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NAVFAC
Naval Facilities Engineering Command

Off-Base Drinking Water Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Figure, SDG 1700789

Naval Air Warfare Center Trenton
Trenton, New Jersey

August 2019

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N62376.SF.001171
NAWC TRENTON
5090.3c

LABORATORY DATA PACKAGE, 1700789, NAWC TRENTON, NJ
07/21/2017
VISTA ANALYTICAL LABORATORY

July 21, 2017

Vista Work Order No. 1700789

Ms. Mary Mang
Tetra Tech
661 Andersen Drive, Foster Plaza 7
Pittsburgh, PA 15220

Dear Ms. Mang,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 29, 2017. This sample set was analyzed on a standard turn-around time, under your Project Name 'NAWC Trenton'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director

Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1700789
Case Narrative

Sample Condition on Receipt:

Ten aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

Modified EPA Method 537

The samples were extracted and analyzed for a selected list of 14 PFAS using Modified EPA Method 537.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The recovery of PFUnA was 131% in the OPR, which is above the limit of 130%. There were no sample detections for this compound above the LODs. The recoveries for all other target analytes in the OPR were within the method acceptance criteria

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

As requested, an MS/MSD was performed on sample "MH-117N-20170627".

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1700789-01	GR-OF-20170627	Modified EPA Method 537	13C2-PFTeDA	H	39.3
1700789-02	MH-117T-20170627	Modified EPA Method 537	13C2-PFDoA	H	45.8
1700789-02	MH-117T-20170627	Modified EPA Method 537	13C2-PFTeDA	H	24.6
1700789-03	MH-117N-20170627	Modified EPA Method 537	13C2-PFDoA	H	25.6
1700789-03	MH-117N-20170627	Modified EPA Method 537	13C2-PFTeDA	H	24.6
1700789-04	MH-118.5T-20170627	Modified EPA Method 537	13C2-PFDoA	H	49.4
1700789-04	MH-118.5T-20170627	Modified EPA Method 537	13C2-PFTeDA	H	23.2
1700789-05	MH-118.5N-20170627	Modified EPA Method 537	13C2-PFDoA	H	29.2
1700789-05	MH-118.5N-20170627	Modified EPA Method 537	13C2-PFTeDA	H	18.0
1700789-06	MH-121.5T-20170627	Modified EPA Method 537	13C2-PFDoA	H	44.9
1700789-06	MH-121.5T-20170627	Modified EPA Method 537	13C2-PFTeDA	H	35.1
1700789-07	MH-121.5N-20170627	Modified EPA Method 537	13C2-PFDoA	H	38.2
1700789-07	MH-121.5N-20170627	Modified EPA Method 537	13C2-PFTeDA	H	22.4
1700789-08	MH-125.9T-20170627	Modified EPA Method 537	13C2-PFDoA	H	46.3
1700789-08	MH-125.9T-20170627	Modified EPA Method 537	13C2-PFTeDA	H	16.9
1700789-09	MH-125.9N-20170627	Modified EPA Method 537	13C2-PFDoA	H	41.9
1700789-09	MH-125.9N-20170627	Modified EPA Method 537	13C2-PFTeDA	H	28.7
B7F0136-BLK1	B7F0136-BLK1	Modified EPA Method 537	13C2-PFDoA	H	38.1
B7F0136-BLK1	B7F0136-BLK1	Modified EPA Method 537	13C2-PFTeDA	H	21.8
B7F0136-BS1	B7F0136-BS1	Modified EPA Method 537	13C2-PFDoA	H	24.2
B7F0136-BS1	B7F0136-BS1	Modified EPA Method 537	13C2-PFTeDA	H	31.9
B7F0136-MS1	B7F0136-MS1	Modified EPA Method 537	13C8-PFOS	H	27.1
B7F0136-MS1	B7F0136-MS1	Modified EPA Method 537	13C2-PFDoA	H	25.8
B7F0136-MSD1	B7F0136-MSD1	Modified EPA Method 537	13C2-PFDoA	H	31.6

H = Recovery was outside laboratory acceptance criteria.

In addition, the laboratory QC officer must read and sign a copy of the Quality Assurance Review Form displayed on the next page of this Attachment. Electronic deliverables are not considered to be complete without the accompanying Quality Assurance Review Form.

I Anna Helak, as the designated Quality Assurance Officer, hereby attest that all electronic deliverables have been thoroughly reviewed and are in agreement with the associated hardcopy data. The enclosed electronic files have been reviewed for accuracy (including significant figures), completeness and format. The laboratory will be responsible for any labor time necessary to correct enclosed electronic deliverables that have been found to be in error. I can be reached at (916) 673-1520 if there are any questions or problems with the enclosed electronic deliverables.

Signature: [signature] Title: QA Manager Date: 7/22/2017

Revision 9
ISG
08/18/16

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Sample Inventory Report

Vista Sample ID	Client Sample ID		Sampled	Received	Components/Containers
1700789-01	GR-OF-20170627		27-Jun-17 08:57	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-02	MH-117T-20170627		27-Jun-17 09:40	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-03	MH-117N-20170627	MS/MSD	27-Jun-17 09:30	29-Jun-17 10:09	HDPE Bottle, 125 mL
		MS/MSD			HDPE Bottle, 125 mL
		MS/MSD			HDPE Bottle, 125 mL
		MS/MSD			HDPE Bottle, 125 mL
		MS/MSD			HDPE Bottle, 125 mL
		MS/MSD			HDPE Bottle, 125 mL
1700789-04	MH-118.5T-20170627		27-Jun-17 10:45	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-05	MH-118.5N-20170627		27-Jun-17 10:30	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-06	MH-121.5T-20170627		27-Jun-17 12:20	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-07	MH-121.5N-20170627		27-Jun-17 11:40	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-08	MH-125.9T-20170627		27-Jun-17 13:45	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-09	MH-125.9N-20170627		27-Jun-17 13:25	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL
1700789-10	West Ditch Out-20170627		27-Jun-17 14:15	29-Jun-17 10:09	HDPE Bottle, 125 mL
					HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

Modified EPA Method 537

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7F0136
Date Extracted: 03-Jul-2017 8:32

Lab Sample: B7F0136-BLK1
Date Analyzed: 06-Jul-17 09:50 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.79	5.00	8.00	
PFHxA	ND	2.18	5.00	8.00	
PFHpA	ND	0.591	5.00	8.00	
PFHxS	ND	0.947	5.00	8.00	
PFOA	ND	0.651	5.00	8.00	
PFOS	ND	0.807	5.00	8.00	
PFNA	ND	0.810	5.00	8.00	
PFDA	ND	1.49	5.00	8.00	
MeFOSAA	ND	1.65	5.00	8.00	
PFUnA	ND	1.05	5.00	8.00	
EtFOSAA	ND	1.37	5.00	8.00	
PFDoA	ND	0.792	5.00	8.00	
PFTrDA	ND	0.494	5.00	8.00	
PFTeDA	ND	0.755	5.00	8.00	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	124	50 - 150	
IS	13C2-PFHxA	99.5	50 - 150	
IS	13C4-PFHpA	83.3	50 - 150	
IS	18O2-PFHxS	95.8	50 - 150	
IS	13C2-PFOA	94.1	50 - 150	
IS	13C8-PFOS	96.9	50 - 150	
IS	13C5-PFNA	82.5	50 - 150	
IS	13C2-PFDA	84.2	50 - 150	
IS	d3-MeFOSAA	63.4	50 - 150	
IS	13C2-PFUnA	60.0	50 - 150	
IS	d5-EtFOSAA	55.2	50 - 150	
IS	13C2-PFDoA	38.1	50 - 150	H
IS	13C2-PFTeDA	21.8	50 - 150	H

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: OPR

Modified EPA Method 537

Matrix:	Aqueous	QC Batch:	B7F0136	Lab Sample:	B7F0136-BS1
Sample Size:	0.125 L	Date Extracted:	03-Jul-2017 8:32	Date Analyzed:	06-Jul-17 09:29 Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits
PFBS	88.7	80.0	111	70 - 130
PFHxA	97.7	80.0	122	70 - 130
PFHpA	95.0	80.0	119	70 - 130
PFHxS	73.2	80.0	91.4	70 - 130
PFOA	99.5	80.0	124	70 - 130
PFOS	93.1	80.0	116	70 - 130
PFNA	91.8	80.0	115	70 - 130
PFDA	95.9	80.0	120	70 - 130
MeFOSAA	87.7	80.0	110	70 - 130
PFUnA	105	80.0	131	70 - 130
EtFOSAA	94.1	80.0	118	70 - 130
PFDoA	102	80.0	127	70 - 130
PFTrDA	70.8	80.0	88.5	60 - 130
PFTeDA	101	80.0	126	70 - 130

	Labeled Standard	%R	LCL-UCL
IS	13C3-PFBS	121	50 - 150
IS	13C2-PFHxA	93.9	50 - 150
IS	13C4-PFHpA	85.4	50 - 150
IS	18O2-PFHxS	102	50 - 150
IS	13C2-PFOA	91.0	50 - 150
IS	13C8-PFOS	90.1	50 - 150
IS	13C5-PFNA	78.7	50 - 150
IS	13C2-PFDA	79.4	50 - 150
IS	d3-MeFOSAA	66.8	50 - 150
IS	13C2-PFUnA	60.9	50 - 150
IS	d5-EtFOSAA	61.9	50 - 150
IS	13C2-PFDoA	24.2	50 - 150
IS	13C2-PFTeDA	31.9	50 - 150

LCL-UCL - Lower control limit - upper control limit

Sample ID: GR-OF-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 8:57
Location: Gold Run Outfall

Sample Data

Matrix: Aqueous
Sample Size: 0.108 L

Laboratory Data

Lab Sample: 1700789-01 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 10:33 Column: BEH C18
07-Jul-17 14:29 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	39.3	2.08	5.79	9.27	
PFHxA	224	2.53	5.79	9.27	
PFHpA	89.7	0.685	5.79	9.27	
PFHxS	240	1.10	5.79	9.27	
PFOA	50.4	0.755	5.79	9.27	
PFOS	1640	4.68	28.9	46.4	D
PFNA	9.50	0.939	5.79	9.27	
PFDA	3.29	1.73	5.79	9.27	J
MeFOSAA	ND	1.91	5.79	9.27	
PFUnA	1.96	1.22	5.79	9.27	J
EtFOSAA	ND	1.59	5.79	9.27	
PFDoA	ND	0.918	5.79	9.27	
PFTrDA	ND	0.573	5.79	9.27	
PFTeDA	ND	0.875	5.79	9.27	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	112	50 - 150	
IS	13C2-PFHxA	91.7	50 - 150	
IS	13C4-PFHpA	78.1	50 - 150	
IS	18O2-PFHxS	88.0	50 - 150	
IS	13C2-PFOA	83.0	50 - 150	
IS	13C8-PFOS	97.3	50 - 150	D
IS	13C5-PFNA	84.5	50 - 150	
IS	13C2-PFDA	90.0	50 - 150	
IS	d3-MeFOSAA	77.3	50 - 150	
IS	13C2-PFUnA	72.7	50 - 150	
IS	d5-EtFOSAA	67.2	50 - 150	
IS	13C2-PFDoA	54.4	50 - 150	
IS	13C2-PFTeDA	39.3	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-117T-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 9:40
Location: Manhole 11.7T

Sample Data

Matrix: Aqueous
Sample Size: 0.123 L

Laboratory Data

Lab Sample: 1700789-02 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 10:44 Column: BEH C18
07-Jul-17 14:39 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	39.7	1.82	5.08	8.12	
PFHxA	295	2.21	5.08	8.12	
PFHpA	108	0.600	5.08	8.12	
PFHxS	227	0.962	5.08	8.12	
PFOA	64.6	0.661	5.08	8.12	
PFOS	2230	4.10	25.4	40.6	D
PFNA	10.3	0.822	5.08	8.12	
PFDA	3.30	1.51	5.08	8.12	J
MeFOSAA	ND	1.68	5.08	8.12	
PFUnA	1.50	1.07	5.08	8.12	J
EtFOSAA	ND	1.39	5.08	8.12	
PFDoA	ND	0.804	5.08	8.12	
PFTrDA	ND	0.502	5.08	8.12	
PFTeDA	ND	0.767	5.08	8.12	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	109	50 - 150	
IS	13C2-PFHxA	86.4	50 - 150	
IS	13C4-PFHpA	79.1	50 - 150	
IS	18O2-PFHxS	98.8	50 - 150	
IS	13C2-PFOA	82.5	50 - 150	
IS	13C8-PFOS	57.4	50 - 150	D
IS	13C5-PFNA	74.5	50 - 150	
IS	13C2-PFDA	79.7	50 - 150	
IS	d3-MeFOSAA	67.8	50 - 150	
IS	13C2-PFUnA	67.9	50 - 150	
IS	d5-EtFOSAA	61.4	50 - 150	
IS	13C2-PFDoA	45.8	50 - 150	H
IS	13C2-PFTeDA	24.6	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-117N-20170627

Modified EPA Method 537

Client Data

P ame: Wetra Wech
j rHEct: P A. C WentHn
Date CHllected: 27-Jun-2017 N30
LHcatiHn: ManhHle 117P

Sample Data

Matrix: AqueHus
Sample Size: 0513 L

Laboratory Data

Lab Sample: 170078N-03
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 10:4o CHlumn: BE9 C18
07-Jul-17 1o:40 CHlumn: BE9 C18

Date Received: 2N-Jun-2017 10:0N
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
j FBS	120	1581	4508	8510	
j F9 xA	601	2521	4508	8510	
j F9 pA	148	054N8	4508	8510	
j F9 xS	1010	o57N	245o	o054	D
j FOA	113	0564N	4508	8510	
j FOS	2860	o508	245o	o054	D
j FP A	1152	05820	4508	8510	
j FDA	1560	1541	4508	8510	J
MeFOSAA	P D	1567	4508	8510	
j FUnA	P D	1506	4508	8510	
EtFOSAA	P D	153N	4508	8510	
j FDHA	P D	05802	4508	8510	
j FWDA	P D	05400	4508	8510	
j FWeDA	P D	0576o	4508	8510	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-j FBS	11N	40 - 140	
IS	13C2-j F9 xA	N856	40 - 140	
IS	13Co-j F9 pA	8754	40 - 140	
IS	18O2-j F9 xS	N256	40 - 140	D
IS	13C2-j FOA	N356	40 - 140	
IS	13C8-j FOS	10N	40 - 140	D
IS	13C4-j FP A	8053	40 - 140	
IS	13C2-j FDA	8851	40 - 140	
IS	d3-MeFOSAA	8054	40 - 140	
IS	13C2-j FUnA	715o	40 - 140	
IS	d4-EtFOSAA	4N57	40 - 140	
IS	13C2-j FDHA	2456	40 - 140	9
IS	13C2-j FWeDA	2o56	40 - 140	9

DL - DetectiHn limit
RL - RepHrting limit

LCL-UCL - LHwer cHntrHl limit - upper cHntrHl limit
Results repHrted tHDL5
. hen repHrted, j FBS, j F9 xS, j FOA and j FOS include bHth linear and branched isHmers5
Only the linear isHmer is repHrted fHr all Hther analytes5

Matrix Spike Results

Modified EPA Method 537

Source Client ID: MH-117N-20170627
Source LabNumber: 1700789-03
Matrix: Aqueous
Sample Size: 0.123/0.121 L

QC Batch: B7F0136
Date Extracted: 03-Jul-2017 8:32

Lab Sample: B7F0136-MS1/B7F0136-MSD1
Date Analyzed: 07-Jul-17 15:01 Column: BEH C18
07-Jul-17 15:11 Column: BEH C18

Analyte	Spike-MS (ng/L)	MS %R	MS Qual.	Spike-MSD (ng/L)	MSD %R	RPD	MSD Qual.	%R Limit	%RPD Limit
PFBS	81.5	126		82.5	118	6.56		70 - 130	25
PFHxA	81.5	90.8		82.5	103	12.6		70 - 130	25
PFHpA	81.5	**157**	H	82.5	**136**	14.3	H	70 - 130	25
PFHxS	81.5	**-178**	D, H	82.5	**-93.6**	**62.2**	D, H	70 - 130	25
PFOA	81.5	117		82.5	117	0		70 - 130	25
PFOS	81.5	**2880**	D, H	82.5	**-1190**	**482**	D, H	70 - 130	25
PFNA	81.5	110		82.5	119	7.86		70 - 130	25
PFDA	81.5	109		82.5	118	7.93		70 - 130	25
MeFOSAA	81.5	108		82.5	105	2.82		70 - 130	25
PFUnA	81.5	115		82.5	127	9.92		70 - 130	25
EtFOSAA	81.5	105		82.5	127	19.0		70 - 130	25
PFDoA	81.5	**136**	H	82.5	86.8	**44.2**	H	70 - 130	25
PFTrDA	81.5	94.5		82.5	73.7	24.7		60 - 130	25
PFTeDA	81.5	117		82.5	127	8.20		70 - 130	25

	Labeled Standard	MS %R	MS Qualifiers	MSD %R	MSD Qual.
IS	13C3-PFBS	111		113	
IS	13C2-PFHxA	96.2		88.7	
IS	13C4-PFHpA	74.3		76.0	
IS	18O2-PFHxS	87.1	D	103	D
IS	13C2-PFOA	85.6		83.4	
IS	13C8-PFOS	27.1	D, H	96.4	D
IS	13C5-PFNA	84.2		82.9	
IS	13C2-PFDA	82.6		84.7	
IS	d3-MeFOSAA	74.8		90.2	
IS	13C2-PFUnA	74.8		82.7	
IS	d5-EtFOSAA	58.8		66.0	
IS	13C2-PFDoA	25.8	H	31.6	H
IS	13C2-PFTeDA	55.9		63.3	

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: MH-118.5T-20170627

Modified EPA Method 537

Client Data

v ame: Wetra Wech
Nr4Rect: v A. C Went4n
Date C4llected: 27-Jun-2017 10:j T
L4cati4n: Manh4le 1185TW

Sample Data

Matrix: AHue4u9
Sample Size: 0513 7 L

Laboratory Data

Lab Sample: 170078R-0j
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 11:26 C4lumn: BEo C18
Date q ceis ed: 2R-Jun-2017 10:0R
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
NFBS	1587	1563	j 5T6	752R	J
NFo xA	113	15RR	j 5T6	752R	
NFo pA	TR57	053R	j 5T6	752R	
NFo xS	R573	0586 3	j 5T6	752R	
NFOA	3752	05TR3	j 5T6	752R	
NFOS	1658	0573T	j 5T6	752R	
NFv A	6512	05738	j 5T6	752R	J
NFDA	v D	1536	j 5T6	752R	
MeFOSAA	v D	15T0	j 5T6	752R	
NFUnA	v D	05RT7	j 5T6	752R	
EtFOSAA	v D	152T	j 5T6	752R	
NFD4A	v D	05722	j 5T6	752R	
NFWDA	v D	05j T0	j 5T6	752R	
NFWeDA	v D	0568 8	j 5T6	752R	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-NFBS	111	T0 - 1T0	
IS	13C2-NFo xA	Rj 57	T0 - 1T0	
IS	13Cj -NFo pA	8352	T0 - 1T0	
IS	18O2-NFo xS	RR57	T0 - 1T0	
IS	13C2-NFOA	8T51	T0 - 1T0	
IS	13C8-NFOS	8j 58	T0 - 1T0	
IS	13CT-NFv A	R252	T0 - 1T0	
IS	13C2-NFDA	7T5R	T0 - 1T0	
IS	d3-MeFOSAA	7R5R	T0 - 1T0	
IS	13C2-NFUnA	7757	T0 - 1T0	
IS	dT-EtFOSAA	685T	T0 - 1T0	
IS	13C2-NFD4A	j R5j	T0 - 1T0	o
IS	13C2-NFWeDA	2352	T0 - 1T0	o

DL - Detecti4n limit

q L - q ep4rting limit

LCL-UCL - L4wer c4ntr4l limit - upper c4ntr4l limit

q e9ult9 rep4rted t4 DL5

. hen rep4rted, NFBS, NFo xS, NFOA and NFOS include b4th linear and branched i94mer95

Only the linear i94mer i9 rep4rted f4r all 4ther analyte95

Sample ID: MH-118.5N-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Pr4ject: NAWC Trent4n
Date C4llected: 27-Jun-2017 10:30
L4cati4n: Manh4le 118.HN

Sample Data

Matrix: A9ue4uq
Sample Size: 0.122 L

Laboratory Data

Lab Sample: 170078v-0H
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 11:37 C4lumn: BEo C18
07-Jul-17 1H22 C4lumn: BEo C18

Date s eceiRed: 2v-Jun-2017 10:0v
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	1HH	1.85	H12	8.22	
PFo xA	70H	2.25	H12	8.22	
PFo pA	213	0.607	H12	8.22	
PFo xS	81H	v.73	Hl.2	82.2	D
PFOA	128	0.66v	H12	8.22	
PFOS	H700	8.2v	Hl.2	82.2	D
PFNA	13.0	0.832	H12	8.22	
PFDA	3.78	1.HB	H12	8.22	J
MeFOSAA	ND	1.70	H12	8.22	
PFUnA	ND	1.08	H12	8.22	
EtFOSAA	ND	1.51	H12	8.22	
PFD4A	ND	0.815	H12	8.22	
PFTrDA	ND	0.H08	H12	8.22	
PFTeDA	ND	0.776	H12	8.22	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	100	HD - 1HD	
IS	13C2-PFo xA	88.0	HD - 1HD	
IS	13C5-PFo pA	80.2	HD - 1HD	
IS	18O2-PFo xS	v0.5	HD - 1HD	D
IS	13C2-PFOA	8H8	HD - 1HD	
IS	13C8-PFOS	H6.2	HD - 1HD	D
IS	13CH-PFNA	7v.8	HD - 1HD	
IS	13C2-PFDA	77.7	HD - 1HD	
IS	d3-MeFOSAA	68.5	HD - 1HD	
IS	13C2-PFUnA	7H6	HD - 1HD	
IS	dH-EtFOSAA	H5.8	HD - 1HD	
IS	13C2-PFD4A	2v.2	HD - 1HD	o
IS	13C2-PFTeDA	18.0	HD - 1HD	o

DL - Detecti4n limit
s L - s ep4rting limit

LCL-UCL - L4wer c4ntr4l limit - upper c4ntr4l limit
s equltq rep4rted t4 DL.
When rep4rted, PFBS, PFo xS, PFOA and PFOS include b4th linear and branched iq4merq.
Only the linear iq4mer iq rep4rted f4r all 4ther analyteq

Sample ID: MH-1T1.52-T01706T7

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 12:20
Location: Manhole 121.5T

Sample Data

Matrix: A9ueouq
Sample Size: 0.123 L

Laboratory Data

Lab Sample: 170078v-06 Date s eceiRed: 2v-Jun-2017 10:0v
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 11:48 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.82	5.08	8.12	
PFHxA	5v.v	2.21	5.08	8.12	
PFHpA	44.6	0.600	5.08	8.12	
PFHxS	4.68	0.v61	5.08	8.12	J
PFOA	36.2	0.661	5.08	8.12	
PFOS	7.55	0.81v	5.08	8.12	J
PFNA	6.84	0.822	5.08	8.12	J
PFDA	ND	1.51	5.08	8.12	
MeFOSAA	ND	1.67	5.08	8.12	
PFUnA	ND	1.07	5.08	8.12	
EtFOSAA	ND	1.3v	5.08	8.12	
PFDoA	ND	0.804	5.08	8.12	
PFTrDA	ND	0.501	5.08	8.12	
PFTeDA	ND	0.766	5.08	8.12	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	111	50 - 150	
IS	13C2-PFHxA	v6.0	50 - 150	
IS	13C4-PFHpA	85.5	50 - 150	
IS	18O2-PFHxS	86.2	50 - 150	
IS	13C2-PFOA	v2.2	50 - 150	
IS	13C8-PFOS	88.4	50 - 150	
IS	13C5-PFNA	vv.7	50 - 150	
IS	13C2-PFDA	68.8	50 - 150	
IS	d3-MeFOSAA	76.4	50 - 150	
IS	13C2-PFUnA	6v.v	50 - 150	
IS	d5-EtFOSAA	6v.5	50 - 150	
IS	13C2-PFDoA	44.v	50 - 150	H
IS	13C2-PFTeDA	35.1	50 - 150	H

DL - Detection limit

s L - s eporting limit

LCL-UCL - Lower control limit - upper control limit

s equltq reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched iqomerq.

Only the linear iqomer iq reported for all other analyteq

Sample ID: MH-1N1.52 -N01706N7

Modified EPA Method 537

Client Data

Name: Wetra Wech
PrHject: NA. C WentHn
Date CHllected: 27-Jun-2017 11:T0
LHcatiHn: ManhHle 12154N

Sample Data

Matrix: AqueHus
Sample Size: 0513 L

Laboratory Data

Lab Sample: 170078o-07
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 11:4o CHlumn: BE9 C18
Date Received: 2o-Jun-2017 10:0o
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	4540	1581	4508	8510	J
PF9 xA	31T	2521	4508	8510	
PF9 pA	133	054o8	4508	8510	
PF9 xS	3354	05o4o	4508	8510	
PFOA	TT53	0564o	4508	8510	
PFOS	2853	0583 7	4508	8510	
PFNA	4521	0582 0	4508	8510	J
PFDA	ND	1541	4508	8510	
MeFOSAA	ND	1567	4508	8510	
PFUnA	ND	1506	4508	8510	
EtFOSAA	ND	153o	4508	8510	
PFDHA	ND	0582	4508	8510	
PFWDA	ND	0540 0	4508	8510	
PFWeDA	ND	0576T	4508	8510	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	111	40 - 140	
IS	13C2-PF9 xA	o15T	40 - 140	
IS	13CT-PF9 pA	8450	40 - 140	
IS	18O2-PF9 xS	8250	40 - 140	
IS	13C2-PFOA	7o54	40 - 140	
IS	13C8-PFOS	o353	40 - 140	
IS	13C4-PFNA	7754	40 - 140	
IS	13C2-PFDA	785T	40 - 140	
IS	d3-MeFOSAA	6152	40 - 140	
IS	13C2-PFUnA	475o	40 - 140	
IS	d4-EtFOSAA	4651	40 - 140	
IS	13C2-PFDHA	3852	40 - 140	9
IS	13C2-PFWeDA	225T	40 - 140	9

DL - DetectiHn limit
RL - RepHrting limit

LCL-UCL - LHwer cHntrHl limit - upper cHntrHl limit
Results repHrted tHDL5
. hen repHrted, PFBS, PF9 xS, PFOA and PFOS include bHth linear and branched isHmers5
Only the linear isHmer is repHrted fHr all Hther analytes5

Sample ID: MH-125.9T-20170627

Modified EPA Method 537

Client Data

Name: Wetra Wech
Project: NA. C Wenton
Date Collected: 27-Jun-2017 13:4T
Location: Manhole 12T5vW

Sample Data

Matrix: A9ueouq
Sample Size: 0512 0 L

Laboratory Data

Lab Sample: 170078v-08 Date s eceiRed: 2v-Jun-2017 10:0v
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 12:42 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1587	T521	8537	
PFHxA	8452	2528	T521	8537	
PFHpA	T85T	0561 8	T521	8537	
PFHxS	3502	05vv1	T521	8537	J
PFOA	Tv50	0568 1	T521	8537	
PFOS	25IT	0584 4	T521	8537	J
PFNA	7537	0584 7	T521	8537	J
PFDA	ND	151 6	T521	8537	
MeFOSAA	ND	1573	T521	8537	
PFUnA	ND	1510	T521	8537	
EtFOSAA	ND	1543	T521	8537	
PFDoA	ND	0582 8	T521	8537	
PFWDA	ND	051 17	T521	8537	
PFWeDA	ND	057v0	T521	8537	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	12T	T0 - 1T0	
IS	13C2-PFHxA	v85T	T0 - 1T0	
IS	13C4-PFHpA	8856	T0 - 1T0	
IS	18O2-PFHxS	102	T0 - 1T0	
IS	13C2-PFOA	8v50	T0 - 1T0	
IS	13C8-PFOS	100	T0 - 1T0	
IS	13CT-PFNA	7656	T0 - 1T0	
IS	13C2-PFDA	885v	T0 - 1T0	
IS	d3-MeFOSAA	8052	T0 - 1T0	
IS	13C2-PFUnA	7054	T0 - 1T0	
IS	dT-EtFOSAA	7053	T0 - 1T0	
IS	13C2-PFDoA	4653	T0 - 1T0	H
IS	13C2-PFWeDA	165v	T0 - 1T0	H

DL - Detection limit

s L - s eporting limit

LCL-UCL - Lower control limit - upper control limit

s equltq reported to DL5

. hen reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched iqomerq5

Only the linear iqomer iq reported for all other analyteq5

Sample ID: MH-125.9N-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 13:24
Location: Manhole 124.vN

Sample Data

Matrix: A9ueouq
Sample Size: 0.125 L

Laboratory Data

Lab Sample: 170078v-0v
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 12:42 Column: BEH C18
Date s eceiRed: 2v-Jun-2017 10:0v
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.81	4.05	8.10	
PFHxA	71.v	2.21	4.05	8.10	
PFHpA	56.2	0.4v8	4.05	8.10	
PFHxS	5.v4	0.v48	4.05	8.10	J
PFOA	38.1	0.64v	4.05	8.10	
PFOS	13.6	0.817	4.05	8.10	
PFNA	11.1	0.820	4.05	8.10	
PFDA	3.26	1.41	4.05	8.10	J
MeFOSAA	ND	1.67	4.05	8.10	
PFUnA	3.41	1.06	4.05	8.10	J
EtFOSAA	ND	1.3v	4.05	8.10	
PFDoA	ND	0.801	4.05	8.10	
PFTrDA	ND	0.400	4.05	8.10	
PFTeDA	ND	0.765	4.05	8.10	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	114	40 - 140	
IS	13C2-PFHxA	v7.4	40 - 140	
IS	13C5-PFHpA	8v.v	40 - 140	
IS	18O2-PFHxS	v7.1	40 - 140	
IS	13C2-PFOA	83.7	40 - 140	
IS	13C8-PFOS	105	40 - 140	
IS	13C4-PFNA	87.6	40 - 140	
IS	13C2-PFDA	86.1	40 - 140	
IS	d3-MeFOSAA	74.0	40 - 140	
IS	13C2-PFUnA	7v.v	40 - 140	
IS	d4-EtFOSAA	61.1	40 - 140	
IS	13C2-PFDoA	51.v	40 - 140	H
IS	13C2-PFTeDA	28.7	40 - 140	H

DL - Detection limit

s L - s eporting limit

LCL-UCL - Lower control limit - upper control limit

s equltq reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched iqomerq.

Only the linear iqomer iq reported for all other analyteq.

Sample ID: West Ditch Out-20170627

Modified EPA Method 537

Client Data

v ame: Wetra Wech
Nr4Rect: v A. C Went4n
Date C4llected: 27-Jun-2017 1j :1T
L4cati4n: . e9t Ditch Out

Sample Data

Matrix: AHue4u9
Sample Size: 0510 L

Laboratory Data

Lab Sample: 170078R-10
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 13:03 C4lumn: BEo C18
Date q ceis ed: 2R-Jun-2017 10:0R
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
NFBS	v D	250j	T568	R511	
NFo xA	7650	25j 8	T568	R511	
NFo pA	TT58	05673	T568	R511	
NFo xS	T581	1508	T568	R511	J
NFOA	j 251	057j 1	T568	R511	
NFOS	1T51	05R1R	T568	R511	
NFv A	135R	05R22	T568	R511	
NFDA	v D	1570	T568	R511	
MeFOSAA	v D	1588	T568	R511	
NFUnA	25j 1	1520	T568	R511	J
EtFOSAA	v D	15T6	T568	R511	
NFD4A	v D	05R02	T568	R511	
NFWDA	v D	05T62	T568	R511	
NFWéDA	v D	058TR	T568	R511	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-NFBS	12j	T0 - 1T0	
IS	13C2-NFo xA	R758	T0 - 1T0	
IS	13Cj -NFo pA	835j	T0 - 1T0	
IS	18O2-NFo xS	100	T0 - 1T0	
IS	13C2-NFOA	8056	T0 - 1T0	
IS	13C8-NFOS	8R56	T0 - 1T0	
IS	13CT-NFv A	6R5T	T0 - 1T0	
IS	13C2-NFDA	R351	T0 - 1T0	
IS	d3-MeFOSAA	7351	T0 - 1T0	
IS	13C2-NFUnA	6751	T0 - 1T0	
IS	dT-EtFOSAA	6151	T0 - 1T0	
IS	13C2-NFD4A	625R	T0 - 1T0	
IS	13C2-NFWéDA	6R5R	T0 - 1T0	

DL - Detecti4n limit
q L - q ep4rting limit

LCL-UCL - L4wer c4ntr4l limit - upper c4ntr4l limit
q e9ult9 rep4rted t4 DL5
. hen rep4rted, NFBS, NFo xS, NFOA and NFOS include b4th linear and branched i94mer95
Only the linear i94mer i9 rep4rted f4r all 4ther analyte95

DATA QUALIFIERS & ABBREVIATIONS

B	**This compound was also detected in the method blank.**
D	**Dilution**
E	**The associated compound concentration exceeded the calibration range of the instrument.**
H	**Recovery and/or RPD was outside laboratory acceptance limits.**
I	**Chemical Interference**
J	**The amount detected is below the Reporting Limit/LOQ.**
M	**Estimated Maximum Possible Concentration. (CA Region 2 projects only)**
*****	**See Cover Letter**
Conc.	**Concentration**
NA	**Not applicable**
ND	**Not Detected**
TEQ	**Toxic Equivalency**

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

CERTIFICATIONS

Accrediting Authority	Certificate Number
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1175673
Nevada Division of Environmental Protection	CA004132017-1
New Hampshire Environmental Accreditation Program	207716
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	013
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	8621
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	**Method**
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23

MATRIX: Biological Tissue	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	**Method**
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537

MATRIX: Non-Potable Water	
Description of Test	**Method**
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	**Method**
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope	EPA 1613B

Dilution GC/HRMS	
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1700789 Temp: 4.0 °C
Storage ID: WR-2, 3-4 Storage Secured: Yes ☒ No ☐

Project ID: NAWC Trenton PO#: 1132341-WR3 Sampler: Charles Meyer (name)

TAT (check one): Standard: ☐ 21 days Rush (surcharge may apply): ☐ 14 days ☐ 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tetra Tech	Foster Plaza VII	661 Andersen Drive	Pittsburgh	PA	15220	412 921 7090	412 921 4040

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Mary kay Bord Mary kay Bord	6/28/17	18:00	Marissa Sparks MSparks	6/29/17	1030
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: _____

Method of Shipment: FedEx

Tracking No.: 0612 1992 6143

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/PFOS	UCMR3 PFAS List:6	537 List: 14	Full List of 26	Other: Please List Below PFOA PFOS PFNA	EPA Method 537(DW only): PFOA/PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
GR-OF-20170627	6/27/17	8:57	Gold Run Outfall	2	PJ	Aq					X				
MH-117T-20170627	6/27/17	9:40	Manhole 117T	2	PJ	Aq					X				
MH-117N-20170627	6/27/17	9:30	Manhole 117N	6	PJ	Aq					X				
MH-118.5T-20170627	6/27/17	10:45	Manhole 118.5T	2	PJ	Aq					X				
MH-118.5N-20170627	6/27/17	10:30	Manhole 118.5N	2	PJ	Aq					X				
MH-121.5T-20170627	6/27/17	12:20	Manhole 121.5T	2	PJ	Aq					X				
MH-121.5N-20170627	6/27/17	11:40	Manhole 121.5N	2	PJ	Aq					X				
MH-125.9T-20170627	6/27/17	13:45	Manhole 125.9T	2	PJ	Aq					X				
MH-125.9N-20170627	6/27/17	13:25	Manhole 125.9N	2	PJ	Aq					X				
WestDitchOut-20170627	6/27/17	14:15	West Ditch Out	2	PJ	Aq					X				

Special Instructions/Comments: _____

SEND DOCUMENTATION AND RESULTS TO:

Name: Mary Mang
Company: Tetra Tech
Address: 234 Mall Boulevard Suite 260
City: King of Prussia State: PA Zip: 19406
Phone: 610 382 1174 Fax: 610 491 9645
Email: mary.mang at tetratech.com

Container Types: P= HDPE, PJ= HDPE Jar, O = Other: PJ

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: AQ

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1700789 **TAT** 22 days

Samples Arrival:	**Date/Time** 6/29/17 1009	**Initials:** WS	**Location:** WR-2 **Shelf/Rack:** W3
Logged In:	**Date/Time** 6/29/17 1051	**Initials:** WS	**Location:** WR-2 **Shelf/Rack:** 3-4

Delivered By:	(FedEx)	UPS	On Trac	GSO	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Dry Ice		None

Temp °C: 4.4 (uncorrected)	**Time:** 1029	**Thermometer ID:** IR-2
Temp °C: 4.0 (corrected)	**Probe used:** Yes☐ No☒	

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill — Trk # 6612 1992 6143	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓

Preservation Documented:	$Na_2S_2O_3$	Trizma	(None)		Yes	(No)	NA
Shipping Container	Vista	Client	(Retain)	Return		Dispose	

Comments:

Correspondence

Martha Maier

From: Karen Volpendesta
Sent: Thursday, June 29, 2017 2:15 PM
To: Mang, Mary (Mary.Mang@tetratech.com); Ritchie, Megan (Megan.Ritchie@tetratech.com)
Cc: Martha Maier (mmaier@vista-analytical.com)
Subject: Vista Work Order #1700789; NAWC Trenton
Attachments: WO# 1700789_Acklet.pdf

Mary,

Please find attached the sample receiving acknowledgement for Vista Analytical Work Order: 1700789.

Please review the Sample Inventory Report found on page 3 to ensure that the samples were logged in correct.

These samples will be analyzed by Modified EPA Method 537 for PFOA, PFOS, and PFNA only.

If you have any questions, please contact me or Martha Maier at (916) 673-1520. We appreciate your business.

Best Regards,

Karen L. Volpendesta
(formerly Lopez)
Project Manager

Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
Phone: (916) 673-1520
www.vista-analytical.com
Hours: Monday, Tuesday, & Thursday, 8am-4:30pm

A woman-owned, small business enterprise.

EXTRACTION INFORMATION

Process Sheet

Workorder: 1700789

Prep Expiration: 2017-Jul-11
Client: Tetra Tech

Workorder Due: 21-Jul-17 00:00

TAT: 22

Method: **537M PFAS DOD (LOQ as mRL)**
Matrix: **Aqueous**

Prep Batch: B7F0136

Prep Data Entered: 7/5/17 KBF
Date and Initials

Version: 537 (14 Analyte)

Initial Sequence: STG0010

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1700789-01 A	☑	GR-OF-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-02 A	☑	MH-117T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-03 A B C	☑	MH-117N-20170627	29-Jun-17 10:09	WR-2 A-4	**MS/MSD**
1700789-04 A	☑	MH-118.5T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-05 A	☑	MH-118.5N-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-06 A	☑	MH-121.5T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-07 A	☑	MH-121.5N-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-08 A	☑	MH-125.9T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-09 A	☑	MH-125.9N-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-10 A	☑	West Ditch Out-20170627	29-Jun-17 10:09	WR-2 A-4	

WO Comments: **Attach balance check doc.**

Vista PM:Martha Maier

Vial Box ID: _____

Sample Reconciled By: HB 6/30/17

Page 1 of 1

Batch: B7F0136

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1700789-01	0.10782	N/A	N/A	1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-02	0.12311	—	—	1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-03	0.12348			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-04	0.13718			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-05	0.12165			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-06	0.12319			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-07	0.12348			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-08	0.11951			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-09	0.12353			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-10	0.10981			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
B7F0136-BLK1	0.125			1000	30-Jun-17 08:32	HAC				QC
B7F0136-BS1	0.125			1000	30-Jun-17 08:32	HAC	17D2705	10		QC
B7F0136-MS1	0.12272			1000	30-Jun-17 08:32	HAC	17D2705	10		QC
B7F0136-MSD1	0.12124			1000	30-Jun-17 08:32	HAC	17D2705	10		QC

LGBF 7/5/17

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOO as mRL)

B7F0136

Chemist: G. Mendiola

Prep Date/Time: ~~30 Jun 17 08:32~~ 7/3/17 KBF 7/3/17

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE G0008	RS CHEM/WIT DATE
☐	B7F0136-BLK1	5	2	0	2	NA	NA	(0.125)	KBF 7/3/17	KBF 7/3/17	KBF 7-3-17
☐	B7F0136-BS1	5	2	0	2	↓	↓	↓			
☐	B7F0136-MS1 1700789-03	5	2	0	3	[illegible]	26.83	~~122.72~~ 0.12232 KBF 7/5/17			
☐	B7F0136-MSD1 1700789-03	5	2	0	3	148.06	26.82	~~121.24~~ 0.12124 KBF 7/5/17			
☐	1700789-01	6	2	0	3	134	26.84	0.10782			
☐	1700789-02	6	2	0	3	[illegible]	26.75	0.12311			
☐	1700789-03	5	2	0	3	[illegible]	26.75	0.12348			
☐	1700789-04	5	2	0	3 HB 6/30/17	~~148.06~~ 164.09	26.86	0.13718			
☐	1700789-05	5	2	0	3 HB 6/30/17	~~164.04~~ 148.99	26.84	0.12165			
☐	1700789-06	6	2	0	3	150.04	26.85	0.12319			
☐	1700789-07	6	2	0	3	150.29	26.81	0.12348			
☐	1700789-08	6	2	0	3	146.35	26.84	0.11951			
☐	1700789-09	6	2	0	3	150.35	26.82	0.12353			
☐	1700789-10	6	2		3	136.59	26.78	0.10981			

IS Name (V2) 17E2617, 10mL

NS Name (V3) 17D2705, 10mL

RS Name (V) 17E1907, 10mL

SPE Chem: Strata-X-AW-33 um 200mg/6mL

Ele SOLV: MeOH / 0.5% NH_4OH in MeOH

Final Volume(s): 1 mL

Check Out: Chemist/Date: HB 6/30/17

Check In: Chemist/Date: HB 6/30/17 NA

Balance ID: HRMS-8

pH Adjusted: Chemist/Date: HB 6/30/17

Comments: Assume 1 g = 1 mL

Vista Analytical Laboratory

BALANCE CALIBRATION CHECK

Weights # 22370 and 7718

Date	☑ for Weight # verification	Weight 1 1 g (0.9900 – 1.0100)	Weight 2 100 g (99.00 – 101.00)	Weight 3 2000 g (1980 – 2020)	Initials	Acceptable? (Y/N)
6/20/17	✓	1.00	100.00	2000.00	OBF	Y
6/21/17	✓	1.01	100.01	2000.03	HB	Y
6/22/17	✓	1.00	99.99	2000.01	OBF	Y
6/23/17	✓	0.99	100.00	2000.00	HB	Y
6/26/17	✓	1.00	100.00	2000.00	HB	Y
6/27/17	✓	1.01	100.00	2000.04	HB	Y
6/28/17	✓	1.00	~~101.00~~ 100.01	2000.01	HB	Y
6/29/17	✓	1.00	100.01	1999.98	JH	Y
6/30/17	✓	1.00	99.99	1999.98	HB	Y
7/3/17	✓	1.01	100.00	1999.99	OBF	Y
7/5/17	✓	1.00	100.00	2000.01	JH	Y

Comments:

SAMPLE DATA – MODIFIED EPA METHOD 537

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

Last Altered: Wednesday, July 19, 2017 15:04:02 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7		6.88e3	0.1250		2.92					
2	2	PFHxA	313.2 > 268.9		2.04e4	0.1250		3.16					
3	3	PFHpA	363 > 318.9		4.34e4	0.1250		3.43					
4	4	PFHxS	398.9 > 79.6	9.61e0	4.76e3	0.1250		3.55	3.49	0.0252	0.138		
5	5	PFOA	413 > 368.7	2.62e2	5.82e4	0.1250		3.63	3.61	0.0564			
6	6	PFNA	462.9 > 418.8		4.84e4	0.1250		3.82					
7	7	PFOS	499 > 79.9	2.43e1	1.08e4	0.1250		3.86	3.81	0.0280			
8	8	PFDA	513 > 468.8		3.94e4	0.1250		4.00					
9	9	PFUnA	562.9 > 518.9	2.02e2	3.05e4	0.1250		4.13	4.12	0.0829			
10	10	N-MeFOSAA	570.1 > 419		7.14e3	0.1250		4.00					
11	11	N-EtFOSAA	584.2 > 419		6.40e3	0.1250		4.08					
12	12	PFDoA	612.9 > 318.8		2.27e3	0.1250		4.31					
13	13	PFTrDA	662.9 > 618.9		2.27e3	0.1250		4.50					
14	14	PFTeDA	712.9 > 668.8		9.03e3	0.1250		4.65					
15	15	13C3-PFBS	302 > 98.8	6.88e3	6.92e4	0.1250	0.032	2.92	2.91	0.497	124	123.9	
16	16	13C2-PFHxA	315 > 269.8	2.04e4	6.92e4	0.1250	0.296	3.15	3.16	1.48	39.8	99.5	
17	17	13C4-PFHpA	367.2 > 321.8	4.34e4	6.92e4	0.1250	0.302	3.43	3.42	3.14	83.3	83.3	
18	18	18O2-PFHxS	403 > 102.6	4.76e3	1.14e4	0.1250	0.434	3.49	3.49	5.20	95.8	95.8	
19	19	13C2-PFOA	414.9 > 369.7	5.82e4	5.42e4	0.1250	1.140	3.62	3.62	13.4	94.1	94.1	
20	20	13C5-PFNA	468.2 > 422.9	4.84e4	6.12e4	0.1250	0.958	3.80	3.80	9.88	82.5	82.5	
21	21	13C8-PFOS	507 > 79.9	1.08e4	1.05e4	0.1250	1.061	3.85	3.85	12.9	96.9	96.9	
22	22	13C2-PFDA	515.1 > 469.9	3.94e4	4.96e4	0.1250	0.942	3.97	3.97	9.92	84.2	84.2	
23	23	13C2-PFUnA	565 > 519.8	3.05e4	4.68e4	0.1250	1.084	4.13	4.13	8.14	60.0	60.0	
24	24	d3-N-MeFOSAA	573.3 > 419	7.14e3	4.68e4	0.1250	0.240	4.00	4.00	1.91	63.4	63.4	
25	25	d5-N-EtFOSAA	589.3 > 419	6.40e3	4.68e4	0.1250	0.247	4.07	4.07	1.71	55.2	55.2	
26	26	13C2-PFDoA	615 > 569.7	2.27e3	4.68e4	0.1250	0.127	4.32	4.29	0.605	38.1	38.1	H
27	27	13C2-PFTeDA	714.8 > 669.6	9.03e3	4.68e4	0.1250	0.883	4.64	4.63	2.41	21.8	21.8	H
28	28	13C5-PFHxA	318 > 272.9	6.92e4	6.92e4	0.1250	1.000	3.15	3.16	5.00	40.0	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.14e4	1.14e4	0.1250	1.000	3.49	3.49	12.5	100	100.0	
30	30	13C8-PFOA	421.3 > 376	5.42e4	5.42e4	0.1250	1.000	3.62	3.62	12.5	100	100.0	
31	31	13C9-PFNA	472.2 > 426.9	6.12e4	6.12e4	0.1250	1.000	3.82	3.80	12.5	100	100.0	
32	32	13C4-PFOS	503 > 79.9	1.05e4	1.05e4	0.1250	1.000	3.85	3.85	12.5	100	100.0	

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

Last Altered: Wednesday, July 19, 2017 15:04:02 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.96e4	4.96e4	0.1250	1.000	3.97	3.97	12.5	100	100.0
34	34	13C7-PFUnA	570.1 > 524.8	4.68e4	4.68e4	0.1250	1.000	4.13	4.13	12.5	100	100.0
35	35	Total PFBS	299 > 79.7	0.00e0	6.88e3	0.1250		2.91		0.000		
36	36	Total PFHxS	398.9 > 79.6	9.61e0	4.76e3	0.1250		3.48		0.0252	0.138	
37	37	Total PFOA	413 > 368.7	2.62e2	5.82e4	0.1250		3.61		0.000		
38	38	Total PFOS	499 > 79.9	2.43e1	1.08e4	0.1250		3.84		0.000		
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1250		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1250		4.06		0.000		

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

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Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

Total PFBS

	# Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1								

Total PFHxS

	# Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4 PFHxS	398.9 > 79.6	3.49	9.606	4761.512	0.025	bb	0.1

Total PFOA

	# Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5 PFOA	413 > 368.7	3.61	262.419	58158.602	0.056	bbl	

Total PFOS

	# Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7 PFOS	499 > 79.9	3.81	24.254	10820.196	0.028	bbl	

Total N-Me-FOSAA

	# Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1								

Total N-EtFOSAA

	# Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1								

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

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Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

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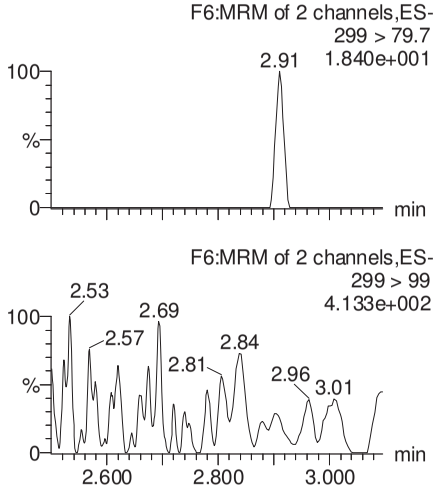
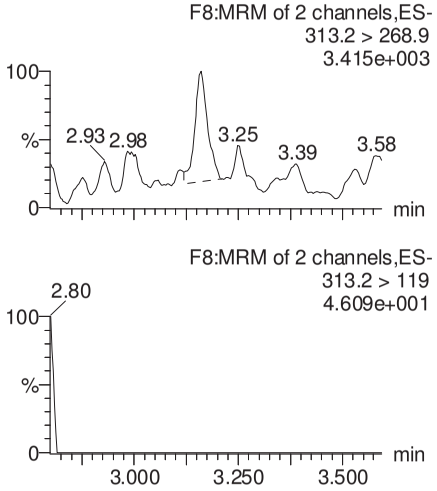
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

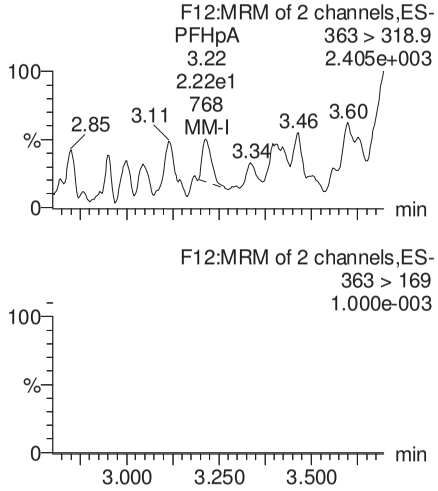
Total PFBS



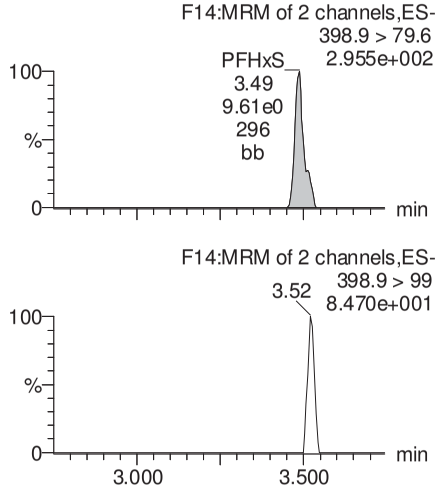
PFHxA



PFHpA



Total PFHxS



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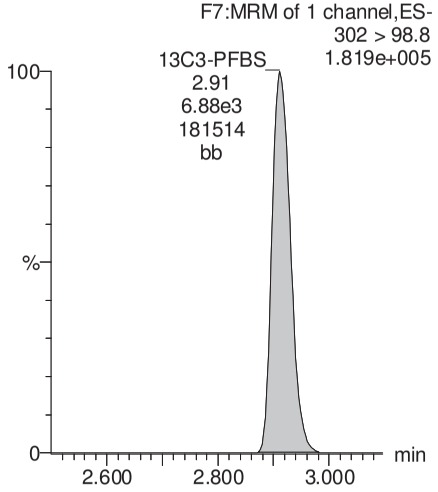

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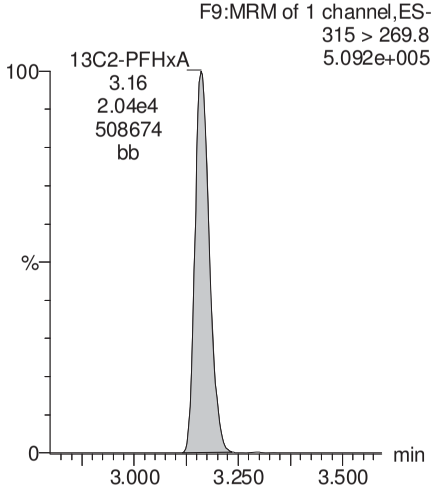

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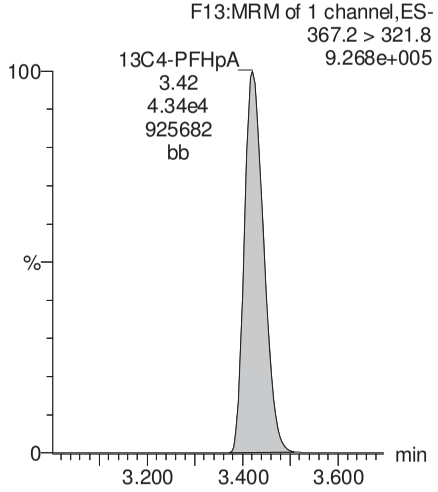
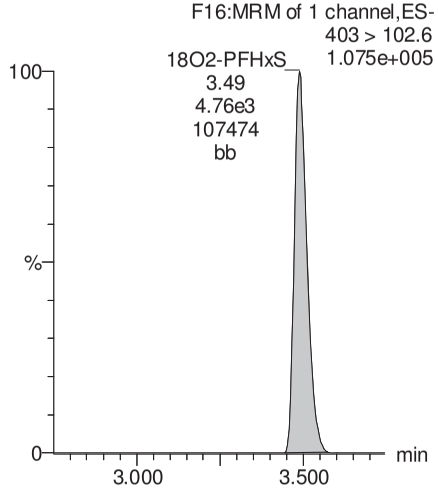


18O2-PFHxS



GM 7/19/17

Vista Analytical Laboratory

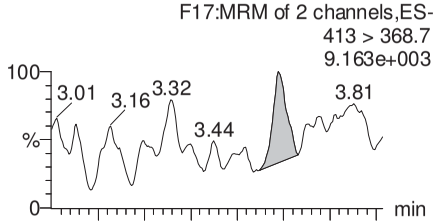
Rev'd: MM 7/21/17

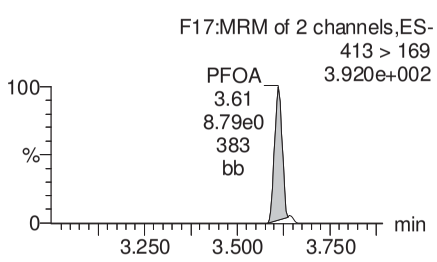
Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

Last Altered: Wednesday, July 19, 2017 15:04:02 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

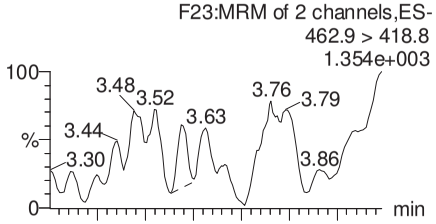
Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

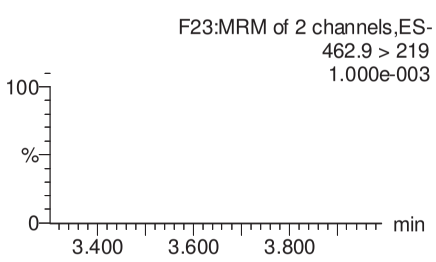
Total PFOA



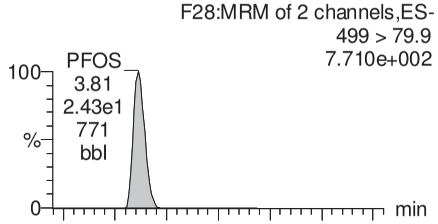


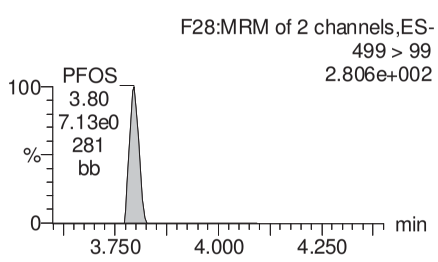
PFNA



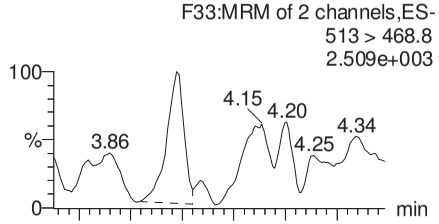


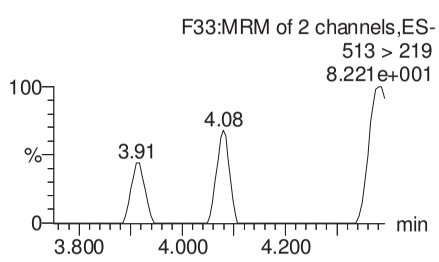
Total PFOS



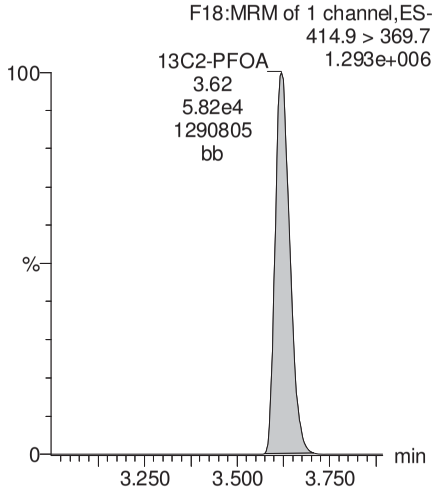


PFDA

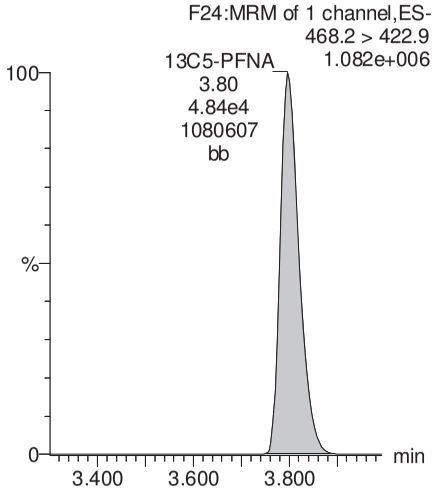




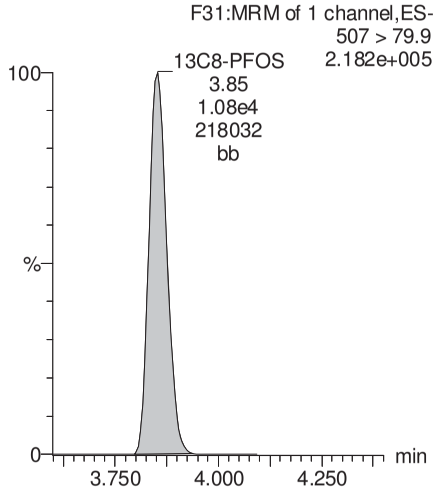
13C2-PFOA



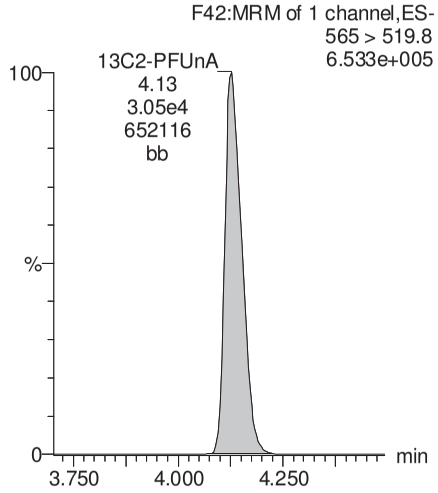
13C5-PFNA



13C8-PFOS



13C2-PFUnA



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Vista Analytical Laboratory

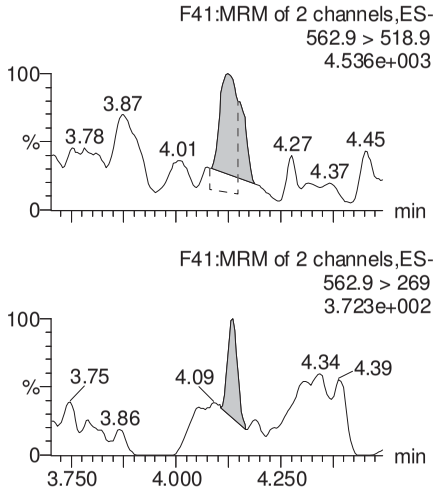
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

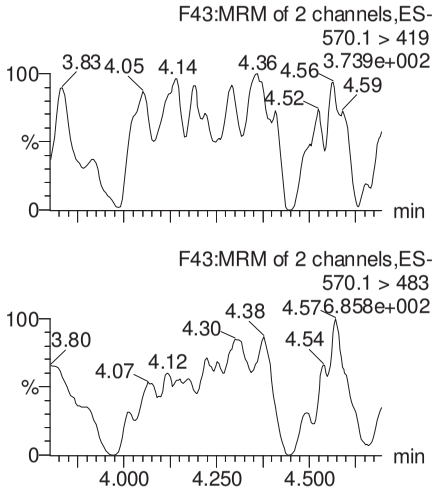
Last Altered: Wednesday, July 19, 2017 15:04:02 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

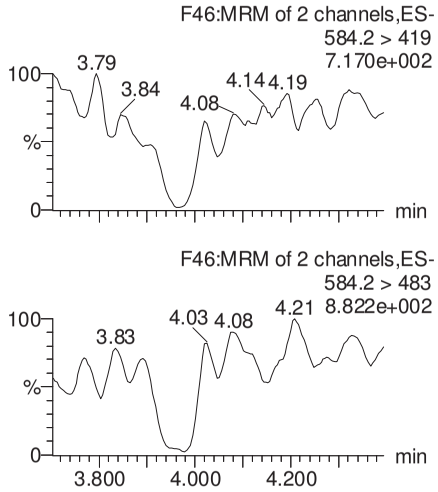
PFUnA



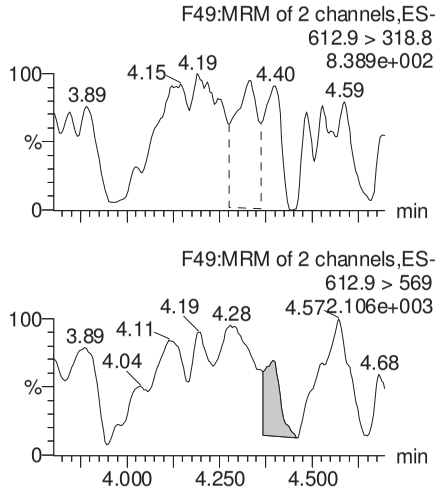
N-MeFOSAA



N-EtFOSAA



PFDoA



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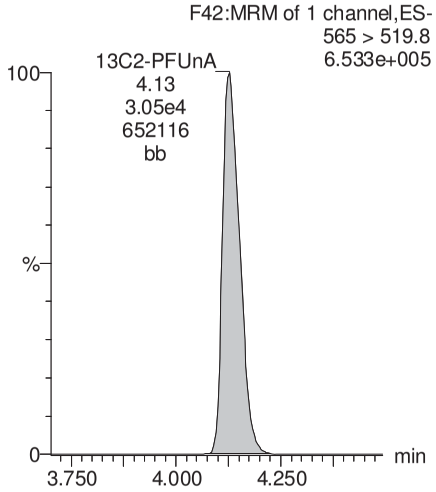
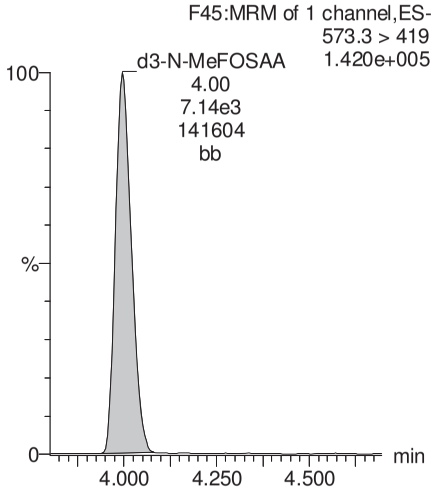
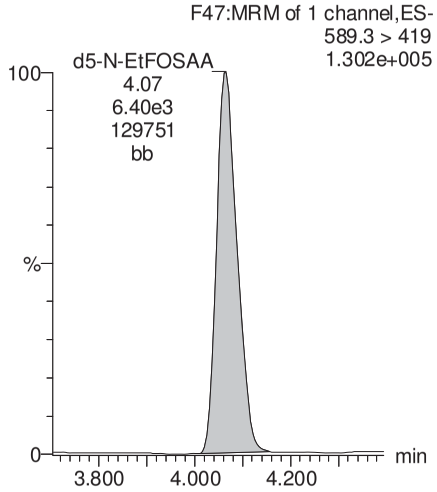


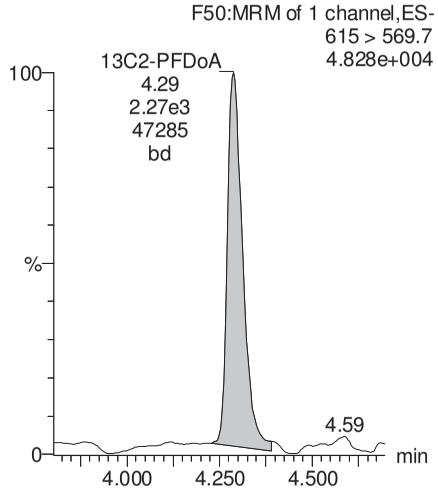
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



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Vista Analytical Laboratory

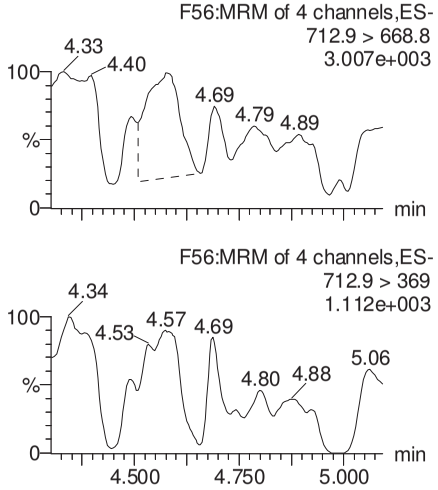
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

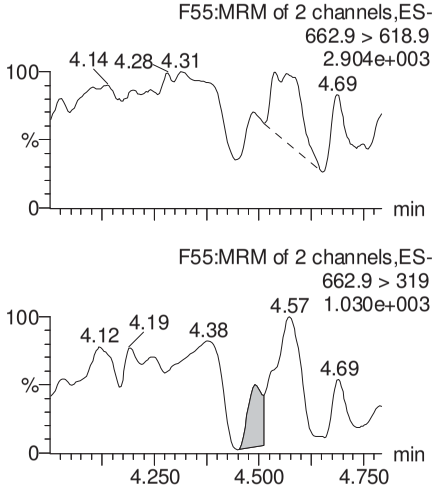
Last Altered: Wednesday, July 19, 2017 15:04:02 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

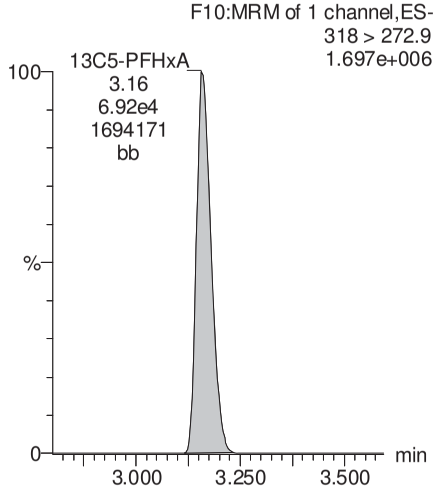
PFTeDA



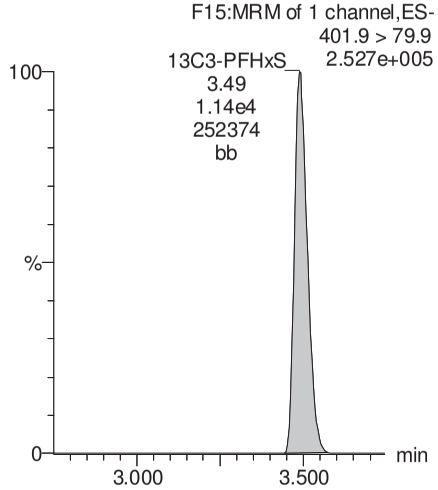
PFTrDA



13C5-PFHxA



13C3-PFHxS



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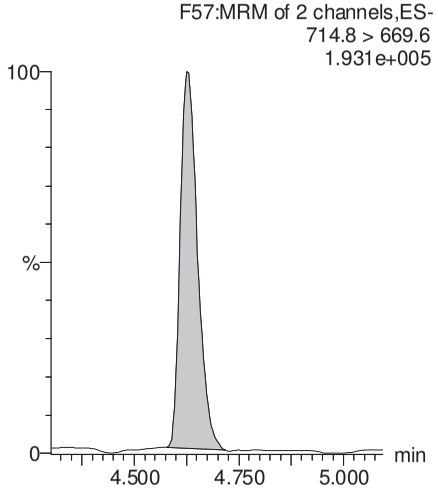

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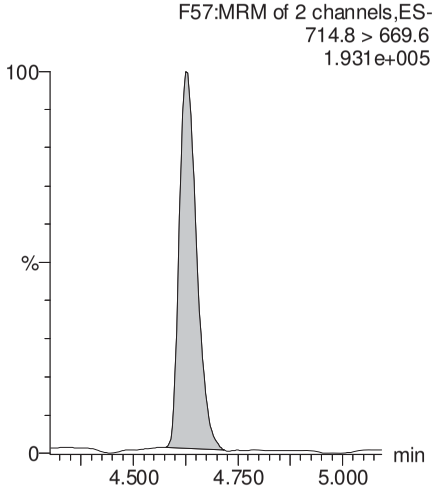
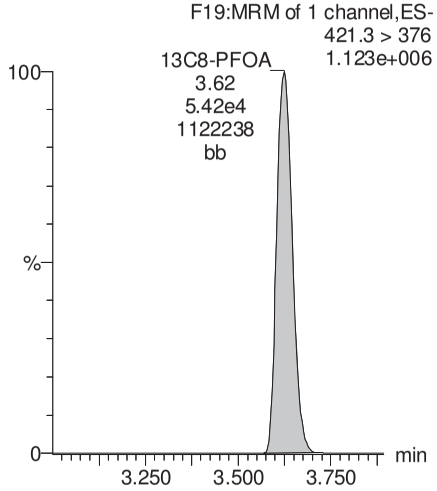
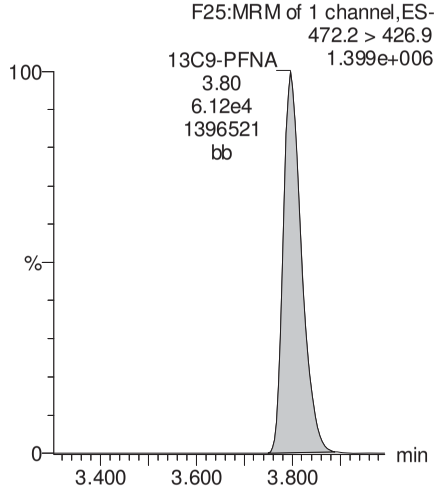


13C8-PFOA



13C9-PFNA



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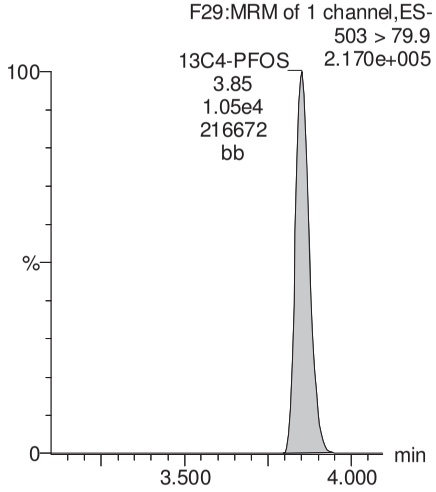
Dataset: U:\Q4.PRO\results\170706M1\170706M1-8.qld

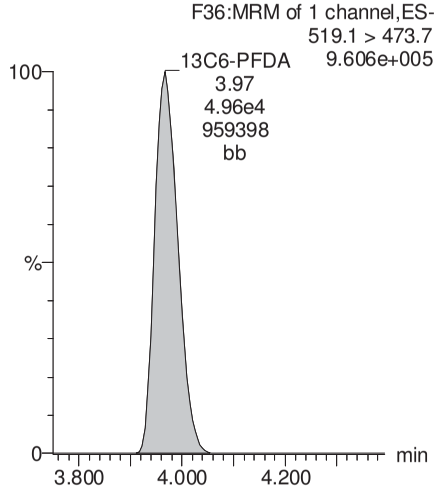
Last Altered: Wednesday, July 19, 2017 15:04:02 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:04:55 Pacific Daylight Time

Name: 170706M1_8, Date: 06-Jul-2017, Time: 09:50:39, ID: B7F0136-BLK1 Method Blank 0.125, Description: Method Blank

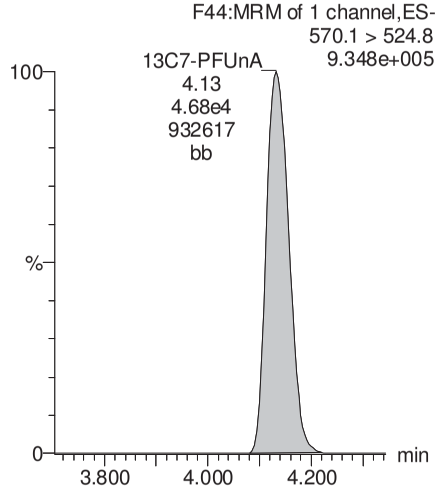
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	1.02e4	6.13e3	0.1250		2.92	2.91	20.9	88.7	110.9	
2	2	PFHxA	313.2 > 268.9	6.02e4	1.76e4	0.1250		3.16	3.16	17.1	97.7	122.1	
3	3	PFHpA	363 > 318.9	4.64e4	4.06e4	0.1250		3.43	3.42	14.3	95.0	118.8	
4	4	PFHxS	398.9 > 79.6	6.37e3	4.71e3	0.1250		3.55	3.49	16.9	73.2	91.4	
5	5	PFOA	413 > 368.7	5.39e4	5.71e4	0.1250		3.63	3.62	11.8	99.5	124.4	
6	6	PFNA	462.9 > 418.8	4.09e4	3.99e4	0.1250		3.82	3.80	12.8	91.8	114.7	
7	7	PFOS	499 > 79.9	9.45e3	9.61e3	0.1250		3.86	3.85	12.3	93.1	116.3	
8	8	PFDA	513 > 468.8	3.95e4	3.57e4	0.1250		4.00	3.96	13.9	95.9	119.9	
9	9	PFUnA	562.9 > 518.9	2.25e4	2.37e4	0.1250		4.13	4.13	11.9	105	130.9	H
10	10	N-MeFOSAA	570.1 > 419	8.07e3	5.76e3	0.1250		4.00	4.00	17.5	87.7	109.7	
11	11	N-EtFOSAA	584.2 > 419	5.93e3	5.49e3	0.1250		4.08	4.06	13.5	94.1	117.6	
12	12	PFDoA	612.9 > 318.8	9.37e2	1.10e3	0.1250		4.31	4.28	10.6	102	127.5	
13	13	PFTrDA	662.9 > 618.9	8.69e3	1.10e3	0.1250		4.50	4.45	98.5	70.8	88.5	
14	14	PFTeDA	712.9 > 668.8	1.20e4	1.01e4	0.1250		4.65	4.62	14.9	101	125.7	
15	15	13C3-PFBS	302 > 98.8	6.13e3	6.31e4	0.1250	0.032	2.92	2.91	0.486	121	121.0	
16	16	13C2-PFHxA	315 > 269.8	1.76e4	6.31e4	0.1250	0.296	3.15	3.16	1.39	37.6	93.9	
17	17	13C4-PFHpA	367.2 > 321.8	4.06e4	6.31e4	0.1250	0.302	3.43	3.42	3.22	85.4	85.4	
18	18	18O2-PFHxS	403 > 102.6	4.71e3	1.07e4	0.1250	0.434	3.49	3.49	5.51	101	101.5	
19	19	13C2-PFOA	414.9 > 369.7	5.71e4	5.50e4	0.1250	1.140	3.62	3.62	13.0	91.0	91.0	
20	20	13C5-PFNA	468.2 > 422.9	3.99e4	5.29e4	0.1250	0.958	3.80	3.80	9.42	78.7	78.7	
21	21	13C8-PFOS	507 > 79.9	9.61e3	1.00e4	0.1250	1.061	3.85	3.85	12.0	90.1	90.1	
22	22	13C2-PFDA	515.1 > 469.9	3.57e4	4.77e4	0.1250	0.942	3.97	3.96	9.35	79.4	79.4	
23	23	13C2-PFUnA	565 > 519.8	2.37e4	3.59e4	0.1250	1.084	4.13	4.12	8.25	60.9	60.9	
24	24	d3-N-MeFOSAA	573.3 > 419	5.76e3	3.59e4	0.1250	0.240	4.00	4.00	2.01	66.8	66.8	
25	25	d5-N-EtFOSAA	589.3 > 419	5.49e3	3.59e4	0.1250	0.247	4.07	4.06	1.91	61.9	61.9	
26	26	13C2-PFDoA	615 > 569.7	1.10e3	3.59e4	0.1250	0.127	4.32	4.28	0.384	24.2	24.2	H
27	27	13C2-PFTeDA	714.8 > 669.6	1.01e4	3.59e4	0.1250	0.883	4.64	4.62	3.52	31.9	31.9	H
28	28	13C5-PFHxA	318 > 272.9	6.31e4	6.31e4	0.1250	1.000	3.15	3.16	5.00	40.0	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.07e4	1.07e4	0.1250	1.000	3.49	3.49	12.5	100	100.0	
30	30	13C8-PFOA	421.3 > 376	5.50e4	5.50e4	0.1250	1.000	3.62	3.62	12.5	100	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.29e4	5.29e4	0.1250	1.000	3.82	3.79	12.5	100	100.0	
32	32	13C4-PFOS	503 > 79.9	1.00e4	1.00e4	0.1250	1.000	3.85	3.85	12.5	100	100.0	

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.77e4	4.77e4	0.1250	1.000	3.97	3.96	12.5	100	100.0
34	34	13C7-PFUnA	570.1 > 524.8	3.59e4	3.59e4	0.1250	1.000	4.13	4.12	12.5	100	100.0
35	35	Total PFBS	299 > 79.7	1.02e4	6.13e3	0.1250		2.91		20.9	88.7	
36	36	Total PFHxS	398.9 > 79.6	6.37e3	4.71e3	0.1250		3.48		16.9	73.2	
37	37	Total PFOA	413 > 368.7	5.39e4	5.71e4	0.1250		3.61		11.8	99.5	
38	38	Total PFOS	499 > 79.9	9.45e3	9.61e3	0.1250		3.84		12.3	93.1	
39	39	Total N-Me-FOSAA	570.1 > 419	8.07e3		0.1250		3.98		17.5	87.7	
40	40	Total N-EtFOSAA	584.2 > 419	5.93e3		0.1250		4.06		13.5	94.1	

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.91	10232.239	6129.635	20.866	bb	88.7

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.49	6371.771	4708.603	16.915	MM	73.2

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	53940.523	57084.867	11.811	bb	99.5

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	9452.537	9611.244	12.294	MM	93.1

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	10	N-MeFOSAA	570.1 > 419	4.00	8068.497	5759.580	17.511	bb	87.7

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	11	N-EtFOSAA	584.2 > 419	4.06	5930.933	5489.900	13.504	bb	94.1

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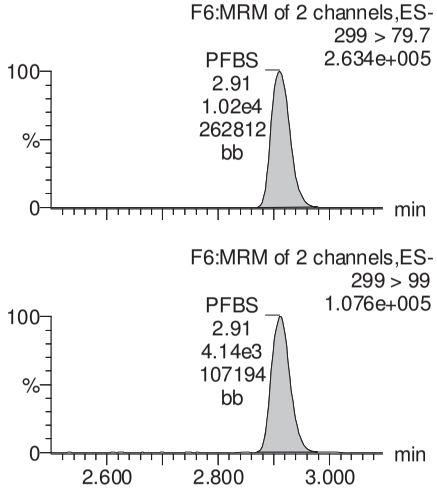
Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

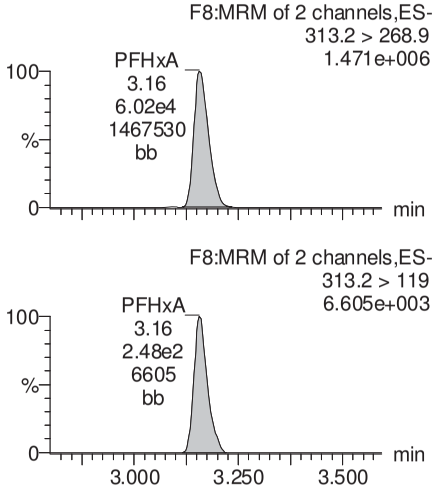
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

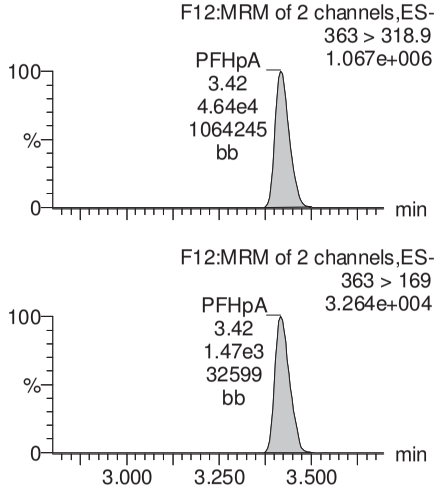
Total PFBS



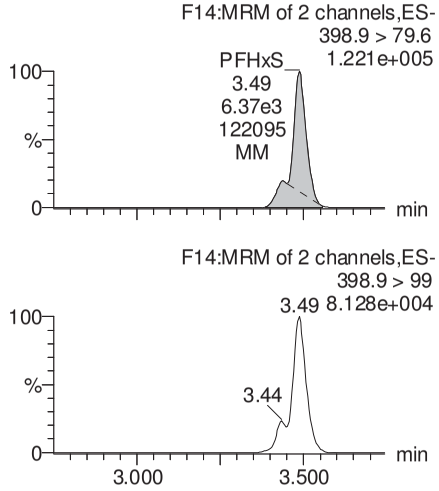
PFHxA



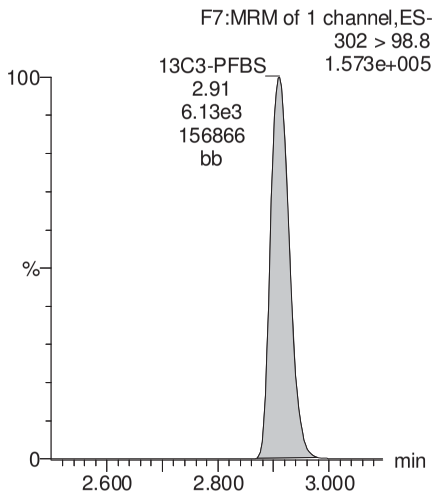
PFHpA



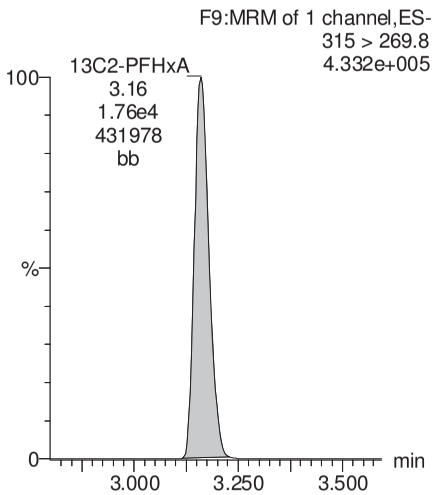
Total PFHxS



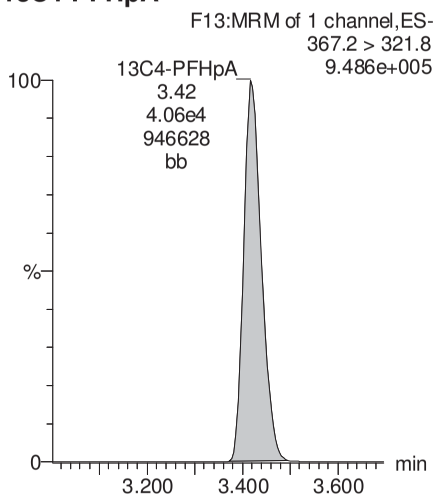
13C3-PFBS



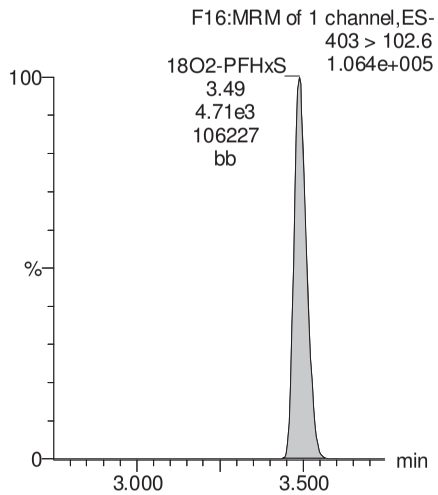
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



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Vista Analytical Laboratory

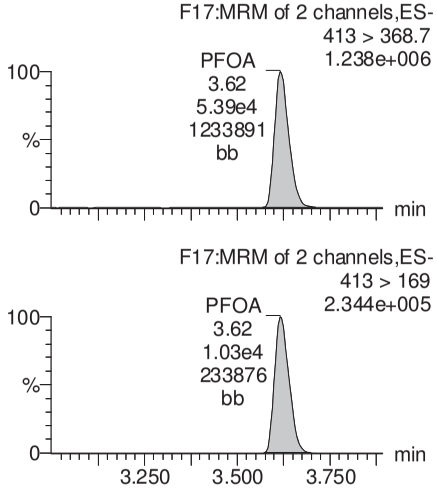
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

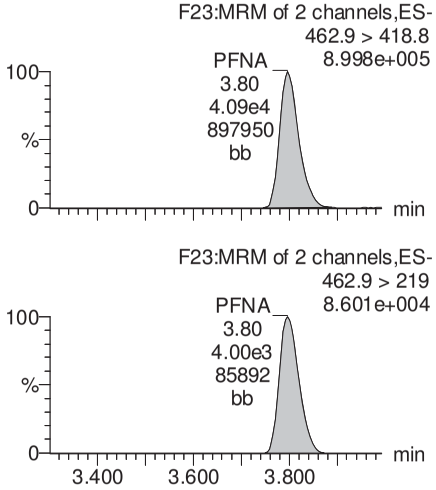
Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

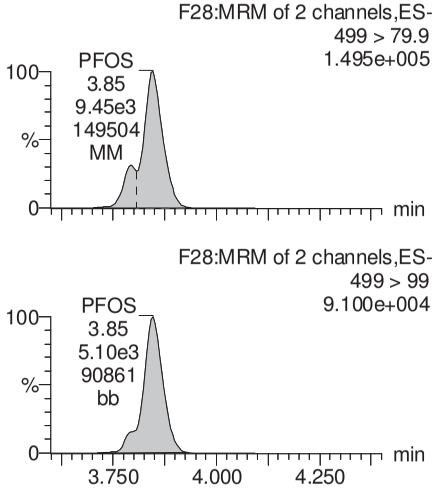
Total PFOA



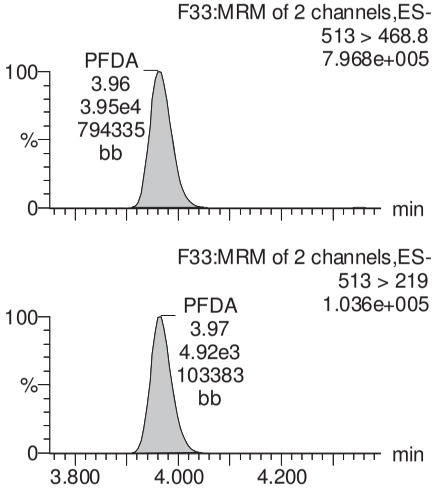
PFNA



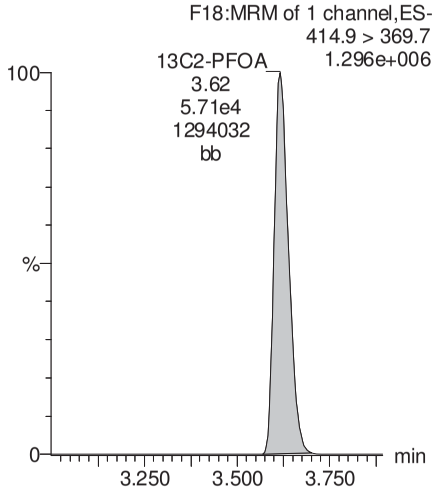
Total PFOS



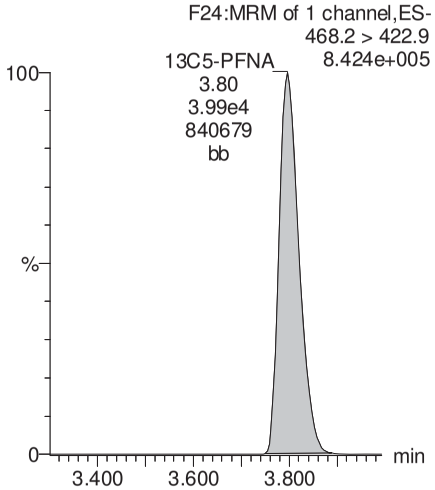
PFDA



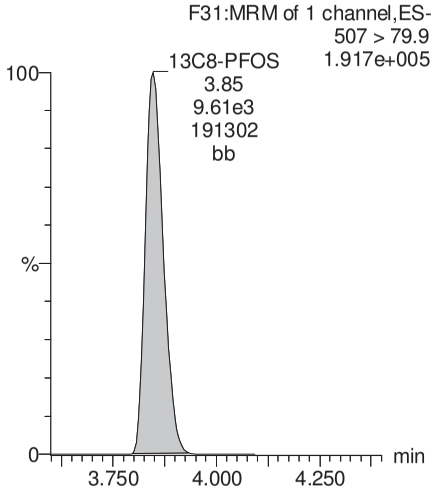
13C2-PFOA



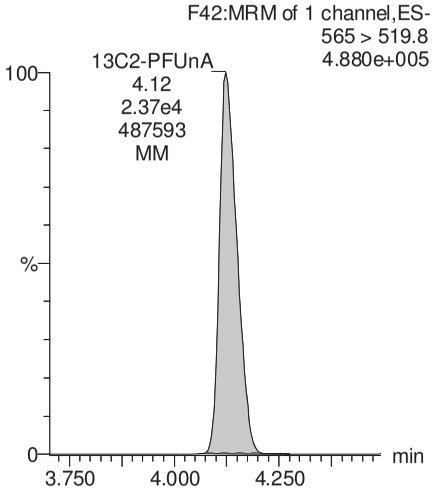
13C5-PFNA



13C8-PFOS



13C2-PFUnA



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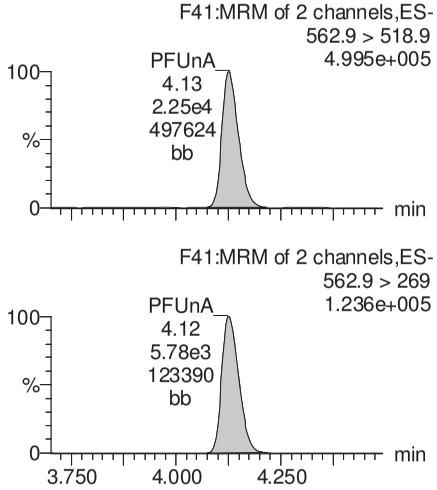
Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

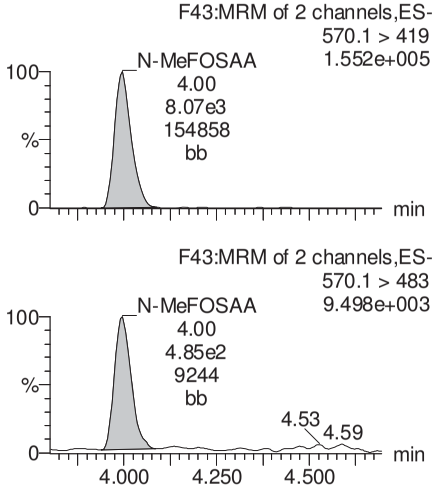
Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

PFUnA



N-MeFOSAA



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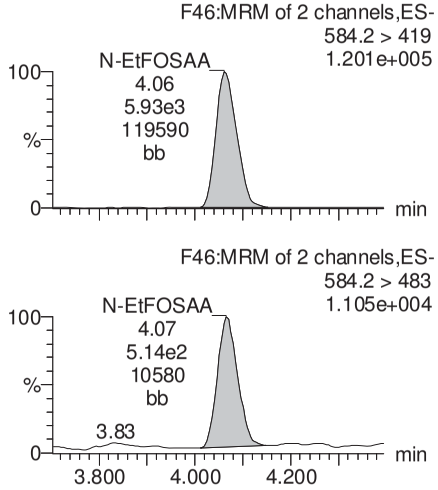
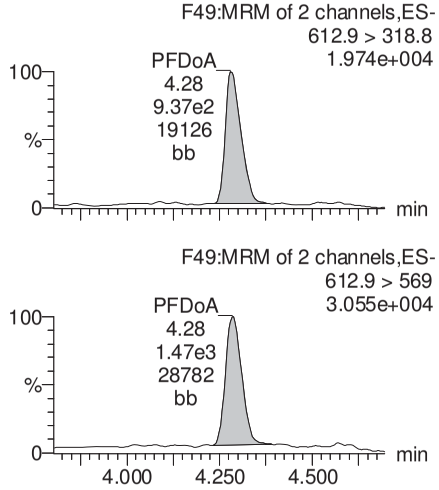
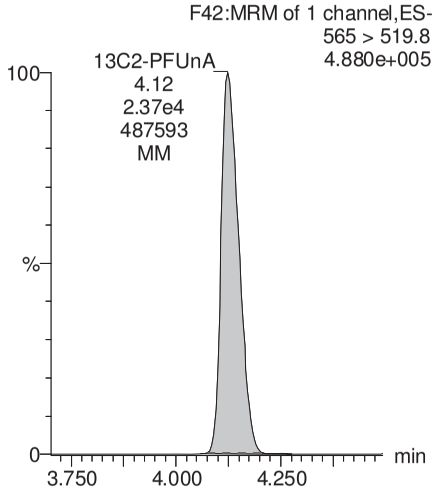


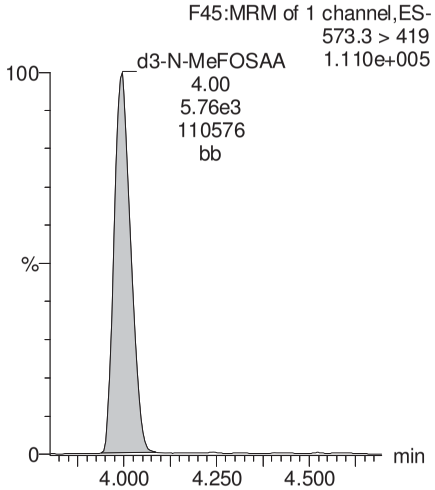
PFDoA



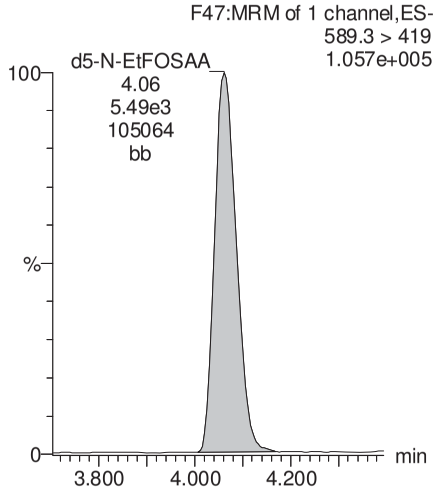
13C2-PFUnA



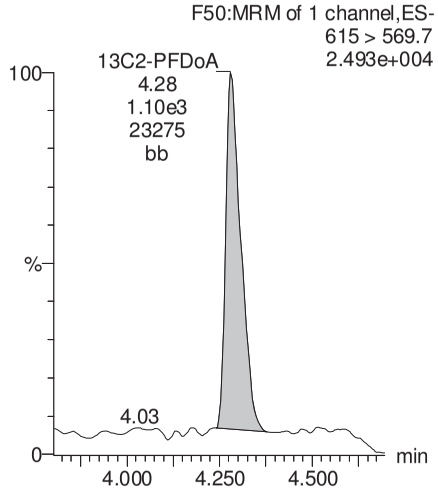
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



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Vista Analytical Laboratory

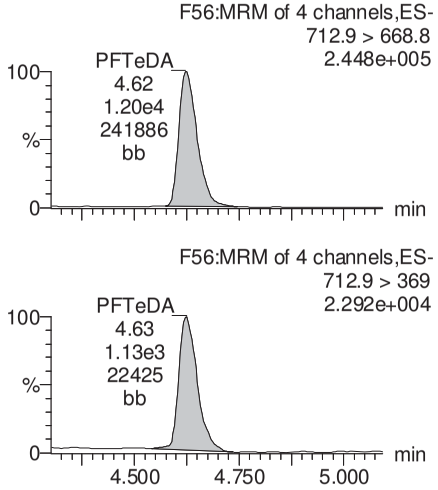
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

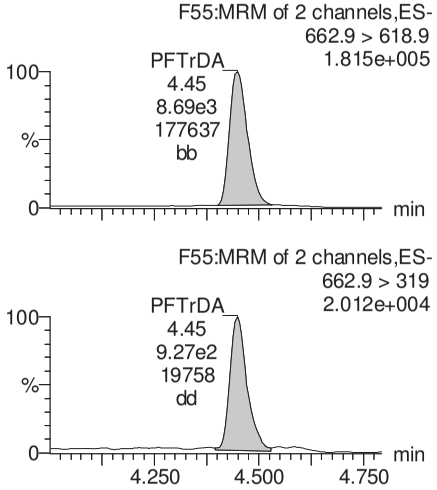
Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

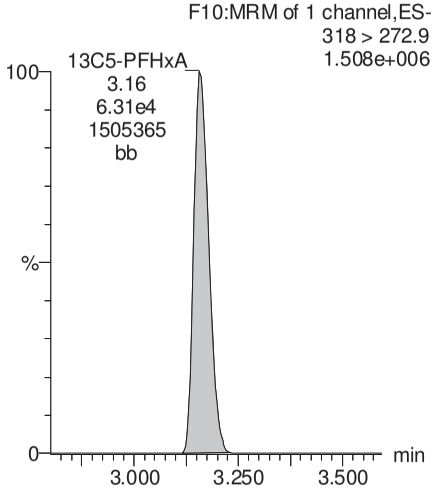
PFTeDA



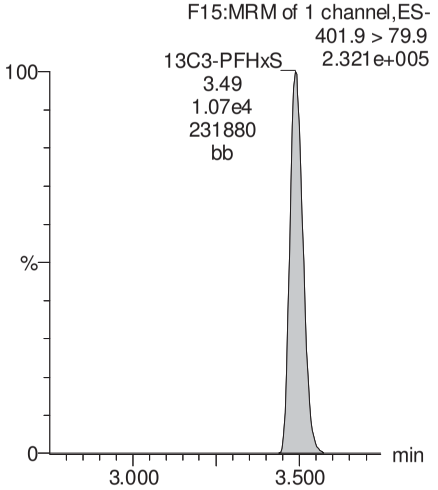
PFTrDA



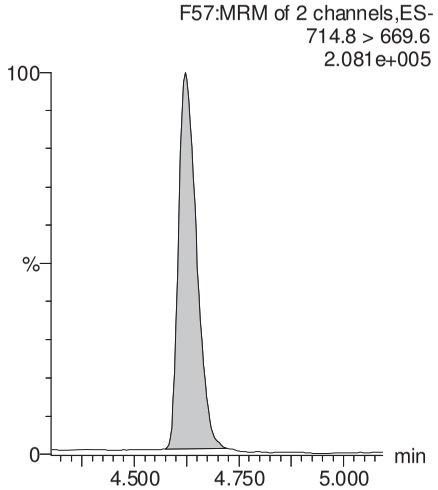
13C5-PFHxA



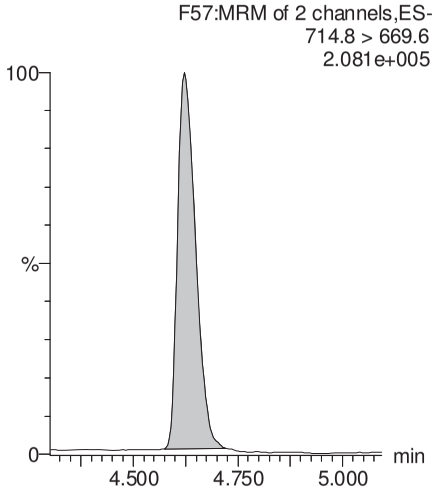
13C3-PFHxS



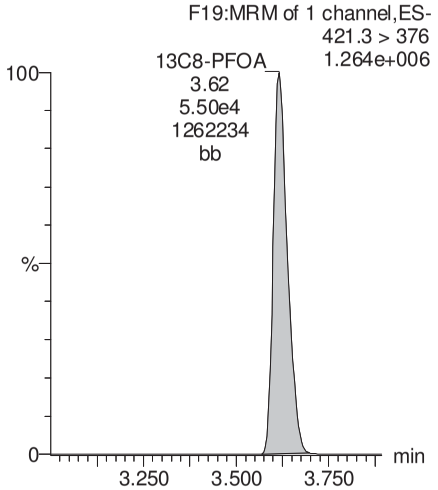
13C2-PFTeDA



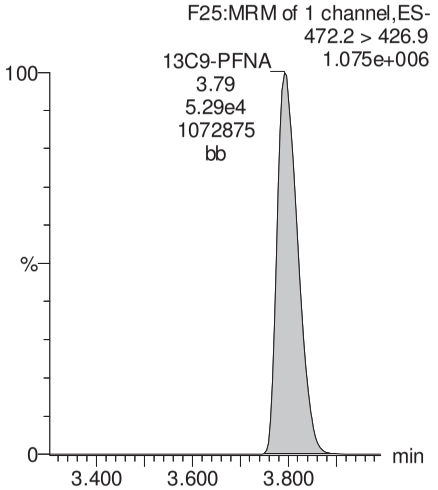
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



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Vista Analytical Laboratory

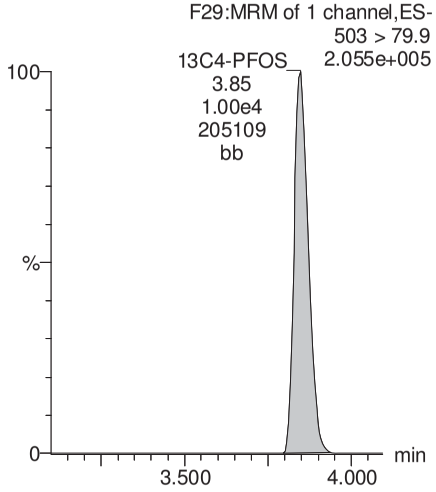
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-6.qld

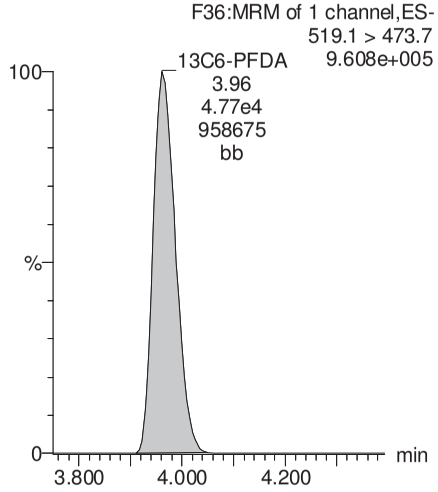
Last Altered: Wednesday, July 19, 2017 15:16:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:16:46 Pacific Daylight Time

Name: 170706M1_6, Date: 06-Jul-2017, Time: 09:29:23, ID: B7F0136-BS1 OPR 0.125, Description: OPR

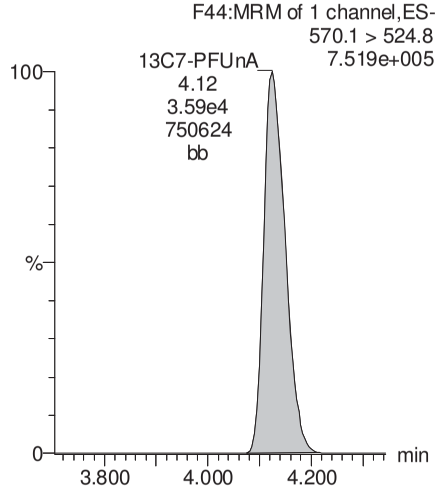
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	3.94e3	6.09e3	0.108		2.92	2.91	8.08	39.3		
2	2	PFHxA	313.2 > 268.9	1.23e5	1.84e4	0.108		3.16	3.16	33.4	224		
3	3	PFHpA	363 > 318.9	3.72e4	3.98e4	0.108		3.43	3.42	11.7	89.7		
4	4	PFHxS	398.9 > 79.6	1.62e4	4.32e3	0.108		3.55	3.49	46.9	240		
5	5	PFOA	413 > 368.7	2.08e4	5.01e4	0.108		3.63	3.62	5.19	49.7		
6	6	PFNA	462.9 > 418.8	3.96e3	4.10e4	0.108		3.82	3.80	1.21	9.50		
7	7	PFOS	499 > 79.9	9.82e4	8.22e3	0.108		3.86	3.85	149	1430		
8	8	PFDA	513 > 468.8	1.77e3	3.53e4	0.108		4.00	3.97	0.628	3.29		
9	9	PFUnA	562.9 > 518.9	6.17e2	2.67e4	0.108		4.13	4.14	0.288	1.96		
10	10	N-MeFOSAA	570.1 > 419		6.30e3	0.108		4.00					
11	11	N-EtFOSAA	584.2 > 419		5.64e3	0.108		4.08					
12	12	PFDoA	612.9 > 318.8		2.34e3	0.108		4.31					
13	13	PFTrDA	662.9 > 618.9		2.34e3	0.108		4.50					
14	14	PFTeDA	712.9 > 668.8		1.18e4	0.108		4.65					
15	15	13C3-PFBS	302 > 98.8	6.09e3	6.77e4	0.108	0.032	2.92	2.91	0.450	130	112.2	
16	16	13C2-PFHxA	315 > 269.8	1.84e4	6.77e4	0.108	0.296	3.15	3.16	1.36	42.5	91.7	
17	17	13C4-PFHpA	367.2 > 321.8	3.98e4	6.77e4	0.108	0.302	3.43	3.42	2.94	90.6	78.1	
18	18	18O2-PFHxS	403 > 102.6	4.32e3	1.13e4	0.108	0.434	3.49	3.49	4.78	102	88.0	
19	19	13C2-PFOA	414.9 > 369.7	5.01e4	5.30e4	0.108	1.140	3.62	3.62	11.8	96.2	83.0	
20	20	13C5-PFNA	468.2 > 422.9	4.10e4	5.07e4	0.108	0.958	3.80	3.80	10.1	97.9	84.5	
21	21	13C8-PFOS	507 > 79.9	8.22e3	9.35e3	0.108	1.061	3.85	3.85	11.0	96.0	82.8	
22	22	13C2-PFDA	515.1 > 469.9	3.53e4	4.16e4	0.108	0.942	3.97	3.97	10.6	104	90.0	
23	23	13C2-PFUnA	565 > 519.8	2.67e4	3.39e4	0.108	1.084	4.13	4.13	9.86	84.3	72.7	
24	24	d3-N-MeFOSAA	573.3 > 419	6.30e3	3.39e4	0.108	0.240	4.00	4.00	2.32	89.6	77.3	
25	25	d5-N-EtFOSAA	589.3 > 419	5.64e3	3.39e4	0.108	0.247	4.07	4.07	2.08	77.9	67.2	
26	26	13C2-PFDoA	615 > 569.7	2.34e3	3.39e4	0.108	0.127	4.32	4.29	0.863	63.0	54.4	H
27	27	13C2-PFTeDA	714.8 > 669.6	1.18e4	3.39e4	0.108	0.883	4.64	4.63	4.34	45.6	39.3	H
28	28	13C5-PFHxA	318 > 272.9	6.77e4	6.77e4	0.108	1.000	3.15	3.16	5.00	46.4	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.13e4	1.13e4	0.108	1.000	3.49	3.49	12.5	116	100.0	
30	30	13C8-PFOA	421.3 > 376	5.30e4	5.30e4	0.108	1.000	3.62	3.62	12.5	116	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.07e4	5.07e4	0.108	1.000	3.82	3.80	12.5	116	100.0	
32	32	13C4-PFOS	503 > 79.9	9.35e3	9.35e3	0.108	1.000	3.85	3.85	12.5	116	100.0	

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.16e4	4.16e4	0.108	1.000	3.97	3.97	12.5	116	100.0
34	34	13C7-PFUnA	570.1 > 524.8	3.39e4	3.39e4	0.108	1.000	4.13	4.13	12.5	116	100.0
35	35	Total PFBS	299 > 79.7	4.00e3	6.09e3	0.108		2.91		8.08	39.3	
36	36	Total PFHxS	398.9 > 79.6	1.62e4	4.32e3	0.108		3.48		46.9	240	
37	37	Total PFOA	413 > 368.7	2.19e4	5.01e4	0.108		3.61		5.46	50.4	
38	38	Total PFOS	499 > 79.9	1.30e5	8.22e3	0.108		3.84		198	1860	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.108		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.108		4.06		0.000		

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.91	3938.123	6093.630	8.078	bb	39.3
2	35	Total PFBS	299 > 79.7	2.78	59.251	6093.630	0.122	bbl	

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.49	16222.136	4324.196	46.894	MM	240.4

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	20820.238	50122.031	5.192	MM	49.7
2	37	Total PFOA	413 > 368.7	3.58	1073.521	50122.031	0.268	MM	0.7

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	98172.453	8216.266	149.357	MM	1427.0
2	38	Total PFOS	499 > 79.9	3.79	31846.438	8216.266	48.450	MM	435.0

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

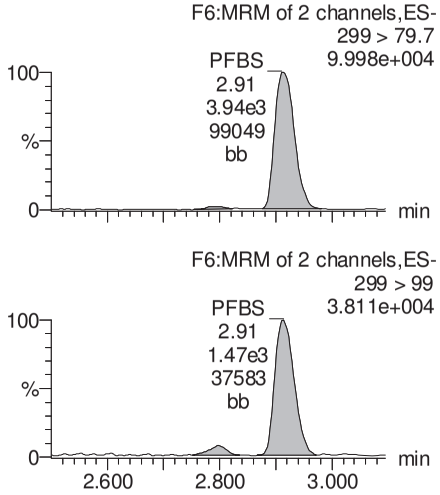
Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

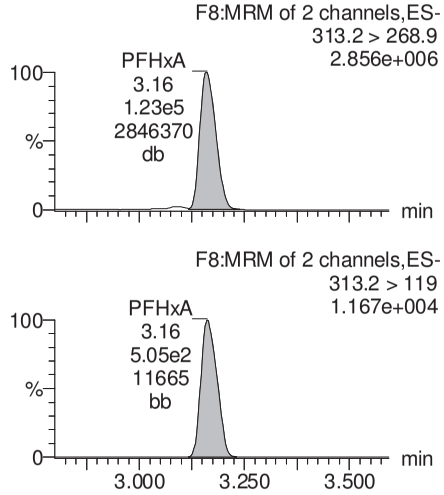
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

Total PFBS



PFHxA



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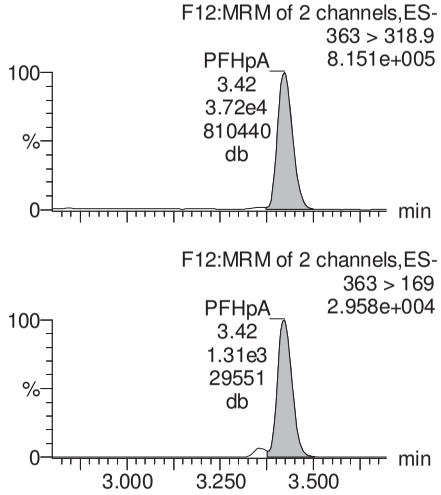
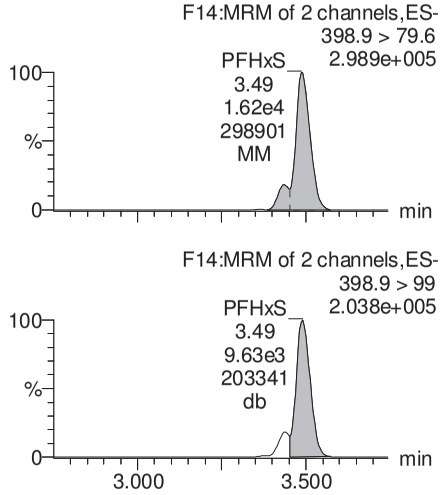
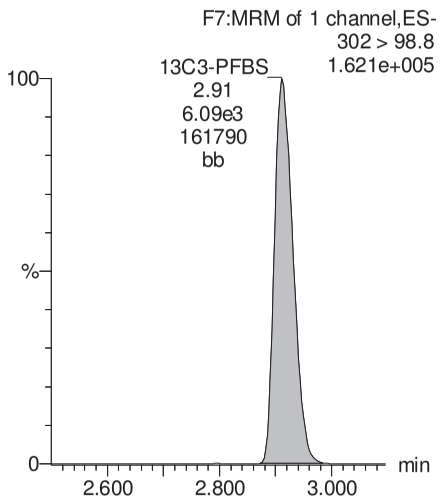


Total PFHxS



13C3-PFBS



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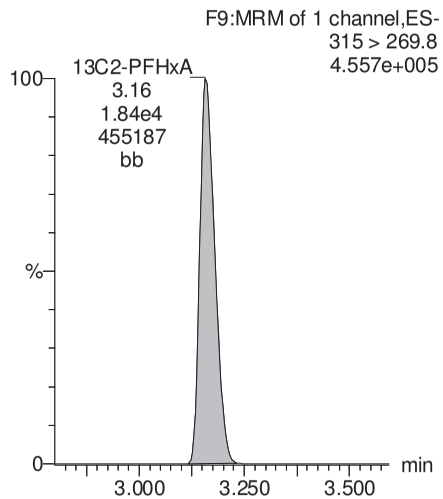

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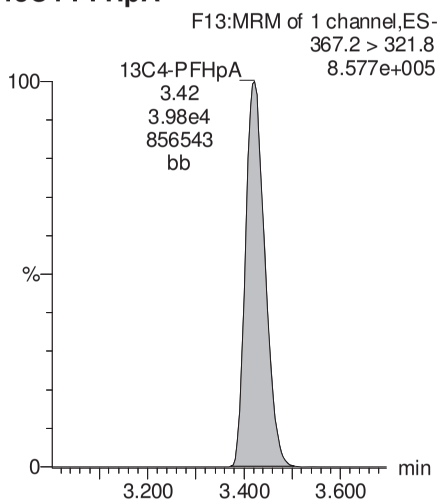

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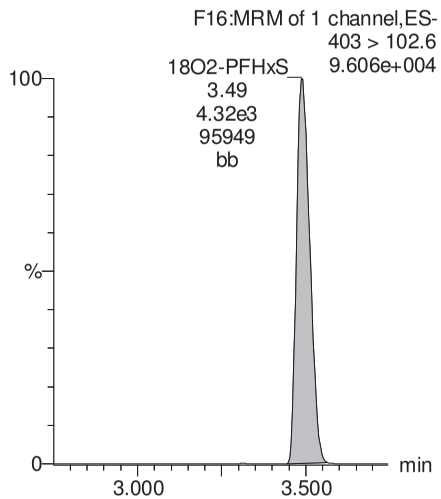

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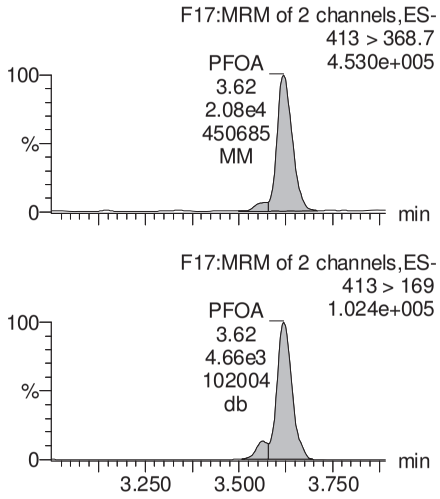
Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

Total PFOA



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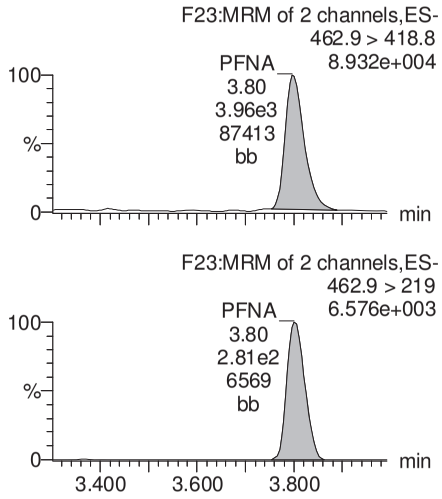
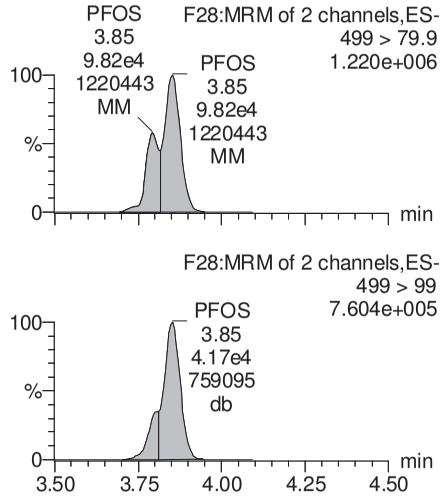


Total PFOS



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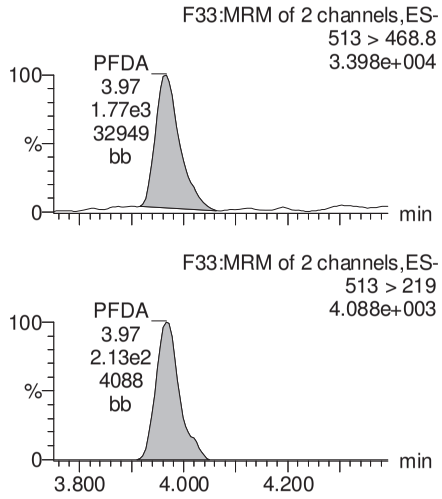
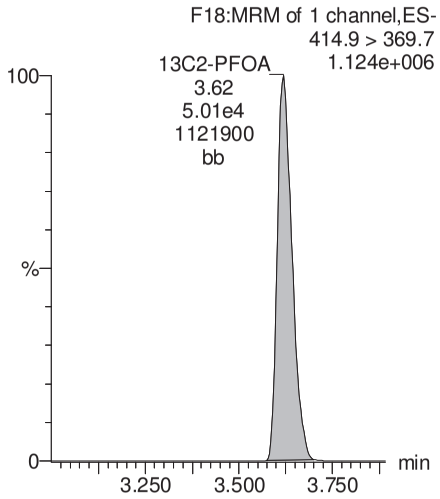
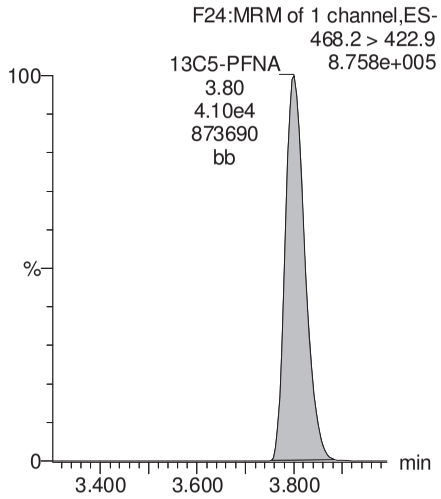


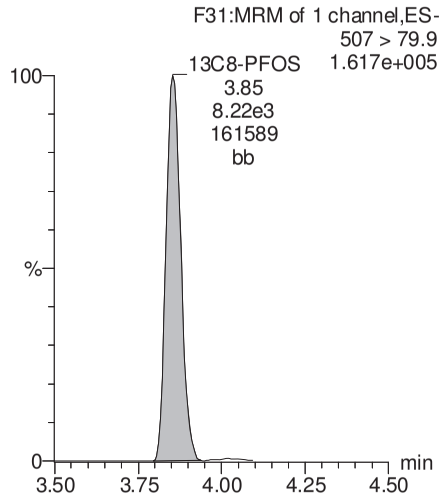
13C2-PFOA



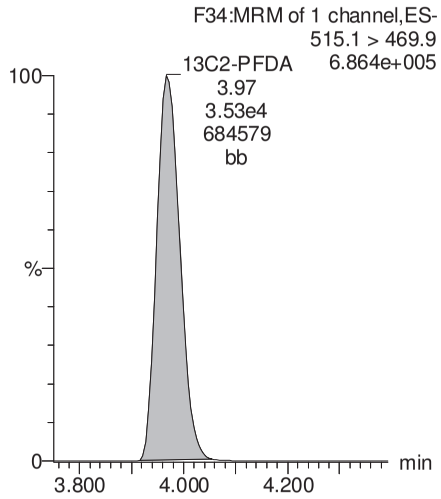
13C5-PFNA



13C8-PFOS



13C2-PFDA



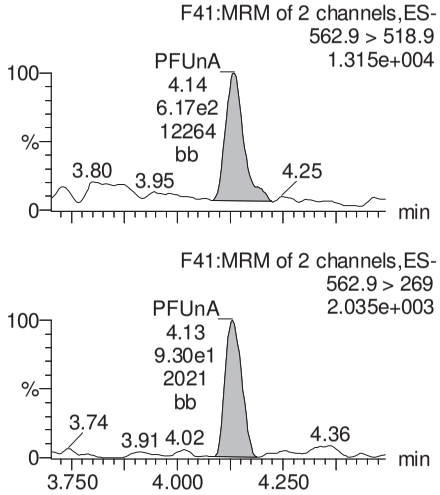
GM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

PFUnA



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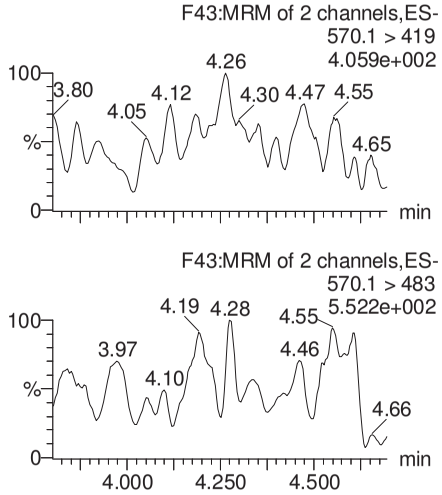

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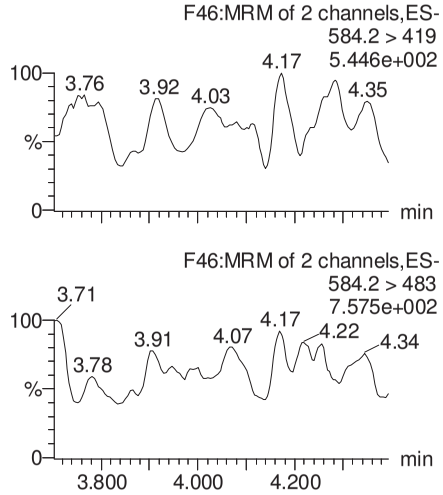
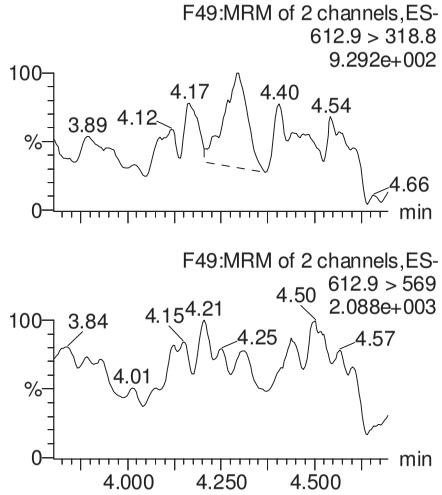


PFDoA



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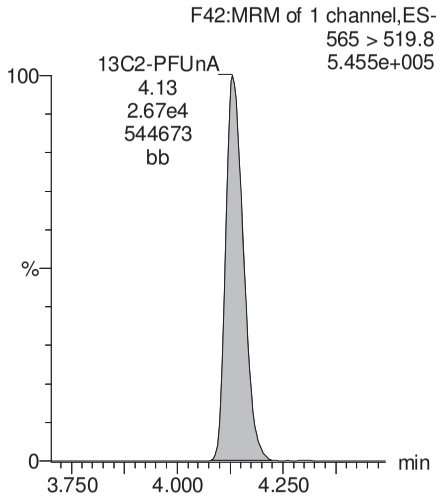

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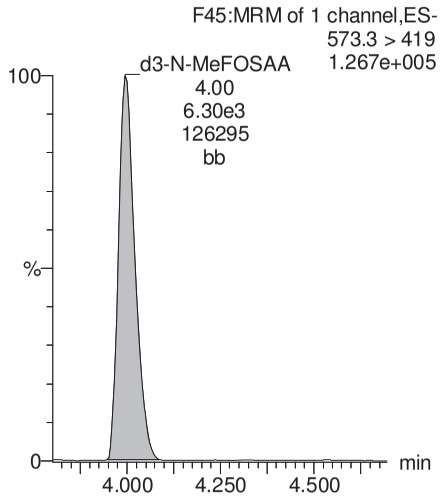
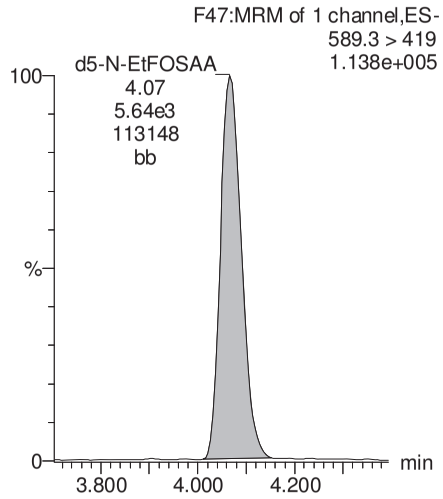
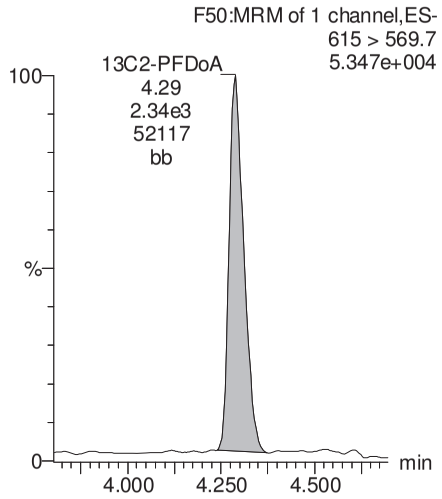


d5-N-EtFOSAA



13C2-PFDoA



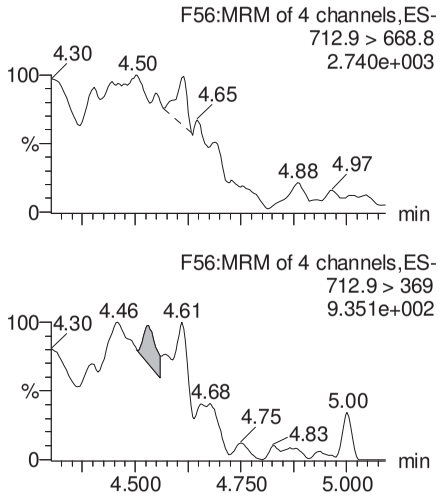
GM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

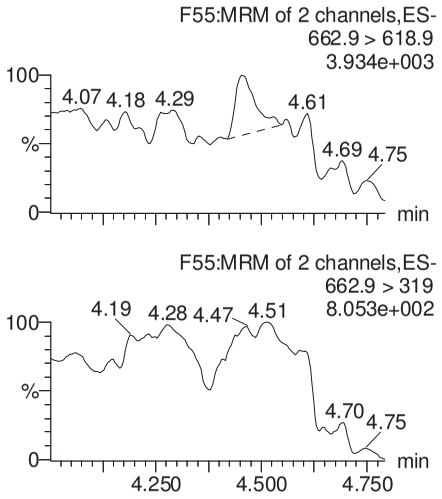
Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

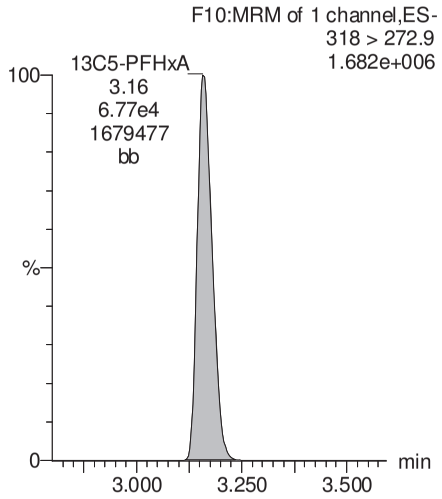
PFTeDA



PFTrDA



13C5-PFHxA



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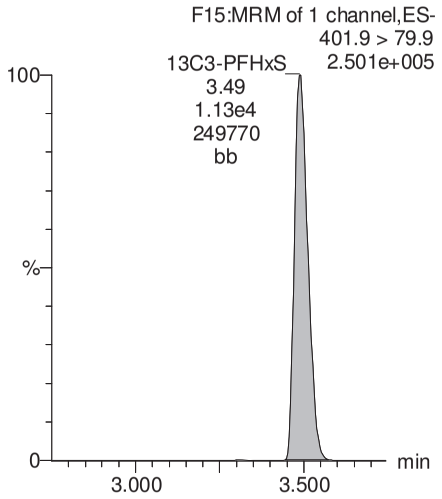

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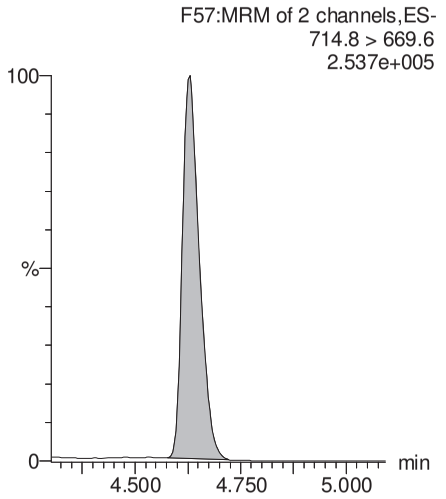

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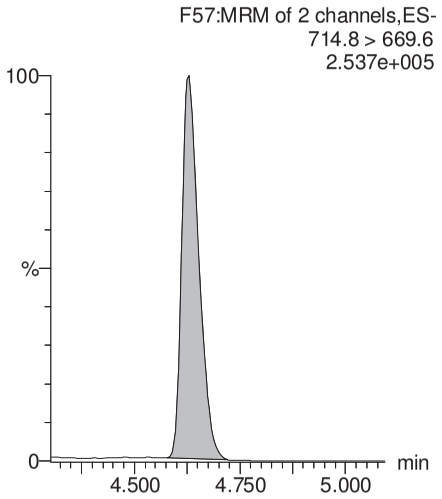
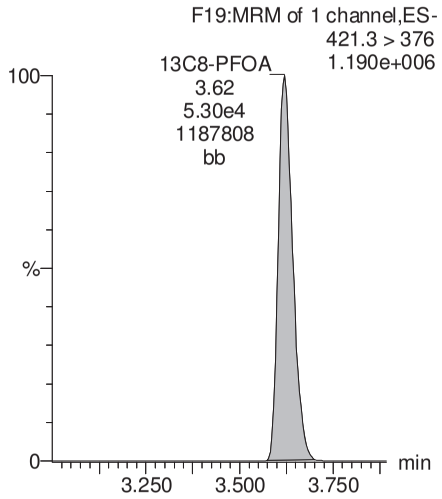


13C8-PFOA



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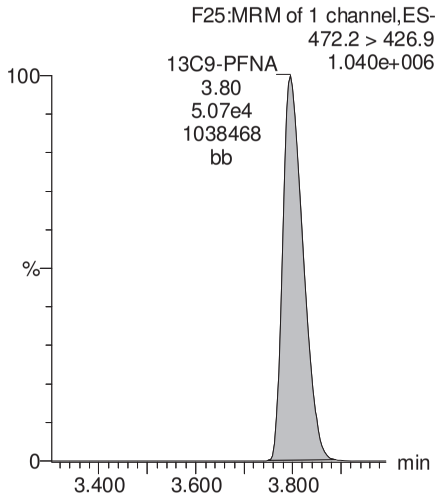

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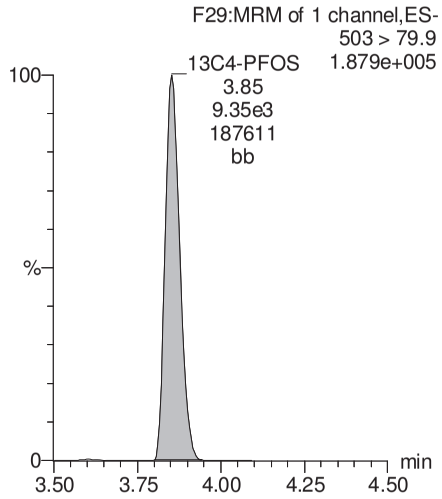
Dataset: U:\Q4.PRO\results\170706M1\170706M1-12.qld

Last Altered: Friday, July 21, 2017 16:23:05 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:23:15 Pacific Daylight Time

Name: 170706M1_12, Date: 06-Jul-2017, Time: 10:33:22, ID: 1700789-01 GR-OF-20170627 0.10782, Description: GR-OF-20170627

13C4-PFOS



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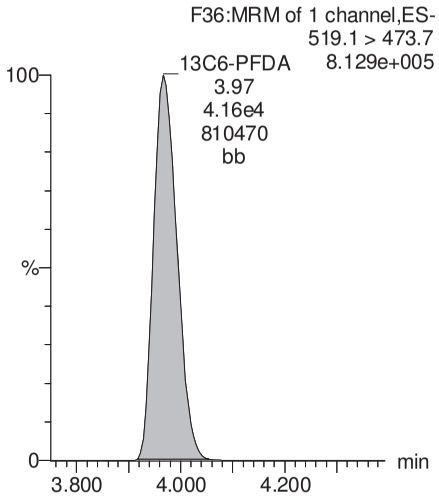

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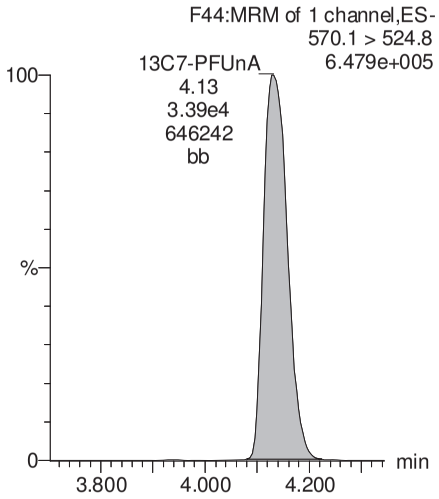

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Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-6.qld

Last Altered: Thursday, July 20, 2017 12:33:46 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:38:20 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_6, Date: 07-Jul-2017, Time: 14:29:12, ID: 1700789-01@5X GR-OF-20170627 0.10782, Description: GR-OF-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	7	PFOS	499 > 79.9	4.27e3	3.15e2	0.1078		3.86	3.86	169	1640	
2	21	13C8-PFOS	507 > 79.9	3.15e2	3.05e2	0.1078	1.061	3.85	3.86	12.9	113	97.3
3	32	13C4-PFOS	503 > 79.9	3.05e2	3.05e2	0.1078	1.000	3.85	3.86	12.5	116	100.0
4	38	Total PFOS	499 > 79.9	4.27e3	3.15e2	0.1078		3.84		169	1640	

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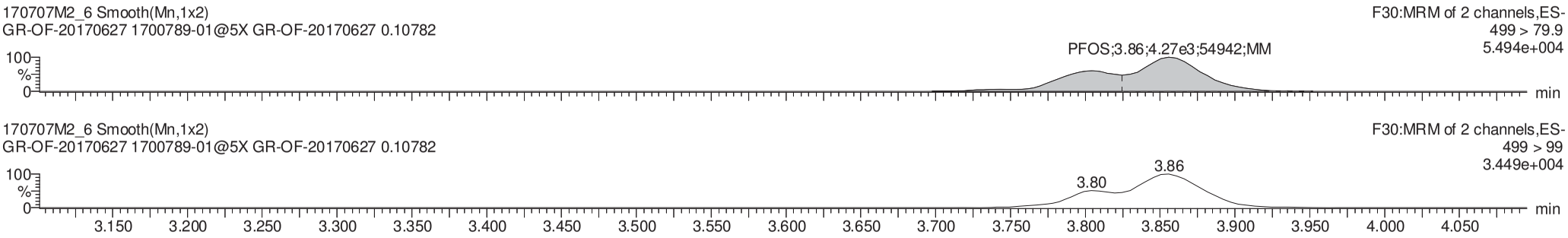
Dataset: U:\Q4.PRO\results\170707M2\170707M2-6.qld

Last Altered: Thursday, July 20, 2017 12:33:46 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:38:20 Pacific Daylight Time

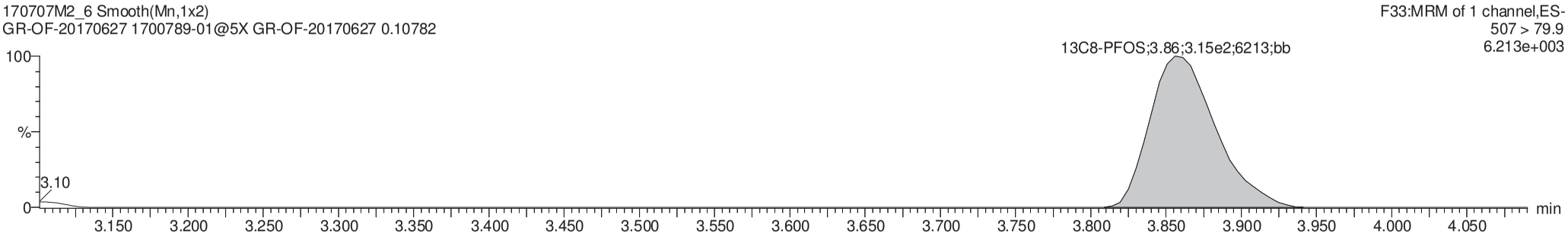
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_6, Date: 07-Jul-2017, Time: 14:29:12, ID: 1700789-01@5X GR-OF-20170627 0.10782, Description: GR-OF-20170627

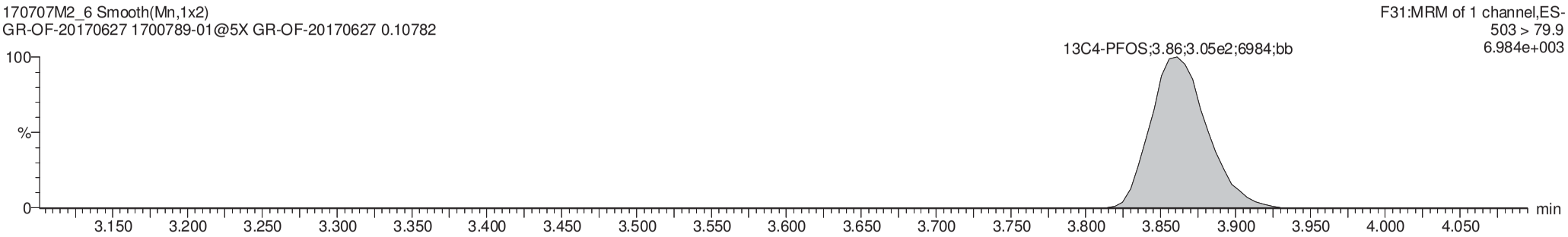
Total PFOS



13C8-PFOS



13C4-PFOS



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:20:08 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	*See dilution.
1	1	PFBS	299 > 79.7	4.52e3	6.09e3	0.1231		2.92	2.91	9.29	39.7		
2	2	PFHxA	313.2 > 268.9	1.80e5	1.79e4	0.1231		3.16	3.16	50.2	295		
3	3	PFHpA	363 > 318.9	5.31e4	4.17e4	0.1231		3.43	3.42	15.9	108		
4	4	PFHxS	398.9 > 79.6	1.82e4	4.51e3	0.1231		3.55	3.49	50.3	227		
5	5	PFOA	413 > 368.7	3.32e4	5.44e4	0.1231		3.63	3.62	7.62	64.6		
6	6	PFNA	462.9 > 418.8	5.01e3	4.22e4	0.1231		3.82	3.80	1.48	10.3		
7	7	PFOS	499 > 79.9	1.19e5	9.43e3	0.1231		3.86	3.85	157	1320 E*		
8	8	PFDA	513 > 468.8	2.07e3	3.76e4	0.1231		4.00	3.97	0.686	3.30		
9	9	PFUnA	562.9 > 518.9	6.80e2	3.22e4	0.1231		4.13	4.12	0.264	1.50		
10	10	N-MeFOSAA	570.1 > 419		7.12e3	0.1231		4.00					
11	11	N-EtFOSAA	584.2 > 419		6.63e3	0.1231		4.08					
12	12	PFDoA	612.9 > 318.8		2.54e3	0.1231		4.31					
13	13	PFTrDA	662.9 > 618.9		2.54e3	0.1231		4.50					
14	14	PFTeDA	712.9 > 668.8		9.47e3	0.1231		4.65					
15	15	13C3-PFBS	302 > 98.8	6.09e3	6.99e4	0.1231	0.032	2.92	2.91	0.435	110	108.5	
16	16	13C2-PFHxA	315 > 269.8	1.79e4	6.99e4	0.1231	0.296	3.15	3.16	1.28	35.1	86.4	
17	17	13C4-PFHpA	367.2 > 321.8	4.17e4	6.99e4	0.1231	0.302	3.43	3.42	2.98	80.3	79.1	
18	18	18O2-PFHxS	403 > 102.6	4.51e3	1.05e4	0.1231	0.434	3.49	3.49	5.37	100	98.8	
19	19	13C2-PFOA	414.9 > 369.7	5.44e4	5.79e4	0.1231	1.140	3.62	3.62	11.8	83.7	82.5	
20	20	13C5-PFNA	468.2 > 422.9	4.22e4	5.91e4	0.1231	0.958	3.80	3.80	8.92	75.7	74.5	
21	21	13C8-PFOS	507 > 79.9	9.43e3	8.71e3	0.1231	1.061	3.85	3.85	13.5	104	101.9	
22	22	13C2-PFDA	515.1 > 469.9	3.76e4	5.01e4	0.1231	0.942	3.97	3.97	9.38	80.9	79.7	
23	23	13C2-PFUnA	565 > 519.8	3.22e4	4.36e4	0.1231	1.084	4.13	4.13	9.21	69.0	67.9	
24	24	d3-N-MeFOSAA	573.3 > 419	7.12e3	4.36e4	0.1231	0.240	4.00	4.00	2.04	68.9	67.8	
25	25	d5-N-EtFOSAA	589.3 > 419	6.63e3	4.36e4	0.1231	0.247	4.07	4.06	1.90	62.3	61.4	
26	26	13C2-PFDoA	615 > 569.7	2.54e3	4.36e4	0.1231	0.127	4.32	4.28	0.727	46.5	45.8 H	
27	27	13C2-PFTeDA	714.8 > 669.6	9.47e3	4.36e4	0.1231	0.883	4.64	4.62	2.71	25.0	24.6 H	
28	28	13C5-PFHxA	318 > 272.9	6.99e4	6.99e4	0.1231	1.000	3.15	3.16	5.00	40.6	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.05e4	1.05e4	0.1231	1.000	3.49	3.49	12.5	102	100.0	
30	30	13C8-PFOA	421.3 > 376	5.79e4	5.79e4	0.1231	1.000	3.62	3.62	12.5	102	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.91e4	5.91e4	0.1231	1.000	3.82	3.80	12.5	102	100.0	
32	32	13C4-PFOS	503 > 79.9	8.71e3	8.71e3	0.1231	1.000	3.85	3.85	12.5	102	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:20:08 Pacific Daylight Time

Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	5.01e4	5.01e4	0.1231	1.000	3.97	3.97	12.5	102	100.0
34	34	13C7-PFUnA	570.1 > 524.8	4.36e4	4.36e4	0.1231	1.000	4.13	4.13	12.5	102	100.0
35	35	Total PFBS	299 > 79.7	4.52e3	6.09e3	0.1231		2.91		9.29	39.7	
36	36	Total PFHxS	398.9 > 79.6	1.82e4	4.51e3	0.1231		3.48		50.3	227	
37	37	Total PFOA	413 > 368.7	3.32e4	5.44e4	0.1231		3.61		7.62	64.6	
38	38	Total PFOS	499 > 79.9	1.19e5	9.43e3	0.1231		3.84		157	1320	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1231		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1231		4.06		0.000		

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
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Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.91	4522.967	6087.202	9.288	bb	39.7

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.49	18159.119	4512.055	50.307	MM	226.5

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	33166.613	54424.809	7.618	MM	64.6

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	118728.344	9427.402	157.425	MM	1324.5

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
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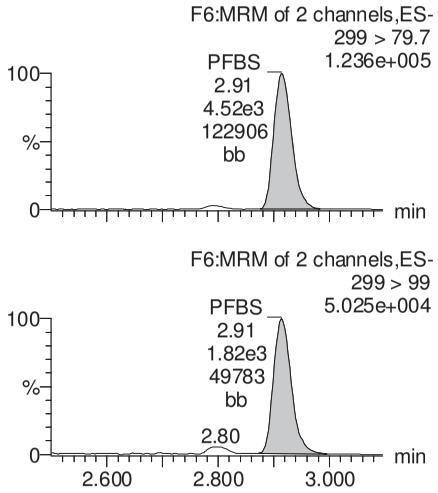
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

Total PFBS



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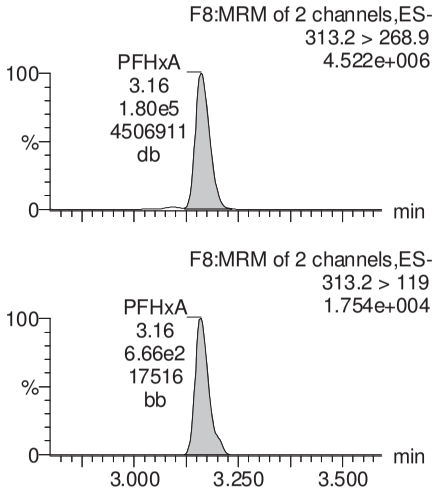

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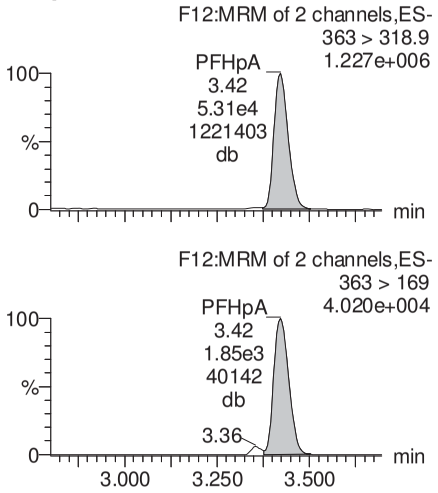

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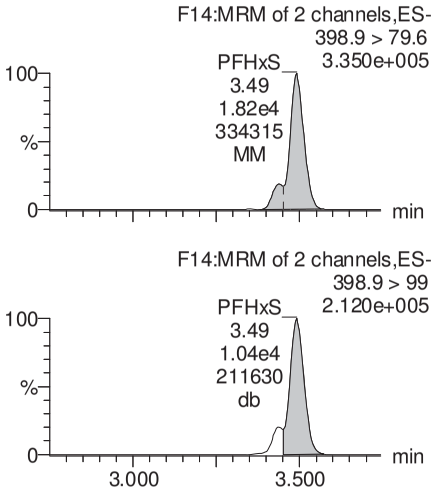

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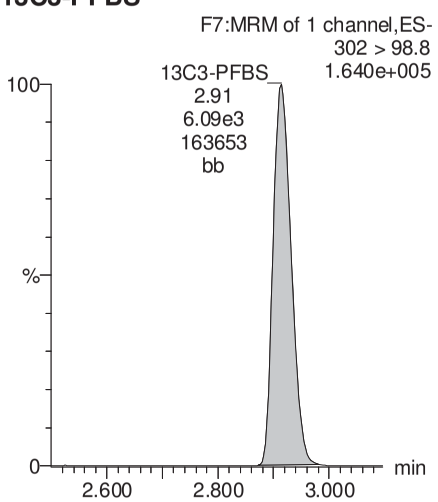

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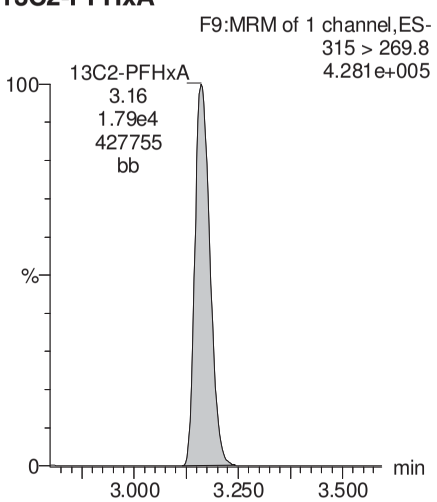

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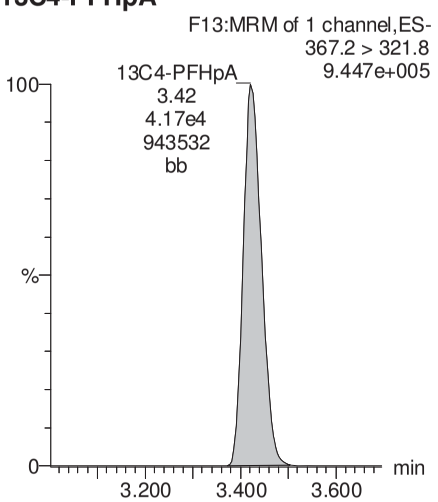

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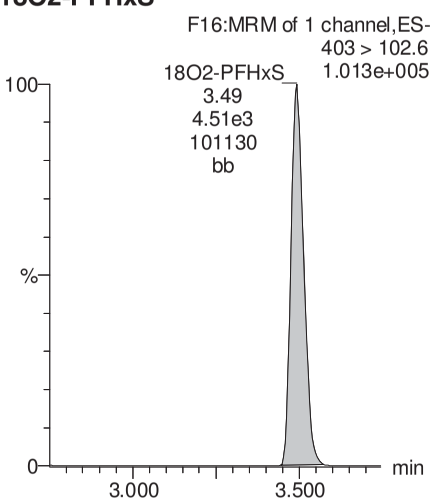

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Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
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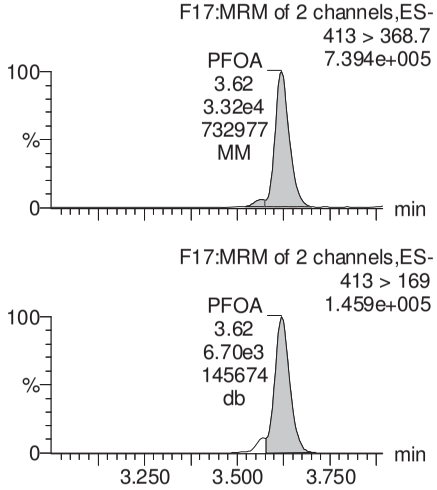
Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

Total PFOA



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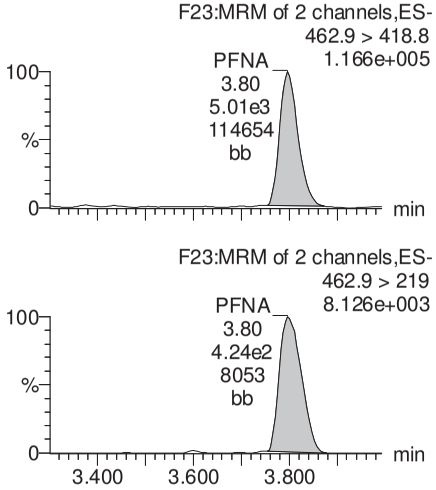
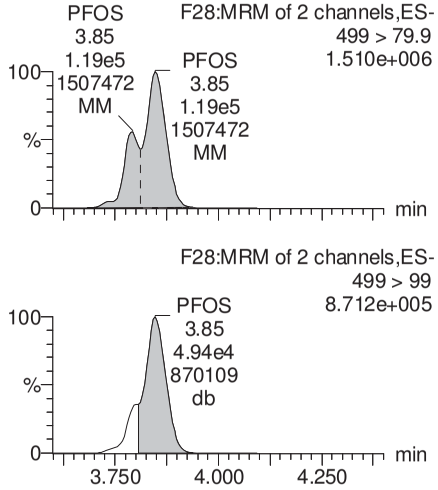


Total PFOS



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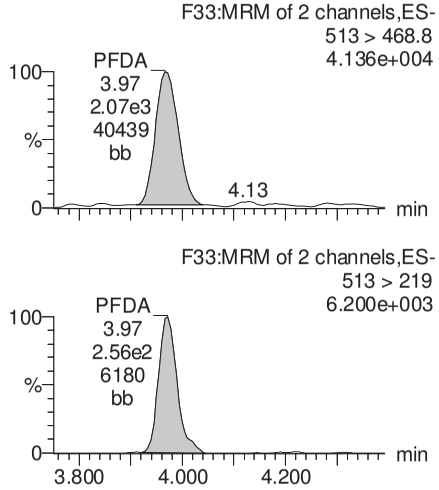

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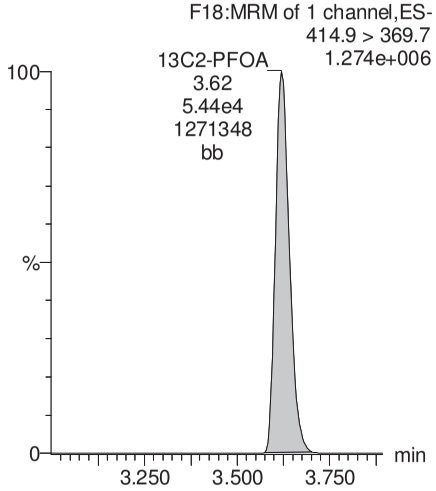

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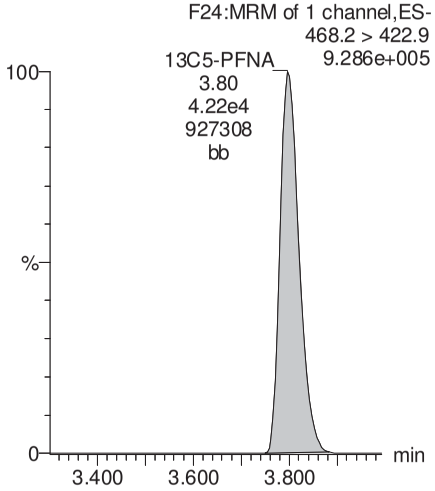

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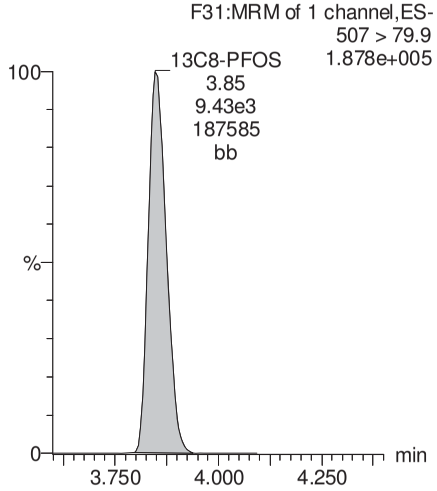

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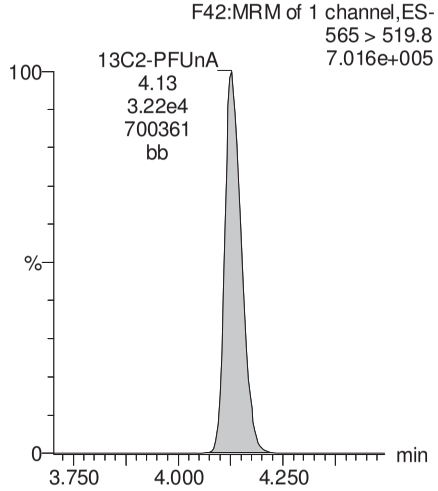

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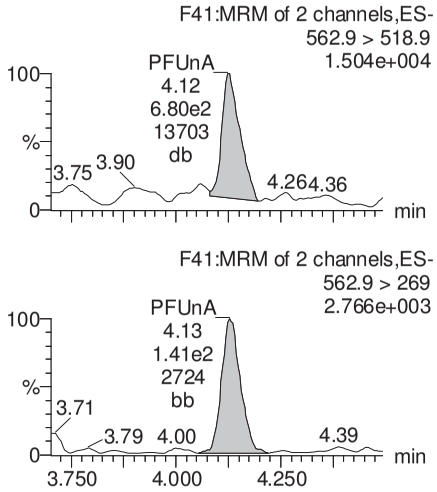
Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:20:08 Pacific Daylight Time

Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

PFUnA



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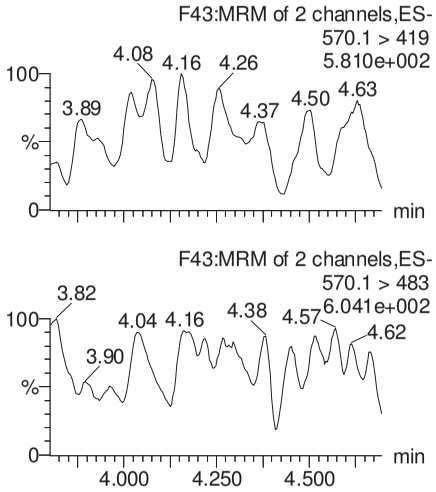

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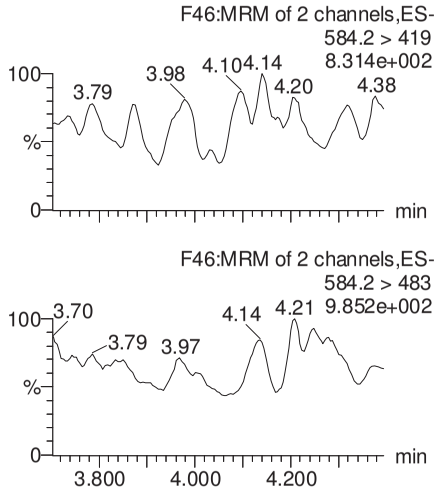

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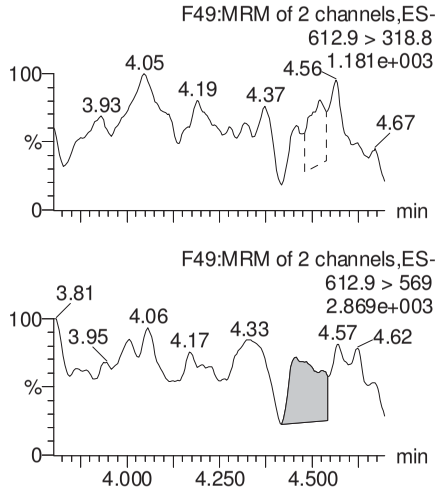

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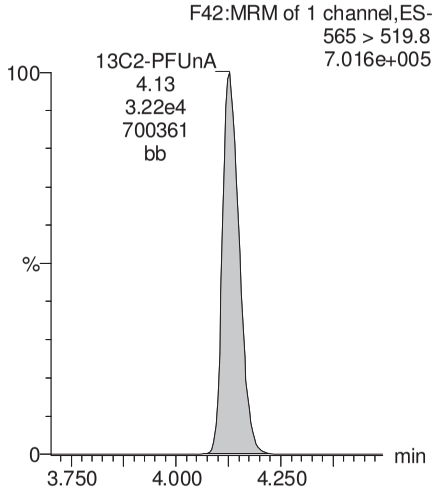

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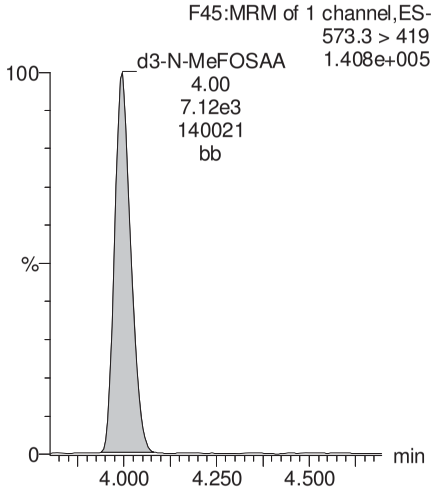

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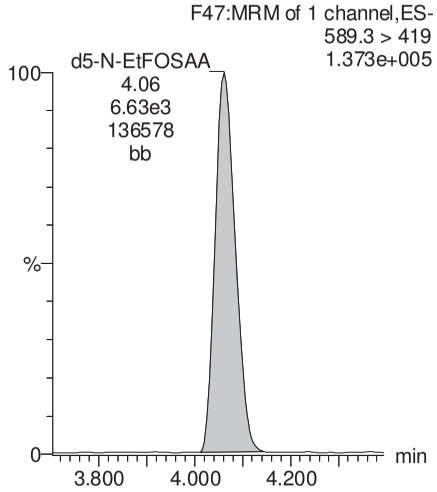

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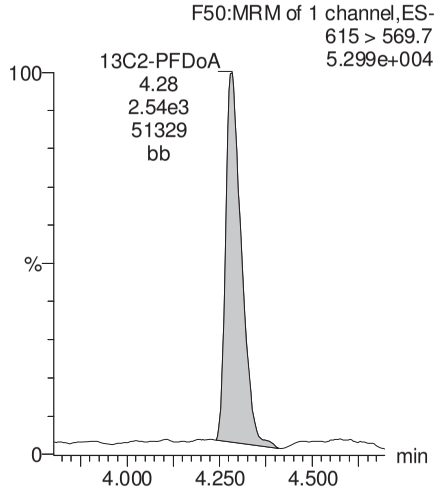

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
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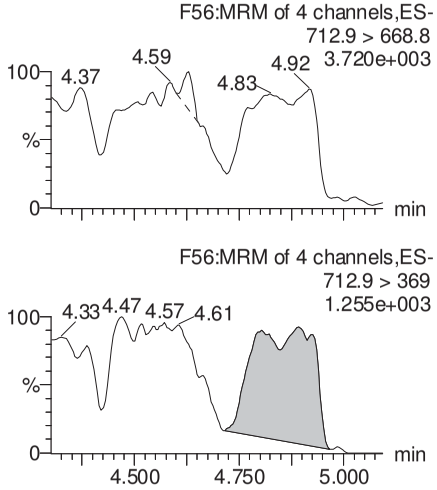
Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

PFTeDA



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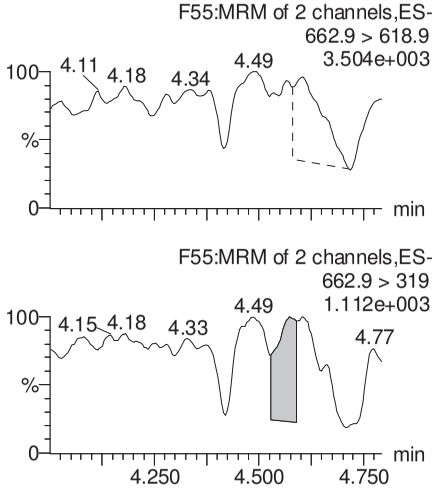

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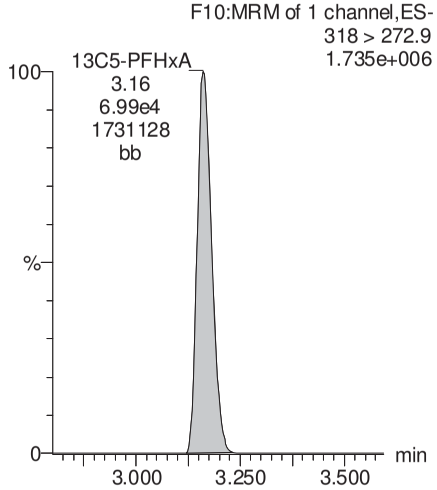

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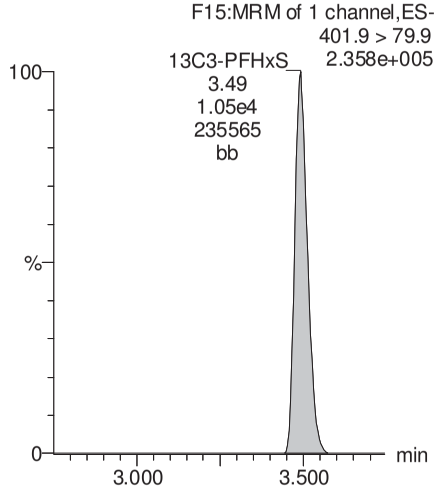

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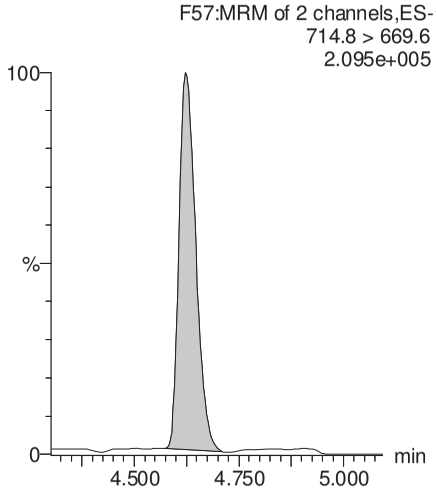
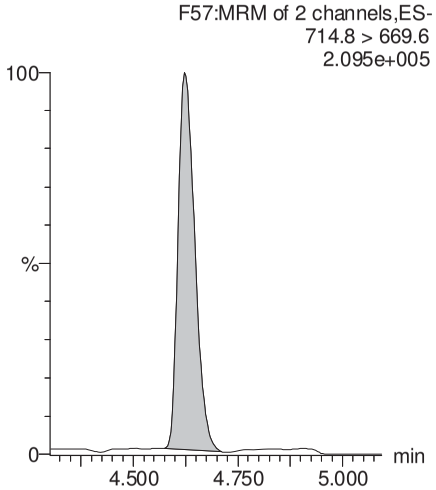
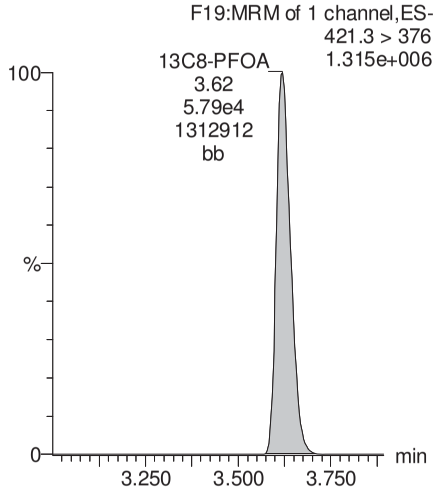


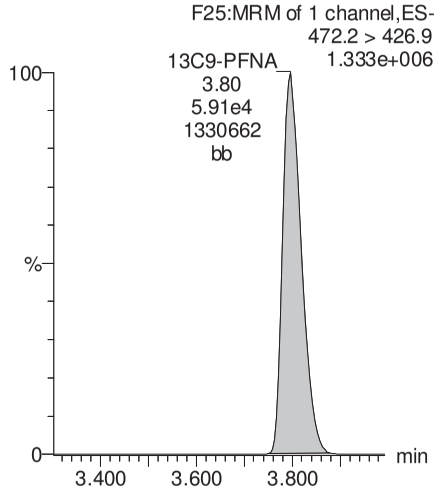
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



GM 7/19/17

Vista Analytical Laboratory

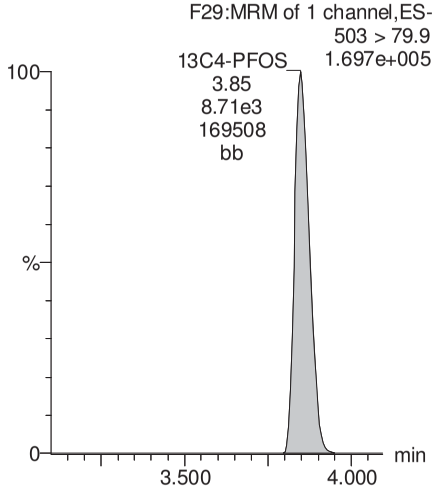
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-13.qld

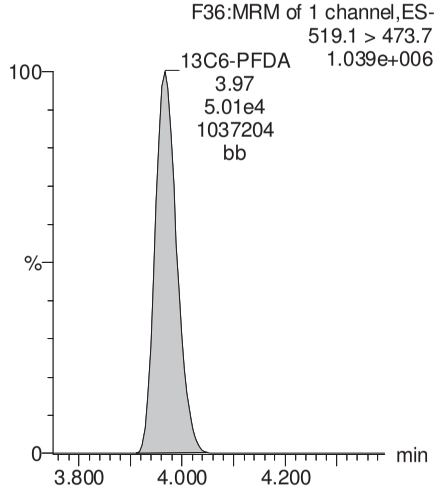
Last Altered: Wednesday, July 19, 2017 15:19:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:20:08 Pacific Daylight Time

Name: 170706M1_13, Date: 06-Jul-2017, Time: 10:44:08, ID: 1700789-02 MH-117T-20170627 0.12311, Description: MH-117T-20170627

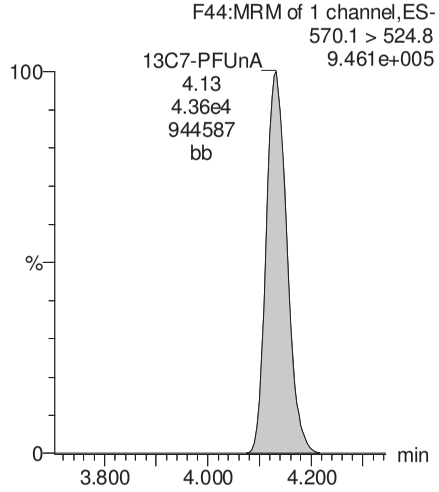
13C4-PFOS



13C6-PFDA



13C7-PFUnA



GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-7.qld

Last Altered: Thursday, July 20, 2017 12:49:24 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:50:01 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_7, Date: 07-Jul-2017, Time: 14:39:57, ID: 1700789-02@5X MH-117T-20170627 0.12311, Description: MH-117T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	7	PFOS	499 > 79.9	4.13e3	2.09e2	0.1231		3.86	3.86	247	2230	
2	21	13C8-PFOS	507 > 79.9	2.09e2	3.43e2	0.1231	1.061	3.85	3.87	7.61	58.2	57.4
3	32	13C4-PFOS	503 > 79.9	3.43e2	3.43e2	0.1231	1.000	3.85	3.86	12.5	102	100.0
4	38	Total PFOS	499 > 79.9	4.13e3	2.09e2	0.1231		3.84		247	2230	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

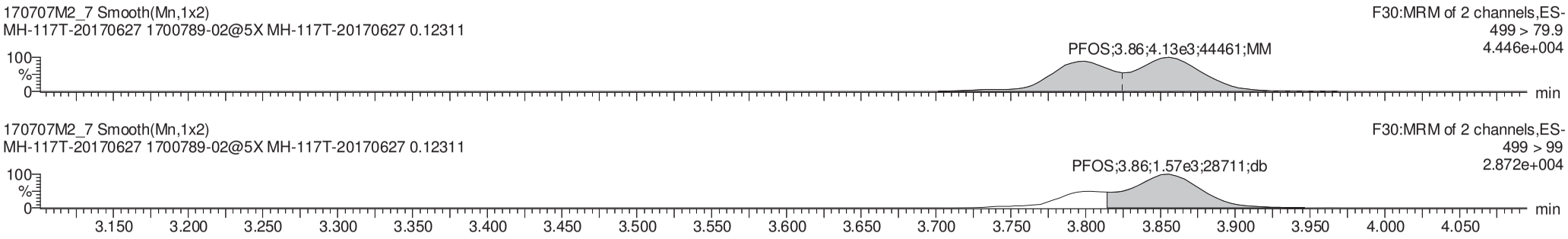
Dataset: U:\Q4.PRO\results\170707M2\170707M2-7.qld

Last Altered: Thursday, July 20, 2017 12:49:24 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:50:01 Pacific Daylight Time

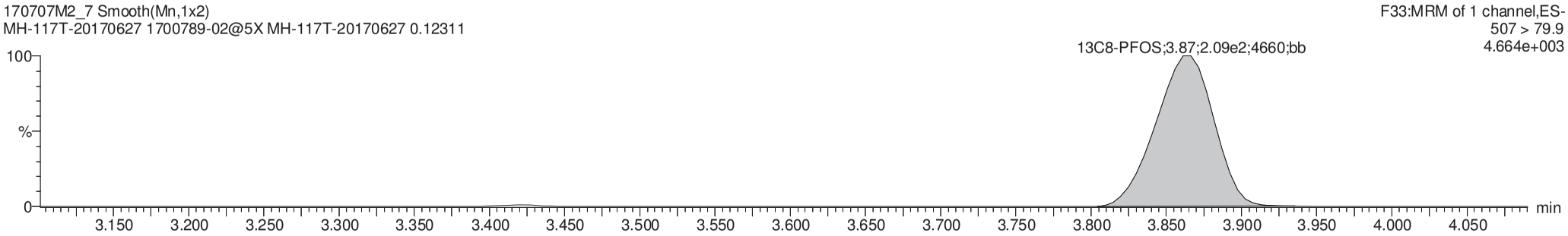
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_7, Date: 07-Jul-2017, Time: 14:39:57, ID: 1700789-02@5X MH-117T-20170627 0.12311, Description: MH-117T-20170627

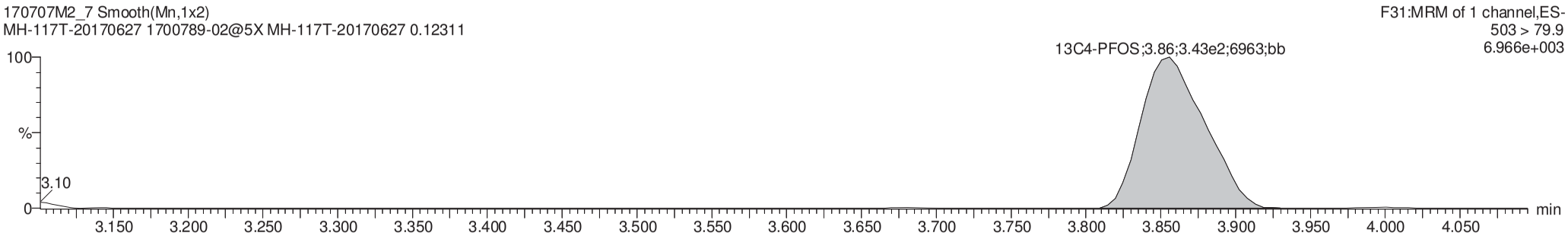
Total PFOS



13C8-PFOS



13C4-PFOS



GM 7/20/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	1.38e4	6.19e3	0.1235		2.92	2.92	27.9	120		
2	2	PFHxA	313.2 > 268.9	3.87e5	1.89e4	0.1235		3.16	3.16	102	601		
3	3	PFHpA	363 > 318.9	7.95e4	4.27e4	0.1235		3.43	3.43	23.3	158		
4	4	PFHxS	398.9 > 79.6	6.37e4	4.08e3	0.1235		3.55	3.50	195	1010 E*		
5	5	PFOA	413 > 368.7	5.86e4	5.55e4	0.1235		3.63	3.62	13.2	113		
6	6	PFNA	462.9 > 418.8	5.59e3	4.37e4	0.1235		3.82	3.81	1.60	11.2		
7	7	PFOS	499 > 79.9	1.55e5	8.94e3	0.1235		3.86	3.85	217	1900 E*		
8	8	PFDA	513 > 468.8	1.46e3	4.05e4	0.1235		4.00	3.97	0.451	1.60		
9	9	PFUnA	562.9 > 518.9		2.61e4	0.1235		4.13					
10	10	N-MeFOSAA	570.1 > 419		6.51e3	0.1235		4.00					
11	11	N-EtFOSAA	584.2 > 419		4.97e3	0.1235		4.08					
12	12	PFDoA	612.9 > 318.8		1.09e3	0.1235		4.31					
13	13	PFTrDA	662.9 > 618.9		1.09e3	0.1235		4.50					
14	14	PFTeDA	712.9 > 668.8		7.32e3	0.1235		4.65					
15	15	13C3-PFBS	302 > 98.8	6.19e3	6.48e4	0.1235	0.032	2.92	2.92	0.478	120	119.0	
16	16	13C2-PFHxA	315 > 269.8	1.89e4	6.48e4	0.1235	0.296	3.15	3.16	1.46	39.9	98.6	
17	17	13C4-PFHpA	367.2 > 321.8	4.27e4	6.48e4	0.1235	0.302	3.43	3.43	3.30	88.6	87.5	
18	18	18O2-PFHxS	403 > 102.6	4.08e3	1.01e4	0.1235	0.434	3.49	3.50	5.04	94.0	92.9	
19	19	13C2-PFOA	414.9 > 369.7	5.55e4	5.20e4	0.1235	1.140	3.62	3.62	13.3	94.8	93.6	
20	20	13C5-PFNA	468.2 > 422.9	4.37e4	5.69e4	0.1235	0.958	3.80	3.80	9.61	81.3	80.3	
21	21	13C8-PFOS	507 > 79.9	8.94e3	8.75e3	0.1235	1.061	3.85	3.85	12.8	97.5	96.3	
22	22	13C2-PFDA	515.1 > 469.9	4.05e4	4.88e4	0.1235	0.942	3.97	3.97	10.4	89.2	88.1	
23	23	13C2-PFUnA	565 > 519.8	2.61e4	3.37e4	0.1235	1.084	4.13	4.13	9.68	72.3	71.4	
24	24	d3-N-MeFOSAA	573.3 > 419	6.51e3	3.37e4	0.1235	0.240	4.00	4.00	2.42	81.5	80.5	
25	25	d5-N-EtFOSAA	589.3 > 419	4.97e3	3.37e4	0.1235	0.247	4.07	4.07	1.85	60.5	59.7	
26	26	13C2-PFDoA	615 > 569.7	1.09e3	3.37e4	0.1235	0.127	4.32	4.29	0.406	25.9	25.6	H
27	27	13C2-PFTeDA	714.8 > 669.6	7.32e3	3.37e4	0.1235	0.883	4.64	4.63	2.72	24.9	24.6	H
28	28	13C5-PFHxA	318 > 272.9	6.48e4	6.48e4	0.1235	1.000	3.15	3.16	5.00	40.5	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.01e4	1.01e4	0.1235	1.000	3.49	3.50	12.5	101	100.0	
30	30	13C8-PFOA	421.3 > 376	5.20e4	5.20e4	0.1235	1.000	3.62	3.62	12.5	101	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.69e4	5.69e4	0.1235	1.000	3.82	3.80	12.5	101	100.0	
32	32	13C4-PFOS	503 > 79.9	8.75e3	8.75e3	0.1235	1.000	3.85	3.86	12.5	101	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.88e4	4.88e4	0.1235	1.000	3.97	3.97	12.5	101	100.0
34	34	13C7-PFUnA	570.1 > 524.8	3.37e4	3.37e4	0.1235	1.000	4.13	4.13	12.5	101	100.0
35	35	Total PFBS	299 > 79.7	1.38e4	6.19e3	0.1235		2.91		27.9	120	
36	36	Total PFHxS	398.9 > 79.6	6.37e4	4.08e3	0.1235		3.48		195	1010	
37	37	Total PFOA	413 > 368.7	5.86e4	5.55e4	0.1235		3.61		13.2	113	
38	38	Total PFOS	499 > 79.9	1.55e5	8.94e3	0.1235		3.84		217	1900	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1235		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1235		4.06		0.000		

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	13782.229	6185.278	27.853	bb	120.2

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	63711.238	4084.751	194.967	MM	1009.0

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	58619.785	55539.137	13.193	MM	112.7

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	155363.672	8940.512	217.219	MM	1904.2

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

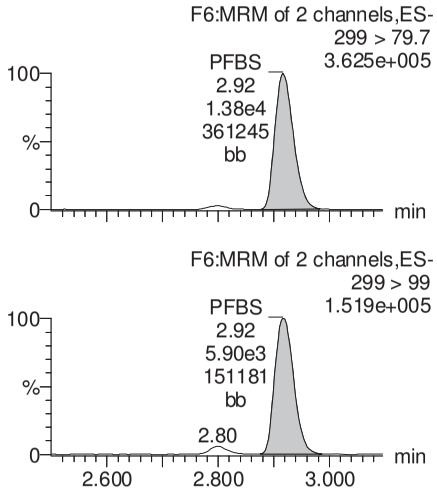
Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

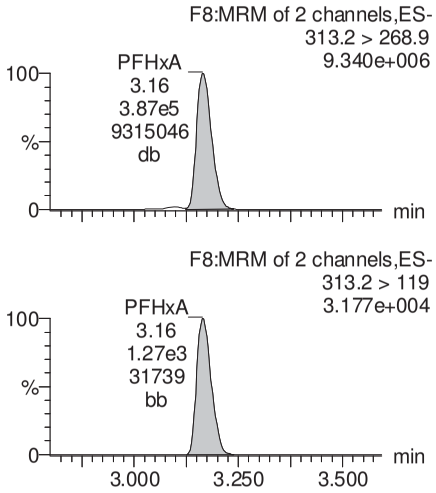
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

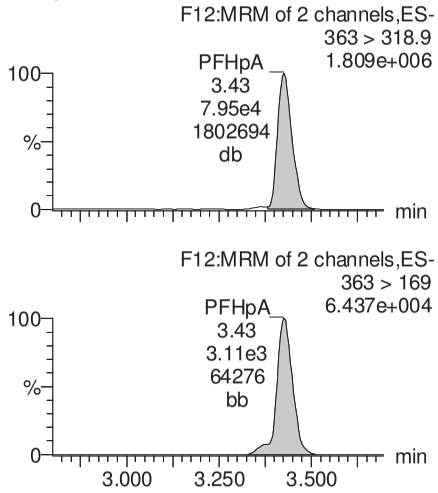
Total PFBS



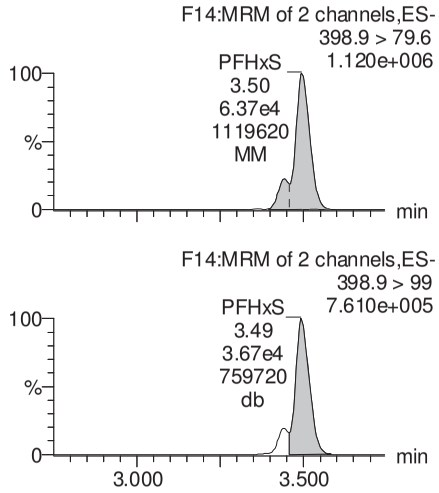
PFHxA



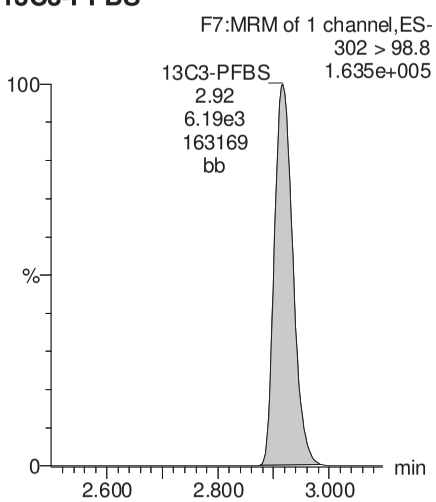
PFHpA



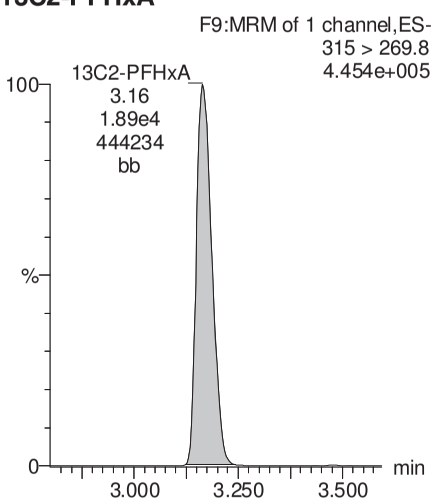
Total PFHxS



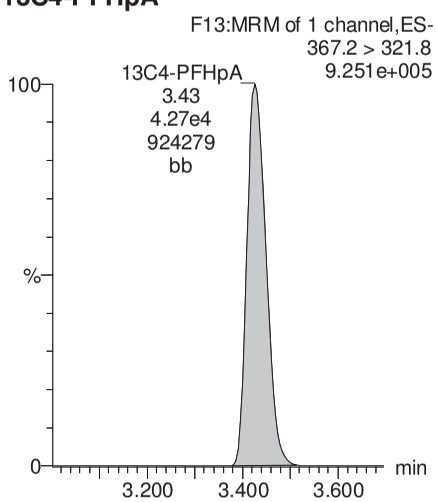
13C3-PFBS



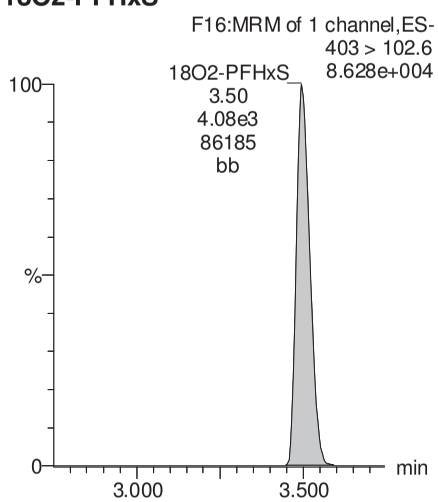
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



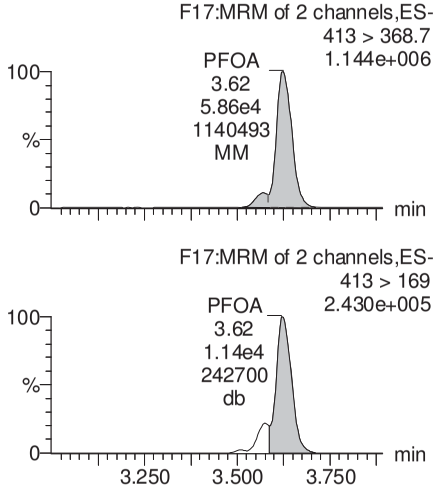
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

Total PFOA



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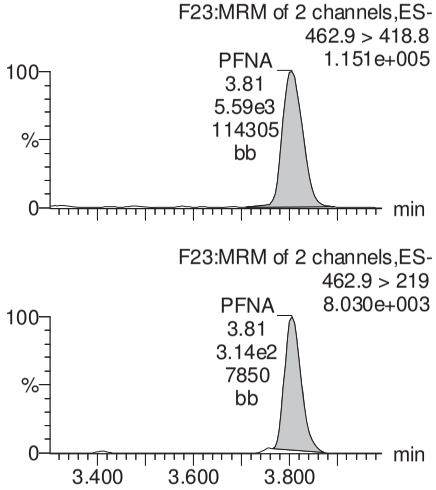
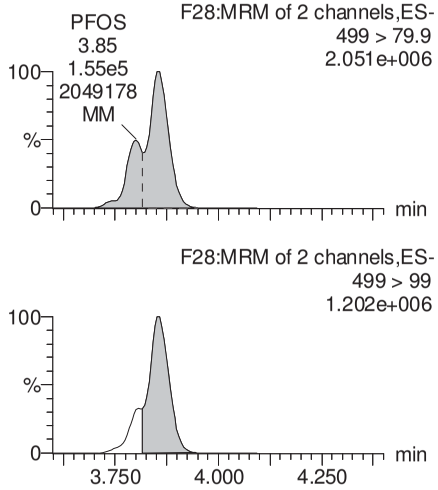
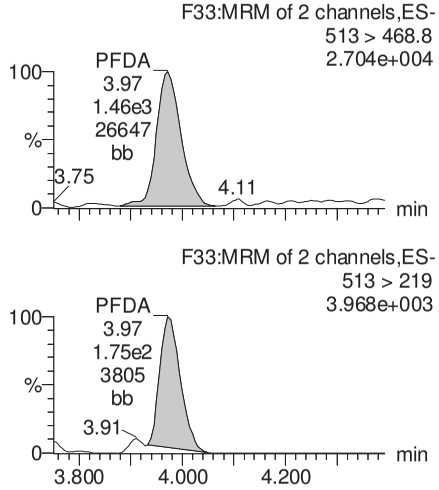


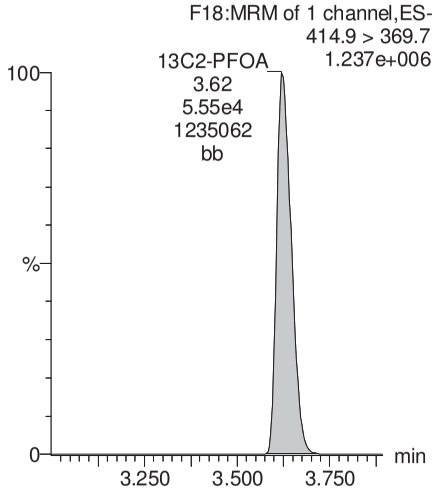
Total PFOS



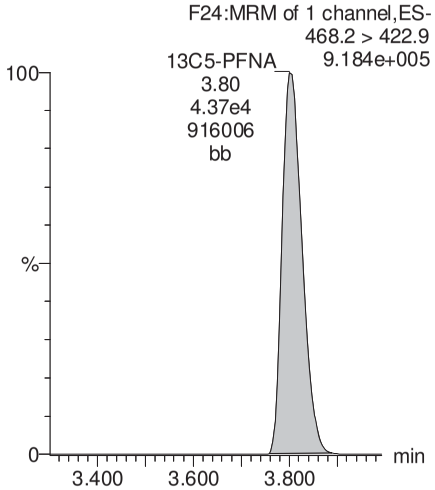
PFDA



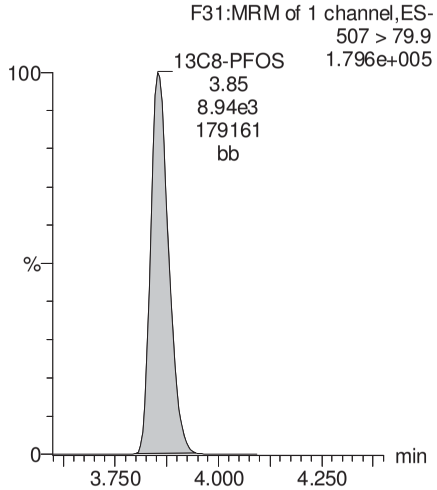
13C2-PFOA



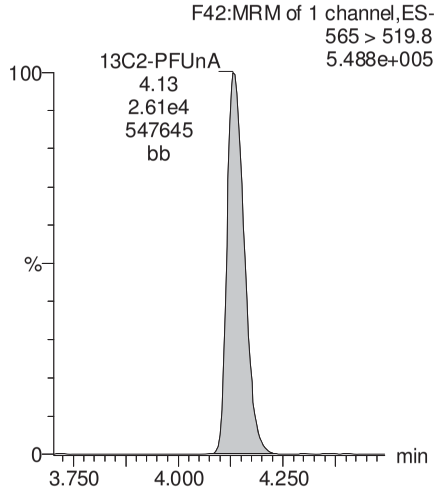
13C5-PFNA



13C8-PFOS



13C2-PFUnA



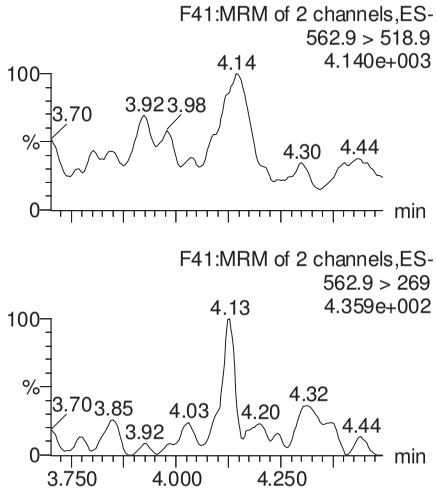
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

