Navy_CLEAN_PFAS_FOIA_request_covers_Nov2019.indd

NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 4 Laboratory Report, Electronic Data Deliverable, and Data Validation Report, SDG 1801084

Marine Corps Air Station Yuma
Yuma, Arizona

November 2019

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

June 21, 2018

Vista Work Order No. 1801084

Ms. Sabina Sudoko
Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614

Dear Ms. Sudoko,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on June 01, 2018. This sample set was analyzed on a rush turn-around time, under your Project Name '4663.3803'.

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. 1801084
Case Narrative

Sample Condition on Receipt:

One water sample was received in good condition and within the method temperature requirements. The sample was received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The sample was extracted and analyzed for a selected list of PFAS using Modified EPA Method 537. The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The sample was extracted and analyzed within the method hold times.

Quality Control

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

A Method Blank and Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD) were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above the Reporting Limit. The LCS/LCSD recoveries were within the method acceptance criteria.

The extract of the LCSD was re-injected because one or more Injection Internal Standard Analyte response areas were outside of criteria. The area criteria passed for the second injection and the results from the re-injection have been reported.

The recoveries of all internal standards in the QC and field samples were within the acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1801084-01	EB-20180531	31-May-18 10:15	01-Jun-18 09:41	HDPE Bottle, 1L

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Matrix: Aqueous

Laboratory Data

Lab Sample: B8F0069-BLK1
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.000895	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFHxA	307-24-4	ND	0.00109	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFHpA	375-85-9	ND	0.000296	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFHxS	355-46-4	ND	0.000474	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFOA	335-67-1	ND	0.000326	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFNA	375-95-1	ND	0.000405	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFOS	1763-23-1	ND	0.000404	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFDA	335-76-2	ND	0.000745	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
MeFOSAA	2355-31-9	ND	0.000825	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
EtFOSAA	2991-50-6	ND	0.000685	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFUnA	2058-94-8	ND	0.000525	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFDoA	307-55-1	ND	0.000396	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFTrDA	72629-94-8	ND	0.000247	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
PFTeDA	376-06-7	ND	0.000378	0.00250	0.00400	U	B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	95.9	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C2-PFHxA	IS	92.0	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C4-PFHpA	IS	104	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
18O2-PFHxS	IS	98.8	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C2-PFOA	IS	91.4	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C5-PFNA	IS	88.6	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C8-PFOS	IS	105	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C2-PFDA	IS	75.1	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
d3-MeFOSAA	IS	72.4	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
d5-EtFOSAA	IS	61.9	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C2-PFUnA	IS	63.6	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C2-PFDoA	IS	70.2	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1
13C2-PFTeDA	IS	63.5	50 - 150		B8F0069	13-Jun-18	0.250 L	18-Jun-18 11:06	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: LCSD **PFAS Isotope Dilution Method**

Name:	Tetra Tech EC, Inc.	Lab Sample:	B8F0069-BS1/B8F0069-BSD1
Project:	4663.3803	QC Batch:	B8F0069
Matrix:	Aqueous	Samp Size:	0.250/0.250 L
		Date Extracted:	13-Jun-18
		Column:	BEH C18

Analyte	CAS Number	LCS (ug/L)	LCS Spike Amt	LCS % Rec	LCS Quals	LCSD (ug/L)	LCSD Spike Amt	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	375-73-5	0.0365	0.0400	91.2		0.0375	0.0400	93.6	2.67		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFHxA	307-24-4	0.0409	0.0400	102		0.0404	0.0400	101	1.06		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFHpA	375-85-9	0.0378	0.0400	94.5		0.0414	0.0400	103	9.10		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFHxS	355-46-4	0.0361	0.0400	90.3		0.0367	0.0400	91.7	1.50		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFOA	335-67-1	0.0354	0.0400	88.5		0.0408	0.0400	102	14.0		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFNA	375-95-1	0.0387	0.0400	96.7		0.0361	0.0400	90.2	7.01		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFOS	1763-23-1	0.0348	0.0400	87.1		0.0373	0.0400	93.2	6.80		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFDA	335-76-2	0.0389	0.0400	97.2		0.0389	0.0400	97.3	0.0397		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
MeFOSAA	2355-31-9	0.0458	0.0400	115		0.0365	0.0400	91.2	22.7		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
EtFOSAA	2991-50-6	0.0476	0.0400	119		0.0481	0.0400	120	1.02		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFUnA	2058-94-8	0.0397	0.0400	99.3		0.0415	0.0400	104	4.27		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFDoA	307-55-1	0.0401	0.0400	100		0.0377	0.0400	94.3	6.11		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFTrDA	72629-94-8	0.0417	0.0400	104		0.0404	0.0400	101	3.07		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1
PFTeDA	376-06-7	0.0390	0.0400	97.4		0.0378	0.0400	94.5	3.06		70-130	30	20-Jun-18 09:29	1	18-Jun-18 23:26	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBS	IS	117		124		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C2-PFHxA	IS	88.8		96.7		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C4-PFHpA	IS	95.5		97.9		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
18O2-PFHxS	IS	84.8		94.0		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C2-PFOA	IS	84.0		91.3		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C5-PFNA	IS	76.5		87.1		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C8-PFOS	IS	89.4		102		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C2-PFDA	IS	74.6		66.5		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
d3-MeFOSAA	IS	61.4		75.2		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
d5-EtFOSAA	IS	64.5		62.9		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C2-PFUnA	IS	63.9		71.3		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C2-PFDoA	IS	76.9		84.0		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1
13C2-PFTeDA	IS	77.4		80.7		50-150	20-Jun-18 09:29	1	18-Jun-18 23:26	1

Sample ID: EB-20180531

PFAS Isotope Dilution Method

Client Data

Name: Tetra Tech EC, Inc.
Project: 4663.3803
Location: YUMA, AZ

Matrix: Water
Date Collected: 31-May-18 10:15

Laboratory Data

Lab Sample: 1801084-01
Date Received: 01-Jun-18 09:41

Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00179	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFHxA	307-24-4	ND	0.00218	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFHpA	375-85-9	ND	0.000590	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFHxS	355-46-4	ND	0.000945	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFOA	335-67-1	ND	0.000650	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFNA	375-95-1	ND	0.000808	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFOS	1763-23-1	ND	0.000805	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFDA	335-76-2	ND	0.00149	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
MeFOSAA	2355-31-9	ND	0.00165	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
EtFOSAA	2991-50-6	ND	0.00137	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFUnA	2058-94-8	ND	0.00105	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFDoA	307-55-1	ND	0.000790	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFTrDA	72629-94-8	ND	0.000493	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
PFTeDA	376-06-7	ND	0.000753	0.00500	0.00798	U	B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	93.2	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C2-PFHxA	IS	94.0	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C4-PFHpA	IS	98.0	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
18O2-PFHxS	IS	90.9	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C2-PFOA	IS	80.4	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C5-PFNA	IS	84.5	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C8-PFOS	IS	85.0	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C2-PFDA	IS	79.1	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
d3-MeFOSAA	IS	68.4	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
d5-EtFOSAA	IS	78.5	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C2-PFUnA	IS	66.5	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C2-PFDoA	IS	60.8	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1
13C2-PFTeDA	IS	70.3	50 - 150		B8F0069	13-Jun-18	0.125 L	19-Jun-18 03:05	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

DATA QUALIFIERS & ABBREVIATIONS

B	**This compound was also detected in the method blank**
Conc.	**Concentration**
D	**Dilution**
DL	**Detection limit**
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**
LOD	**Limits of Detection**
LOQ	**Limits of Quantitation**
M	**Estimated Maximum Possible Concentration (CA Region 2 projects only)**
NA	**Not applicable**
ND	**Not Detected**
Q	**Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)**
TEQ	**Toxic Equivalency**
U	**Not Detected (specific projects only)**
*****	**See Cover Letter**

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
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	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
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.

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1801084 Temp: 3.0 °C
Storage ID: WR-2 Storage Secured: Yes ☒ No ☐

Project ID: 4663.3803 PO#: 1152405 Sampler: Spencer Doolittle (name)

TAT (check one): Standard: ☐ 21 days; Rush (surcharge may apply): ☐ 14 days ☐ 7 days Specify: 10 BD

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Accts Payable	Tetra Tech EC, Inc.	1230 Columbia St. Suite 750	San Diego	CA	619-234-8696	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
SDoo Spencer Doolittle	5/31/18	1130	Tetra Tech Joe Lovell	5/31/18	1130
Tetra Tech Joe Lovell	5/31/18	1300	Fed Ex	5/31/18	1300

Relinquished by: Fed Ex 06/01/18 0941 Received by: Sydney Roughton 06/01/18 0954

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

Method of Shipment: FED EX
Tracking No.:

ATTN: SAMPLE RECEIVING

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	EPA Method 537(DW only): PFOA/PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
EB-20180531	5/31/18	1015	YUMA, AZ	1	P	W			X						

5-31-18

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:

Name: Sabina Sudoko
Company: Tetra Tech EC, Inc.
Address: 17885 Von Karman Avenue, Suite 500
City: Irvine State: CA Zip: 92614
Phone: 949-809-5022 Fax:
Email: sabina.sudoko@tetratech.com

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

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: W - WATER

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1801084 **TAT** 14

Samples Arrival:	**Date/Time** 06/01/18 0941	**Initials:** SR	**Location:** WR-2 **Shelf/Rack:** N/A
Logged In:	**Date/Time** 06/02/18 0751	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** E1

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

Temp °C: 3.1 (uncorrected)	**Time:** 0951	**Thermometer ID:** IR-4
Temp °C: 3.0 (corrected)	**Probe used:** Yes☐ No☒	

	YES	NO	NA
Adequate Sample Volume Received?	JBB		
Holding Time Acceptable?	SR		
Shipping Container(s) Intact?	SR		
Shipping Custody Seals Intact?	SR		
Shipping Documentation Present?	SR		
Airbill — Trk # 7812 1569 9082	SR		
Sample Container Intact?	JBB		
Sample Custody Seals Intact?			JBB
Chain of Custody / Sample Documentation Present?	SR		
COC Anomaly/Sample Acceptance Form completed?		JBB	

If Chlorinated or Drinking Water Samples, Acceptable Preservation?							JBB
Preservation Documented:	$Na_2S_2O_3$	Trizma	(None)		Yes	No	NA
Shipping Container	Vista	(Client)	Retain	Return		Dispose	

Comments: Sample rec'd in 1L HDPE Container. Volume is ~650 mls. JBB

EXTRACTION INFORMATION

PRIORITY

Process Sheet

Workorder: 1801084

Prep Expiration: 2018-Jun-14

Client: Tetra Tech EC, Inc.

Workorder Due: 15-Jun-18 00:00

TAT: 14 KC 6/13/18

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

Matrix: **Aqueous**

Prep Batch: ~~B8F0069~~ ~~B8F0069+~~ B8F0069

Prep Data Entered: KC 6/16/18 (Date and Initials) B8F0069

Version: 537 (14 Analyte)

DoD: DoD QSM 5.1

Initial Sequence: S8F0056 AR 6/18/18

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
1801084-01	"A"	☑	☑	EB-20180531		WR-2 E-1	HDPE Bottle, 1L

Pre-Prep Check Out: GRB 6/12/18

Pre-Prep Check In: MY 6/12/18

Prep Check Out: KC 6/13/18

Prep Check In: NA

Prep Reconciled Initals/Date: GRB 6/12/18

Spike Reconciled Initals/Date: KC 6/13/18

VialBoxID: TANTOR

Internal Chain of Custody
1801084

Vista Analytical Laboratory

Client: Tetra Tech EC, Inc. | Project Number: 4663.3803 | Received: 01-Jun-18 09:41 | Received By: Sydney Roughton

		Sample				Extract	
Vista Sample ID	Bottle	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location	Initials Date/Time New Location
1801084-01	A	SR 06/01/18 0950 WR-2	GRB 6/12/18 0835 SOIL LAB	MF 6/12/18 1055 WR-2	KC 6/13/18 1000 Soil Lab	JLM 6/18/18 1010 Instrument	

Note in grid if sample or extract are depleted. See Login Checklist for initial location.

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mRL)

B8F0069

Chemist: KC

Prep Date: 6/13/18

Prep Time: 1000

Prepared using: LCMS - SPE Extraction-LCMS

Date/Initals: KC 6/13/18 BalanceID: HRMS-8

Cen	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	RS CHEM/WIT DATE
☐	B8F0069-BLK1 (A) (D)	7	2	0	6	NA	NA	(0.250)	KC FS 6/13/18	KC 6/13/18	GRB 7R 6/14/18
☐	B8F0069-BS1	7	2	0	6			(0.250)			
☐	B8F0069-BSD1	7	2	0	6			(0.250)			
☐	1801080-01										
☐	1801080-02										
☐	1801083-01										
☐	1801083-02										
☐	1801083-03										
☐	1801083-04										
☐	1801083-05										
☐	1801083-06										
☐	1801083-07										
☐	1801083-08										
☐	1801083-09										
☐	1801083-10									KC 6/13/18	
☐	1801083-11										

IS: 18D2004, 10 µL (V1)

IS SUP: NA

NS: 18E0923, 10 µL (V4)

RS: 18D2005, 10 µL (V1)

SPE Chem: StrataX-AW 33µm 200mg/6mL

Ele SOLV: MeOH/.5% NH4OH in MeOH

Final Volume(s) 1mL

Notes: (A) 1.25g trizma added. KC 6/13/18

(D) Supelco ENVI-CARB LOT NO. 10186603 USED. GRB 6/14/18

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mRL)

B8F0069

Chemist: KC 6/13/18 ~~6/13/18~~

Prep Date: 6/13/18

Prep Time: 1000

Prepared using: LCMS - SPE Extraction-LCMS

Date/Initals: MJ 6/12/18 | BalanceID: HRMS-8

Cen	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	RS CHEM/WIT DATE
☐	B8F0069-BLK1 (A)	~~7~~	~~2~~	~~0~~	~~16~~	~~NA~~	~~NA~~	~~(1.00)~~			
☐	B8F0069-BS1	~~7~~	~~2~~	0	16			(1.00)		(B) KC 6/13/18	
☐	B8F0069-BSD1	~~7~~	~~2~~	~~0~~	~~16~~			~~(1.00)~~			
☑	1801080-01 (D)	6	2	0	3	141.61	26.87	0.11474	KC FS 6/13/18	KC 6/13/18	GRB 7R 6/14/18
☑	1801080-02	6	2	0	3	144.09	26.69	0.11740			
☐	1801083-01	7	2	0	3	144.79	26.86	0.11793			
☐	1801083-02	7	2	0	3	145.97	26.80	0.11917			
☐	1801083-03	7	2	0	3	140.00	26.75	0.11325			
☐	1801083-04	7	2	0	3	140.62	26.74	0.11388			
☐	1801083-05	7	2	0	5	145.93	26.85	0.11908			
☐	1801083-06	7	2	0	5	145.97	26.85	0.11912			
☐	1801083-07	7	2	0	3	141.84	26.76	0.11508			
☐	1801083-08	7	2	0	3	141.22	26.89	0.11433			
☐	1801083-09	7	2	0	5	144.44	26.87	0.11757			
☐	1801083-10	7	2	0	5	146.22	26.80	0.11942			
☐	1801083-11	7	2	0	3	146.70	26.72	0.11998			

IS: 18D2004, 10µL (V1)

IS SUP: NA

NS: 18E0923, 10µL (V4)

RS: 18D2005, 10µL (V1)

SPE Chem: Strata-X-AW 33µm 200mg/6mL

Ele SOLV: MeOH/.5%NH4OH in MeOH

Final Volume(s) 1mL

Notes (A) Trizma added mj 6/12/18

(B) QC's removed. 1L sample was added to benchsheet and removed after prep. 250mL bottles used for QC's. KC 6/13/18

(D) Supelco ENVI-CARB LOT NO. 1018C0603 USED GRB 6/14/18

Comments: Assume 1 g = 1 mL

Cen = Centrifuged

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mRL)

B8F0069

Chemist: KC

Prep Date: 6/13/18

Prep Time: 1000

Prepared using: LCMS - SPE Extraction-LCMS

Date/Initals: MJ 6/12/18 | BalanceID: HRMS-8

Cen	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	RS CHEM/WIT DATE
☐	1801083-12 (D)	7	2	0	3	145.42	26.78	0.11864	KC FS 6/13/18	KC 6/13/18	GRB 7R 6/14/18
☐	~~1801084-01~~	~~5~~	~~2~~	~~0~~	~~4~~	~~808.29~~					KC 6/13/18
☑	1801126-01 (A) (C) (D) KC 6/13/18	7	2	0	3	286.78	37.10	0.24968	KC FS 6/13/18	KC 6/13/18	GRB 7R 6/14/18
☑	1801126-02	5	2	0	3	283.38	37.21	0.24617	↓	↓	↓
☑	1801126-03	5	2	0	4	281.55	37.22	0.24433			
☐	1801126-04	6	2	0	4	280.02	37.12	0.24290			
☐	1801138-02	5	2	0	2	143.90	26.83	0.11707			

IS: 18D2004, 10µL (V1)

IS SUP: NA

NS: 18E0923, 10 µL (V4)

RS: 18D2005, 10µL (V1)

SPE Chem: Strata-X-AW 33µm 200mg/6mL

Ele SOLV: MeOH/.5%NH4OH in MeOH

Final Volume(s) 1mL

Notes: (C) Sample clogged cartridge whalfway through ~~elution~~ extraction KC 6/13/18
Full vacuum and N_2 gas used to push sample through. KC 6/13/18

(D) SUPELCO ENVI-CARB LOT NO. 10186603 USED. GRB 6/14/18

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mRL)

B8F0069

Chemist: KC

Prep Date: 6/13/18

Prep Time: 1000

Prepared using: LCMS - SPE Extraction-LCMS

Date/Initals: (A) BalanceID: HRMS-8

Cen	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	RS CHEM/WIT DATE
☒	~~1801083-12~~										KC 6/13/18
☐	1801084-01 (D)	(A)	(A)	(A)	(A)	151.45	26.19	0.12526	KC FS 6/13/18	KC 6/13/18	GRB 7R 6/19/18
☒	~~1801126-01~~										
☐	1801126-02										
☐	1801126-03										
☐	1801126-04								KC 6/13/18		
☒	~~1801138-02~~										

IS: 18D2004, 10µL (V1)

IS SUP: NA

NS: 18E0923, 10µL (V4)

RS: 18D2005, 10µL (V1)

SPE Chem: Strata-X-33µm 200mg/6mL

Ele SOLV: MeOH/.5%NH4OH in MeOH

Final Volume(s): 1mL

Notes: (A) Sample prepped 6/12/18, Removed from benchsheet as sample was 1L. 125mL aliquot taken for extraction. KC 6/13/18
(D) Supelco ENVI-CARB LOT NO. LC1816603 USED. GRB 6/19/18