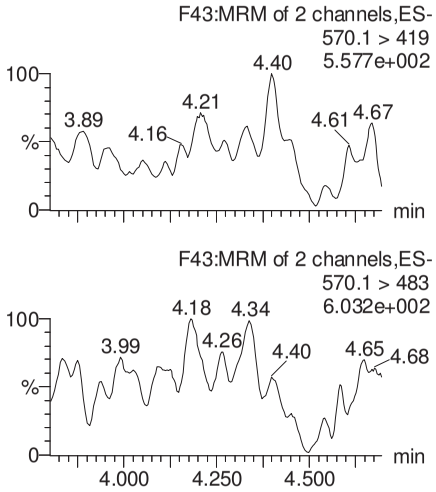
Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

PFUnA



N-MeFOSAA



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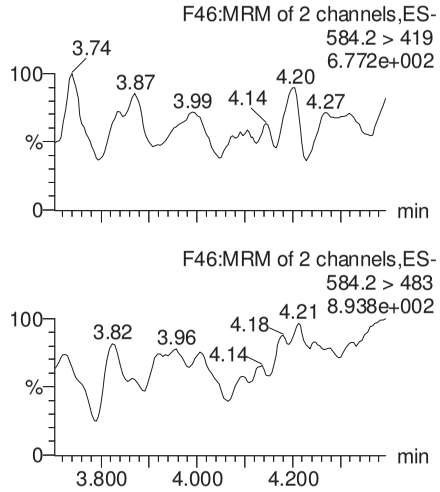
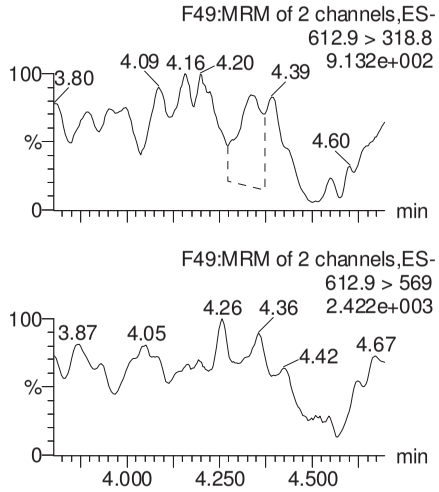
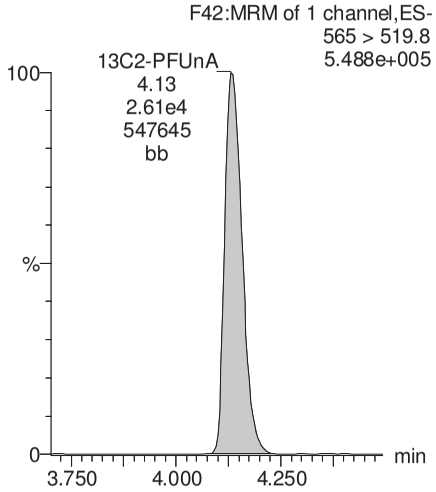


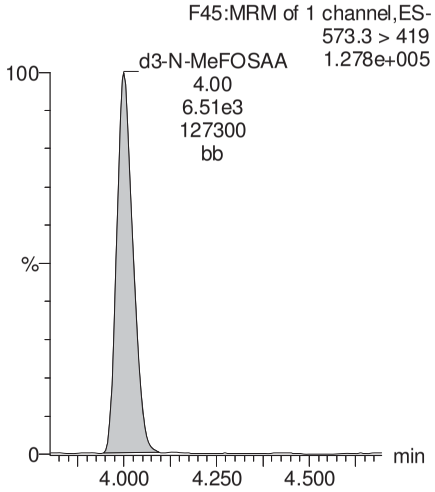
PFDoA



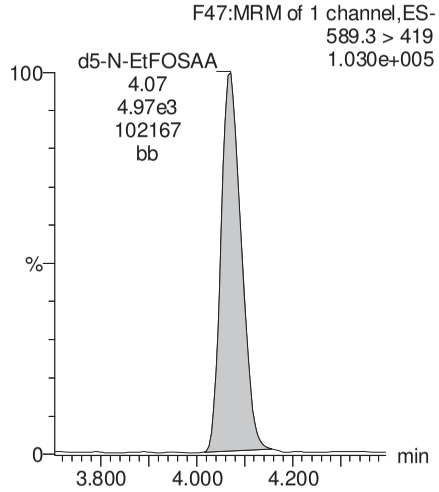
13C2-PFUnA



d3-N-MeFOSAA



d5-N-EtFOSAA



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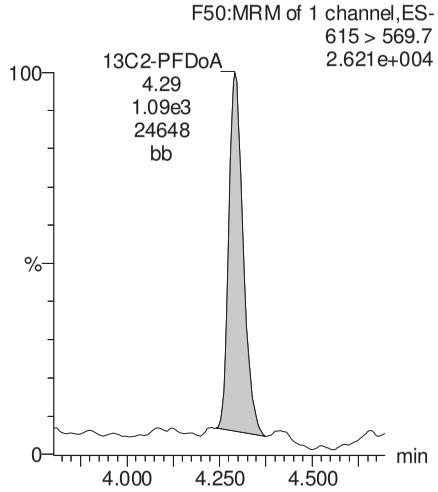


GM 7/19/17

Vista Analytical Laboratory

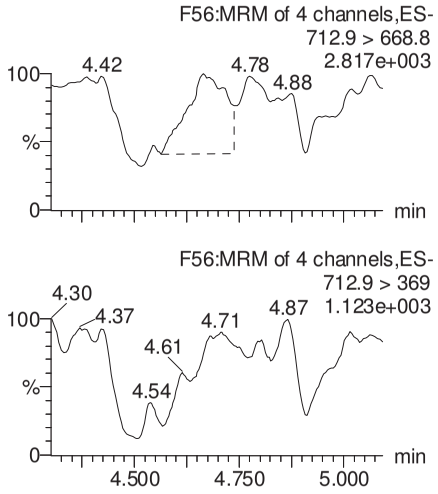
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

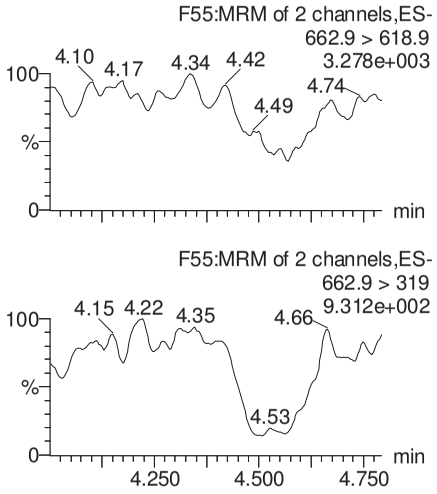
Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

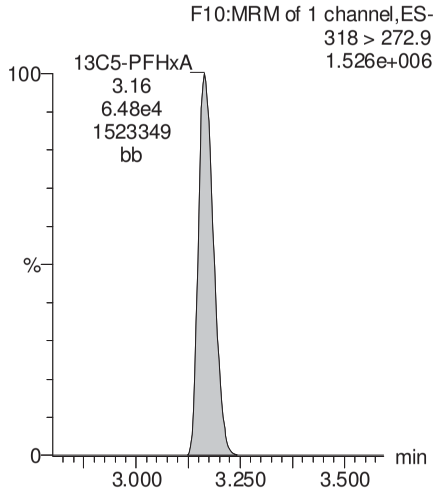
PFTeDA



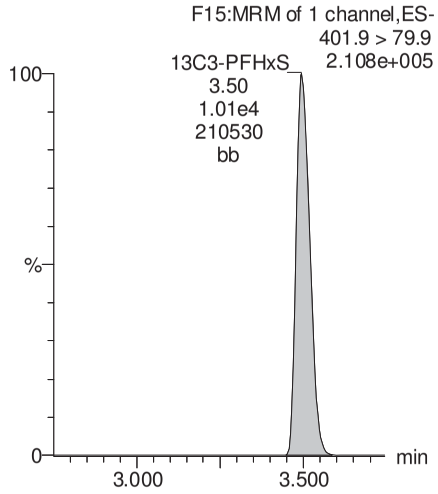
PFTrDA



13C5-PFHxA



13C3-PFHxS



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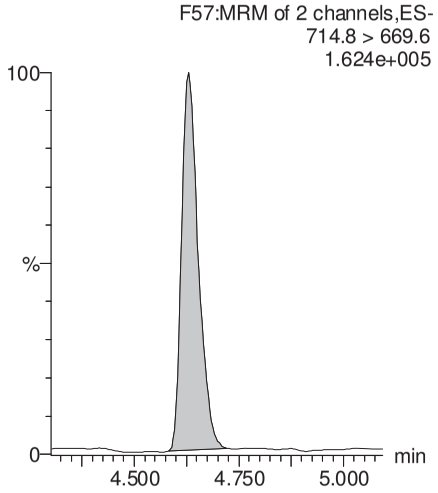
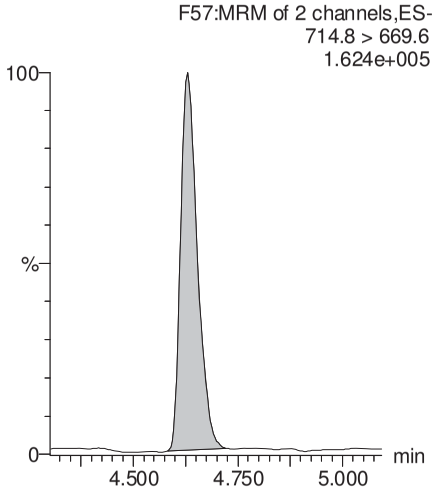
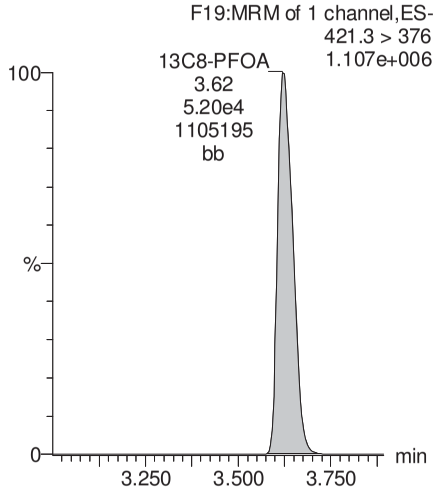


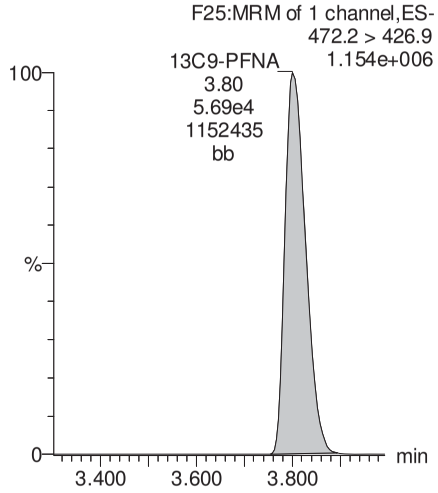
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



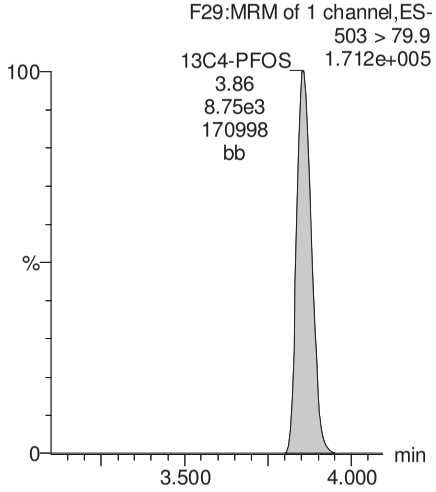
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-14.qld

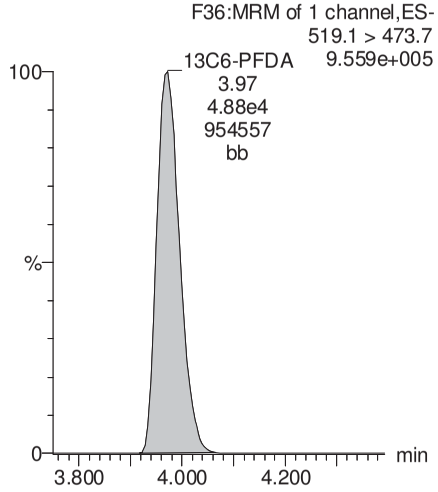
Last Altered: Wednesday, July 19, 2017 15:26:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:27:29 Pacific Daylight Time

Name: 170706M1_14, Date: 06-Jul-2017, Time: 10:54:47, ID: 1700789-03 MH-117N-20170627 0.12348, Description: MH-117N-20170627

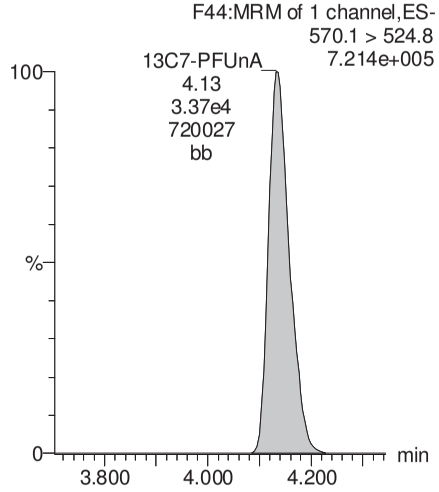
13C4-PFOS



13C6-PFDA



13C7-PFUnA



GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-8.qld

Last Altered: Thursday, July 20, 2017 12:54:07 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:55:36 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_8, Date: 07-Jul-2017, Time: 14:50:35, ID: 1700789-03@5X MH-117N-20170627 0.12348, Description: MH-117N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	4	PFHxS	398.9 > 79.6	1.02e4	7.12e2	0.1235		3.55	3.50	179	907	
2	7	PFOS	499 > 79.9	3.36e3	1.39e2	0.1235		3.86	3.86	302	2860	
3	18	18O2-PFHxS	403 > 102.6	7.12e2	1.77e3	0.1235	0.434	3.49	3.50	5.03	93.8	92.6
4	21	13C8-PFOS	507 > 79.9	1.39e2	1.20e2	0.1235	1.061	3.85	3.86	14.5	111	109.3
5	29	13C3-PFHxS	401.9 > 79.9	1.77e3	1.77e3	0.1235	1.000	3.49	3.50	12.5	101	100.0
6	32	13C4-PFOS	503 > 79.9	1.20e2	1.20e2	0.1235	1.000	3.85	3.86	12.5	101	100.0
7	36	Total PFHxS	398.9 > 79.6	1.16e4	7.12e2	0.1235		3.48		204	1010	
8	38	Total PFOS	499 > 79.9	3.36e3	1.39e2	0.1235		3.84		302	2860	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

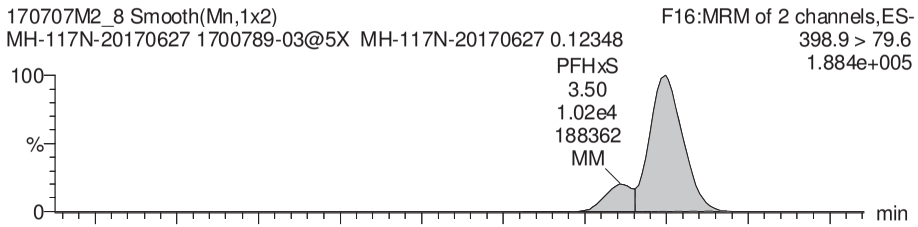
Dataset: U:\Q4.PRO\results\170707M2\170707M2-8.qld

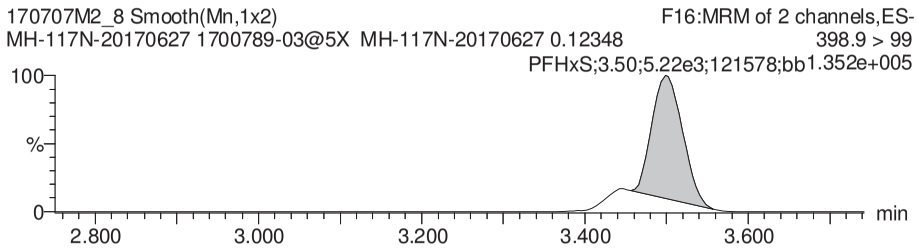
Last Altered: Thursday, July 20, 2017 12:54:07 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:55:36 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

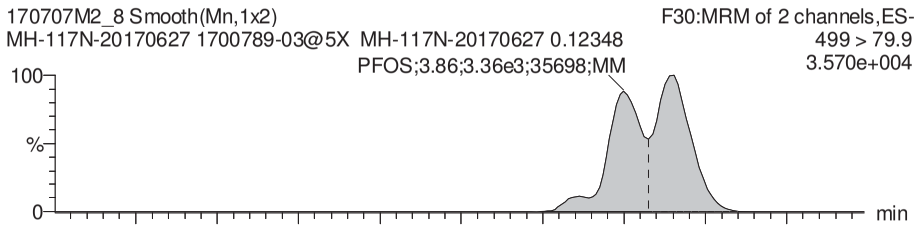
Name: 170707M2_8, Date: 07-Jul-2017, Time: 14:50:35, ID: 1700789-03@5X MH-117N-20170627 0.12348, Description: MH-117N-20170627

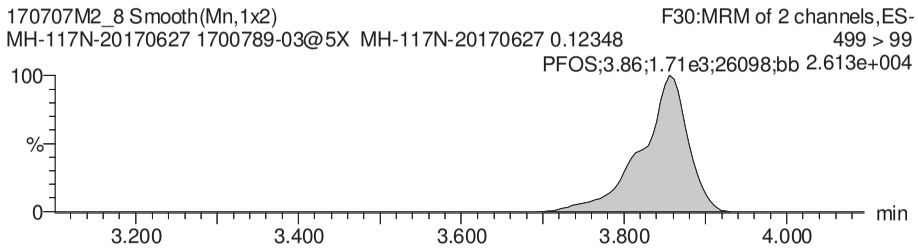
Total PFHxS



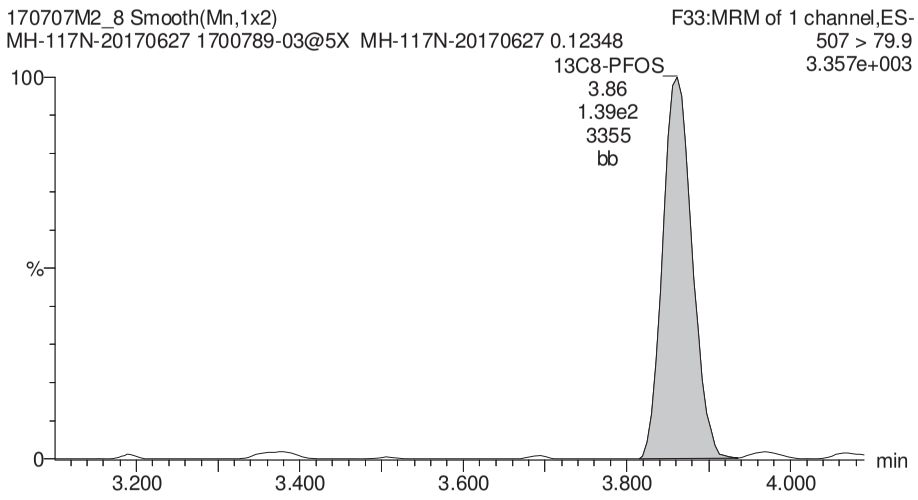


Total PFOS

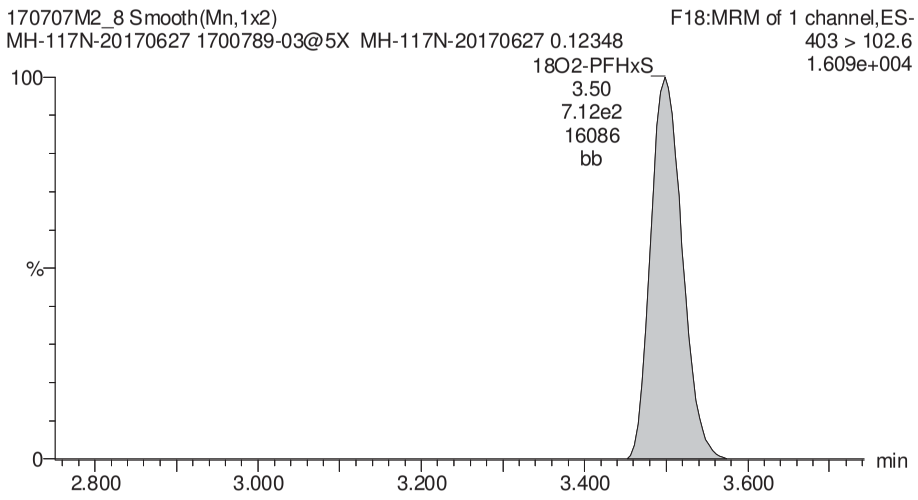




13C8-PFOS



18O2-PFHxS



GM 7/20/17

Vista Analytical Laboratory

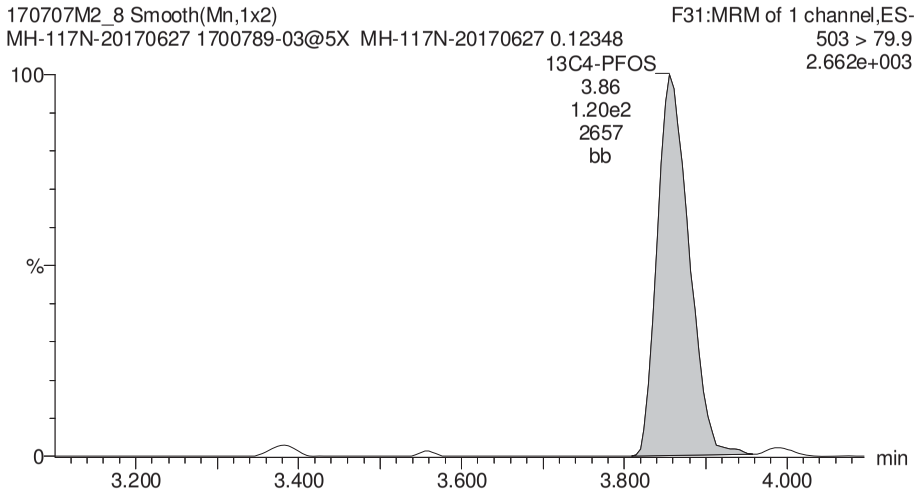
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-8.qld

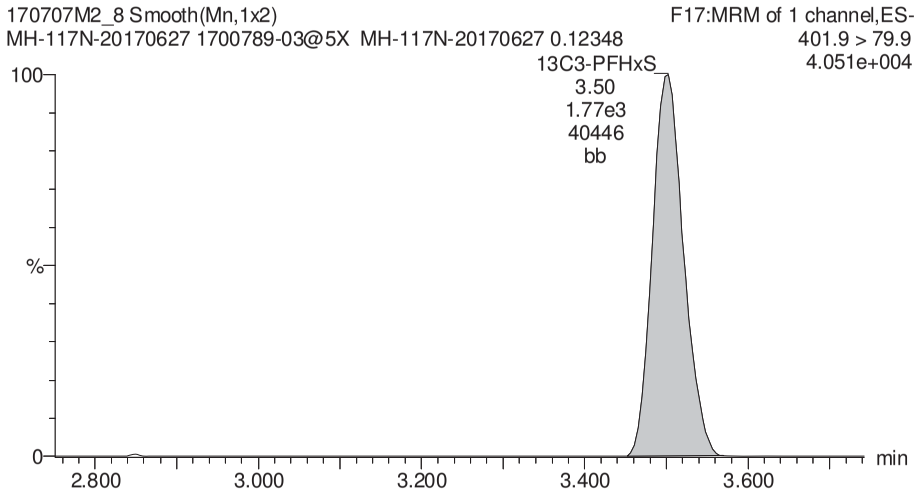
Last Altered: Thursday, July 20, 2017 12:54:07 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:55:36 Pacific Daylight Time

Name: 170707M2_8, Date: 07-Jul-2017, Time: 14:50:35, ID: 1700789-03@5X MH-117N-20170627 0.12348, Description: MH-117N-20170627

13C4-PFOS



13C3-PFHxS



GM 7/20/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	2.38e4	5.79e3	0.1227		2.92	2.92	51.3	223		
2	2	PFHxA	313.2 > 268.9	4.25e5	1.86e4	0.1227		3.16	3.16	114	675		
3	3	PFHpA	363 > 318.9	1.22e5	3.66e4	0.1227		3.43	3.43	41.5	285		
4	4	PFHxS	398.9 > 79.6	6.84e4	3.82e3	0.1227		3.55	3.50	224	1210 E*		
5	5	PFOA	413 > 368.7	9.67e4	5.03e4	0.1227		3.63	3.62	24.0	208		
6	6	PFNA	462.9 > 418.8	4.90e4	4.42e4	0.1227		3.82	3.80	13.8	101		
7	7	PFOS	499 > 79.9	1.56e5	7.89e3	0.1227		3.86	3.85	246	2230 E*		
8	8	PFDA	513 > 468.8	3.75e4	3.64e4	0.1227		4.00	3.97	12.9	90.8		
9	9	PFUnA	562.9 > 518.9	2.01e4	2.41e4	0.1227		4.13	4.13	10.5	93.6		
10	10	N-MeFOSAA	570.1 > 419	7.35e3	5.34e3	0.1227		4.00	4.00	17.2	87.8		
11	11	N-EtFOSAA	584.2 > 419	4.16e3	4.32e3	0.1227		4.08	4.07	12.0	85.5		
12	12	PFDoA	612.9 > 318.8	8.79e2	9.71e2	0.1227		4.31	4.29	11.3	111		
13	13	PFTrDA	662.9 > 618.9	8.16e3	9.71e2	0.1227		4.50	4.46	105	77.0		
14	14	PFTeDA	712.9 > 668.8	1.63e4	1.46e4	0.1227		4.65	4.63	13.9	95.4		
15	15	13C3-PFBS	302 > 98.8	5.79e3	6.54e4	0.1227	0.032	2.92	2.92	0.443	113	110.5	
16	16	13C2-PFHxA	315 > 269.8	1.86e4	6.54e4	0.1227	0.296	3.15	3.16	1.43	39.2	96.2	
17	17	13C4-PFHpA	367.2 > 321.8	3.66e4	6.54e4	0.1227	0.302	3.43	3.43	2.80	75.7	74.3	
18	18	18O2-PFHxS	403 > 102.6	3.82e3	9.82e3	0.1227	0.434	3.49	3.50	4.86	91.1	89.5	
19	19	13C2-PFOA	414.9 > 369.7	5.03e4	5.16e4	0.1227	1.140	3.62	3.62	12.2	87.1	85.6	
20	20	13C5-PFNA	468.2 > 422.9	4.42e4	5.48e4	0.1227	0.958	3.80	3.80	10.1	85.7	84.2	
21	21	13C8-PFOS	507 > 79.9	7.89e3	8.03e3	0.1227	1.061	3.85	3.85	12.3	94.3	92.5	
22	22	13C2-PFDA	515.1 > 469.9	3.64e4	4.68e4	0.1227	0.942	3.97	3.97	9.72	84.1	82.6	
23	23	13C2-PFUnA	565 > 519.8	2.41e4	2.97e4	0.1227	1.084	4.13	4.14	10.1	76.1	74.8	
24	24	d3-N-MeFOSAA	573.3 > 419	5.34e3	2.97e4	0.1227	0.240	4.00	4.00	2.25	76.2	74.8	
25	25	d5-N-EtFOSAA	589.3 > 419	4.32e3	2.97e4	0.1227	0.247	4.07	4.07	1.82	59.9	58.8	
26	26	13C2-PFDoA	615 > 569.7	9.71e2	2.97e4	0.1227	0.127	4.32	4.29	0.409	26.2	25.8	H
27	27	13C2-PFTeDA	714.8 > 669.6	1.46e4	2.97e4	0.1227	0.883	4.64	4.63	6.17	56.9	55.9	
28	28	13C5-PFHxA	318 > 272.9	6.54e4	6.54e4	0.1227	1.000	3.15	3.16	5.00	40.7	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	9.82e3	9.82e3	0.1227	1.000	3.49	3.50	12.5	102	100.0	
30	30	13C8-PFOA	421.3 > 376	5.16e4	5.16e4	0.1227	1.000	3.62	3.62	12.5	102	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.48e4	5.48e4	0.1227	1.000	3.82	3.80	12.5	102	100.0	
32	32	13C4-PFOS	503 > 79.9	8.03e3	8.03e3	0.1227	1.000	3.85	3.85	12.5	102	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.68e4	4.68e4	0.1227	1.000	3.97	3.97	12.5	102	100.0
34	34	13C7-PFUnA	570.1 > 524.8	2.97e4	2.97e4	0.1227	1.000	4.13	4.13	12.5	102	100.0
35	35	Total PFBS	299 > 79.7	2.38e4	5.79e3	0.1227		2.91		51.3	223	
36	36	Total PFHxS	398.9 > 79.6	6.84e4	3.82e3	0.1227		3.48		224	1210	
37	37	Total PFOA	413 > 368.7	9.67e4	5.03e4	0.1227		3.61		24.0	208	
38	38	Total PFOS	499 > 79.9	1.56e5	7.89e3	0.1227		3.84		246	2230	
39	39	Total N-Me-FOSAA	570.1 > 419	7.35e3		0.1227		3.98		17.2	87.8	
40	40	Total N-EtFOSAA	584.2 > 419	4.16e3		0.1227		4.06		12.0	85.5	

GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	23759.426	5794.149	51.257	bb	223.1

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	68431.234	3815.633	224.180	MM	1214.2

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	96715.031	50326.984	24.022	MM	207.9

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	155589.422	7891.083	246.464	MM	2226.9

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	10	N-MeFOSAA	570.1 > 419	4.00	7350.231	5338.386	17.211	bb	87.8

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	11	N-EtFOSAA	584.2 > 419	4.07	4156.891	4317.193	12.036	bb	85.5

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

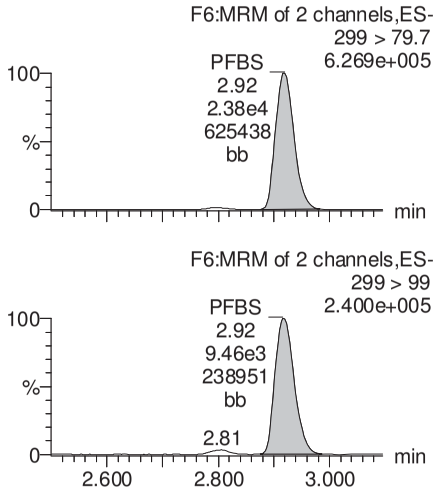
Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

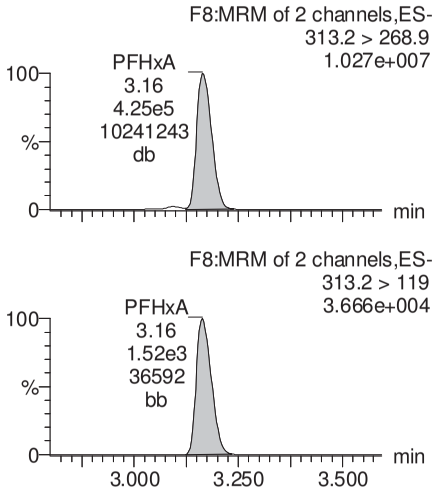
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

Total PFBS



PFHxA



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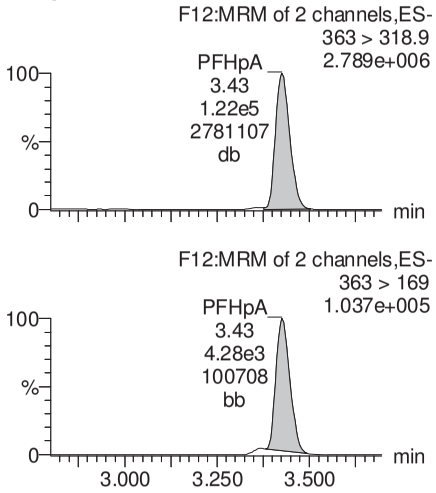
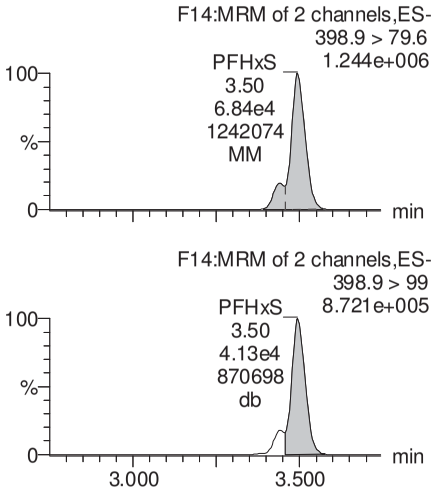


Total PFHxS



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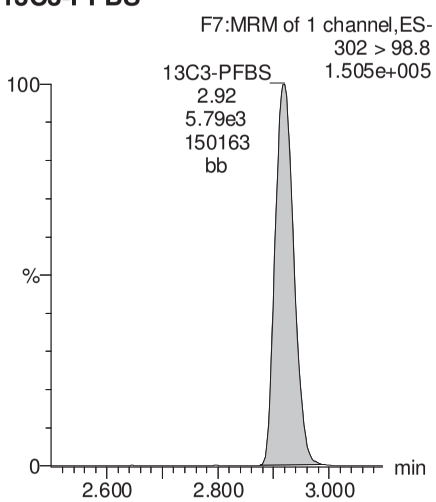
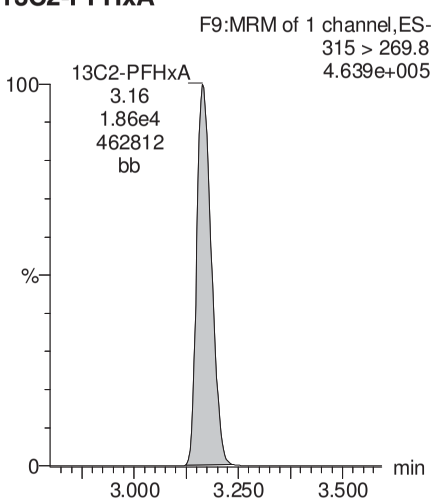


13C2-PFHxA



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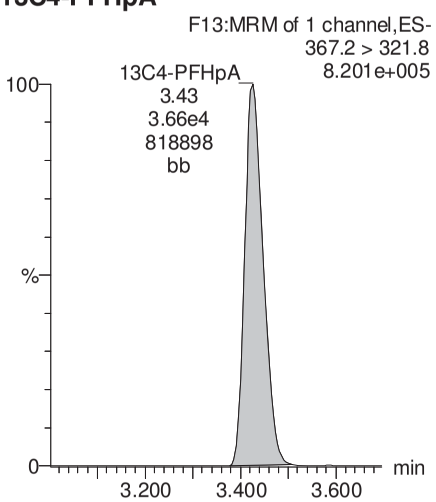
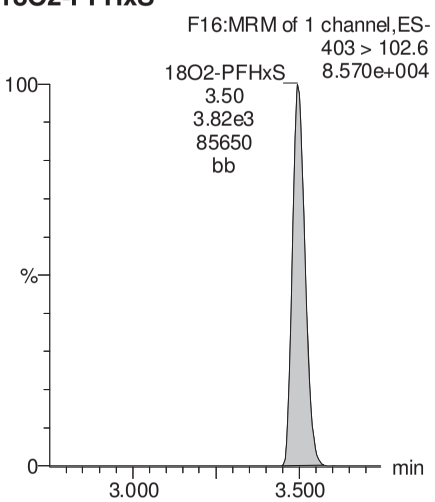


18O2-PFHxS



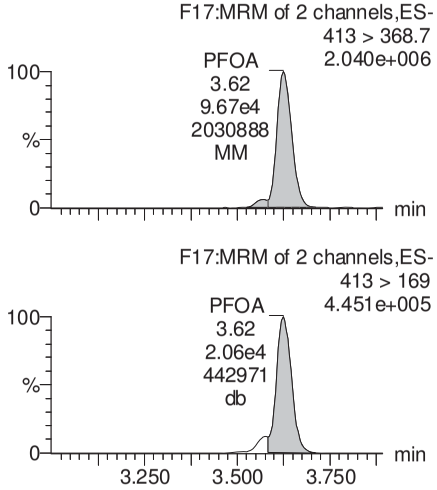
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

Total PFOA



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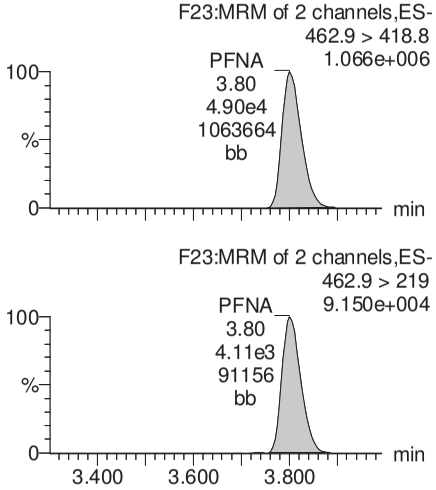
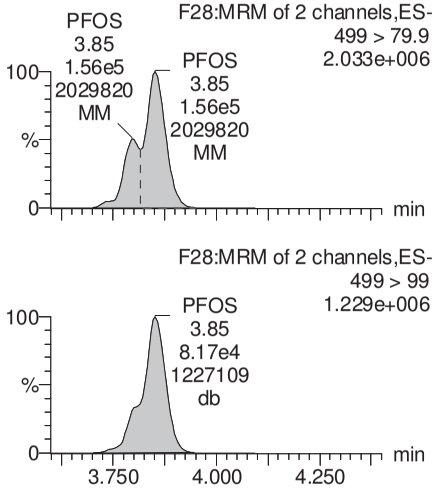


Total PFOS



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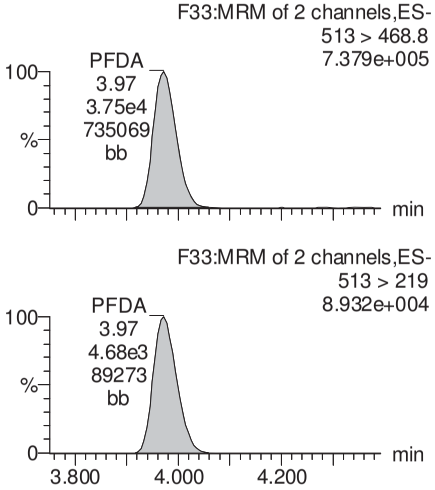
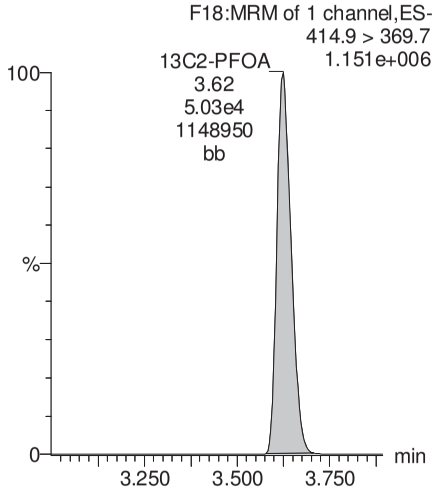


13C2-PFOA



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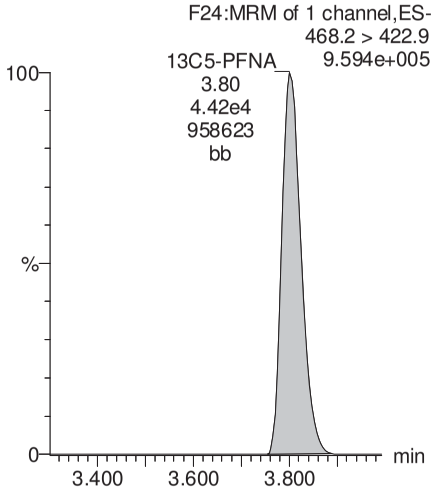
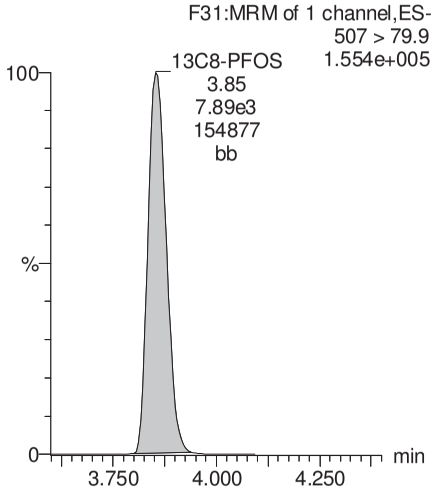
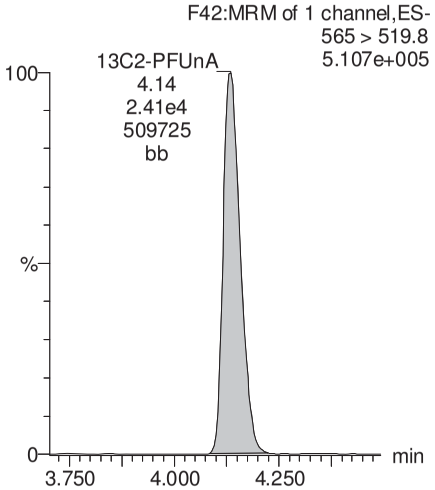


13C8-PFOS



13C2-PFUnA



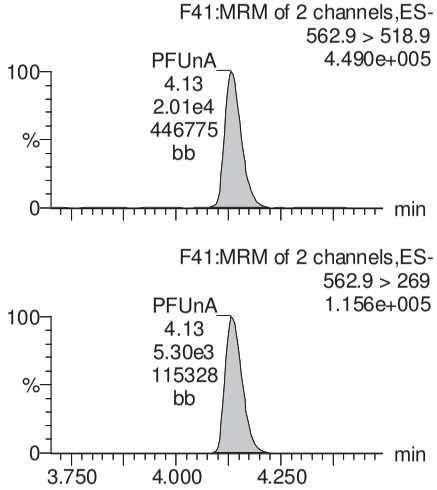
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

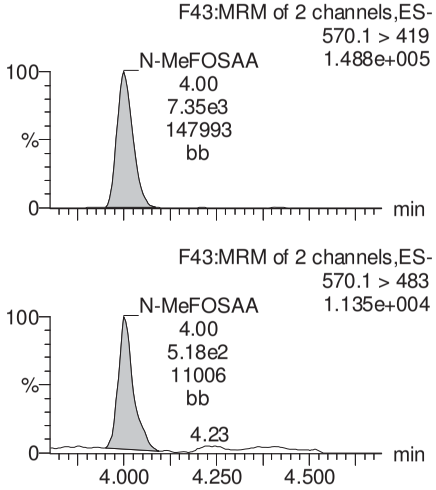
Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

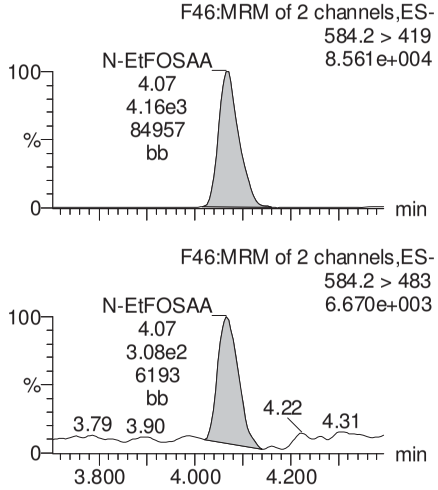
PFUnA



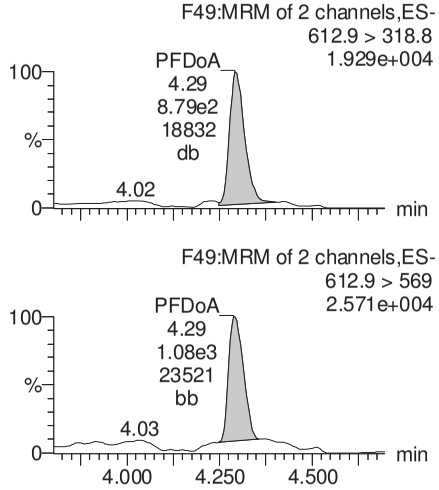
N-MeFOSAA



N-EtFOSAA



PFDoA



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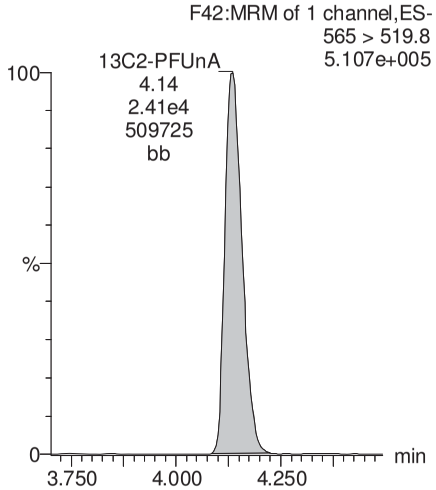
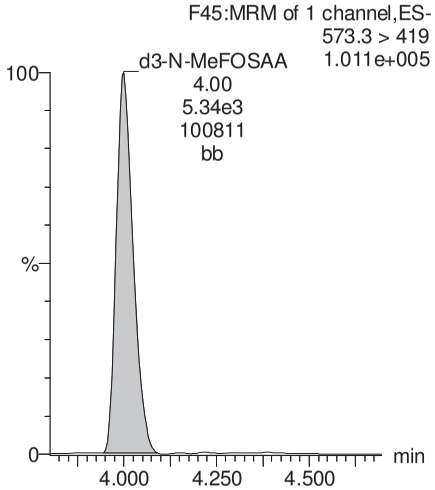
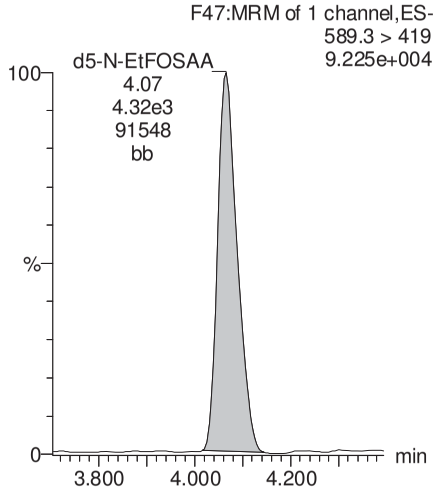


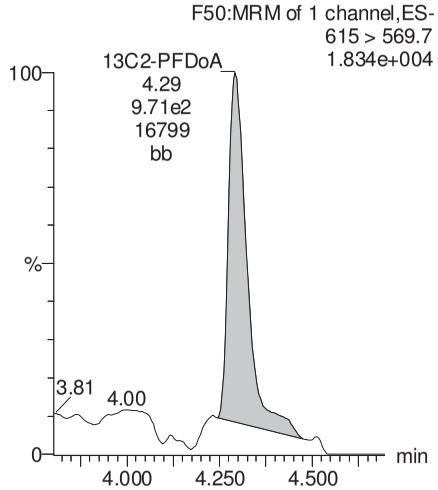
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



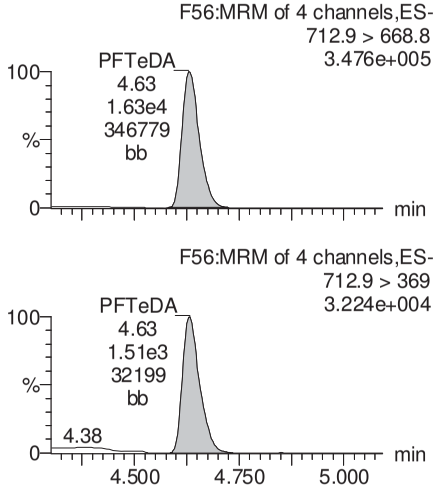
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

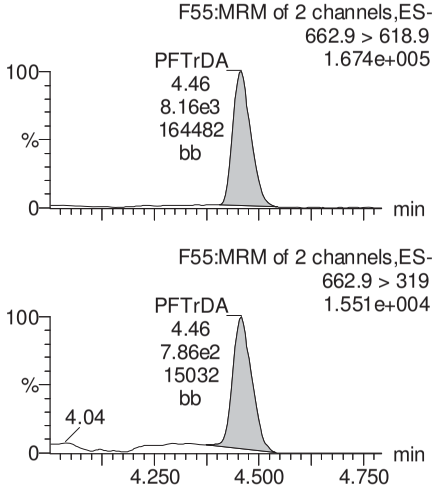
Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

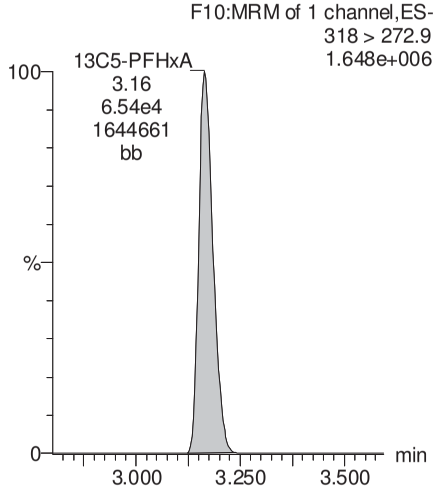
PFTeDA



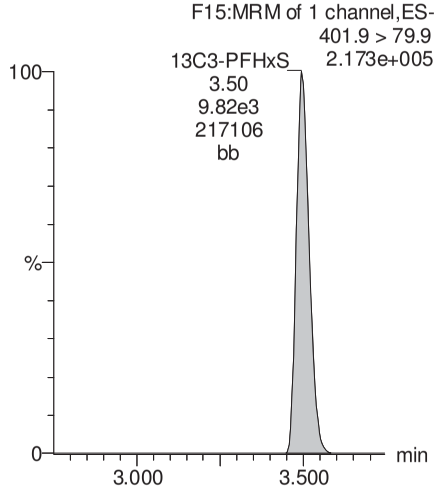
PFTrDA



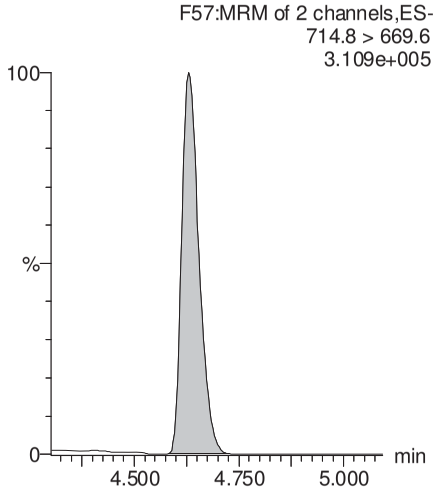
13C5-PFHxA



13C3-PFHxS



13C2-PFTeDA



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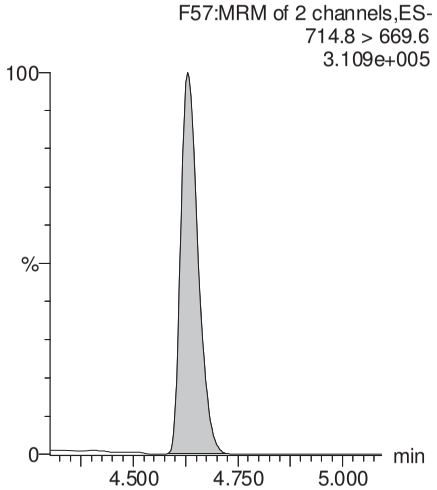
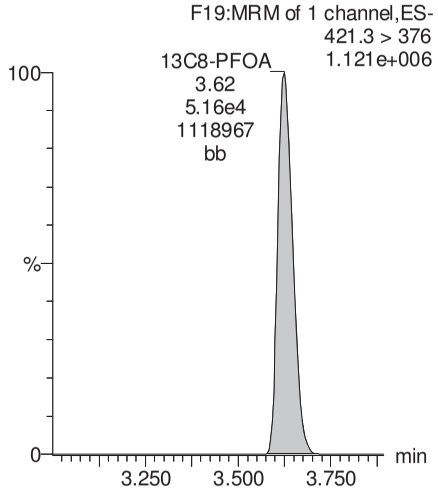
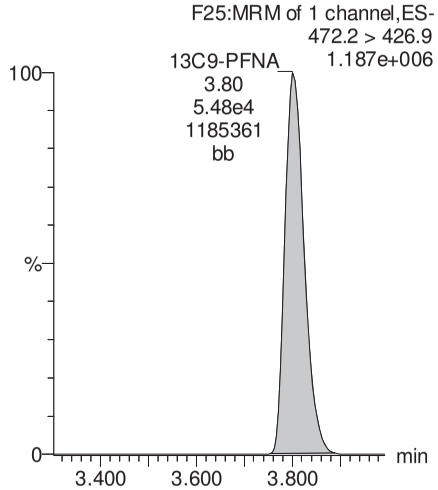


13C8-PFOA



13C9-PFNA



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Vista Analytical Laboratory

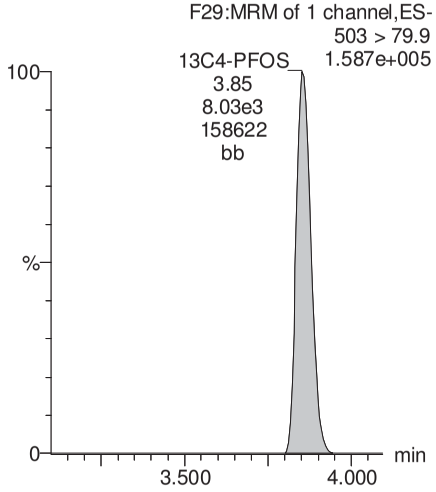
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-15.qld

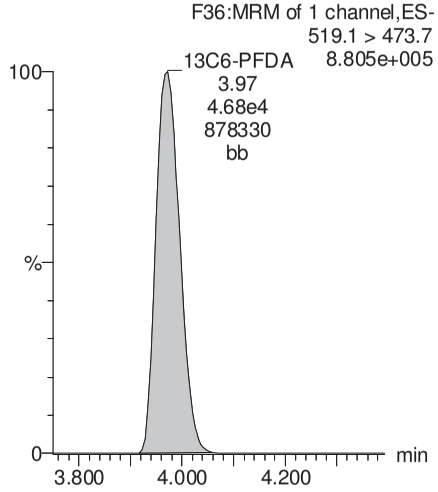
Last Altered: Wednesday, July 19, 2017 15:30:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:30:50 Pacific Daylight Time

Name: 170706M1_15, Date: 06-Jul-2017, Time: 11:05:25, ID: B7F0136-MS1 Matrix Spike 0.12272, Description: Matrix Spike

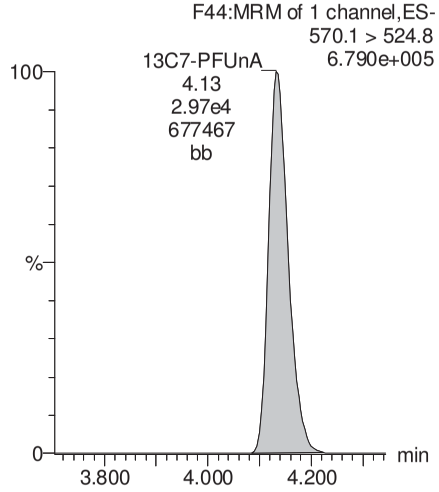
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-9.qld

Last Altered: Friday, July 21, 2017 15:37:26 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:05:57 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 13:42:33
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_9, Date: 07-Jul-2017, Time: 15:01:14, ID: B7F0136-MS1@5X Matrix Spike 0.12272, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.*	%Rec	*ug/L
1	4	PFHxS	398.9 > 79.6	9.75e3	6.32e2	0.1227		3.55	3.50	0.193	0.870		
2	7	PFOS	499 > 79.9	3.14e3	5.39e1	0.1227		3.86	3.86	0.730	5.20		
3	18	18O2-PFHxS	403 > 102.6	6.32e2	1.67e3	0.1227	0.434	3.49	3.50	0.00473	0.0887	87.1	
4	21	13C8-PFOS	507 > 79.9	5.39e1	1.87e2	0.1227	1.061	3.85	3.86	0.00360	0.0276	27.1	H
5	29	13C3-PFHxS	401.9 > 79.9	1.67e3	1.67e3	0.1227	1.000	3.49	3.50	0.0125	0.102	100.0	
6	32	13C4-PFOS	503 > 79.9	1.87e2	1.87e2	0.1227	1.000	3.85	3.86	0.0125	0.102	100.0	
7	36	Total PFHxS	398.9 > 79.6	9.75e3	6.32e2	0.1227		3.48		0.193	0.870		
8	38	Total PFOS	499 > 79.9	3.14e3	5.39e1	0.1227		3.84		0.730	5.20		

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-9.qld

Last Altered: Friday, July 21, 2017 15:37:26 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:05:57 Pacific Daylight Time

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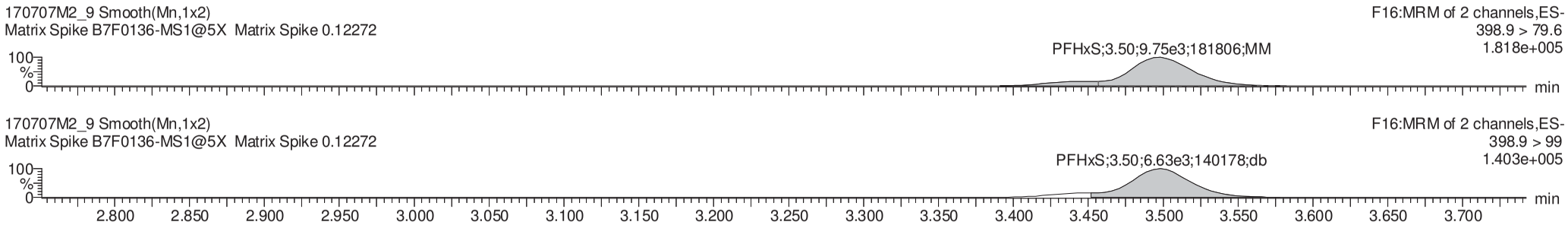
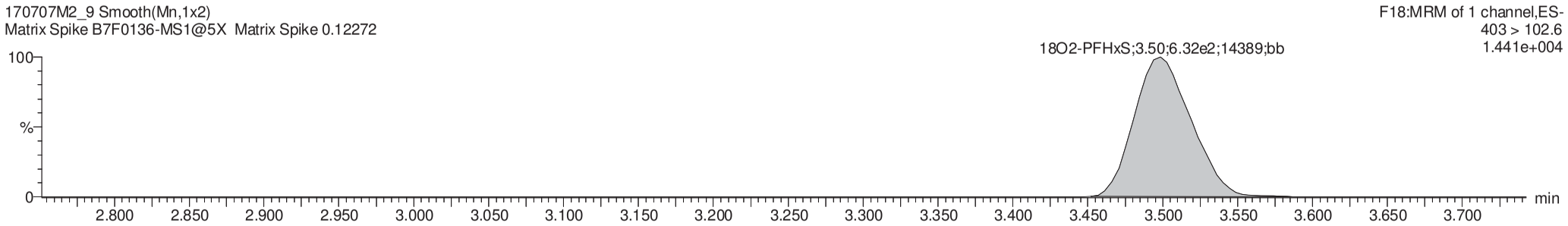
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_9, Date: 07-Jul-2017, Time: 15:01:14, ID: B7F0136-MS1@5X Matrix Spike 0.12272, Description: Matrix Spike

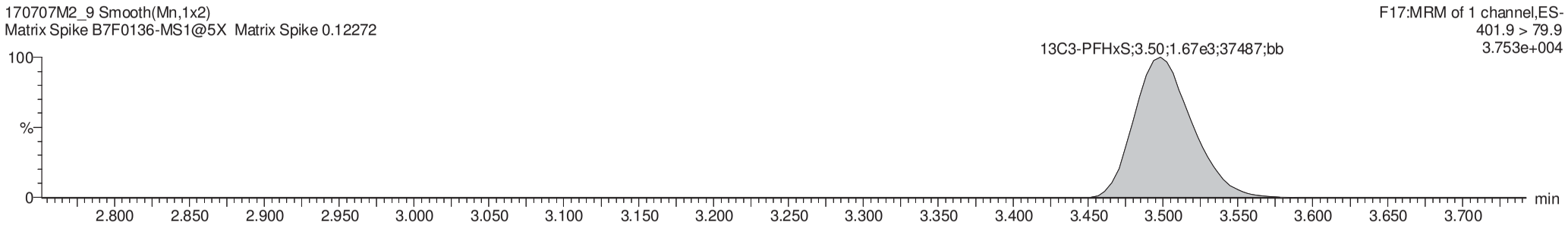
Total PFHxS



18O2-PFHxS



13C3-PFHxS



GM 7/21/17

Vista Analytical Laboratory

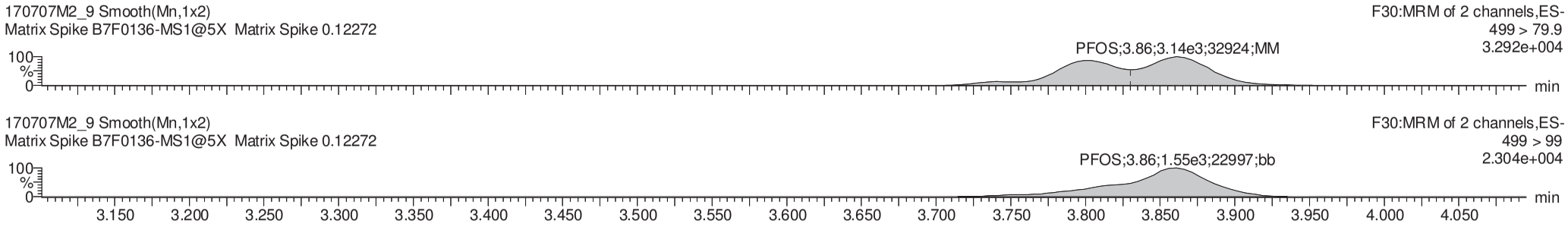
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-9.qld

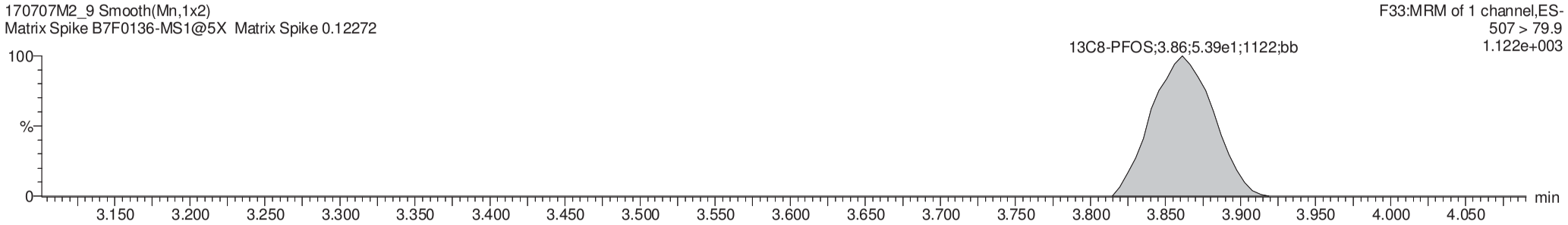
Last Altered: Friday, July 21, 2017 15:37:26 Pacific Daylight Time
Printed: Friday, July 21, 2017 16:05:57 Pacific Daylight Time

Name: 170707M2_9, Date: 07-Jul-2017, Time: 15:01:14, ID: B7F0136-MS1@5X Matrix Spike 0.12272, Description: Matrix Spike

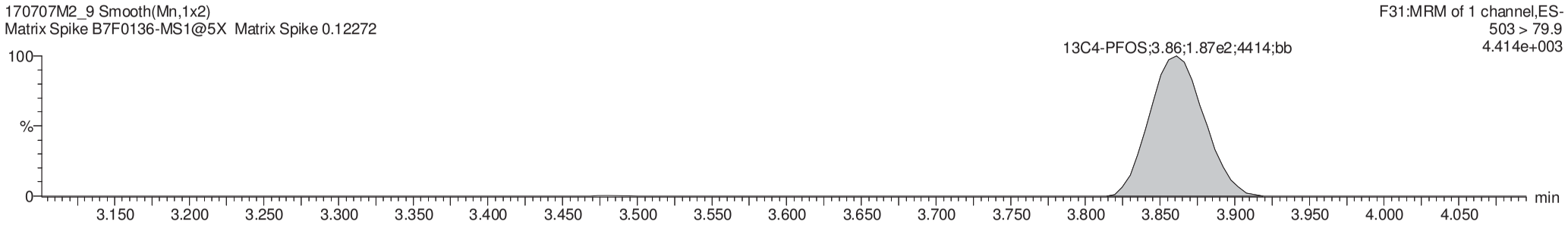
Total PFOS



13C8-PFOS



13C4-PFOS



GM 7/21/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	2.42e4	6.14e3	0.1212		2.92	2.92	49.3	217		
2	2	PFHxA	313.2 > 268.9	4.06e5	1.78e4	0.1212		3.16	3.16	114	686		*See dilution.
3	3	PFHpA	363 > 318.9	1.20e5	3.87e4	0.1212		3.43	3.42	38.9	270		
4	4	PFHxS	398.9 > 79.6	6.62e4	4.18e3	0.1212		3.55	3.49	198	1050 E*		
5	5	PFOA	413 > 368.7	1.05e5	5.49e4	0.1212		3.63	3.62	23.9	209		
6	6	PFNA	462.9 > 418.8	4.91e4	4.14e4	0.1212		3.82	3.80	14.8	110		
7	7	PFOS	499 > 79.9	1.55e5	8.54e3	0.1212		3.86	3.85	228	2050 E*		
8	8	PFDA	513 > 468.8	3.81e4	3.42e4	0.1212		4.00	3.97	13.9	99.3		
9	9	PFUnA	562.9 > 518.9	1.68e4	1.82e4	0.1212		4.13	4.13	11.5	104		
10	10	N-MeFOSAA	570.1 > 419	5.92e3	4.41e3	0.1212		4.00	4.00	16.8	86.7		
11	11	N-EtFOSAA	584.2 > 419	3.87e3	3.32e3	0.1212		4.08	4.07	14.6	104		
12	12	PFDoA	612.9 > 318.8	4.73e2	8.15e2	0.1212		4.31	4.29	7.25	71.6		
13	13	PFTrDA	662.9 > 618.9	5.38e3	8.15e2	0.1212		4.50	4.45	82.4	60.8		
14	14	PFTeDA	712.9 > 668.8	1.37e4	1.14e4	0.1212		4.65	4.63	15.0	105		
15	15	13C3-PFBS	302 > 98.8	6.14e3	6.75e4	0.1212	0.032	2.92	2.91	0.455	117	113.3	
16	16	13C2-PFHxA	315 > 269.8	1.78e4	6.75e4	0.1212	0.296	3.15	3.16	1.31	36.6	88.7	
17	17	13C4-PFHpA	367.2 > 321.8	3.87e4	6.75e4	0.1212	0.302	3.43	3.43	2.86	78.3	76.0	
18	18	18O2-PFHxS	403 > 102.6	4.18e3	1.01e4	0.1212	0.434	3.49	3.49	5.17	98.2	95.3	
19	19	13C2-PFOA	414.9 > 369.7	5.49e4	5.77e4	0.1212	1.140	3.62	3.62	11.9	86.0	83.4	
20	20	13C5-PFNA	468.2 > 422.9	4.14e4	5.21e4	0.1212	0.958	3.80	3.80	9.92	85.5	82.9	
21	21	13C8-PFOS	507 > 79.9	8.54e3	8.76e3	0.1212	1.061	3.85	3.85	12.2	94.7	91.8	
22	22	13C2-PFDA	515.1 > 469.9	3.42e4	4.29e4	0.1212	0.942	3.97	3.97	9.97	87.3	84.7	
23	23	13C2-PFUnA	565 > 519.8	1.82e4	2.03e4	0.1212	1.084	4.13	4.13	11.2	85.2	82.7	
24	24	d3-N-MeFOSAA	573.3 > 419	4.41e3	2.03e4	0.1212	0.240	4.00	4.00	2.71	92.9	90.2	
25	25	d5-N-EtFOSAA	589.3 > 419	3.32e3	2.03e4	0.1212	0.247	4.07	4.07	2.04	68.1	66.0	
26	26	13C2-PFDoA	615 > 569.7	8.15e2	2.03e4	0.1212	0.127	4.32	4.28	0.501	32.5	31.6	H
27	27	13C2-PFTeDA	714.8 > 669.6	1.14e4	2.03e4	0.1212	0.883	4.64	4.63	6.98	65.3	63.3	
28	28	13C5-PFHxA	318 > 272.9	6.75e4	6.75e4	0.1212	1.000	3.15	3.16	5.00	41.2	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.01e4	1.01e4	0.1212	1.000	3.49	3.49	12.5	103	100.0	
30	30	13C8-PFOA	421.3 > 376	5.77e4	5.77e4	0.1212	1.000	3.62	3.62	12.5	103	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.21e4	5.21e4	0.1212	1.000	3.82	3.80	12.5	103	100.0	
32	32	13C4-PFOS	503 > 79.9	8.76e3	8.76e3	0.1212	1.000	3.85	3.85	12.5	103	100.0	

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.29e4	4.29e4	0.1212	1.000	3.97	3.97	12.5	103	100.0
34	34	13C7-PFUnA	570.1 > 524.8	2.03e4	2.03e4	0.1212	1.000	4.13	4.13	12.5	103	100.0
35	35	Total PFBS	299 > 79.7	2.42e4	6.14e3	0.1212		2.91		49.3	217	
36	36	Total PFHxS	398.9 > 79.6	6.62e4	4.18e3	0.1212		3.48		198	1050	
37	37	Total PFOA	413 > 368.7	1.05e5	5.49e4	0.1212		3.61		23.9	209	
38	38	Total PFOS	499 > 79.9	1.55e5	8.54e3	0.1212		3.84		228	2050	
39	39	Total N-Me-FOSAA	570.1 > 419	5.92e3		0.1212		3.98		16.8	86.7	
40	40	Total N-EtFOSAA	584.2 > 419	3.87e3		0.1212		4.06		14.6	104	

GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	24200.488	6137.638	49.287	bb	217.1

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.49	66242.484	4176.507	198.259	MM	1049.3

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	104745.625	54871.273	23.862	MM	209.1

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	155426.656	8538.972	227.525	MM	2048.2

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	10	N-MeFOSAA	570.1 > 419	4.00	5915.667	4405.442	16.785	bb	86.7

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	11	N-EtFOSAA	584.2 > 419	4.07	3866.947	3321.443	14.553	bb	104.5

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
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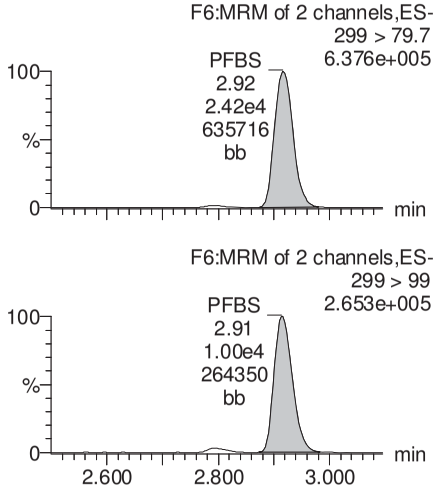
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

Total PFBS



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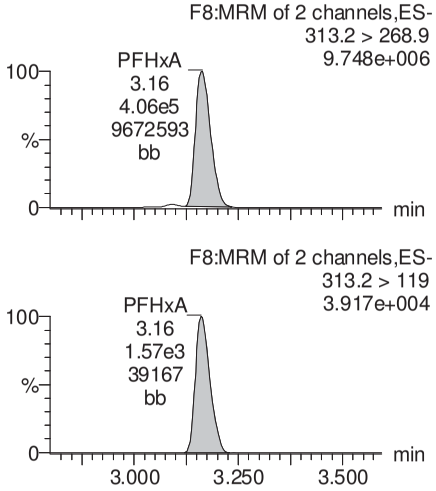

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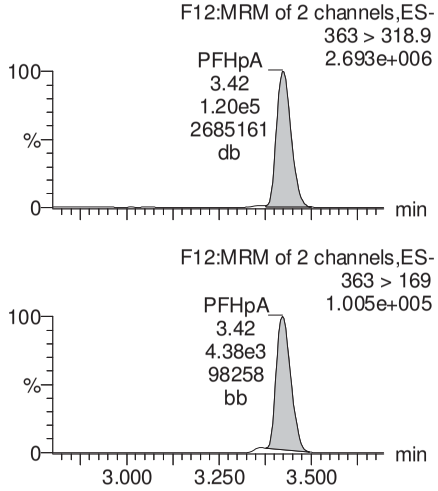
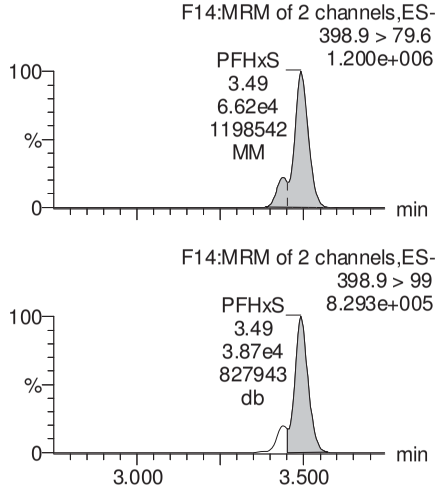


Total PFHxS



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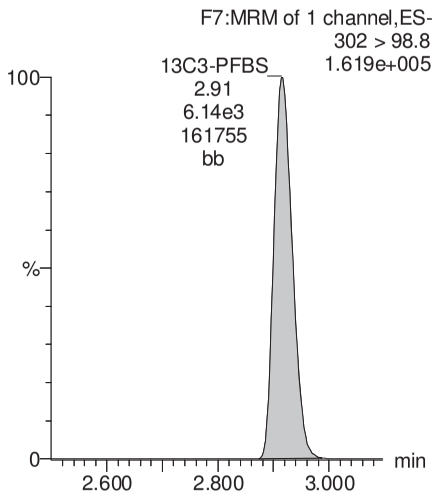

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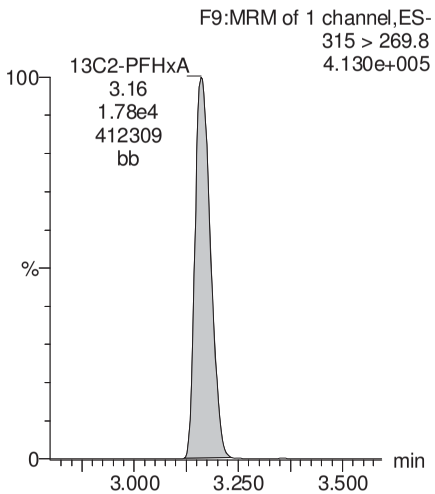

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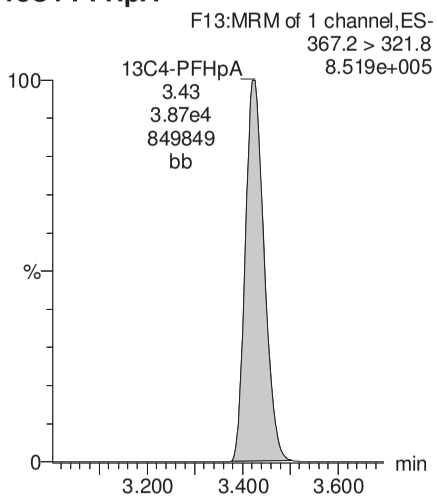
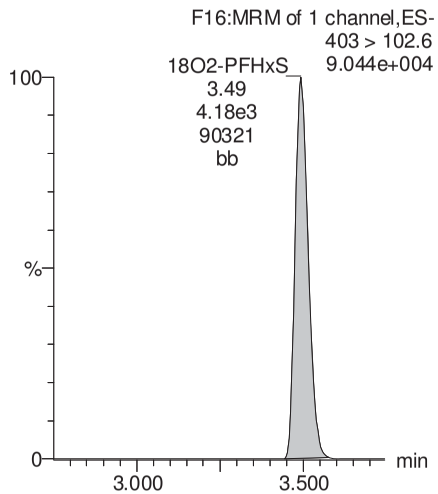


18O2-PFHxS



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Vista Analytical Laboratory

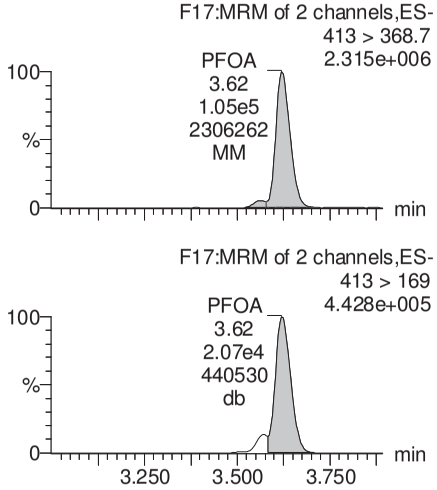
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

Total PFOA



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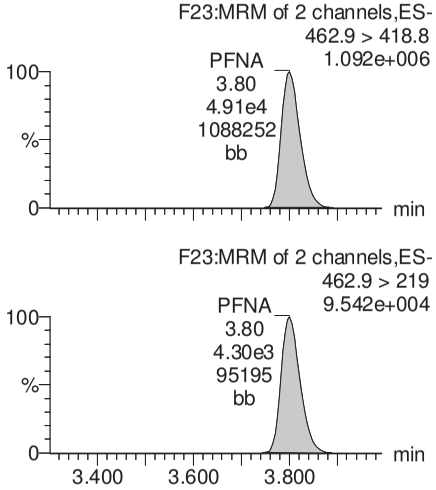
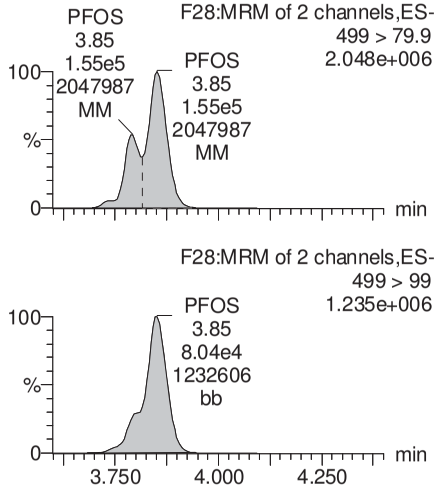


Total PFOS



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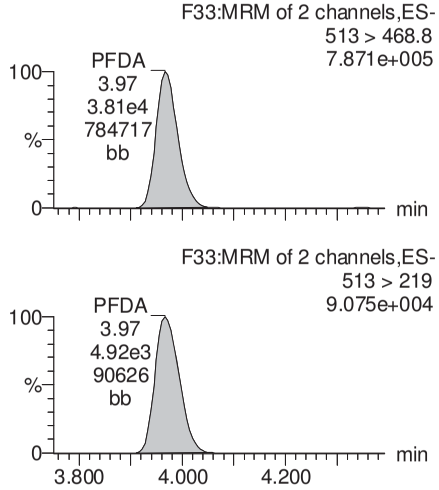

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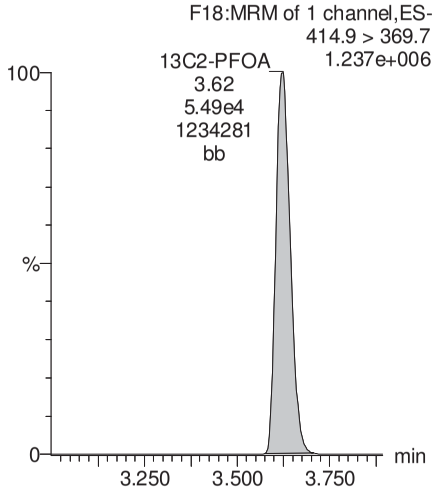

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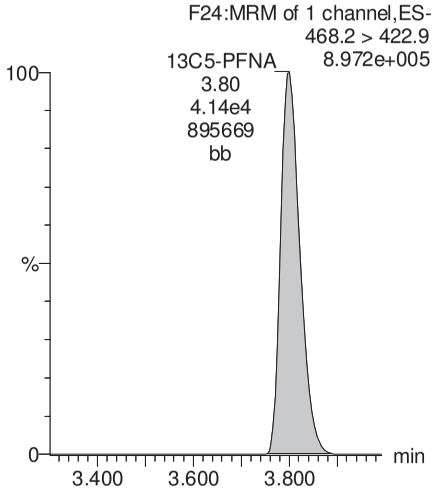

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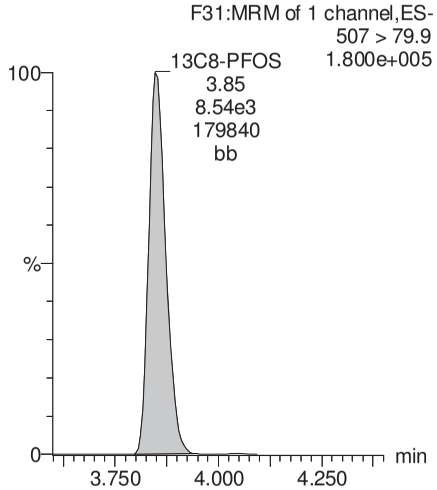

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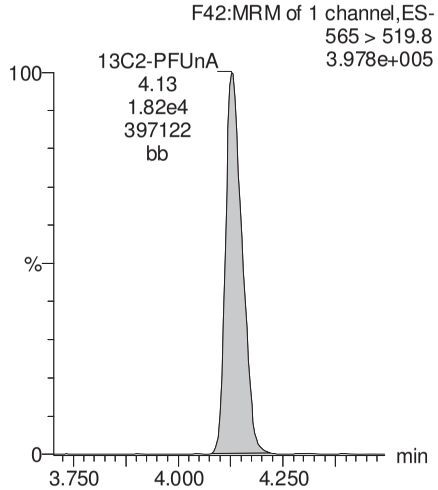


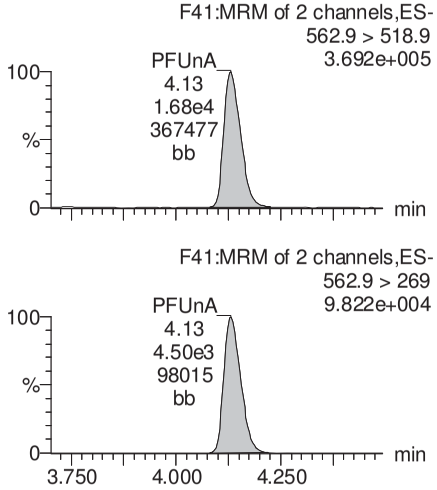
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

PFUnA



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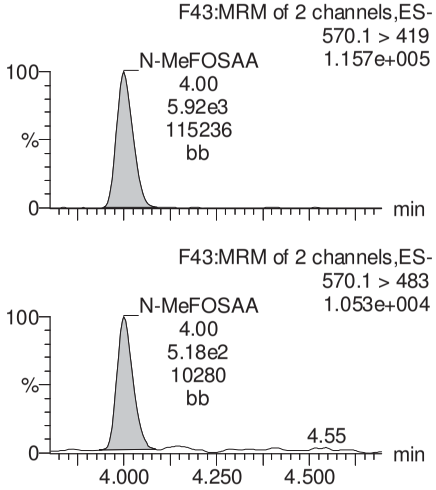

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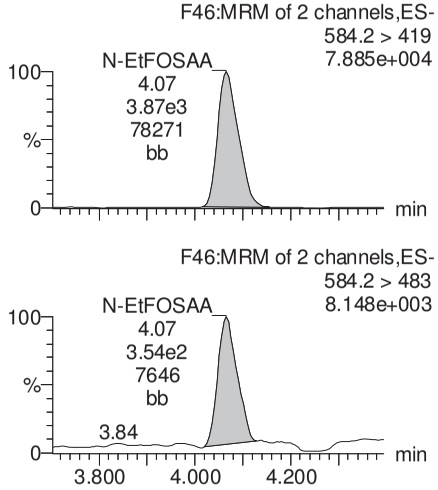

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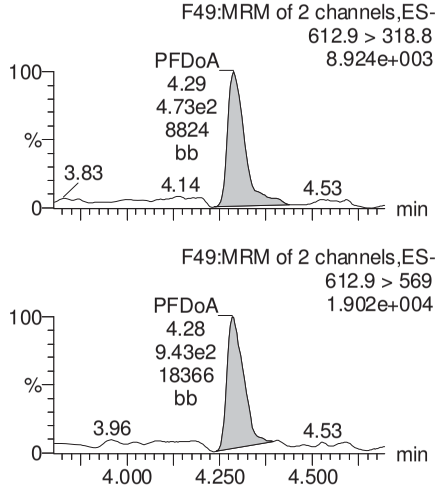

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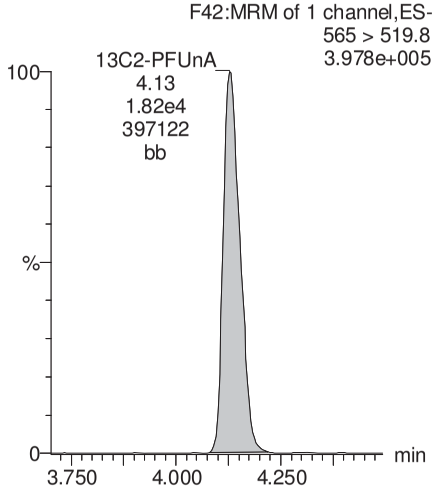

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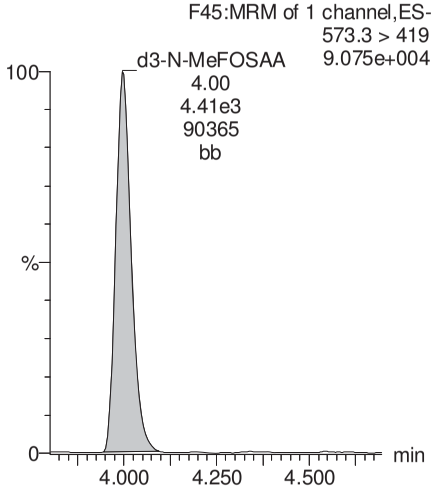
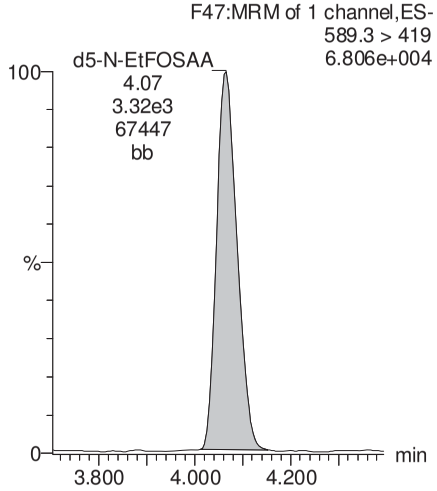
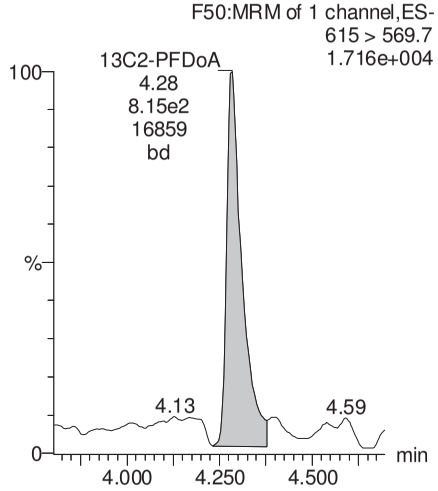


d5-N-EtFOSAA



13C2-PFDoA



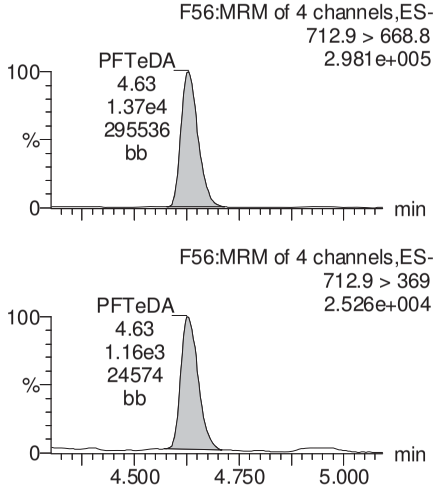
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

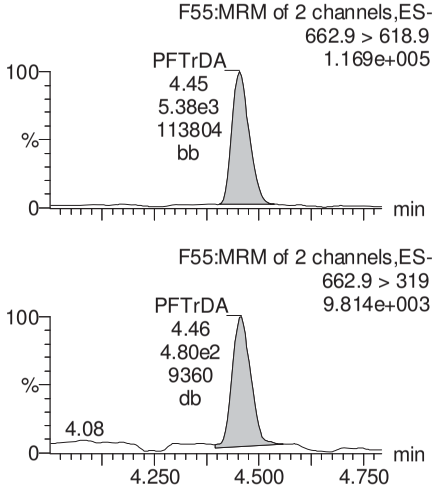
Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

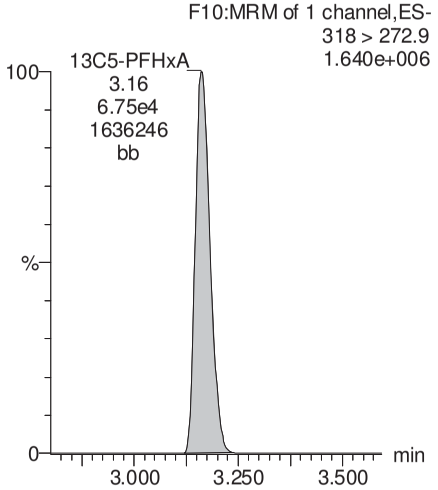
PFTeDA



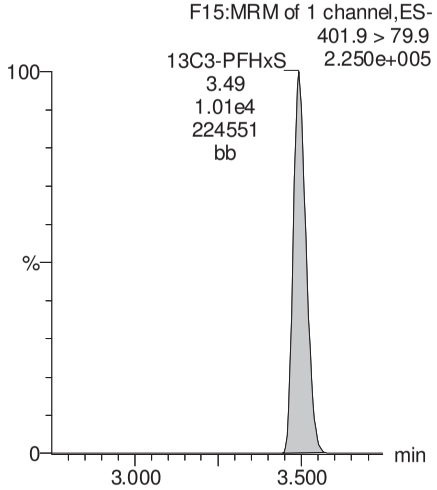
PFTrDA



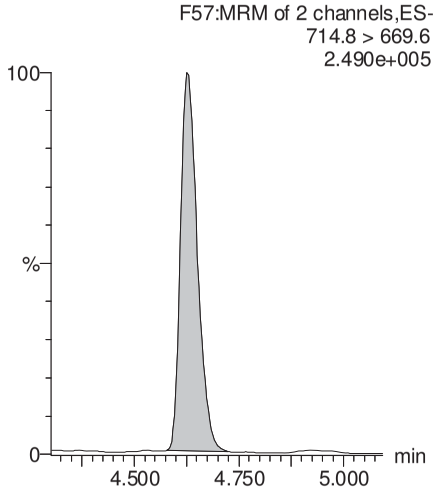
13C5-PFHxA



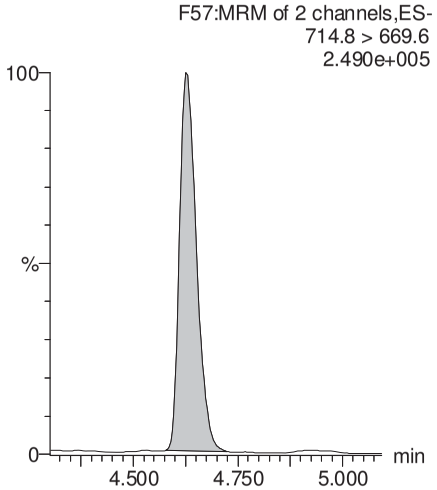
13C3-PFHxS



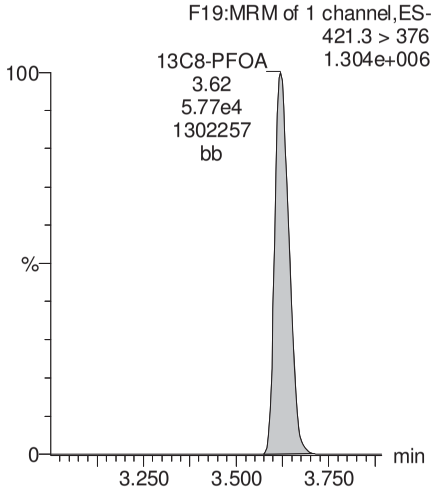
13C2-PFTeDA



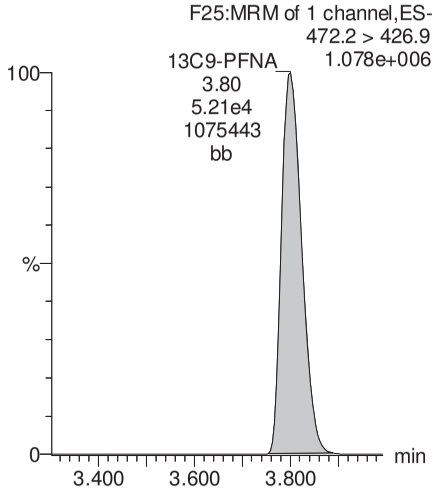
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



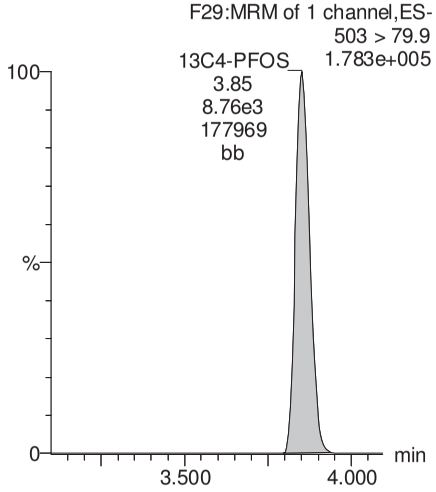
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-16.qld

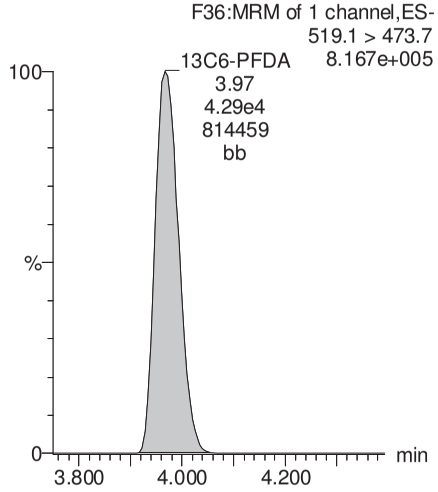
Last Altered: Wednesday, July 19, 2017 15:37:33 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:37:57 Pacific Daylight Time

Name: 170706M1_16, Date: 06-Jul-2017, Time: 11:16:03, ID: B7F0136-MSD1 Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

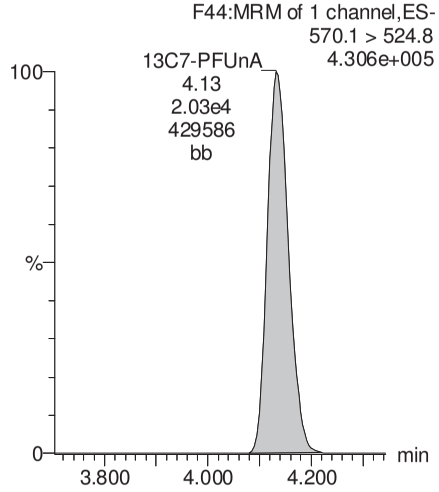
13C4-PFOS



13C6-PFDA



13C7-PFUnA



GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-10.qld

Last Altered: Thursday, July 20, 2017 13:02:34 Pacific Daylight Time
Printed: Thursday, July 20, 2017 13:02:56 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_10, Date: 07-Jul-2017, Time: 15:11:54, ID: B7F0136-MSD1@5X Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	4	PFHxS	398.9 > 79.6	9.85e3	6.81e2	0.1212		3.55	3.50	181	938	
2	7	PFOS	499 > 79.9	2.26e3	1.34e2	0.1212		3.86	3.86	211	1880	
3	18	18O2-PFHxS	403 > 102.6	6.81e2	1.52e3	0.1212	0.434	3.49	3.49	5.61	106	103.3
4	21	13C8-PFOS	507 > 79.9	1.34e2	1.31e2	0.1212	1.061	3.85	3.87	12.8	99.4	96.4
5	29	13C3-PFHxS	401.9 > 79.9	1.52e3	1.52e3	0.1212	1.000	3.49	3.50	12.5	103	100.0
6	32	13C4-PFOS	503 > 79.9	1.31e2	1.31e2	0.1212	1.000	3.85	3.86	12.5	103	100.0
7	36	Total PFHxS	398.9 > 79.6	9.85e3	6.81e2	0.1212		3.48		181	938	
8	38	Total PFOS	499 > 79.9	2.26e3	1.34e2	0.1212		3.84		211	1880	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

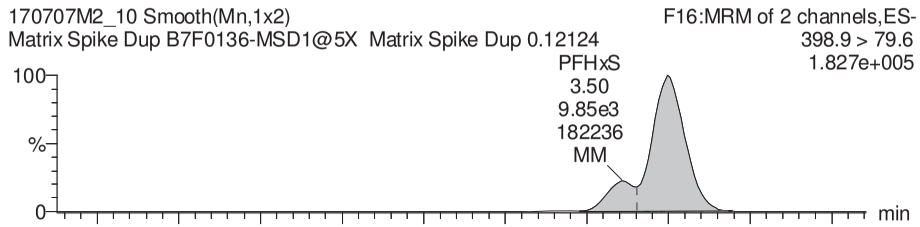
Dataset: U:\Q4.PRO\results\170707M2\170707M2-10.qld

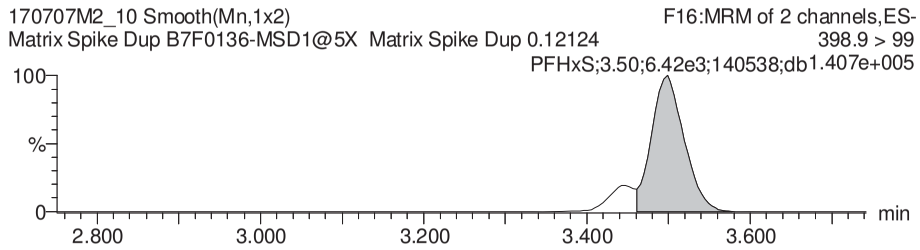
Last Altered: Thursday, July 20, 2017 13:02:34 Pacific Daylight Time
Printed: Thursday, July 20, 2017 13:02:56 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:11:00
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

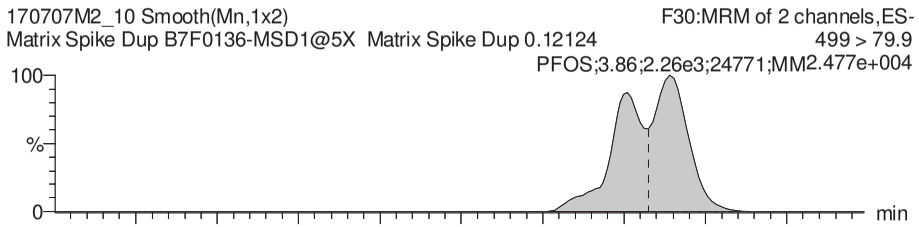
Name: 170707M2_10, Date: 07-Jul-2017, Time: 15:11:54, ID: B7F0136-MSD1@5X Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

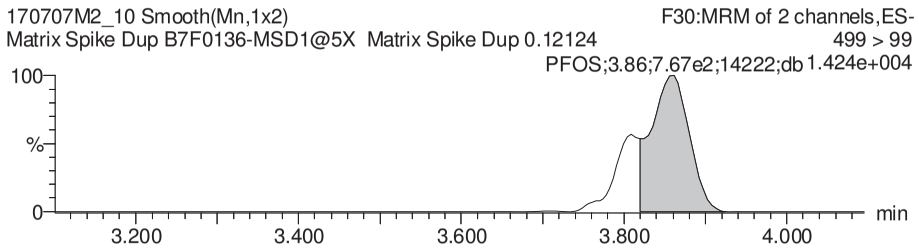
Total PFHxS



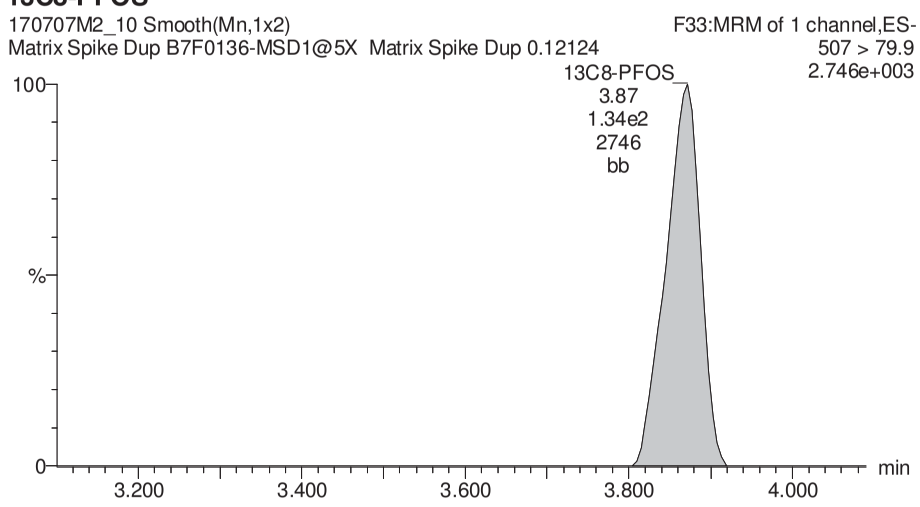


Total PFOS

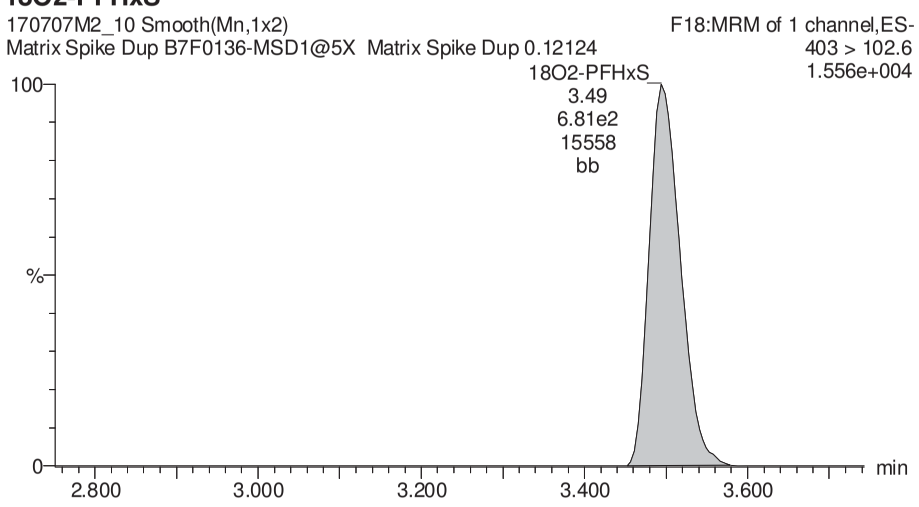




13C8-PFOS



18O2-PFHxS



GM 7/20/17

Vista Analytical Laboratory

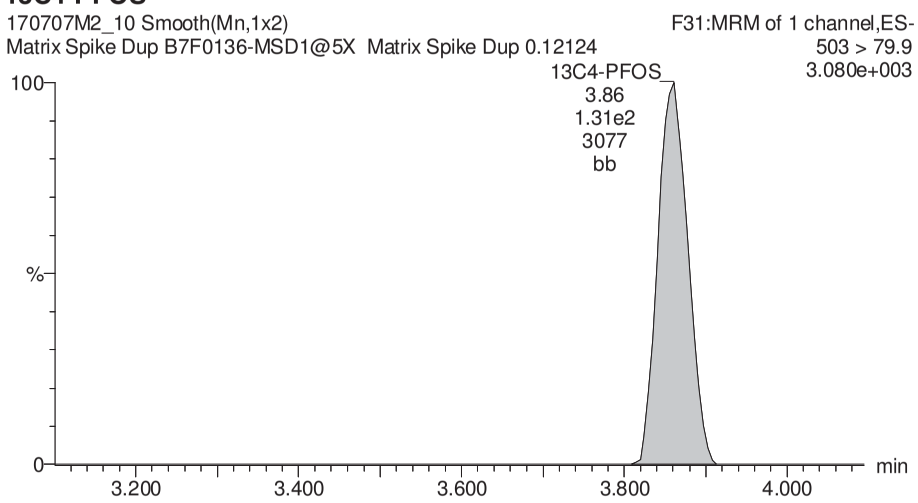
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-10.qld

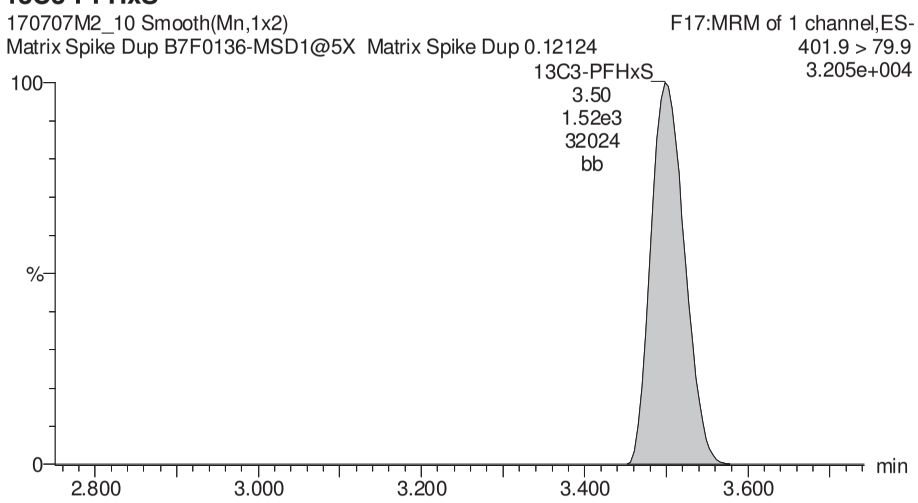
Last Altered: Thursday, July 20, 2017 13:02:34 Pacific Daylight Time
Printed: Thursday, July 20, 2017 13:02:56 Pacific Daylight Time

Name: 170707M2_10, Date: 07-Jul-2017, Time: 15:11:54, ID: B7F0136-MSD1@5X Matrix Spike Dup 0.12124, Description: Matrix Spike Dup

13C4-PFOS



13C3-PFHxS



GM 7/20/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	3.05e2	5.80e3	0.1372		2.92	2.92	0.657	1.87		
2	2	PFHxA	313.2 > 268.9	7.94e4	1.84e4	0.1372		3.16	3.16	21.6	113		
3	3	PFHpA	363 > 318.9	3.26e4	4.10e4	0.1372		3.43	3.43	9.94	59.7		
4	4	PFHxS	398.9 > 79.6	9.14e2	4.59e3	0.1372		3.55	3.50	2.49	9.73		
5	5	PFOA	413 > 368.7	2.13e4	5.37e4	0.1372		3.63	3.62	4.96	37.2		
6	6	PFNA	462.9 > 418.8	3.98e3	4.97e4	0.1372		3.82	3.80	1.00	6.12		
7	7	PFOS	499 > 79.9	1.82e3	9.10e3	0.1372		3.86	3.85	2.50	16.8		
8	8	PFDA	513 > 468.8	8.65e2	3.39e4	0.1372		4.00	3.98	0.319	0.585		
9	9	PFUnA	562.9 > 518.9		3.24e4	0.1372		4.13					
10	10	N-MeFOSAA	570.1 > 419		7.39e3	0.1372		4.00					
11	11	N-EtFOSAA	584.2 > 419		6.52e3	0.1372		4.08					
12	12	PFDoA	612.9 > 318.8		2.41e3	0.1372		4.31					
13	13	PFTrDA	662.9 > 618.9		2.41e3	0.1372		4.50					
14	14	PFTeDA	712.9 > 668.8		7.89e3	0.1372		4.65					
15	15	13C3-PFBS	302 > 98.8	5.80e3	6.54e4	0.1372	0.032	2.92	2.91	0.444	101	110.6	
16	16	13C2-PFHxA	315 > 269.8	1.84e4	6.54e4	0.1372	0.296	3.15	3.16	1.40	34.5	94.7	
17	17	13C4-PFHpA	367.2 > 321.8	4.10e4	6.54e4	0.1372	0.302	3.43	3.43	3.14	75.8	83.2	
18	18	18O2-PFHxS	403 > 102.6	4.59e3	1.06e4	0.1372	0.434	3.49	3.49	5.41	90.8	99.7	
19	19	13C2-PFOA	414.9 > 369.7	5.37e4	5.53e4	0.1372	1.140	3.62	3.62	12.1	77.5	85.1	
20	20	13C5-PFNA	468.2 > 422.9	4.97e4	5.62e4	0.1372	0.958	3.80	3.80	11.0	84.1	92.2	
21	21	13C8-PFOS	507 > 79.9	9.10e3	1.01e4	0.1372	1.061	3.85	3.85	11.3	77.3	84.8	
22	22	13C2-PFDA	515.1 > 469.9	3.39e4	4.74e4	0.1372	0.942	3.97	3.97	8.94	69.2	75.9	
23	23	13C2-PFUnA	565 > 519.8	3.24e4	3.85e4	0.1372	1.084	4.13	4.14	10.5	70.8	77.7	
24	24	d3-N-MeFOSAA	573.3 > 419	7.39e3	3.85e4	0.1372	0.240	4.00	4.00	2.40	72.8	79.9	
25	25	d5-N-EtFOSAA	589.3 > 419	6.52e3	3.85e4	0.1372	0.247	4.07	4.07	2.12	62.4	68.5	
26	26	13C2-PFDoA	615 > 569.7	2.41e3	3.85e4	0.1372	0.127	4.32	4.29	0.783	45.0	49.4	H
27	27	13C2-PFTeDA	714.8 > 669.6	7.89e3	3.85e4	0.1372	0.883	4.64	4.63	2.57	21.2	23.2	H
28	28	13C5-PFHxA	318 > 272.9	6.54e4	6.54e4	0.1372	1.000	3.15	3.16	5.00	36.4	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.06e4	1.06e4	0.1372	1.000	3.49	3.50	12.5	91.1	100.0	
30	30	13C8-PFOA	421.3 > 376	5.53e4	5.53e4	0.1372	1.000	3.62	3.62	12.5	91.1	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.62e4	5.62e4	0.1372	1.000	3.82	3.81	12.5	91.1	100.0	
32	32	13C4-PFOS	503 > 79.9	1.01e4	1.01e4	0.1372	1.000	3.85	3.85	12.5	91.1	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.74e4	4.74e4	0.1372	1.000	3.97	3.97	12.5	91.1	100.0
34	34	13C7-PFUnA	570.1 > 524.8	3.85e4	3.85e4	0.1372	1.000	4.13	4.13	12.5	91.1	100.0
35	35	Total PFBS	299 > 79.7	3.05e2	5.80e3	0.1372		2.91		0.657	1.87	
36	36	Total PFHxS	398.9 > 79.6	9.14e2	4.59e3	0.1372		3.48		2.49	9.73	
37	37	Total PFOA	413 > 368.7	2.13e4	5.37e4	0.1372		3.61		4.96	37.2	
38	38	Total PFOS	499 > 79.9	1.82e3	9.10e3	0.1372		3.84		2.50	16.8	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1372		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1372		4.06		0.000		

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	304.964	5803.320	0.657	bb	1.9

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	914.408	4594.294	2.488	MM	9.7

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	21323.836	53694.637	4.964	bb	37.2

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	1818.069	9104.921	2.496	MM	16.8

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

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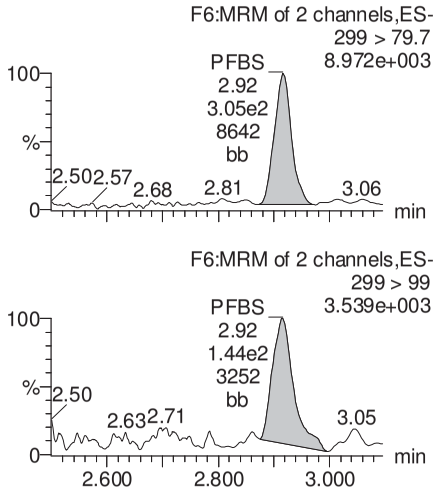
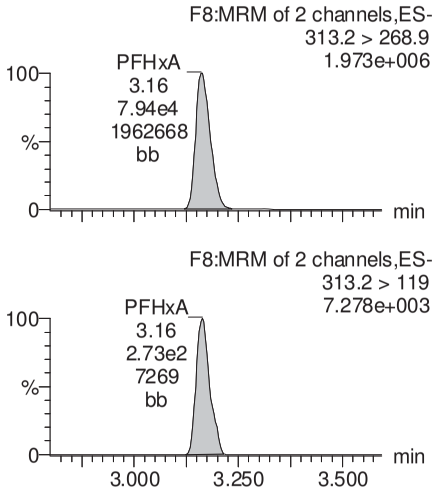
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

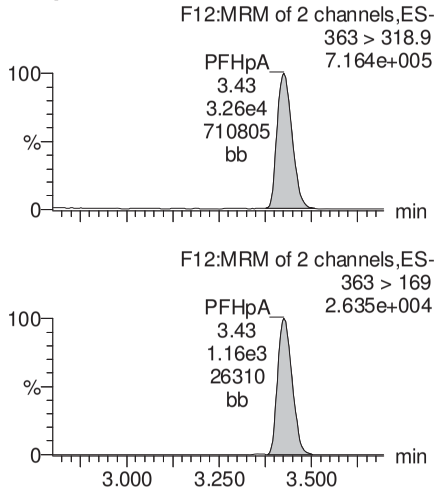
Total PFBS



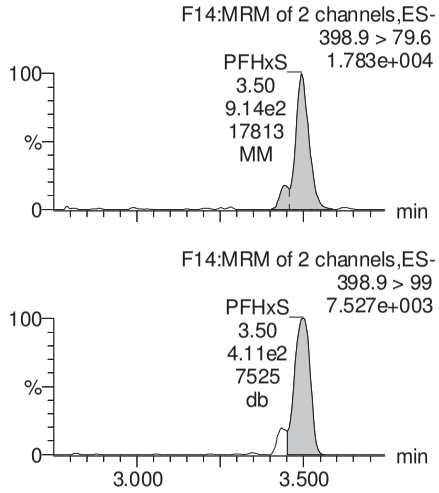
PFHxA



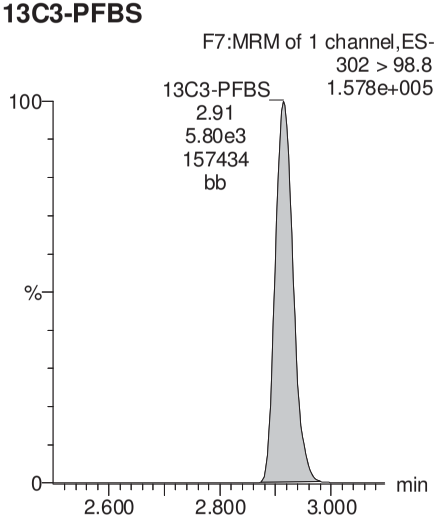
PFHpA



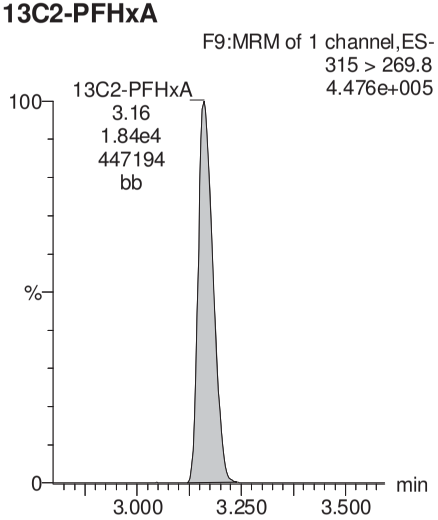
Total PFHxS



13C3-PFBS



13C2-PFHxA



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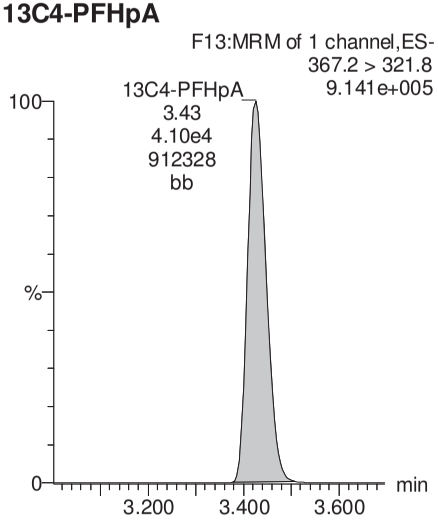
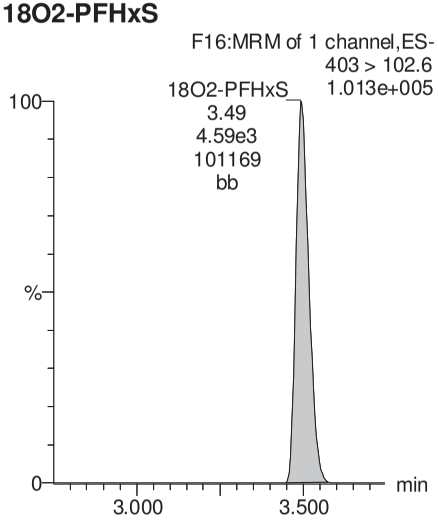


18O2-PFHxS



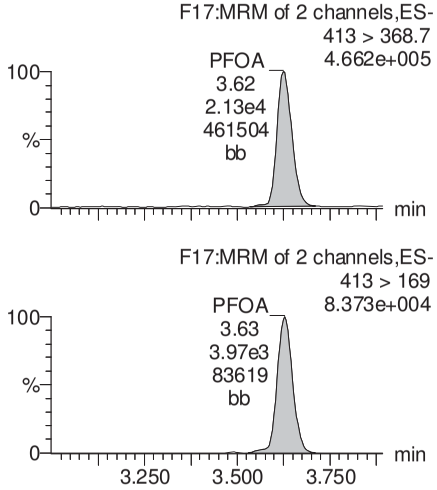
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

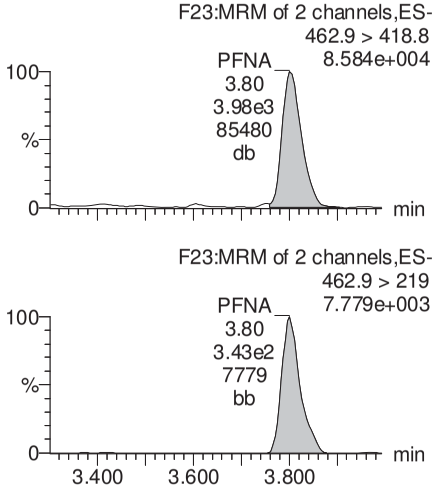
Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

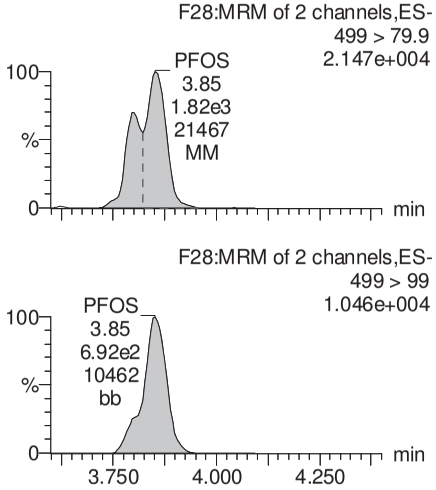
Total PFOA



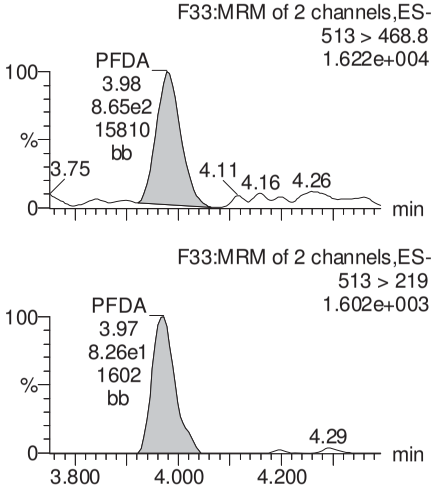
PFNA



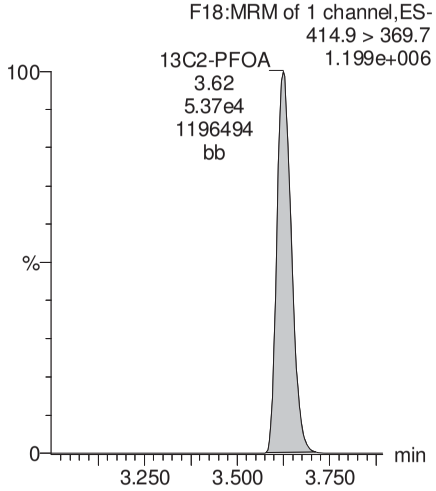
Total PFOS



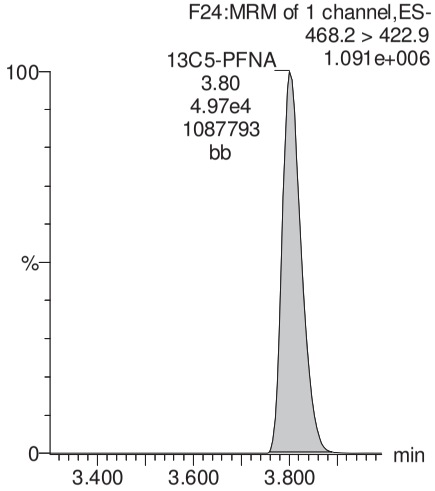
PFDA



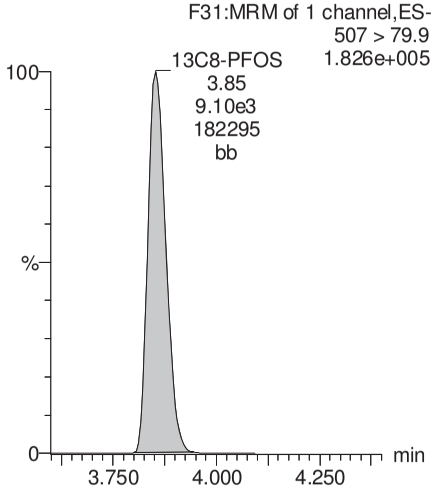
13C2-PFOA



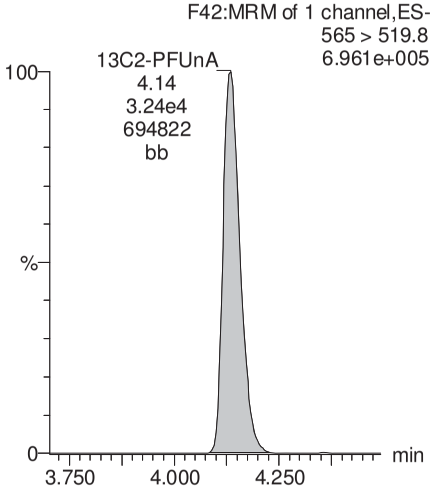
13C5-PFNA



13C8-PFOS



13C2-PFUnA



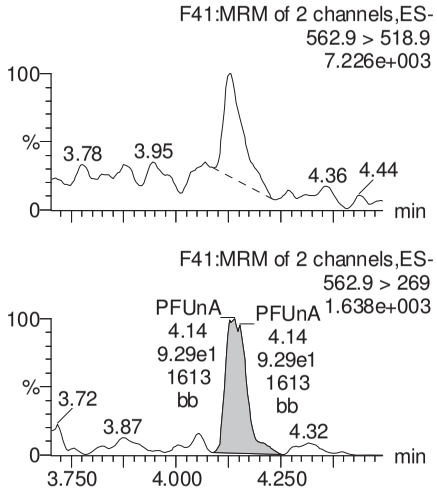
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

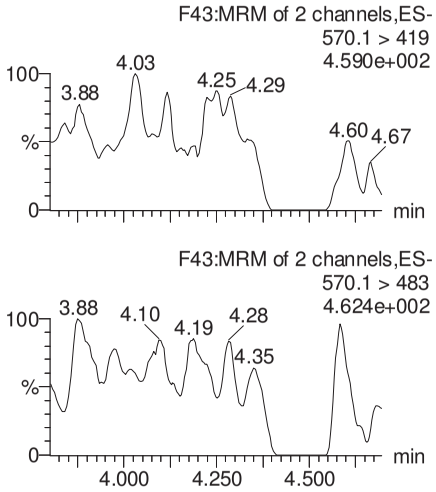
Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

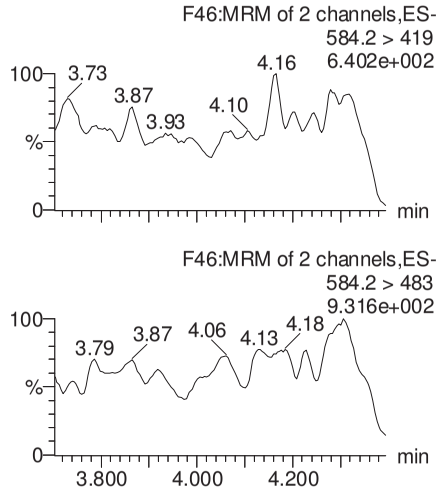
PFUnA



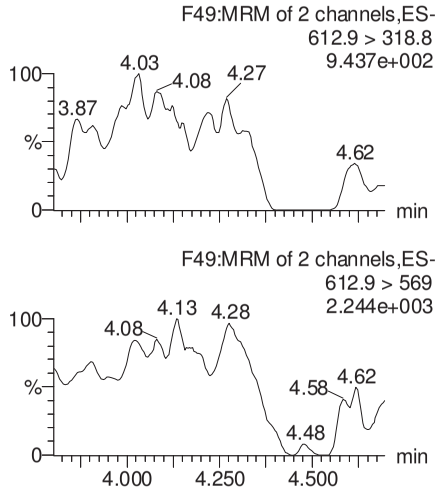
N-MeFOSAA



N-EtFOSAA



PFDoA



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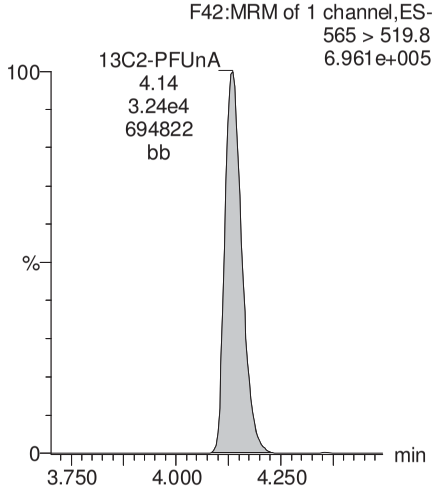
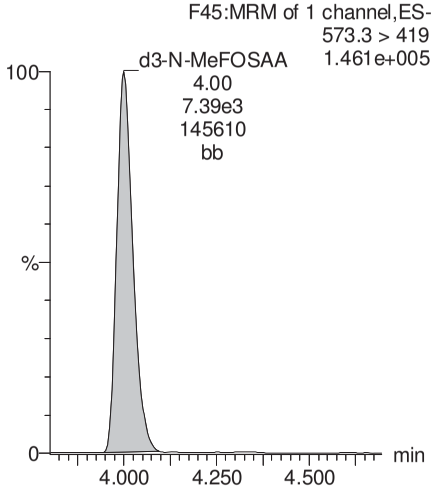
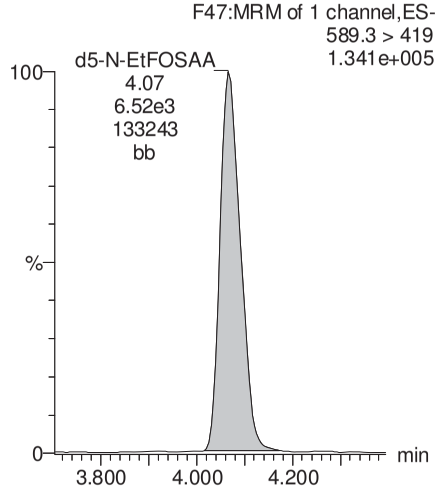


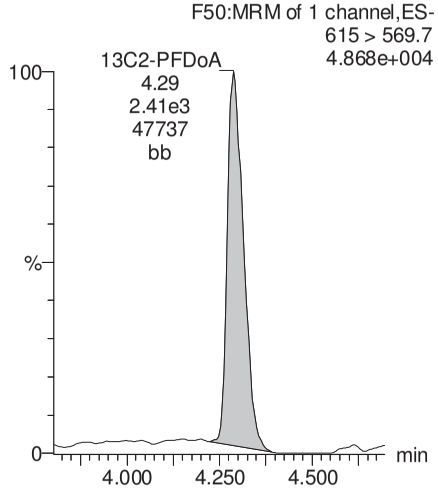
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



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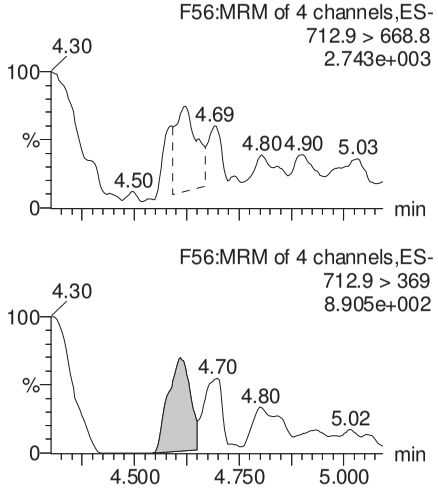
Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

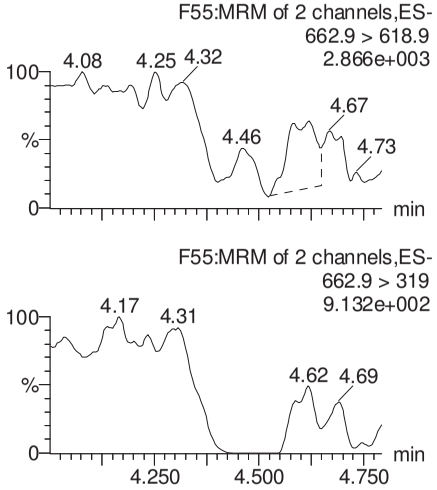
Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

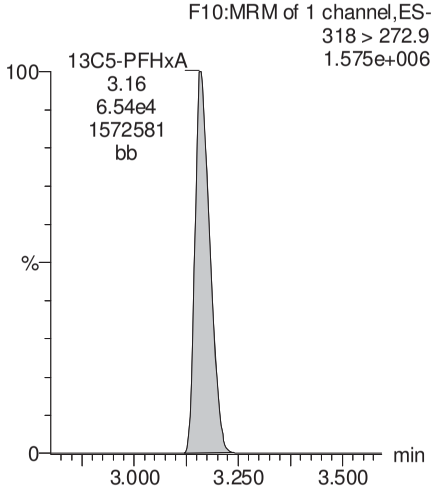
PFTeDA



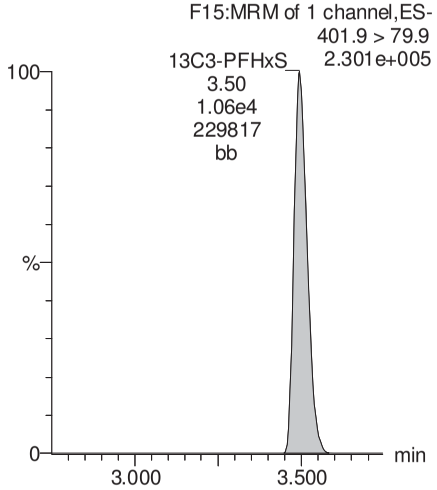
PFTrDA



13C5-PFHxA



13C3-PFHxS



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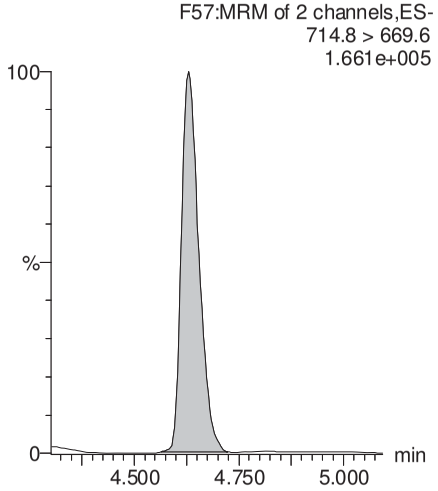

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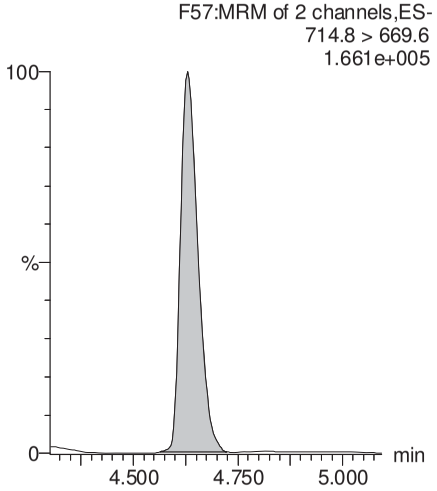
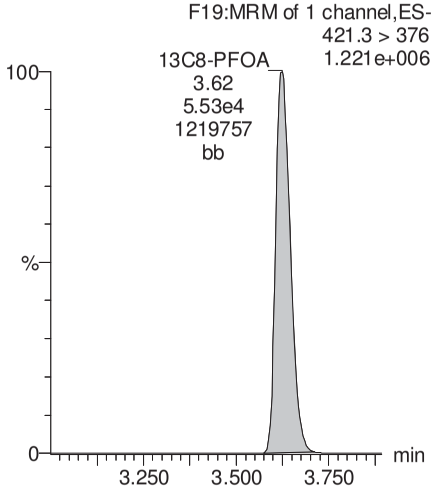
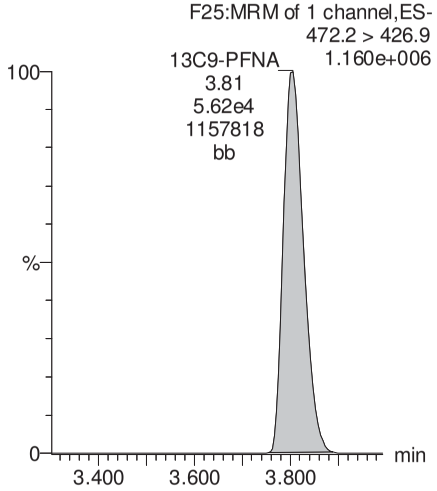


13C8-PFOA



13C9-PFNA



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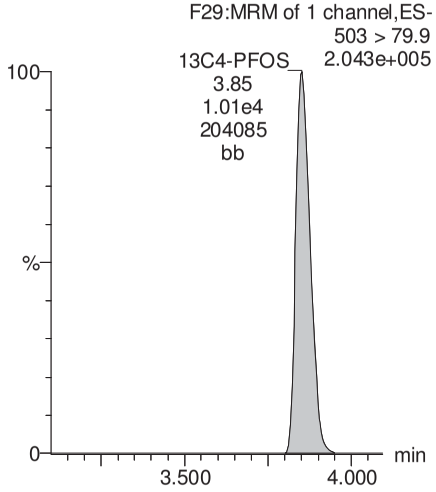
Dataset: U:\Q4.PRO\results\170706M1\170706M1-17.qld

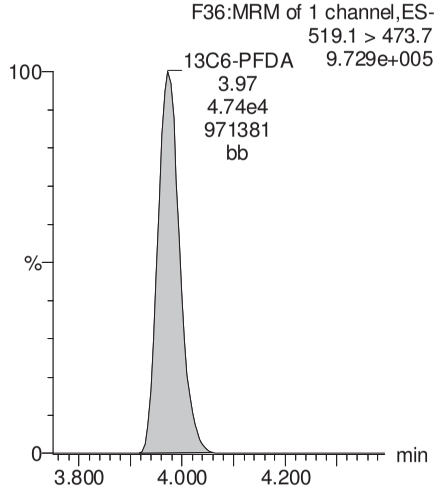
Last Altered: Wednesday, July 19, 2017 15:42:12 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:42:45 Pacific Daylight Time

Name: 170706M1_17, Date: 06-Jul-2017, Time: 11:26:42, ID: 1700789-04 MH-118.5T-20170627 0.13718, Description: MH-118.5T-20170627

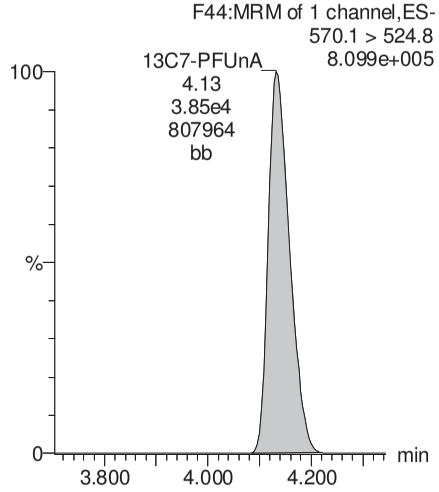
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	1.60e4	5.65e3	0.1216		2.92	2.91	35.4	155		
2	2	PFHxA	313.2 > 268.9	4.34e5	1.84e4	0.1216		3.16	3.16	118	705		*See dilution.
3	3	PFHpA	363 > 318.9	1.05e5	4.26e4	0.1216		3.43	3.42	30.8	213		
4	4	PFHxS	398.9 > 79.6	6.00e4	4.00e3	0.1216		3.55	3.49	188	977	E*	
5	5	PFOA	413 > 368.7	6.61e4	5.61e4	0.1216		3.63	3.62	14.7	128		
6	6	PFNA	462.9 > 418.8	6.21e3	4.26e4	0.1216		3.82	3.80	1.82	13.0		
7	7	PFOS	499 > 79.9	2.33e5	8.22e3	0.1216		3.86	3.85	355	3620	E*	
8	8	PFDA	513 > 468.8	2.35e3	3.93e4	0.1216		4.00	3.97	0.748	3.78		
9	9	PFUnA	562.9 > 518.9	3.55e2	3.33e4	0.1216		4.13	4.14	0.133	0.318		
10	10	N-MeFOSAA	570.1 > 419		6.68e3	0.1216		4.00					
11	11	N-EtFOSAA	584.2 > 419		5.51e3	0.1216		4.08					
12	12	PFDoA	612.9 > 318.8		1.51e3	0.1216		4.31					
13	13	PFTrDA	662.9 > 618.9		1.51e3	0.1216		4.50					
14	14	PFTeDA	712.9 > 668.8		6.47e3	0.1216		4.65					
15	15	13C3-PFBS	302 > 98.8	5.65e3	7.04e4	0.1216	0.032	2.92	2.91	0.401	103	100.0	
16	16	13C2-PFHxA	315 > 269.8	1.84e4	7.04e4	0.1216	0.296	3.15	3.16	1.30	36.2	88.0	
17	17	13C4-PFHpA	367.2 > 321.8	4.26e4	7.04e4	0.1216	0.302	3.43	3.42	3.02	82.4	80.2	
18	18	18O2-PFHxS	403 > 102.6	4.00e3	9.68e3	0.1216	0.434	3.49	3.49	5.16	97.7	95.1	
19	19	13C2-PFOA	414.9 > 369.7	5.61e4	5.73e4	0.1216	1.140	3.62	3.62	12.2	88.2	85.8	
20	20	13C5-PFNA	468.2 > 422.9	4.26e4	5.58e4	0.1216	0.958	3.80	3.80	9.55	82.0	79.8	
21	21	13C8-PFOS	507 > 79.9	8.22e3	8.01e3	0.1216	1.061	3.85	3.85	12.8	99.3	96.7	
22	22	13C2-PFDA	515.1 > 469.9	3.93e4	5.37e4	0.1216	0.942	3.97	3.97	9.15	79.8	77.7	
23	23	13C2-PFUnA	565 > 519.8	3.33e4	4.06e4	0.1216	1.084	4.13	4.13	10.2	77.7	75.6	
24	24	d3-N-MeFOSAA	573.3 > 419	6.68e3	4.06e4	0.1216	0.240	4.00	4.00	2.05	70.3	68.4	
25	25	d5-N-EtFOSAA	589.3 > 419	5.51e3	4.06e4	0.1216	0.247	4.07	4.07	1.69	56.3	54.8	
26	26	13C2-PFDoA	615 > 569.7	1.51e3	4.06e4	0.1216	0.127	4.32	4.29	0.464	30.0	29.2	H
27	27	13C2-PFTeDA	714.8 > 669.6	6.47e3	4.06e4	0.1216	0.883	4.64	4.63	1.99	18.5	18.0	H
28	28	13C5-PFHxA	318 > 272.9	7.04e4	7.04e4	0.1216	1.000	3.15	3.16	5.00	41.1	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	9.68e3	9.68e3	0.1216	1.000	3.49	3.50	12.5	103	100.0	
30	30	13C8-PFOA	421.3 > 376	5.73e4	5.73e4	0.1216	1.000	3.62	3.62	12.5	103	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.58e4	5.58e4	0.1216	1.000	3.82	3.80	12.5	103	100.0	
32	32	13C4-PFOS	503 > 79.9	8.01e3	8.01e3	0.1216	1.000	3.85	3.85	12.5	103	100.0	

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	5.37e4	5.37e4	0.1216	1.000	3.97	3.97	12.5	103	100.0
34	34	13C7-PFUnA	570.1 > 524.8	4.06e4	4.06e4	0.1216	1.000	4.13	4.13	12.5	103	100.0
35	35	Total PFBS	299 > 79.7	1.60e4	5.65e3	0.1216		2.91		35.4	155	
36	36	Total PFHxS	398.9 > 79.6	6.00e4	4.00e3	0.1216		3.48		188	977	
37	37	Total PFOA	413 > 368.7	6.61e4	5.61e4	0.1216		3.61		14.7	128	
38	38	Total PFOS	499 > 79.9	2.33e5	8.22e3	0.1216		3.84		355	3620	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1216		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1216		4.06		0.000		

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.91	15978.053	5649.806	35.351	bb	155.0

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.49	59997.152	3996.590	187.651	MM	976.8

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	66093.398	56064.113	14.736	MM	128.0

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	233172.531	8218.258	354.656	MM	3618.5

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

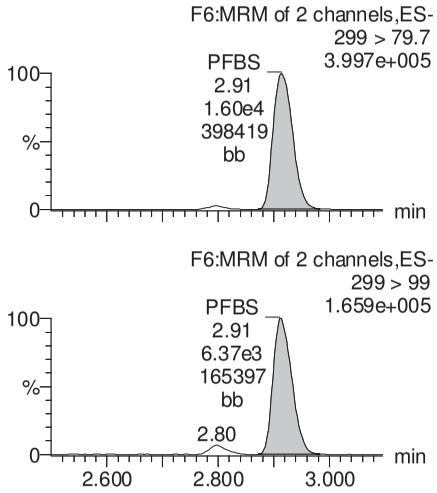
Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

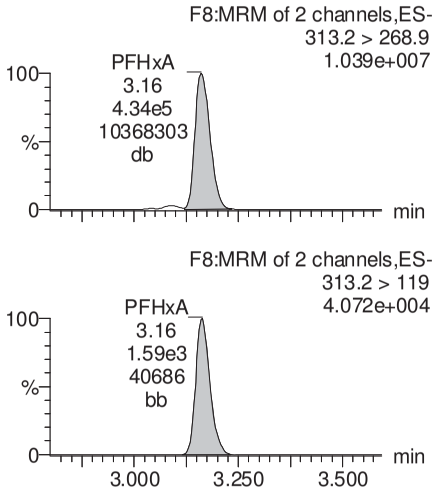
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

Total PFBS



PFHxA



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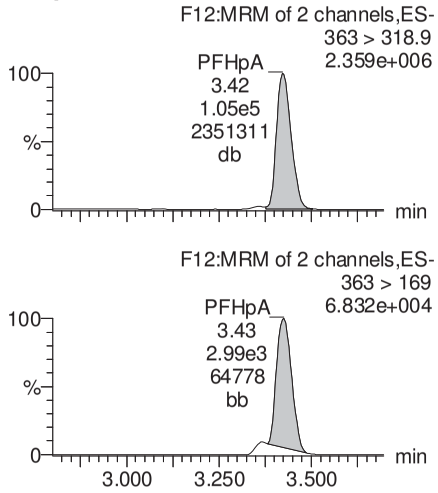
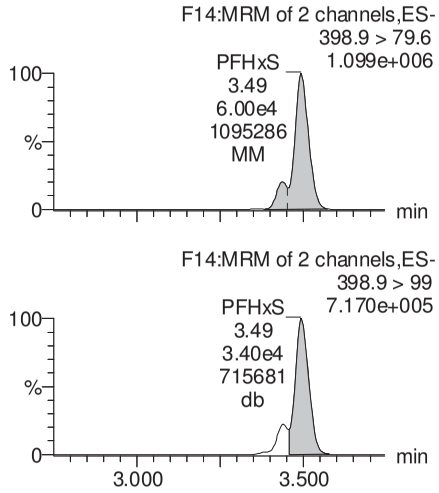
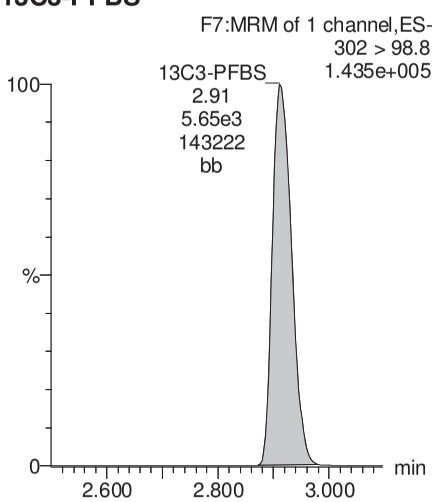


Total PFHxS



13C3-PFBS



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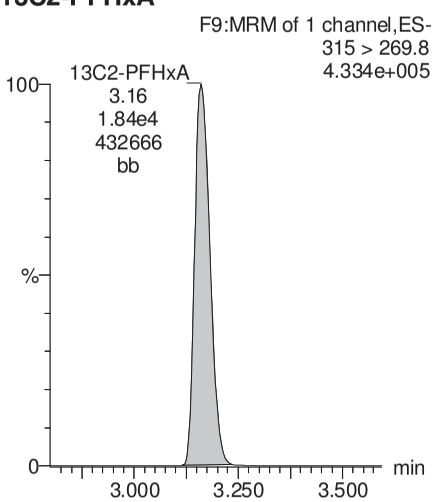

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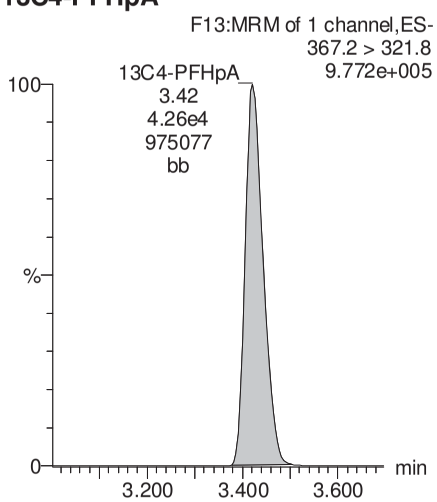

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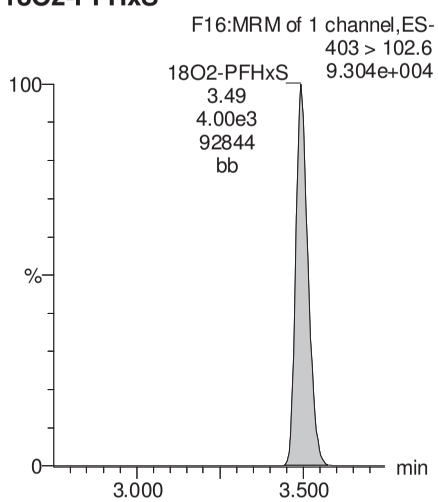


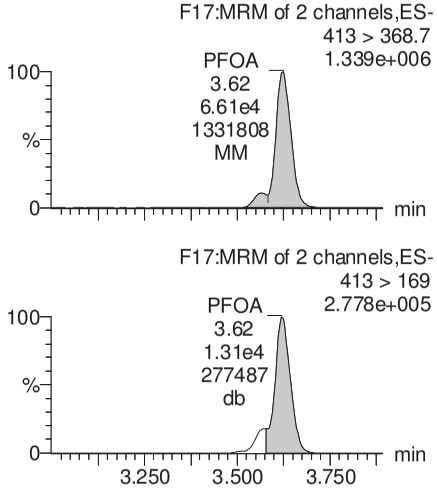
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

Total PFOA



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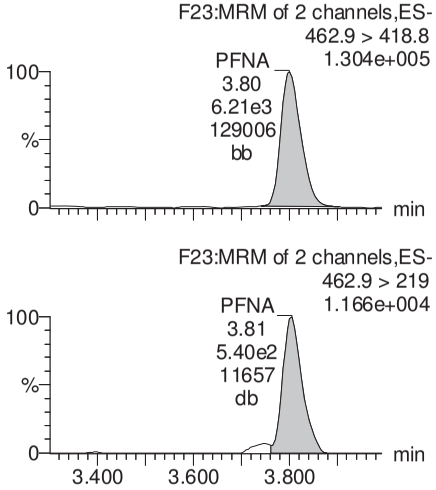
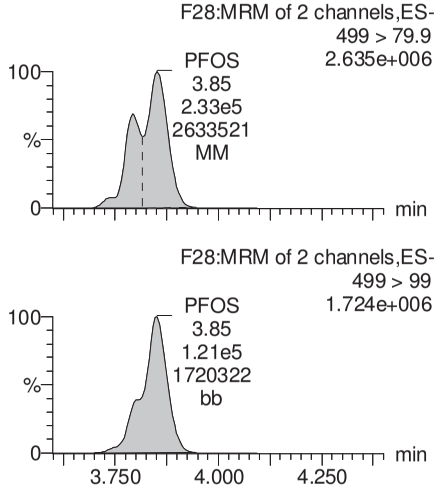


Total PFOS



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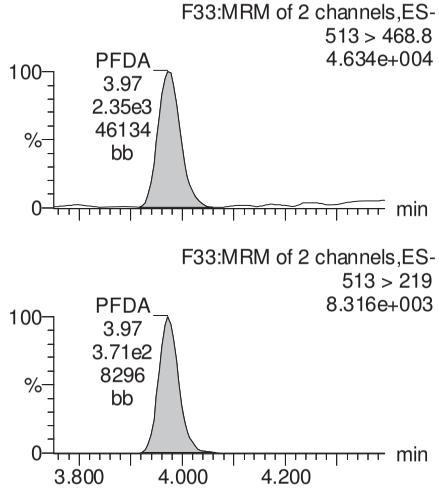
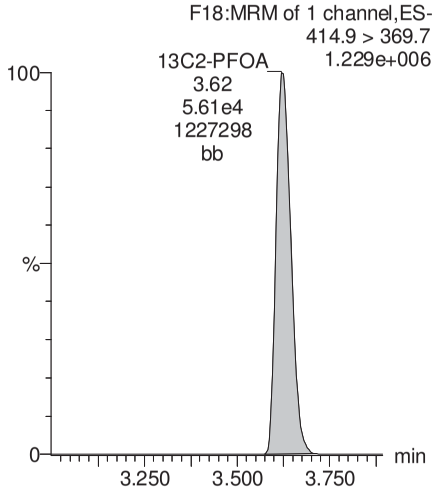
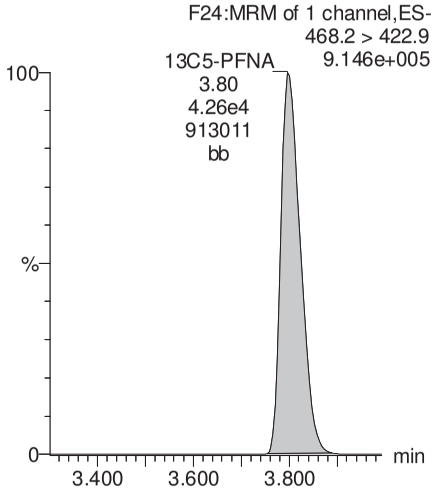


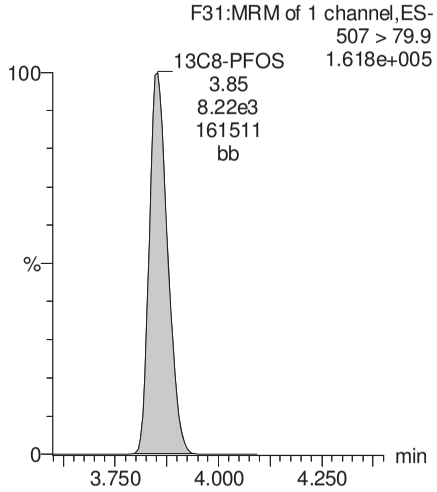
13C2-PFOA



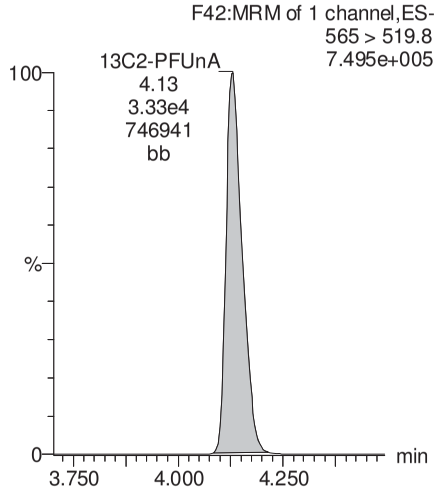
13C5-PFNA



13C8-PFOS



13C2-PFUnA



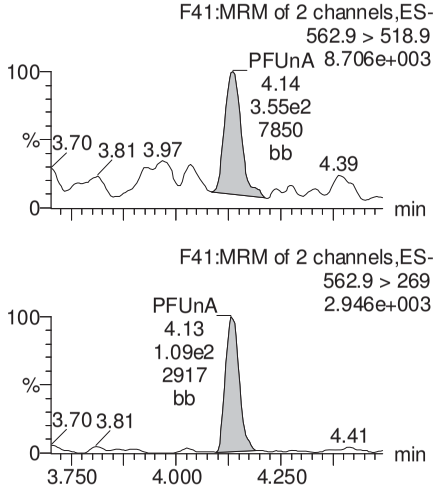
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

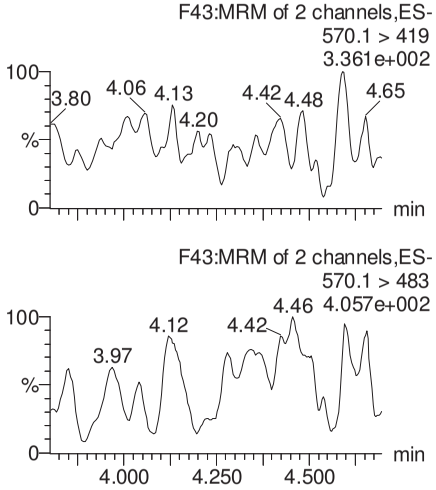
Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

PFUnA



N-MeFOSAA



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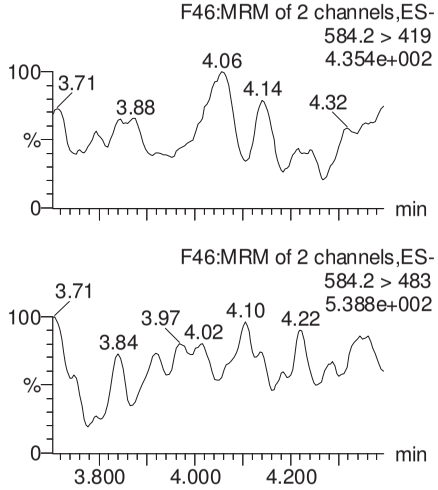
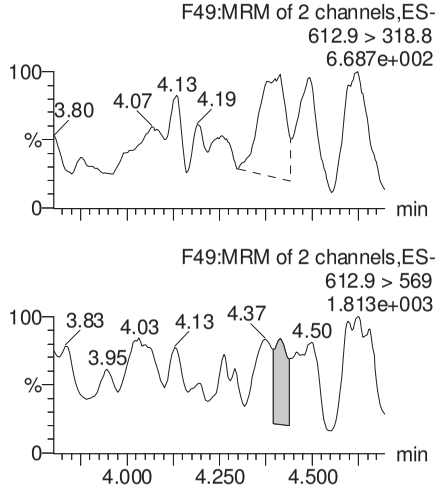


PFDoA



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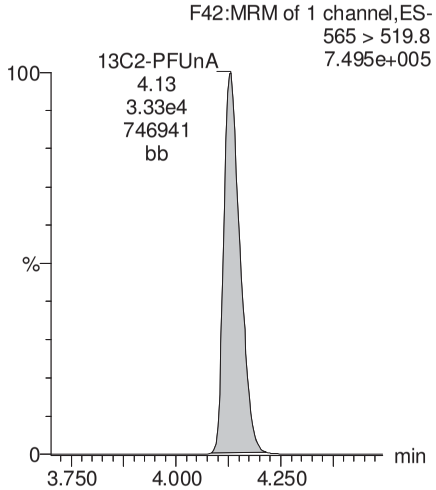
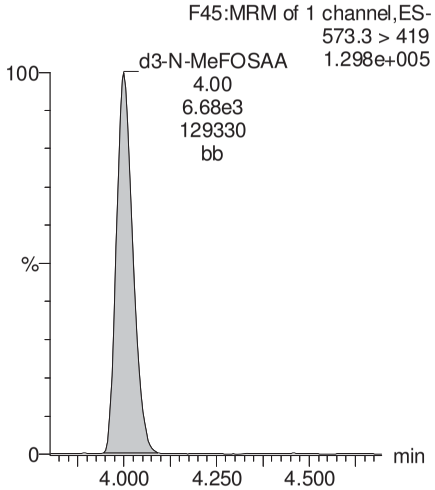
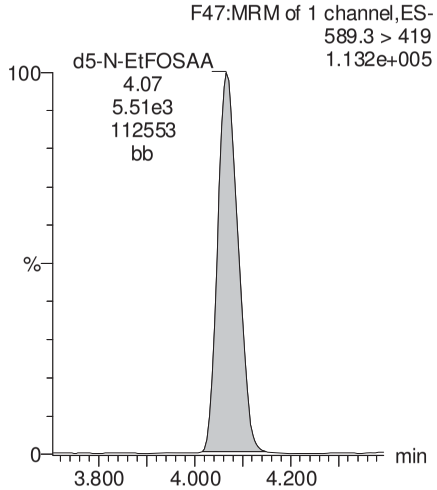


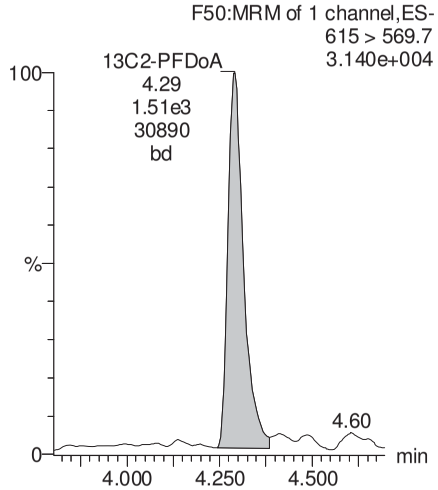
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



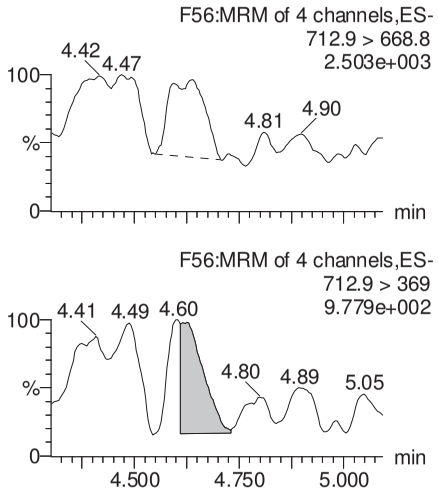
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

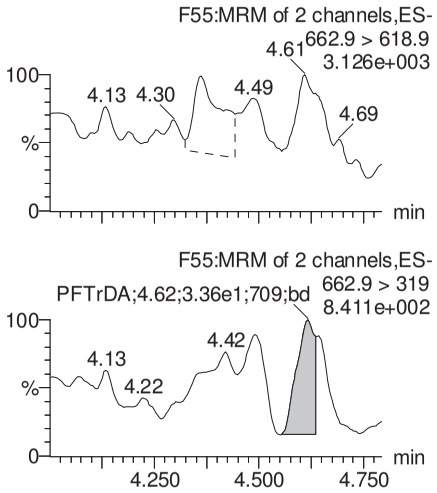
Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

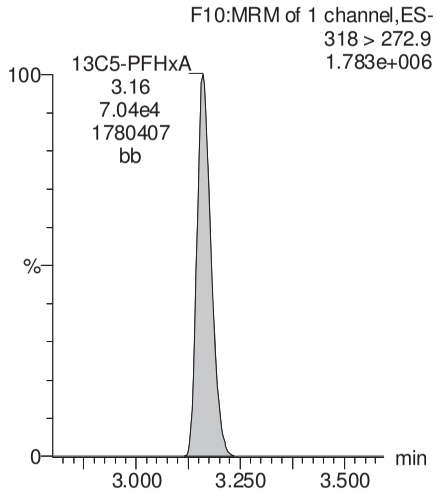
PFTeDA



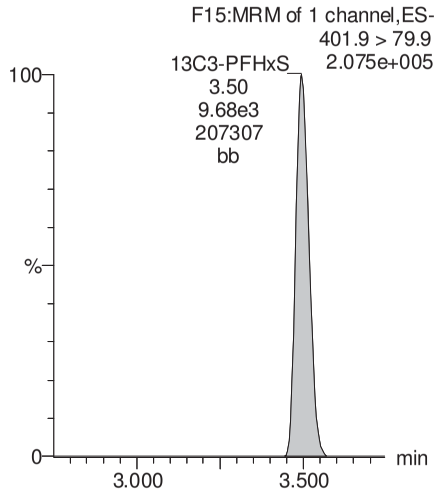
PFTrDA



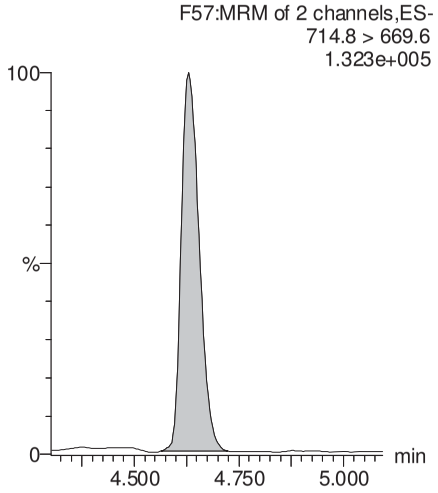
13C5-PFHxA



13C3-PFHxS



13C2-PFTeDA



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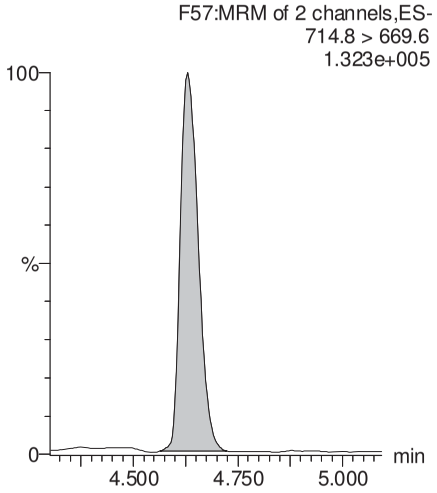
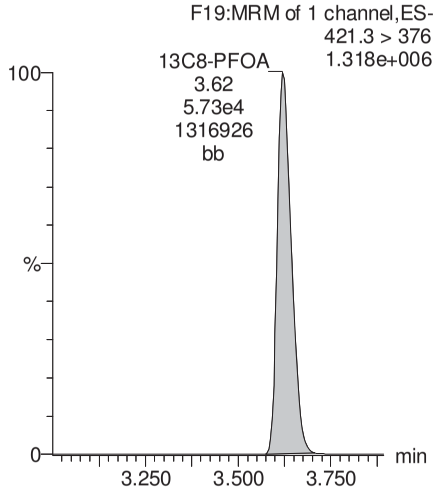
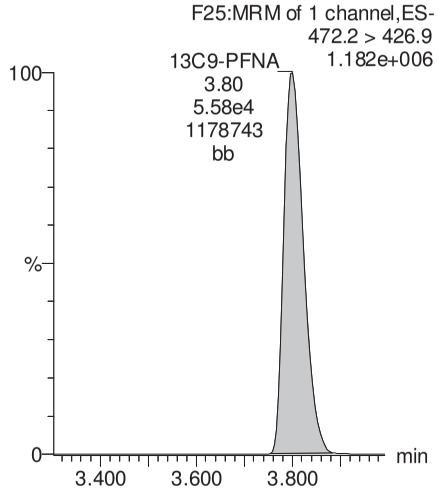


13C8-PFOA



13C9-PFNA



GM 7/19/17

Vista Analytical Laboratory

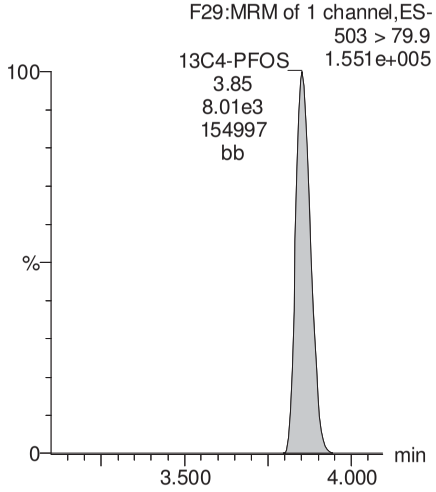
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-18.qld

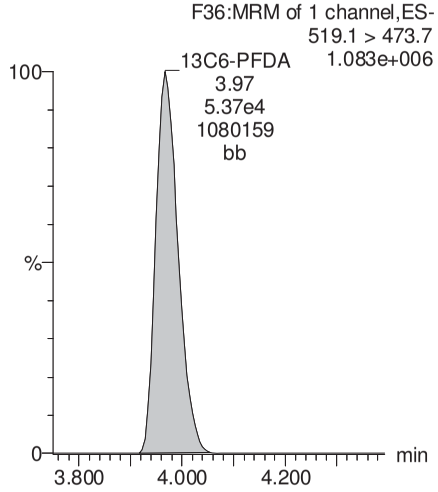
Last Altered: Wednesday, July 19, 2017 15:45:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:45:45 Pacific Daylight Time

Name: 170706M1_18, Date: 06-Jul-2017, Time: 11:37:49, ID: 1700789-05 MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

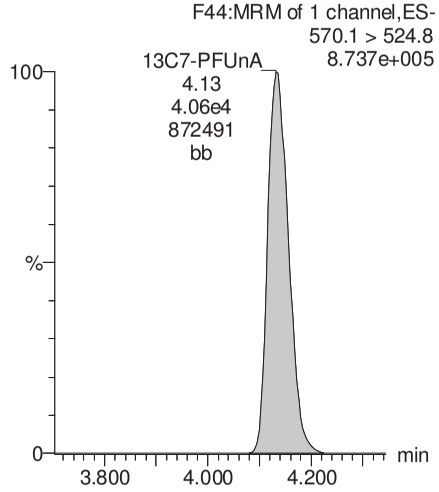
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-11.qld

Last Altered: Thursday, July 20, 2017 14:11:47 Pacific Daylight Time
Printed: Thursday, July 20, 2017 14:12:56 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 13:42:33
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_11, Date: 07-Jul-2017, Time: 15:22:39, ID: 1700789-05@10X MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

*ug/L

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc. *	%Rec
1	4	PFHxS	398.9 > 79.6	4.96e3	3.47e2	0.1216		3.55	3.50	0.179	0.815	
2	7	PFOS	499 > 79.9	5.80e3	9.20e1	0.1216		3.86	3.86	0.788	5.70	
3	18	18O2-PFHxS	403 > 102.6	3.47e2	8.83e2	0.1216	0.434	3.49	3.50	0.00491	0.0929	90.4
4	21	13C8-PFOS	507 > 79.9	9.20e1	1.54e2	0.1216	1.061	3.85	3.87	0.00745	0.0577	56.2
5	29	13C3-PFHxS	401.9 > 79.9	8.83e2	8.83e2	0.1216	1.000	3.49	3.50	0.0125	0.103	100.0
6	32	13C4-PFOS	503 > 79.9	1.54e2	1.54e2	0.1216	1.000	3.85	3.87	0.0125	0.103	100.0
7	36	Total PFHxS	398.9 > 79.6	4.96e3	3.47e2	0.1216		3.48		0.179	0.815	
8	38	Total PFOS	499 > 79.9	5.80e3	9.20e1	0.1216		3.84		0.788	5.70	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

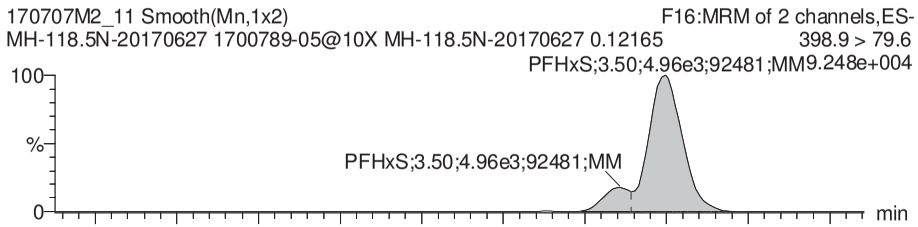
Dataset: U:\Q4.PRO\results\170707M2\170707M2-11.qld

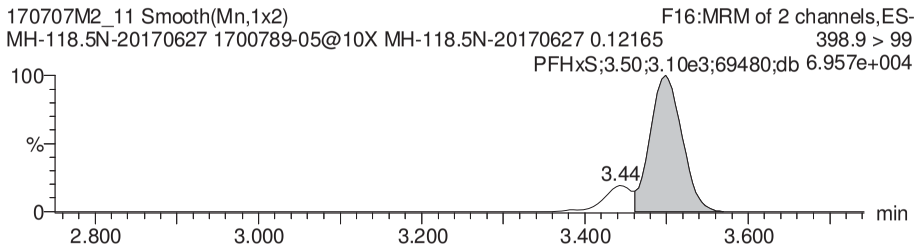
Last Altered: Thursday, July 20, 2017 14:11:47 Pacific Daylight Time
Printed: Thursday, July 20, 2017 14:12:56 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 13:42:33
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

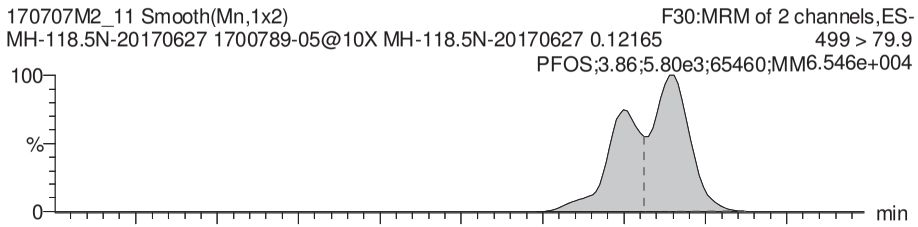
Name: 170707M2_11, Date: 07-Jul-2017, Time: 15:22:39, ID: 1700789-05@10X MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

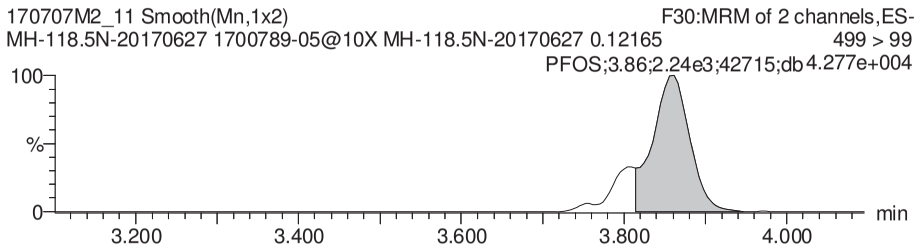
Total PFHxS



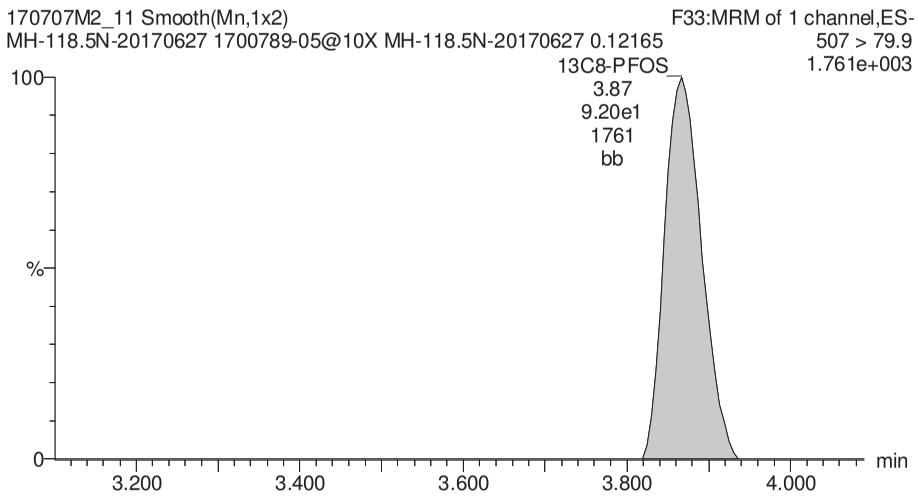


Total PFOS

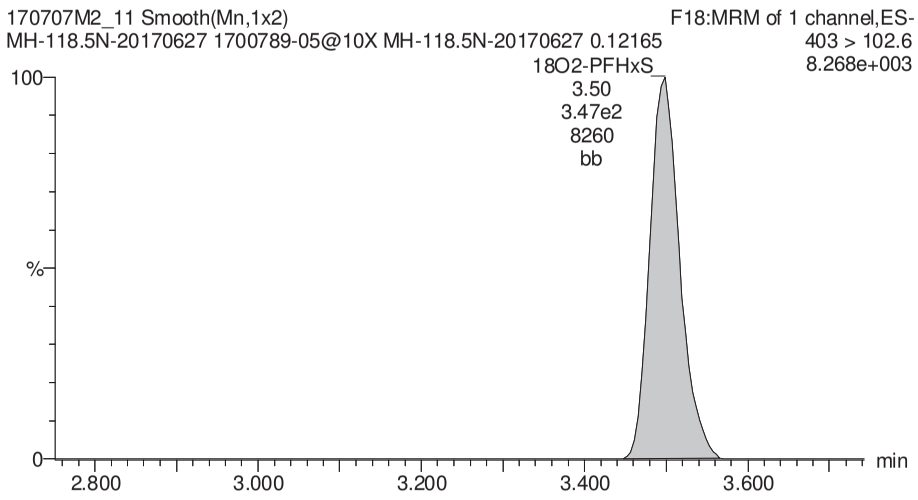




13C8-PFOS



18O2-PFHxS



GM 7/20/17

Vista Analytical Laboratory

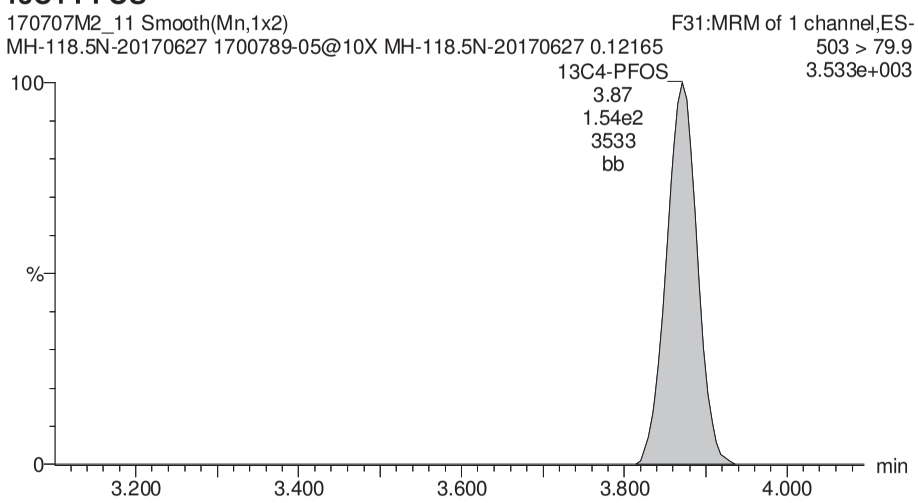
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-11.qld

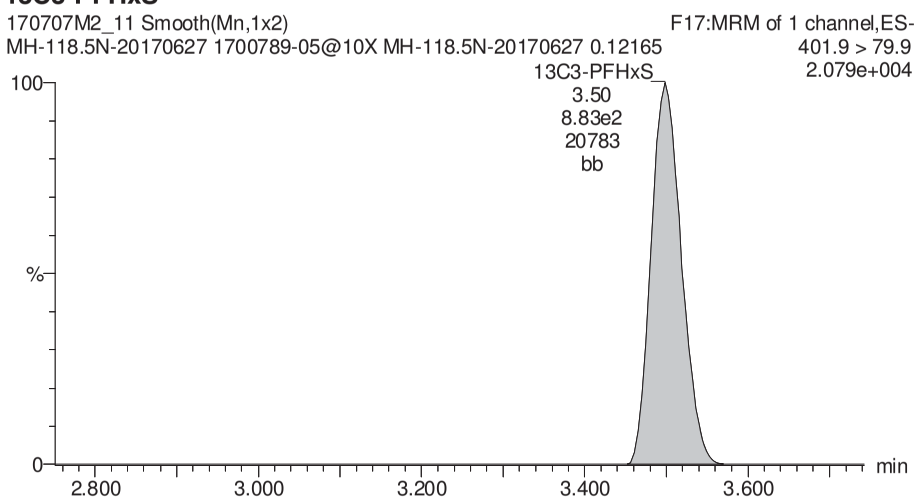
Last Altered: Thursday, July 20, 2017 14:11:47 Pacific Daylight Time
Printed: Thursday, July 20, 2017 14:12:56 Pacific Daylight Time

Name: 170707M2_11, Date: 07-Jul-2017, Time: 15:22:39, ID: 1700789-05@10X MH-118.5N-20170627 0.12165, Description: MH-118.5N-20170627

13C4-PFOS



13C3-PFHxS



GM 7/20/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	1.95e2	6.03e3	0.1232		2.92	2.92	0.405	0.991		
2	2	PFHxA	313.2 > 268.9	4.06e4	1.93e4	0.1232		3.16	3.16	10.5	59.9		
3	3	PFHpA	363 > 318.9	2.37e4	4.37e4	0.1232		3.43	3.43	6.77	44.6		
4	4	PFHxS	398.9 > 79.6	3.31e2	3.85e3	0.1232		3.55	3.50	1.07	4.68		
5	5	PFOA	413 > 368.7	1.86e4	5.32e4	0.1232		3.63	3.62	4.36	36.2		
6	6	PFNA	462.9 > 418.8	3.72e3	4.63e4	0.1232		3.82	3.80	1.01	6.84		
7	7	PFOS	499 > 79.9	7.48e2	9.01e3	0.1232		3.86	3.79	1.04	7.55		
8	8	PFDA	513 > 468.8	9.53e2	3.34e4	0.1232		4.00	3.97	0.357	0.923		
9	9	PFUnA	562.9 > 518.9	5.23e2	3.04e4	0.1232		4.13	4.13	0.215	1.05		
10	10	N-MeFOSAA	570.1 > 419		7.36e3	0.1232		4.00					
11	11	N-EtFOSAA	584.2 > 419		6.89e3	0.1232		4.08					
12	12	PFDoA	612.9 > 318.8		2.28e3	0.1232		4.31					
13	13	PFTrDA	662.9 > 618.9		2.28e3	0.1232		4.50					
14	14	PFTeDA	712.9 > 668.8		1.24e4	0.1232		4.65					
15	15	13C3-PFBS	302 > 98.8	6.03e3	6.78e4	0.1232	0.032	2.92	2.91	0.444	112	110.7	
16	16	13C2-PFHxA	315 > 269.8	1.93e4	6.78e4	0.1232	0.296	3.15	3.16	1.42	39.0	96.0	
17	17	13C4-PFHpA	367.2 > 321.8	4.37e4	6.78e4	0.1232	0.302	3.43	3.43	3.22	86.8	85.5	
18	18	18O2-PFHxS	403 > 102.6	3.85e3	1.03e4	0.1232	0.434	3.49	3.50	4.68	87.5	86.2	
19	19	13C2-PFOA	414.9 > 369.7	5.32e4	5.06e4	0.1232	1.140	3.62	3.62	13.1	93.5	92.2	
20	20	13C5-PFNA	468.2 > 422.9	4.63e4	4.85e4	0.1232	0.958	3.80	3.80	11.9	101	99.7	
21	21	13C8-PFOS	507 > 79.9	9.01e3	9.60e3	0.1232	1.061	3.85	3.85	11.7	89.7	88.4	
22	22	13C2-PFDA	515.1 > 469.9	3.34e4	5.16e4	0.1232	0.942	3.97	3.97	8.10	69.8	68.8	
23	23	13C2-PFUnA	565 > 519.8	3.04e4	4.01e4	0.1232	1.084	4.13	4.13	9.47	70.9	69.9	
24	24	d3-N-MeFOSAA	573.3 > 419	7.36e3	4.01e4	0.1232	0.240	4.00	4.00	2.29	77.5	76.4	
25	25	d5-N-EtFOSAA	589.3 > 419	6.89e3	4.01e4	0.1232	0.247	4.07	4.07	2.15	70.5	69.5	
26	26	13C2-PFDoA	615 > 569.7	2.28e3	4.01e4	0.1232	0.127	4.32	4.29	0.713	45.6	44.9	H
27	27	13C2-PFTeDA	714.8 > 669.6	1.24e4	4.01e4	0.1232	0.883	4.64	4.63	3.87	35.6	35.1	H
28	28	13C5-PFHxA	318 > 272.9	6.78e4	6.78e4	0.1232	1.000	3.15	3.16	5.00	40.6	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.03e4	1.03e4	0.1232	1.000	3.49	3.49	12.5	101	100.0	
30	30	13C8-PFOA	421.3 > 376	5.06e4	5.06e4	0.1232	1.000	3.62	3.62	12.5	101	100.0	
31	31	13C9-PFNA	472.2 > 426.9	4.85e4	4.85e4	0.1232	1.000	3.82	3.80	12.5	101	100.0	
32	32	13C4-PFOS	503 > 79.9	9.60e3	9.60e3	0.1232	1.000	3.85	3.85	12.5	101	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	5.16e4	5.16e4	0.1232	1.000	3.97	3.97	12.5	101	100.0
34	34	13C7-PFUnA	570.1 > 524.8	4.01e4	4.01e4	0.1232	1.000	4.13	4.13	12.5	101	100.0
35	35	Total PFBS	299 > 79.7	1.95e2	6.03e3	0.1232		2.91		0.405	0.991	
36	36	Total PFHxS	398.9 > 79.6	3.31e2	3.85e3	0.1232		3.48		1.07	4.68	
37	37	Total PFOA	413 > 368.7	1.86e4	5.32e4	0.1232		3.61		4.36	36.2	
38	38	Total PFOS	499 > 79.9	7.48e2	9.01e3	0.1232		3.84		1.04	7.55	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1232		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1232		4.06		0.000		

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	195.236	6028.156	0.405	bb	1.0

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	330.761	3853.087	1.073	MM	4.7

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	18557.158	53203.191	4.360	bb	36.2

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.79	747.872	9006.713	1.038	MM	7.6

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

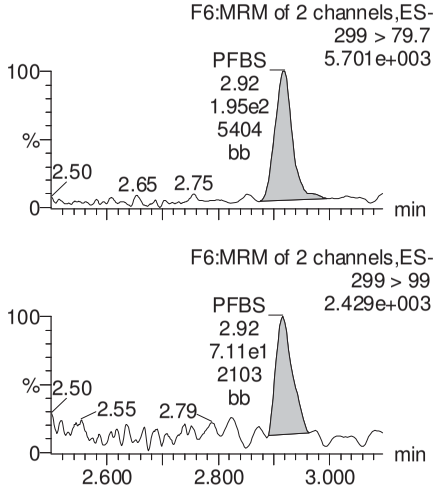
Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

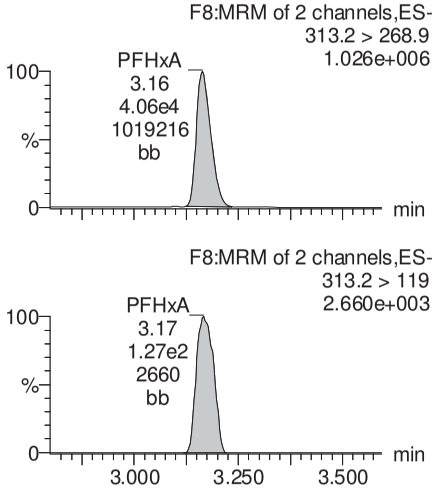
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

Total PFBS



PFHxA



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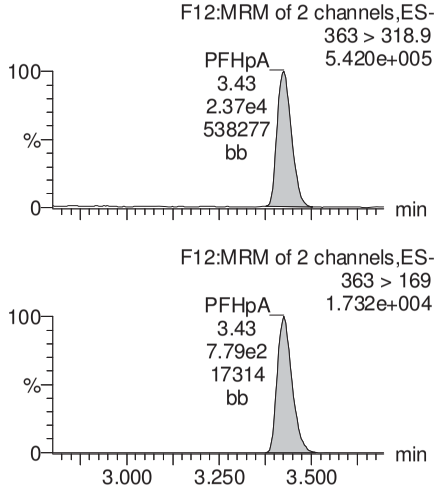
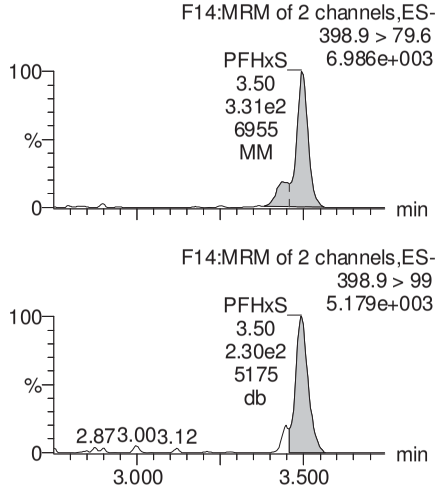
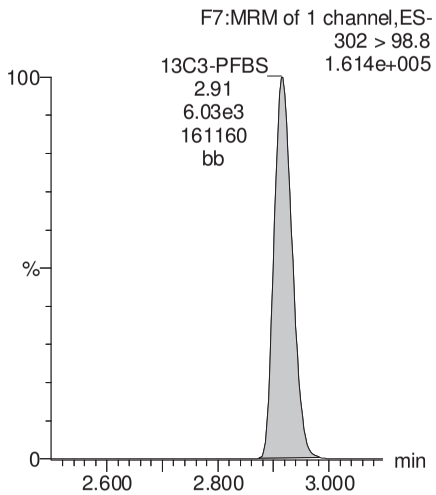


Total PFHxS



13C3-PFBS



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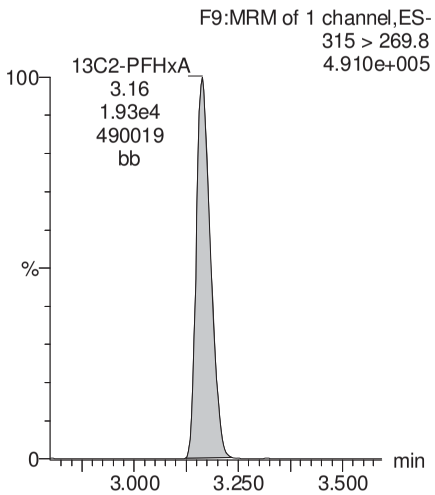

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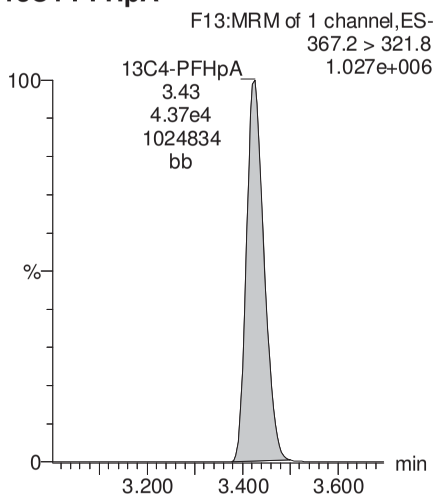
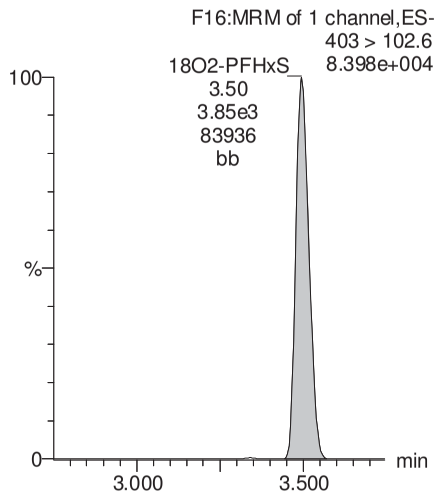


18O2-PFHxS



GM 7/19/17

Vista Analytical Laboratory

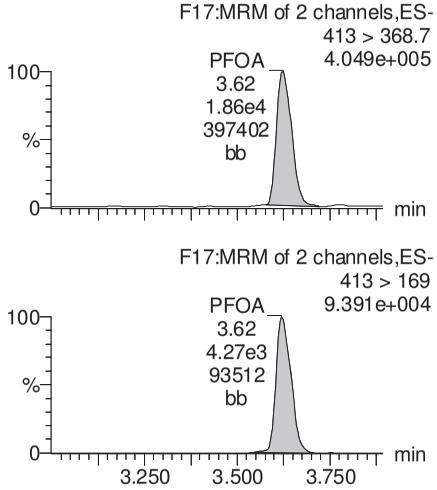
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

Total PFOA



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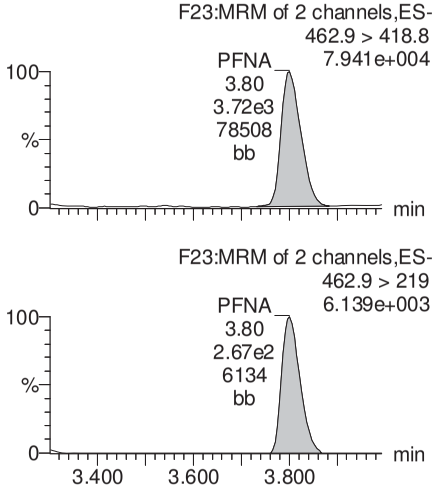
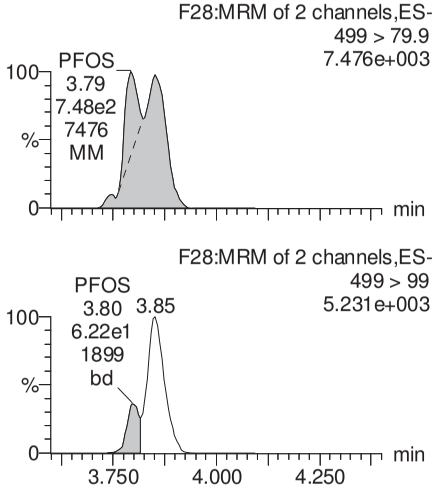


Total PFOS



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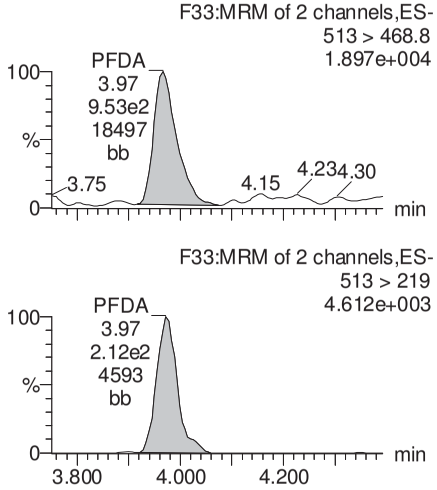
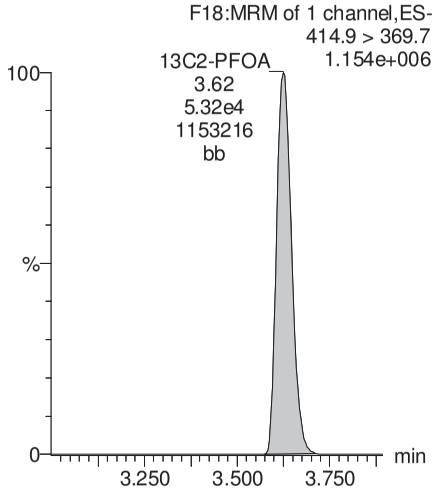


13C2-PFOA



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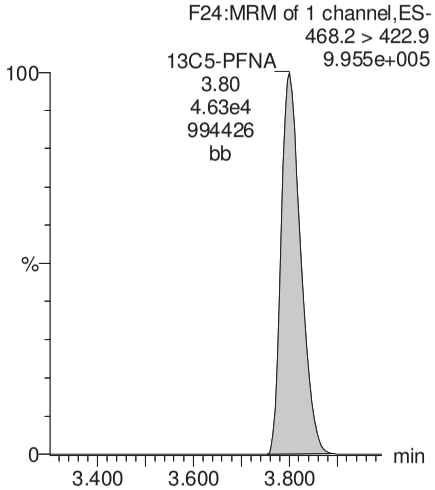
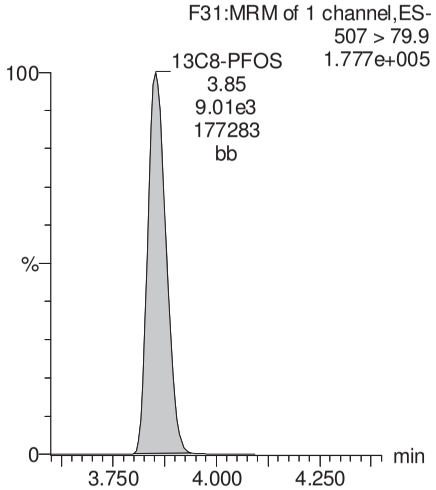
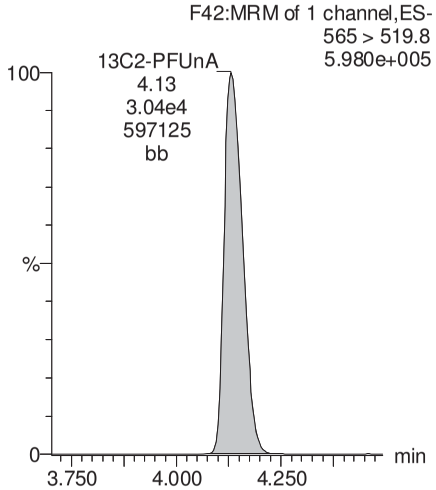


13C8-PFOS



13C2-PFUnA



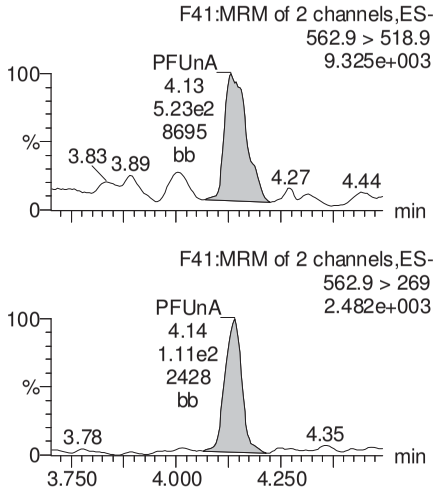
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

PFUnA



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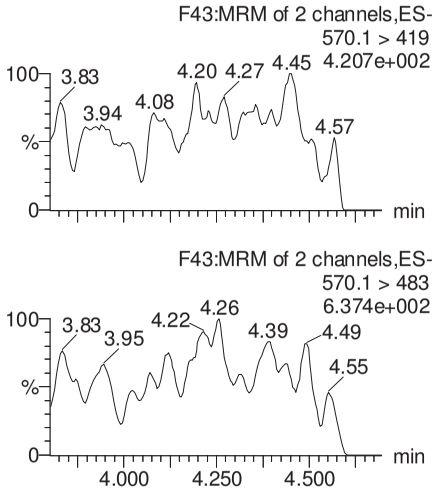

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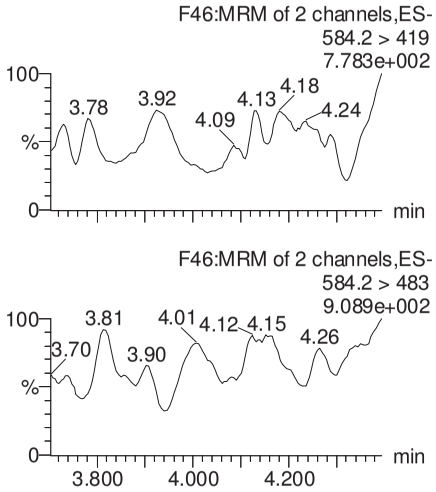
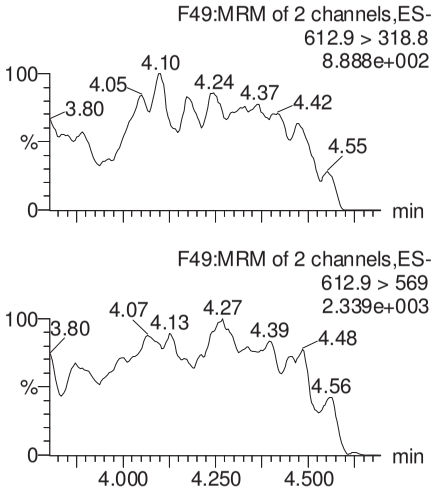


PFDoA



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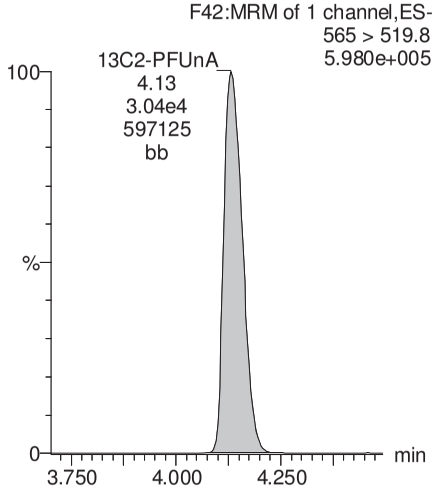

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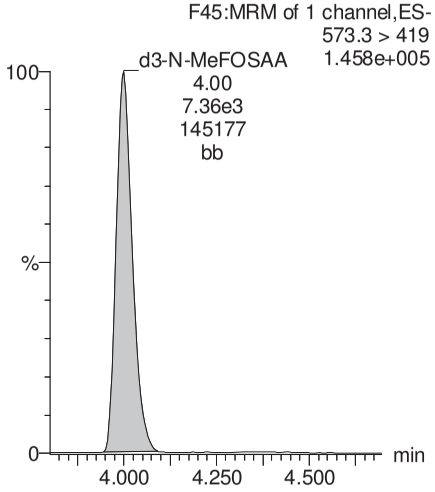
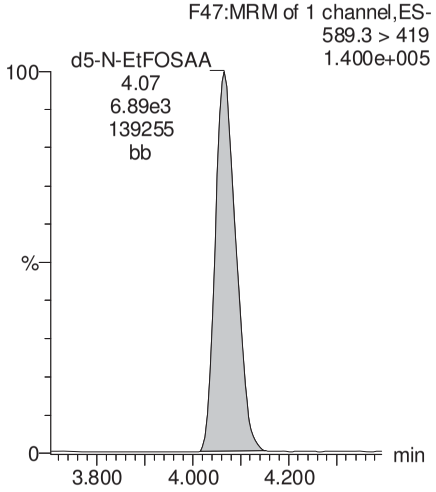
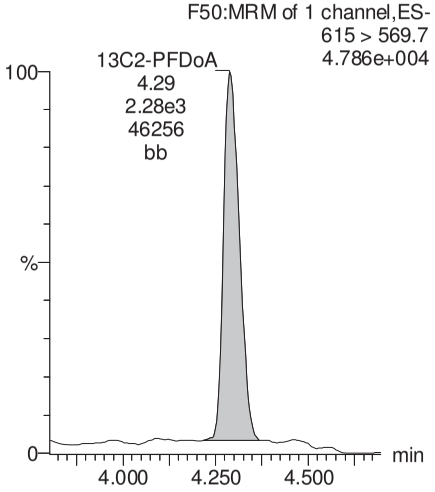


d5-N-EtFOSAA



13C2-PFDoA



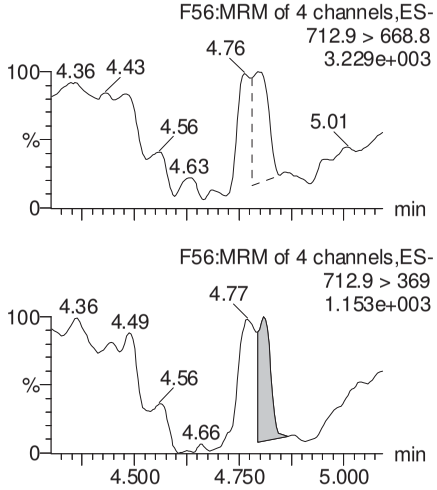
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

PFTeDA



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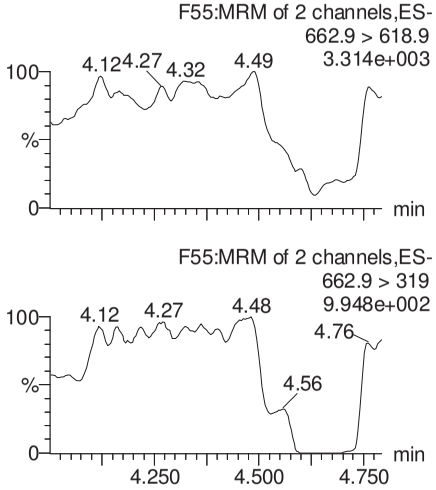
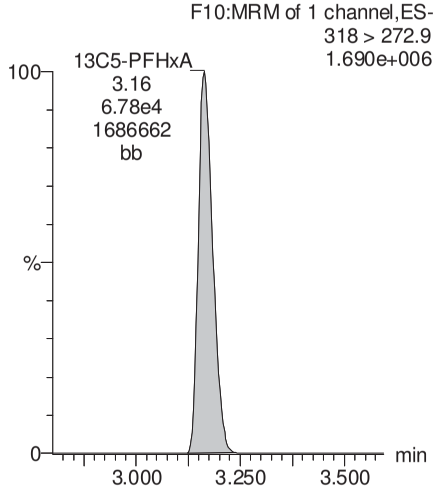
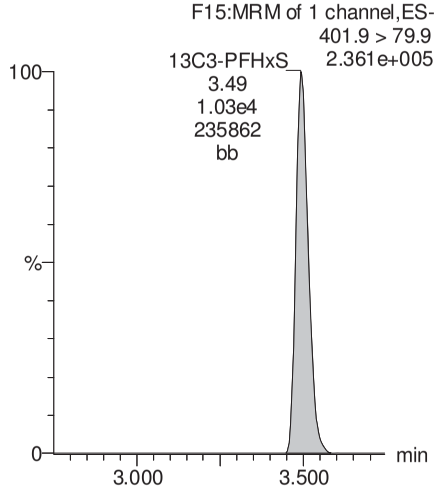


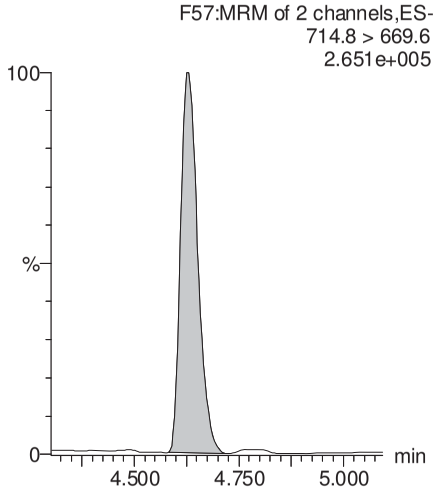
13C5-PFHxA



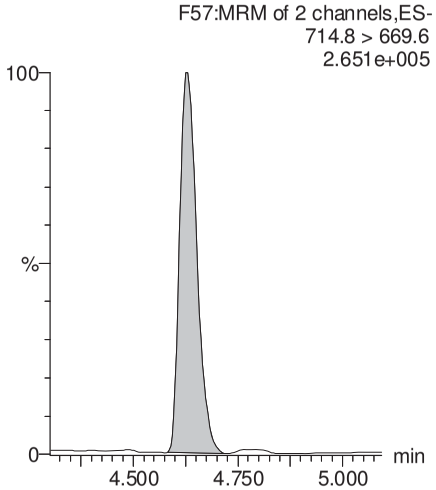
13C3-PFHxS



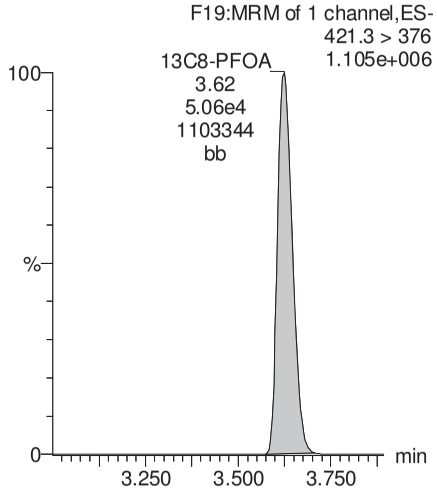
13C2-PFTeDA



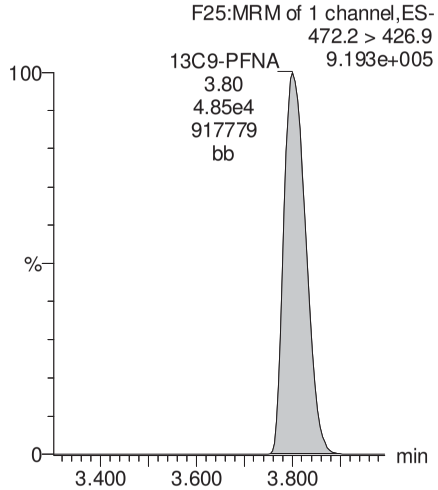
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



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Vista Analytical Laboratory

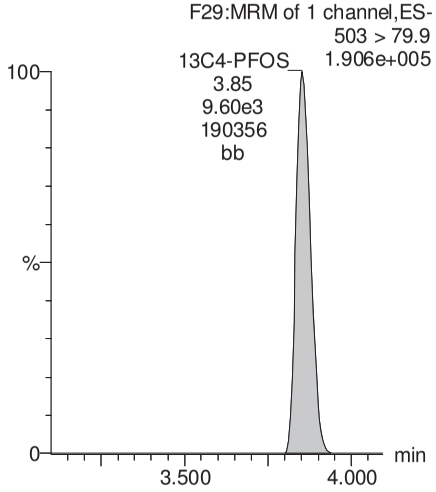
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-19.qld

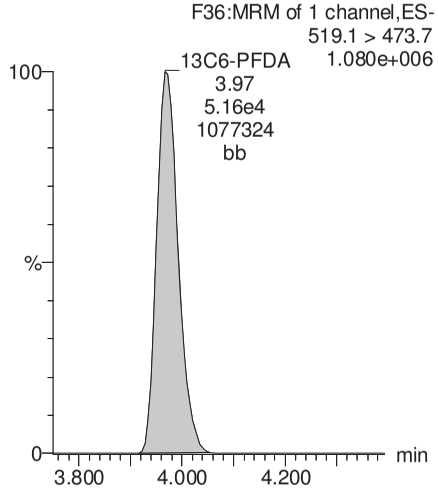
Last Altered: Wednesday, July 19, 2017 15:48:40 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:49:13 Pacific Daylight Time

Name: 170706M1_19, Date: 06-Jul-2017, Time: 11:48:40, ID: 1700789-06 MH-121.5T-20170627 0.12319, Description: MH-121.5T-20170627

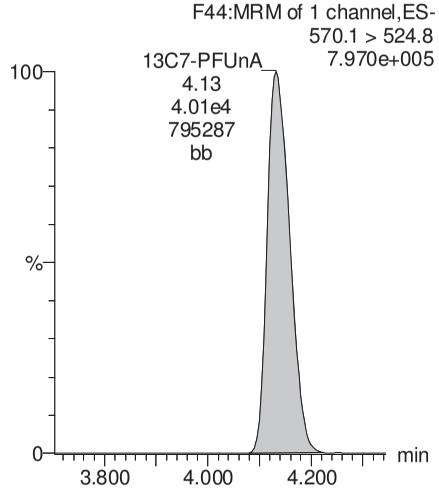
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:52:22 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	7.24e2	6.27e3	0.1235		2.92	2.91	1.44	5.50		
2	2	PFHxA	313.2 > 268.9	2.05e5	1.91e4	0.1235		3.16	3.16	53.6	314		
3	3	PFHpA	363 > 318.9	7.09e4	4.52e4	0.1235		3.43	3.43	19.6	133		
4	4	PFHxS	398.9 > 79.6	2.47e3	4.00e3	0.1235		3.55	3.50	7.71	33.5		
5	5	PFOA	413 > 368.7	2.37e4	5.57e4	0.1235		3.63	3.62	5.31	44.3		
6	6	PFNA	462.9 > 418.8	2.88e3	4.60e4	0.1235		3.82	3.80	0.783	5.21		
7	7	PFOS	499 > 79.9	3.11e3	1.04e4	0.1235		3.86	3.85	3.75	28.3		
8	8	PFDA	513 > 468.8	4.13e2	3.70e4	0.1235		4.00	3.98	0.139			
9	9	PFUnA	562.9 > 518.9		2.68e4	0.1235		4.13					
10	10	N-MeFOSAA	570.1 > 419		6.28e3	0.1235		4.00					
11	11	N-EtFOSAA	584.2 > 419		5.93e3	0.1235		4.08					
12	12	PFDoA	612.9 > 318.8		2.07e3	0.1235		4.31					
13	13	PFTrDA	662.9 > 618.9		2.07e3	0.1235		4.50					
14	14	PFTeDA	712.9 > 668.8		8.45e3	0.1235		4.65					
15	15	13C3-PFBS	302 > 98.8	6.27e3	7.05e4	0.1235	0.032	2.92	2.92	0.445	112	110.8	
16	16	13C2-PFHxA	315 > 269.8	1.91e4	7.05e4	0.1235	0.296	3.15	3.16	1.35	37.0	91.4	
17	17	13C4-PFHpA	367.2 > 321.8	4.52e4	7.05e4	0.1235	0.302	3.43	3.43	3.20	86.0	85.0	
18	18	18O2-PFHxS	403 > 102.6	4.00e3	1.12e4	0.1235	0.434	3.49	3.50	4.45	83.0	82.0	
19	19	13C2-PFOA	414.9 > 369.7	5.57e4	6.14e4	0.1235	1.140	3.62	3.62	11.3	80.5	79.5	
20	20	13C5-PFNA	468.2 > 422.9	4.60e4	6.20e4	0.1235	0.958	3.80	3.80	9.28	78.5	77.5	
21	21	13C8-PFOS	507 > 79.9	1.04e4	1.05e4	0.1235	1.061	3.85	3.85	12.4	94.5	93.3	
22	22	13C2-PFDA	515.1 > 469.9	3.70e4	5.01e4	0.1235	0.942	3.97	3.97	9.23	79.3	78.4	
23	23	13C2-PFUnA	565 > 519.8	2.68e4	4.27e4	0.1235	1.084	4.13	4.13	7.85	58.6	57.9	
24	24	d3-N-MeFOSAA	573.3 > 419	6.28e3	4.27e4	0.1235	0.240	4.00	4.00	1.84	61.9	61.2	
25	25	d5-N-EtFOSAA	589.3 > 419	5.93e3	4.27e4	0.1235	0.247	4.07	4.07	1.74	56.8	56.1	
26	26	13C2-PFDoA	615 > 569.7	2.07e3	4.27e4	0.1235	0.127	4.32	4.29	0.606	38.7	38.2	H
27	27	13C2-PFTeDA	714.8 > 669.6	8.45e3	4.27e4	0.1235	0.883	4.64	4.63	2.47	22.7	22.4	H
28	28	13C5-PFHxA	318 > 272.9	7.05e4	7.05e4	0.1235	1.000	3.15	3.16	5.00	40.5	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.12e4	1.12e4	0.1235	1.000	3.49	3.50	12.5	101	100.0	
30	30	13C8-PFOA	421.3 > 376	6.14e4	6.14e4	0.1235	1.000	3.62	3.62	12.5	101	100.0	
31	31	13C9-PFNA	472.2 > 426.9	6.20e4	6.20e4	0.1235	1.000	3.82	3.80	12.5	101	100.0	
32	32	13C4-PFOS	503 > 79.9	1.05e4	1.05e4	0.1235	1.000	3.85	3.85	12.5	101	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:52:22 Pacific Daylight Time

Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	5.01e4	5.01e4	0.1235	1.000	3.97	3.97	12.5	101	100.0
34	34	13C7-PFUnA	570.1 > 524.8	4.27e4	4.27e4	0.1235	1.000	4.13	4.13	12.5	101	100.0
35	35	Total PFBS	299 > 79.7	7.24e2	6.27e3	0.1235		2.91		1.44	5.50	
36	36	Total PFHxS	398.9 > 79.6	2.47e3	4.00e3	0.1235		3.48		7.71	33.5	
37	37	Total PFOA	413 > 368.7	2.37e4	5.57e4	0.1235		3.61		5.31	44.3	
38	38	Total PFOS	499 > 79.9	3.11e3	1.04e4	0.1235		3.84		3.75	28.3	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1235		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1235		4.06		0.000		

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Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:52:22 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.91	724.208	6266.343	1.445	bb	5.5

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	2467.768	4003.276	7.705	MM	33.5

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	23652.523	55713.563	5.307	bb	44.3

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	3112.828	10382.918	3.748	MM	28.3

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
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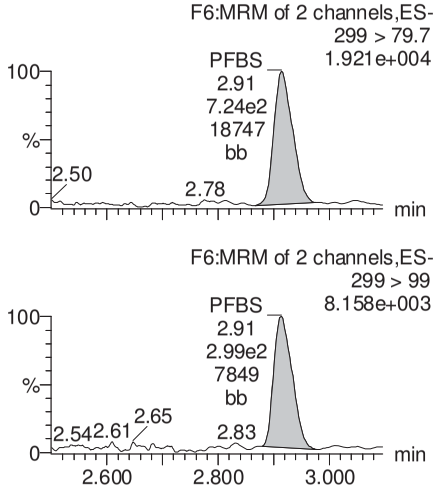
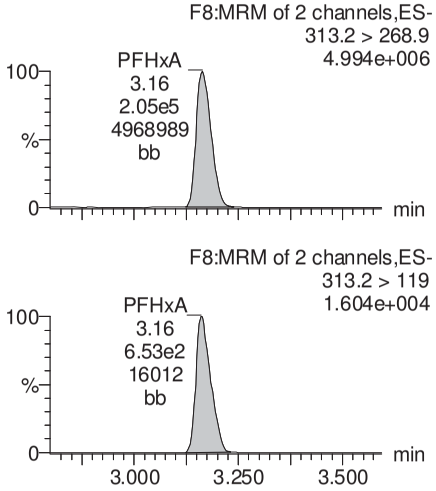
Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

Total PFBS



PFHxA



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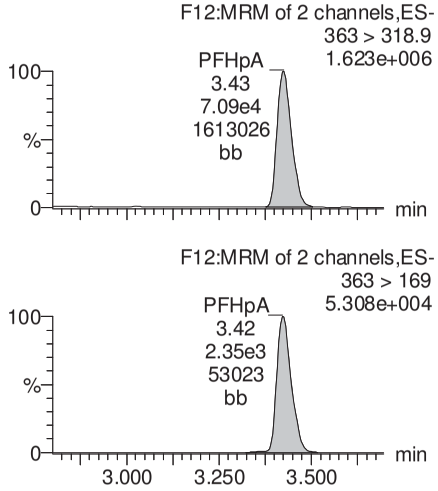
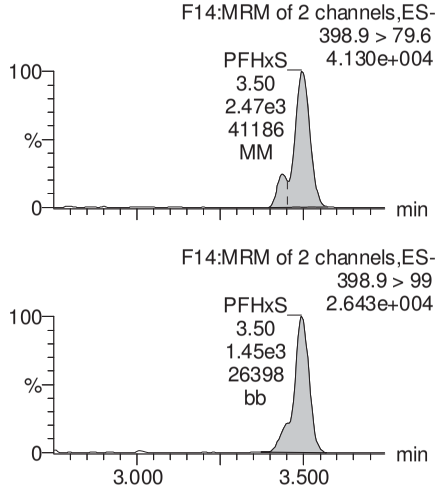


Total PFHxS



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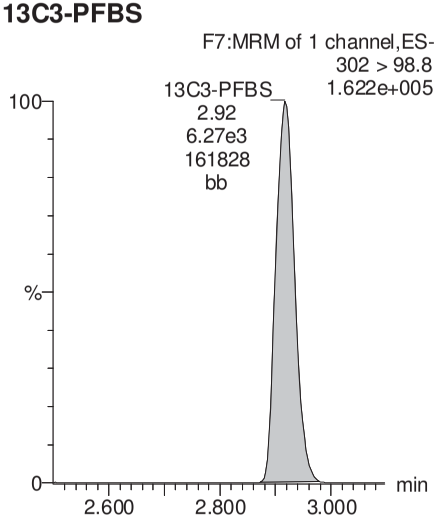
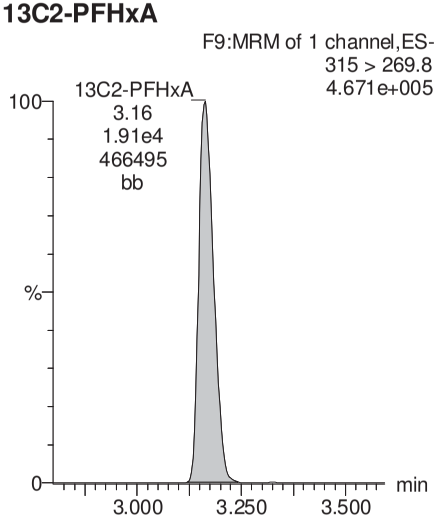
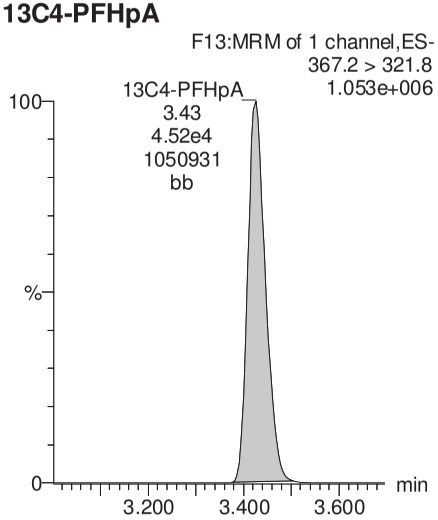


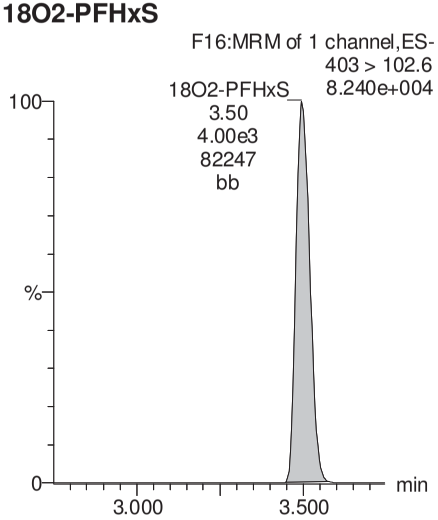
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
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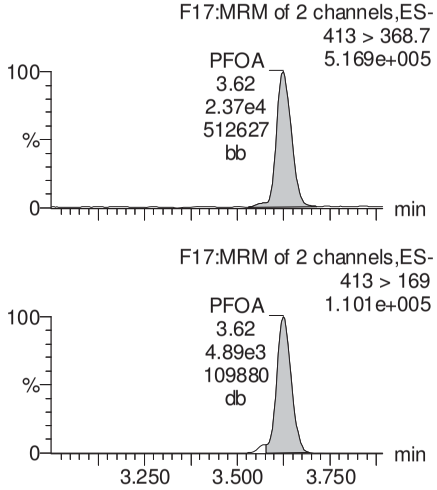
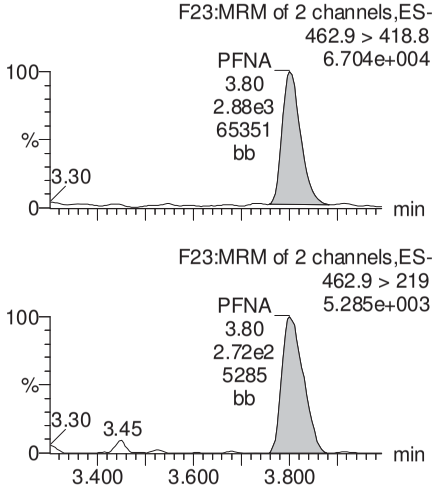
Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

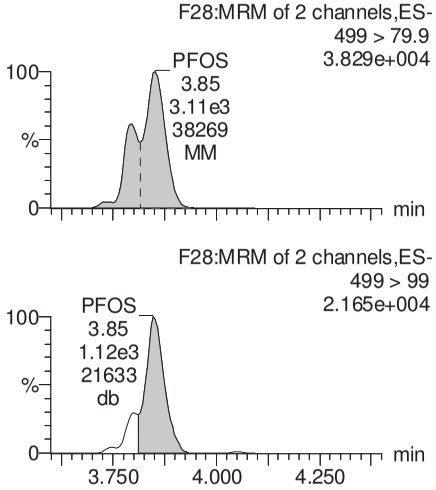
Total PFOA



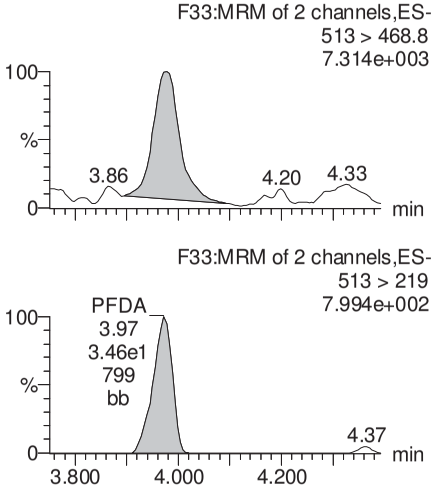
PFNA



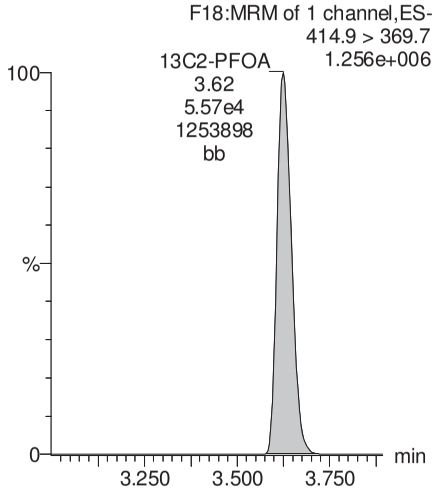
Total PFOS



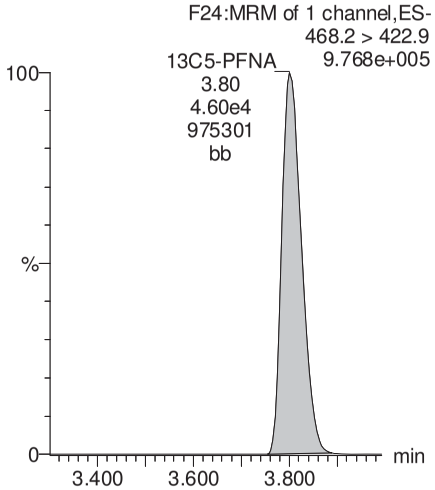
PFDA



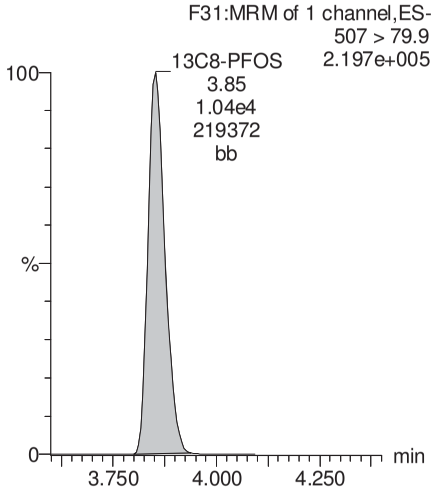
13C2-PFOA



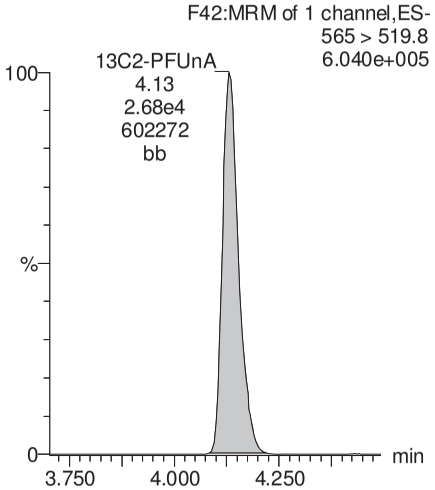
13C5-PFNA



13C8-PFOS



13C2-PFUnA



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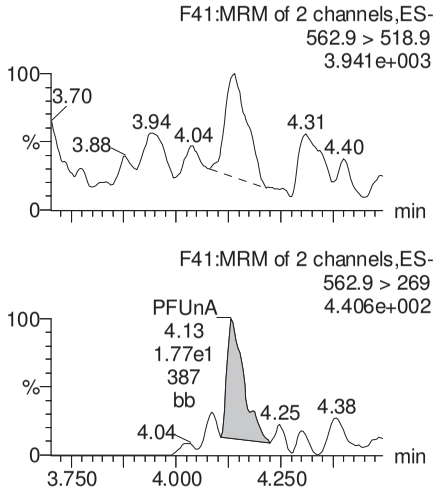
Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:52:22 Pacific Daylight Time

Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

PFUnA



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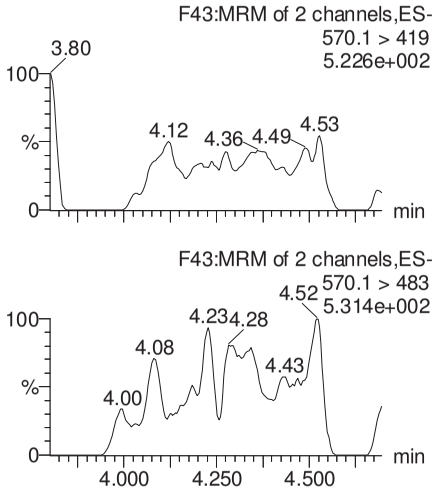

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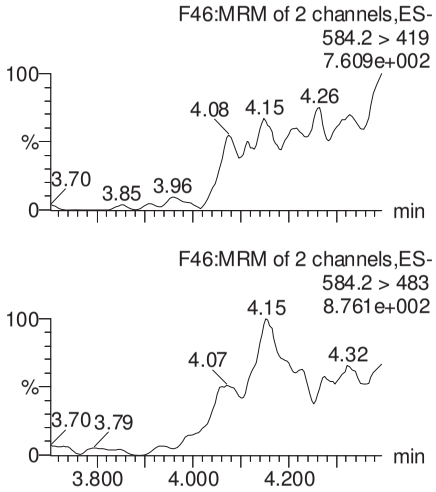

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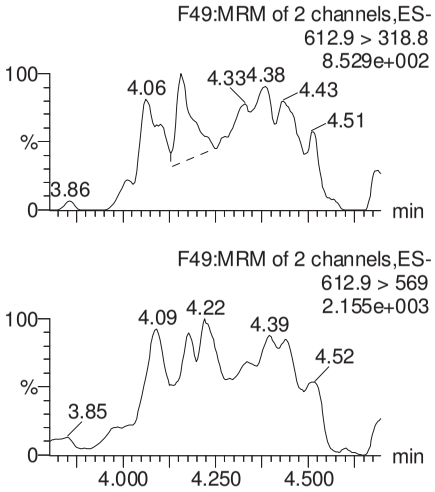
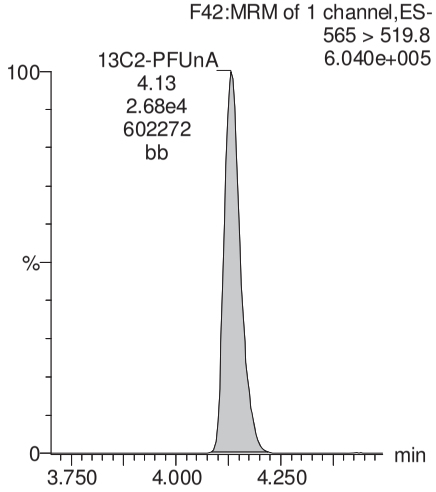


13C2-PFUnA



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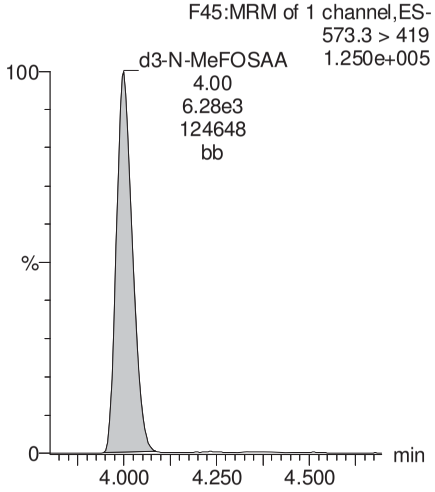

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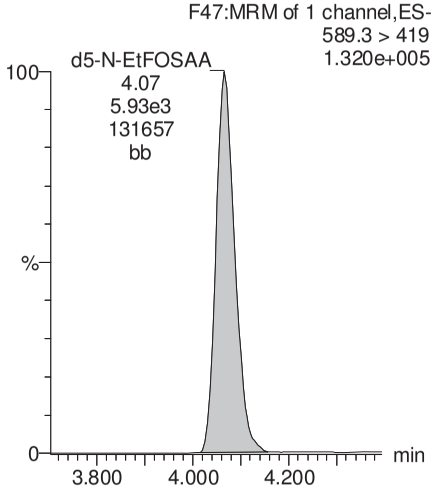

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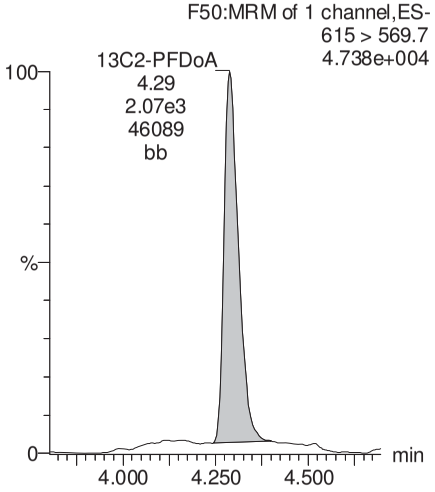

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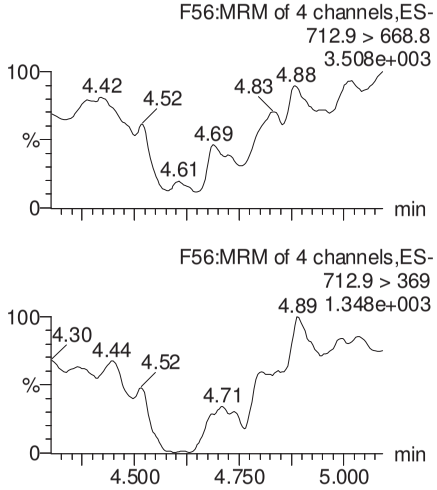
Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:52:22 Pacific Daylight Time

Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

PFTeDA



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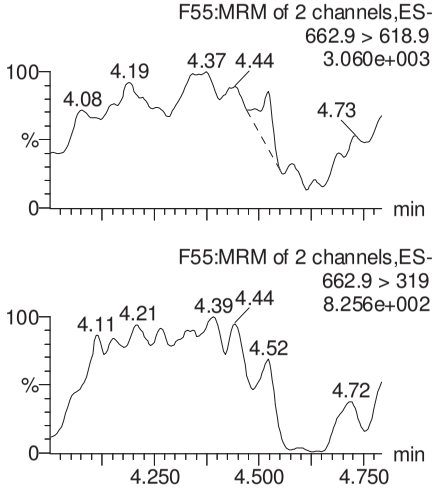
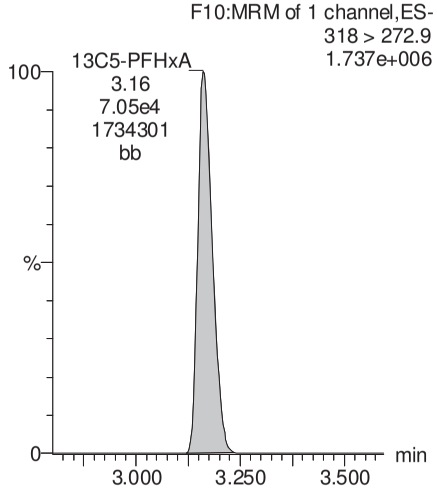


13C5-PFHxA



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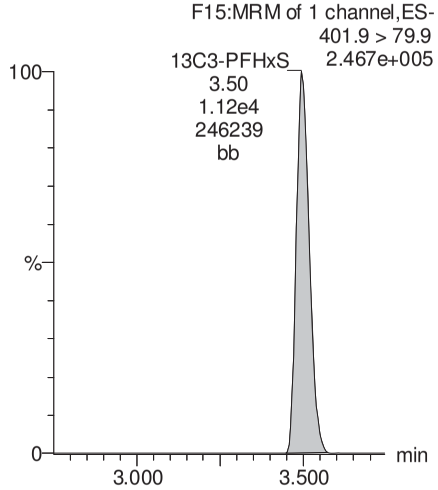

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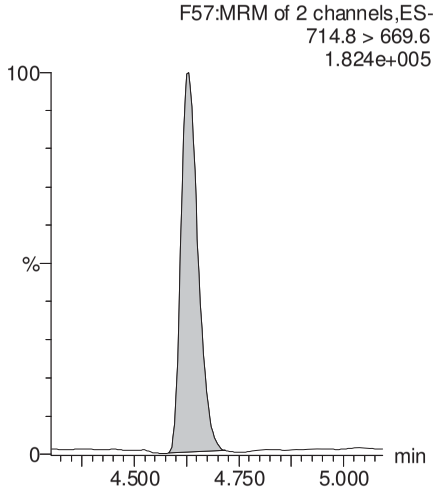

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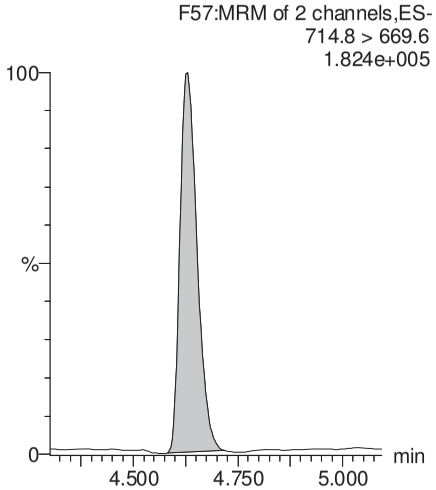

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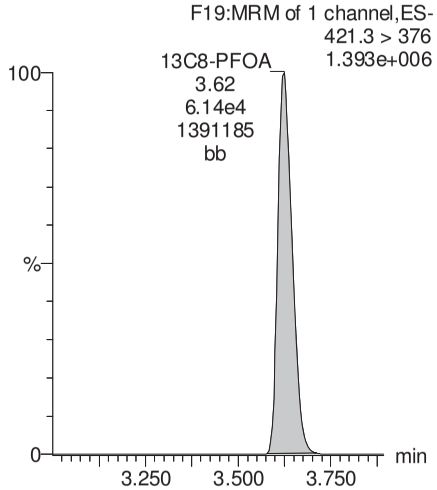
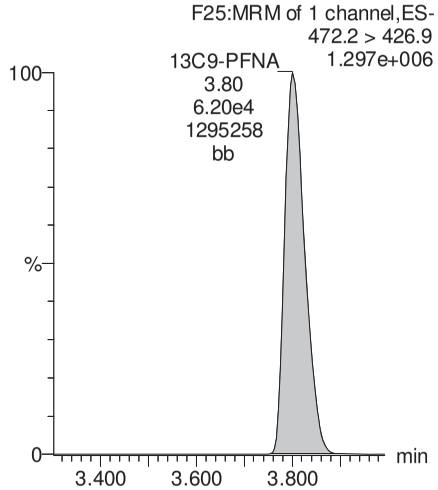


13C9-PFNA



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Vista Analytical Laboratory

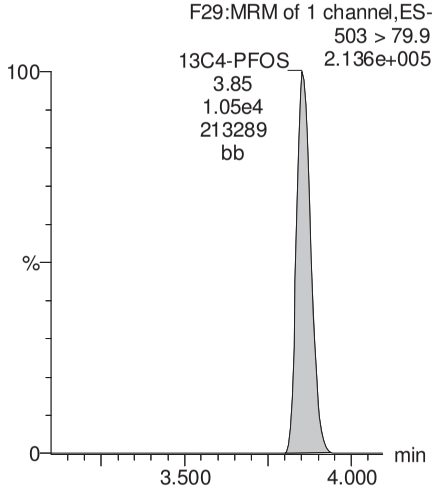
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-20.qld

Last Altered: Wednesday, July 19, 2017 15:51:55 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:52:22 Pacific Daylight Time

Name: 170706M1_20, Date: 06-Jul-2017, Time: 11:59:18, ID: 1700789-07 MH-121.5N-20170627 0.12348, Description: MH-121.5N-20170627

13C4-PFOS



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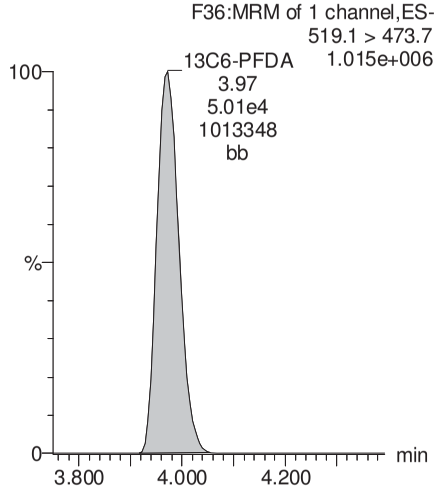
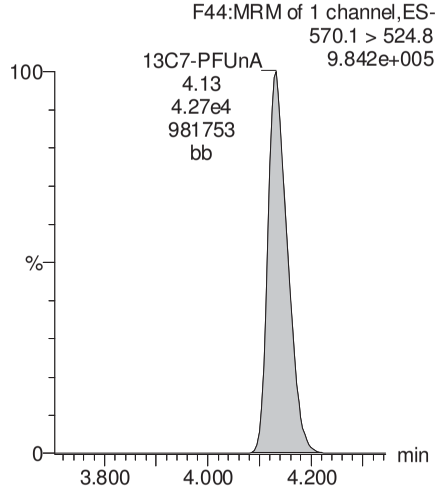


13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:55:15 Pacific Daylight Time

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Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	1.56e2	6.50e3	0.1195		2.92	2.92	0.299	0.546		
2	2	PFHxA	313.2 > 268.9	5.37e4	1.89e4	0.1195		3.16	3.17	14.2	84.2		
3	3	PFHpA	363 > 318.9	2.95e4	4.32e4	0.1195		3.43	3.43	8.53	58.5		
4	4	PFHxS	398.9 > 79.6	2.46e2	4.60e3	0.1195		3.55	3.50	0.669	3.02		
5	5	PFOA	413 > 368.7	2.97e4	5.48e4	0.1195		3.63	3.63	6.78	59.0		
6	6	PFNA	462.9 > 418.8	3.78e3	4.51e4	0.1195		3.82	3.81	1.05	7.37		
7	7	PFOS	499 > 79.9	3.13e2	1.04e4	0.1195		3.86	3.86	0.377	2.55		
8	8	PFDA	513 > 468.8	9.16e2	3.63e4	0.1195		4.00	3.97	0.315	0.646		
9	9	PFUnA	562.9 > 518.9	3.91e2	2.66e4	0.1195		4.13	4.14	0.184	0.792		
10	10	N-MeFOSAA	570.1 > 419		6.73e3	0.1195		4.00					
11	11	N-EtFOSAA	584.2 > 419		6.07e3	0.1195		4.08					
12	12	PFDoA	612.9 > 318.8		2.05e3	0.1195		4.31					
13	13	PFTrDA	662.9 > 618.9		2.05e3	0.1195		4.50					
14	14	PFTeDA	712.9 > 668.8		5.20e3	0.1195		4.65					
15	15	13C3-PFBS	302 > 98.8	6.50e3	6.47e4	0.1195	0.032	2.92	2.92	0.502	131	125.2	
16	16	13C2-PFHxA	315 > 269.8	1.89e4	6.47e4	0.1195	0.296	3.15	3.16	1.46	41.2	98.5	
17	17	13C4-PFHpA	367.2 > 321.8	4.32e4	6.47e4	0.1195	0.302	3.43	3.43	3.34	92.7	88.6	
18	18	18O2-PFHxS	403 > 102.6	4.60e3	1.04e4	0.1195	0.434	3.49	3.50	5.52	106	101.7	
19	19	13C2-PFOA	414.9 > 369.7	5.48e4	5.40e4	0.1195	1.140	3.62	3.63	12.7	93.1	89.0	
20	20	13C5-PFNA	468.2 > 422.9	4.51e4	6.15e4	0.1195	0.958	3.80	3.81	9.17	80.1	76.6	
21	21	13C8-PFOS	507 > 79.9	1.04e4	9.76e3	0.1195	1.061	3.85	3.86	13.3	105	100.3	
22	22	13C2-PFDA	515.1 > 469.9	3.63e4	4.33e4	0.1195	0.942	3.97	3.98	10.5	93.0	88.9	
23	23	13C2-PFUnA	565 > 519.8	2.66e4	3.49e4	0.1195	1.084	4.13	4.14	9.54	73.6	70.4	
24	24	d3-N-MeFOSAA	573.3 > 419	6.73e3	3.49e4	0.1195	0.240	4.00	4.01	2.41	83.9	80.2	
25	25	d5-N-EtFOSAA	589.3 > 419	6.07e3	3.49e4	0.1195	0.247	4.07	4.07	2.17	73.5	70.3	
26	26	13C2-PFDoA	615 > 569.7	2.05e3	3.49e4	0.1195	0.127	4.32	4.29	0.735	48.4	46.3	H
27	27	13C2-PFTeDA	714.8 > 669.6	5.20e3	3.49e4	0.1195	0.883	4.64	4.64	1.86	17.6	16.9	H
28	28	13C5-PFHxA	318 > 272.9	6.47e4	6.47e4	0.1195	1.000	3.15	3.17	5.00	41.8	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.04e4	1.04e4	0.1195	1.000	3.49	3.50	12.5	105	100.0	
30	30	13C8-PFOA	421.3 > 376	5.40e4	5.40e4	0.1195	1.000	3.62	3.63	12.5	105	100.0	
31	31	13C9-PFNA	472.2 > 426.9	6.15e4	6.15e4	0.1195	1.000	3.82	3.81	12.5	105	100.0	
32	32	13C4-PFOS	503 > 79.9	9.76e3	9.76e3	0.1195	1.000	3.85	3.86	12.5	105	100.0	

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:55:15 Pacific Daylight Time

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.33e4	4.33e4	0.1195	1.000	3.97	3.97	12.5	105	100.0
34	34	13C7-PFUnA	570.1 > 524.8	3.49e4	3.49e4	0.1195	1.000	4.13	4.14	12.5	105	100.0
35	35	Total PFBS	299 > 79.7	1.56e2	6.50e3	0.1195		2.91		0.299	0.546	
36	36	Total PFHxS	398.9 > 79.6	2.46e2	4.60e3	0.1195		3.48		0.669	3.02	
37	37	Total PFOA	413 > 368.7	2.97e4	5.48e4	0.1195		3.61		6.78	59.0	
38	38	Total PFOS	499 > 79.9	3.13e2	1.04e4	0.1195		3.84		0.377	2.55	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1195		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1195		4.06		0.000		

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Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:55:15 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	155.521	6504.721	0.299	bb	0.5

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	246.186	4600.104	0.669	MM	3.0

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.63	29691.762	54765.297	6.777	bb	59.0

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.86	312.924	10388.834	0.377	MM	2.6

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
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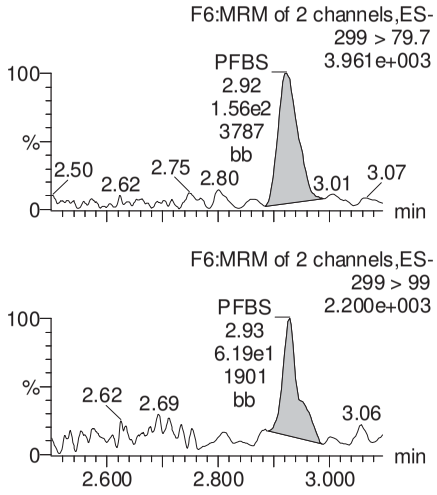
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

Total PFBS



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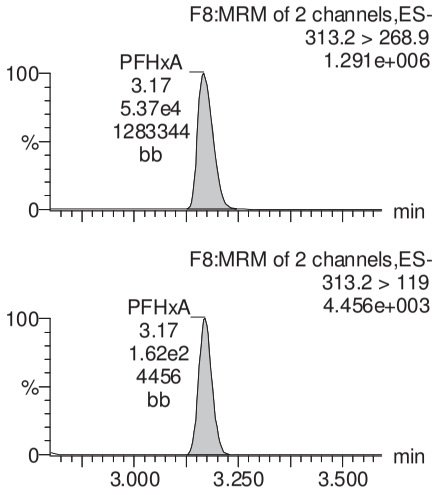

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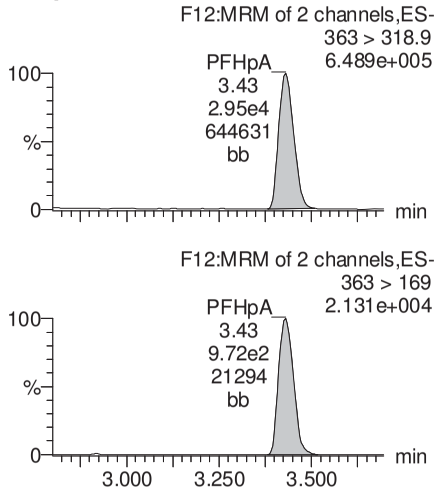
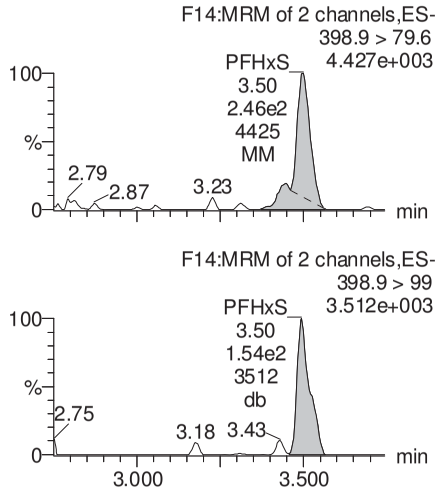
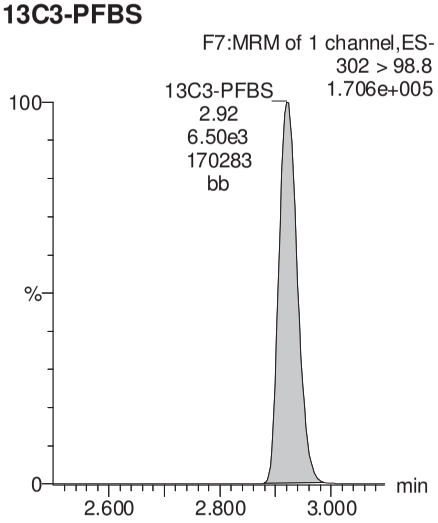


Total PFHxS



13C3-PFBS



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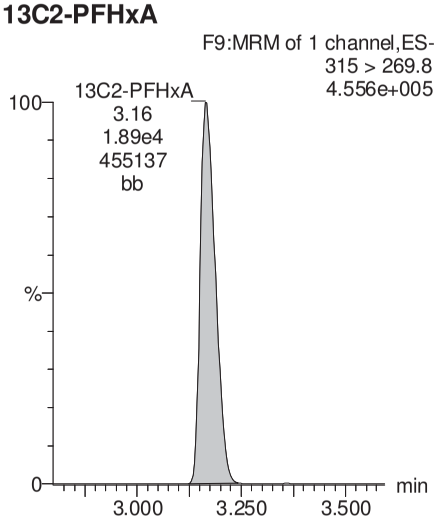

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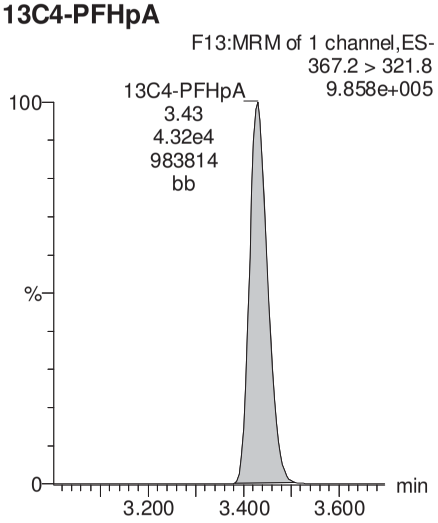

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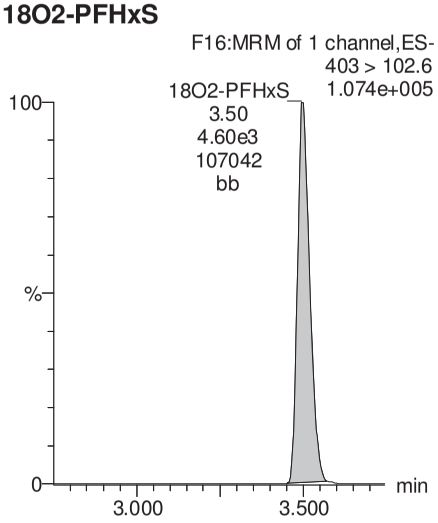

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Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
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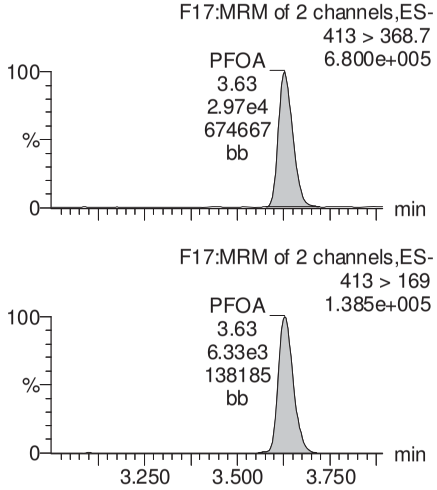
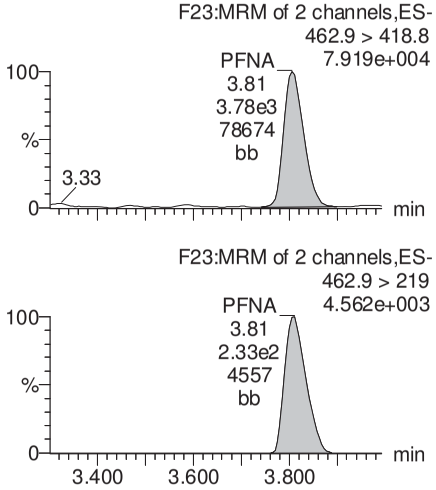
Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

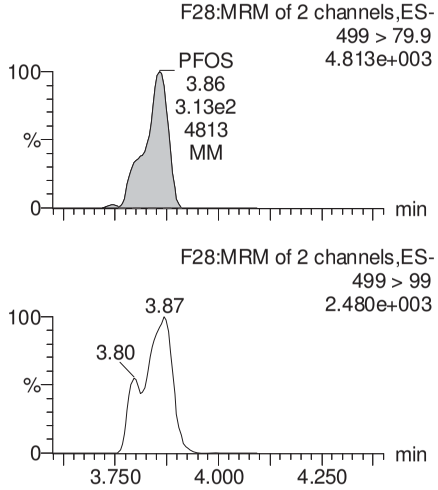
Total PFOA



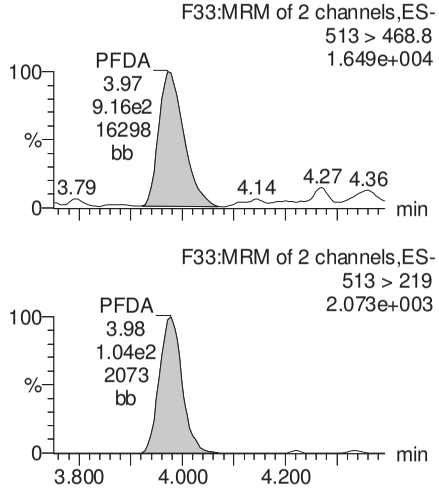
PFNA



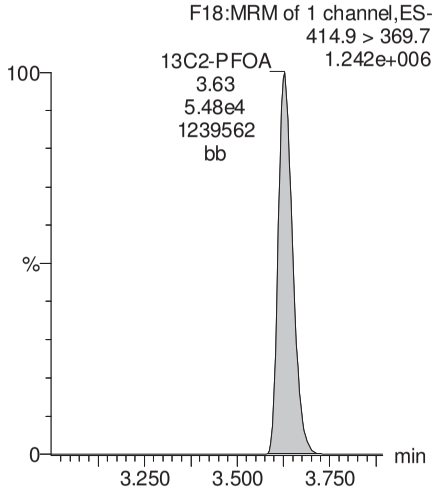
Total PFOS



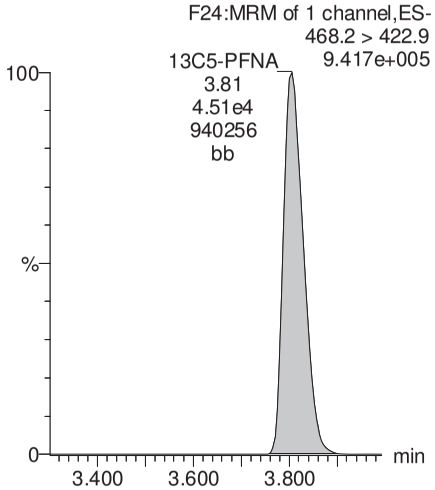
PFDA



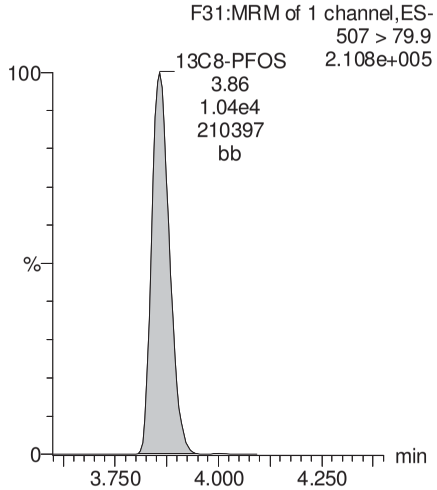
13C2-PFOA



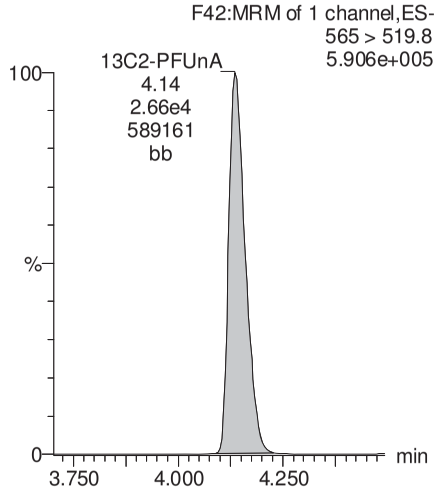
13C5-PFNA



13C8-PFOS



13C2-PFUnA



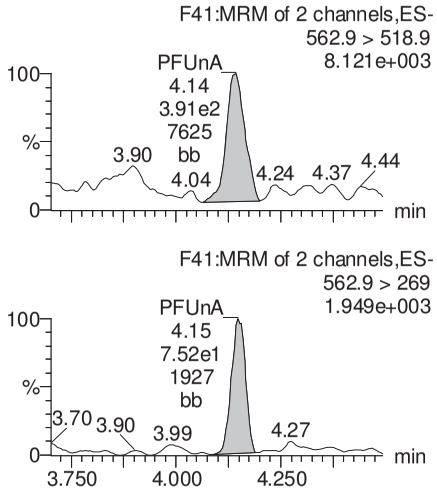
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

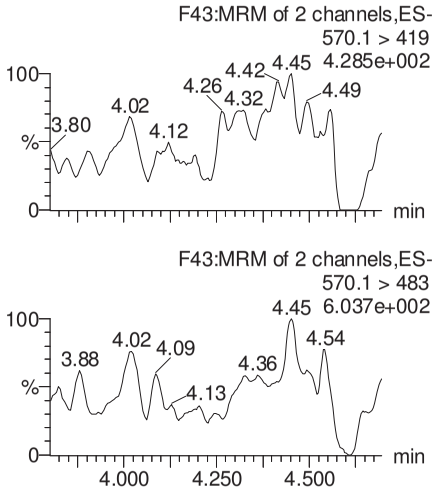
Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:55:15 Pacific Daylight Time

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

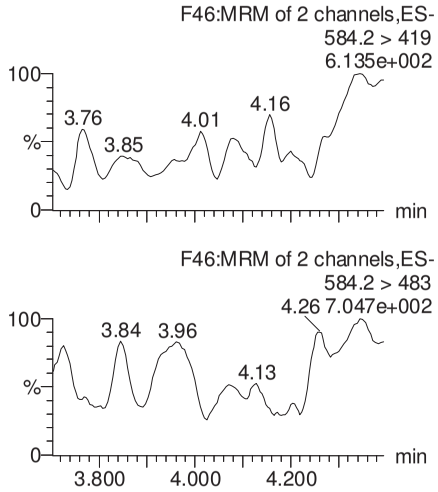
PFUnA



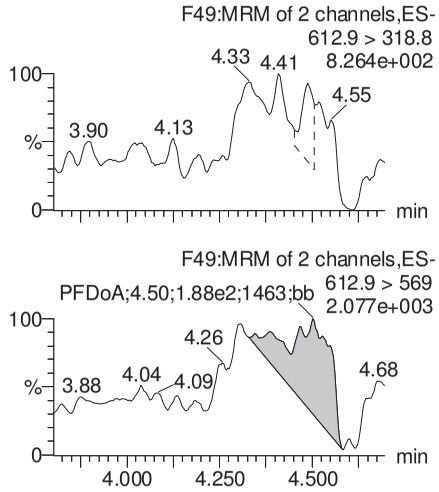
N-MeFOSAA



N-EtFOSAA



PFDoA



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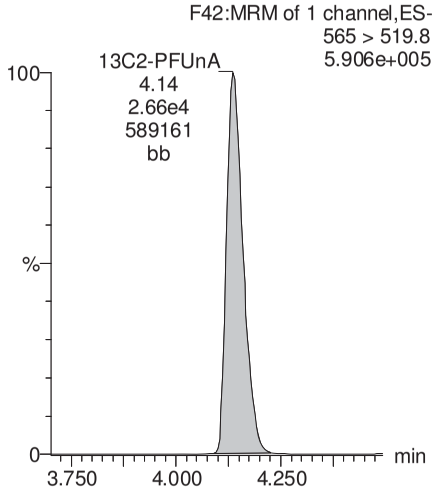

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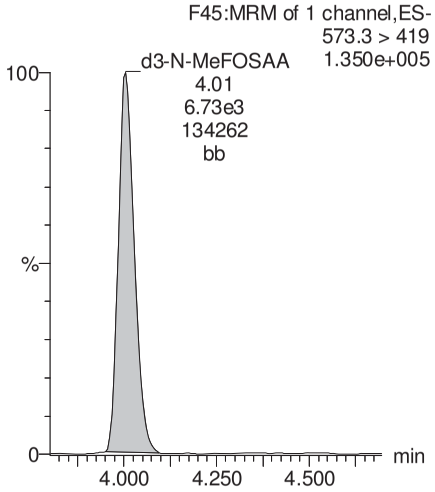

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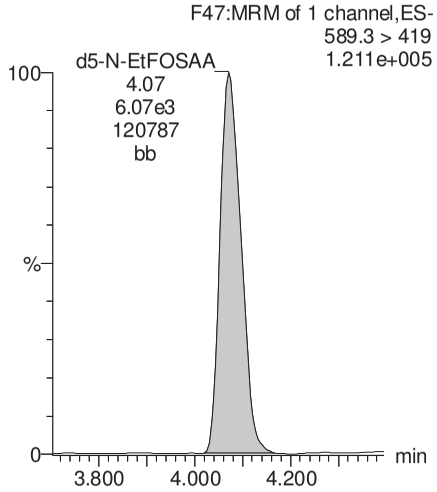
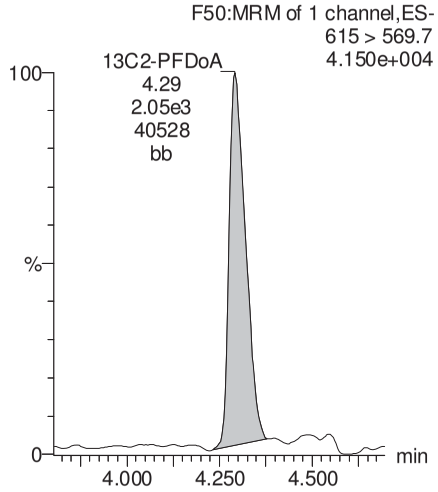


13C2-PFDoA



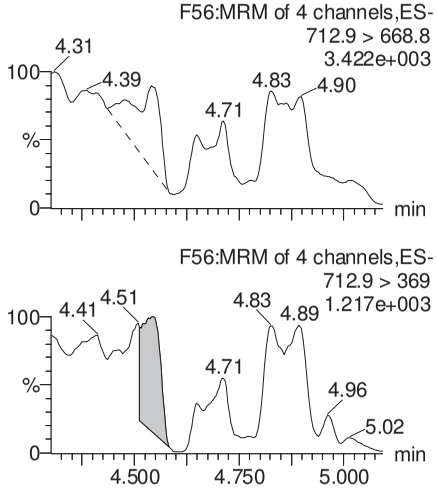
GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:55:15 Pacific Daylight Time

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

PFTeDA



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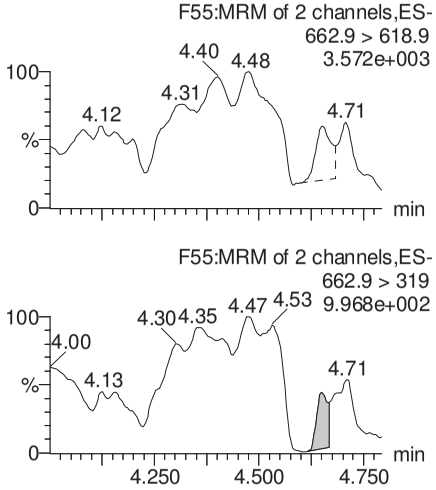
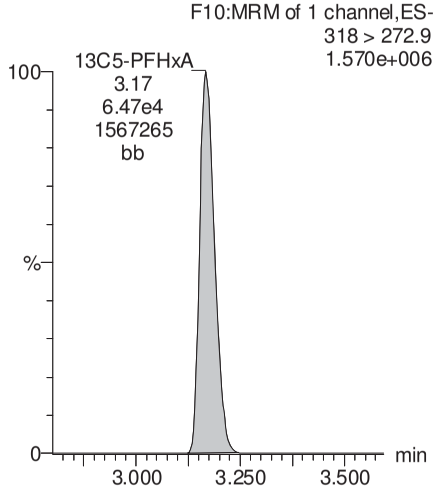
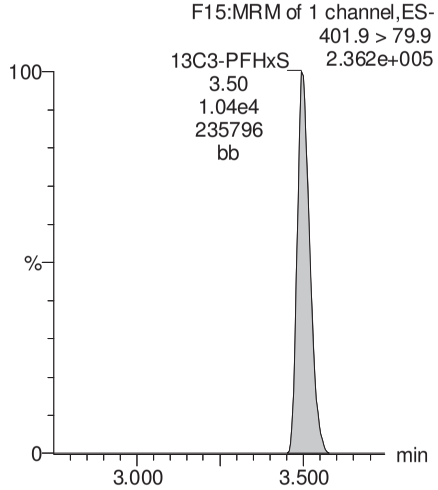


13C5-PFHxA



13C3-PFHxS



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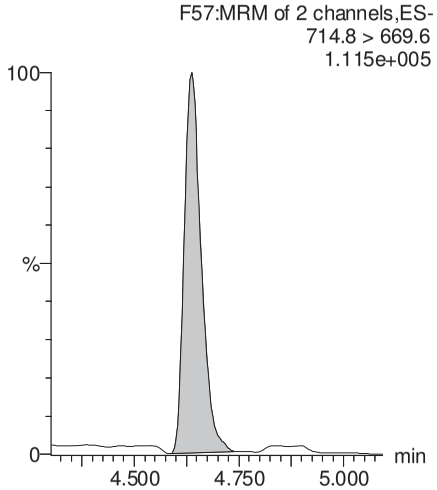
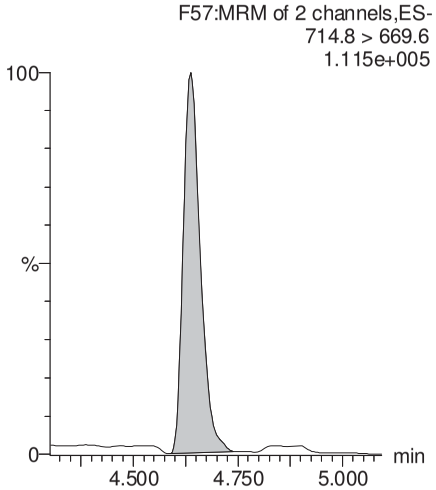
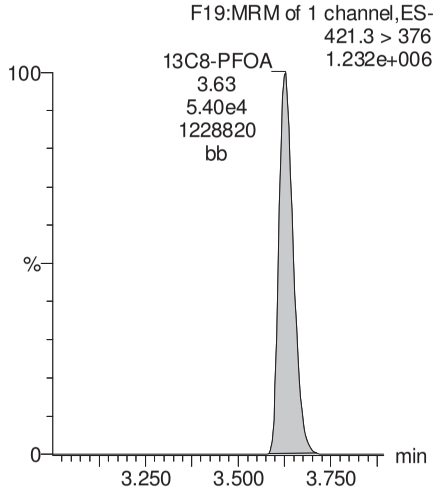


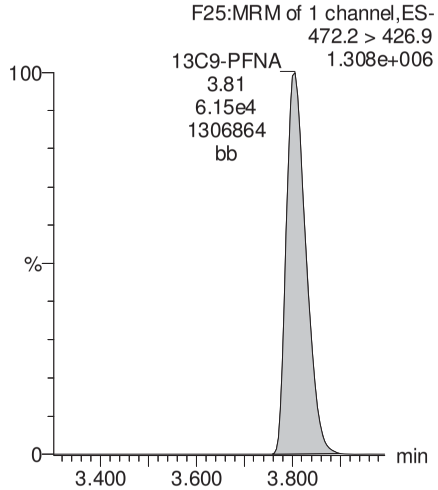
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



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Vista Analytical Laboratory

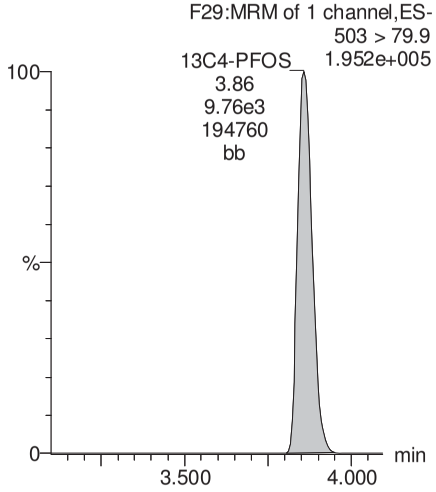
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-24.qld

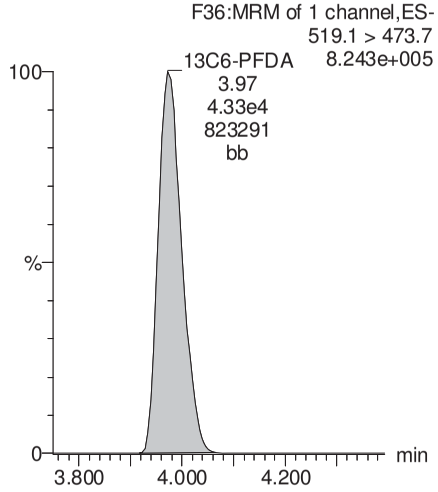
Last Altered: Wednesday, July 19, 2017 15:55:05 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:55:15 Pacific Daylight Time

Name: 170706M1_24, Date: 06-Jul-2017, Time: 12:42:00, ID: 1700789-08 MH-125.9T-20170627 0.11951, Description: MH-125.9T-20170627

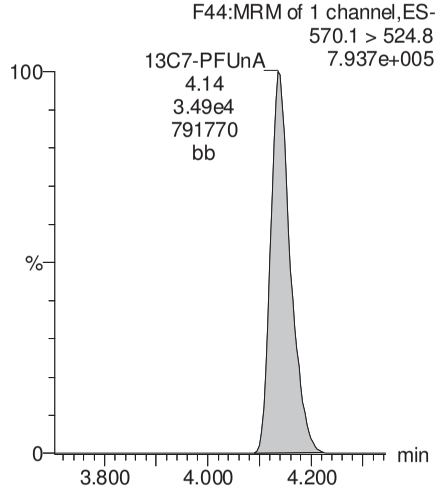
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	1	PFBS	299 > 79.7	1.89e2	5.89e3	0.1235		2.92	2.92	0.401	0.972		
2	2	PFHxA	313.2 > 268.9	4.66e4	1.85e4	0.1235		3.16	3.17	12.6	71.9		
3	3	PFHpA	363 > 318.9	2.44e4	4.34e4	0.1235		3.43	3.43	7.02	46.2		
4	4	PFHxS	398.9 > 79.6	4.01e2	4.40e3	0.1235		3.55	3.50	1.14	4.95		
5	5	PFOA	413 > 368.7	1.95e4	5.30e4	0.1235		3.63	3.62	4.59	38.1		
6	6	PFNA	462.9 > 418.8	5.82e3	4.56e4	0.1235		3.82	3.80	1.59	11.1		
7	7	PFOS	499 > 79.9	1.45e3	9.91e3	0.1235		3.86	3.85	1.83	13.6		
8	8	PFDA	513 > 468.8	1.96e3	3.58e4	0.1235		4.00	3.97	0.683	3.26		
9	9	PFUnA	562.9 > 518.9	1.22e3	3.13e4	0.1235		4.13	4.14	0.489	3.51		
10	10	N-MeFOSAA	570.1 > 419		6.51e3	0.1235		4.00					
11	11	N-EtFOSAA	584.2 > 419		5.45e3	0.1235		4.08					
12	12	PFDoA	612.9 > 318.8		1.92e3	0.1235		4.31					
13	13	PFTrDA	662.9 > 618.9		1.92e3	0.1235		4.50					
14	14	PFTeDA	712.9 > 668.8		9.14e3	0.1235		4.65					
15	15	13C3-PFBS	302 > 98.8	5.89e3	6.41e4	0.1235	0.032	2.92	2.92	0.460	116	114.5	
16	16	13C2-PFHxA	315 > 269.8	1.85e4	6.41e4	0.1235	0.296	3.15	3.17	1.44	39.4	97.5	
17	17	13C4-PFHpA	367.2 > 321.8	4.34e4	6.41e4	0.1235	0.302	3.43	3.43	3.39	91.0	89.9	
18	18	18O2-PFHxS	403 > 102.6	4.40e3	1.04e4	0.1235	0.434	3.49	3.50	5.27	98.2	97.1	
19	19	13C2-PFOA	414.9 > 369.7	5.30e4	5.56e4	0.1235	1.140	3.62	3.62	11.9	84.6	83.7	
20	20	13C5-PFNA	468.2 > 422.9	4.56e4	5.44e4	0.1235	0.958	3.80	3.80	10.5	88.6	87.6	
21	21	13C8-PFOS	507 > 79.9	9.91e3	8.97e3	0.1235	1.061	3.85	3.85	13.8	105	104.1	
22	22	13C2-PFDA	515.1 > 469.9	3.58e4	4.42e4	0.1235	0.942	3.97	3.97	10.1	87.1	86.1	
23	23	13C2-PFUnA	565 > 519.8	3.13e4	3.61e4	0.1235	1.084	4.13	4.14	10.8	80.8	79.9	
24	24	d3-N-MeFOSAA	573.3 > 419	6.51e3	3.61e4	0.1235	0.240	4.00	4.00	2.25	75.9	75.0	
25	25	d5-N-EtFOSAA	589.3 > 419	5.45e3	3.61e4	0.1235	0.247	4.07	4.07	1.89	61.8	61.1	
26	26	13C2-PFDoA	615 > 569.7	1.92e3	3.61e4	0.1235	0.127	4.32	4.29	0.666	42.4	41.9	H
27	27	13C2-PFTeDA	714.8 > 669.6	9.14e3	3.61e4	0.1235	0.883	4.64	4.63	3.17	29.0	28.7	H
28	28	13C5-PFHxA	318 > 272.9	6.41e4	6.41e4	0.1235	1.000	3.15	3.17	5.00	40.5	100.0	
29	29	13C3-PFHxS	401.9 > 79.9	1.04e4	1.04e4	0.1235	1.000	3.49	3.50	12.5	101	100.0	
30	30	13C8-PFOA	421.3 > 376	5.56e4	5.56e4	0.1235	1.000	3.62	3.62	12.5	101	100.0	
31	31	13C9-PFNA	472.2 > 426.9	5.44e4	5.44e4	0.1235	1.000	3.82	3.80	12.5	101	100.0	
32	32	13C4-PFOS	503 > 79.9	8.97e3	8.97e3	0.1235	1.000	3.85	3.86	12.5	101	100.0	

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.42e4	4.42e4	0.1235	1.000	3.97	3.97	12.5	101	100.0
34	34	13C7-PFUnA	570.1 > 524.8	3.61e4	3.61e4	0.1235	1.000	4.13	4.14	12.5	101	100.0
35	35	Total PFBS	299 > 79.7	1.89e2	5.89e3	0.1235		2.91		0.401	0.972	
36	36	Total PFHxS	398.9 > 79.6	4.01e2	4.40e3	0.1235		3.48		1.14	4.95	
37	37	Total PFOA	413 > 368.7	1.95e4	5.30e4	0.1235		3.61		4.59	38.1	
38	38	Total PFOS	499 > 79.9	1.45e3	9.91e3	0.1235		3.84		1.83	13.6	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1235		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1235		4.06		0.000		

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	189.022	5891.968	0.401	bb	1.0

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	400.566	4402.677	1.137	MM	4.9

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	19474.768	53014.102	4.592	bb	38.1

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	1454.041	9909.354	1.834	MM	13.6

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

GM 7/19/17

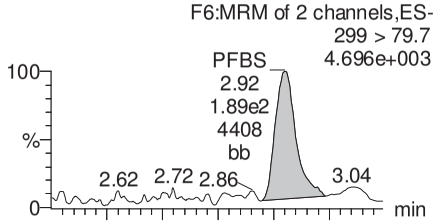
Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

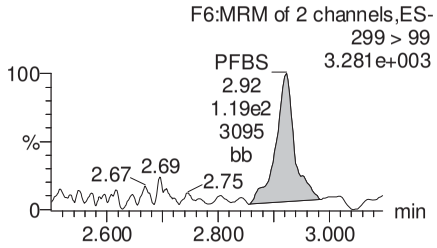
Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

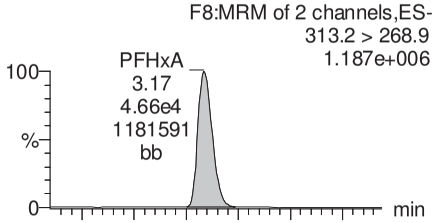
Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

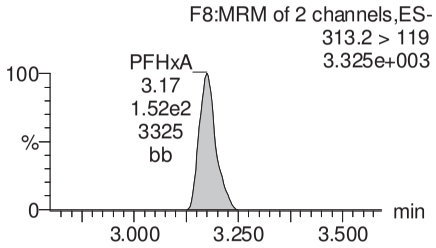
Total PFBS



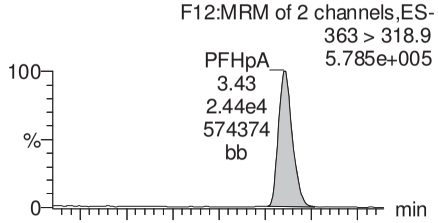


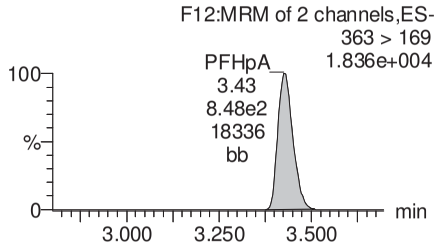
PFHxA





PFHpA





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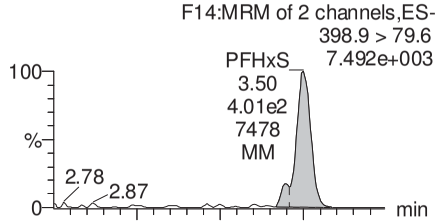

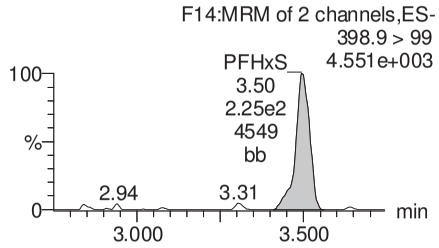

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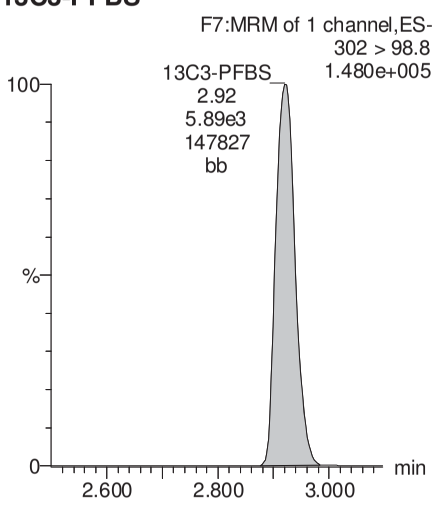

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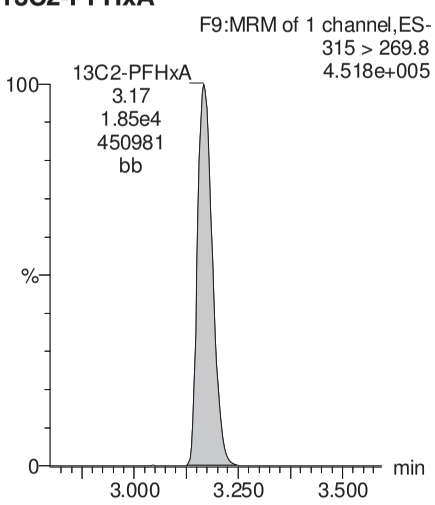

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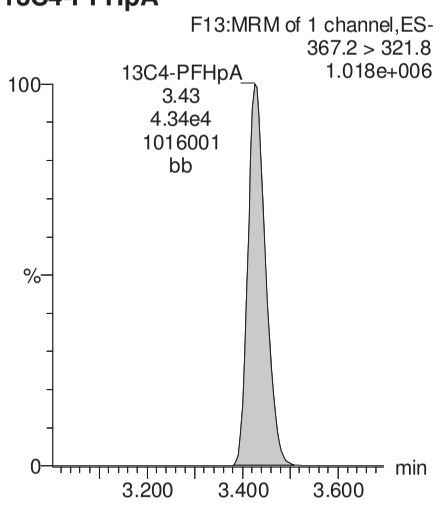
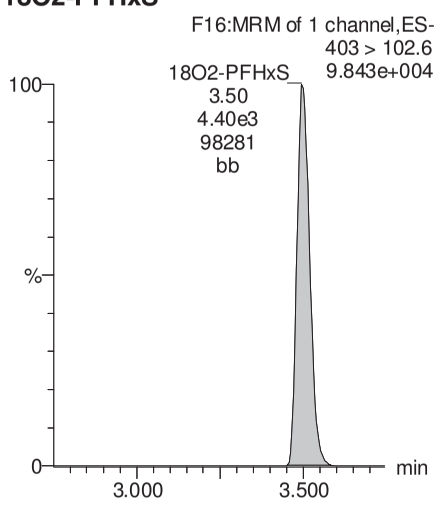


18O2-PFHxS



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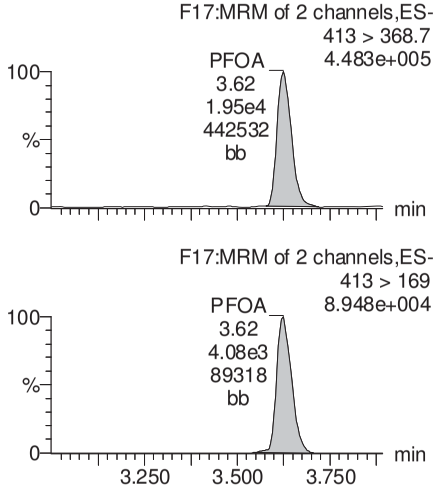
Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

Total PFOA



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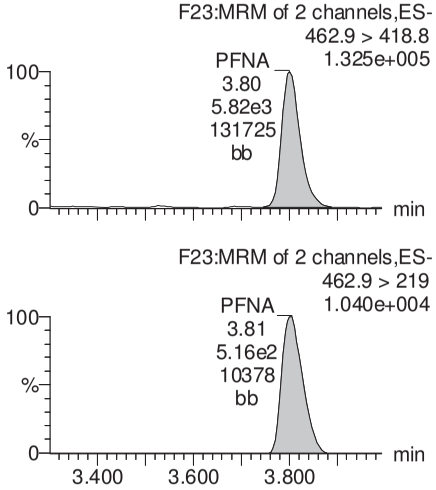
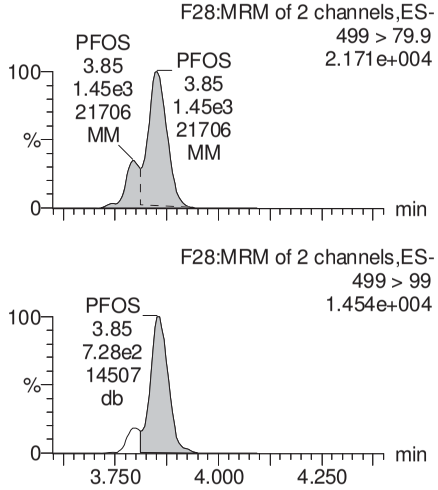
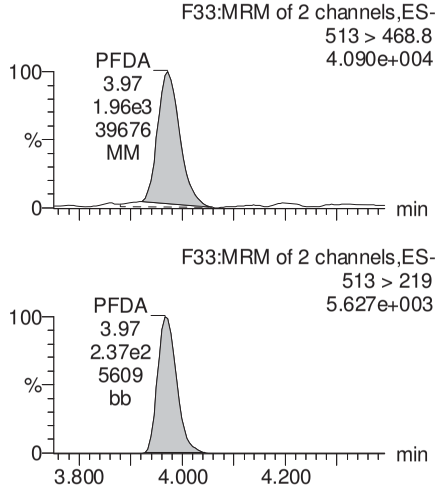


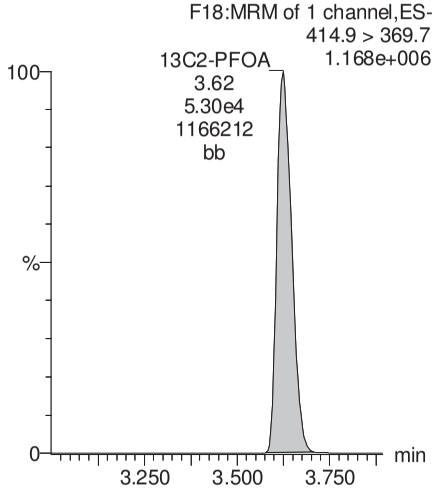
Total PFOS



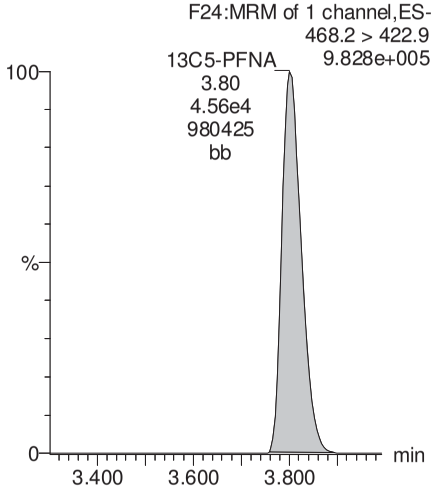
PFDA



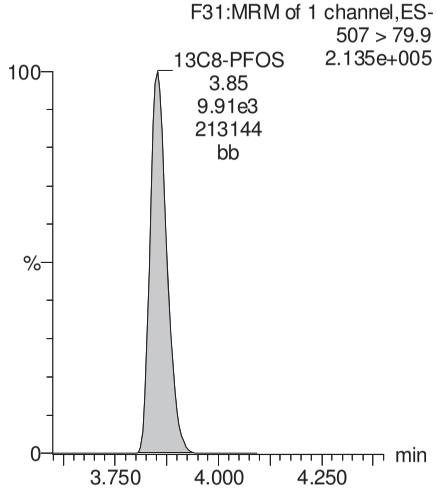
13C2-PFOA



13C5-PFNA



13C8-PFOS



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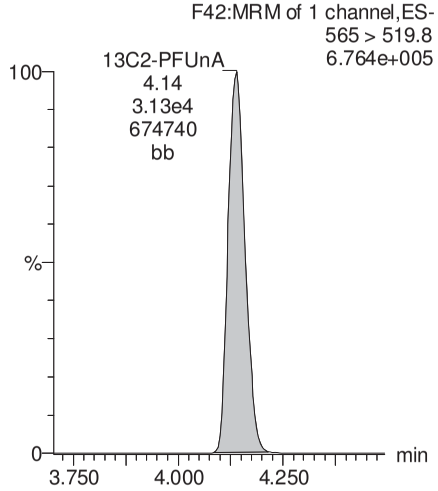

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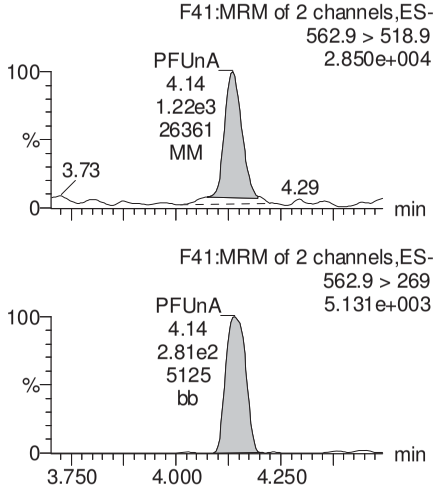
Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

PFUnA



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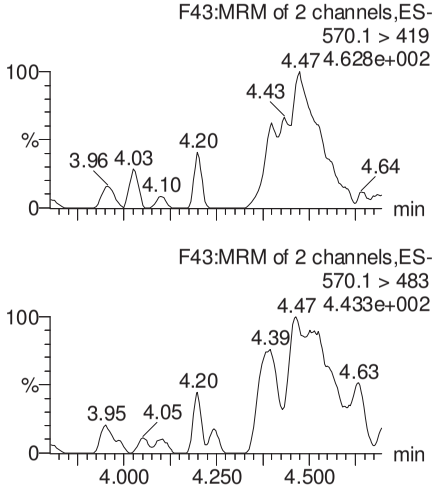

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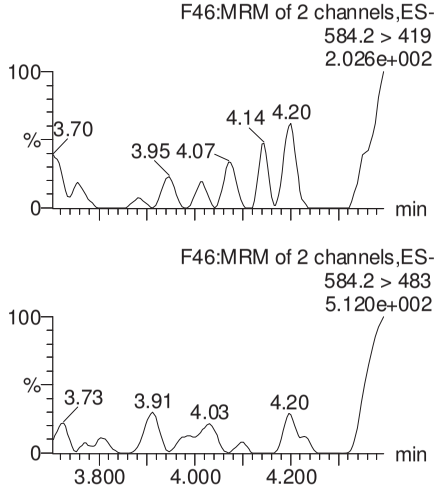

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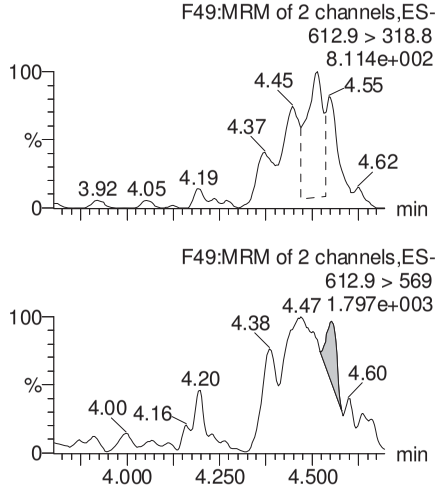

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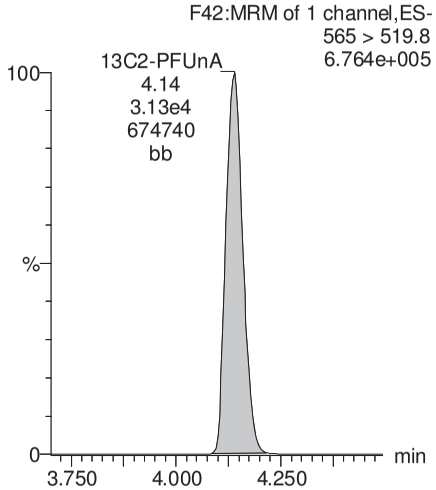

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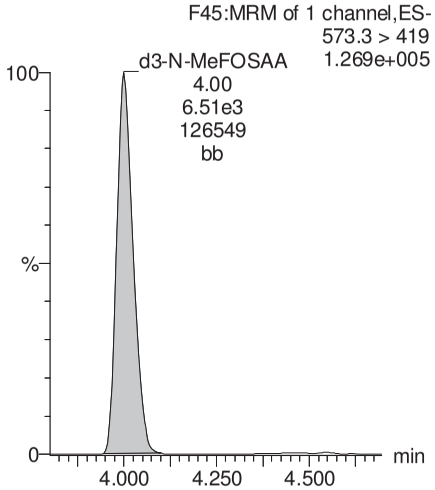

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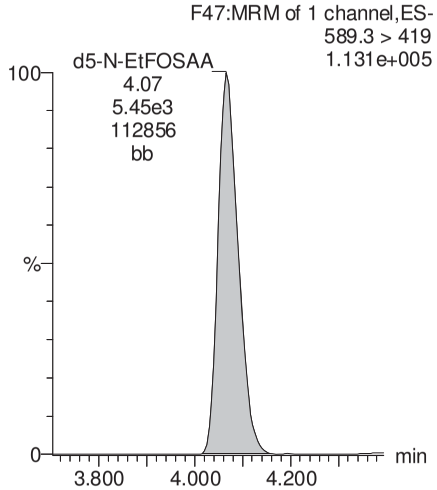

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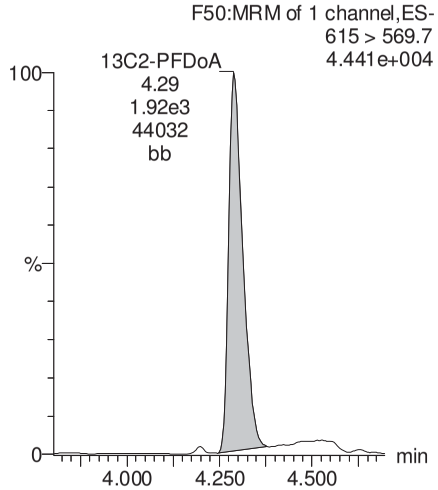

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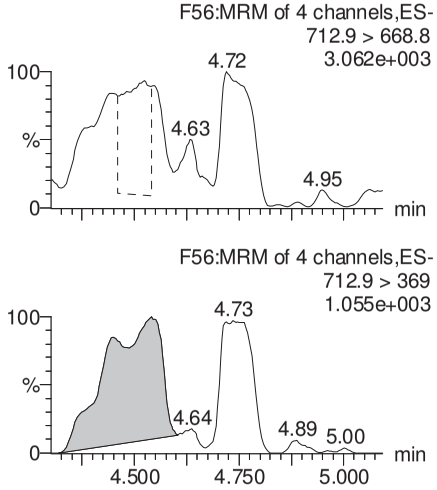
Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

PFTeDA



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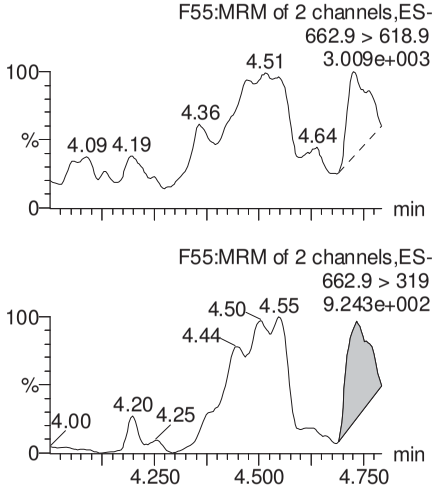

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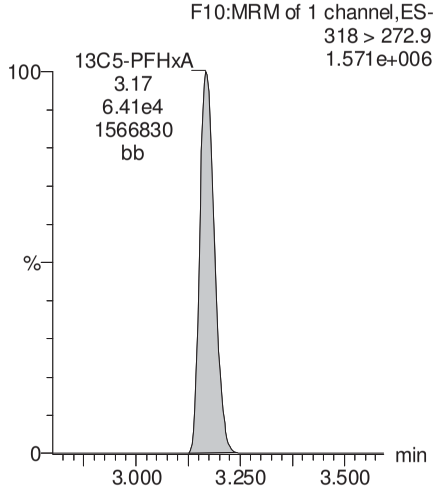

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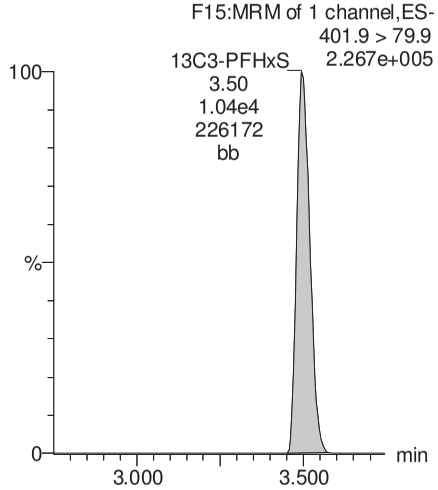

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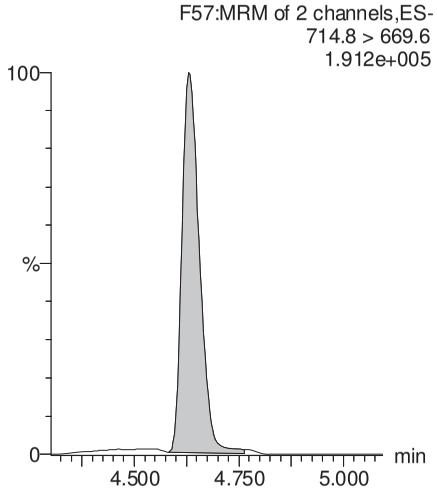

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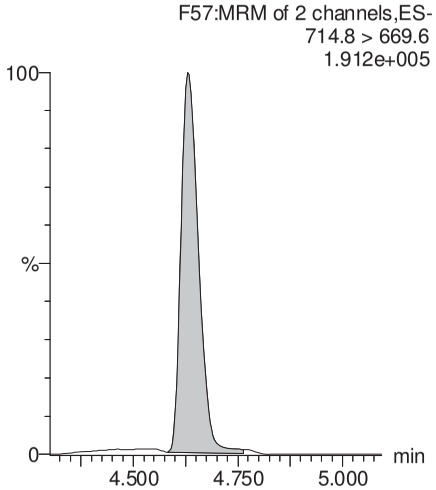
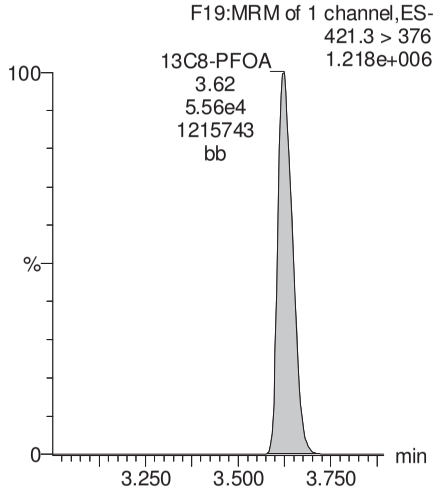
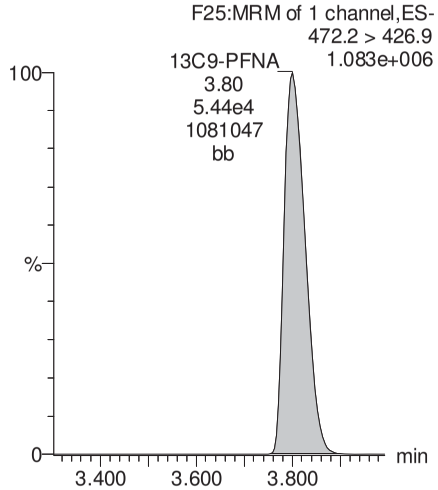


13C8-PFOA



13C9-PFNA



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Vista Analytical Laboratory

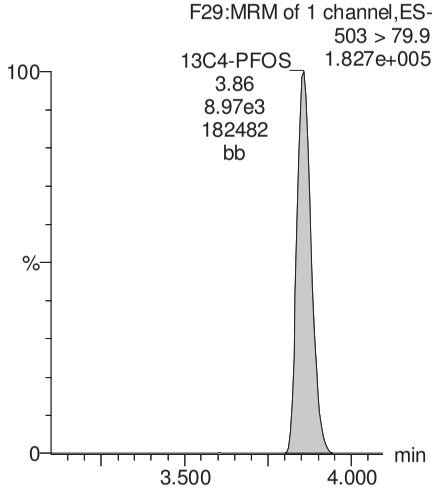
Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-25.qld

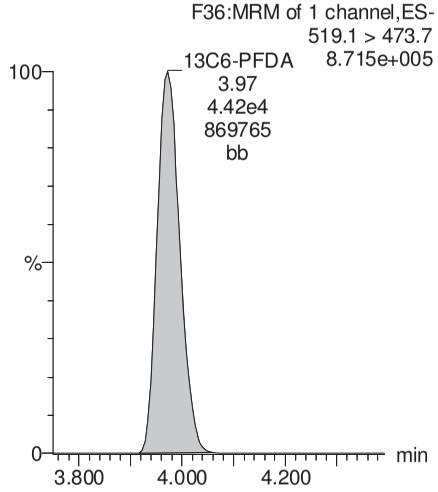
Last Altered: Wednesday, July 19, 2017 15:57:25 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:57:45 Pacific Daylight Time

Name: 170706M1_25, Date: 06-Jul-2017, Time: 12:52:38, ID: 1700789-09 MH-125.9N-20170627 0.12353, Description: MH-125.9N-20170627

13C4-PFOS



13C6-PFDA



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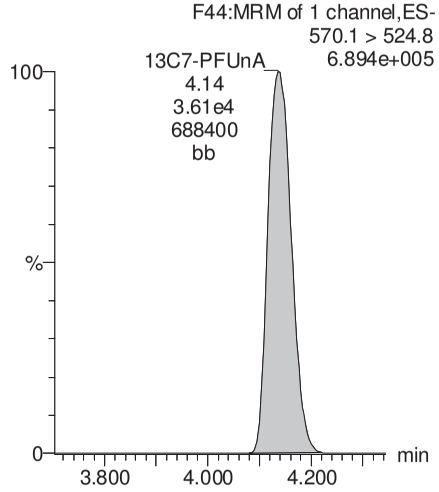

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Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

Last Altered: Wednesday, July 19, 2017 15:59:30 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:59:53 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_26, Date: 06-Jul-2017, Time: 13:03:17, ID: 1700789-10 West Ditch Out-20170627 0.10981, Description: West Ditch Out-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	2.40e2	6.15e3	0.1098		2.92	2.92	0.487	1.51	
2	2	PFHxA	313.2 > 268.9	4.23e4	1.79e4	0.1098		3.16	3.17	11.8	76.0	
3	3	PFHpA	363 > 318.9	2.33e4	3.88e4	0.1098		3.43	3.43	7.52	55.8	
4	4	PFHxS	398.9 > 79.6	4.27e2	4.50e3	0.1098		3.55	3.50	1.19	5.81	
5	5	PFOA	413 > 368.7	1.89e4	5.23e4	0.1098		3.63	3.62	4.51	42.1	
6	6	PFNA	462.9 > 418.8	5.16e3	3.65e4	0.1098		3.82	3.81	1.77	13.9	
7	7	PFOS	499 > 79.9	1.34e3	9.25e3	0.1098		3.86	3.85	1.81	15.1	
8	8	PFDA	513 > 468.8	1.23e3	3.53e4	0.1098		4.00	3.97	0.436	1.67	
9	9	PFUnA	562.9 > 518.9	5.55e2	2.06e4	0.1098		4.13	4.14	0.337	2.41	
10	10	N-MeFOSAA	570.1 > 419		4.97e3	0.1098		4.00				
11	11	N-EtFOSAA	584.2 > 419		4.27e3	0.1098		4.08				
12	12	PFDoA	612.9 > 318.8		2.26e3	0.1098		4.31				
13	13	PFTrDA	662.9 > 618.9		2.26e3	0.1098		4.50				
14	14	PFTeDA	712.9 > 668.8		1.74e4	0.1098		4.65				
15	15	13C3-PFBS	302 > 98.8	6.15e3	6.17e4	0.1098	0.032	2.92	2.92	0.499	141	124.3
16	16	13C2-PFHxA	315 > 269.8	1.79e4	6.17e4	0.1098	0.296	3.15	3.17	1.45	44.5	97.8
17	17	13C4-PFHpA	367.2 > 321.8	3.88e4	6.17e4	0.1098	0.302	3.43	3.43	3.15	95.0	83.4
18	18	18O2-PFHxS	403 > 102.6	4.50e3	1.03e4	0.1098	0.434	3.49	3.50	5.45	114	100.3
19	19	13C2-PFOA	414.9 > 369.7	5.23e4	5.69e4	0.1098	1.140	3.62	3.62	11.5	91.7	80.6
20	20	13C5-PFNA	468.2 > 422.9	3.65e4	5.48e4	0.1098	0.958	3.80	3.81	8.32	79.1	69.5
21	21	13C8-PFOS	507 > 79.9	9.25e3	9.73e3	0.1098	1.061	3.85	3.86	11.9	102	89.6
22	22	13C2-PFDA	515.1 > 469.9	3.53e4	4.02e4	0.1098	0.942	3.97	3.97	11.0	106	93.1
23	23	13C2-PFUnA	565 > 519.8	2.06e4	2.83e4	0.1098	1.084	4.13	4.14	9.10	76.4	67.1
24	24	d3-N-MeFOSAA	573.3 > 419	4.97e3	2.83e4	0.1098	0.240	4.00	4.00	2.20	83.2	73.1
25	25	d5-N-EtFOSAA	589.3 > 419	4.27e3	2.83e4	0.1098	0.247	4.07	4.07	1.89	69.6	61.1
26	26	13C2-PFDoA	615 > 569.7	2.26e3	2.83e4	0.1098	0.127	4.32	4.29	0.998	71.5	62.9
27	27	13C2-PFTeDA	714.8 > 669.6	1.74e4	2.83e4	0.1098	0.883	4.64	4.63	7.71	79.5	69.9
28	28	13C5-PFHxA	318 > 272.9	6.17e4	6.17e4	0.1098	1.000	3.15	3.17	5.00	45.5	100.0
29	29	13C3-PFHxS	401.9 > 79.9	1.03e4	1.03e4	0.1098	1.000	3.49	3.50	12.5	114	100.0
30	30	13C8-PFOA	421.3 > 376	5.69e4	5.69e4	0.1098	1.000	3.62	3.62	12.5	114	100.0
31	31	13C9-PFNA	472.2 > 426.9	5.48e4	5.48e4	0.1098	1.000	3.82	3.81	12.5	114	100.0
32	32	13C4-PFOS	503 > 79.9	9.73e3	9.73e3	0.1098	1.000	3.85	3.86	12.5	114	100.0

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Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

Last Altered: Wednesday, July 19, 2017 15:59:30 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:59:53 Pacific Daylight Time

Name: 170706M1_26, Date: 06-Jul-2017, Time: 13:03:17, ID: 1700789-10 West Ditch Out-20170627 0.10981, Description: West Ditch Out-20170627

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	33	13C6-PFDA	519.1 > 473.7	4.02e4	4.02e4	0.1098	1.000	3.97	3.97	12.5	114	100.0
34	34	13C7-PFUnA	570.1 > 524.8	2.83e4	2.83e4	0.1098	1.000	4.13	4.13	12.5	114	100.0
35	35	Total PFBS	299 > 79.7	2.40e2	6.15e3	0.1098		2.91		0.487	1.51	
36	36	Total PFHxS	398.9 > 79.6	4.27e2	4.50e3	0.1098		3.48		1.19	5.81	
37	37	Total PFOA	413 > 368.7	1.89e4	5.23e4	0.1098		3.61		4.51	42.1	
38	38	Total PFOS	499 > 79.9	1.34e3	9.25e3	0.1098		3.84		1.81	15.1	
39	39	Total N-Me-FOSAA	570.1 > 419	0.00e0		0.1098		3.98		0.000		
40	40	Total N-EtFOSAA	584.2 > 419	0.00e0		0.1098		4.06		0.000		

GM 7/19/17

Vista Analytical Laboratory

Rev'd: MM 7/21/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

Last Altered: Wednesday, July 19, 2017 15:59:30 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 15:59:53 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_26, Date: 06-Jul-2017, Time: 13:03:17, ID: 1700789-10 West Ditch Out-20170627 0.10981, Description: West Ditch Out-20170627

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.92	239.764	6153.009	0.487	bb	1.5

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.50	427.223	4496.256	1.188	bb	5.8

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.62	18864.682	52304.340	4.508	bb	42.1

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	7	PFOS	499 > 79.9	3.85	1338.782	9249.305	1.809	MM	15.1

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1									

GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

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Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
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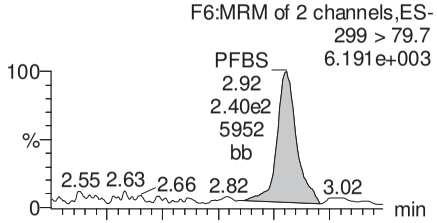
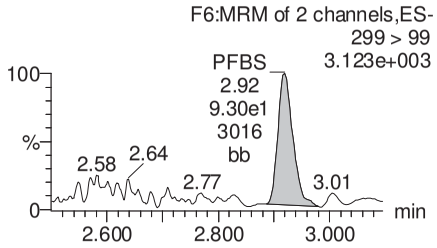
Name: 170706M1_26, Date: 06-Jul-2017, Time: 13:03:17, ID: 1700789-10 West Ditch Out-20170627 0.10981, Description: West Ditch Out-20170627

Total PFBS





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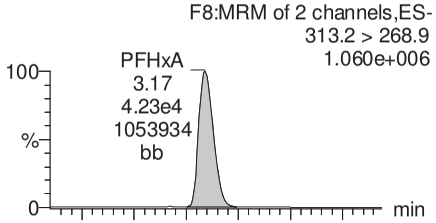

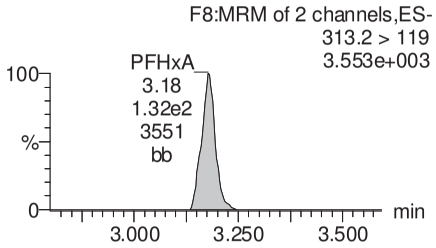

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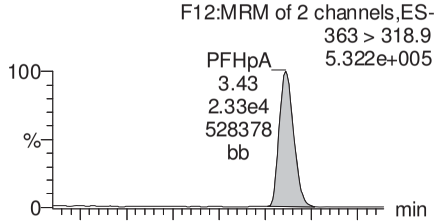
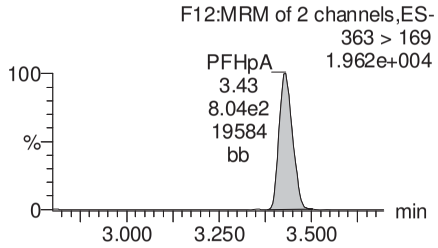
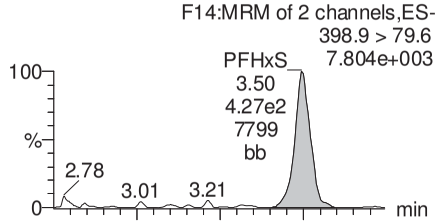
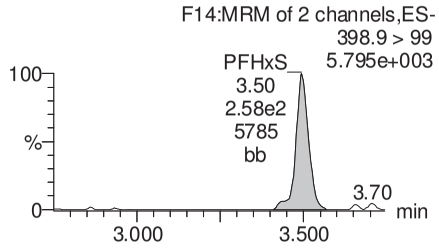


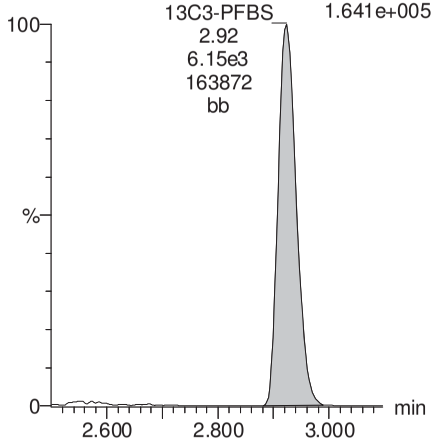


Total PFHxS





13C3-PFBS



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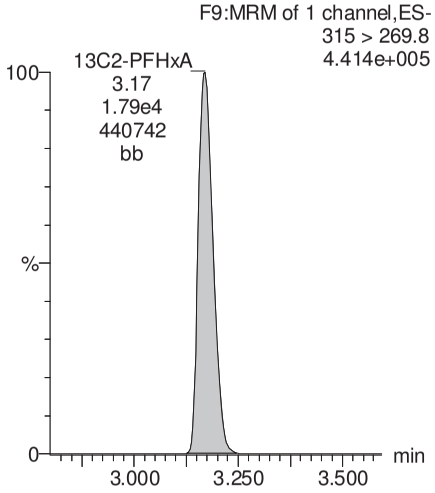

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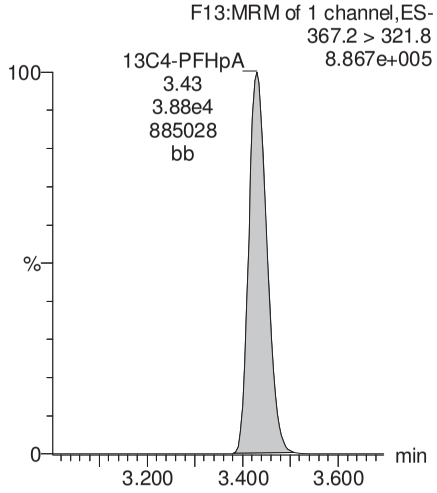

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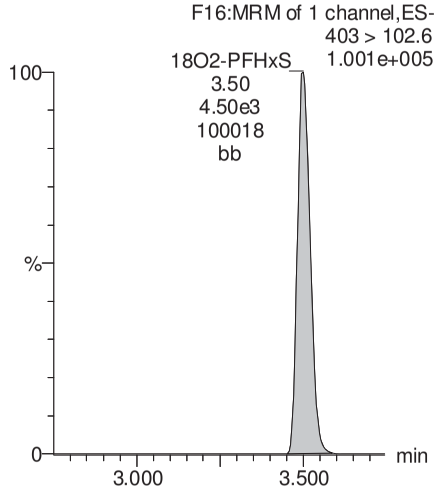

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Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

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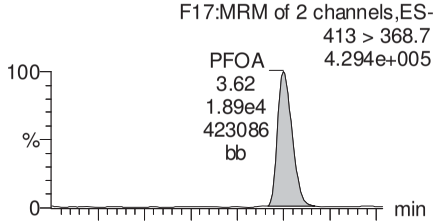
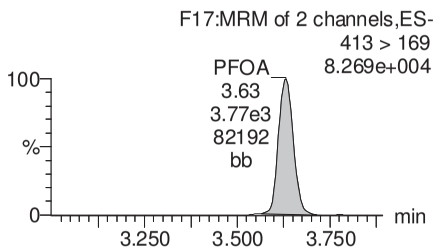
Name: 170706M1_26, Date: 06-Jul-2017, Time: 13:03:17, ID: 1700789-10 West Ditch Out-20170627 0.10981, Description: West Ditch Out-20170627

Total PFOA





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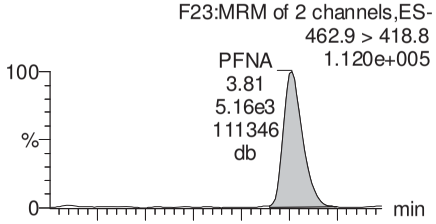
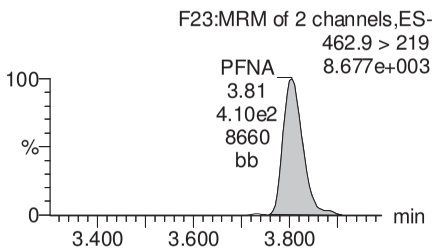
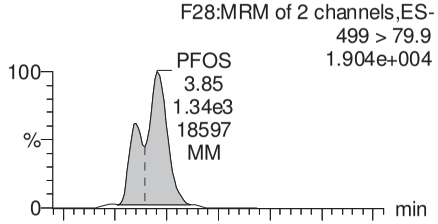
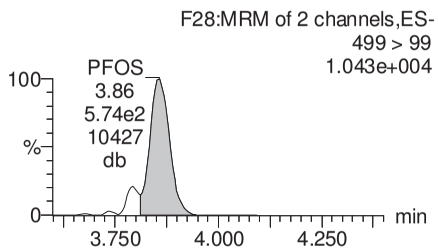


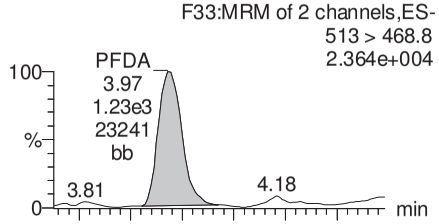


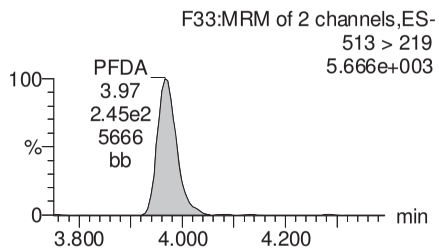
Total PFOS





PFDA





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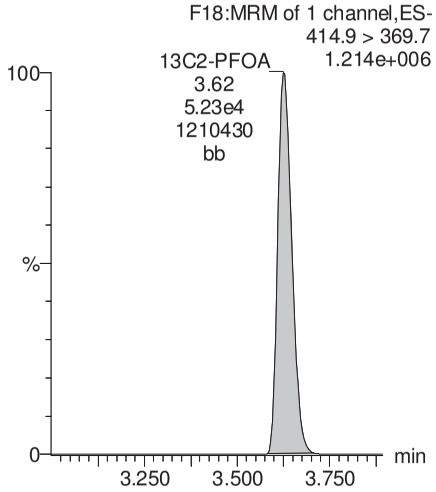
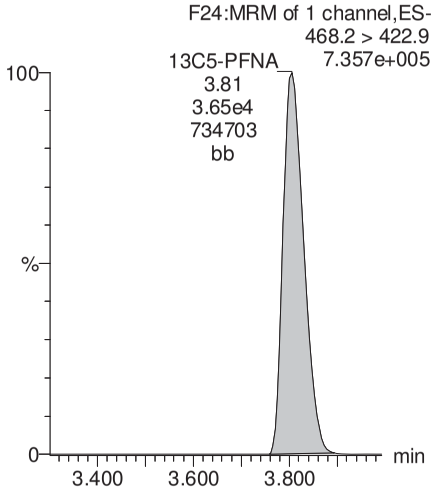
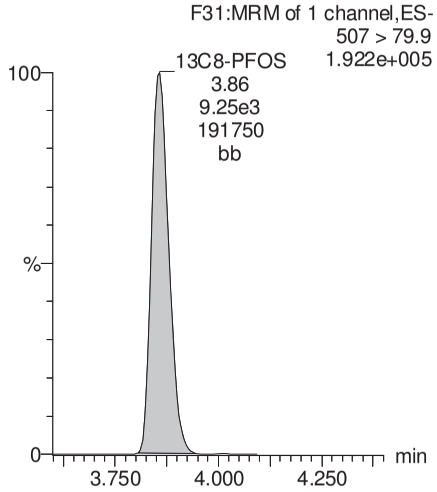


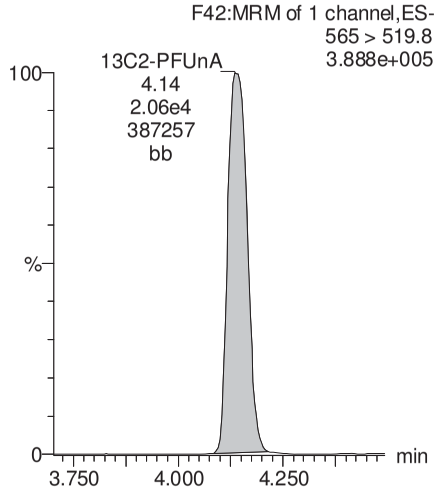
13C5-PFNA



13C8-PFOS



13C2-PFUnA



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Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

Last Altered: Wednesday, July 19, 2017 15:59:30 Pacific Daylight Time
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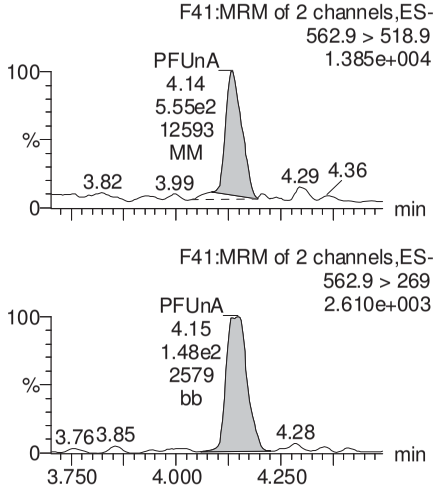
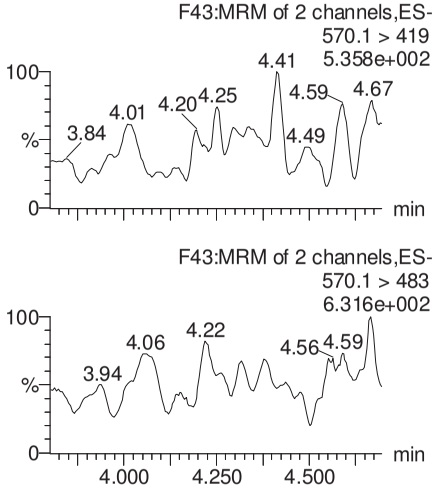
Name: 170706M1_26, Date: 06-Jul-2017, Time: 13:03:17, ID: 1700789-10 West Ditch Out-20170627 0.10981, Description: West Ditch Out-20170627

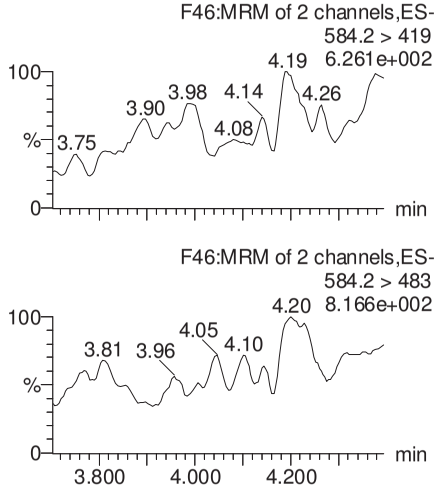
PFUnA



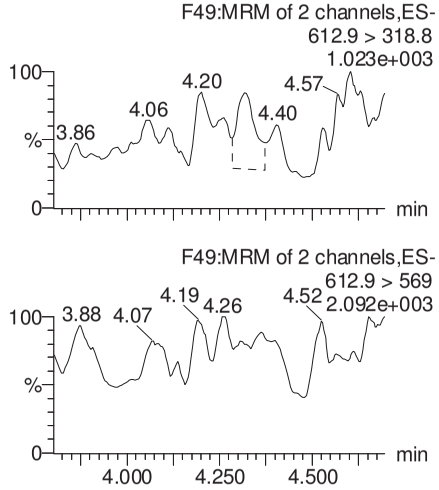
N-MeFOSAA



N-EtFOSAA



PFDoA



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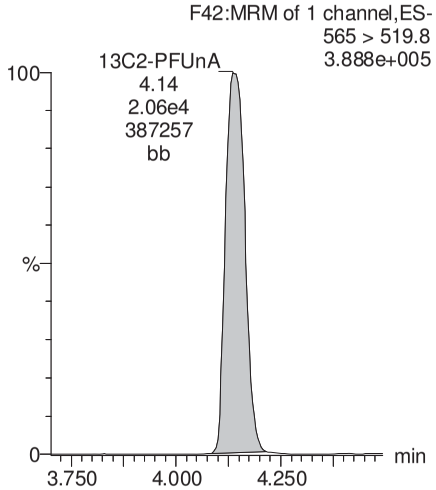
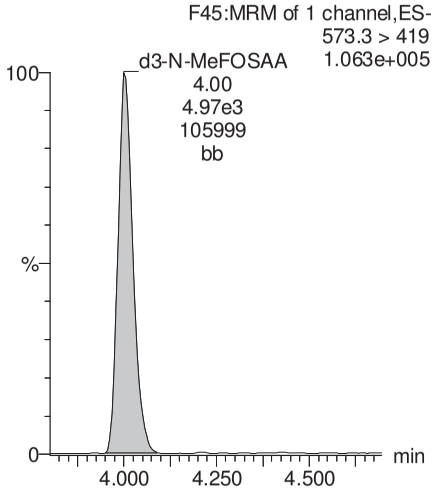


d3-N-MeFOSAA



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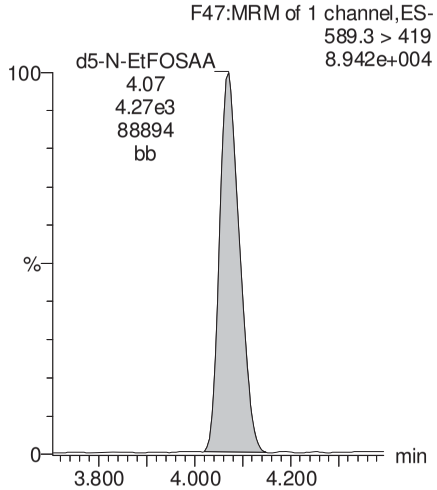

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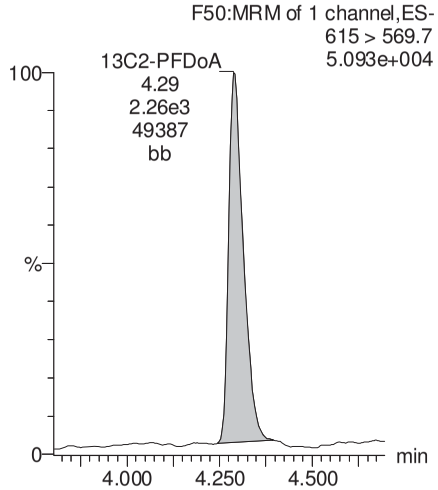

GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

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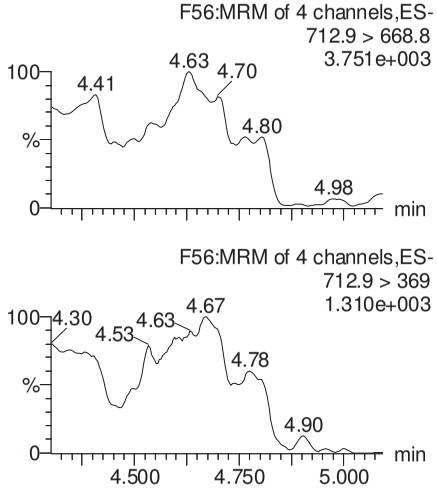
PFTeDA



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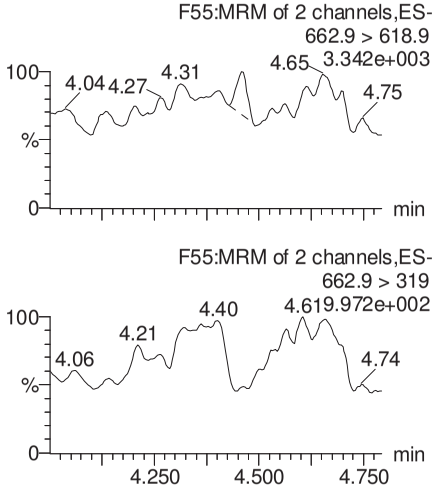

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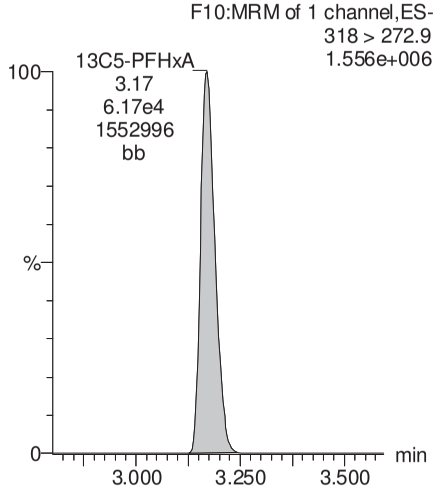

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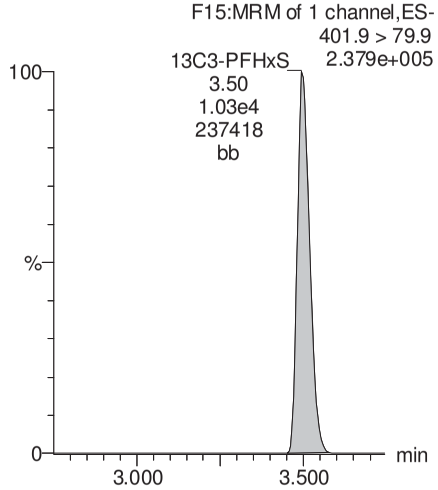

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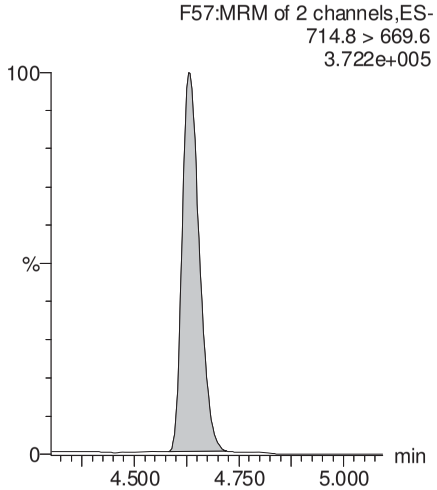

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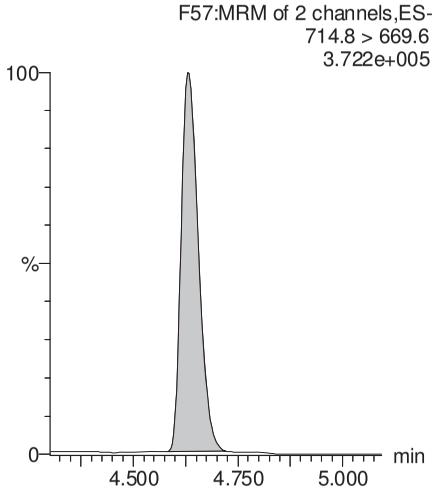

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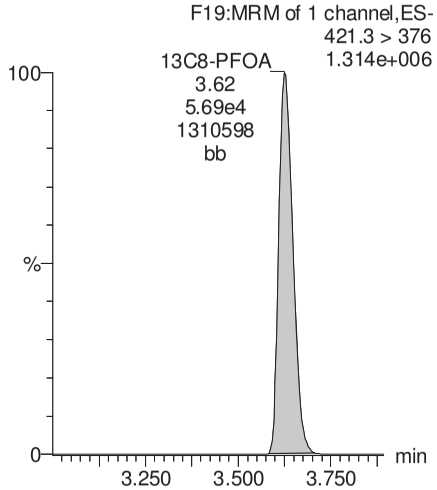

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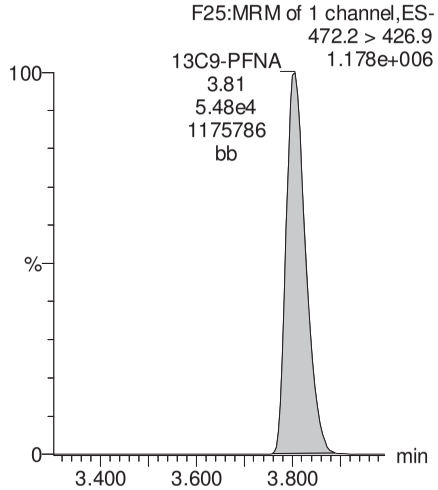

GM 7/19/17

Dataset: U:\Q4.PRO\results\170706M1\170706M1-26.qld

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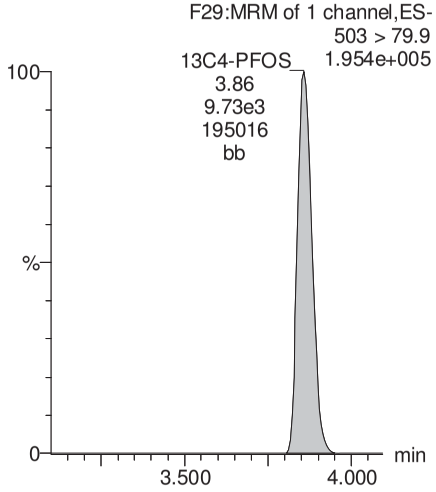
13C4-PFOS



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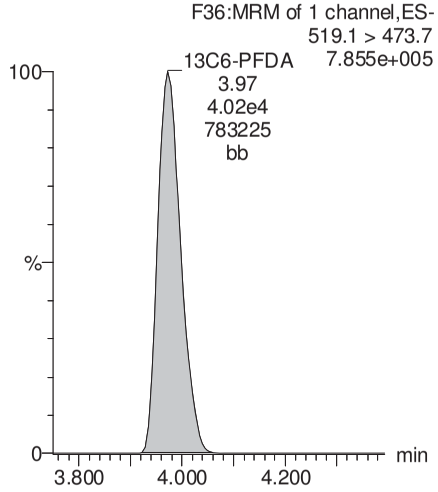

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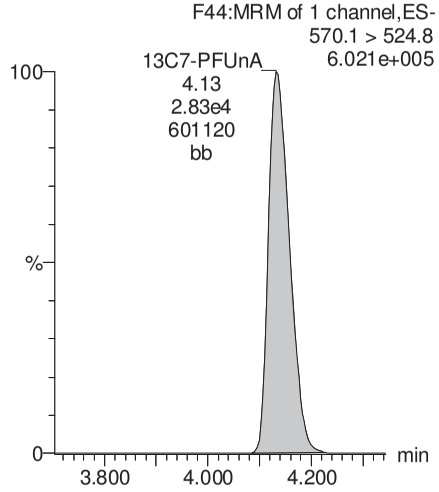

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CONTINUING CALIBRATION

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-4.qld

Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

AC 7/17/17

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBA	213.0 > 168.8	1.29e4	1.43e4	1.000		1.43	1.46	11.2	10.0	100.4
2	2	PFPeA	263.1 > 218.9	2.14e4	2.80e4	1.000		2.72	2.71	9.59	9.84	98.4
3	3	PFBS	299 > 79.7	5.19e3	3.64e3	1.000		2.92	2.91	17.8	9.47	94.7
4	4	PFHxA	313.2 > 268.9	3.26e4	1.27e4	1.000		3.16	3.16	12.8	9.15	91.5
5	5	PFHpA	363 > 318.9	2.90e4	3.01e4	1.000		3.43	3.42	12.0	9.59	95.9
6	6	PFHxS	398.9 > 79.6	4.11e3	3.19e3	1.000		3.55	3.49	16.1	9.48	94.8
7	7	PFOA	413 > 368.7	4.00e4	5.11e4	1.000		3.63	3.62	9.78	10.3	102.6
8	8	PFHpS	448.9 > 98.8	4.32e3	5.11e4	1.000		3.69	3.67	1.06	10.4	103.9
9	9	PFNA	462.9 > 418.8	5.19e4	6.58e4	1.000		3.82	3.79	9.85	8.78	87.8
10	10	PFOSA	498.1 > 77.8	4.66e3	5.83e3	1.000		3.83	3.81	10.0	9.47	94.7
11	11	PFOS	499 > 79.9	1.01e4	1.28e4	1.000		3.86	3.84	9.84	9.31	93.1
12	12	PFDA	513 > 468.8	5.66e4	6.11e4	1.000		4.00	3.96	11.6	9.59	95.9
13	13	PFUnA	562.9 > 518.9	4.84e4	6.24e4	1.000		4.16	4.12	9.70	11.3	112.6
14	14	PFDS	598.9 > 98.7	5.18e3	6.24e4	1.000		4.20	4.17	1.04	12.1	121.1
15	15	PFDoA	612.9 > 318.8	4.93e3	7.69e3	1.000		4.32	4.28	8.02	9.46	94.6
16	16	PFTrDA	662.9 > 618.9	6.69e4	7.69e3	1.000		4.50	4.45	109	9.80	98.0
17	17	PFTeDA	712.9 > 668.8	4.90e4	4.68e4	1.000		4.66	4.62	13.1	11.0	110.2
18	18	13C3-PFBA	216.1 > 171.8	1.43e4	1.68e4	1.000	0.875	1.43	1.46	10.7	12.2	97.6
19	19	13C3-PFPeA	266 > 221.8	2.80e4	1.68e4	1.000	1.720	2.72	2.71	20.8	12.1	96.7
20	20	13C3-PFBS	302 > 98.8	3.64e3	1.68e4	1.000	0.205	2.92	2.91	2.71	13.2	105.8
21	21	13C2-PFHxA	315 > 269.8	1.27e4	4.30e4	1.000	0.296	3.16	3.15	1.48	5.00	100.1
22	22	13C4-PFHpA	367.2 > 321.8	3.01e4	4.30e4	1.000	0.302	3.43	3.42	3.50	11.6	92.9
23	23	18O2-PFHxS	403 > 102.6	3.19e3	7.53e3	1.000	0.434	3.55	3.49	5.30	12.2	97.6
24	24	13C2-PFOA	414.9 > 369.7	5.11e4	4.43e4	1.000	1.140	3.63	3.62	14.4	12.6	101.2
25	25	13C5-PFNA	468.2 > 422.9	6.58e4	6.75e4	1.000	0.958	3.82	3.79	12.2	12.7	101.8
26	26	13C8-PFOSA	506.1 > 77.7	5.83e3	4.85e4	1.000	0.084	3.83	3.80	1.50	17.8	142.8
27	27	13C8-PFOS	507 > 79.9	1.28e4	1.18e4	1.000	1.061	3.86	3.84	13.6	12.8	102.5
28	28	13C2-PFDA	515.1 > 469.9	6.11e4	6.01e4	1.000	0.942	4.00	3.96	12.7	13.5	107.9
29	29	13C2-PFUnA	565 > 519.8	6.24e4	4.85e4	1.000	1.084	4.16	4.12	16.1	14.8	118.8
30	30	13C2-PFDoA	615 > 569.7	7.69e3	4.85e4	1.000	0.127	4.32	4.28	1.98	15.6	124.9
31	31	13C2-PFTeDA	714.8 > 669.6	4.68e4	4.85e4	1.000	0.883	4.66	4.62	12.1	13.7	109.6

70-130

50-150

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Dataset: U:\Q4.PRO\results\170706M1\170706M1-4.qld

Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFBA	217 > 171.8	1.68e4	1.68e4	1.000	1.000	1.43	1.46	12.5	12.5	100.0
33	33	13C5-PFHxA	318 > 272.9	4.30e4	4.30e4	1.000	1.000	3.16	3.15	5.00	5.00	100.0
34	34	13C3-PFHxS	401.9 > 79.9	7.53e3	7.53e3	1.000	1.000	3.55	3.49	12.5	12.5	100.0
35	35	13C8-PFOA	421.3 > 376	4.43e4	4.43e4	1.000	1.000	3.63	3.61	12.5	12.5	100.0
36	36	13C9-PFNA	472.2 > 426.9	6.75e4	6.75e4	1.000	1.000	3.82	3.79	12.5	12.5	100.0
37	37	13C4-PFOS	503 > 79.9	1.18e4	1.18e4	1.000	1.000	3.86	3.84	12.5	12.5	100.0
38	38	13C6-PFDA	519.1 > 473.7	6.01e4	6.01e4	1.000	1.000	4.00	3.96	12.5	12.5	100.0
39	39	13C7-PFUnA	570.1 > 524.8	4.85e4	4.85e4	1.000	1.000	4.16	4.12	12.5	12.5	100.0
40	40	Total PFBS	299 > 79.7	5.19e3	3.64e3	1.000		2.90		17.8	9.47	
41	41	Total PFHxS	398.9 > 79.6	4.11e3	3.19e3	1.000		3.50		16.1	9.48	
42	42	Total PFOA	413 > 368.7	4.00e4	5.11e4	1.000		3.63		9.78	10.3	
43	43	Total PFOS	499 > 79.9	1.01e4	1.28e4	1.000		3.86		9.84	9.31	

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, July 17, 2017 15:02:25 Pacific Daylight Time
Printed: Monday, July 17, 2017 15:02:40 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
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2	170706M1_5	IPA	06-Jul-17	09:18:15
3	170706M1_6	B7F0136-BS1 OPR 0.125	06-Jul-17	09:29:23
4	170706M1_7	IPA	06-Jul-17	09:40:01
5	170706M1_8	B7F0136-BLK1 Method Blank 0.125	06-Jul-17	09:50:39
6	170706M1_9	1700767-03 3 College 0.24548	06-Jul-17	10:01:21
7	170706M1_10	1700767-04 4 College 0.2493	06-Jul-17	10:12:05
8	170706M1_11	1700767-05 5 Sunrise 0.23777	06-Jul-17	10:22:44
9	170706M1_12	1700789-01 GR-OF-20170627 0.10782	06-Jul-17	10:33:22
10	170706M1_13	1700789-02 MH-117T-20170627 0.12311	06-Jul-17	10:44:08
11	170706M1_14	1700789-03 MH-117N-20170627 0.12348	06-Jul-17	10:54:47
12	170706M1_15	B7F0136-MS1 Matrix Spike 0.12272	06-Jul-17	11:05:25
13	170706M1_16	B7F0136-MSD1 Matrix Spike Dup 0.12124	06-Jul-17	11:16:03
14	170706M1_17	1700789-04 MH-118.5T-20170627 0.13718	06-Jul-17	11:26:42
15	170706M1_18	1700789-05 MH-118.5N-20170627 0.12165	06-Jul-17	11:37:49
16	170706M1_19	1700789-06 MH-121.5T-20170627 0.12319	06-Jul-17	11:48:40
17	170706M1_20	1700789-07 MH-121.5N-20170627 0.12348	06-Jul-17	11:59:18
18	170706M1_21	IPA	06-Jul-17	12:09:57
19	170706M1_22	ST170706M1-3 PFC CS3 17G0508	06-Jul-17	12:20:35
20	170706M1_23	IPA	06-Jul-17	12:31:21
21	170706M1_24	1700789-08 MH-125.9T-20170627 0.11951	06-Jul-17	12:42:00
22	170706M1_25	1700789-09 MH-125.9N-20170627 0.12353	06-Jul-17	12:52:38
23	170706M1_26	1700789-10 West Ditch Out-20170627 0.10981	06-Jul-17	13:03:17
24	170706M1_27	IPA	06-Jul-17	13:13:55
25	170706M1_28	ST170706M1-4 PFC CS3 17G0508	06-Jul-17	13:24:34
26	170706M1_29	IPA	06-Jul-17	13:35:20

LC Calibration Standards Review Checklist Q4

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	N/A
Calibration ID:	ST170706M1-2	L (M) H	N/A	☑	☑	☑	☑	☑	☐
Calibration ID:	↓ 1-3	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: AC 7/11/17 ≤ 6/21/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: CC 7/17/17
Initials/Date

Comments:

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-4.qld

Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
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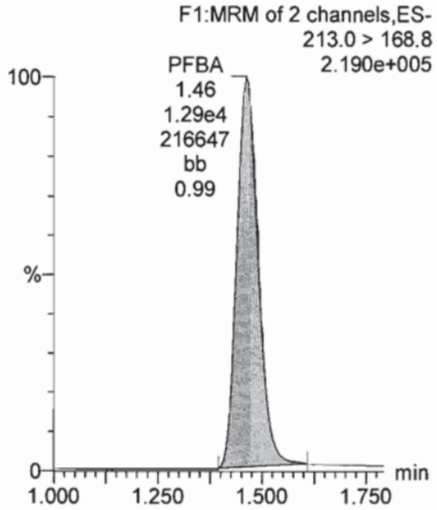
Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFBA



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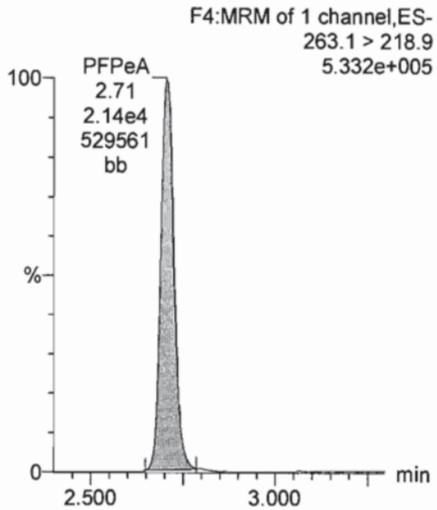

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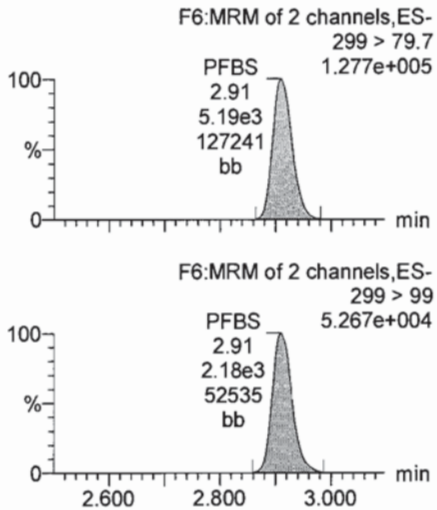

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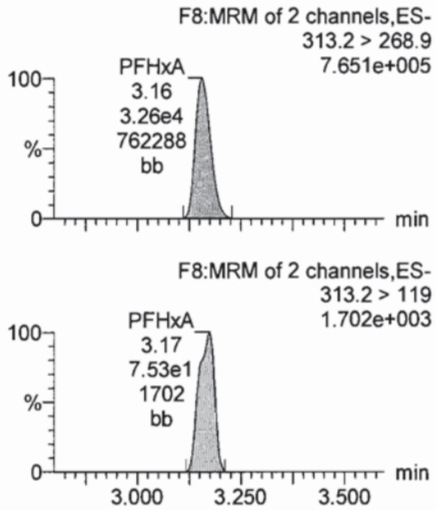

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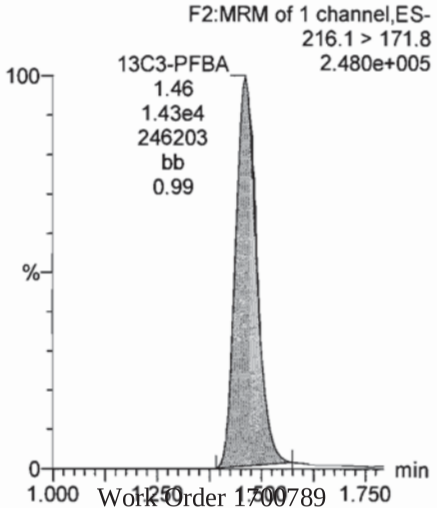

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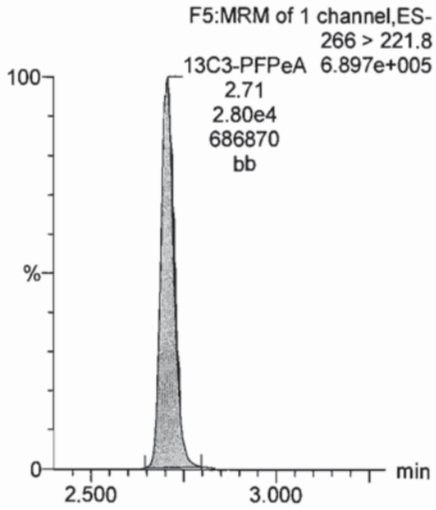

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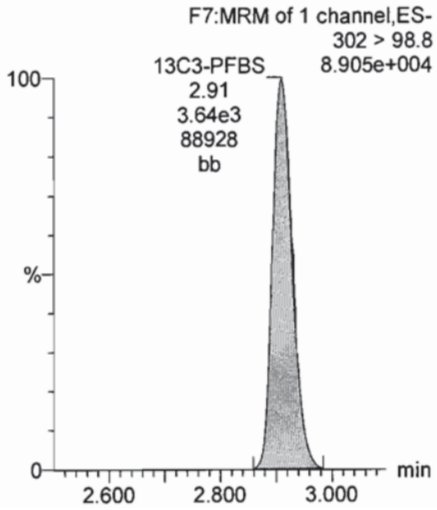

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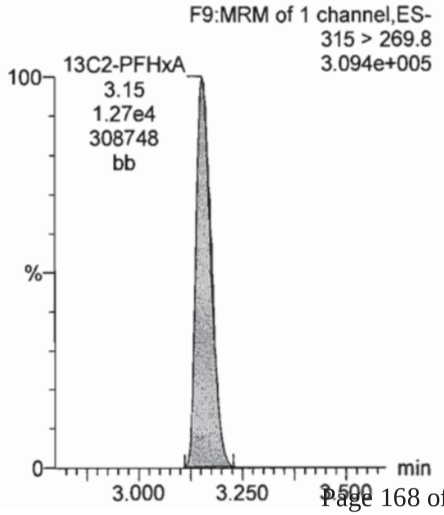

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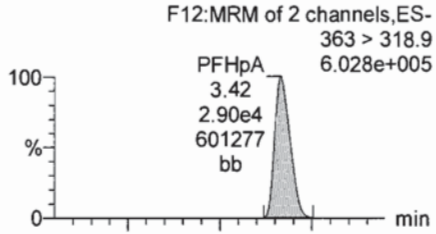
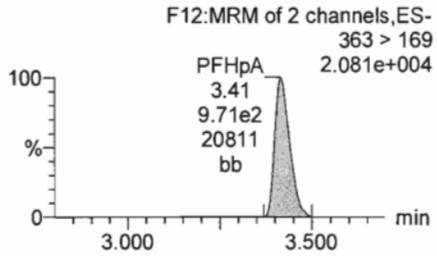
Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFHpA





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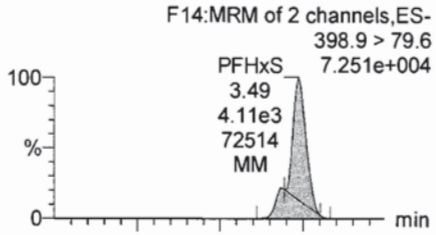

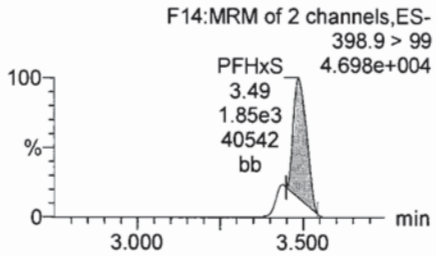

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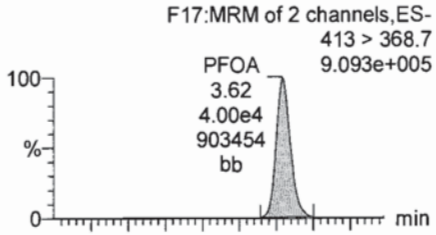

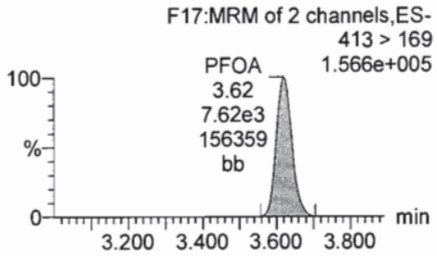

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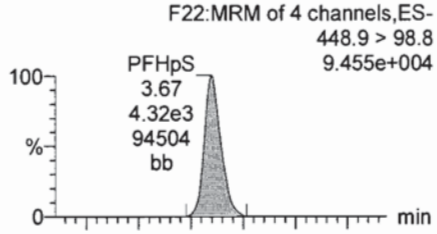

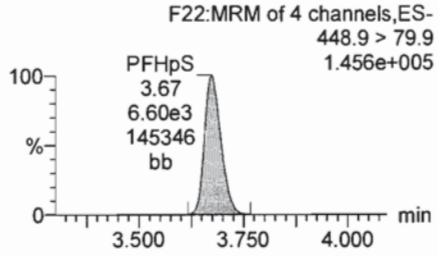

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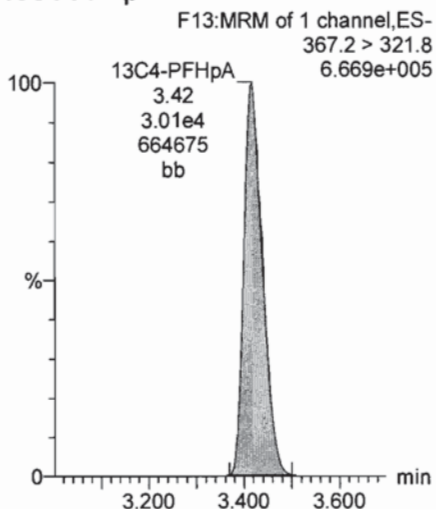

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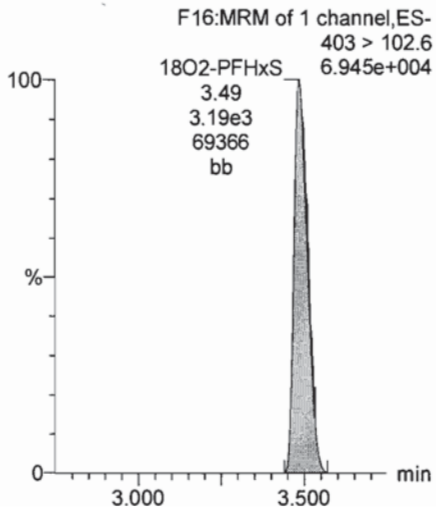

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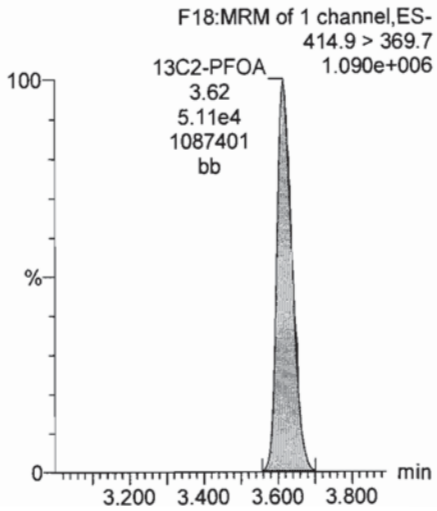

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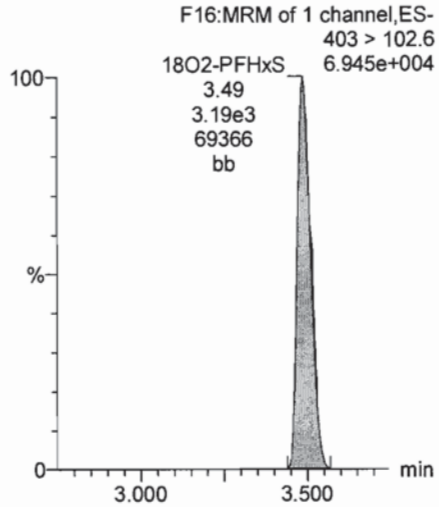

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Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
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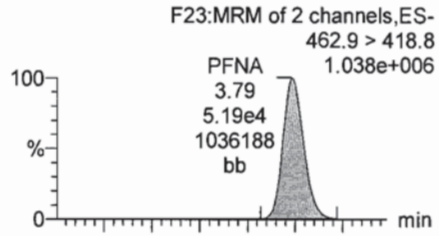
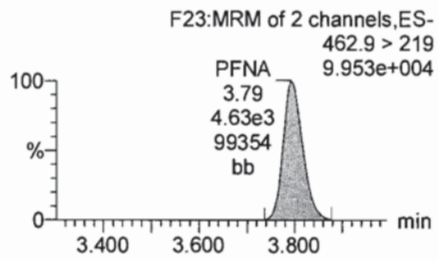
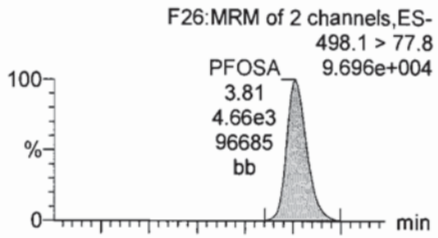
Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

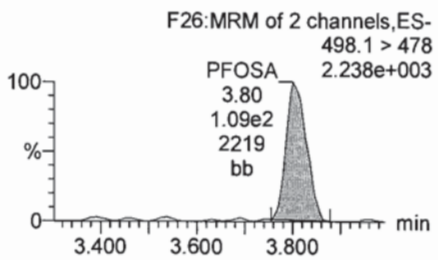
PFNA



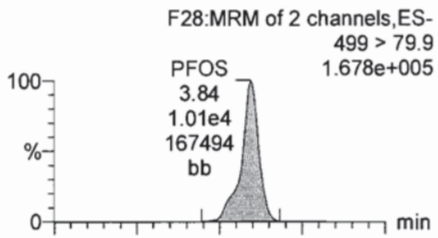


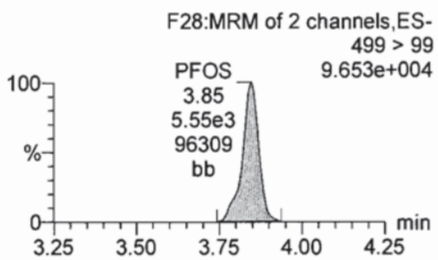
PFOSA



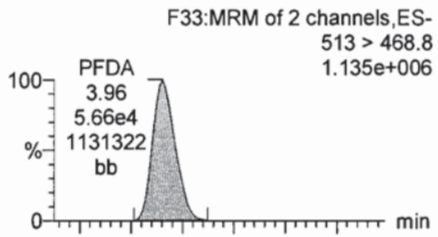


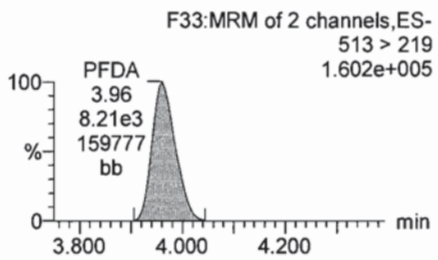
Total PFOS



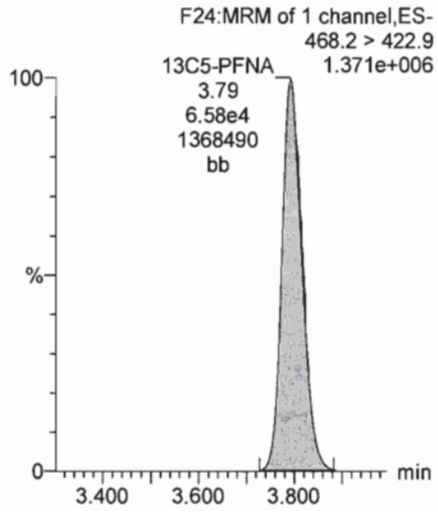


PFDA

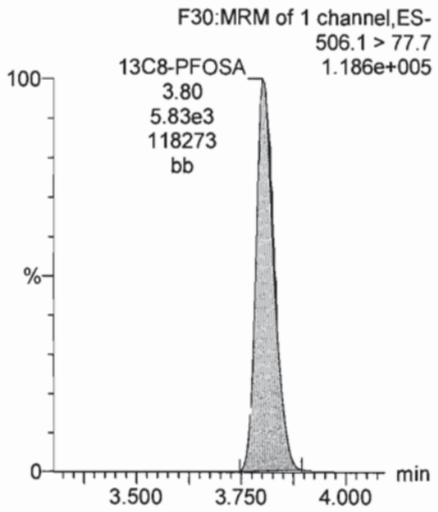




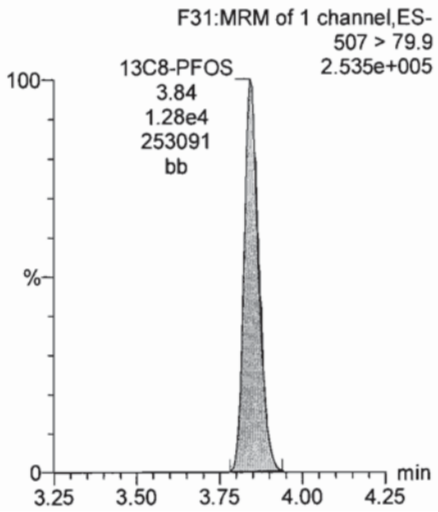
13C5-PFNA



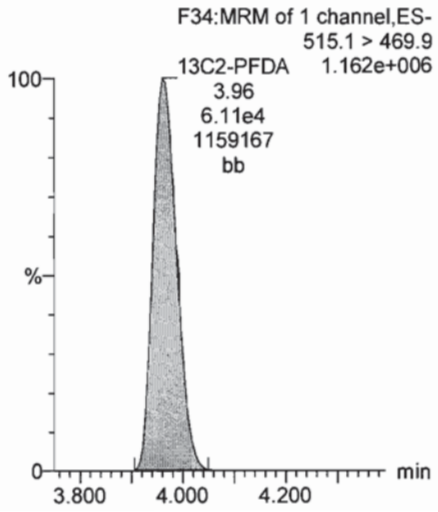
13C8-PFOSA



13C8-PFOS



13C2-PFDA



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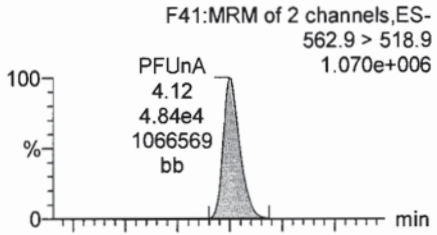
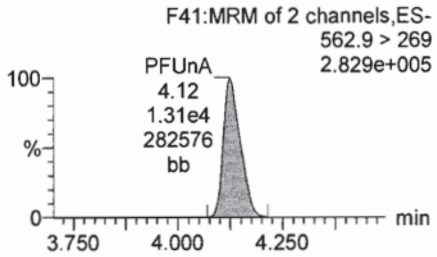
Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFUnA





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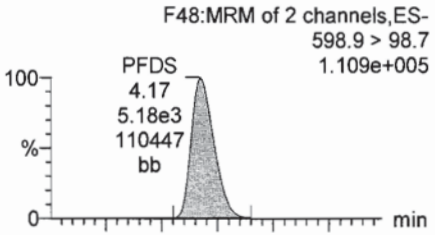
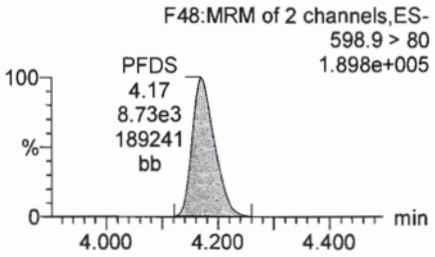
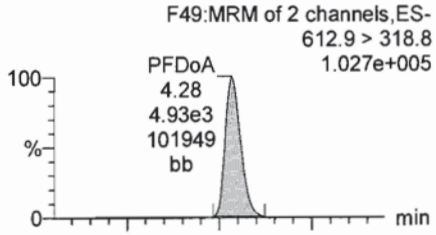
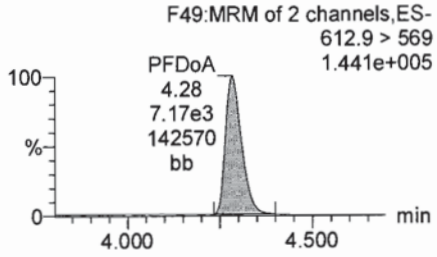


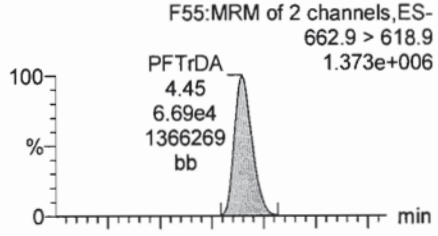


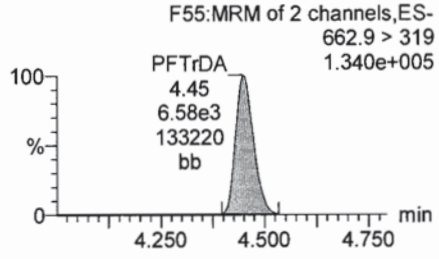
PFDoA



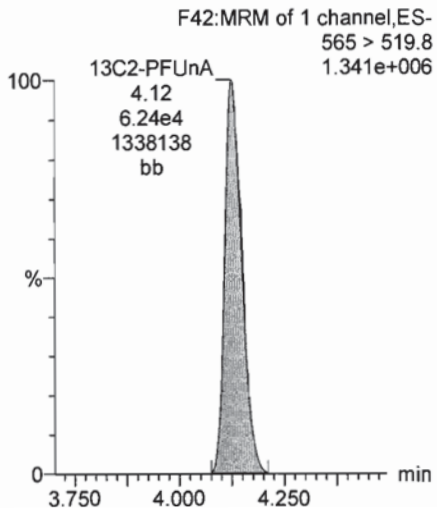


PFTrDA

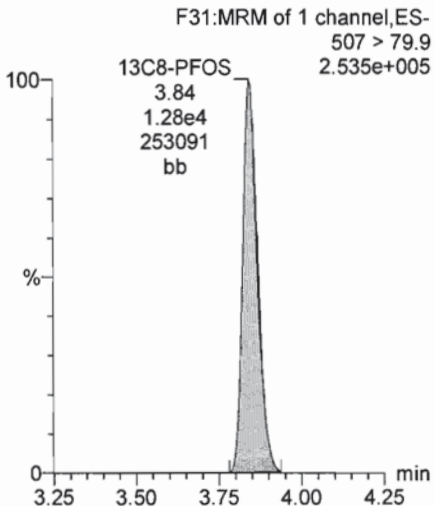




13C2-PFUnA



13C8-PFOS



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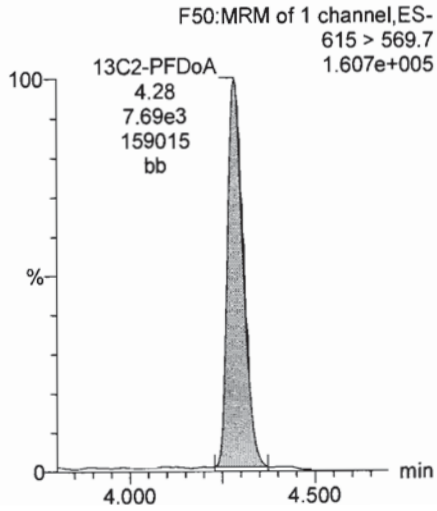
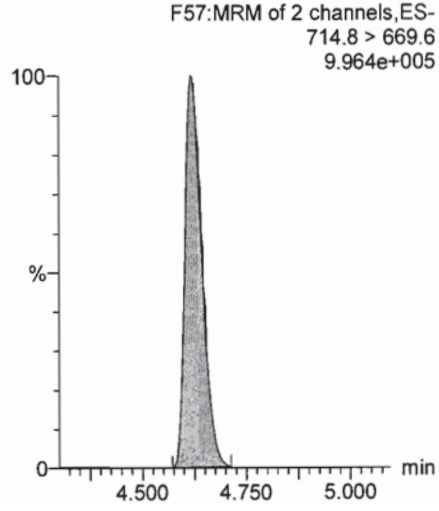


13C2-PFTeDA



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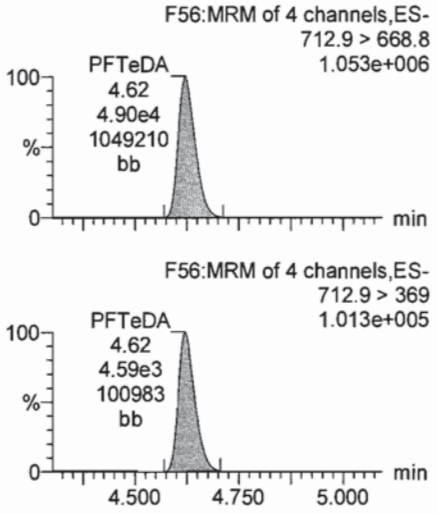
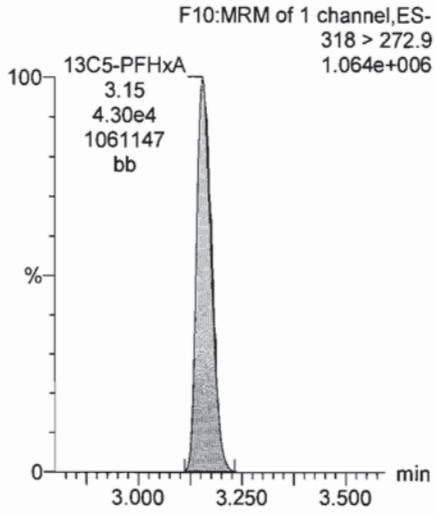
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

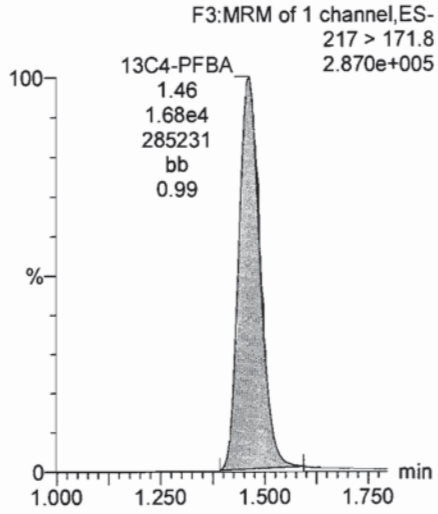
PFTeDA



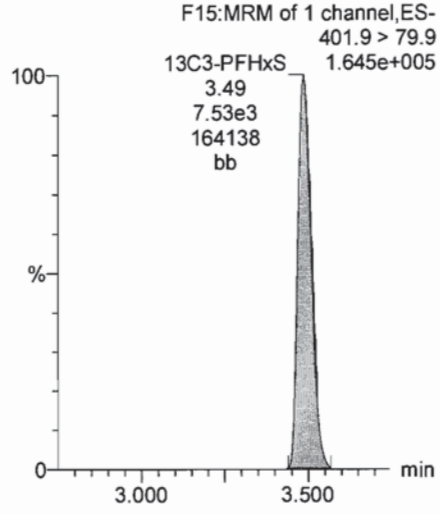
13C5-PFHxA



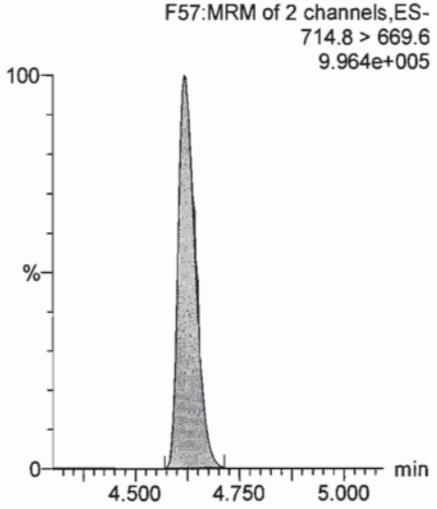
13C4-PFBA



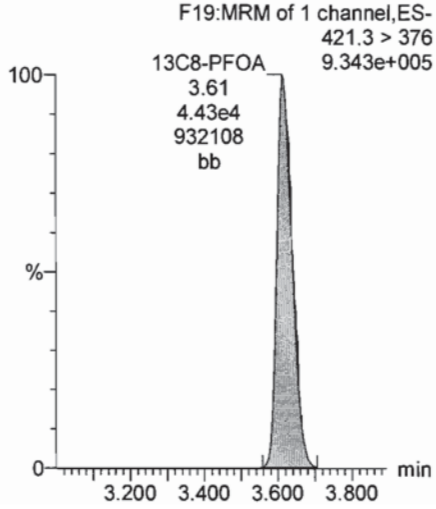
13C3-PFHxS



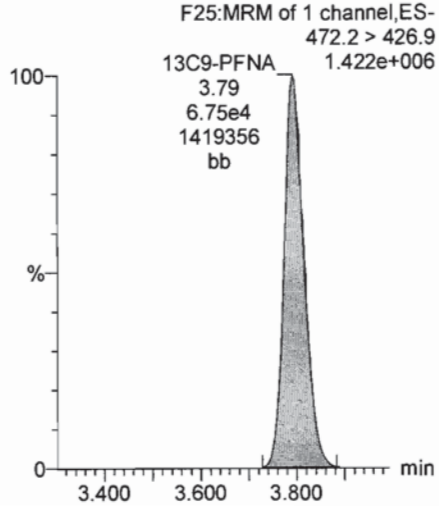
13C2-PFTeDA



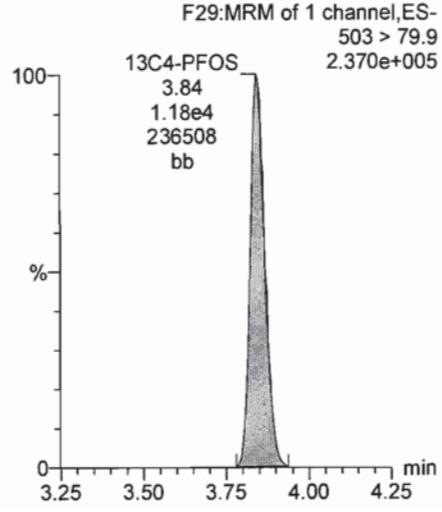
13C8-PFOA



13C9-PFNA



13C4-PFOS

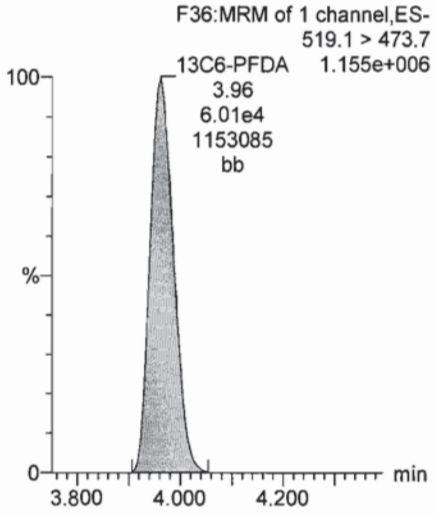


Dataset: U:\Q4.PRO\results\170706M1\170706M1-4.qld

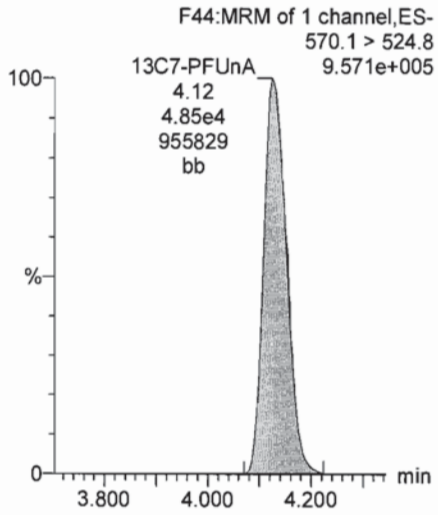
Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

13C6-PFDA



13C7-PFUnA



Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-22.qld

Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:42:52 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

AC 7/17/17

Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBA	213.0 > 168.8	1.29e4	1.45e4	1.000		1.43	1.47	11.1	9.95	99.5
2	2	PFPeA	263.1 > 218.9	2.21e4	2.95e4	1.000		2.72	2.71	9.36	9.60	96.0
3	3	PFBS	299 > 79.7	5.08e3	3.35e3	1.000		2.92	2.92	18.9	10.1	100.6
4	4	PFHxA	313.2 > 268.9	3.64e4	1.31e4	1.000		3.16	3.16	13.9	9.94	99.4
5	5	PFHpA	363 > 318.9	3.27e4	3.19e4	1.000		3.43	3.43	12.8	10.2	102.2
6	6	PFHxS	398.9 > 79.6	4.48e3	3.15e3	1.000		3.55	3.50	17.8	10.5	104.9
7	7	PFOA	413 > 368.7	4.37e4	5.31e4	1.000		3.63	3.62	10.3	10.8	108.1
8	8	PFHpS	448.9 > 98.8	4.57e3	5.31e4	1.000		3.69	3.68	1.08	10.6	105.7
9	9	PFNA	462.9 > 418.8	5.64e4	6.01e4	1.000		3.82	3.80	11.7	10.5	104.8
10	10	PFOSA	498.1 > 77.8	4.63e3	5.91e3	1.000		3.83	3.81	9.79	9.27	92.7
11	11	PFOS	499 > 79.9	1.12e4	1.32e4	1.000		3.86	3.85	10.6	10.1	100.7
12	12	PFDA	513 > 468.8	6.60e4	6.45e4	1.000		4.00	3.97	12.8	10.6	106.2
13	13	PFUnA	562.9 > 518.9	4.98e4	7.04e4	1.000		4.16	4.13	8.84	10.3	102.5
14	14	PFDS	598.9 > 98.7	4.95e3	7.04e4	1.000		4.20	4.18	0.879	10.2	101.7
15	15	PFDoA	612.9 > 318.8	4.88e3	7.89e3	1.000		4.32	4.29	7.73	9.11	91.1
16	16	PFTrDA	662.9 > 618.9	7.08e4	7.89e3	1.000		4.50	4.46	112	10.1	101.1
17	17	PFTeDA	712.9 > 668.8	4.94e4	5.30e4	1.000		4.66	4.63	11.7	9.80	98.0
18	18	13C3-PFBA	216.1 > 171.8	1.45e4	1.67e4	1.000	0.875	1.43	1.47	10.9	12.4	99.5
19	19	13C3-PFPeA	266 > 221.8	2.95e4	1.67e4	1.000	1.720	2.72	2.72	22.1	12.9	102.8
20	20	13C3-PFBS	302 > 98.8	3.35e3	1.67e4	1.000	0.205	2.92	2.92	2.51	12.3	98.2
21	21	13C2-PFHxA	315 > 269.8	1.31e4	4.07e4	1.000	0.296	3.16	3.16	1.61	5.43	108.6
22	22	13C4-PFHpA	367.2 > 321.8	3.19e4	4.07e4	1.000	0.302	3.43	3.42	3.91	13.0	103.8
23	23	18O2-PFHxS	403 > 102.6	3.15e3	7.19e3	1.000	0.434	3.55	3.49	5.48	12.6	101.0
24	24	13C2-PFOA	414.9 > 369.7	5.31e4	4.86e4	1.000	1.140	3.63	3.62	13.6	12.0	95.7
25	25	13C5-PFNA	468.2 > 422.9	6.01e4	6.34e4	1.000	0.958	3.82	3.80	11.9	12.4	99.0
26	26	13C8-PFOSA	506.1 > 77.7	5.91e3	6.74e4	1.000	0.084	3.83	3.81	1.10	13.0	104.0
27	27	13C8-PFOS	507 > 79.9	1.32e4	1.35e4	1.000	1.061	3.86	3.85	12.2	11.5	92.1
28	28	13C2-PFDA	515.1 > 469.9	6.45e4	6.39e4	1.000	0.942	4.00	3.97	12.6	13.4	107.2
29	29	13C2-PFUnA	565 > 519.8	7.04e4	6.74e4	1.000	1.084	4.16	4.13	13.0	12.0	96.3
30	30	13C2-PFDoA	615 > 569.7	7.89e3	6.74e4	1.000	0.127	4.32	4.29	1.46	11.5	92.1
31	31	13C2-PFTeDA	714.8 > 669.6	5.30e4	6.74e4	1.000	0.883	4.66	4.63	9.82	11.1	89.3

70-130

50-150

Dataset: U:\Q4.PRO\results\170706M1\170706M1-22.qld

Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:42:52 Pacific Daylight Time

Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32 13C4-PFBA	217 > 171.8	1.67e4	1.67e4	1.000	1.000	1.43	1.48	12.5	12.5	100.0
33	33 13C5-PFHxA	318 > 272.9	4.07e4	4.07e4	1.000	1.000	3.16	3.16	5.00	5.00	100.0
34	34 13C3-PFHxS	401.9 > 79.9	7.19e3	7.19e3	1.000	1.000	3.55	3.49	12.5	12.5	100.0
35	35 13C8-PFOA	421.3 > 376	4.86e4	4.86e4	1.000	1.000	3.63	3.62	12.5	12.5	100.0
36	36 13C9-PFNA	472.2 > 426.9	6.34e4	6.34e4	1.000	1.000	3.82	3.80	12.5	12.5	100.0
37	37 13C4-PFOS	503 > 79.9	1.35e4	1.35e4	1.000	1.000	3.86	3.85	12.5	12.5	100.0
38	38 13C6-PFDA	519.1 > 473.7	6.39e4	6.39e4	1.000	1.000	4.00	3.97	12.5	12.5	100.0
39	39 13C7-PFUnA	570.1 > 524.8	6.74e4	6.74e4	1.000	1.000	4.16	4.13	12.5	12.5	100.0
40	40 Total PFBS	299 > 79.7	5.08e3	3.35e3	1.000		2.90		18.9	10.1	
41	41 Total PFHxS	398.9 > 79.6	4.48e3	3.15e3	1.000		3.50		17.8	10.5	
42	42 Total PFOA	413 > 368.7	4.37e4	5.31e4	1.000		3.63		10.3	10.8	
43	43 Total PFOS	499 > 79.9	1.12e4	1.32e4	1.000		3.86		10.6	10.1	

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Dataset: Untitled

Last Altered: Monday, July 17, 2017 15:02:25 Pacific Daylight Time
Printed: Monday, July 17, 2017 15:02:40 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170706M1_4	ST170706M1-2 PFC CS3 17G0508	06-Jul-17	09:07:20
2	170706M1_5	IPA	06-Jul-17	09:18:15
3	170706M1_6	B7F0136-BS1 OPR 0.125	06-Jul-17	09:29:23
4	170706M1_7	IPA	06-Jul-17	09:40:01
5	170706M1_8	B7F0136-BLK1 Method Blank 0.125	06-Jul-17	09:50:39
6	170706M1_9	1700767-03 3 College 0.24548	06-Jul-17	10:01:21
7	170706M1_10	1700767-04 4 College 0.2493	06-Jul-17	10:12:05
8	170706M1_11	1700767-05 5 Sunrise 0.23777	06-Jul-17	10:22:44
9	170706M1_12	1700789-01 GR-OF-20170627 0.10782	06-Jul-17	10:33:22
10	170706M1_13	1700789-02 MH-117T-20170627 0.12311	06-Jul-17	10:44:08
11	170706M1_14	1700789-03 MH-117N-20170627 0.12348	06-Jul-17	10:54:47
12	170706M1_15	B7F0136-MS1 Matrix Spike 0.12272	06-Jul-17	11:05:25
13	170706M1_16	B7F0136-MSD1 Matrix Spike Dup 0.12124	06-Jul-17	11:16:03
14	170706M1_17	1700789-04 MH-118.5T-20170627 0.13718	06-Jul-17	11:26:42
15	170706M1_18	1700789-05 MH-118.5N-20170627 0.12165	06-Jul-17	11:37:49
16	170706M1_19	1700789-06 MH-121.5T-20170627 0.12319	06-Jul-17	11:48:40
17	170706M1_20	1700789-07 MH-121.5N-20170627 0.12348	06-Jul-17	11:59:18
18	170706M1_21	IPA	06-Jul-17	12:09:57
19	170706M1_22	ST170706M1-3 PFC CS3 17G0508	06-Jul-17	12:20:35
20	170706M1_23	IPA	06-Jul-17	12:31:21
21	170706M1_24	1700789-08 MH-125.9T-20170627 0.11951	06-Jul-17	12:42:00
22	170706M1_25	1700789-09 MH-125.9N-20170627 0.12353	06-Jul-17	12:52:38
23	170706M1_26	1700789-10 West Ditch Out-20170627 0.10981	06-Jul-17	13:03:17
24	170706M1_27	IPA	06-Jul-17	13:13:55
25	170706M1_28	ST170706M1-4 PFC CS3 17G0508	06-Jul-17	13:24:34
26	170706M1_29	IPA	06-Jul-17	13:35:20

Dataset: U:\Q4.PRO\results\170706M1\170706M1-22.qld

Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:42:52 Pacific Daylight Time

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Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

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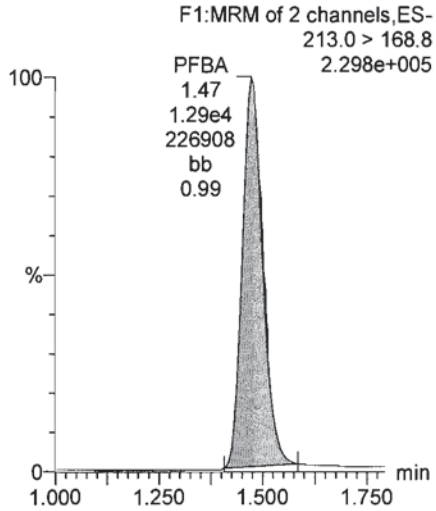
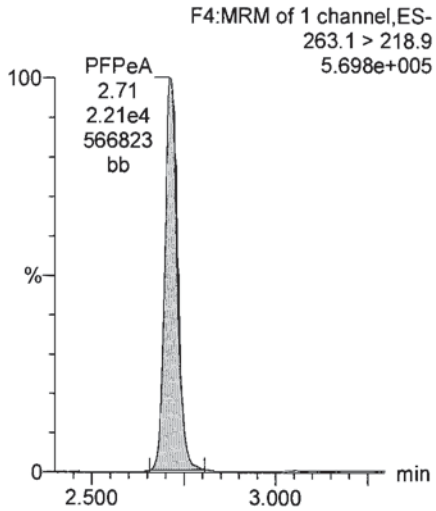
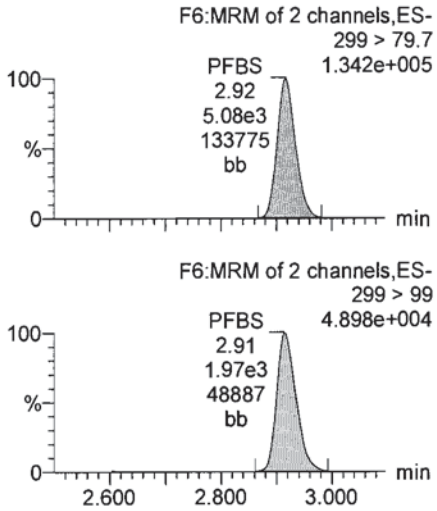