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

Batch: B8F0069

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1801080-01	0.11474	NA	NA	1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801080-02	0.1174			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-01	0.11793			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-02	0.11917			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-03	0.11325			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-04	0.11388			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-05	0.11908			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-06	0.11912			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-07	0.11508			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-08	0.11433			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-09	0.11757			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-10	0.11942			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-11	0.11998			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801083-12	0.11864			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
1801084-01	0.12526			1000	13-Jun-18 10:00	KC			Water	537M PFAS DOD (LOQ as
1801126-01	0.24968			1000	13-Jun-18 10:00	KC			Aqueous	537M PFAS DOD (LOQ as
1801126-02	0.24617			1000	13-Jun-18 10:00	KC			Aqueous	537M PFAS DOD (LOQ as
1801126-03	0.24433			1000	13-Jun-18 10:00	KC			Aqueous	537M PFAS DOD (LOQ as
1801126-04	0.2429			1000	13-Jun-18 10:00	KC			Aqueous	537M PFAS DOD (LOQ as
1801138-02	0.11707			1000	13-Jun-18 10:00	KC			QC Water	537M PFAS DOD (LOQ as
B8F0069-BLK1	0.25			1000	13-Jun-18 10:00	KC				QC
B8F0069-BS1	0.25			1000	13-Jun-18 10:00	KC	18E0923	10		QC
B8F0069-BSD1	0.25			1000	13-Jun-18 10:00	KC	18E0923	10		QC

KC 6/16/18

Printed: 6/16/2018 11:53:53AM

Sample Data – PFAS Isotope Dilution Method

Vista Analytical Laboratory

MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8		5.30e3	0.250							
2	2	PFPeA	263.1 > 218.9		6.72e3	0.250							
3	3	PFBS	299.0 > 79.7	4.31e-1	9.16e2	0.250	0.000	2.49	0.00588			0.975	YES
4	4	4:2 FTS	327.2>307.2		1.80e3	0.250							
5	5	PFHxA	313.2 > 268.9		2.20e3	0.250							
6	36	13C3-PFBA	216.1 > 171.8	5.30e3	6.18e3	0.250	0.858	1.23	10.7	48.9519	97.9		
7	37	13C3-PFPeA	266. > 221.8	6.72e3	8.10e3	0.250	0.829	2.20	10.4	43.3877	86.8		
8	38	13C3-PFBS	302. > 98.8	9.16e2	8.10e3	0.250	0.113	2.50	1.41	47.9748	95.9		
9	39	13C2-4:2 FTS	329.2>308.9	1.80e3	8.10e3	0.250	0.222	2.91	2.78	46.5113	93.0		
10	40	13C2-PFHxA	315 > 269.8	2.20e3	8.10e3	0.250	0.678	2.99	3.39	18.4036	92.0		
11	-1												
12	6	PFPeS	349.1>80.1		9.16e2	0.250							
13	7	PFHpA	363.0 > 318.9		6.22e3	0.250							
14	8	L-PFHxS	398.9 > 79.6		7.76e2	0.250							
15	68	Total PFHxS	398.9 > 79.6	0.00e0	7.76e2	0.250			0.000				
16	10	6:2 FTS	427.1 > 407	6.54e1	1.97e3	0.250	0.000	4.09	0.415	0.6046		2.83	NO
17	38	13C3-PFBS	302. > 98.8	9.16e2	8.10e3	0.250	0.113	2.50	1.41	47.9748	95.9		
18	41	13C4-PFHpA	367.2 > 321.8	6.22e3	8.10e3	0.250	0.768	3.62	9.60	51.9096	103.8		
19	42	18O2-PFHxS	403.0 > 102.6	7.76e2	1.97e3	0.250	0.394	3.78	4.93	49.3922	98.8		
20	42	18O2-PFHxS	403.0 > 102.6	7.76e2	1.97e3	0.250	0.394	3.78	4.93	49.3922	98.8		
21	43	13C2-6:2 FTS	429.1 > 408.9	1.97e3	7.26e3	0.250	0.271	4.10	3.39	53.0613	106.1		
22	-1												
23	11	L-PFOA	413 > 368.7		8.56e3	0.250							
24	69	Total PFOA	413 > 368.7	0.00e0	8.56e3	0.250			0.000				
25	13	PFHpS	449 > 80.0		8.56e3	0.250							
26	16	L-PFOS	499.1 > 79.9		2.17e3	0.250							
27	70	Total PFOS	499.1 > 79.9	0.00e0	2.17e3	0.250			0.000				
28	44	13C2-PFOA	414.9 > 369.7	8.56e3	7.26e3	0.250	1.18	4.16	14.7	45.6755	91.4		
29	44	13C2-PFOA	414.9 > 369.7	8.56e3	7.26e3	0.250	1.18	4.16	14.7	45.6755	91.4		
30	44	13C2-PFOA	414.9 > 369.7	8.56e3	7.26e3	0.250	1.18	4.16	14.7	45.6755	91.4		
31	47	13C8-PFOS	507.0 > 79.9	2.17e3	2.08e3	0.250	1.05	4.69	13.1	52.5036	105.0		
32	47	13C8-PFOS	507.0 > 79.9	2.17e3	2.08e3	0.250	1.05	4.69	13.1	52.5036	105.0		
33	-1												
34	14	PFNA	463.0 > 418.8		6.86e3	0.250							
35	15	PFOSA	498.2 > 77.9		1.57e3	0.250							
36	18	PFDA	513 > 468.8		7.00e3	0.250							

AD 6/18/2018

Vista Analytical Laboratory

MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	19	8:2 FTS	527 > 506.9		1.45e3	0.250							
38	20	PFNS	549.1>80.1		2.17e3	0.250							
39	45	13C5-PFNA	468.2 > 422.9	6.86e3	8.39e3	0.250	0.817	4.60	10.2	44.2952	88.6		
40	46	13C8-PFOSA	506.1 > 77.7	1.57e3	1.12e4	0.250	0.141	4.66	1.76	22.8700	45.7		
41	48	13C2-PFDA	515.1 > 469.9	7.00e3	8.42e3	0.250	0.831	4.99	10.4	37.5260	75.1		
42	49	13C2-8:2 FTS	529.1 > 508.7	1.45e3	8.10e3	0.250	0.179	4.96	2.24	44.3323	88.7		
43	47	13C8-PFOS	507.0 > 79.9	2.17e3	2.08e3	0.250	1.05	4.69	13.1	52.5036	105.0		
44	-1												
45	21	L-MeFOSAA	570.1 > 419		1.63e3	0.250							
46	71	Total N-MeFOSAA	570.1 > 419	0.00e0	1.63e3	0.250			0.000				
47	23	L-EtFOSAA	584.2 > 419		1.67e3	0.250							
48	72	Total N-EtFOSAA	584.2 > 419	0.00e0	1.67e3	0.250			0.000				
49	25	PFUdA	563.0 > 518.9		6.67e3	0.250							
50	50	d3-N-MeFOSAA	573.3 > 419	1.63e3	1.12e4	0.250	0.146	5.14	1.82	36.2023	72.4		
51	50	d3-N-MeFOSAA	573.3 > 419	1.63e3	1.12e4	0.250	0.146	5.14	1.82	36.2023	72.4		
52	51	d5-N-EtFOSAA	589.3 > 419	1.67e3	1.12e4	0.250	0.150	5.30	1.87	30.9352	61.9		
53	51	d5-N-EtFOSAA	589.3 > 419	1.67e3	1.12e4	0.250	0.150	5.30	1.87	30.9352	61.9		
54	52	13C2-PFUdA	565 > 519.8	6.67e3	1.12e4	0.250	0.598	5.31	7.47	31.8091	63.6		
55	-1												
56	26	PFDS	598.8 > 80		6.67e3	0.250							
57	27	PFDoA	612.9 > 569.0		7.83e3	0.250							
58	29	PFTrDA	662.9 > 618.9		7.83e3	0.250							
59	30	PFTeDA	712.9 > 668.8		6.70e3	0.250							
60	28	N-MeFOSA	512.1 > 168.9			0.250							
61	52	13C2-PFUdA	565 > 519.8	6.67e3	1.12e4	0.250	0.598	5.31	7.47	31.8091	63.6		
62	53	13C2-PFDoA	615.0 > 569.7	7.83e3	8.42e3	0.250	0.930	5.61	11.6	35.0890	70.2		
63	53	13C2-PFDoA	615.0 > 569.7	7.83e3	8.42e3	0.250	0.930	5.61	11.6	35.0890	70.2		
64	55	13C2-PFTeDA	714.8 > 669.6	6.70e3	1.12e4	0.250	0.600	6.08	7.50	31.7465	63.5		
65	54	d3-N-MeFOSA	515.2 > 168.9		1.12e4	0.250							
66	-1												
67	31	N-EtFOSA	526.1 > 168.9			0.250							
68	32	PFHxDA	813.1 > 768.6		1.75e3	0.250							
69	33	PFODA	913.1 > 868.8		1.75e3	0.250							
70	34	N-MeFOSE	616.1 > 58.9			0.250							
71	35	N-EtFOSE	630.1 > 58.9			0.250							
72	56	d5-N-ETFOSA	531.1 > 168.9		1.12e4	0.250							

AD 6/18/2018

MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
73	57	13C2-PFHxDA	815 > 769.7	1.75e3	1.12e4	0.250	0.391	6.43	1.96	6.6519	33.3		
74	57	13C2-PFHxDA	815 > 769.7	1.75e3	1.12e4	0.250	0.391	6.43	1.96	6.6519	33.3		
75	58	d7-N-MeFOSE	623.1 > 58.9		1.12e4	0.250							
76	59	d9-N-EtFOSE	639.2 > 58.8		1.12e4	0.250							
77	-1												
78	73	TCDA	498.3>106.9			0.250							
79	61	13C5-PFHxA	318 > 272.9	8.10e3	8.10e3	0.250	1.00	2.99	12.5	50.0000	100.0		
80	47	13C8-PFOS	507.0 > 79.9	2.17e3	2.08e3	0.250	1.05	4.69	13.1	52.5036	105.0		
81	60	13C4-PFBA	217. > 171.8	6.18e3	6.18e3	0.250	1.00	1.23	12.5	50.0000	100.0		
82	62	13C3-PFHxS	401.9 > 79.9	1.97e3	1.97e3	0.250	1.00	3.77	12.5	50.0000	100.0		
83	63	13C8-PFOA	421.3 > 376	7.26e3	7.26e3	0.250	1.00	4.15	12.5	50.0000	100.0		
84	64	13C9-PFNA	472.2 > 426.9	8.39e3	8.39e3	0.250	1.00	4.60	12.5	50.0000	100.0		
85	65	13C4-PFOS	503 > 79.9	2.08e3	2.08e3	0.250	1.00	4.69	12.5	50.0000	100.0		
86	66	13C6-PFDA	519.1 > 473.7	8.42e3	8.42e3	0.250	1.00	4.99	12.5	50.0000	100.0		
87	67	13C7-PFUdA	570.1 > 524.8	1.12e4	1.12e4	0.250	1.00	5.31	12.5	50.0000	100.0		

AD 6/18/2018

Vista Analytical Laboratory

MM 6/19/2018

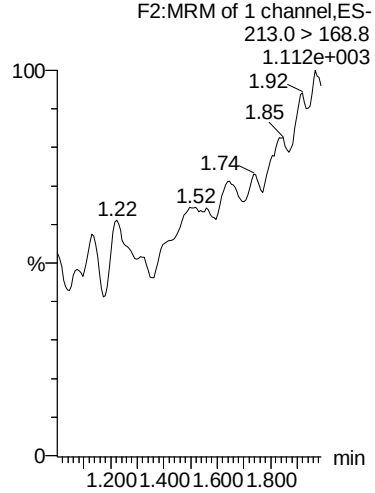
Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

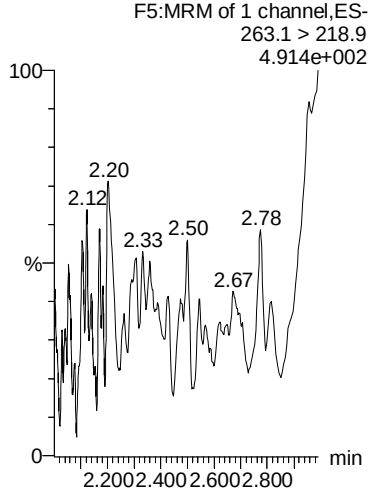
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

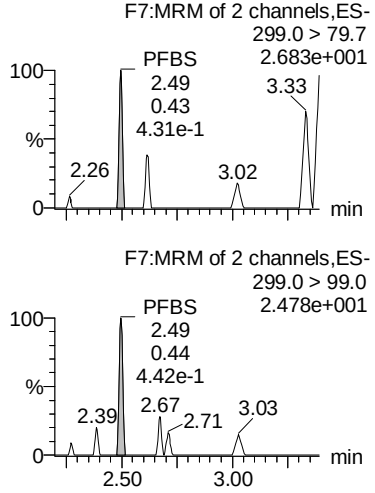
PFBA



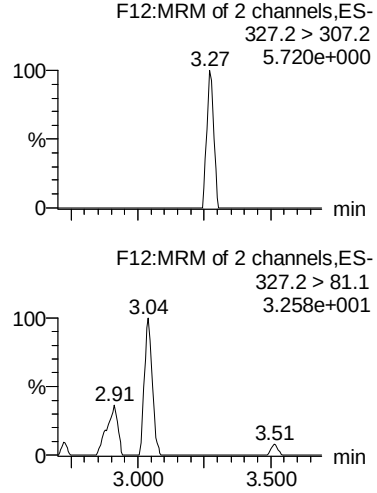
PFPeA



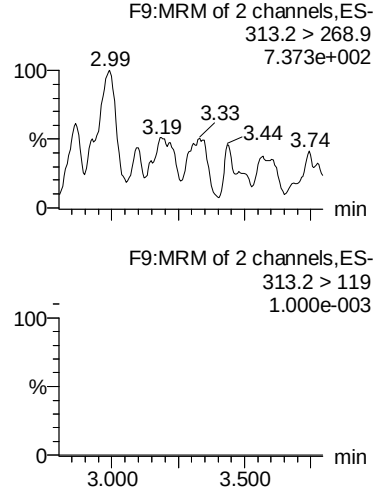
PFBS



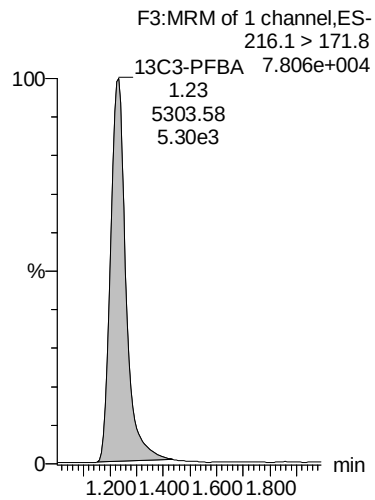
4:2 FTS



PFHxA



13C3-PFBA



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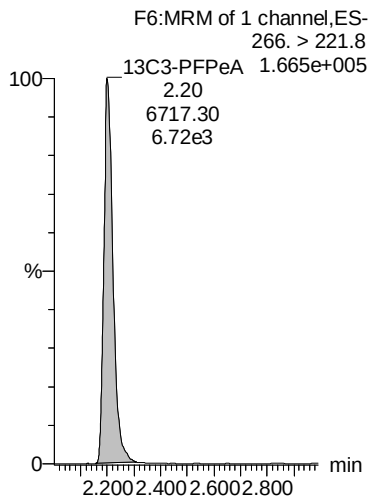

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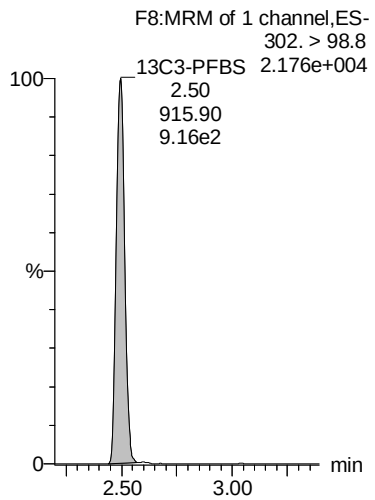
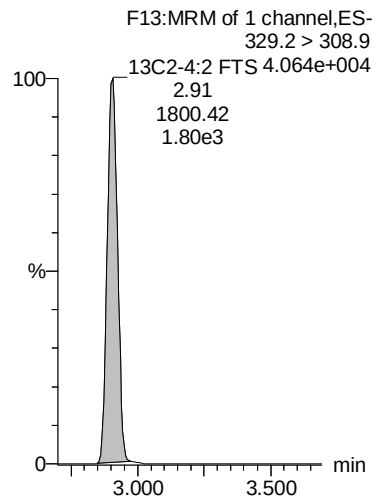


13C2-4:2 FTS



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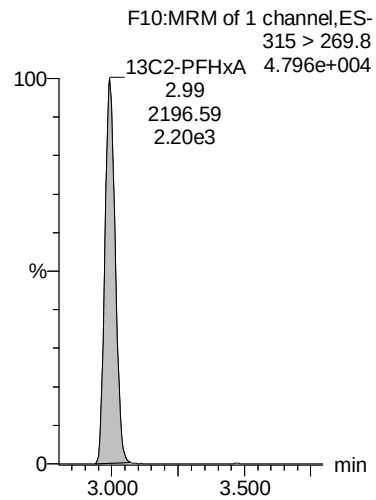

AD 6/18/2018

Vista Analytical Laboratory

MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

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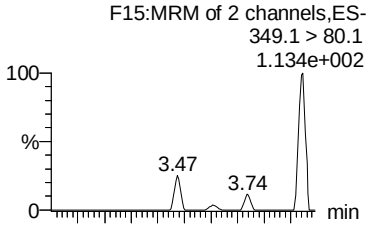
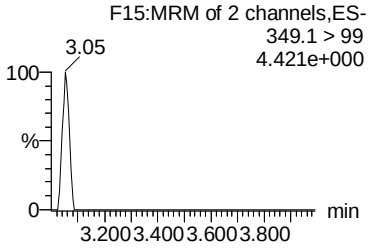
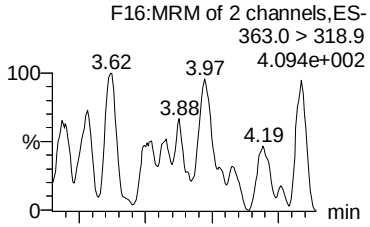
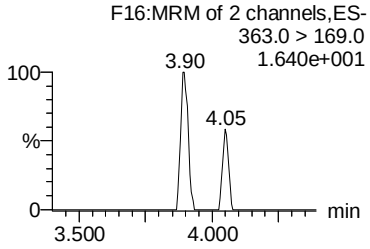