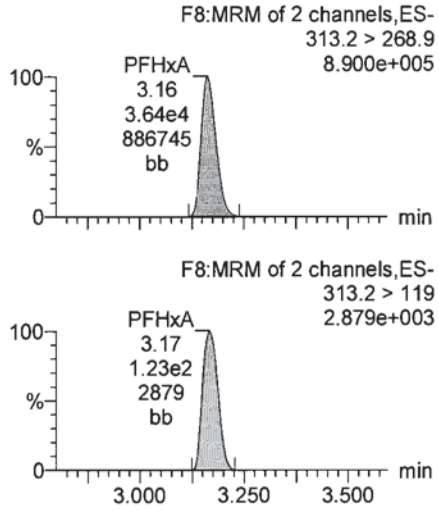
PFPeA



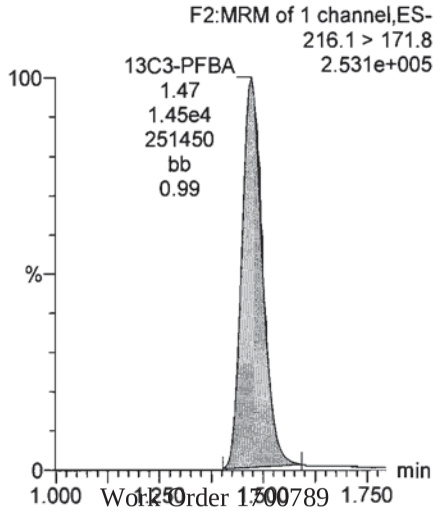
Total PFBS



PFHxA



13C3-PFBA



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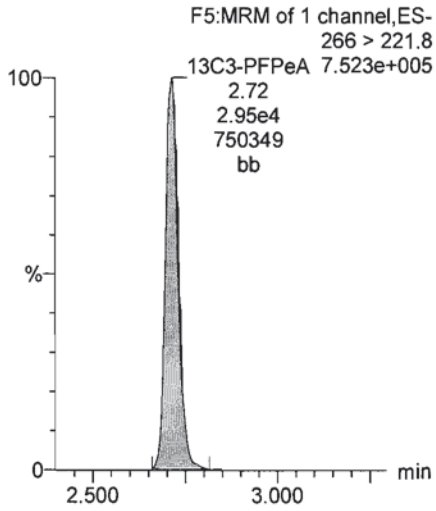

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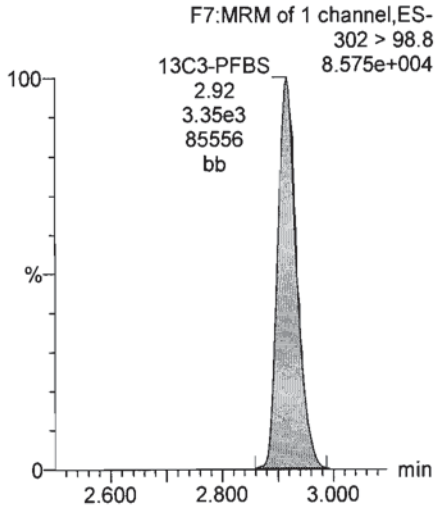
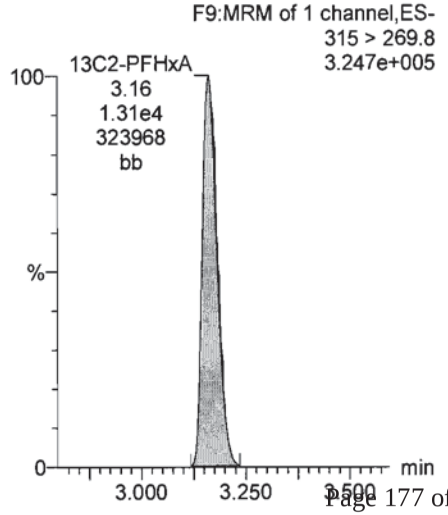


13C2-PFHxA



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Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
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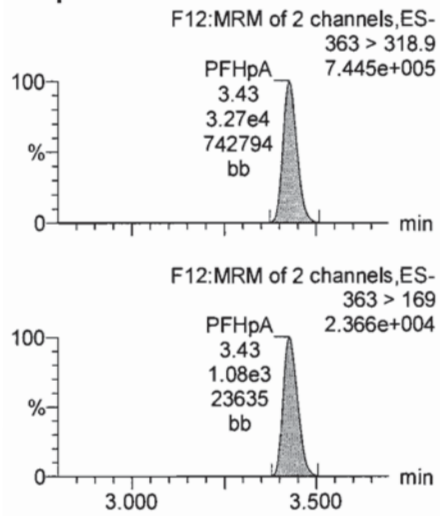
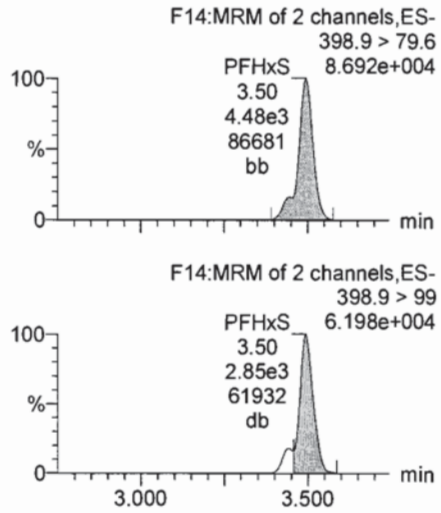
Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFHpA



Total PFHxS



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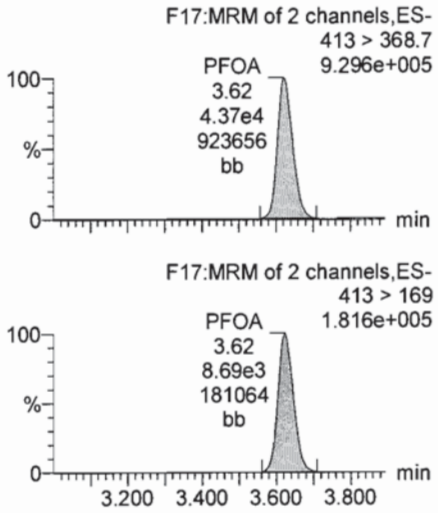
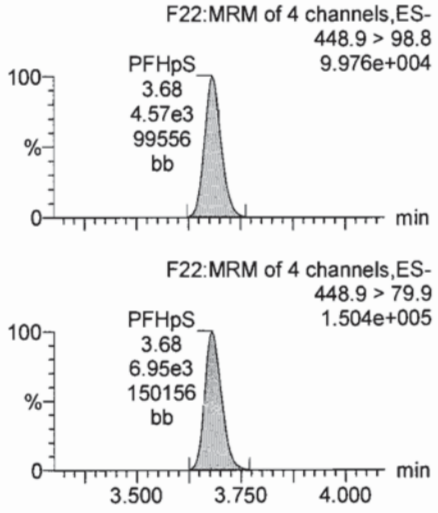


PFHpS



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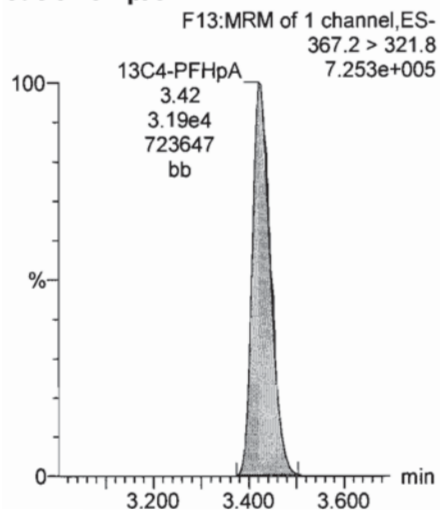
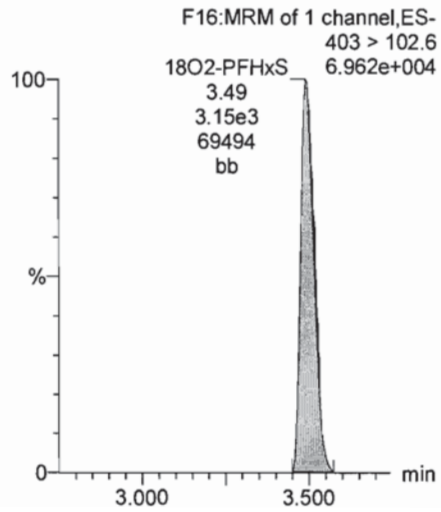
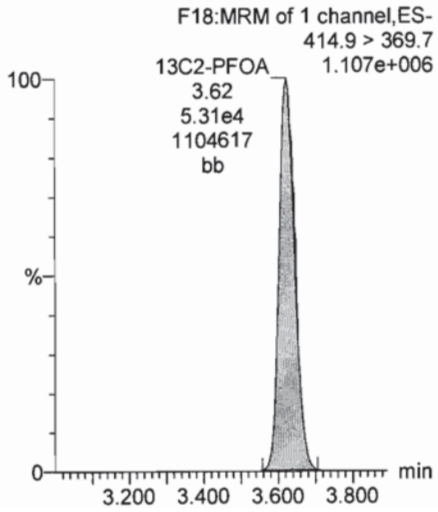


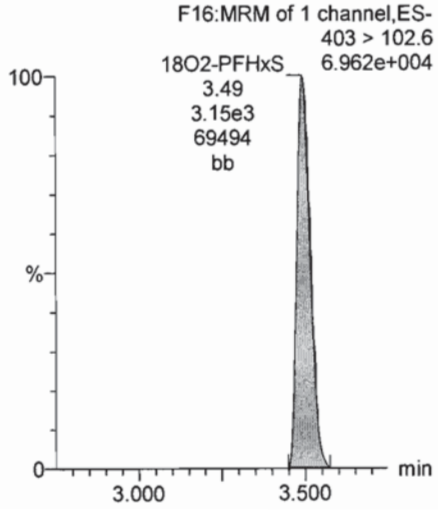
18O2-PFHxS



13C2-PFOA



18O2-PFHxS



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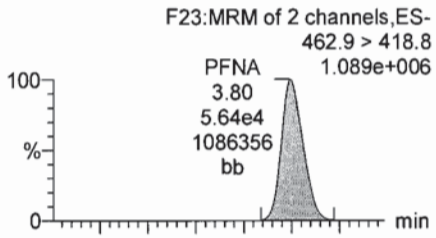
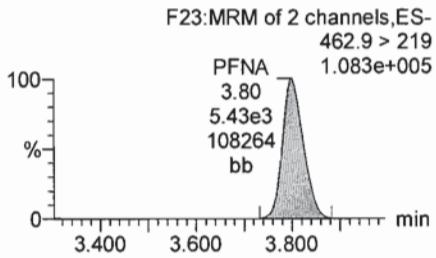
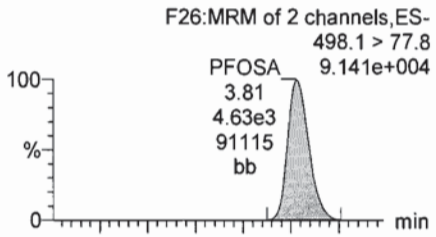
Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

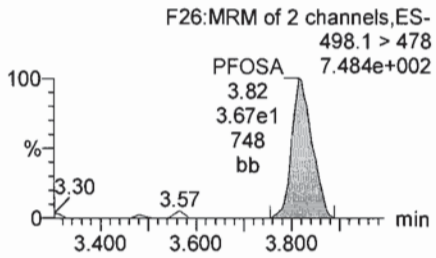
PFNA



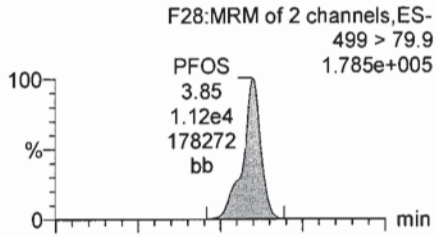


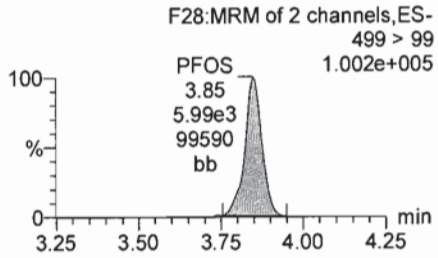
PFOSA





Total PFOS





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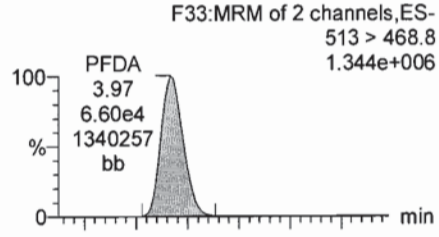

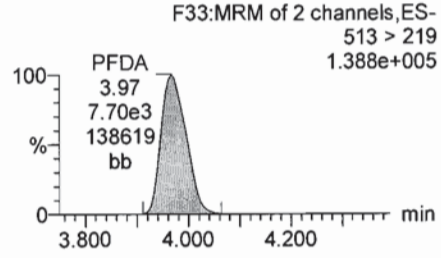

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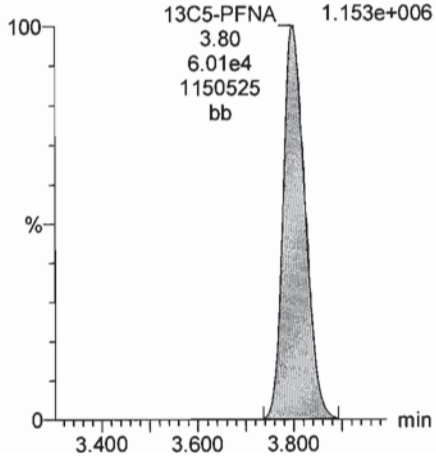
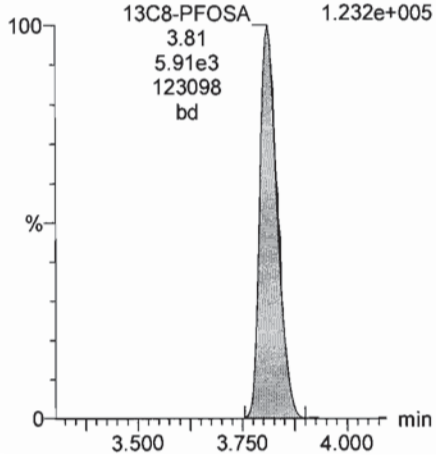
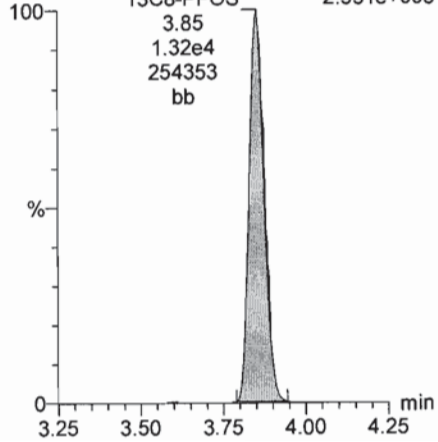


13C8-PFOSA



13C8-PFOS



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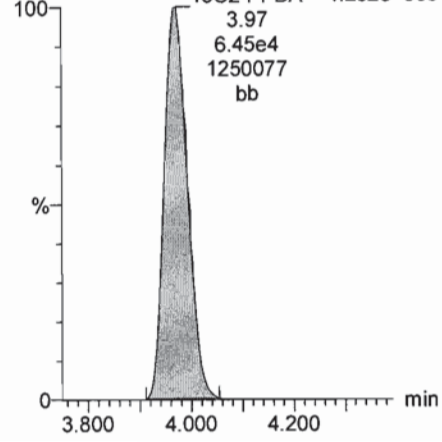

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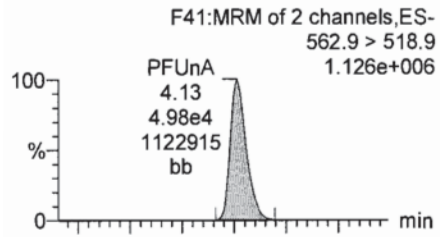
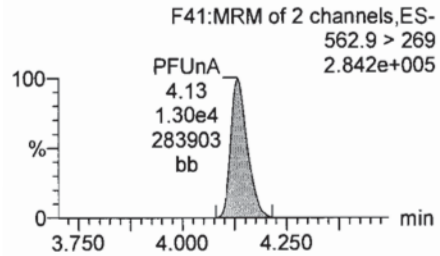
Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFUnA





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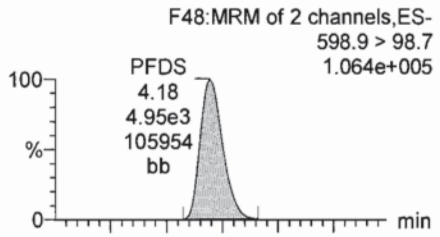
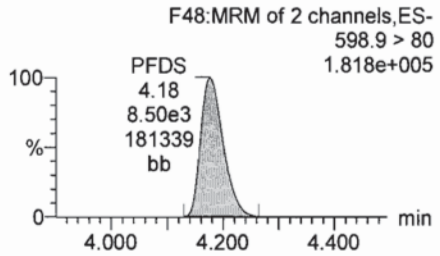
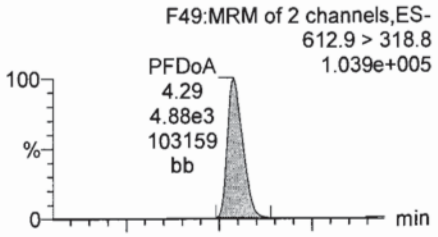
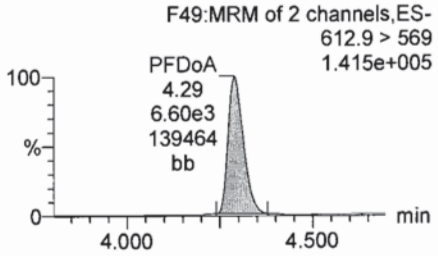




PFDoA





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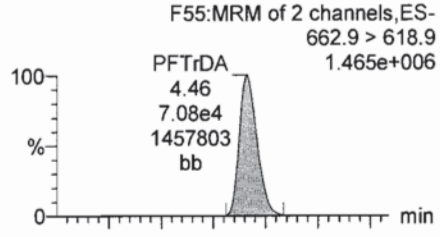

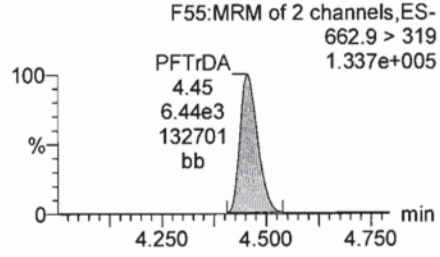

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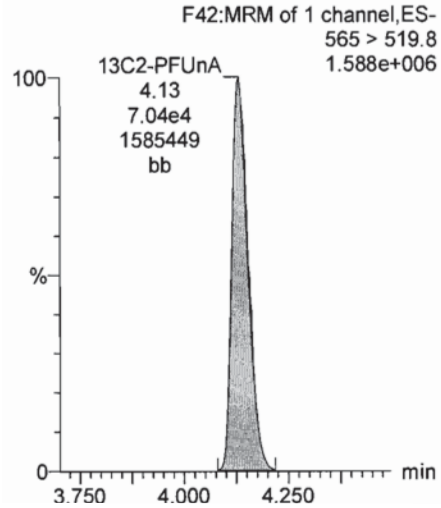
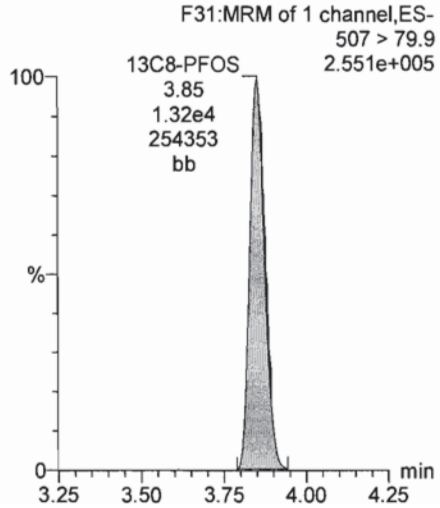


13C8-PFOS



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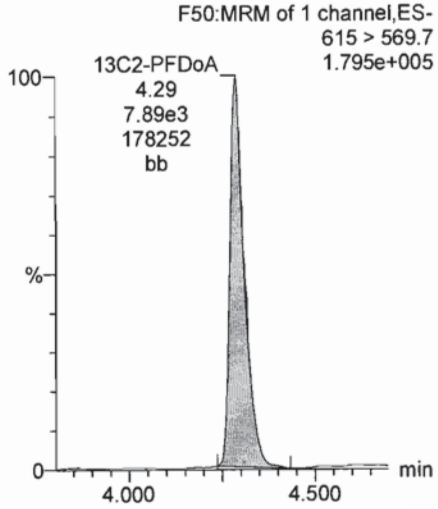

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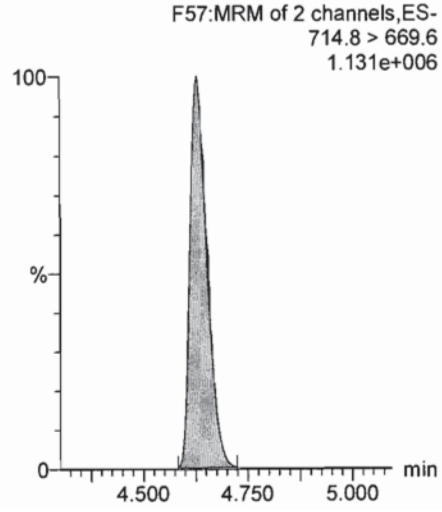

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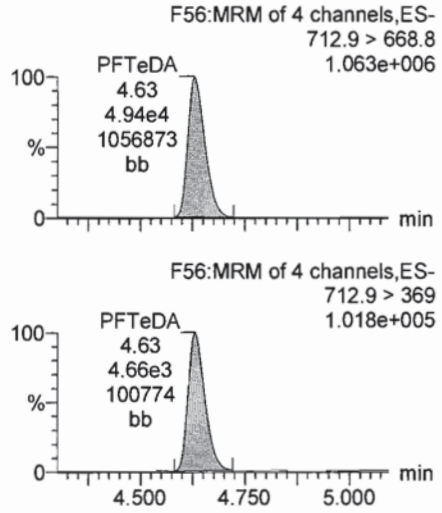
Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFTeDA



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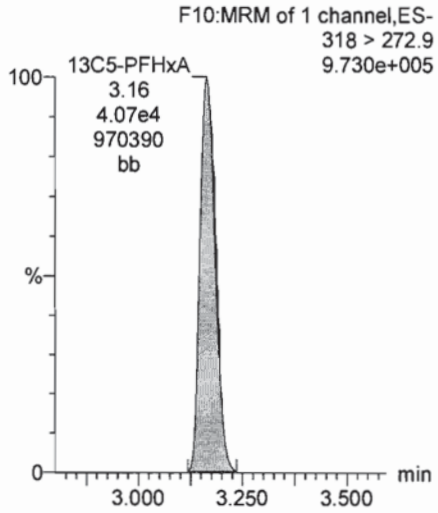

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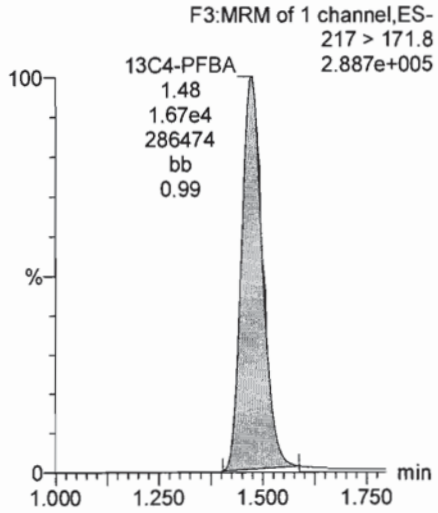

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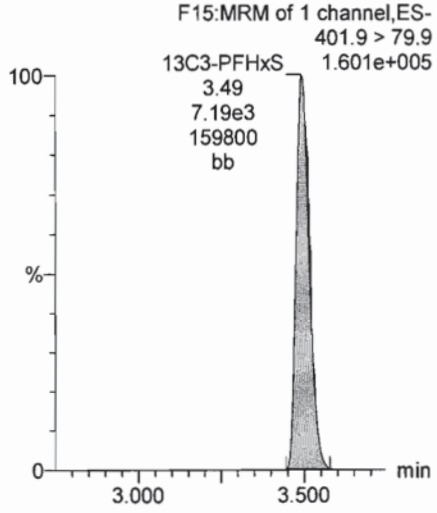

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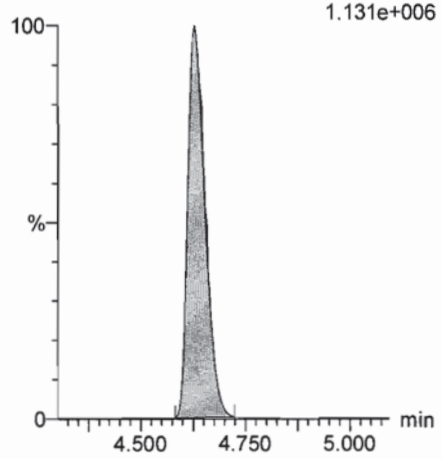
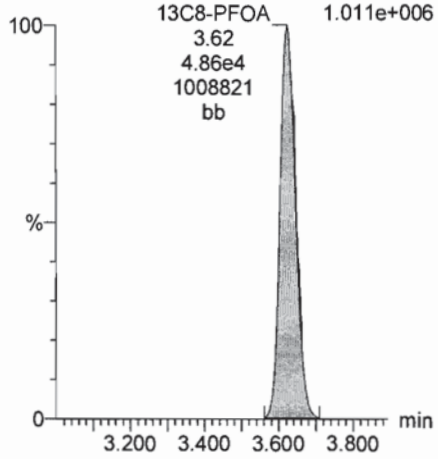
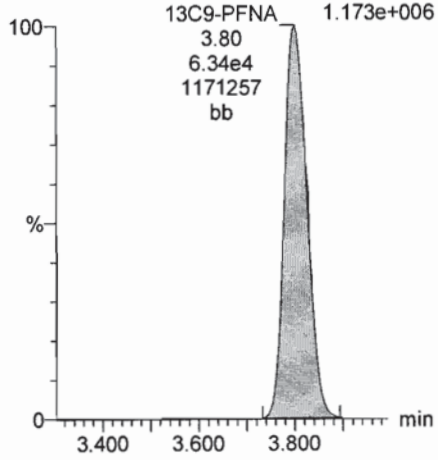


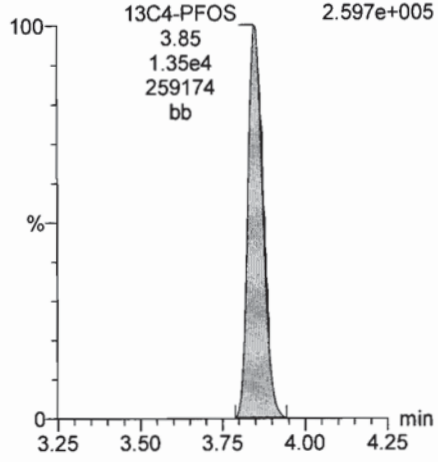
13C8-PFOA



13C9-PFNA



13C4-PFOS

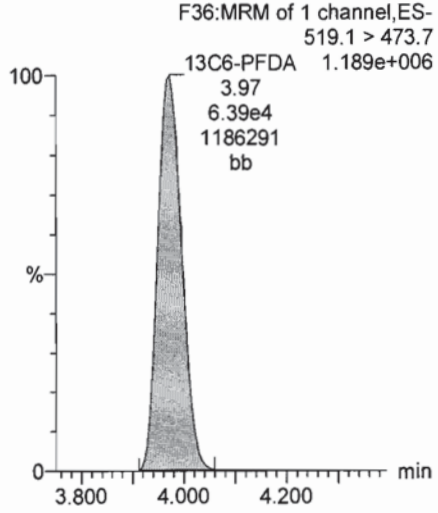


Dataset: U:\Q4.PRO\results\170706M1\170706M1-22.qld

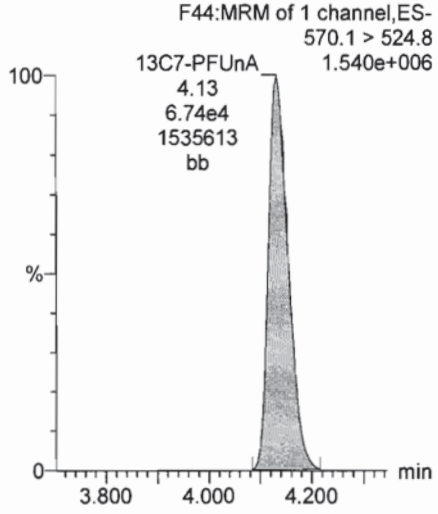
Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:42:52 Pacific Daylight Time

Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

13C6-PFDA



13C7-PFUnA



Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

AC 7/19/17

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	5.10e3	3.48e3	1.0000		2.92	2.92	18.3	9.73	97.3
2	2	PFHxA	313.2 > 268.9	3.58e4	1.30e4	1.0000		3.16	3.16	13.7	9.71	97.1
3	3	PFHpA	363 > 318.9	3.27e4	3.50e4	1.0000		3.43	3.43	11.7	9.68	96.8
4	4	PFHxS	398.9 > 79.6	4.43e3	3.37e3	1.0000		3.55	3.50	16.5	8.89	88.9
5	5	PFOA	413 > 368.7	4.53e4	5.98e4	1.0000		3.63	3.62	9.47	9.94	99.4
6	6	PFNA	462.9 > 418.8	6.46e4	7.20e4	1.0000		3.82	3.80	11.2	10.0	100.2
7	7	PFOS	499 > 79.9	1.06e4	1.28e4	1.0000		3.86	3.85	10.4	9.79	97.9
8	8	PFDA	513 > 468.8	6.35e4	7.30e4	1.0000		4.00	3.97	10.9	9.39	93.9
9	9	PFUnA	562.9 > 518.9	4.92e4	6.82e4	1.0000		4.13	4.14	9.02	9.89	98.9
10	10	N-MeFOSAA	570.1 > 419	1.77e4	1.53e4	1.0000		4.00	4.00	14.5	9.05	90.5
11	11	N-EtFOSAA	584.2 > 419	1.51e4	1.63e4	1.0000		4.08	4.07	11.6	10.1	101.1
12	12	PFDoA	612.9 > 318.8	4.88e3	7.92e3	1.0000		4.31	4.29	7.70	9.23	92.3
13	13	PFTrDA	662.9 > 618.9	7.08e4	7.92e3	1.0000		4.50	4.46	112	10.1	100.7
14	14	PFTeDA	712.9 > 668.8	5.27e4	5.48e4	1.0000		4.65	4.64	12.0	10.1	100.8
15	15	13C3-PFBS	302 > 98.8	3.48e3	4.24e4	1.0000	0.032	2.92	2.92	0.410	12.8	102.1
16	16	13C2-PFHxA	315 > 269.8	1.30e4	4.24e4	1.0000	0.296	3.15	3.16	1.54	5.19	103.8
17	17	13C4-PFHpA	367.2 > 321.8	3.50e4	4.24e4	1.0000	0.302	3.43	3.43	4.12	13.7	109.4
18	18	18O2-PFHxS	403 > 102.6	3.37e3	7.68e3	1.0000	0.434	3.49	3.50	5.48	12.6	100.9
19	19	13C2-PFOA	414.9 > 369.7	5.98e4	4.97e4	1.0000	1.140	3.62	3.63	15.0	13.2	105.4
20	20	13C5-PFNA	468.2 > 422.9	7.20e4	7.01e4	1.0000	0.958	3.80	3.80	12.8	13.4	107.3
21	21	13C8-PFOS	507 > 79.9	1.28e4	1.22e4	1.0000	1.061	3.85	3.85	13.1	12.3	98.7
22	22	13C2-PFDA	515.1 > 469.9	7.30e4	7.21e4	1.0000	0.942	3.97	3.97	12.7	13.4	107.5
23	23	13C2-PFUnA	565 > 519.8	6.82e4	6.72e4	1.0000	1.084	4.13	4.13	12.7	11.7	93.7
24	24	d3-N-MeFOSAA	573.3 > 419	1.53e4	6.72e4	1.0000	0.240	4.00	4.00	2.84	11.8	94.5
25	25	d5-N-EtFOSAA	589.3 > 419	1.63e4	6.72e4	1.0000	0.247	4.07	4.07	3.04	12.3	98.3
26	26	13C2-PFDoA	615 > 569.7	7.92e3	6.72e4	1.0000	0.127	4.32	4.29	1.47	11.6	92.9
27	27	13C2-PFTeDA	714.8 > 669.6	5.48e4	6.72e4	1.0000	0.883	4.64	4.63	10.2	11.6	92.5
28	28	13C5-PFHxA	318 > 272.9	4.24e4	4.24e4	1.0000	1.000	3.15	3.16	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	7.68e3	7.68e3	1.0000	1.000	3.49	3.50	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	4.97e4	4.97e4	1.0000	1.000	3.62	3.62	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	7.01e4	7.01e4	1.0000	1.000	3.82	3.80	12.5	12.5	100.0

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QM 7/19/17

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	1.22e4	1.22e4	1.0000	1.000	3.85	3.85	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	7.21e4	7.21e4	1.0000	1.000	3.97	3.97	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	6.72e4	6.72e4	1.0000	1.000	4.13	4.14	12.5	12.5	100.0

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 14:13:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:14:28 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS

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1	170706M1_4	ST170706M1-2 PFC CS3 17G0508	06-Jul-17	09:07:20
2	170706M1_5	IPA	06-Jul-17	09:18:15
3	170706M1_6	B7F0136-BS1 OPR 0.125	06-Jul-17	09:29:23
4	170706M1_7	IPA	06-Jul-17	09:40:01
5	170706M1_8	B7F0136-BLK1 Method Blank 0.125	06-Jul-17	09:50:39
6	170706M1_9	1700767-03 3 College 0.24548	06-Jul-17	10:01:21
7	170706M1_10	1700767-04 4 College 0.2493	06-Jul-17	10:12:05
8	170706M1_11	1700767-05 5 Sunrise 0.23777	06-Jul-17	10:22:44
9	170706M1_12	1700789-01 GR-OF-20170627 0.10782	06-Jul-17	10:33:22
10	170706M1_13	1700789-02 MH-117T-20170627 0.12311	06-Jul-17	10:44:08
11	170706M1_14	1700789-03 MH-117N-20170627 0.12348	06-Jul-17	10:54:47
12	170706M1_15	B7F0136-MS1 Matrix Spike 0.12272	06-Jul-17	11:05:25
13	170706M1_16	B7F0136-MSD1 Matrix Spike Dup 0.12124	06-Jul-17	11:16:03
14	170706M1_17	1700789-04 MH-118.5T-20170627 0.13718	06-Jul-17	11:26:42
15	170706M1_18	1700789-05 MH-118.5N-20170627 0.12165	06-Jul-17	11:37:49
16	170706M1_19	1700789-06 MH-121.5T-20170627 0.12319	06-Jul-17	11:48:40
17	170706M1_20	1700789-07 MH-121.5N-20170627 0.12348	06-Jul-17	11:59:18
18	170706M1_21	IPA	06-Jul-17	12:09:57
19	170706M1_22	ST170706M1-3 PFC CS3 17G0508	06-Jul-17	12:20:35
20	170706M1_23	IPA	06-Jul-17	12:31:21
21	170706M1_24	1700789-08 MH-125.9T-20170627 0.11951	06-Jul-17	12:42:00
22	170706M1_25	1700789-09 MH-125.9N-20170627 0.12353	06-Jul-17	12:52:38
23	170706M1_26	1700789-10 West Ditch Out-20170627 0.10981	06-Jul-17	13:03:17
24	170706M1_27	IPA	06-Jul-17	13:13:55
25	170706M1_28	ST170706M1-4 PFC CS3 17G0508	06-Jul-17	13:24:34
26	170706M1_29	IPA	06-Jul-17	13:35:20

Vista Analytical Laboratory

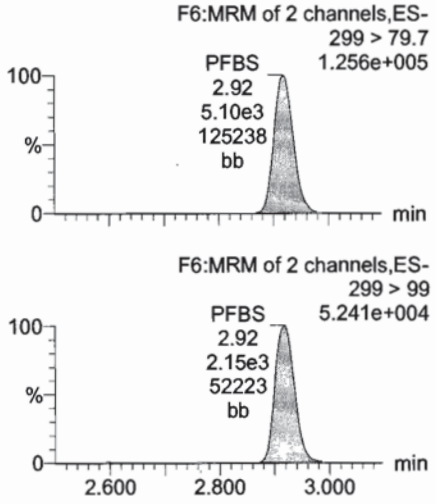
Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

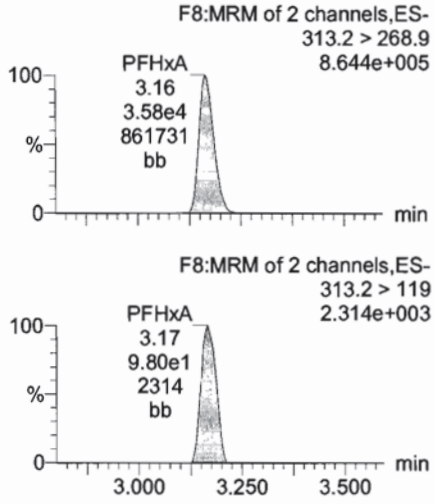
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

Total PFBS



PFHxA



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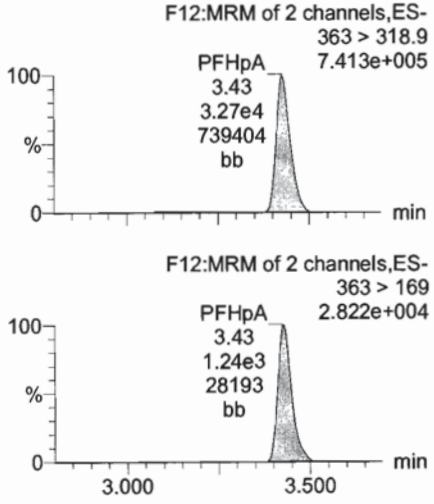
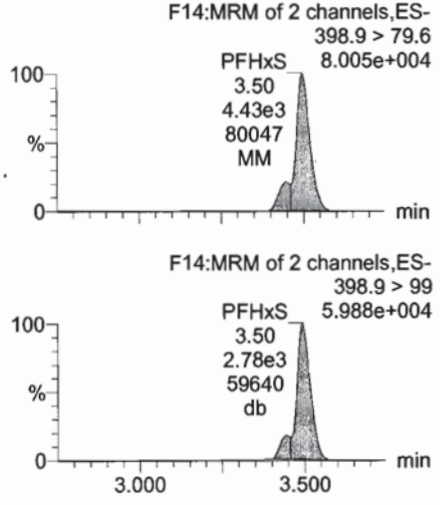
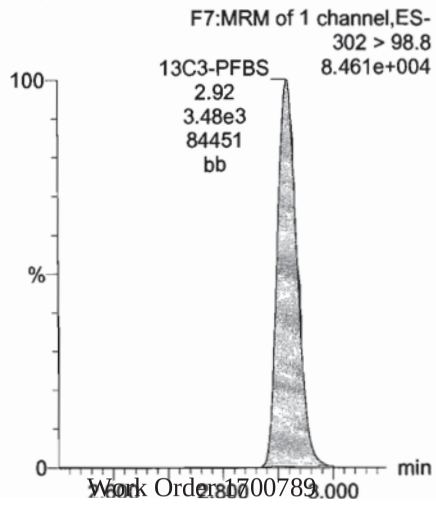


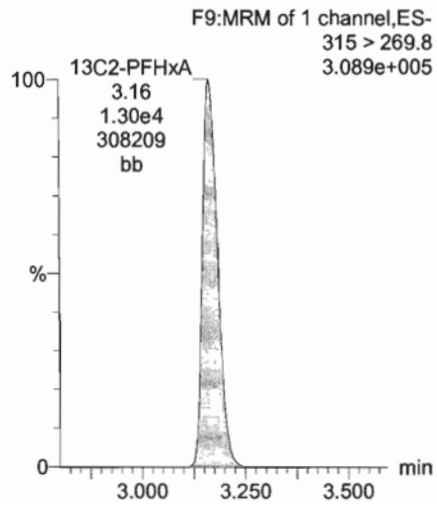
Total PFHxS



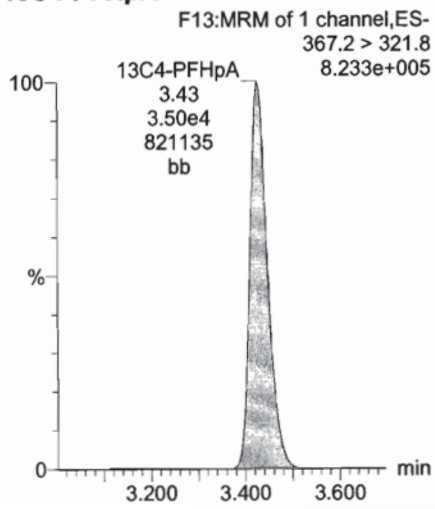
13C3-PFBS



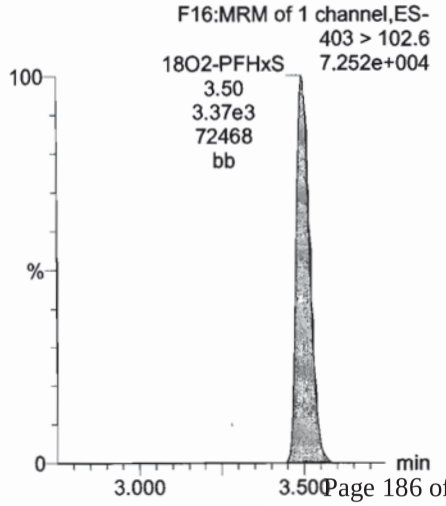
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS

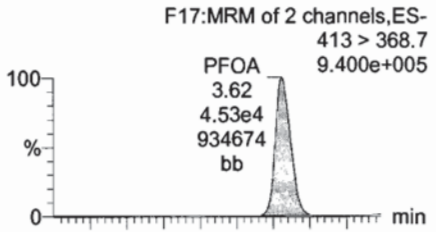


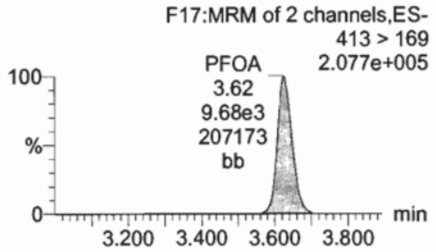
Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

Total PFOA





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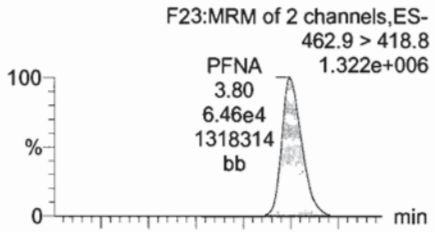
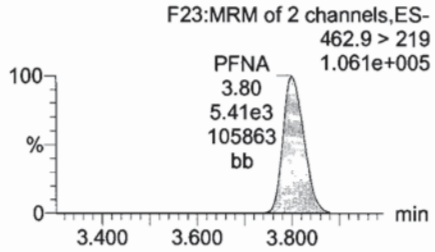
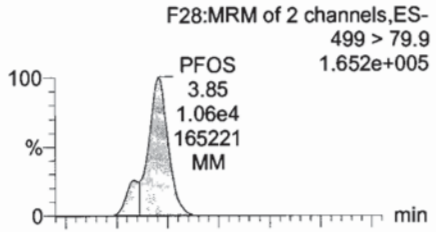
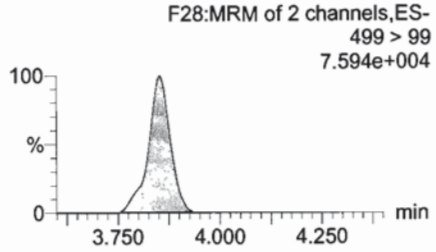


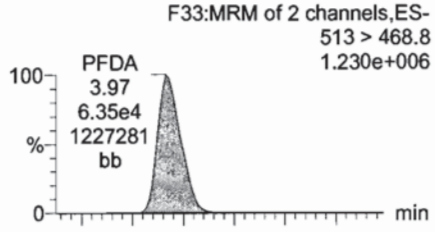


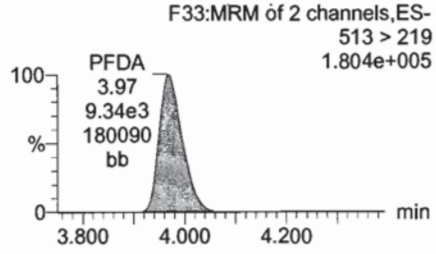
Total PFOS



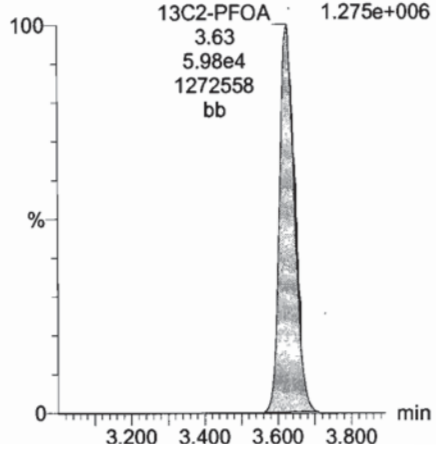


PFDA

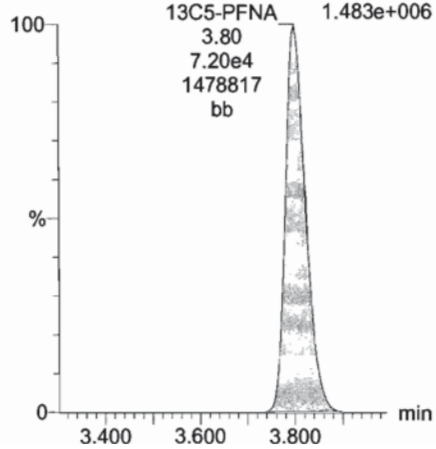




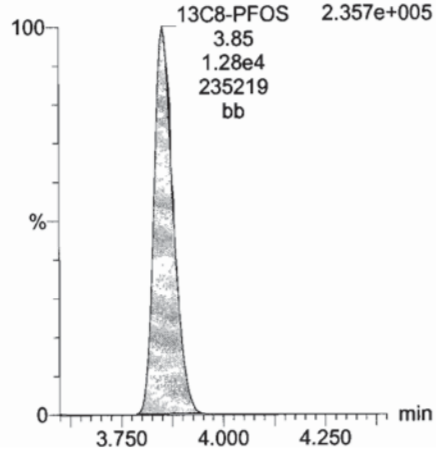
13C2-PFOA



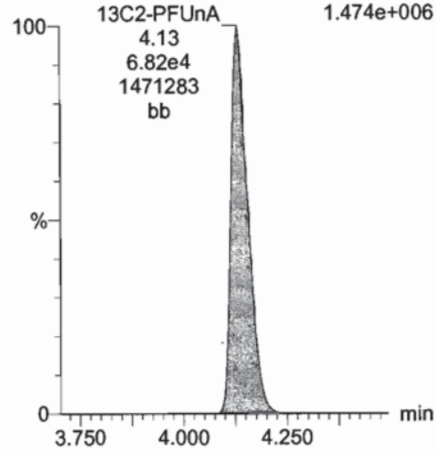
13C5-PFNA



13C8-PFOS



13C2-PFUnA

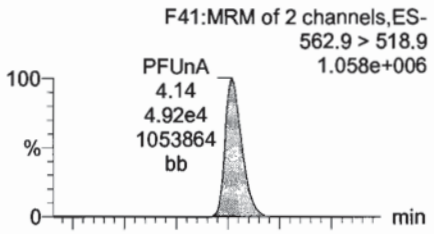


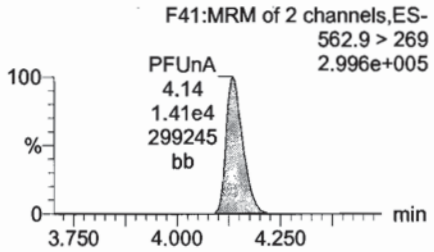
Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

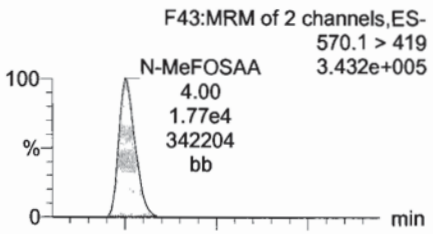
Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

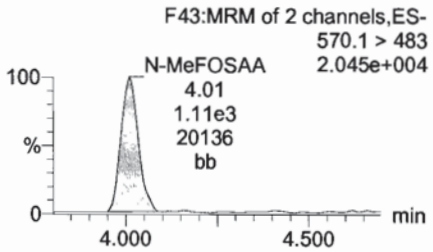
PFUnA



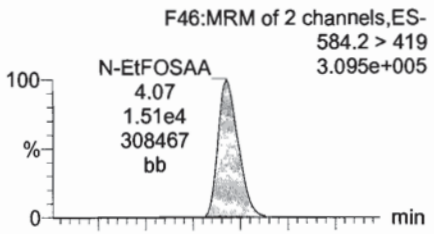


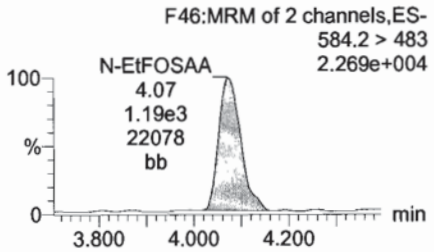
N-MeFOSAA



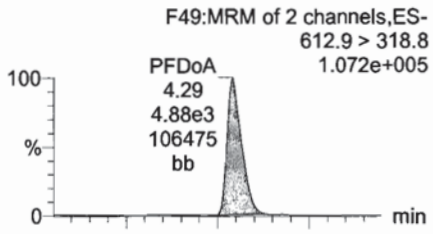


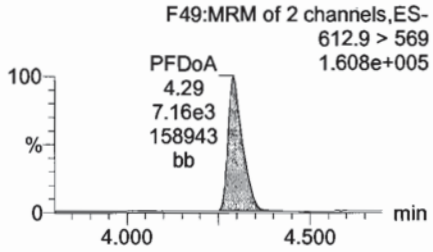
N-EtFOSAA



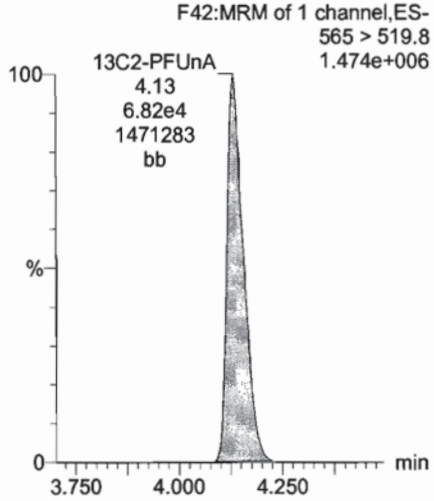


PFDoA

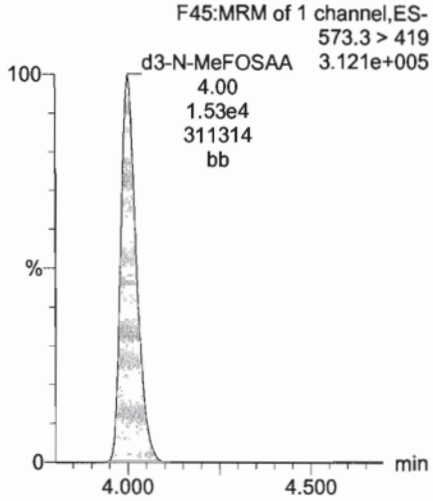




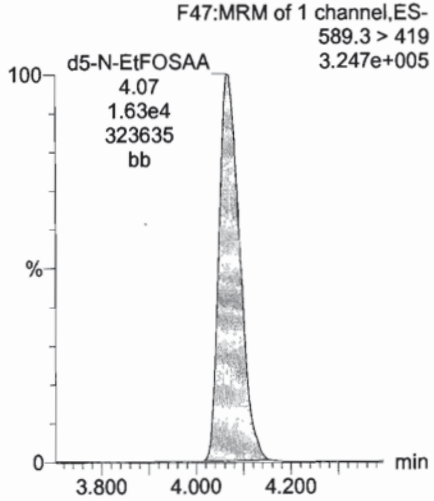
13C2-PFUnA



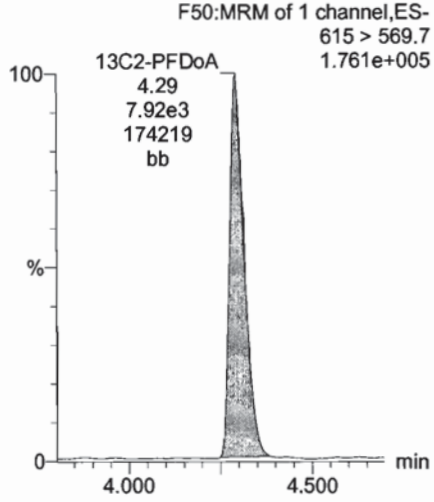
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



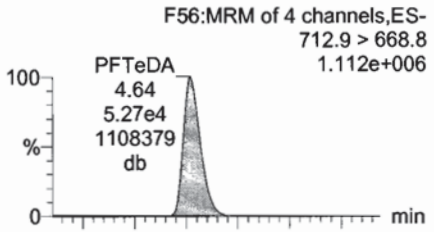
Vista Analytical Laboratory

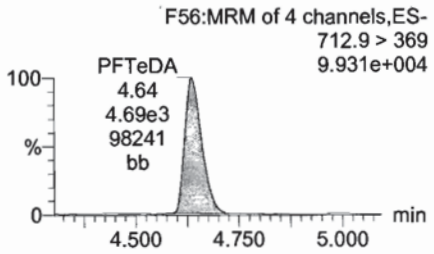
Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

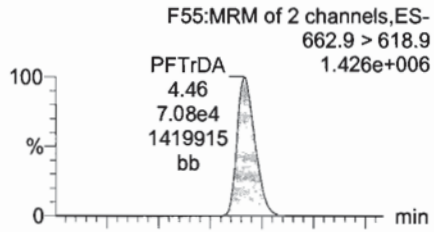
Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

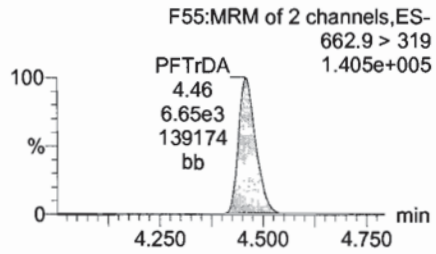
PFTeDA



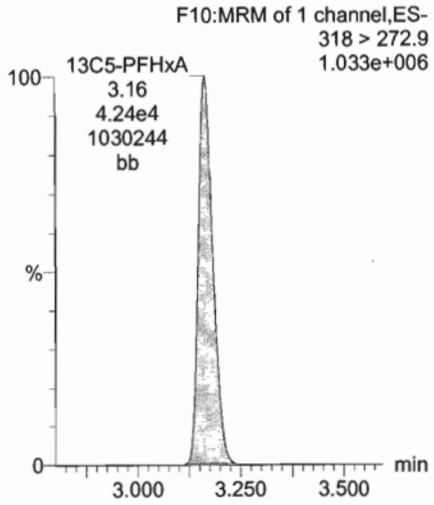


PFTrDA

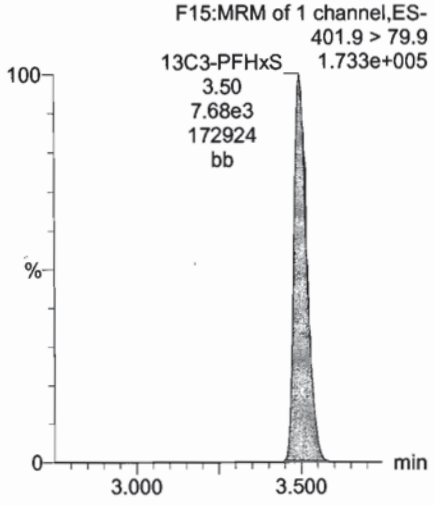




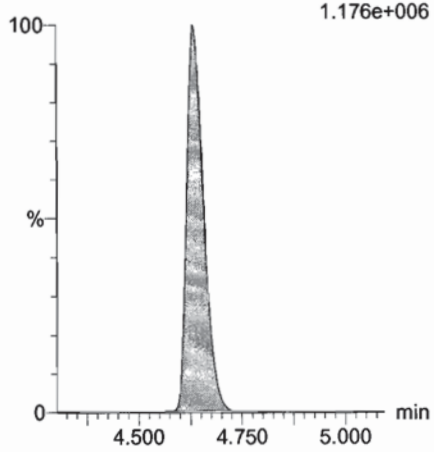
13C5-PFHxA



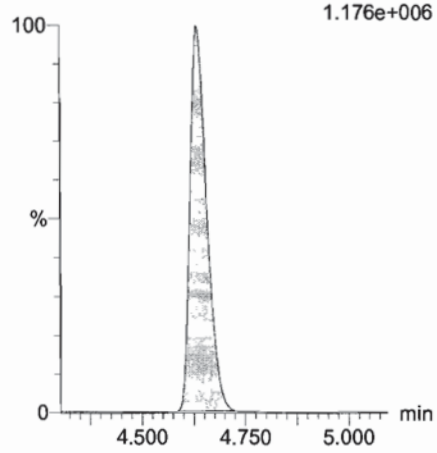
13C3-PFHxS



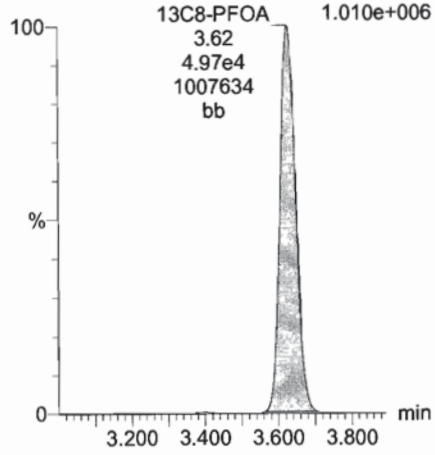
13C2-PFTeDA



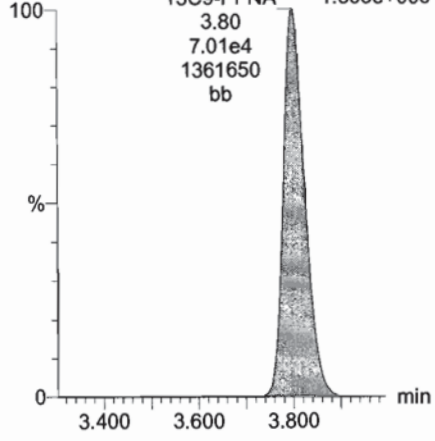
13C2-PFTeDA



13C8-PFOA



13C9-PFNA

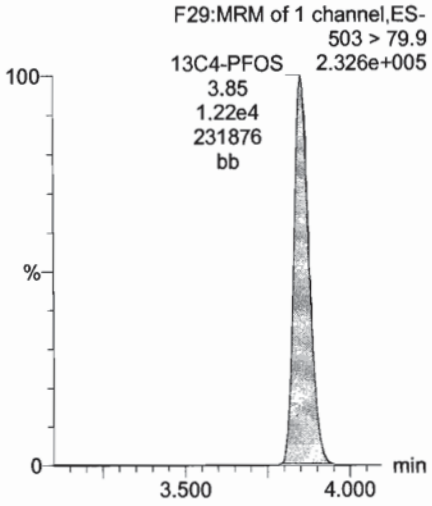


Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

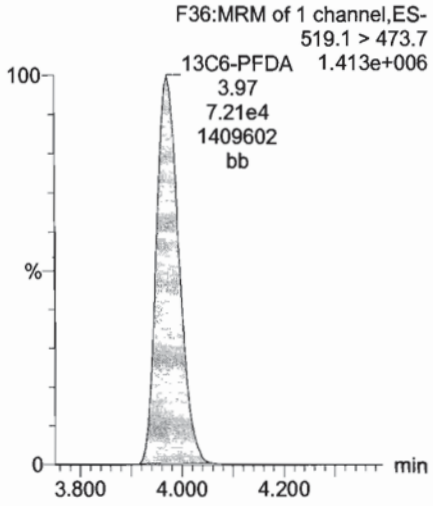
Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

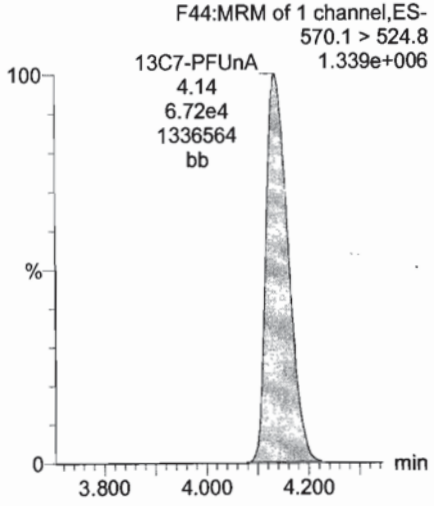
13C4-PFOS



13C6-PFDA



13C7-PFUnA



Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-2.qld

Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:05:34
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	6.16e3	4.19e3	1.0000		2.92	2.92	18.4	9.76	97.6
2	2	PFHxA	313.2 > 268.9	4.75e4	1.62e4	1.0000		3.16	3.16	14.7	10.4	104.0
3	3	PFHpA	363 > 318.9	4.25e4	4.61e4	1.0000		3.43	3.42	11.5	9.54	95.4
4	4	PFHxS	398.9 > 79.6	5.27e3	4.08e3	1.0000		3.55	3.49	16.2	8.73	87.3
5	5	PFOA	413 > 368.7	7.77e4	9.64e4	1.0000		3.63	3.62	10.1	10.6	105.9
6	6	PFNA	462.9 > 418.8	7.54e4	7.98e4	1.0000		3.82	3.80	11.8	10.6	105.7
7	7	PFOS	499 > 79.9	1.27e4	1.58e4	1.0000		3.86	3.85	10.1	9.53	95.3
8	8	PFDA	513 > 468.8	7.01e4	8.05e4	1.0000		4.00	3.96	10.9	9.39	93.9
9	9	PFUnA	562.9 > 518.9	5.77e4	7.40e4	1.0000		4.13	4.13	9.74	10.7	107.0
10	10	N-MeFOSAA	570.1 > 419	2.12e4	1.80e4	1.0000		4.00	4.00	14.7	9.22	92.2
11	11	N-EtFOSAA	584.2 > 419	1.75e4	1.85e4	1.0000		4.07	4.07	11.8	10.3	103.0
12	12	PFDoA	612.9 > 318.8	6.02e3	1.01e4	1.0000		4.31	4.28	7.42	8.89	88.9
13	13	PFTrDA	662.9 > 618.9	8.91e4	1.01e4	1.0000		4.50	4.45	110	9.90	99.0
14	14	PFTeDA	712.9 > 668.8	6.53e4	7.45e4	1.0000		4.65	4.62	10.9	9.18	91.8
15	15	13C3-PFBS	302 > 98.8	4.19e3	5.15e4	1.0000	0.032	2.92	2.92	0.407	12.7	101.4
16	16	13C2-PFHxA	315 > 269.8	1.62e4	5.15e4	1.0000	0.296	3.15	3.16	1.57	5.31	106.1
17	17	13C4-PFHpA	367.2 > 321.8	4.61e4	5.15e4	1.0000	0.302	3.43	3.42	4.48	14.9	118.9
18	18	18O2-PFHxS	403 > 102.6	4.08e3	1.03e4	1.0000	0.434	3.49	3.49	4.93	11.3	90.8
19	19	13C2-PFOA	414.9 > 369.7	9.64e4	8.32e4	1.0000	1.140	3.62	3.62	14.5	12.7	101.6
20	20	13C5-PFNA	468.2 > 422.9	7.98e4	8.20e4	1.0000	0.958	3.80	3.80	12.2	12.7	101.6
21	21	13C8-PFOS	507 > 79.9	1.58e4	1.53e4	1.0000	1.061	3.85	3.85	12.9	12.1	97.1
22	22	13C2-PFDA	515.1 > 469.9	8.05e4	8.59e4	1.0000	0.942	3.97	3.96	11.7	12.4	99.4
23	23	13C2-PFUnA	565 > 519.8	7.40e4	8.94e4	1.0000	1.084	4.13	4.13	10.3	9.54	76.3
24	24	d3-N-MeFOSAA	573.3 > 419	1.80e4	8.94e4	1.0000	0.240	4.00	4.00	2.52	10.5	83.7
25	25	d5-N-EtFOSAA	589.3 > 419	1.85e4	8.94e4	1.0000	0.247	4.07	4.06	2.59	10.5	83.7
26	26	13C2-PFDoA	615 > 569.7	1.01e4	8.94e4	1.0000	0.127	4.32	4.29	1.42	11.2	89.3
27	27	13C2-PFTeDA	714.8 > 669.6	7.45e4	8.94e4	1.0000	0.883	4.64	4.62	10.4	11.8	94.5
28	28	13C5-PFHxA	318 > 272.9	5.15e4	5.15e4	1.0000	1.000	3.15	3.16	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	1.03e4	1.03e4	1.0000	1.000	3.49	3.49	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	8.32e4	8.32e4	1.0000	1.000	3.62	3.62	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	8.20e4	8.20e4	1.0000	1.000	3.82	3.80	12.5	12.5	100.0

70-130

50-150

OM 7/20/17

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-2.qld

Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	1.53e4	1.53e4	1.0000	1.000	3.85	3.85	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	8.59e4	8.59e4	1.0000	1.000	3.97	3.96	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	8.94e4	8.94e4	1.0000	1.000	4.13	4.13	12.5	12.5	100.0

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 16:34:18 Pacific Daylight Time
Printed: Thursday, July 20, 2017 16:38:16 Pacific Daylight Time

Compound name: PFHxA

	Name	ID	Acq.Date	Acq.Time
1	170707M2_2	ST170707M2-1 PFC CS3 17G0508	07-Jul-17	13:45:44
2	170707M2_3	B7F0137-BLK1 Method Blank 0.125	07-Jul-17	13:56:23
3	170707M2_4	IPA	07-Jul-17	14:07:44
4	170707M2_5	B7F0137-BS1 OPR 0.125	07-Jul-17	14:18:24
5	170707M2_6	1700789-01@5X GR-OF-20170627 0.10782	07-Jul-17	14:29:12
6	170707M2_7	1700789-02@5X MH-117T-20170627 0.12311	07-Jul-17	14:39:57
7	170707M2_8	1700789-03@5X MH-117N-20170627 0.12348	07-Jul-17	14:50:35
8	170707M2_9	B7F0136-MS1@5X Matrix Spike 0.12272	07-Jul-17	15:01:14
9	170707M2_10	B7F0136-MSD1@5X Matrix Spike Dup 0.12124	07-Jul-17	15:11:54
10	170707M2_11	1700789-05@10X MH-118.5N-20170627 0.12...	07-Jul-17	15:22:39
11	170707M2_12	1700792-01 West Ditch In-20170627 0.11683	07-Jul-17	15:33:17
12	170707M2_13	1700792-02 MH-140-20170628 0.11475	07-Jul-17	15:43:56
13	170707M2_14	1700792-03 Interceptor-20170628 0.11459	07-Jul-17	15:54:34
14	170707M2_15	1700792-04 Roof Drain-20170628 0.11484	07-Jul-17	16:05:13
15	170707M2_16	1700792-05 Spring-20170628 0.09751	07-Jul-17	16:15:51
16	170707M2_17	1700792-06 FRB-20170628 0.1121	07-Jul-17	16:26:52
17	170707M2_18	1700792-07 MH318.9-20170628 0.11873	07-Jul-17	16:37:41
18	170707M2_19	IPA	07-Jul-17	16:48:19
19	170707M2_20	ST170707M2-2 PFC CS3 17G0508	07-Jul-17	16:58:58
20	170707M2_21	IPA	07-Jul-17	17:09:44
21	170707M2_22	1700792-08 MH388.9-20170628 0.11713	07-Jul-17	17:20:31
22	170707M2_23	1700792-09 Dup03-20170628 0.11824	07-Jul-17	17:31:09
23	170707M2_24	1700792-10 Dup01-20170627 0.11337	07-Jul-17	17:41:47
24	170707M2_25	1700792-11 RB01-20170628 0.12005	07-Jul-17	17:52:26
25	170707M2_26	IPA	07-Jul-17	18:03:04
26	170707M2_27	ST170707M2-3 PFC CS3 17G0508	07-Jul-17	18:13:43

LC Calibration Standards Review Checklist Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	dm 7/20/17 ✓ NA
Calibration ID: ST170707-M2-1	L (M) H	NA ☐	☑	☑	☑	☑	☐	☐
Calibration ID: -2	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID: -3	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 6/21/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: 7/21/17
Initials/Date

Comments:
L14

Vista Analytical Laboratory

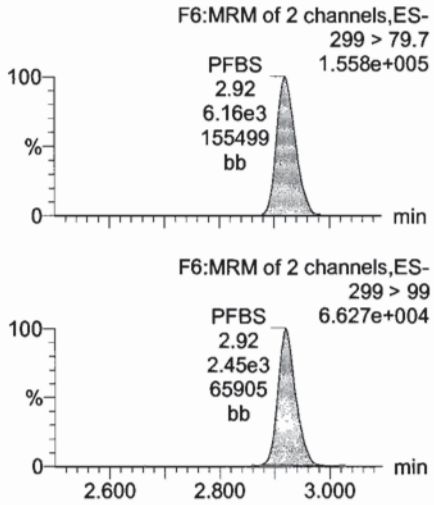
Dataset: U:\Q4.PRO\results\170707M2\170707M2-2.qld

Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

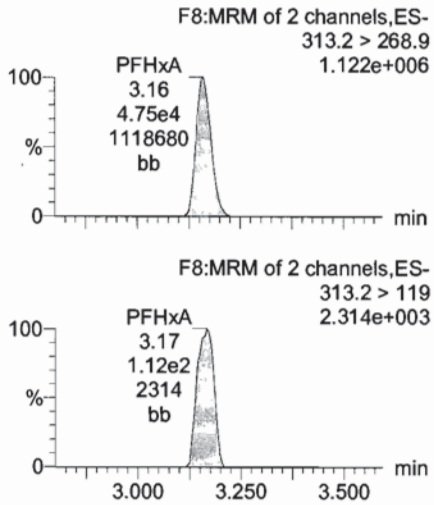
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:05:34
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

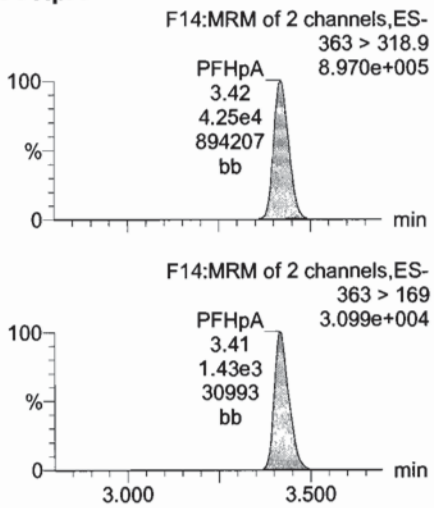
Total PFBS



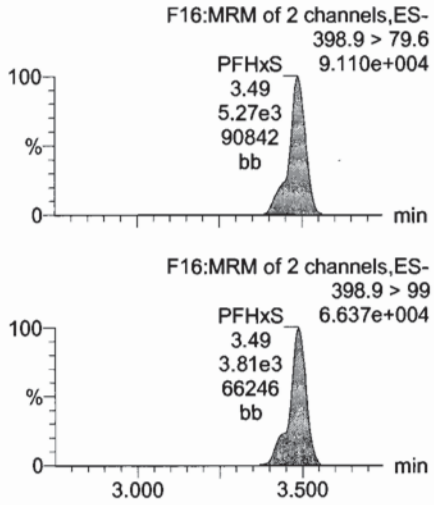
PFHxA



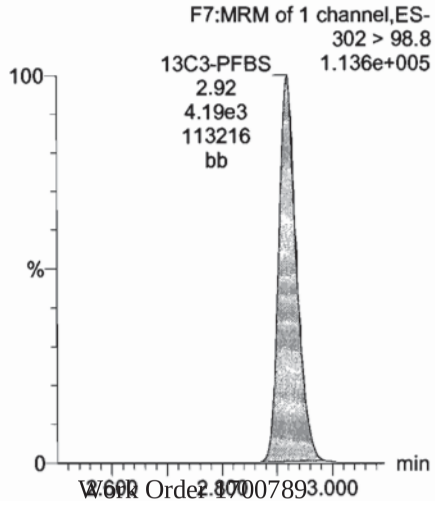
PFHpA



Total PFHxS



13C3-PFBS



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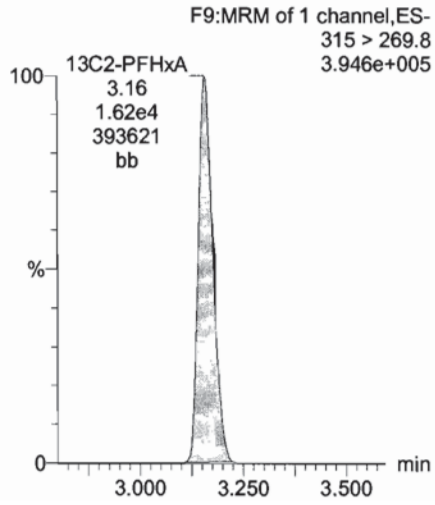

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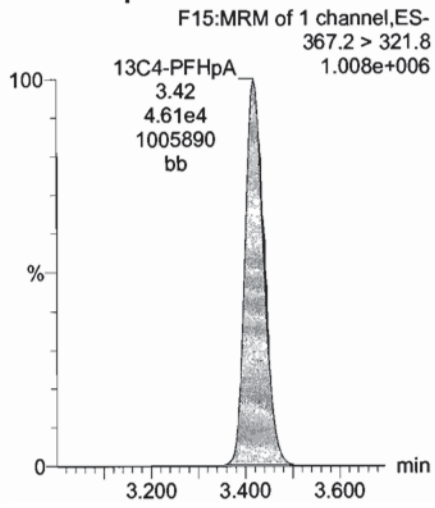
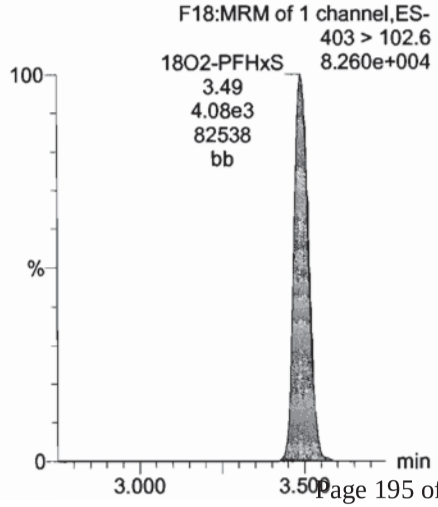


18O2-PFHxS



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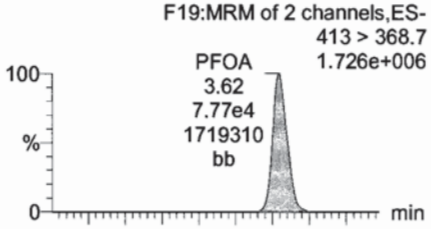
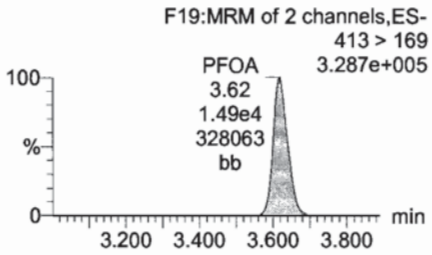
Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

Total PFOA





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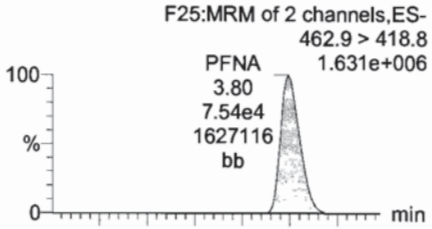
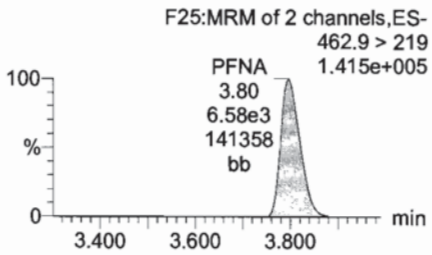
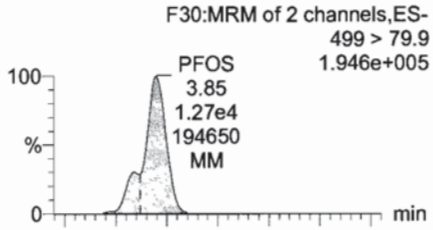
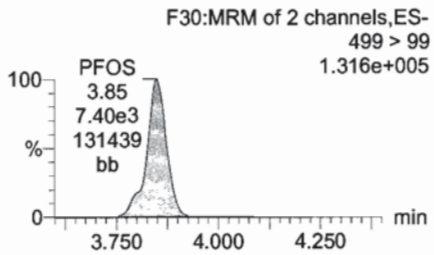


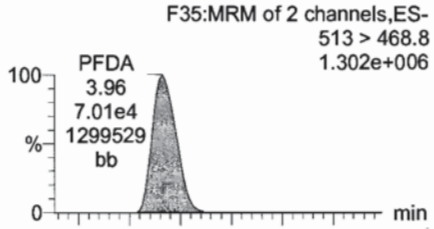


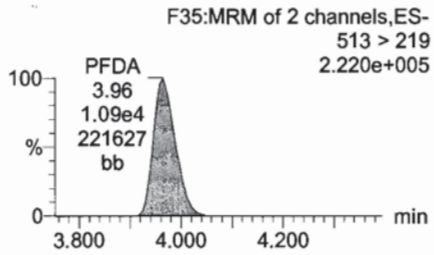
Total PFOS



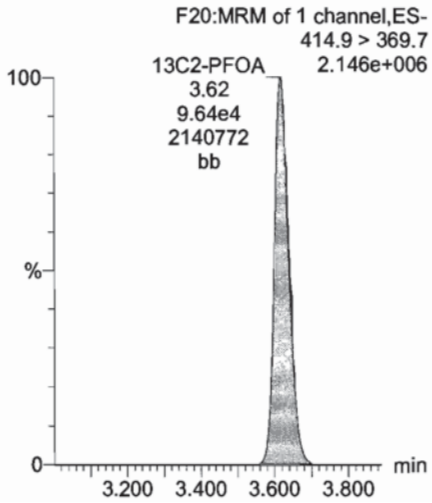


PFDA

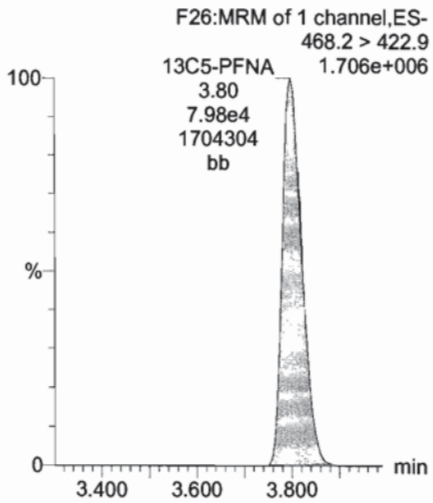




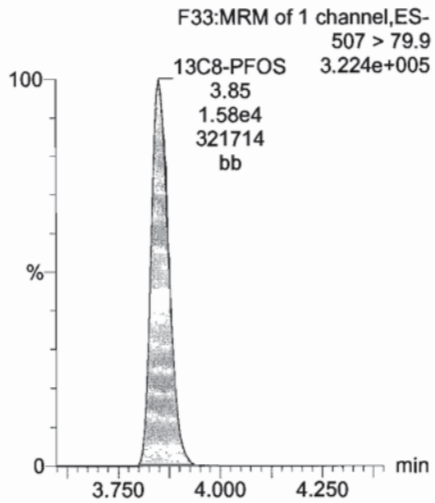
13C2-PFOA



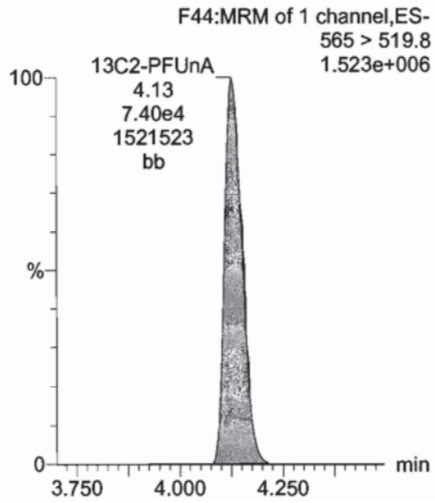
13C5-PFNA



13C8-PFOS



13C2-PFUnA



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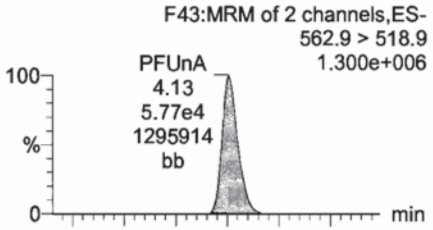
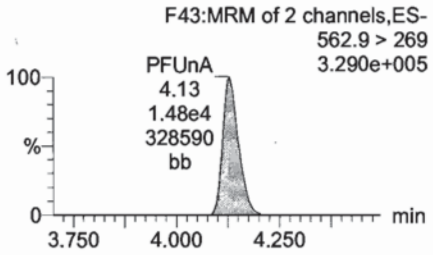
Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFUnA





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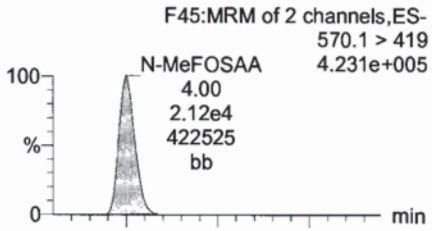
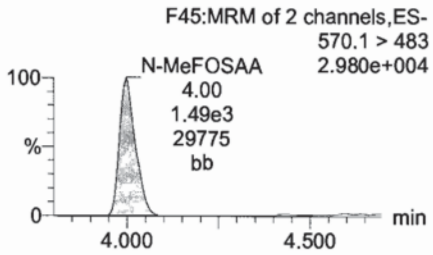
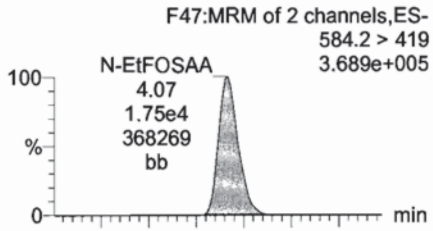
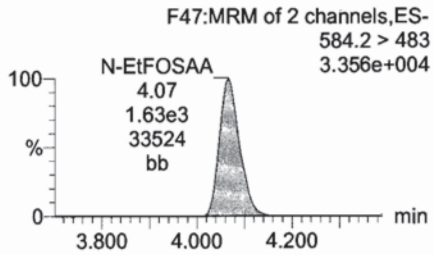


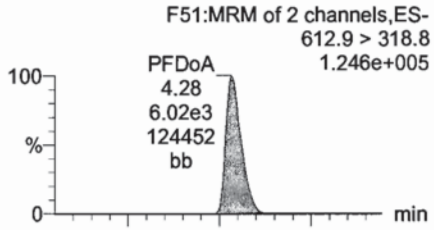


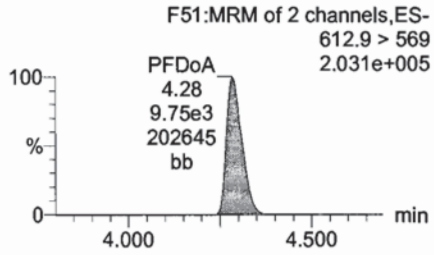
N-EtFOSAA





PFDoA





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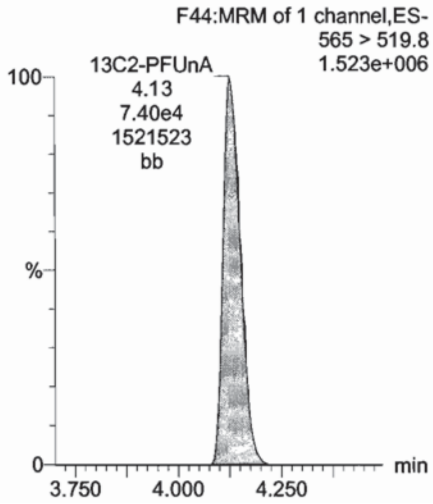

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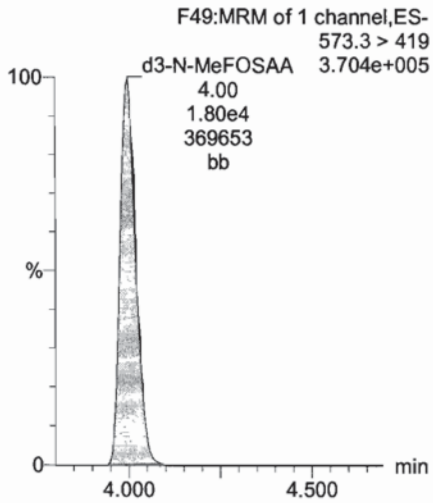

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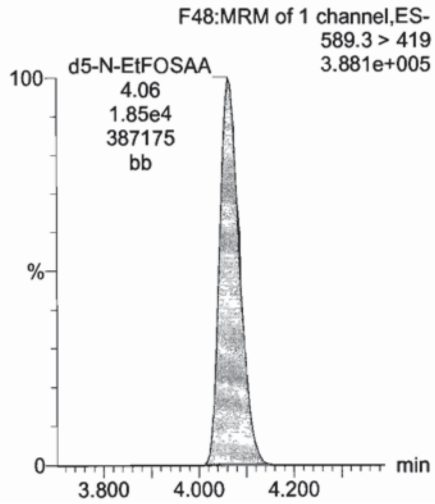

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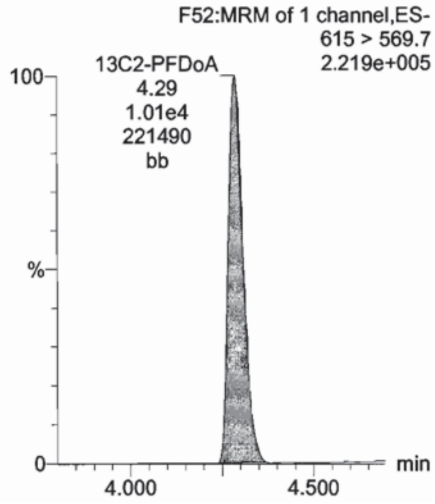

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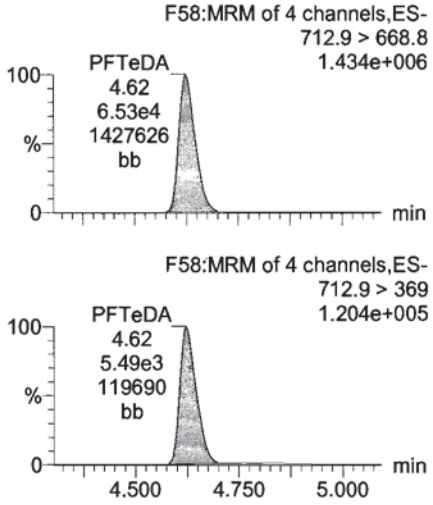
Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFTeDA



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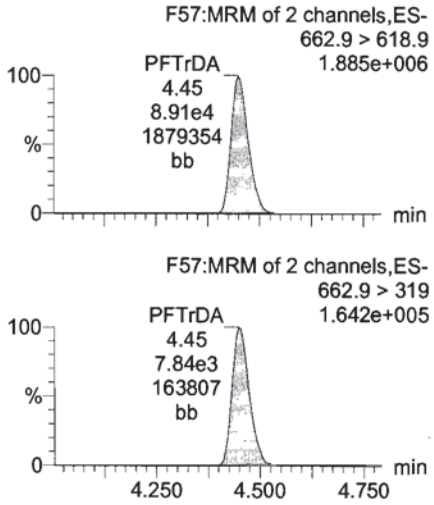
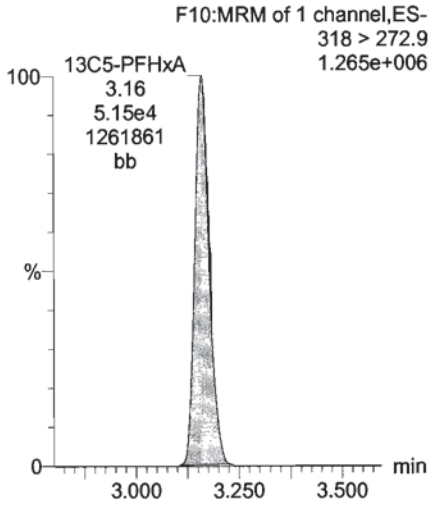
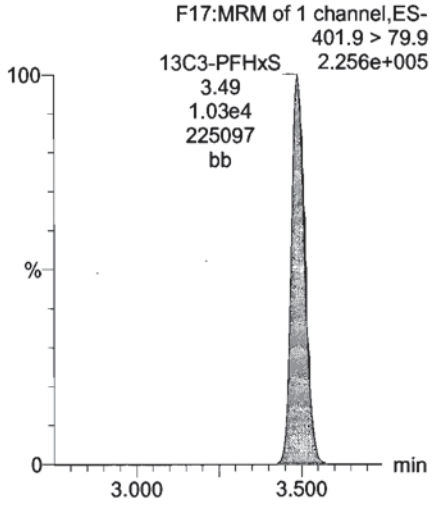


13C5-PFHxA



13C3-PFHxS



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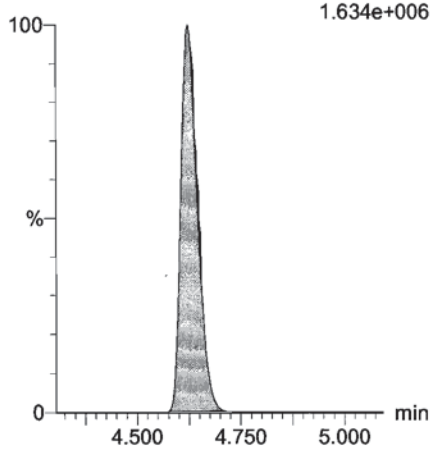
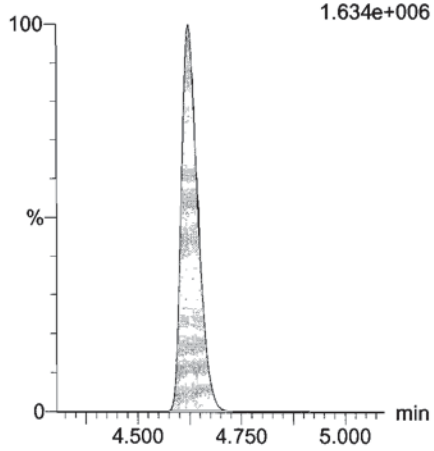
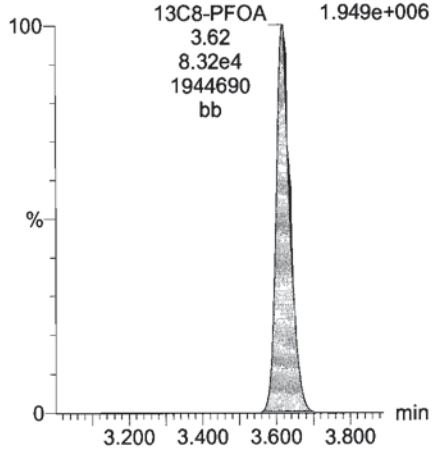


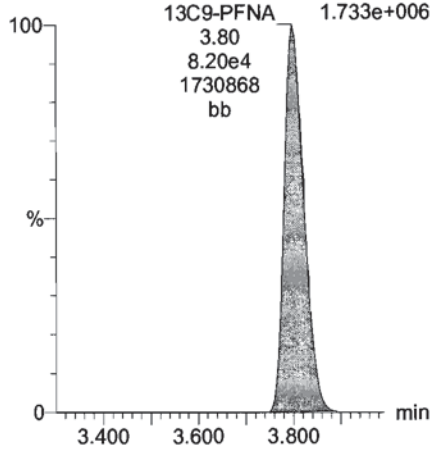
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



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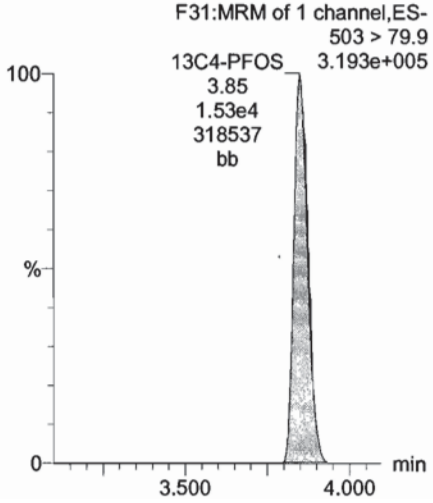
Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

13C4-PFOS



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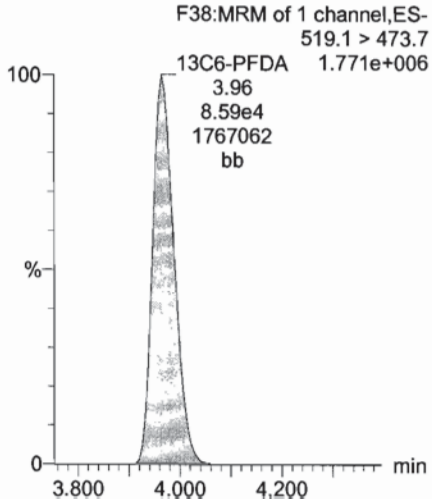
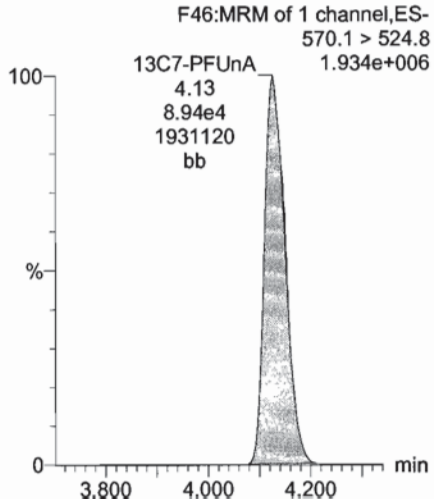


13C7-PFUnA



Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:05:34
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	6.71e3	4.61e3	1.0000		2.92	2.93	18.2	9.67	96.7
2	2	PFHxA	313.2 > 268.9	5.42e4	1.87e4	1.0000		3.16	3.18	14.5	10.3	102.7
3	3	PFHpA	363 > 318.9	5.70e4	5.95e4	1.0000		3.43	3.43	12.0	9.92	99.2
4	4	PFHxS	398.9 > 79.6	7.25e3	5.33e3	1.0000		3.55	3.50	17.0	9.20	92.0
5	5	PFOA	413 > 368.7	8.29e4	1.09e5	1.0000		3.63	3.64	9.52	9.99	99.9
6	6	PFNA	462.9 > 418.8	7.93e4	8.73e4	1.0000		3.82	3.82	11.4	10.2	101.6
7	7	PFOS	499 > 79.9	1.33e4	1.57e4	1.0000		3.86	3.87	10.6	9.99	99.9
8	8	PFDA	513 > 468.8	7.49e4	8.20e4	1.0000		4.00	3.99	11.4	9.85	98.5
9	9	PFUnA	562.9 > 518.9	6.26e4	8.68e4	1.0000		4.13	4.15	9.01	9.88	98.8
10	10	N-MeFOSAA	570.1 > 419	2.08e4	1.76e4	1.0000		4.00	4.02	14.7	9.22	92.2
11	11	N-EtFOSAA	584.2 > 419	1.71e4	1.79e4	1.0000		4.07	4.08	11.9	10.4	103.8
12	12	PFDoA	612.9 > 318.8	6.27e3	1.04e4	1.0000		4.31	4.30	7.57	9.07	90.7
13	13	PFTrDA	662.9 > 618.9	8.89e4	1.04e4	1.0000		4.50	4.47	107	9.67	96.7
14	14	PFTeDA	712.9 > 668.8	6.37e4	7.48e4	1.0000		4.65	4.64	10.6	8.92	89.2
15	15	13C3-PFBS	302 > 98.8	4.61e3	6.14e4	1.0000	0.032	2.92	2.93	0.375	11.7	93.4
16	16	13C2-PFHxA	315 > 269.8	1.87e4	6.14e4	1.0000	0.296	3.15	3.18	1.52	5.14	102.8
17	17	13C4-PFHpA	367.2 > 321.8	5.95e4	6.14e4	1.0000	0.302	3.43	3.43	4.84	16.0	128.4
18	18	18O2-PFHxS	403 > 102.6	5.33e3	1.32e4	1.0000	0.434	3.49	3.50	5.03	11.6	92.6
19	19	13C2-PFOA	414.9 > 369.7	1.09e5	9.20e4	1.0000	1.140	3.62	3.64	14.8	13.0	103.9
20	20	13C5-PFNA	468.2 > 422.9	8.73e4	9.27e4	1.0000	0.958	3.80	3.81	11.8	12.3	98.3
21	21	13C8-PFOS	507 > 79.9	1.57e4	1.44e4	1.0000	1.061	3.85	3.87	13.6	12.8	102.5
22	22	13C2-PFDA	515.1 > 469.9	8.20e4	9.06e4	1.0000	0.942	3.97	3.99	11.3	12.0	96.0
23	23	13C2-PFUnA	565 > 519.8	8.68e4	1.01e5	1.0000	1.084	4.13	4.15	10.8	9.96	79.6
24	24	d3-N-MeFOSAA	573.3 > 419	1.76e4	1.01e5	1.0000	0.240	4.00	4.01	2.19	9.13	73.0
25	25	d5-N-EtFOSAA	589.3 > 419	1.79e4	1.01e5	1.0000	0.247	4.07	4.08	2.23	9.01	72.1
26	26	13C2-PFDoA	615 > 569.7	1.04e4	1.01e5	1.0000	0.127	4.32	4.30	1.29	10.1	81.1
27	27	13C2-PFTeDA	714.8 > 669.6	7.48e4	1.01e5	1.0000	0.883	4.64	4.65	9.30	10.5	84.3
28	28	13C5-PFHxA	318 > 272.9	6.14e4	6.14e4	1.0000	1.000	3.15	3.18	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	1.32e4	1.32e4	1.0000	1.000	3.49	3.50	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	9.20e4	9.20e4	1.0000	1.000	3.62	3.64	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	9.27e4	9.27e4	1.0000	1.000	3.82	3.81	12.5	12.5	100.0

70-130

50-150

AM 7/20/17

Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	1.44e4	1.44e4	1.0000	1.000	3.85	3.87	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	9.06e4	9.06e4	1.0000	1.000	3.97	3.99	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	1.01e5	1.01e5	1.0000	1.000	4.13	4.15	12.5	12.5	100.0

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 16:34:18 Pacific Daylight Time
Printed: Thursday, July 20, 2017 16:38:16 Pacific Daylight Time

Compound name: PFHxA

	Name	ID	Acq.Date	Acq.Time
1	170707M2_2	ST170707M2-1 PFC CS3 17G0508	07-Jul-17	13:45:44
2	170707M2_3	B7F0137-BLK1 Method Blank 0.125	07-Jul-17	13:56:23
3	170707M2_4	IPA	07-Jul-17	14:07:44
4	170707M2_5	B7F0137-BS1 OPR 0.125	07-Jul-17	14:18:24
5	170707M2_6	1700789-01@5X GR-OF-20170627 0.10782	07-Jul-17	14:29:12
6	170707M2_7	1700789-02@5X MH-117T-20170627 0.12311	07-Jul-17	14:39:57
7	170707M2_8	1700789-03@5X MH-117N-20170627 0.12348	07-Jul-17	14:50:35
8	170707M2_9	B7F0136-MS1@5X Matrix Spike 0.12272	07-Jul-17	15:01:14
9	170707M2_10	B7F0136-MSD1@5X Matrix Spike Dup 0.12124	07-Jul-17	15:11:54
10	170707M2_11	1700789-05@10X MH-118.5N-20170627 0.12...	07-Jul-17	15:22:39
11	170707M2_12	1700792-01 West Ditch In-20170627 0.11683	07-Jul-17	15:33:17
12	170707M2_13	1700792-02 MH-140-20170628 0.11475	07-Jul-17	15:43:56
13	170707M2_14	1700792-03 Interceptor-20170628 0.11459	07-Jul-17	15:54:34
14	170707M2_15	1700792-04 Roof Drain-20170628 0.11484	07-Jul-17	16:05:13
15	170707M2_16	1700792-05 Spring-20170628 0.09751	07-Jul-17	16:15:51
16	170707M2_17	1700792-06 FRB-20170628 0.1121	07-Jul-17	16:26:52
17	170707M2_18	1700792-07 MH318.9-20170628 0.11873	07-Jul-17	16:37:41
18	170707M2_19	IPA	07-Jul-17	16:48:19
19	170707M2_20	ST170707M2-2 PFC CS3 17G0508	07-Jul-17	16:58:58
20	170707M2_21	IPA	07-Jul-17	17:09:44
21	170707M2_22	1700792-08 MH388.9-20170628 0.11713	07-Jul-17	17:20:31
22	170707M2_23	1700792-09 Dup03-20170628 0.11824	07-Jul-17	17:31:09
23	170707M2_24	1700792-10 Dup01-20170627 0.11337	07-Jul-17	17:41:47
24	170707M2_25	1700792-11 RB01-20170628 0.12005	07-Jul-17	17:52:26
25	170707M2_26	IPA	07-Jul-17	18:03:04
26	170707M2_27	ST170707M2-3 PFC CS3 17G0508	07-Jul-17	18:13:43

Vista Analytical Laboratory

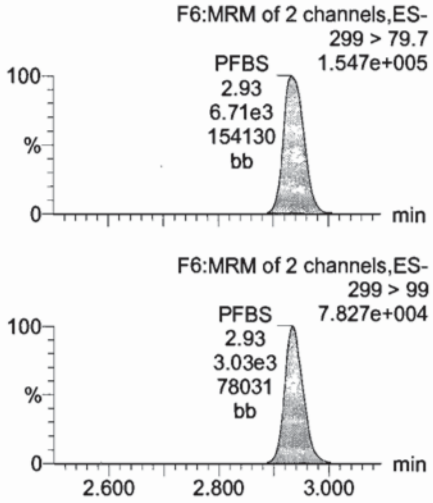
Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

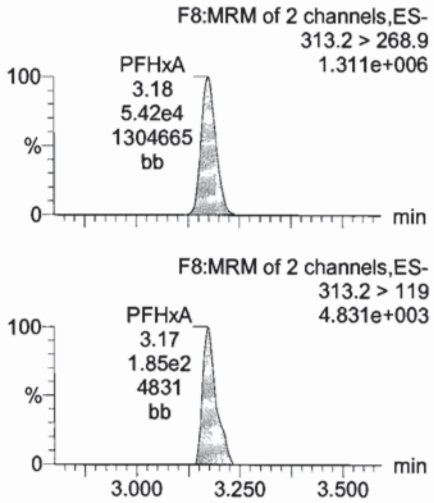
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:05:34
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

Total PFBS



PFHxA



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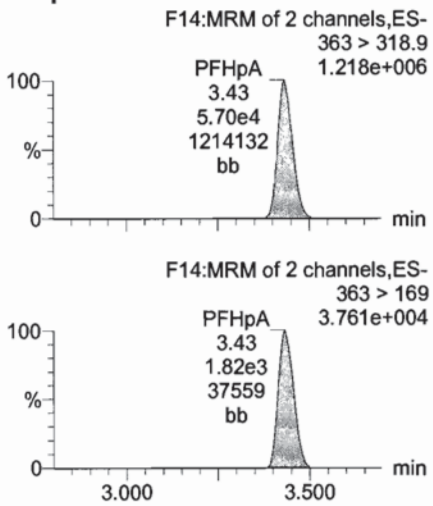
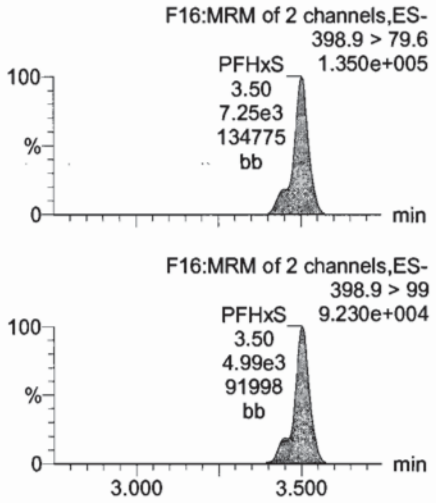


Total PFHxS



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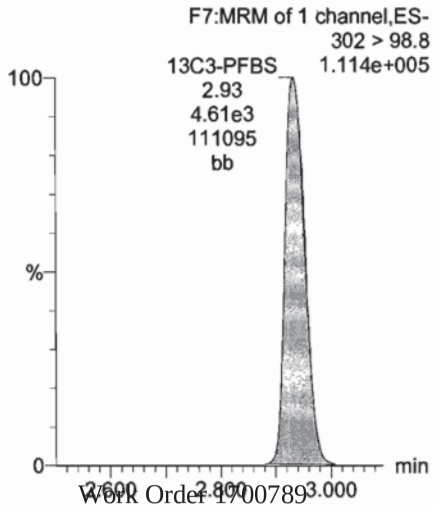

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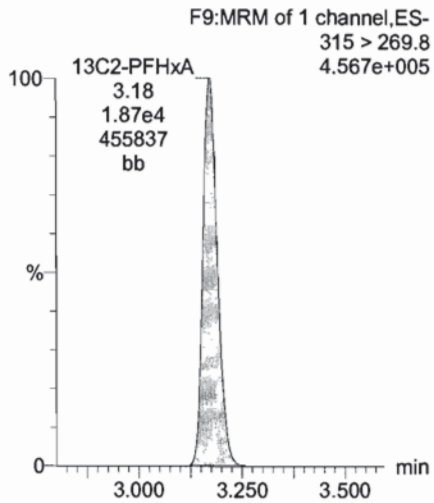

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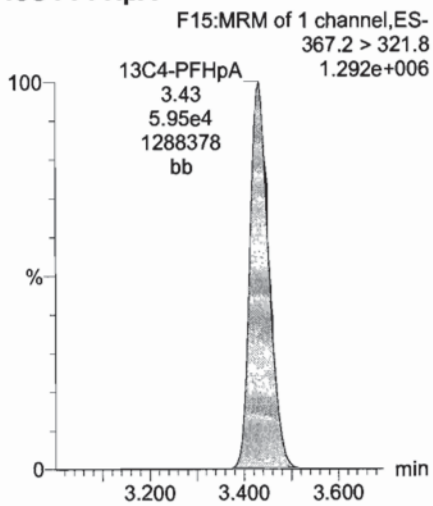

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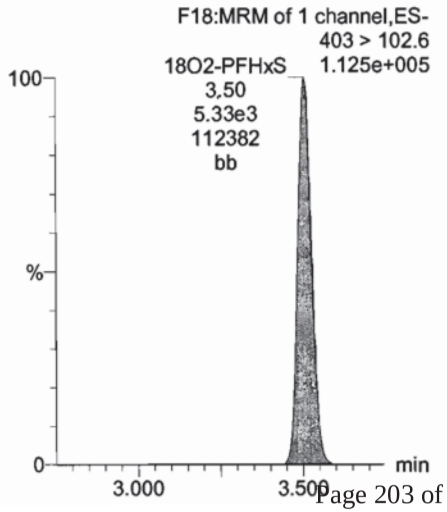
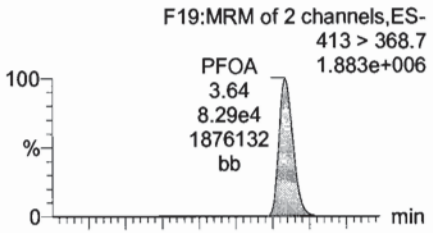


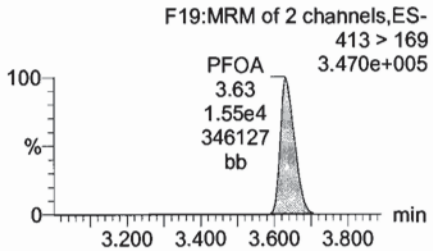
Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

Total PFOA





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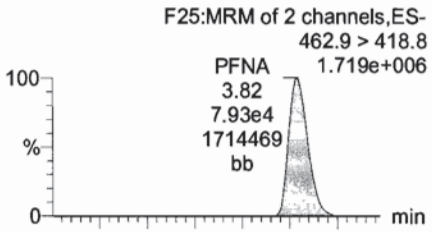
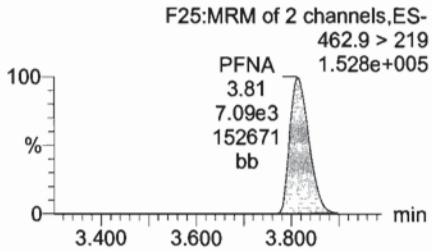
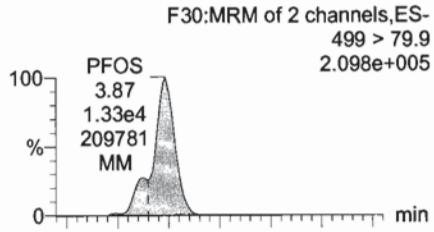
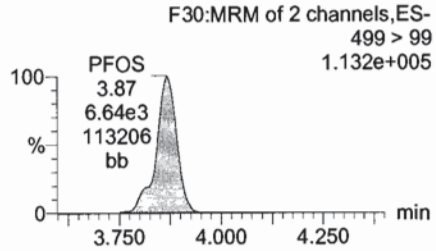




Total PFOS





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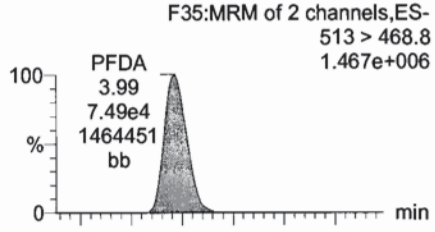
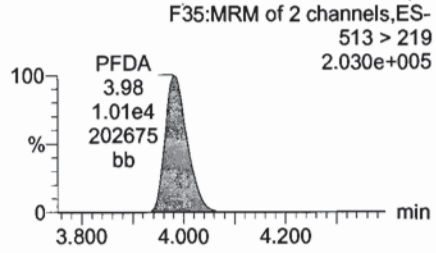
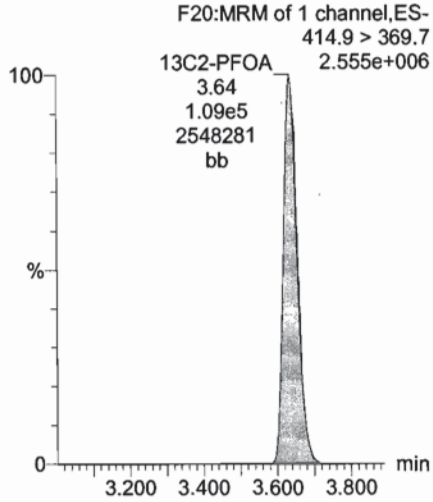
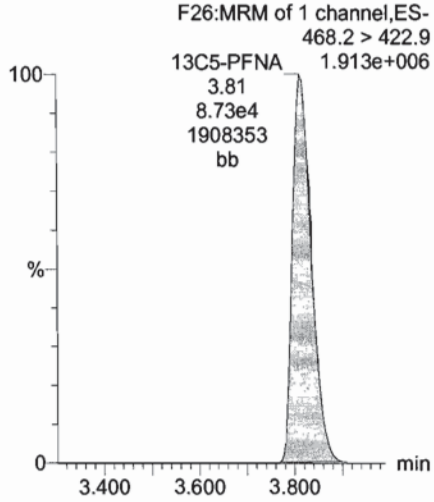




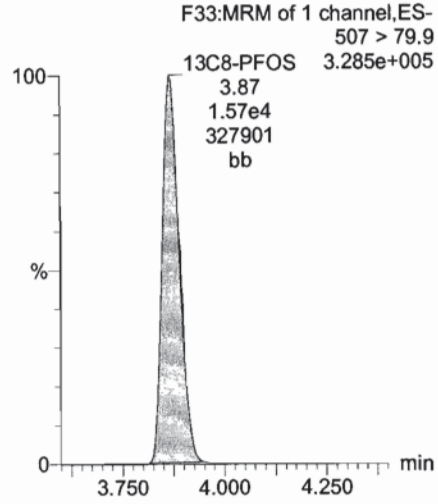
13C2-PFOA



13C5-PFNA



13C8-PFOS



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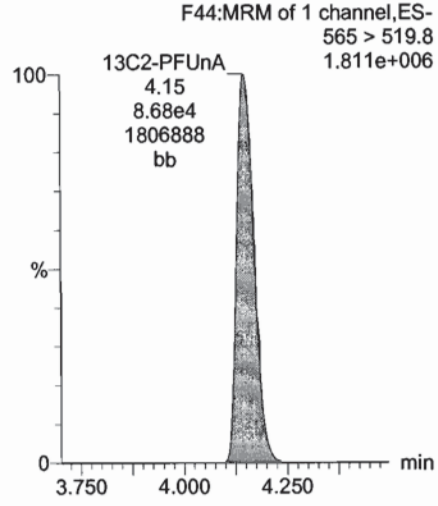
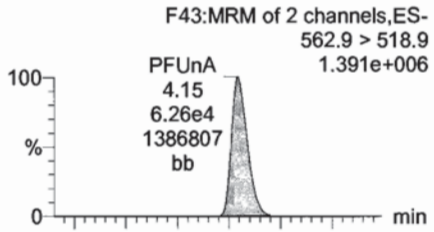


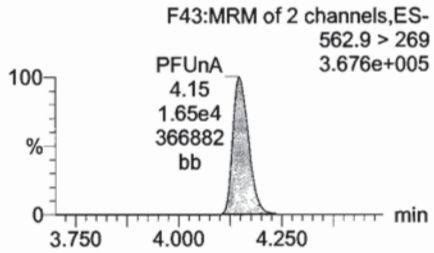
Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

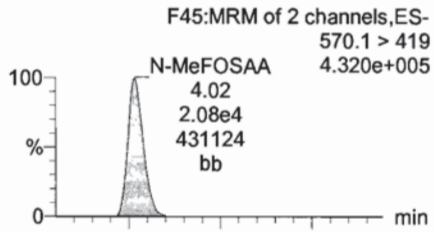
Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

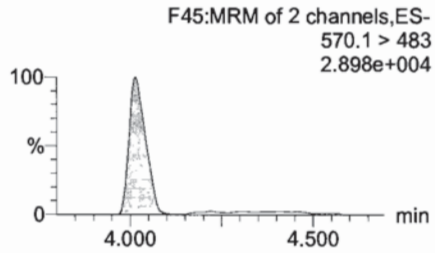
PFUnA



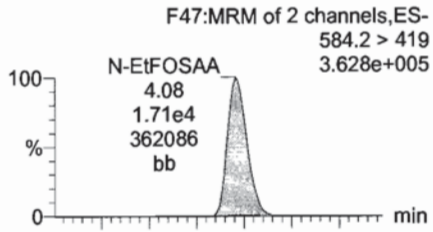


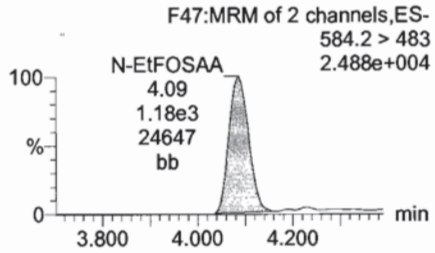
N-MeFOSAA





N-EtFOSAA





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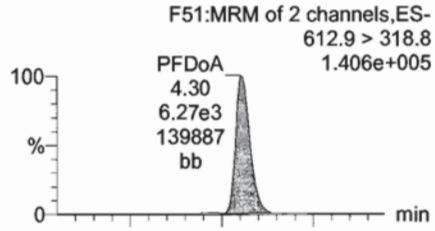

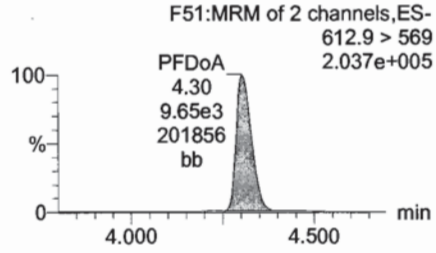

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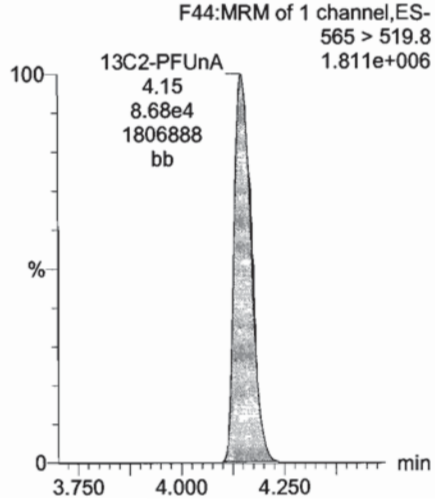

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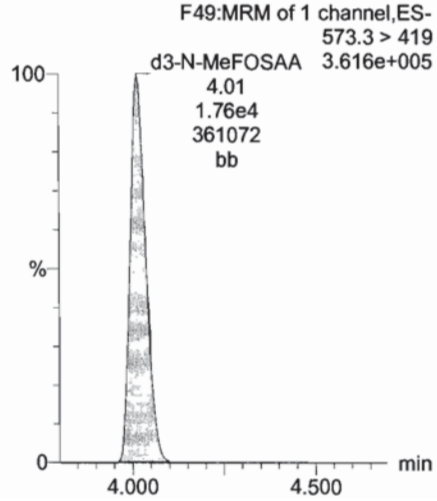

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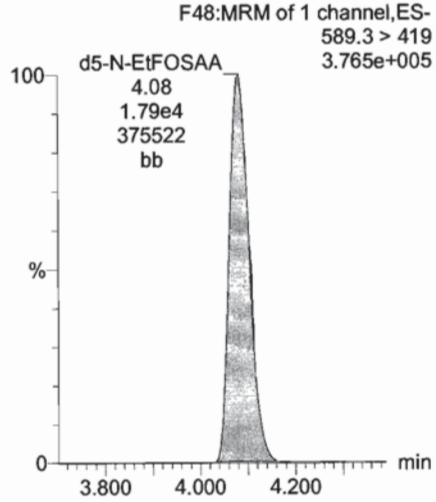

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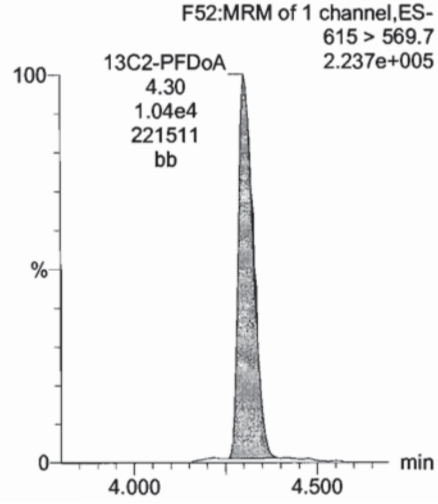

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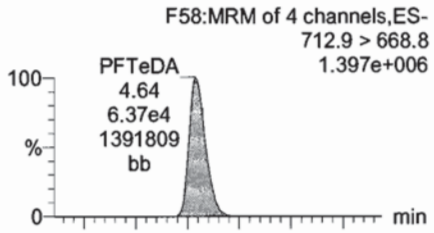
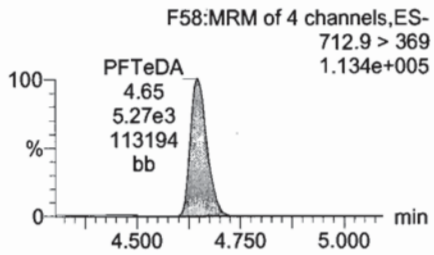
Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFTeDA





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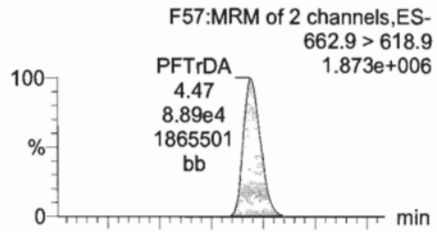

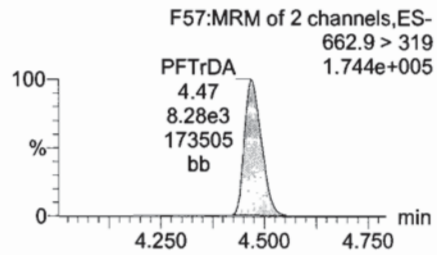

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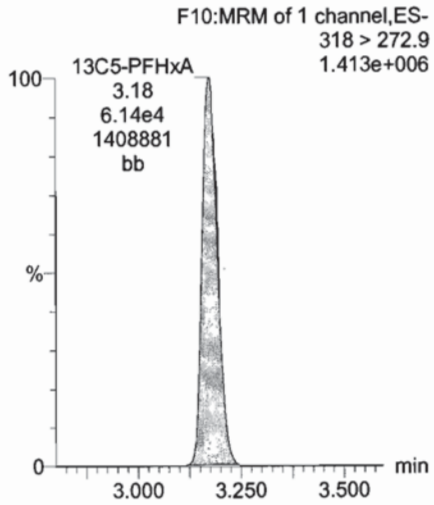
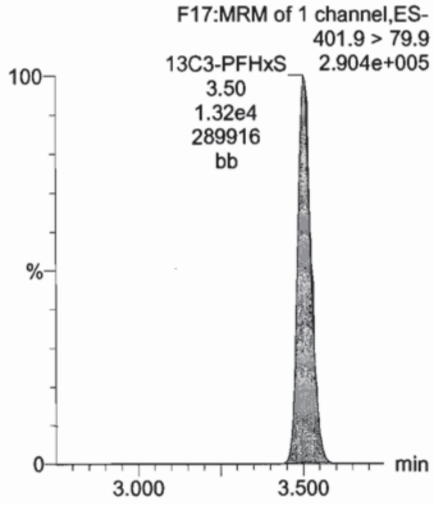


13C3-PFHxS



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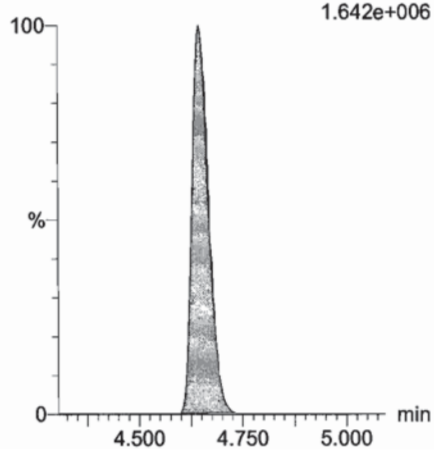
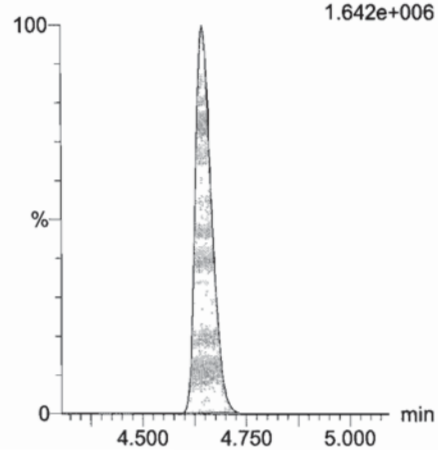
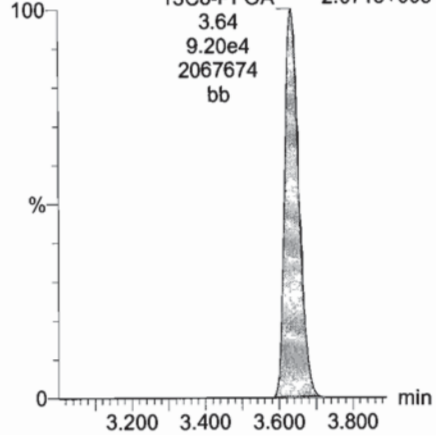


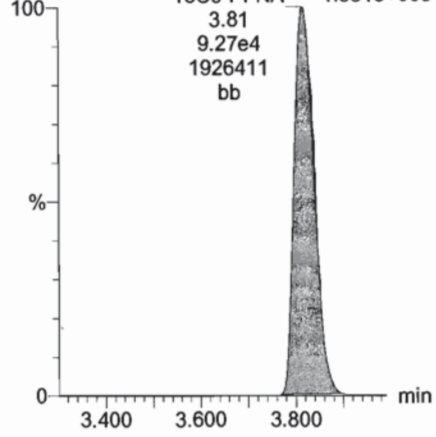
13C2-PFTeDA



13C8-PFOA



13C9-PFNA

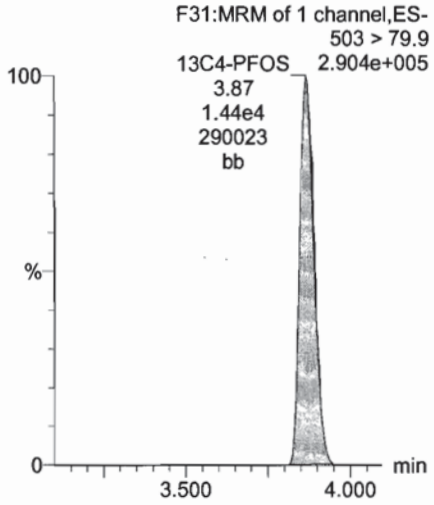


Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

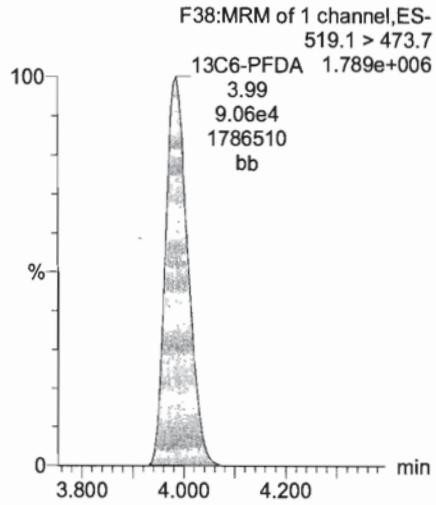
Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

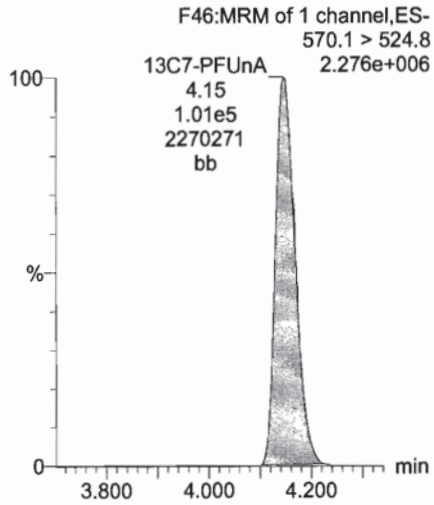
13C4-PFOS



13C6-PFDA



13C7-PFUnA



INITIAL CALIBRATION

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:49:03 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:17:05
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS
Correlation coefficient: r = 0.999311, r^2 = 0.998622
Calibration curve: 1.8654 * x + 0.177147
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	2.91	125.733	2938.156	0.535	bb	0.2	-23.3
2	2	170705M2_3	Standard	0.500	2.91	274.135	3185.882	1.076	bb	0.5	-3.7
3	3	170705M2_4	Standard	1.000	2.91	521.219	2857.299	2.280	bb	1.1	12.7
4	4	170705M2_5	Standard	2.000	2.91	1030.654	2980.753	4.322	bb	2.2	11.1
5	5	170705M2_6	Standard	5.000	2.91	2487.573	3115.085	9.982	bb	5.3	5.1
6	6	170705M2_7	Standard	10.000	2.90	4439.071	3067.311	18.090	bb	9.6	-4.0
7	7	170705M2_8	Standard	50.000	2.90	21747.844	2792.265	97.358	bb	52.1	4.2
8	8	170705M2_9	Standard	100.000	2.90	43517.570	2979.658	182.561	bb	97.8	-2.2

Compound name: PFHxA
Correlation coefficient: r = 0.999586, r^2 = 0.999173
Calibration curve: 1.37106 * x + 0.396864
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.15	930.784	10364.861	0.449	bbX	0.0	-84.8
2	2	170705M2_3	Standard	0.500	3.16	1938.407	11079.211	0.875	bbX	0.3	-30.3
3	3	170705M2_4	Standard	1.000	3.16	3580.227	11239.421	1.593	bb	0.9	-12.8
4	4	170705M2_5	Standard	2.000	3.15	7592.697	10441.585	3.636	db	2.4	18.1
5	5	170705M2_6	Standard	5.000	3.15	16920.393	11712.890	7.223	bb	5.0	-0.4
6	6	170705M2_7	Standard	10.000	3.15	29010.945	10900.922	13.307	bb	9.4	-5.8
7	7	170705M2_8	Standard	50.000	3.15	155929.297	11183.368	69.715	bb	50.6	1.1
8	8	170705M2_9	Standard	100.000	3.15	311700.125	11355.477	137.247	bb	99.8	-0.2

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Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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Compound name: PFHpA
Correlation coefficient: r = 0.998862, r^2 = 0.997726
Calibration curve: 1.17677 * x + 0.307824
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.42	865.095	28174.320	0.384	bbX	0.1	-74.2
2	2	170705M2_3	Standard	0.500	3.42	1636.894	26635.770	0.768	bb	0.4	-21.8
3	3	170705M2_4	Standard	1.000	3.42	3446.113	27885.830	1.545	bb	1.1	5.1
4	4	170705M2_5	Standard	2.000	3.42	6837.425	29611.441	2.886	bb	2.2	9.6
5	5	170705M2_6	Standard	5.000	3.42	15523.172	28877.217	6.719	bb	5.4	9.0
6	6	170705M2_7	Standard	10.000	3.41	25794.193	27952.889	11.535	bb	9.5	-4.6
7	7	170705M2_8	Standard	50.000	3.41	140524.750	28110.525	62.488	bb	52.8	5.7
8	8	170705M2_9	Standard	100.000	3.41	250847.719	27385.096	114.500	bb	97.0	-3.0

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.999590
Calibration curve: -0.00247497 * x^2 + 1.87329 * x + -0.00705947
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.49	93.769	2594.732	0.452	MM	0.2	-2.0
2	2	170705M2_3	Standard	0.500	3.50	195.692	2589.928	0.944	MM	0.5	1.7
3	3	170705M2_4	Standard	1.000	3.49	464.071	2913.508	1.991	MM	1.1	6.8
4	4	170705M2_5	Standard	2.000	3.50	894.373	2989.887	3.739	MM	2.0	0.3
5	5	170705M2_6	Standard	5.000	3.49	2047.378	2866.506	8.928	MM	4.8	-4.0
6	6	170705M2_7	Standard	10.000	3.48	3922.652	2774.778	17.671	MM	9.6	-4.4
7	7	170705M2_8	Standard	50.000	3.48	18716.000	2618.582	89.342	MM	51.2	2.3
8	8	170705M2_9	Standard	100.000	3.48	34991.797	2704.431	161.734	MM	99.4	-0.6

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: PFOA
Correlation coefficient: r = 0.999420, r^2 = 0.998839
Calibration curve: 0.933761 * x + 0.193294
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.62	1284.817	43531.598	0.369	bd	0.2	-24.8
2	2	170705M2_3	Standard	0.500	3.62	2227.929	48053.043	0.580	bb	0.4	-17.3
3	3	170705M2_4	Standard	1.000	3.62	4569.104	45696.223	1.250	bb	1.1	13.2
4	4	170705M2_5	Standard	2.000	3.62	8739.742	46379.480	2.355	bb	2.3	15.8
5	5	170705M2_6	Standard	5.000	3.62	18573.055	42715.777	5.435	bb	5.6	12.3
6	6	170705M2_7	Standard	10.000	3.61	35522.211	45589.391	9.740	bb	10.2	2.2
7	7	170705M2_8	Standard	50.000	3.61	150408.438	40322.508	46.627	bb	49.7	-0.5
8	8	170705M2_9	Standard	100.000	3.61	321997.094	43389.621	92.763	bb	99.1	-0.9

Compound name: PFNA
Correlation coefficient: r = 0.999280, r^2 = 0.998560
Calibration curve: 1.11098 * x + 0.0688283
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.81	1171.810	47770.836	0.307	MM	0.2	-14.4
2	2	170705M2_3	Standard	0.500	3.80	2756.608	52243.852	0.660	MM	0.5	6.3
3	3	170705M2_4	Standard	1.000	3.80	5663.031	54290.777	1.304	bb	1.1	11.2
4	4	170705M2_5	Standard	2.000	3.80	11539.653	54512.996	2.646	bb	2.3	16.0
5	5	170705M2_6	Standard	5.000	3.80	24322.898	48291.633	6.296	bb	5.6	12.1
6	6	170705M2_7	Standard	10.000	3.79	42993.871	51635.496	10.408	bb	9.3	-6.9
7	7	170705M2_8	Standard	50.000	3.79	220269.813	48688.023	56.551	bb	50.8	1.7
8	8	170705M2_9	Standard	100.000	3.79	470415.844	53525.945	109.857	bb	98.8	-1.2

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: PFOS
Coefficient of Determination: R^2 = 0.998873
Calibration curve: -0.000575658 * x^2 + 1.05897 * x + 0.0534494
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.84	272.087	9413.727	0.361	MM	0.3	16.3
2	2	170705M2_3	Standard	0.500	3.86	400.136	10871.231	0.460	MM	0.4	-23.2
3	3	170705M2_4	Standard	1.000	3.85	1042.090	11022.589	1.182	MM	1.1	6.6
4	4	170705M2_5	Standard	2.000	3.85	2145.399	10620.750	2.525	bb	2.3	16.8
5	5	170705M2_6	Standard	5.000	3.85	4941.119	10669.258	5.789	MM	5.4	8.6
6	6	170705M2_7	Standard	10.000	3.84	8099.005	9939.181	10.186	MM	9.6	-3.8
7	7	170705M2_8	Standard	50.000	3.84	39063.281	9623.398	50.740	bb	49.2	-1.6
8	8	170705M2_9	Standard	100.000	3.84	78466.844	9748.393	100.615	bb	100.4	0.4

Compound name: PFDA
Coefficient of Determination: R^2 = 0.998398
Calibration curve: 0.000759384 * x^2 + 1.12777 * x + 0.228347
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.97	1951.477	55632.191	0.438	bb	0.2	-25.5
2	2	170705M2_3	Standard	0.500	3.97	3453.753	56620.121	0.762	bd	0.5	-5.3
3	3	170705M2_4	Standard	1.000	3.97	6905.331	62663.176	1.377	bb	1.0	1.8
4	4	170705M2_5	Standard	2.000	3.97	14230.029	57448.082	3.096	bb	2.5	26.9
5	5	170705M2_6	Standard	5.000	3.96	30603.072	59067.801	6.476	bb	5.5	10.4
6	6	170705M2_7	Standard	10.000	3.96	48989.387	57214.508	10.703	bb	9.2	-7.7
7	7	170705M2_8	Standard	50.000	3.96	270264.500	58303.238	57.944	bb	49.5	-0.9
8	8	170705M2_9	Standard	100.000	3.96	495796.375	51247.992	120.931	bb	100.3	0.3

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: PFUnA
Correlation coefficient: r = 0.998781, r^2 = 0.997563
Calibration curve: 0.901738 * x + 0.0982118
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.13	1296.185	62046.969	0.261	bb	0.2	-27.7
2	2	170705M2_3	Standard	0.500	4.14	2809.686	63528.918	0.553	bb	0.5	0.8
3	3	170705M2_4	Standard	1.000	4.14	5080.900	55413.711	1.146	bb	1.2	16.2
4	4	170705M2_5	Standard	2.000	4.14	10284.878	62163.789	2.068	bb	2.2	9.2
5	5	170705M2_6	Standard	5.000	4.13	24180.139	61536.848	4.912	bb	5.3	6.8
6	6	170705M2_7	Standard	10.000	4.12	42430.457	59057.191	8.981	bb	9.9	-1.5
7	7	170705M2_8	Standard	50.000	4.12	218260.484	64685.254	42.177	bb	46.7	-6.7
8	8	170705M2_9	Standard	100.000	4.12	402963.281	54245.828	92.856	bb	102.9	2.9

Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999610
Calibration curve: -0.00133241 * x^2 + 1.61336 * x + -0.019444
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.00	429.221	13824.592	0.388	bb	0.3	1.1
2	2	170705M2_3	Standard	0.500	4.00	872.219	14234.324	0.766	bb	0.5	-2.6
3	3	170705M2_4	Standard	1.000	4.00	1658.677	13112.977	1.581	bb	1.0	-0.7
4	4	170705M2_5	Standard	2.000	4.00	3706.589	14049.660	3.298	bb	2.1	3.0
5	5	170705M2_6	Standard	5.000	3.99	8063.015	12826.344	7.858	bb	4.9	-2.0
6	6	170705M2_7	Standard	10.000	3.99	16067.637	13268.185	15.137	bb	9.5	-5.3
7	7	170705M2_8	Standard	50.000	3.99	81804.094	12943.525	79.001	bb	51.1	2.3
8	8	170705M2_9	Standard	100.000	3.99	149881.781	12724.132	147.242	bb	99.4	-0.6

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999426
Calibration curve: 0.00157116 * x^2 + 1.12286 * x + 0.0790977
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.08	402.172	13874.378	0.362	bbX	0.3	0.9
2	2	170705M2_3	Standard	0.500	4.08	625.424	13899.495	0.562	bb	0.4	-14.0
3	3	170705M2_4	Standard	1.000	4.07	1486.438	13745.829	1.352	bb	1.1	13.2
4	4	170705M2_5	Standard	2.000	4.07	3091.382	14579.158	2.651	bb	2.3	14.1
5	5	170705M2_6	Standard	5.000	4.06	6536.002	13540.418	6.034	bb	5.3	5.3
6	6	170705M2_7	Standard	10.000	4.06	12651.616	14363.329	11.010	bb	9.6	-3.9
7	7	170705M2_8	Standard	50.000	4.05	64759.824	13574.722	59.633	bb	49.6	-0.8
8	8	170705M2_9	Standard	100.000	4.06	128597.008	12523.236	128.358	bb	100.2	0.2

Compound name: PFDoA
Correlation coefficient: r = 0.999542, r^2 = 0.999083
Calibration curve: 0.830738 * x + 0.0366231
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.31	107.734	7090.979	0.190	bb	0.2	-26.2
2	2	170705M2_3	Standard	0.500	4.30	289.868	7251.595	0.500	bb	0.6	11.5
3	3	170705M2_4	Standard	1.000	4.29	459.943	6817.750	0.843	bb	1.0	-2.9
4	4	170705M2_5	Standard	2.000	4.30	1208.494	7804.063	1.936	bb	2.3	14.3
5	5	170705M2_6	Standard	5.000	4.29	2377.221	6537.772	4.545	bb	5.4	8.5
6	6	170705M2_7	Standard	10.000	4.28	4439.618	7053.735	7.867	bb	9.4	-5.7
7	7	170705M2_8	Standard	50.000	4.28	23850.646	7085.070	42.079	bb	50.6	1.2
8	8	170705M2_9	Standard	100.000	4.28	45273.797	6858.020	82.520	bb	99.3	-0.7

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Compound name: PFTrDA
Correlation coefficient: r = 0.999307, r^2 = 0.998614
Calibration curve: 10.821 * x + 2.72105
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.46	1874.518	7090.979	3.304	bbX	0.1	-78.4
2	2	170705M2_3	Standard	0.500	4.47	4003.324	7251.595	6.901	bb	0.4	-22.7
3	3	170705M2_4	Standard	1.000	4.46	7442.000	6817.750	13.645	bb	1.0	0.9
4	4	170705M2_5	Standard	2.000	4.47	15466.644	7804.063	24.773	bb	2.0	1.9
5	5	170705M2_6	Standard	5.000	4.45	34794.688	6537.772	66.526	bb	5.9	17.9
6	6	170705M2_7	Standard	10.000	4.44	64315.676	7053.735	113.975	bb	10.3	2.8
7	7	170705M2_8	Standard	50.000	4.44	309907.188	7085.070	546.761	bb	50.3	0.6
8	8	170705M2_9	Standard	100.000	4.44	586941.375	6858.020	1069.808	bb	98.6	-1.4

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999498
Calibration curve: -0.000989892 * x^2 + 1.18715 * x + 0.13375
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.64	1407.173	46747.992	0.376	bb	0.2	-18.3
2	2	170705M2_3	Standard	0.500	4.64	2854.123	50027.531	0.713	bb	0.5	-2.4
3	3	170705M2_4	Standard	1.000	4.64	5316.194	47718.160	1.393	bb	1.1	6.1
4	4	170705M2_5	Standard	2.000	4.64	11385.062	50935.184	2.794	bb	2.2	12.3
5	5	170705M2_6	Standard	5.000	4.63	25391.598	49814.836	6.371	bb	5.3	5.6
6	6	170705M2_7	Standard	10.000	4.62	46087.875	49546.270	11.627	bb	9.8	-2.4
7	7	170705M2_8	Standard	50.000	4.61	220414.203	48918.633	56.322	bb	49.4	-1.3
8	8	170705M2_9	Standard	100.000	4.62	434117.906	49646.109	109.303	bb	100.4	0.4

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Compound name: 13C3-PFBS
Response Factor: 0.0321044
RRF SD: 0.00160131, Relative SD: 4.98783
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	2.90	2938.156	36934.543	0.398	bb	12.4	-0.9
2	2	170705M2_3	Standard	12.500	2.91	3185.882	37581.402	0.424	bb	13.2	5.6
3	3	170705M2_4	Standard	12.500	2.91	2857.299	38061.805	0.375	bb	11.7	-6.5
4	4	170705M2_5	Standard	12.500	2.91	2980.753	39265.156	0.380	bb	11.8	-5.4
5	5	170705M2_6	Standard	12.500	2.90	3115.085	38459.203	0.405	bb	12.6	0.9
6	6	170705M2_7	Standard	12.500	2.91	3067.311	35323.004	0.434	bb	13.5	8.2
7	7	170705M2_8	Standard	12.500	2.90	2792.265	34923.203	0.400	bb	12.5	-0.4
8	8	170705M2_9	Standard	12.500	2.90	2979.658	37720.324	0.395	bb	12.3	-1.6

Compound name: 13C2-PFHxA
Response Factor: 0.296386
RRF SD: 0.0168441, Relative SD: 5.68316
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	5.000	3.15	10364.861	36934.543	1.403	bb	4.7	-5.3
2	2	170705M2_3	Standard	5.000	3.16	11079.211	37581.402	1.474	bb	5.0	-0.5
3	3	170705M2_4	Standard	5.000	3.16	11239.421	38061.805	1.476	bb	5.0	-0.4
4	4	170705M2_5	Standard	5.000	3.15	10441.585	39265.156	1.330	bb	4.5	-10.3
5	5	170705M2_6	Standard	5.000	3.15	11712.890	38459.203	1.523	bb	5.1	2.8
6	6	170705M2_7	Standard	5.000	3.15	10900.922	35323.004	1.543	bb	5.2	4.1
7	7	170705M2_8	Standard	5.000	3.15	11183.368	34923.203	1.601	bb	5.4	8.0
8	8	170705M2_9	Standard	5.000	3.15	11355.477	37720.324	1.505	bb	5.1	1.6

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Compound name: 13C4-PFHpA
Response Factor: 0.301574
RRF SD: 0.0129733, Relative SD: 4.30187
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.42	28174.320	36934.543	3.814	bb	12.6	1.2
2	2	170705M2_3	Standard	12.500	3.42	26635.770	37581.402	3.544	bb	11.8	-6.0
3	3	170705M2_4	Standard	12.500	3.42	27885.830	38061.805	3.663	bb	12.1	-2.8
4	4	170705M2_5	Standard	12.500	3.42	29611.441	39265.156	3.771	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.42	28877.217	38459.203	3.754	bb	12.4	-0.4
6	6	170705M2_7	Standard	12.500	3.41	27952.889	35323.004	3.957	bb	13.1	5.0
7	7	170705M2_8	Standard	12.500	3.41	28110.525	34923.203	4.025	bb	13.3	6.8
8	8	170705M2_9	Standard	12.500	3.41	27385.096	37720.324	3.630	bb	12.0	-3.7

Compound name: 18O2-PFHxS
Response Factor: 0.434349
RRF SD: 0.0284465, Relative SD: 6.54922
Response type: Internal Std (Ref 29), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.49	2594.732	6817.387	4.758	bb	11.0	-12.4
2	2	170705M2_3	Standard	12.500	3.49	2589.928	6164.226	5.252	bb	12.1	-3.3
3	3	170705M2_4	Standard	12.500	3.49	2913.508	6644.131	5.481	bb	12.6	1.0
4	4	170705M2_5	Standard	12.500	3.49	2989.887	6498.437	5.751	bb	13.2	5.9
5	5	170705M2_6	Standard	12.500	3.49	2866.506	6113.233	5.861	bb	13.5	8.0
6	6	170705M2_7	Standard	12.500	3.48	2774.778	6537.576	5.305	bb	12.2	-2.3
7	7	170705M2_8	Standard	12.500	3.48	2618.582	6160.812	5.313	bb	12.2	-2.1
8	8	170705M2_9	Standard	12.500	3.48	2704.431	5917.072	5.713	bb	13.2	5.2

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Compound name: 13C2-PFOA
Response Factor: 1.14047
RRF SD: 0.0311664, Relative SD: 2.73276
Response type: Internal Std (Ref 30), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.62	43531.598	38977.832	13.960	bb	12.2	-2.1
2	2	170705M2_3	Standard	12.500	3.62	48053.043	41005.910	14.648	bb	12.8	2.8
3	3	170705M2_4	Standard	12.500	3.62	45696.223	39029.453	14.635	bb	12.8	2.7
4	4	170705M2_5	Standard	12.500	3.62	46379.480	42331.734	13.695	bb	12.0	-3.9
5	5	170705M2_6	Standard	12.500	3.62	42715.777	36537.793	14.614	bb	12.8	2.5
6	6	170705M2_7	Standard	12.500	3.61	45589.391	39402.188	14.463	bb	12.7	1.5
7	7	170705M2_8	Standard	12.500	3.61	40322.508	36472.195	13.820	bb	12.1	-3.1
8	8	170705M2_9	Standard	12.500	3.61	43389.621	38161.703	14.212	bb	12.5	-0.3

Compound name: 13C5-PFNA
Response Factor: 0.95797
RRF SD: 0.0563983, Relative SD: 5.88727
Response type: Internal Std (Ref 31), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.80	47770.836	52300.438	11.417	bb	11.9	-4.7
2	2	170705M2_3	Standard	12.500	3.80	52243.852	52519.844	12.434	bb	13.0	3.8
3	3	170705M2_4	Standard	12.500	3.80	54290.777	52957.340	12.815	bb	13.4	7.0
4	4	170705M2_5	Standard	12.500	3.80	54512.996	54419.230	12.522	bb	13.1	4.6
5	5	170705M2_6	Standard	12.500	3.79	48291.633	56932.551	10.603	bb	11.1	-11.5
6	6	170705M2_7	Standard	12.500	3.79	51635.496	52904.762	12.200	bb	12.7	1.9
7	7	170705M2_8	Standard	12.500	3.79	48688.023	50838.715	11.971	bb	12.5	-0.0
8	8	170705M2_9	Standard	12.500	3.79	53525.945	56534.215	11.835	bb	12.4	-1.2

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Compound name: 13C8-PFOS
Response Factor: 1.06141
RRF SD: 0.0529547, Relative SD: 4.9891
Response type: Internal Std (Ref 32), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.85	9413.727	9402.628	12.515	bb	11.8	-5.7
2	2	170705M2_3	Standard	12.500	3.85	10871.231	9786.112	13.886	bb	13.1	4.7
3	3	170705M2_4	Standard	12.500	3.85	11022.589	9642.229	14.289	bb	13.5	7.7
4	4	170705M2_5	Standard	12.500	3.85	10620.750	9991.625	13.287	bb	12.5	0.1
5	5	170705M2_6	Standard	12.500	3.85	10669.258	10308.810	12.937	bb	12.2	-2.5
6	6	170705M2_7	Standard	12.500	3.84	9939.181	9025.101	13.766	bb	13.0	3.8
7	7	170705M2_8	Standard	12.500	3.84	9623.398	9648.409	12.468	bd	11.7	-6.0
8	8	170705M2_9	Standard	12.500	3.84	9748.393	9378.699	12.993	bd	12.2	-2.1

Compound name: 13C2-PFDA
Response Factor: 0.942006
RRF SD: 0.0532165, Relative SD: 5.64928
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.97	55632.191	59940.918	11.601	bb	12.3	-1.5
2	2	170705M2_3	Standard	12.500	3.97	56620.121	63230.613	11.193	bb	11.9	-4.9
3	3	170705M2_4	Standard	12.500	3.97	62663.176	59436.520	13.179	bb	14.0	11.9
4	4	170705M2_5	Standard	12.500	3.97	57448.082	59932.414	11.982	bb	12.7	1.8
5	5	170705M2_6	Standard	12.500	3.96	59067.801	66052.234	11.178	bb	11.9	-5.1
6	6	170705M2_7	Standard	12.500	3.96	57214.508	59362.641	12.048	bb	12.8	2.3
7	7	170705M2_8	Standard	12.500	3.96	58303.238	61872.145	11.779	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.96	51247.992	56989.531	11.241	bb	11.9	-4.5

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Compound name: 13C2-PFUnA
Response Factor: 1.08439
RRF SD: 0.0985113, Relative SD: 9.08448
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.13	62046.969	53537.027	14.487	bb	13.4	6.9
2	2	170705M2_3	Standard	12.500	4.14	63528.918	57247.090	13.872	bb	12.8	2.3
3	3	170705M2_4	Standard	12.500	4.14	55413.711	51139.855	13.545	bb	12.5	-0.1
4	4	170705M2_5	Standard	12.500	4.14	62163.789	53307.301	14.577	bb	13.4	7.5
5	5	170705M2_6	Standard	12.500	4.12	61536.848	58437.289	13.163	bb	12.1	-2.9
6	6	170705M2_7	Standard	12.500	4.12	59057.191	60314.734	12.239	bb	11.3	-9.7
7	7	170705M2_8	Standard	12.500	4.12	64685.254	53582.891	15.090	bb	13.9	11.3
8	8	170705M2_9	Standard	12.500	4.12	54245.828	59133.727	11.467	bb	10.6	-15.4

Compound name: d3-N-MeFOSAA
Response Factor: 0.240382
RRF SD: 0.0195314, Relative SD: 8.12516
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.00	13824.592	53537.027	3.228	bb	13.4	7.4
2	2	170705M2_3	Standard	12.500	4.00	14234.324	57247.090	3.108	bb	12.9	3.4
3	3	170705M2_4	Standard	12.500	4.00	13112.977	51139.855	3.205	bb	13.3	6.7
4	4	170705M2_5	Standard	12.500	4.00	14049.660	53307.301	3.294	bb	13.7	9.6
5	5	170705M2_6	Standard	12.500	4.00	12826.344	58437.289	2.744	bb	11.4	-8.7
6	6	170705M2_7	Standard	12.500	3.99	13268.185	60314.734	2.750	bb	11.4	-8.5
7	7	170705M2_8	Standard	12.500	3.98	12943.525	53582.891	3.020	bb	12.6	0.5
8	8	170705M2_9	Standard	12.500	3.99	12724.132	59133.727	2.690	bb	11.2	-10.5

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Compound name: d5-N-EtFOSAA
Response Factor: 0.2474
RRF SD: 0.0204724, Relative SD: 8.27503
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.07	13874.378	53537.027	3.239	bb	13.1	4.8
2	2	170705M2_3	Standard	12.500	4.07	13899.495	57247.090	3.035	bb	12.3	-1.9
3	3	170705M2_4	Standard	12.500	4.07	13745.829	51139.855	3.360	bb	13.6	8.6
4	4	170705M2_5	Standard	12.500	4.07	14579.158	53307.301	3.419	bb	13.8	10.5
5	5	170705M2_6	Standard	12.500	4.06	13540.418	58437.289	2.896	bb	11.7	-6.3
6	6	170705M2_7	Standard	12.500	4.05	14363.329	60314.734	2.977	bb	12.0	-3.7
7	7	170705M2_8	Standard	12.500	4.05	13574.722	53582.891	3.167	bb	12.8	2.4
8	8	170705M2_9	Standard	12.500	4.06	12523.236	59133.727	2.647	bb	10.7	-14.4

Compound name: 13C2-PFDoA
Response Factor: 0.126983
RRF SD: 0.0114927, Relative SD: 9.05061
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.30	7090.979	53537.027	1.656	bb	13.0	4.3
2	2	170705M2_3	Standard	12.500	4.30	7251.595	57247.090	1.583	bb	12.5	-0.2
3	3	170705M2_4	Standard	12.500	4.30	6817.750	51139.855	1.666	bb	13.1	5.0
4	4	170705M2_5	Standard	12.500	4.30	7804.063	53307.301	1.830	bb	14.4	15.3
5	5	170705M2_6	Standard	12.500	4.29	6537.772	58437.289	1.398	bb	11.0	-11.9
6	6	170705M2_7	Standard	12.500	4.28	7053.735	60314.734	1.462	bb	11.5	-7.9
7	7	170705M2_8	Standard	12.500	4.28	7085.070	53582.891	1.653	bb	13.0	4.1
8	8	170705M2_9	Standard	12.500	4.28	6858.020	59133.727	1.450	bb	11.4	-8.7

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Compound name: 13C2-PFTeDA
Response Factor: 0.882761
RRF SD: 0.0469789, Relative SD: 5.32181
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.64	46747.992	53537.027	10.915	bb	12.4	-1.1
2	2	170705M2_3	Standard	12.500	4.64	50027.531	57247.090	10.924	bb	12.4	-1.0
3	3	170705M2_4	Standard	12.500	4.64	47718.160	51139.855	11.664	bb	13.2	5.7
4	4	170705M2_5	Standard	12.500	4.64	50935.184	53307.301	11.944	bb	13.5	8.2
5	5	170705M2_6	Standard	12.500	4.63	49814.836	58437.289	10.656	bb	12.1	-3.4
6	6	170705M2_7	Standard	12.500	4.62	49546.270	60314.734	10.268	bb	11.6	-6.9
7	7	170705M2_8	Standard	12.500	4.61	48918.633	53582.891	11.412	bb	12.9	3.4
8	8	170705M2_9	Standard	12.500	4.62	49646.109	59133.727	10.494	bb	11.9	-4.9

Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	5.000	3.15	36934.543	36934.543	5.000	bb	5.0	0.0
2	2	170705M2_3	Standard	5.000	3.16	37581.402	37581.402	5.000	bb	5.0	0.0
3	3	170705M2_4	Standard	5.000	3.16	38061.805	38061.805	5.000	bb	5.0	0.0
4	4	170705M2_5	Standard	5.000	3.15	39265.156	39265.156	5.000	bb	5.0	0.0
5	5	170705M2_6	Standard	5.000	3.15	38459.203	38459.203	5.000	bb	5.0	0.0
6	6	170705M2_7	Standard	5.000	3.15	35323.004	35323.004	5.000	bb	5.0	0.0
7	7	170705M2_8	Standard	5.000	3.15	34923.203	34923.203	5.000	bb	5.0	0.0
8	8	170705M2_9	Standard	5.000	3.15	37720.324	37720.324	5.000	bb	5.0	0.0

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 29), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.49	6817.387	6817.387	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.49	6164.226	6164.226	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.49	6644.131	6644.131	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.49	6498.437	6498.437	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.48	6113.233	6113.233	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.48	6537.576	6537.576	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.48	6160.812	6160.812	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.48	5917.072	5917.072	12.500	bb	12.5	0.0

Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 30), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.62	38977.832	38977.832	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.62	41005.910	41005.910	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.62	39029.453	39029.453	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.62	42331.734	42331.734	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.62	36537.793	36537.793	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.61	39402.188	39402.188	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.61	36472.195	36472.195	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.61	38161.703	38161.703	12.500	bb	12.5	0.0

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 8.3925e-017, Relative SD: 8.3925e-015
Response type: Internal Std (Ref 31), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.80	52300.438	52300.438	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.80	52519.844	52519.844	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.80	52957.340	52957.340	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.80	54419.230	54419.230	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.79	56932.551	56932.551	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.79	52904.762	52904.762	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.79	50838.715	50838.715	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.79	56534.215	56534.215	12.500	bb	12.5	0.0

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 32), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.85	9402.628	9402.628	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.85	9786.112	9786.112	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.85	9642.229	9642.229	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.85	9991.625	9991.625	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.85	10308.810	10308.810	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.84	9025.101	9025.101	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.84	9648.409	9648.409	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.84	9378.699	9378.699	12.500	bb	12.5	0.0

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 4.19625e-017, Relative SD: 4.19625e-015
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.97	59940.918	59940.918	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.97	63230.613	63230.613	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.97	59436.520	59436.520	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.97	59932.414	59932.414	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.96	66052.234	66052.234	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.96	59362.641	59362.641	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.96	61872.145	61872.145	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.96	56989.531	56989.531	12.500	bb	12.5	0.0

Compound name: 13C7-PFUnA
Response Factor: 1
RRF SD: 1.18688e-016, Relative SD: 1.18688e-014
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.13	53537.027	53537.027	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	4.13	57247.090	57247.090	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	4.14	51139.855	51139.855	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	4.14	53307.301	53307.301	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	4.12	58437.289	58437.289	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	4.12	60314.734	60314.734	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	4.12	53582.891	53582.891	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	4.12	59133.727	59133.727	12.500	bb	12.5	0.0

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 14:00:18 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:00:51 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170705M2_2	ST170705M2-1 PFC CS-2 17G0503	05-Jul-17	13:27:57
2	170705M2_3	ST170705M2-2 PFC CS-1 17G0504	05-Jul-17	13:38:43
3	170705M2_4	ST170705M2-3 PFC CS0 17G0505	05-Jul-17	13:49:28
4	170705M2_5	ST170705M2-4 PFC CS1 17G0506	05-Jul-17	14:00:11
5	170705M2_6	ST170705M2-5 PFC CS2 17G0507	05-Jul-17	14:10:49
6	170705M2_7	ST170705M2-6 PFC CS3 17G0508	05-Jul-17	14:21:36
7	170705M2_8	ST170705M2-7 PFC CS4 17G0509	05-Jul-17	14:32:14
8	170705M2_9	ST170705M2-8 PFC CS5 17G0510	05-Jul-17	14:43:01
9	170705M2_10	IPA	05-Jul-17	14:53:47
10	170705M2_11	SS170705M2-1 PFC SSS 17G0502	05-Jul-17	15:04:25
11	170705M2_12	IPA	05-Jul-17	15:15:04

Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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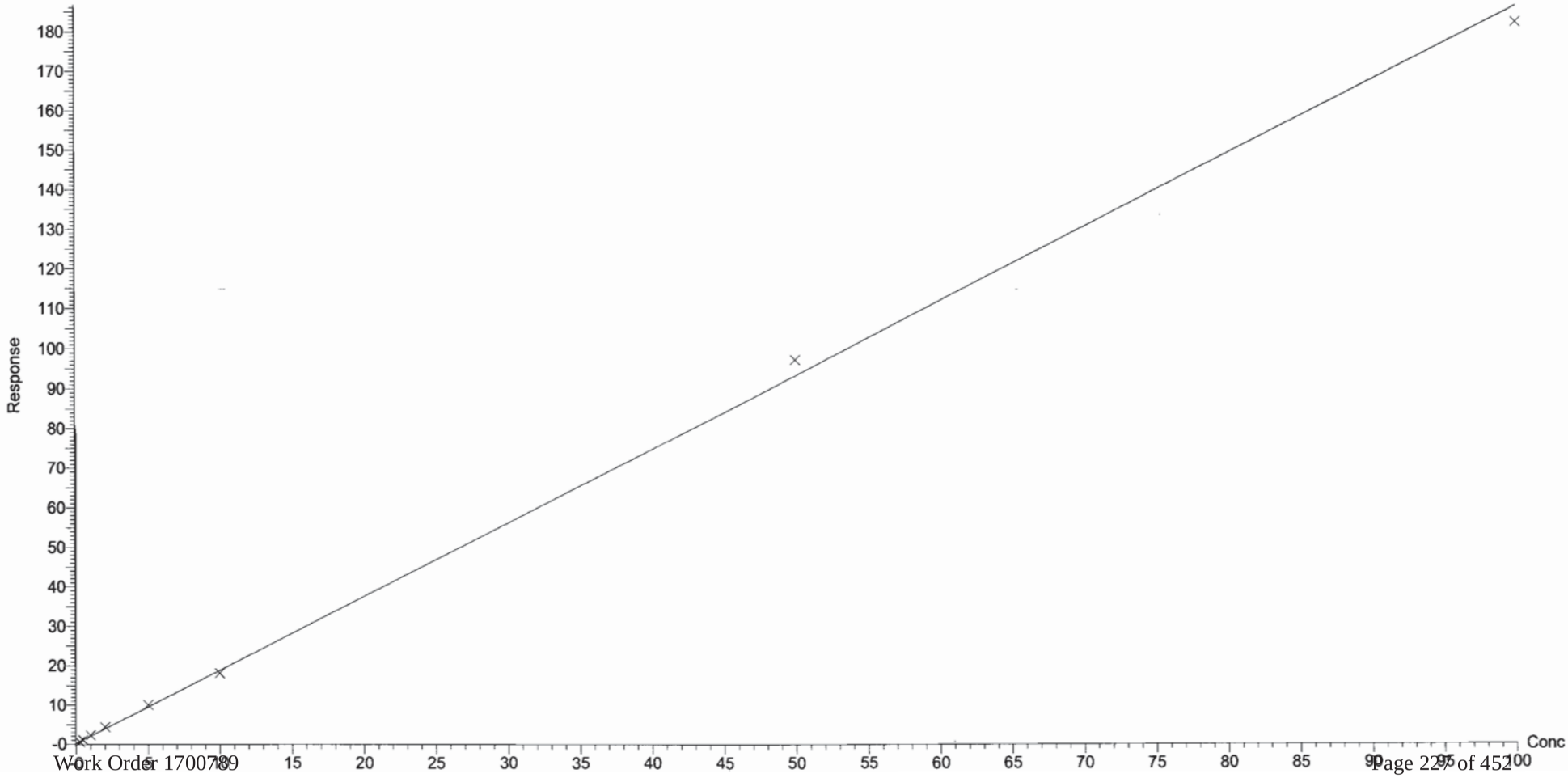
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:17:05
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS
Correlation coefficient: r = 0.999311, r^2 = 0.998622
Calibration curve: 1.8654 * x + 0.177147
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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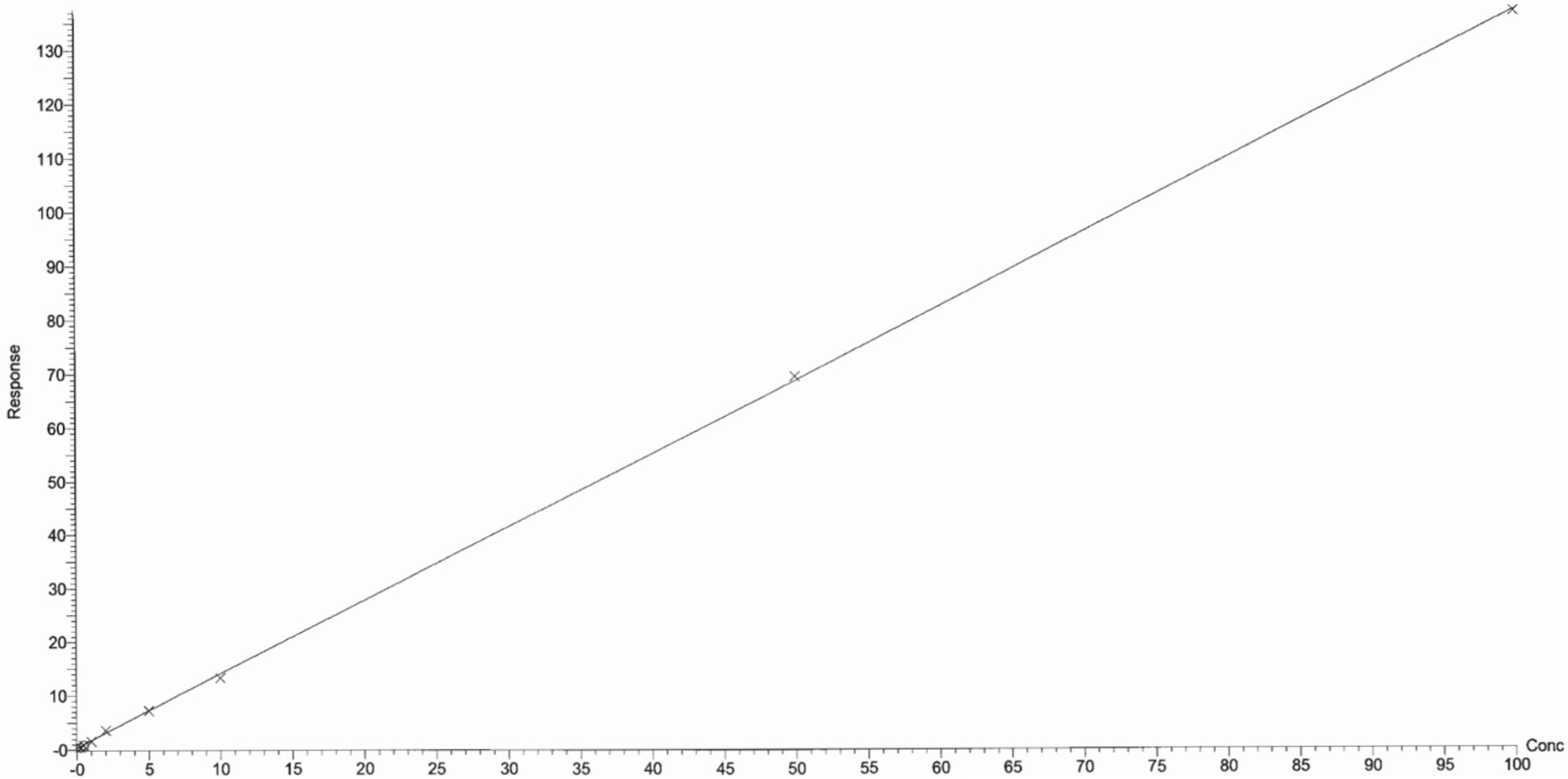
Compound name: PFHxA
Correlation coefficient: r = 0.999586, r^2 = 0.999173
Calibration curve: 1.37106 * x + 0.396864
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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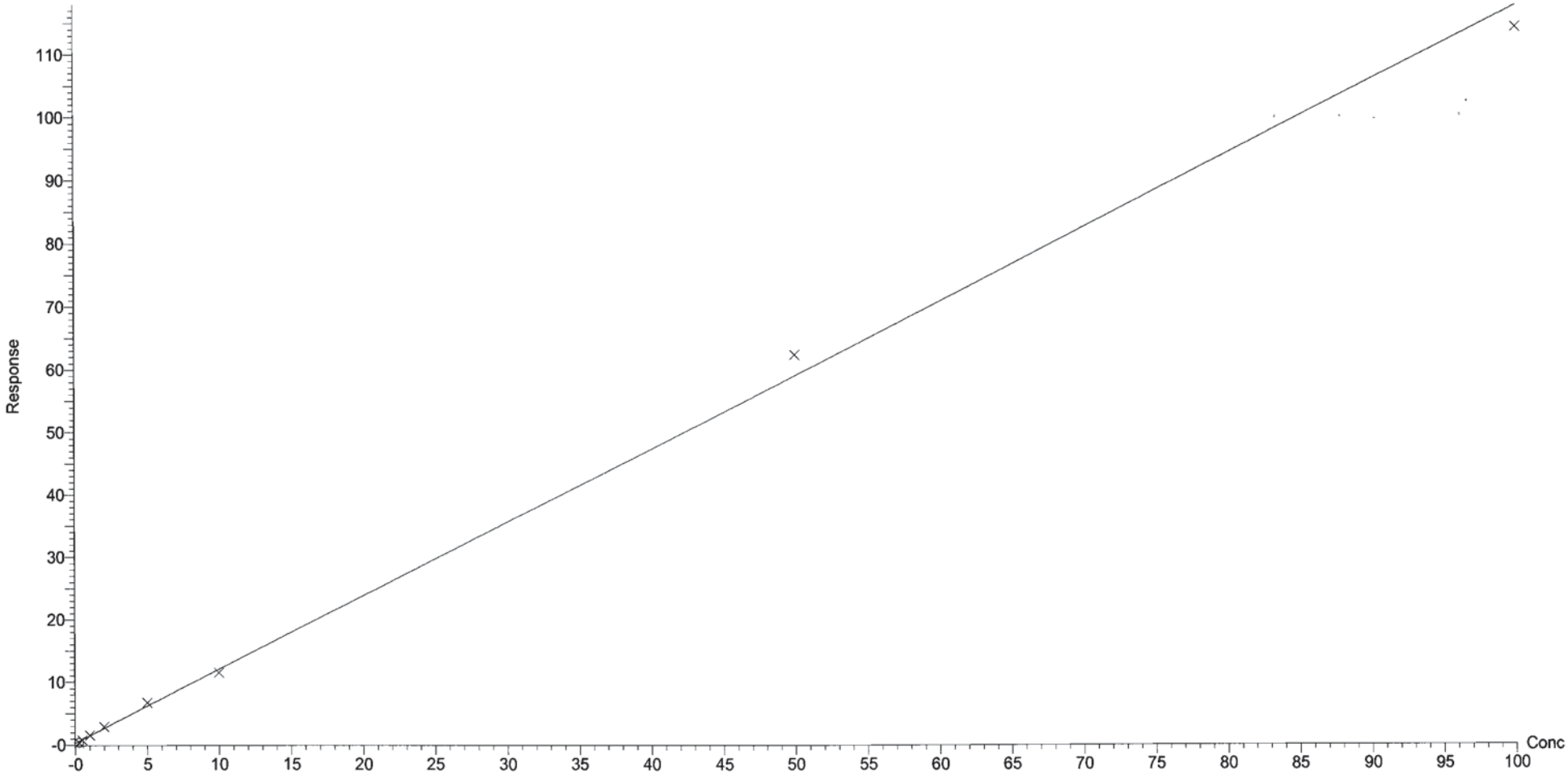
Compound name: PFHpA
Correlation coefficient: r = 0.998862, r^2 = 0.997726
Calibration curve: 1.17677 * x + 0.307824
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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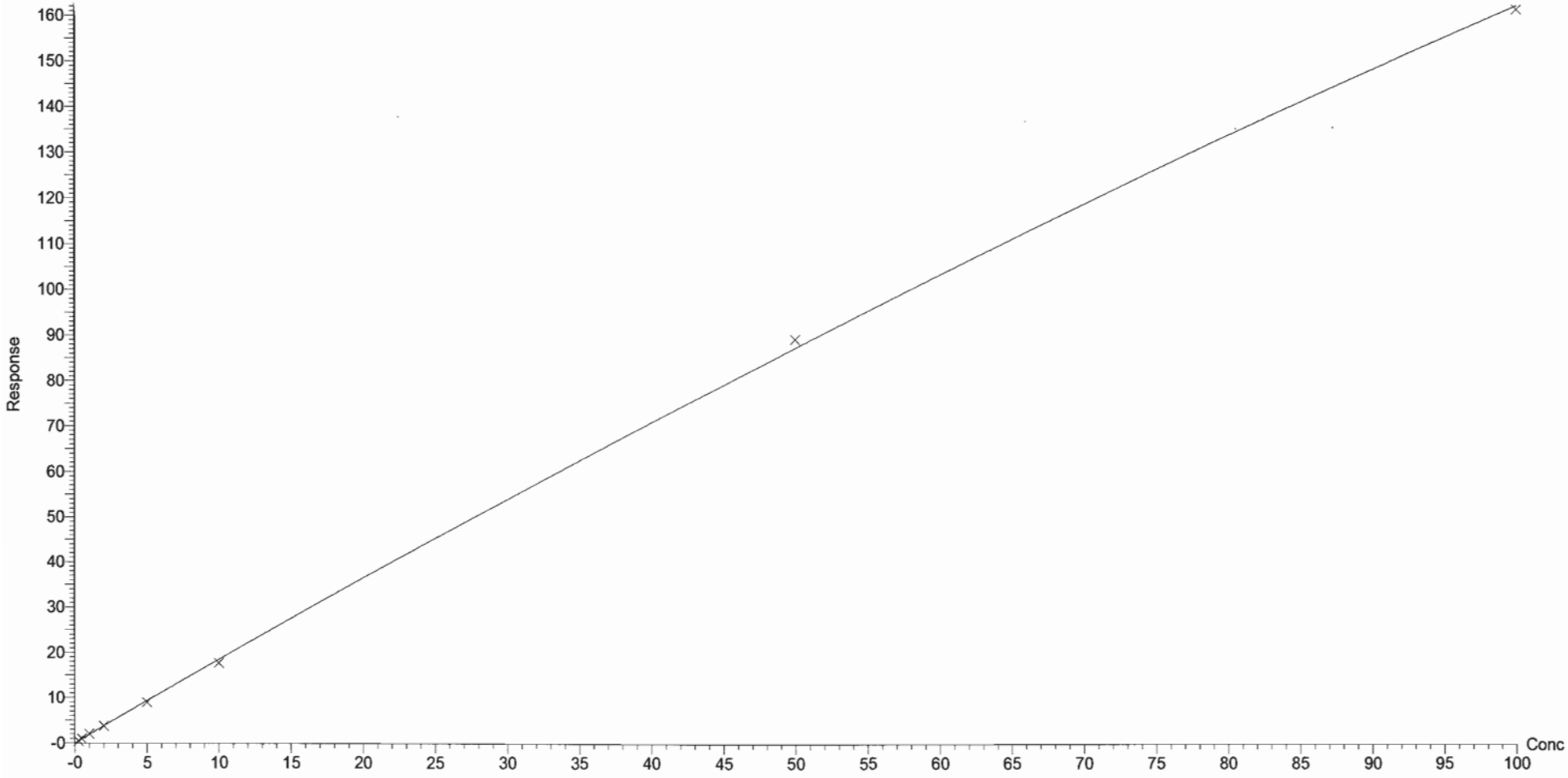
Compound name: PFHxS
Coefficient of Determination: R^2 = 0.999590
Calibration curve: -0.00247497 * x^2 + 1.87329 * x + -0.00705947
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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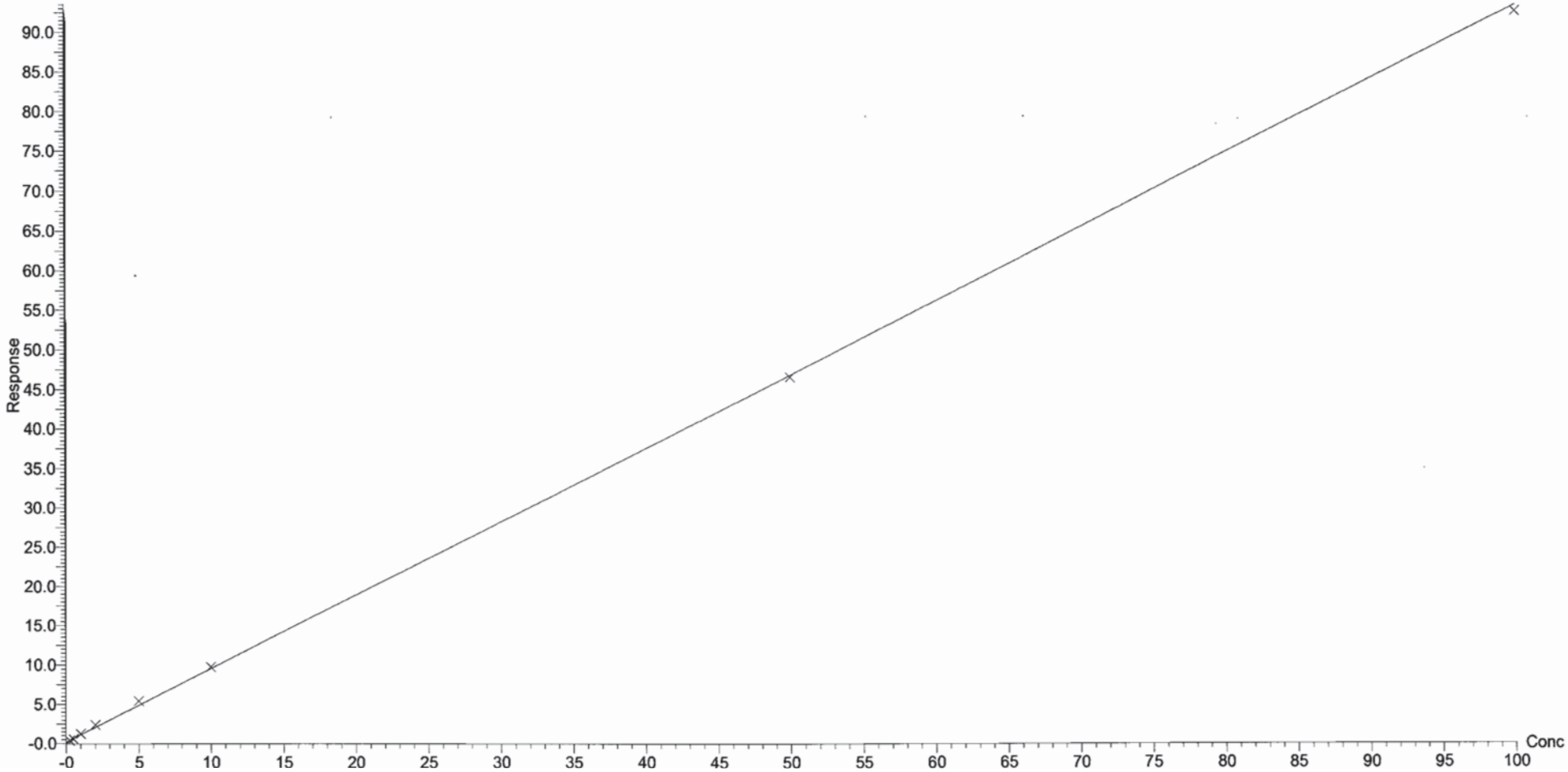
Compound name: PFOA
Correlation coefficient: r = 0.999420, r^2 = 0.998839
Calibration curve: 0.933761 * x + 0.193294
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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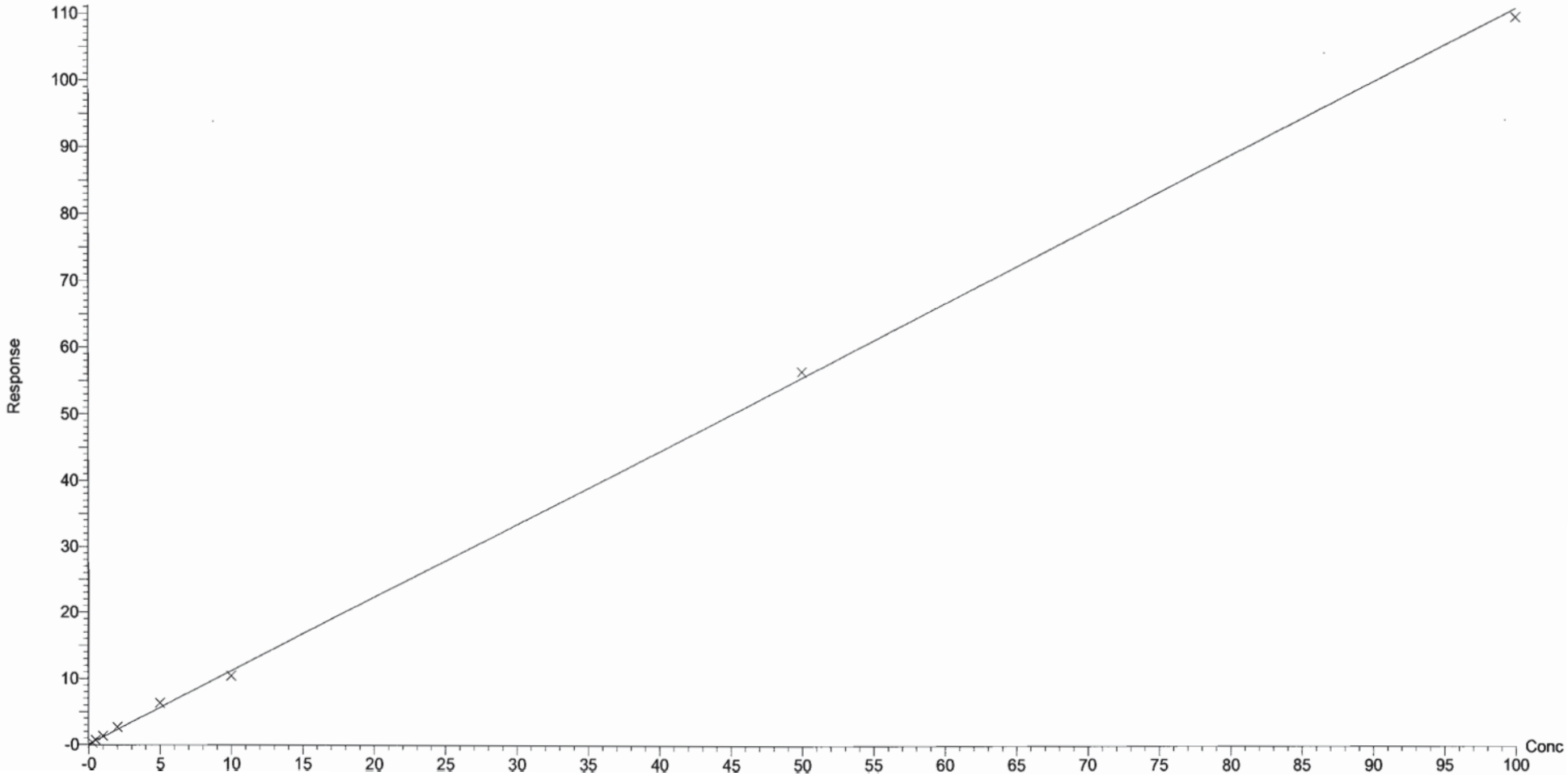
Compound name: PFNA
Correlation coefficient: r = 0.999280, r^2 = 0.998560
Calibration curve: 1.11098 * x + 0.0688283
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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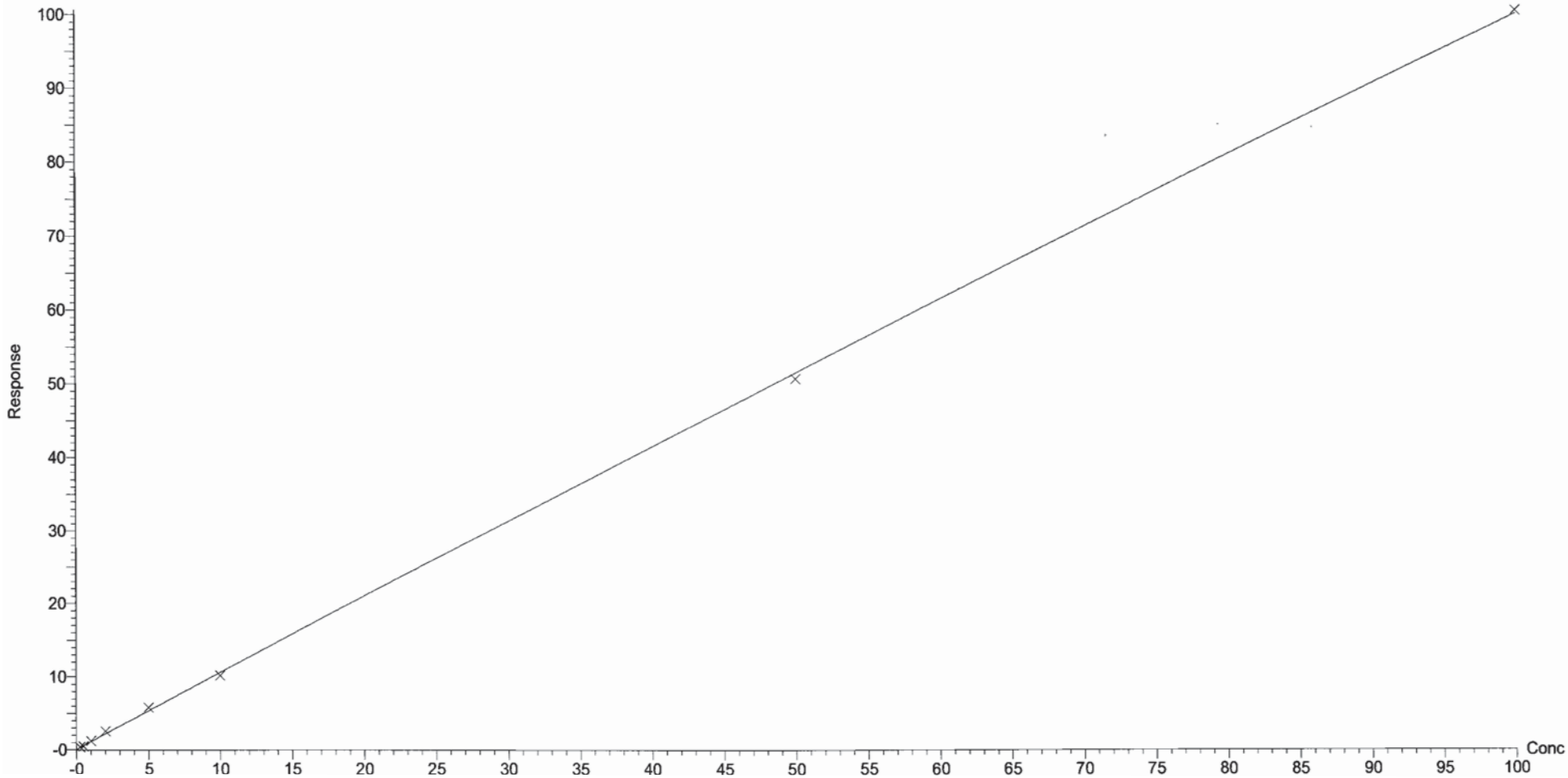
Compound name: PFOS
Coefficient of Determination: R^2 = 0.998873
Calibration curve: -0.000575658 * x^2 + 1.05897 * x + 0.0534494
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



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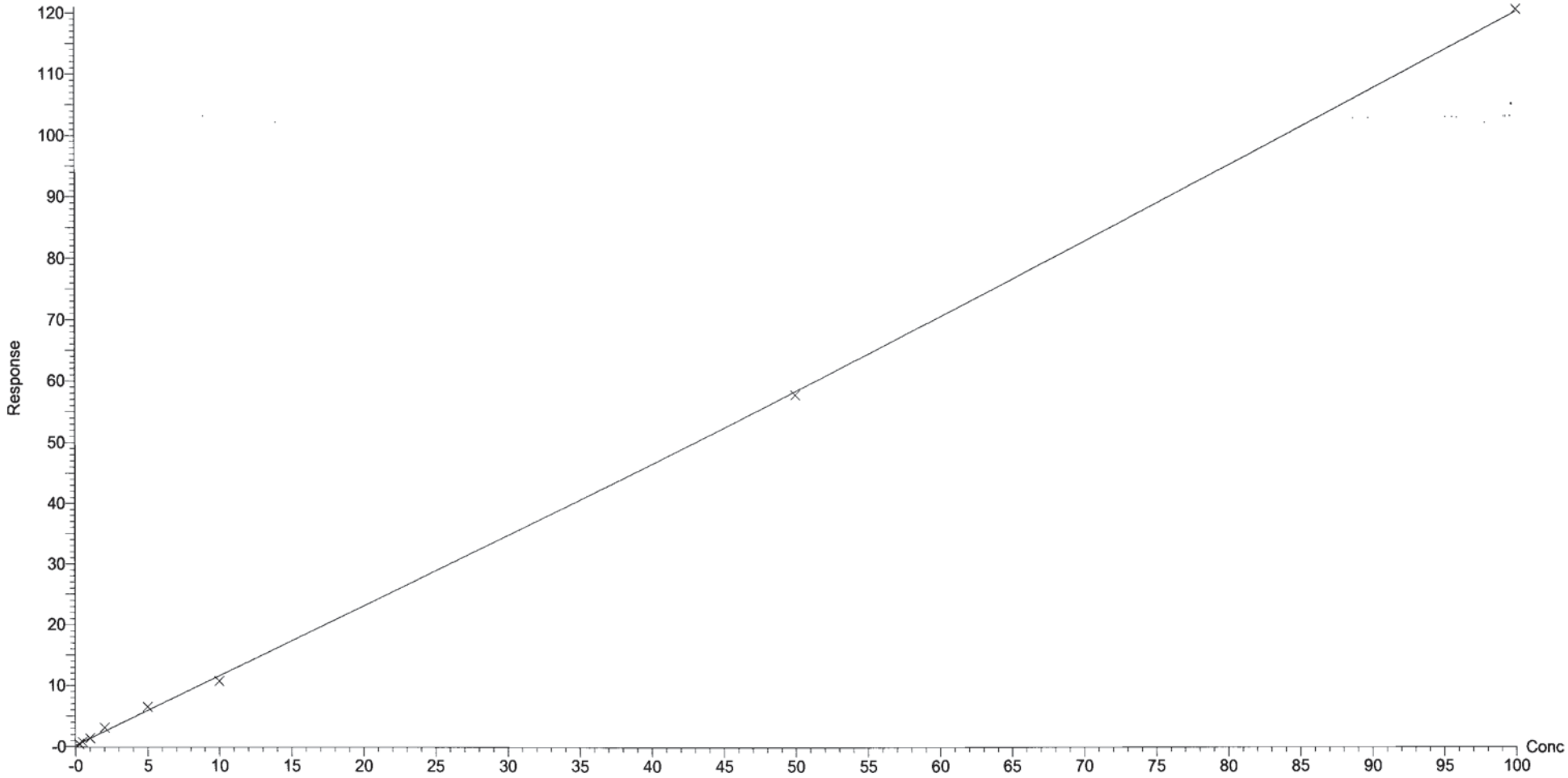
Compound name: PFDA
Coefficient of Determination: R^2 = 0.998398
Calibration curve: 0.000759384 * x^2 + 1.12777 * x + 0.228347
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