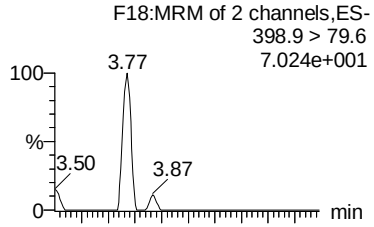


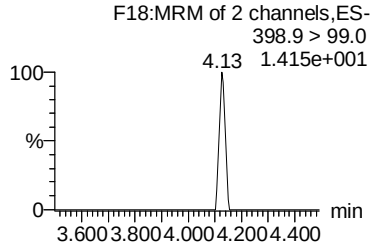
PFHpA





L-PFHxS





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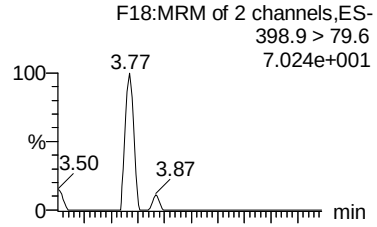
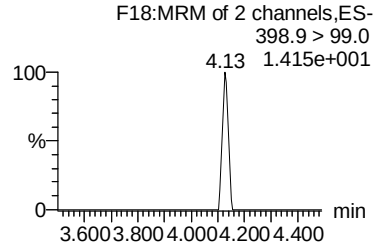
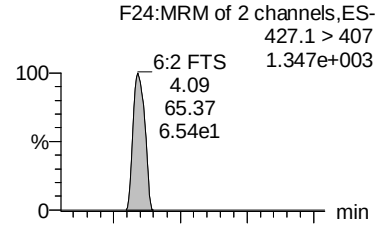
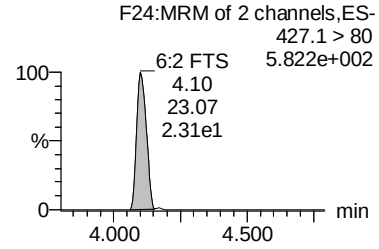




6:2 FTS





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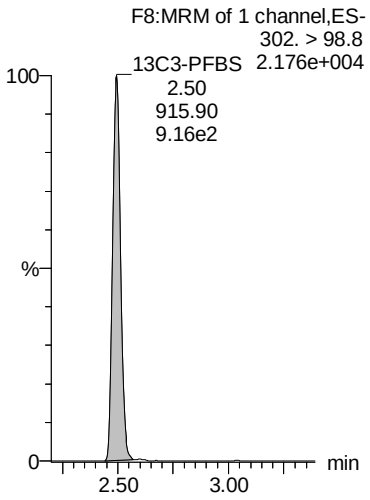

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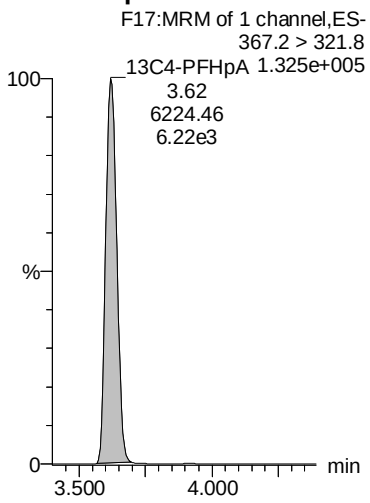
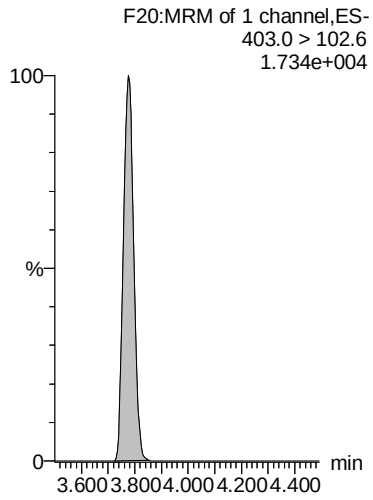


18O2-PFHxS



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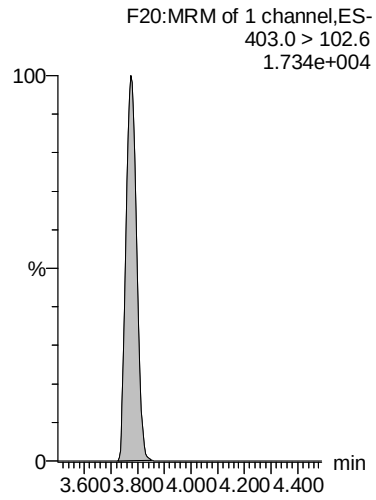
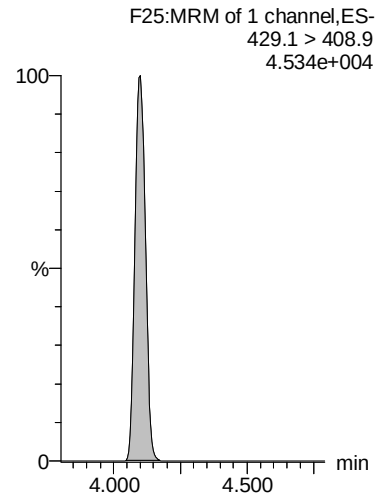


13C2-6:2 FTS



AD 6/18/2018

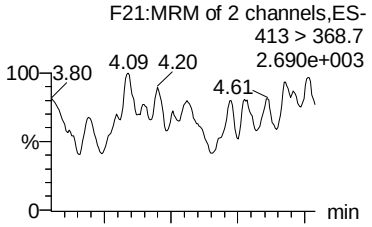
MM 6/19/2018

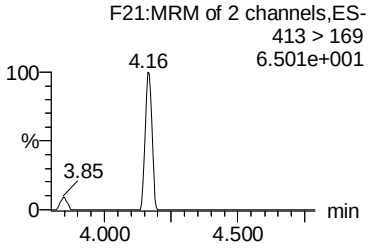
Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

L-PFOA





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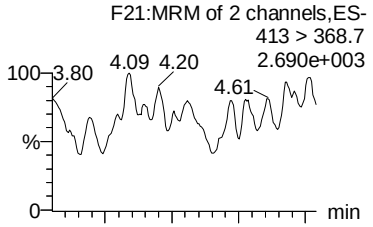
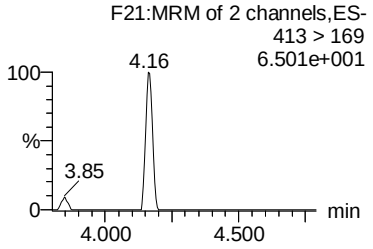
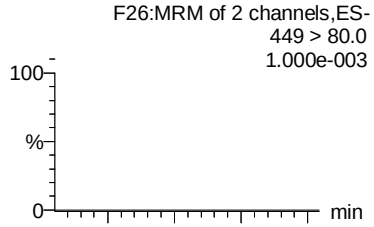
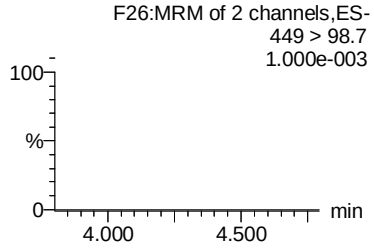


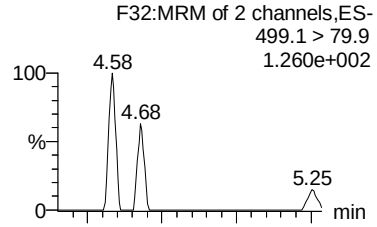


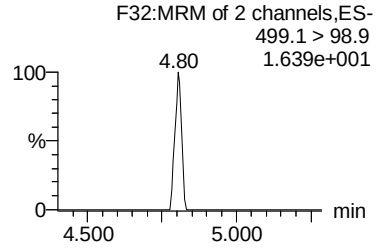
PFHpS





L-PFOS





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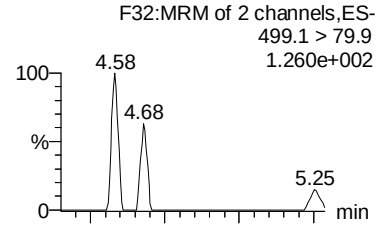

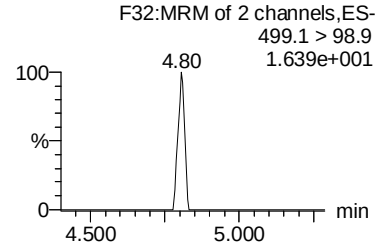

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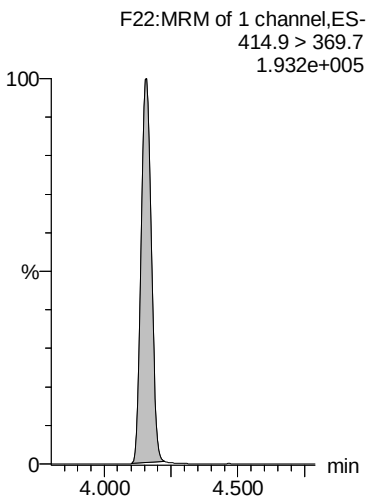

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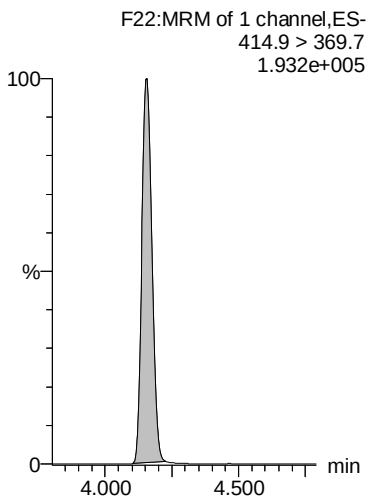

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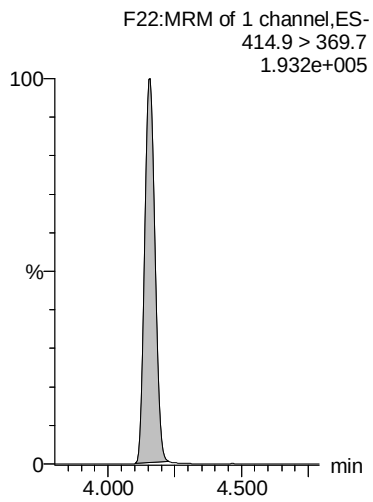

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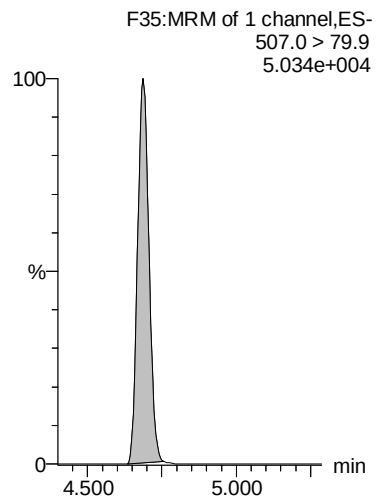

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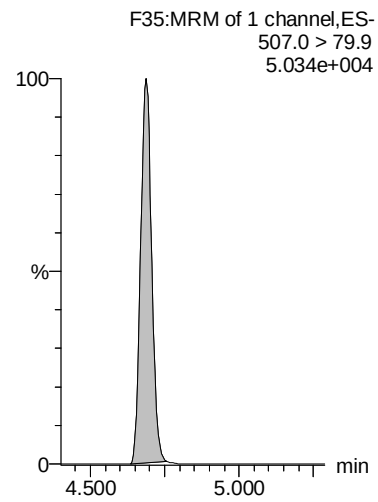

AD 6/18/2018

Vista Analytical Laboratory

MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
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Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

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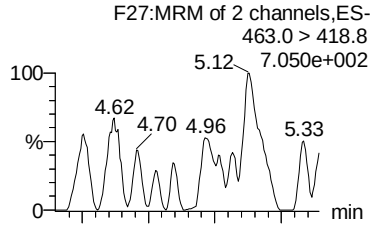

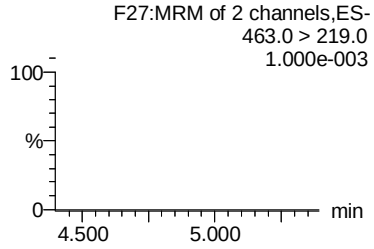

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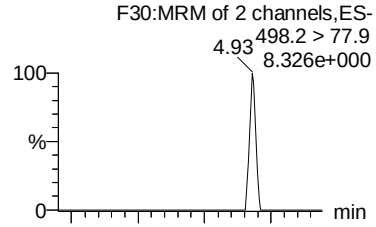

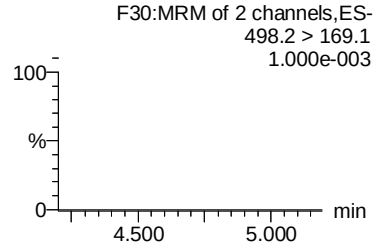

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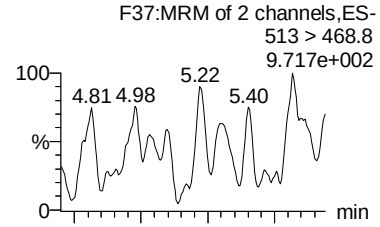
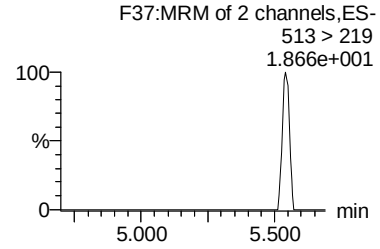
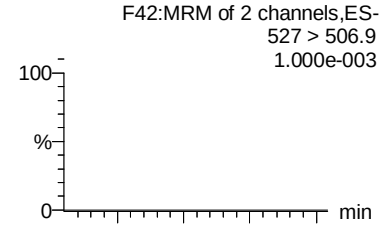
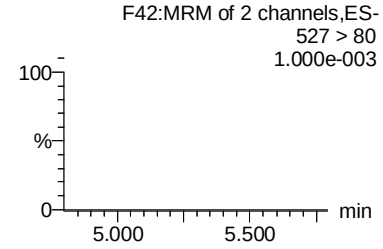


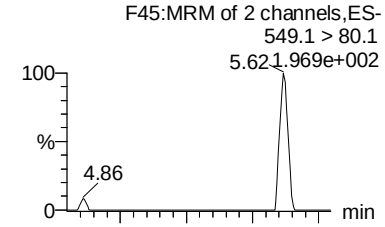


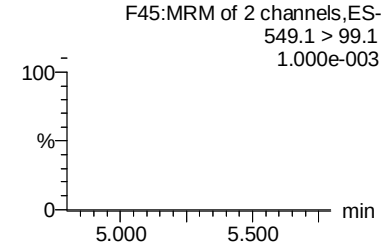
8:2 FTS





PFNS





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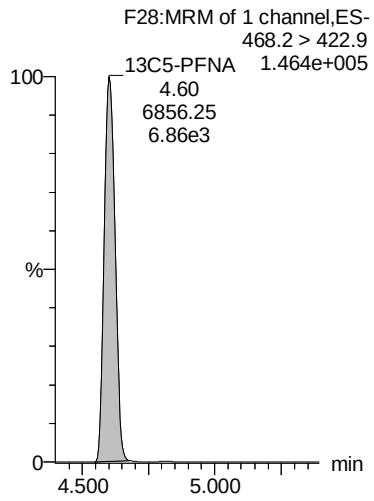
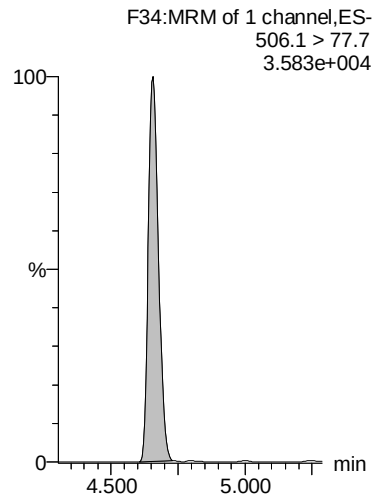
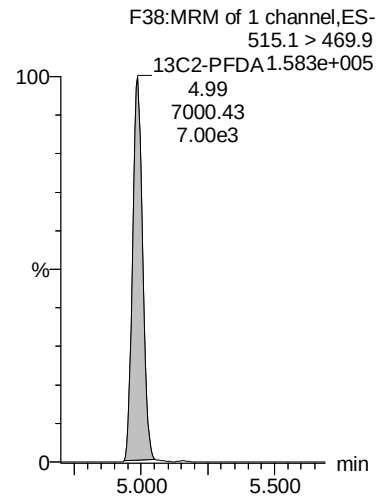


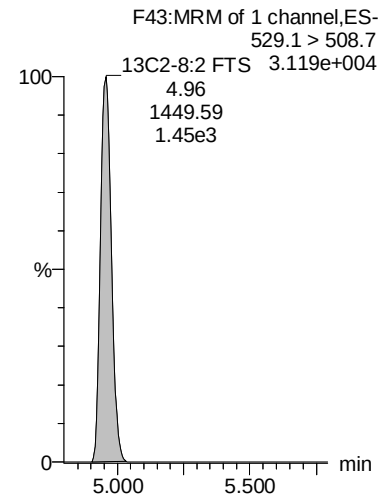
13C8-PFOSA



13C2-PFDA



13C2-8:2 FTS



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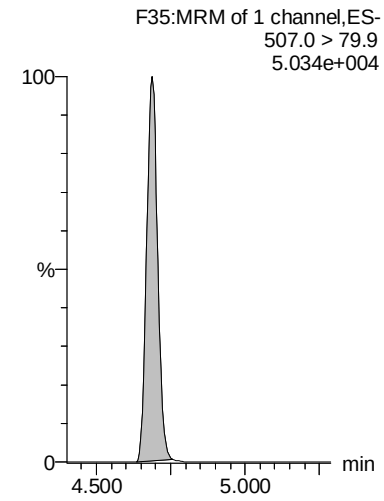


AD 6/18/2018

Vista Analytical Laboratory

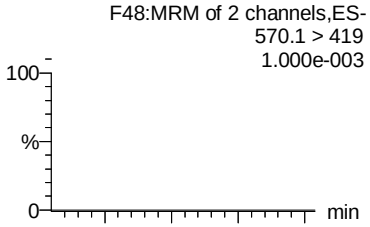
MM 6/19/2018

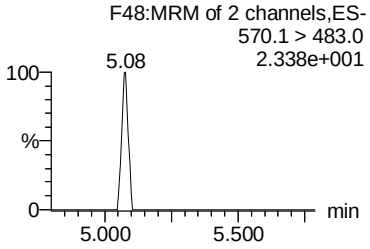
Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