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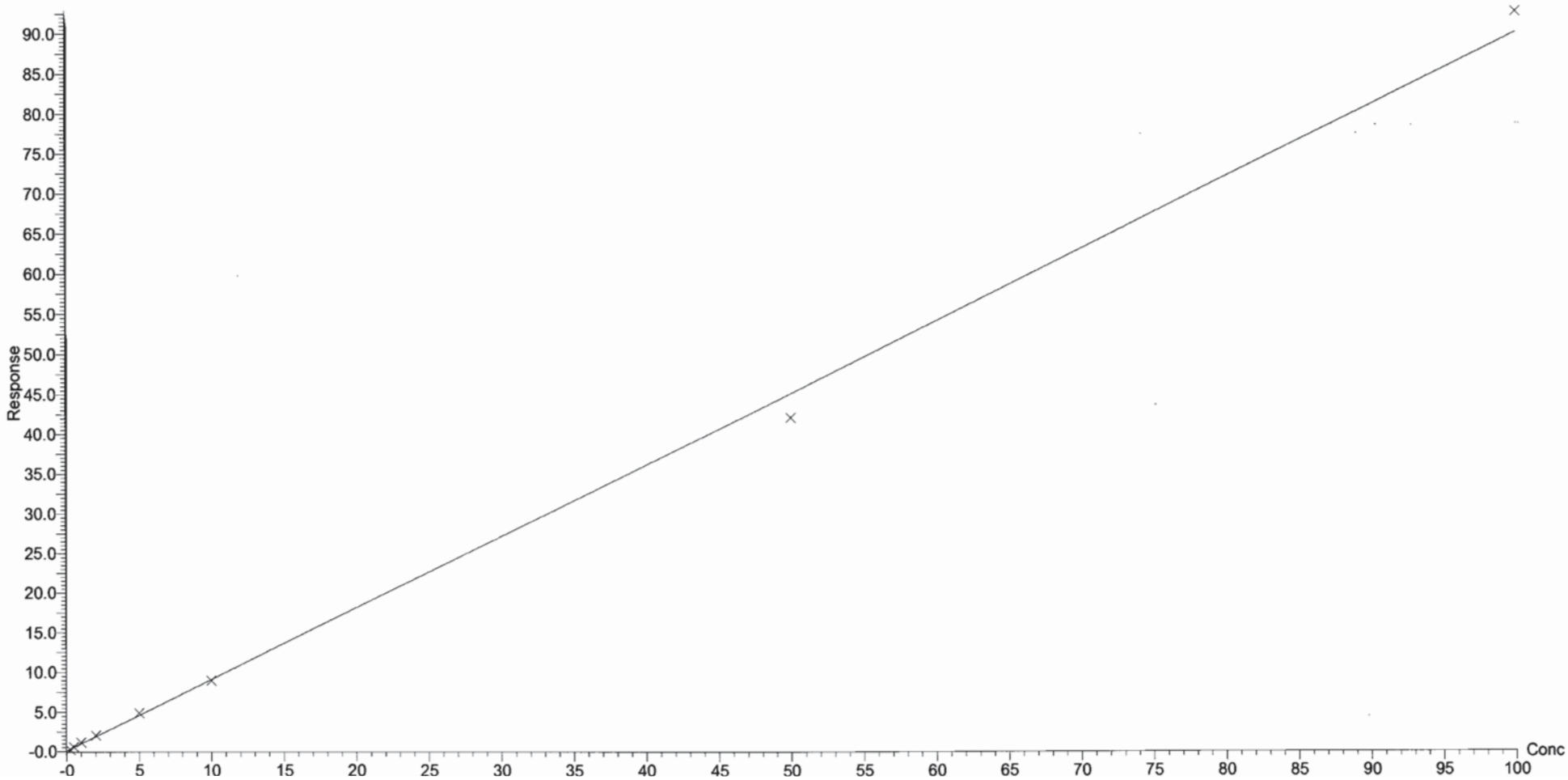
Compound name: PFUnA
Correlation coefficient: r = 0.998781, r^2 = 0.997563
Calibration curve: 0.901738 * x + 0.0982118
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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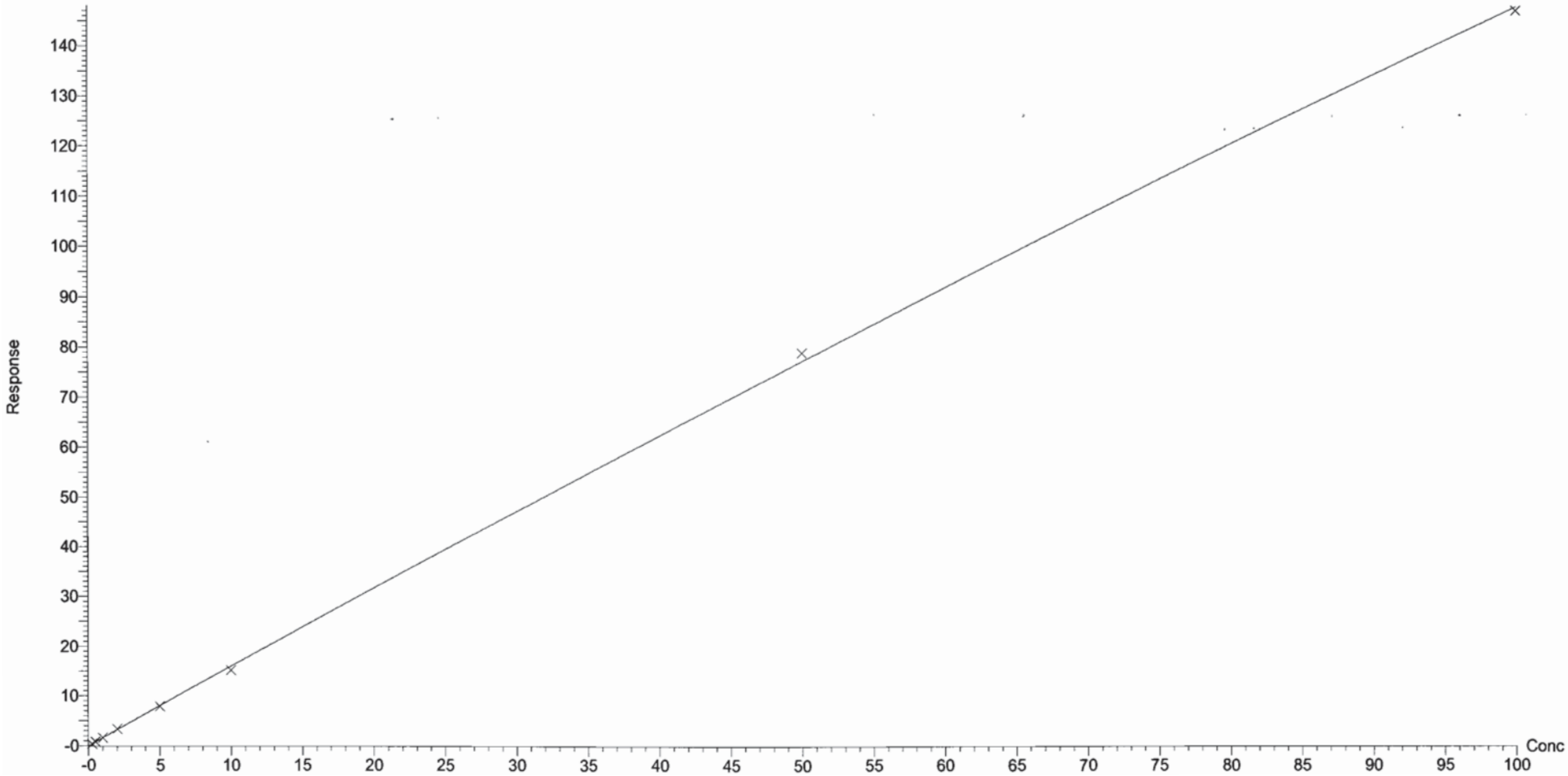
Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999610
Calibration curve: -0.00133241 * x^2 + 1.61336 * x + -0.019444
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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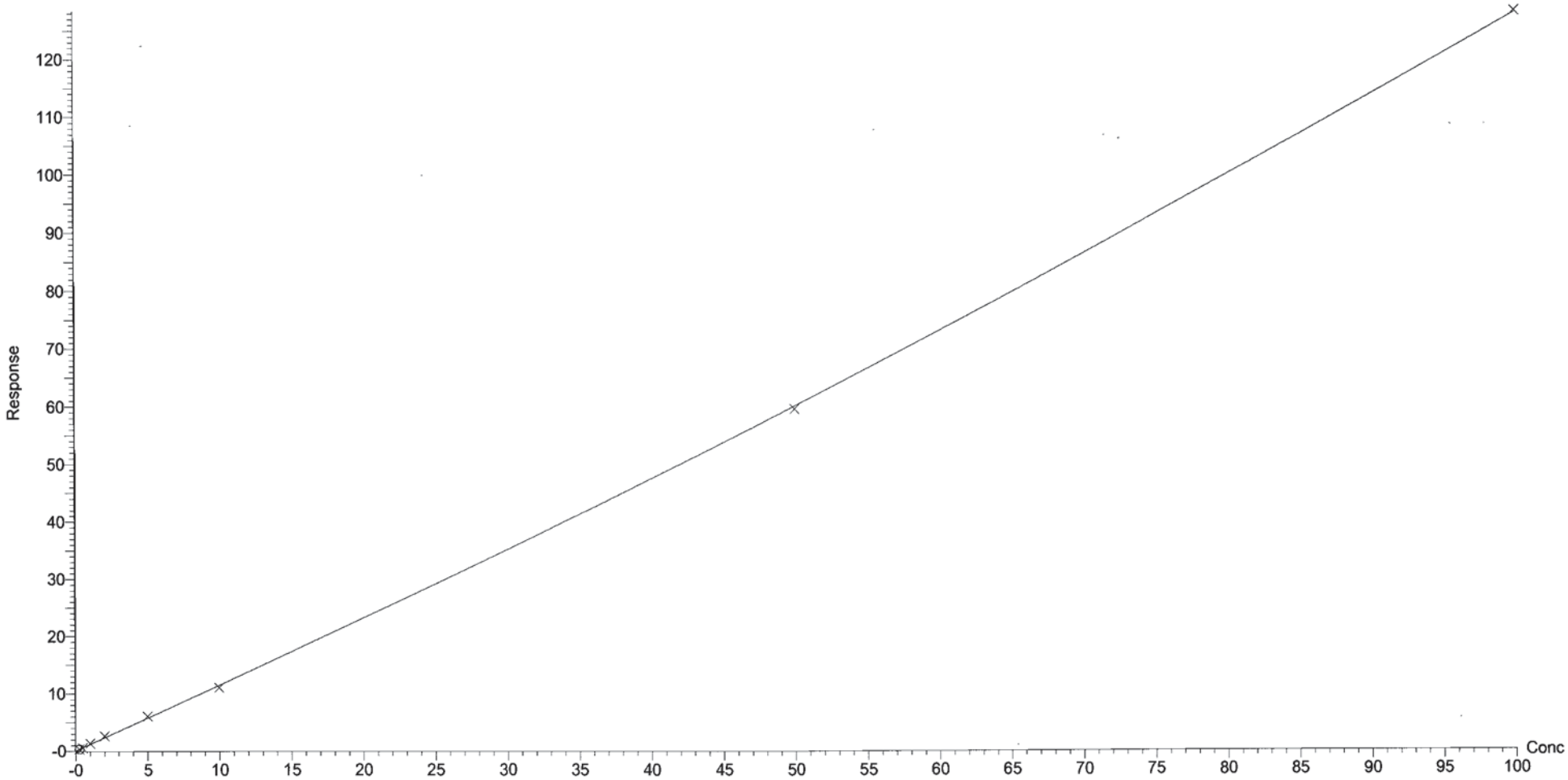
Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999426
Calibration curve: 0.00157116 * x^2 + 1.12286 * x + 0.0790977
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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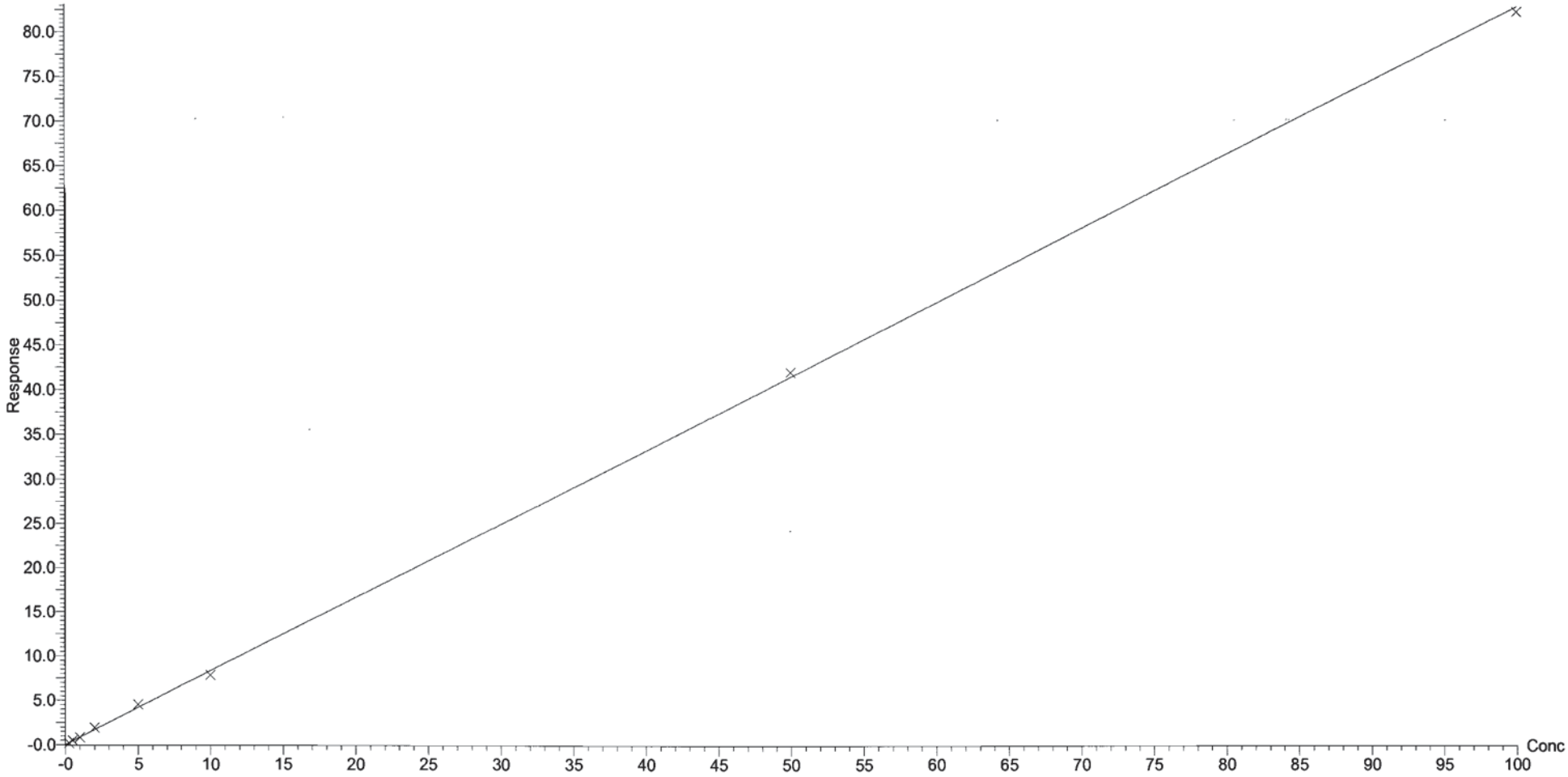
Compound name: PFDoA
Correlation coefficient: r = 0.999542, r^2 = 0.999083
Calibration curve: 0.830738 * x + 0.0366231
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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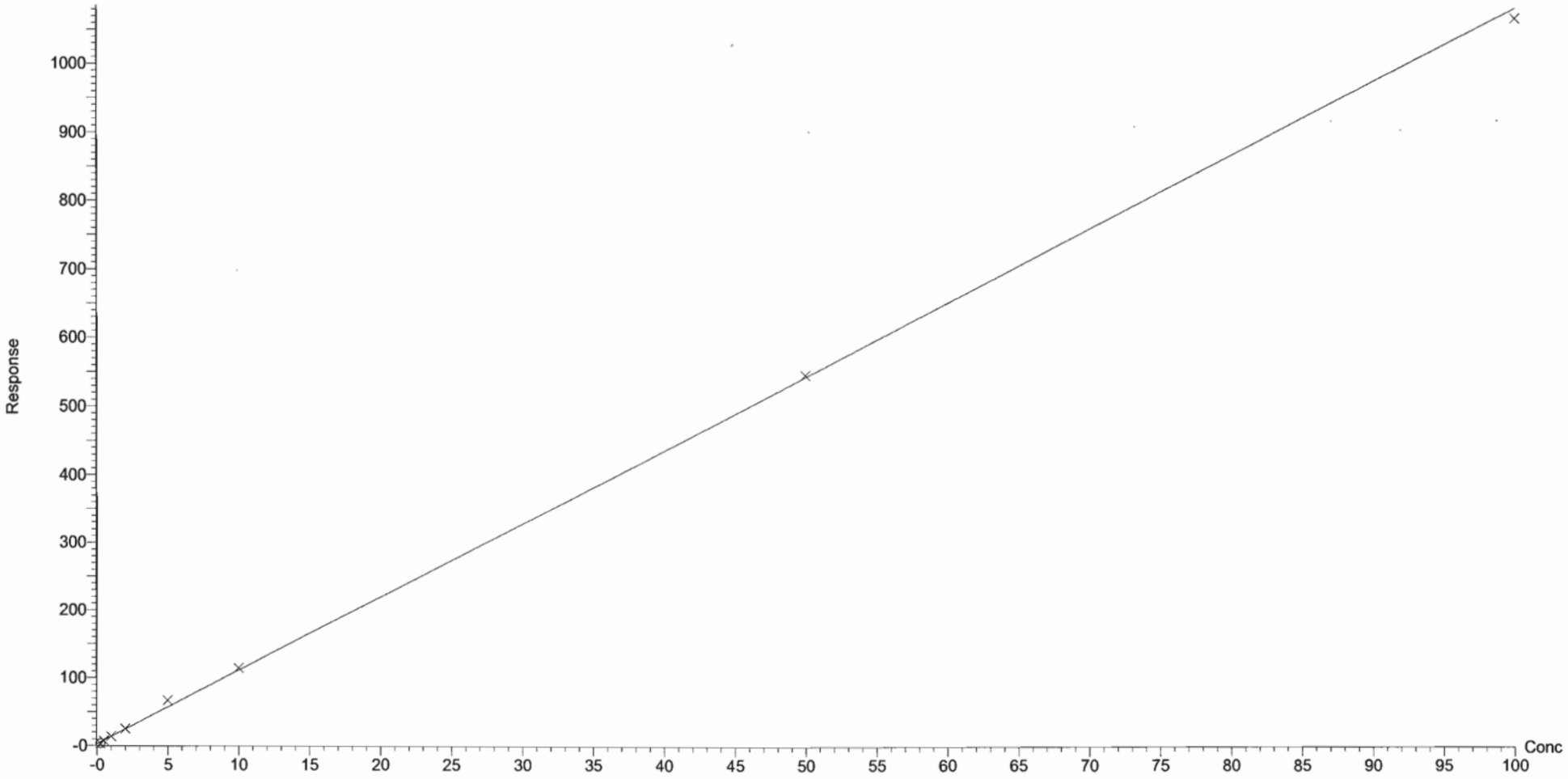
Compound name: PFTrDA
Correlation coefficient: r = 0.999307, r^2 = 0.998614
Calibration curve: 10.821 * x + 2.72105
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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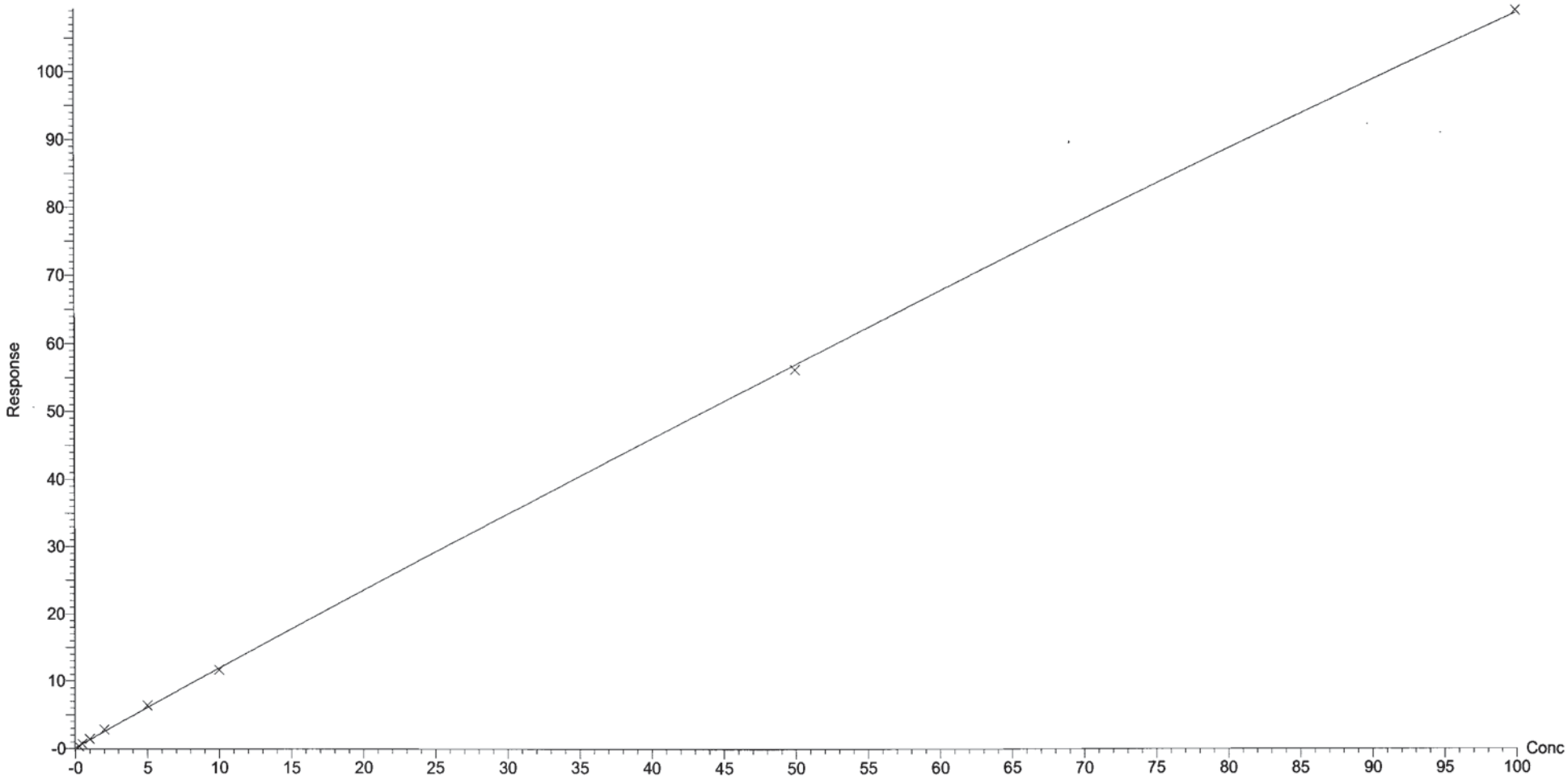
Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999498
Calibration curve: -0.000989892 * x^2 + 1.18715 * x + 0.13375
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory

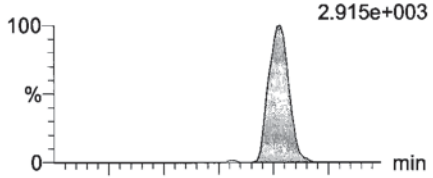
Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

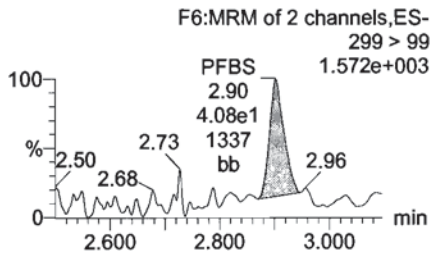
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:17:05
Calibration: 19 Jul 2017 13:31:36

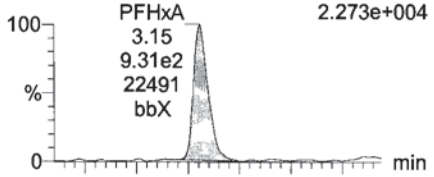
Name: 170705M2_2, Date: 05-Jul-2017, Time: 13:27:57, ID: ST170705M2-1 PFC CS-2 17G0503, Description: PFC CS-2 17G0503

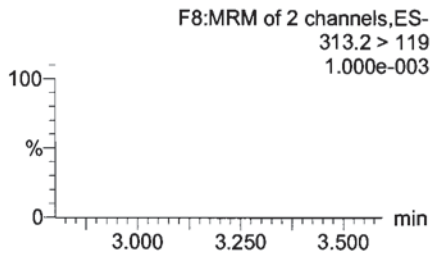
PFBS



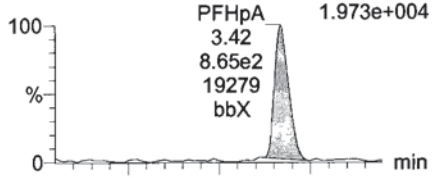


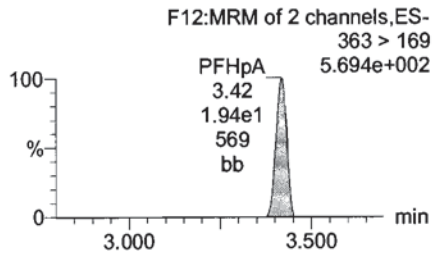
PFHxA



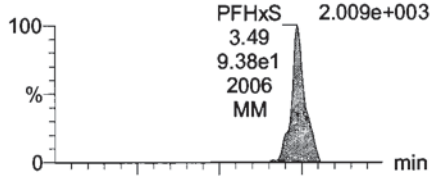


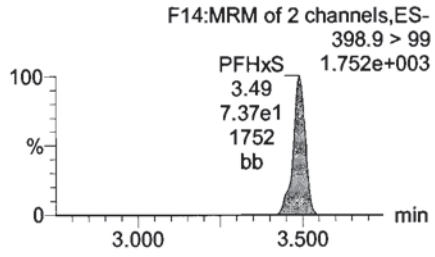
PFHpA



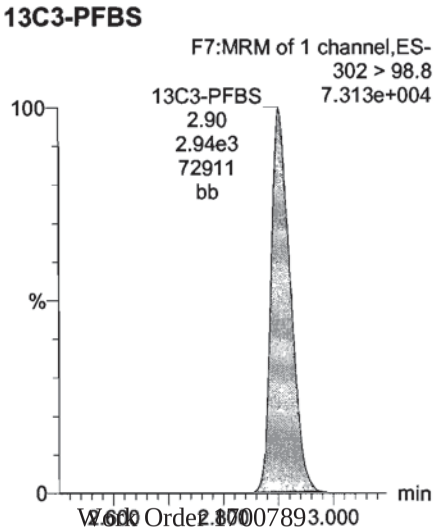


PFHxS

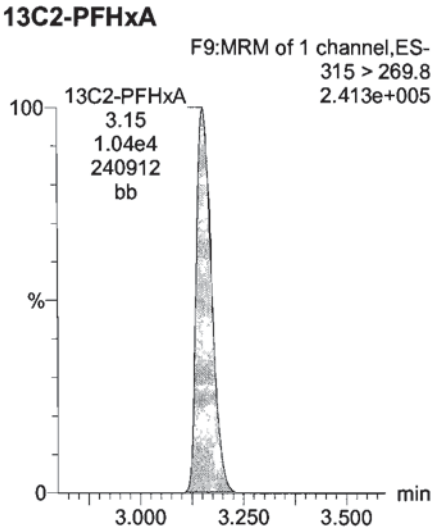




13C3-PFBS



13C2-PFHxA



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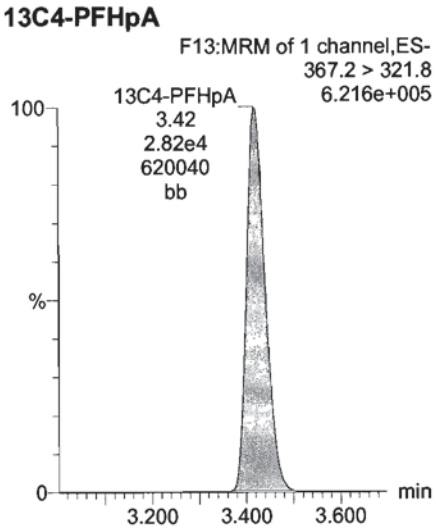

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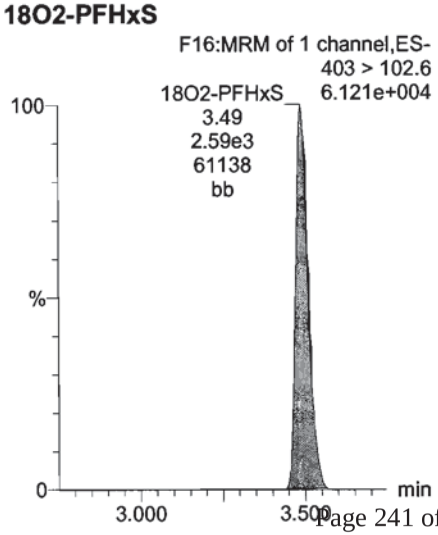
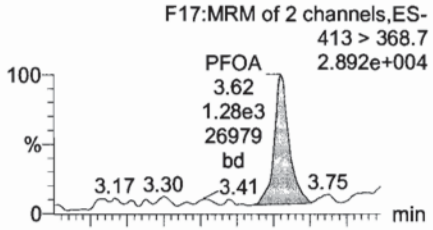


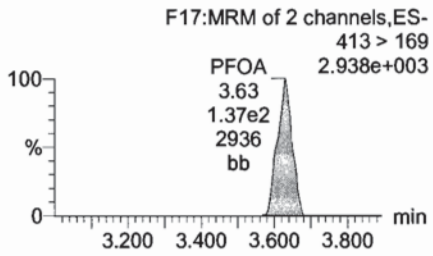
Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_2, Date: 05-Jul-2017, Time: 13:27:57, ID: ST170705M2-1 PFC CS-2 17G0503, Description: PFC CS-2 17G0503

PFOA





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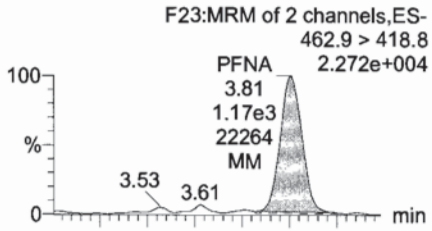

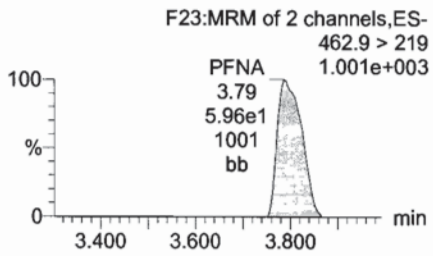

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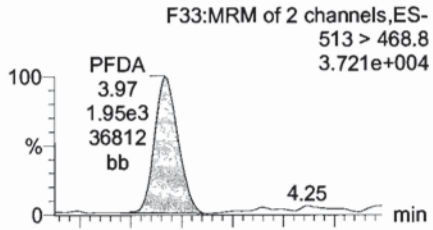
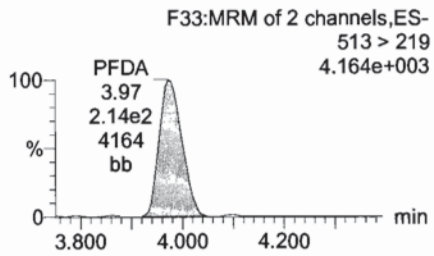
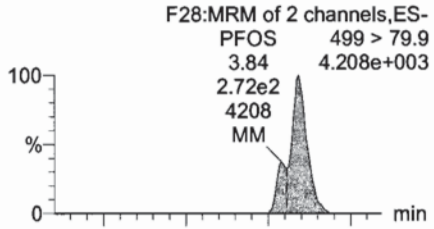
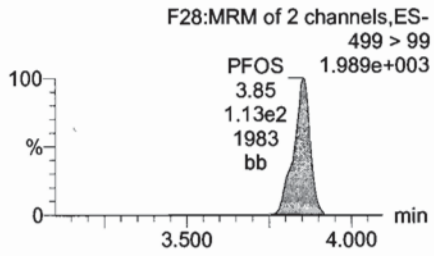


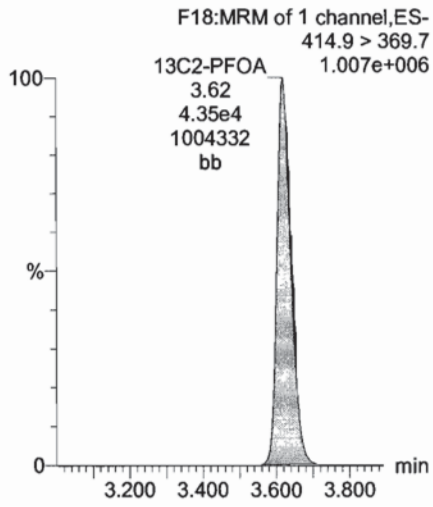


PFOS

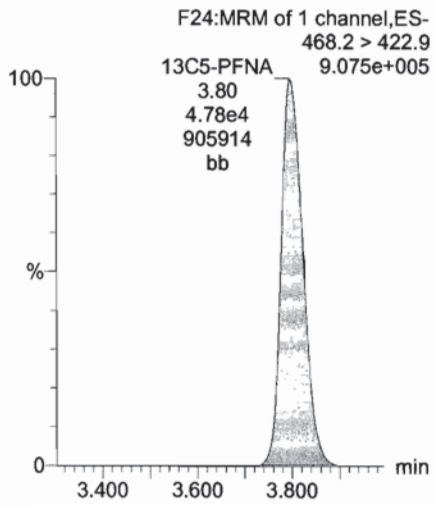




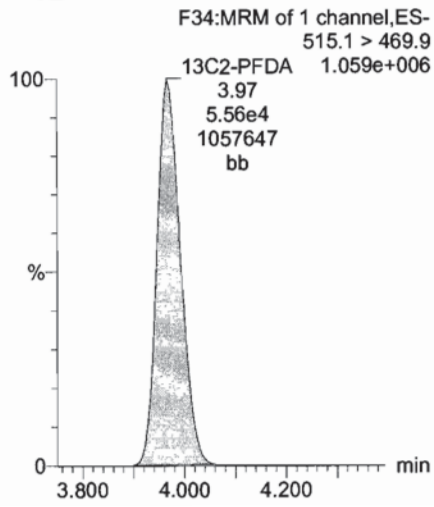
13C2-PFOA



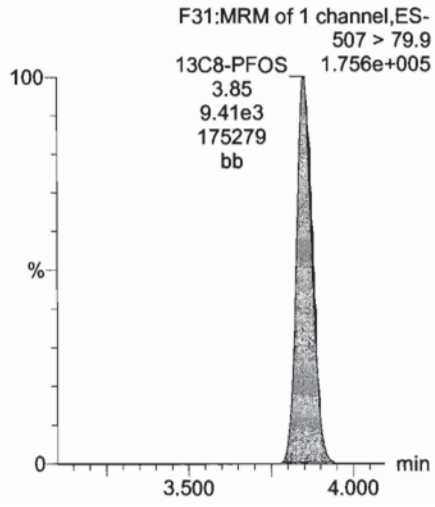
13C5-PFNA



13C2-PFDA



13C8-PFOS



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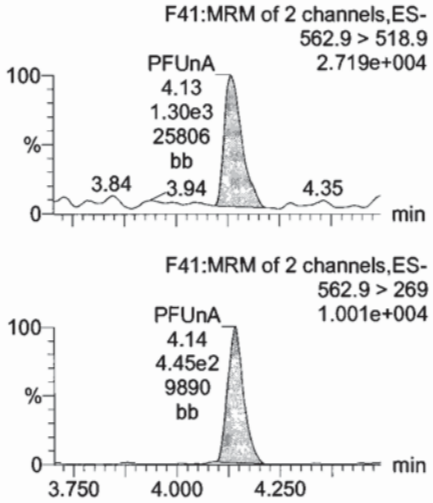
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_2, Date: 05-Jul-2017, Time: 13:27:57, ID: ST170705M2-1 PFC CS-2 17G0503, Description: PFC CS-2 17G0503

PFUnA



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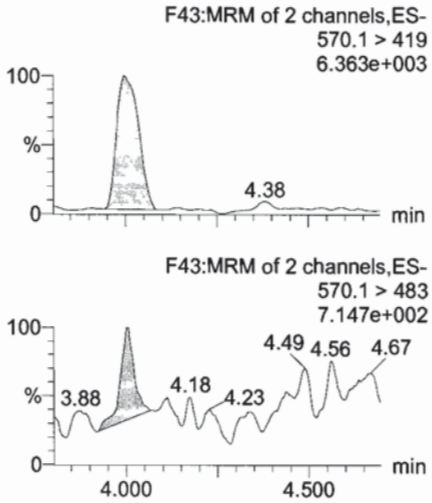
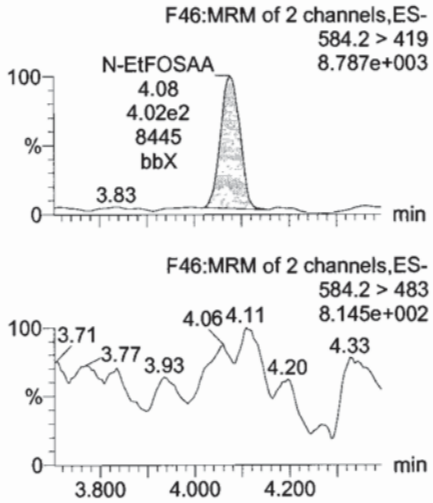
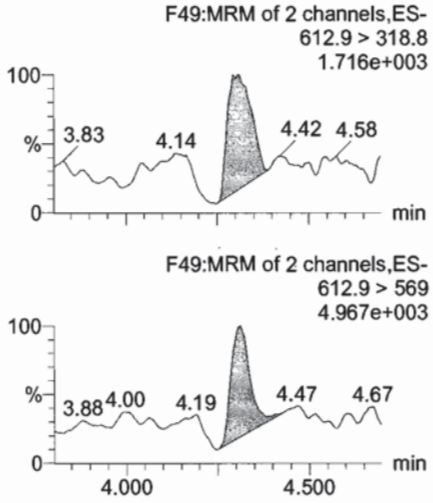


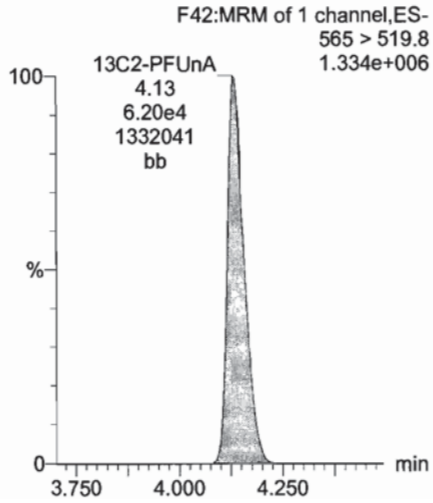
N-EtFOSAA



PFDoA



13C2-PFUnA



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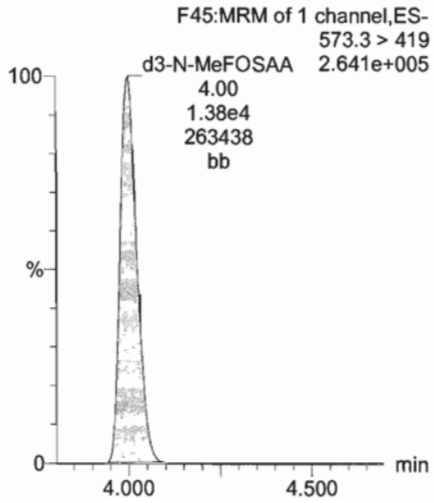

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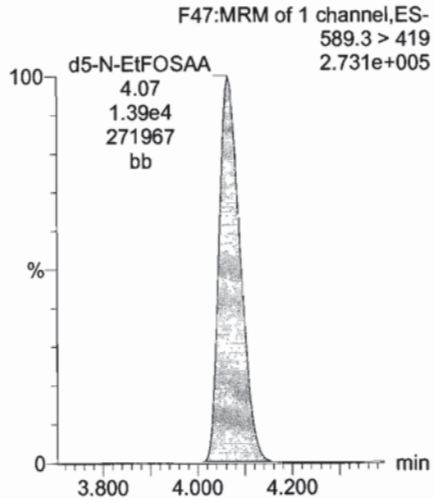

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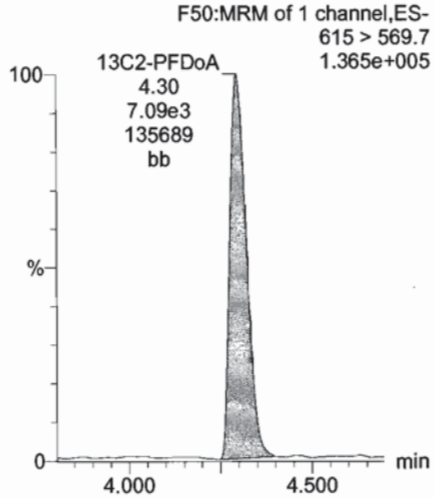

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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_2, Date: 05-Jul-2017, Time: 13:27:57, ID: ST170705M2-1 PFC CS-2 17G0503, Description: PFC CS-2 17G0503

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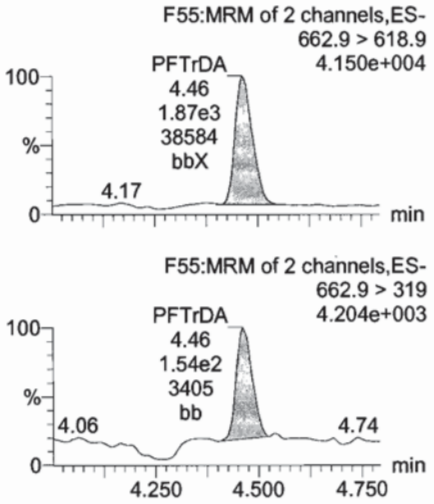

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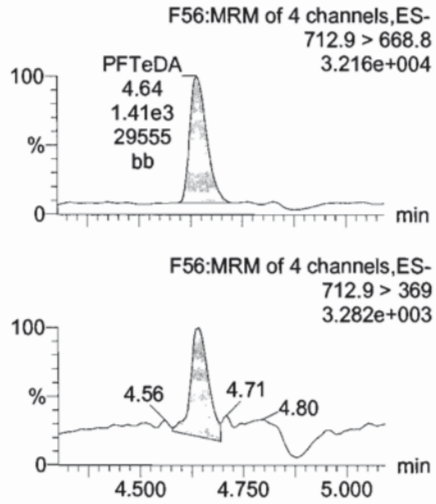

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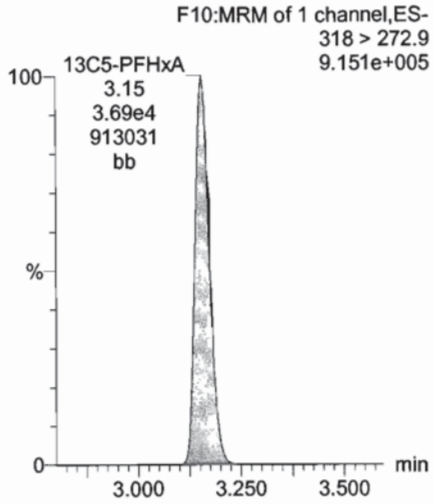

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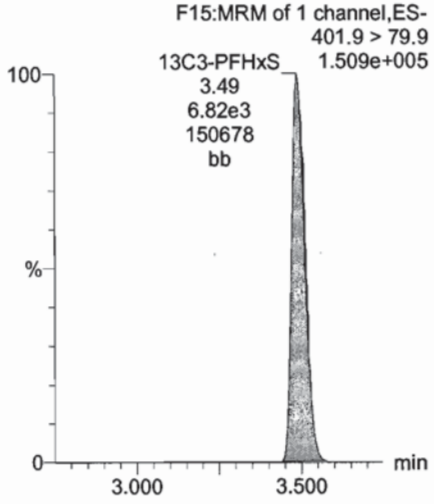

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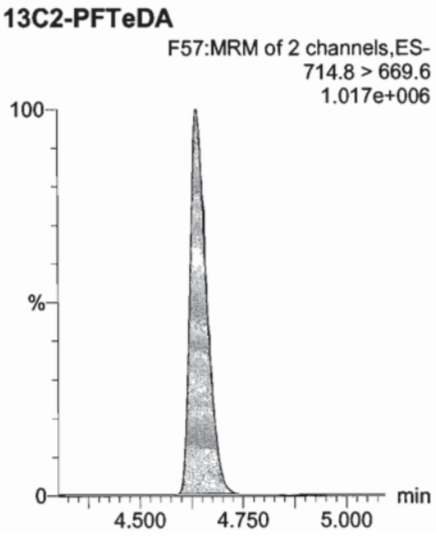

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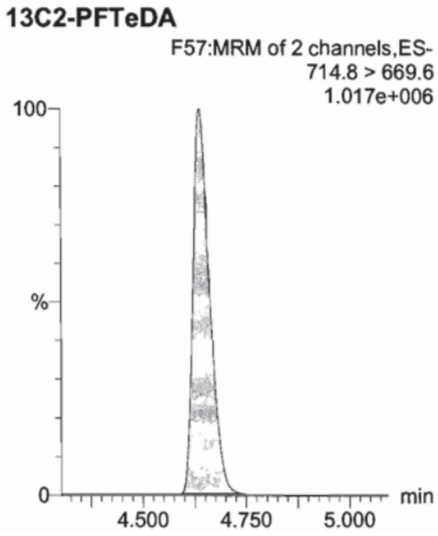
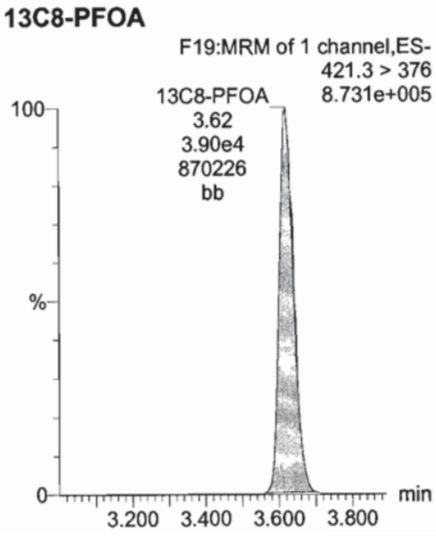


13C8-PFOA



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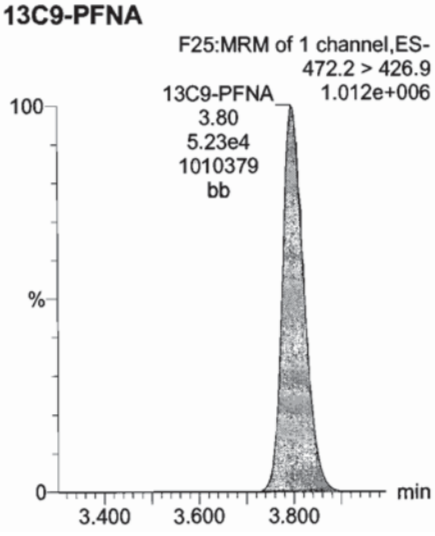

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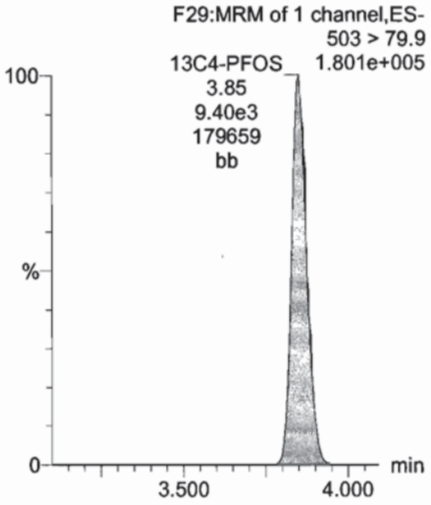
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_2, Date: 05-Jul-2017, Time: 13:27:57, ID: ST170705M2-1 PFC CS-2 17G0503, Description: PFC CS-2 17G0503

13C4-PFOS



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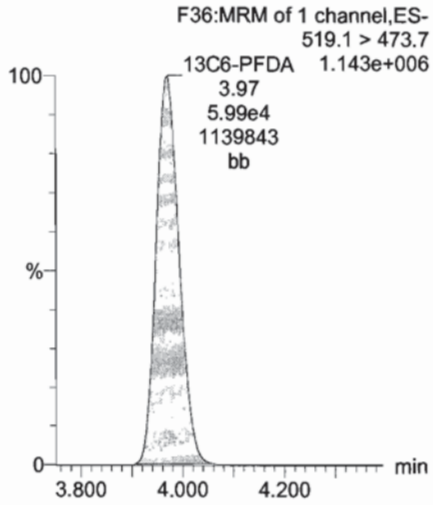

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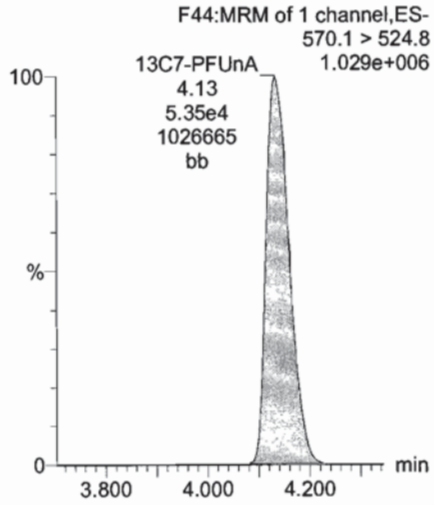
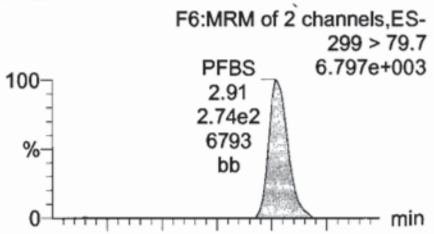


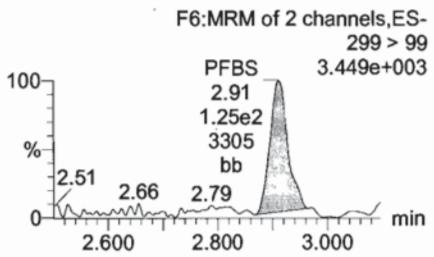
Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

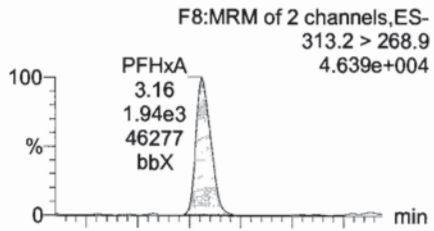
Name: 170705M2_3, Date: 05-Jul-2017, Time: 13:38:43, ID: ST170705M2-2 PFC CS-1 17G0504, Description: PFC CS-1 17G0504

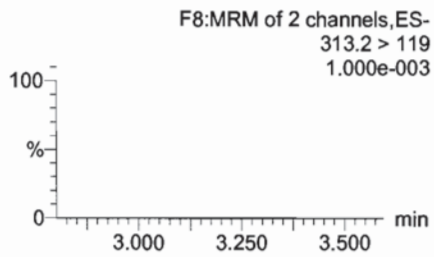
PFBS



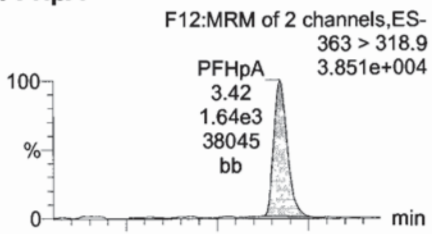


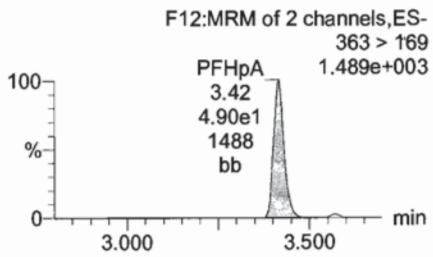
PFHxA





PFHpA





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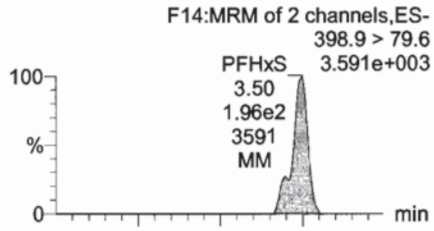
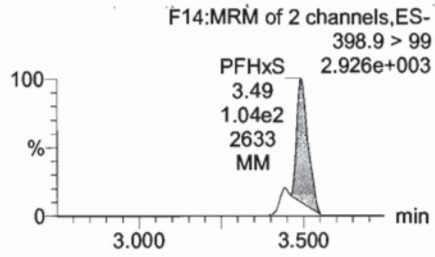
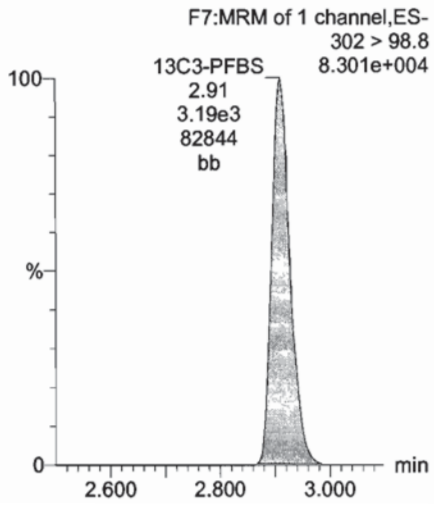
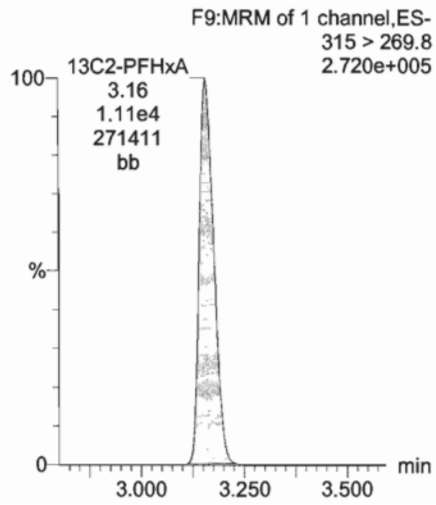




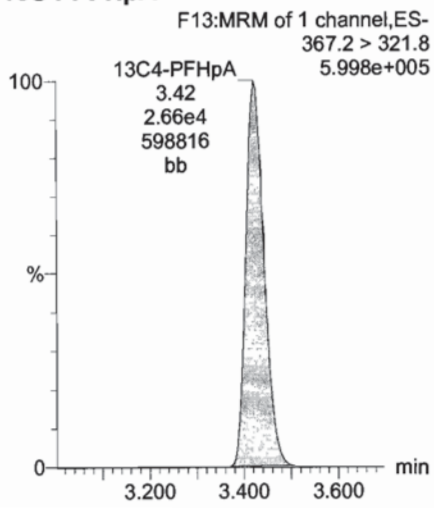
13C3-PFBS



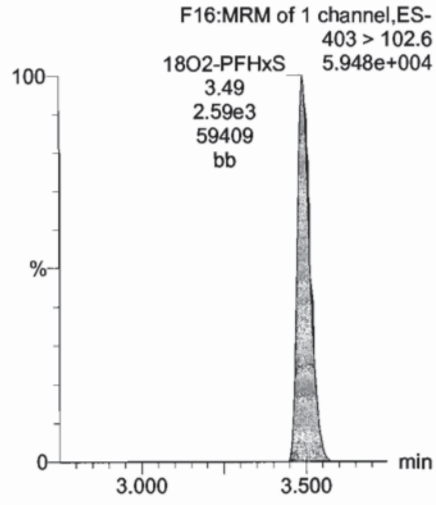
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



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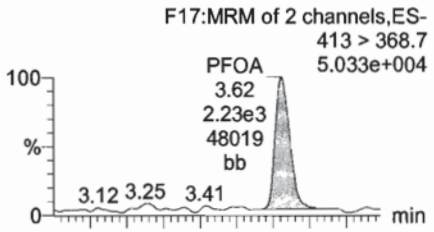
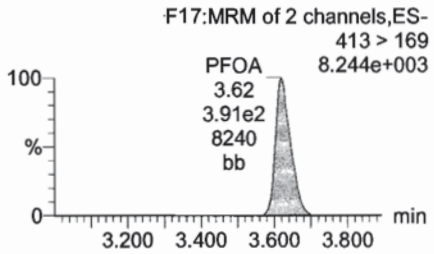
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_3, Date: 05-Jul-2017, Time: 13:38:43, ID: ST170705M2-2 PFC CS-1 17G0504, Description: PFC CS-1 17G0504

PFOA





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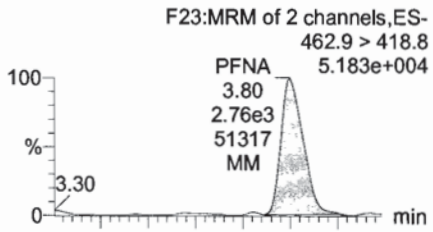

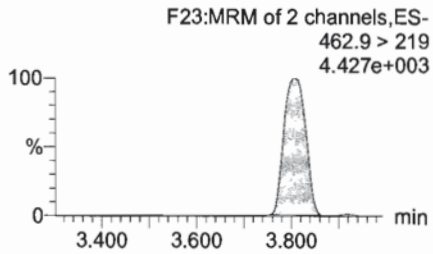

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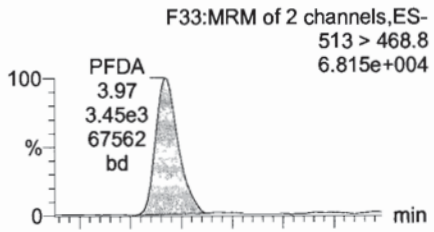

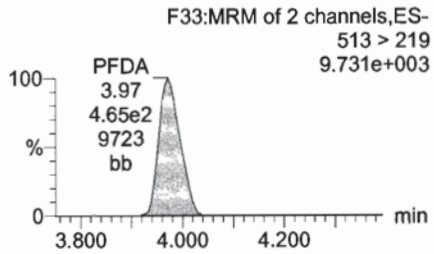

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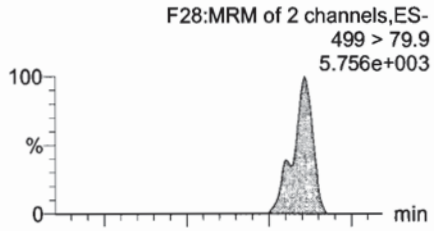
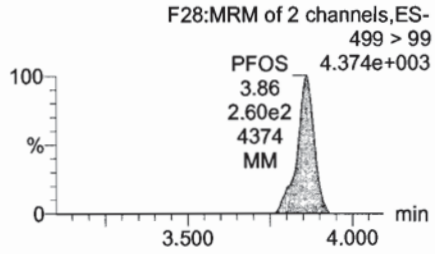
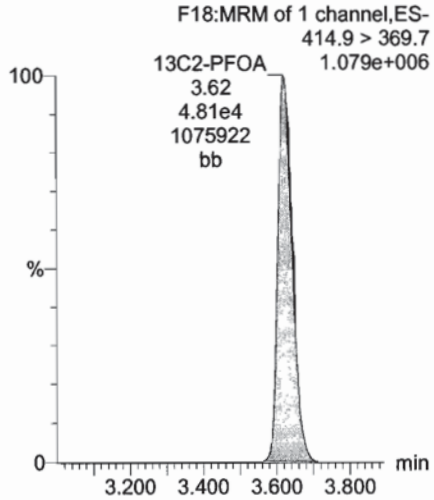
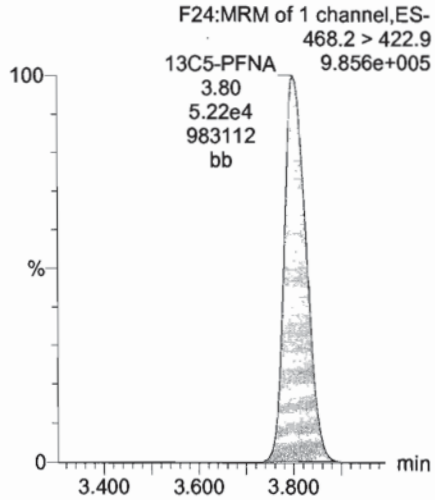




13C2-PFOA



13C5-PFNA



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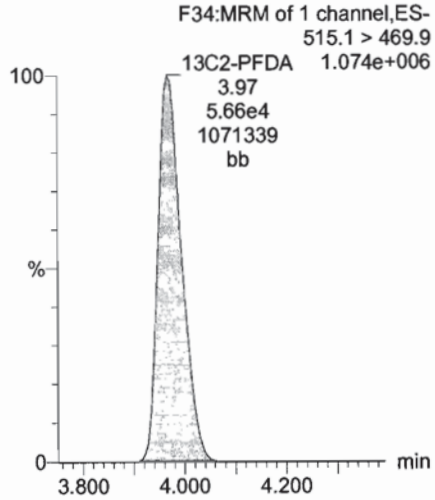
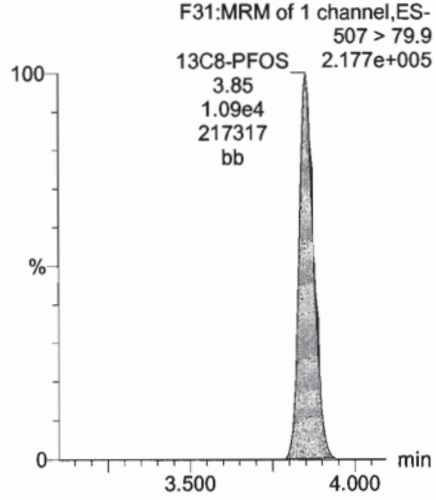


13C8-PFOS



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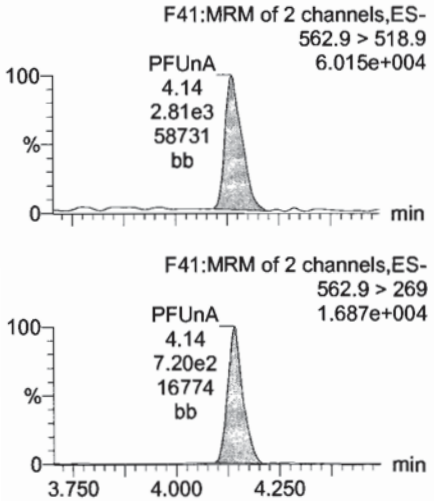
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_3, Date: 05-Jul-2017, Time: 13:38:43, ID: ST170705M2-2 PFC CS-1 17G0504, Description: PFC CS-1 17G0504

PFUnA



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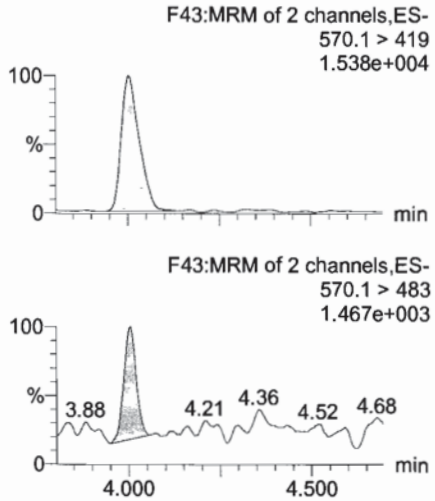
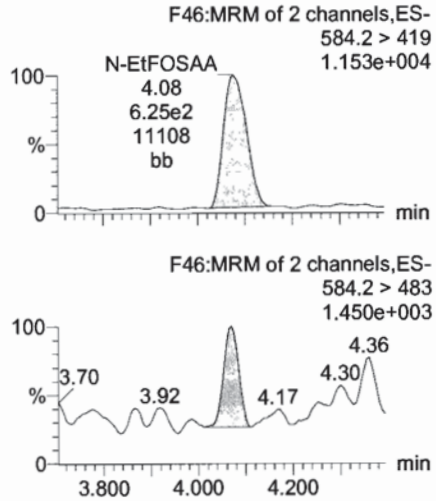
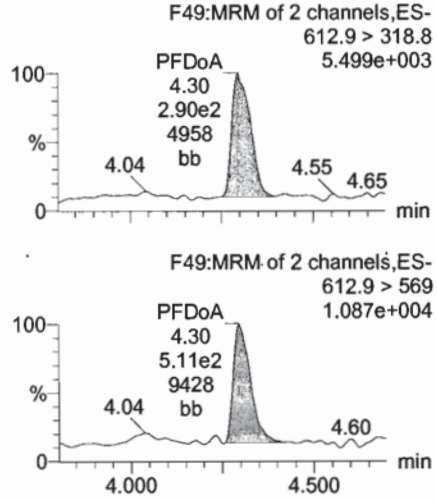


N-EtFOSAA



PFDoA



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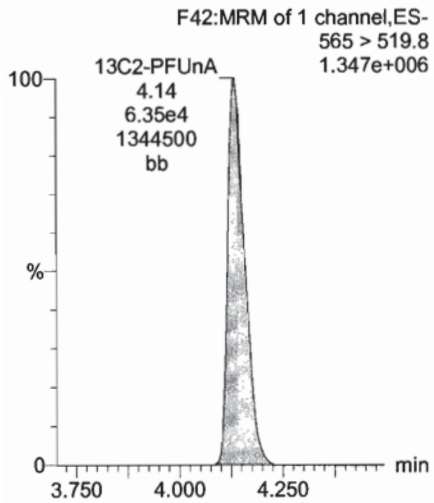
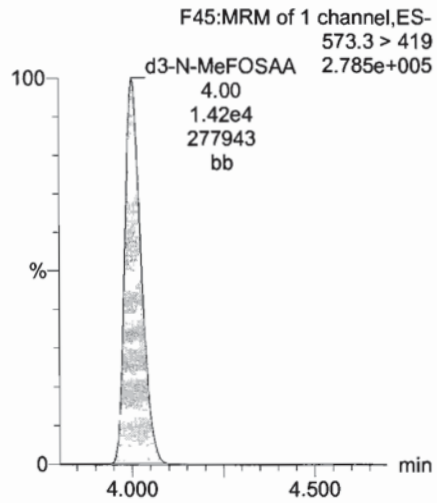


d3-N-MeFOSAA



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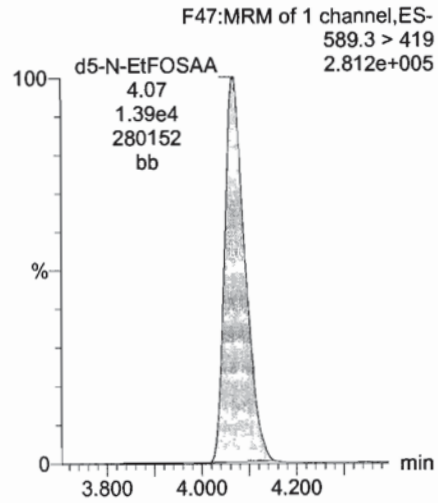

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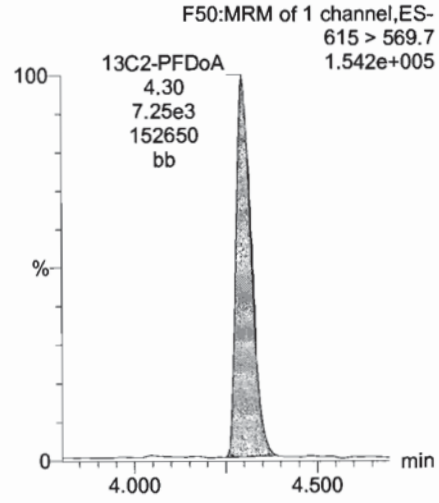

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Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_3, Date: 05-Jul-2017, Time: 13:38:43, ID: ST170705M2-2 PFC CS-1 17G0504, Description: PFC CS-1 17G0504

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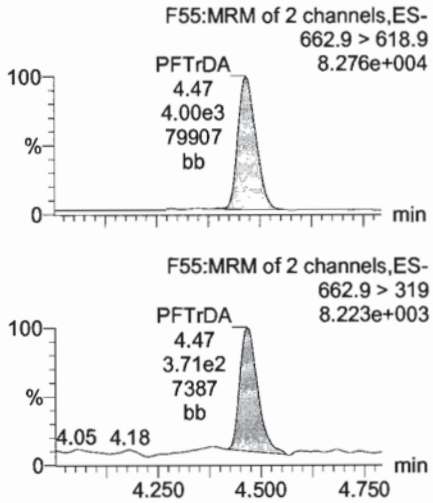

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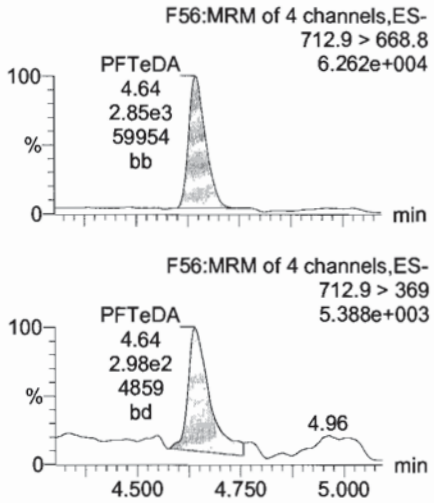
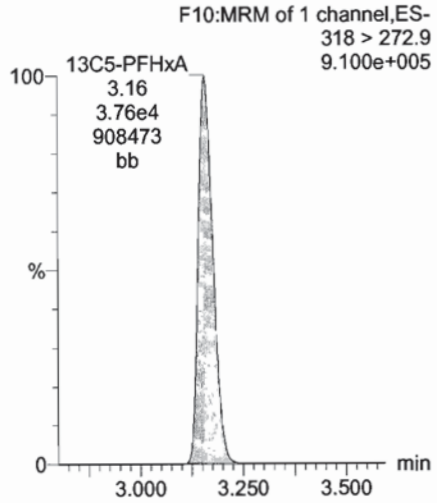
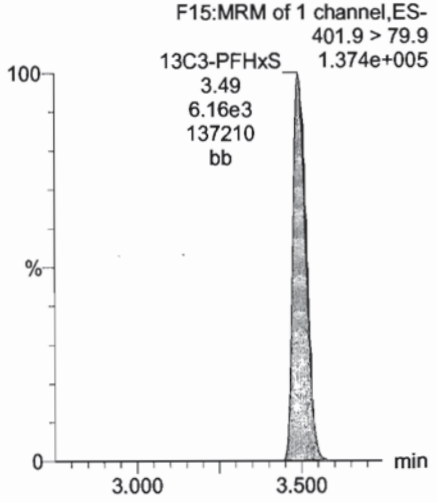


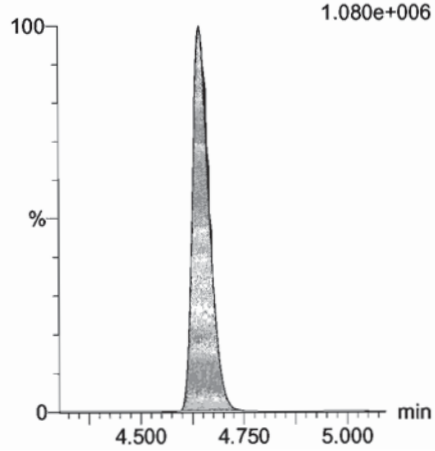
13C5-PFHxA



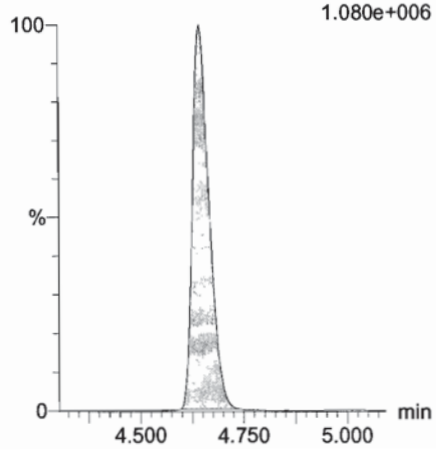
13C3-PFHxS



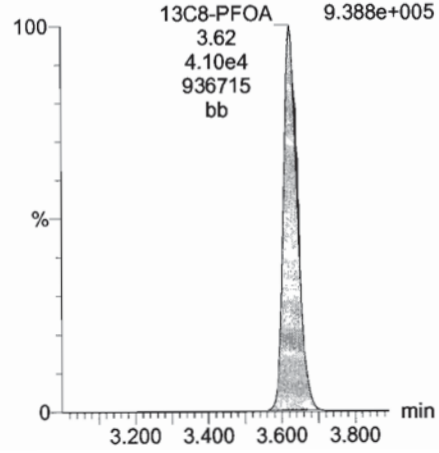
13C2-PFTeDA



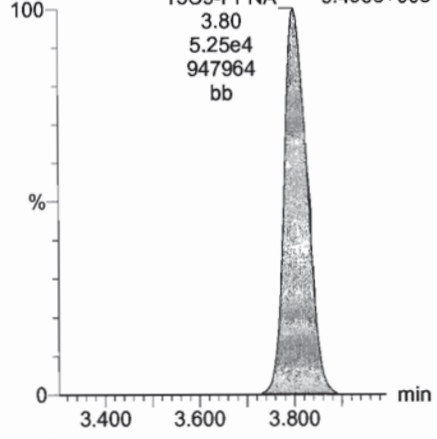
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



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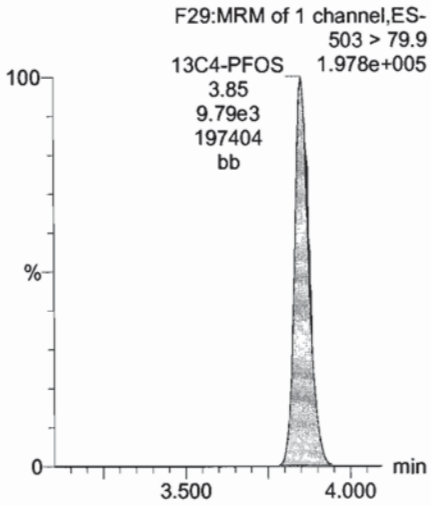
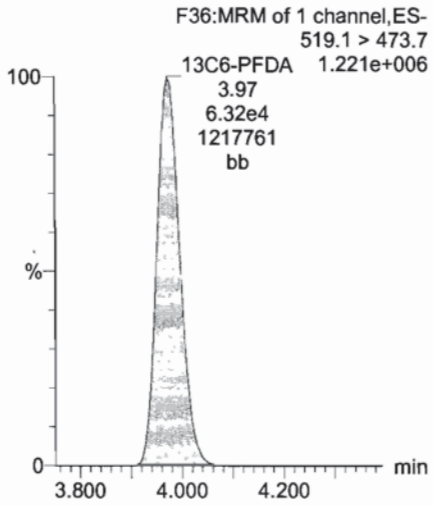
Name: 170705M2_3, Date: 05-Jul-2017, Time: 13:38:43, ID: ST170705M2-2 PFC CS-1 17G0504, Description: PFC CS-1 17G0504

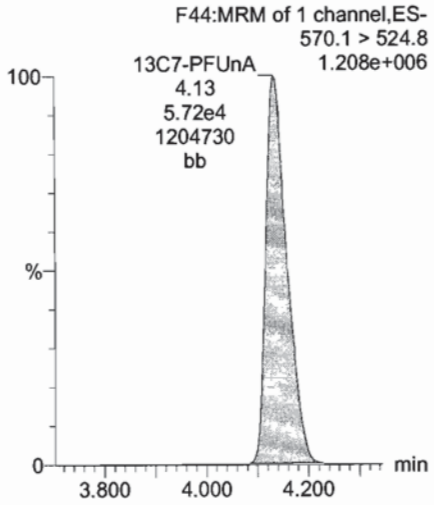
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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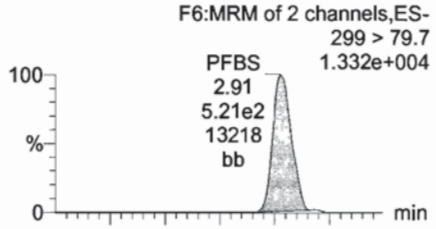
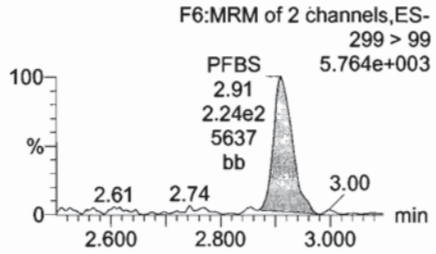
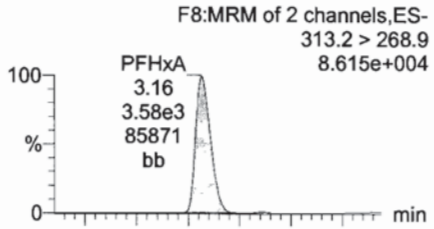
Name: 170705M2_4, Date: 05-Jul-2017, Time: 13:49:28, ID: ST170705M2-3 PFC CS0 17G0505, Description: PFC CS0 17G0505

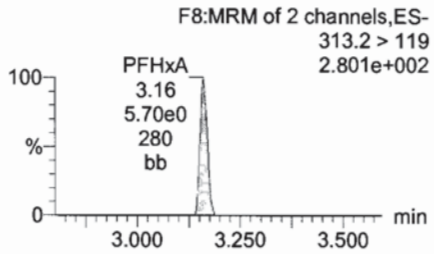
PFBS





PFHxA





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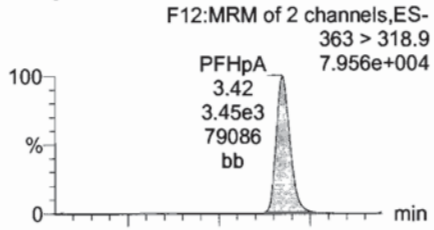

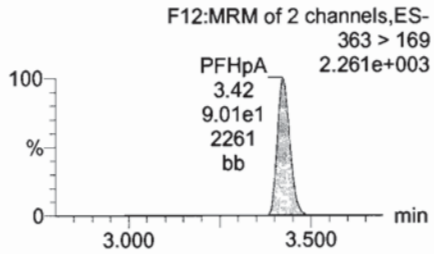

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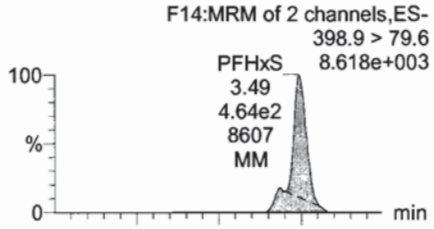
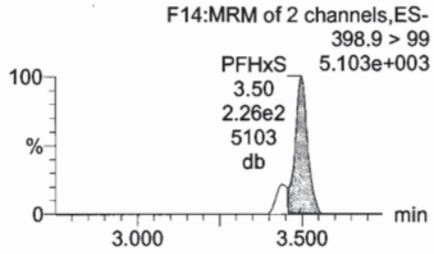
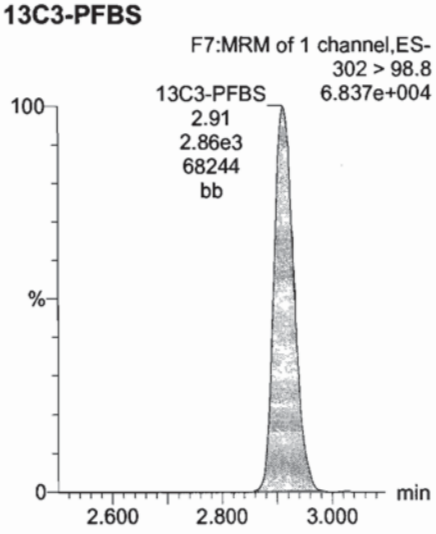
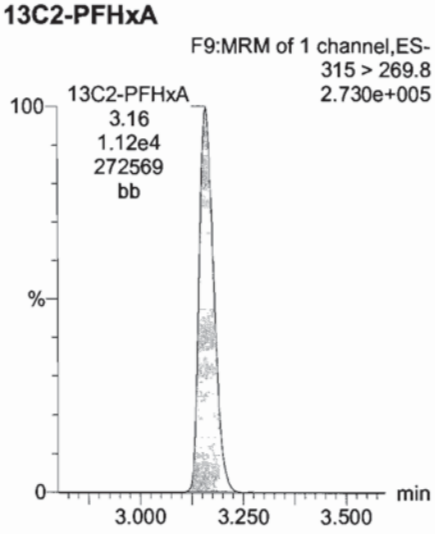




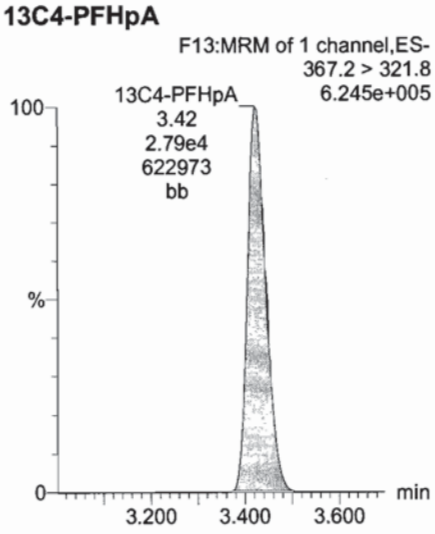
13C3-PFBS



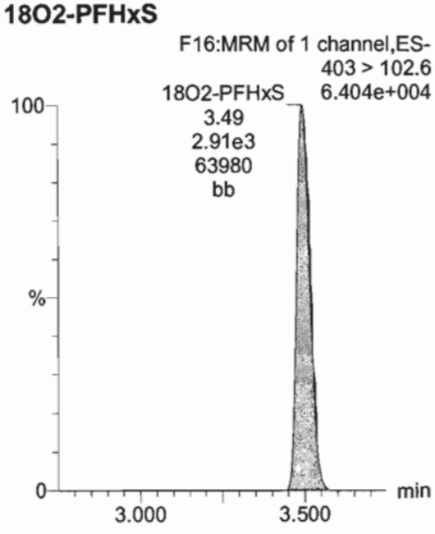
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



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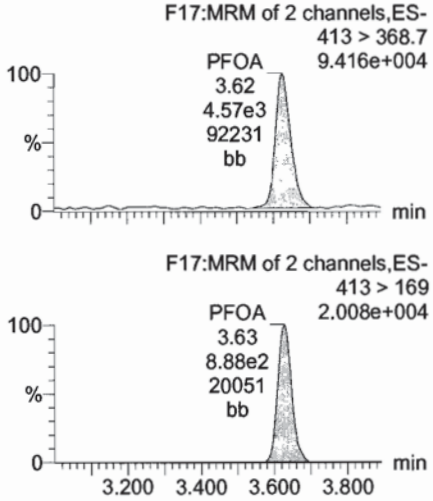
Name: 170705M2_4, Date: 05-Jul-2017, Time: 13:49:28, ID: ST170705M2-3 PFC CS0 17G0505, Description: PFC CS0 17G0505

PFOA



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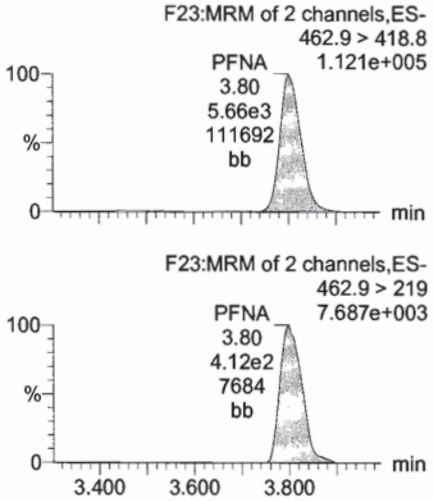

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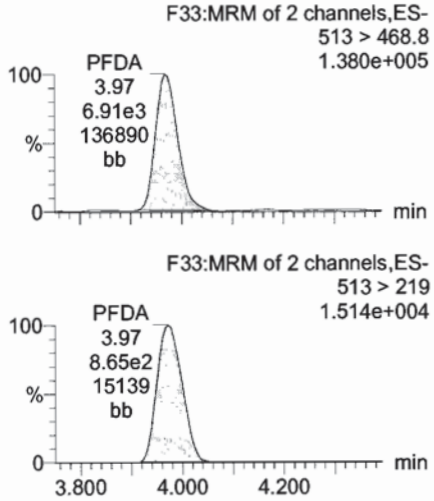

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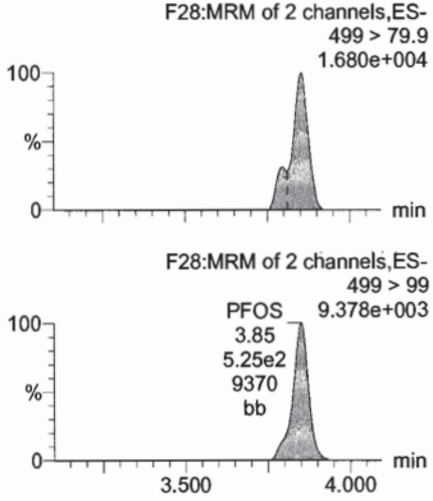
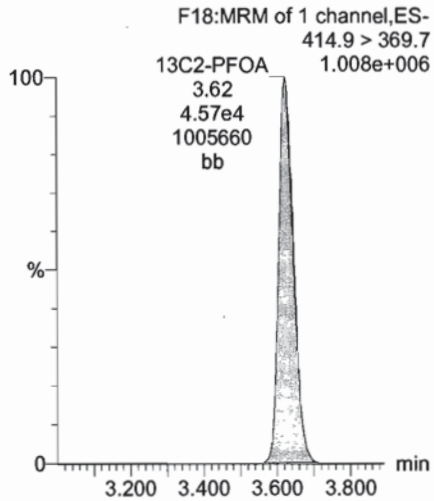
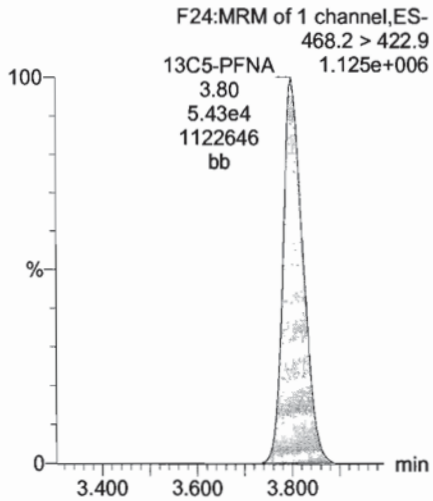


13C2-PFOA



13C5-PFNA



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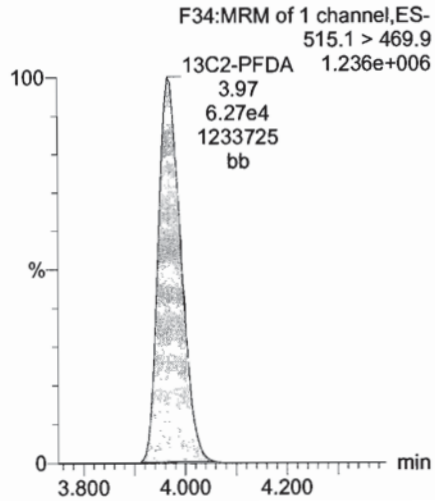
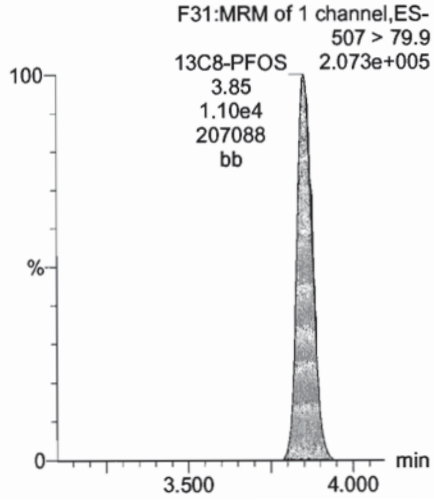


13C8-PFOS



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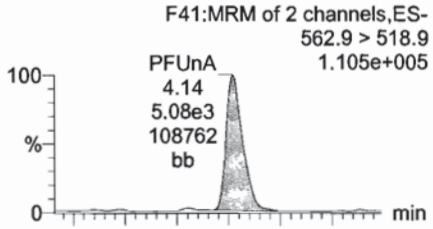
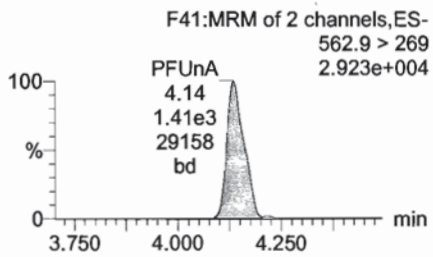
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_4, Date: 05-Jul-2017, Time: 13:49:28, ID: ST170705M2-3 PFC CS0 17G0505, Description: PFC CS0 17G0505

PFUnA





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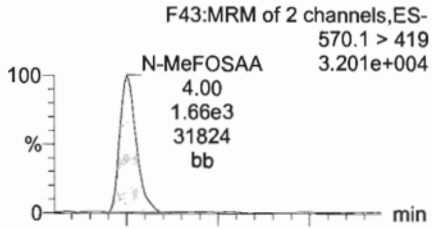

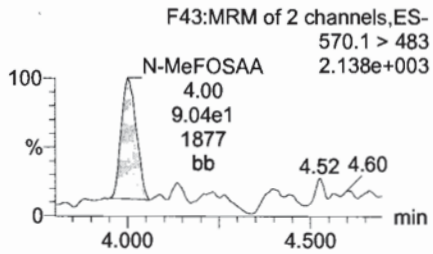

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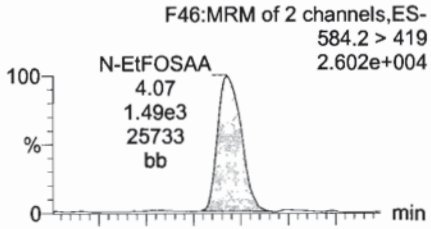

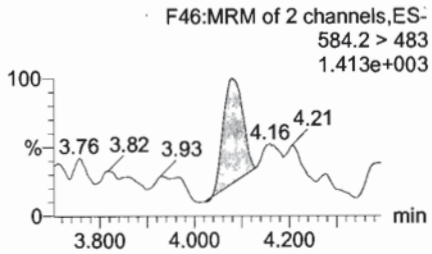

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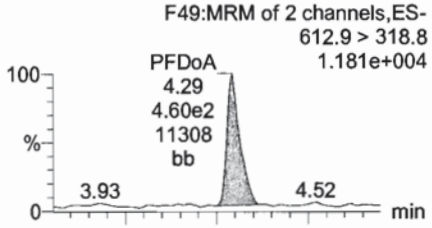
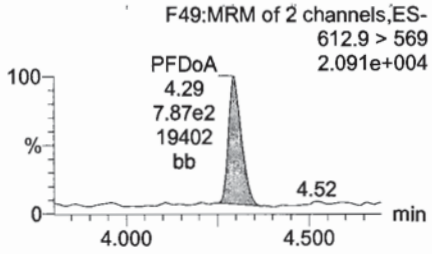
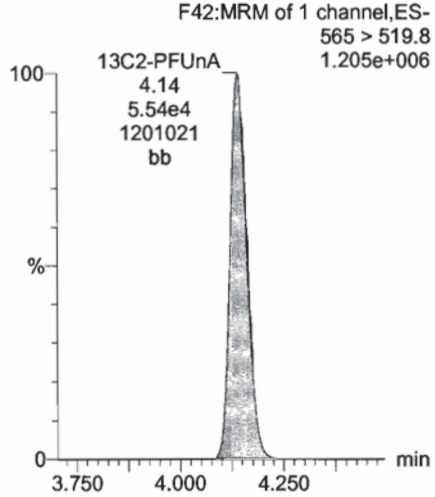
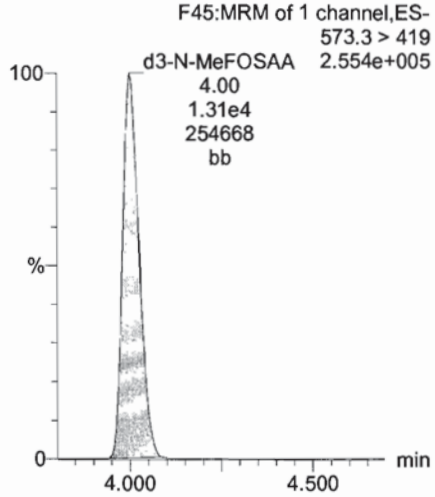




13C2-PFUnA



d3-N-MeFOSAA



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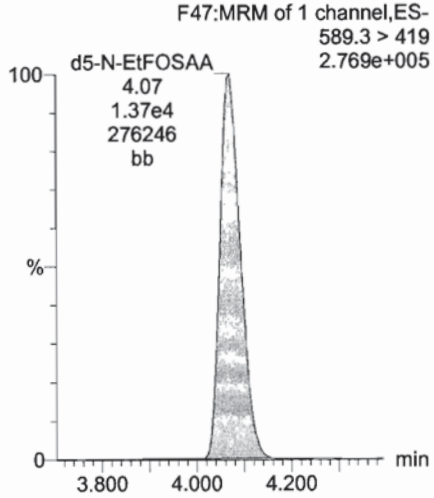

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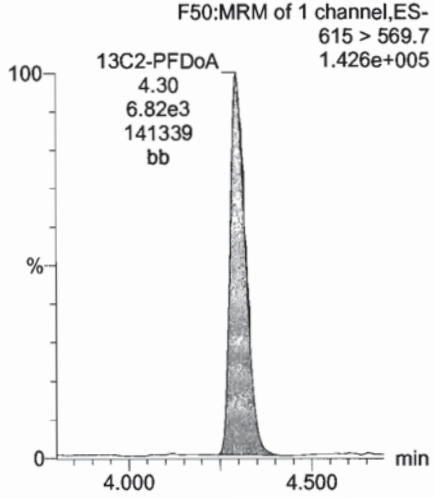

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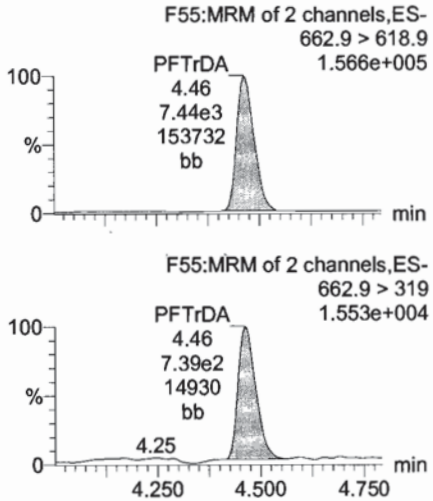
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_4, Date: 05-Jul-2017, Time: 13:49:28, ID: ST170705M2-3 PFC CS0 17G0505, Description: PFC CS0 17G0505

PFTrDA



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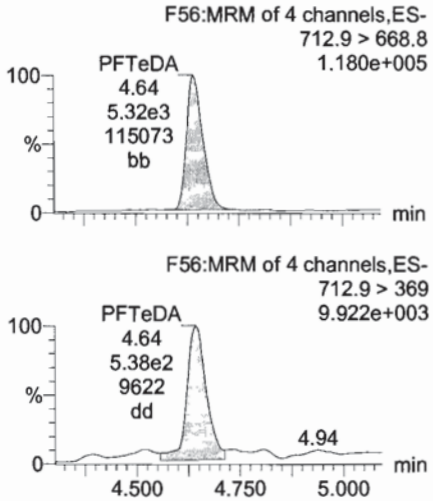

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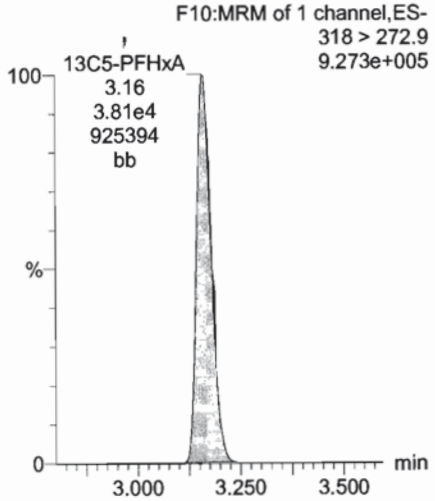

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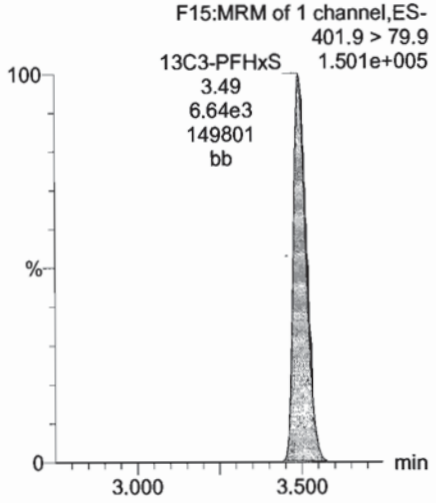

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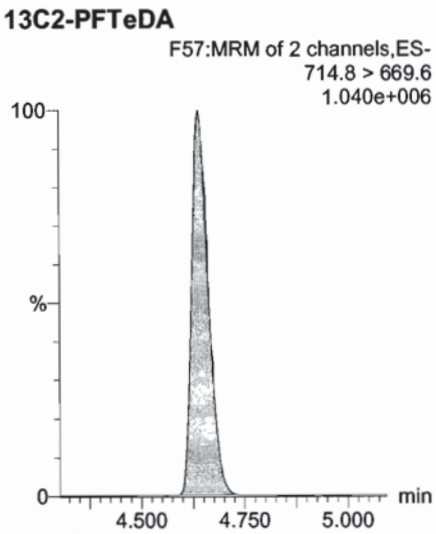

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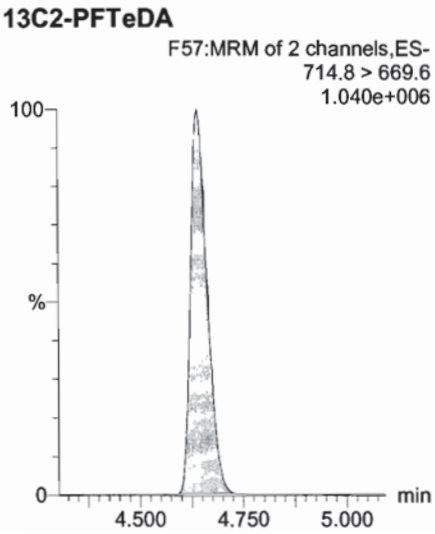
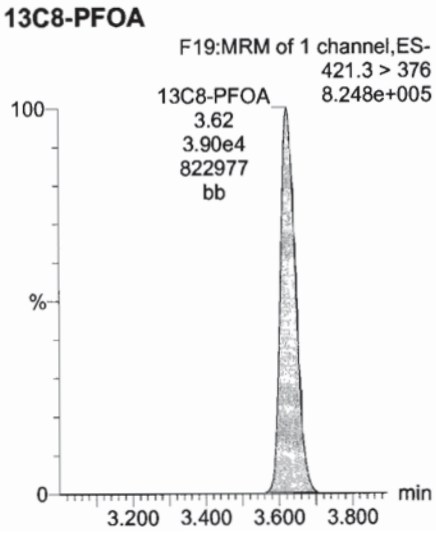


13C8-PFOA



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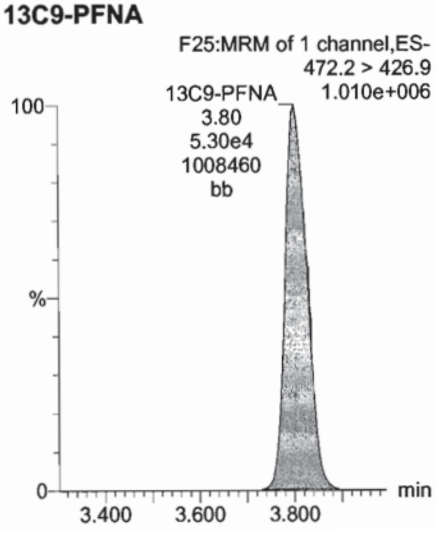

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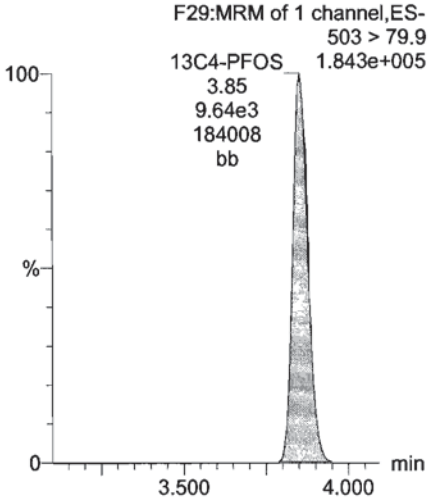
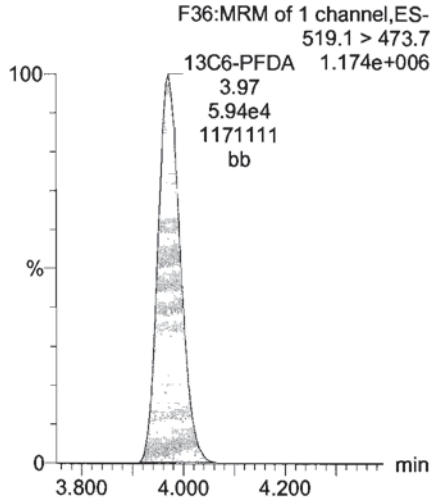
Name: 170705M2_4, Date: 05-Jul-2017, Time: 13:49:28, ID: ST170705M2-3 PFC CS0 17G0505, Description: PFC CS0 17G0505

13C4-PFOS



13C6-PFDA



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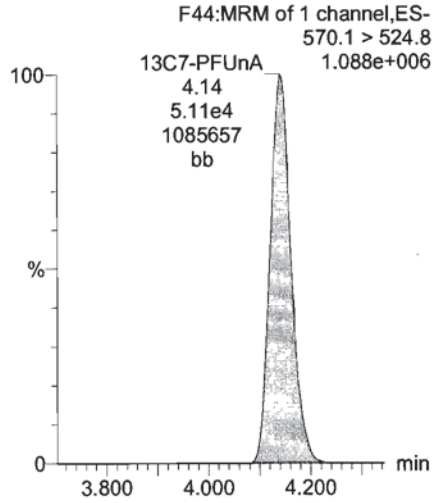

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Name: 170705M2_5, Date: 05-Jul-2017, Time: 14:00:11, ID: ST170705M2-4 PFC CS1 17G0506, Description: PFC CS1 17G0506

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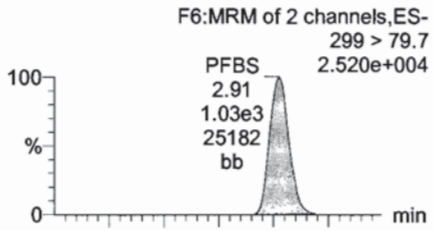
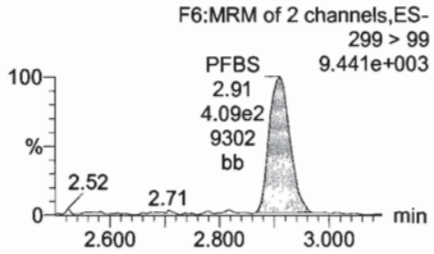
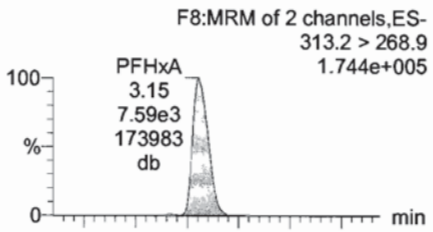
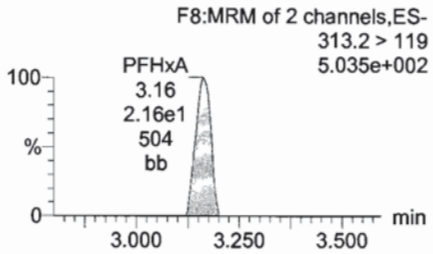


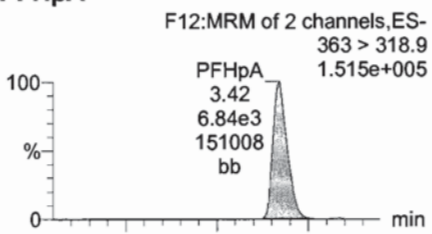


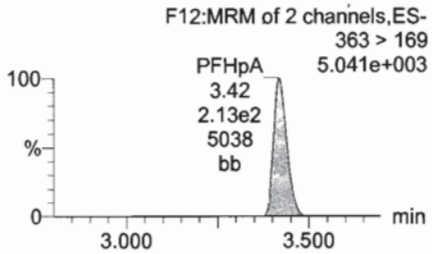
PFHxA



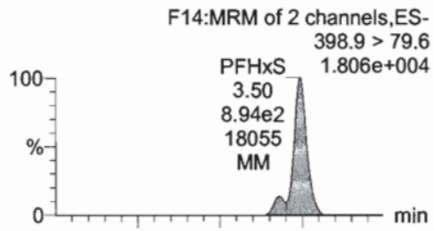


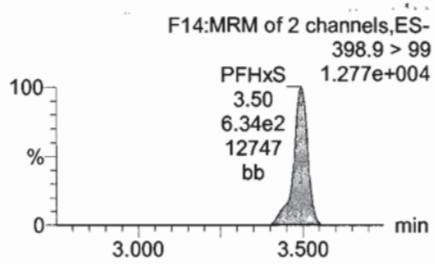
PFHpA



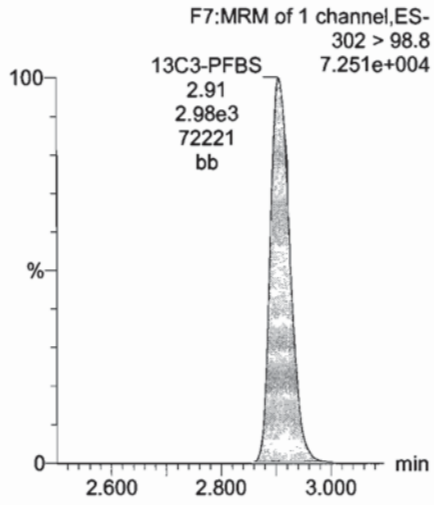


PFHxS

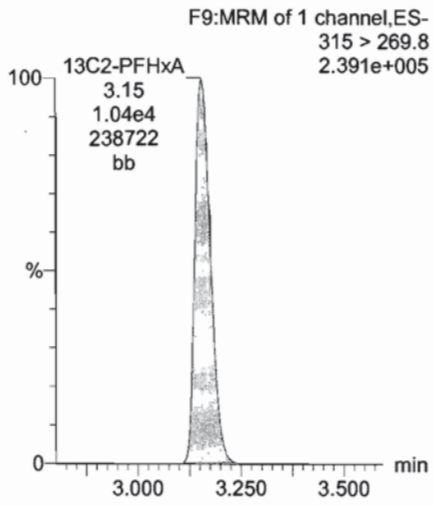




13C3-PFBS



13C2-PFHxA



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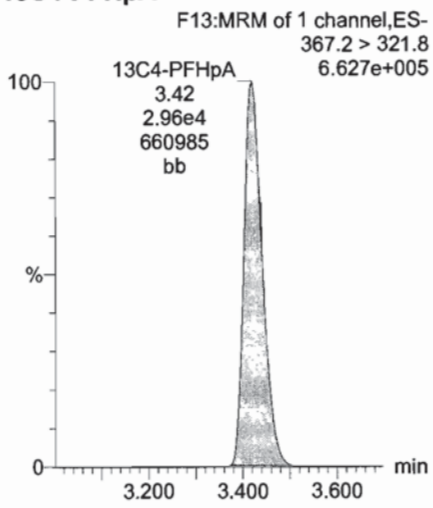

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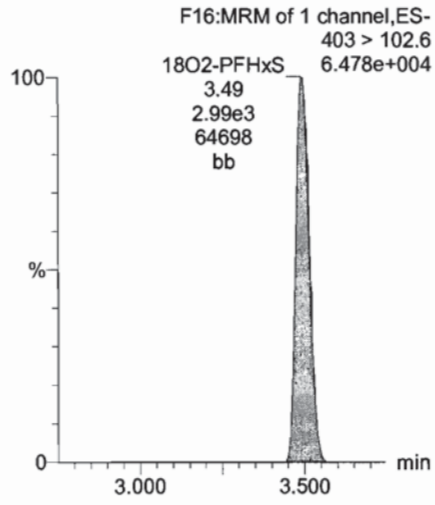

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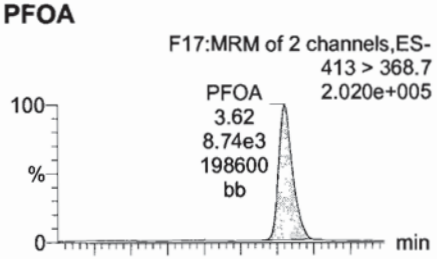
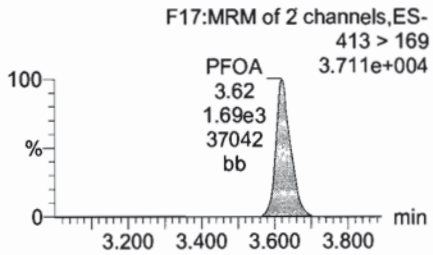
Name: 170705M2_5, Date: 05-Jul-2017, Time: 14:00:11, ID: ST170705M2-4 PFC CS1 17G0506, Description: PFC CS1 17G0506

PFOA





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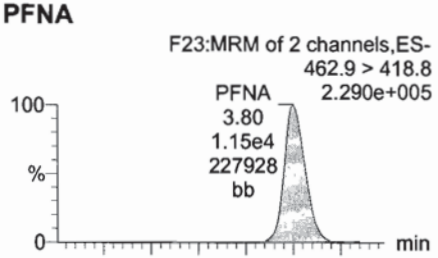

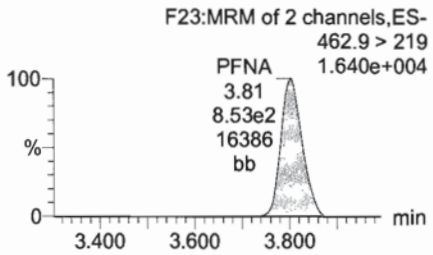

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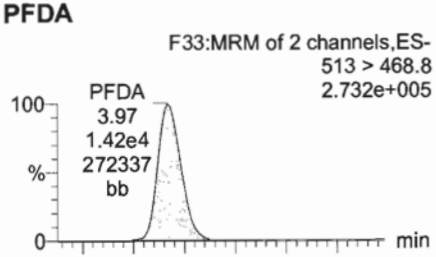
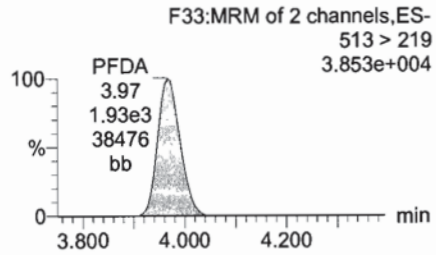
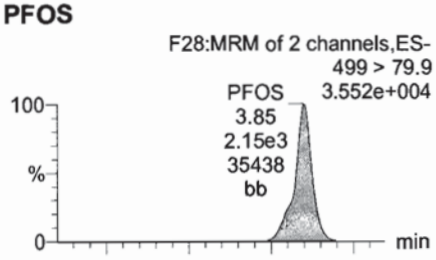
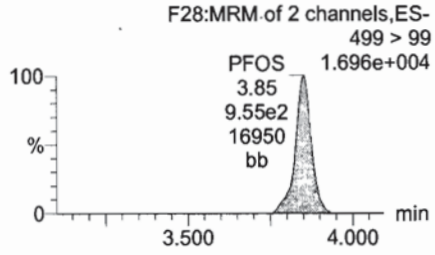


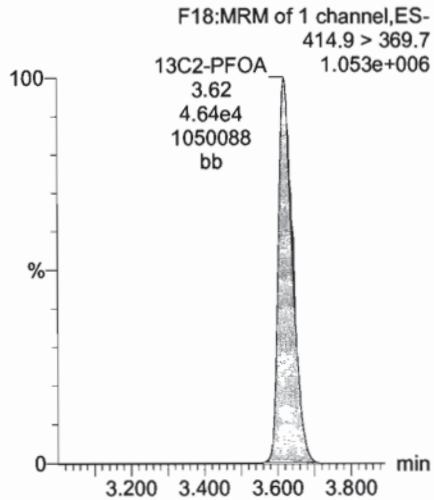


PFOS

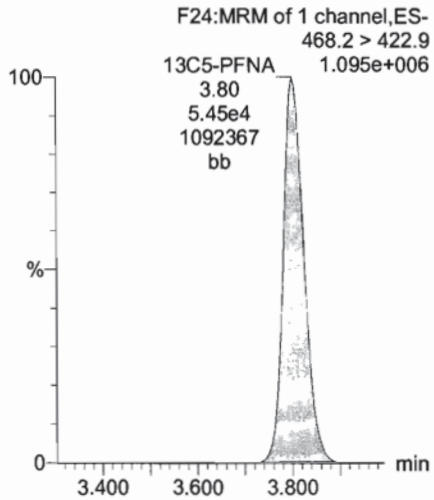




13C2-PFOA



13C5-PFNA



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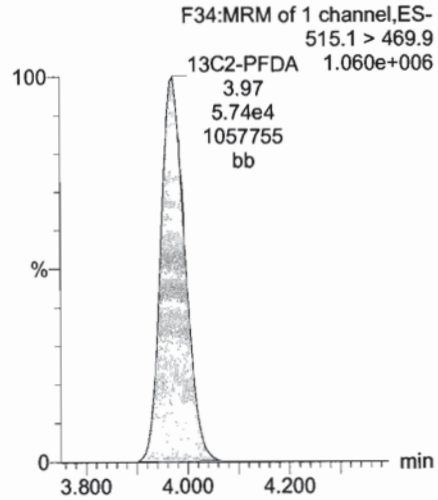
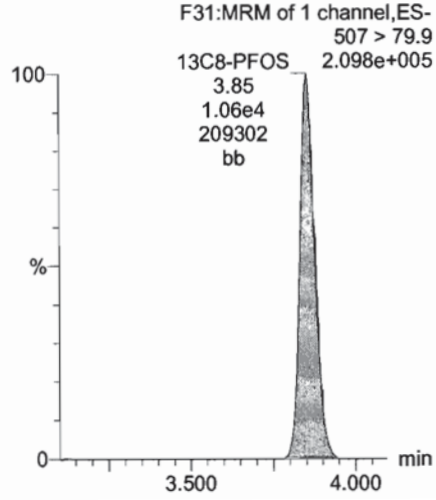


13C8-PFOS



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Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_5, Date: 05-Jul-2017, Time: 14:00:11, ID: ST170705M2-4 PFC CS1 17G0506, Description: PFC CS1 17G0506

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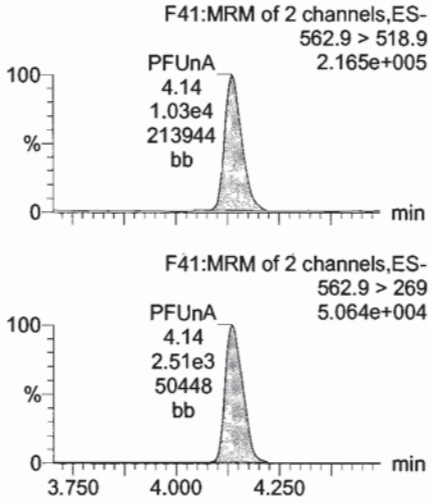
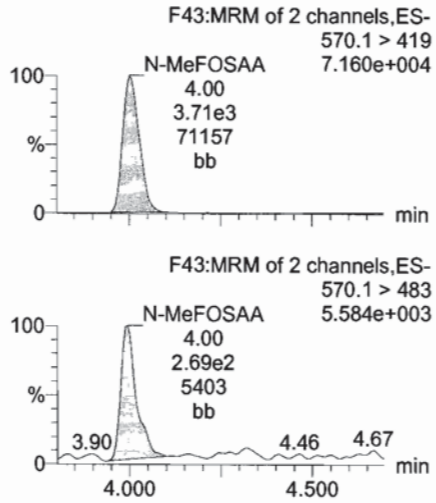
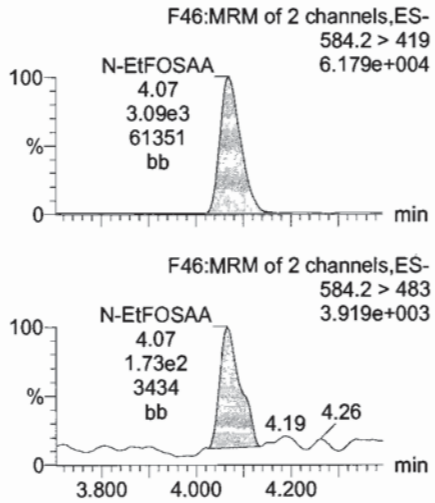


N-MeFOSAA



N-EtFOSAA



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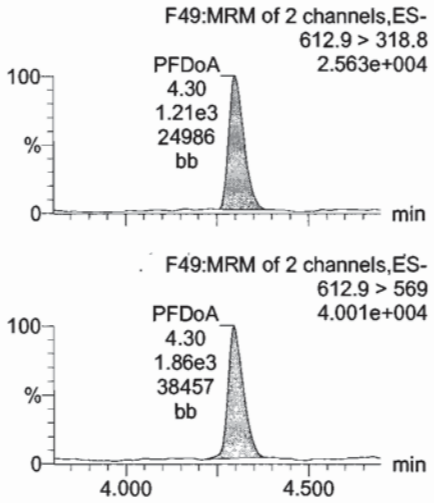

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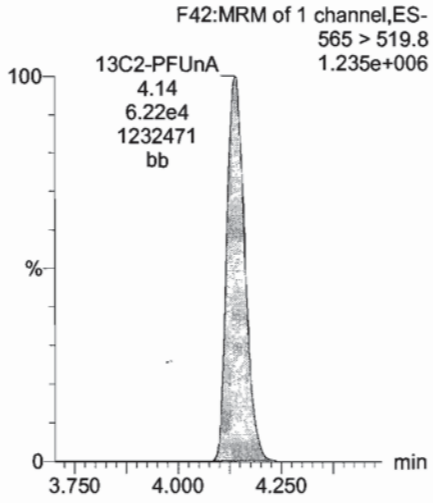

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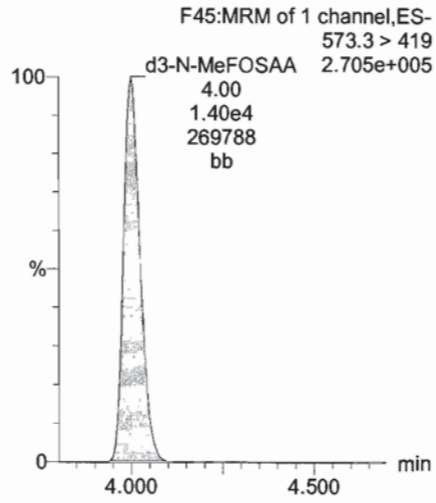

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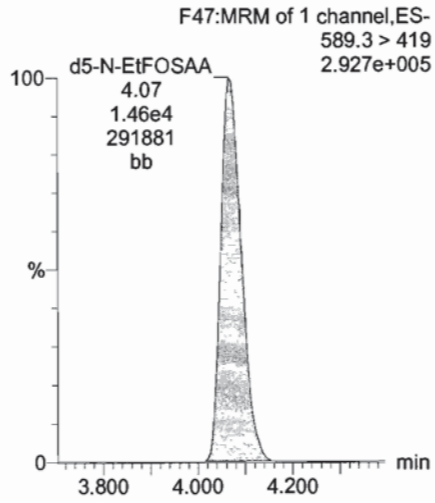

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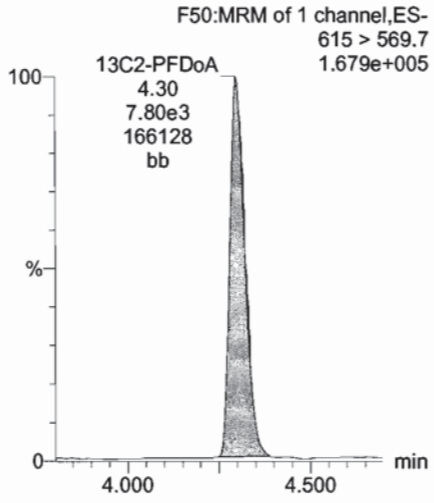

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Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_5, Date: 05-Jul-2017, Time: 14:00:11, ID: ST170705M2-4 PFC CS1 17G0506, Description: PFC CS1 17G0506

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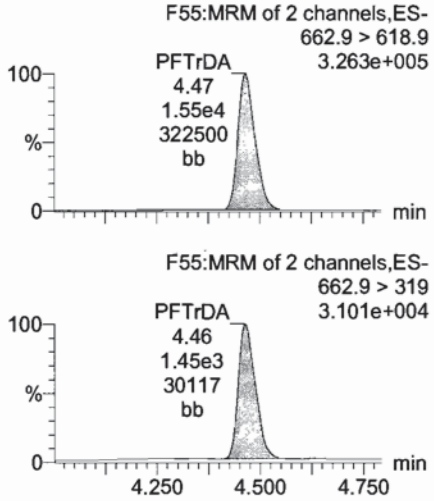

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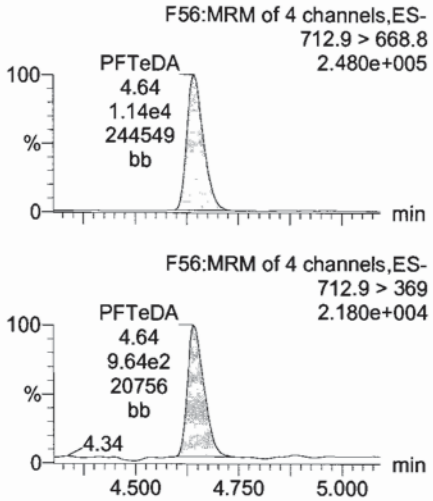
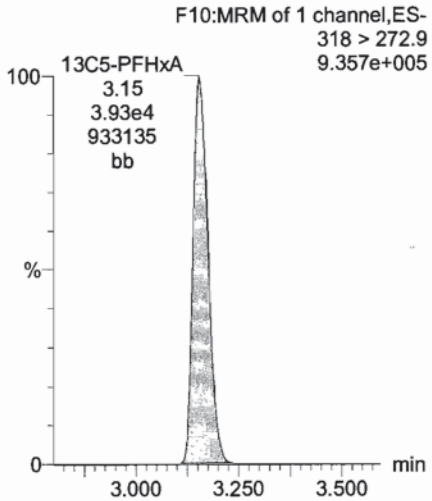
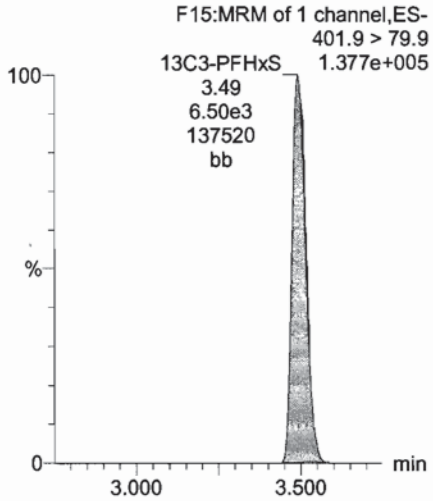


13C5-PFHxA



13C3-PFHxS



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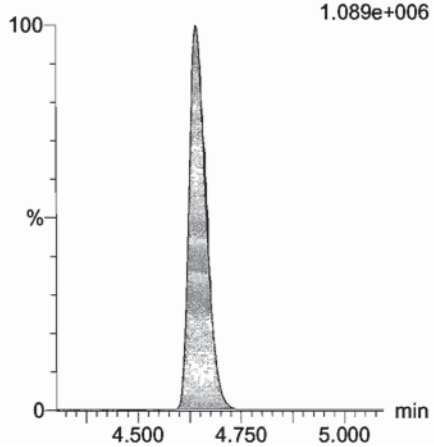

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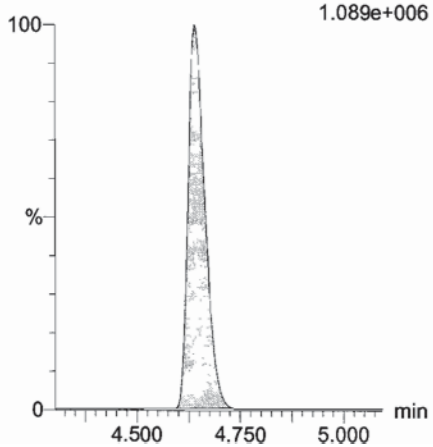

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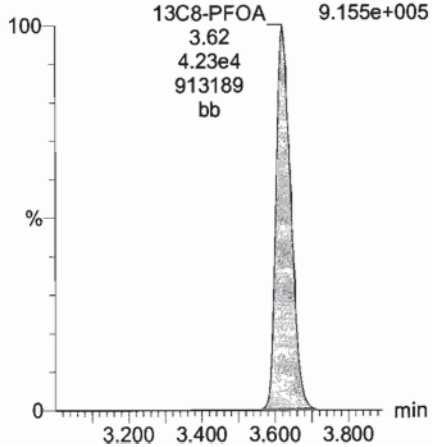
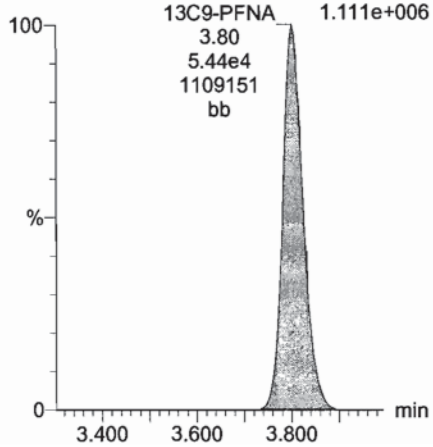


13C9-PFNA



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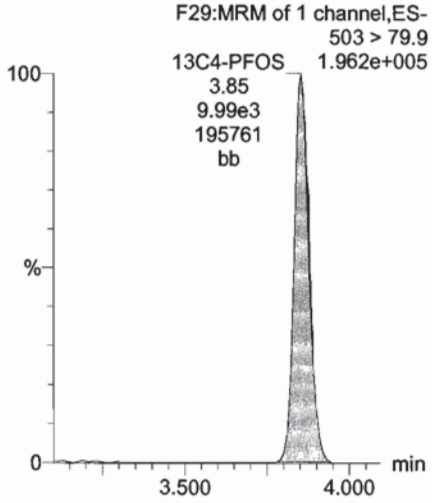
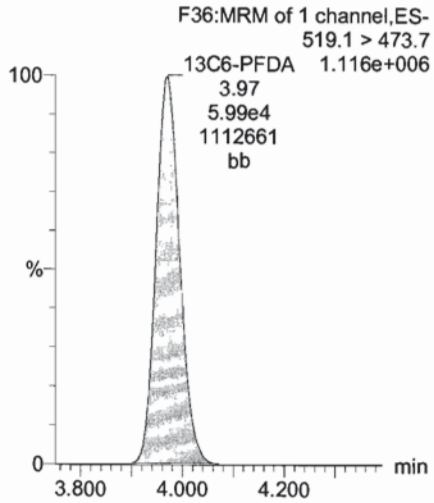
Name: 170705M2_5, Date: 05-Jul-2017, Time: 14:00:11, ID: ST170705M2-4 PFC CS1 17G0506, Description: PFC CS1 17G0506

13C4-PFOS



13C6-PFDA



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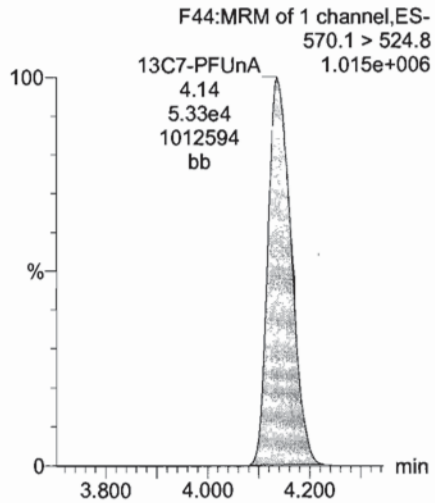

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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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Name: 170705M2_6, Date: 05-Jul-2017, Time: 14:10:49, ID: ST170705M2-5 PFC CS2 17G0507, Description: PFC CS2 17G0507

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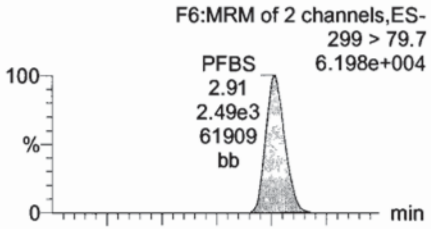

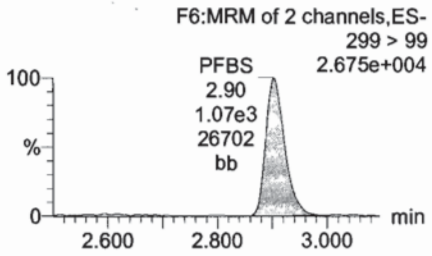

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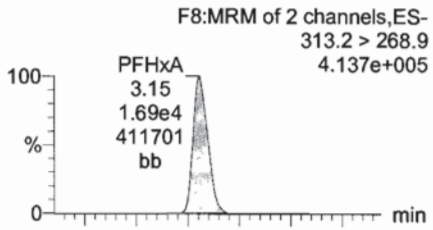

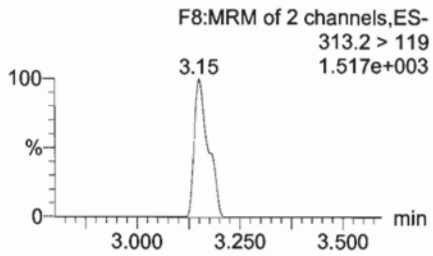

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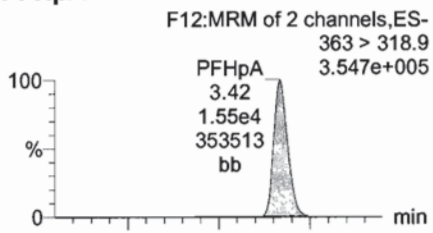
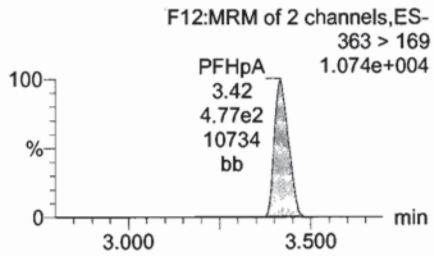
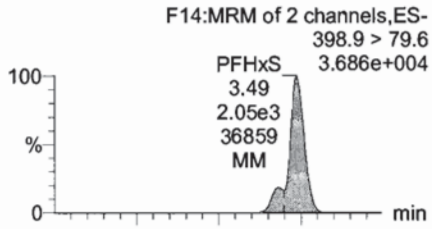
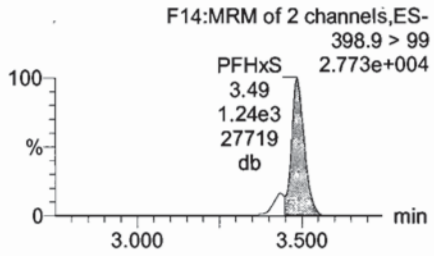




PFHxS





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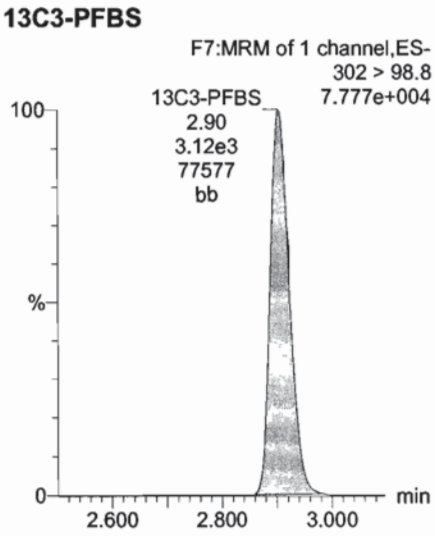
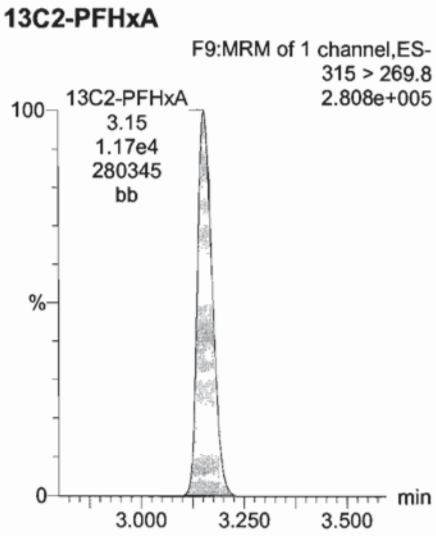


13C2-PFHxA



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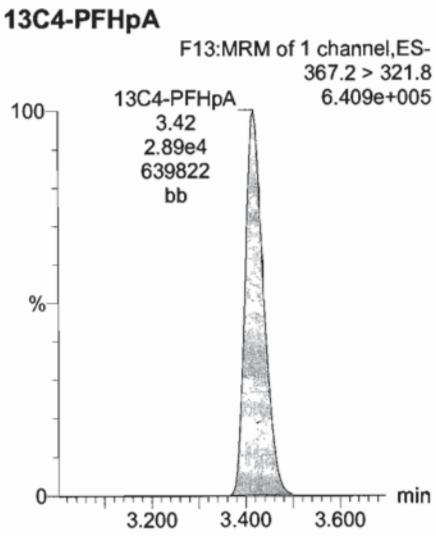
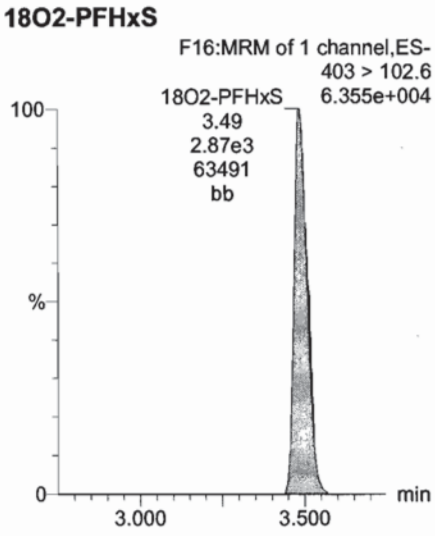


18O2-PFHxS



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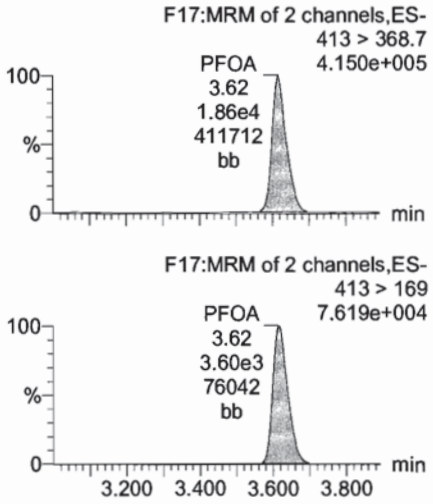
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_6, Date: 05-Jul-2017, Time: 14:10:49, ID: ST170705M2-5 PFC CS2 17G0507, Description: PFC CS2 17G0507

PFOA



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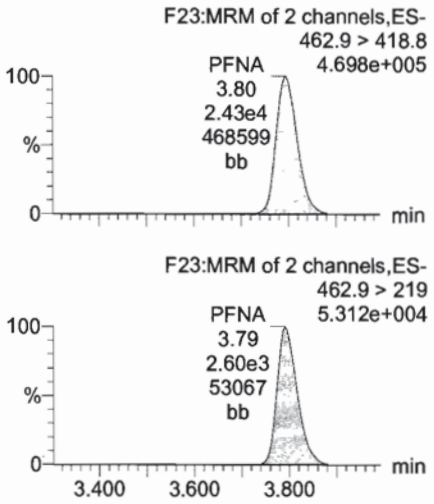

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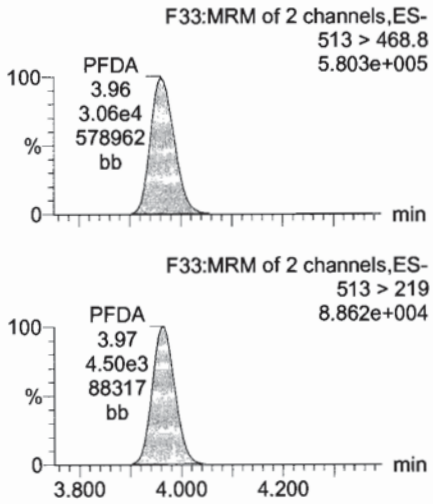
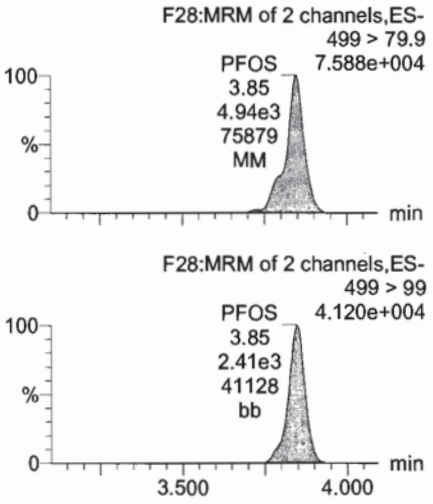


PFOS



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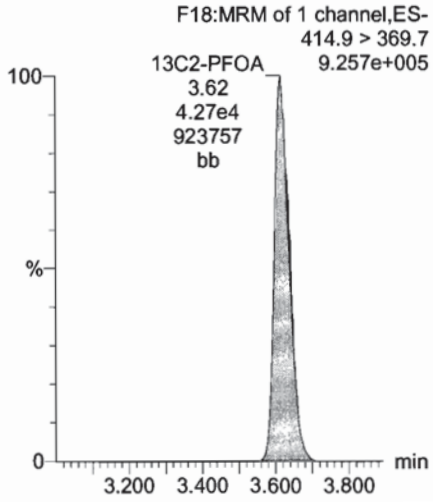

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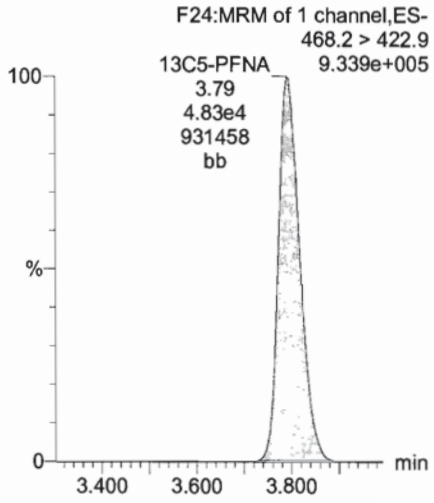

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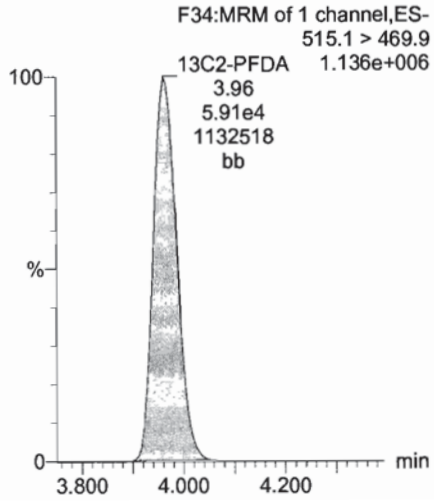
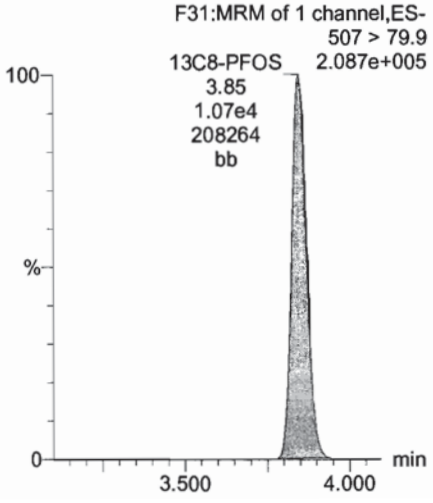


13C8-PFOS



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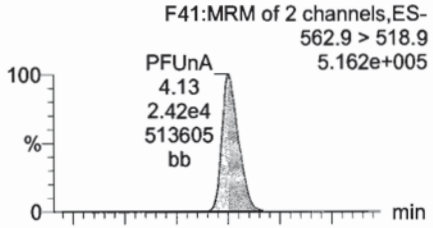
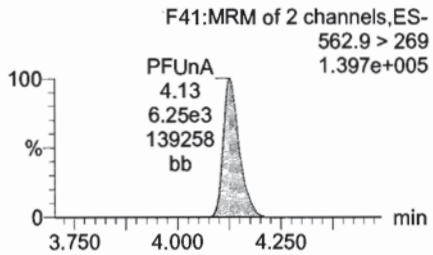
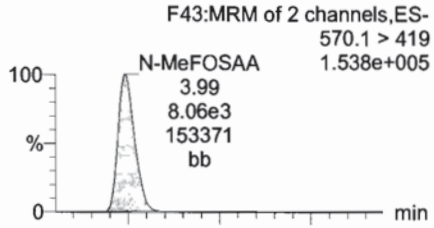
Name: 170705M2_6, Date: 05-Jul-2017, Time: 14:10:49, ID: ST170705M2-5 PFC CS2 17G0507, Description: PFC CS2 17G0507

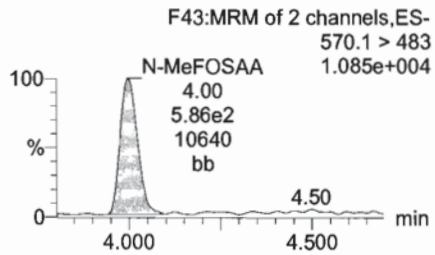
PFUnA





N-MeFOSAA





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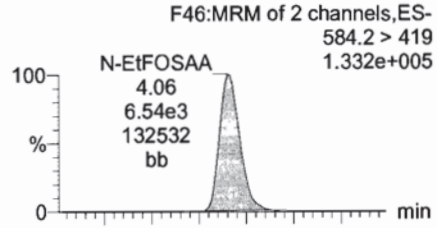

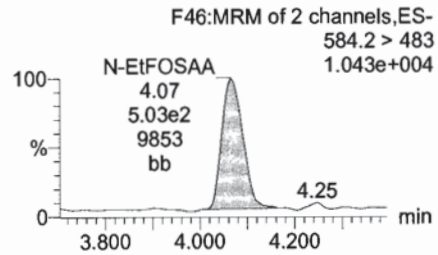

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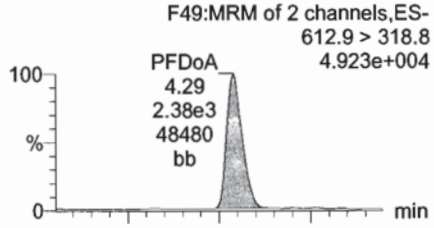

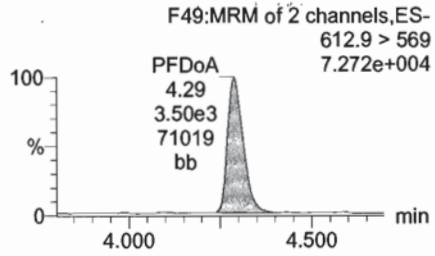

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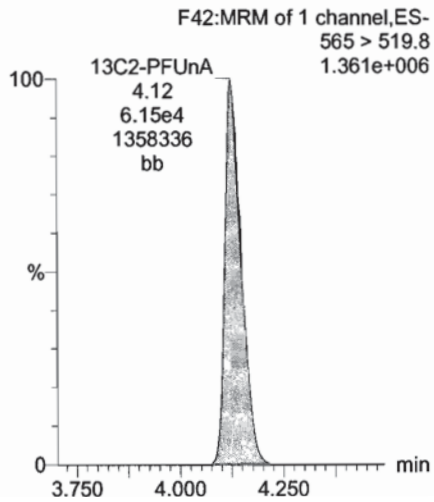

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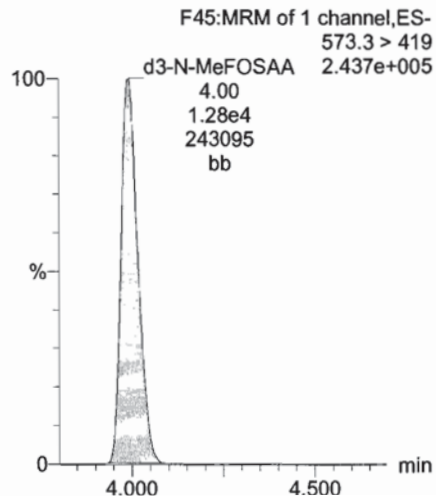

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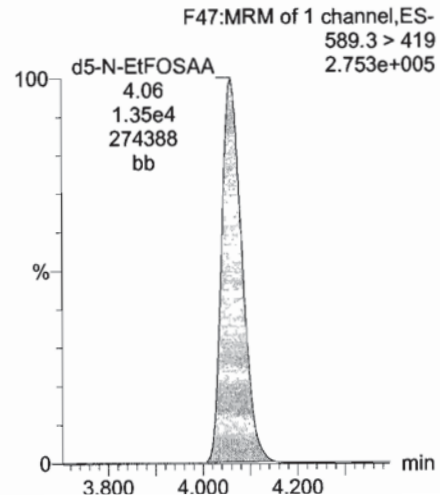

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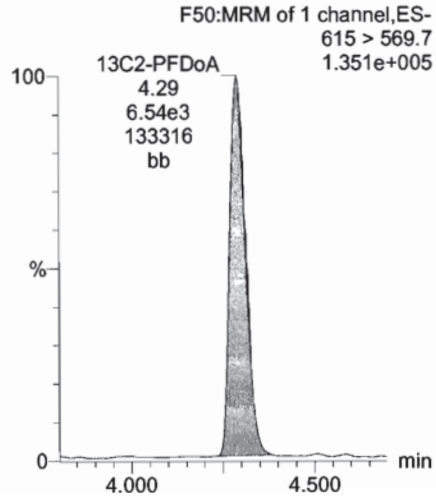

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Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_6, Date: 05-Jul-2017, Time: 14:10:49, ID: ST170705M2-5 PFC CS2 17G0507, Description: PFC CS2 17G0507

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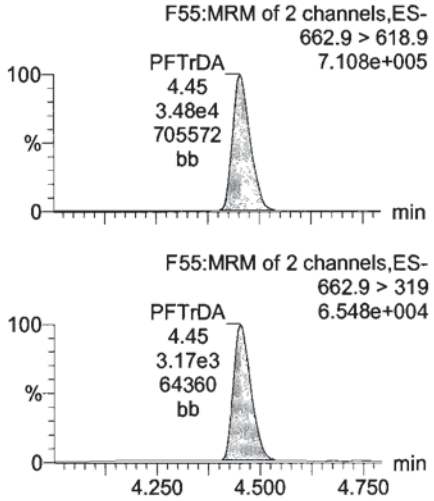

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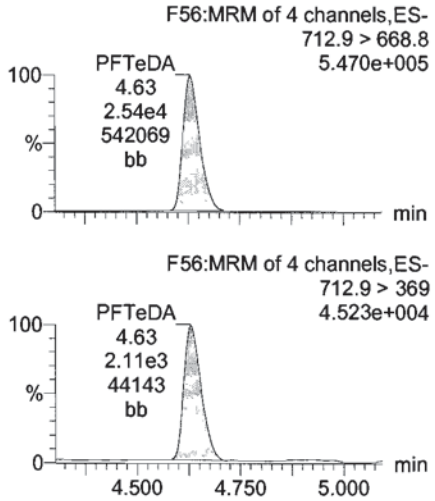

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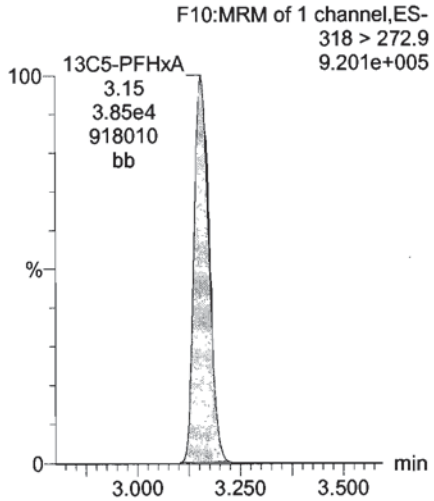

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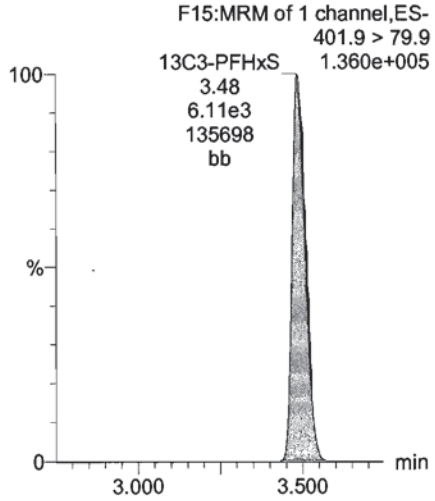

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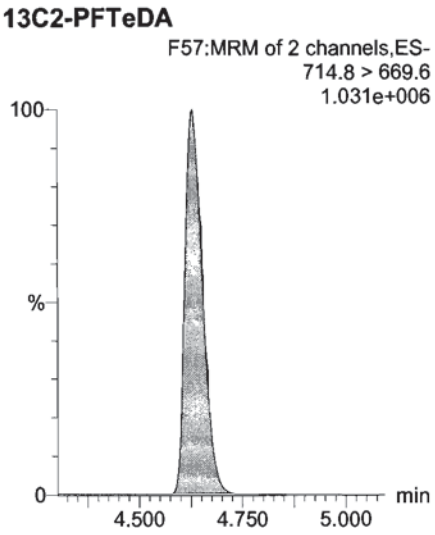

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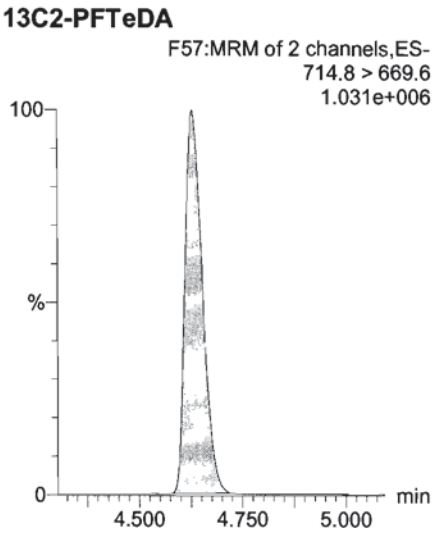

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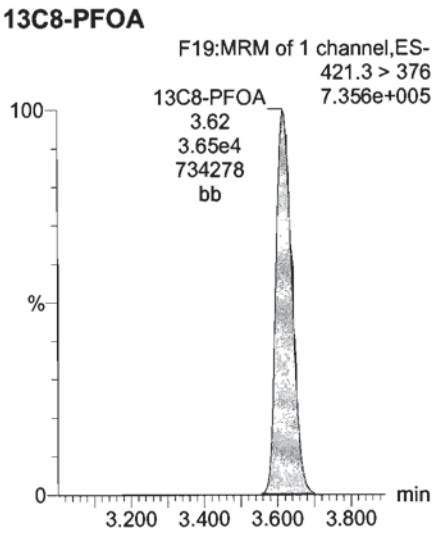

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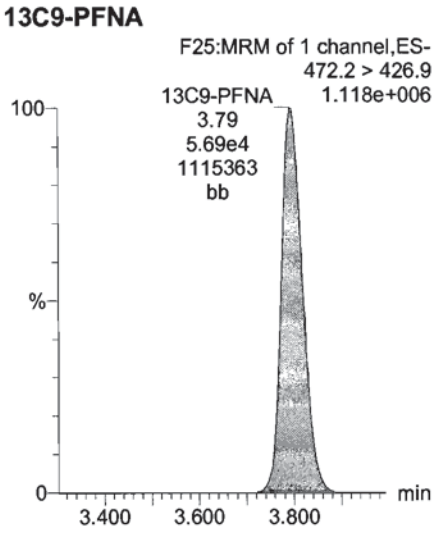

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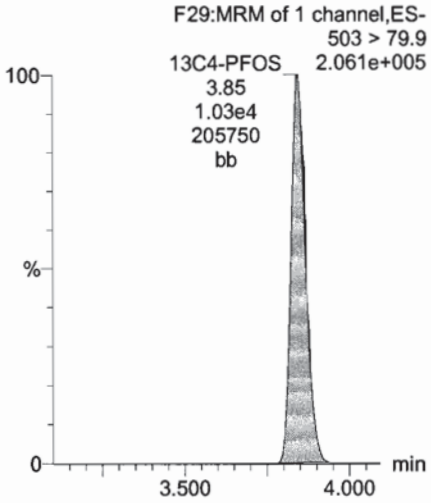
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_6, Date: 05-Jul-2017, Time: 14:10:49, ID: ST170705M2-5 PFC CS2 17G0507, Description: PFC CS2 17G0507

13C4-PFOS



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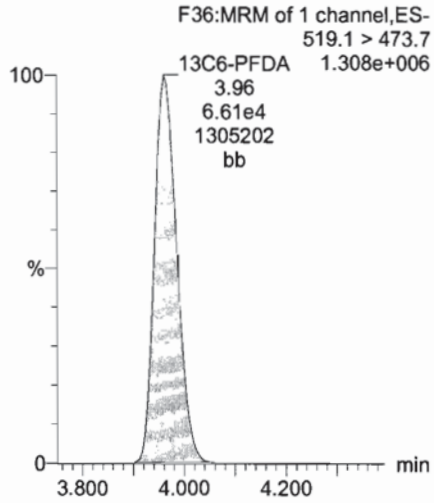

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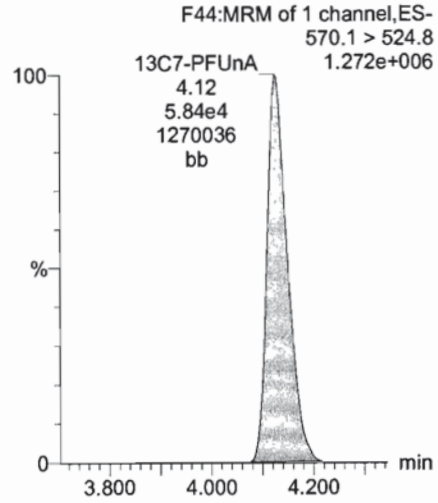

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Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_7, Date: 05-Jul-2017, Time: 14:21:36, ID: ST170705M2-6 PFC CS3 17G0508, Description: PFC CS3 17G0508

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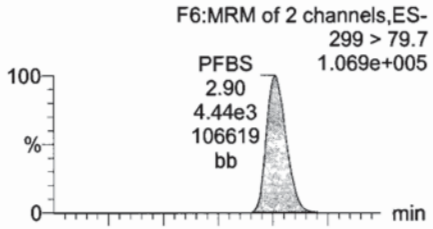

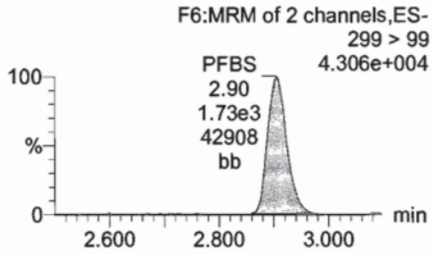

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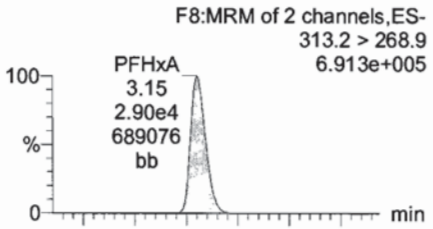

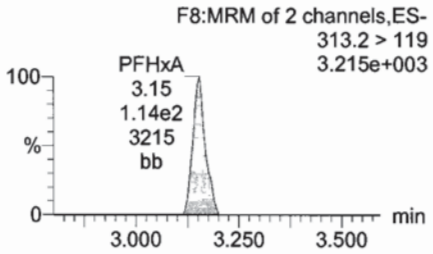

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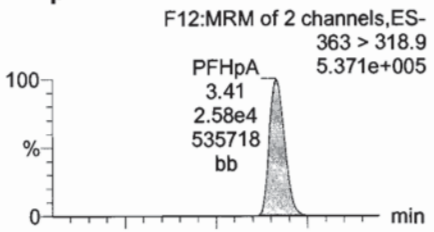

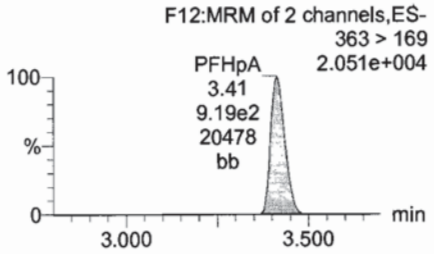

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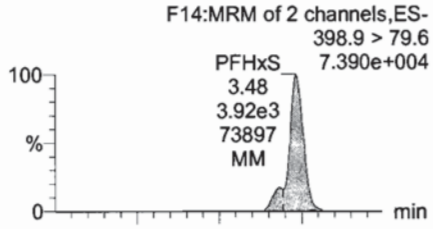

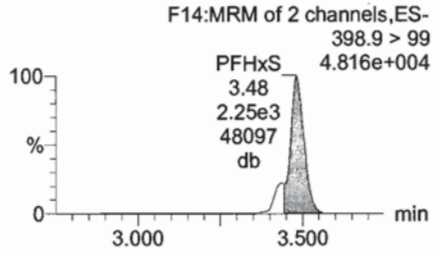

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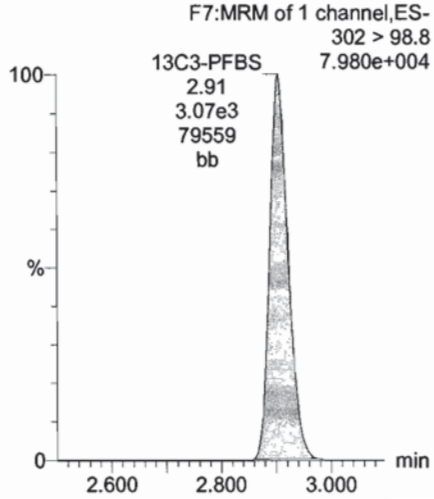

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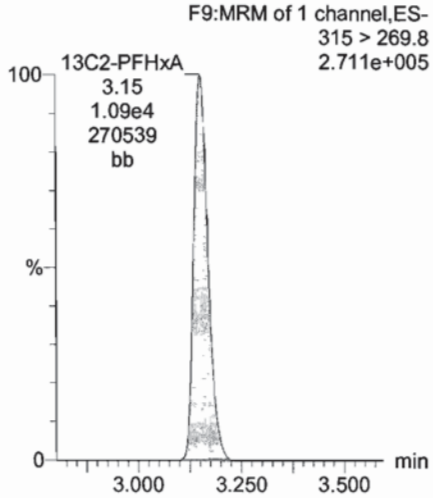

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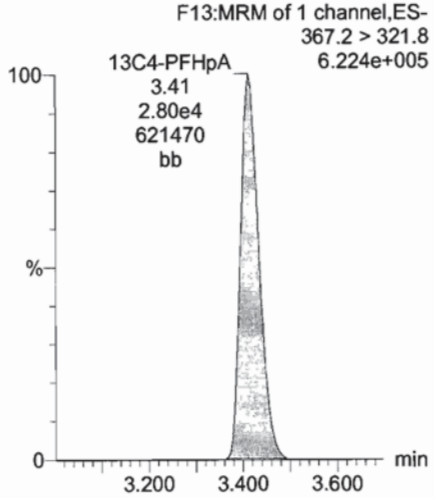

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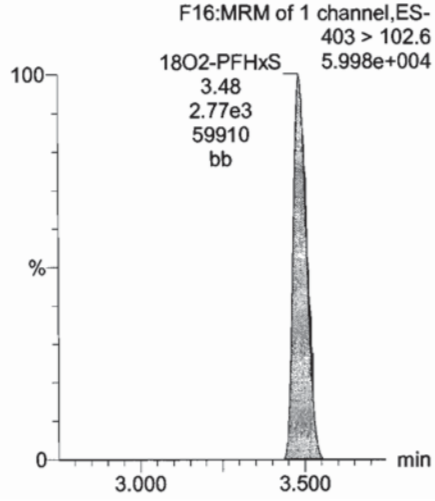

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Name: 170705M2_7, Date: 05-Jul-2017, Time: 14:21:36, ID: ST170705M2-6 PFC CS3 17G0508, Description: PFC CS3 17G0508

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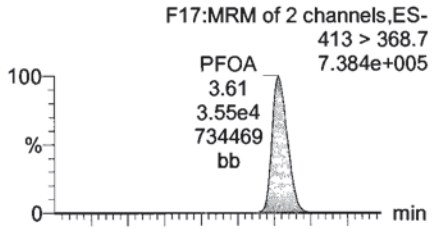

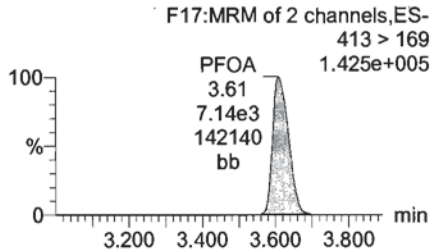

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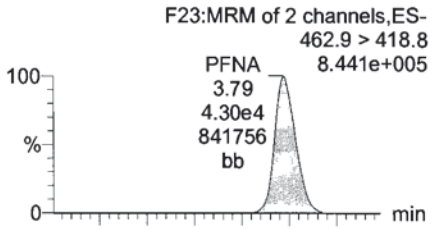

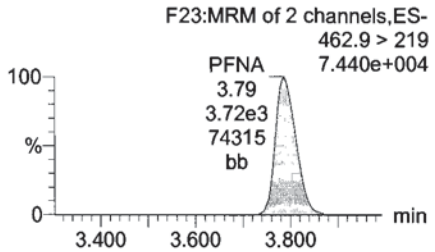

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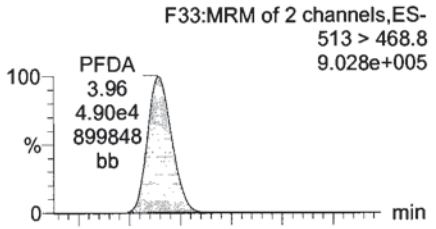
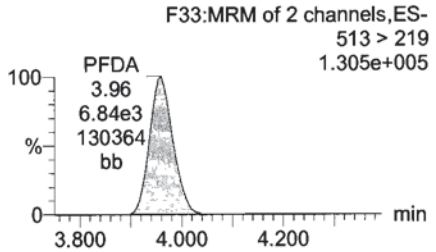
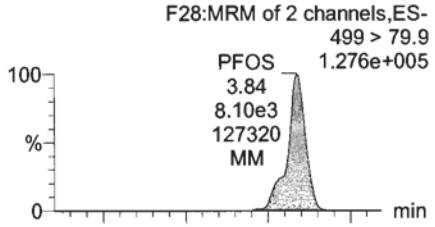
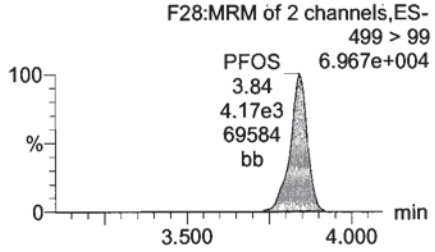


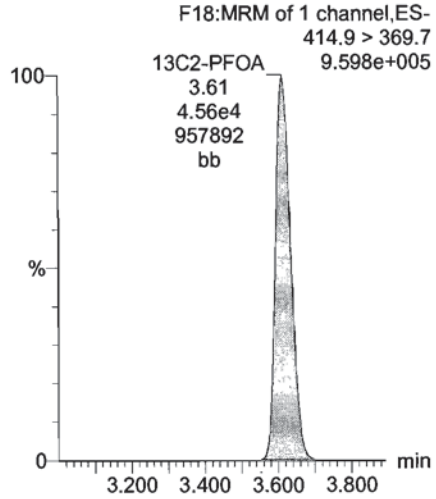


PFOS

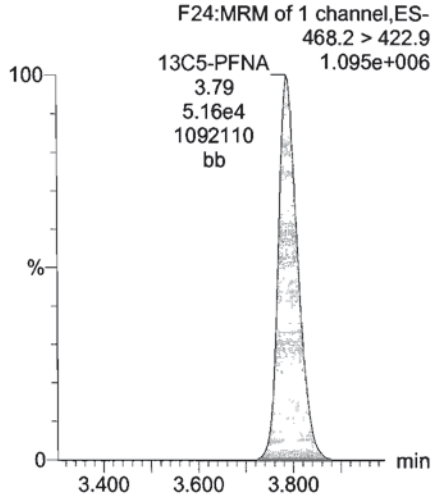




13C2-PFOA



13C5-PFNA



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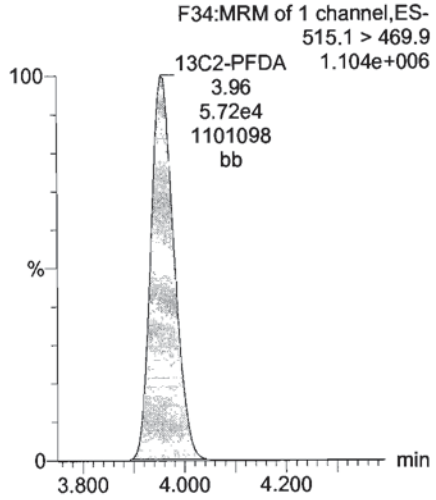

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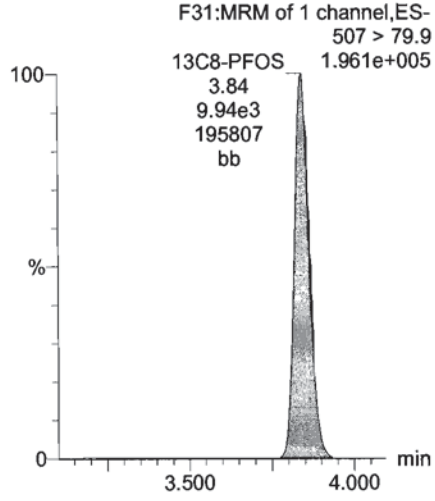

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Name: 170705M2_7, Date: 05-Jul-2017, Time: 14:21:36, ID: ST170705M2-6 PFC CS3 17G0508, Description: PFC CS3 17G0508

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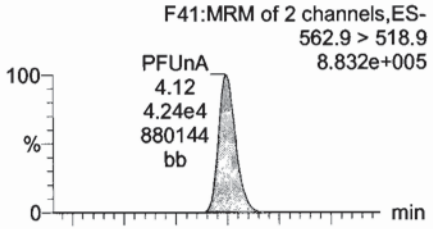

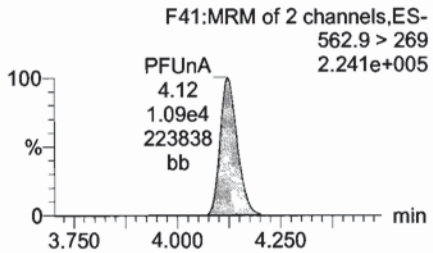

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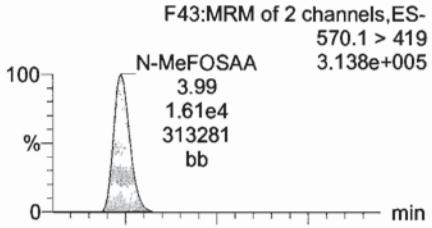

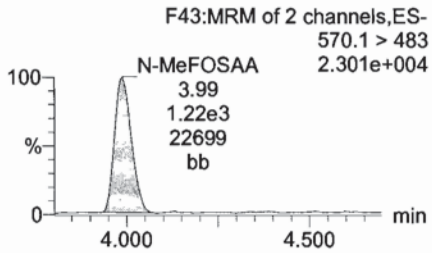

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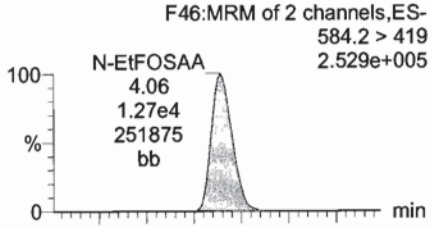

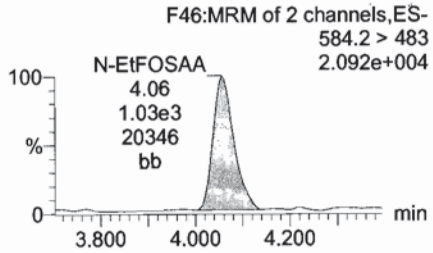

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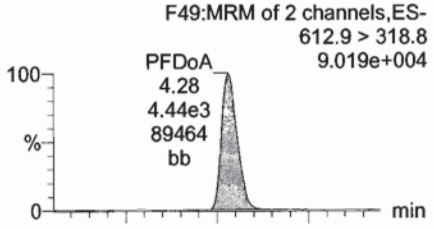

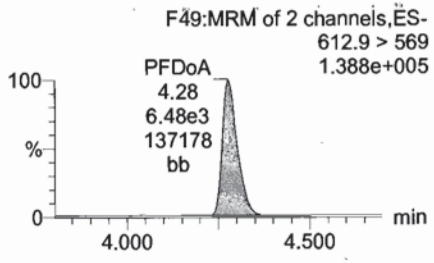

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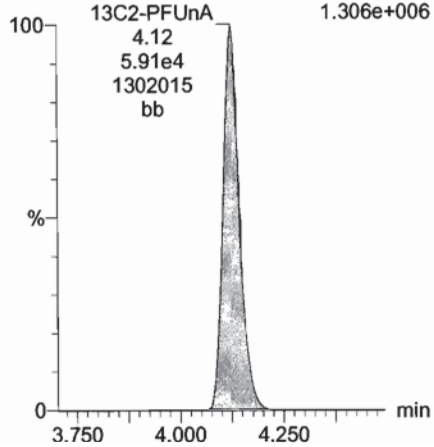

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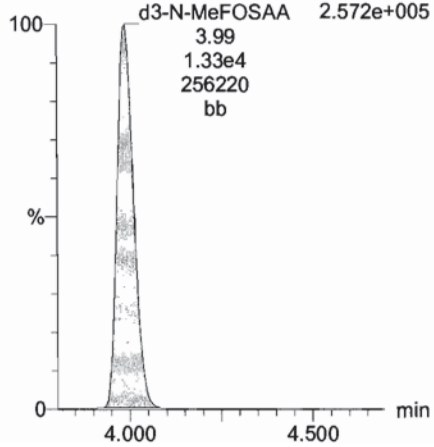

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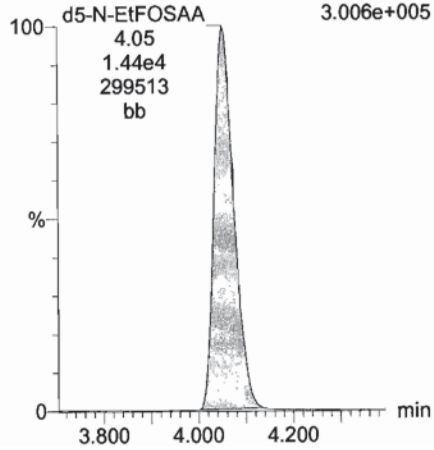

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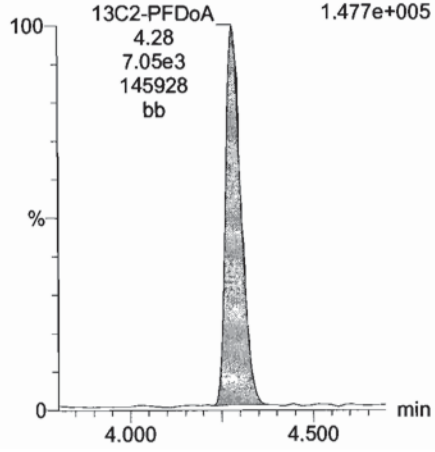

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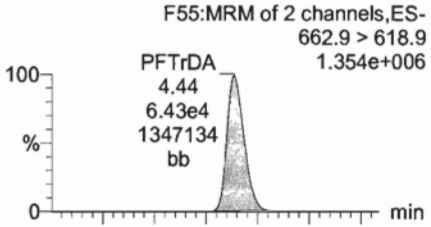
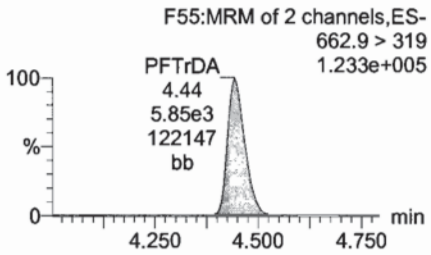
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_7, Date: 05-Jul-2017, Time: 14:21:36, ID: ST170705M2-6 PFC CS3 17G0508, Description: PFC CS3 17G0508

PFTrDA





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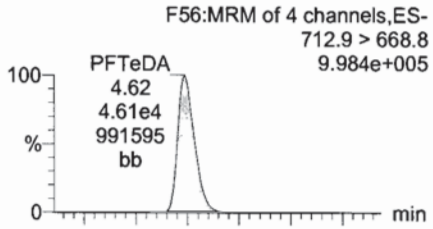
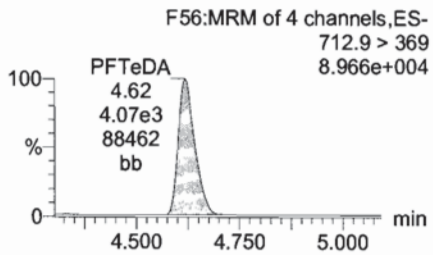
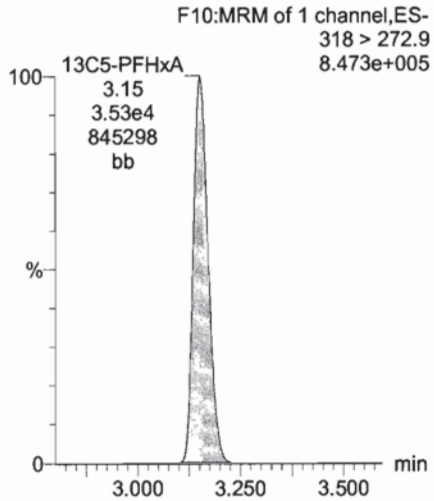
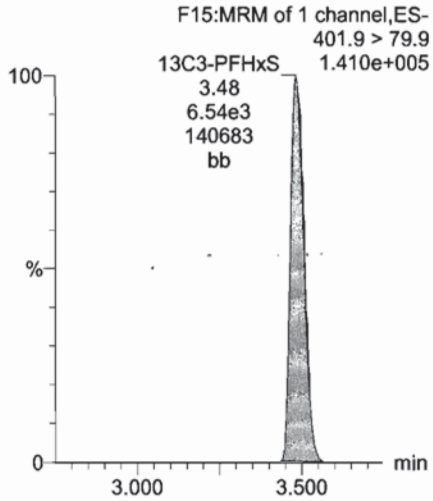




13C5-PFHxA



13C3-PFHxS



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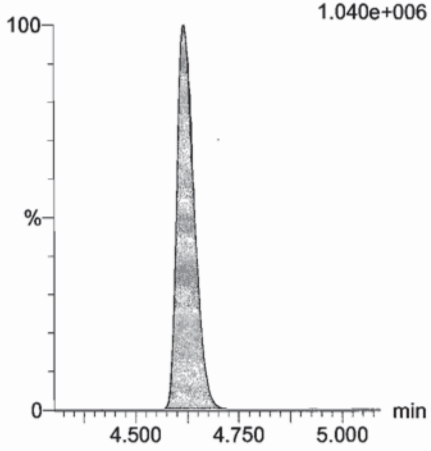

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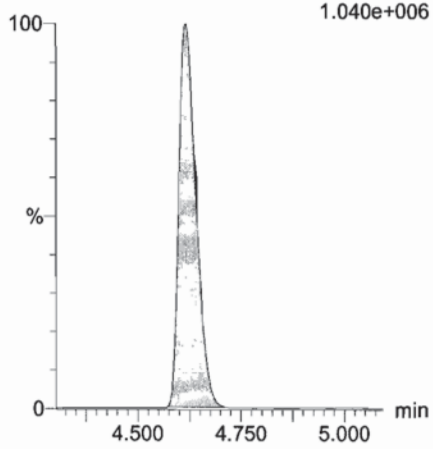

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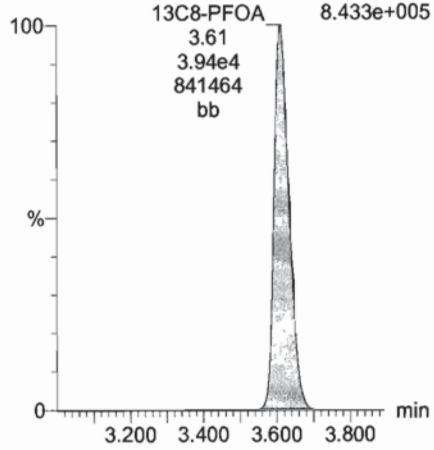

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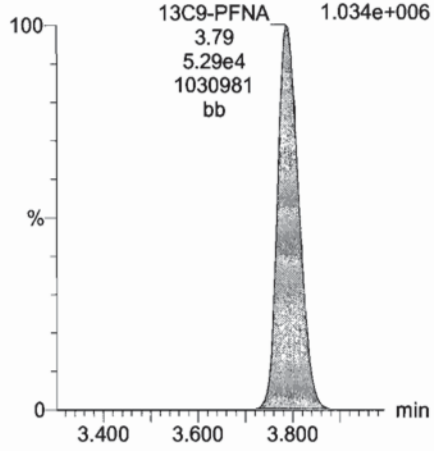

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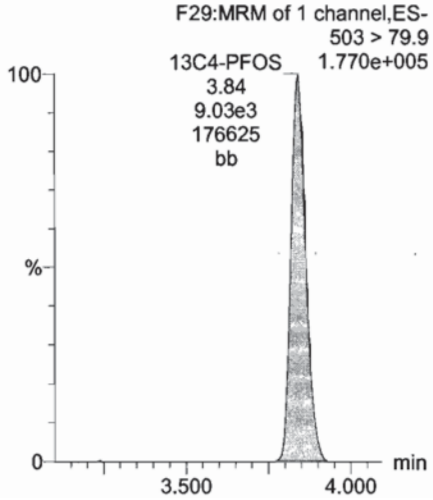
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_7, Date: 05-Jul-2017, Time: 14:21:36, ID: ST170705M2-6 PFC CS3 17G0508, Description: PFC CS3 17G0508

13C4-PFOS



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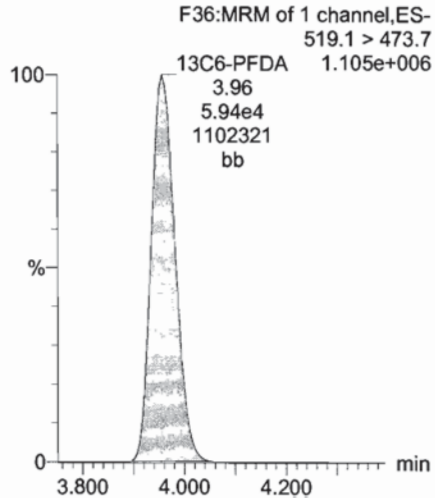
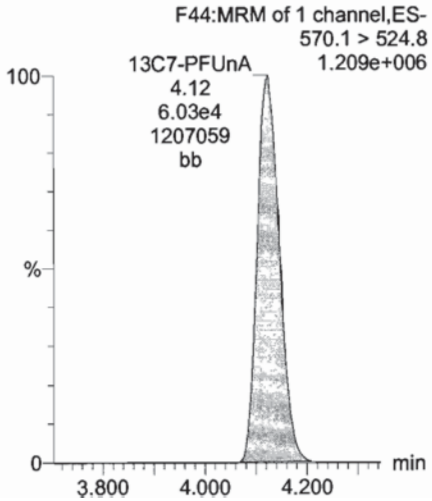


13C7-PFUnA



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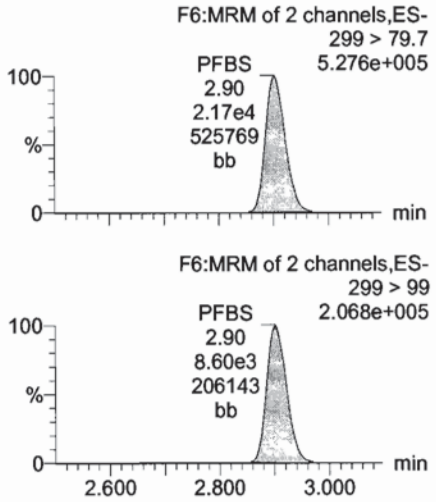
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_8, Date: 05-Jul-2017, Time: 14:32:14, ID: ST170705M2-7 PFC CS4 17G0509, Description: PFC CS4 17G0509

PFBS



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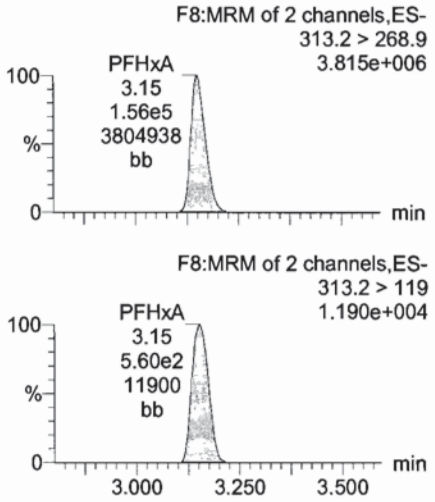

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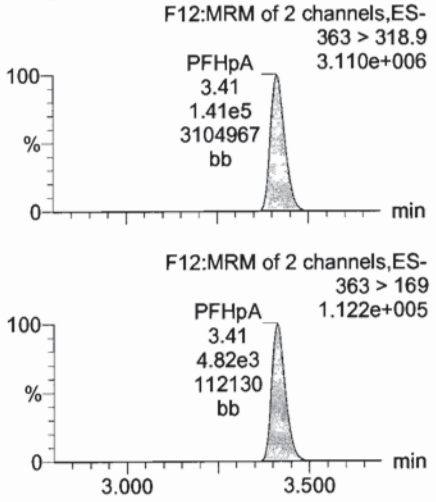

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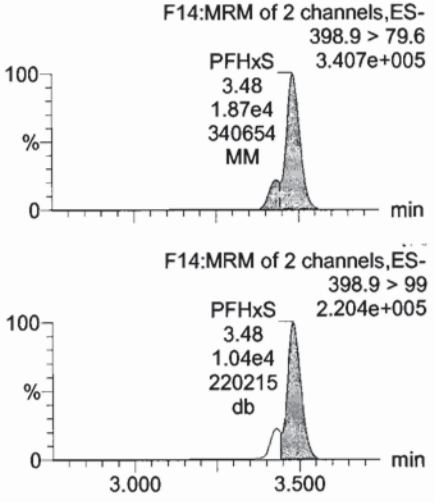

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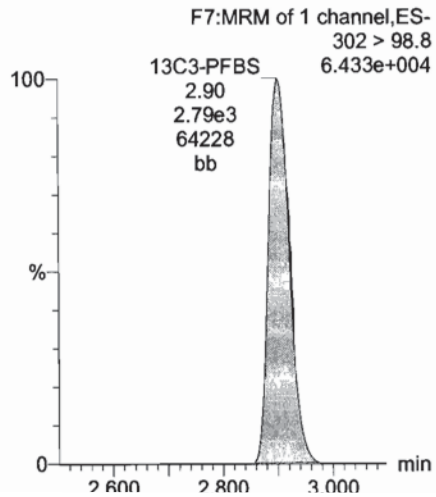

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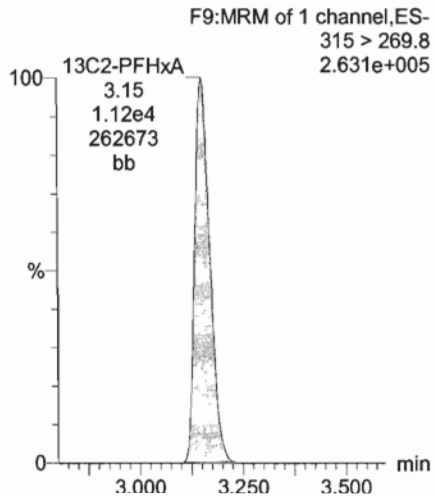

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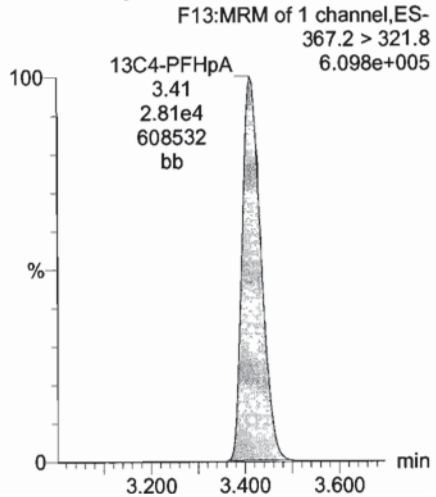

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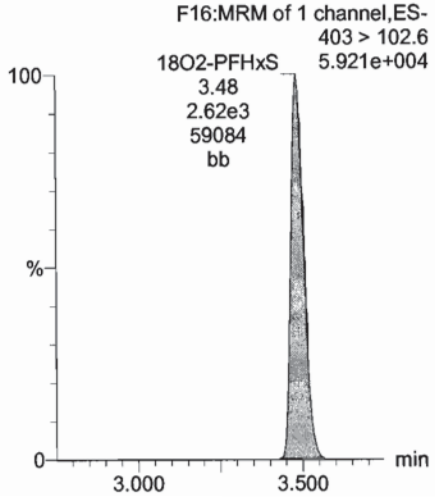

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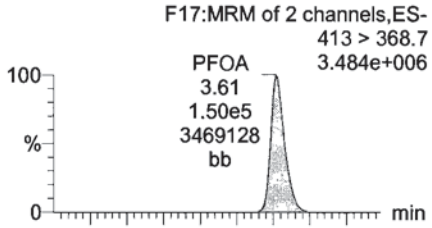
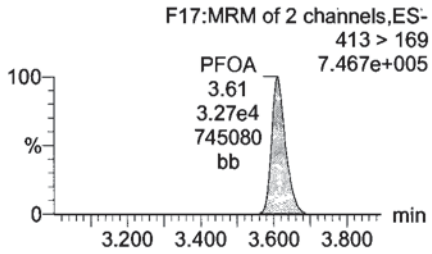
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_8, Date: 05-Jul-2017, Time: 14:32:14, ID: ST170705M2-7 PFC CS4 17G0509, Description: PFC CS4 17G0509

PFOA





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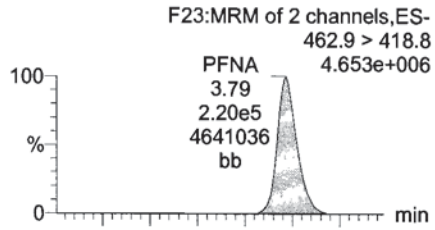

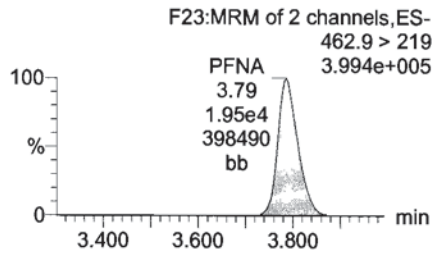

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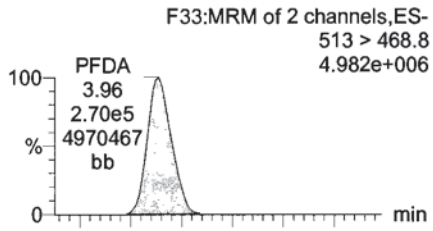

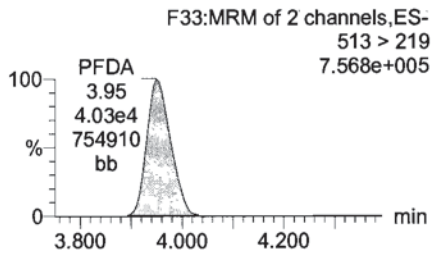

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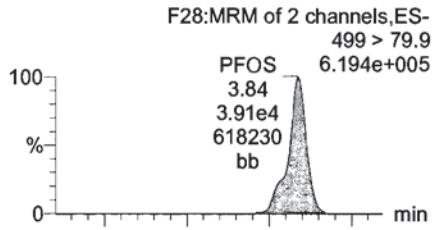
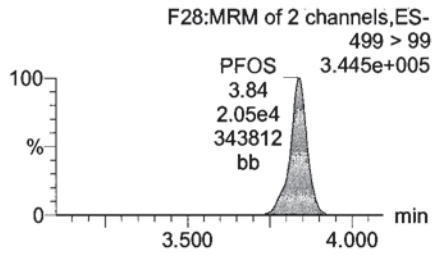
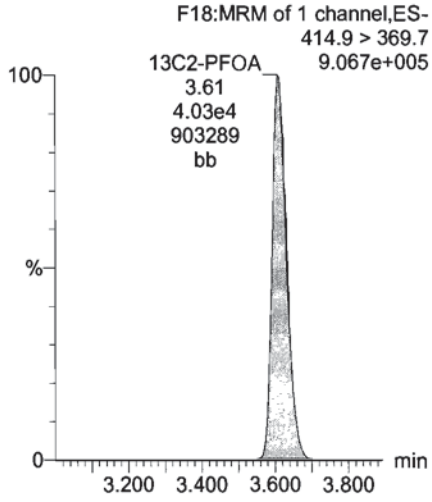




13C2-PFOA



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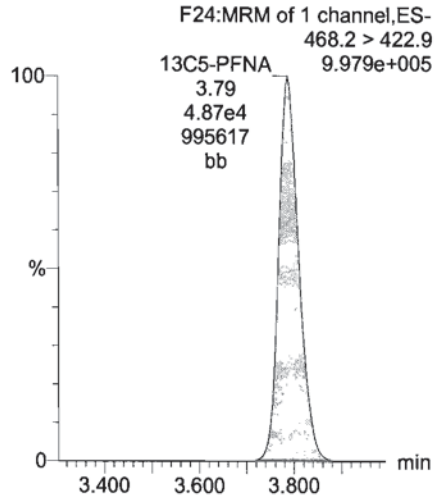

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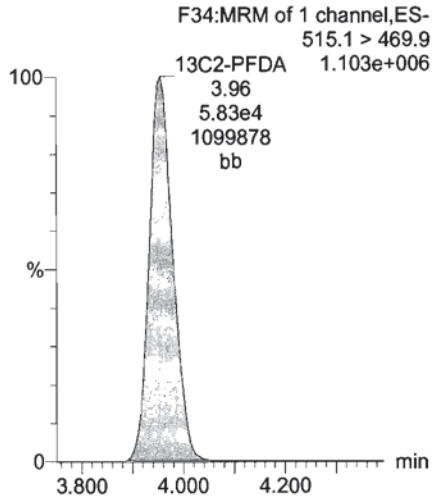

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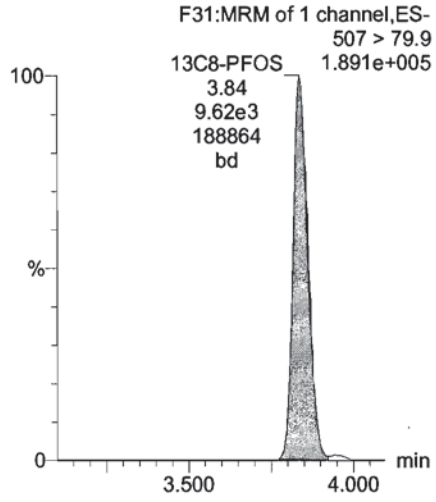

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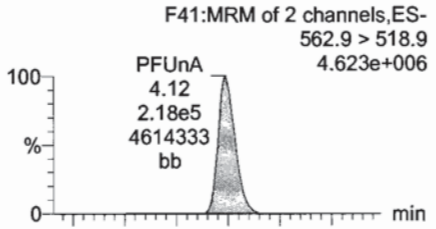
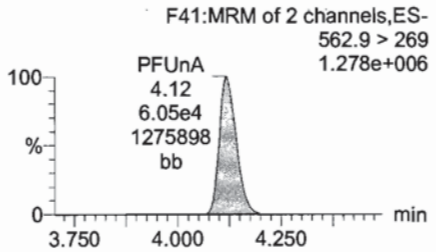
Name: 170705M2_8, Date: 05-Jul-2017, Time: 14:32:14, ID: ST170705M2-7 PFC CS4 17G0509, Description: PFC CS4 17G0509

PFUnA





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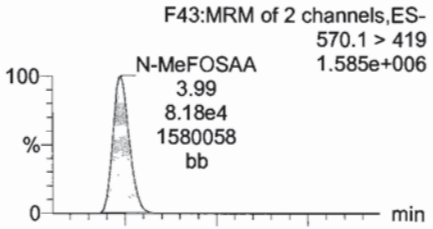