L-MeFOSAA





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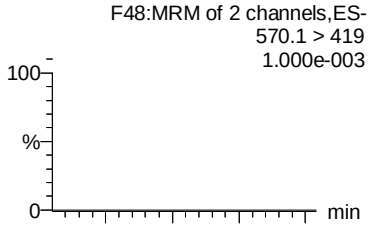
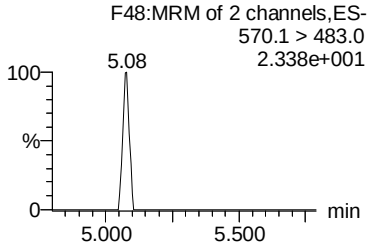
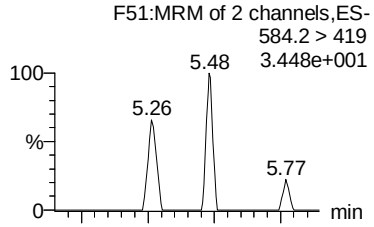
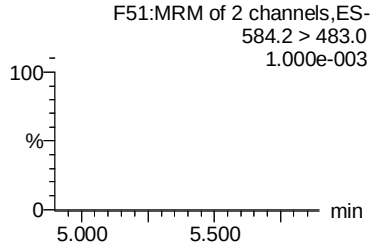


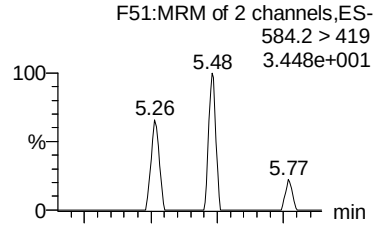


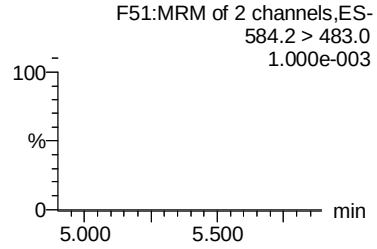
L-EtFOSAA



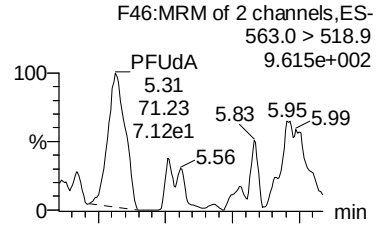


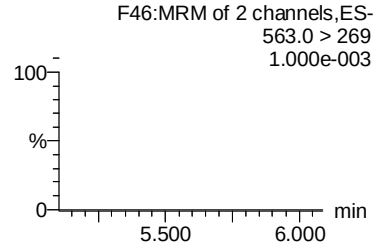
Total N-EtFOSAA



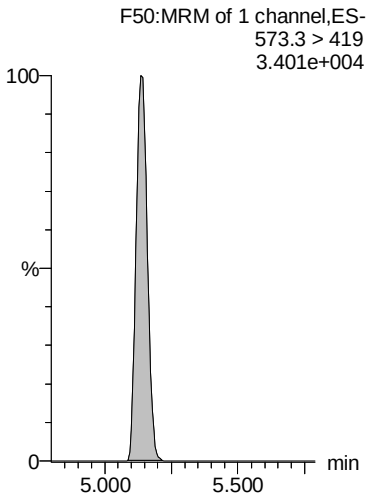


PFUdA





d3-N-MeFOSAA



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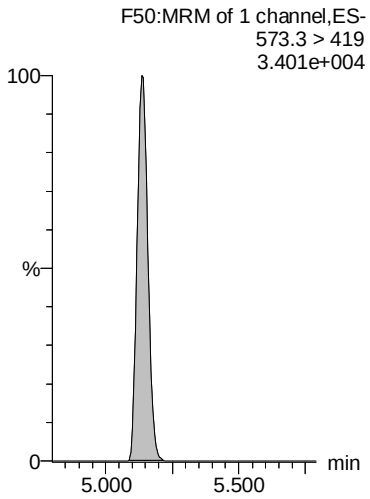
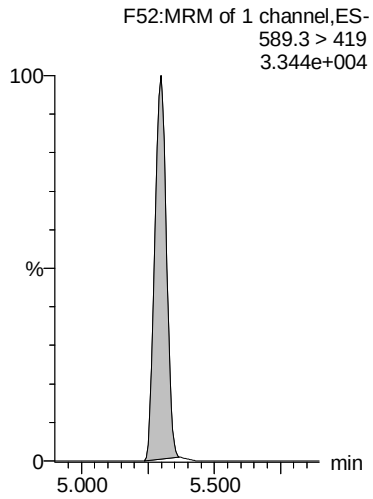
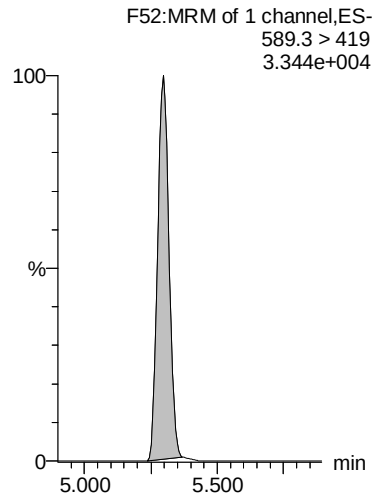


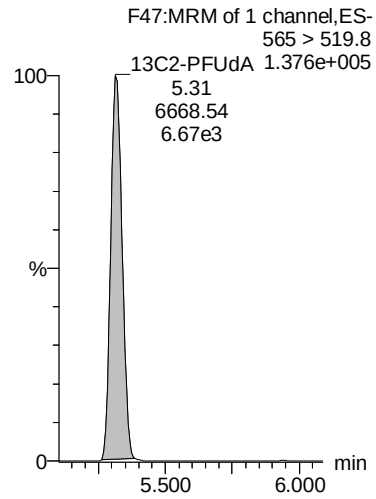
d5-N-EtFOSAA



d5-N-EtFOSAA



13C2-PFUdA



AD 6/18/2018

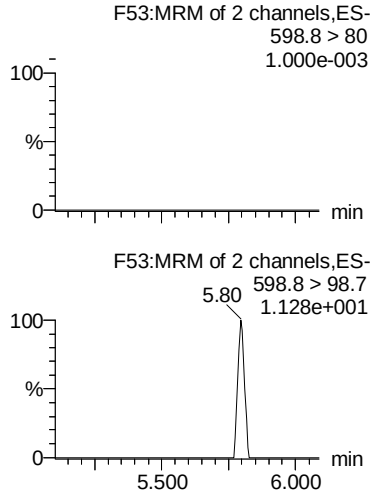
MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

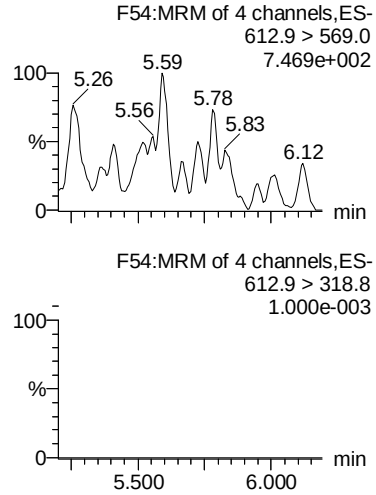
Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

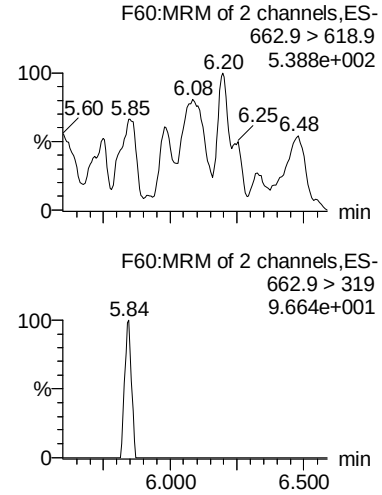
PFDS



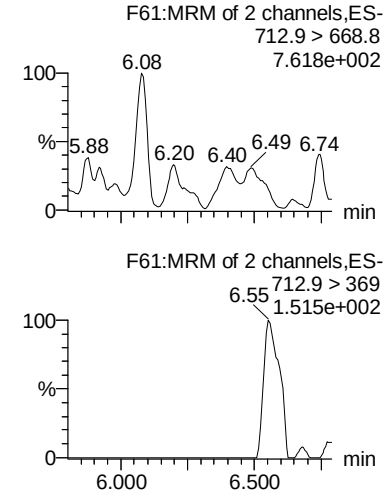
PFDoA



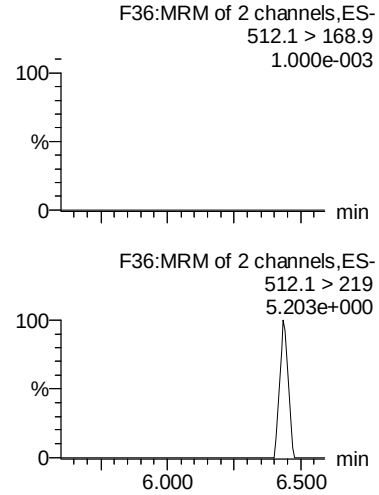
PFTrDA



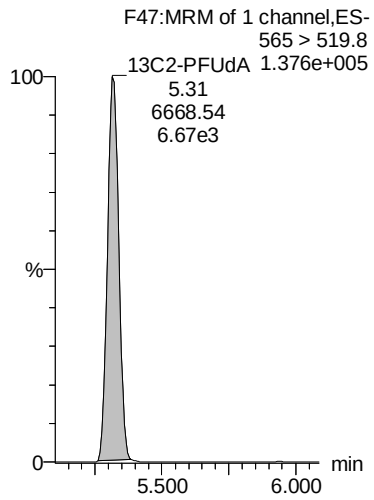
PFTeDA



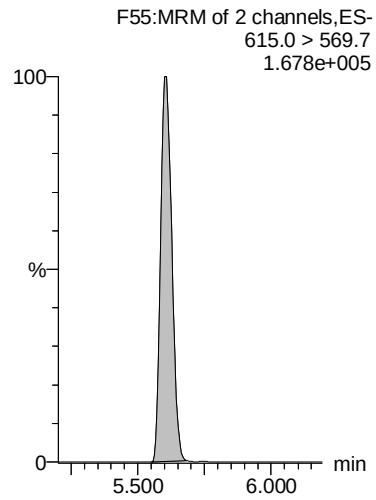
N-MeFOSA



13C2-PFUdA



13C2-PFDoA



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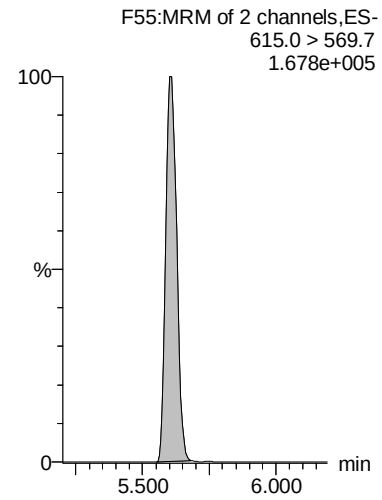
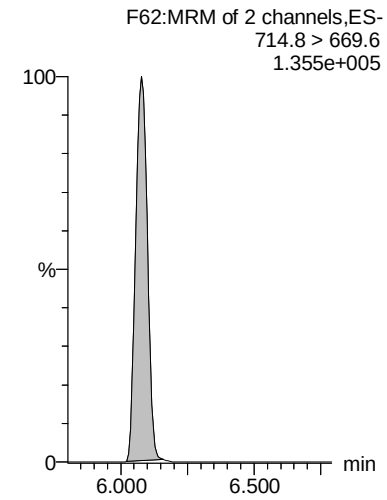
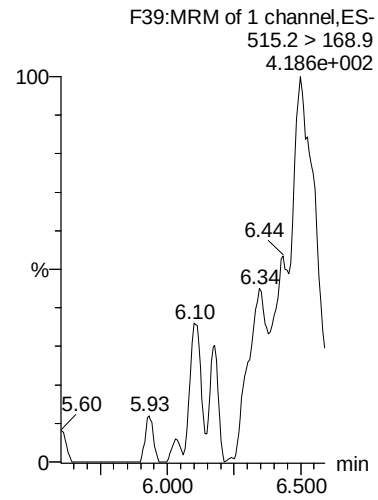


13C2-PFTeDA



d3-N-MeFOSA



AD 6/18/2018

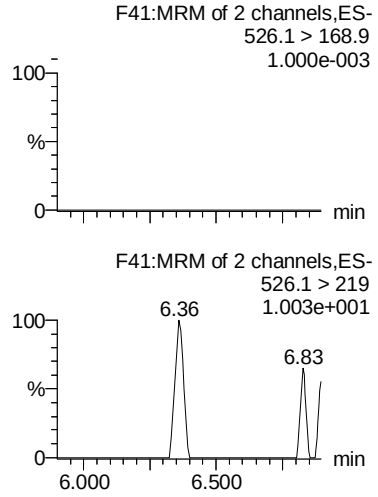
MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

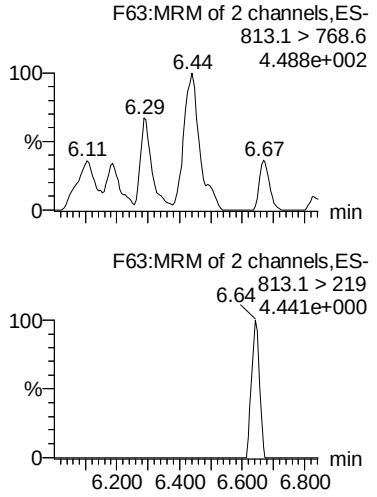
Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

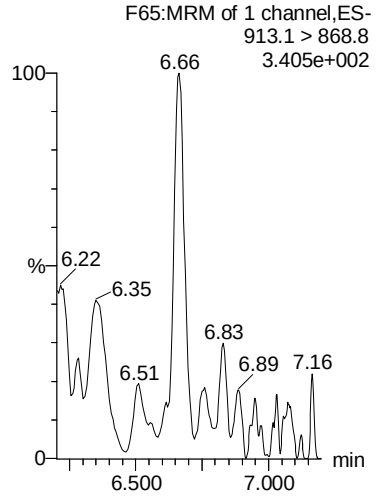
N-EtFOSA



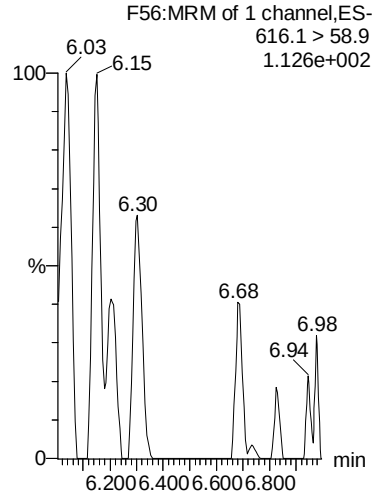
PFHxDA



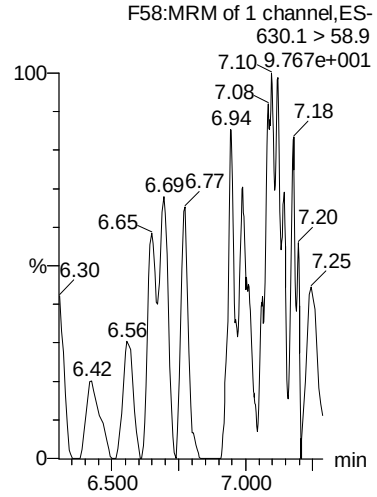
PFODA



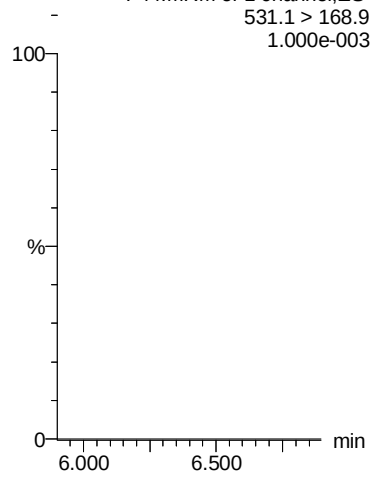
N-MeFOSE



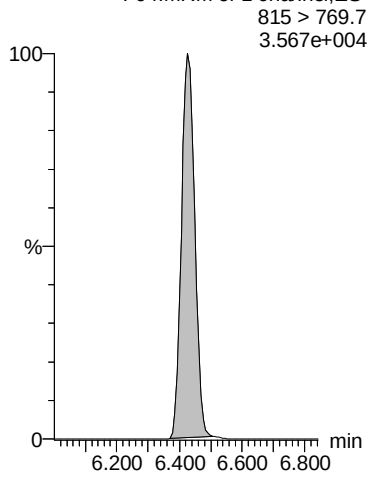
N-EtFOSE



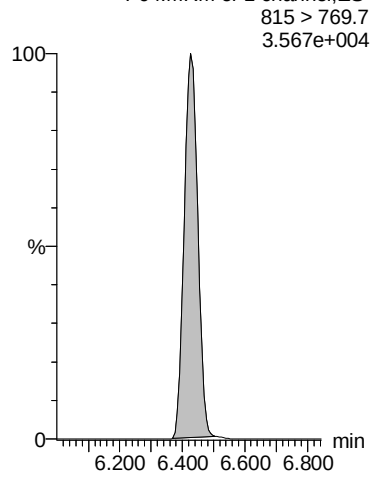
d5-N-ETFOSA



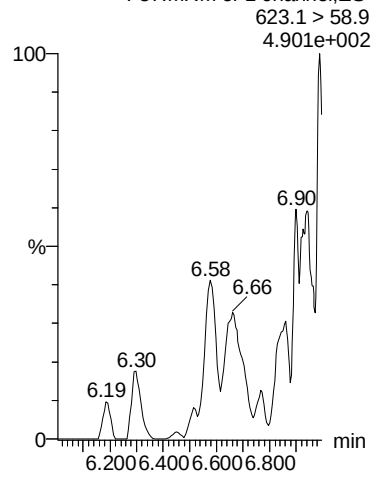
13C2-PFHxDA



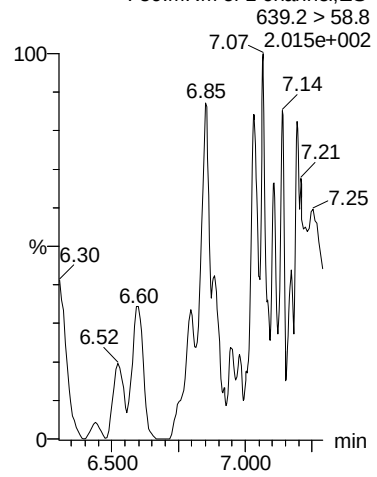
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



AD 6/18/2018

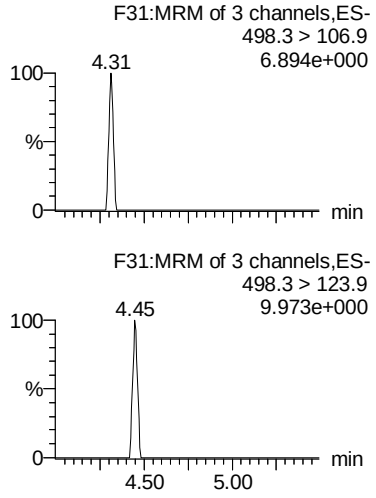
MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180617M1\180617M1-108.qld