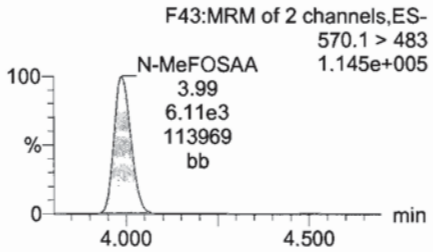

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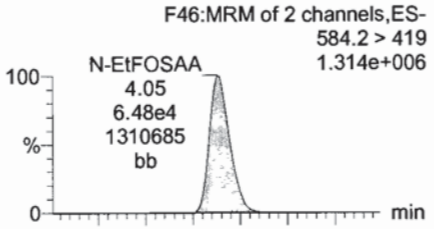
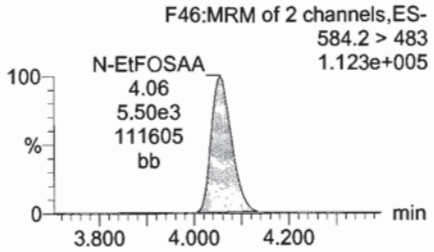
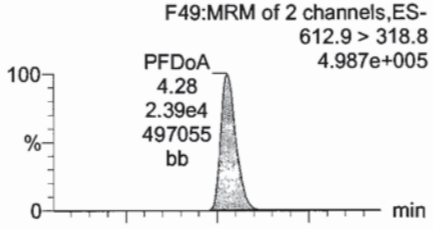
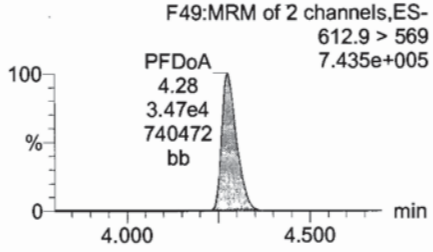




PFDoA





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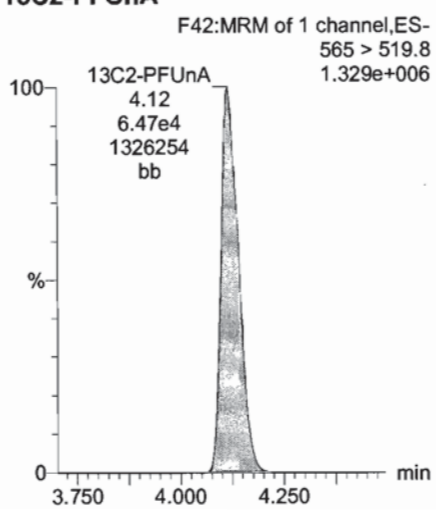

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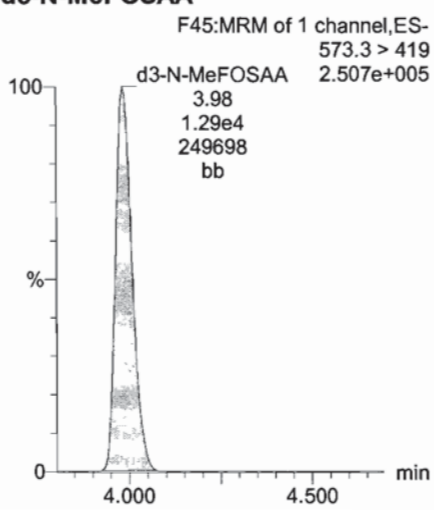

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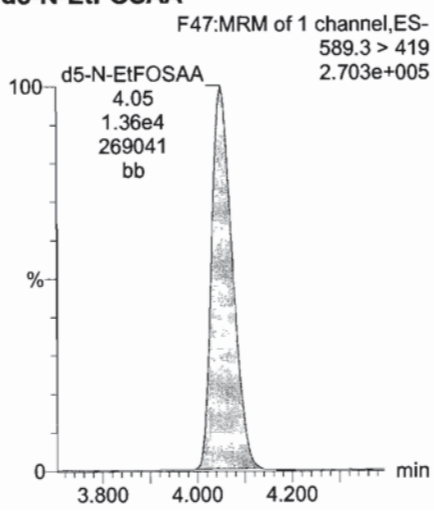

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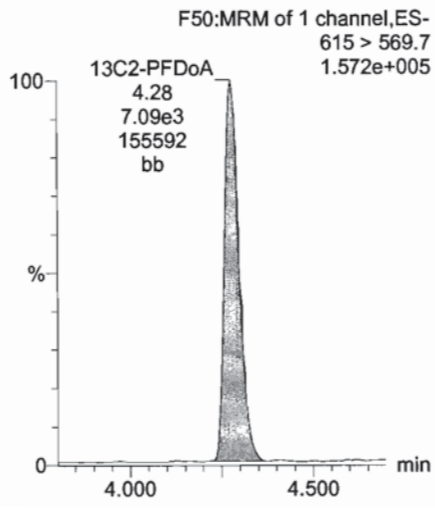

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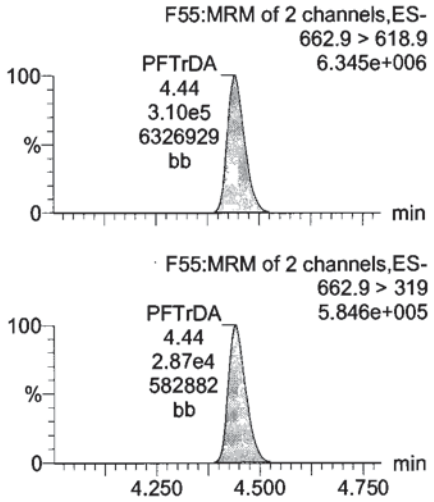
Name: 170705M2_8, Date: 05-Jul-2017, Time: 14:32:14, ID: ST170705M2-7 PFC CS4 17G0509, Description: PFC CS4 17G0509

PFTrDA



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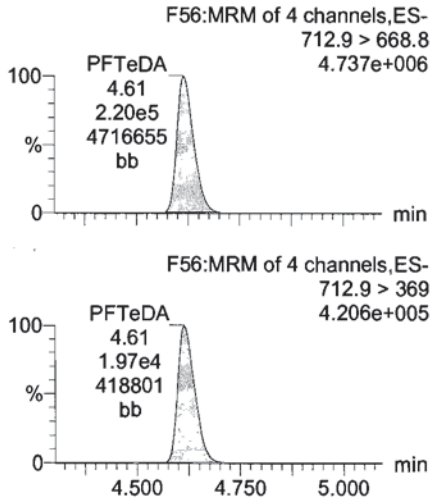

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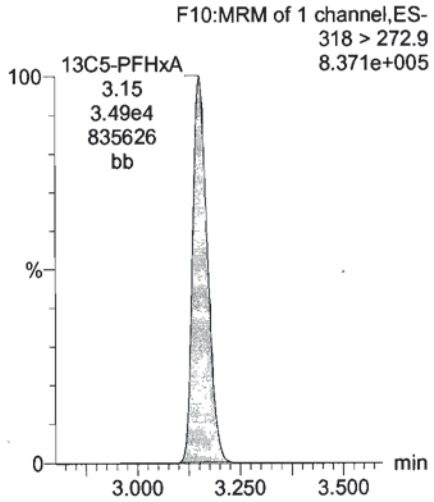
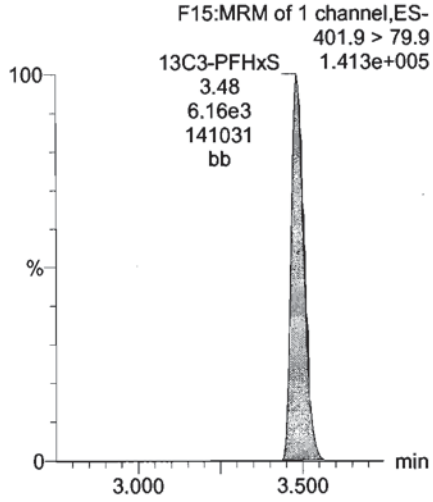
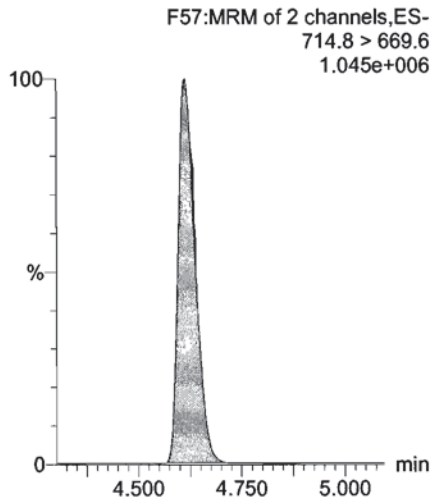


13C3-PFHxS



13C2-PFTeDA



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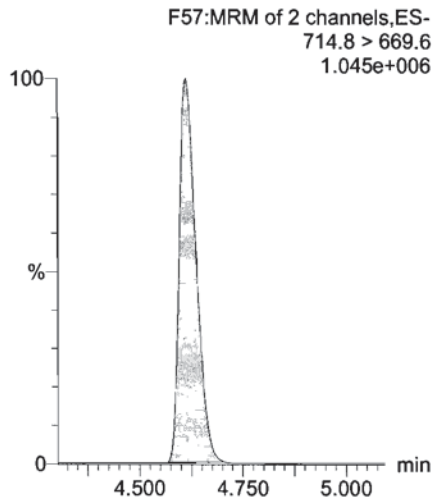
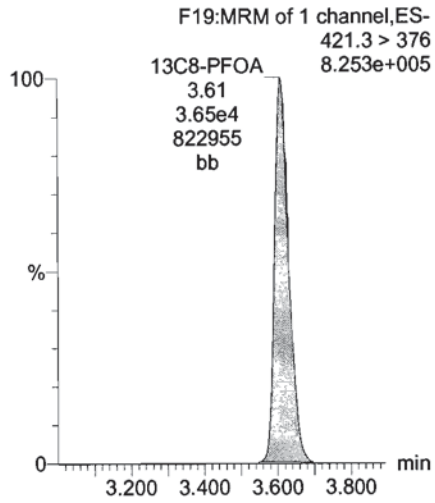
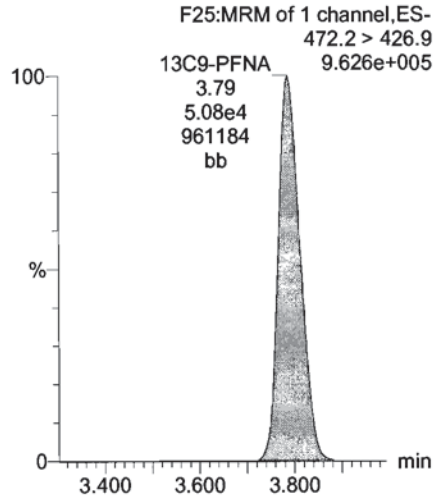


13C8-PFOA



13C9-PFNA



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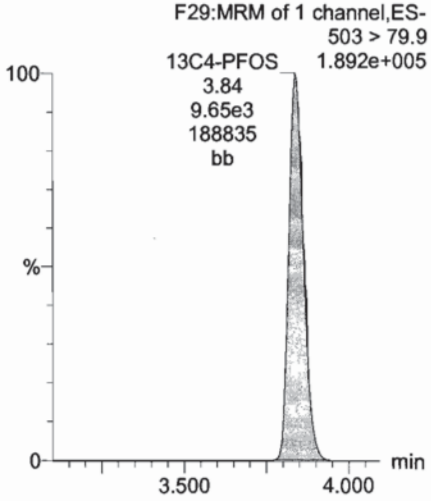
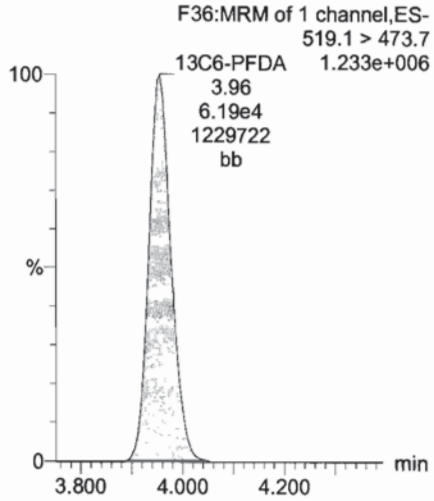
Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_8, Date: 05-Jul-2017, Time: 14:32:14, ID: ST170705M2-7 PFC CS4 17G0509, Description: PFC CS4 17G0509

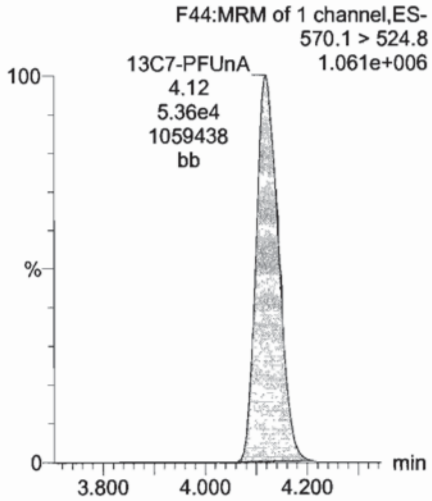
13C4-PFOS



13C6-PFDA



13C7-PFUnA



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:44:34 Pacific Daylight Time

Name: 170705M2_9, Date: 05-Jul-2017, Time: 14:43:01, ID: ST170705M2-8 PFC CS5 17G0510, Description: PFC CS5 17G0510

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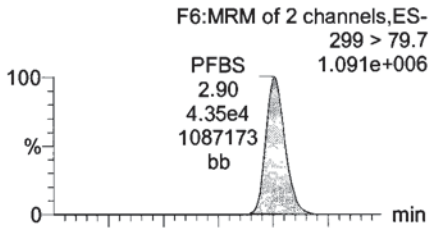
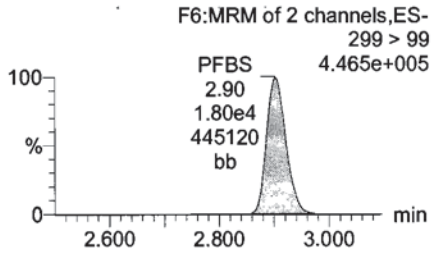
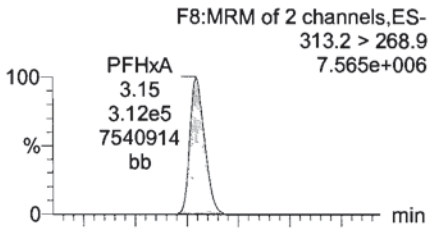
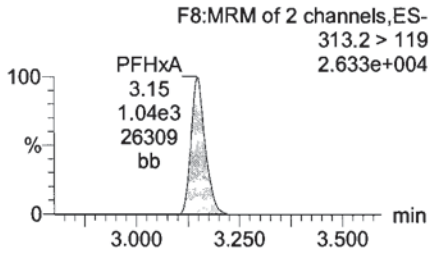




PFHxA





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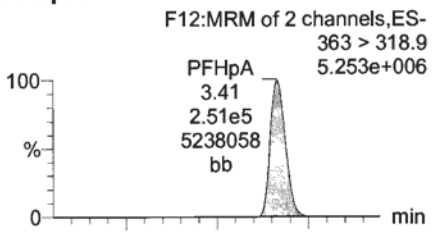

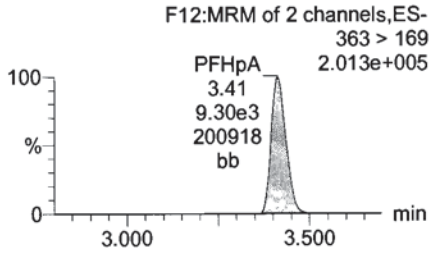

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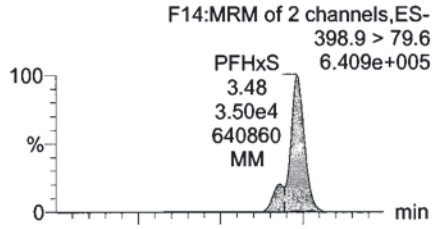
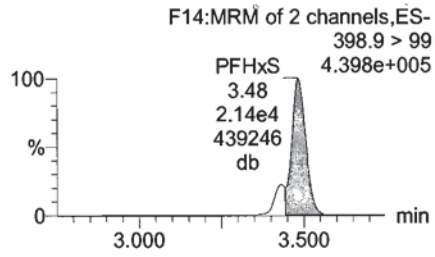
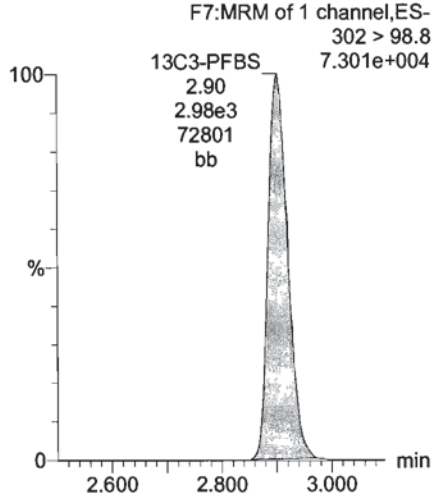
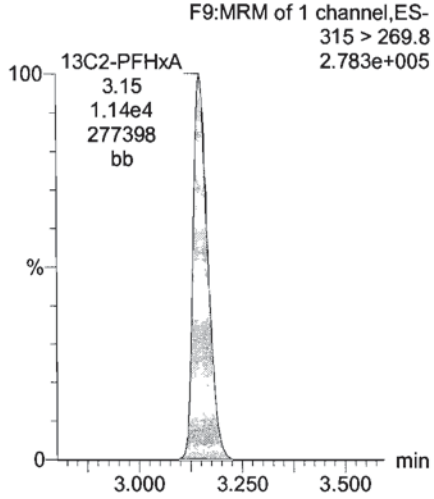




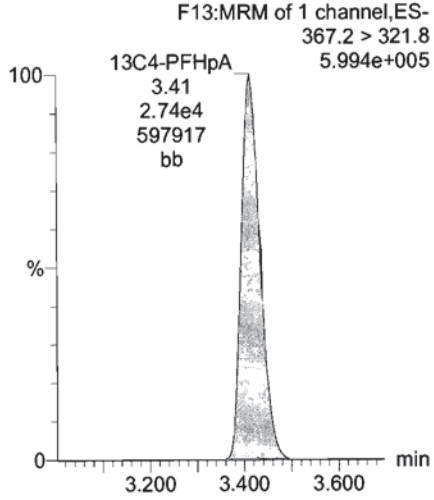
13C3-PFBS



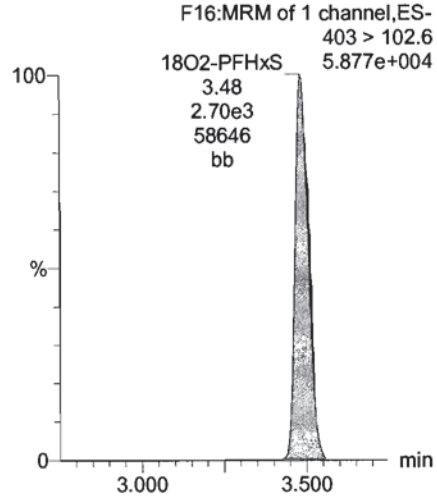
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



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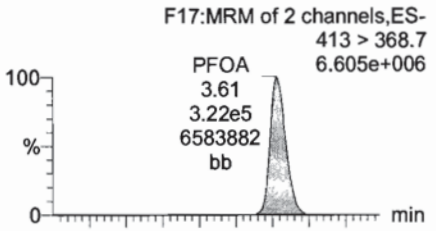
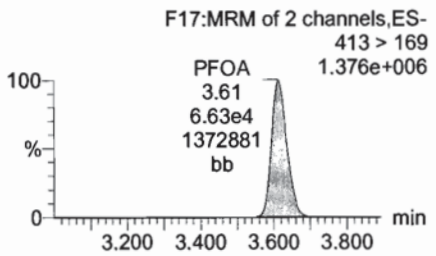
Name: 170705M2_9, Date: 05-Jul-2017, Time: 14:43:01, ID: ST170705M2-8 PFC CS5 17G0510, Description: PFC CS5 17G0510

PFOA





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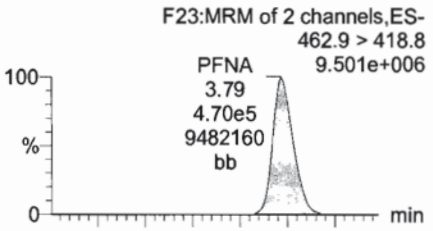
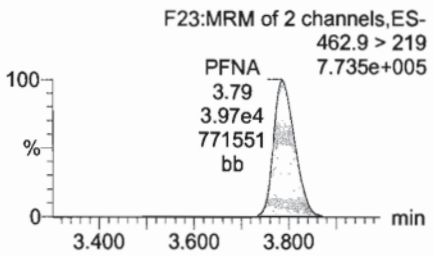
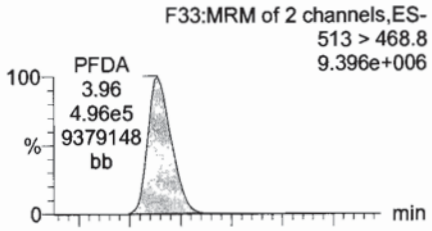
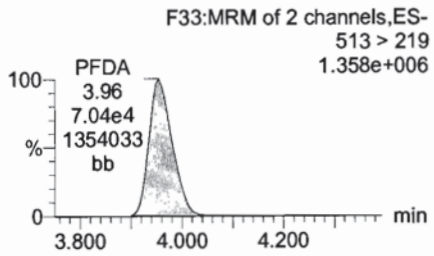




PFDA





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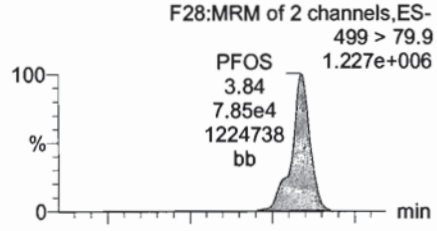
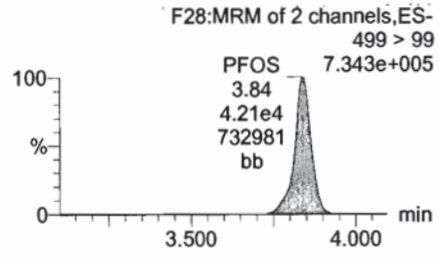
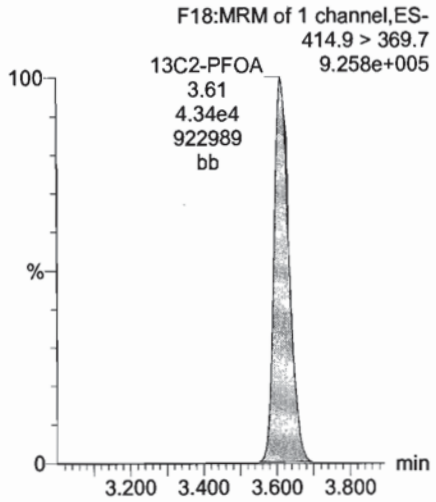
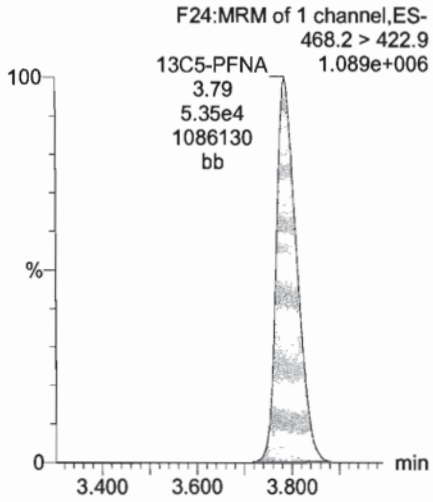




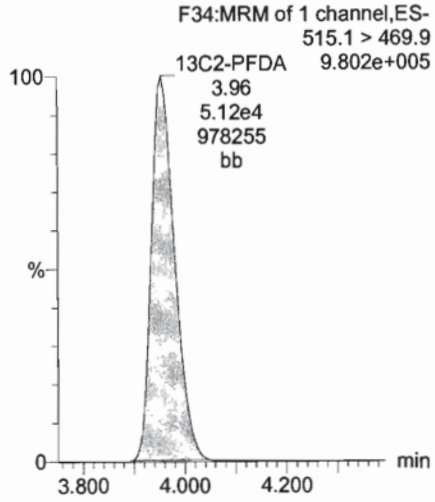
13C2-PFOA



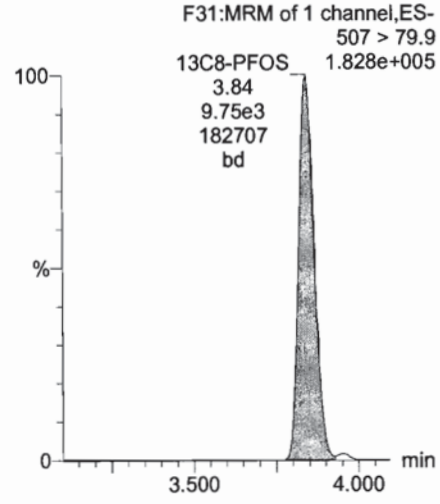
13C5-PFNA



13C2-PFDA



13C8-PFOS



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Name: 170705M2_9, Date: 05-Jul-2017, Time: 14:43:01, ID: ST170705M2-8 PFC CS5 17G0510, Description: PFC CS5 17G0510

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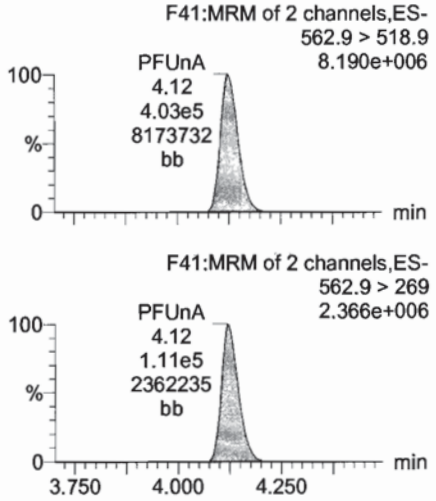
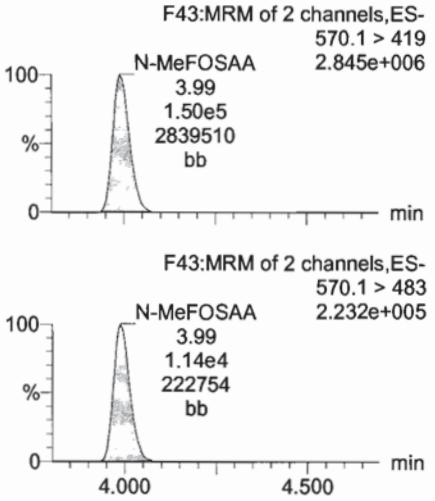


N-MeFOSAA



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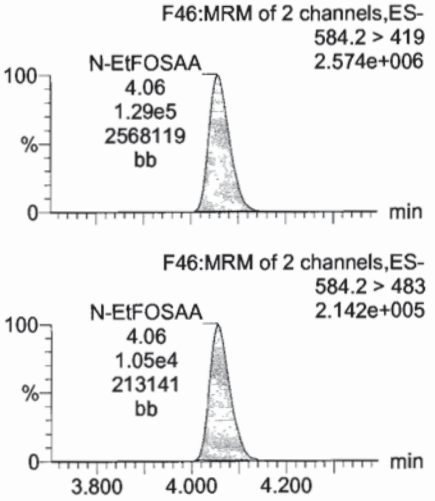
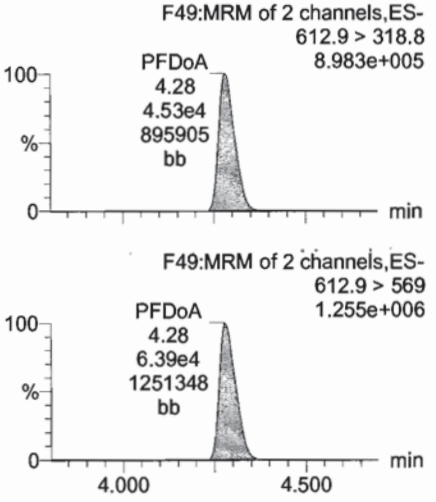


PFDoA



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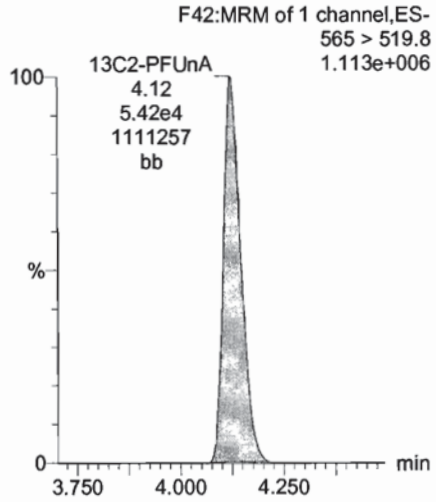
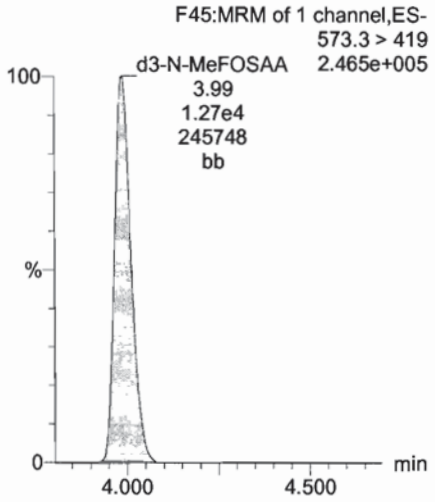
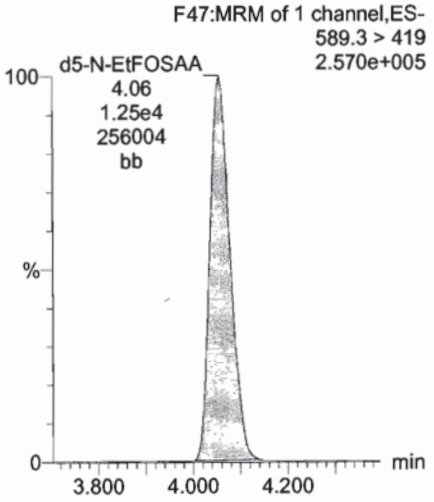


d3-N-MeFOSAA



d5-N-EtFOSAA



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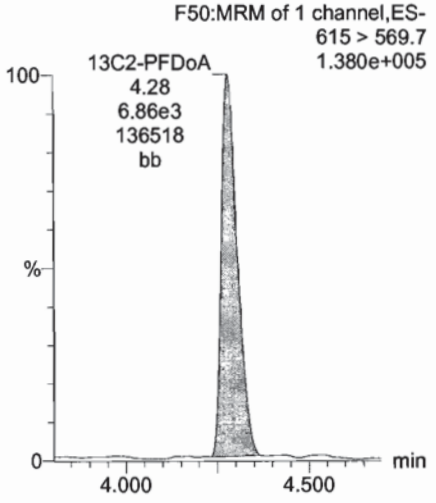

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Name: 170705M2_9, Date: 05-Jul-2017, Time: 14:43:01, ID: ST170705M2-8 PFC CS5 17G0510, Description: PFC CS5 17G0510

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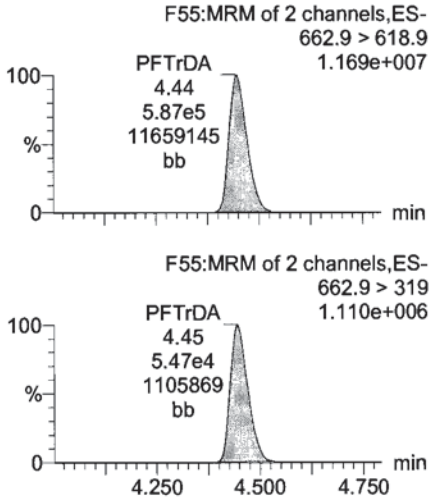
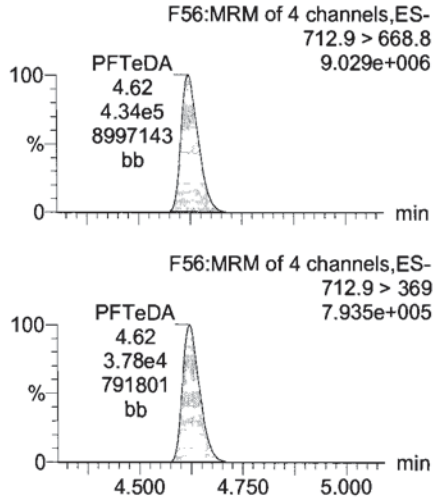


PFTeDA



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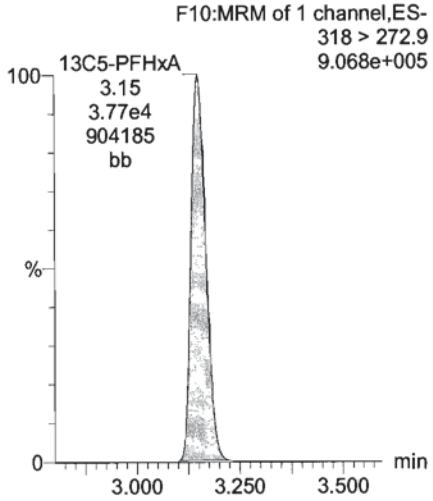

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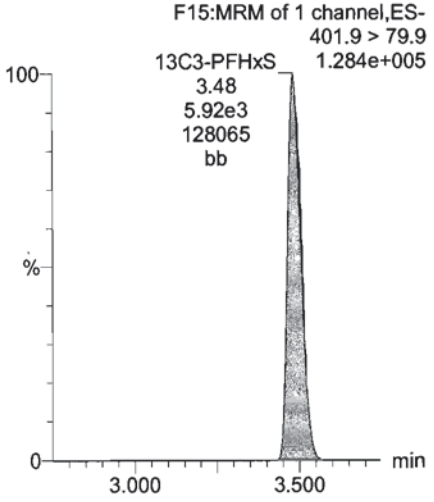

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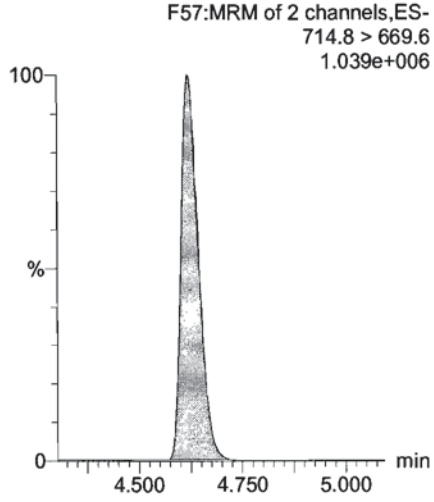
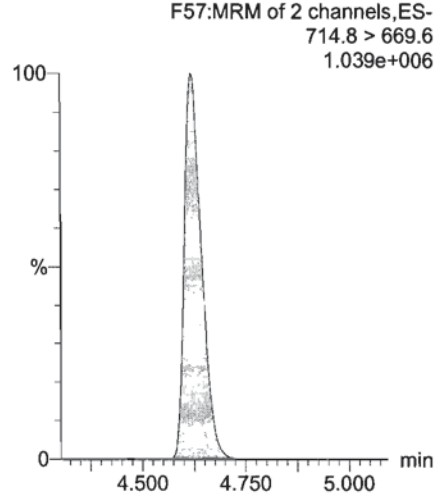
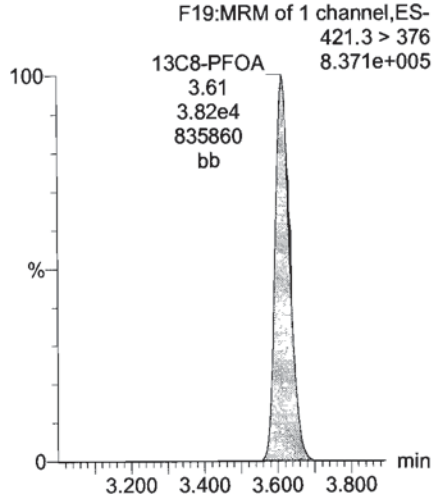


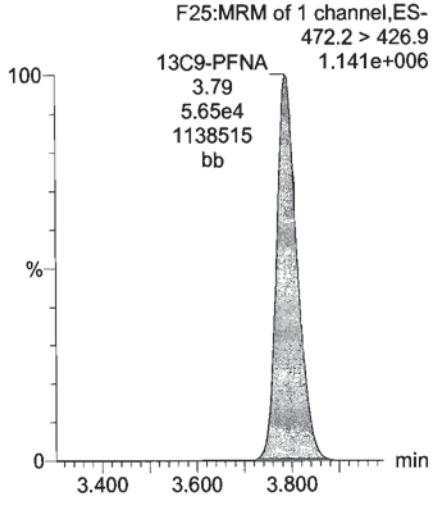
13C2-PFTeDA



13C8-PFOA



13C9-PFNA



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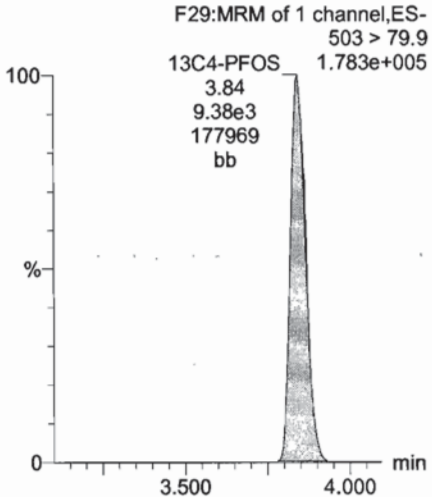
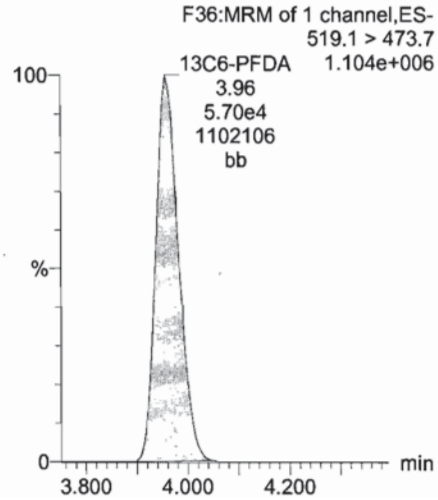
Name: 170705M2_9, Date: 05-Jul-2017, Time: 14:43:01, ID: ST170705M2-8 PFC CS5 17G0510, Description: PFC CS5 17G0510

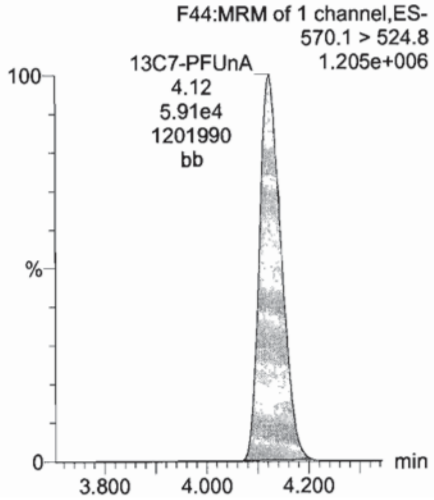
13C4-PFOS



13C6-PFDA



13C7-PFUnA



Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 13:56:31 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:57:19 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

✓ AC 7/19/17

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	4.07e3	3.20e3	1.0000		2.92	2.91	15.9	8.43	84.3
2	2	PFHxA	313.2 > 268.9	3.42e4	1.14e4	1.0000		3.16	3.15	15.0	10.7	106.8
3	3	PFHpA	363 > 318.9	2.97e4	3.09e4	1.0000		3.43	3.41	12.0	9.93	99.3
4	4	PFHxS	398.9 > 79.6	3.47e3	3.05e3	1.0000		3.55	3.48	14.2	7.68	76.8
5	5	PFOA	413 > 368.7	3.73e4	4.66e4	1.0000		3.63	3.61	10.0	10.5	105.2
6	6	PFNA	462.9 > 418.8	4.85e4	5.23e4	1.0000		3.82	3.79	11.6	10.4	103.6
7	7	PFOS	499 > 79.9	8.39e3	1.01e4	1.0000		3.86	3.84	10.4	9.85	98.5
8	8	PFDA	513 > 468.8	5.40e4	5.70e4	1.0000		4.00	3.96	11.8	10.2	102.3
9	9	PFUnA	562.9 > 518.9	4.50e4	6.44e4	1.0000		4.13	4.12	8.74	9.59	95.9
10	10	N-MeFOSAA	570.1 > 419	1.58e4	1.22e4	1.0000		4.00	3.98	16.2	10.1	101.4
11	11	N-EtFOSAA	584.2 > 419	1.31e4	1.33e4	1.0000		4.08	4.06	12.3	10.7	107.2
12	12	PFDoA	612.9 > 318.8	4.77e3	6.71e3	1.0000		4.31	4.28	8.87	10.6	106.4
13	13	PFTrDA	662.9 > 618.9	6.07e4	6.71e3	1.0000		4.50	4.44	113	10.2	101.9
14	14	PFTeDA	712.9 > 668.8	4.49e4	4.82e4	1.0000		4.65	4.61	11.6	9.78	97.8
15	15	13C3-PFBS	302 > 98.8	3.20e3	3.66e4	1.0000	0.032	2.92	2.91	0.436	13.6	108.8
16	16	13C2-PFHxA	315 > 269.8	1.14e4	3.66e4	1.0000	0.296	3.15	3.15	1.55	5.24	104.9
17	17	13C4-PFHpA	367.2 > 321.8	3.09e4	3.66e4	1.0000	0.302	3.43	3.41	4.23	14.0	112.2
18	18	18O2-PFHxS	403 > 102.6	3.05e3	6.49e3	1.0000	0.434	3.49	3.48	5.87	13.5	108.1
19	19	13C2-PFOA	414.9 > 369.7	4.66e4	3.79e4	1.0000	1.140	3.62	3.61	15.4	13.5	107.9
20	20	13C5-PFNA	468.2 > 422.9	5.23e4	5.78e4	1.0000	0.958	3.80	3.79	11.3	11.8	94.5
21	21	13C8-PFOS	507 > 79.9	1.01e4	9.50e3	1.0000	1.061	3.85	3.84	13.2	12.5	99.7
22	22	13C2-PFDA	515.1 > 469.9	5.70e4	5.52e4	1.0000	0.942	3.97	3.96	12.9	13.7	109.6
23	23	13C2-PFUnA	565 > 519.8	6.44e4	5.94e4	1.0000	1.084	4.13	4.12	13.5	12.5	99.9
24	24	d3-N-MeFOSAA	573.3 > 419	1.22e4	5.94e4	1.0000	0.240	4.00	3.98	2.56	10.7	85.3
25	25	d5-N-EtFOSAA	589.3 > 419	1.33e4	5.94e4	1.0000	0.247	4.07	4.05	2.80	11.3	90.5
26	26	13C2-PFDoA	615 > 569.7	6.71e3	5.94e4	1.0000	0.127	4.32	4.28	1.41	11.1	89.0
27	27	13C2-PFTeDA	714.8 > 669.6	4.82e4	5.94e4	1.0000	0.883	4.64	4.61	10.1	11.5	91.9
28	28	13C5-PFHxA	318 > 272.9	3.66e4	3.66e4	1.0000	1.000	3.15	3.15	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	6.49e3	6.49e3	1.0000	1.000	3.49	3.48	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	3.79e4	3.79e4	1.0000	1.000	3.62	3.61	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	5.78e4	5.78e4	1.0000	1.000	3.82	3.79	12.5	12.5	100.0

70-130

7/19/17

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 13:56:31 Pacific Daylight Time
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Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	9.50e3	9.50e3	1.0000	1.000	3.85	3.84	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	5.52e4	5.52e4	1.0000	1.000	3.97	3.96	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	5.94e4	5.94e4	1.0000	1.000	4.13	4.12	12.5	12.5	100.0

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 13:56:31 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:57:19 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	1	PFBS	299 > 79.7	2.91	4065.935	3195.256	15.906	bb	8.4

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	4	PFHxS	398.9 > 79.6	3.48	3468.745	3047.549	14.228	MM	7.7
2	36	Total PFHxS	398.9 > 79.6	3.43	450.082	3047.549	1.846	bd	1.0

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	5	PFOA	413 > 368.7	3.61	37303.105	46566.715	10.013	bb	10.5

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	38	Total PFOS	499 > 79.9	3.78	1246.896	10054.862	1.550	bd	1.4
2	7	PFOS	499 > 79.9	3.84	8386.800	10054.862	10.426	MM	9.8

Total N-Me-FOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	10	N-MeFOSAA	570.1 > 419	3.98	15800.099	12190.212	16.202	bb	10.1

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Response	Primary Flags	Conc.
1	11	N-EtFOSAA	584.2 > 419	4.06	13091.983	13306.594	12.298	bb	10.7

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 13:56:31 Pacific Daylight Time
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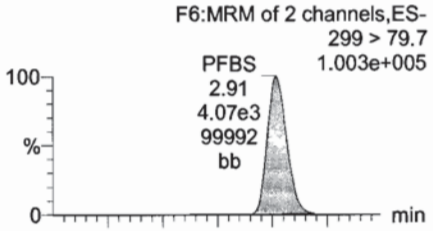
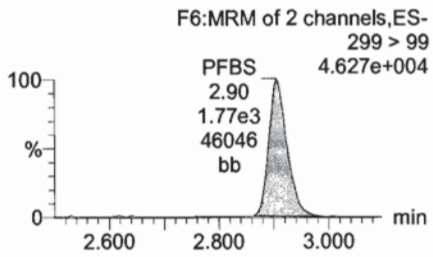
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

Total PFBS





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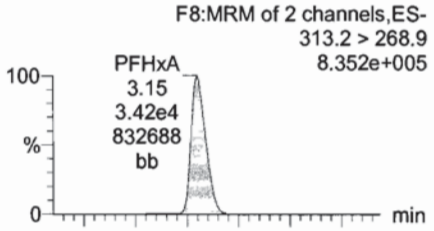

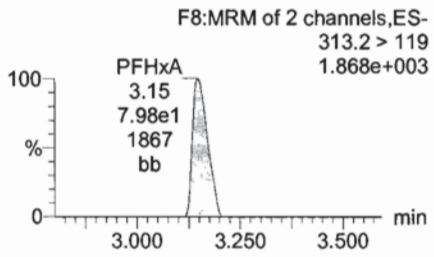

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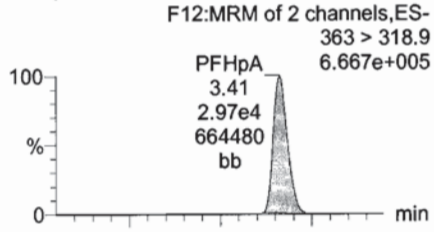

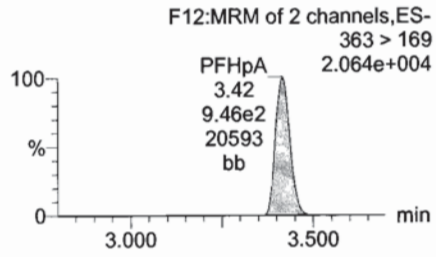

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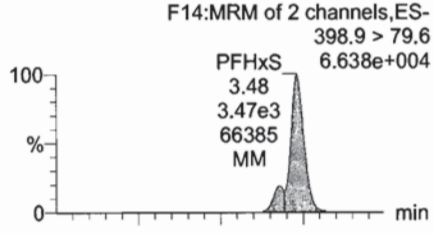

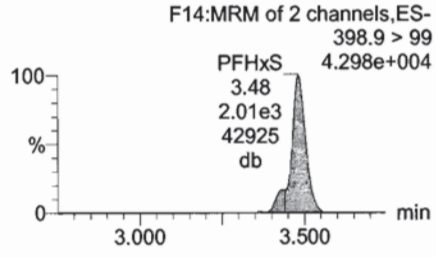

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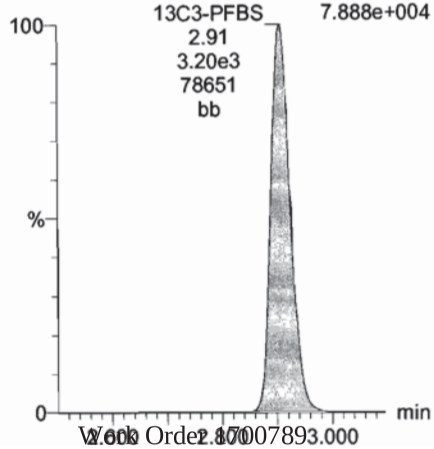

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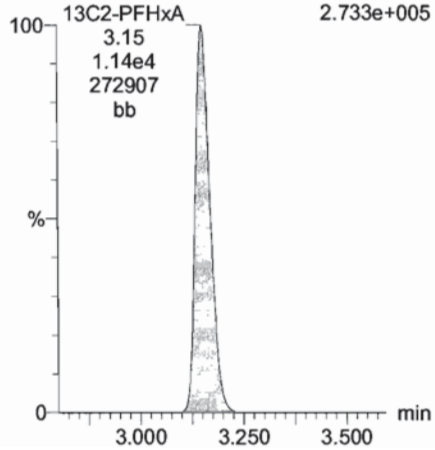

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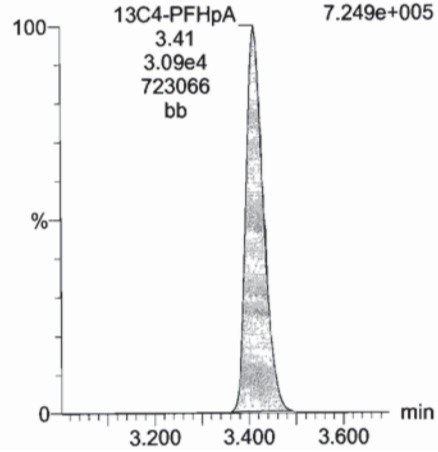

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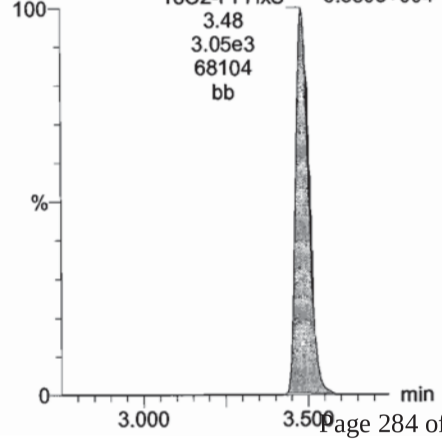

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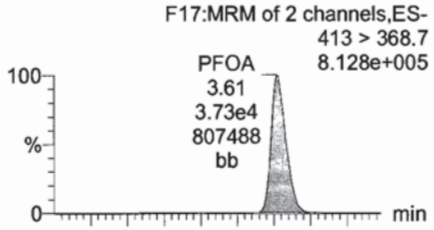
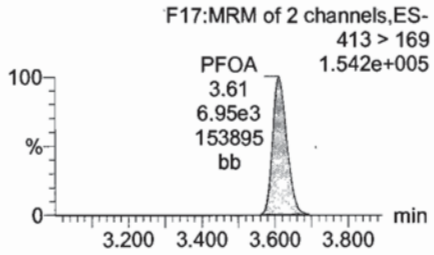
Printed: Wednesday, July 19, 2017 13:57:19 Pacific Daylight Time

Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

Total PFOA





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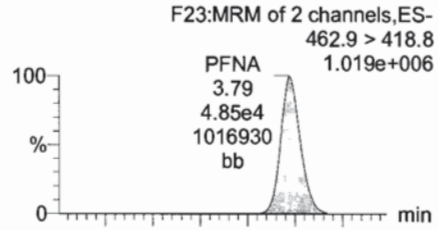
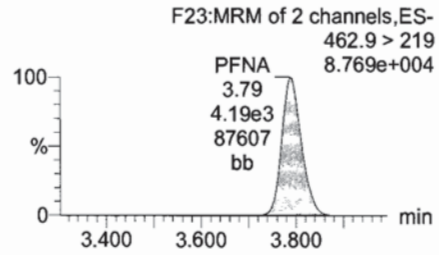
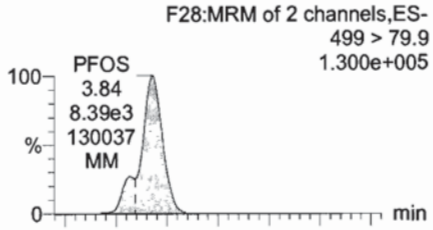
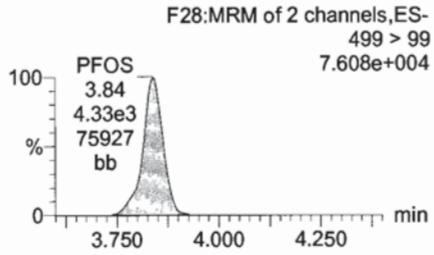




Total PFOS





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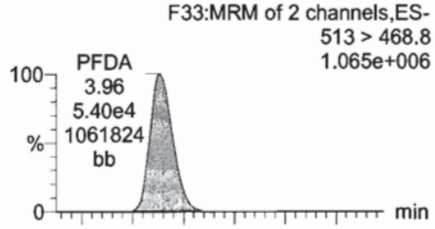

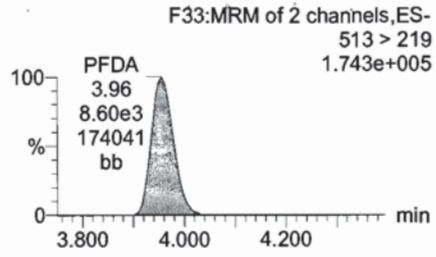

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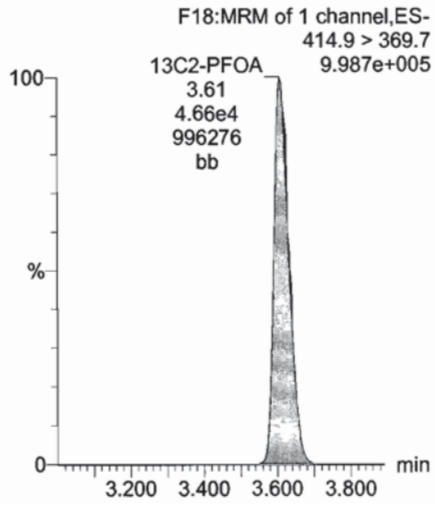

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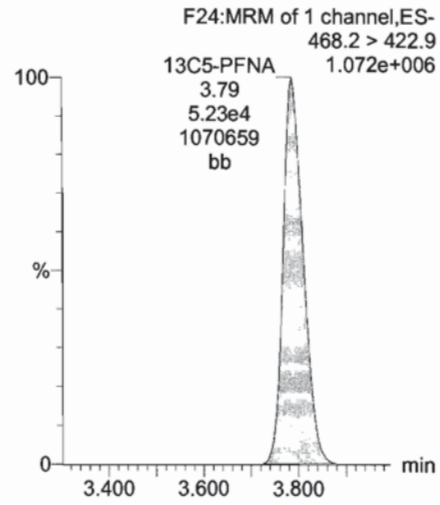

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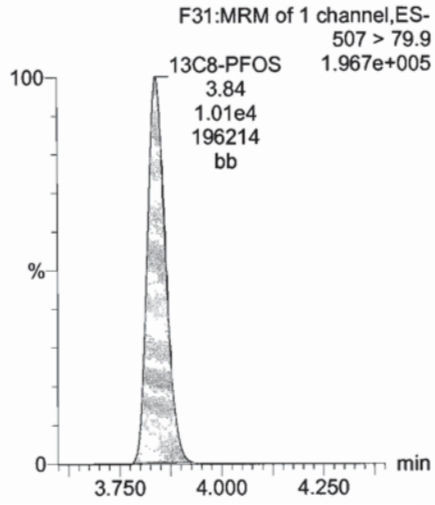
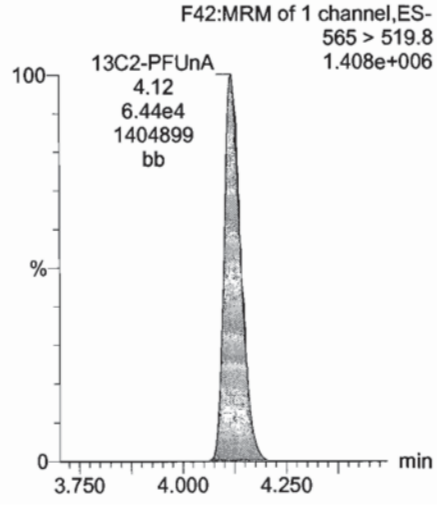


13C2-PFUnA



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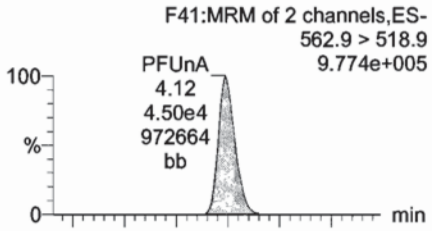
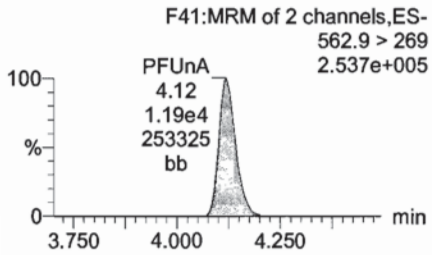
Last Altered: Wednesday, July 19, 2017 13:56:31 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:57:19 Pacific Daylight Time

Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

PFUnA





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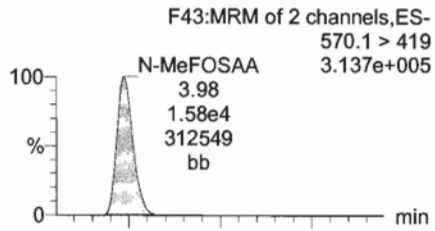

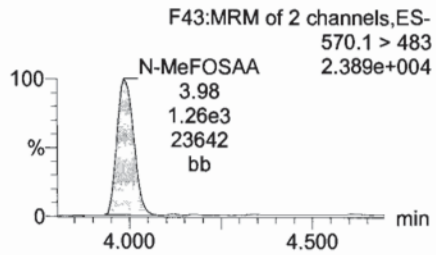

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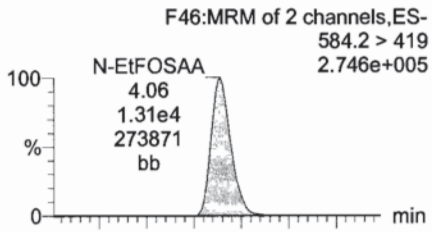
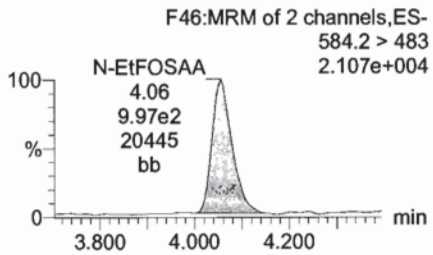
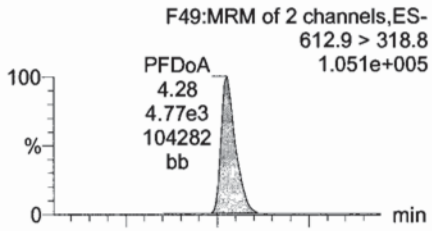
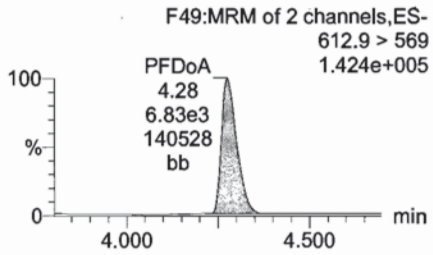


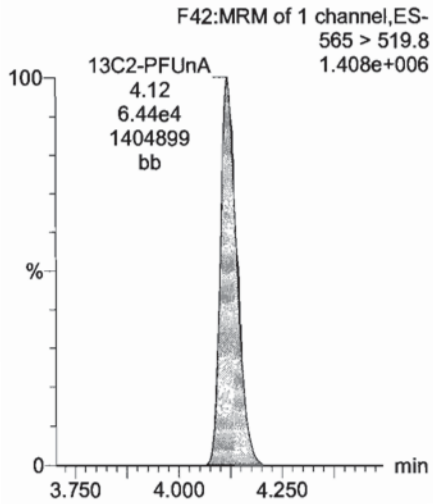


PFDoA

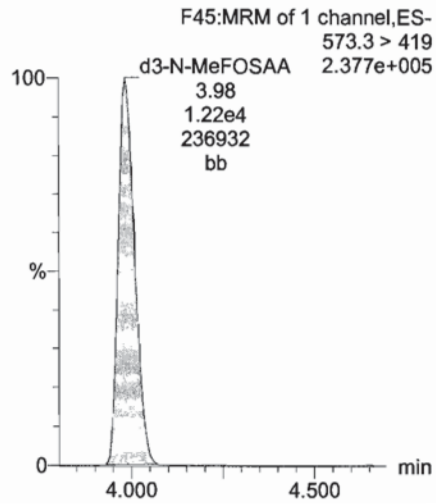




13C2-PFUnA



d3-N-MeFOSAA



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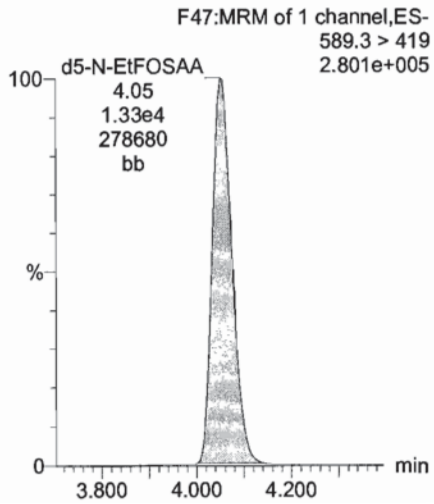

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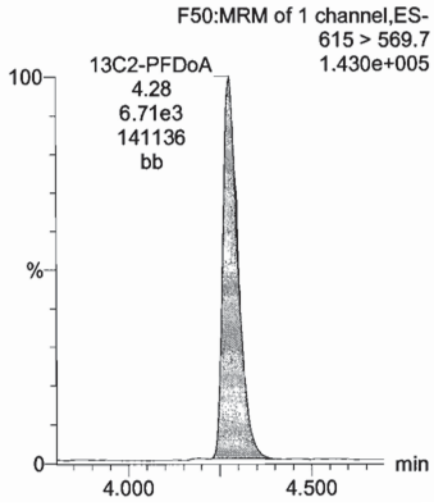

Vista Analytical Laboratory

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Printed: Wednesday, July 19, 2017 13:57:19 Pacific Daylight Time

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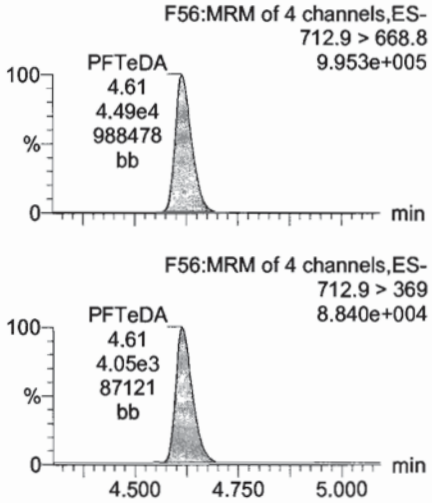

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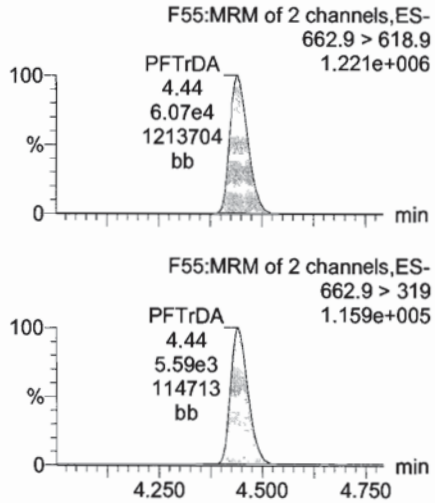

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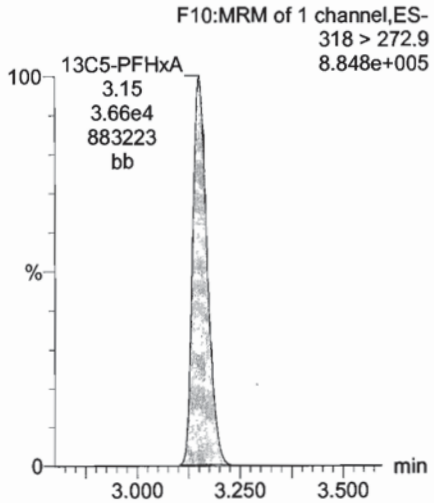

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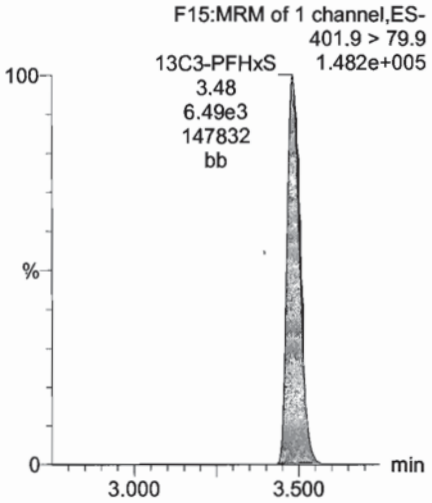

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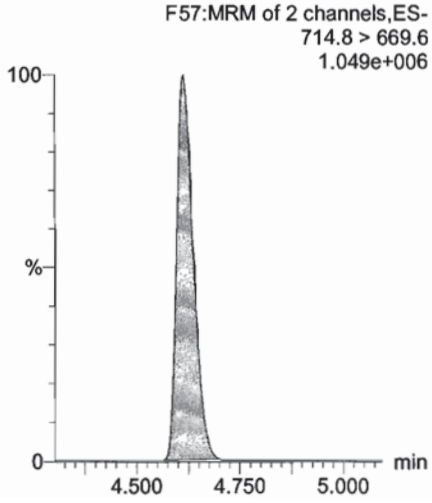

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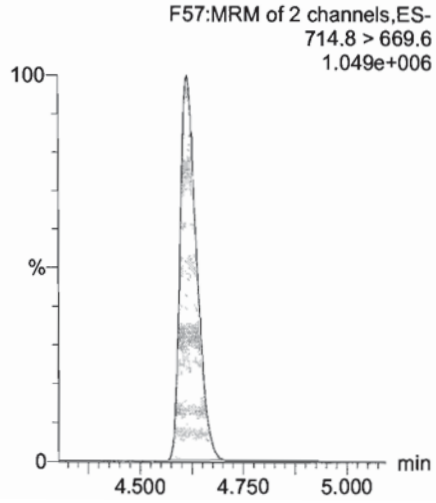

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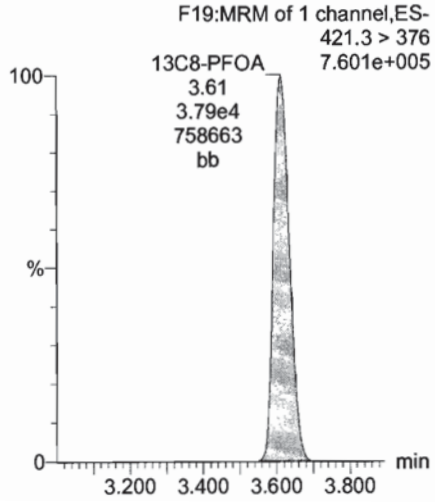

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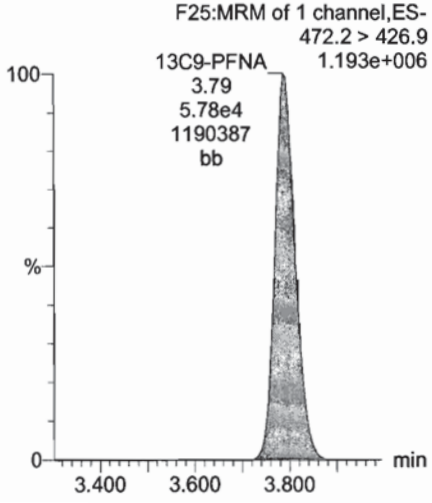

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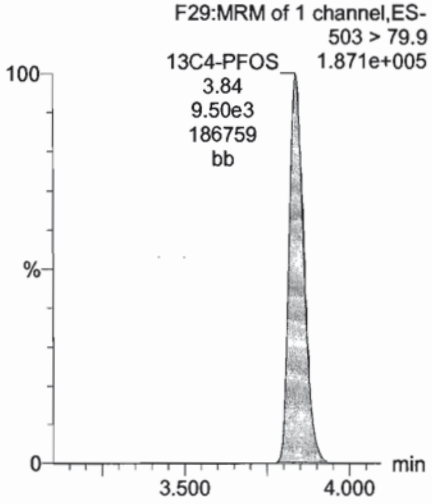
13C4-PFOS



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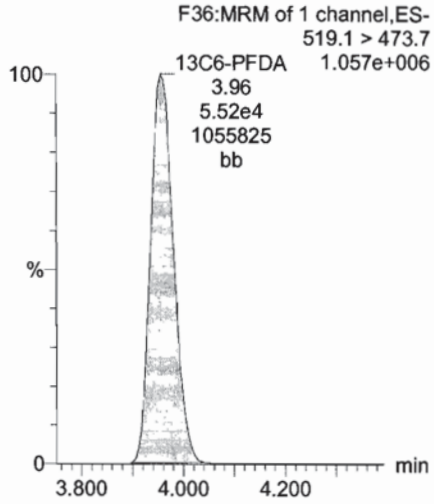

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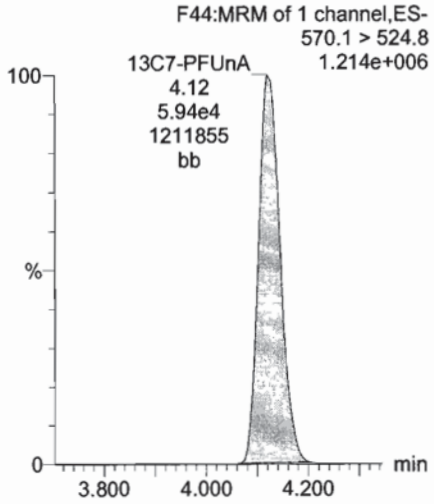


Analytical Standard Record

Vista Analytical Laboratory

17E2617

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1432	13C2-PFHxDA	14-Sep-16	** Vendor **	07-Jan-21	14-Sep-16 14:19 by TLD	0.2
16I1433	13C2-PFHxA	14-Sep-16	** Vendor **	08-Apr-21	14-Sep-16 14:22 by TLD	0.2
17B2809	d3-N-Me-FOSAA	28-Feb-17	** Vendor **	28-Feb-18	28-Feb-17 13:24 by EMS	0.5
17B2811	d5-N-EtFOSAA	28-Feb-17	** Vendor **	22-Nov-21	28-Feb-17 13:33 by EMS	0.5
17D0502	13C3-PFPeA	05-Apr-17	Jamie C. Stockman	12-Feb-21	05-Apr-17 11:20 by JCS	0.5
17D0503	13C2-PFOA	05-Apr-17	Jamie C. Stockman	12-Feb-21	05-Apr-17 11:21 by JCS	0.5
17D0504	13C2-PFDA	05-Apr-17	Jamie C. Stockman	28-Sep-21	05-Apr-17 11:21 by JCS	0.5
17D0505	13C8-FOSA-I	05-Apr-17	Jamie C. Stockman	22-Dec-20	05-Apr-17 11:22 by JCS	0.5
17E2414	13C3-PFBA	24-May-17	** Vendor **	27-May-21	24-May-17 11:20 by INJ	0.5
17E2417	13C5-PFNA	24-May-17	** Vendor **	30-Sep-21	24-May-17 11:22 by INJ	0.5
17E2418	13C2-PFTeDA	24-May-17	** Vendor **	01-Mar-22	24-May-17 11:22 by INJ	0.5
17E2419	13C2-PFUdA	24-May-17	** Vendor **	22-Nov-21	24-May-17 11:23 by INJ	0.5
17E2420	13C4-PFHpA	24-May-17	** Vendor **	27-May-21	24-May-17 11:23 by INJ	0.5
17E2421	13C2-PFDoA	24-May-17	** Vendor **	08-Apr-21	24-May-17 11:24 by INJ	0.5
17E2612	18O2-PFHxS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:53 by INJ	0.624
17E2613	13C2-8:2 FTS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:55 by INJ	0.624
17E2614	13C2-6:2 FTS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:57 by INJ	0.624
17E2615	13C8-PFOS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:59 by INJ	0.624
17E2616	13C3-PFBS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 11:01 by INJ	0.624

Description:	PFC - IS	Expires:	19-Dec-17
Standard Type:	Reagent	Prepared:	26-May-17
Solvent:	MEOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	26-May-17 13:09 by INJ

Analyte	CAS Number	Concentration	Units
13C3-PFBS		1.25	ug/mL
13C2-8:2 FTS		1.25	ug/mL
13C2-PFDA		1.25	ug/mL
13C2-PFDoA		1.25	ug/mL
13C2-PFHxA		0.5	ug/mL
13C2-PFHxDA		0.5	ug/mL
13C2-PFOA		1.25	ug/mL
13C2-PFTeDA		1.25	ug/mL
13C2-6:2 FTS		1.25	ug/mL
13C3-PFBA		1.25	ug/mL
d5-EtFOSAA		1.25	ug/mL
13C3-PFPeA		1.25	ug/mL
13C4-PFHpA		1.25	ug/mL
13C5-PFNA		1.25	ug/mL
13C8-PFOS		1.25	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17E2617

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1432	13C2-PFHxDA	14-Sep-16	** Vendor **	07-Jan-21	14-Sep-16 14:19 by TLD	0.2
16I1433	13C2-PFHxA	14-Sep-16	** Vendor **	08-Apr-21	14-Sep-16 14:22 by TLD	0.2
17B2809	d3-N-Me-FOSAA	28-Feb-17	** Vendor **	28-Feb-18	28-Feb-17 13:24 by EMS	0.5
17B2811	d5-N-EtFOSAA	28-Feb-17	** Vendor **	22-Nov-21	28-Feb-17 13:33 by EMS	0.5
17D0502	13C3-PFPeA	05-Apr-17	Jamie C. Stockman	12-Feb-21	05-Apr-17 11:20 by JCS	0.5
17D0503	13C2-PFOA	05-Apr-17	Jamie C. Stockman	12-Feb-21	05-Apr-17 11:21 by JCS	0.5
17D0504	13C2-PFDA	05-Apr-17	Jamie C. Stockman	28-Sep-21	05-Apr-17 11:21 by JCS	0.5
17D0505	13C8-FOSA-I	05-Apr-17	Jamie C. Stockman	22-Dec-20	05-Apr-17 11:22 by JCS	0.5
17E2414	13C3-PFBA	24-May-17	** Vendor **	27-May-21	24-May-17 11:20 by INJ	0.5
17E2417	13C5-PFNA	24-May-17	** Vendor **	30-Sep-21	24-May-17 11:22 by INJ	0.5
17E2418	13C2-PFTeDA	24-May-17	** Vendor **	01-Mar-22	24-May-17 11:22 by INJ	0.5
17E2419	13C2-PFUdA	24-May-17	** Vendor **	22-Nov-21	24-May-17 11:23 by INJ	0.5
17E2420	13C4-PFHpA	24-May-17	** Vendor **	27-May-21	24-May-17 11:23 by INJ	0.5
17E2421	13C2-PFDoA	24-May-17	** Vendor **	08-Apr-21	24-May-17 11:24 by INJ	0.5
17E2612	18O2-PFHxS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:53 by INJ	0.624
17E2613	13C2-8:2 FTS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:55 by INJ	0.624
17E2614	13C2-6:2 FTS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:57 by INJ	0.624
17E2615	13C8-PFOS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 10:59 by INJ	0.624
17E2616	13C3-PFBS dil.	26-May-17	Isaac N. Johnson	26-May-18	26-May-17 11:01 by INJ	0.624

Description:	PFC - IS	Expires:	19-Dec-17
Standard Type:	Reagent	Prepared:	26-May-17
Solvent:	MEOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	26-May-17 13:09 by INJ

Analyte	CAS Number	Concentration	Units
13C8-PFOSA		1.25	ug/mL
18O2-PFHxS		1.25	ug/mL
d3-MeFOSAA		1.25	ug/mL
13C2-PFUnA		1.25	ug/mL

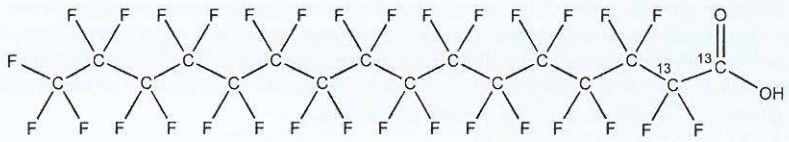
16I1432

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

13C2-PFHxDA

PRODUCT CODE:	M2PFHxDA	**LOT NUMBER:**	M2PFHxDA1112
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/07/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/07/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/11/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

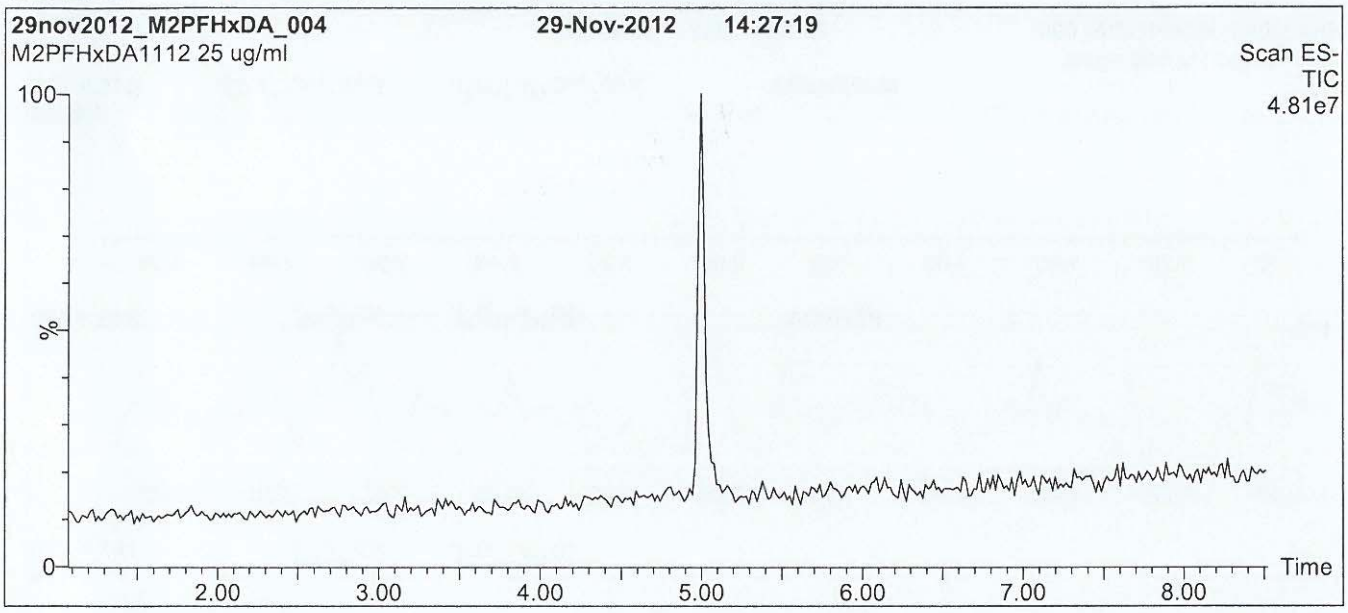
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

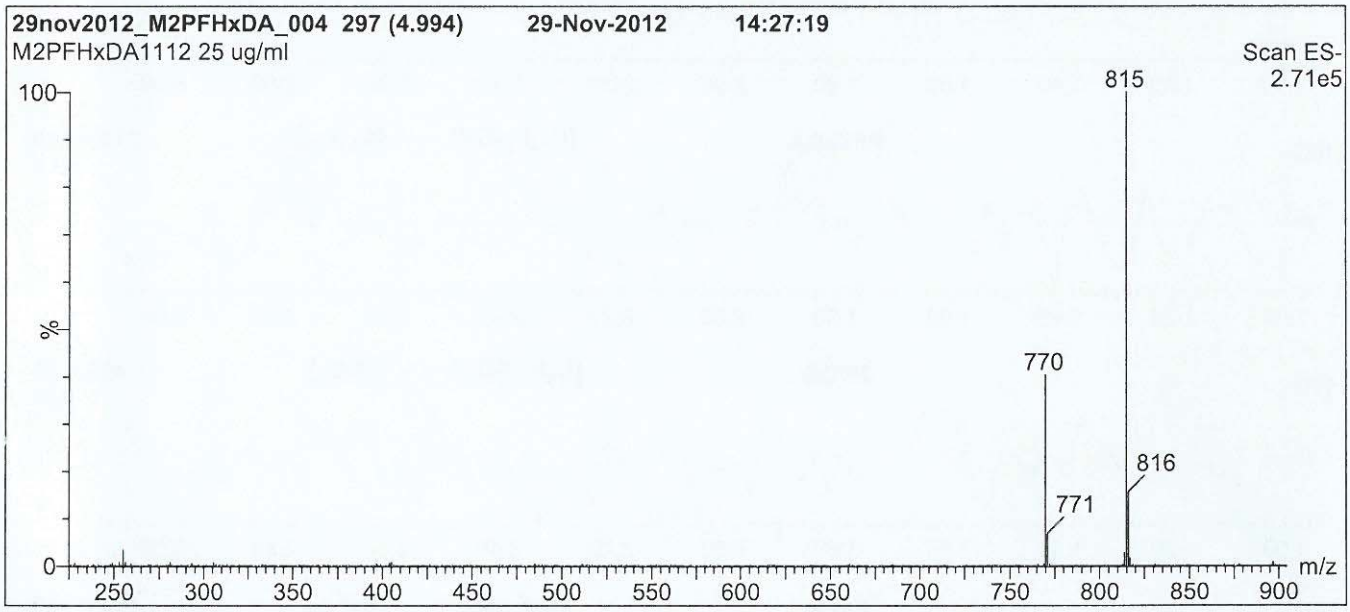
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED Accreditation for Reference Material Producer

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

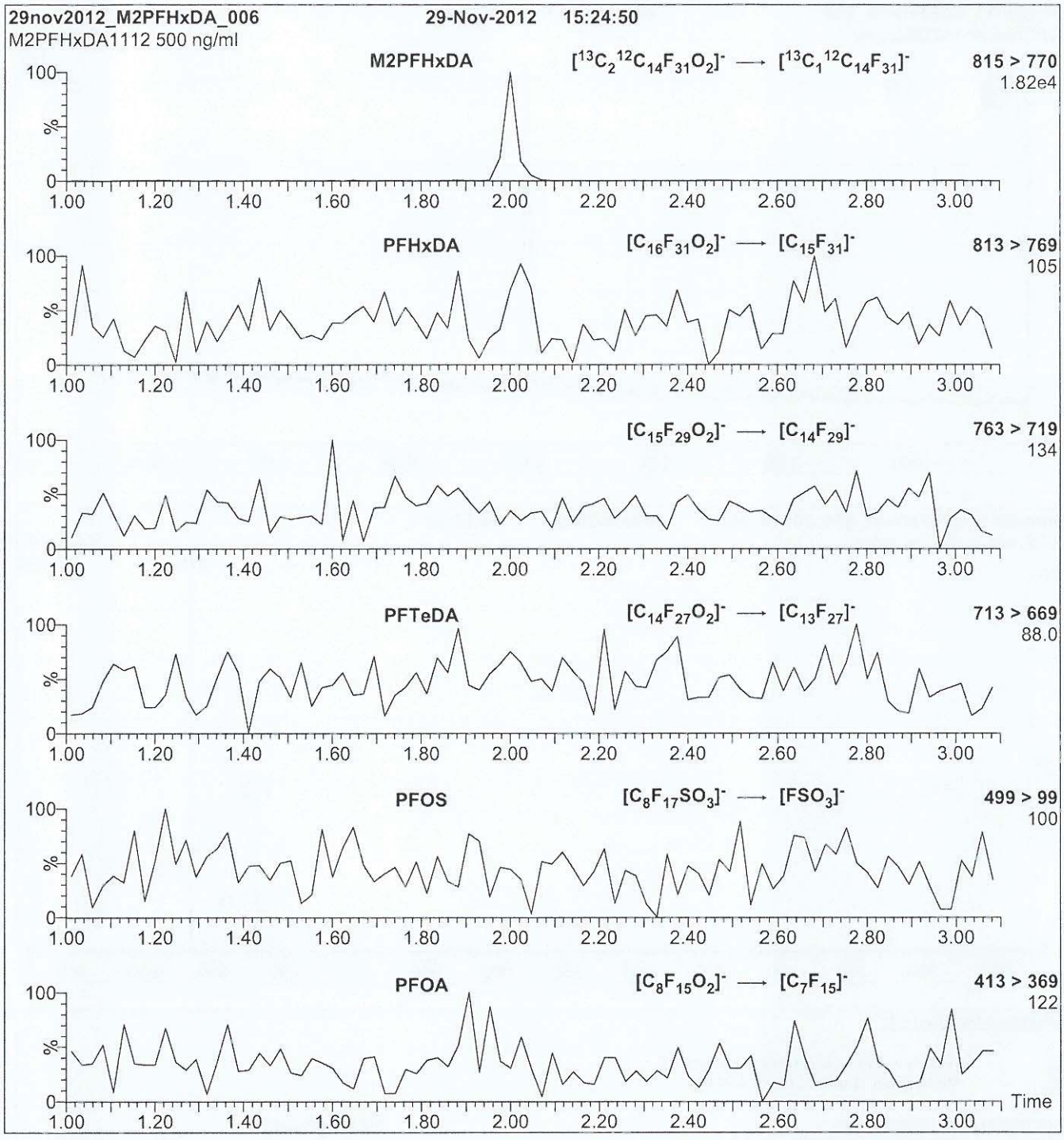
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M2PFHxDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

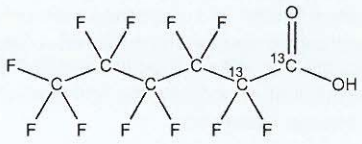
16I1433

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

13C2-PFHxA

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- 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:** 04/29/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

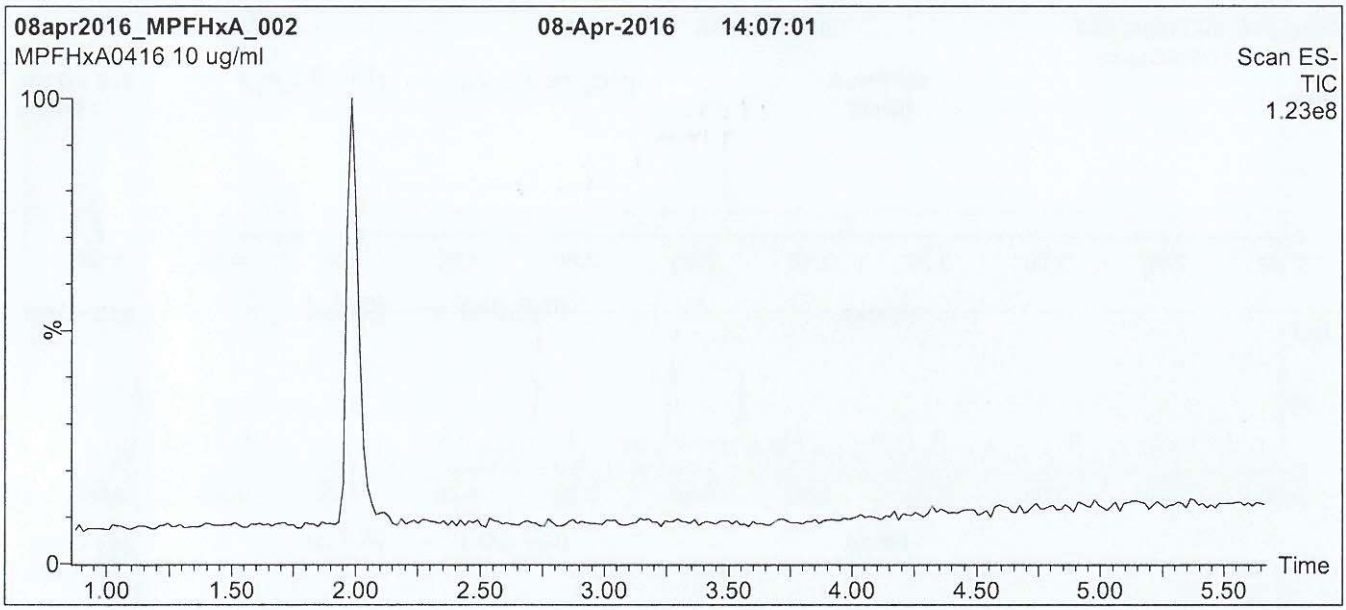
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

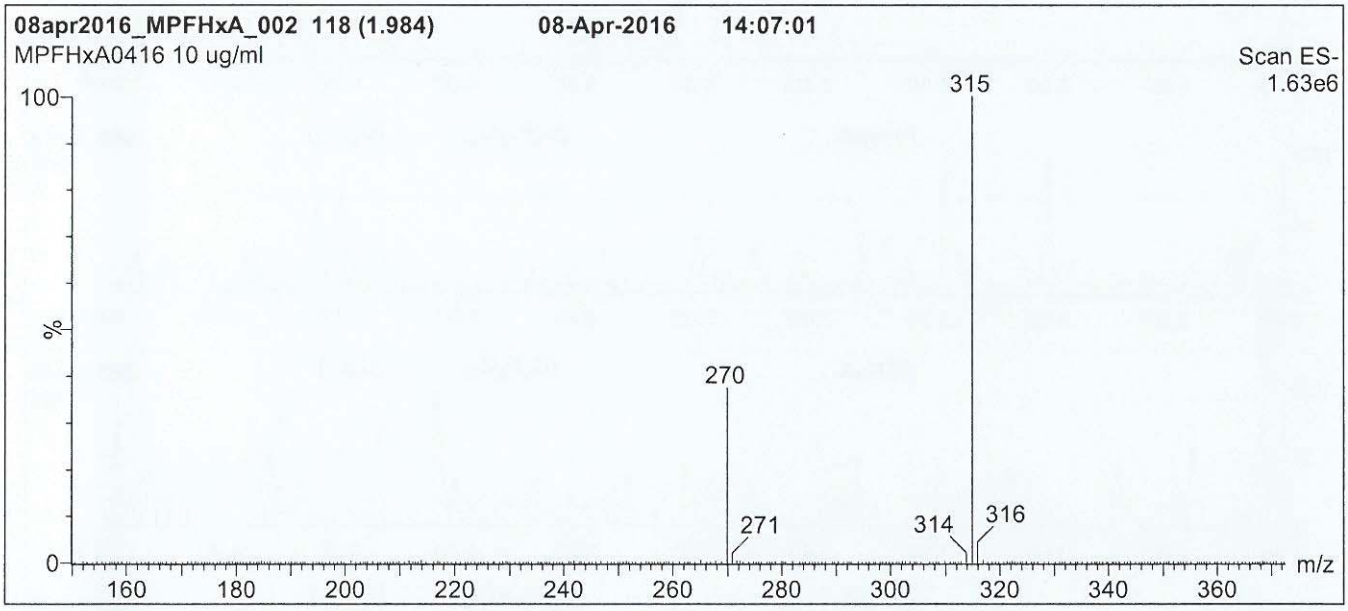
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

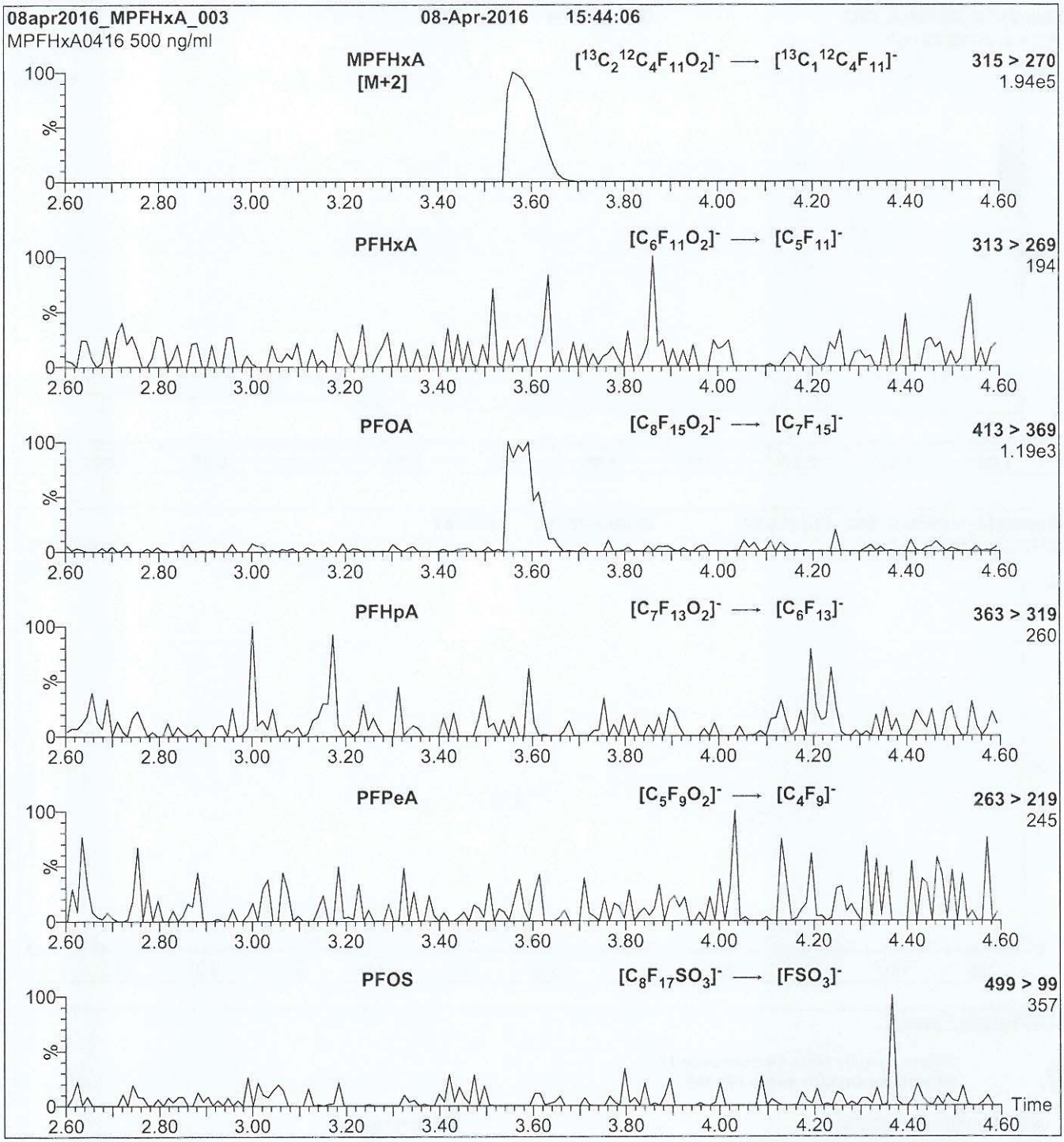
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

17B 2809

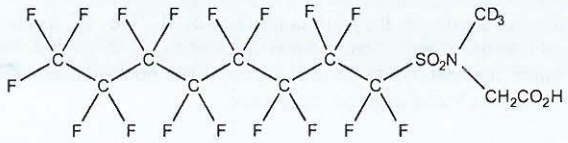
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1116

COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	11/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	11/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/07/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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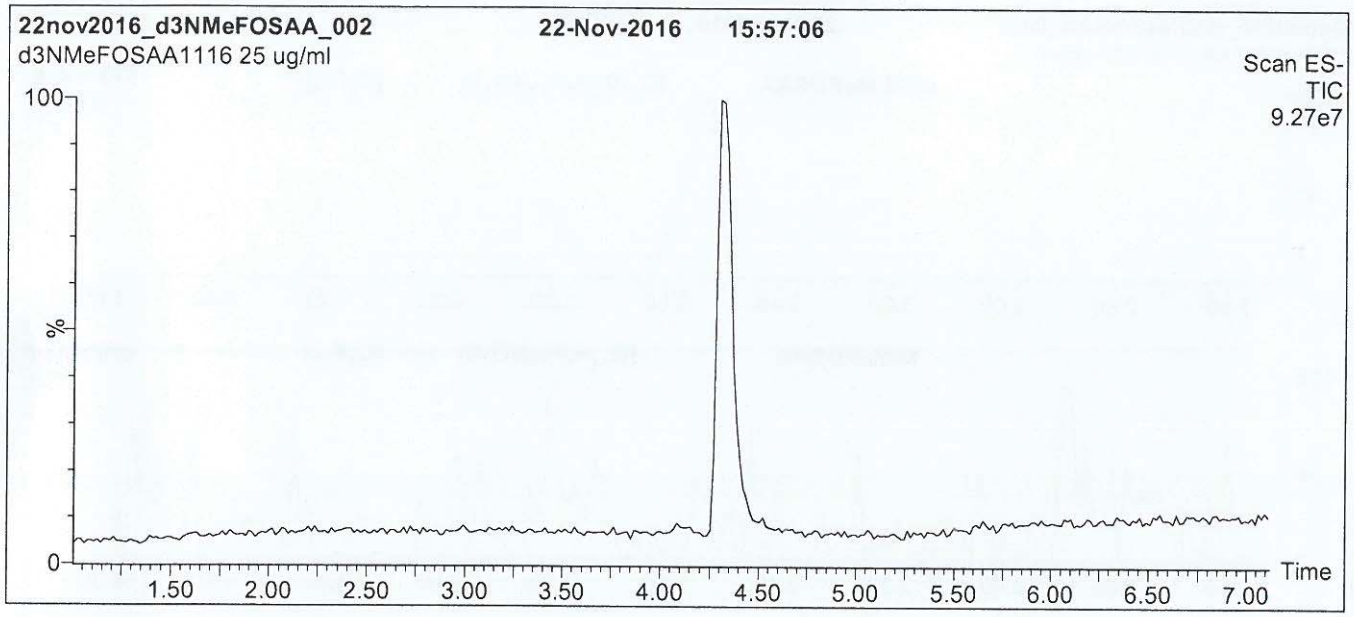
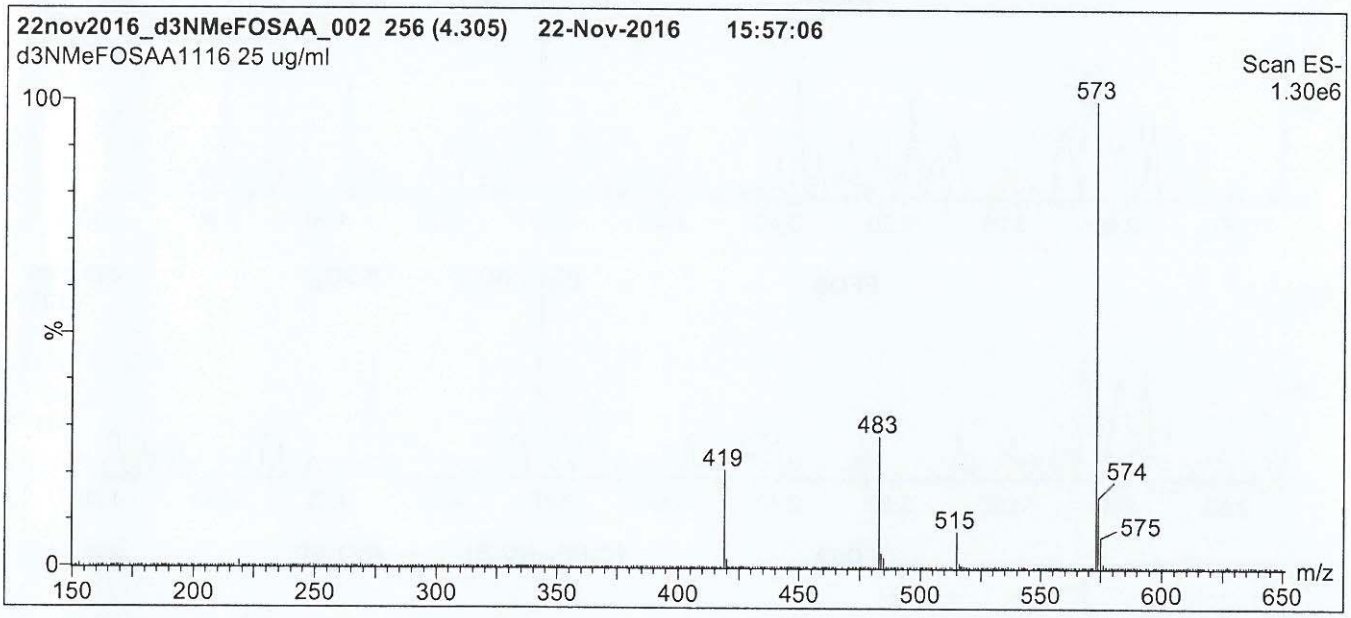
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

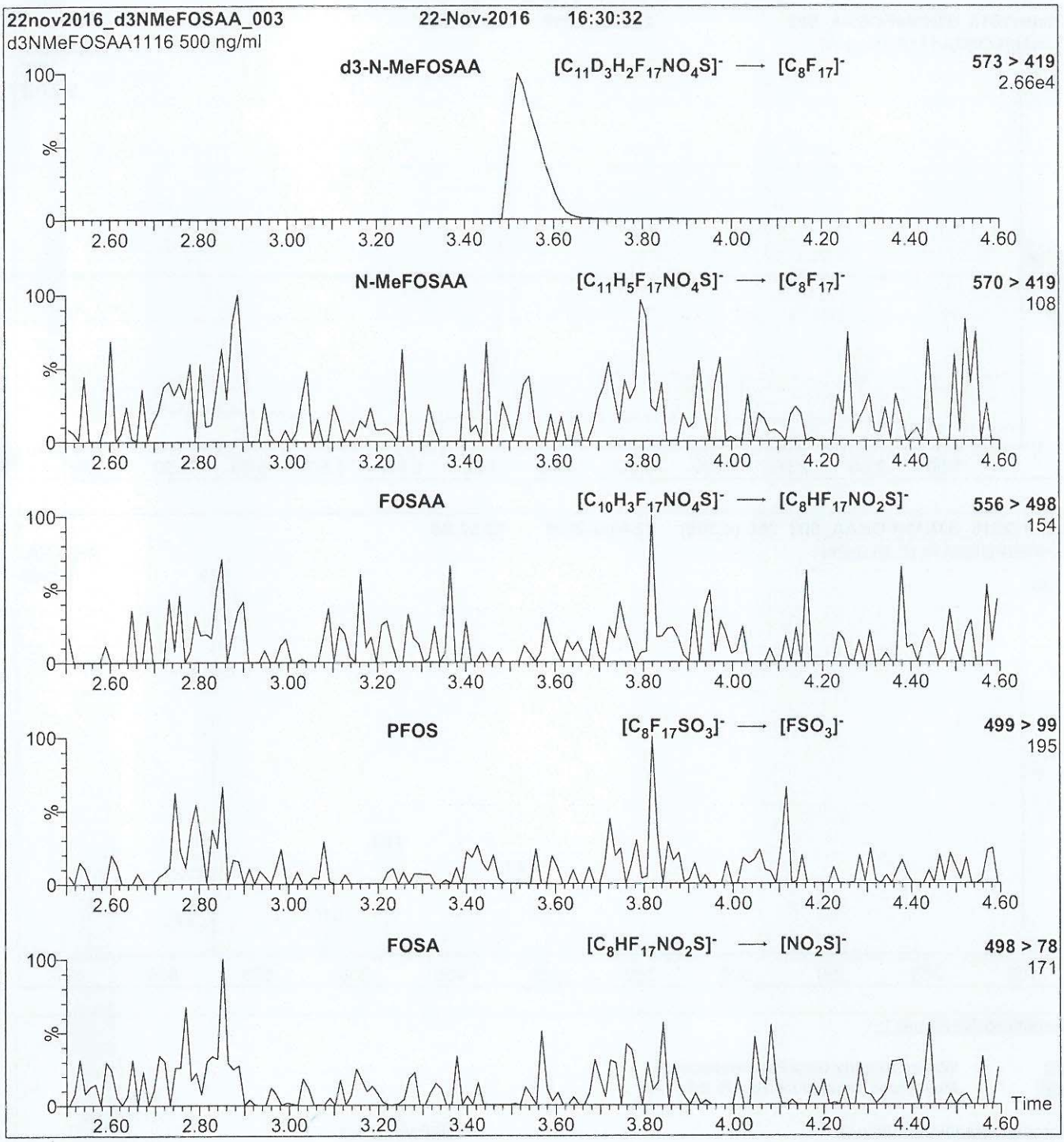
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

FTB2911

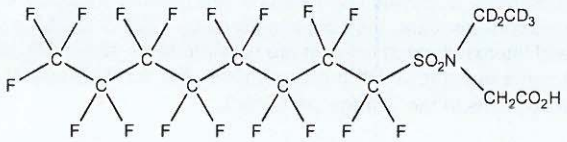
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1116

COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.26
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	11/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	11/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/01/2016 (mm/dd/yyyy)

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

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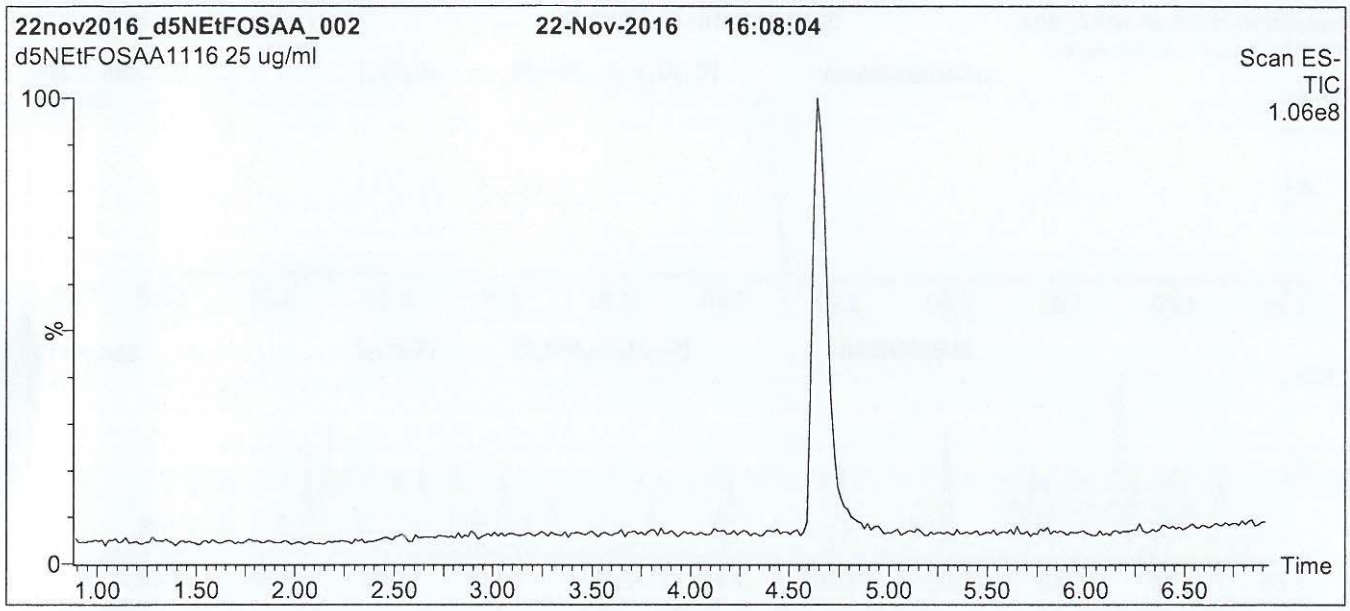
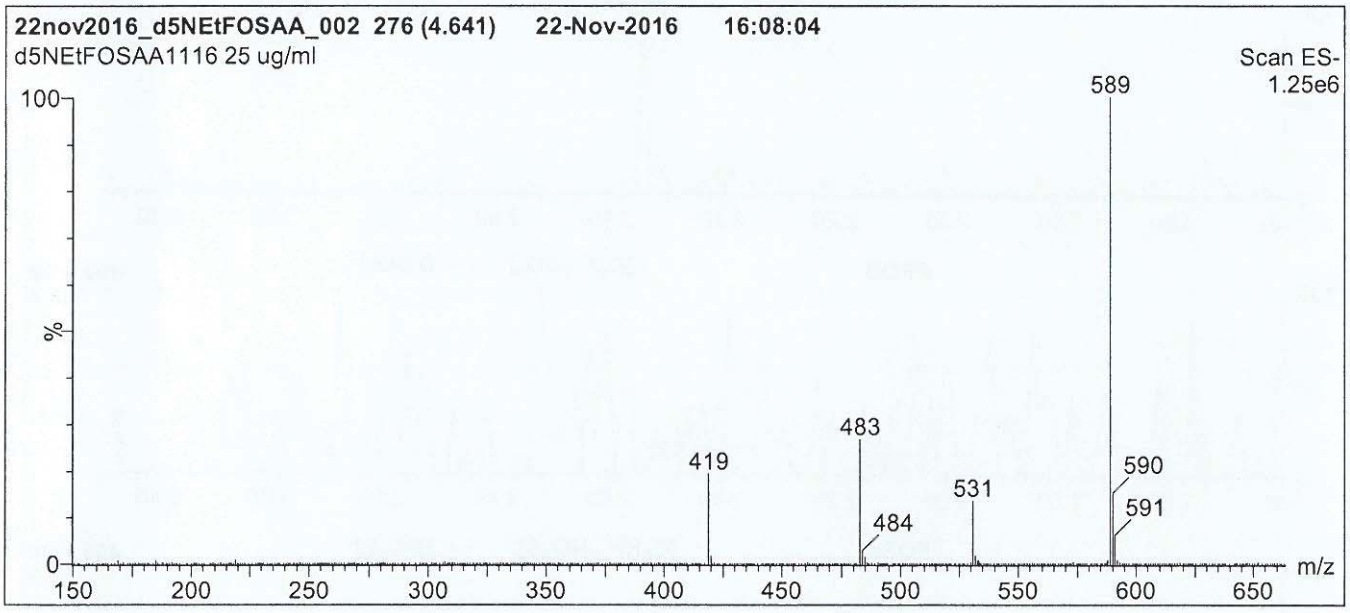
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 & ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

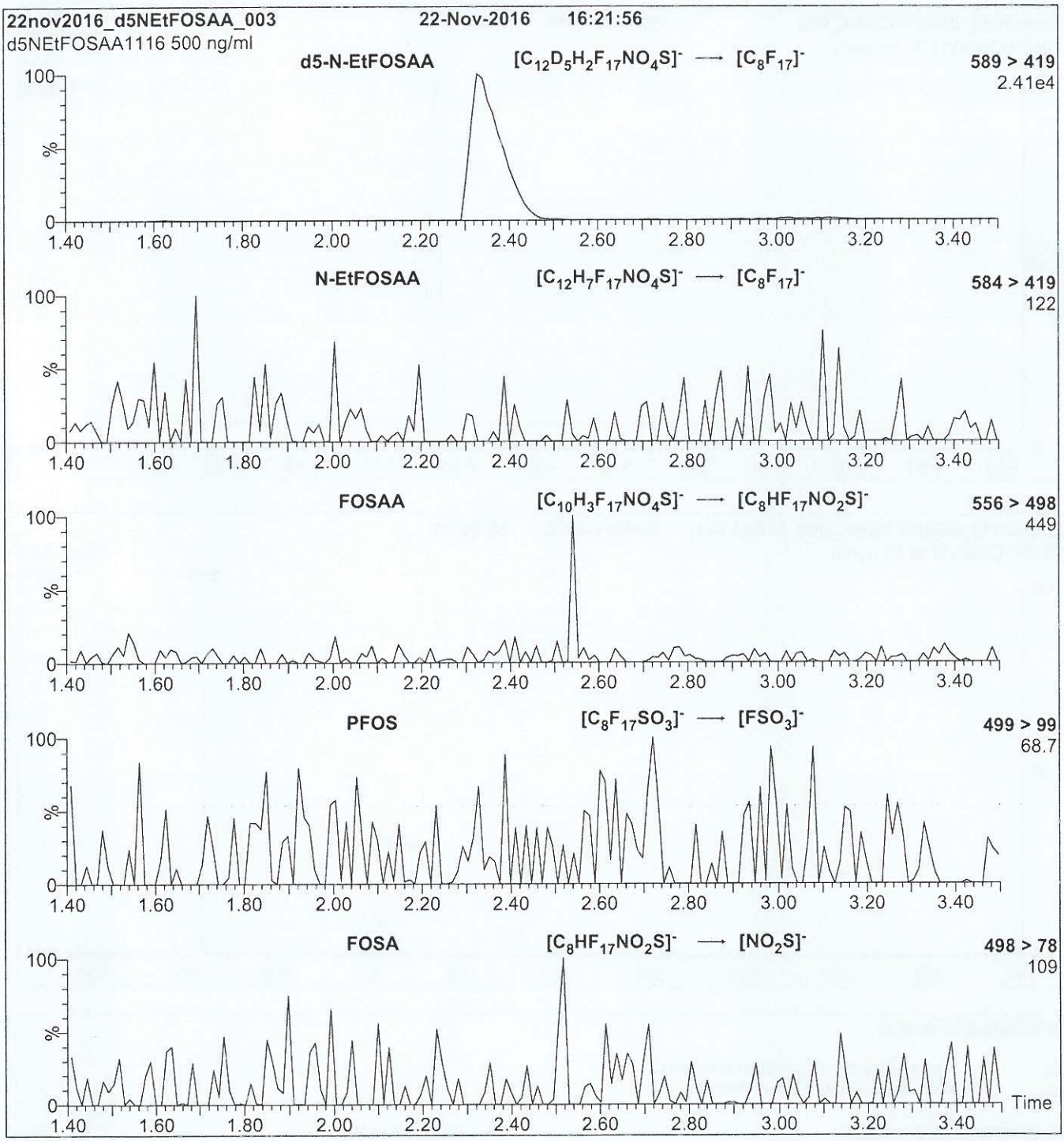
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

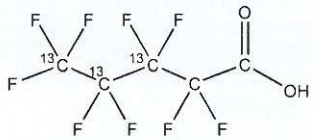
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

17D0502

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M3PFPeA	**LOT NUMBER:**	M3PFPeA0216
COMPOUND:	Perfluoro-n-[3,4,5-$^{13}C_3$]pentanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_2HF_9O_2$	**MOLECULAR WEIGHT:**	267.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($3,4,5$-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.95% of perfluoro-n-[$^{13}C_3$]butanoic acid and 0.05% of perfluoro-1-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

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

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

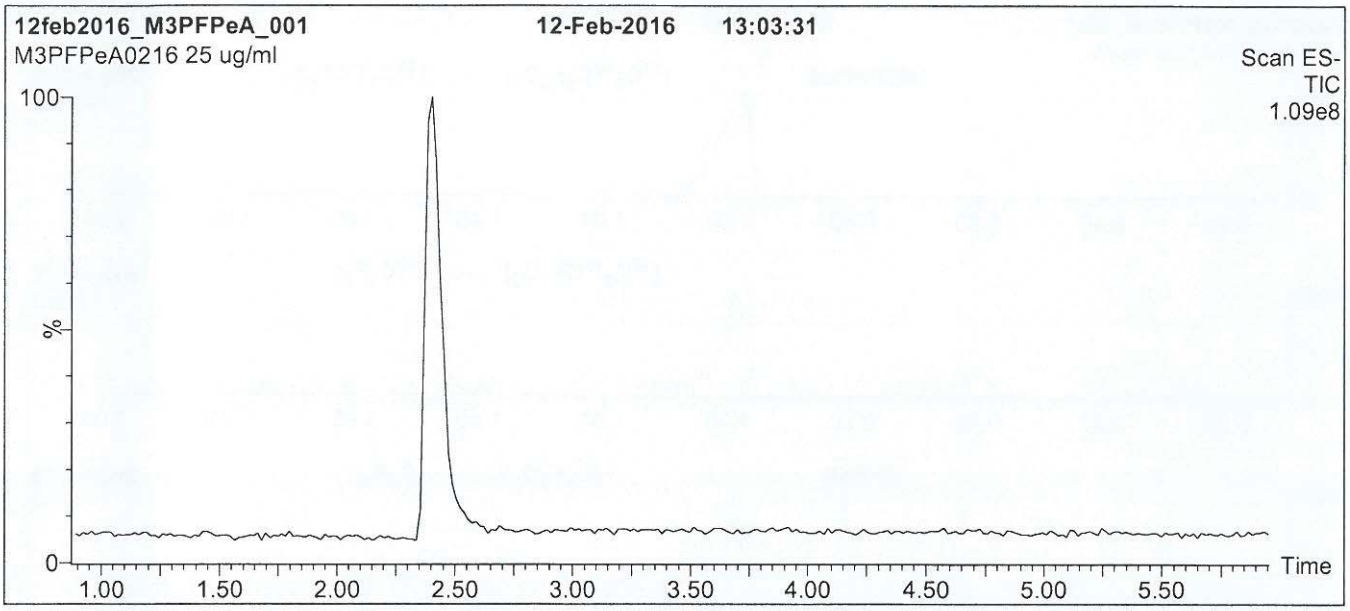
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

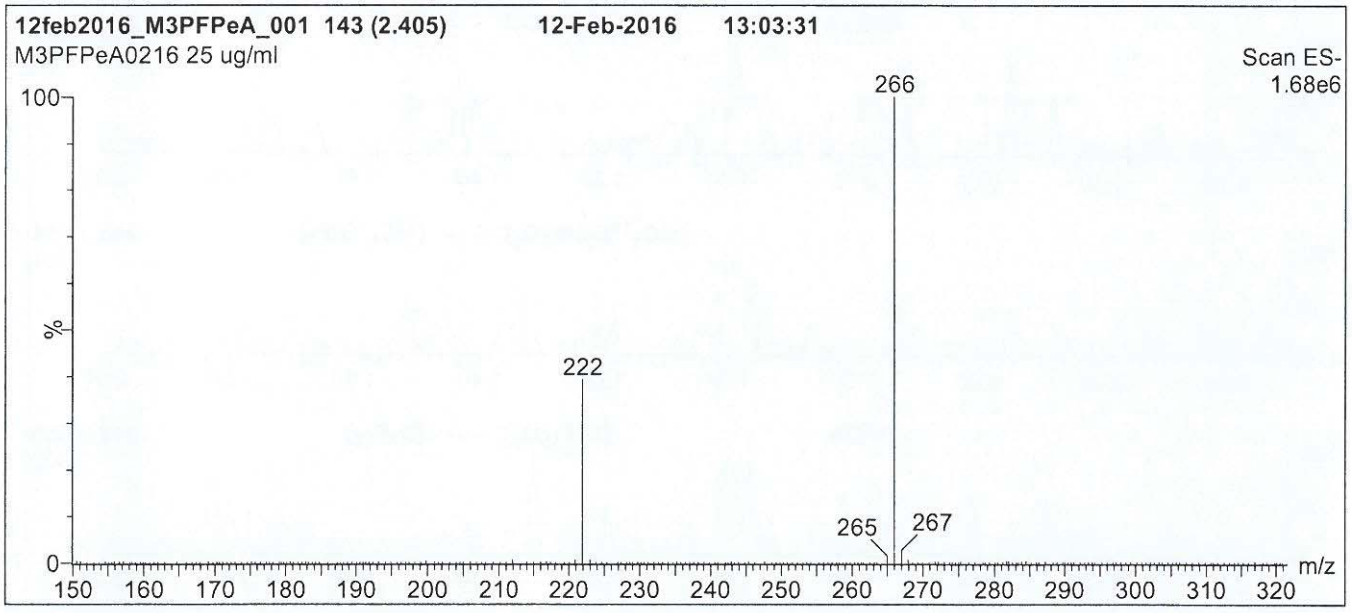
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **M3PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

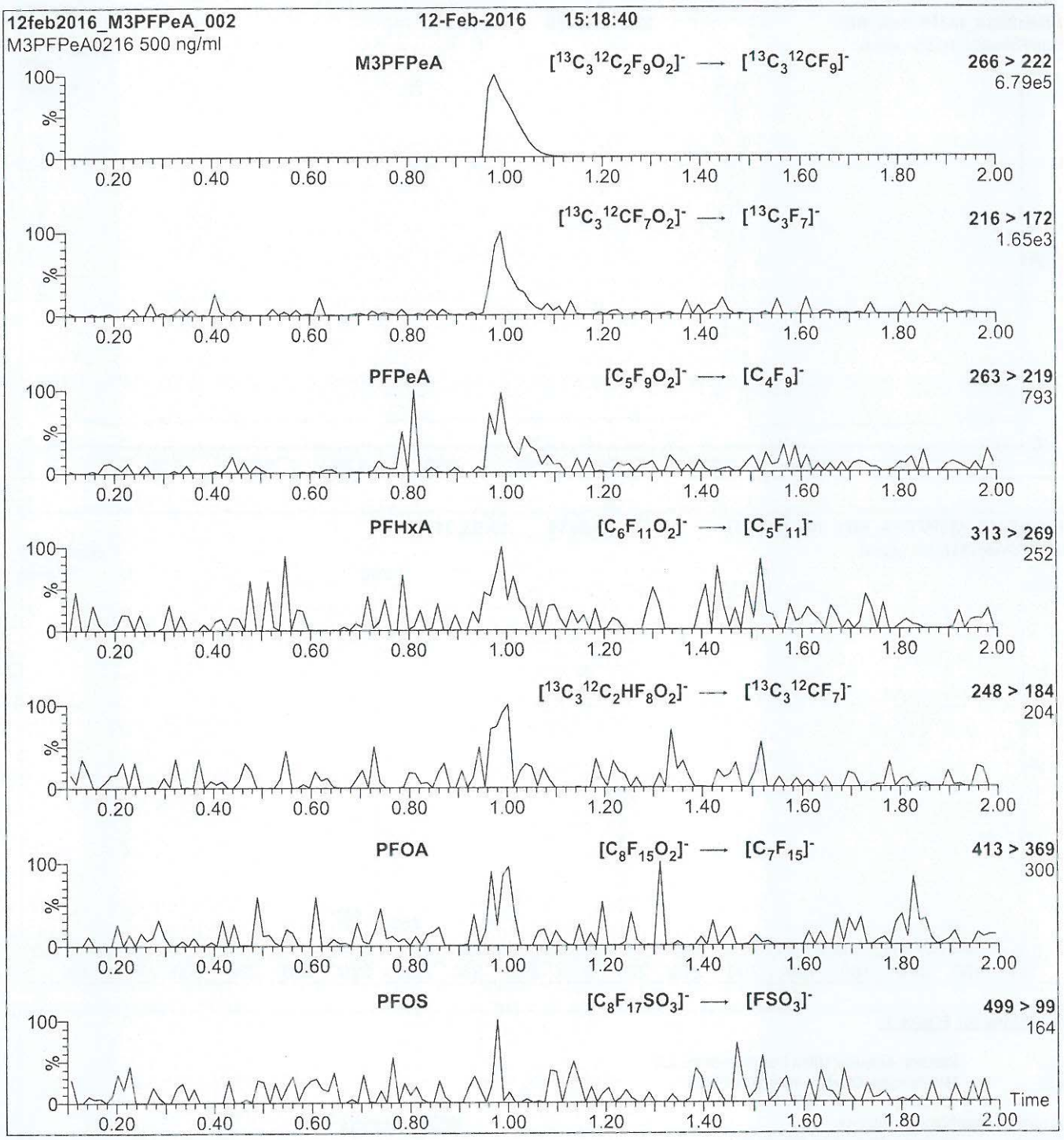
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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: **M3PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFPeA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 9

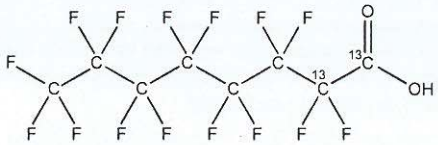
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

17D0503

PRODUCT CODE: M2PFOA
LOT NUMBER: M2PFOA0216
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
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)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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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).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

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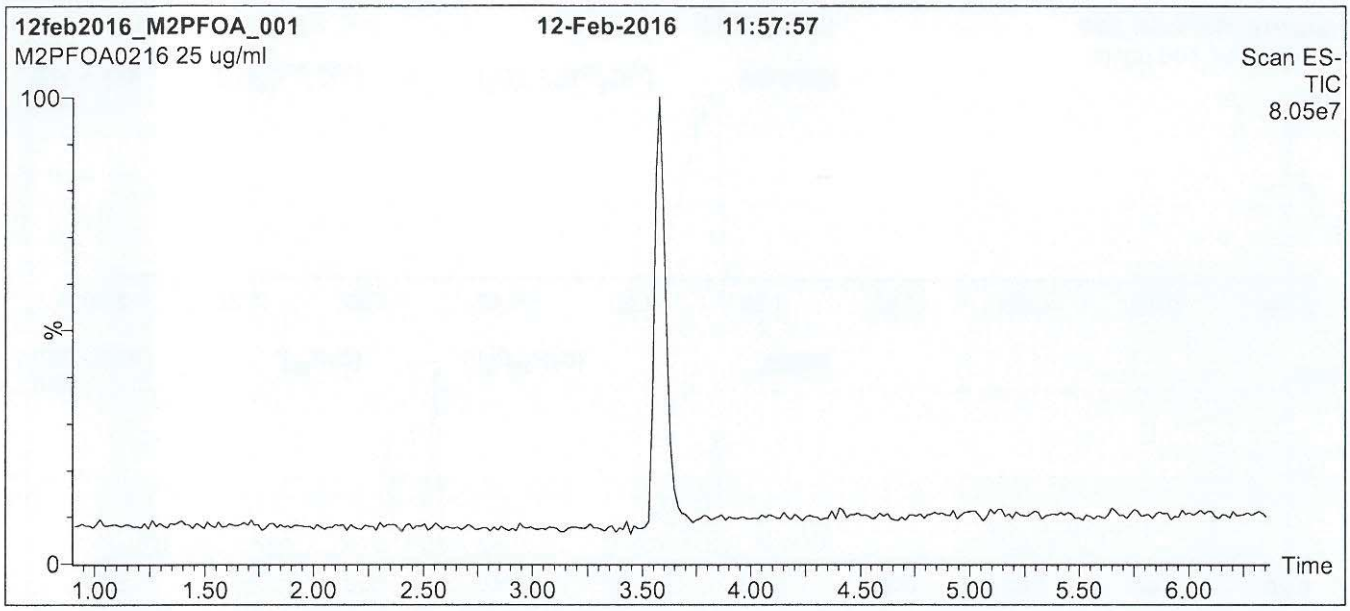
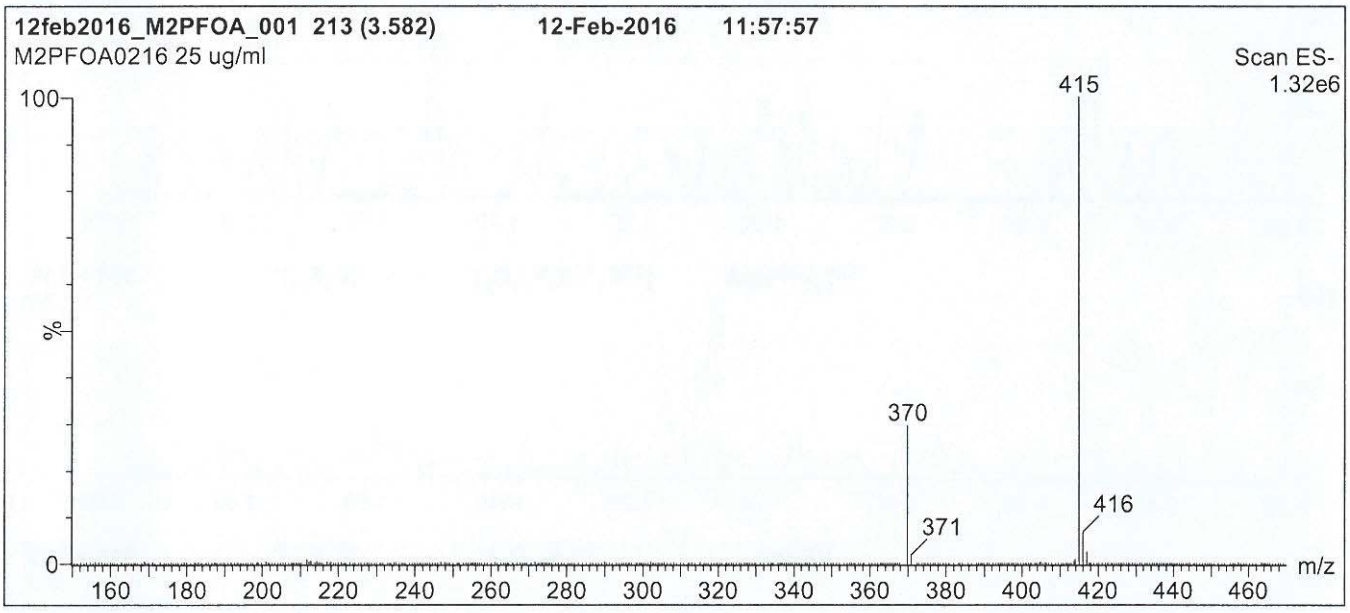
Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

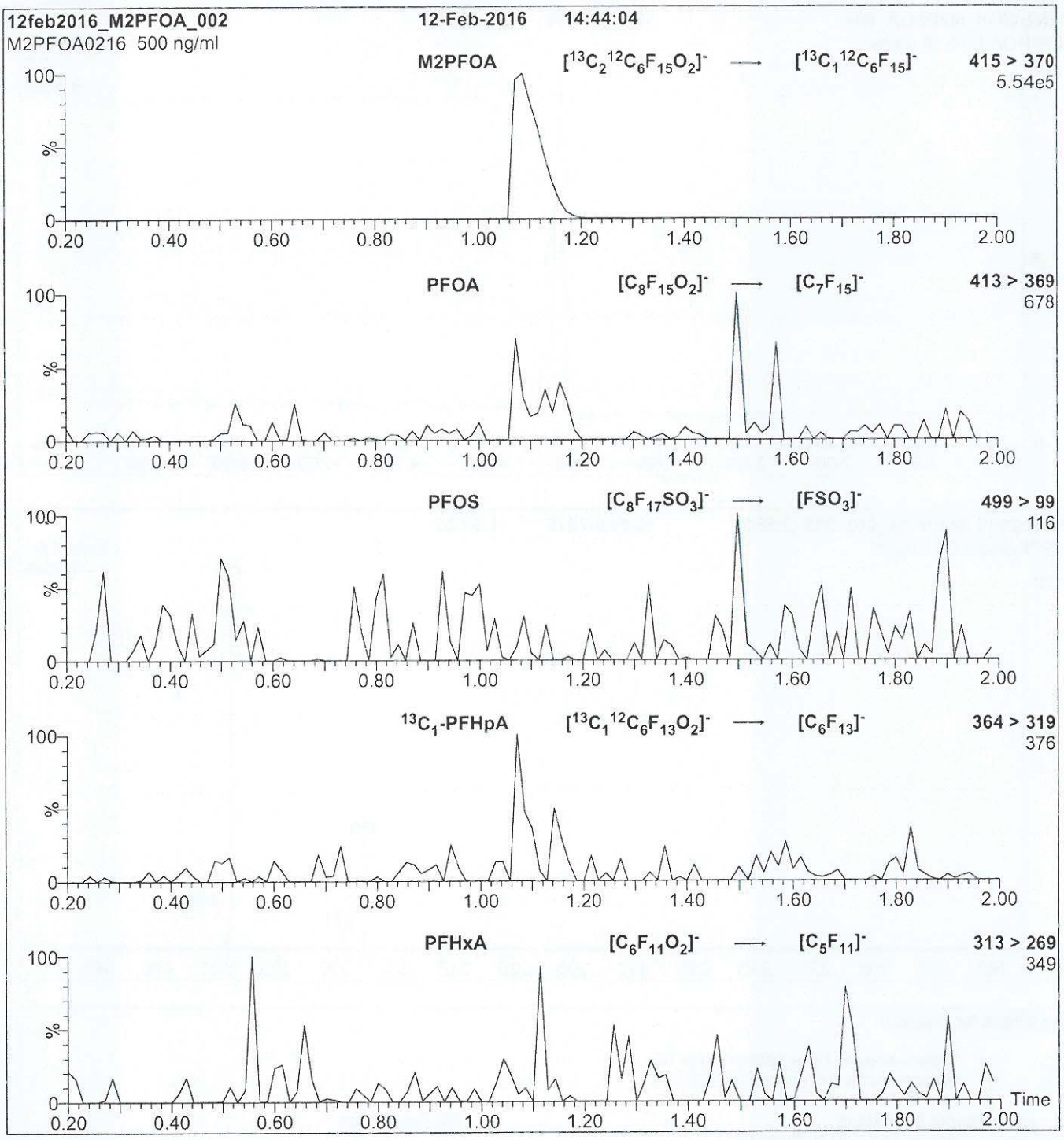
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

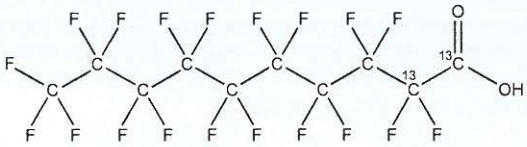
17D0504

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

LOT NUMBER: MPFDA0916

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/07/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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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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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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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO 34 REFERENCE MATERIAL PRODUCER

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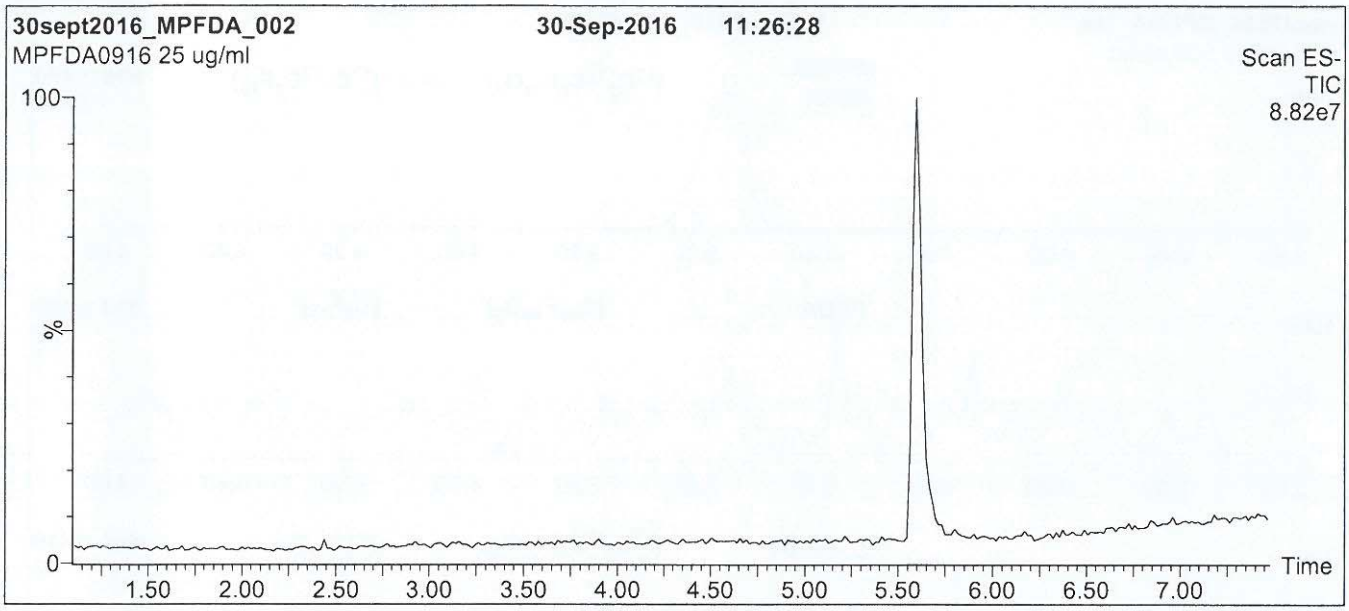
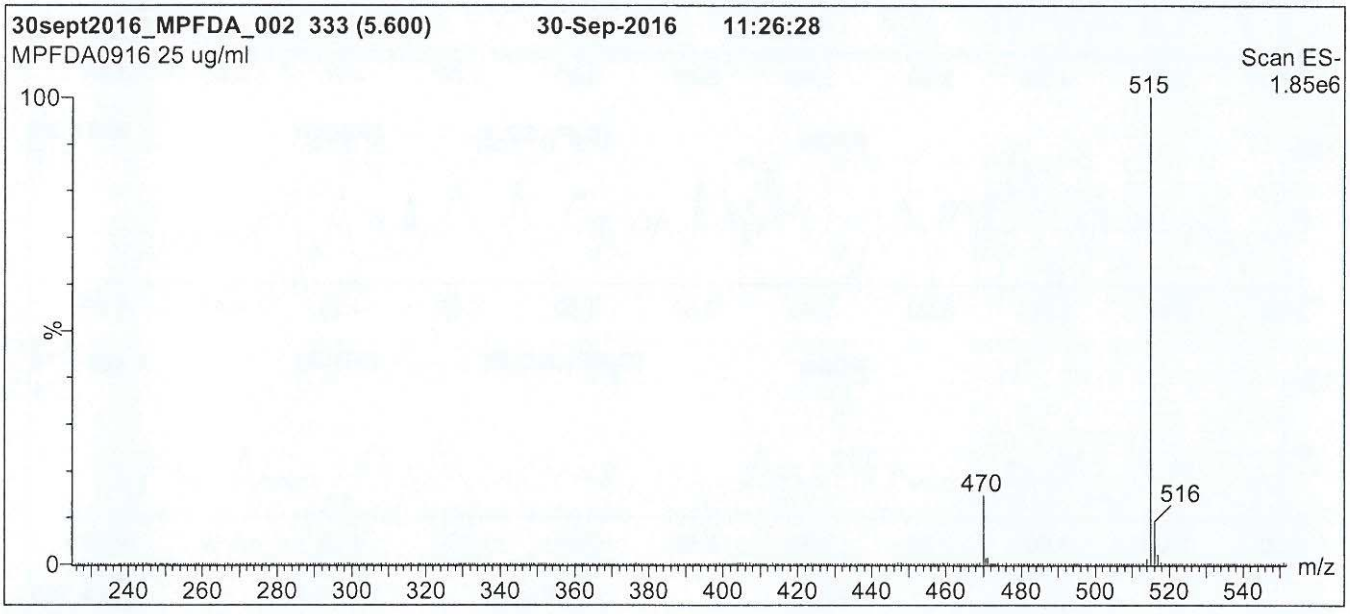
Figure 1: **MPFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

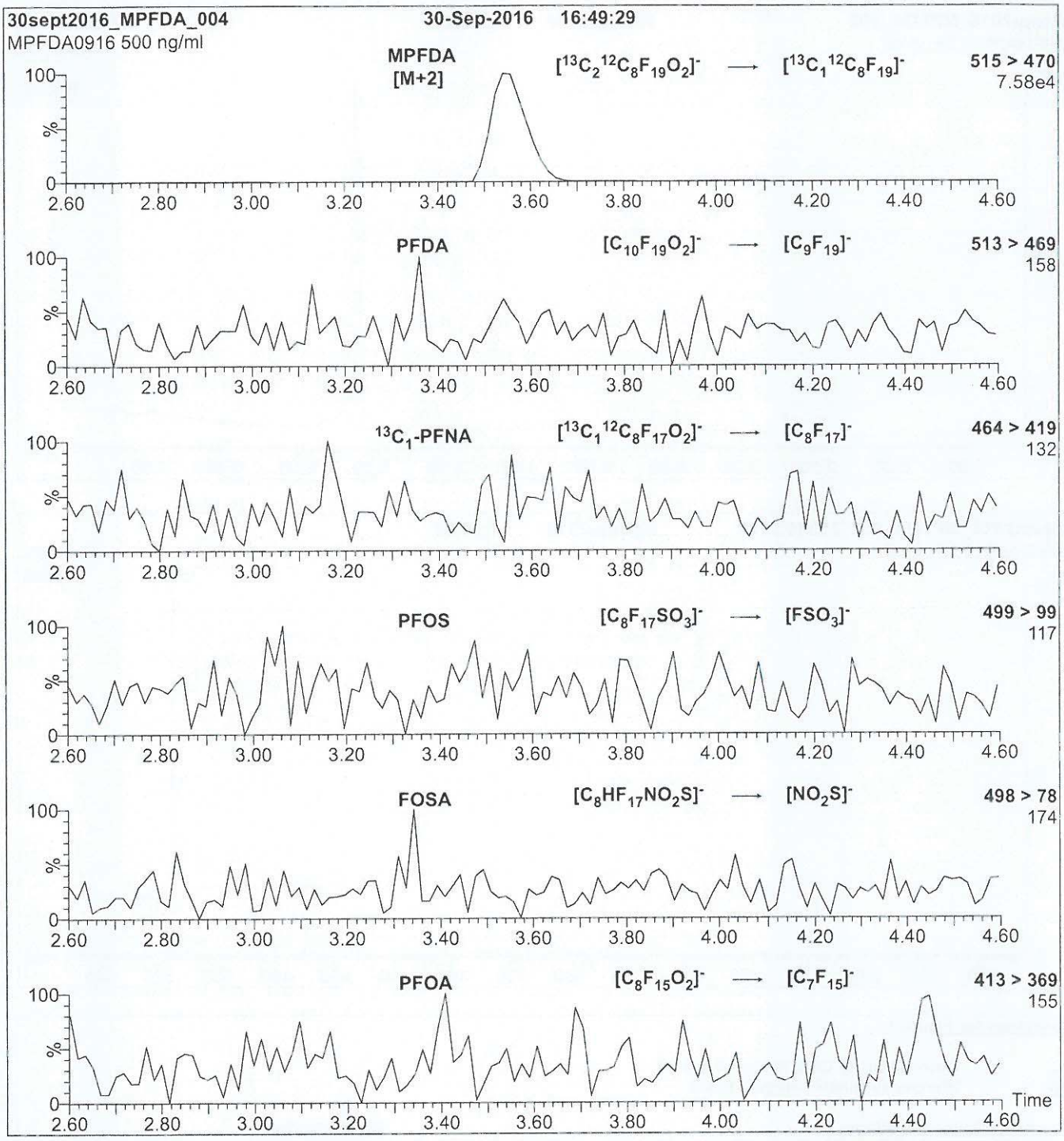
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

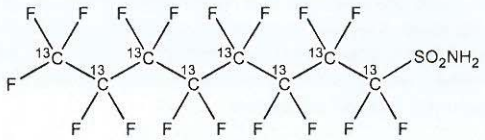
17D0505

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

LOT NUMBER: M8FOSA1215I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	12/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/22/2020		
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:** 12/13/2016 (mm/dd/yyyy)

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

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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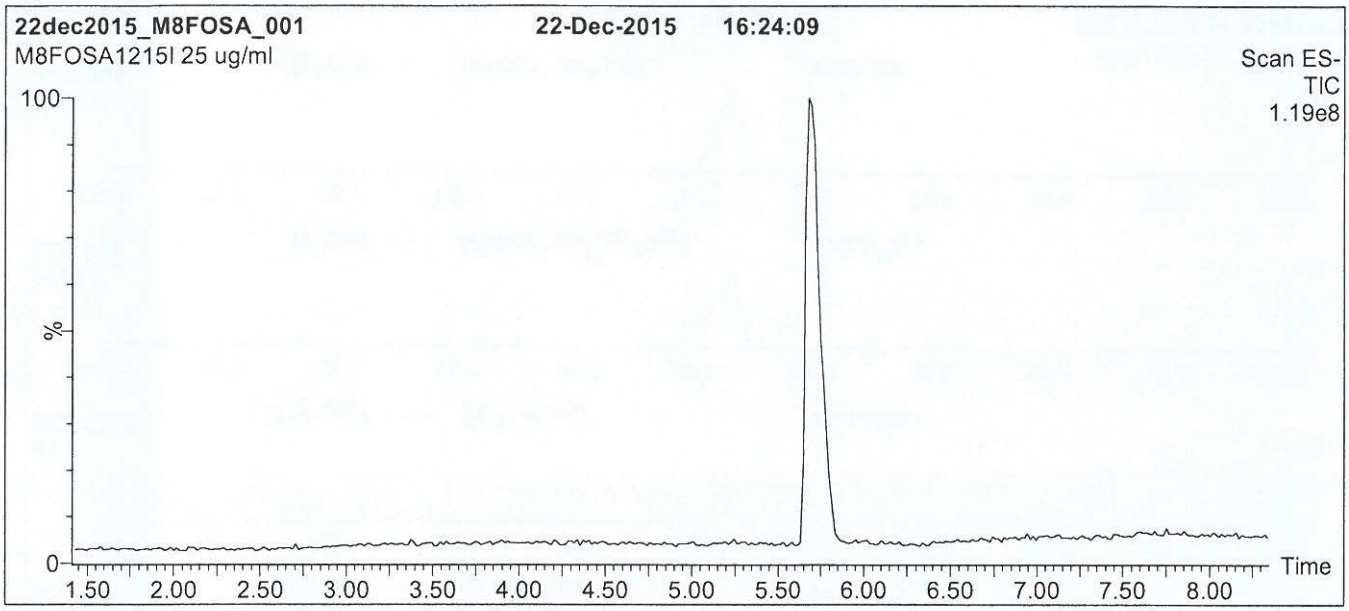
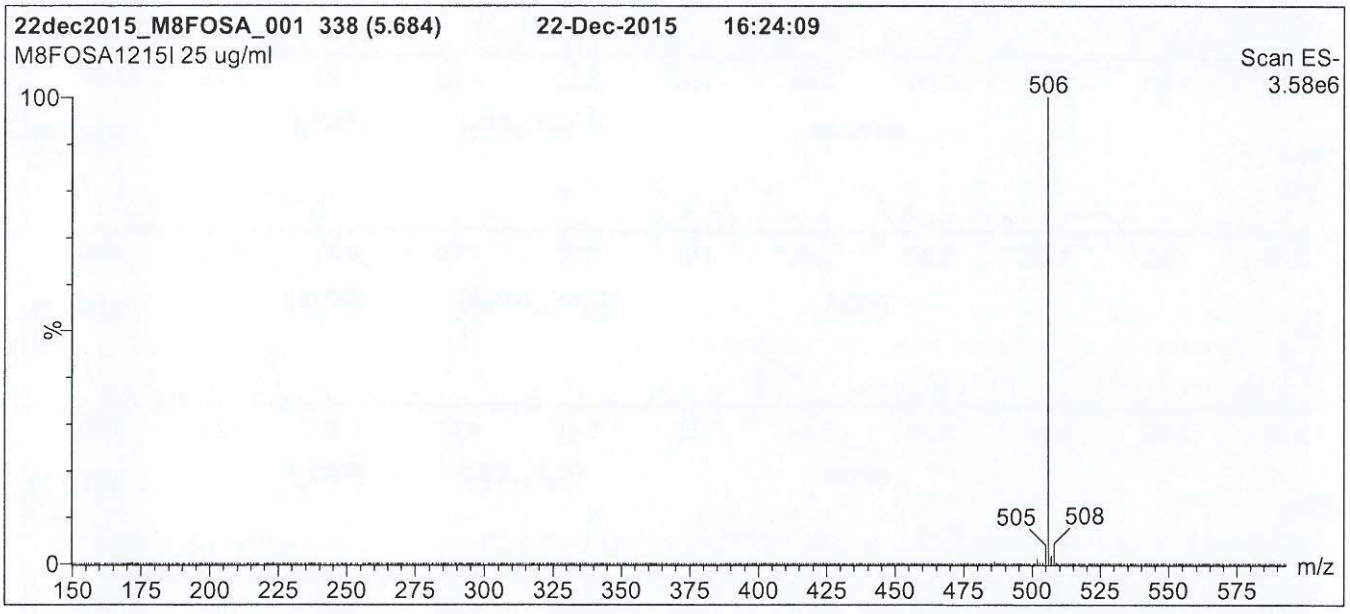
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

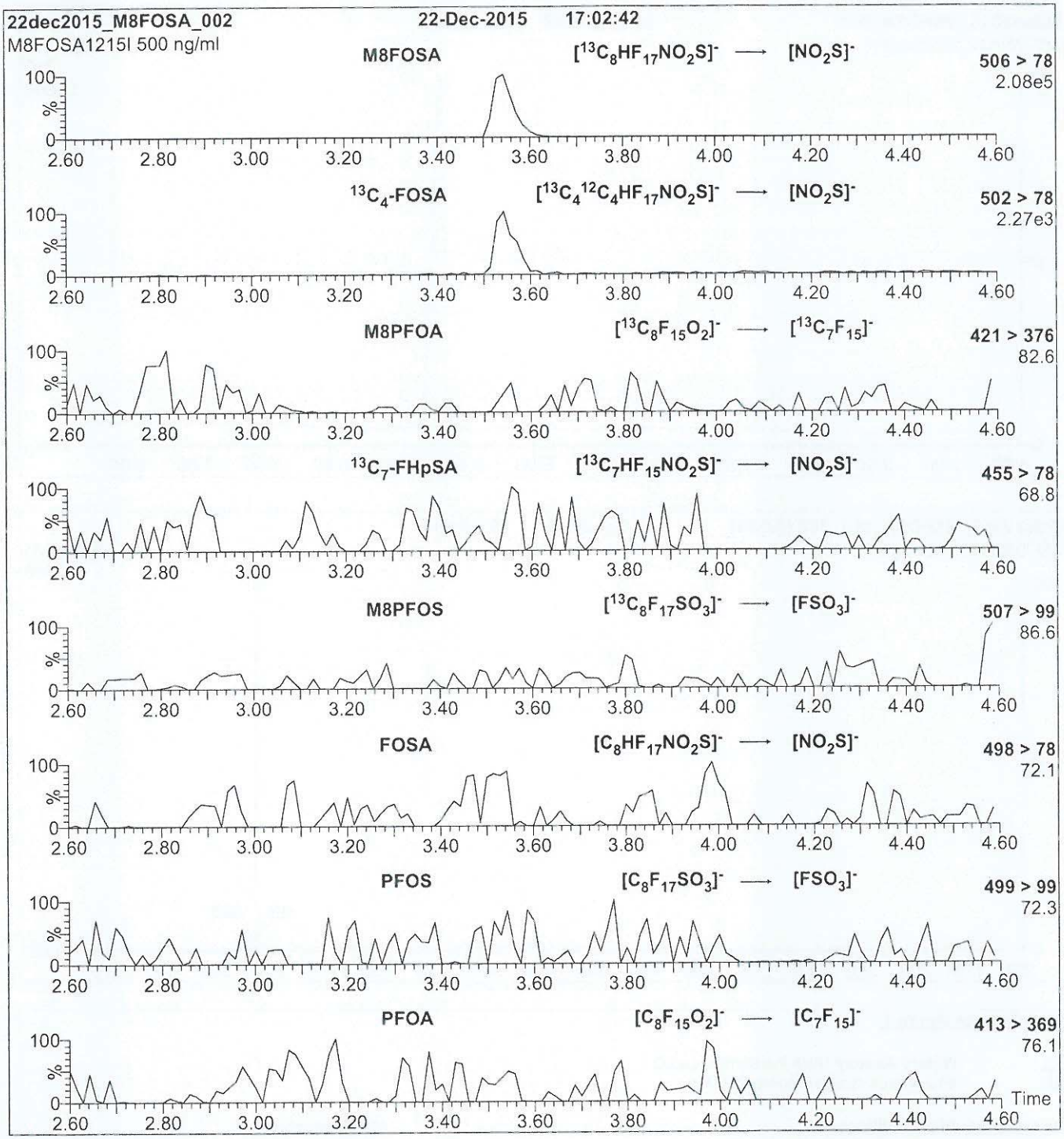
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

17E24-14

WELLINGTON LABORATORIES

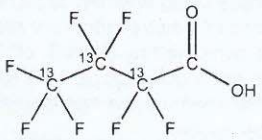
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBA
COMPOUND: Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid

LOT NUMBER: M3PFBA0516

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CHF_7O_2$	**MOLECULAR WEIGHT:**	217.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (2,3,4-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-[$^{13}C_3$]propanoic acid and also contains ~ 1.0% of perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid due to the naturally occurring isotopic abundance of ^{13}C in the unlabelled carbon atom.

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Certified By: _____ **Date:** 07/08/2016
B.G. Chittim (mm/dd/yyyy)

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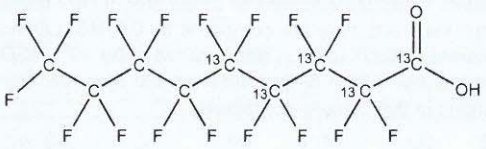
17E2417

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFNA	**LOT NUMBER:**	MPFNA0916
COMPOUND:	Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 10/11/2016 (mm/dd/yyyy)

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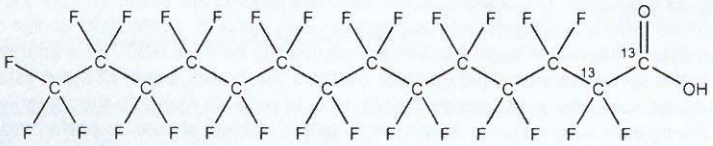
17E2418

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA0217
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	03/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	03/01/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 03/07/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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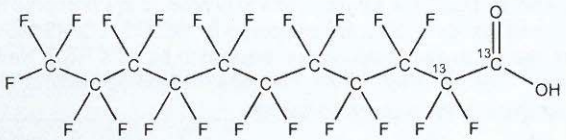
17E2419

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA
LOT NUMBER: MPFUdA1116
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_9HF_{21}O_2$
MOLECULAR WEIGHT: 566.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

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Certified By: B.G. Chittim **Date:** 12/07/2016 (mm/dd/yyyy)

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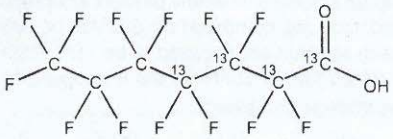
17E2420

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M4PFHpA	**LOT NUMBER:**	M4PFHpA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 07/05/2016 (mm/dd/yyyy)

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17E2421

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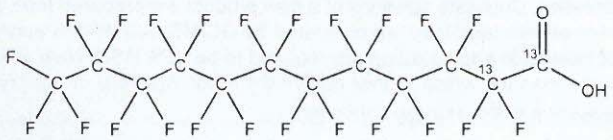
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDoA0416

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 04/15/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17E2612

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E1718	18O2-PFHxS	17-May-17	** Vendor **	17-Feb-22	17-May-17 12:46 by INJ	0.8

Description:	18O2-PFHxS dil.	Expires:	26-May-18
Standard Type:	Other	Prepared:	26-May-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.946	Department:	LCMS
Vials:	1	Last Edit:	26-May-17 10:53 by INJ

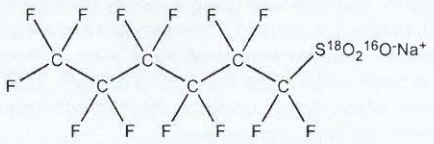
Analyte	CAS Number	Concentration	Units
18O2-PFHxS		40	ug/mL

17E1718

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFHxS	**LOT NUMBER:**	MPFHxS0217
COMPOUND:	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFOS).
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

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Analytical Standard Record

Vista Analytical Laboratory

17E2613

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2415	13C2-8:2 FTS	24-May-17	** Vendor **	22-Aug-21	24-May-17 11:21 by INJ	0.8

Description:	13C2-8:2 FTS dil.	Expires:	26-May-18
Standard Type:	Other	Prepared:	26-May-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.958	Department:	LCMS
Vials:	1	Last Edit:	26-May-17 10:55 by INJ

Analyte	CAS Number	Concentration	Units
13C2-8:2 FTS		40	ug/mL

17E2415

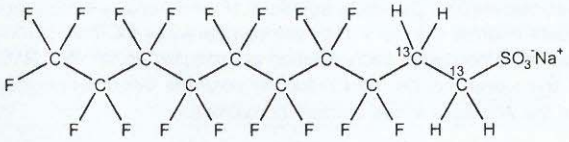
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0816

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 09/02/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17E2614

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2416	13C2-6:2 FTS	24-May-17	** Vendor **	17-Feb-22	24-May-17 11:21 by INJ	0.75

Description:	13C2-6:2 FTS dil.	Expires:	26-May-18
Standard Type:	Other	Prepared:	26-May-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.891	Department:	LCMS
Vials:	1	Last Edit:	26-May-17 10:57 by INJ

Analyte	CAS Number	Concentration	Units
13C2-6:2 FTS		40	ug/mL

17E2416

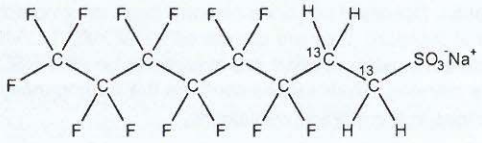
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0217

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.5 ± 2.4 µg/ml (M2-6:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 02/24/2017 (mm/dd/yyyy)
B.G. Chittim

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Analytical Standard Record

Vista Analytical Laboratory

17E2615

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2412	153 C-P: F S	24-V ay-17	TT * endor TT	56-Sep-21	24-V ay-17 11Mb I y N O	607.

DescriptionM	153 C-P: F S dil0	ExpiresM	29-V ay-1C
Standard vypeM	F ther	PreparedM	29-V ay-17
SoluentM	V ethanol	Prepared ByM	Naac J 0Oohnson
: inal * ol8me (mls)M	60C7	DepartmentM	L3 V S
* ialsM	1	Last EditM	29-V ay-17 16Mb I y N O

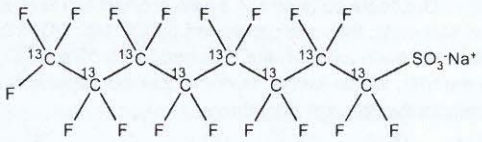
Analyte	CAS Number	Concentration	Units
153 C-P: F S		46	8g/mL

17E2412

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M8PFOS	**LOT NUMBER:**	M8PFOS0916
COMPOUND:	Sodium perfluoro-1-[$^{13}C_8$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	530.05
CONCENTRATION:	48.5 ± 2.4 µg/ml (Na salt) 46.4 ± 2.3 µg/ml (M8PFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>97%	**ISOTOPIC PURITY:**	>99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.6% of sodium perfluoro-1-[$^{13}C_7$]heptanesulfonate ($^{13}C_7$-PFHpS), ~ 1.0% of chlorohexadecafluoro-1-[$^{13}C_8$]octanesulfonate, and ~ 1.5% of sodium perfluoro-1-[$^{13}C_4$]octanesulfonate (MPFOS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/11/2016 (mm/dd/yyyy)

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

Analytical Standard Record

Vista Analytical Laboratory

17E2616

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2413	13C3-PFBS	24-May-17	** Vendor **	02-Aug-21	24-May-17 11:20 by INJ	0.8

Description:	13C3-PFBS dil.	Expires:	26-May-18
Standard Type:	Other	Prepared:	26-May-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.93	Department:	LCMS
Vials:	1	Last Edit:	26-May-17 11:01 by INJ

Analyte	CAS Number	Concentration	Units
13C3-PFBS		40	ug/mL

17E2413

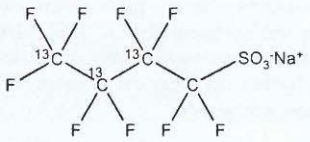
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0815

COMPOUND: Sodium perfluoro-1-[2,3,4-$^{13}C_3$]butanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CF_9SO_3Na$	**MOLECULAR WEIGHT:**	325.06
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($2,3,4\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	08/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
L-PFDS		1	ug/mL
6:2 FTS	27619-97-2	1	ug/mL
L-PFTeDA		1	ug/mL
L-PFPeA		1	ug/mL
L-PFOSA		1	ug/mL
L-PFOS		0.788	ug/mL
L-PFODA		1	ug/mL
L-PFOA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
L-PFNA		1	ug/mL
L-PFHxS		0.812	ug/mL
L-PFHxDA		1	ug/mL
L-PFHxA		1	ug/mL
L-PFUnA		1	ug/mL
L-PFHpA		1	ug/mL
MeFOSA	31506-32-8	5	ug/mL
L-PFDoA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
L-PFDA		1	ug/mL
L-PFBS		1	ug/mL
L-PFBA		1	ug/mL
L-8:2FTS		1	ug/mL
L-6:2 FTS		1	ug/mL
EtFOSE	1691-99-2	5	ug/mL
EtFOSAA	2991-50-6	1	ug/mL
EtFOSA	4151-50-2	5	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
Br-PFHxS	3871-99-6	0.189	ug/mL
8:2 FTS	70887-84-2	1	ug/mL
L-PFHpS		1	ug/mL
PFHxS	355-46-4	1	ug/mL
Total PFHxS		1	ug/mL
Total PFHpS		1	ug/mL
Total PFDS		1	ug/mL
Total 6:2 FTS		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
PFUnA	2058-94-8	1	ug/mL
PFTrDA	72629-94-8	1	ug/mL
PFTeDA	376-06-7	1	ug/mL
PFPeA	2706-90-3	1	ug/mL
PFOSA	754-91-6	1	ug/mL
PFOS	1763-23-1	1	ug/mL
PFODA	16517-11-6	1	ug/mL
L-PFTrDA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
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17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
PFNA	375-95-1	1	ug/mL
Total PFUnA		1	ug/mL
PFHxDA	67905-19-5	1	ug/mL
PFHxA	307-24-4	1	ug/mL
PFHpS	375-92-8	1	ug/mL
PFHpA	375-85-9	1	ug/mL
PFDS	335-77-3	1	ug/mL
PFDoA	307-55-1	1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
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17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
PFDA	335-76-2	1	ug/mL
PFBS	375-73-5	1	ug/mL
PFBA	375-22-4	1	ug/mL
MeFOSE	24448-09-7	5	ug/mL
MeFOSAA	2355-31-9	1	ug/mL
PFOA	335-67-1	1	ug/mL

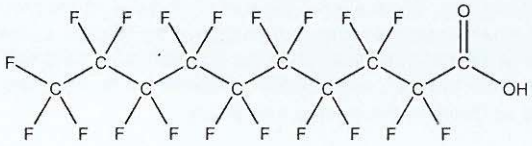
16I1414

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA ✓ **LOT NUMBER:** PFDA0516 ✓
COMPOUND: Perfluoro-n-decanoic acid

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



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$ **MOLECULAR WEIGHT:** 514.08
CONCENTRATION: 50 ± 2.5 µg/ml ✓ **SOLVENT(S):** Methanol ✓
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021 ✓
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/13/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

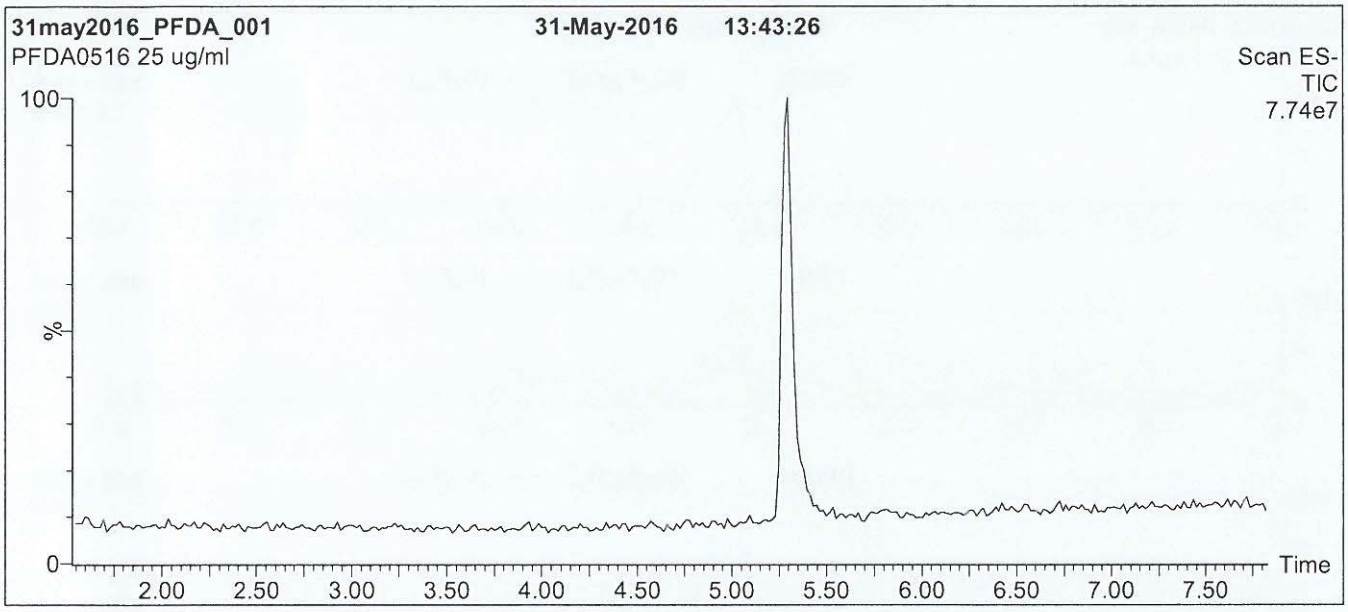
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

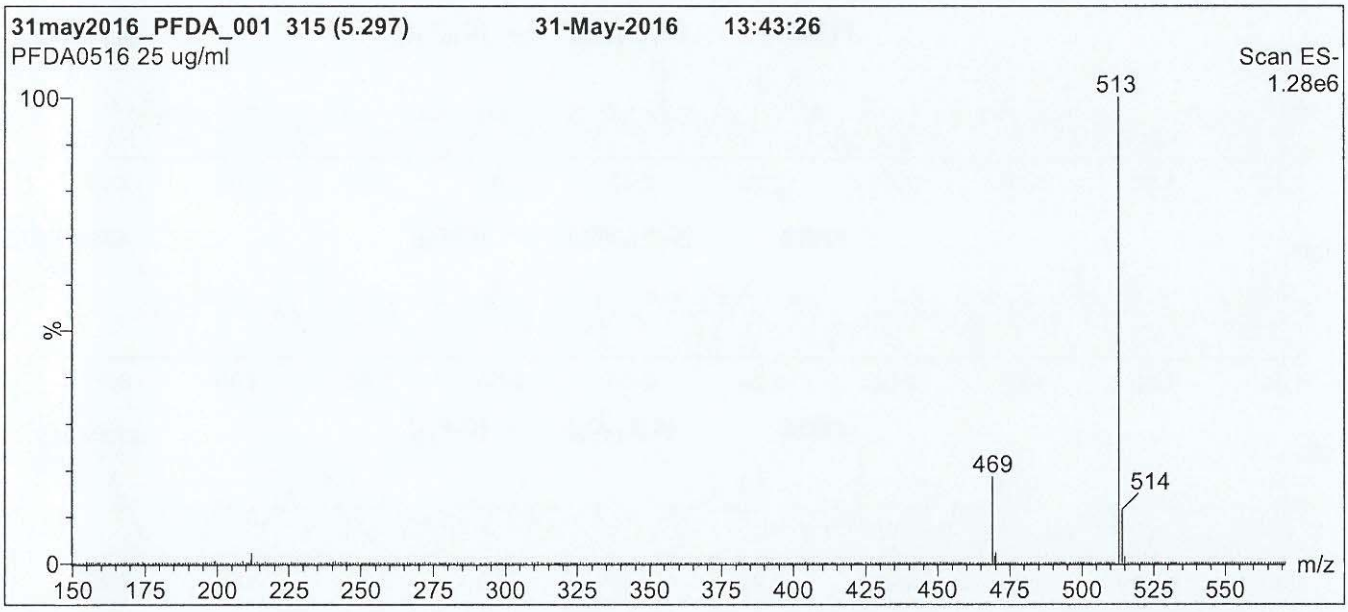
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

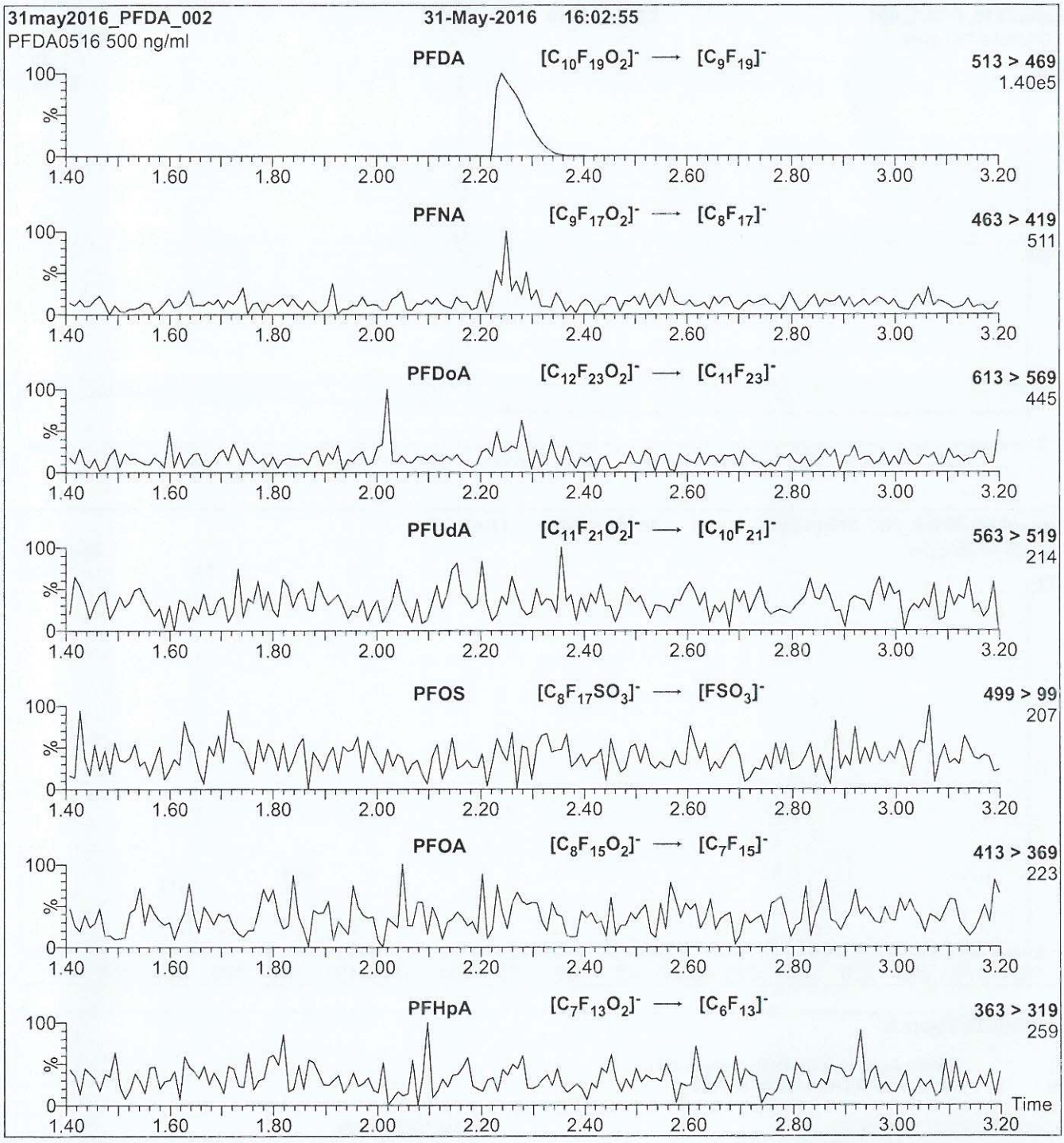
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

16I1415

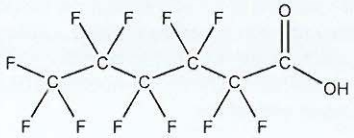
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA ✓
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA1215 ✓

STRUCTURE:



CAS #: 307-24-4

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020 ✓
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/23/2015 (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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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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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

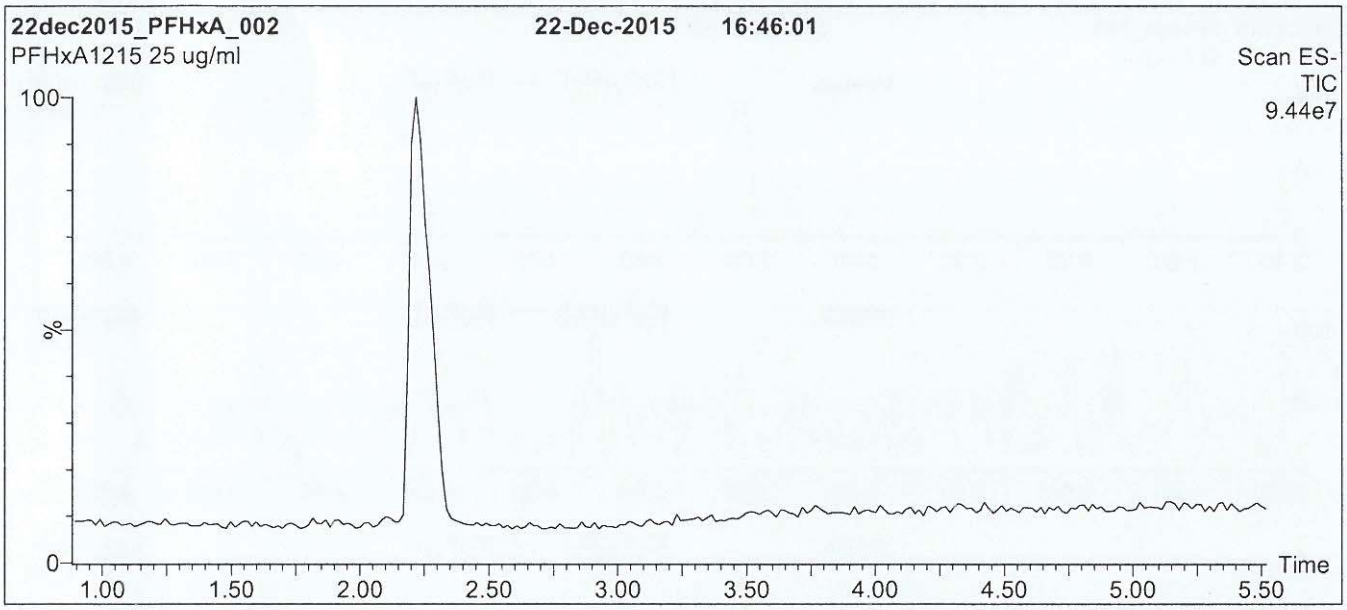
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

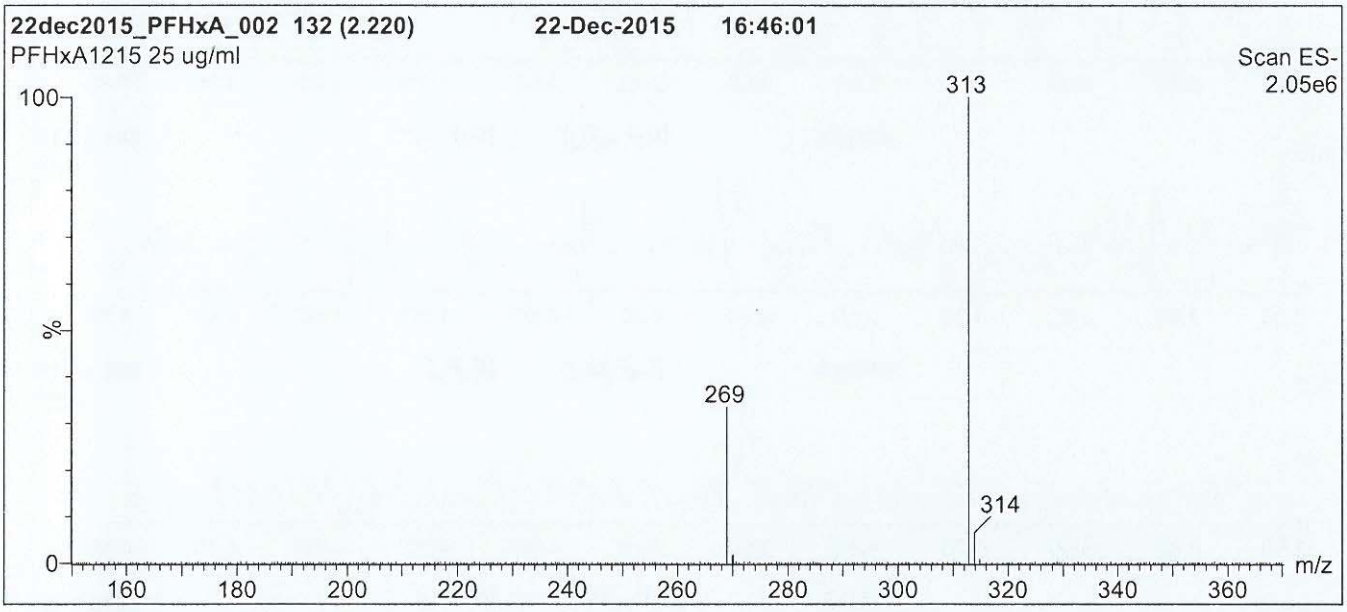
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

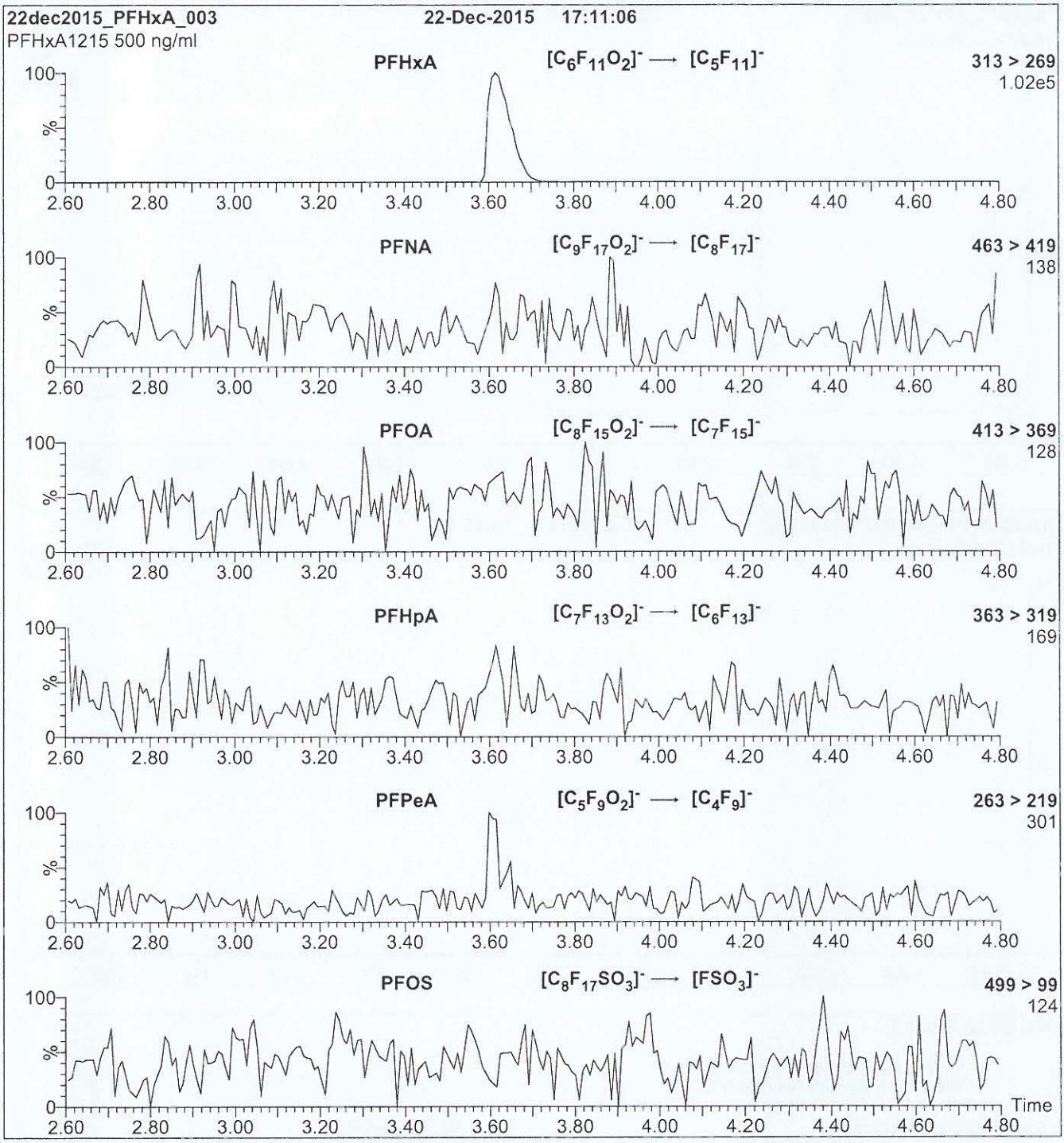
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

16I 1416

WELLINGTON LABORATORIES

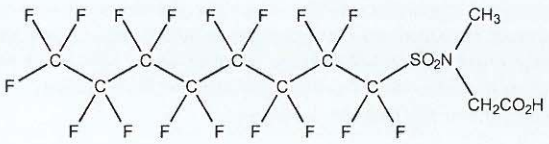
CERTIFICATE OF ANALYSIS DOCUMENTATION

MeFOSAA

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{11}H_6F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

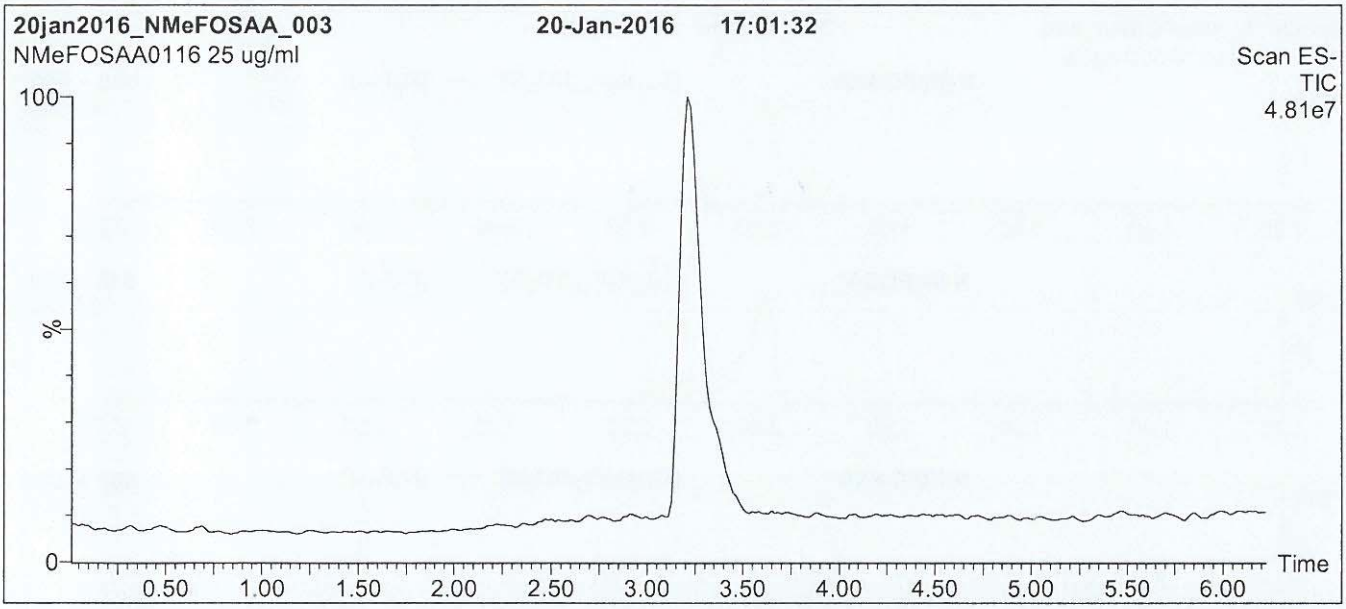
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

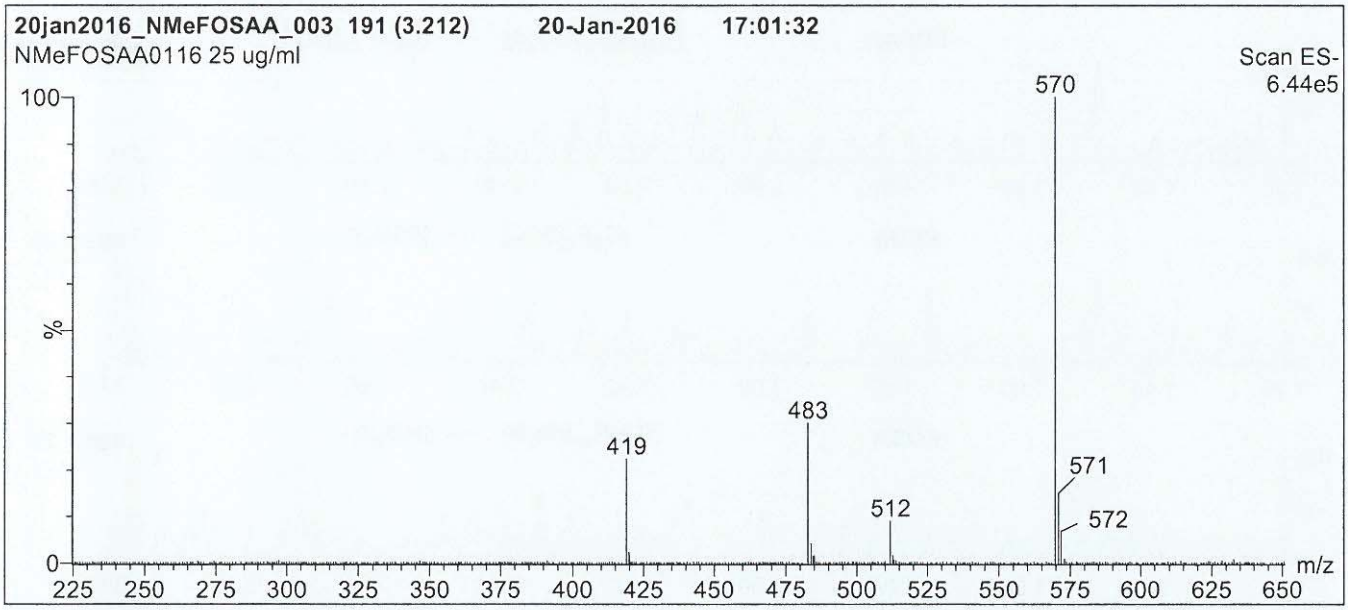
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

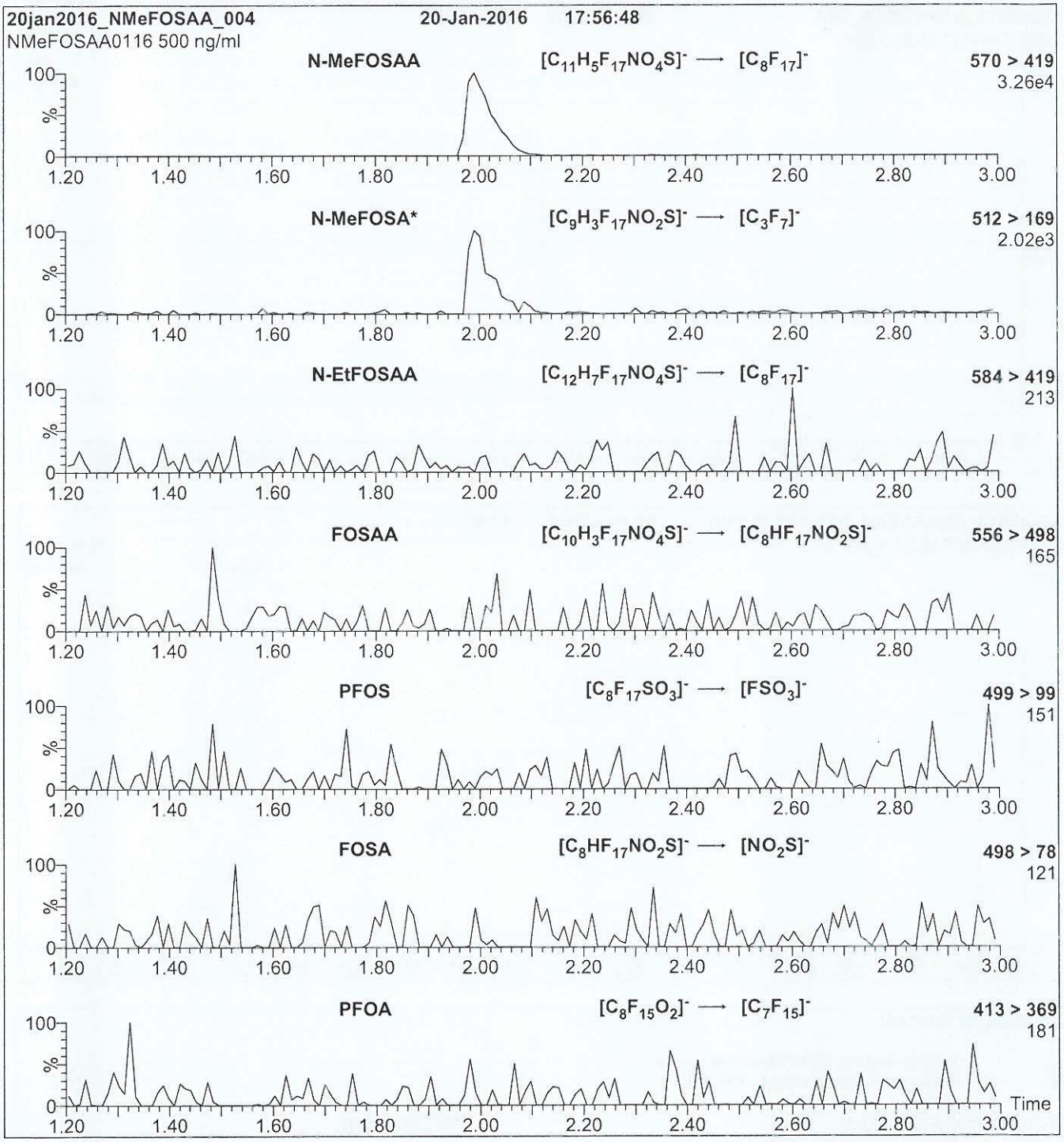
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