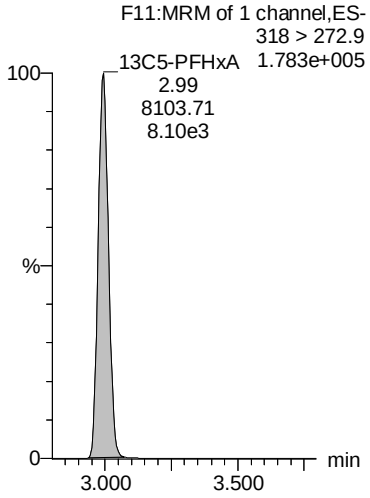
Last Altered: Monday, June 18, 2018 15:31:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:32:12 Pacific Daylight Time

Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

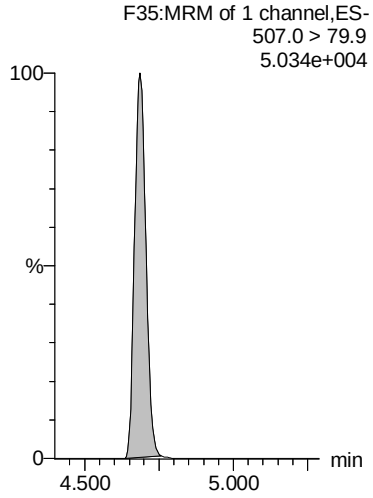
TCDA



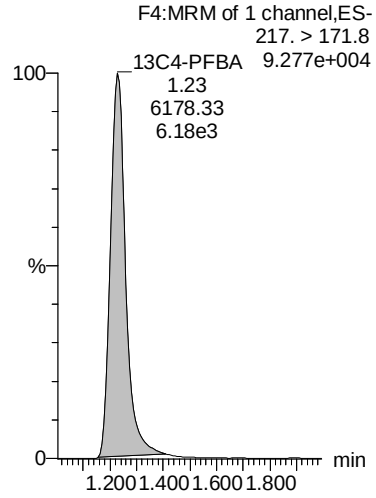
13C5-PFHxA



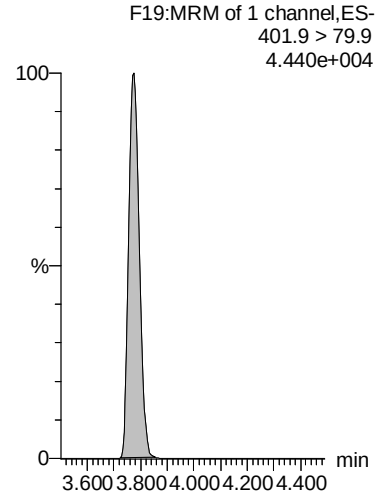
13C8-PFOS



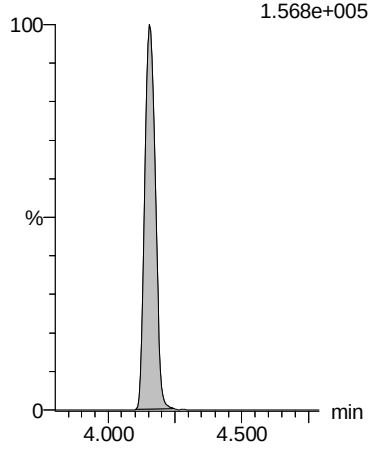
13C4-PFBA



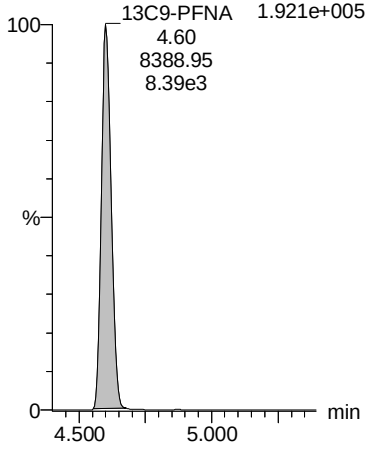
13C3-PFHxS



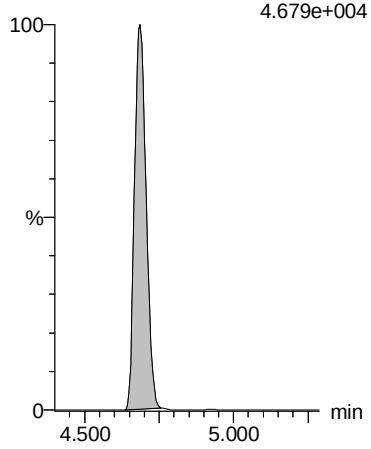
13C8-PFOA



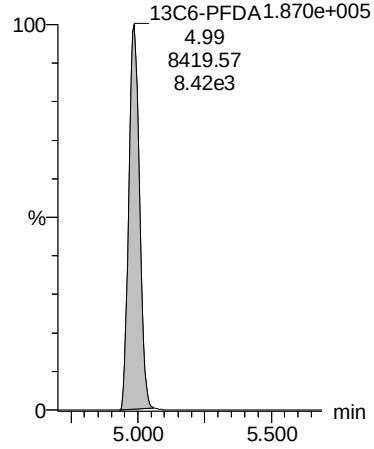
13C9-PFNA



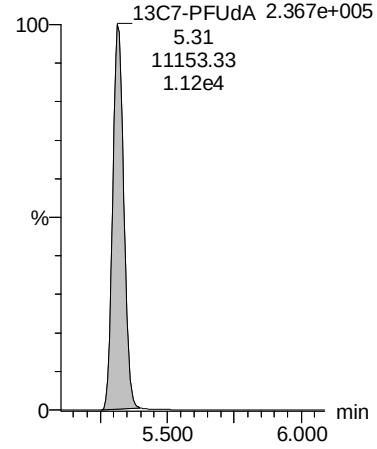
13C4-PFOS



13C6-PFDA



13C7-PFUdA



AD 6/18/2018

Vista Analytical Laboratory

rev ANP 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?	
1	1	PFBA	213.0 > 168.8	3.95e3	4.92e3	0.250	1.00	1.16	10.0	36.9682	92.4			
2	2	PFPeA	263.1 > 218.9	5.04e3	6.76e3	0.250	0.933	2.18	9.33	37.5465	93.9			
3	3	PFBS	299.0 > 79.7	1.49e3	1.05e3	0.250	1.78	2.49	17.8	36.4717	91.2	2.78	NO	
4	4	4:2 FTS	327.2>307.2	1.58e3	2.20e3	0.250	0.898	2.93	8.98	43.6192	109.0	1.81	NO	
5	5	PFHxA	313.2 > 268.9	6.59e3	2.28e3	0.250	1.44	3.01	14.4	40.8742	102.2	545	YES	
6	36	13C3-PFBA	216.1 > 171.8	4.92e3	6.32e3	0.250	0.779	1.16	9.74	44.0996	88.2			
7	37	13C3-PFPeA	266. > 221.8	6.76e3	8.50e3	0.250	0.795	2.18	9.94	44.2252	88.5			
8	38	13C3-PFBS	302. > 98.8	1.05e3	8.50e3	0.250	0.123	2.49	1.54	58.5900	117.2			
9	39	13C2-4:2 FTS	329.2>308.9	2.20e3	8.50e3	0.250	0.259	2.92	3.23	51.4925	103.0			
10	40	13C2-PFHxA	315 > 269.8	2.28e3	8.50e3	0.250	0.672	3.01	3.36	17.7552	88.8			
11	-1													
12	6	PFPeS	349.1>80.1	1.43e3	1.05e3	0.250	1.71	3.22	17.1	41.4412	103.6	1.62	NO	
13	7	PFHpA	363.0 > 318.9	5.62e3	6.57e3	0.250	1.07	3.64	10.7	37.7931	94.5	26.2	NO	
14	8	L-PFHxS	398.9 > 79.6	1.26e3	9.14e2	0.250	1.72	3.80	17.2	36.1339	90.3	1.77	NO	
15	68	Total PFHxS	398.9 > 79.6	1.26e3	9.14e2	0.250			17.2	36.1339				
16	10	6:2 FTS	427.1 > 407	2.55e3	2.28e3	0.250	1.40	4.12	14.0	59.7046	149.3	3.35	NO	H
17	38	13C3-PFBS	302. > 98.8	1.05e3	8.50e3	0.250	0.123	2.49	1.54	58.5900	117.2			
18	41	13C4-PFHpA	367.2 > 321.8	6.57e3	8.50e3	0.250	0.773	3.64	9.66	47.7591	95.5			
19	42	18O2-PFHxS	403.0 > 102.6	9.14e2	2.49e3	0.250	0.368	3.80	4.60	42.3812	84.8			
20	42	18O2-PFHxS	403.0 > 102.6	9.14e2	2.49e3	0.250	0.368	3.80	4.60	42.3812	84.8			
21	43	13C2-6:2 FTS	429.1 > 408.9	2.28e3	9.69e3	0.250	0.235	4.12	2.94	43.2240	86.4			
22	-1													
23	11	L-PFOA	413 > 368.7	6.63e3	9.67e3	0.250	0.856	4.18	8.56	35.4175	88.5	5.38	NO	
24	69	Total PFOA	413 > 368.7	6.63e3	9.67e3	0.250			8.56	35.4175				
25	13	PFHpS	449 > 80.0	1.62e3	9.67e3	0.250	0.209	4.30	2.09	46.8694	117.2	2.05	NO	
26	16	L-PFOS	499.1 > 79.9	1.45e3	2.25e3	0.250	0.807	4.72	8.07	34.8344	87.1	1.89	NO	
27	70	Total PFOS	499.1 > 79.9	1.45e3	2.25e3	0.250			8.07	34.8344				
28	44	13C2-PFOA	414.9 > 369.7	9.67e3	9.69e3	0.250	0.999	4.18	12.5	42.0141	84.0			
29	44	13C2-PFOA	414.9 > 369.7	9.67e3	9.69e3	0.250	0.999	4.18	12.5	42.0141	84.0			
30	44	13C2-PFOA	414.9 > 369.7	9.67e3	9.69e3	0.250	0.999	4.18	12.5	42.0141	84.0			
31	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.51e3	0.250	0.896	4.72	11.2	44.7080	89.4			
32	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.51e3	0.250	0.896	4.72	11.2	44.7080	89.4			
33	-1													
34	14	PFNA	463.0 > 418.8	7.27e3	7.90e3	0.250	1.15	4.63	11.5	38.6892	96.7	5.27	NO	
35	15	PFOSA	498.2 > 77.9	9.08e2	1.28e3	0.250	0.886	4.69	8.86	43.3718	108.4	38.4	YES	
36	18	PFDA	513 > 468.8	6.19e3	8.85e3	0.250	0.874	5.02	8.74	38.8965	97.2	7.60	NO	

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Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	19	8:2 FTS	527 > 506.9	1.87e3	1.84e3	0.250	1.27	4.99	12.7	36.1943	90.5	2.60	NO
38	20	PFNS	549.1>80.1	1.26e3	2.25e3	0.250	0.700	5.08	7.00	35.1603	87.9	1.74	NO
39	45	13C5-PFNA	468.2 > 422.9	7.90e3	1.09e4	0.250	0.722	4.63	9.02	38.2457	76.5		
40	46	13C8-PFOSA	506.1 > 77.7	1.28e3	1.19e4	0.250	0.107	4.69	1.34	18.8183	37.6		
41	48	13C2-PFDA	515.1 > 469.9	8.85e3	9.05e3	0.250	0.978	5.02	12.2	37.3092	74.6		
42	49	13C2-8:2 FTS	529.1 > 508.7	1.84e3	8.50e3	0.250	0.216	4.99	2.71	54.6304	109.3		
43	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.51e3	0.250	0.896	4.72	11.2	44.7080	89.4		
44	-1												
45	21	L-MeFOSAA	570.1 > 419	2.65e3	2.08e3	0.250	1.59	5.17	15.9	45.8278	114.6	13.9	NO
46	71	Total N-MeFOSAA	570.1 > 419	2.65e3	2.08e3	0.250			15.9	45.8278			
47	23	L-EtFOSAA	584.2 > 419	2.18e3	2.09e3	0.250	1.31	5.34	13.1	47.6128	119.0	14.2	YES
48	72	Total N-EtFOSAA	584.2 > 419	2.18e3	2.09e3	0.250			13.1	47.6128			
49	25	PFUdA	563.0 > 518.9	6.21e3	7.92e3	0.250	0.980	5.35	9.80	39.7245	99.3	18.0	NO
50	50	d3-N-MeFOSAA	573.3 > 419	2.08e3	1.19e4	0.250	0.174	5.17	2.18	30.6813	61.4		
51	50	d3-N-MeFOSAA	573.3 > 419	2.08e3	1.19e4	0.250	0.174	5.17	2.18	30.6813	61.4		
52	51	d5-N-EtFOSAA	589.3 > 419	2.09e3	1.19e4	0.250	0.175	5.33	2.18	32.2670	64.5		
53	51	d5-N-EtFOSAA	589.3 > 419	2.09e3	1.19e4	0.250	0.175	5.33	2.18	32.2670	64.5		
54	52	13C2-PFUdA	565 > 519.8	7.92e3	1.19e4	0.250	0.663	5.35	8.29	31.9666	63.9		
55	-1												
56	26	PFDS	598.8 > 80	1.43e3	7.92e3	0.250	0.226	5.41	2.26	51.2290	128.1	1.84	NO
57	27	PFDoA	612.9 > 569.0	8.29e3	8.84e3	0.250	1.17	5.65	11.7	40.1013	100.3	10.0	NO
58	29	PFTrDA	662.9 > 618.9	9.26e3	8.84e3	0.250	1.31	5.90	13.1	41.6594	104.1	40.6	NO
59	30	PFTeDA	712.9 > 668.8	8.35e3	8.26e3	0.250	1.26	6.12	12.6	38.9792	97.4	11.8	NO
60	28	N-MeFOSA	512.1 > 168.9	7.36e2		0.250	0.000	5.80				1.20	NO
61	52	13C2-PFUdA	565 > 519.8	7.92e3	1.19e4	0.250	0.663	5.35	8.29	31.9666	63.9		
62	53	13C2-PFDoA	615.0 > 569.7	8.84e3	9.05e3	0.250	0.976	5.64	12.2	38.4646	76.9		
63	53	13C2-PFDoA	615.0 > 569.7	8.84e3	9.05e3	0.250	0.976	5.64	12.2	38.4646	76.9		
64	55	13C2-PFTeDA	714.8 > 669.6	8.26e3	1.19e4	0.250	0.692	6.12	8.64	38.7112	77.4		
65	54	d3-N-MeFOSA	515.2 > 168.9		1.19e4	0.250							
66	-1												
67	31	N-EtFOSA	526.1 > 168.9	7.28e2		0.250	0.000	6.23				1.43	NO
68	32	PFHxDA	813.1 > 768.6	1.19e3	1.34e3	0.250	0.442	6.47	4.42	32.6908	81.7	29.6	NO
69	33	PFODA	913.1 > 868.8	6.74e1	1.34e3	0.250	0.0251	6.71	0.251	1.4873	3.7		
70	34	N-MeFOSE	616.1 > 58.9	1.54e3		0.250	0.000	6.41					
71	35	N-EtFOSE	630.1 > 58.9	1.79e3		0.250	0.000	6.56					
72	56	d5-N-ETFOSA	531.1 > 168.9		1.19e4	0.250							

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Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
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Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
73	57	13C2-PFHxDA	815 > 769.7	1.34e3	1.19e4	0.250	0.281	6.47	1.41	4.5131	22.6		
74	57	13C2-PFHxDA	815 > 769.7	1.34e3	1.19e4	0.250	0.281	6.47	1.41	4.5131	22.6		
75	58	d7-N-MeFOSE	623.1 > 58.9		1.19e4	0.250							
76	59	d9-N-EtFOSE	639.2 > 58.8		1.19e4	0.250							
77	-1												
78	73	TCDA	498.3>106.9			0.250							
79	61	13C5-PFHxA	318 > 272.9	8.50e3	8.50e3	0.250	1.00	3.01	12.5	50.0000	100.0		
80	47	13C8-PFOS	507.0 > 79.9	2.25e3	2.51e3	0.250	0.896	4.72	11.2	44.7080	89.4		
81	60	13C4-PFBA	217. > 171.8	6.32e3	6.32e3	0.250	1.00	1.16	12.5	50.0000	100.0		
82	62	13C3-PFHxS	401.9 > 79.9	2.49e3	2.49e3	0.250	1.00	3.80	12.5	50.0000	100.0		
83	63	13C8-PFOA	421.3 > 376	9.69e3	9.69e3	0.250	1.00	4.18	12.5	50.0000	100.0		
84	64	13C9-PFNA	472.2 > 426.9	1.09e4	1.09e4	0.250	1.00	4.63	12.5	50.0000	100.0		
85	65	13C4-PFOS	503 > 79.9	2.51e3	2.51e3	0.250	1.00	4.72	12.5	50.0000	100.0		
86	66	13C6-PFDA	519.1 > 473.7	9.05e3	9.05e3	0.250	1.00	5.02	12.5	50.0000	100.0		
87	67	13C7-PFUdA	570.1 > 524.8	1.19e4	1.19e4	0.250	1.00	5.35	12.5	50.0000	100.0		

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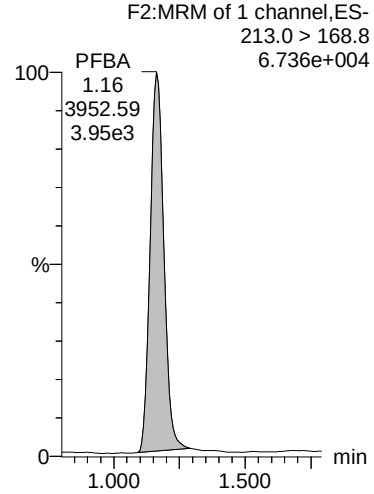
Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

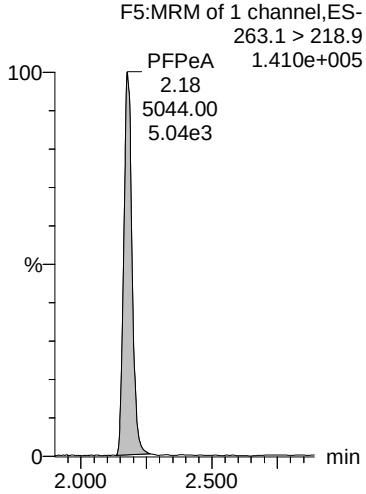
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