*Note: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

16I1417

WELLINGTON LABORATORIES

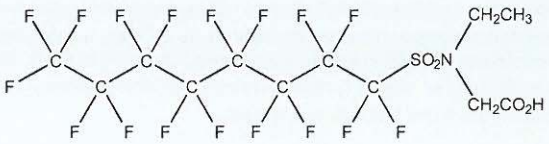
CERTIFICATE OF ANALYSIS
DOCUMENTATION

EtFOSAA

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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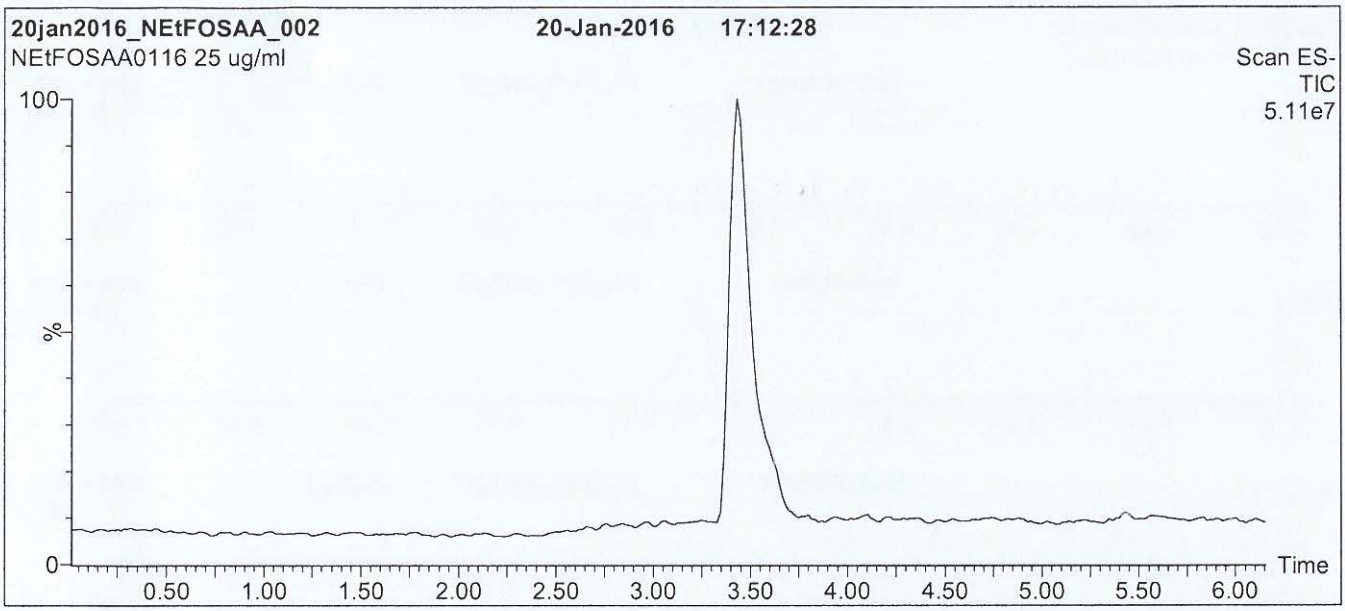
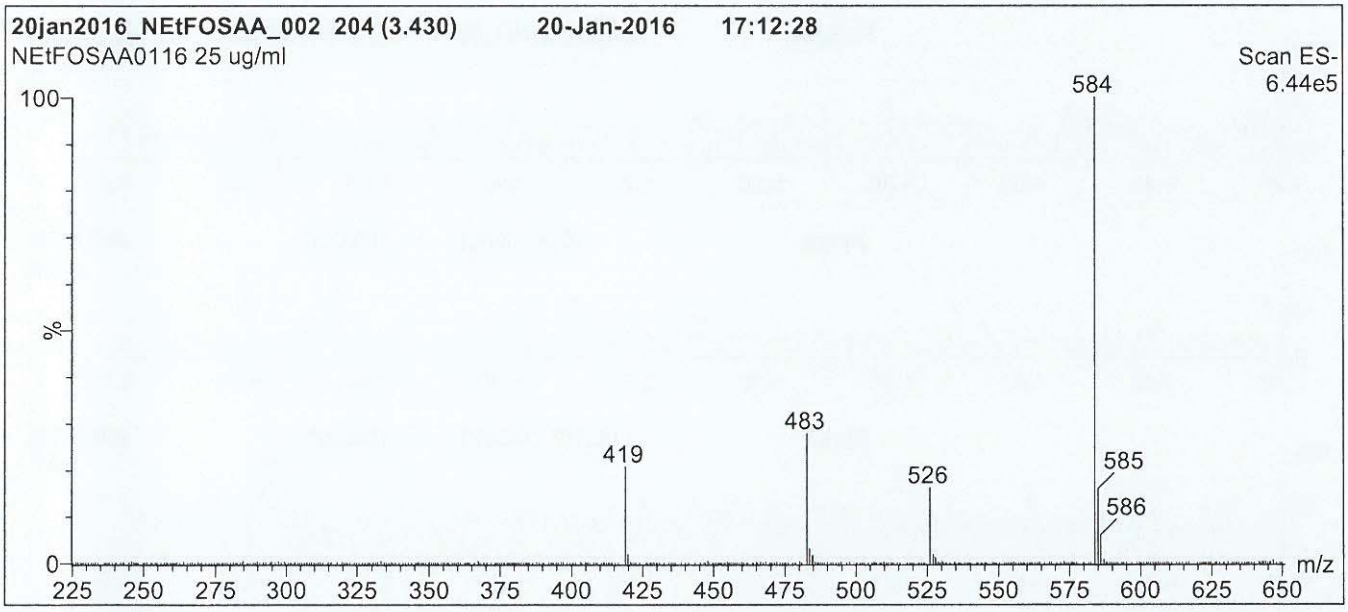
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

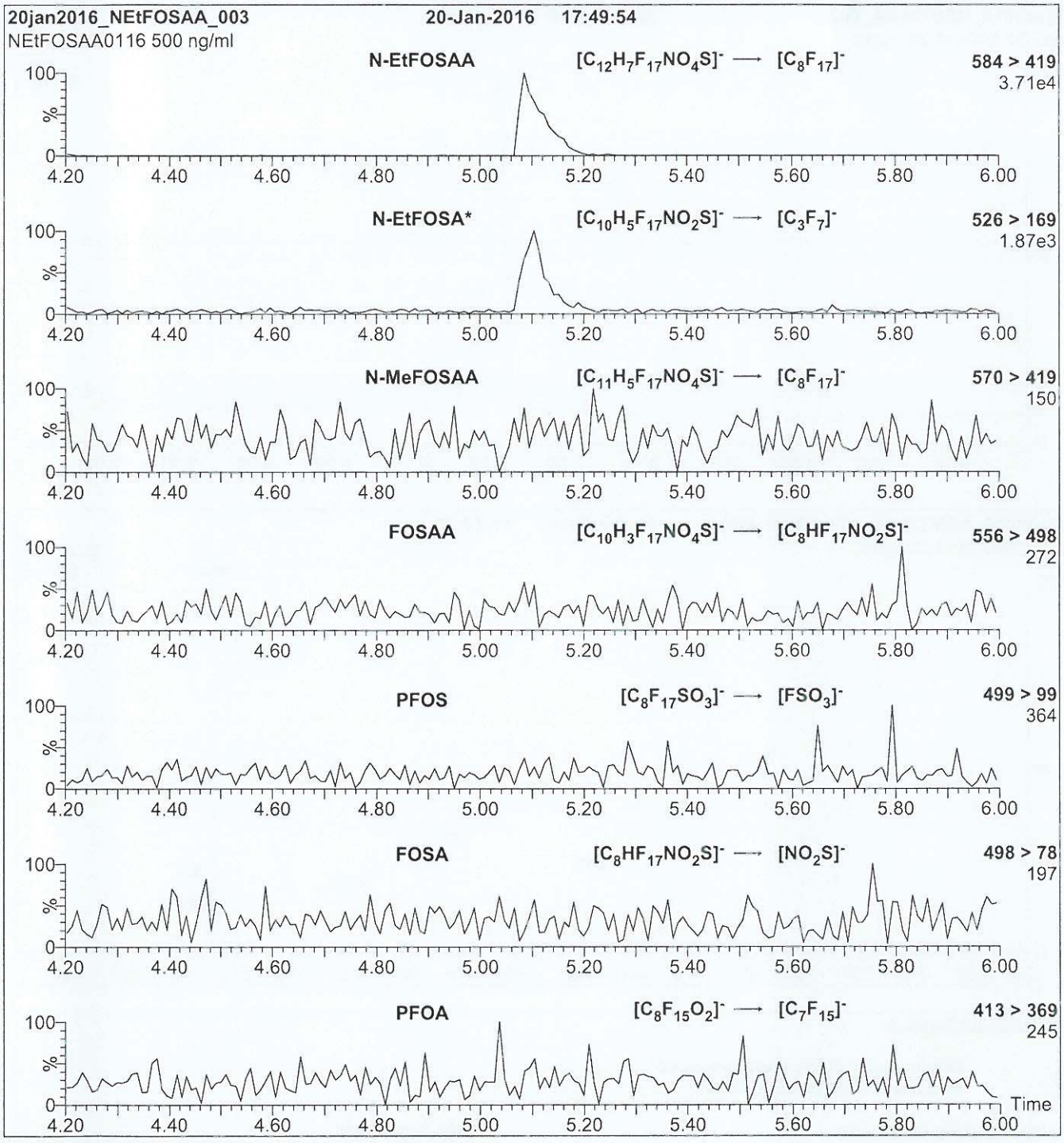
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

16I1418

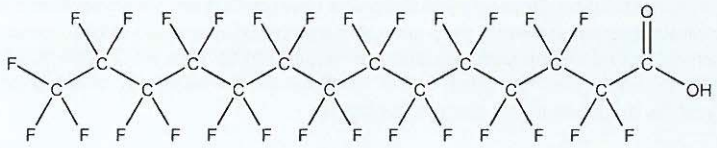
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFTeDA

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) 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:** 12/09/2015 (mm/dd/yyyy)

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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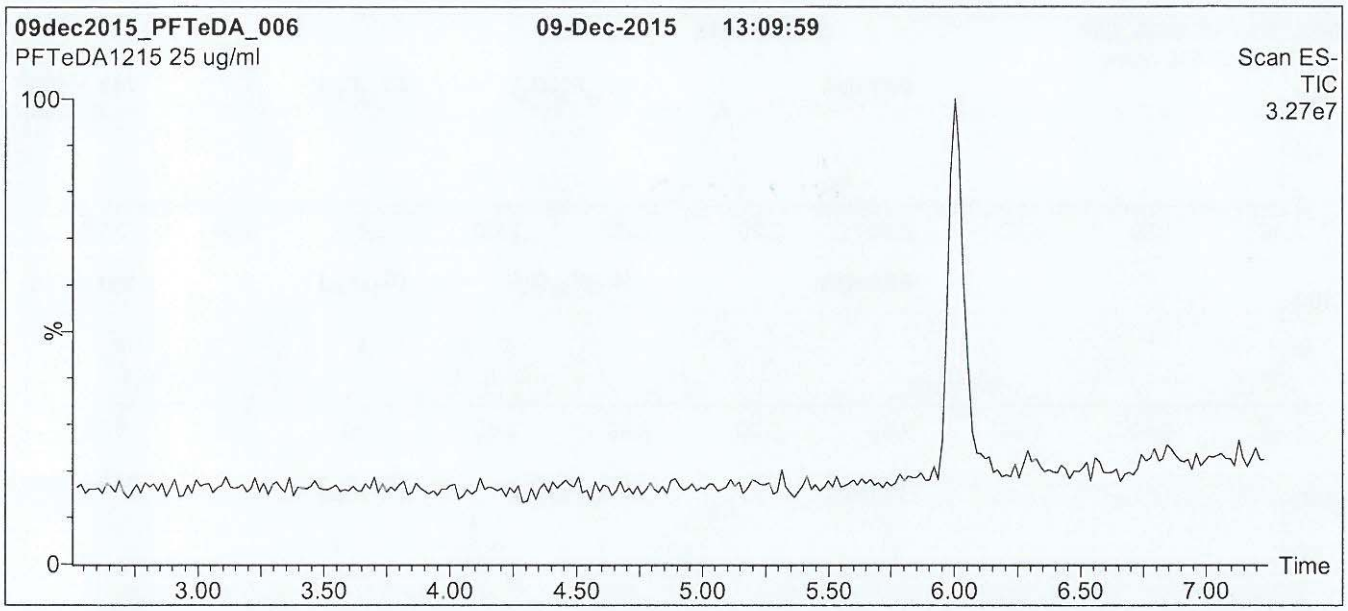
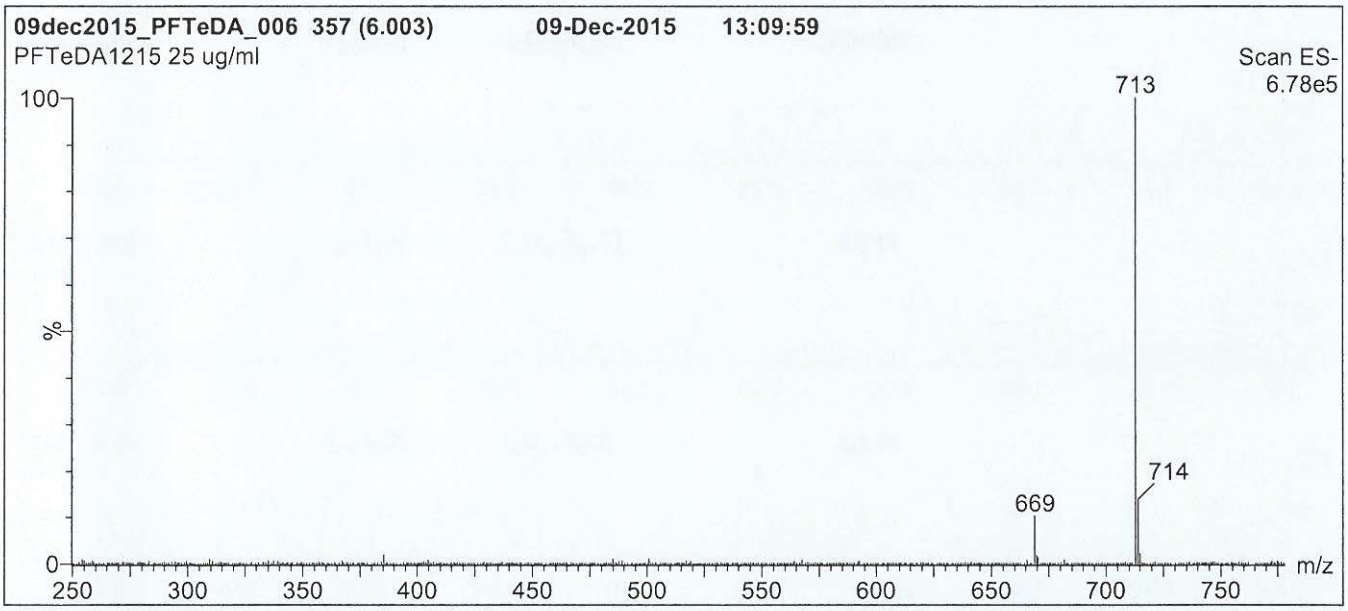
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

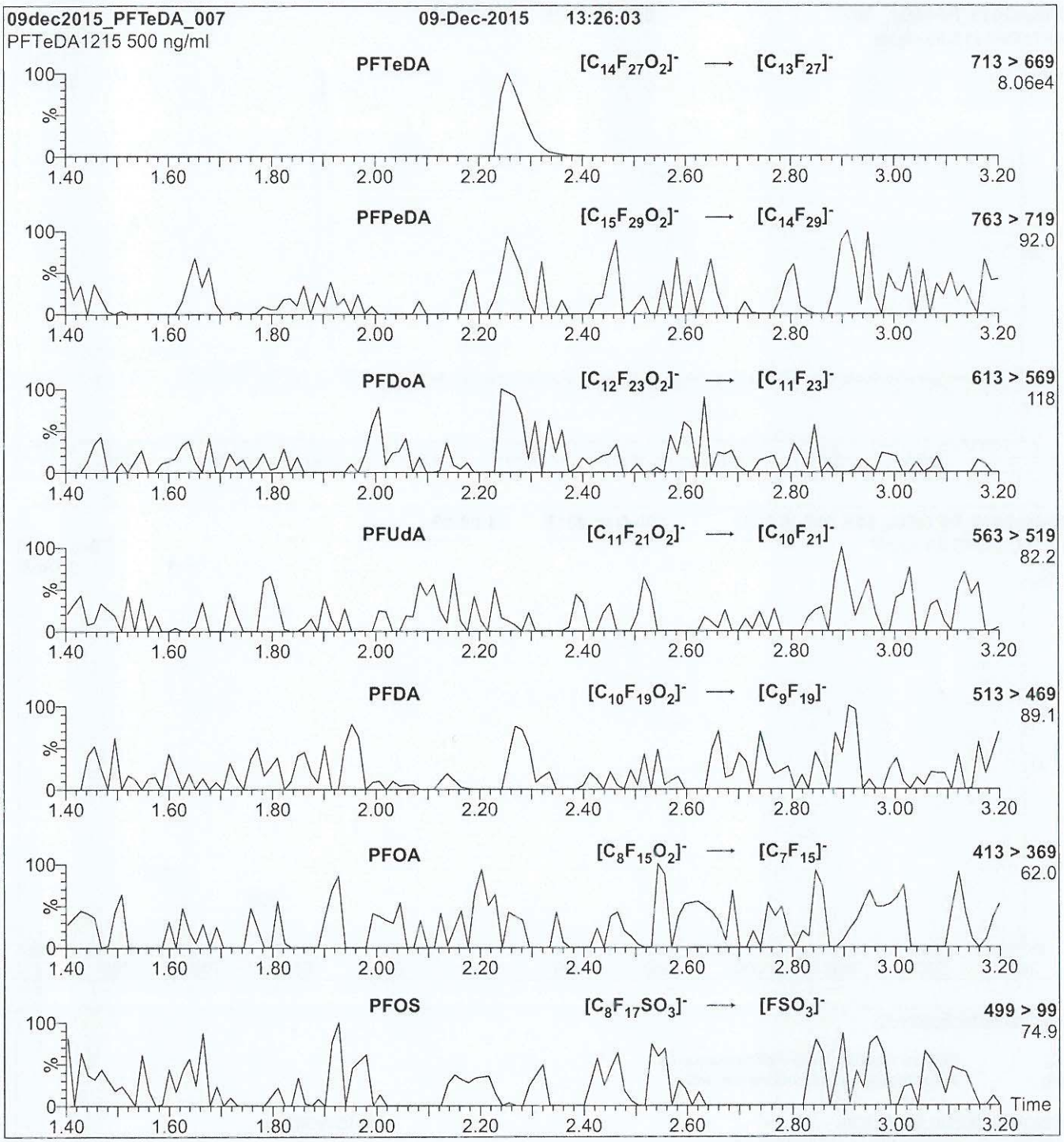
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

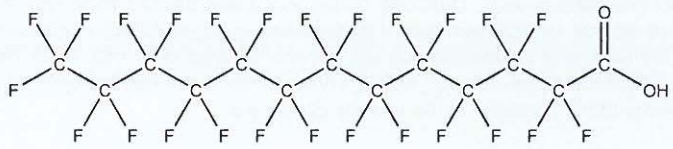
16I3001

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA0216
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE:
CAS #: 72629-94-8



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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/16/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

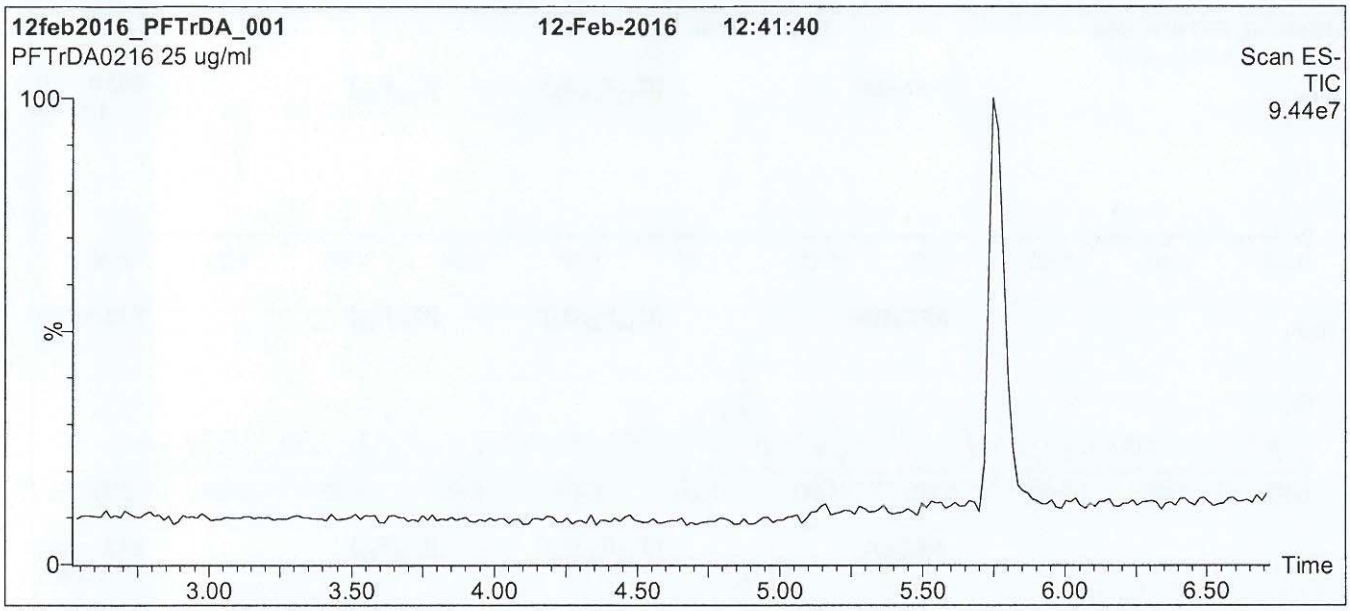
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

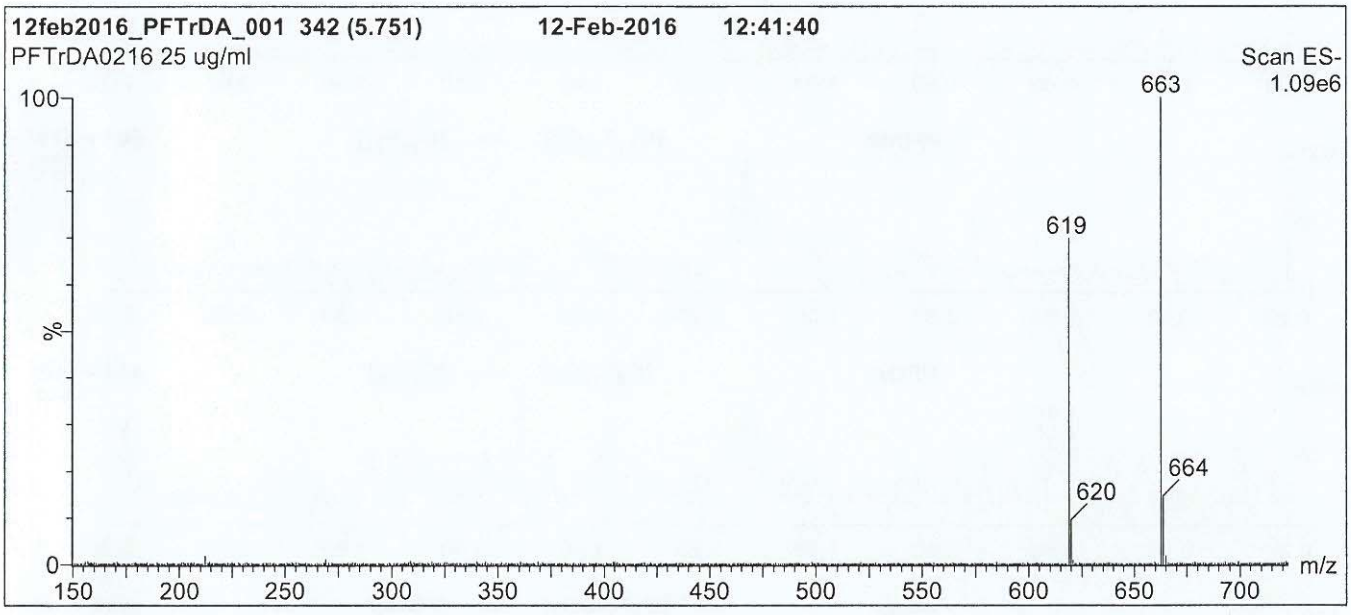
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

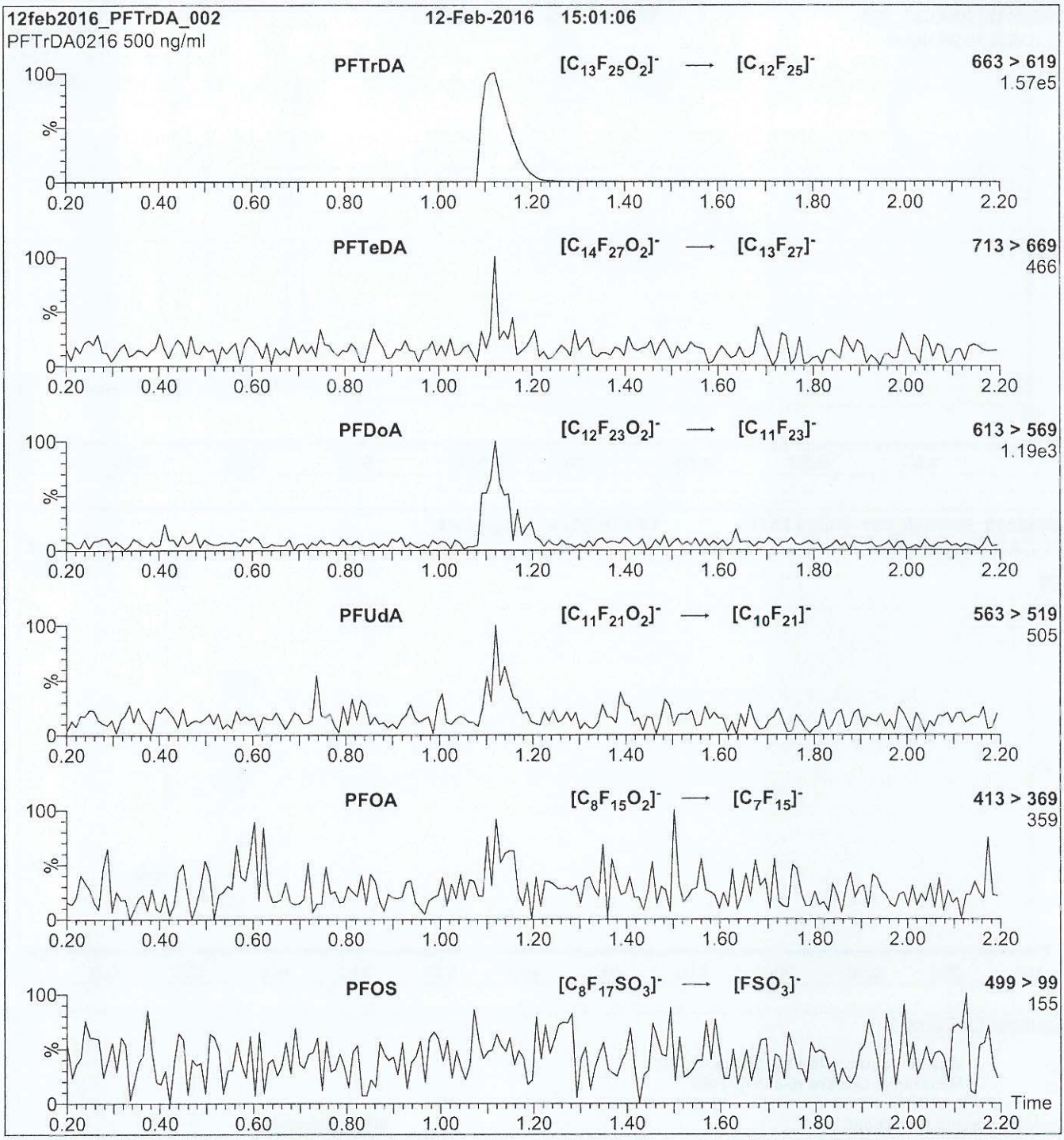
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

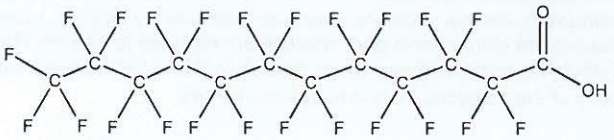
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

16J0422

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0516
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/02/2016 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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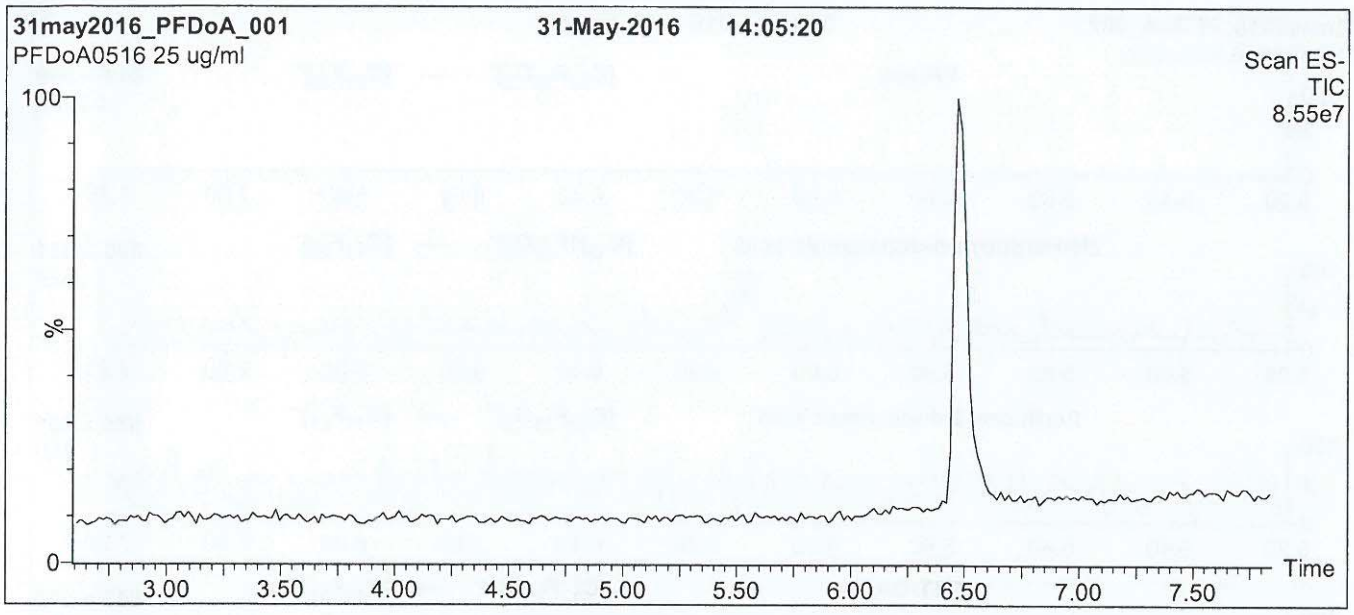
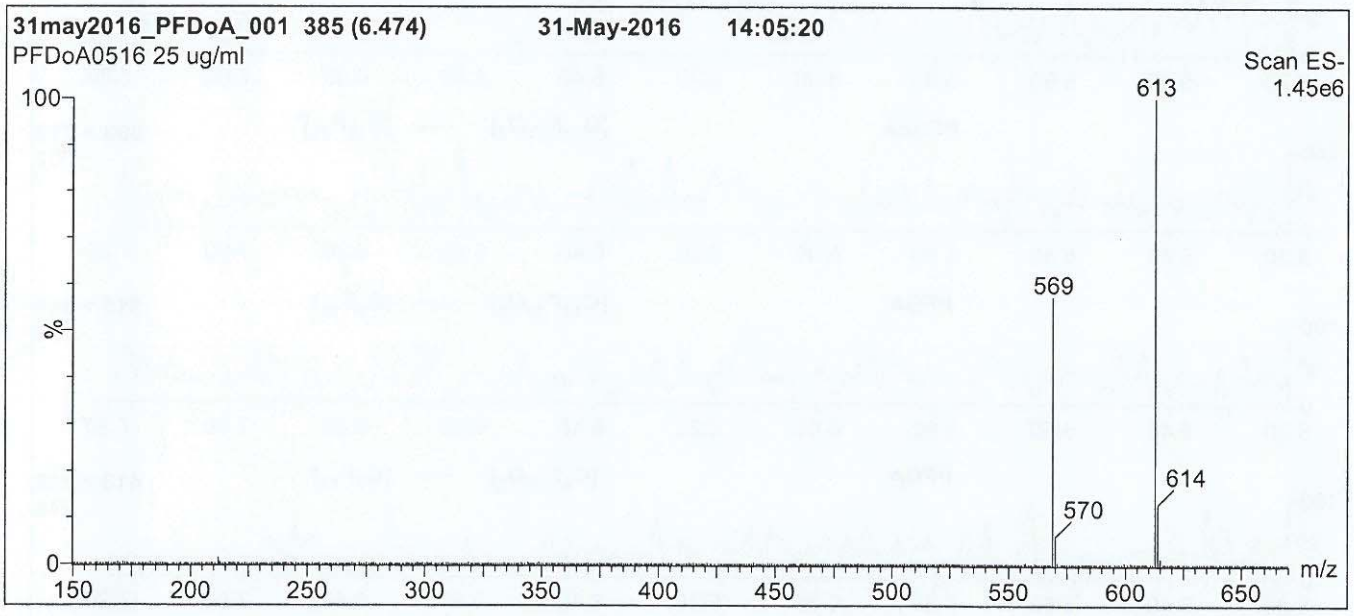
Figure 1: **PFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

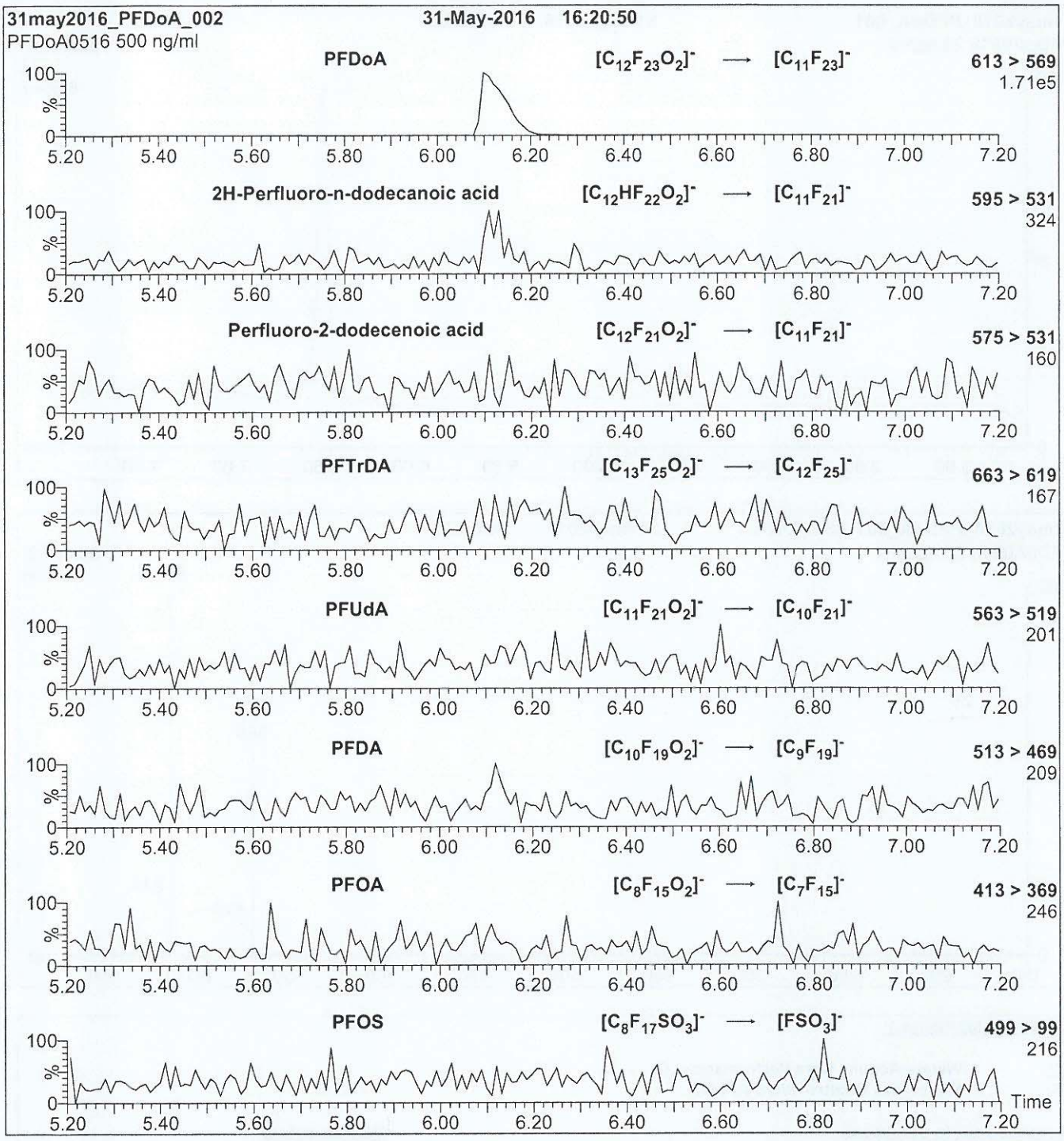
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

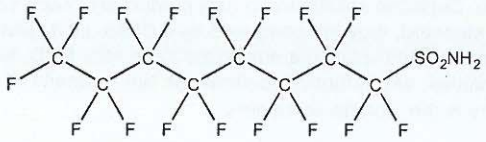
Injection:	Direct loop injection 10 µl (500 ng/ml PFDoA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 13
Flow:	300 µl/min	

16J0423

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0815I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	09/02/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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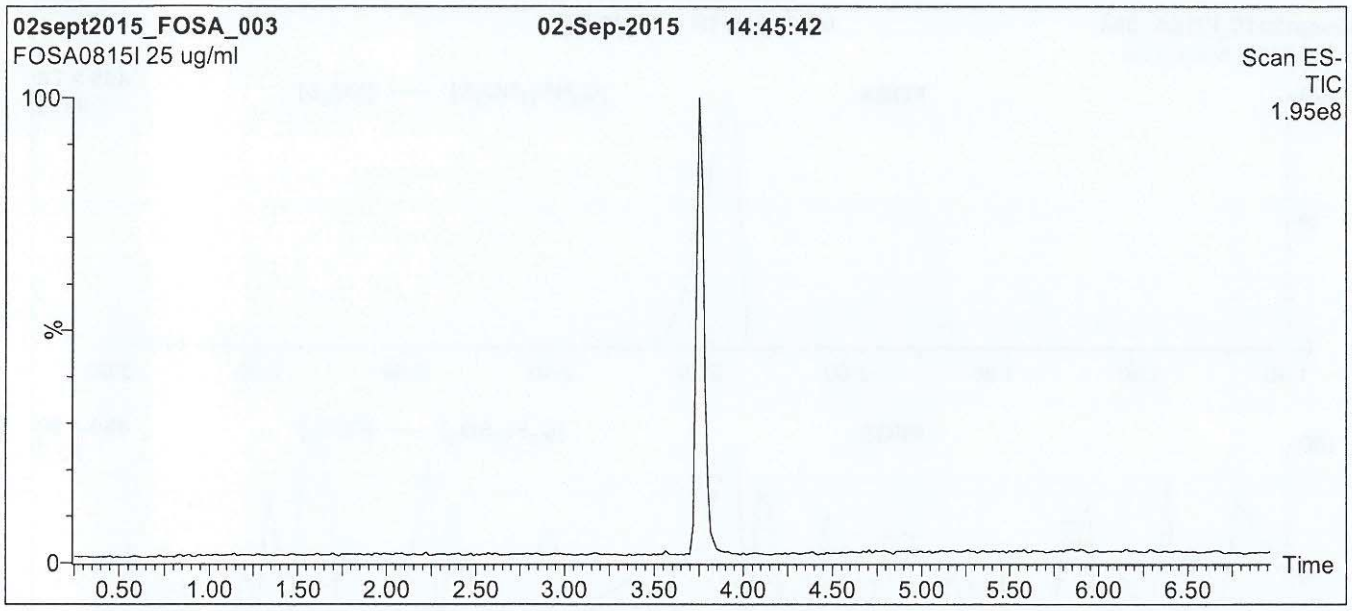
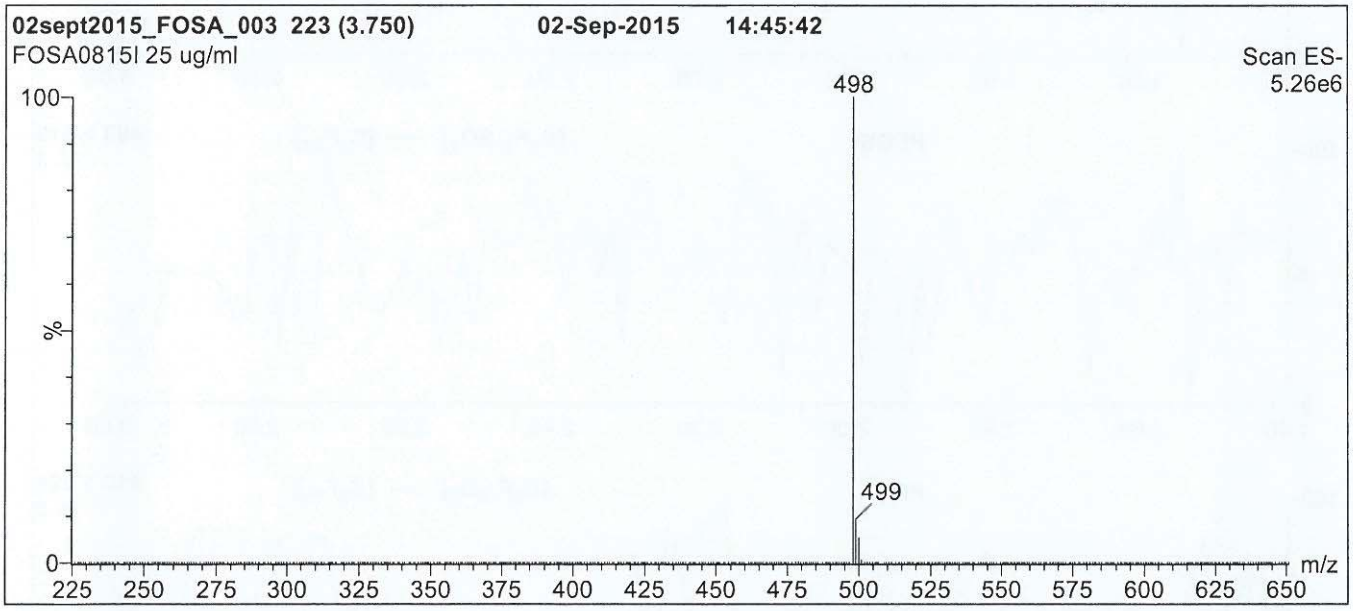
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

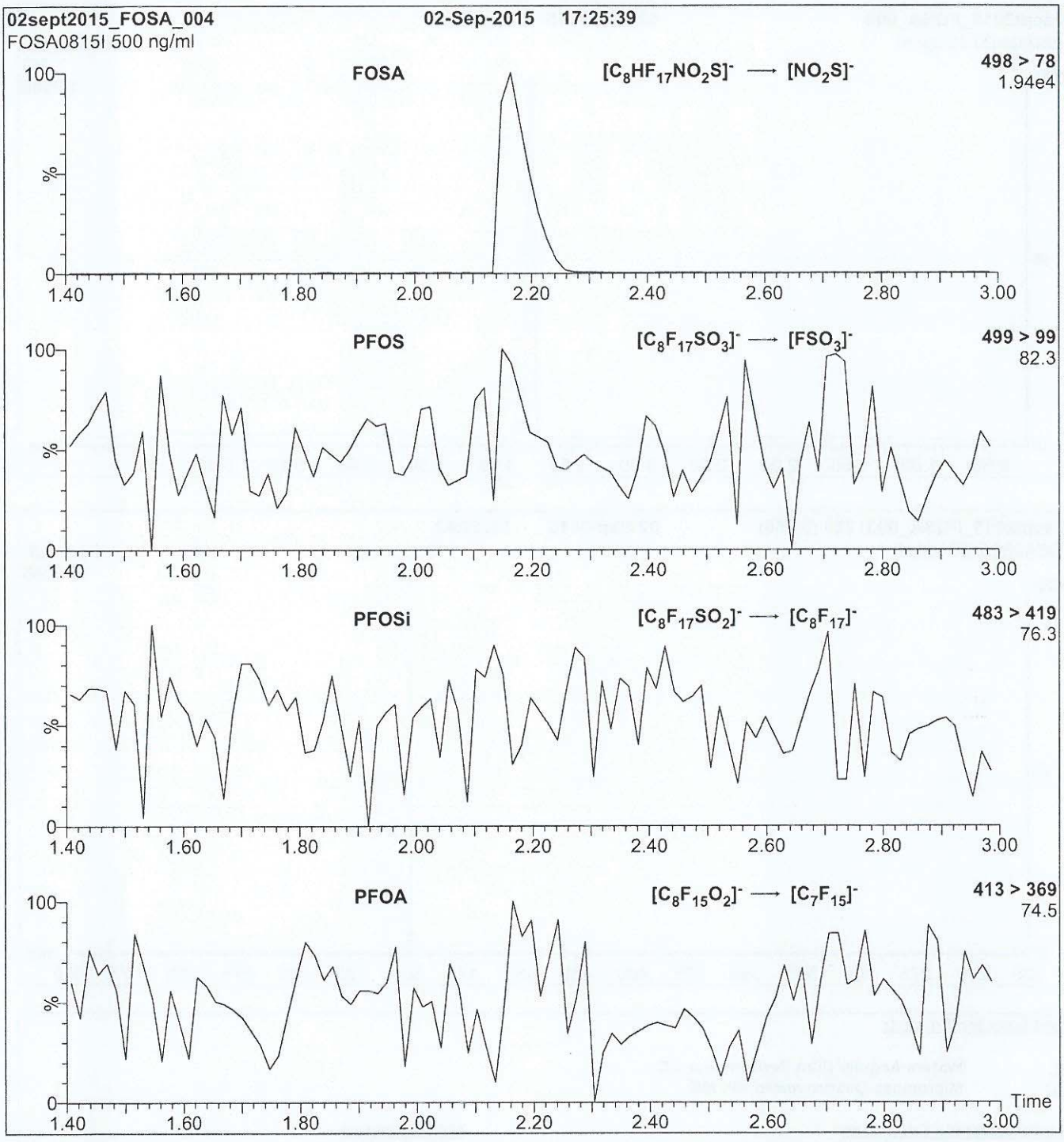
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

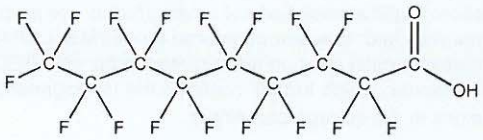
16J0424

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid
LOT NUMBER: PFNA1015

STRUCTURE:
CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
MOLECULAR WEIGHT: 464.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/30/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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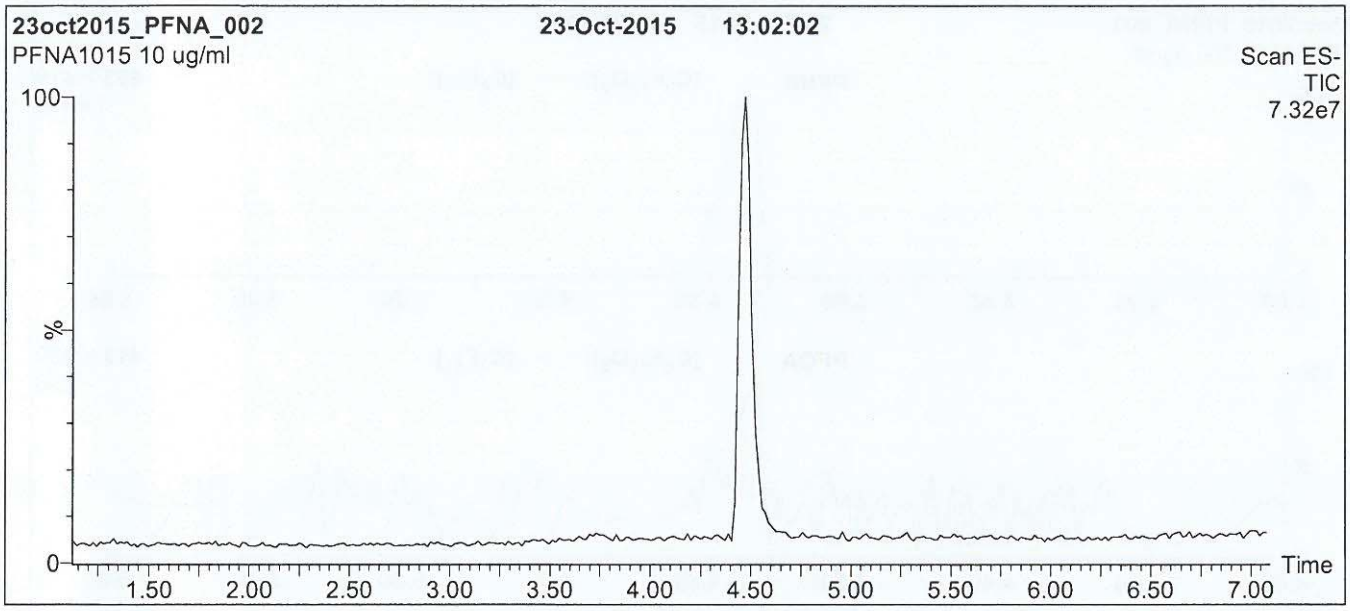
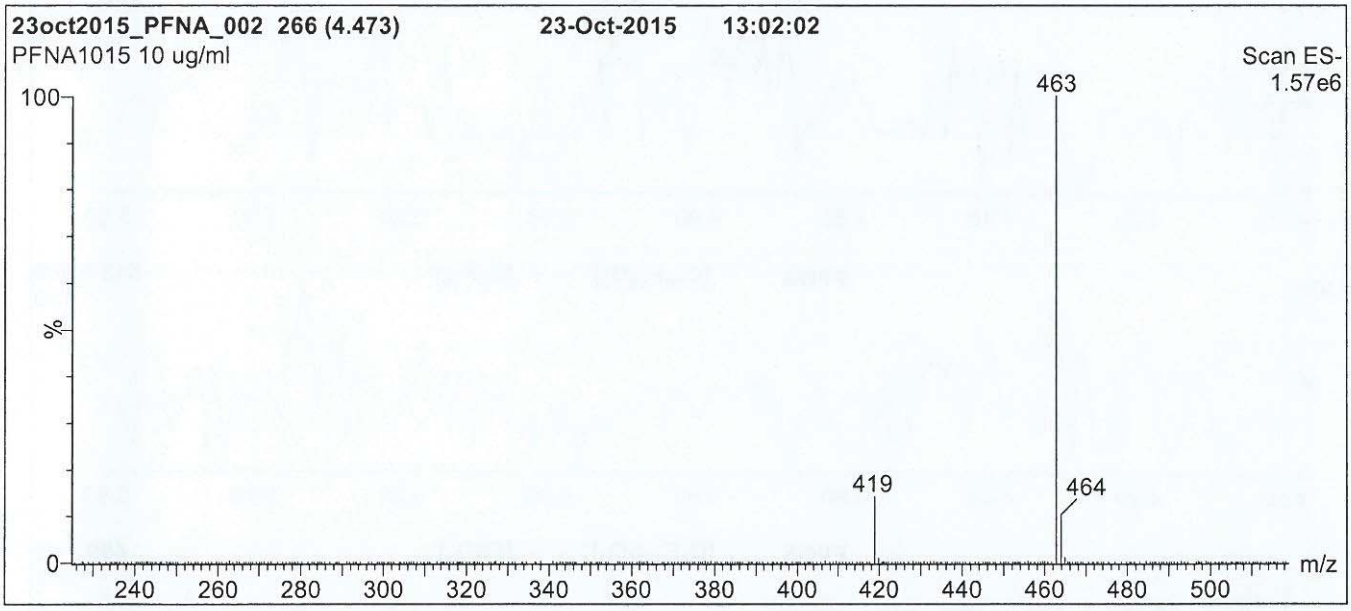
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

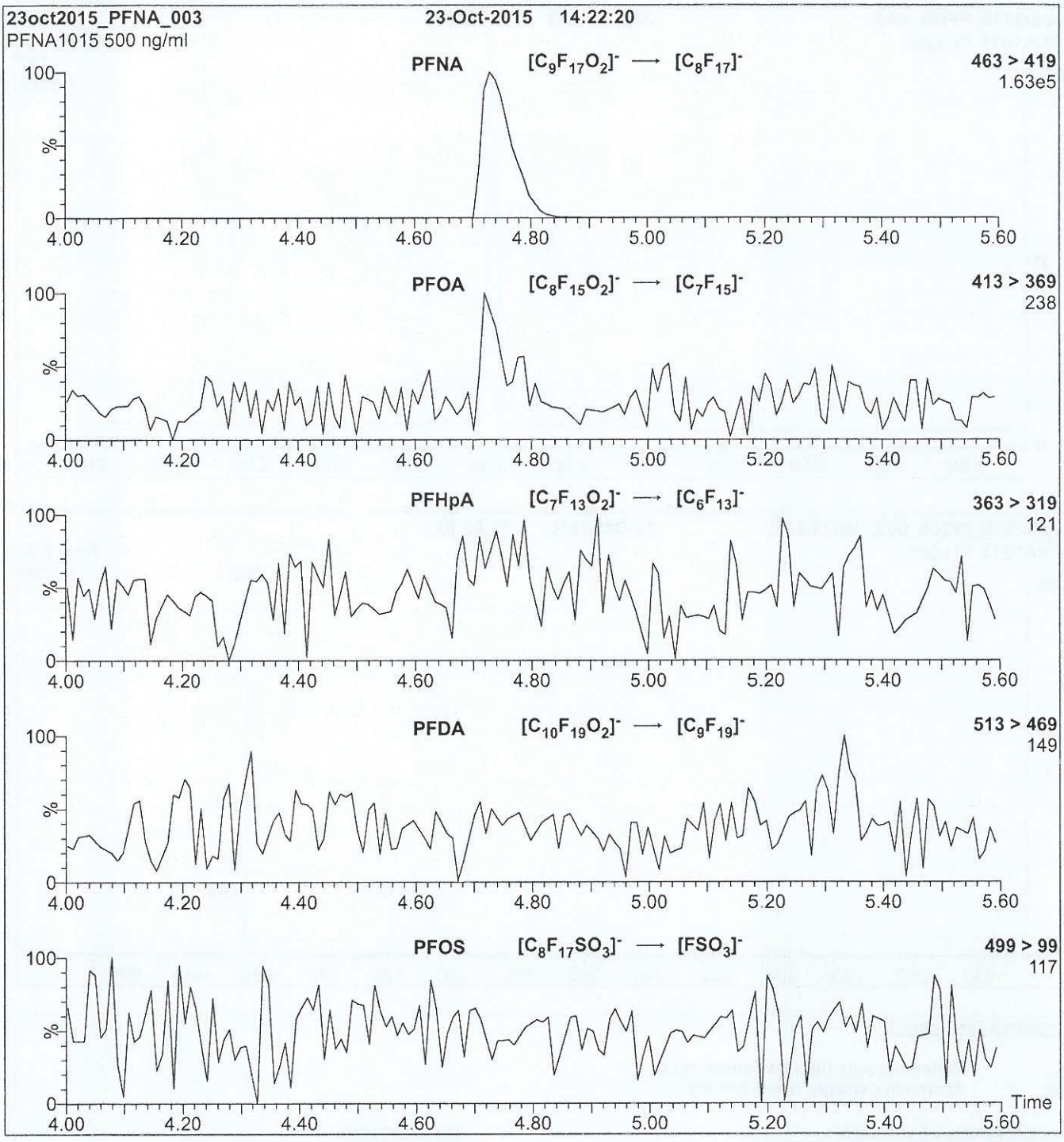
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

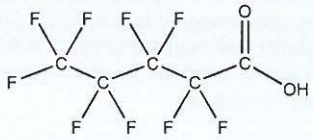
Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

16 JUN 25

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0516
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_9O_2$	**MOLECULAR WEIGHT:**	264.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/02/2016 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A 1226

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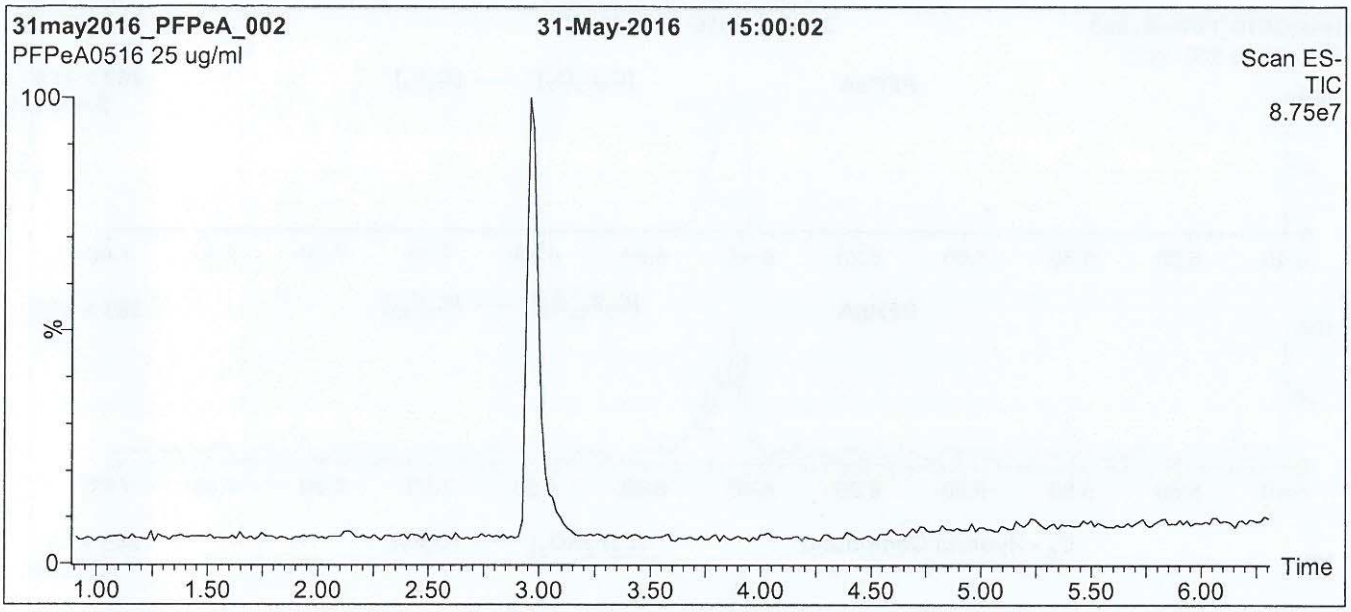
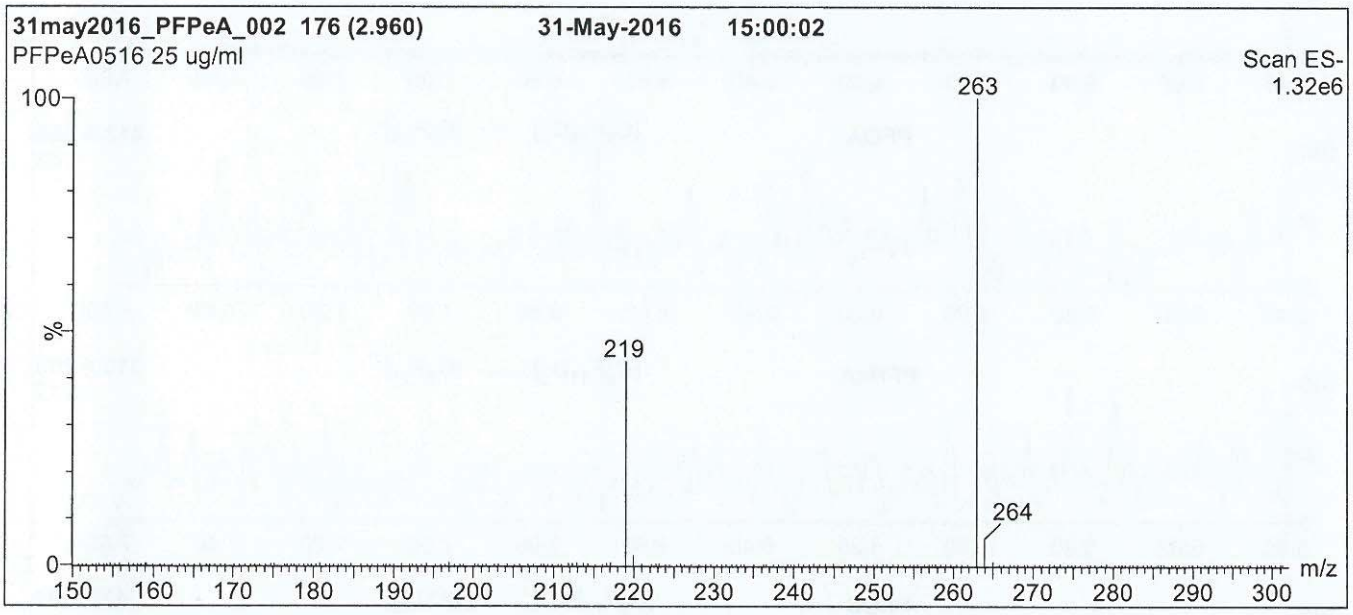




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

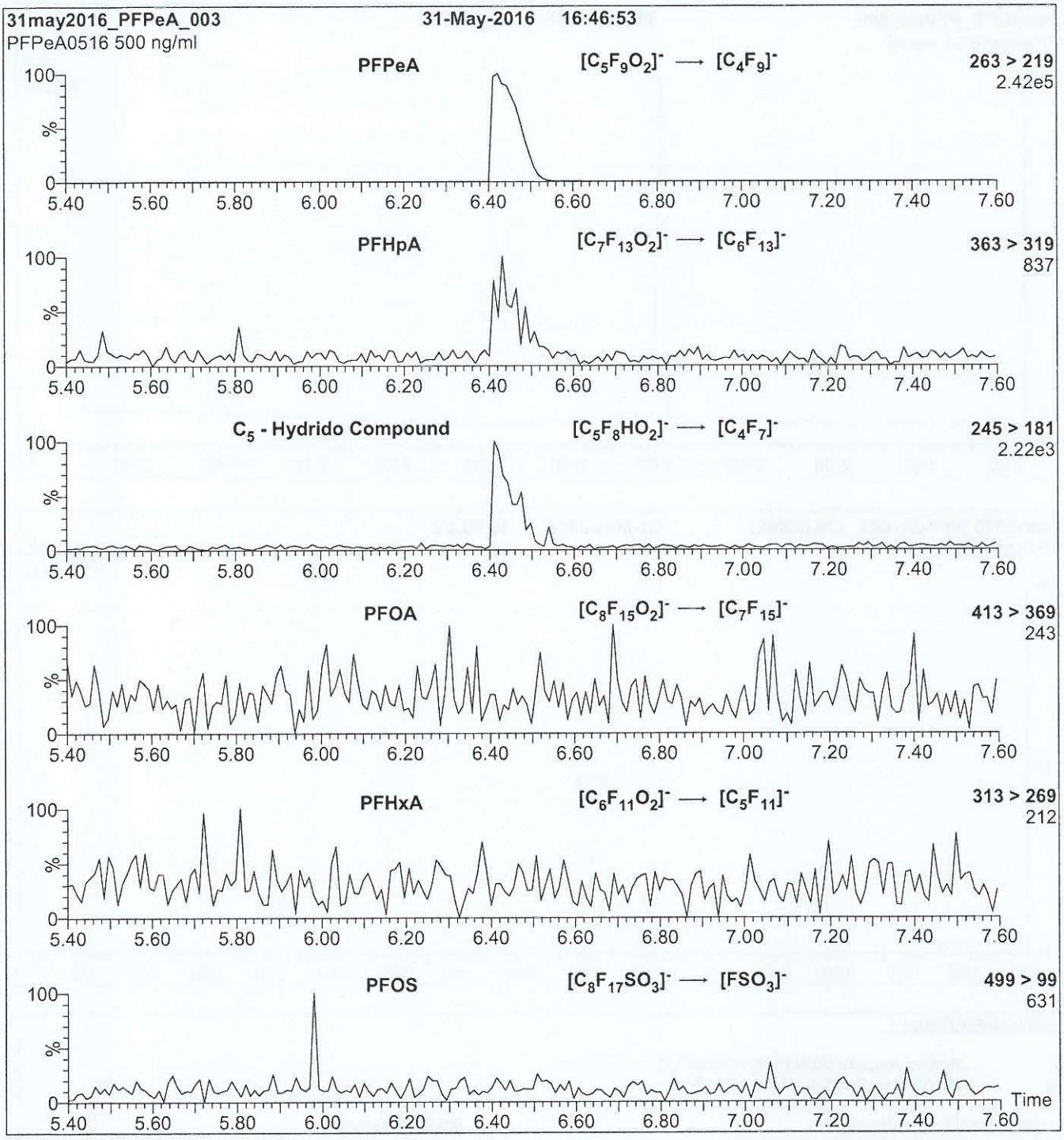
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

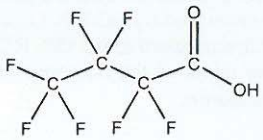
Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 9

16J0426

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0516
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/31/2016 (mm/dd/yyyy)

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

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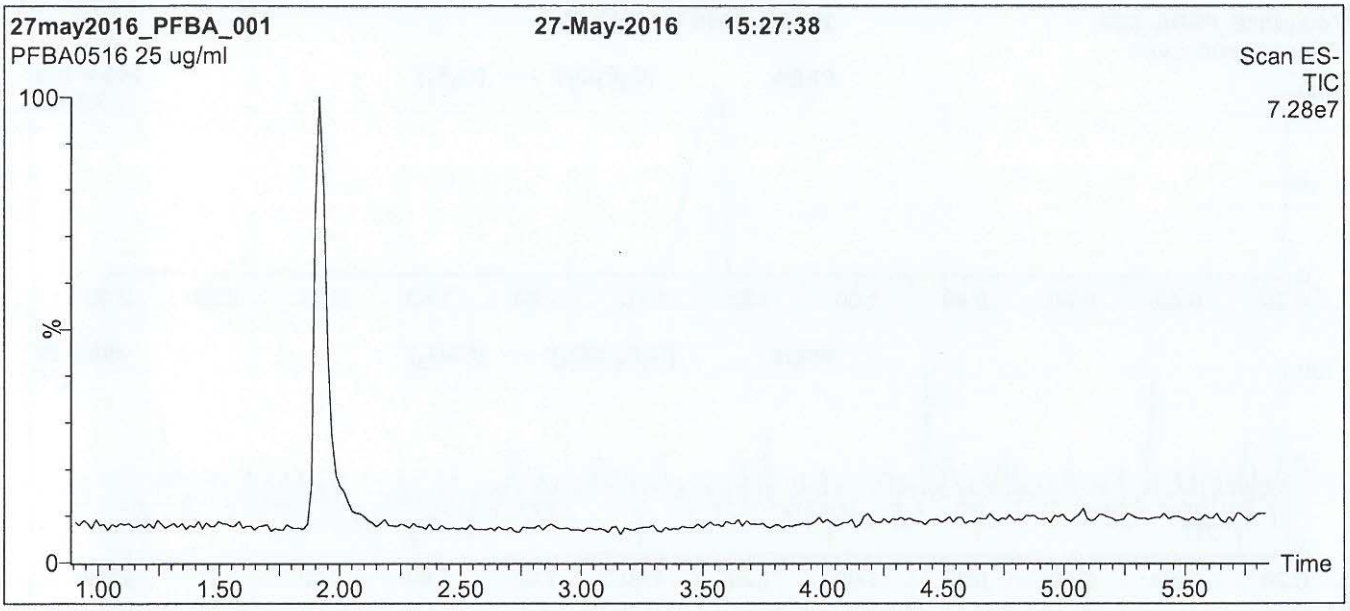
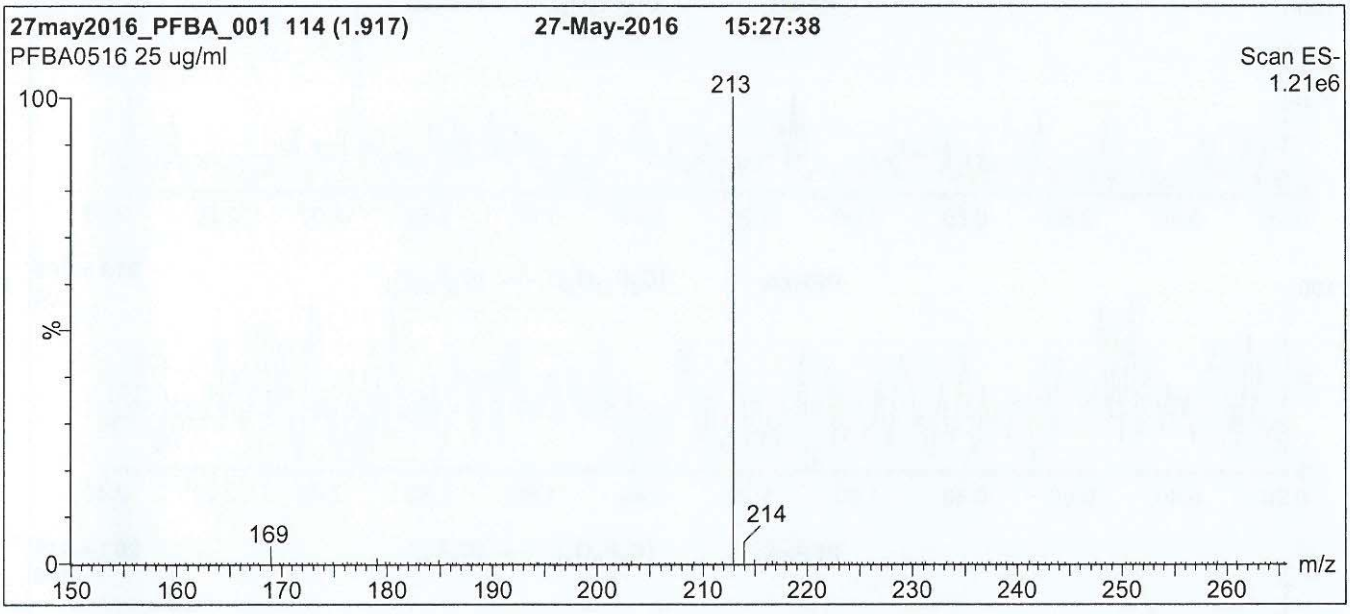




Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

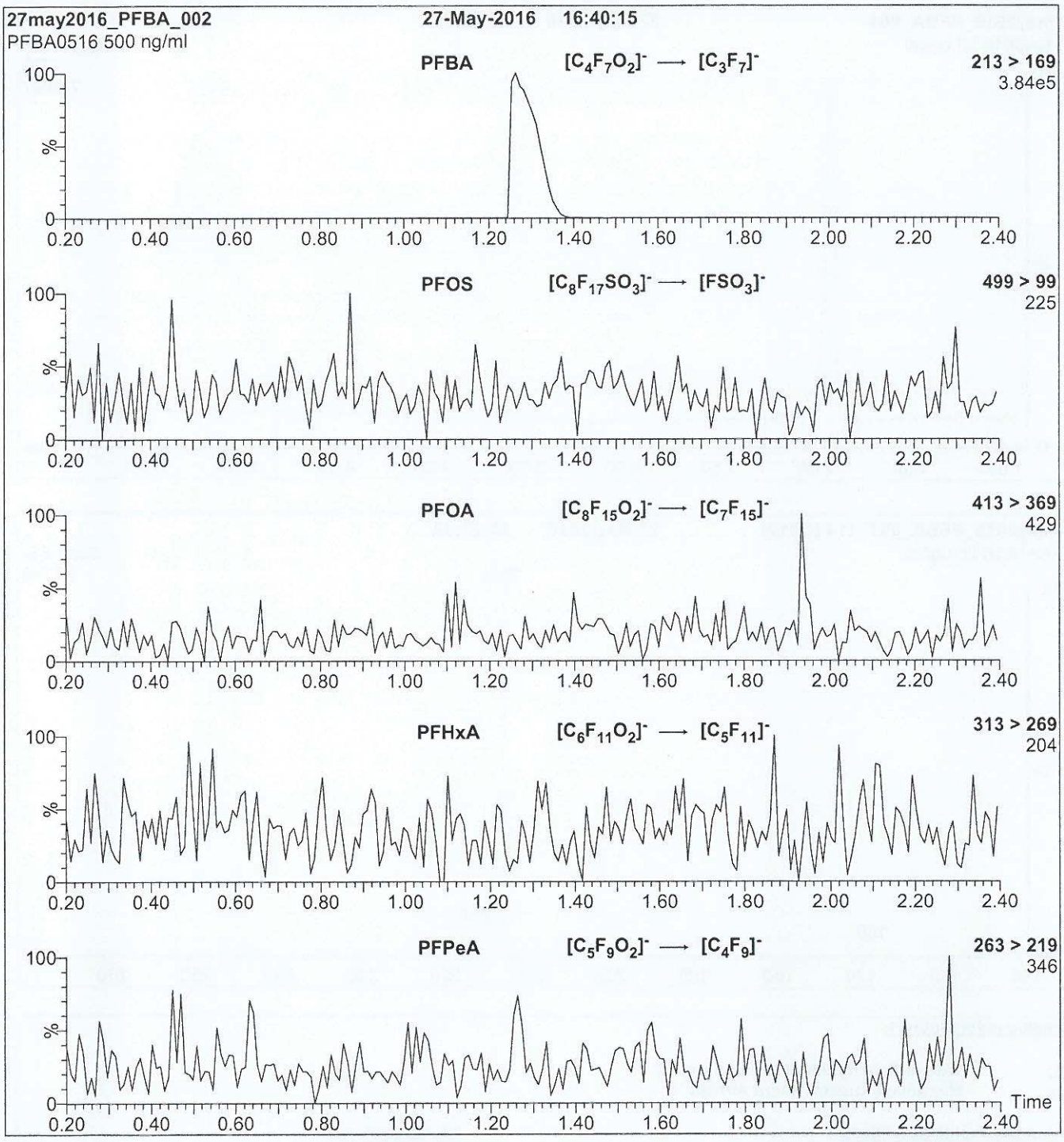
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

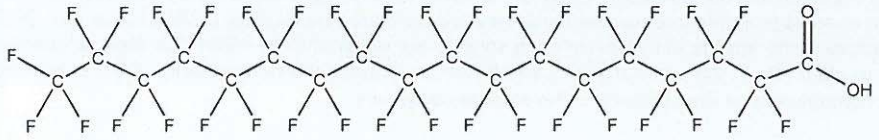
16L0512

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
LOT NUMBER: PFODA0416
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.14
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/29/2016
EXPIRY DATE: (mm/dd/yyyy) 04/29/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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CALA Testing Accreditation No. A1226

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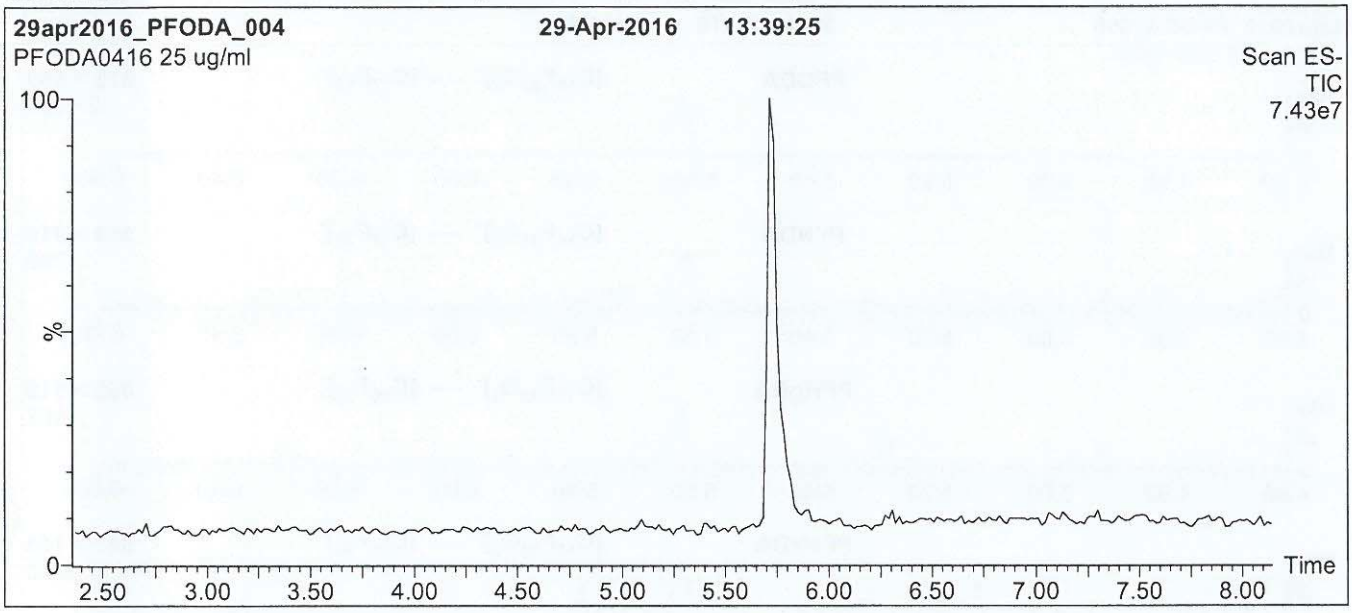
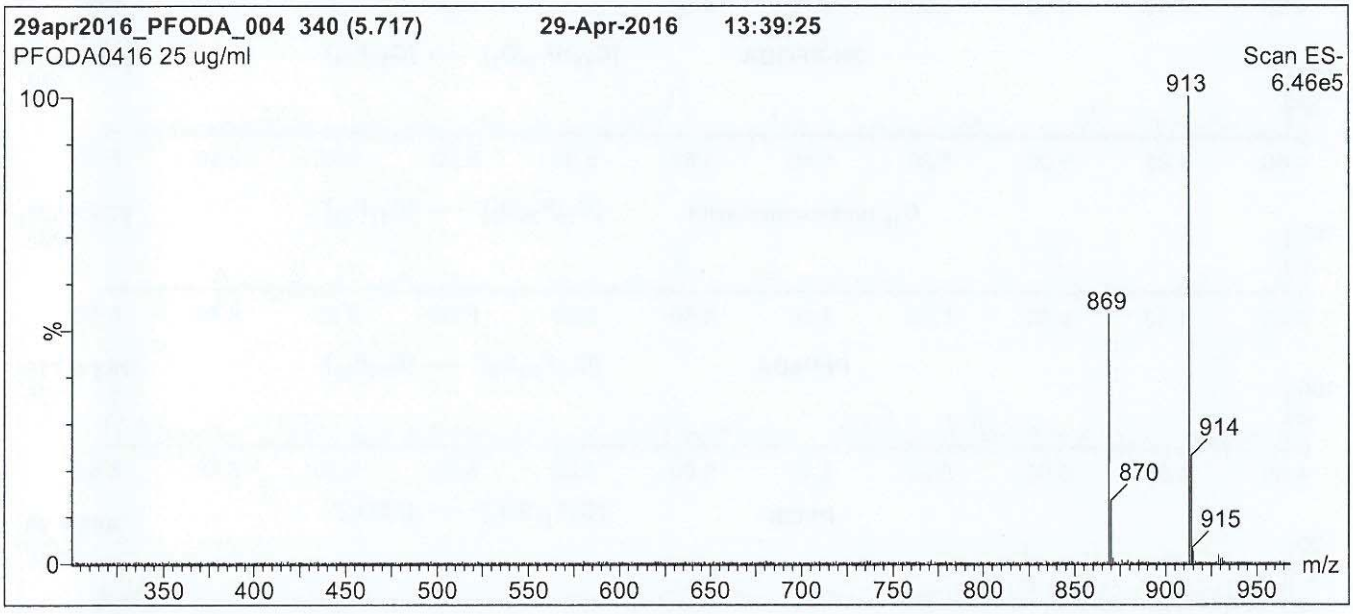
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for
2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

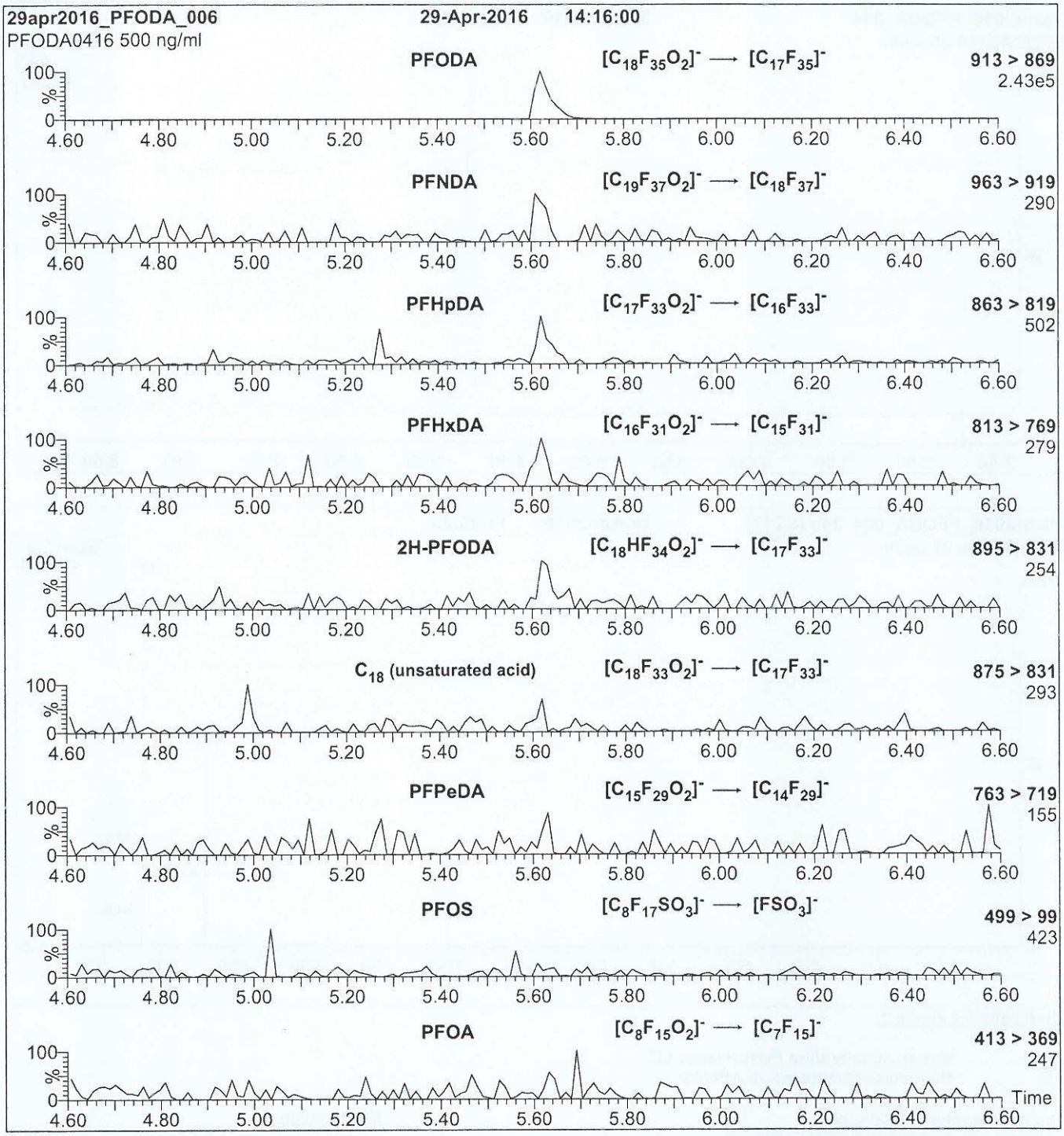
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

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

17C1026

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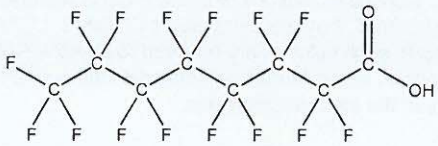
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA0716

STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
MOLECULAR WEIGHT: 414.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2016
EXPIRY DATE: (mm/dd/yyyy) 08/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

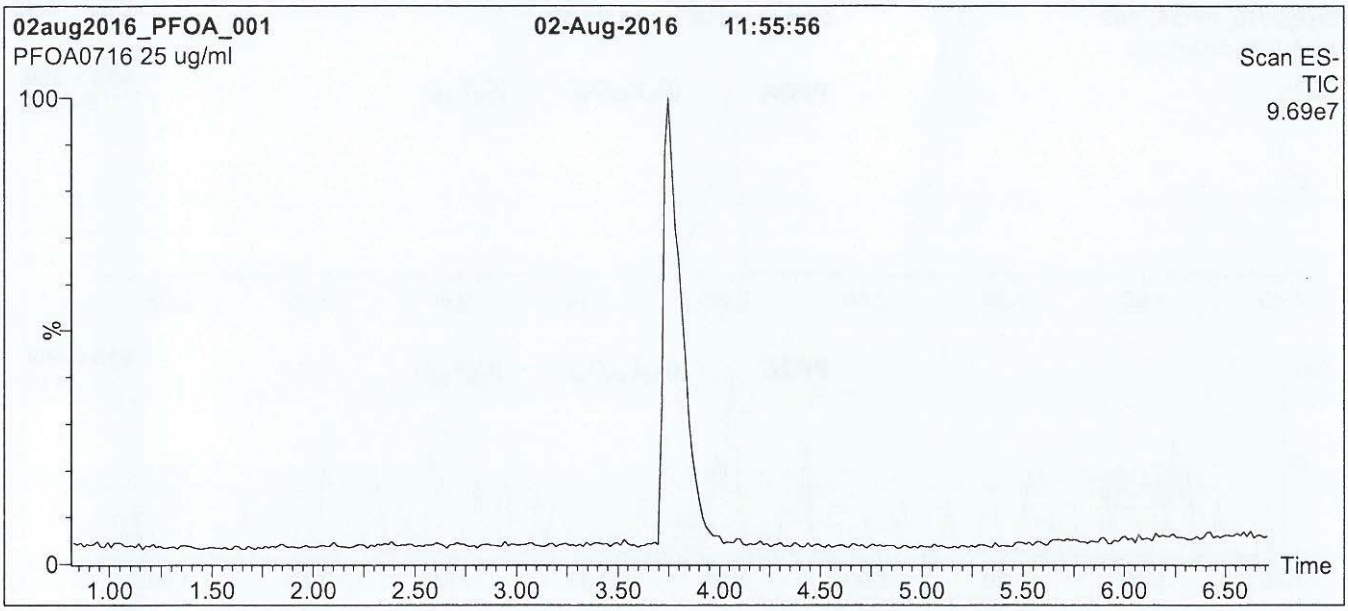
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

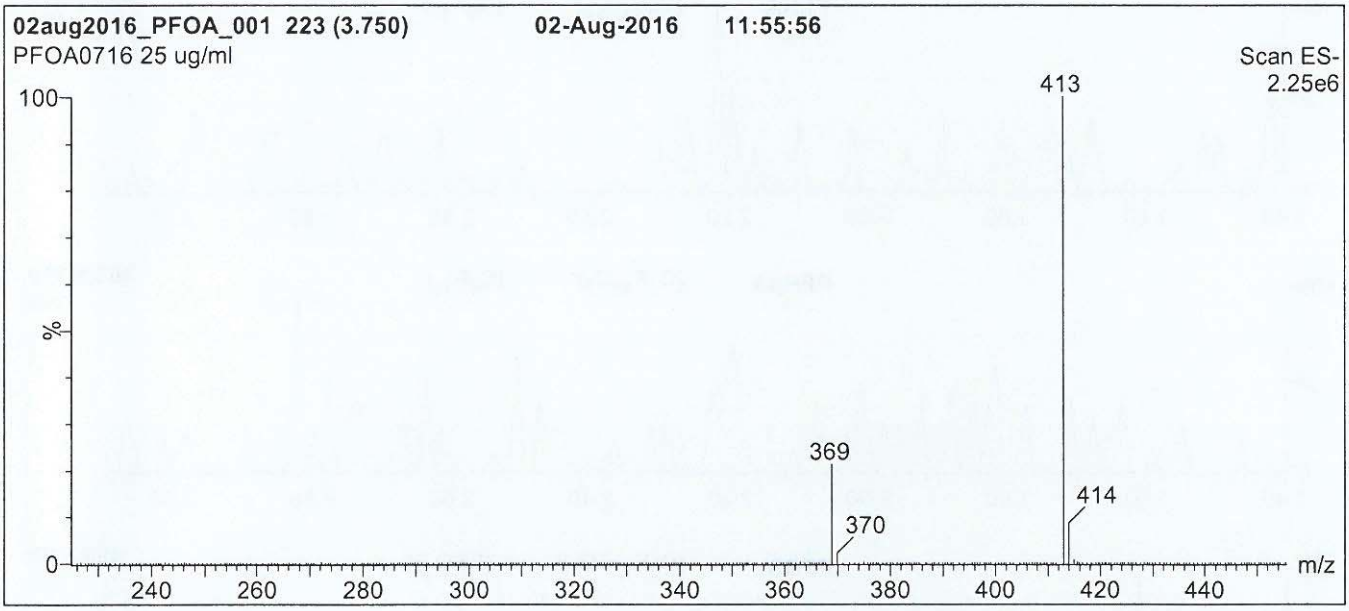
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

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

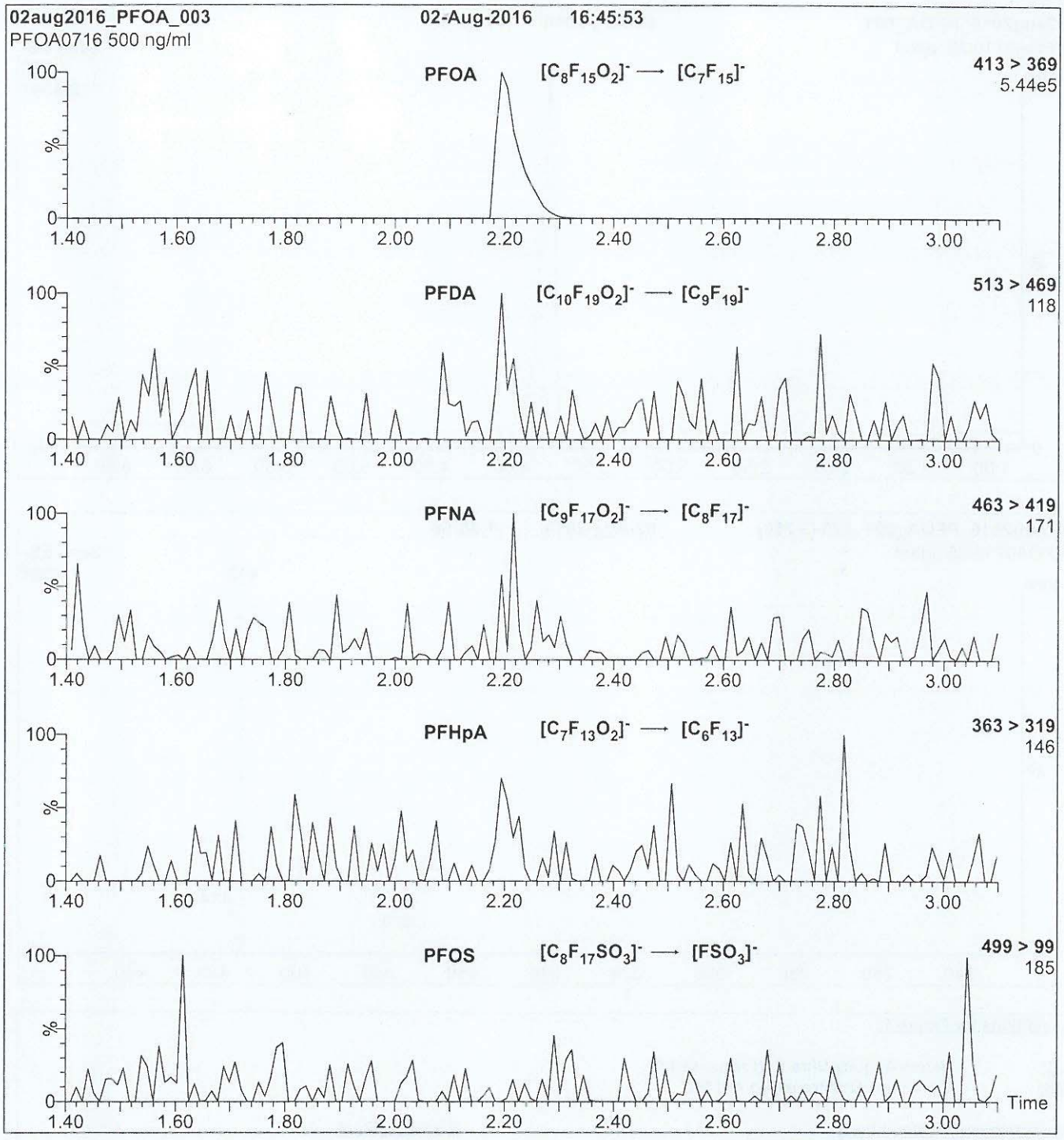
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

1702612

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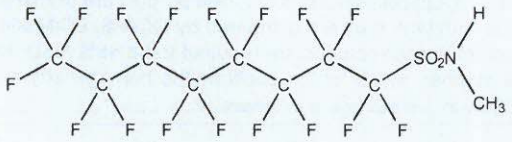
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0516M
COMPOUND:	N-methylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/26/2016 (mm/dd/yyyy)

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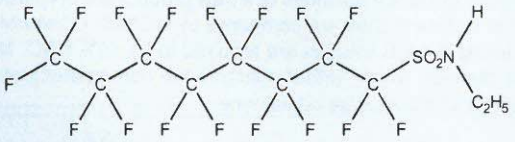
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-EtFOSA-M	**LOT NUMBER:**	NEtFOSA0516M
COMPOUND:	N-ethylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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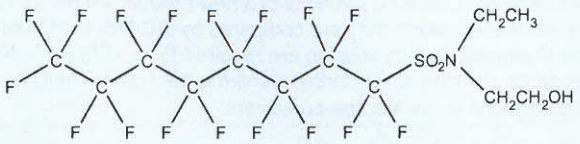
17D2614

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE1115M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA: $C_{12}H_{10}F_{17}NO_3S$ **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/10/2015 (HRGC/LRMS)
11/09/2015 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 11/10/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (TIC and Mass Spectrum)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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1702616

WELLINGTON LABORATORIES

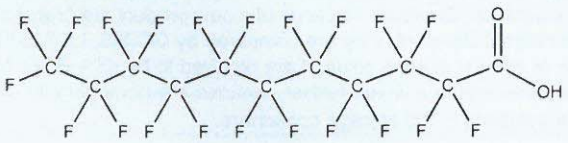
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: PFUdA1016

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA:	$C_{11}HF_{21}O_2$	**MOLECULAR WEIGHT:**	564.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/18/2016		
EXPIRY DATE: (mm/dd/yyyy)	10/18/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

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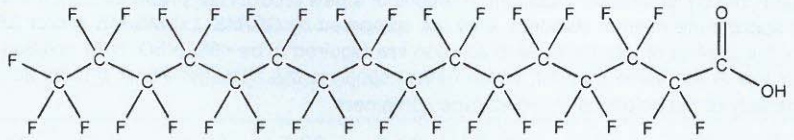
1702617

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA
LOT NUMBER: PFHxDA0516
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE:
CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
MOLECULAR WEIGHT: 814.13
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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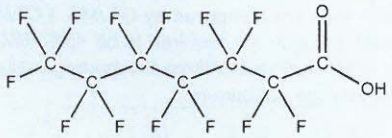
1702618

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFHpA	**LOT NUMBER:**	PFHpA1216
COMPOUND:	Perfluoro-n-heptanoic acid		
STRUCTURE:		**CAS #:**	375-85-9



MOLECULAR FORMULA:	$C_7HF_{13}O_2$	**MOLECULAR WEIGHT:**	364.06
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/12/2016 (mm/dd/yyyy)

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17D2621

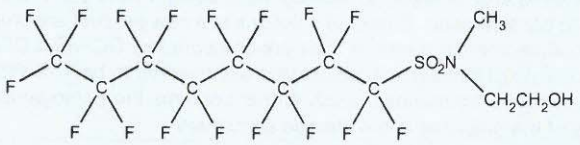
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE1115M

COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 24448-09-7



MOLECULAR FORMULA:	$C_{11}H_8F_{17}NO_3S$	**MOLECULAR WEIGHT:**	557.22
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/10/2015 (HRGC/LRMS) 11/09/2015 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	11/10/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (TIC and Mass Spectrum)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/16/2015 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17D2706

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17C1027	PFBS anion	10-Mar-17	Jamie C. Stockman	02-Dec-21	10-Mar-17 15:27 by JCS	0.75

Description:	L-PFBS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	Methanol	Prepared By:	Emilie Schneider
Final Volume (mls):	1.326	Department:	LCMS
Vials:	1	Last Edit:	27-Apr-17 13:48 by EMS

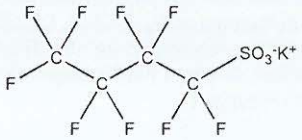
Analyte	CAS Number	Concentration	Units
PFBS	375-73-5	25	ug/mL
L-PFBS		25	ug/mL

17C1027

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFBS	**LOT NUMBER:**	LPFBS1116
COMPOUND:	Potassium perfluoro-1-butanesulfonate		
STRUCTURE:		**CAS #:**	29420-49-3



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 44.2 ± 2.2 µg/ml (PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/05/2016 (mm/dd/yyyy)
B.G. Chittim

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INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

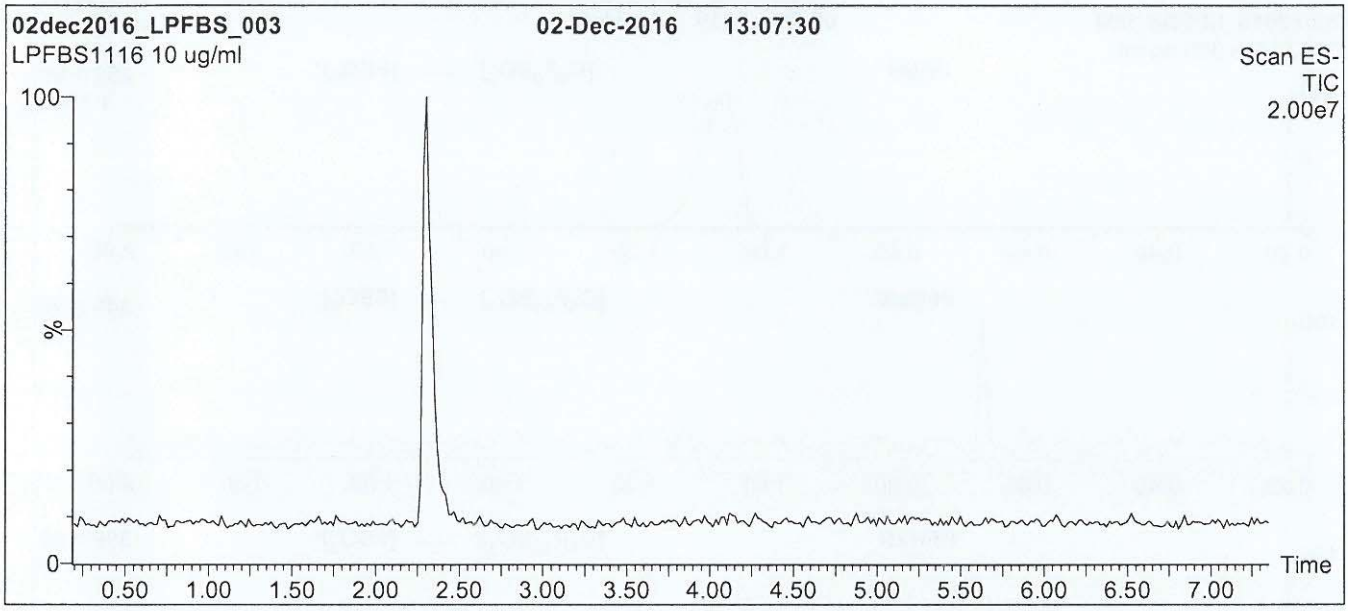
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

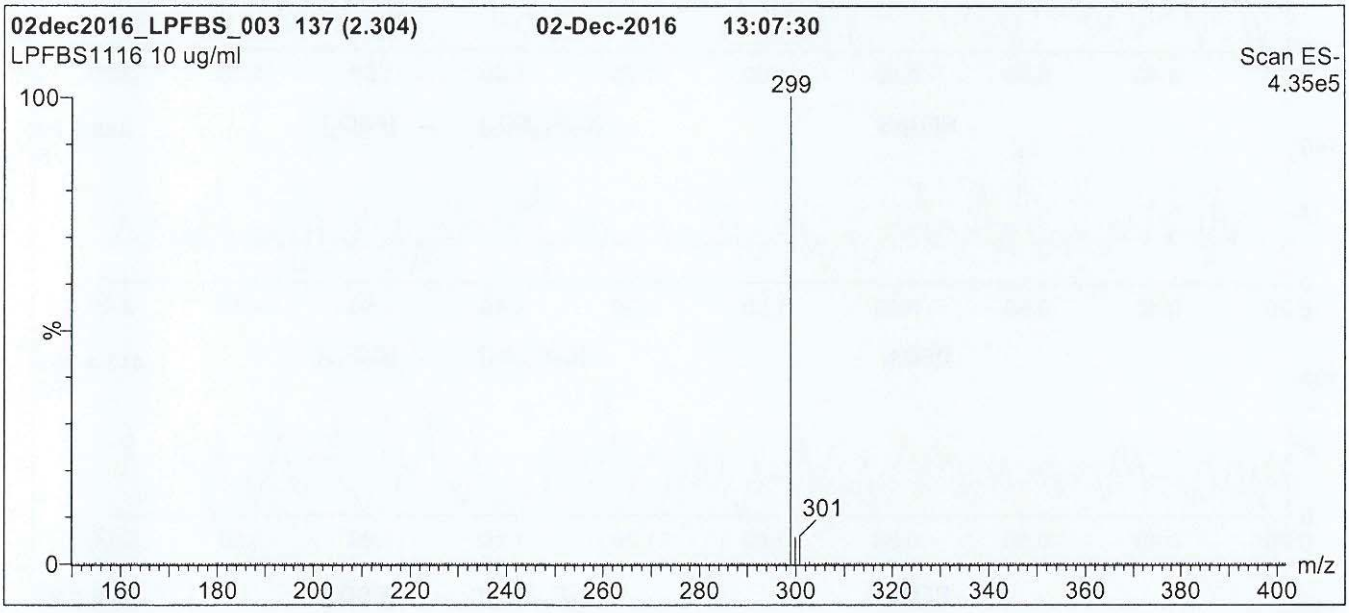
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

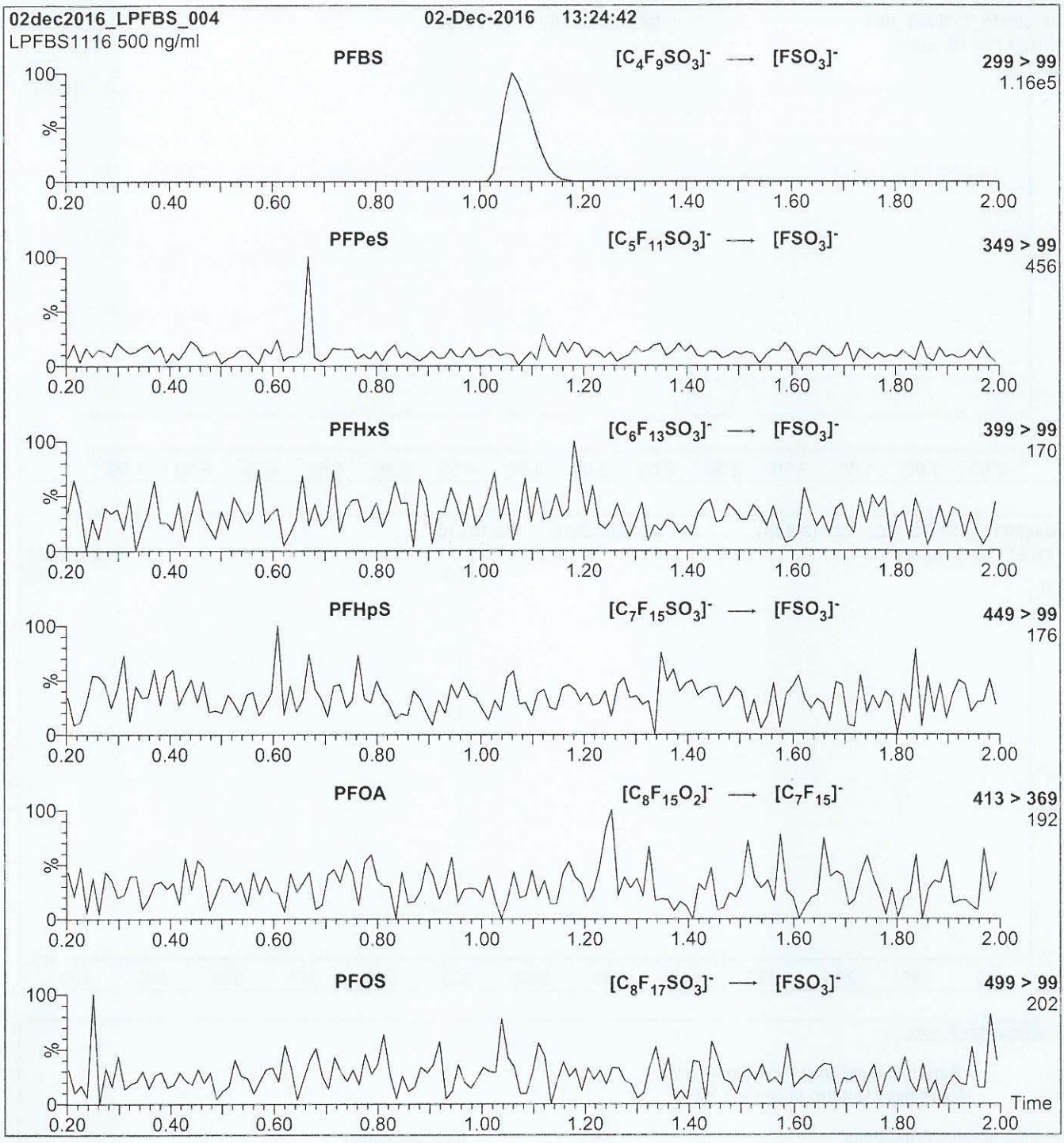
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Analytical Standard Record

Vista Analytical Laboratory

17D2709

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1427	8:2 FTS anion	14-Sep-16	** Vendor **	22-Aug-21	15-Dec-16 08:53 by AEW	0.5

Description:	8:2 FTS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.958	Department:	LCMS
Vials:	1	Last Edit:	27-Apr-17 14:28 by INJ

Analyte	CAS Number	Concentration	Units
L-8:2FTS		25	ug/mL
8:2 FTS	70887-84-2	25	ug/mL

16I1427

WELLINGTON LABORATORIES

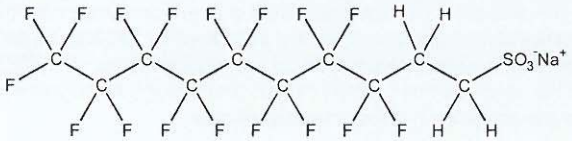
CERTIFICATE OF ANALYSIS DOCUMENTATION

8:2FTS

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0816

COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	550.16
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (8:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	08/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/22/2021		
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:** 08/25/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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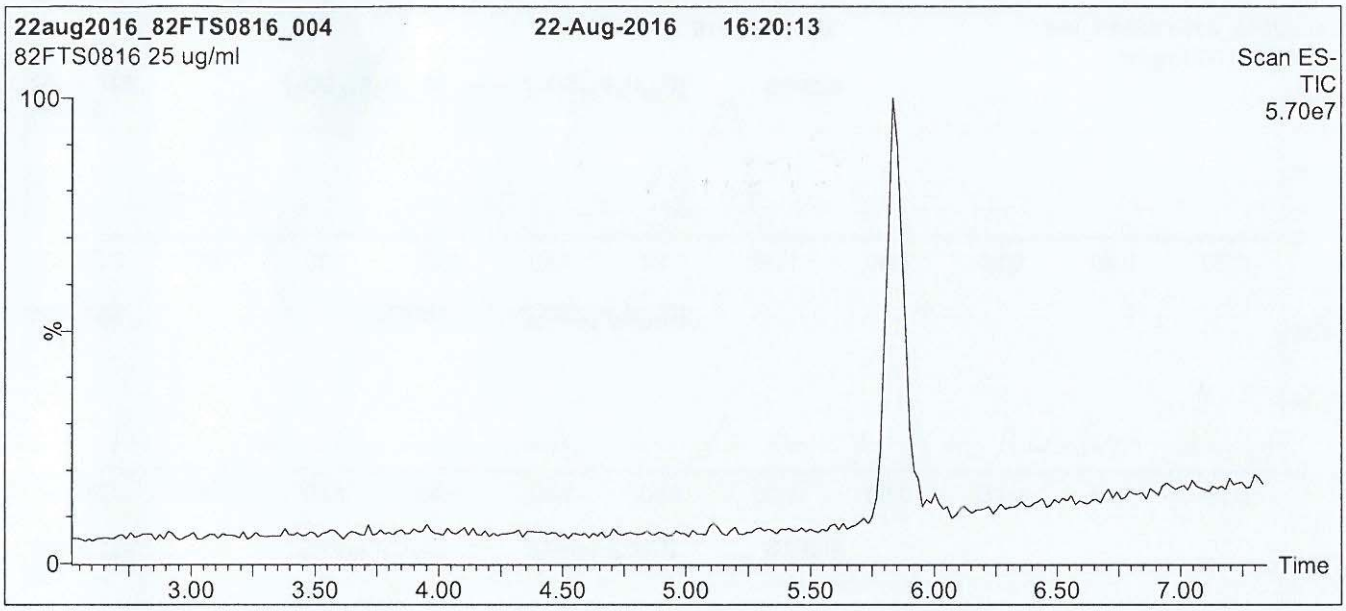
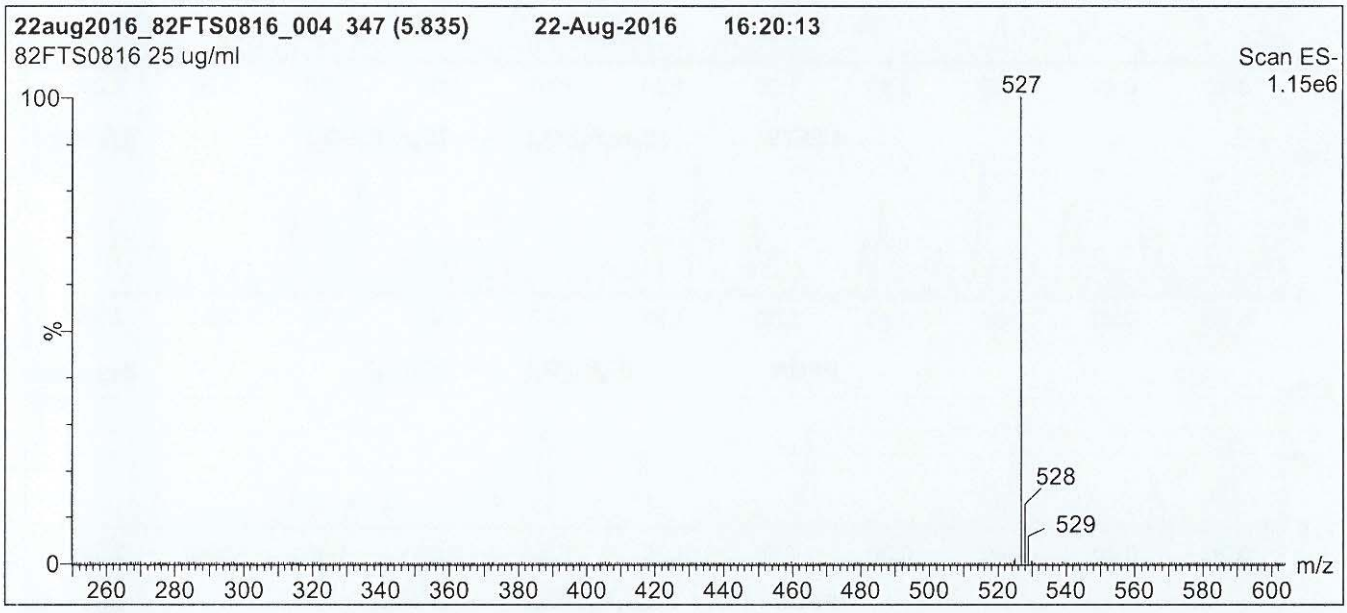
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Agilent Zorbax Bonus-RP
1.8 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH/ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

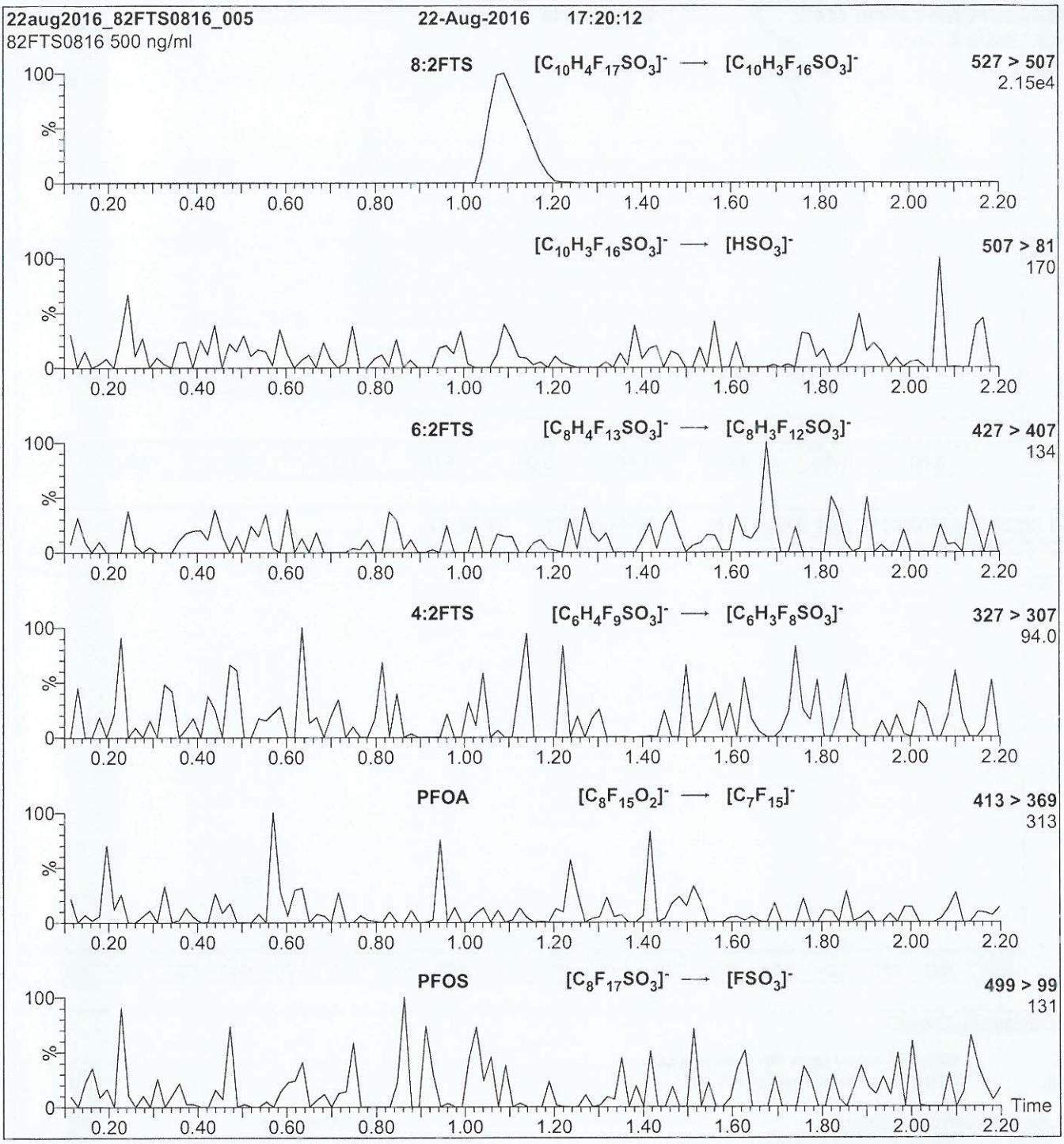
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250- 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Analytical Standard Record

Vista Analytical Laboratory

17D2715

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D2622	6:2FTS	26-Apr-17	** Vendor **	25-Jun-21	12-Jun-17 09:01 by AEW	0.5

Description:	6:2 FTS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.948	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 09:01 by AEW

Analyte	CAS Number	Concentration	Units
Total 6:2 FTS		25	ug/mL
L-6:2 FTS		25	ug/mL
6:2 FTS	27619-97-2	25	ug/mL

1702622

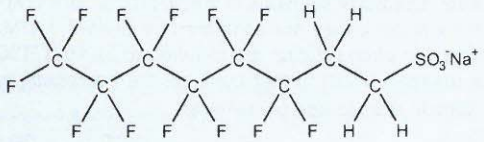
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0616

COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_8H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	450.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.4 ± 2.4 µg/ml (6:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	06/25/2016		
EXPIRY DATE: (mm/dd/yyyy)	06/25/2021		
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:** 06/29/2016 (mm/dd/yyyy)

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

Analytical Standard Record

Vista Analytical Laboratory

17D2716

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16DI 4I 2	L.P5DS	I 4. Apr. 16	88 : endor 88	16. 5eb. I I	1I .FTn. 16 2*V3 by AEW	27 0

DescriptionV	L.P5DS anion DvL	ExpiresV	I 6. Apr. 1N
Standard OypeV	u tger	PreparedV	I 6. Apr. 16
SolhentV	Meu H	Prepared ByV	vsaac 9 7Fognson
5inal : olTme (mls)V	27*43	DepartmentV	LCMS
: ialsV	1	Last EditV	1I .FTn. 16 2*V3 by AEW

Analyte	CAS Number	Concentration	Units
Cbtal P5DS		I 0	TJ/mL
P5DS	- - 0. 66. -	I 0	TJ/mL
L. P5DS		I 0	TJ/mL

17D2620

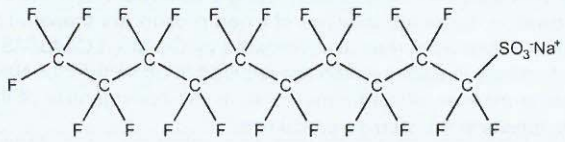
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0217
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:

CAS #: 2806-15-7



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$
MOLECULAR WEIGHT:	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)
SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	02/17/2017
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 02/22/2017 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17D2717

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16J0431	br-PFOSK	04-Oct-16	** Vendor **	14-Oct-20	03-Feb-17 13:33 by AEW	0.5

Description:	Br-PFOSK anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.928	Department:	LCMS
Vials:	1	Last Edit:	27-Apr-17 14:46 by INJ

Analyte	CAS Number	Concentration	Units
PFOS	1763-23-1	25	ug/mL
L-PFOS		19.7	ug/mL

16J0431

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK1015
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/13/2015
LAST TESTED: (mm/dd/yyyy)	10/14/2015
EXPIRY DATE: (mm/dd/yyyy)	10/14/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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TRACEABILITY:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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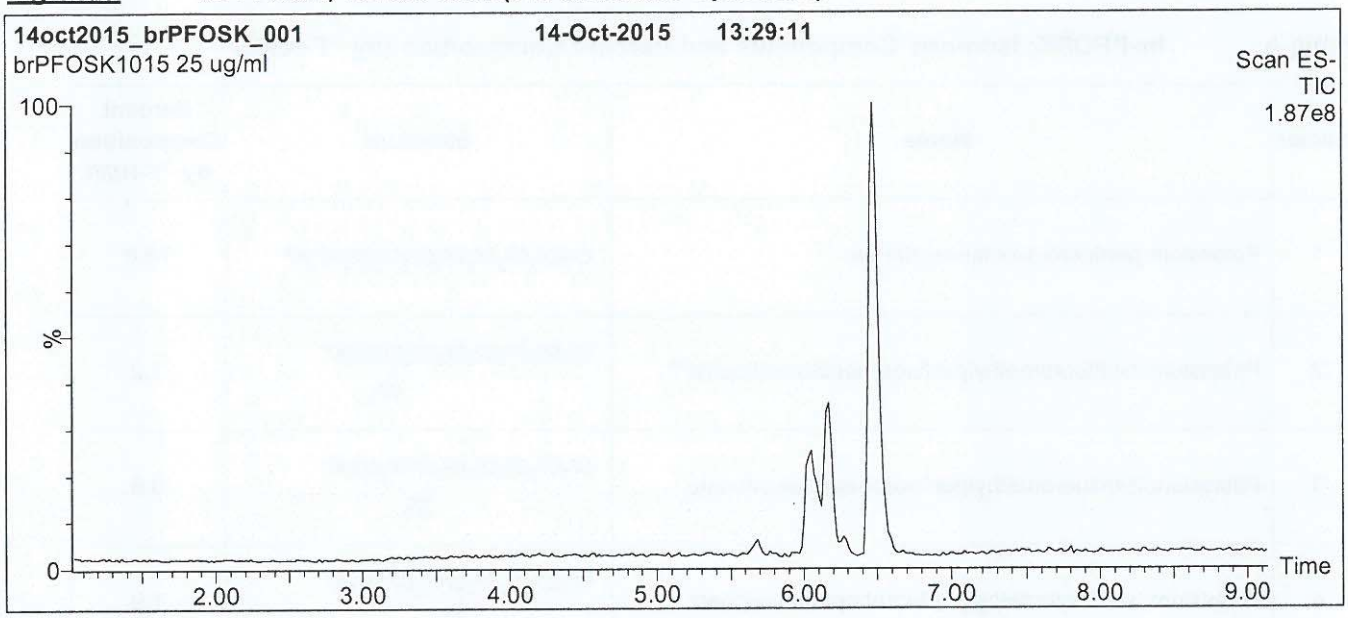
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

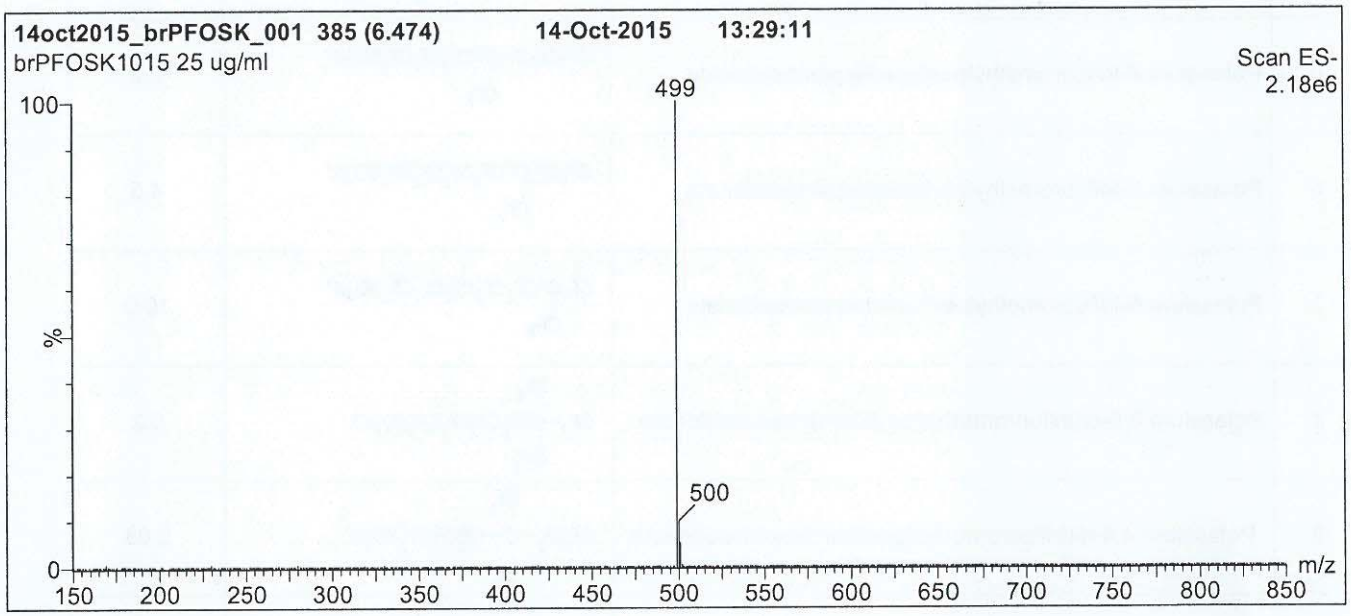
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-C(CF_3)(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 10/15/2015 (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

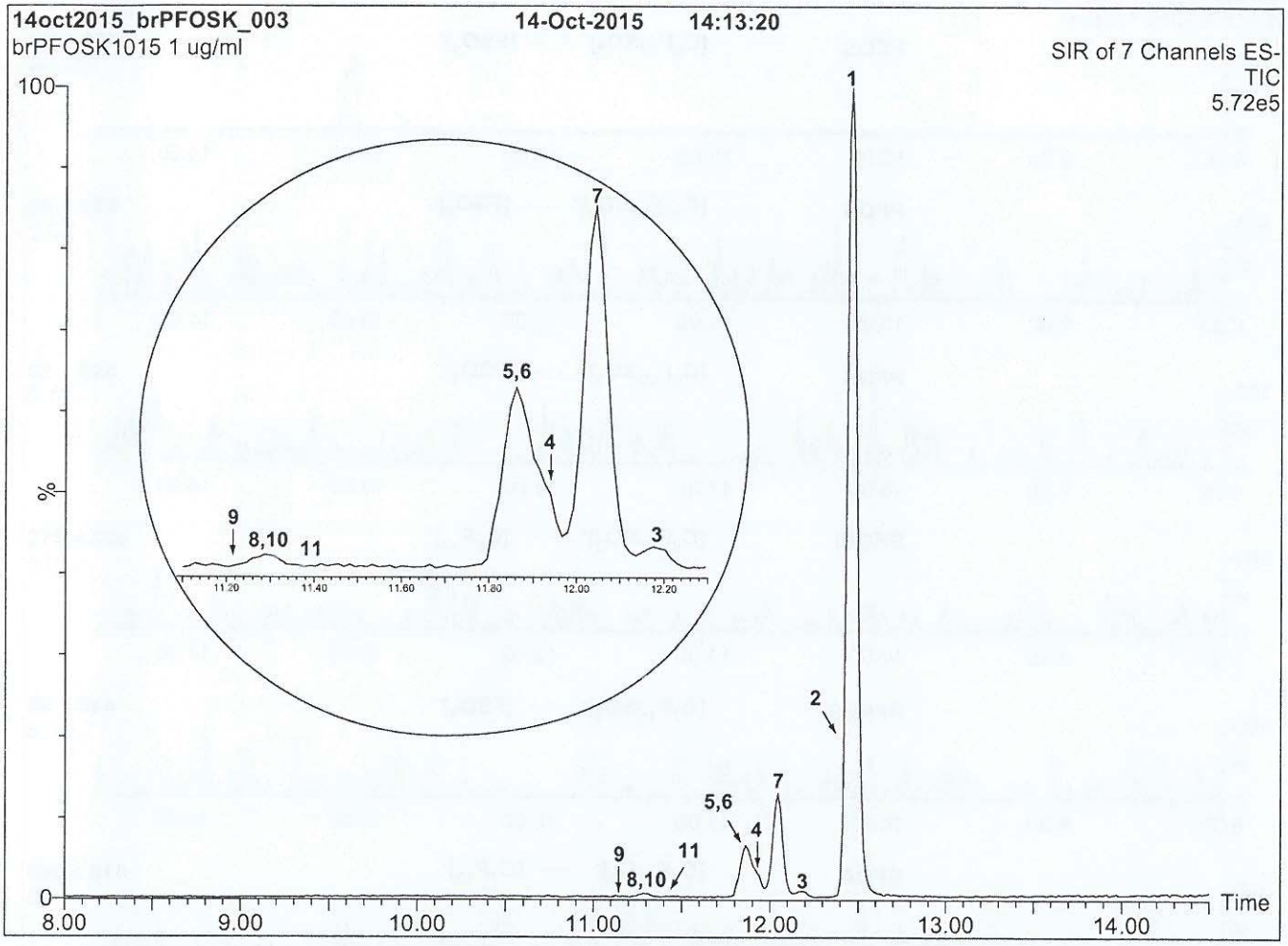
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

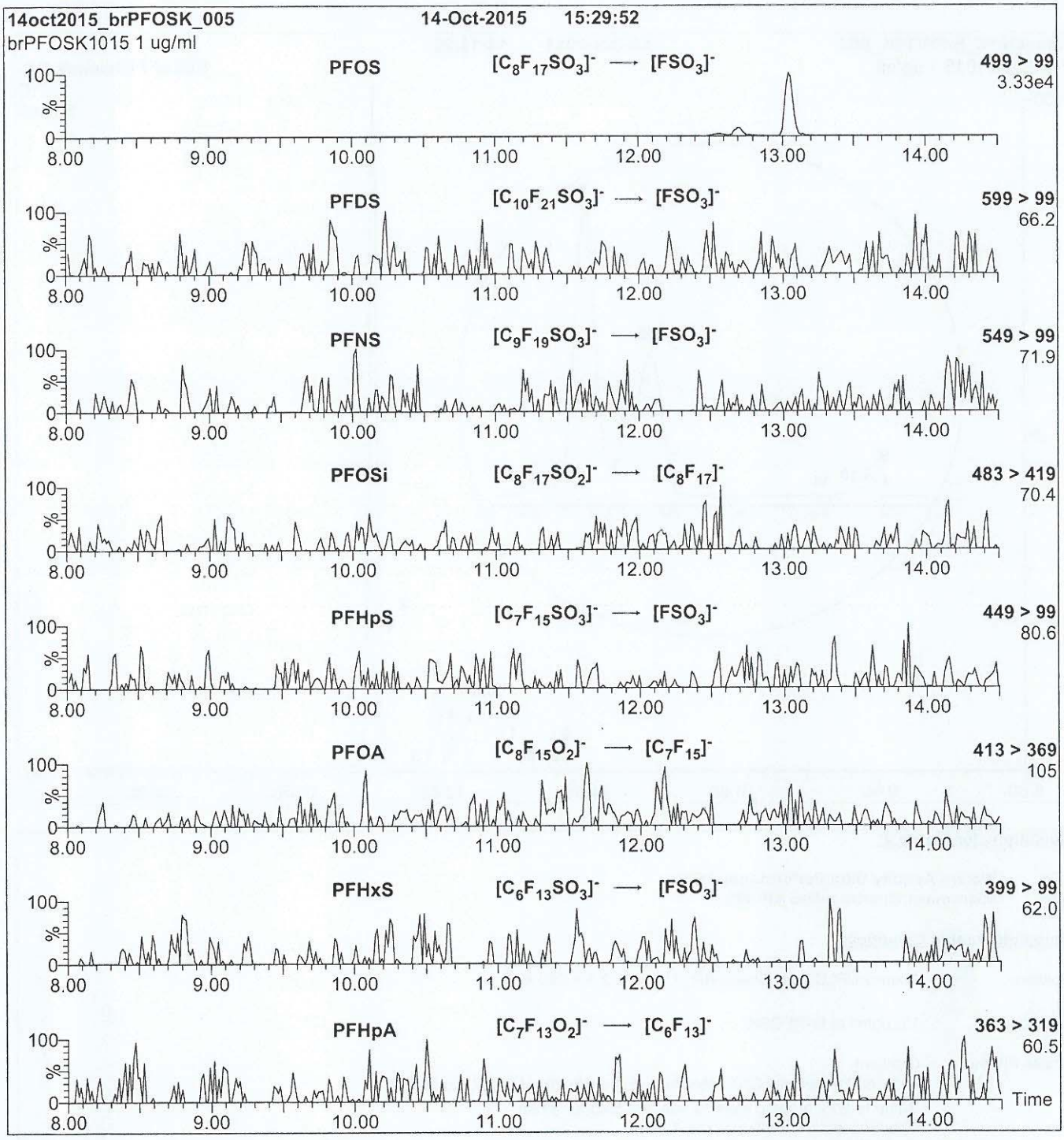
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

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



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

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

Analytical Standard Record

Vista Analytical Laboratory

17D2718

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16DJ014	5rbP- F xSO	J0bWprbl6	KK* endor KK	3hbVanbJJ	1JbV7nbl6 3: A41 5y WE2	3.4

DescriptionA	BrbP- F xSO anion DCL	ExpiresA	J6bWprbl:
Standard uypeA	Ttver	PreparedA	J6bWprbl6
SolI entA	H eTF	Prepared ByA	Gsaac 8 . Vovnson
- inal *ol7me (mls)A	3.91	DepartmentA	LMHS
* ialsA	1	Last EditA	1JbV7nbl6 3: A41 5y WE2

Analyte	CAS Number	Concentration	Units
uotal P- F xS		J4	7NgmL
P- F xS	/ 44bh0bh	J4	7NgmL
LbP- F xS		J3./	7NgmL
BrbP- F xS	/ : 61b99b0	h.6J	7NgmL

17D2615

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

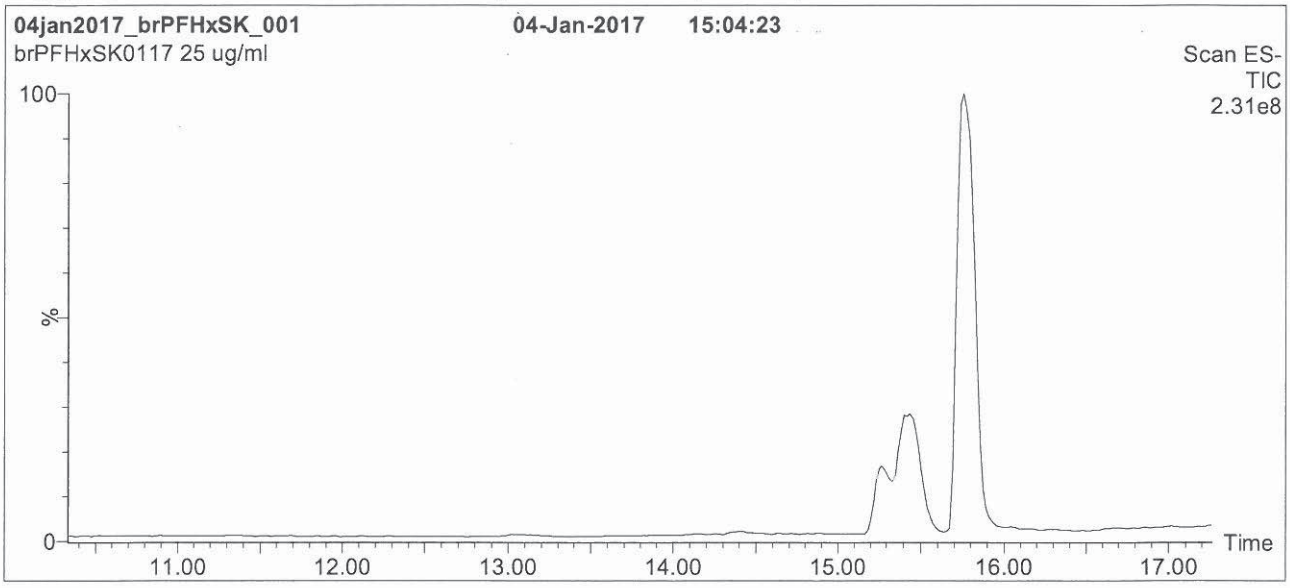
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

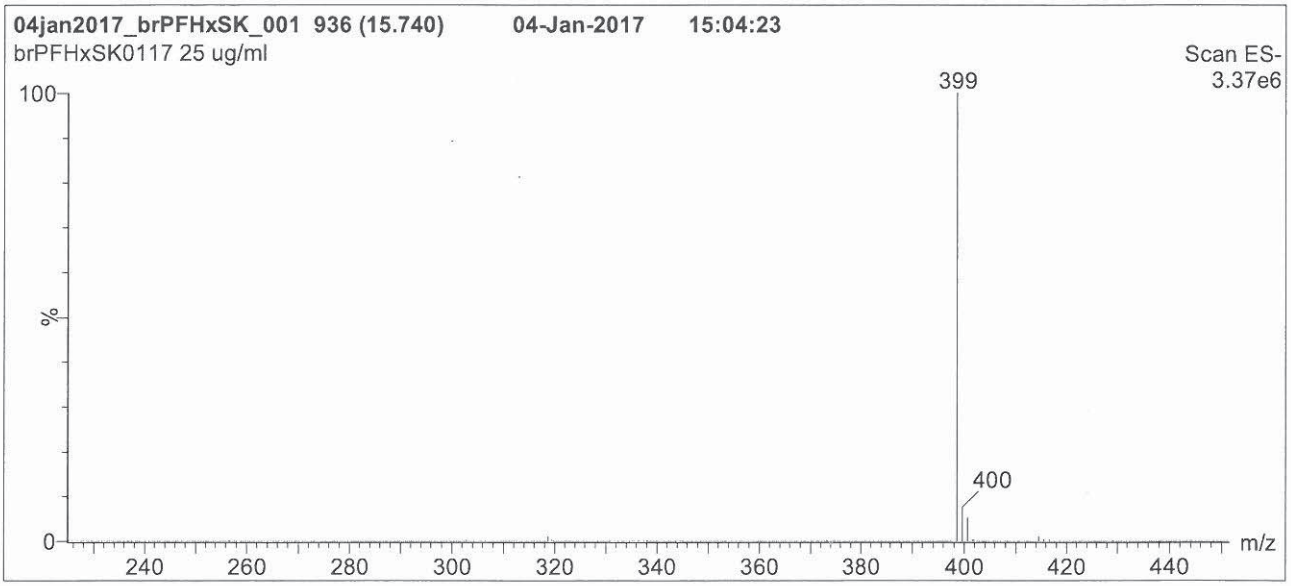
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

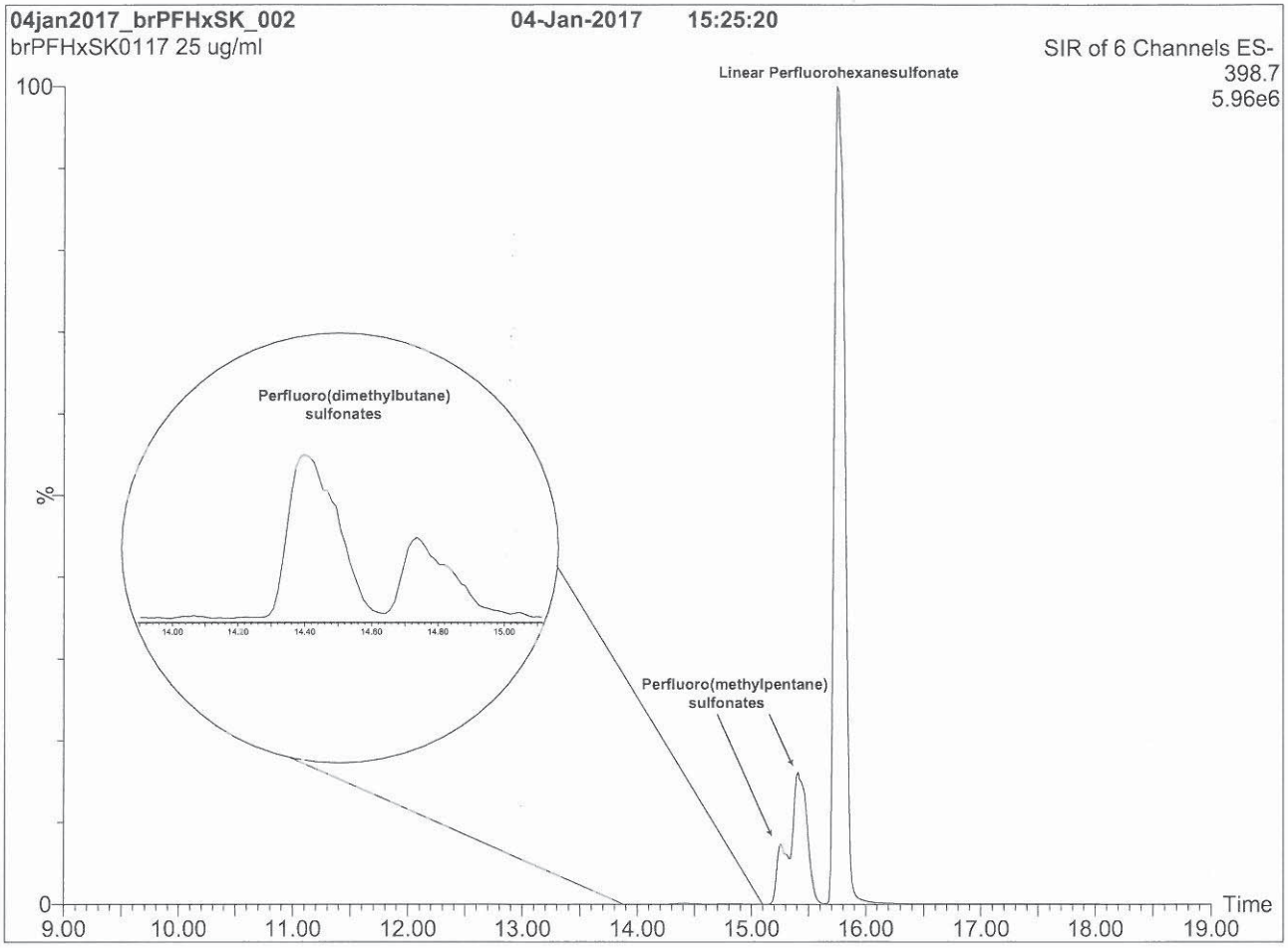
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

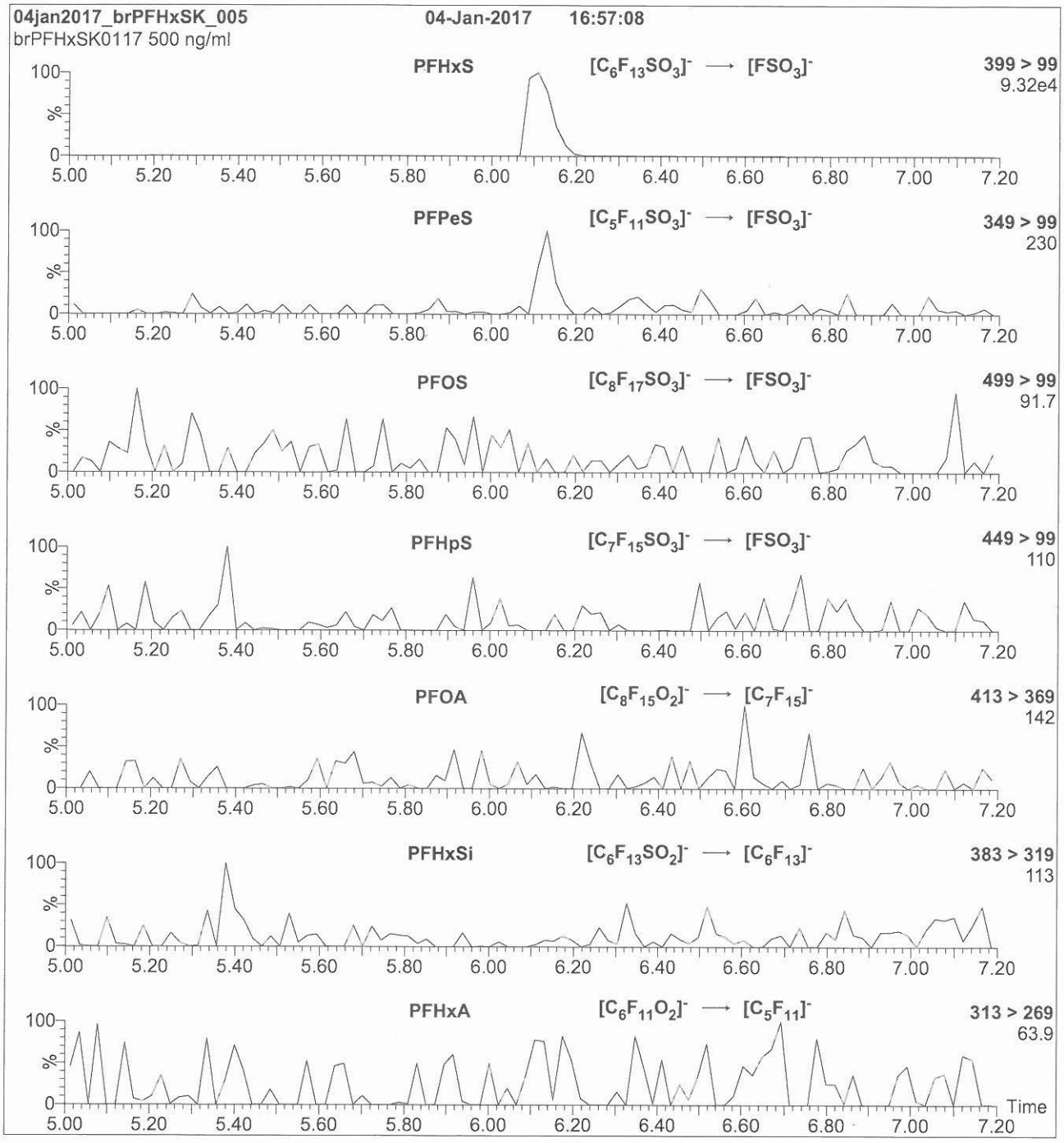
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 3:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Analytical Standard Record

Vista Analytical Laboratory

17D2813

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D2619	L-PFHpS	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:07 by AEW	0.5

Description:	L-PFHpS anion DIL	Expires:	28-Apr-18
Standard Type:	Other	Prepared:	28-Apr-17
Solvent:	Methanol/	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.952	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 09:07 by AEW

Analyte	CAS Number	Concentration	Units
Total PFHpS		25	ug/mL
PFHpS	375-92-8	25	ug/mL
L-PFHpS		25	ug/mL

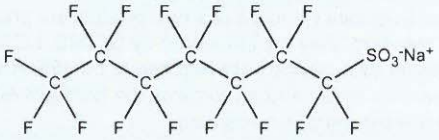
1702619

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS1016

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/18/2016		
EXPIRY DATE: (mm/dd/yyyy)	10/18/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/20/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Analytical Standard Record

Vista Analytical Laboratory

17E1907

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I 1432	1. - FHPA* I	14H9anH6	W: endor W	46H J8HF	14H9anH6 13b42 Ty E7 S	30 6C
16I 1435	1. - NHPABI	14H9anH6	W: endor W	4NH7 ayH41	14H9anH6 13b45 Ty E7 S	30 6C
16I 143F	1. - 6HPAMdI	14H9anH6	W: endor W	44H9anH41	14H9anH6 13b 1 Ty E7 S	30 6C
16D323C	1. - 2HPADI	32H prH6	9amie - 0StocOman	32H7 ayH41	32H prH6 3FbN Ty 9- S	30 6C
16E1616	1. - 4HAv MEI	16H7 ayH6	W: endor W	34H J8H5	16H7 ayH6 14bN2 Ty k* 9	30 6C
16E1F32	1. - NHPAv S dil0	1FH7 ayH6	ksaac * 09oUhson	1FH7 ayH5	1FH7 ayH6 13b 4 Ty k* 9	30N25
16E4N11	1. - CHPAh xI	4NH7 ayH6	W: endor W	46H J8HF	4NH7 ayH6 11blF Ty k* 9	30 6C
16E4N44	1. - . HPAh xS DkL0	4NH7 ayH6	ksaac * 09oUhson	4NH7 ayH5	4NH7 ayH6 11bN5 Ty k* 9	30N12
16E4N4.	1. - 4HNb4 ARS dil0	4NH7 ayH6	ksaac * 09oUhson	4NH7 ayH5	4NH7 ayH6 11bC3 Ty k* 9	30N25
16E4N4N	1. - 5HPAv I dil0	4NH7 ayH6	ksaac * 09oUhson	4NH7 ayH5	4NH7 ayH6 11bC4 Ty k* 9	30N25

Descriptionb	PA- HgS	Expiresb	32H prH5
Standard Rypeb	g ea8ent	Preparedb	1FH7 ayH6
Soluentb	7 Ev h	Prepared Byb	ksaac * 09oUhson
Ainal : olJme (mls)b	1C	Departmentb	L- 7 S
: ialsb	1	Last Editb	4NH7 ayH6 11bC. Ty k* 9

Analyte	CAS Number	Concentration	Units
1. - FHPA* I		104C	J8/mL
1. - 5HPAv I		104C	J8/mL
1. - 6HPAMnI		104C	J8/mL
1. - 2HPADI		104C	J8/mL
1. - CHPAh xI		104C	J8/mL
1. - NHPAv S		104C	J8/mL
1. - NHPABI		104C	J8/mL
1. - . HPAh xS		104C	J8/mL
1. - 4HAv MEI		104C	J8/mL
1. - 4HNb4 ARS		104C	J8/mL

17A1206

WELLINGTON LABORATORIES

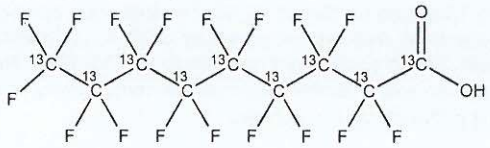
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M9PFNA
COMPOUND: Perfluoro-n-[$^{13}C_9$]nonanoic acid

LOT NUMBER: M9PFNA0814

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	473.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_9$)
LAST TESTED: (mm/dd/yyyy)	08/27/2014		
EXPIRY DATE: (mm/dd/yyyy)	08/27/2019		
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 ~ 0.9% of $^{13}C_5{}^{12}C_4HF_{17}O_2$ (MPFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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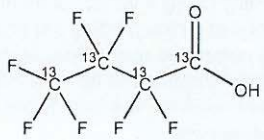
17A1208

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ B.G. Chittim **Date:** 05/30/2016 (mm/dd/yyyy)

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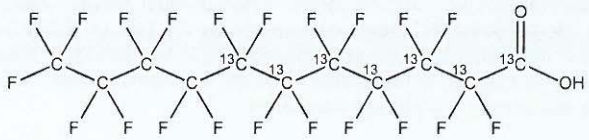
17A1209

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M7PFUdA	**LOT NUMBER:**	M7PFUdA0116
COMPOUND:	Perfluoro-n-[1,2,3,4,5,6,7-$^{13}C_7$]undecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_7{}^{12}C_4HF_{21}O_2$	**MOLECULAR WEIGHT:**	571.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C
LAST TESTED: (mm/dd/yyyy)	01/22/2016		(1,2,3,4,5,6,7-$^{13}C_7$)
EXPIRY DATE: (mm/dd/yyyy)	01/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/26/2016 (mm/dd/yyyy)

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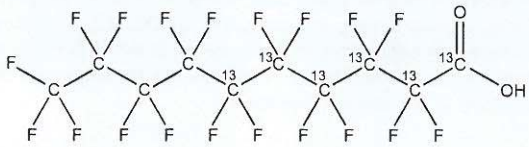
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

17D0605

PRODUCT CODE: M6PFDA
LOT NUMBER: M6PFDA0516
COMPOUND: Perfluoro-n-[1,2,3,4,5,6-$^{13}C_6$]decanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_6{}^{12}C_4HF_{19}O_2$	**MOLECULAR WEIGHT:**	520.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5,6-$^{13}C_6$)
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/13/2016 (mm/dd/yyyy)

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INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

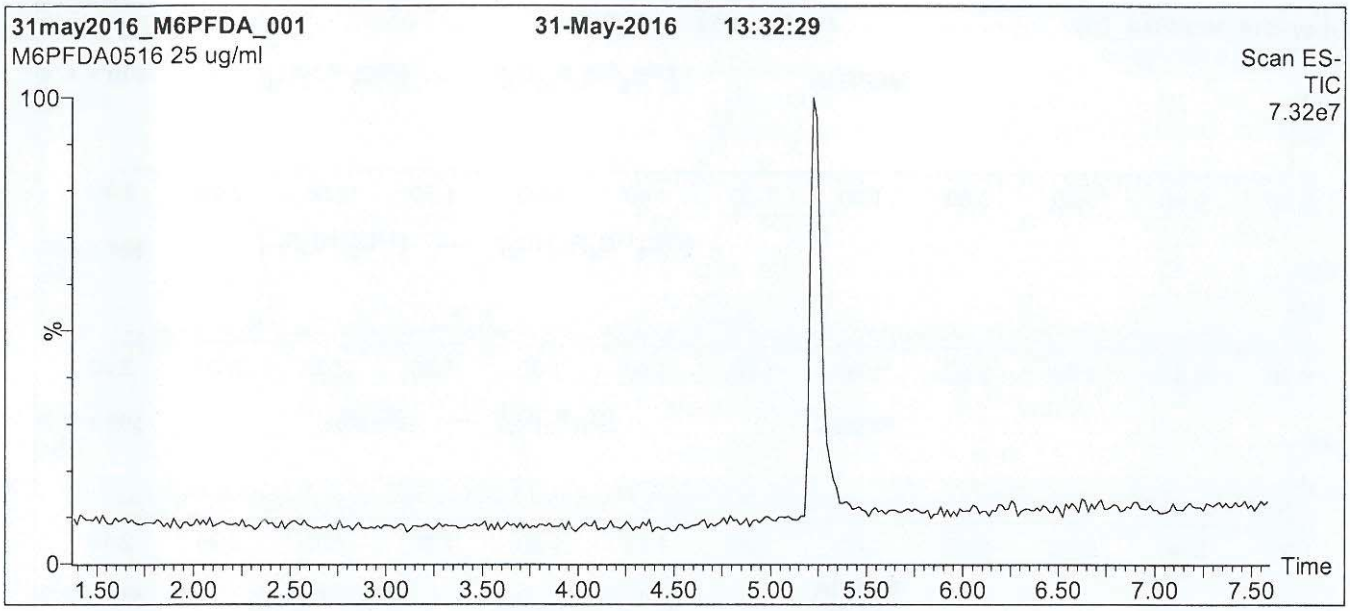
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

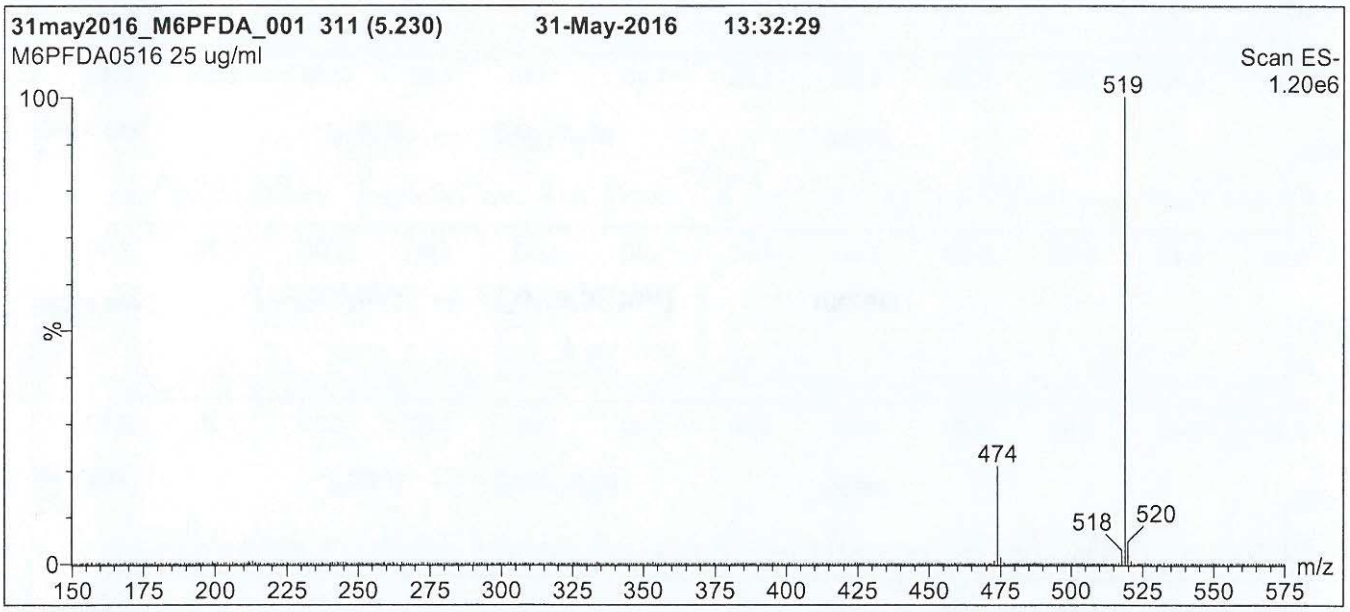
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Figure 1: **M6PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

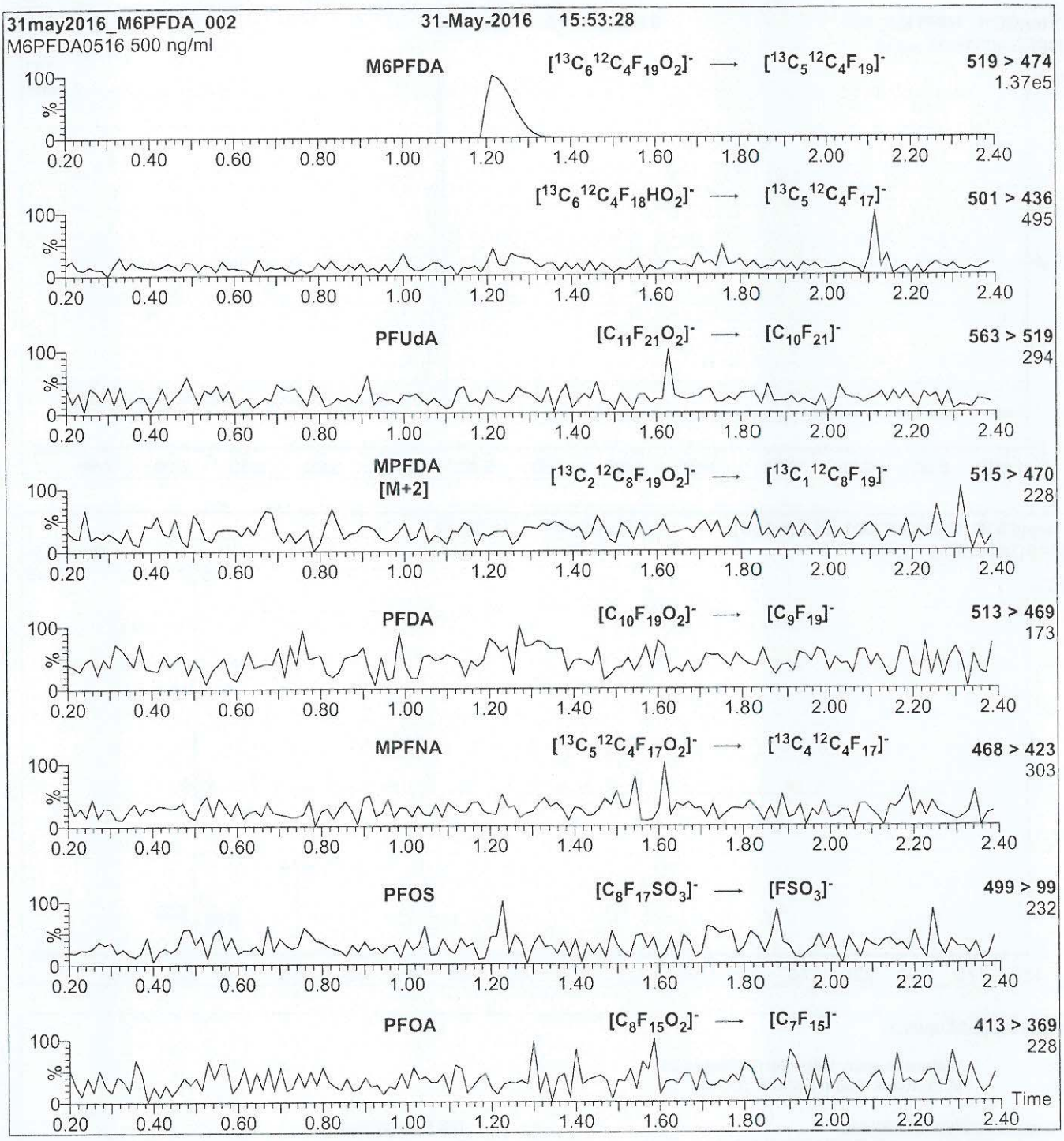
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **M6PFDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M6PFDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

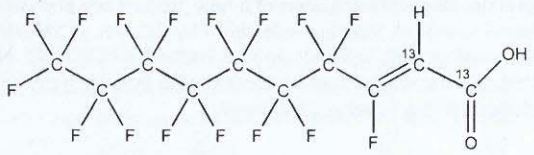
17E1717

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MFOUEA
LOT NUMBER: MFOUEA0716
COMPOUND: 2H-Perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_2F_{16}O_2$	**MOLECULAR WEIGHT:**	460.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Anhydrous Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/02/2018		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Dilution of this standard in methanol may lead to the formation of 2H-3-methoxy-perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid. This reaction can be catalyzed by the presence of acid or base. All dilutions should be routinely checked for degradation.

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Certified By: B.G. Chittim **Date:** 08/19/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17E1906

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E1719	13C4-PFOS	17-May-17	** Vendor **	12-Dec-21	17-May-17 12:47 by INJ	0.6

Description:	13C4-PFOS dil.	Expires:	19-May-18
Standard Type:	Other	Prepared:	19-May-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.717	Department:	LCMS
Vials:	1	Last Edit:	19-May-17 10:32 by INJ

Analyte	CAS Number	Concentration	Units
13C4-PFOS		40	ug/mL

17E1719

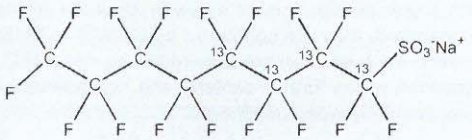
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	12/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/14/2016 (mm/dd/yyyy)

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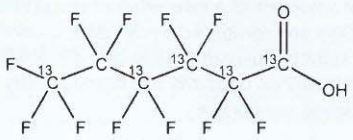
17E2411

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M5PFHxA	**LOT NUMBER:**	M5PFHxA0814
COMPOUND:	Perfluoro-n-[1,2,3,4,6-$^{13}C_5$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_1HF_{11}O_2$	**MOLECULAR WEIGHT:**	319.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,6-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	08/27/2014		
EXPIRY DATE: (mm/dd/yyyy)	08/27/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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Analytical Standard Record

Vista Analytical Laboratory

17E2422

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2410	13C3-PFHxS	24-May-17	** Vendor **	31-May-21	24-May-17 11:18 by INJ	0.45

Description:	13C3-PFHxS DIL.	Expires:	24-May-18
Standard Type:	Reagent	Prepared:	24-May-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.473	Department:	LCMS
Vials:	1	Last Edit:	24-May-17 11:48 by INJ

Analyte	CAS Number	Concentration	Units
13C3-PFHxS		45	ug/mL

17E2410

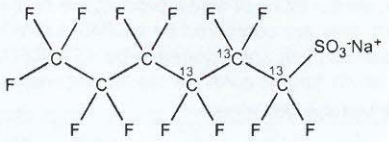
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFHxS **LOT NUMBER:** M3PFHxS0516

COMPOUND: Sodium perfluoro-1-[1,2,3-$^{13}C_3$]hexanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	425.07
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (M3PFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/05/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17E2423

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2460	13C2-4:2 FTS	24-May-17	** Vendor **	25-Onn-21	24-May-17 11:1b I y N O	6.75

Description:	13C2-4:2 FTS dil.	Expires:	24-May-1b
Standard Type:	v tuer	Prepared:	24-May-17
Sol8ent:	Metuanol	Prepared By:	Nsaac J . Oounson
Final Volhme (mls):	6.b79	Department:	LCMS
Vials:	1	Last Edit:	24-May-17 11:56 I y N O

Analyte	CAS Number	Concentration	Units
13C2-4:2 FTS		46	hg/mL

17E2409

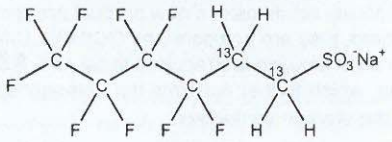
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-4:2FTS **LOT NUMBER:** M242FTS0616

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]hexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4H_4F_9SO_3Na$	**MOLECULAR WEIGHT:**	352.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	46.7 ± 2.3 µg/ml (M2-4:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	06/25/2016		
EXPIRY DATE: (mm/dd/yyyy)	06/25/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.6% of an unknown impurity.
- The native 4:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 4:2FTS and M2-4:2FTS will produce signals in the m/z 329 to m/z 309 channel during SRM analysis. We recommend using the m/z 329 to m/z 81 transition to monitor for M2-4:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 06/29/2016
B.G. Chittim (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17E2424

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2406	13C8-PFOA	24-May-17	** Vendor **	12-Feb-21	24-May-17 11:16 by INJ	0.5

Description:	13C8-PFOA dil.	Expires:	24-May-18
Standard Type:	Other	Prepared:	24-May-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.612	Department:	LCMS
Vials:	1	Last Edit:	24-May-17 11:52 by INJ

Analyte	CAS Number	Concentration	Units
13C8-PFOA		40	ug/mL

17E2406

WELLINGTON LABORATORIES

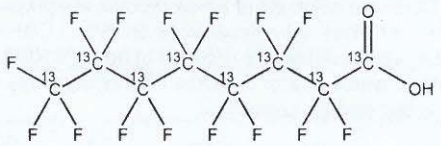
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M8PFOA
COMPOUND: Perfluoro-n-[$^{13}C_8$]octanoic acid

LOT NUMBER: M8PFOA0216

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_8HF_{15}O_2$
CONCENTRATION: 49 ± 2.45 µg/ml

MOLECULAR WEIGHT: 422.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: 97.9% (M8PFOA)
2.1% (MPFOA [M+4])

ISOTOPIC PURITY: ≥99% ^{13}C ($^{13}C_8$)

LAST TESTED: (mm/dd/yyyy) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of native perfluoro-n-octanoic acid (PFOA) and ~ 2.1% of [M+4] perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","375-73-5","PFBS","39.3","ng/L","","2.08","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","307-24-4","PFHxA","224","ng/L","","2.53","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","375-85-9","PFHpA","89.7","ng/L","","0.685","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","355-46-4","PFHxS","240","ng/L","","1.10","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","335-67-1","PFOA","50.4","ng/L","","0.755","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Dilution","1700789-01","Vista","1763-23-1","PFOS","1640","ng/L","D","4.68","LOD","","TRG","","","46.4","LOQ","YES","-99","","0.108","0.001","28.9",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","375-95-1","PFNA","9.50","ng/L","","0.939","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","335-76-2","PFDA","3.29","ng/L","J","1.73","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","2355-31-9","MeFOSAA","5.79","ng/L","U","1.91","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","2058-94-8","PFUnA","1.96","ng/L","J","1.22","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","2991-50-6","EtFOSAA","5.79","ng/L","U","1.59","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","307-55-1","PFDoA","5.79","ng/L","U","0.918","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","72629-94-8","PFTrDA","5.79","ng/L","U","0.573","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","376-06-7","PFTeDA","5.79","ng/L","U","0.875","LOD","","TRG","","","9.27","LOQ","YES","-99","","0.108","0.001","5.79",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C3-PFBS","13C3-PFBS","112","%R","","-99","NA","","IS","112","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C2-PFHxA","13C2-PFHxA","91.7","%R","","-99","NA","","IS","91.7","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C4-PFHpA","13C4-PFHpA","78.1","%R","","-99","NA","","IS","78.1","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","18O2-PFHxS","18O2-PFHxS","88.0","%R","","-99","NA","","IS","88.0","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C2-PFOA","13C2-PFOA","83.0","%R","","-99","NA","","IS","83.0","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Dilution","1700789-01","Vista","13C8-PFOS","13C8-PFOS","97.3","%R","D","-99","NA","","IS","97.3","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C5-PFNA","13C5-PFNA","84.5","%R","","-99","NA","","IS","84.5","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C2-PFDA","13C2-PFDA","90.0","%R","","-99","NA","","IS","90.0","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","d3-MeFOSAA","d3-MeFOSAA","77.3","%R","","-99","NA","","IS","77.3","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C2-PFUnA","13C2-PFUnA","72.7","%R","","-99","NA","","IS","72.7","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","d5-EtFOSAA","d5-

EtFOSAA","67.2","%R","","-99","NA","","IS","67.2","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C2-PFDoA","13C2-
PFDoA","54.4","%R","","-99","NA","","IS","54.4","","-99","NA","YES","100","","0.108","0.001","-99",""
"GR-OF-20170627","Modified EPA Method 537","Initial","1700789-01","Vista","13C2-PFTeDA","13C2-
PFTeDA","39.3","%R","H","-99","NA","","IS","39.3","","-99","NA","YES","100","","0.108","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","375-73-
5","PFBS","39.7","ng/L","","1.82","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","307-24-
4","PFHxA","295","ng/L","","2.21","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","375-85-
9","PFHpA","108","ng/L","","0.600","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","355-46-
4","PFHxS","227","ng/L","","0.962","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","335-67-
1","PFOA","64.6","ng/L","","0.661","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Dilution","1700789-02","Vista","1763-23-
1","PFOS","2230","ng/L","D","4.10","LOD","","TRG","","","40.6","LOQ","YES","-99","","0.123","0.001","25.4",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","375-95-
1","PFNA","10.3","ng/L","","0.822","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","335-76-
2","PFDA","3.30","ng/L","J","1.51","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","2355-31-
9","MeFOSAA","5.08","ng/L","U","1.68","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08"
,""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","2058-94-
8","PFUnA","1.50","ng/L","J","1.07","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","2991-50-
6","EtFOSAA","5.08","ng/L","U","1.39","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",
""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","307-55-
1","PFDoA","5.08","ng/L","U","0.804","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","72629-94-
8","PFTrDA","5.08","ng/L","U","0.502","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08","
"
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","376-06-
7","PFTeDA","5.08","ng/L","U","0.767","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",
""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C3-PFBS","13C3-
PFBS","109","%R","","-99","NA","","IS","109","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C2-PFHxA","13C2-
PFHxA","86.4","%R","","-99","NA","","IS","86.4","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C4-PFHpA","13C4-
PFHpA","79.1","%R","","-99","NA","","IS","79.1","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","18O2-PFHxS","18O2-
PFHxS","98.8","%R","","-99","NA","","IS","98.8","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C2-PFOA","13C2-
PFOA","82.5","%R","","-99","NA","","IS","82.5","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Dilution","1700789-02","Vista","13C8-PFOS","13C8-
PFOS","57.4","%R","D","-99","NA","","IS","57.4","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C5-PFNA","13C5-
PFNA","74.5","%R","","-99","NA","","IS","74.5","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C2-PFDA","13C2-
PFDA","79.7","%R","","-99","NA","","IS","79.7","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","d3-MeFOSAA","d3-

MeFOSAA","67.8","%R","","-99","NA","","IS","67.8","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C2-PFUnA","13C2-
PFUnA","67.9","%R","","-99","NA","","IS","67.9","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","d5-EtFOSAA","d5-
EtFOSAA","61.4","%R","","-99","NA","","IS","61.4","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C2-PFDoA","13C2-
PFDoA","45.8","%R","H","-99","NA","","IS","45.8","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117T-20170627","Modified EPA Method 537","Initial","1700789-02","Vista","13C2-PFTeDA","13C2-
PFTeDA","24.6","%R","H","-99","NA","","IS","24.6","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","375-73-
5","PFBS","120","ng/L","","1.81","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","307-24-
4","PFHxA","601","ng/L","","2.21","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","375-85-
9","PFHpA","158","ng/L","","0.598","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Dilution","1700789-03","Vista","355-46-
4","PFHxS","1010","ng/L","D","4.79","LOD","","TRG","","","40.5","LOQ","YES","-99","","0.123","0.001","25.4",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","335-67-
1","PFOA","113","ng/L","","0.659","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Dilution","1700789-03","Vista","1763-23-
1","PFOS","2860","ng/L","D","4.08","LOD","","TRG","","","40.5","LOQ","YES","-99","","0.123","0.001","25.4",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","375-95-
1","PFNA","11.2","ng/L","","0.820","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","335-76-
2","PFDA","1.60","ng/L","J","1.51","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","2355-31-
9","MeFOSAA","5.08","ng/L","U","1.67","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08"
,""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","2058-94-
8","PFUnA","5.08","ng/L","U","1.06","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","2991-50-
6","EtFOSAA","5.08","ng/L","U","1.39","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",
""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","307-55-
1","PFDoA","5.08","ng/L","U","0.802","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","72629-94-
8","PFTrDA","5.08","ng/L","U","0.500","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08","
"
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","376-06-
7","PFTeDA","5.08","ng/L","U","0.764","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",
""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C3-PFBS","13C3-
PFBS","119","%R","","-99","NA","","IS","119","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C2-PFHxA","13C2-
PFHxA","98.6","%R","","-99","NA","","IS","98.6","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C4-PFHpA","13C4-
PFHpA","87.5","%R","","-99","NA","","IS","87.5","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Dilution","1700789-03","Vista","18O2-PFHxS","18O2-
PFHxS","92.6","%R","D","-99","NA","","IS","92.6","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C2-PFOA","13C2-
PFOA","93.6","%R","","-99","NA","","IS","93.6","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Dilution","1700789-03","Vista","13C8-PFOS","13C8-
PFOS","109","%R","D","-99","NA","","IS","109","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C5-PFNA","13C5-

PFNA","80.3","%R","","-99","NA","","IS","80.3","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C2-PFDA","13C2-
PFDA","88.1","%R","","-99","NA","","IS","88.1","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","d3-MeFOSAA","d3-
MeFOSAA","80.5","%R","","-99","NA","","IS","80.5","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C2-PFUnA","13C2-
PFUnA","71.4","%R","","-99","NA","","IS","71.4","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","d5-EtFOSAA","d5-
EtFOSAA","59.7","%R","","-99","NA","","IS","59.7","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C2-PFDoA","13C2-
PFDoA","25.6","%R","H","-99","NA","","IS","25.6","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-117N-20170627","Modified EPA Method 537","Initial","1700789-03","Vista","13C2-PFTeDA","13C2-
PFTeDA","24.6","%R","H","-99","NA","","IS","24.6","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","375-73-
5","PFBS","1.87","ng/L","J","1.63","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","307-24-
4","PFHxA","113","ng/L","","1.99","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","375-85-
9","PFHpA","59.7","ng/L","","0.539","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","355-46-
4","PFHxS","9.73","ng/L","","0.863","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","335-67-
1","PFOA","37.2","ng/L","","0.593","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","1763-23-
1","PFOS","16.8","ng/L","","0.735","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","375-95-
1","PFNA","6.12","ng/L","J","0.738","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","335-76-
2","PFDA","4.56","ng/L","U","1.36","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","2355-31-
9","MeFOSAA","4.56","ng/L","U","1.50","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56"
,""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","2058-94-
8","PFUnA","4.56","ng/L","U","0.957","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","2991-50-
6","EtFOSAA","4.56","ng/L","U","1.25","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",
""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","307-55-
1","PFDoA","4.56","ng/L","U","0.722","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","72629-94-
8","PFTrDA","4.56","ng/L","U","0.450","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56","
"
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","376-06-
7","PFTeDA","4.56","ng/L","U","0.688","LOD","","TRG","","","7.29","LOQ","YES","-99","","0.137","0.001","4.56",
""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C3-PFBS","13C3-
PFBS","111","%R","","-99","NA","","IS","111","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C2-PFHxA","13C2-
PFHxA","94.7","%R","","-99","NA","","IS","94.7","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C4-PFHpA","13C4-
PFHpA","83.2","%R","","-99","NA","","IS","83.2","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","18O2-PFHxS","18O2-
PFHxS","99.7","%R","","-99","NA","","IS","99.7","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C2-PFOA","13C2-

PFOA","85.1","%R","","-99","NA","","IS","85.1","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C8-PFOS","13C8-
PFOS","84.8","%R","","-99","NA","","IS","84.8","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C5-PFNA","13C5-
PFNA","92.2","%R","","-99","NA","","IS","92.2","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C2-PFDA","13C2-
PFDA","75.9","%R","","-99","NA","","IS","75.9","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","d3-MeFOSAA","d3-
MeFOSAA","79.9","%R","","-99","NA","","IS","79.9","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C2-PFUnA","13C2-
PFUnA","77.7","%R","","-99","NA","","IS","77.7","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","d5-EtFOSAA","d5-
EtFOSAA","68.5","%R","","-99","NA","","IS","68.5","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C2-PFDoA","13C2-
PFDoA","49.4","%R","H","-99","NA","","IS","49.4","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5T-20170627","Modified EPA Method 537","Initial","1700789-04","Vista","13C2-PFTeDA","13C2-
PFTeDA","23.2","%R","H","-99","NA","","IS","23.2","","-99","NA","YES","100","","0.137","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","375-73-
5","PFBS","155","ng/L","","1.84","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","307-24-
4","PFHxA","705","ng/L","","2.24","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","375-85-
9","PFHpA","213","ng/L","","0.607","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Dilution","1700789-05","Vista","355-46-
4","PFHxS","815","ng/L","D","9.73","LOD","","TRG","","","82.2","LOQ","YES","-99","","0.122","0.001","51.2",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","335-67-
1","PFOA","128","ng/L","","0.669","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Dilution","1700789-05","Vista","1763-23-
1","PFOS","5700","ng/L","D","8.29","LOD","","TRG","","","82.2","LOQ","YES","-99","","0.122","0.001","51.2",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","375-95-
1","PFNA","13.0","ng/L","","0.832","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","335-76-
2","PFDA","3.78","ng/L","J","1.53","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","2355-31-
9","MeFOSAA","5.12","ng/L","U","1.70","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12"
,""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","2058-94-
8","PFUnA","5.12","ng/L","U","1.08","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","2991-50-
6","EtFOSAA","5.12","ng/L","U","1.41","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",
""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","307-55-
1","PFDoA","5.12","ng/L","U","0.814","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","72629-94-
8","PFTrDA","5.12","ng/L","U","0.508","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12","
"
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","376-06-
7","PFTeDA","5.12","ng/L","U","0.776","LOD","","TRG","","","8.22","LOQ","YES","-99","","0.122","0.001","5.12",
""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C3-PFBS","13C3-
PFBS","100","%R","","-99","NA","","IS","100","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C2-PFHxA","13C2-
PFHxA","88.0","%R","","-99","NA","","IS","88.0","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C4-PFHpA","13C4-

PFHpA","80.2","%R","","-99","NA","","IS","80.2","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Dilution","1700789-05","Vista","18O2-PFHxS","18O2-PFHxS","90.4","%R","D","-99","NA","","IS","90.4","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C2-PFOA","13C2-PFOA","85.8","%R","","-99","NA","","IS","85.8","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Dilution","1700789-05","Vista","13C8-PFOS","13C8-PFOS","56.2","%R","D","-99","NA","","IS","56.2","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C5-PFNA","13C5-PFNA","79.8","%R","","-99","NA","","IS","79.8","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C2-PFDA","13C2-PFDA","77.7","%R","","-99","NA","","IS","77.7","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","d3-MeFOSAA","d3-MeFOSAA","68.4","%R","","-99","NA","","IS","68.4","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C2-PFUnA","13C2-PFUnA","75.6","%R","","-99","NA","","IS","75.6","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","d5-EtFOSAA","d5-EtFOSAA","54.8","%R","","-99","NA","","IS","54.8","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C2-PFDoA","13C2-PFDoA","29.2","%R","H","-99","NA","","IS","29.2","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-118.5N-20170627","Modified EPA Method 537","Initial","1700789-05","Vista","13C2-PFTeDA","13C2-PFTeDA","18.0","%R","H","-99","NA","","IS","18.0","","-99","NA","YES","100","","0.122","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","375-73-5","PFBS","5.08","ng/L","U","1.82","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","307-24-4","PFHxA","59.9","ng/L","","2.21","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","375-85-9","PFHpA","44.6","ng/L","","0.600","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","355-46-4","PFHxS","4.68","ng/L","J","0.961","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","335-67-1","PFOA","36.2","ng/L","","0.661","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","1763-23-1","PFOS","7.55","ng/L","J","0.819","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","375-95-1","PFNA","6.84","ng/L","J","0.822","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","335-76-2","PFDA","5.08","ng/L","U","1.51","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","2355-31-9","MeFOSAA","5.08","ng/L","U","1.67","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","2058-94-8","PFUnA","5.08","ng/L","U","1.07","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","2991-50-6","EtFOSAA","5.08","ng/L","U","1.39","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","307-55-1","PFDoA","5.08","ng/L","U","0.804","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","72629-94-8","PFTrDA","5.08","ng/L","U","0.501","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","376-06-7","PFTeDA","5.08","ng/L","U","0.766","LOD","","TRG","","","8.12","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C3-PFBS","13C3-

PFBS","111","%R","","-99","NA","","IS","111","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C2-PFHxA","13C2-PFHxA","96.0","%R","","-99","NA","","IS","96.0","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C4-PFHpA","13C4-PFHpA","85.5","%R","","-99","NA","","IS","85.5","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","18O2-PFHxS","18O2-PFHxS","86.2","%R","","-99","NA","","IS","86.2","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C2-PFOA","13C2-PFOA","92.2","%R","","-99","NA","","IS","92.2","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C8-PFOS","13C8-PFOS","88.4","%R","","-99","NA","","IS","88.4","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C5-PFNA","13C5-PFNA","99.7","%R","","-99","NA","","IS","99.7","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C2-PFDA","13C2-PFDA","68.8","%R","","-99","NA","","IS","68.8","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","d3-MeFOSAA","d3-MeFOSAA","76.4","%R","","-99","NA","","IS","76.4","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C2-PFUnA","13C2-PFUnA","69.9","%R","","-99","NA","","IS","69.9","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","d5-EtFOSAA","d5-EtFOSAA","69.5","%R","","-99","NA","","IS","69.5","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C2-PFDoA","13C2-PFDoA","44.9","%R","H","-99","NA","","IS","44.9","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5T-20170627","Modified EPA Method 537","Initial","1700789-06","Vista","13C2-PFTeDA","13C2-PFTeDA","35.1","%R","H","-99","NA","","IS","35.1","","-99","NA","YES","100","","0.123","0.001","-99",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","375-73-5","PFBS","5.50","ng/L","J","1.81","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","307-24-4","PFHxA","314","ng/L","","2.21","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","375-85-9","PFHpA","133","ng/L","","0.598","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","355-46-4","PFHxS","33.5","ng/L","","0.959","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","335-67-1","PFOA","44.3","ng/L","","0.659","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","1763-23-1","PFOS","28.3","ng/L","","0.817","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","375-95-1","PFNA","5.21","ng/L","J","0.820","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","335-76-2","PFDA","5.08","ng/L","U","1.51","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","2355-31-9","MeFOSAA","5.08","ng/L","U","1.67","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","2058-94-8","PFUnA","5.08","ng/L","U","1.06","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","2991-50-6","EtFOSAA","5.08","ng/L","U","1.39","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","307-55-1","PFDoA","5.08","ng/L","U","0.802","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""
"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","72629-94-8","PFTrDA","5.08","ng/L","U","0.500","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","376-06-7","PFTeDA","5.08","ng/L","U","0.764","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.123","0.001","5.08",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C3-PFBS","13C3-PFBS","111","%R","","-99","NA","","IS","111","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C2-PFHxA","13C2-PFHxA","91.4","%R","","-99","NA","","IS","91.4","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C4-PFHpA","13C4-PFHpA","85.0","%R","","-99","NA","","IS","85.0","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","18O2-PFHxS","18O2-PFHxS","82.0","%R","","-99","NA","","IS","82.0","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C2-PFOA","13C2-PFOA","79.5","%R","","-99","NA","","IS","79.5","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C8-PFOS","13C8-PFOS","93.3","%R","","-99","NA","","IS","93.3","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C5-PFNA","13C5-PFNA","77.5","%R","","-99","NA","","IS","77.5","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C2-PFDA","13C2-PFDA","78.4","%R","","-99","NA","","IS","78.4","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","d3-MeFOSAA","d3-MeFOSAA","61.2","%R","","-99","NA","","IS","61.2","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C2-PFUnA","13C2-PFUnA","57.9","%R","","-99","NA","","IS","57.9","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","d5-EtFOSAA","d5-EtFOSAA","56.1","%R","","-99","NA","","IS","56.1","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C2-PFDoA","13C2-PFDoA","38.2","%R","H","-99","NA","","IS","38.2","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-121.5N-20170627","Modified EPA Method 537","Initial","1700789-07","Vista","13C2-PFTeDA","13C2-PFTeDA","22.4","%R","H","-99","NA","","IS","22.4","","-99","NA","YES","100","","0.123","0.001","-99",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","375-73-5","PFBS","5.21","ng/L","U","1.87","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","307-24-4","PFHxA","84.2","ng/L","","2.28","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","375-85-9","PFHpA","58.5","ng/L","","0.618","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","355-46-4","PFHxS","3.02","ng/L","J","0.991","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","335-67-1","PFOA","59.0","ng/L","","0.681","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","1763-23-1","PFOS","2.55","ng/L","J","0.844","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","375-95-1","PFNA","7.37","ng/L","J","0.847","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","335-76-2","PFDA","5.21","ng/L","U","1.56","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","2355-31-9","MeFOSAA","5.21","ng/L","U","1.73","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","2058-94-8","PFUnA","5.21","ng/L","U","1.10","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","2991-50-6","EtFOSAA","5.21","ng/L","U","1.43","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""

"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","307-55-

1","PFDoA","5.21","ng/L","U","0.828","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","72629-94-
8","PFTrDA","5.21","ng/L","U","0.517","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21","
"
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","376-06-
7","PFTeDA","5.21","ng/L","U","0.790","LOD","","TRG","","","8.37","LOQ","YES","-99","","0.120","0.001","5.21",
""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C3-PFBS","13C3-
PFBS","125","%R","","-99","NA","","IS","125","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C2-PFHxA","13C2-
PFHxA","98.5","%R","","-99","NA","","IS","98.5","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C4-PFHpA","13C4-
PFHpA","88.6","%R","","-99","NA","","IS","88.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","18O2-PFHxS","18O2-
PFHxS","102","%R","","-99","NA","","IS","102","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C2-PFOA","13C2-
PFOA","89.0","%R","","-99","NA","","IS","89.0","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C8-PFOS","13C8-
PFOS","100","%R","","-99","NA","","IS","100","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C5-PFNA","13C5-
PFNA","76.6","%R","","-99","NA","","IS","76.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C2-PFDA","13C2-
PFDA","88.9","%R","","-99","NA","","IS","88.9","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","d3-MeFOSAA","d3-
MeFOSAA","80.2","%R","","-99","NA","","IS","80.2","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C2-PFUnA","13C2-
PFUnA","70.4","%R","","-99","NA","","IS","70.4","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","d5-EtFOSAA","d5-
EtFOSAA","70.3","%R","","-99","NA","","IS","70.3","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C2-PFDoA","13C2-
PFDoA","46.3","%R","H","-99","NA","","IS","46.3","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9T-20170627","Modified EPA Method 537","Initial","1700789-08","Vista","13C2-PFTeDA","13C2-
PFTeDA","16.9","%R","H","-99","NA","","IS","16.9","","-99","NA","YES","100","","0.120","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","375-73-
5","PFBS","5.04","ng/L","U","1.81","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","307-24-
4","PFHxA","71.9","ng/L","","2.21","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","375-85-
9","PFHpA","46.2","ng/L","","0.598","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","355-46-
4","PFHxS","4.95","ng/L","J","0.958","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","335-67-
1","PFOA","38.1","ng/L","","0.659","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","1763-23-
1","PFOS","13.6","ng/L","","0.817","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","375-95-
1","PFNA","11.1","ng/L","","0.820","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","335-76-
2","PFDA","3.26","ng/L","J","1.51","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","2355-31-
9","MeFOSAA","5.04","ng/L","U","1.67","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04"
,""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","2058-94-
8","PFUnA","3.51","ng/L","J","1.06","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""

"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","2991-50-6","EtFOSAA","5.04","ng/L","U","1.39","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","307-55-1","PFDoA","5.04","ng/L","U","0.801","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","72629-94-8","PFTrDA","5.04","ng/L","U","0.500","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","376-06-7","PFTeDA","5.04","ng/L","U","0.764","LOD","","TRG","","","8.10","LOQ","YES","-99","","0.124","0.001","5.04",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C3-PFBS","13C3-PFBS","115","%R","","-99","NA","","IS","115","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C2-PFHxA","13C2-PFHxA","97.5","%R","","-99","NA","","IS","97.5","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C4-PFHpA","13C4-PFHpA","89.9","%R","","-99","NA","","IS","89.9","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","18O2-PFHxS","18O2-PFHxS","97.1","%R","","-99","NA","","IS","97.1","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C2-PFOA","13C2-PFOA","83.7","%R","","-99","NA","","IS","83.7","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C8-PFOS","13C8-PFOS","104","%R","","-99","NA","","IS","104","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C5-PFNA","13C5-PFNA","87.6","%R","","-99","NA","","IS","87.6","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C2-PFDA","13C2-PFDA","86.1","%R","","-99","NA","","IS","86.1","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","d3-MeFOSAA","d3-MeFOSAA","75.0","%R","","-99","NA","","IS","75.0","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C2-PFUnA","13C2-PFUnA","79.9","%R","","-99","NA","","IS","79.9","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","d5-EtFOSAA","d5-EtFOSAA","61.1","%R","","-99","NA","","IS","61.1","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C2-PFDoA","13C2-PFDoA","41.9","%R","H","-99","NA","","IS","41.9","","-99","NA","YES","100","","0.124","0.001","-99",""
"MH-125.9N-20170627","Modified EPA Method 537","Initial","1700789-09","Vista","13C2-PFTeDA","13C2-PFTeDA","28.7","%R","H","-99","NA","","IS","28.7","","-99","NA","YES","100","","0.124","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","375-73-5","PFBS","5.68","ng/L","U","2.04","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","307-24-4","PFHxA","76.0","ng/L","","2.48","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","375-85-9","PFHpA","55.8","ng/L","","0.673","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","355-46-4","PFHxS","5.81","ng/L","J","1.08","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","335-67-1","PFOA","42.1","ng/L","","0.741","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","1763-23-1","PFOS","15.1","ng/L","","0.919","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","375-95-1","PFNA","13.9","ng/L","","0.922","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","335-76-2","PFDA","5.68","ng/L","U","1.70","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","2355-31-

9","MeFOSAA","5.68","ng/L","U","1.88","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68"
,""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","2058-94-
8","PFUnA","2.41","ng/L","J","1.20","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","2991-50-
6","EtFOSAA","5.68","ng/L","U","1.56","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",
""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","307-55-
1","PFDoA","5.68","ng/L","U","0.902","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","72629-94-
8","PFTrDA","5.68","ng/L","U","0.562","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68","
"
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","376-06-
7","PFTeDA","5.68","ng/L","U","0.859","LOD","","TRG","","","9.11","LOQ","YES","-99","","0.110","0.001","5.68",
""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C3-PFBS","13C3-
PFBS","124","%R","","-99","NA","","IS","124","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C2-PFHxA","13C2-
PFHxA","97.8","%R","","-99","NA","","IS","97.8","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C4-PFHpA","13C4-
PFHpA","83.4","%R","","-99","NA","","IS","83.4","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","18O2-PFHxS","18O2-
PFHxS","100","%R","","-99","NA","","IS","100","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C2-PFOA","13C2-
PFOA","80.6","%R","","-99","NA","","IS","80.6","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C8-PFOS","13C8-
PFOS","89.6","%R","","-99","NA","","IS","89.6","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C5-PFNA","13C5-
PFNA","69.5","%R","","-99","NA","","IS","69.5","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C2-PFDA","13C2-
PFDA","93.1","%R","","-99","NA","","IS","93.1","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","d3-MeFOSAA","d3-
MeFOSAA","73.1","%R","","-99","NA","","IS","73.1","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C2-PFUnA","13C2-
PFUnA","67.1","%R","","-99","NA","","IS","67.1","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","d5-EtFOSAA","d5-
EtFOSAA","61.1","%R","","-99","NA","","IS","61.1","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C2-PFDoA","13C2-
PFDoA","62.9","%R","","-99","NA","","IS","62.9","","-99","NA","YES","100","","0.110","0.001","-99",""
"West Ditch Out-20170627","Modified EPA Method 537","Initial","1700789-10","Vista","13C2-PFTeDA","13C2-
PFTeDA","69.9","%R","","-99","NA","","IS","69.9","","-99","NA","YES","100","","0.110","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","375-73-
5","PFBS","5.00","ng/L","U","1.79","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","307-24-
4","PFHxA","5.00","ng/L","U","2.18","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","375-85-
9","PFHpA","5.00","ng/L","U","0.591","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","355-46-
4","PFHxS","5.00","ng/L","U","0.947","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","335-67-
1","PFOA","5.00","ng/L","U","0.651","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","1763-23-
1","PFOS","5.00","ng/L","U","0.807","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","375-95-

1","PFNA","5.00","ng/L","U","0.810","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","335-76-
2","PFDA","5.00","ng/L","U","1.49","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","2355-31-
9","MeFOSAA","5.00","ng/L","U","1.65","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00"
,""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","2058-94-
8","PFUnA","5.00","ng/L","U","1.05","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","2991-50-
6","EtFOSAA","5.00","ng/L","U","1.37","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",
""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","307-55-
1","PFDoA","5.00","ng/L","U","0.792","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","72629-94-
8","PFTrDA","5.00","ng/L","U","0.494","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00","
"
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","376-06-
7","PFTeDA","5.00","ng/L","U","0.755","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",
""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C3-PFBS","13C3-
PFBS","124","%R","","-99","NA","","IS","124","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C2-PFHxA","13C2-
PFHxA","99.5","%R","","-99","NA","","IS","99.5","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C4-PFHpA","13C4-
PFHpA","83.3","%R","","-99","NA","","IS","83.3","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","18O2-PFHxS","18O2-
PFHxS","95.8","%R","","-99","NA","","IS","95.8","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C2-PFOA","13C2-
PFOA","94.1","%R","","-99","NA","","IS","94.1","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C8-PFOS","13C8-
PFOS","96.9","%R","","-99","NA","","IS","96.9","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C5-PFNA","13C5-
PFNA","82.5","%R","","-99","NA","","IS","82.5","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C2-PFDA","13C2-
PFDA","84.2","%R","","-99","NA","","IS","84.2","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","d3-MeFOSAA","d3-
MeFOSAA","63.4","%R","","-99","NA","","IS","63.4","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C2-PFUnA","13C2-
PFUnA","60.0","%R","","-99","NA","","IS","60.0","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","d5-EtFOSAA","d5-
EtFOSAA","55.2","%R","","-99","NA","","IS","55.2","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C2-PFDoA","13C2-
PFDoA","38.1","%R","H","-99","NA","","IS","38.1","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BLK1","Modified EPA Method 537","Initial","B7F0136-BLK1","Vista","13C2-PFTeDA","13C2-
PFTeDA","21.8","%R","H","-99","NA","","IS","21.8","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","375-73-
5","PFBS","88.7","ng/L","","1.79","LOD","","TRG","111","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","307-24-
4","PFHxA","97.7","ng/L","","2.18","LOD","","TRG","122","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","375-85-
9","PFHpA","95.0","ng/L","","0.591","LOD","","TRG","119","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00"
,""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","355-46-

4","PFHxS","73.2","ng/L","","0.947","LOD","","TRG","91.4","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00
","",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","335-67-
1","PFOA","99.5","ng/L","","0.651","LOD","","TRG","124","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","1763-23-
1","PFOS","93.1","ng/L","","0.807","LOD","","TRG","116","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","
"
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","375-95-
1","PFNA","91.8","ng/L","","0.810","LOD","","TRG","115","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","335-76-
2","PFDA","95.9","ng/L","","1.49","LOD","","TRG","120","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","
"
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","2355-31-
9","MeFOSAA","87.7","ng/L","","1.65","LOD","","TRG","110","","8.00","LOQ","YES","80.0","","0.125","0.001","5.
00",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","2058-94-
8","PFUnA","105","ng/L","H","1.05","LOD","","TRG","131","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00"
,""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","2991-50-
6","EtFOSAA","94.1","ng/L","","1.37","LOD","","TRG","118","","8.00","LOQ","YES","80.0","","0.125","0.001","5.0
0",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","307-55-
1","PFDoA","102","ng/L","","0.792","LOD","","TRG","127","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","72629-94-
8","PFTrDA","70.8","ng/L","","0.494","LOD","","TRG","88.5","","8.00","LOQ","YES","80.0","","0.125","0.001","5.0
0",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","376-06-
7","PFTeDA","101","ng/L","","0.755","LOD","","TRG","126","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00
","",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C3-PFBS","13C3-
PFBS","121","%R","","-99","NA","","IS","121","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C2-PFHxA","13C2-
PFHxA","93.9","%R","","-99","NA","","IS","93.9","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C4-PFHpA","13C4-
PFHpA","85.4","%R","","-99","NA","","IS","85.4","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","18O2-PFHxS","18O2-
PFHxS","102","%R","","-99","NA","","IS","102","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C2-PFOA","13C2-
PFOA","91.0","%R","","-99","NA","","IS","91.0","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C8-PFOS","13C8-
PFOS","90.1","%R","","-99","NA","","IS","90.1","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C5-PFNA","13C5-
PFNA","78.7","%R","","-99","NA","","IS","78.7","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C2-PFDA","13C2-
PFDA","79.4","%R","","-99","NA","","IS","79.4","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","d3-MeFOSAA","d3-
MeFOSAA","66.8","%R","","-99","NA","","IS","66.8","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C2-PFUnA","13C2-
PFUnA","60.9","%R","","-99","NA","","IS","60.9","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","d5-EtFOSAA","d5-
EtFOSAA","61.9","%R","","-99","NA","","IS","61.9","","-99","NA","YES","100","","0.125","0.001","-99",""

"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C2-PFDoA","13C2-PFDoA","24.2","%R","H","-99","NA","","IS","24.2","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-BS1","Modified EPA Method 537","Initial","B7F0136-BS1","Vista","13C2-PFTeDA","13C2-PFTeDA","31.9","%R","H","-99","NA","","IS","31.9","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","375-73-5","PFBS","223","ng/L","","1.82","LOD","","TRG","126","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","307-24-4","PFHxA","675","ng/L","","2.22","LOD","","TRG","90.8","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","375-85-9","PFHpA","285","ng/L","H","0.602","LOD","","TRG","157","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Dilution","B7F0136-MS1","Vista","355-46-4","PFHxS","870","ng/L","D, H","4.82","LOD","","TRG","-178","","40.7","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","25.4",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","335-67-1","PFOA","208","ng/L","","0.663","LOD","","TRG","117","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Dilution","B7F0136-MS1","Vista","1763-23-1","PFOS","5200","ng/L","D, H","4.11","LOD","","TRG","2880","","40.7","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","25.4",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","375-95-1","PFNA","101","ng/L","","0.825","LOD","","TRG","110","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","335-76-2","PFDA","90.8","ng/L","","1.52","LOD","","TRG","109","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","2355-31-9","MeFOSAA","87.8","ng/L","","1.68","LOD","","TRG","108","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","2058-94-8","PFUnA","93.6","ng/L","","1.07","LOD","","TRG","115","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","2991-50-6","EtFOSAA","85.5","ng/L","","1.40","LOD","","TRG","105","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","307-55-1","PFDoA","111","ng/L","H","0.807","LOD","","TRG","136","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","72629-94-8","PFTrDA","77.0","ng/L","","0.503","LOD","","TRG","94.5","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","376-06-7","PFTeDA","95.4","ng/L","","0.769","LOD","","TRG","117","","8.15","LOQ","YES","81.5","MH-117N-20170627","0.123","0.001","5.08",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C3-PFBS","13C3-PFBS","111","%R","","-99","NA","","IS","111","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C2-PFHxA","13C2-PFHxA","96.2","%R","","-99","NA","","IS","96.2","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C4-PFHpA","13C4-PFHpA","74.3","%R","","-99","NA","","IS","74.3","","-99","NA","YES","100","MH-117N-

20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Dilution","B7F0136-MS1","Vista","18O2-PFHxS","18O2-PFHxS","87.1","%R","D","-99","NA","","IS","87.1","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C2-PFOA","13C2-PFOA","85.6","%R","","-99","NA","","IS","85.6","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Dilution","B7F0136-MS1","Vista","13C8-PFOS","13C8-PFOS","27.1","%R","D, H","-99","NA","","IS","27.1","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C5-PFNA","13C5-PFNA","84.2","%R","","-99","NA","","IS","84.2","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C2-PFDA","13C2-PFDA","82.6","%R","","-99","NA","","IS","82.6","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","d3-MeFOSAA","d3-MeFOSAA","74.8","%R","","-99","NA","","IS","74.8","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C2-PFUnA","13C2-PFUnA","74.8","%R","","-99","NA","","IS","74.8","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","d5-EtFOSAA","d5-EtFOSAA","58.8","%R","","-99","NA","","IS","58.8","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C2-PFDoA","13C2-PFDoA","25.8","%R","H","-99","NA","","IS","25.8","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MS1","Modified EPA Method 537","Initial","B7F0136-MS1","Vista","13C2-PFTeDA","13C2-PFTeDA","55.9","%R","","-99","NA","","IS","55.9","","-99","NA","YES","100","MH-117N-20170627","0.123","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","375-73-5","PFBS","217","ng/L","","1.85","LOD","","TRG","118","6.56","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","307-24-4","PFHxA","686","ng/L","","2.25","LOD","","TRG","103","12.6","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","375-85-9","PFHpA","270","ng/L","H","0.609","LOD","","TRG","136","14.3","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Dilution","B7F0136-MSD1","Vista","355-46-4","PFHxS","938","ng/L","D, H","4.88","LOD","","TRG","-93.6","62.2","41.2","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","25.8",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","335-67-1","PFOA","209","ng/L","","0.671","LOD","","TRG","117","0","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Dilution","B7F0136-MSD1","Vista","1763-23-1","PFOS","1880","ng/L","D, H","4.16","LOD","","TRG","-1190","482","41.2","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","25.8",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","375-95-1","PFNA","110","ng/L","","0.835","LOD","","TRG","119","7.86","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","335-76-2","PFDA","99.3","ng/L","","1.54","LOD","","TRG","118","7.93","8.25","LOQ","YES","82.5","MH-117N-

20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","2355-31-9","MeFOSAA","86.7","ng/L","","1.70","LOD","","TRG","105","2.82","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","2058-94-8","PFUnA","104","ng/L","","1.08","LOD","","TRG","127","9.92","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","2991-50-6","EtFOSAA","104","ng/L","","1.41","LOD","","TRG","127","19.0","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","307-55-1","PFDoA","71.6","ng/L","H","0.817","LOD","","TRG","86.8","44.2","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","72629-94-8","PFTrDA","60.8","ng/L","","0.509","LOD","","TRG","73.7","24.7","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","376-06-7","PFTeDA","105","ng/L","","0.778","LOD","","TRG","127","8.20","8.25","LOQ","YES","82.5","MH-117N-20170627","0.121","0.001","5.17",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C3-PFBS","13C3-PFBS","113","%R","","-99","NA","","IS","113","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C2-PFHxA","13C2-PFHxA","88.7","%R","","-99","NA","","IS","88.7","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C4-PFHpA","13C4-PFHpA","76.0","%R","","-99","NA","","IS","76.0","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Dilution","B7F0136-MSD1","Vista","18O2-PFHxS","18O2-PFHxS","103","%R","D","-99","NA","","IS","103","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C2-PFOA","13C2-PFOA","83.4","%R","","-99","NA","","IS","83.4","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Dilution","B7F0136-MSD1","Vista","13C8-PFOS","13C8-PFOS","96.4","%R","D","-99","NA","","IS","96.4","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C5-PFNA","13C5-PFNA","82.9","%R","","-99","NA","","IS","82.9","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C2-PFDA","13C2-PFDA","84.7","%R","","-99","NA","","IS","84.7","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","d3-MeFOSAA","d3-MeFOSAA","90.2","%R","","-99","NA","","IS","90.2","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C2-PFUnA","13C2-PFUnA","82.7","%R","","-99","NA","","IS","82.7","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","d5-EtFOSAA","d5-EtFOSAA","66.0","%R","","-99","NA","","IS","66.0","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C2-PFDoA","13C2-PFDoA","31.6","%R","H","-99","NA","","IS","31.6","","-99","NA","YES","100","MH-117N-

20170627","0.121","0.001","-99",""
"B7F0136-MSD1","Modified EPA Method 537","Initial","B7F0136-MSD1","Vista","13C2-PFTeDA","13C2-PFTeDA","63.3","%R","","-99","NA","","IS","63.3","","-99","NA","YES","100","MH-117N-20170627","0.121","0.001","-99",""
"NAWC Trenton","NAWC Trenton","GR-OF-20170627","06/27/2017 08:57","AQ","1700789-01","NM","","4.00","Modified EPA Method 537","METHOD","Dilution","07/03/2017 08:32","07/07/2017 14:29","Vista","COA","WET","NA","5","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","GR-OF-20170627","06/27/2017 08:57","AQ","1700789-01","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 10:33","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-117T-20170627","06/27/2017 09:40","AQ","1700789-02","NM","","4.00","Modified EPA Method 537","METHOD","Dilution","07/03/2017 08:32","07/07/2017 14:39","Vista","COA","WET","NA","5","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-117T-20170627","06/27/2017 09:40","AQ","1700789-02","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 10:44","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-117N-20170627","06/27/2017 09:30","AQ","1700789-03","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 10:54","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-117N-20170627","06/27/2017 09:30","AQ","1700789-03","NM","","4.00","Modified EPA Method 537","METHOD","Dilution","07/03/2017 08:32","07/07/2017 14:50","Vista","COA","WET","NA","5","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-118.5T-20170627","06/27/2017 10:45","AQ","1700789-04","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 11:26","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
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"NAWC Trenton","NAWC Trenton","MH-118.5N-20170627","06/27/2017 10:30","AQ","1700789-05","NM","","4.00","Modified EPA Method 537","METHOD","Dilution","07/03/2017 08:32","07/07/2017 15:22","Vista","COA","WET","NA","10","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-121.5T-20170627","06/27/2017 12:20","AQ","1700789-06","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 11:48","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-121.5N-20170627","06/27/2017 11:40","AQ","1700789-07","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 11:59","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-125.9T-20170627","06/27/2017 13:45","AQ","1700789-08","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017 12:42","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MH-125.9N-20170627","06/27/2017 13:25","AQ","1700789-09","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017

12:52","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","West Ditch Out-20170627","06/27/2017 14:15","AQ","1700789-
10","NM","","4.00","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017
13:03","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","06/29/2017 10:09","01/01/1900 00:00",""
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BLK1","MB","","-99","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017
09:50","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","01/01/1900 00:00","01/01/1900 00:00",""
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BS1","LCS","","-99","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017
09:29","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","01/01/1900 00:00","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7F0136-MS1","01/01/1900 00:00","AQ","B7F0136-
MS1","MS","","-99","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017
11:05","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","01/01/1900 00:00","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7F0136-MS1","01/01/1900 00:00","AQ","B7F0136-
MS1","MS","","-99","Modified EPA Method 537","METHOD","Dilution","07/03/2017 08:32","07/07/2017
15:01","Vista","COA","WET","NA","5","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","01/01/1900 00:00","01/01/1900 00:00",""
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MSD1","MSD","","-99","Modified EPA Method 537","METHOD","Initial","07/03/2017 08:32","07/06/2017
11:16","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","01/01/1900 00:00","01/01/1900 00:00",""
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MSD1","MSD","","-99","Modified EPA Method 537","METHOD","Dilution","07/03/2017 08:32","07/07/2017
15:11","Vista","COA","WET","NA","5","NA","NA","01/01/1900
00:00","100","B7F0136","B7F0136","NA","S7G0010","1700789","01/01/1900 00:00","01/01/1900 00:00",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **MARY MANG** **DATE:** **SEPTEMBER 15, 2017**

FROM: **MEGAN RITCHIE** **COPIES:** **DV FILE/**

SUBJECT: **ORGANIC DATA VALIDATION – POLYFLUOROAKLYL SUBSTANCES (PFAS)**
CTO WE08 - FORMER NAWC TRENTON
SDG 1700789

SAMPLES: 10 / Surface Water / PFAS

GR-OF-20170627	MH-118.5T-20170627	MH-125.9T-20170627
MH-117N-20170627	MH-121.5N-20170627	West Ditch Out-20170627
MH-117T-20170627	MH-121.5T-20170627	
MH-118.5N-20170627	MH-125.9N-20170627	

Overview

The sample set for NAWC Trenton, SDG 1700789 consists of ten (10) surface water environmental samples. One field duplicate pair (MH-118.5N-20170627/Dup01-20170627 [from SDG 1700792]) was included in this SDG. The samples were analyzed for polyfluoroalkyl substances (PFAS).