PFBA



PFPeA



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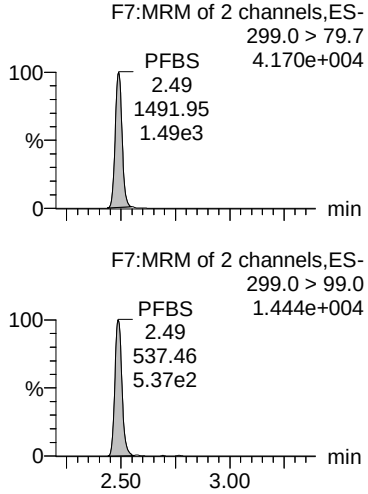

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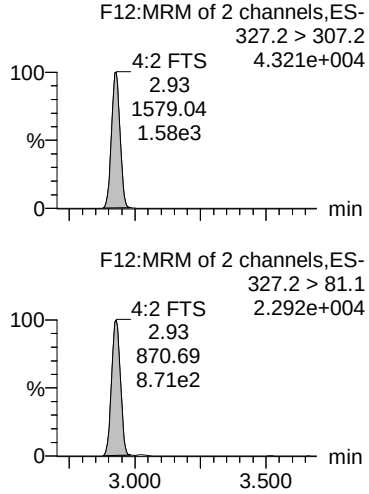
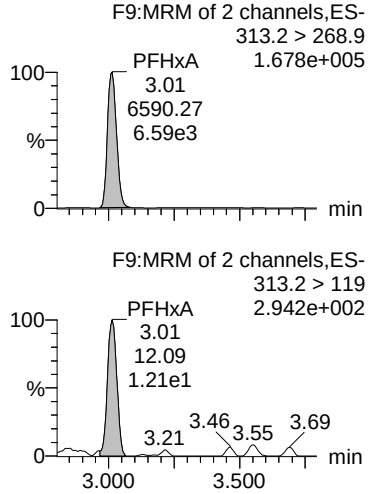
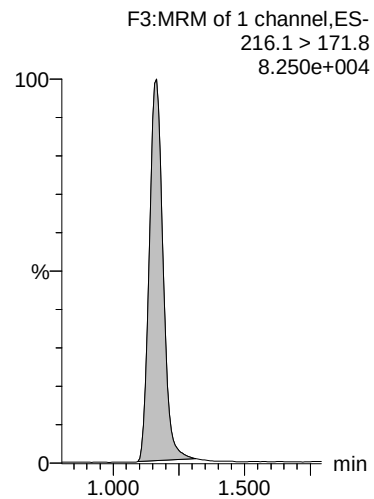


PFHxA



13C3-PFBA



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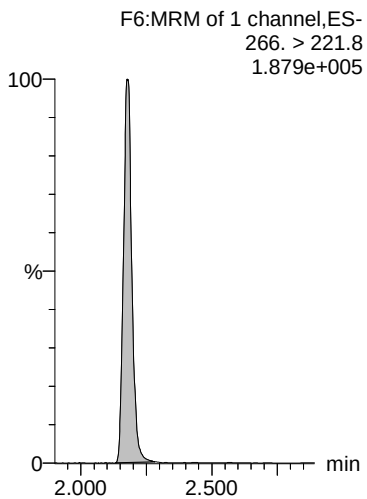
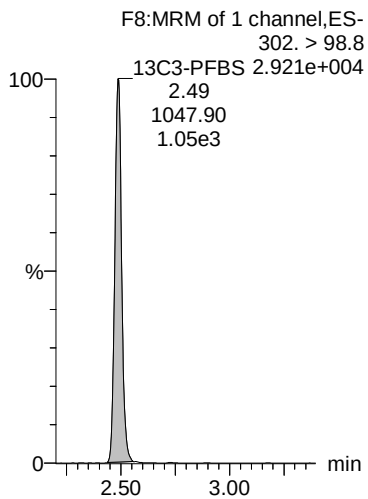


13C3-PFBS



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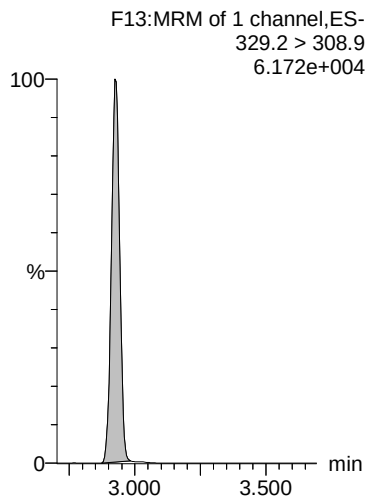
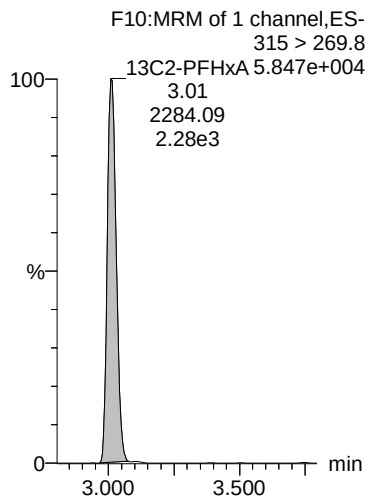


13C2-PFHxA



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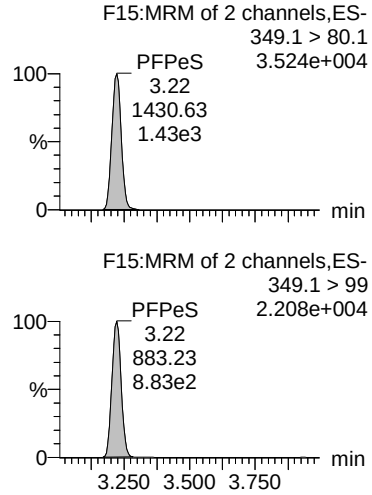
Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

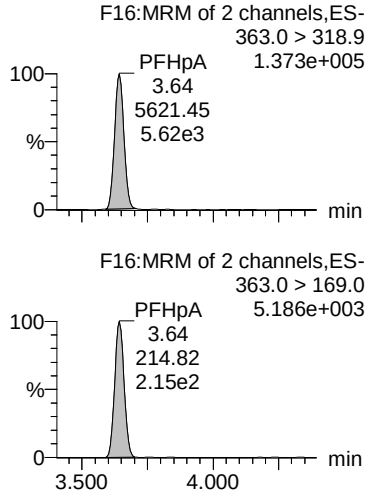
Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

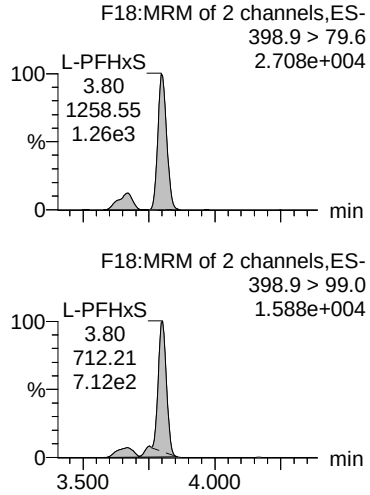
PFPeS



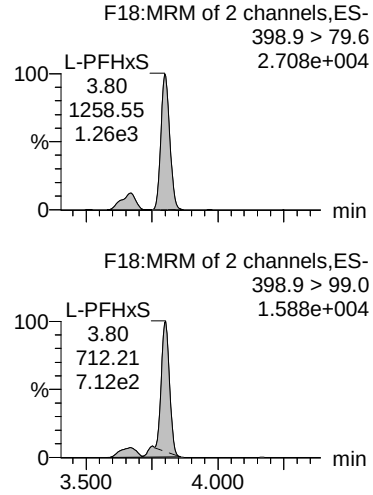
PFHpA



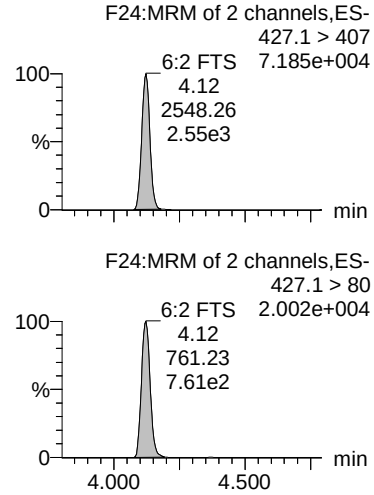
L-PFHxS



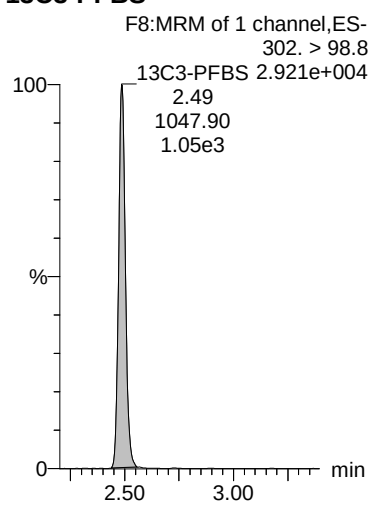
Total PFHxS



6:2 FTS



13C3-PFBS



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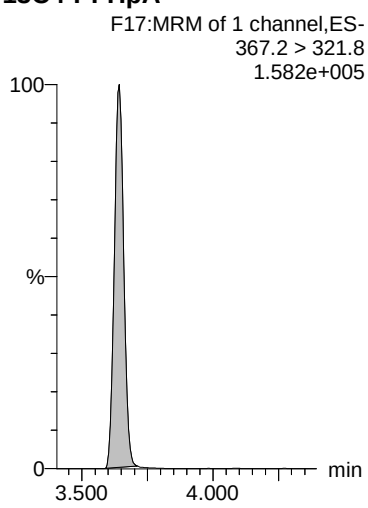

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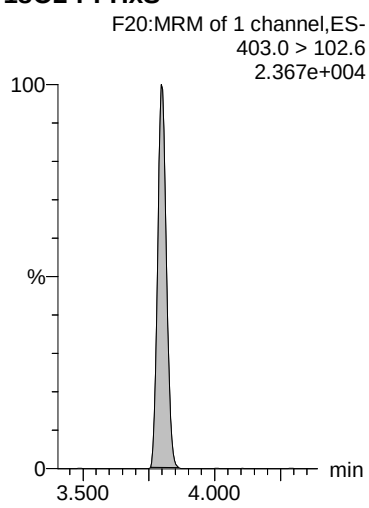

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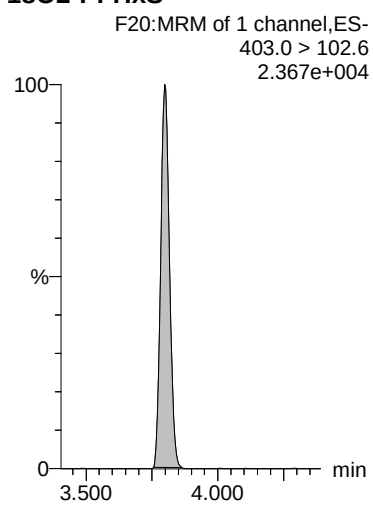
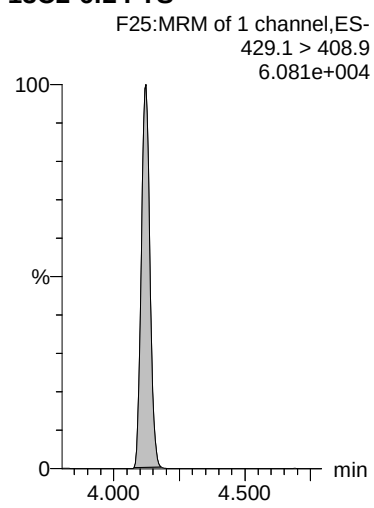


13C2-6:2 FTS



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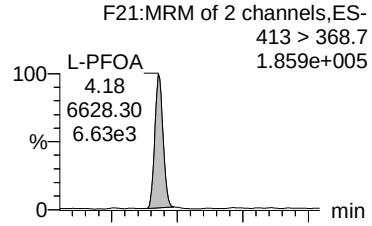
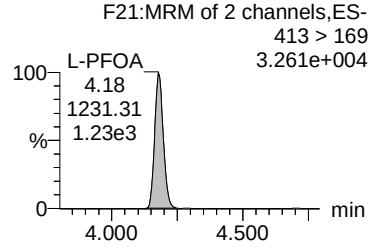
Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

L-PFOA





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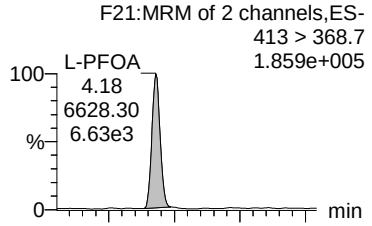

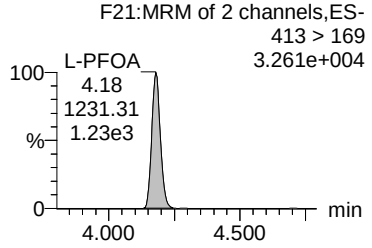

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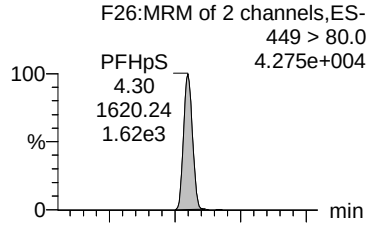

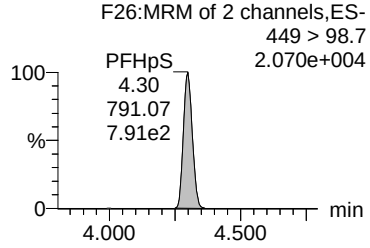

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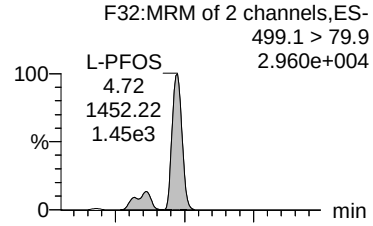

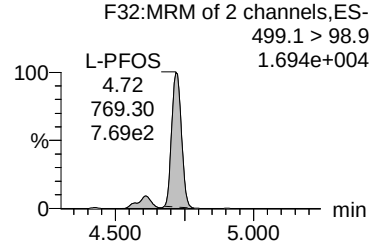

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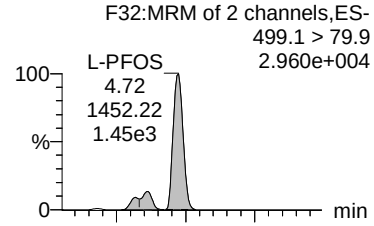
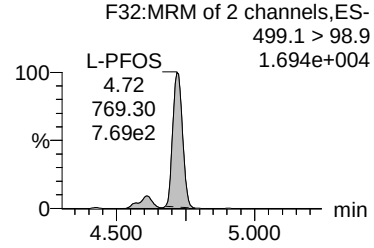
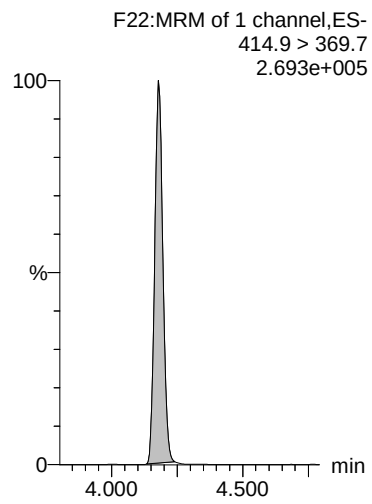




13C2-PFOA



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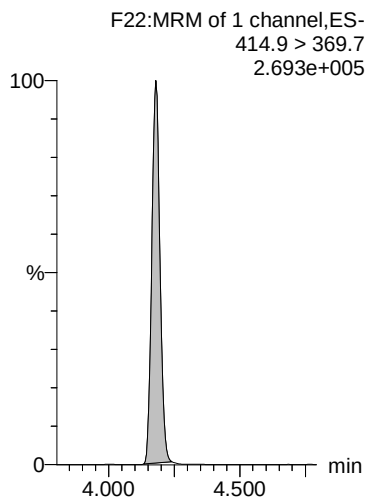

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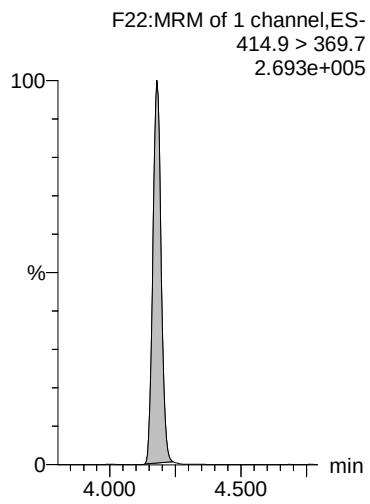
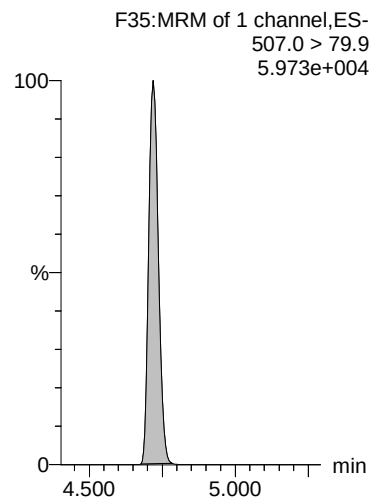


13C8-PFOS



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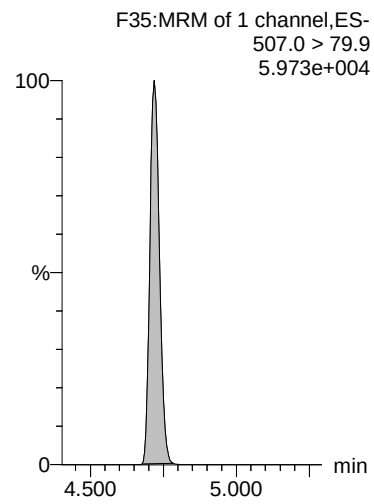


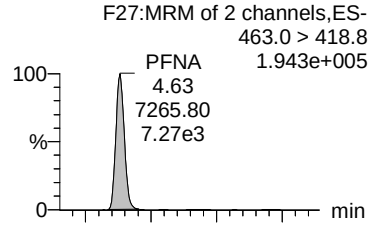
CGH 6/21/2018

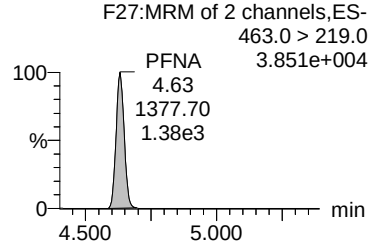
Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

PFNA





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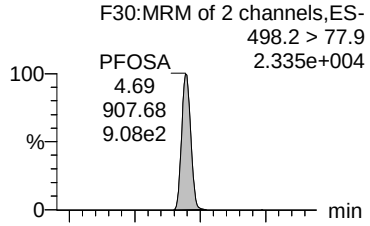