The samples were collected by Tetra Tech on June 27, 2017 and analyzed by Vista Analytical of Sheffield, California. The analysis was conducted in accordance with modified EPA Method 537 Rev. 1.1 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

* Data Completeness
* Holding Times/Sample Preservation
* GC/MS Instrument Tuning and System Performance
* Initial and Continuing Calibration Verification Results
* Laboratory Method/Preparation Blank Analyses
* Surrogate Recoveries
  Ongoing Precision and Recovery (OPR) Results
  Matrix Spike/Matrix Spike Duplicate Results
* Laboratory Duplicate Sample Results
* Internal Standard Results
  Field Duplicate Precision
* Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Issues affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

PFAS

The recovery of the internal standard 13C2-PFTeDA was below 50% in sample GR-OF-20170627. The nondetected result for the associated analyte PFTeDA was qualified as estimated (UJ).

The recovery of the internal standard 13C2-PFTeDA and 13C2PFDoA were below 50% in samples MH-117T-20170627, MH-117N-20170627, MH-118.5T-20170627, MH-125.9T-20170627, MH-121.5N-20170627, MH-121.5T-20170627, and MH-125.9T-20170627. The nondetected result for the associated analyte PFTeDA was qualified as estimated (UJ).

The ongoing precision and accuracy check (OPR) recovery marginally exceeded the QC limit of 130% for perfluoroundecanoic acid (PFUnA). The positive results for PFUnA in the associated samples qualified as estimated (J).

Field duplicate relative percent difference (RPD) for PFOS exceeded the QC criterion of 30% for samples MH-118.5N-20170627 and Dup01-20170627. The positive results for PFOS in these samples were qualified as estimated (J).

Detected results reported below the Limit of Quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated (J).

Notes

The MS/MSD recoveries or RPD for PFHxS and PFOS exceeded the QC limits. The original sample concentration of PFHxS and PFOS exceeded 4X the spike concentration. No action was taken for PFHxS or PFOS.

The MS/MSD recoveries for PFHpA and PFDoA exceeded the QC limits. The OPR recoveries for these analytes were within QC limits. No action was taken on MS/MSD data alone.

Dilutions were required for the following analytes because the concentration in the original analysis exceeded the calibration range of the instrument.

PFHxS	MH-117N-20170627	5X
	MH-118.5N-20170627	10X
PFOS	GR-OF-20170627	5X
	MH-117N-20170627	5X
	MH-117T-20170627	5X
	MH-118.5N-20170627	10X

All analyses were conducted within the hold times specified by the site specific Sampling and Analysis Plan (SAP) and the analytical method.

Non-detected results were reported to the Limit of Detection (LOD).

Executive Summary

Laboratory Performance: One OPR recovery marginally exceeded the QC limit. One or two Internal standards were low in all samples except West Ditch Out-20170627.

Other Factors Affecting Data Quality: MS/MSD recoveries or RPD exceeded the QC limits for four analytes. Field duplicate precision exceeded the QC criterion for one analyte. Positive results below the LOQ were qualified as estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Superfund Organic Methods Data Review" (January 2017). The text of this report has been formulated to address only those areas affecting data quality.

Megan Ritchie

Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator

Joseph A. Samchuck

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE08	NSAMPLE	GR-OF-20170627			MH-117N-20170627			MH-117T-20170627			MH-118.5N-20170627		
SDG: 1700789	LAB_ID	1700789-01			1700789-03			1700789-02			1700789-05		
FRACTION: PFAS	SAMP_DATE	6/27/2017			6/27/2017			6/27/2017			6/27/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		5.79	U		5.08	U		5.08	U		5.12	U	
N-METHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		5.79	U		5.08	U		5.08	U		5.12	U	
PENTADECAFLUOROOCTANOIC ACID		50.4			113			64.6			128		
PERFLUOROBUTANESULFONIC ACID		39.3			120			39.7			155		
PERFLUORODECANOIC ACID		3.29	J	P	1.6	J	PN	3.3	J	PN	3.78	J	PN
PERFLUORODODECANOIC ACID		5.79	U		5.08	U		5.08	UJ	N	5.12	U	
PERFLUOROHEPTANOIC ACID		89.7			158			108			213		
PERFLUOROHEXANESULFONIC ACID		240			1010			227			815		
PERFLUOROHEXANOIC ACID		224			601			295			705		
PERFLUORONONANOIC ACID		9.5			11.2			10.3			13		
PERFLUOROOCTANE SULFONIC ACID		1640			2860			2230			5700	J	G
PERFLUOROTETRADECANOIC ACID		5.79	UJ	N	5.08	U		5.08	UJ	N	5.12	U	
PERFLUOROTRIDECANOIC ACID		5.79	U		5.08	UJ	N	5.08	UJ	N	5.12	UJ	N
PERFLUOROUNDECANOIC ACID		1.96	J	EP	5.08	U		1.5	J	EP	5.12	U	

PROJ_NO: 08005-WE08	NSAMPLE	MH-118.5T-20170627			MH-121.5N-20170627			MH-121.5T-20170627			MH-125.9N-20170627		
SDG: 1700789	LAB_ID	1700789-04			1700789-07			1700789-06			1700789-09		
FRACTION: PFAS	SAMP_DATE	6/27/2017			6/27/2017			6/27/2017			6/27/2017		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		4.56	U		5.08	U		5.08	U		5.04	U	
N-METHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		4.56	U		5.08	U		5.08	U		5.04	U	
PENTADECAFLUOROOCTANOIC ACID		37.2			44.3			36.2			38.1		
PERFLUOROBUTANESULFONIC ACID		1.87	J	P	5.5	J	P	5.08	U		5.04	U	
PERFLUORODECANOIC ACID		4.56	UJ	N	5.08	UJ	N	5.08	UJ	N	3.26	J	PN
PERFLUORODODECANOIC ACID		4.56	U		5.08	U		5.08	U		5.04	U	
PERFLUOROHEPTANOIC ACID		59.7			133			44.6			46.2		
PERFLUOROHEXANESULFONIC ACID		9.73			33.5			4.68	J	P	4.95	J	P
PERFLUOROHEXANOIC ACID		113			314			59.9			71.9		
PERFLUORONONANOIC ACID		6.12	J	P	5.21	J	P	6.84	J	P	11.1		
PERFLUOROOCTANE SULFONIC ACID		16.8			28.3			7.55	J	P	13.6		
PERFLUOROTETRADECANOIC ACID		4.56	U		5.08	U		5.08	U		5.04	U	
PERFLUOROTRIDECANOIC ACID		4.56	UJ	N	5.08	UJ	N	5.08	UJ	N	5.04	UJ	N
PERFLUOROUNDECANOIC ACID		4.56	U		5.08	U		5.08	U		3.51	J	EP

PROJ_NO: 08005-WE08	NSAMPLE	MH-125.9T-20170627			West Ditch Out-20170627		
SDG: 1700789	LAB_ID	1700789-08			1700789-10		
FRACTION: PFAS	SAMP_DATE	6/27/2017			6/27/2017		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		5.21	U		5.68	U	
N-METHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		5.21	U		5.68	U	
PENTADECAFLUOROOCTANOIC ACID		59			42.1		
PERFLUOROBUTANESULFONIC ACID		5.21	U		5.68	U	
PERFLUORODECANOIC ACID		5.21	UJ	N	5.68	U	
PERFLUORODODECANOIC ACID		5.21	U		5.68	U	
PERFLUOROHEPTANOIC ACID		58.5			55.8		
PERFLUOROHEXANESULFONIC ACID		3.02	J	P	5.81	J	P
PERFLUOROHEXANOIC ACID		84.2			76		
PERFLUORONONANOIC ACID		7.37	J	P	13.9		
PERFLUOROOCTANE SULFONIC ACID		2.55	J	P	15.1		
PERFLUOROTETRADECANOIC ACID		5.21	U		5.68	U	
PERFLUOROTRIDECANOIC ACID		5.21	UJ	N	5.68	U	
PERFLUOROUNDECANOIC ACID		5.21	U		2.41	J	EP

Appendix B

Results as Reported by the Laboratory

Sample ID: GR-OF-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 8:57
Location: Gold Run Outfall

Sample Data

Matrix: Aqueous
Sample Size: 0.108 L

Laboratory Data

Lab Sample: 1700789-01
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 10:33 Column: BEH C18
07-Jul-17 14:29 Column: BEH C18
Date Received: 29-Jun-2017 10:09
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	39.3	2.08	5.79	9.27	
PFHxA	224	2.53	5.79	9.27	
PFHpA	89.7	0.685	5.79	9.27	
PFHxS	240	1.10	5.79	9.27	
PFOA	50.4	0.755	5.79	9.27	
PFOS	1640	4.68	28.9	46.4	D
PFNA	9.50	0.939	5.79	9.27	
PFDA	3.29	1.73	5.79	9.27	J
MeFOSAA	ND	1.91	5.79	9.27	
PFUnA	1.96	1.22	5.79	9.27	J
EtFOSAA	ND	1.59	5.79	9.27	
PFDoA	ND	0.918	5.79	9.27	
PFTrDA	ND	0.573	5.79	9.27	
PFTeDA	ND	0.875	5.79	9.27	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	112	50 - 150	
IS	13C2-PFHxA	91.7	50 - 150	
IS	13C4-PFHpA	78.1	50 - 150	
IS	18O2-PFHxS	88.0	50 - 150	
IS	13C2-PFOA	83.0	50 - 150	
IS	13C8-PFOS	97.3	50 - 150	D
IS	13C5-PFNA	84.5	50 - 150	
IS	13C2-PFDA	90.0	50 - 150	
IS	d3-MeFOSAA	77.3	50 - 150	
IS	13C2-PFUnA	72.7	50 - 150	
IS	d5-EtFOSAA	67.2	50 - 150	
IS	13C2-PFDoA	54.4	50 - 150	
IS	13C2-PFTeDA	39.3	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-117T-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 9:40
Location: Manhole 11.7T

Sample Data

Matrix: Aqueous
Sample Size: 0.123 L

Laboratory Data

Lab Sample: 1700789-02 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 10:44 Column: BEH C18
07-Jul-17 14:39 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	39.7	1.82	5.08	8.12	
PFHxA	295	2.21	5.08	8.12	
PFHpA	108	0.600	5.08	8.12	
PFHxS	227	0.962	5.08	8.12	
PFOA	64.6	0.661	5.08	8.12	
PFOS	2230	4.10	25.4	40.6	D
PFNA	10.3	0.822	5.08	8.12	
PFDA	3.30	1.51	5.08	8.12	J
MeFOSAA	ND	1.68	5.08	8.12	
PFUnA	1.50	1.07	5.08	8.12	J
EtFOSAA	ND	1.39	5.08	8.12	
PFDoA	ND	0.804	5.08	8.12	
PFTrDA	ND	0.502	5.08	8.12	
PFTeDA	ND	0.767	5.08	8.12	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	109	50 - 150	
IS	13C2-PFHxA	86.4	50 - 150	
IS	13C4-PFHpA	79.1	50 - 150	
IS	18O2-PFHxS	98.8	50 - 150	
IS	13C2-PFOA	82.5	50 - 150	
IS	13C8-PFOS	57.4	50 - 150	D
IS	13C5-PFNA	74.5	50 - 150	
IS	13C2-PFDA	79.7	50 - 150	
IS	d3-MeFOSAA	67.8	50 - 150	
IS	13C2-PFUnA	67.9	50 - 150	
IS	d5-EtFOSAA	61.4	50 - 150	
IS	13C2-PFDoA	45.8	50 - 150	H
IS	13C2-PFTeDA	24.6	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: MH-117N-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 9:30
Location: Manhole 117N

Sample Data

Matrix: Aqueous
Sample Size: 0.123 L

Laboratory Data

Lab Sample: 1700789-03
QC Batch: B7F0136
Date Analyzed: 06-Jul-17 10:54 Column: BEH C18
07-Jul-17 14:50 Column: BEH C18
Date Received: 29-Jun-2017 10:09
Date Extracted: 03-Jul-2017 8:32

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	120	1.81	5.08	8.10	
PFHxA	601	2.21	5.08	8.10	
PFHpA	158	0.598	5.08	8.10	
PFHxS	1010	4.79	25.4	40.5	D
PFOA	113	0.659	5.08	8.10	
PFOS	2860	4.08	25.4	40.5	D
PFNA	11.2	0.820	5.08	8.10	
PFDA	1.60	1.51	5.08	8.10	J
MeFOSAA	ND	1.67	5.08	8.10	
PFUnA	ND	1.06	5.08	8.10	
EtFOSAA	ND	1.39	5.08	8.10	
PFDoA	ND	0.802	5.08	8.10	
PFTrDA	ND	0.500	5.08	8.10	
PFTeDA	ND	0.764	5.08	8.10	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	119	50 - 150	
IS	13C2-PFHxA	98.6	50 - 150	
IS	13C4-PFHpA	87.5	50 - 150	
IS	18O2-PFHxS	92.6	50 - 150	D
IS	13C2-PFOA	93.6	50 - 150	
IS	13C8-PFOS	109	50 - 150	D
IS	13C5-PFNA	80.3	50 - 150	
IS	13C2-PFDA	88.1	50 - 150	
IS	d3-MeFOSAA	80.5	50 - 150	
IS	13C2-PFUnA	71.4	50 - 150	
IS	d5-EtFOSAA	59.7	50 - 150	
IS	13C2-PFDoA	25.6	50 - 150	H
IS	13C2-PFTeDA	24.6	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-118.5T-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 10:45
Location: Manhole 118.5T

Sample Data

Matrix: Aqueous
Sample Size: 0.137 L

Laboratory Data

Lab Sample: 1700789-04 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 11:26 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	1.87	1.63	4.56	7.29	J
PFHxA	113	1.99	4.56	7.29	
PFHpA	59.7	0.539	4.56	7.29	
PFHxS	9.73	0.863	4.56	7.29	
PFOA	37.2	0.593	4.56	7.29	
PFOS	16.8	0.735	4.56	7.29	
PFNA	6.12	0.738	4.56	7.29	J
PFDA	ND	1.36	4.56	7.29	
MeFOSAA	ND	1.50	4.56	7.29	
PFUnA	ND	0.957	4.56	7.29	
EtFOSAA	ND	1.25	4.56	7.29	
PFDoA	ND	0.722	4.56	7.29	
PFTrDA	ND	0.450	4.56	7.29	
PFTeDA	ND	0.688	4.56	7.29	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	111	50 - 150	
IS	13C2-PFHxA	94.7	50 - 150	
IS	13C4-PFHpA	83.2	50 - 150	
IS	18O2-PFHxS	99.7	50 - 150	
IS	13C2-PFOA	85.1	50 - 150	
IS	13C8-PFOS	84.8	50 - 150	
IS	13C5-PFNA	92.2	50 - 150	
IS	13C2-PFDA	75.9	50 - 150	
IS	d3-MeFOSAA	79.9	50 - 150	
IS	13C2-PFUnA	77.7	50 - 150	
IS	d5-EtFOSAA	68.5	50 - 150	
IS	13C2-PFDoA	49.4	50 - 150	H
IS	13C2-PFTeDA	23.2	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-118.5N-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 10:30
Location: Manhole 118.5N

Sample Data

Matrix: Aqueous
Sample Size: 0.122 L

Laboratory Data

Lab Sample: 1700789-05 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 11:37 Column: BEH C18
07-Jul-17 15:22 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	155	1.84	5.12	8.22	
PFHxA	705	2.24	5.12	8.22	
PFHpA	213	0.607	5.12	8.22	
PFHxS	815	9.73	51.2	82.2	D
PFOA	128	0.669	5.12	8.22	
PFOS	5700	8.29	51.2	82.2	D
PFNA	13.0	0.832	5.12	8.22	
PFDA	3.78	1.53	5.12	8.22	J
MeFOSAA	ND	1.70	5.12	8.22	
PFUnA	ND	1.08	5.12	8.22	
EtFOSAA	ND	1.41	5.12	8.22	
PFDoA	ND	0.814	5.12	8.22	
PFTrDA	ND	0.508	5.12	8.22	
PFTeDA	ND	0.776	5.12	8.22	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	100	50 - 150	
IS	13C2-PFHxA	88.0	50 - 150	
IS	13C4-PFHpA	80.2	50 - 150	
IS	18O2-PFHxS	90.4	50 - 150	D
IS	13C2-PFOA	85.8	50 - 150	
IS	13C8-PFOS	56.2	50 - 150	D
IS	13C5-PFNA	79.8	50 - 150	
IS	13C2-PFDA	77.7	50 - 150	
IS	d3-MeFOSAA	68.4	50 - 150	
IS	13C2-PFUnA	75.6	50 - 150	
IS	d5-EtFOSAA	54.8	50 - 150	
IS	13C2-PFDoA	29.2	50 - 150	H
IS	13C2-PFTeDA	18.0	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: MH-121.5T-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 12:20
Location: Manhole 121.5T

Sample Data

Matrix: Aqueous
Sample Size: 0.123 L

Laboratory Data

Lab Sample: 1700789-06 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 11:48 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.82	5.08	8.12	
PFHxA	59.9	2.21	5.08	8.12	
PFHpA	44.6	0.600	5.08	8.12	
PFHxS	4.68	0.961	5.08	8.12	J
PFOA	36.2	0.661	5.08	8.12	
PFOS	7.55	0.819	5.08	8.12	J
PFNA	6.84	0.822	5.08	8.12	J
PFDA	ND	1.51	5.08	8.12	
MeFOSAA	ND	1.67	5.08	8.12	
PFUnA	ND	1.07	5.08	8.12	
EtFOSAA	ND	1.39	5.08	8.12	
PFDoA	ND	0.804	5.08	8.12	
PFTrDA	ND	0.501	5.08	8.12	
PFTeDA	ND	0.766	5.08	8.12	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	111	50 - 150	
IS	13C2-PFHxA	96.0	50 - 150	
IS	13C4-PFHpA	85.5	50 - 150	
IS	18O2-PFHxS	86.2	50 - 150	
IS	13C2-PFOA	92.2	50 - 150	
IS	13C8-PFOS	88.4	50 - 150	
IS	13C5-PFNA	99.7	50 - 150	
IS	13C2-PFDA	68.8	50 - 150	
IS	d3-MeFOSAA	76.4	50 - 150	
IS	13C2-PFUnA	69.9	50 - 150	
IS	d5-EtFOSAA	69.5	50 - 150	
IS	13C2-PFDoA	44.9	50 - 150	H
IS	13C2-PFTeDA	35.1	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-121.5N-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 11:40
Location: Manhole 121.5N

Sample Data

Matrix: Aqueous
Sample Size: 0.123 L

Laboratory Data

Lab Sample: 1700789-07 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 11:59 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	5.50	1.81	5.08	8.10	J
PFHxA	314	2.21	5.08	8.10	
PFHpA	133	0.598	5.08	8.10	
PFHxS	33.5	0.959	5.08	8.10	
PFOA	44.3	0.659	5.08	8.10	
PFOS	28.3	0.817	5.08	8.10	
PFNA	5.21	0.820	5.08	8.10	J
PFDA	ND	1.51	5.08	8.10	
MeFOSAA	ND	1.67	5.08	8.10	
PFUnA	ND	1.06	5.08	8.10	
EtFOSAA	ND	1.39	5.08	8.10	
PFDoA	ND	0.802	5.08	8.10	
PFTrDA	ND	0.500	5.08	8.10	
PFTeDA	ND	0.764	5.08	8.10	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	111	50 - 150	
IS	13C2-PFHxA	91.4	50 - 150	
IS	13C4-PFHpA	85.0	50 - 150	
IS	18O2-PFHxS	82.0	50 - 150	
IS	13C2-PFOA	79.5	50 - 150	
IS	13C8-PFOS	93.3	50 - 150	
IS	13C5-PFNA	77.5	50 - 150	
IS	13C2-PFDA	78.4	50 - 150	
IS	d3-MeFOSAA	61.2	50 - 150	
IS	13C2-PFUnA	57.9	50 - 150	
IS	d5-EtFOSAA	56.1	50 - 150	
IS	13C2-PFDoA	38.2	50 - 150	H
IS	13C2-PFTeDA	22.4	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-125.9T-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 13:45
Location: Manhole 125.9T

Sample Data

Matrix: Aqueous
Sample Size: 0.120 L

Laboratory Data

Lab Sample: 1700789-08 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 12:42 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.87	5.21	8.37	
PFHxA	84.2	2.28	5.21	8.37	
PFHpA	58.5	0.618	5.21	8.37	
PFHxS	3.02	0.991	5.21	8.37	J
PFOA	59.0	0.681	5.21	8.37	
PFOS	2.55	0.844	5.21	8.37	J
PFNA	7.37	0.847	5.21	8.37	J
PFDA	ND	1.56	5.21	8.37	
MeFOSAA	ND	1.73	5.21	8.37	
PFUnA	ND	1.10	5.21	8.37	
EtFOSAA	ND	1.43	5.21	8.37	
PFDoA	ND	0.828	5.21	8.37	
PFTrDA	ND	0.517	5.21	8.37	
PFTeDA	ND	0.790	5.21	8.37	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	125	50 - 150	
IS	13C2-PFHxA	98.5	50 - 150	
IS	13C4-PFHpA	88.6	50 - 150	
IS	18O2-PFHxS	102	50 - 150	
IS	13C2-PFOA	89.0	50 - 150	
IS	13C8-PFOS	100	50 - 150	
IS	13C5-PFNA	76.6	50 - 150	
IS	13C2-PFDA	88.9	50 - 150	
IS	d3-MeFOSAA	80.2	50 - 150	
IS	13C2-PFUnA	70.4	50 - 150	
IS	d5-EtFOSAA	70.3	50 - 150	
IS	13C2-PFDoA	46.3	50 - 150	H
IS	13C2-PFTeDA	16.9	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: MH-125.9N-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 13:25
Location: Manhole 125.9N

Sample Data

Matrix: Aqueous
Sample Size: 0.124 L

Laboratory Data

Lab Sample: 1700789-09 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 12:52 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.81	5.04	8.10	
PFHxA	71.9	2.21	5.04	8.10	
PFHpA	46.2	0.598	5.04	8.10	
PFHxS	4.95	0.958	5.04	8.10	J
PFOA	38.1	0.659	5.04	8.10	
PFOS	13.6	0.817	5.04	8.10	
PFNA	11.1	0.820	5.04	8.10	
PFDA	3.26	1.51	5.04	8.10	J
MeFOSAA	ND	1.67	5.04	8.10	
PFUnA	3.51	1.06	5.04	8.10	J
EtFOSAA	ND	1.39	5.04	8.10	
PFDoA	ND	0.801	5.04	8.10	
PFTrDA	ND	0.500	5.04	8.10	
PFTeDA	ND	0.764	5.04	8.10	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	115	50 - 150	
IS	13C2-PFHxA	97.5	50 - 150	
IS	13C4-PFHpA	89.9	50 - 150	
IS	18O2-PFHxS	97.1	50 - 150	
IS	13C2-PFOA	83.7	50 - 150	
IS	13C8-PFOS	104	50 - 150	
IS	13C5-PFNA	87.6	50 - 150	
IS	13C2-PFDA	86.1	50 - 150	
IS	d3-MeFOSAA	75.0	50 - 150	
IS	13C2-PFUnA	79.9	50 - 150	
IS	d5-EtFOSAA	61.1	50 - 150	
IS	13C2-PFDoA	41.9	50 - 150	H
IS	13C2-PFTeDA	28.7	50 - 150	H

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Sample ID: West Ditch Out-20170627

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 27-Jun-2017 14:15
Location: West Ditch Out

Sample Data

Matrix: Aqueous
Sample Size: 0.110 L

Laboratory Data

Lab Sample: 1700789-10 Date Received: 29-Jun-2017 10:09
QC Batch: B7F0136 Date Extracted: 03-Jul-2017 8:32
Date Analyzed: 06-Jul-17 13:03 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	2.04	5.68	9.11	
PFHxA	76.0	2.48	5.68	9.11	
PFHpA	55.8	0.673	5.68	9.11	
PFHxS	5.81	1.08	5.68	9.11	J
PFOA	42.1	0.741	5.68	9.11	
PFOS	15.1	0.919	5.68	9.11	
PFNA	13.9	0.922	5.68	9.11	
PFDA	ND	1.70	5.68	9.11	
MeFOSAA	ND	1.88	5.68	9.11	
PFUnA	2.41	1.20	5.68	9.11	J
EtFOSAA	ND	1.56	5.68	9.11	
PFDoA	ND	0.902	5.68	9.11	
PFTrDA	ND	0.562	5.68	9.11	
PFTeDA	ND	0.859	5.68	9.11	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	124	50 - 150	
IS	13C2-PFHxA	97.8	50 - 150	
IS	13C4-PFHpA	83.4	50 - 150	
IS	18O2-PFHxS	100	50 - 150	
IS	13C2-PFOA	80.6	50 - 150	
IS	13C8-PFOS	89.6	50 - 150	
IS	13C5-PFNA	69.5	50 - 150	
IS	13C2-PFDA	93.1	50 - 150	
IS	d3-MeFOSAA	73.1	50 - 150	
IS	13C2-PFUnA	67.1	50 - 150	
IS	d5-EtFOSAA	61.1	50 - 150	
IS	13C2-PFDoA	62.9	50 - 150	
IS	13C2-PFTeDA	69.9	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.

Only the linear isomer is reported for all other analytes.

Appendix C

Support Documentation

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1700789 Temp: 4.0 °C
Storage ID: WR-2, 3-4 Storage Secured: Yes ☒ No ☐

Project ID: NAWC Trenton PO#: 1132341-WR3 Sampler: Charles Meyer (name)

TAT (check one): Standard: ☐ 21 days Rush (surcharge may apply) ☐ 14 days ☐ 7 days Specify:

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Tetra Tech	Foster Plaza VII	661 Andersen Drive	Pittsburgh	PA	15220	412 921 7090	412 921 4040

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Mary kay Bord Mary kay Bord	6/28/17	18:00	Marissa Sparks MSparks	6/29/17	1030
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

SHIP TO: Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762
(916) 673-1520 * Fax (916) 673-0106

ATTN: _____

Method of Shipment: FedEx

Tracking No.: 0612 1992 6143

Add Analysis(es) Requested

Sample ID	Date	Time	Location/Sample Description	Container(s) Quantity	Type	Matrix	Mod. EPA Method 537: PFOA/PFOS	UCMR3 PFAS List:6	537 List: 14	Full List of 26	Other: Please List Below PFOA PFOS PFNA	EPA Method 537(DW only): PFOA/PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
GR-OF-20170627	6/27/17	8:57	Gold Run Outfall	2	PJ	AQ					X				
MH-117T-20170627	6/27/17	9:40	Mannole 117T	2	PJ	AQ					X				
MH-117N-20170627	6/27/17	9:30	Manhole 117N	6	PJ	AQ					X				
MH-118.5T-20170627	6/27/17	10:45	Mannole 118.5T	2	PJ	AQ					X				
MH-118.5N-20170627	6/27/17	10:30	Mannole 118.5N	2	PJ	AQ					X				
MH-121.5T-20170627	6/27/17	12:20	Mannole 121.5T	2	PJ	AQ					X				
MH-121.5N-20170627	6/27/17	11:40	Mannole 121.5N	2	PJ	AQ					X				
MH-125.9T-20170627	6/27/17	13:45	Manhole 125.9T	2	PJ	AQ					X				
MH-125.9N-20170627	6/27/17	13:25	Manhole 125.9N	2	PJ	AQ					X				
WestDitchOut-20170627	6/27/17	14:15	West Ditch Out	2	PJ	AQ					X				

Special Instructions/Comments: _____

SEND DOCUMENTATION AND RESULTS TO:

Name: Mary Mang
Company: Tetra Tech
Address: 234 Mall Boulevard Suite 260
City: King of Prussia State: PA Zip: 19406
Phone: 610 382 1174 Fax: 610 491 9645
Email: mary.mang at tetratech.com

Container Types: P= HDPE, PJ= HDPE Jar, O = Other: PJ

Bottle Preservation Type: T = Thiosulfate, TZ = Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment, SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: AQ

Vista Work Order No. 1700789
Case Narrative

Sample Condition on Receipt:

Ten aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

Modified EPA Method 537

The samples were extracted and analyzed for a selected list of 14 PFAS using Modified EPA Method 537.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The recovery of PFUnA was 131% in the OPR, which is above the limit of 130%. There were no sample detections for this compound above the LODs. The recoveries for all other target analytes in the OPR were within the method acceptance criteria

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

As requested, an MS/MSD was performed on sample "MH-117N-20170627".

FORMER NAWC TRENTON
1700789

SAMPLE IDENTIFICATION	MH-117N-20170627
COMPOUND	PFOS
COMPOUND AREA	155363.672
INTERNAL STANDARD AMOUNT (ng/ml)	97.5
DILUTION FACTOR	1
INTERNAL STANDARD AREA	8940.512
AVERAGE RRF	1.061
SAMPLE VOLUME (ml)	123.48
VOLUME EXTRACT (ml)	0.01
VOLUME INJECTED (µl)	15
ml to L	1000
CONCENTRATION =	1939.86 ng/L

155364 x 97.5ng/ml x 15 uL x 1000ml x 1/(8941 x 0.01 x123.48ml x 1L)

Sample ID: Method Blank

Modified EPA Method 537

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7F0136
Date Extracted: 03-Jul-2017 8:32

Lab Sample: B7F0136-BLK1
Date Analyzed: 06-Jul-17 09:50 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.79	5.00	8.00	
PFHxA	ND	2.18	5.00	8.00	
PFHpA	ND	0.591	5.00	8.00	
PFHxS	ND	0.947	5.00	8.00	
PFOA	ND	0.651	5.00	8.00	
PFOS	ND	0.807	5.00	8.00	
PFNA	ND	0.810	5.00	8.00	
PFDA	ND	1.49	5.00	8.00	
MeFOSAA	ND	1.65	5.00	8.00	
PFUnA	ND	1.05	5.00	8.00	
EtFOSAA	ND	1.37	5.00	8.00	
PFDoA	ND	0.792	5.00	8.00	
PFTrDA	ND	0.494	5.00	8.00	
PFTeDA	ND	0.755	5.00	8.00	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	124	50 - 150	
IS	13C2-PFHxA	99.5	50 - 150	
IS	13C4-PFHpA	83.3	50 - 150	
IS	18O2-PFHxS	95.8	50 - 150	
IS	13C2-PFOA	94.1	50 - 150	
IS	13C8-PFOS	96.9	50 - 150	
IS	13C5-PFNA	82.5	50 - 150	
IS	13C2-PFDA	84.2	50 - 150	
IS	d3-MeFOSAA	63.4	50 - 150	
IS	13C2-PFUnA	60.0	50 - 150	
IS	d5-EtFOSAA	55.2	50 - 150	
IS	13C2-PFDoA	38.1	50 - 150	H
IS	13C2-PFTeDA	21.8	50 - 150	H

DL - Detection limit
RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit
Results reported to DL.
When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Sample ID: OPR

Modified EPA Method 537

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7F0136
Date Extracted: 03-Jul-2017 8:32

Lab Sample: B7F0136-BS1
Date Analyzed: 06-Jul-17 09:29 Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits
PFBS	88.7	80.0	111	70 - 130
PFHxA	97.7	80.0	122	70 - 130
PFHpA	95.0	80.0	119	70 - 130
PFHxS	73.2	80.0	91.4	70 - 130
PFOA	99.5	80.0	124	70 - 130
PFOS	93.1	80.0	116	70 - 130
PFNA	91.8	80.0	115	70 - 130
PFDA	95.9	80.0	120	70 - 130
MeFOSAA	87.7	80.0	110	70 - 130
PFUnA	105	80.0	131	70 - 130
EtFOSAA	94.1	80.0	118	70 - 130
PFDoA	102	80.0	127	70 - 130
PFTrDA	70.8	80.0	88.5	60 - 130
PFTeDA	101	80.0	126	70 - 130

	Labeled Standard	%R	LCL-UCL
IS	13C3-PFBS	121	50 - 150
IS	13C2-PFHxA	93.9	50 - 150
IS	13C4-PFHpA	85.4	50 - 150
IS	18O2-PFHxS	102	50 - 150
IS	13C2-PFOA	91.0	50 - 150
IS	13C8-PFOS	90.1	50 - 150
IS	13C5-PFNA	78.7	50 - 150
IS	13C2-PFDA	79.4	50 - 150
IS	d3-MeFOSAA	66.8	50 - 150
IS	13C2-PFUnA	60.9	50 - 150
IS	d5-EtFOSAA	61.9	50 - 150
IS	13C2-PFDoA	24.2	50 - 150
IS	13C2-PFTeDA	31.9	50 - 150

LCL-UCL - Lower control limit - upper control limit

Matrix Spike Results

Modified EPA Method 537

Source Client ID: MH-117N-20170627
Source LabNumber: 1700789-03
Matrix: Aqueous
Sample Size: 0.123/0.121 L

QC Batch: B7F0136
Date Extracted: 03-Jul-2017 8:32

Lab Sample: B7F0136-MS1/B7F0136-MSD1
Date Analyzed: 07-Jul-17 15:01 Column: BEH C18
07-Jul-17 15:11 Column: BEH C18

Analyte	Spike-MS (ng/L)	MS %R	MS Qual.	Spike-MSD (ng/L)	MSD %R	RPD	MSD Qual.	%R Limit	%RPD Limit
PFBS	81.5	126		82.5	118	6.56		70 - 130	25
PFHxA	81.5	90.8		82.5	103	12.6		70 - 130	25
PFHpA	81.5	**157**	H	82.5	**136**	14.3	H	70 - 130	25
PFHxS	81.5	**-178**	D, H	82.5	**-93.6**	**62.2**	D, H	70 - 130	25
PFOA	81.5	117		82.5	117	0		70 - 130	25
PFOS	81.5	**2880**	D, H	82.5	**-1190**	**482**	D, H	70 - 130	25
PFNA	81.5	110		82.5	119	7.86		70 - 130	25
PFDA	81.5	109		82.5	118	7.93		70 - 130	25
MeFOSAA	81.5	108		82.5	105	2.82		70 - 130	25
PFUnA	81.5	115		82.5	127	9.92		70 - 130	25
EtFOSAA	81.5	105		82.5	127	19.0		70 - 130	25
PFDoA	81.5	**136**	H	82.5	86.8	**44.2**	H	70 - 130	25
PFTrDA	81.5	94.5		82.5	73.7	24.7		60 - 130	25
PFTeDA	81.5	117		82.5	127	8.20		70 - 130	25

	Labeled Standard	MS %R	MS Qualifiers	MSD %R	MSD Qual.
IS	13C3-PFBS	111		113	
IS	13C2-PFHxA	96.2		88.7	
IS	13C4-PFHpA	74.3		76.0	
IS	18O2-PFHxS	87.1	D	103	D
IS	13C2-PFOA	85.6		83.4	
IS	13C8-PFOS	27.1	D, H	96.4	D
IS	13C5-PFNA	84.2		82.9	
IS	13C2-PFDA	82.6		84.7	
IS	d3-MeFOSAA	74.8		90.2	
IS	13C2-PFUnA	74.8		82.7	
IS	d5-EtFOSAA	58.8		66.0	
IS	13C2-PFDoA	25.8	H	31.6	H
IS	13C2-PFTeDA	55.9		63.3	

When reported, PFBS, PFHxS, PFOA and PFOS include both linear and branched isomers.
Only the linear isomer is reported for all other analytes.

Process Sheet

Workorder: 1700789

Prep Expiration: 2017-Jul-11
Client: Tetra Tech

Workorder Due: 21-Jul-17 00:00

TAT: 22

Method: **537M PFAS DOD (LOQ as mRL)**
Matrix: **Aqueous**

Prep Batch: B7F0136

Prep Data Entered: 7/5/17 KBF
Date and Initials

Version: 537 (14 Analyte)

Initial Sequence: STG0010

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1700789-01 A	☑	GR-OF-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-02 A	☑	MH-117T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-03 A B C	☑	MH-117N-20170627	29-Jun-17 10:09	WR-2 A-4	**MS/MSD**
1700789-04 A	☑	MH-118.5T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-05 A	☑	MH-118.5N-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-06 A	☑	MH-121.5T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-07 A	☑	MH-121.5N-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-08 A	☑	MH-125.9T-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-09 A	☑	MH-125.9N-20170627	29-Jun-17 10:09	WR-2 A-4	
1700789-10 A	☑	West Ditch Out-20170627	29-Jun-17 10:09	WR-2 A-4	

WO Comments: **Attach balance check doc.**

Vista PM:Martha Maier

Vial Box ID: _____

Sample Reconciled By: HB 6/30/17

Page 1 of 1

Batch: B7F0136

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1700789-01	0.10782 ✓	N/A	N/A	1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-02	0.12311 ✓	—	—	1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-03	0.12348 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-04	0.13718 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-05	0.12165 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-06	0.12319 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-07	0.12348 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-08	0.11951 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-09	0.12353 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
1700789-10	0.10981 ✓			1000	30-Jun-17 08:32	HAC			Aqueous	537M PFAS DOD (LOQ as
B7F0136-BLK1	0.125 ✓			1000	30-Jun-17 08:32	HAC				QC
B7F0136-BS1	0.125 ✓			1000	30-Jun-17 08:32	HAC	17D2705 —	10		QC
B7F0136-MS1	0.12272 ✓			1000	30-Jun-17 08:32	HAC	17D2705 —	10		QC
B7F0136-MSD1	0.12124 ✓	↓	↓	1000	30-Jun-17 08:32	HAC	17D2705 —	10		QC

IGBF 7/5/17

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOO as mRL)

B7F0136

Chemist: G. Mendiola

Prep Date/Time: ~~30-Jun-17 08:32~~ 7/3/17 KBF 7/3/17

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE G-G0008	RS CHEM/WIT DATE
☐	B7F0136-BLK1	5	2	0	2	NA	NA	(0.125)	KBF 7/3/17	KBF 7/3/17	KBF 7-3-17
☐	B7F0136-BS1	5	2	0	2	↓	↓	↓			
☐	B7F0136-MS1 1700789-03	5	2	0	3	[illegible]	26.83	~~122.72~~ 0.12232 KBF 7/5/17			
☐	B7F0136-MSD1 1700789-03	5	2	0	3	148.06	26.82	~~121.24~~ 0.12124 KBF 7/5/17			
☐	1700789-01	6	2	0	3	134	26.84	0.10782			
☐	1700789-02	6	2	0	3	[illegible]	26.75	0.12311			
☐	1700789-03	5	2	0	3	[illegible]	26.75	0.12348			
☐	1700789-04	5	2	0	3	~~148.06~~ 164.09	26.86	0.13718			
☐	1700789-05	5	2	0	3	~~164.04~~ 148.99	26.84	0.12165			
☐	1700789-06	6	2	0	3	150.04	26.85	0.12319			
☐	1700789-07	6	2	0	3	150.29	26.81	0.12348			
☐	1700789-08	6	2	0	3	146.35	26.84	0.11951			
☐	1700789-09	6	2	0	3	150.35	26.82	0.12353			
☐	1700789-10	6	2		3	136.59	26.78	0.10981			

IS Name (V2) 17E2617, 10mL

NS Name (V3) 17D2705, 10mL

RS Name (V) 17E19[illegible]7, 10mL

SPE Chem: Strata-X-AW-33um 200mg/6mL

Ele SOLV: MeOH / 0.5% NH_4OH in MeOH

Final Volume(s) 1 mL

Check Out: Chemist/Date: HB 6/30/17

Check In: Chemist/Date: HB 6/30/17 ~~N/A~~

Balance ID: HRMS-8

pH Adjusted: Chemist/Date: HB 6/30/17

Comments: Assume 1 g = 1 mL

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-4.qld

Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

AC 7/17/17

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBA	213.0 > 168.8	1.29e4	1.43e4	1.000		1.43	1.46	11.2	10.0	100.4
2	2	PFPeA	263.1 > 218.9	2.14e4	2.80e4	1.000		2.72	2.71	9.59	9.84	98.4
3	3	PFBS	299 > 79.7	5.19e3	3.64e3	1.000		2.92	2.91	17.8	9.47	94.7
4	4	PFHxA	313.2 > 268.9	3.26e4	1.27e4	1.000		3.16	3.16	12.8	9.15	91.5
5	5	PFHpA	363 > 318.9	2.90e4	3.01e4	1.000		3.43	3.42	12.0	9.59	95.9
6	6	PFHxS	398.9 > 79.6	4.11e3	3.19e3	1.000		3.55	3.49	16.1	9.48	94.8
7	7	PFOA	413 > 368.7	4.00e4	5.11e4	1.000		3.63	3.62	9.78	10.3	102.6
8	8	PFHpS	448.9 > 98.8	4.32e3	5.11e4	1.000		3.69	3.67	1.06	10.4	103.9
9	9	PFNA	462.9 > 418.8	5.19e4	6.58e4	1.000		3.82	3.79	9.85	8.78	87.8
10	10	PFOSA	498.1 > 77.8	4.66e3	5.83e3	1.000		3.83	3.81	10.0	9.47	94.7
11	11	PFOS	499 > 79.9	1.01e4	1.28e4	1.000		3.86	3.84	9.84	9.31	93.1
12	12	PFDA	513 > 468.8	5.66e4	6.11e4	1.000		4.00	3.96	11.6	9.59	95.9
13	13	PFUnA	562.9 > 518.9	4.84e4	6.24e4	1.000		4.16	4.12	9.70	11.3	112.6
14	14	PFDS	598.9 > 98.7	5.18e3	6.24e4	1.000		4.20	4.17	1.04	12.1	121.1
15	15	PFDoA	612.9 > 318.8	4.93e3	7.69e3	1.000		4.32	4.28	8.02	9.46	94.6
16	16	PFTrDA	662.9 > 618.9	6.69e4	7.69e3	1.000		4.50	4.45	109	9.80	98.0
17	17	PFTeDA	712.9 > 668.8	4.90e4	4.68e4	1.000		4.66	4.62	13.1	11.0	110.2
18	18	13C3-PFBA	216.1 > 171.8	1.43e4	1.68e4	1.000	0.875	1.43	1.46	10.7	12.2	97.6
19	19	13C3-PFPeA	266 > 221.8	2.80e4	1.68e4	1.000	1.720	2.72	2.71	20.8	12.1	96.7
20	20	13C3-PFBS	302 > 98.8	3.64e3	1.68e4	1.000	0.205	2.92	2.91	2.71	13.2	105.8
21	21	13C2-PFHxA	315 > 269.8	1.27e4	4.30e4	1.000	0.296	3.16	3.15	1.48	5.00	100.1
22	22	13C4-PFHpA	367.2 > 321.8	3.01e4	4.30e4	1.000	0.302	3.43	3.42	3.50	11.6	92.9
23	23	18O2-PFHxS	403 > 102.6	3.19e3	7.53e3	1.000	0.434	3.55	3.49	5.30	12.2	97.6
24	24	13C2-PFOA	414.9 > 369.7	5.11e4	4.43e4	1.000	1.140	3.63	3.62	14.4	12.6	101.2
25	25	13C5-PFNA	468.2 > 422.9	6.58e4	6.75e4	1.000	0.958	3.82	3.79	12.2	12.7	101.8
26	26	13C8-PFOSA	506.1 > 77.7	5.83e3	4.85e4	1.000	0.084	3.83	3.80	1.50	17.8	142.8
27	27	13C8-PFOS	507 > 79.9	1.28e4	1.18e4	1.000	1.061	3.86	3.84	13.6	12.8	102.5
28	28	13C2-PFDA	515.1 > 469.9	6.11e4	6.01e4	1.000	0.942	4.00	3.96	12.7	13.5	107.9
29	29	13C2-PFUnA	565 > 519.8	6.24e4	4.85e4	1.000	1.084	4.16	4.12	16.1	14.8	118.8
30	30	13C2-PFDoA	615 > 569.7	7.69e3	4.85e4	1.000	0.127	4.32	4.28	1.98	15.6	124.9
31	31	13C2-PFTeDA	714.8 > 669.6	4.68e4	4.85e4	1.000	0.883	4.66	4.62	12.1	13.7	109

70-130

50-150

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-4.qld

Last Altered: Monday, July 17, 2017 11:36:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:38:16 Pacific Daylight Time

Name: 170706M1_4, Date: 06-Jul-2017, Time: 09:07:20, ID: ST170706M1-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFBA	217 > 171.8	1.68e4	1.68e4	1.000	1.000	1.43	1.46	12.5	12.5	100.0
33	33	13C5-PFHxA	318 > 272.9	4.30e4	4.30e4	1.000	1.000	3.16	3.15	5.00	5.00	100.0
34	34	13C3-PFHxS	401.9 > 79.9	7.53e3	7.53e3	1.000	1.000	3.55	3.49	12.5	12.5	100.0
35	35	13C8-PFOA	421.3 > 376	4.43e4	4.43e4	1.000	1.000	3.63	3.61	12.5	12.5	100.0
36	36	13C9-PFNA	472.2 > 426.9	6.75e4	6.75e4	1.000	1.000	3.82	3.79	12.5	12.5	100.0
37	37	13C4-PFOS	503 > 79.9	1.18e4	1.18e4	1.000	1.000	3.86	3.84	12.5	12.5	100.0
38	38	13C6-PFDA	519.1 > 473.7	6.01e4	6.01e4	1.000	1.000	4.00	3.96	12.5	12.5	100.0
39	39	13C7-PFUnA	570.1 > 524.8	4.85e4	4.85e4	1.000	1.000	4.16	4.12	12.5	12.5	100.0
40	40	Total PFBS	299 > 79.7	5.19e3	3.64e3	1.000		2.90		17.8	9.47	
41	41	Total PFHxS	398.9 > 79.6	4.11e3	3.19e3	1.000		3.50		16.1	9.48	
42	42	Total PFOA	413 > 368.7	4.00e4	5.11e4	1.000		3.63		9.78	10.3	
43	43	Total PFOS	499 > 79.9	1.01e4	1.28e4	1.000		3.86		9.84	9.31	

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, July 17, 2017 15:02:25 Pacific Daylight Time
Printed: Monday, July 17, 2017 15:02:40 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170706M1_4	ST170706M1-2 PFC CS3 17G0508	06-Jul-17	09:07:20
2	170706M1_5	IPA	06-Jul-17	09:18:15
3	170706M1_6	B7F0136-BS1 OPR 0.125	06-Jul-17	09:29:23
4	170706M1_7	IPA	06-Jul-17	09:40:01
5	170706M1_8	B7F0136-BLK1 Method Blank 0.125	06-Jul-17	09:50:39
6	170706M1_9	1700767-03 3 College 0.24548	06-Jul-17	10:01:21
7	170706M1_10	1700767-04 4 College 0.2493	06-Jul-17	10:12:05
8	170706M1_11	1700767-05 5 Sunrise 0.23777	06-Jul-17	10:22:44
9	170706M1_12	1700789-01 GR-OF-20170627 0.10782	06-Jul-17	10:33:22
10	170706M1_13	1700789-02 MH-117T-20170627 0.12311	06-Jul-17	10:44:08
11	170706M1_14	1700789-03 MH-117N-20170627 0.12348	06-Jul-17	10:54:47
12	170706M1_15	B7F0136-MS1 Matrix Spike 0.12272	06-Jul-17	11:05:25
13	170706M1_16	B7F0136-MSD1 Matrix Spike Dup 0.12124	06-Jul-17	11:16:03
14	170706M1_17	1700789-04 MH-118.5T-20170627 0.13718	06-Jul-17	11:26:42
15	170706M1_18	1700789-05 MH-118.5N-20170627 0.12165	06-Jul-17	11:37:49
16	170706M1_19	1700789-06 MH-121.5T-20170627 0.12319	06-Jul-17	11:48:40
17	170706M1_20	1700789-07 MH-121.5N-20170627 0.12348	06-Jul-17	11:59:18
18	170706M1_21	IPA	06-Jul-17	12:09:57
19	170706M1_22	ST170706M1-3 PFC CS3 17G0508	06-Jul-17	12:20:35
20	170706M1_23	IPA	06-Jul-17	12:31:21
21	170706M1_24	1700789-08 MH-125.9T-20170627 0.11951	06-Jul-17	12:42:00
22	170706M1_25	1700789-09 MH-125.9N-20170627 0.12353	06-Jul-17	12:52:38
23	170706M1_26	1700789-10 West Ditch Out-20170627 0.10981	06-Jul-17	13:03:17
24	170706M1_27	IPA	06-Jul-17	13:13:55
25	170706M1_28	ST170706M1-4 PFC CS3 17G0508	06-Jul-17	13:24:34
26	170706M1_29	IPA	06-Jul-17	13:35:20

LC Calibration Standards Review Checklist Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	N/A
Calibration ID: ST170706M1-2	L (M) H	N/A ☑	☑	☑	☑	☑	☑	☐
Calibration ID: ↓ 1-3	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: AC 7/17/17 ≤ 6/21/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: CC 7/17/17
Initials/Date

Comments:

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-22.qld

Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:42:52 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

AC 7/17/17

Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBA	213.0 > 168.8	1.29e4	1.45e4	1.000		1.43	1.47	11.1	9.95	99.5
2	2	PFPeA	263.1 > 218.9	2.21e4	2.95e4	1.000		2.72	2.71	9.36	9.60	96.0
3	3	PFBS	299 > 79.7	5.08e3	3.35e3	1.000		2.92	2.92	18.9	10.1	100.6
4	4	PFHxA	313.2 > 268.9	3.64e4	1.31e4	1.000		3.16	3.16	13.9	9.94	99.4
5	5	PFHpA	363 > 318.9	3.27e4	3.19e4	1.000		3.43	3.43	12.8	10.2	102.2
6	6	PFHxS	398.9 > 79.6	4.48e3	3.15e3	1.000		3.55	3.50	17.8	10.5	104.9
7	7	PFOA	413 > 368.7	4.37e4	5.31e4	1.000		3.63	3.62	10.3	10.8	108.1
8	8	PFHpS	448.9 > 98.8	4.57e3	5.31e4	1.000		3.69	3.68	1.08	10.6	105.7
9	9	PFNA	462.9 > 418.8	5.64e4	6.01e4	1.000		3.82	3.80	11.7	10.5	104.8
10	10	PFOSA	498.1 > 77.8	4.63e3	5.91e3	1.000		3.83	3.81	9.79	9.27	92.7
11	11	PFOS	499 > 79.9	1.12e4	1.32e4	1.000		3.86	3.85	10.6	10.1	100.7
12	12	PFDA	513 > 468.8	6.60e4	6.45e4	1.000		4.00	3.97	12.8	10.6	106.2
13	13	PFUnA	562.9 > 518.9	4.98e4	7.04e4	1.000		4.16	4.13	8.84	10.3	102.5
14	14	PFDS	598.9 > 98.7	4.95e3	7.04e4	1.000		4.20	4.18	0.879	10.2	101.7
15	15	PFDoA	612.9 > 318.8	4.88e3	7.89e3	1.000		4.32	4.29	7.73	9.11	91.1
16	16	PFTrDA	662.9 > 618.9	7.08e4	7.89e3	1.000		4.50	4.46	112	10.1	101.1
17	17	PFTeDA	712.9 > 668.8	4.94e4	5.30e4	1.000		4.66	4.63	11.7	9.80	98.0
18	18	13C3-PFBA	216.1 > 171.8	1.45e4	1.67e4	1.000	0.875	1.43	1.47	10.9	12.4	99.5
19	19	13C3-PFPeA	266 > 221.8	2.95e4	1.67e4	1.000	1.720	2.72	2.72	22.1	12.9	102.8
20	20	13C3-PFBS	302 > 98.8	3.35e3	1.67e4	1.000	0.205	2.92	2.92	2.51	12.3	98.2
21	21	13C2-PFHxA	315 > 269.8	1.31e4	4.07e4	1.000	0.296	3.16	3.16	1.61	5.43	108.6
22	22	13C4-PFHpA	367.2 > 321.8	3.19e4	4.07e4	1.000	0.302	3.43	3.42	3.91	13.0	103.8
23	23	18O2-PFHxS	403 > 102.6	3.15e3	7.19e3	1.000	0.434	3.55	3.49	5.48	12.6	101.0
24	24	13C2-PFOA	414.9 > 369.7	5.31e4	4.86e4	1.000	1.140	3.63	3.62	13.6	12.0	95.7
25	25	13C5-PFNA	468.2 > 422.9	6.01e4	6.34e4	1.000	0.958	3.82	3.80	11.9	12.4	99.0
26	26	13C8-PFOSA	506.1 > 77.7	5.91e3	6.74e4	1.000	0.084	3.83	3.81	1.10	13.0	104.0
27	27	13C8-PFOS	507 > 79.9	1.32e4	1.35e4	1.000	1.061	3.86	3.85	12.2	11.5	92.1
28	28	13C2-PFDA	515.1 > 469.9	6.45e4	6.39e4	1.000	0.942	4.00	3.97	12.6	13.4	107.2
29	29	13C2-PFUnA	565 > 519.8	7.04e4	6.74e4	1.000	1.084	4.16	4.13	13.0	12.0	96.3
30	30	13C2-PFDoA	615 > 569.7	7.89e3	6.74e4	1.000	0.127	4.32	4.29	1.46	11.5	92.1
31	31	13C2-PFTeDA	714.8 > 669.6	5.30e4	6.74e4	1.000	0.883	4.66	4.63	9.82	11.1	89.0

70-130

50-150

Dataset: U:\Q4.PRO\results\170706M1\170706M1-22.qld

Last Altered: Monday, July 17, 2017 11:41:55 Pacific Daylight Time
Printed: Monday, July 17, 2017 11:42:52 Pacific Daylight Time

Name: 170706M1_22, Date: 06-Jul-2017, Time: 12:20:35, ID: ST170706M1-3 PFC CS3 17G0508, Description: PFC CS3 17G0508

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32 13C4-PFBA	217 > 171.8	1.67e4	1.67e4	1.000	1.000	1.43	1.48	12.5	12.5	100.0
33	33 13C5-PFHxA	318 > 272.9	4.07e4	4.07e4	1.000	1.000	3.16	3.16	5.00	5.00	100.0
34	34 13C3-PFHxS	401.9 > 79.9	7.19e3	7.19e3	1.000	1.000	3.55	3.49	12.5	12.5	100.0
35	35 13C8-PFOA	421.3 > 376	4.86e4	4.86e4	1.000	1.000	3.63	3.62	12.5	12.5	100.0
36	36 13C9-PFNA	472.2 > 426.9	6.34e4	6.34e4	1.000	1.000	3.82	3.80	12.5	12.5	100.0
37	37 13C4-PFOS	503 > 79.9	1.35e4	1.35e4	1.000	1.000	3.86	3.85	12.5	12.5	100.0
38	38 13C6-PFDA	519.1 > 473.7	6.39e4	6.39e4	1.000	1.000	4.00	3.97	12.5	12.5	100.0
39	39 13C7-PFUnA	570.1 > 524.8	6.74e4	6.74e4	1.000	1.000	4.16	4.13	12.5	12.5	100.0
40	40 Total PFBS	299 > 79.7	5.08e3	3.35e3	1.000		2.90		18.9	10.1	
41	41 Total PFHxS	398.9 > 79.6	4.48e3	3.15e3	1.000		3.50		17.8	10.5	
42	42 Total PFOA	413 > 368.7	4.37e4	5.31e4	1.000		3.63		10.3	10.8	
43	43 Total PFOS	499 > 79.9	1.12e4	1.32e4	1.000		3.86		10.6	10.1	

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, July 17, 2017 15:02:25 Pacific Daylight Time
Printed: Monday, July 17, 2017 15:02:40 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L17_6-29-17.mdb 06 Jul 2017 11:51:27
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L17.cdb 06 Jul 2017 12:12:22

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170706M1_4	ST170706M1-2 PFC CS3 17G0508	06-Jul-17	09:07:20
2	170706M1_5	IPA	06-Jul-17	09:18:15
3	170706M1_6	B7F0136-BS1 OPR 0.125	06-Jul-17	09:29:23
4	170706M1_7	IPA	06-Jul-17	09:40:01
5	170706M1_8	B7F0136-BLK1 Method Blank 0.125	06-Jul-17	09:50:39
6	170706M1_9	1700767-03 3 College 0.24548	06-Jul-17	10:01:21
7	170706M1_10	1700767-04 4 College 0.2493	06-Jul-17	10:12:05
8	170706M1_11	1700767-05 5 Sunrise 0.23777	06-Jul-17	10:22:44
9	170706M1_12	1700789-01 GR-OF-20170627 0.10782	06-Jul-17	10:33:22
10	170706M1_13	1700789-02 MH-117T-20170627 0.12311	06-Jul-17	10:44:08
11	170706M1_14	1700789-03 MH-117N-20170627 0.12348	06-Jul-17	10:54:47
12	170706M1_15	B7F0136-MS1 Matrix Spike 0.12272	06-Jul-17	11:05:25
13	170706M1_16	B7F0136-MSD1 Matrix Spike Dup 0.12124	06-Jul-17	11:16:03
14	170706M1_17	1700789-04 MH-118.5T-20170627 0.13718	06-Jul-17	11:26:42
15	170706M1_18	1700789-05 MH-118.5N-20170627 0.12165	06-Jul-17	11:37:49
16	170706M1_19	1700789-06 MH-121.5T-20170627 0.12319	06-Jul-17	11:48:40
17	170706M1_20	1700789-07 MH-121.5N-20170627 0.12348	06-Jul-17	11:59:18
18	170706M1_21	IPA	06-Jul-17	12:09:57
19	170706M1_22	ST170706M1-3 PFC CS3 17G0508	06-Jul-17	12:20:35
20	170706M1_23	IPA	06-Jul-17	12:31:21
21	170706M1_24	1700789-08 MH-125.9T-20170627 0.11951	06-Jul-17	12:42:00
22	170706M1_25	1700789-09 MH-125.9N-20170627 0.12353	06-Jul-17	12:52:38
23	170706M1_26	1700789-10 West Ditch Out-20170627 0.10981	06-Jul-17	13:03:17
24	170706M1_27	IPA	06-Jul-17	13:13:55
25	170706M1_28	ST170706M1-4 PFC CS3 17G0508	06-Jul-17	13:24:34
26	170706M1_29	IPA	06-Jul-17	13:35:20

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

AC 7/19/17

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	5.10e3	3.48e3	1.0000		2.92	2.92	18.3	9.73	97.3
2	2	PFHxA	313.2 > 268.9	3.58e4	1.30e4	1.0000		3.16	3.16	13.7	9.71	97.1
3	3	PFHpA	363 > 318.9	3.27e4	3.50e4	1.0000		3.43	3.43	11.7	9.68	96.8
4	4	PFHxS	398.9 > 79.6	4.43e3	3.37e3	1.0000		3.55	3.50	16.5	8.89	88.9
5	5	PFOA	413 > 368.7	4.53e4	5.98e4	1.0000		3.63	3.62	9.47	9.94	99.4
6	6	PFNA	462.9 > 418.8	6.46e4	7.20e4	1.0000		3.82	3.80	11.2	10.0	100.2
7	7	PFOS	499 > 79.9	1.06e4	1.28e4	1.0000		3.86	3.85	10.4	9.79	97.9
8	8	PFDA	513 > 468.8	6.35e4	7.30e4	1.0000		4.00	3.97	10.9	9.39	93.9
9	9	PFUnA	562.9 > 518.9	4.92e4	6.82e4	1.0000		4.13	4.14	9.02	9.89	98.9
10	10	N-MeFOSAA	570.1 > 419	1.77e4	1.53e4	1.0000		4.00	4.00	14.5	9.05	90.5
11	11	N-EtFOSAA	584.2 > 419	1.51e4	1.63e4	1.0000		4.08	4.07	11.6	10.1	101.1
12	12	PFDoA	612.9 > 318.8	4.88e3	7.92e3	1.0000		4.31	4.29	7.70	9.23	92.3
13	13	PFTrDA	662.9 > 618.9	7.08e4	7.92e3	1.0000		4.50	4.46	112	10.1	100.7
14	14	PFTeDA	712.9 > 668.8	5.27e4	5.48e4	1.0000		4.65	4.64	12.0	10.1	100.8
15	15	13C3-PFBS	302 > 98.8	3.48e3	4.24e4	1.0000	0.032	2.92	2.92	0.410	12.8	102.1
16	16	13C2-PFHxA	315 > 269.8	1.30e4	4.24e4	1.0000	0.296	3.15	3.16	1.54	5.19	103.8
17	17	13C4-PFHpA	367.2 > 321.8	3.50e4	4.24e4	1.0000	0.302	3.43	3.43	4.12	13.7	109.4
18	18	18O2-PFHxS	403 > 102.6	3.37e3	7.68e3	1.0000	0.434	3.49	3.50	5.48	12.6	100.9
19	19	13C2-PFOA	414.9 > 369.7	5.98e4	4.97e4	1.0000	1.140	3.62	3.63	15.0	13.2	105.4
20	20	13C5-PFNA	468.2 > 422.9	7.20e4	7.01e4	1.0000	0.958	3.80	3.80	12.8	13.4	107.3
21	21	13C8-PFOS	507 > 79.9	1.28e4	1.22e4	1.0000	1.061	3.85	3.85	13.1	12.3	98.7
22	22	13C2-PFDA	515.1 > 469.9	7.30e4	7.21e4	1.0000	0.942	3.97	3.97	12.7	13.4	107.5
23	23	13C2-PFUnA	565 > 519.8	6.82e4	6.72e4	1.0000	1.084	4.13	4.13	12.7	11.7	93.7
24	24	d3-N-MeFOSAA	573.3 > 419	1.53e4	6.72e4	1.0000	0.240	4.00	4.00	2.84	11.8	94.5
25	25	d5-N-EtFOSAA	589.3 > 419	1.63e4	6.72e4	1.0000	0.247	4.07	4.07	3.04	12.3	98.3
26	26	13C2-PFDoA	615 > 569.7	7.92e3	6.72e4	1.0000	0.127	4.32	4.29	1.47	11.6	92.9
27	27	13C2-PFTeDA	714.8 > 669.6	5.48e4	6.72e4	1.0000	0.883	4.64	4.63	10.2	11.6	92.5
28	28	13C5-PFHxA	318 > 272.9	4.24e4	4.24e4	1.0000	1.000	3.15	3.16	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	7.68e3	7.68e3	1.0000	1.000	3.49	3.50	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	4.97e4	4.97e4	1.0000	1.000	3.62	3.62	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	7.01e4	7.01e4	1.0000	1.000	3.82	3.80	12.5	12.5	100.0

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DM 7/19/17

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170706M1\170706M1-28_L14.qld

Last Altered: Wednesday, July 19, 2017 14:08:21 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:08:51 Pacific Daylight Time

Name: 170706M1_28, Date: 06-Jul-2017, Time: 13:24:34, ID: ST170706M1-4 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	1.22e4	1.22e4	1.0000	1.000	3.85	3.85	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	7.21e4	7.21e4	1.0000	1.000	3.97	3.97	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	6.72e4	6.72e4	1.0000	1.000	4.13	4.14	12.5	12.5	100.0

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 14:13:44 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 14:14:28 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170706M1_4	ST170706M1-2 PFC CS3 17G0508	06-Jul-17	09:07:20
2	170706M1_5	IPA	06-Jul-17	09:18:15
3	170706M1_6	B7F0136-BS1 OPR 0.125	06-Jul-17	09:29:23
4	170706M1_7	IPA	06-Jul-17	09:40:01
5	170706M1_8	B7F0136-BLK1 Method Blank 0.125	06-Jul-17	09:50:39
6	170706M1_9	1700767-03 3 College 0.24548	06-Jul-17	10:01:21
7	170706M1_10	1700767-04 4 College 0.2493	06-Jul-17	10:12:05
8	170706M1_11	1700767-05 5 Sunrise 0.23777	06-Jul-17	10:22:44
9	170706M1_12	1700789-01 GR-OF-20170627 0.10782	06-Jul-17	10:33:22
10	170706M1_13	1700789-02 MH-117T-20170627 0.12311	06-Jul-17	10:44:08
11	170706M1_14	1700789-03 MH-117N-20170627 0.12348	06-Jul-17	10:54:47
12	170706M1_15	B7F0136-MS1 Matrix Spike 0.12272	06-Jul-17	11:05:25
13	170706M1_16	B7F0136-MSD1 Matrix Spike Dup 0.12124	06-Jul-17	11:16:03
14	170706M1_17	1700789-04 MH-118.5T-20170627 0.13718	06-Jul-17	11:26:42
15	170706M1_18	1700789-05 MH-118.5N-20170627 0.12165	06-Jul-17	11:37:49
16	170706M1_19	1700789-06 MH-121.5T-20170627 0.12319	06-Jul-17	11:48:40
17	170706M1_20	1700789-07 MH-121.5N-20170627 0.12348	06-Jul-17	11:59:18
18	170706M1_21	IPA	06-Jul-17	12:09:57
19	170706M1_22	ST170706M1-3 PFC CS3 17G0508	06-Jul-17	12:20:35
20	170706M1_23	IPA	06-Jul-17	12:31:21
21	170706M1_24	1700789-08 MH-125.9T-20170627 0.11951	06-Jul-17	12:42:00
22	170706M1_25	1700789-09 MH-125.9N-20170627 0.12353	06-Jul-17	12:52:38
23	170706M1_26	1700789-10 West Ditch Out-20170627 0.10981	06-Jul-17	13:03:17
24	170706M1_27	IPA	06-Jul-17	13:13:55
25	170706M1_28	ST170706M1-4 PFC CS3 17G0508	06-Jul-17	13:24:34
26	170706M1_29	IPA	06-Jul-17	13:35:20

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-2.qld

Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:05:34
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	6.16e3	4.19e3	1.0000		2.92	2.92	18.4	9.76	97.6
2	2	PFHxA	313.2 > 268.9	4.75e4	1.62e4	1.0000		3.16	3.16	14.7	10.4	104.0
3	3	PFHpA	363 > 318.9	4.25e4	4.61e4	1.0000		3.43	3.42	11.5	9.54	95.4
4	4	PFHxS	398.9 > 79.6	5.27e3	4.08e3	1.0000		3.55	3.49	16.2	8.73	87.3
5	5	PFOA	413 > 368.7	7.77e4	9.64e4	1.0000		3.63	3.62	10.1	10.6	105.9
6	6	PFNA	462.9 > 418.8	7.54e4	7.98e4	1.0000		3.82	3.80	11.8	10.6	105.7
7	7	PFOS	499 > 79.9	1.27e4	1.58e4	1.0000		3.86	3.85	10.1	9.53	95.3
8	8	PFDA	513 > 468.8	7.01e4	8.05e4	1.0000		4.00	3.96	10.9	9.39	93.9
9	9	PFUnA	562.9 > 518.9	5.77e4	7.40e4	1.0000		4.13	4.13	9.74	10.7	107.0
10	10	N-MeFOSAA	570.1 > 419	2.12e4	1.80e4	1.0000		4.00	4.00	14.7	9.22	92.2
11	11	N-EtFOSAA	584.2 > 419	1.75e4	1.85e4	1.0000		4.07	4.07	11.8	10.3	103.0
12	12	PFDoA	612.9 > 318.8	6.02e3	1.01e4	1.0000		4.31	4.28	7.42	8.89	88.9
13	13	PFTrDA	662.9 > 618.9	8.91e4	1.01e4	1.0000		4.50	4.45	110	9.90	99.0
14	14	PFTeDA	712.9 > 668.8	6.53e4	7.45e4	1.0000		4.65	4.62	10.9	9.18	91.8
15	15	13C3-PFBS	302 > 98.8	4.19e3	5.15e4	1.0000	0.032	2.92	2.92	0.407	12.7	101.4
16	16	13C2-PFHxA	315 > 269.8	1.62e4	5.15e4	1.0000	0.296	3.15	3.16	1.57	5.31	106.1
17	17	13C4-PFHpA	367.2 > 321.8	4.61e4	5.15e4	1.0000	0.302	3.43	3.42	4.48	14.9	118.9
18	18	18O2-PFHxS	403 > 102.6	4.08e3	1.03e4	1.0000	0.434	3.49	3.49	4.93	11.3	90.8
19	19	13C2-PFOA	414.9 > 369.7	9.64e4	8.32e4	1.0000	1.140	3.62	3.62	14.5	12.7	101.6
20	20	13C5-PFNA	468.2 > 422.9	7.98e4	8.20e4	1.0000	0.958	3.80	3.80	12.2	12.7	101.6
21	21	13C8-PFOS	507 > 79.9	1.58e4	1.53e4	1.0000	1.061	3.85	3.85	12.9	12.1	97.1
22	22	13C2-PFDA	515.1 > 469.9	8.05e4	8.59e4	1.0000	0.942	3.97	3.96	11.7	12.4	99.4
23	23	13C2-PFUnA	565 > 519.8	7.40e4	8.94e4	1.0000	1.084	4.13	4.13	10.3	9.54	76.3
24	24	d3-N-MeFOSAA	573.3 > 419	1.80e4	8.94e4	1.0000	0.240	4.00	4.00	2.52	10.5	83.7
25	25	d5-N-EtFOSAA	589.3 > 419	1.85e4	8.94e4	1.0000	0.247	4.07	4.06	2.59	10.5	83.7
26	26	13C2-PFDoA	615 > 569.7	1.01e4	8.94e4	1.0000	0.127	4.32	4.29	1.42	11.2	89.3
27	27	13C2-PFTeDA	714.8 > 669.6	7.45e4	8.94e4	1.0000	0.883	4.64	4.62	10.4	11.8	94.5
28	28	13C5-PFHxA	318 > 272.9	5.15e4	5.15e4	1.0000	1.000	3.15	3.16	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	1.03e4	1.03e4	1.0000	1.000	3.49	3.49	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	8.32e4	8.32e4	1.0000	1.000	3.62	3.62	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	8.20e4	8.20e4	1.0000	1.000	3.82	3.80	12.5	12.5	100.0

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OM 7/20/17

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-2.qld

Last Altered: Thursday, July 20, 2017 12:06:04 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:07:25 Pacific Daylight Time

Name: 170707M2_2, Date: 07-Jul-2017, Time: 13:45:44, ID: ST170707M2-1 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	1.53e4	1.53e4	1.0000	1.000	3.85	3.85	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	8.59e4	8.59e4	1.0000	1.000	3.97	3.96	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	8.94e4	8.94e4	1.0000	1.000	4.13	4.13	12.5	12.5	100.0

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 16:34:18 Pacific Daylight Time
Printed: Thursday, July 20, 2017 16:38:16 Pacific Daylight Time

Compound name: PFHxA

	Name	ID	Acq.Date	Acq.Time
1	170707M2_2	ST170707M2-1 PFC CS3 17G0508	07-Jul-17	13:45:44
2	170707M2_3	B7F0137-BLK1 Method Blank 0.125	07-Jul-17	13:56:23
3	170707M2_4	IPA	07-Jul-17	14:07:44
4	170707M2_5	B7F0137-BS1 OPR 0.125	07-Jul-17	14:18:24
5	170707M2_6	1700789-01@5X GR-OF-20170627 0.10782	07-Jul-17	14:29:12
6	170707M2_7	1700789-02@5X MH-117T-20170627 0.12311	07-Jul-17	14:39:57
7	170707M2_8	1700789-03@5X MH-117N-20170627 0.12348	07-Jul-17	14:50:35
8	170707M2_9	B7F0136-MS1@5X Matrix Spike 0.12272	07-Jul-17	15:01:14
9	170707M2_10	B7F0136-MSD1@5X Matrix Spike Dup 0.12124	07-Jul-17	15:11:54
10	170707M2_11	1700789-05@10X MH-118.5N-20170627 0.12...	07-Jul-17	15:22:39
11	170707M2_12	1700792-01 West Ditch In-20170627 0.11683	07-Jul-17	15:33:17
12	170707M2_13	1700792-02 MH-140-20170628 0.11475	07-Jul-17	15:43:56
13	170707M2_14	1700792-03 Interceptor-20170628 0.11459	07-Jul-17	15:54:34
14	170707M2_15	1700792-04 Roof Drain-20170628 0.11484	07-Jul-17	16:05:13
15	170707M2_16	1700792-05 Spring-20170628 0.09751	07-Jul-17	16:15:51
16	170707M2_17	1700792-06 FRB-20170628 0.1121	07-Jul-17	16:26:52
17	170707M2_18	1700792-07 MH318.9-20170628 0.11873	07-Jul-17	16:37:41
18	170707M2_19	IPA	07-Jul-17	16:48:19
19	170707M2_20	ST170707M2-2 PFC CS3 17G0508	07-Jul-17	16:58:58
20	170707M2_21	IPA	07-Jul-17	17:09:44
21	170707M2_22	1700792-08 MH388.9-20170628 0.11713	07-Jul-17	17:20:31
22	170707M2_23	1700792-09 Dup03-20170628 0.11824	07-Jul-17	17:31:09
23	170707M2_24	1700792-10 Dup01-20170627 0.11337	07-Jul-17	17:41:47
24	170707M2_25	1700792-11 RB01-20170628 0.12005	07-Jul-17	17:52:26
25	170707M2_26	IPA	07-Jul-17	18:03:04
26	170707M2_27	ST170707M2-3 PFC CS3 17G0508	07-Jul-17	18:13:43

LC Calibration Standards Review Checklist Q4

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	AM 7/20/17 ✓ NA
Calibration ID:	ST170707-M2-1	L (M) H	NA ☐	☑	☑	☑	☑	☐	☐
Calibration ID:	-2	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID:	-3	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 6/21/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: 7/21/17
Initials/Date

Comments:
L14

Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 20 Jul 2017 12:05:34
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	6.71e3	4.61e3	1.0000		2.92	2.93	18.2	9.67	96.7
2	2	PFHxA	313.2 > 268.9	5.42e4	1.87e4	1.0000		3.16	3.18	14.5	10.3	102.7
3	3	PFHpA	363 > 318.9	5.70e4	5.95e4	1.0000		3.43	3.43	12.0	9.92	99.2
4	4	PFHxS	398.9 > 79.6	7.25e3	5.33e3	1.0000		3.55	3.50	17.0	9.20	92.0
5	5	PFOA	413 > 368.7	8.29e4	1.09e5	1.0000		3.63	3.64	9.52	9.99	99.9
6	6	PFNA	462.9 > 418.8	7.93e4	8.73e4	1.0000		3.82	3.82	11.4	10.2	101.6
7	7	PFOS	499 > 79.9	1.33e4	1.57e4	1.0000		3.86	3.87	10.6	9.99	99.9
8	8	PFDA	513 > 468.8	7.49e4	8.20e4	1.0000		4.00	3.99	11.4	9.85	98.5
9	9	PFUnA	562.9 > 518.9	6.26e4	8.68e4	1.0000		4.13	4.15	9.01	9.88	98.8
10	10	N-MeFOSAA	570.1 > 419	2.08e4	1.76e4	1.0000		4.00	4.02	14.7	9.22	92.2
11	11	N-EtFOSAA	584.2 > 419	1.71e4	1.79e4	1.0000		4.07	4.08	11.9	10.4	103.8
12	12	PFDoA	612.9 > 318.8	6.27e3	1.04e4	1.0000		4.31	4.30	7.57	9.07	90.7
13	13	PFTrDA	662.9 > 618.9	8.89e4	1.04e4	1.0000		4.50	4.47	107	9.67	96.7
14	14	PFTeDA	712.9 > 668.8	6.37e4	7.48e4	1.0000		4.65	4.64	10.6	8.92	89.2
15	15	13C3-PFBS	302 > 98.8	4.61e3	6.14e4	1.0000	0.032	2.92	2.93	0.375	11.7	93.4
16	16	13C2-PFHxA	315 > 269.8	1.87e4	6.14e4	1.0000	0.296	3.15	3.18	1.52	5.14	102.8
17	17	13C4-PFHpA	367.2 > 321.8	5.95e4	6.14e4	1.0000	0.302	3.43	3.43	4.84	16.0	128.4
18	18	18O2-PFHxS	403 > 102.6	5.33e3	1.32e4	1.0000	0.434	3.49	3.50	5.03	11.6	92.6
19	19	13C2-PFOA	414.9 > 369.7	1.09e5	9.20e4	1.0000	1.140	3.62	3.64	14.8	13.0	103.9
20	20	13C5-PFNA	468.2 > 422.9	8.73e4	9.27e4	1.0000	0.958	3.80	3.81	11.8	12.3	98.3
21	21	13C8-PFOS	507 > 79.9	1.57e4	1.44e4	1.0000	1.061	3.85	3.87	13.6	12.8	102.5
22	22	13C2-PFDA	515.1 > 469.9	8.20e4	9.06e4	1.0000	0.942	3.97	3.99	11.3	12.0	96.0
23	23	13C2-PFUnA	565 > 519.8	8.68e4	1.01e5	1.0000	1.084	4.13	4.15	10.8	9.96	79.6
24	24	d3-N-MeFOSAA	573.3 > 419	1.76e4	1.01e5	1.0000	0.240	4.00	4.01	2.19	9.13	73.0
25	25	d5-N-EtFOSAA	589.3 > 419	1.79e4	1.01e5	1.0000	0.247	4.07	4.08	2.23	9.01	72.1
26	26	13C2-PFDoA	615 > 569.7	1.04e4	1.01e5	1.0000	0.127	4.32	4.30	1.29	10.1	81.1
27	27	13C2-PFTeDA	714.8 > 669.6	7.48e4	1.01e5	1.0000	0.883	4.64	4.65	9.30	10.5	84.3
28	28	13C5-PFHxA	318 > 272.9	6.14e4	6.14e4	1.0000	1.000	3.15	3.18	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	1.32e4	1.32e4	1.0000	1.000	3.49	3.50	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	9.20e4	9.20e4	1.0000	1.000	3.62	3.64	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	9.27e4	9.27e4	1.0000	1.000	3.82	3.81	12.5	12.5	100.0

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Vista Analytical Laboratory

Dataset: U:\Q4.PRO\results\170707M2\170707M2-20.qld

Last Altered: Thursday, July 20, 2017 12:08:08 Pacific Daylight Time
Printed: Thursday, July 20, 2017 12:08:56 Pacific Daylight Time

Name: 170707M2_20, Date: 07-Jul-2017, Time: 16:58:58, ID: ST170707M2-2 PFC CS3 17G0508, Description: PFC CS3 17G0508

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
32	32	13C4-PFOS	503 > 79.9	1.44e4	1.44e4	1.0000	1.000	3.85	3.87	12.5	12.5	100.0
33	33	13C6-PFDA	519.1 > 473.7	9.06e4	9.06e4	1.0000	1.000	3.97	3.99	12.5	12.5	100.0
34	34	13C7-PFUnA	570.1 > 524.8	1.01e5	1.01e5	1.0000	1.000	4.13	4.15	12.5	12.5	100.0

Dataset: Untitled

Last Altered: Thursday, July 20, 2017 16:34:18 Pacific Daylight Time
Printed: Thursday, July 20, 2017 16:38:16 Pacific Daylight Time

Compound name: PFHxA

	Name	ID	Acq.Date	Acq.Time
1	170707M2_2	ST170707M2-1 PFC CS3 17G0508	07-Jul-17	13:45:44
2	170707M2_3	B7F0137-BLK1 Method Blank 0.125	07-Jul-17	13:56:23
3	170707M2_4	IPA	07-Jul-17	14:07:44
4	170707M2_5	B7F0137-BS1 OPR 0.125	07-Jul-17	14:18:24
5	170707M2_6	1700789-01@5X GR-OF-20170627 0.10782	07-Jul-17	14:29:12
6	170707M2_7	1700789-02@5X MH-117T-20170627 0.12311	07-Jul-17	14:39:57
7	170707M2_8	1700789-03@5X MH-117N-20170627 0.12348	07-Jul-17	14:50:35
8	170707M2_9	B7F0136-MS1@5X Matrix Spike 0.12272	07-Jul-17	15:01:14
9	170707M2_10	B7F0136-MSD1@5X Matrix Spike Dup 0.12124	07-Jul-17	15:11:54
10	170707M2_11	1700789-05@10X MH-118.5N-20170627 0.12...	07-Jul-17	15:22:39
11	170707M2_12	1700792-01 West Ditch In-20170627 0.11683	07-Jul-17	15:33:17
12	170707M2_13	1700792-02 MH-140-20170628 0.11475	07-Jul-17	15:43:56
13	170707M2_14	1700792-03 Interceptor-20170628 0.11459	07-Jul-17	15:54:34
14	170707M2_15	1700792-04 Roof Drain-20170628 0.11484	07-Jul-17	16:05:13
15	170707M2_16	1700792-05 Spring-20170628 0.09751	07-Jul-17	16:15:51
16	170707M2_17	1700792-06 FRB-20170628 0.1121	07-Jul-17	16:26:52
17	170707M2_18	1700792-07 MH318.9-20170628 0.11873	07-Jul-17	16:37:41
18	170707M2_19	IPA	07-Jul-17	16:48:19
19	170707M2_20	ST170707M2-2 PFC CS3 17G0508	07-Jul-17	16:58:58
20	170707M2_21	IPA	07-Jul-17	17:09:44
21	170707M2_22	1700792-08 MH388.9-20170628 0.11713	07-Jul-17	17:20:31
22	170707M2_23	1700792-09 Dup03-20170628 0.11824	07-Jul-17	17:31:09
23	170707M2_24	1700792-10 Dup01-20170627 0.11337	07-Jul-17	17:41:47
24	170707M2_25	1700792-11 RB01-20170628 0.12005	07-Jul-17	17:52:26
25	170707M2_26	IPA	07-Jul-17	18:03:04
26	170707M2_27	ST170707M2-3 PFC CS3 17G0508	07-Jul-17	18:13:43

Vista Analytical Laboratory Q2

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:49:03 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:17:05
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS
Correlation coefficient: r = 0.999311, r^2 = 0.998622
Calibration curve: 1.8654 * x + 0.177147
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	2.91	125.733	2938.156	0.535	bb	0.2	-23.3
2	2	170705M2_3	Standard	0.500	2.91	274.135	3185.882	1.076	bb	0.5	-3.7
3	3	170705M2_4	Standard	1.000	2.91	521.219	2857.299	2.280	bb	1.1	12.7
4	4	170705M2_5	Standard	2.000	2.91	1030.654	2980.753	4.322	bb	2.2	11.1
5	5	170705M2_6	Standard	5.000	2.91	2487.573	3115.085	9.982	bb	5.3	5.1
6	6	170705M2_7	Standard	10.000	2.90	4439.071	3067.311	18.090	bb	9.6	-4.0
7	7	170705M2_8	Standard	50.000	2.90	21747.844	2792.265	97.358	bb	52.1	4.2
8	8	170705M2_9	Standard	100.000	2.90	43517.570	2979.658	182.561	bb	97.8	-2.2

Compound name: PFHxA
Correlation coefficient: r = 0.999586, r^2 = 0.999173
Calibration curve: 1.37106 * x + 0.396864
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.15	930.784	10364.861	0.449	bbX	0.0	-84.8
2	2	170705M2_3	Standard	0.500	3.16	1938.407	11079.211	0.875	bbX	0.3	-30.3
3	3	170705M2_4	Standard	1.000	3.16	3580.227	11239.421	1.593	bb	0.9	-12.8
4	4	170705M2_5	Standard	2.000	3.15	7592.697	10441.585	3.636	db	2.4	18.1
5	5	170705M2_6	Standard	5.000	3.15	16920.393	11712.890	7.223	bb	5.0	-0.4
6	6	170705M2_7	Standard	10.000	3.15	29010.945	10900.922	13.307	bb	9.4	-5.8
7	7	170705M2_8	Standard	50.000	3.15	155929.297	11183.368	69.715	bb	50.6	1.1
8	8	170705M2_9	Standard	100.000	3.15	311700.125	11355.477	137.247	bb	99.8	-0.2

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Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:49:03 Pacific Daylight Time

Compound name: PFHpA
Correlation coefficient: r = 0.998862, r^2 = 0.997726
Calibration curve: 1.17677 * x + 0.307824
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.42	865.095	28174.320	0.384	bbX	0.1	-74.2
2	2	170705M2_3	Standard	0.500	3.42	1636.894	26635.770	0.768	bb	0.4	-21.8
3	3	170705M2_4	Standard	1.000	3.42	3446.113	27885.830	1.545	bb	1.1	5.1
4	4	170705M2_5	Standard	2.000	3.42	6837.425	29611.441	2.886	bb	2.2	9.6
5	5	170705M2_6	Standard	5.000	3.42	15523.172	28877.217	6.719	bb	5.4	9.0
6	6	170705M2_7	Standard	10.000	3.41	25794.193	27952.889	11.535	bb	9.5	-4.6
7	7	170705M2_8	Standard	50.000	3.41	140524.750	28110.525	62.488	bb	52.8	5.7
8	8	170705M2_9	Standard	100.000	3.41	250847.719	27385.096	114.500	bb	97.0	-3.0

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.999590
Calibration curve: -0.00247497 * x^2 + 1.87329 * x + -0.00705947
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.49	93.769	2594.732	0.452	MM	0.2	-2.0
2	2	170705M2_3	Standard	0.500	3.50	195.692	2589.928	0.944	MM	0.5	1.7
3	3	170705M2_4	Standard	1.000	3.49	464.071	2913.508	1.991	MM	1.1	6.8
4	4	170705M2_5	Standard	2.000	3.50	894.373	2989.887	3.739	MM	2.0	0.3
5	5	170705M2_6	Standard	5.000	3.49	2047.378	2866.506	8.928	MM	4.8	-4.0
6	6	170705M2_7	Standard	10.000	3.48	3922.652	2774.778	17.671	MM	9.6	-4.4
7	7	170705M2_8	Standard	50.000	3.48	18716.000	2618.582	89.342	MM	51.2	2.3
8	8	170705M2_9	Standard	100.000	3.48	34991.797	2704.431	161.734	MM	99.4	-0.6

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:49:03 Pacific Daylight Time

Compound name: PFOA
Correlation coefficient: r = 0.999420, r^2 = 0.998839
Calibration curve: 0.933761 * x + 0.193294
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.62	1284.817	43531.598	0.369	bd	0.2	-24.8
2	2	170705M2_3	Standard	0.500	3.62	2227.929	48053.043	0.580	bb	0.4	-17.3
3	3	170705M2_4	Standard	1.000	3.62	4569.104	45696.223	1.250	bb	1.1	13.2
4	4	170705M2_5	Standard	2.000	3.62	8739.742	46379.480	2.355	bb	2.3	15.8
5	5	170705M2_6	Standard	5.000	3.62	18573.055	42715.777	5.435	bb	5.6	12.3
6	6	170705M2_7	Standard	10.000	3.61	35522.211	45589.391	9.740	bb	10.2	2.2
7	7	170705M2_8	Standard	50.000	3.61	150408.438	40322.508	46.627	bb	49.7	-0.5
8	8	170705M2_9	Standard	100.000	3.61	321997.094	43389.621	92.763	bb	99.1	-0.9

Compound name: PFNA
Correlation coefficient: r = 0.999280, r^2 = 0.998560
Calibration curve: 1.11098 * x + 0.0688283
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.81	1171.810	47770.836	0.307	MM	0.2	-14.4
2	2	170705M2_3	Standard	0.500	3.80	2756.608	52243.852	0.660	MM	0.5	6.3
3	3	170705M2_4	Standard	1.000	3.80	5663.031	54290.777	1.304	bb	1.1	11.2
4	4	170705M2_5	Standard	2.000	3.80	11539.653	54512.996	2.646	bb	2.3	16.0
5	5	170705M2_6	Standard	5.000	3.80	24322.898	48291.633	6.296	bb	5.6	12.1
6	6	170705M2_7	Standard	10.000	3.79	42993.871	51635.496	10.408	bb	9.3	-6.9
7	7	170705M2_8	Standard	50.000	3.79	220269.813	48688.023	56.551	bb	50.8	1.7
8	8	170705M2_9	Standard	100.000	3.79	470415.844	53525.945	109.857	bb	98.8	-1.2

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:49:03 Pacific Daylight Time

Compound name: PFOS
Coefficient of Determination: R^2 = 0.998873
Calibration curve: -0.000575658 * x^2 + 1.05897 * x + 0.0534494
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.84	272.087	9413.727	0.361	MM	0.3	16.3
2	2	170705M2_3	Standard	0.500	3.86	400.136	10871.231	0.460	MM	0.4	-23.2
3	3	170705M2_4	Standard	1.000	3.85	1042.090	11022.589	1.182	MM	1.1	6.6
4	4	170705M2_5	Standard	2.000	3.85	2145.399	10620.750	2.525	bb	2.3	16.8
5	5	170705M2_6	Standard	5.000	3.85	4941.119	10669.258	5.789	MM	5.4	8.6
6	6	170705M2_7	Standard	10.000	3.84	8099.005	9939.181	10.186	MM	9.6	-3.8
7	7	170705M2_8	Standard	50.000	3.84	39063.281	9623.398	50.740	bb	49.2	-1.6
8	8	170705M2_9	Standard	100.000	3.84	78466.844	9748.393	100.615	bb	100.4	0.4

Compound name: PFDA
Coefficient of Determination: R^2 = 0.998398
Calibration curve: 0.000759384 * x^2 + 1.12777 * x + 0.228347
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	3.97	1951.477	55632.191	0.438	bb	0.2	-25.5
2	2	170705M2_3	Standard	0.500	3.97	3453.753	56620.121	0.762	bd	0.5	-5.3
3	3	170705M2_4	Standard	1.000	3.97	6905.331	62663.176	1.377	bb	1.0	1.8
4	4	170705M2_5	Standard	2.000	3.97	14230.029	57448.082	3.096	bb	2.5	26.9
5	5	170705M2_6	Standard	5.000	3.96	30603.072	59067.801	6.476	bb	5.5	10.4
6	6	170705M2_7	Standard	10.000	3.96	48989.387	57214.508	10.703	bb	9.2	-7.7
7	7	170705M2_8	Standard	50.000	3.96	270264.500	58303.238	57.944	bb	49.5	-0.9
8	8	170705M2_9	Standard	100.000	3.96	495796.375	51247.992	120.931	bb	100.3	0.3

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:49:03 Pacific Daylight Time

Compound name: PFUnA
Correlation coefficient: r = 0.998781, r^2 = 0.997563
Calibration curve: 0.901738 * x + 0.0982118
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.13	1296.185	62046.969	0.261	bb	0.2	-27.7
2	2	170705M2_3	Standard	0.500	4.14	2809.686	63528.918	0.553	bb	0.5	0.8
3	3	170705M2_4	Standard	1.000	4.14	5080.900	55413.711	1.146	bb	1.2	16.2
4	4	170705M2_5	Standard	2.000	4.14	10284.878	62163.789	2.068	bb	2.2	9.2
5	5	170705M2_6	Standard	5.000	4.13	24180.139	61536.848	4.912	bb	5.3	6.8
6	6	170705M2_7	Standard	10.000	4.12	42430.457	59057.191	8.981	bb	9.9	-1.5
7	7	170705M2_8	Standard	50.000	4.12	218260.484	64685.254	42.177	bb	46.7	-6.7
8	8	170705M2_9	Standard	100.000	4.12	402963.281	54245.828	92.856	bb	102.9	2.9

Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999610
Calibration curve: -0.00133241 * x^2 + 1.61336 * x + -0.019444
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.00	429.221	13824.592	0.388	bb	0.3	1.1
2	2	170705M2_3	Standard	0.500	4.00	872.219	14234.324	0.766	bb	0.5	-2.6
3	3	170705M2_4	Standard	1.000	4.00	1658.677	13112.977	1.581	bb	1.0	-0.7
4	4	170705M2_5	Standard	2.000	4.00	3706.589	14049.660	3.298	bb	2.1	3.0
5	5	170705M2_6	Standard	5.000	3.99	8063.015	12826.344	7.858	bb	4.9	-2.0
6	6	170705M2_7	Standard	10.000	3.99	16067.637	13268.185	15.137	bb	9.5	-5.3
7	7	170705M2_8	Standard	50.000	3.99	81804.094	12943.525	79.001	bb	51.1	2.3
8	8	170705M2_9	Standard	100.000	3.99	149881.781	12724.132	147.242	bb	99.4	-0.6

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Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999426
Calibration curve: 0.00157116 * x^2 + 1.12286 * x + 0.0790977
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.08	402.172	13874.378	0.362	bbX	0.3	0.9
2	2	170705M2_3	Standard	0.500	4.08	625.424	13899.495	0.562	bb	0.4	-14.0
3	3	170705M2_4	Standard	1.000	4.07	1486.438	13745.829	1.352	bb	1.1	13.2
4	4	170705M2_5	Standard	2.000	4.07	3091.382	14579.158	2.651	bb	2.3	14.1
5	5	170705M2_6	Standard	5.000	4.06	6536.002	13540.418	6.034	bb	5.3	5.3
6	6	170705M2_7	Standard	10.000	4.06	12651.616	14363.329	11.010	bb	9.6	-3.9
7	7	170705M2_8	Standard	50.000	4.05	64759.824	13574.722	59.633	bb	49.6	-0.8
8	8	170705M2_9	Standard	100.000	4.06	128597.008	12523.236	128.358	bb	100.2	0.2

Compound name: PFDoA
Correlation coefficient: r = 0.999542, r^2 = 0.999083
Calibration curve: 0.830738 * x + 0.0366231
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.31	107.734	7090.979	0.190	bb	0.2	-26.2
2	2	170705M2_3	Standard	0.500	4.30	289.868	7251.595	0.500	bb	0.6	11.5
3	3	170705M2_4	Standard	1.000	4.29	459.943	6817.750	0.843	bb	1.0	-2.9
4	4	170705M2_5	Standard	2.000	4.30	1208.494	7804.063	1.936	bb	2.3	14.3
5	5	170705M2_6	Standard	5.000	4.29	2377.221	6537.772	4.545	bb	5.4	8.5
6	6	170705M2_7	Standard	10.000	4.28	4439.618	7053.735	7.867	bb	9.4	-5.7
7	7	170705M2_8	Standard	50.000	4.28	23850.646	7085.070	42.079	bb	50.6	1.2
8	8	170705M2_9	Standard	100.000	4.28	45273.797	6858.020	82.520	bb	99.3	-0.7

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Compound name: PFTrDA
Correlation coefficient: r = 0.999307, r^2 = 0.998614
Calibration curve: 10.821 * x + 2.72105
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.46	1874.518	7090.979	3.304	bbX	0.1	-78.4
2	2	170705M2_3	Standard	0.500	4.47	4003.324	7251.595	6.901	bb	0.4	-22.7
3	3	170705M2_4	Standard	1.000	4.46	7442.000	6817.750	13.645	bb	1.0	0.9
4	4	170705M2_5	Standard	2.000	4.47	15466.644	7804.063	24.773	bb	2.0	1.9
5	5	170705M2_6	Standard	5.000	4.45	34794.688	6537.772	66.526	bb	5.9	17.9
6	6	170705M2_7	Standard	10.000	4.44	64315.676	7053.735	113.975	bb	10.3	2.8
7	7	170705M2_8	Standard	50.000	4.44	309907.188	7085.070	546.761	bb	50.3	0.6
8	8	170705M2_9	Standard	100.000	4.44	586941.375	6858.020	1069.808	bb	98.6	-1.4

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999498
Calibration curve: -0.000989892 * x^2 + 1.18715 * x + 0.13375
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	0.250	4.64	1407.173	46747.992	0.376	bb	0.2	-18.3
2	2	170705M2_3	Standard	0.500	4.64	2854.123	50027.531	0.713	bb	0.5	-2.4
3	3	170705M2_4	Standard	1.000	4.64	5316.194	47718.160	1.393	bb	1.1	6.1
4	4	170705M2_5	Standard	2.000	4.64	11385.062	50935.184	2.794	bb	2.2	12.3
5	5	170705M2_6	Standard	5.000	4.63	25391.598	49814.836	6.371	bb	5.3	5.6
6	6	170705M2_7	Standard	10.000	4.62	46087.875	49546.270	11.627	bb	9.8	-2.4
7	7	170705M2_8	Standard	50.000	4.61	220414.203	48918.633	56.322	bb	49.4	-1.3
8	8	170705M2_9	Standard	100.000	4.62	434117.906	49646.109	109.303	bb	100.4	0.4

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Compound name: 13C3-PFBS
Response Factor: 0.0321044
RRF SD: 0.00160131, Relative SD: 4.98783
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	2.90	2938.156	36934.543	0.398	bb	12.4	-0.9
2	2	170705M2_3	Standard	12.500	2.91	3185.882	37581.402	0.424	bb	13.2	5.6
3	3	170705M2_4	Standard	12.500	2.91	2857.299	38061.805	0.375	bb	11.7	-6.5
4	4	170705M2_5	Standard	12.500	2.91	2980.753	39265.156	0.380	bb	11.8	-5.4
5	5	170705M2_6	Standard	12.500	2.90	3115.085	38459.203	0.405	bb	12.6	0.9
6	6	170705M2_7	Standard	12.500	2.91	3067.311	35323.004	0.434	bb	13.5	8.2
7	7	170705M2_8	Standard	12.500	2.90	2792.265	34923.203	0.400	bb	12.5	-0.4
8	8	170705M2_9	Standard	12.500	2.90	2979.658	37720.324	0.395	bb	12.3	-1.6

Compound name: 13C2-PFHxA
Response Factor: 0.296386
RRF SD: 0.0168441, Relative SD: 5.68316
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	5.000	3.15	10364.861	36934.543	1.403	bb	4.7	-5.3
2	2	170705M2_3	Standard	5.000	3.16	11079.211	37581.402	1.474	bb	5.0	-0.5
3	3	170705M2_4	Standard	5.000	3.16	11239.421	38061.805	1.476	bb	5.0	-0.4
4	4	170705M2_5	Standard	5.000	3.15	10441.585	39265.156	1.330	bb	4.5	-10.3
5	5	170705M2_6	Standard	5.000	3.15	11712.890	38459.203	1.523	bb	5.1	2.8
6	6	170705M2_7	Standard	5.000	3.15	10900.922	35323.004	1.543	bb	5.2	4.1
7	7	170705M2_8	Standard	5.000	3.15	11183.368	34923.203	1.601	bb	5.4	8.0
8	8	170705M2_9	Standard	5.000	3.15	11355.477	37720.324	1.505	bb	5.1	1.6

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Compound name: 13C4-PFHpA
Response Factor: 0.301574
RRF SD: 0.0129733, Relative SD: 4.30187
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.42	28174.320	36934.543	3.814	bb	12.6	1.2
2	2	170705M2_3	Standard	12.500	3.42	26635.770	37581.402	3.544	bb	11.8	-6.0
3	3	170705M2_4	Standard	12.500	3.42	27885.830	38061.805	3.663	bb	12.1	-2.8
4	4	170705M2_5	Standard	12.500	3.42	29611.441	39265.156	3.771	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.42	28877.217	38459.203	3.754	bb	12.4	-0.4
6	6	170705M2_7	Standard	12.500	3.41	27952.889	35323.004	3.957	bb	13.1	5.0
7	7	170705M2_8	Standard	12.500	3.41	28110.525	34923.203	4.025	bb	13.3	6.8
8	8	170705M2_9	Standard	12.500	3.41	27385.096	37720.324	3.630	bb	12.0	-3.7

Compound name: 18O2-PFHxS
Response Factor: 0.434349
RRF SD: 0.0284465, Relative SD: 6.54922
Response type: Internal Std (Ref 29), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.49	2594.732	6817.387	4.758	bb	11.0	-12.4
2	2	170705M2_3	Standard	12.500	3.49	2589.928	6164.226	5.252	bb	12.1	-3.3
3	3	170705M2_4	Standard	12.500	3.49	2913.508	6644.131	5.481	bb	12.6	1.0
4	4	170705M2_5	Standard	12.500	3.49	2989.887	6498.437	5.751	bb	13.2	5.9
5	5	170705M2_6	Standard	12.500	3.49	2866.506	6113.233	5.861	bb	13.5	8.0
6	6	170705M2_7	Standard	12.500	3.48	2774.778	6537.576	5.305	bb	12.2	-2.3
7	7	170705M2_8	Standard	12.500	3.48	2618.582	6160.812	5.313	bb	12.2	-2.1
8	8	170705M2_9	Standard	12.500	3.48	2704.431	5917.072	5.713	bb	13.2	5.2

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Compound name: 13C2-PFOA
Response Factor: 1.14047
RRF SD: 0.0311664, Relative SD: 2.73276
Response type: Internal Std (Ref 30), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.62	43531.598	38977.832	13.960	bb	12.2	-2.1
2	2	170705M2_3	Standard	12.500	3.62	48053.043	41005.910	14.648	bb	12.8	2.8
3	3	170705M2_4	Standard	12.500	3.62	45696.223	39029.453	14.635	bb	12.8	2.7
4	4	170705M2_5	Standard	12.500	3.62	46379.480	42331.734	13.695	bb	12.0	-3.9
5	5	170705M2_6	Standard	12.500	3.62	42715.777	36537.793	14.614	bb	12.8	2.5
6	6	170705M2_7	Standard	12.500	3.61	45589.391	39402.188	14.463	bb	12.7	1.5
7	7	170705M2_8	Standard	12.500	3.61	40322.508	36472.195	13.820	bb	12.1	-3.1
8	8	170705M2_9	Standard	12.500	3.61	43389.621	38161.703	14.212	bb	12.5	-0.3

Compound name: 13C5-PFNA
Response Factor: 0.95797
RRF SD: 0.0563983, Relative SD: 5.88727
Response type: Internal Std (Ref 31), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.80	47770.836	52300.438	11.417	bb	11.9	-4.7
2	2	170705M2_3	Standard	12.500	3.80	52243.852	52519.844	12.434	bb	13.0	3.8
3	3	170705M2_4	Standard	12.500	3.80	54290.777	52957.340	12.815	bb	13.4	7.0
4	4	170705M2_5	Standard	12.500	3.80	54512.996	54419.230	12.522	bb	13.1	4.6
5	5	170705M2_6	Standard	12.500	3.79	48291.633	56932.551	10.603	bb	11.1	-11.5
6	6	170705M2_7	Standard	12.500	3.79	51635.496	52904.762	12.200	bb	12.7	1.9
7	7	170705M2_8	Standard	12.500	3.79	48688.023	50838.715	11.971	bb	12.5	-0.0
8	8	170705M2_9	Standard	12.500	3.79	53525.945	56534.215	11.835	bb	12.4	-1.2

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Compound name: 13C8-PFOS
Response Factor: 1.06141
RRF SD: 0.0529547, Relative SD: 4.9891
Response type: Internal Std (Ref 32), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.85	9413.727	9402.628	12.515	bb	11.8	-5.7
2	2	170705M2_3	Standard	12.500	3.85	10871.231	9786.112	13.886	bb	13.1	4.7
3	3	170705M2_4	Standard	12.500	3.85	11022.589	9642.229	14.289	bb	13.5	7.7
4	4	170705M2_5	Standard	12.500	3.85	10620.750	9991.625	13.287	bb	12.5	0.1
5	5	170705M2_6	Standard	12.500	3.85	10669.258	10308.810	12.937	bb	12.2	-2.5
6	6	170705M2_7	Standard	12.500	3.84	9939.181	9025.101	13.766	bb	13.0	3.8
7	7	170705M2_8	Standard	12.500	3.84	9623.398	9648.409	12.468	bd	11.7	-6.0
8	8	170705M2_9	Standard	12.500	3.84	9748.393	9378.699	12.993	bd	12.2	-2.1

Compound name: 13C2-PFDA
Response Factor: 0.942006
RRF SD: 0.0532165, Relative SD: 5.64928
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.97	55632.191	59940.918	11.601	bb	12.3	-1.5
2	2	170705M2_3	Standard	12.500	3.97	56620.121	63230.613	11.193	bb	11.9	-4.9
3	3	170705M2_4	Standard	12.500	3.97	62663.176	59436.520	13.179	bb	14.0	11.9
4	4	170705M2_5	Standard	12.500	3.97	57448.082	59932.414	11.982	bb	12.7	1.8
5	5	170705M2_6	Standard	12.500	3.96	59067.801	66052.234	11.178	bb	11.9	-5.1
6	6	170705M2_7	Standard	12.500	3.96	57214.508	59362.641	12.048	bb	12.8	2.3
7	7	170705M2_8	Standard	12.500	3.96	58303.238	61872.145	11.779	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.96	51247.992	56989.531	11.241	bb	11.9	-4.5

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Compound name: 13C2-PFUnA
Response Factor: 1.08439
RRF SD: 0.0985113, Relative SD: 9.08448
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.13	62046.969	53537.027	14.487	bb	13.4	6.9
2	2	170705M2_3	Standard	12.500	4.14	63528.918	57247.090	13.872	bb	12.8	2.3
3	3	170705M2_4	Standard	12.500	4.14	55413.711	51139.855	13.545	bb	12.5	-0.1
4	4	170705M2_5	Standard	12.500	4.14	62163.789	53307.301	14.577	bb	13.4	7.5
5	5	170705M2_6	Standard	12.500	4.12	61536.848	58437.289	13.163	bb	12.1	-2.9
6	6	170705M2_7	Standard	12.500	4.12	59057.191	60314.734	12.239	bb	11.3	-9.7
7	7	170705M2_8	Standard	12.500	4.12	64685.254	53582.891	15.090	bb	13.9	11.3
8	8	170705M2_9	Standard	12.500	4.12	54245.828	59133.727	11.467	bb	10.6	-15.4

Compound name: d3-N-MeFOSAA
Response Factor: 0.240382
RRF SD: 0.0195314, Relative SD: 8.12516
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.00	13824.592	53537.027	3.228	bb	13.4	7.4
2	2	170705M2_3	Standard	12.500	4.00	14234.324	57247.090	3.108	bb	12.9	3.4
3	3	170705M2_4	Standard	12.500	4.00	13112.977	51139.855	3.205	bb	13.3	6.7
4	4	170705M2_5	Standard	12.500	4.00	14049.660	53307.301	3.294	bb	13.7	9.6
5	5	170705M2_6	Standard	12.500	4.00	12826.344	58437.289	2.744	bb	11.4	-8.7
6	6	170705M2_7	Standard	12.500	3.99	13268.185	60314.734	2.750	bb	11.4	-8.5
7	7	170705M2_8	Standard	12.500	3.98	12943.525	53582.891	3.020	bb	12.6	0.5
8	8	170705M2_9	Standard	12.500	3.99	12724.132	59133.727	2.690	bb	11.2	-10.5

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Compound name: d5-N-EtFOSAA
Response Factor: 0.2474
RRF SD: 0.0204724, Relative SD: 8.27503
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.07	13874.378	53537.027	3.239	bb	13.1	4.8
2	2	170705M2_3	Standard	12.500	4.07	13899.495	57247.090	3.035	bb	12.3	-1.9
3	3	170705M2_4	Standard	12.500	4.07	13745.829	51139.855	3.360	bb	13.6	8.6
4	4	170705M2_5	Standard	12.500	4.07	14579.158	53307.301	3.419	bb	13.8	10.5
5	5	170705M2_6	Standard	12.500	4.06	13540.418	58437.289	2.896	bb	11.7	-6.3
6	6	170705M2_7	Standard	12.500	4.05	14363.329	60314.734	2.977	bb	12.0	-3.7
7	7	170705M2_8	Standard	12.500	4.05	13574.722	53582.891	3.167	bb	12.8	2.4
8	8	170705M2_9	Standard	12.500	4.06	12523.236	59133.727	2.647	bb	10.7	-14.4

Compound name: 13C2-PFDoA
Response Factor: 0.126983
RRF SD: 0.0114927, Relative SD: 9.05061
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.30	7090.979	53537.027	1.656	bb	13.0	4.3
2	2	170705M2_3	Standard	12.500	4.30	7251.595	57247.090	1.583	bb	12.5	-0.2
3	3	170705M2_4	Standard	12.500	4.30	6817.750	51139.855	1.666	bb	13.1	5.0
4	4	170705M2_5	Standard	12.500	4.30	7804.063	53307.301	1.830	bb	14.4	15.3
5	5	170705M2_6	Standard	12.500	4.29	6537.772	58437.289	1.398	bb	11.0	-11.9
6	6	170705M2_7	Standard	12.500	4.28	7053.735	60314.734	1.462	bb	11.5	-7.9
7	7	170705M2_8	Standard	12.500	4.28	7085.070	53582.891	1.653	bb	13.0	4.1
8	8	170705M2_9	Standard	12.500	4.28	6858.020	59133.727	1.450	bb	11.4	-8.7

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: 13C2-PFTeDA
Response Factor: 0.882761
RRF SD: 0.0469789, Relative SD: 5.32181
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.64	46747.992	53537.027	10.915	bb	12.4	-1.1
2	2	170705M2_3	Standard	12.500	4.64	50027.531	57247.090	10.924	bb	12.4	-1.0
3	3	170705M2_4	Standard	12.500	4.64	47718.160	51139.855	11.664	bb	13.2	5.7
4	4	170705M2_5	Standard	12.500	4.64	50935.184	53307.301	11.944	bb	13.5	8.2
5	5	170705M2_6	Standard	12.500	4.63	49814.836	58437.289	10.656	bb	12.1	-3.4
6	6	170705M2_7	Standard	12.500	4.62	49546.270	60314.734	10.268	bb	11.6	-6.9
7	7	170705M2_8	Standard	12.500	4.61	48918.633	53582.891	11.412	bb	12.9	3.4
8	8	170705M2_9	Standard	12.500	4.62	49646.109	59133.727	10.494	bb	11.9	-4.9

Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 28), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	5.000	3.15	36934.543	36934.543	5.000	bb	5.0	0.0
2	2	170705M2_3	Standard	5.000	3.16	37581.402	37581.402	5.000	bb	5.0	0.0
3	3	170705M2_4	Standard	5.000	3.16	38061.805	38061.805	5.000	bb	5.0	0.0
4	4	170705M2_5	Standard	5.000	3.15	39265.156	39265.156	5.000	bb	5.0	0.0
5	5	170705M2_6	Standard	5.000	3.15	38459.203	38459.203	5.000	bb	5.0	0.0
6	6	170705M2_7	Standard	5.000	3.15	35323.004	35323.004	5.000	bb	5.0	0.0
7	7	170705M2_8	Standard	5.000	3.15	34923.203	34923.203	5.000	bb	5.0	0.0
8	8	170705M2_9	Standard	5.000	3.15	37720.324	37720.324	5.000	bb	5.0	0.0

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 29), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.49	6817.387	6817.387	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.49	6164.226	6164.226	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.49	6644.131	6644.131	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.49	6498.437	6498.437	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.48	6113.233	6113.233	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.48	6537.576	6537.576	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.48	6160.812	6160.812	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.48	5917.072	5917.072	12.500	bb	12.5	0.0

Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 30), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.62	38977.832	38977.832	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.62	41005.910	41005.910	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.62	39029.453	39029.453	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.62	42331.734	42331.734	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.62	36537.793	36537.793	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.61	39402.188	39402.188	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.61	36472.195	36472.195	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.61	38161.703	38161.703	12.500	bb	12.5	0.0

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 8.3925e-017, Relative SD: 8.3925e-015
Response type: Internal Std (Ref 31), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.80	52300.438	52300.438	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.80	52519.844	52519.844	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.80	52957.340	52957.340	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.80	54419.230	54419.230	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.79	56932.551	56932.551	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.79	52904.762	52904.762	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.79	50838.715	50838.715	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.79	56534.215	56534.215	12.500	bb	12.5	0.0

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 32), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.85	9402.628	9402.628	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.85	9786.112	9786.112	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.85	9642.229	9642.229	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.85	9991.625	9991.625	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.85	10308.810	10308.810	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.84	9025.101	9025.101	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.84	9648.409	9648.409	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.84	9378.699	9378.699	12.500	bb	12.5	0.0

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 4.19625e-017, Relative SD: 4.19625e-015
Response type: Internal Std (Ref 33), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	3.97	59940.918	59940.918	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	3.97	63230.613	63230.613	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	3.97	59436.520	59436.520	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	3.97	59932.414	59932.414	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	3.96	66052.234	66052.234	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	3.96	59362.641	59362.641	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	3.96	61872.145	61872.145	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	3.96	56989.531	56989.531	12.500	bb	12.5	0.0

Compound name: 13C7-PFUnA
Response Factor: 1
RRF SD: 1.18688e-016, Relative SD: 1.18688e-014
Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primar...	Conc.	%Dev
1	1	170705M2_2	Standard	12.500	4.13	53537.027	53537.027	12.500	bb	12.5	0.0
2	2	170705M2_3	Standard	12.500	4.13	57247.090	57247.090	12.500	bb	12.5	0.0
3	3	170705M2_4	Standard	12.500	4.14	51139.855	51139.855	12.500	bb	12.5	0.0
4	4	170705M2_5	Standard	12.500	4.14	53307.301	53307.301	12.500	bb	12.5	0.0
5	5	170705M2_6	Standard	12.500	4.12	58437.289	58437.289	12.500	bb	12.5	0.0
6	6	170705M2_7	Standard	12.500	4.12	60314.734	60314.734	12.500	bb	12.5	0.0
7	7	170705M2_8	Standard	12.500	4.12	53582.891	53582.891	12.500	bb	12.5	0.0
8	8	170705M2_9	Standard	12.500	4.12	59133.727	59133.727	12.500	bb	12.5	0.0

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 14:00:18 Pacific Daylight Time
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Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS

	Name	ID	Acq.Date	Acq.Time
1	170705M2_2	ST170705M2-1 PFC CS-2 17G0503	05-Jul-17	13:27:57
2	170705M2_3	ST170705M2-2 PFC CS-1 17G0504	05-Jul-17	13:38:43
3	170705M2_4	ST170705M2-3 PFC CS0 17G0505	05-Jul-17	13:49:28
4	170705M2_5	ST170705M2-4 PFC CS1 17G0506	05-Jul-17	14:00:11
5	170705M2_6	ST170705M2-5 PFC CS2 17G0507	05-Jul-17	14:10:49
6	170705M2_7	ST170705M2-6 PFC CS3 17G0508	05-Jul-17	14:21:36
7	170705M2_8	ST170705M2-7 PFC CS4 17G0509	05-Jul-17	14:32:14
8	170705M2_9	ST170705M2-8 PFC CS5 17G0510	05-Jul-17	14:43:01
9	170705M2_10	IPA	05-Jul-17	14:53:47
10	170705M2_11	SS170705M2-1 PFC SSS 17G0502	05-Jul-17	15:04:25
11	170705M2_12	IPA	05-Jul-17	15:15:04

Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

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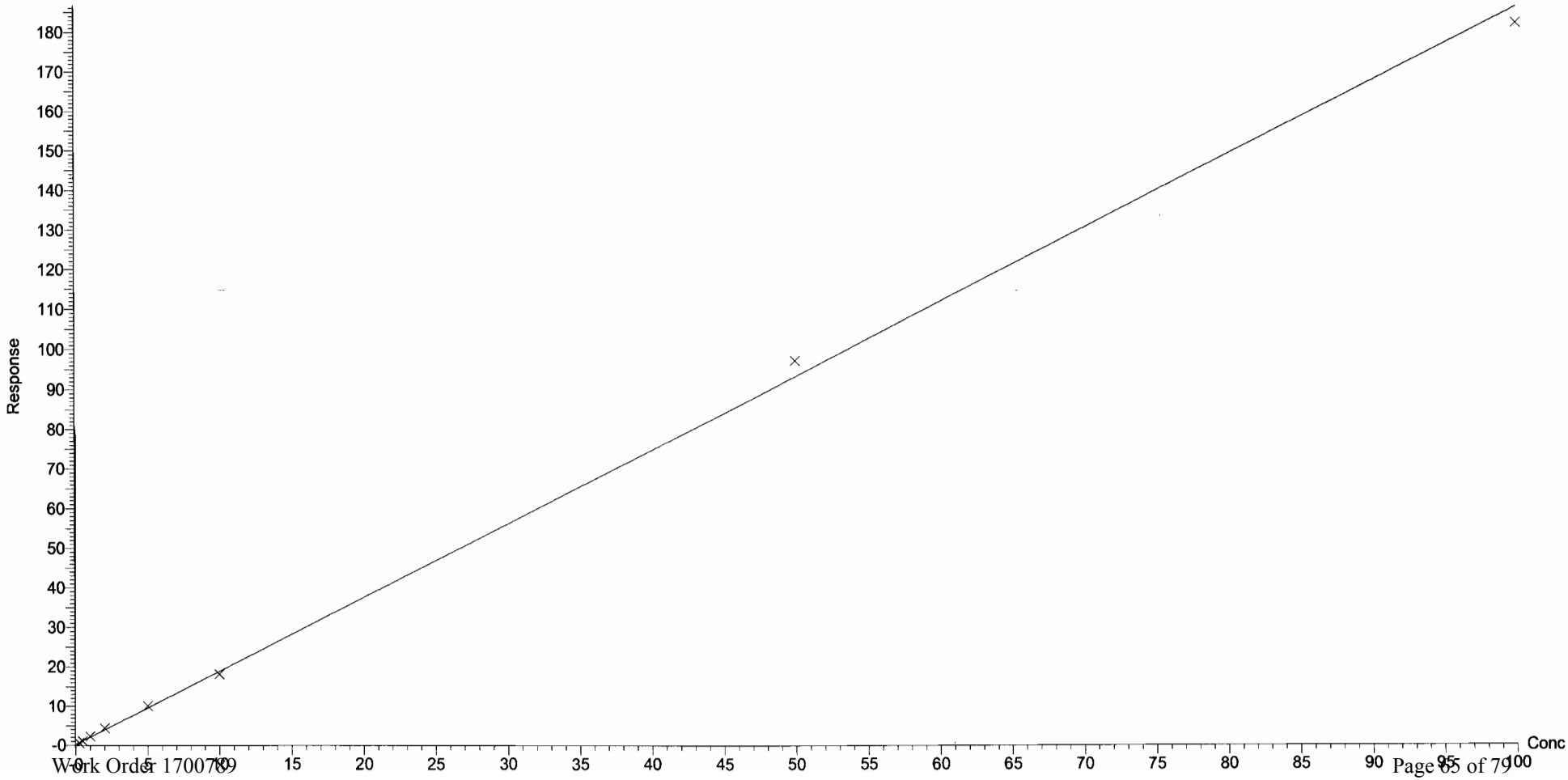
Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:17:05
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Compound name: PFBS
Correlation coefficient: r = 0.999311, r^2 = 0.998622
Calibration curve: 1.8654 * x + 0.177147
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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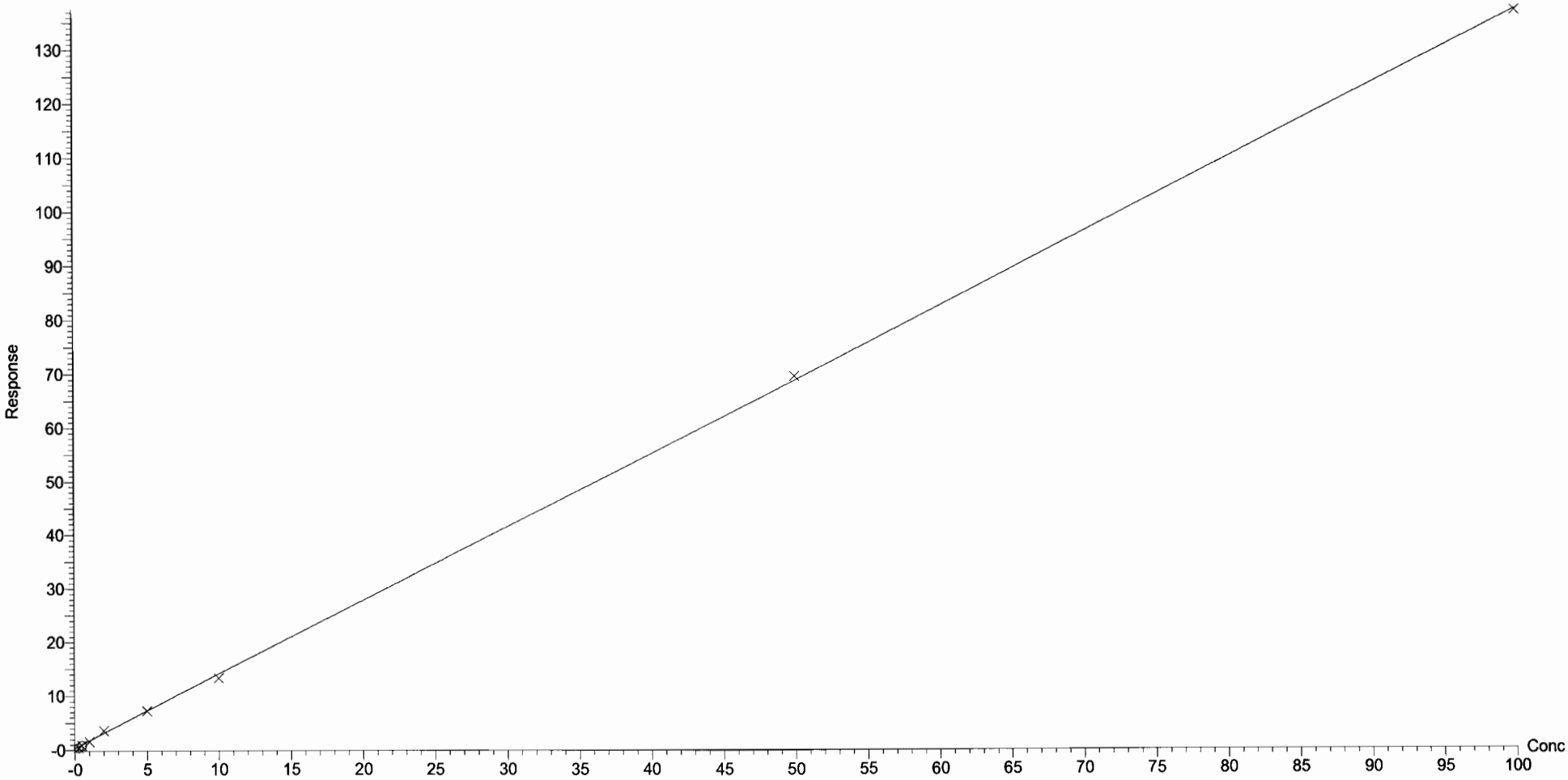
Compound name: PFHxA
Correlation coefficient: r = 0.999586, r^2 = 0.999173
Calibration curve: 1.37106 * x + 0.396864
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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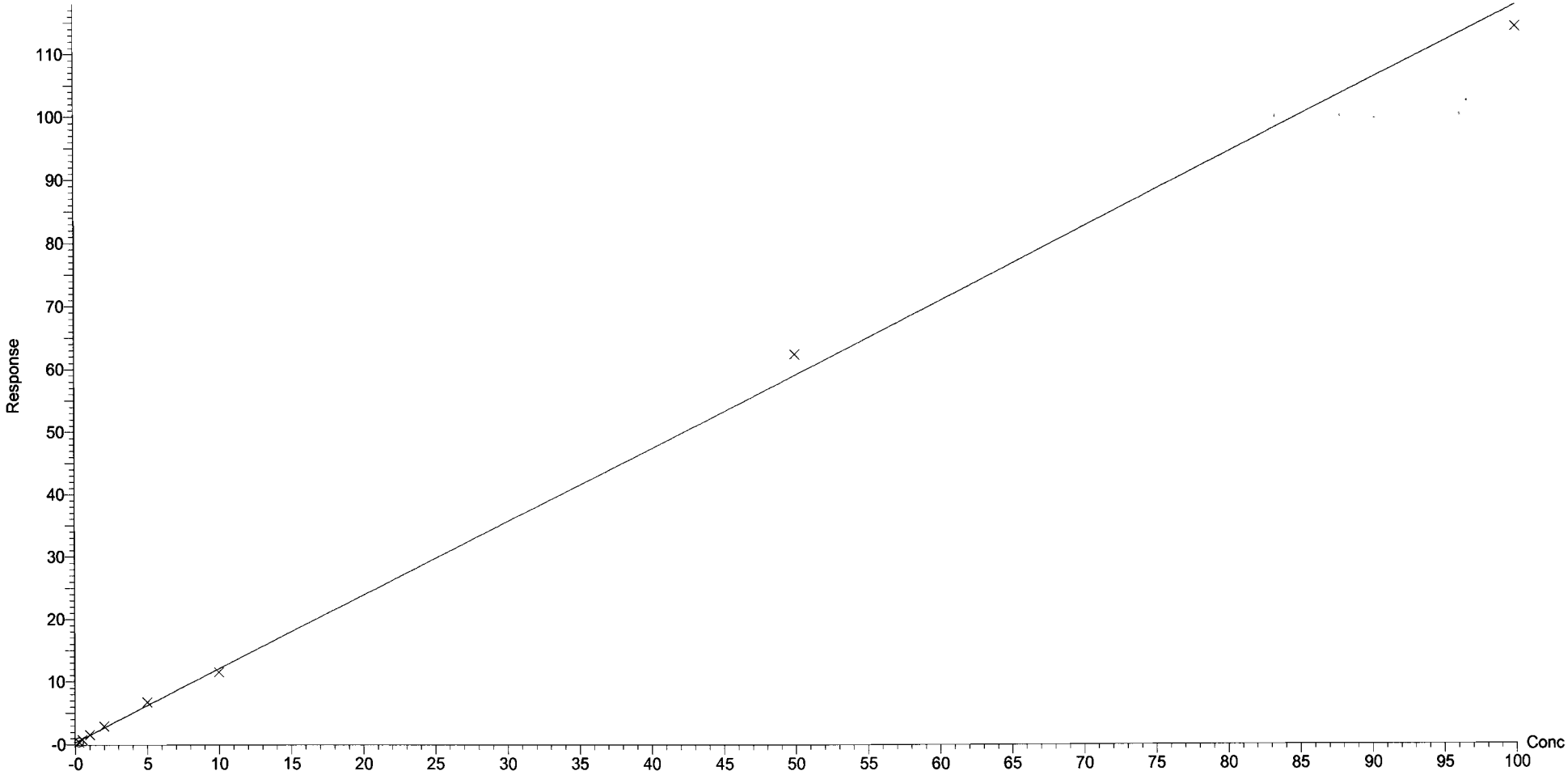
Compound name: PFHpA
Correlation coefficient: r = 0.998862, r^2 = 0.997726
Calibration curve: 1.17677 * x + 0.307824
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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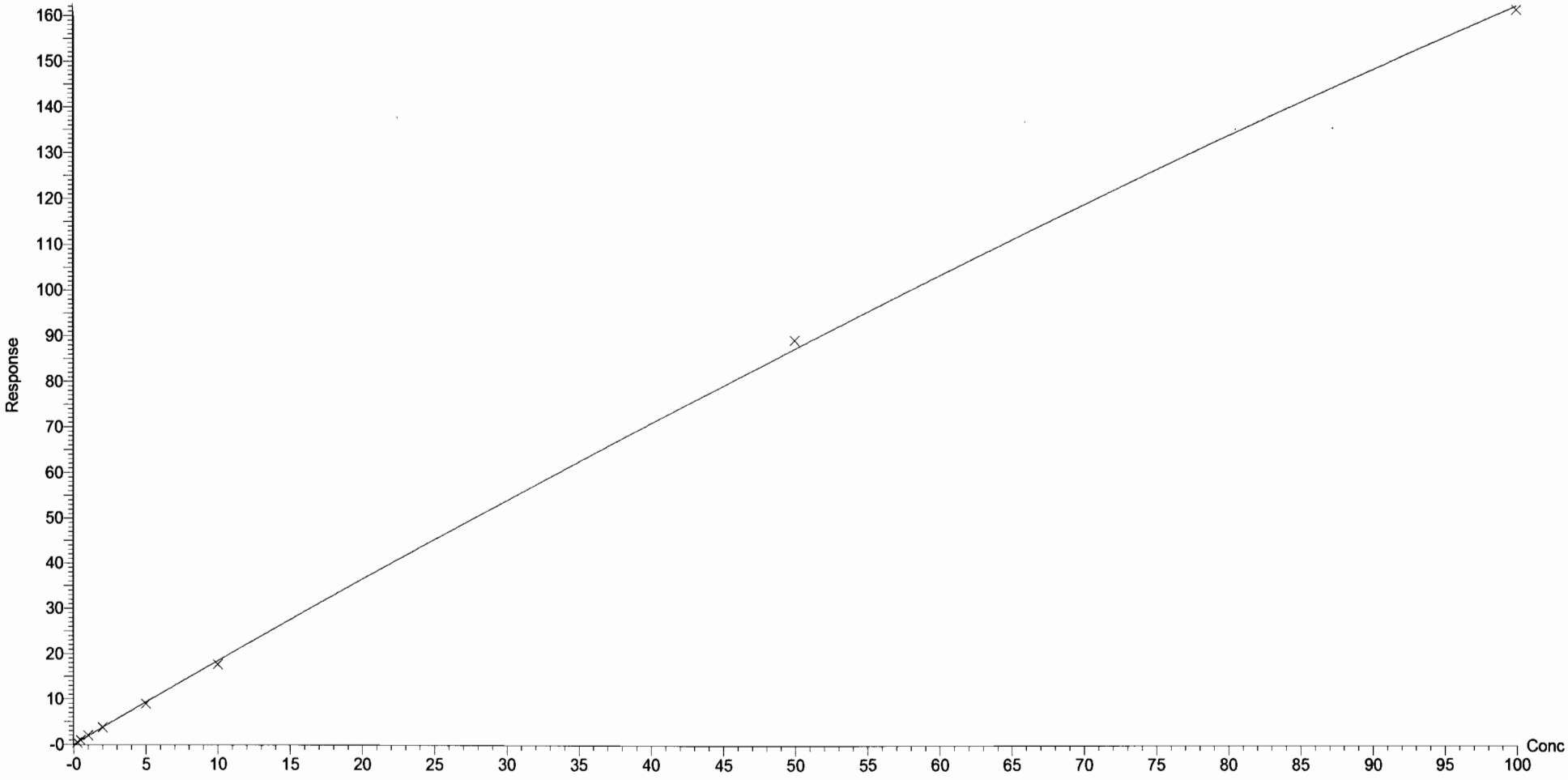
Compound name: PFHxS
Coefficient of Determination: R^2 = 0.999590
Calibration curve: -0.00247497 * x^2 + 1.87329 * x + -0.00705947
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
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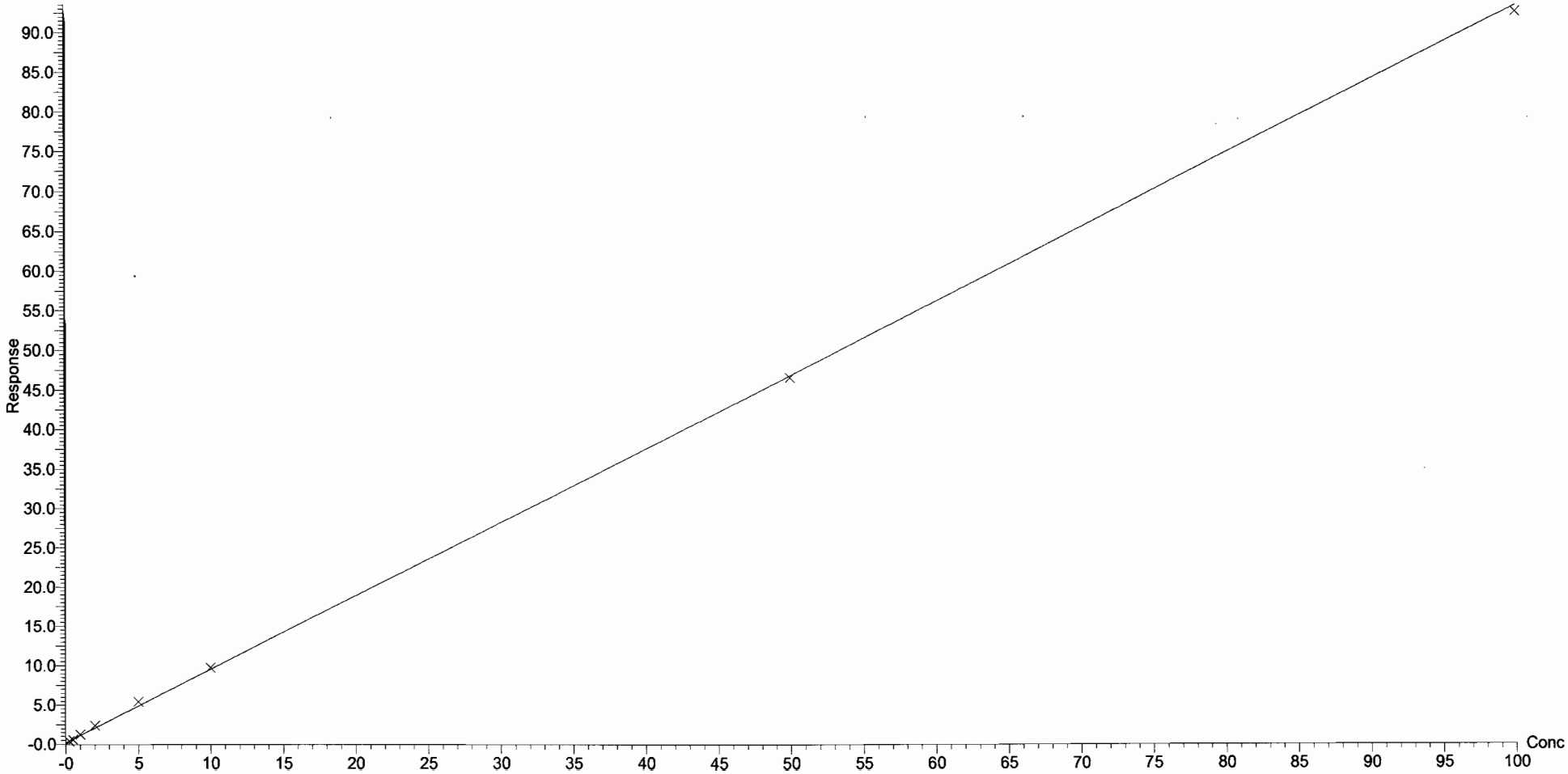
Compound name: PFOA
Correlation coefficient: r = 0.999420, r^2 = 0.998839
Calibration curve: 0.933761 * x + 0.193294
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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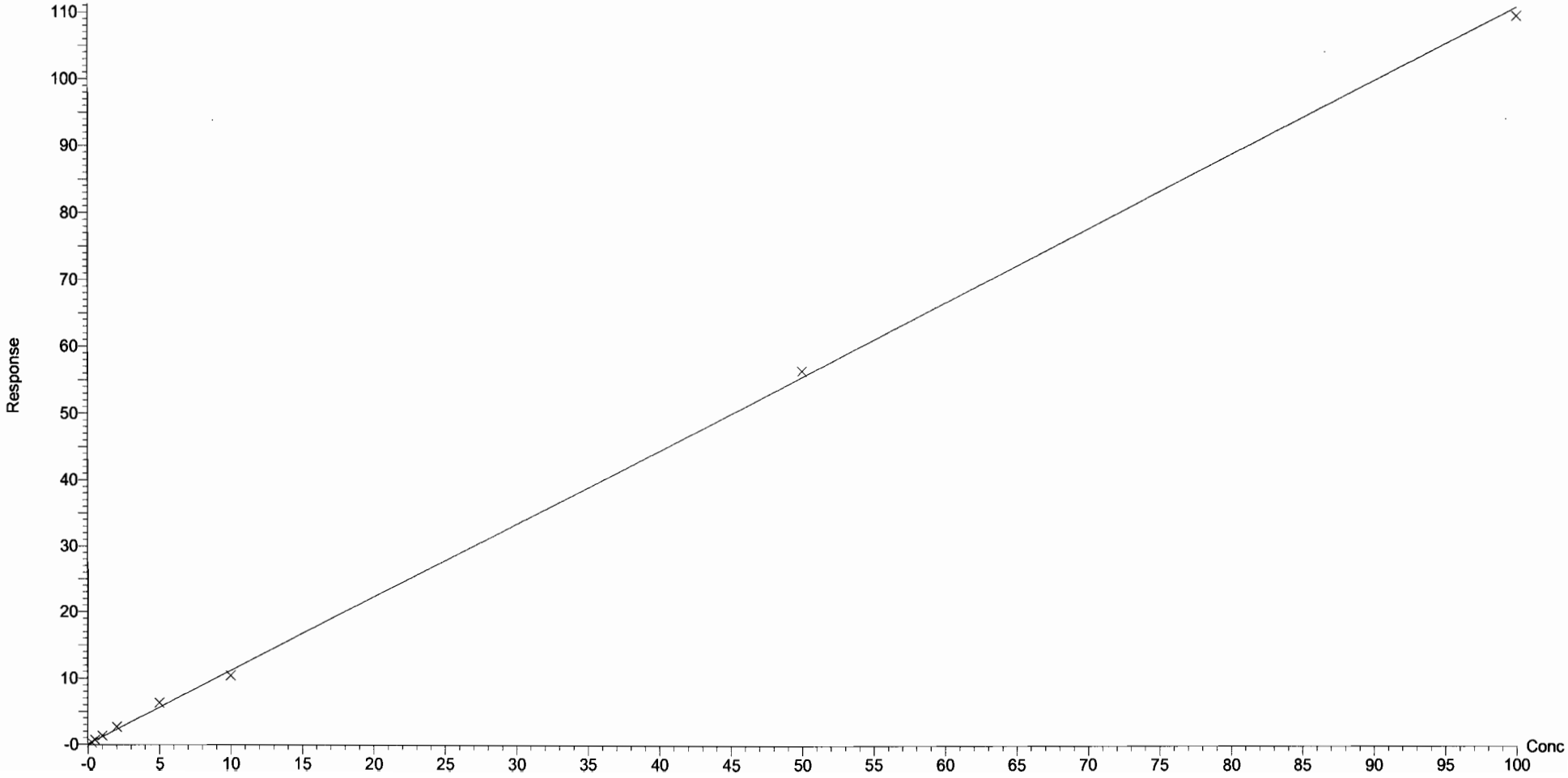
Compound name: PFNA
Correlation coefficient: r = 0.999280, r^2 = 0.998560
Calibration curve: 1.11098 * x + 0.0688283
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



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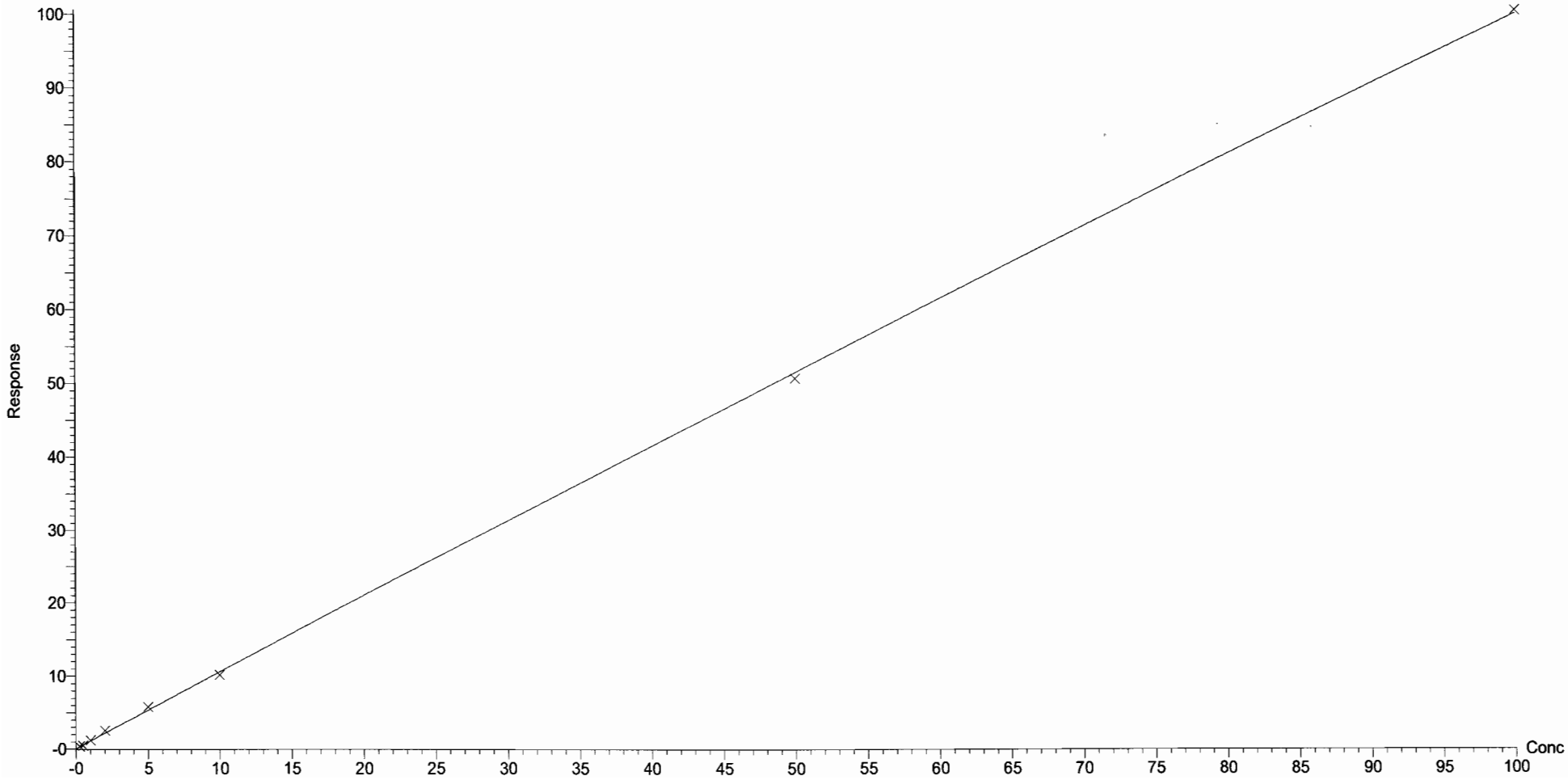
Compound name: PFOS
Coefficient of Determination: R^2 = 0.998873
Calibration curve: -0.000575658 * x^2 + 1.05897 * x + 0.0534494
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



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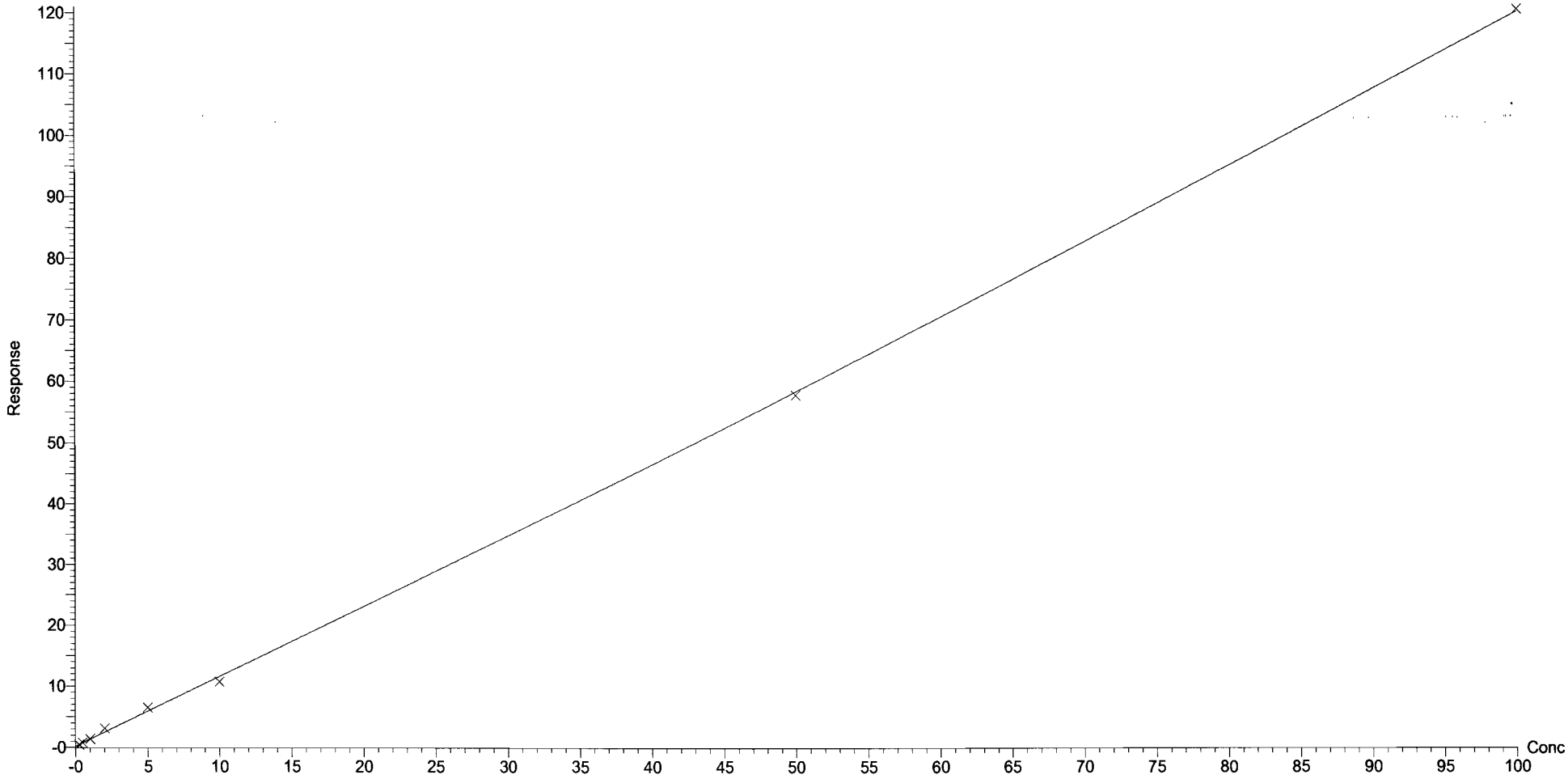
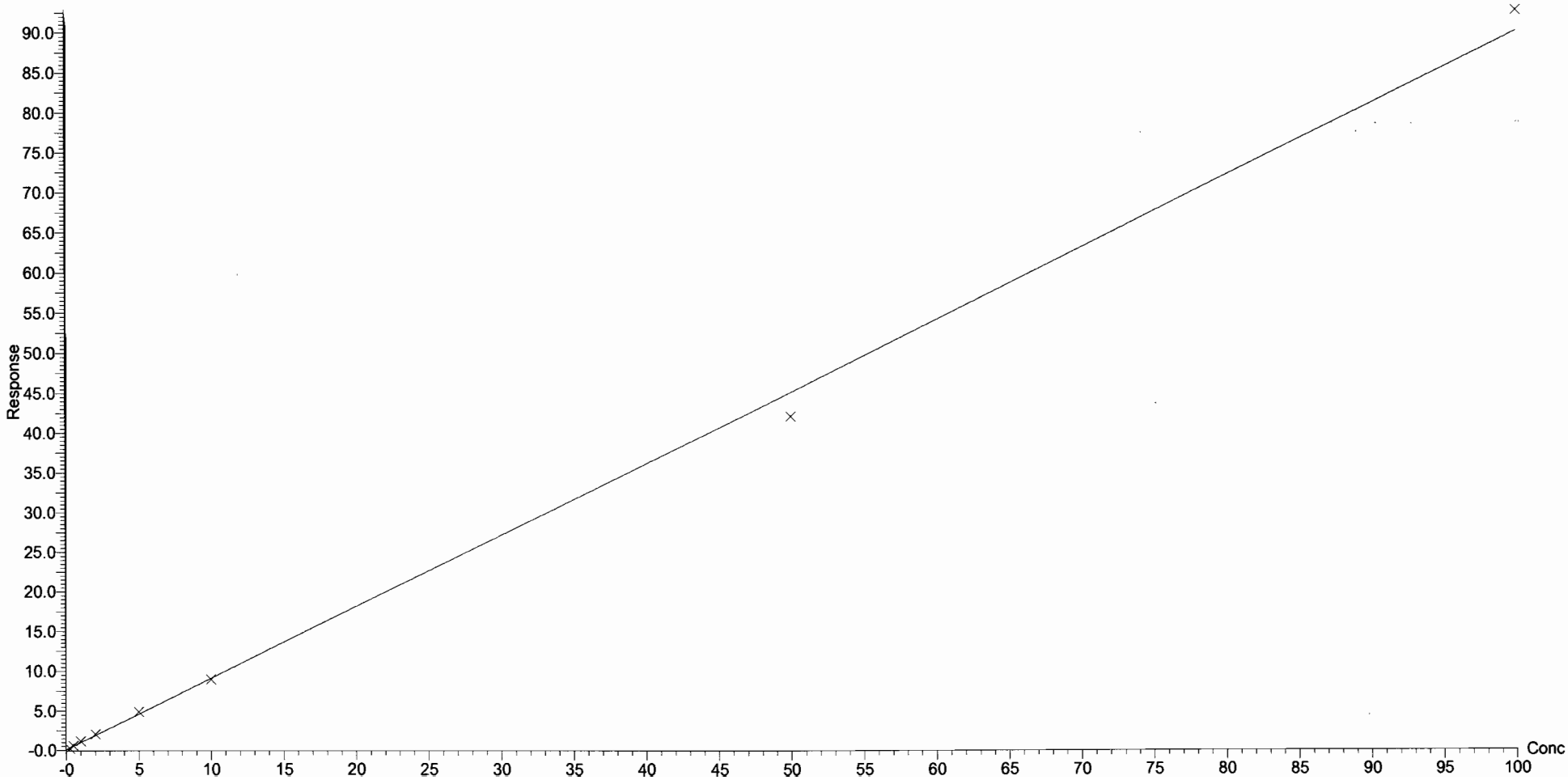
Compound name: PFDA
Coefficient of Determination: R^2 = 0.998398
Calibration curve: 0.000759384 * x^2 + 1.12777 * x + 0.228347
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:46:10 Pacific Daylight Time

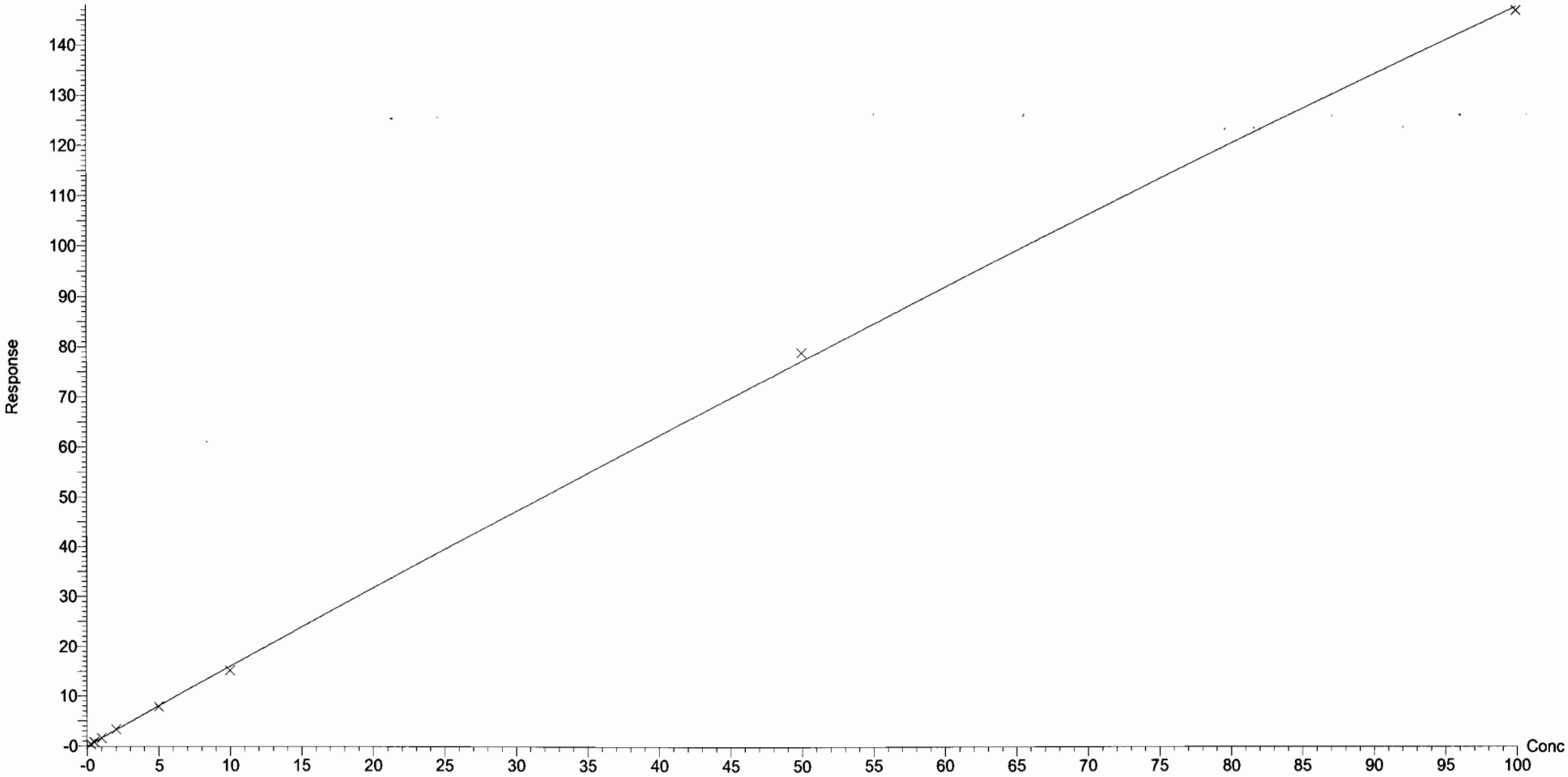
Compound name: PFUnA
Correlation coefficient: r = 0.998781, r^2 = 0.997563
Calibration curve: 0.901738 * x + 0.0982118
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:46:10 Pacific Daylight Time

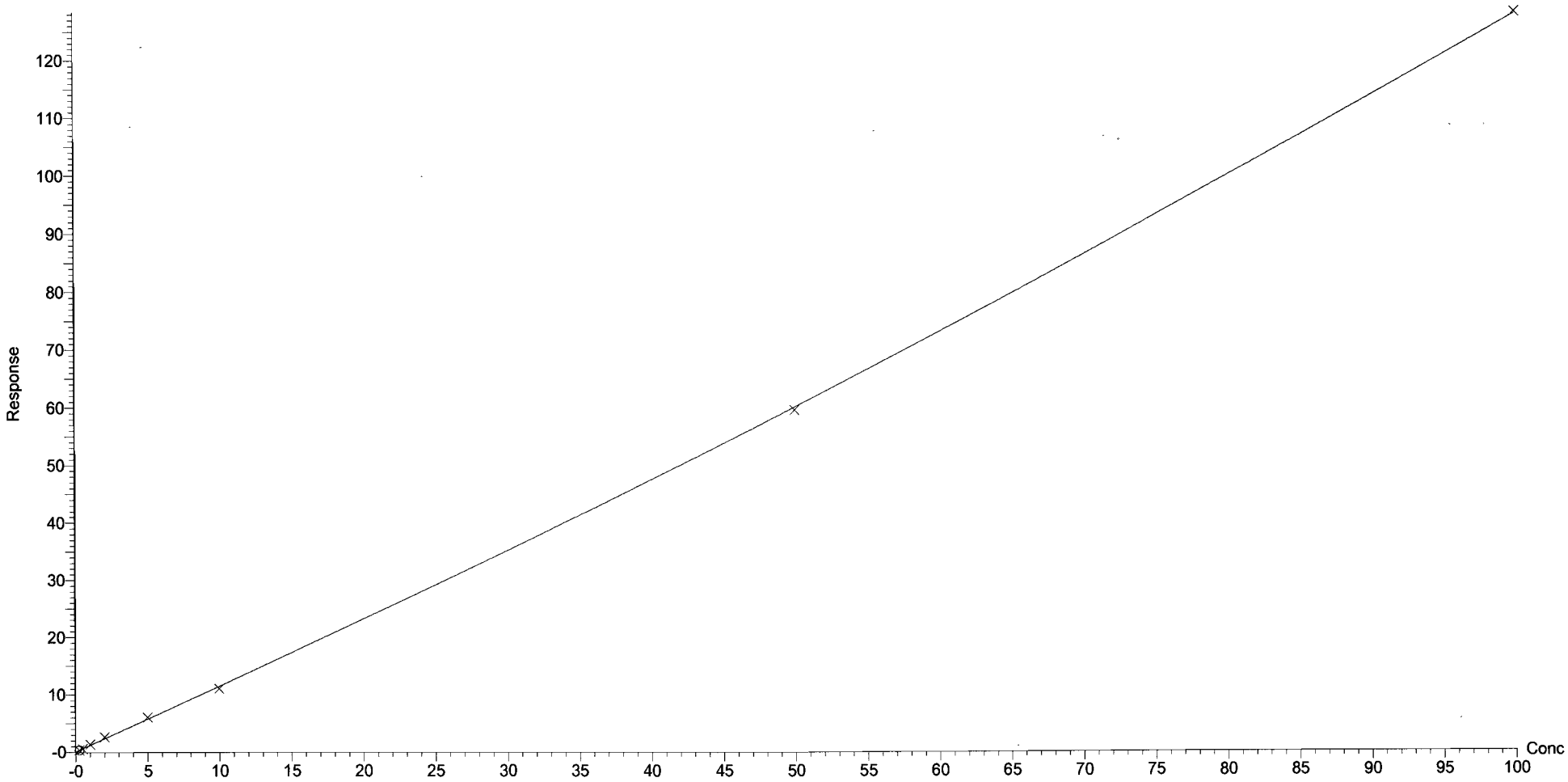
Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999610
Calibration curve: -0.00133241 * x^2 + 1.61336 * x + -0.019444
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:46:10 Pacific Daylight Time

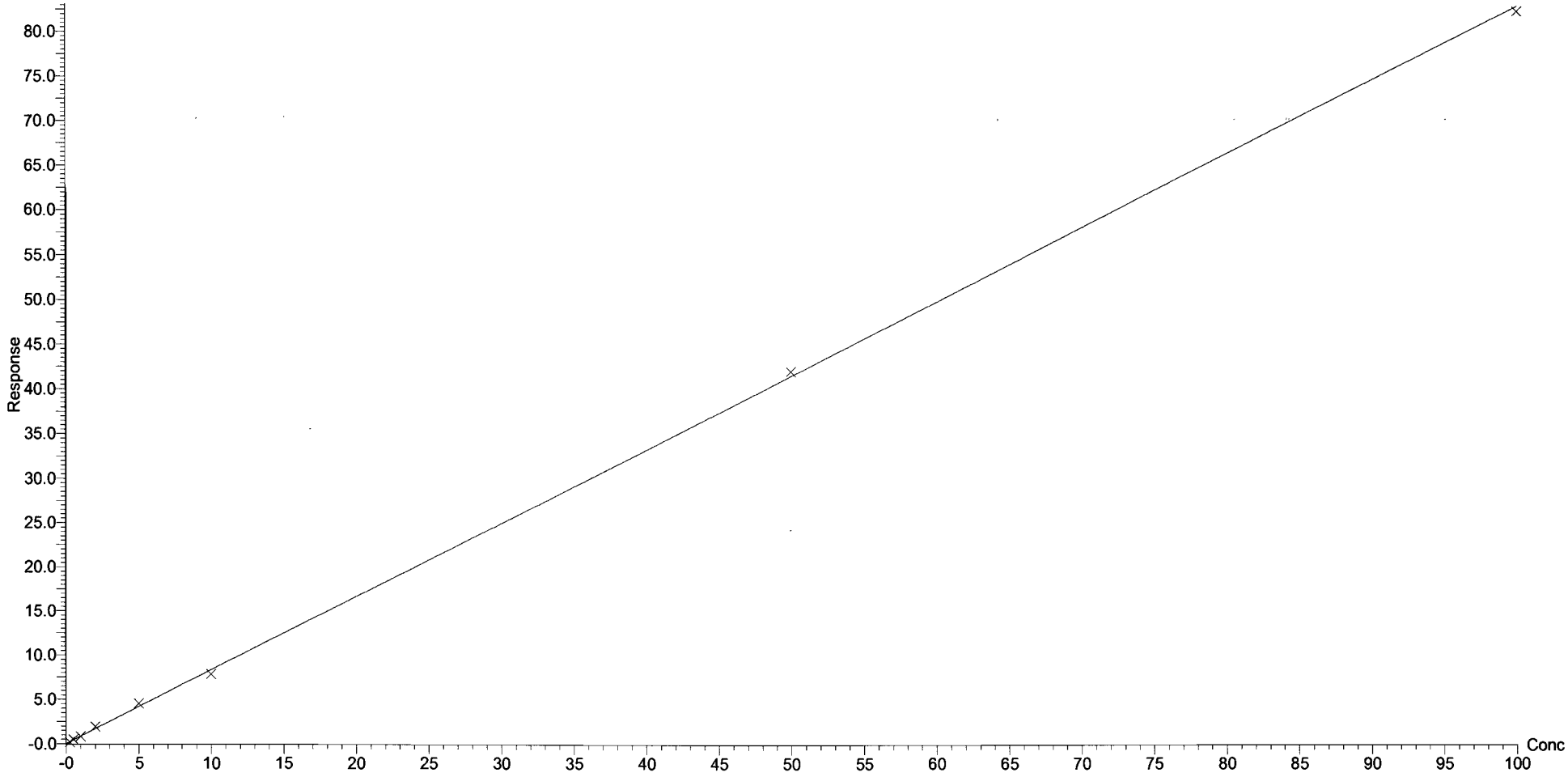
Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999426
Calibration curve: 0.00157116 * x^2 + 1.12286 * x + 0.0790977
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:46:10 Pacific Daylight Time

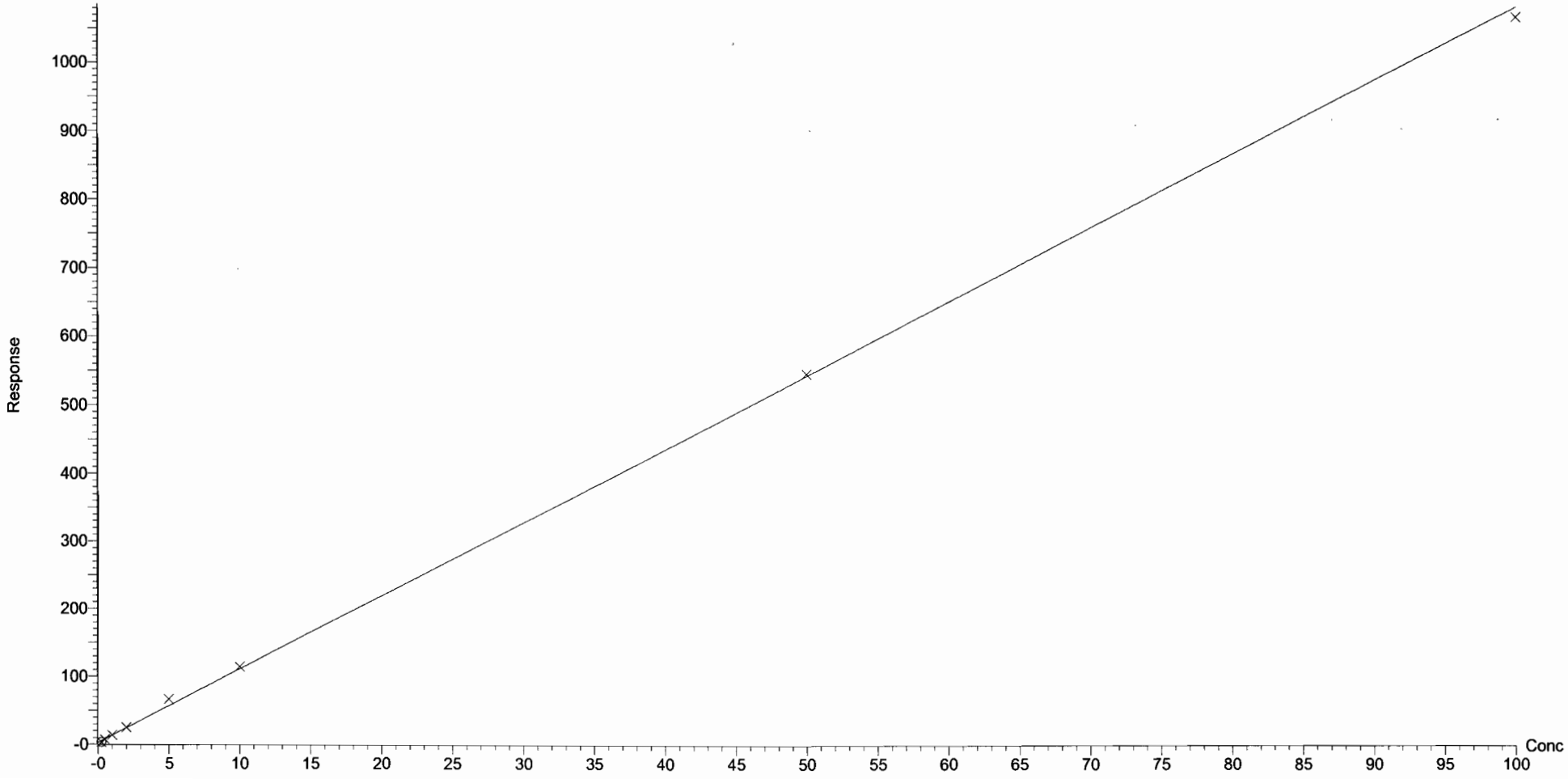
Compound name: PFDoA
Correlation coefficient: r = 0.999542, r^2 = 0.999083
Calibration curve: 0.830738 * x + 0.0366231
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:46:10 Pacific Daylight Time

Compound name: PFTrDA
Correlation coefficient: r = 0.999307, r^2 = 0.998614
Calibration curve: 10.821 * x + 2.72105
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

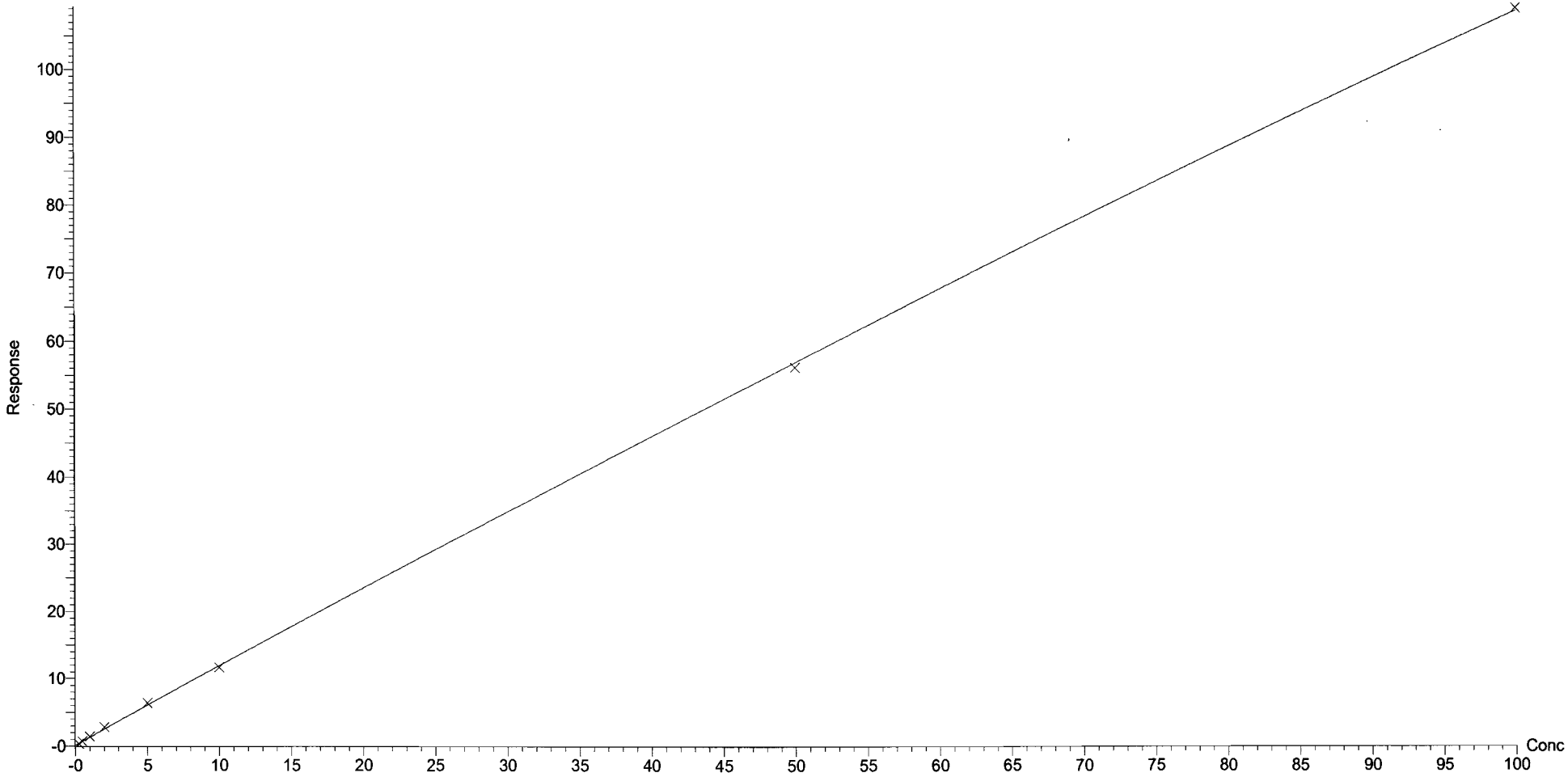


Vista Analytical Laboratory Q1

Dataset: U:\Q4.PRO\results\170705M2\170705M2-CRV_L14.qld

Last Altered: Wednesday, July 19, 2017 13:31:36 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:46:10 Pacific Daylight Time

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999498
Calibration curve: -0.000989892 * x^2 + 1.18715 * x + 0.13375
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, July 19, 2017 13:56:31 Pacific Daylight Time
Printed: Wednesday, July 19, 2017 13:57:19 Pacific Daylight Time

Method: U:\Q4.PRO\MethDB\PFAS_L14-6-7-17B.mdb 19 Jul 2017 13:56:08
Calibration: U:\Q4.PRO\CurveDB\C18_VAL-PFAS_Q4_7-5-17-L14.cdb 19 Jul 2017 13:31:36

Name: 170705M2_11, Date: 05-Jul-2017, Time: 15:04:25, ID: SS170705M2-1 PFC SSS 17G0502, Description: PFC SSS 17G0502

✓ AC 7/19/17

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	4.07e3	3.20e3	1.0000		2.92	2.91	15.9	8.43	84.3
2	2	PFHxA	313.2 > 268.9	3.42e4	1.14e4	1.0000		3.16	3.15	15.0	10.7	106.8
3	3	PFHpA	363 > 318.9	2.97e4	3.09e4	1.0000		3.43	3.41	12.0	9.93	99.3
4	4	PFHxS	398.9 > 79.6	3.47e3	3.05e3	1.0000		3.55	3.48	14.2	7.68	76.8
5	5	PFOA	413 > 368.7	3.73e4	4.66e4	1.0000		3.63	3.61	10.0	10.5	105.2
6	6	PFNA	462.9 > 418.8	4.85e4	5.23e4	1.0000		3.82	3.79	11.6	10.4	103.6
7	7	PFOS	499 > 79.9	8.39e3	1.01e4	1.0000		3.86	3.84	10.4	9.85	98.5
8	8	PFDA	513 > 468.8	5.40e4	5.70e4	1.0000		4.00	3.96	11.8	10.2	102.3
9	9	PFUnA	562.9 > 518.9	4.50e4	6.44e4	1.0000		4.13	4.12	8.74	9.59	95.9
10	10	N-MeFOSAA	570.1 > 419	1.58e4	1.22e4	1.0000		4.00	3.98	16.2	10.1	101.4
11	11	N-EtFOSAA	584.2 > 419	1.31e4	1.33e4	1.0000		4.08	4.06	12.3	10.7	107.2
12	12	PFDoA	612.9 > 318.8	4.77e3	6.71e3	1.0000		4.31	4.28	8.87	10.6	106.4
13	13	PFTrDA	662.9 > 618.9	6.07e4	6.71e3	1.0000		4.50	4.44	113	10.2	101.9
14	14	PFTeDA	712.9 > 668.8	4.49e4	4.82e4	1.0000		4.65	4.61	11.6	9.78	97.8
15	15	13C3-PFBS	302 > 98.8	3.20e3	3.66e4	1.0000	0.032	2.92	2.91	0.436	13.6	108.8
16	16	13C2-PFHxA	315 > 269.8	1.14e4	3.66e4	1.0000	0.296	3.15	3.15	1.55	5.24	104.9
17	17	13C4-PFHpA	367.2 > 321.8	3.09e4	3.66e4	1.0000	0.302	3.43	3.41	4.23	14.0	112.2
18	18	18O2-PFHxS	403 > 102.6	3.05e3	6.49e3	1.0000	0.434	3.49	3.48	5.87	13.5	108.1
19	19	13C2-PFOA	414.9 > 369.7	4.66e4	3.79e4	1.0000	1.140	3.62	3.61	15.4	13.5	107.9
20	20	13C5-PFNA	468.2 > 422.9	5.23e4	5.78e4	1.0000	0.958	3.80	3.79	11.3	11.8	94.5
21	21	13C8-PFOS	507 > 79.9	1.01e4	9.50e3	1.0000	1.061	3.85	3.84	13.2	12.5	99.7
22	22	13C2-PFDA	515.1 > 469.9	5.70e4	5.52e4	1.0000	0.942	3.97	3.96	12.9	13.7	109.6
23	23	13C2-PFUnA	565 > 519.8	6.44e4	5.94e4	1.0000	1.084	4.13	4.12	13.5	12.5	99.9
24	24	d3-N-MeFOSAA	573.3 > 419	1.22e4	5.94e4	1.0000	0.240	4.00	3.98	2.56	10.7	85.3
25	25	d5-N-EtFOSAA	589.3 > 419	1.33e4	5.94e4	1.0000	0.247	4.07	4.05	2.80	11.3	90.5
26	26	13C2-PFDoA	615 > 569.7	6.71e3	5.94e4	1.0000	0.127	4.32	4.28	1.41	11.1	89.0
27	27	13C2-PFTeDA	714.8 > 669.6	4.82e4	5.94e4	1.0000	0.883	4.64	4.61	10.1	11.5	91.9
28	28	13C5-PFHxA	318 > 272.9	3.66e4	3.66e4	1.0000	1.000	3.15	3.15	5.00	5.00	100.0
29	29	13C3-PFHxS	401.9 > 79.9	6.49e3	6.49e3	1.0000	1.000	3.49	3.48	12.5	12.5	100.0
30	30	13C8-PFOA	421.3 > 376	3.79e4	3.79e4	1.0000	1.000	3.62	3.61	12.5	12.5	100.0
31	31	13C9-PFNA	472.2 > 426.9	5.78e4	5.78e4	1.0000	1.000	3.82	3.79	12.5	12.5	100.0

70-130

7/19/17

FIELD DUPLICATE PRECISION
SDG 1700789 AND 1700792

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 30%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >RL
PFOA	128	116	5.12	10	FALSE	TRUE	TRUE	TRUE
PFBS	155	127	5.12	20	FALSE	TRUE	TRUE	TRUE
PFDA	3.78	3.79	5.12	0	FALSE	FALSE	FALSE	FALSE
PFHPA	213	190	5.12	11	FALSE	TRUE	TRUE	TRUE
PFHXS	815	799	5.12	2	FALSE	TRUE	TRUE	TRUE
PFHXA	705	612	5.12	14	FALSE	TRUE	TRUE	TRUE
PFNA	13	10.7	5.12	19	FALSE	TRUE	TRUE	FALSE
PFOS	5700	1600	5.12	112	TRUE	TRUE	TRUE	TRUE

C:\ALL_PROJECTS\112G08005\WE08\FIGURE 10-2 CSM AND FLOW.MXD MKB 12/22/2016

INSET
SCALE 1" = 600'

NAWC
TRENTON

MW-48BR

1

2

3

Altura

634

N

611

Scotch Rd

Merrill Lynch Dr

Diverty R

Sheffield Ln

Reed Rd

Ewing Creek Tributary

Capital Way

Capital Health Medical Center

Reading

95

Ewing Creek

Charles Ewing Blvd

Timberlake Dr

200 ft

Mountain View Golf Course

228 ft

Mansfield Rd

Star Dr

Bedford Dr

Westwood Dr

579

Bear Tavern Rd

237 ft

Sam Weinroth Rd

S Olessna Ave

197 ft

Trenton Mercer Airport

601

Terminal Circle Dr

Lower Ferry Rd

Phillips Blvd

Van Saun Dr

Currier Way

Rockleigh Dr

Graphics Dr

Municipal Dr

Upper Ferry Rd

636

West Branch Shabakunk Creek Tributary

Corey Dr

Hickory Hill Dr

Bayberry Rd

Rambling Creek Park

Willis Dr

Scenic Dr

200 ft

NAWC
TRENTON

SEE INSET

PRIVATE WELL LOCATIONS

PRIVATE WELL LOCATIONS

Ewing

Carlton Ave

Main Blvd

Shelton Ave

Albans Ave

Acton Ave

Chelmsford Dr

Dixmont Ave

Conway Ave

Dixfield Ave

Brandon Ave

Lanning

Parkway Ave

Howell Ave

Decou Ave

Sunset Ave

Lafayette Ave

Summit Ave

Washington Ave

Trenton Ave

New Ave

Railroad Ave

Grand Ave

Walker Ave

Gold Run Tributary

Yorkshire Cir

Silvia St

Wynnewood Rd

Clarke Rd

Gilmore Rd

Downing Rd

Franklyn Rd

Fernwood

Rutledge Ave

Dunmore Ave

Walton Ave

Farrell Ave

Glen Manor Dr

Ferry Road Manor

Reading

W Farrell

643

Esther Ave

Palmer Ln

133 ft

Lincoln Dr

Drake Cir

E Drake Dr

Sullivan Way

McGray Dr

Paton Ln

Trenton Country Club

Abernethy Dr

Morningside Dr

Santhican Dr

Delaware River

Gold Run

Schwarzkopf Dr

E State Police Dr

State Police Dr

W Upper Ferry Rd

Diane Dr

Manor Dr

Scudders Falls

175

Riverview Dr

Wilburtha

Wilburtha Rd

Blackwood Dr

Country Ln

Jacob Ct

River Rd

Delaware River Tributary

Grown St

0 750 1,500 3,000
Feet

LEGEND

- (2) IR SITE LOCATION
- GROUNDWATER TREATMENT PLANT
- SHALLOW GROUNDWATER FLOW DIRECTION
- DEEP GROUNDWATER FLOW DIRECTION
- ONE MILE RADIUS

TETRA TECH

CONCEPTUAL SITE MODEL AND GROUNDWATER FLOW DIRECTIONS FORMER NAVAL AIR WARFARE CENTER TRENTON, NEW JERSEY

FILE	SCALE
FIGURE 10-2 CSM AND FLOW	PER SCALE BAR
FIGURE NUMBER	REV / DATE
FIGURE 10-2	0 / 12/22/16