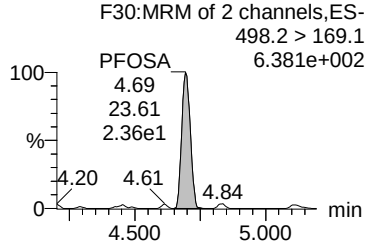

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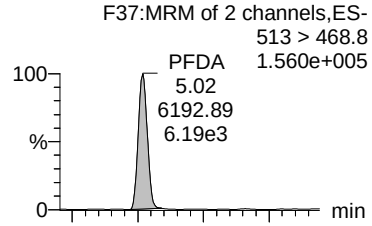

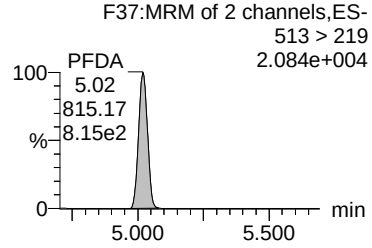

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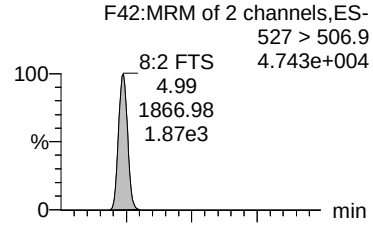
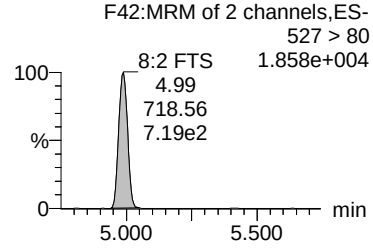
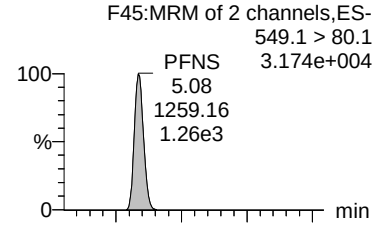
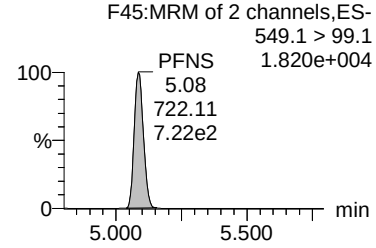


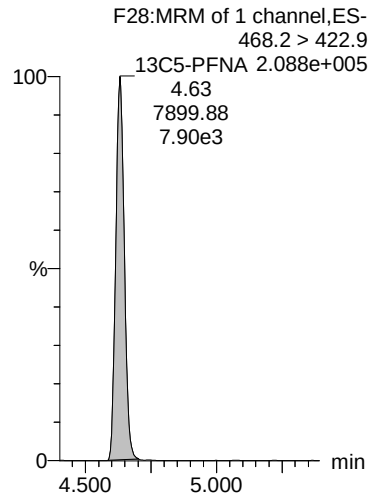


PFNS





13C5-PFNA



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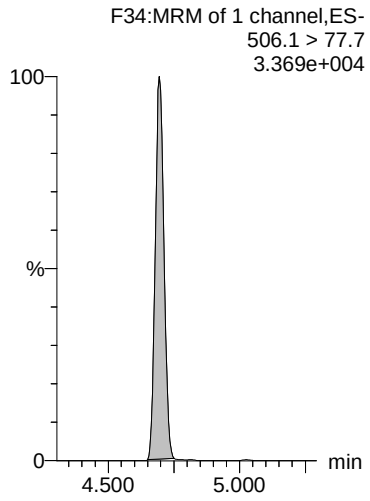

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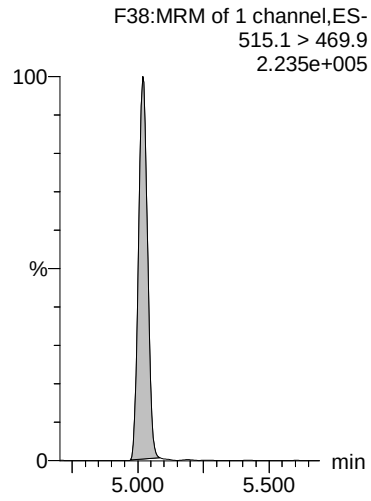

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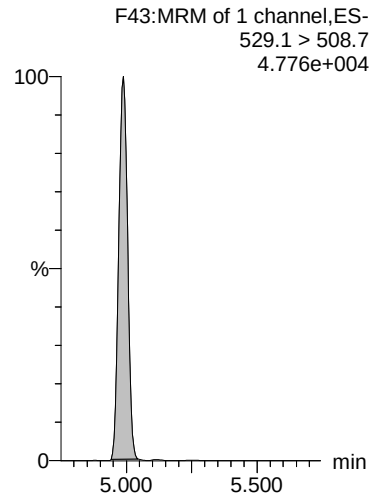

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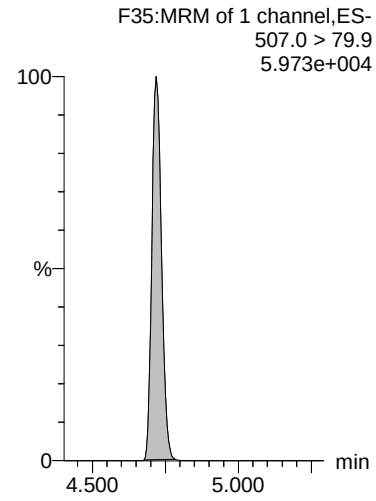

CGH 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

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Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

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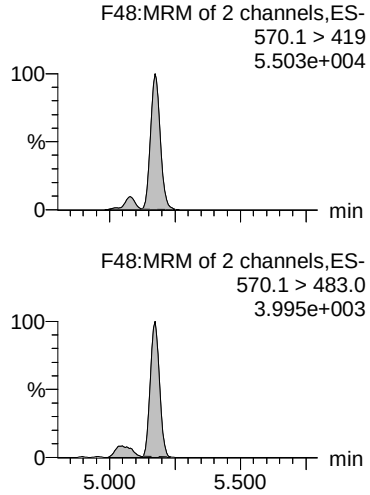

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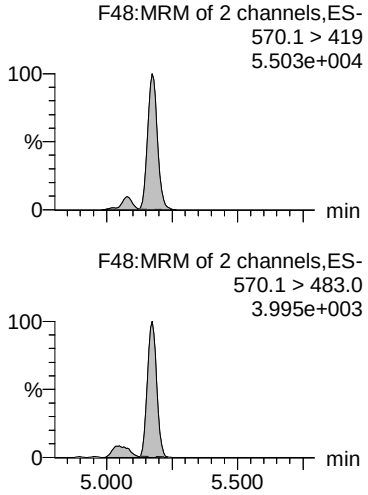

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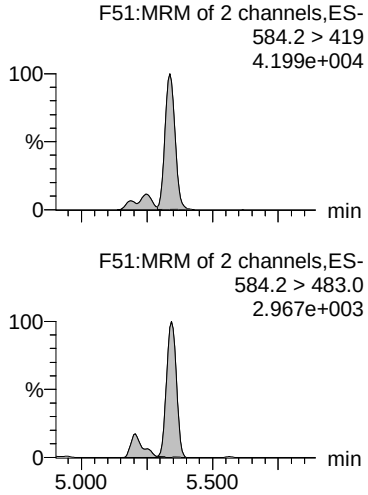

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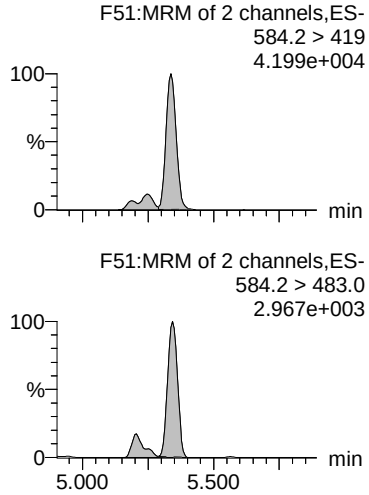

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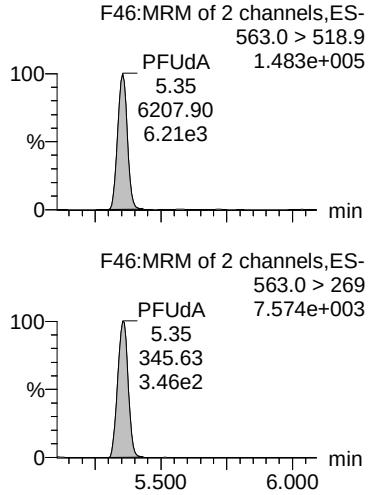

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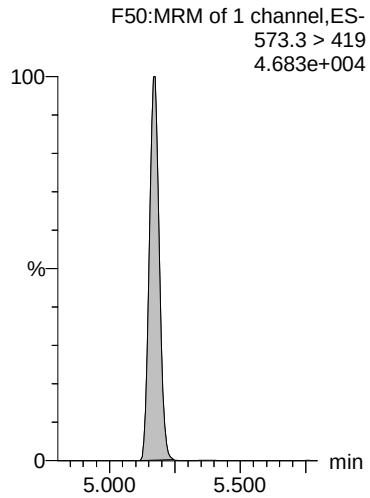

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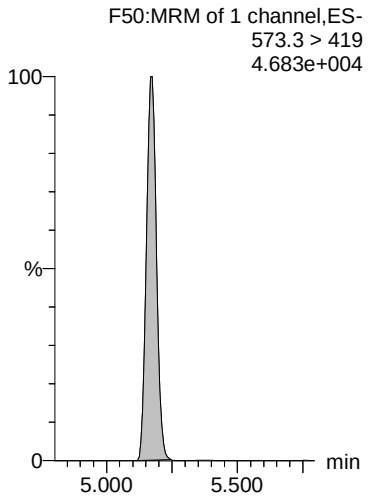

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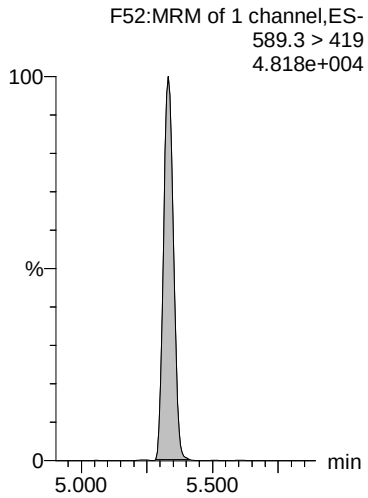

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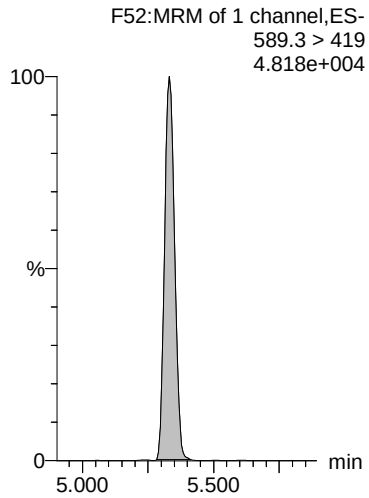

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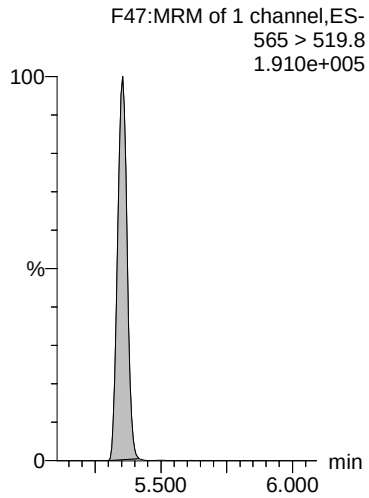

CGH 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

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Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

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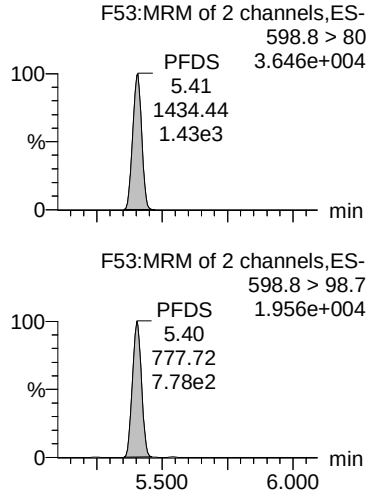

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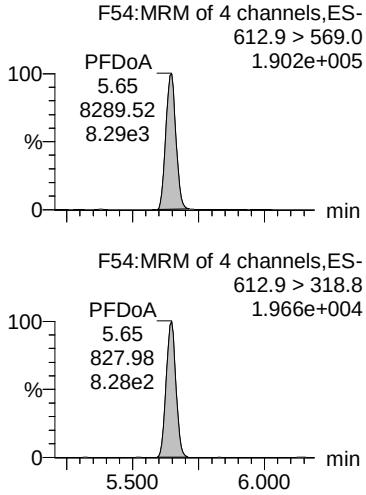

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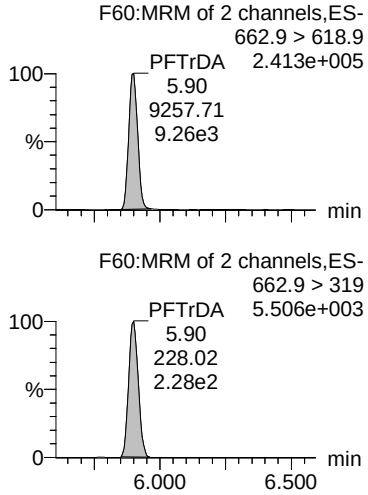

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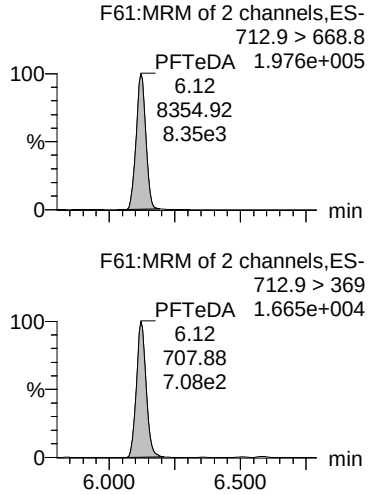
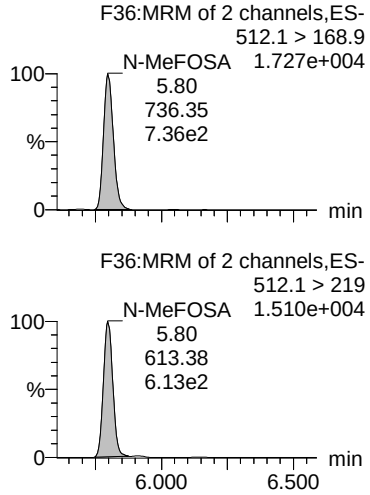


N-MeFOSA



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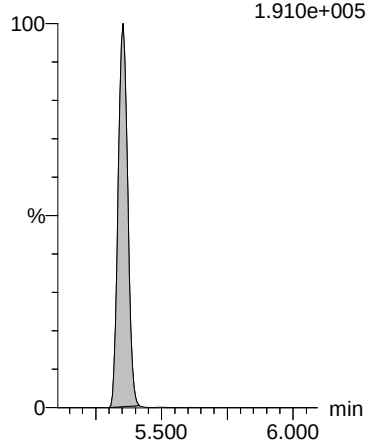

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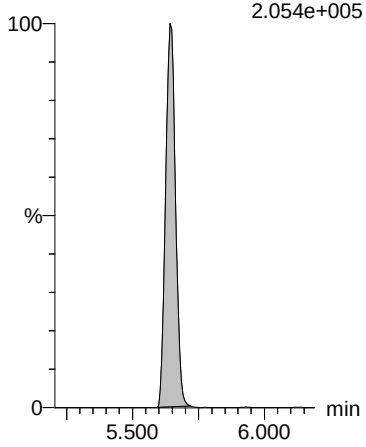

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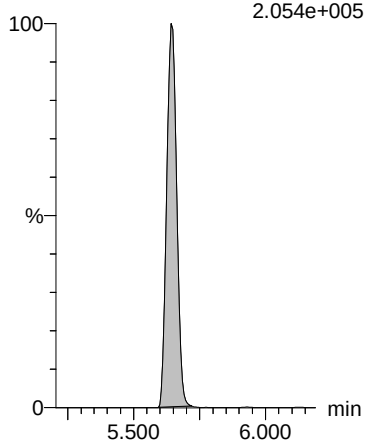

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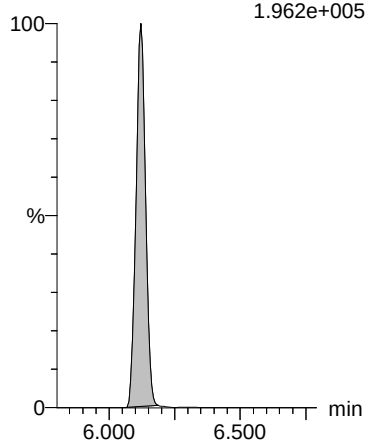
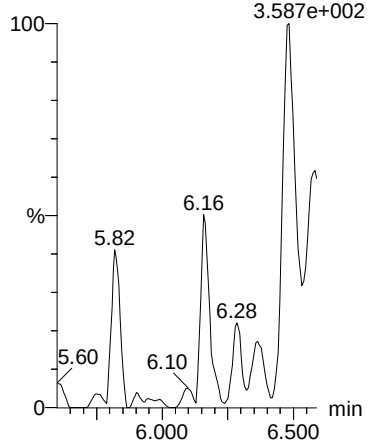


d3-N-MeFOSA



CGH 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

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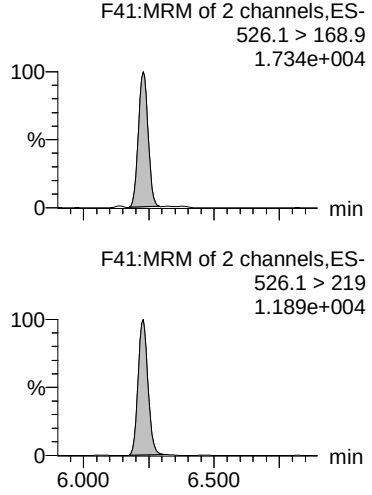
Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

N-EtFOSA



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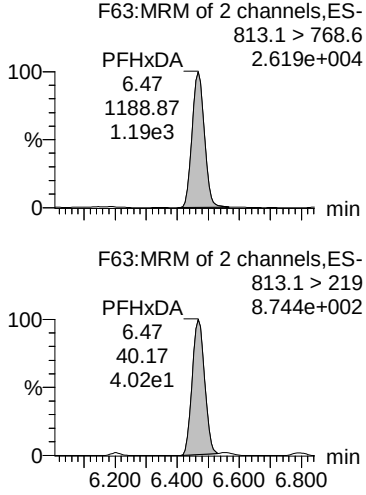
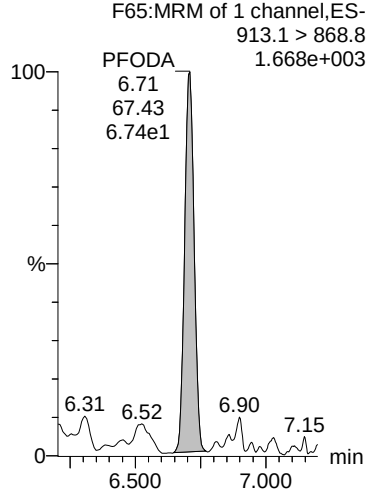
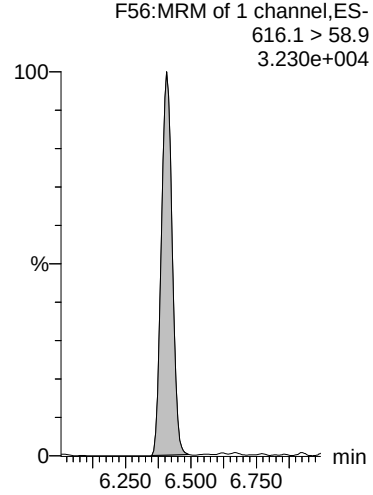


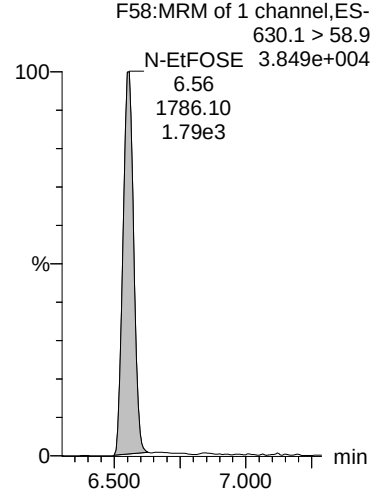
PFODA



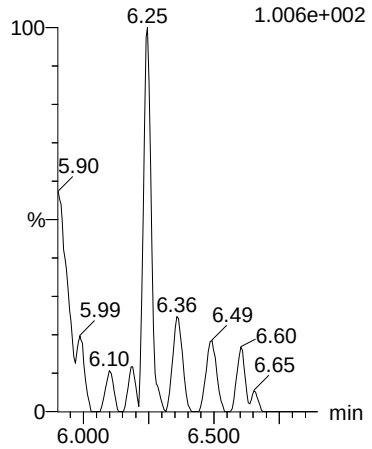
N-MeFOSE



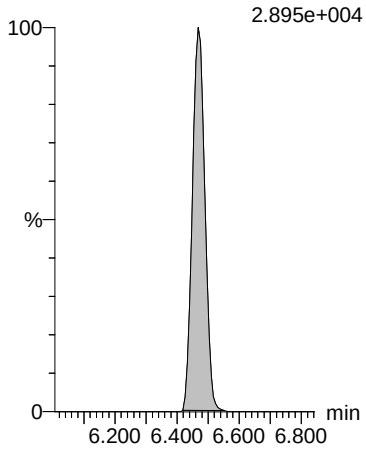
N-EtFOSE



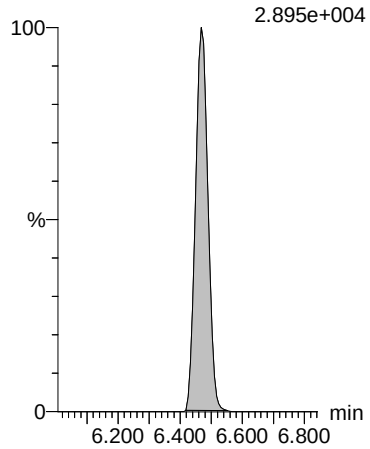
d5-N-ETFOSA



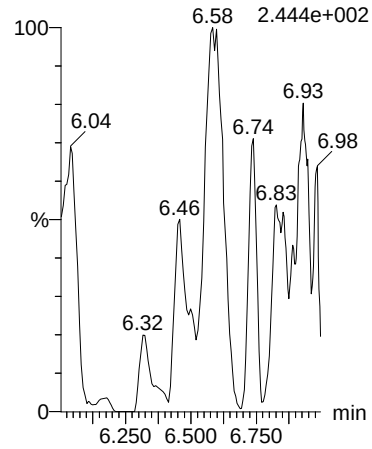
13C2-PFHxDA



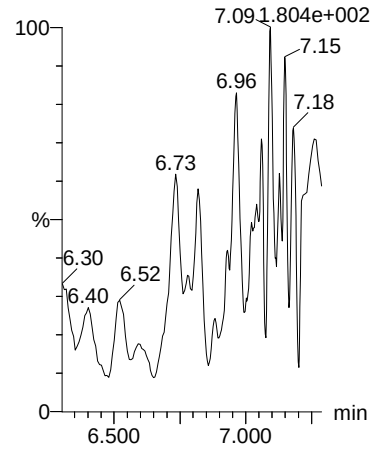
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



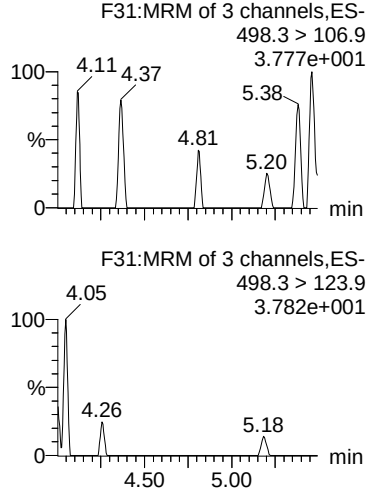
CGH 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180619M1\180619M1-92.qld

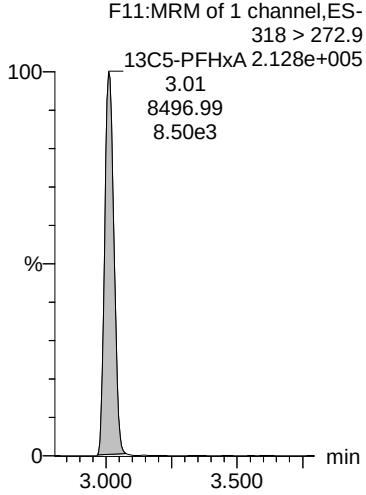
Last Altered: Thursday, June 21, 2018 10:57:38 Pacific Daylight Time
Printed: Thursday, June 21, 2018 11:00:41 Pacific Daylight Time

Name: 180619M1_92, Date: 20-Jun-2018, Time: 09:29:16, ID: B8F0069-BS1 OPR 0.25, Description: OPR

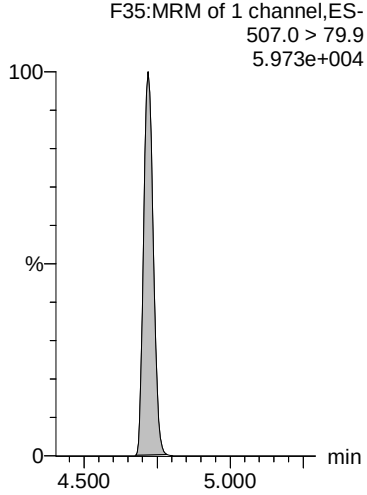
TCDA



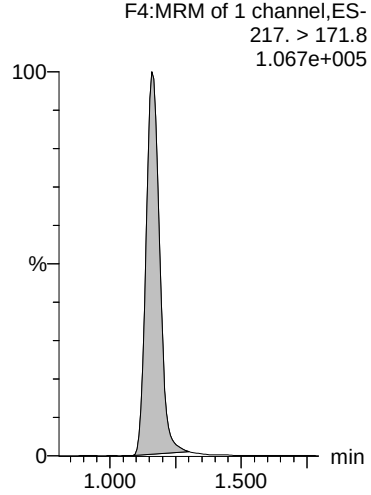
13C5-PFHxA



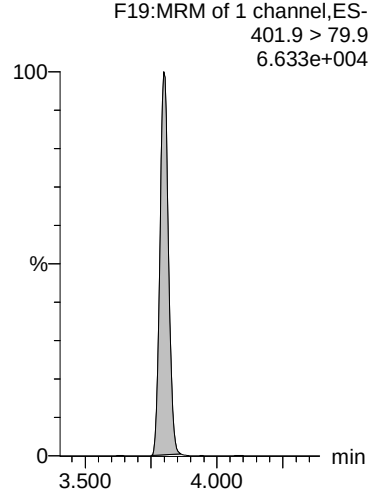
13C8-PFOS



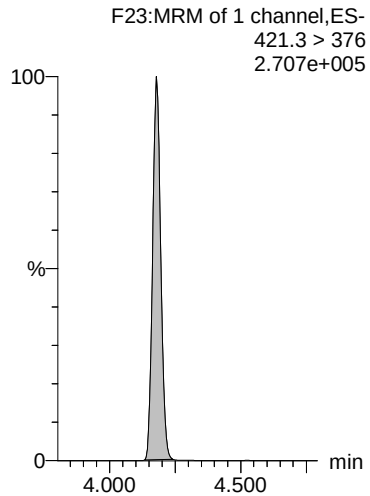
13C4-PFBA



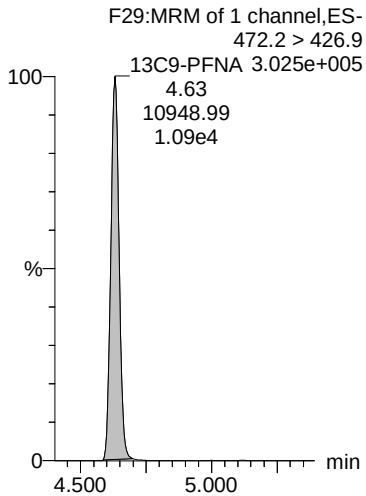
13C3-PFHxS



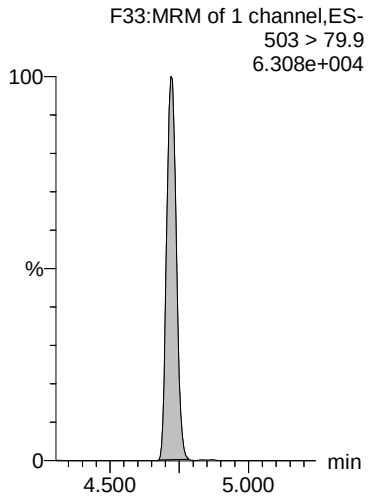
13C8-PFOA



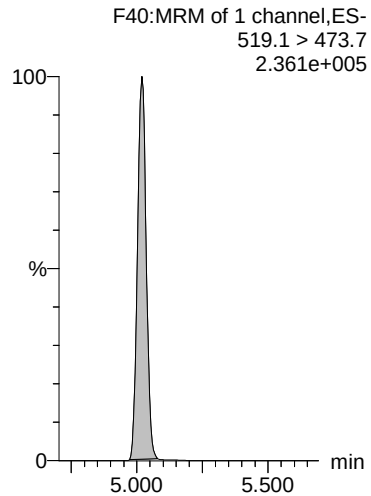
13C9-PFNA



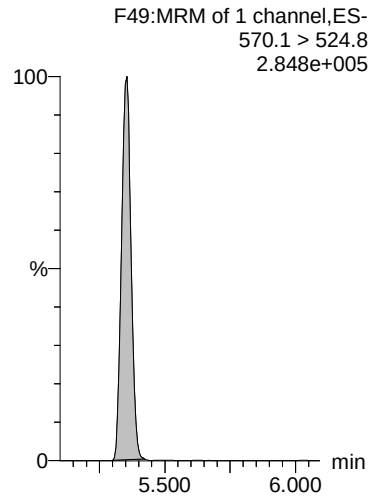
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 6/21/2018

Vista Analytical Laboratory

MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-39.qld

Last Altered: Tuesday, June 19, 2018 16:07:54 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 16:10:01 Pacific Daylight Time

Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

	#	Name	Trace	Area	IS Area	wt/vol	RRF	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7	1.39e3	8.86e2	0.250	1.96	2.51	2.50	19.6	37.4590	93.6	2.971	NO
2	5	PFHxA	313.2 > 268.9	5.96e3	1.94e3	0.250	1.54	3.02	3.02	15.4	40.4419	101.1	253.526	NO
3	7	PFHpA	363.0 > 318.9	4.87e3	4.97e3	0.250	1.23	3.64	3.64	12.3	41.3974	103.5	20.056	NO
4	8	L-PFHxS	398.9 > 79.6	1.11e3	8.05e2	0.250	1.72	3.81	3.79	17.2	36.6802	91.7	1.926	NO
5	68	Total PFHxS	398.9 > 79.6	1.11e3	8.05e2	0.250		4.05		17.2	36.6802			
6	11	L-PFOA	413 > 368.7	5.43e3	7.13e3	0.250	0.953	4.24	4.17	9.53	40.7664	101.9	4.583	NO
7	69	Total PFOA	413 > 368.7	5.43e3	7.13e3	0.250		4.30		9.53	40.7664			
8	38	13C3-PFBS	302. > 98.8	8.86e2	6.70e3	0.250	0.132	2.50	2.50	1.65	62.0560	124.1		
9	40	13C2-PFHxA	315 > 269.8	1.94e3	6.70e3	0.250	0.723	3.02	3.02	3.62	19.3332	96.7		
10	41	13C4-PFHpA	367.2 > 321.8	4.97e3	6.70e3	0.250	0.742	3.64	3.64	9.27	48.9638	97.9		
11	42	18O2-PFHxS	403.0 > 102.6	8.05e2	1.82e3	0.250	0.443	3.80	3.80	5.54	47.0045	94.0		
12	42	18O2-PFHxS	403.0 > 102.6	8.05e2	1.82e3	0.250	0.443	3.80	3.80	5.54	47.0045	94.0		
13	44	13C2-PFOA	414.9 > 369.7	7.13e3	5.78e3	0.250	1.23	4.17	4.17	15.4	45.6619	91.3		
14	44	13C2-PFOA	414.9 > 369.7	7.13e3	5.78e3	0.250	1.23	4.17	4.17	15.4	45.6619	91.3		
15	-1													
16	14	PFNA	463.0 > 418.8	5.14e3	5.60e3	0.250	1.15	4.62	4.62	11.5	36.0675	90.2	5.073	NO
17	16	L-PFOS	499.1 > 79.9	1.15e3	1.75e3	0.250	0.820	4.72	4.71	8.20	37.2851	93.2	1.864	NO
18	70	Total PFOS	499.1 > 79.9	1.15e3	1.75e3	0.250		4.90		8.20	37.2851			
19	18	PFDA	513 > 468.8	4.49e3	5.79e3	0.250	0.968	5.01	5.01	9.68	38.9119	97.3	6.133	NO
20	21	L-MeFOSAA	570.1 > 419	2.05e3	1.60e3	0.250	1.60	5.06	5.16	16.0	36.4907	91.2	14.238	NO
21	71	Total N-MeFOSAA	570.1 > 419	2.05e3	1.60e3	0.250		5.55		16.0	36.4907			
22	25	PFUdA	563.0 > 518.9	5.00e3	5.93e3	0.250	1.05	5.34	5.34	10.5	41.4594	103.6	19.455	NO
23	45	13C5-PFNA	468.2 > 422.9	5.60e3	6.91e3	0.250	0.811	4.62	4.62	10.1	43.5561	87.1		
24	47	13C8-PFOS	507.0 > 79.9	1.75e3	1.71e3	0.250	1.03	4.71	4.71	12.8	50.9815	102.0		
25	47	13C8-PFOS	507.0 > 79.9	1.75e3	1.71e3	0.250	1.03	4.71	4.71	12.8	50.9815	102.0		
26	48	13C2-PFDA	515.1 > 469.9	5.79e3	7.03e3	0.250	0.824	5.01	5.01	10.3	33.2418	66.5		
27	50	d3-N-MeFOSAA	573.3 > 419	1.60e3	8.12e3	0.250	0.197	5.16	5.15	2.46	37.6050	75.2		
28	50	d3-N-MeFOSAA	573.3 > 419	1.60e3	8.12e3	0.250	0.197	5.16	5.15	2.46	37.6050	75.2		
29	52	13C2-PFUdA	565 > 519.8	5.93e3	8.12e3	0.250	0.731	5.34	5.34	9.13	35.6442	71.3		
30	-1													
31	23	L-EtFOSAA	584.2 > 419	1.62e3	1.62e3	0.250	1.25	5.34	5.32	12.5	48.1007	120.3	23.948	YES
32	72	Total N-EtFOSAA	584.2 > 419	1.62e3	1.62e3	0.250		5.70		12.5	48.1007			
33	29	PFTrDA	662.9 > 618.9	7.68e3	7.19e3	0.250	1.34	5.88	5.88	13.4	40.3984	101.0	31.343	NO
34	27	PFDoA	612.9 > 569.0	6.64e3	7.19e3	0.250	1.15	5.63	5.63	11.5	37.7242	94.3	8.690	NO
35	30	PFTeDA	712.9 > 668.8	6.31e3	5.36e3	0.250	1.47	6.10	6.10	14.7	37.8049	94.5	12.048	NO
36	73	TCDA	498.3>106.9			0.250		5.11						

CGH 6/19/2018

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MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-39.qld

Last Altered: Tuesday, June 19, 2018 16:07:54 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 16:10:01 Pacific Daylight Time

Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

	#	Name	Trace	Area	IS Area	wt/vol	RRF	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	61	13C5-PFHxA	318 > 272.9	6.70e3	6.70e3	0.250	1.00	3.02	3.02	12.5	50.0000	100.0		
38	51	d5-N-EtFOSAA	589.3 > 419	1.62e3	8.12e3	0.250	0.200	5.32	5.32	2.49	31.4564	62.9		
39	51	d5-N-EtFOSAA	589.3 > 419	1.62e3	8.12e3	0.250	0.200	5.32	5.32	2.49	31.4564	62.9		
40	53	13C2-PFDoA	615.0 > 569.7	7.19e3	7.03e3	0.250	1.02	5.63	5.63	12.8	41.9777	84.0		
41	53	13C2-PFDoA	615.0 > 569.7	7.19e3	7.03e3	0.250	1.02	5.63	5.63	12.8	41.9777	84.0		
42	55	13C2-PFTeDA	714.8 > 669.6	5.36e3	8.12e3	0.250	0.661	6.10	6.10	8.26	40.3525	80.7		
43	47	13C8-PFOS	507.0 > 79.9	1.75e3	1.71e3	0.250	1.03	4.71	4.71	12.8	50.9815	102.0		
44	63	13C8-PFOA	421.3 > 376	5.78e3	5.78e3	0.250	1.00	4.17	4.17	12.5	50.0000	100.0		
45	-1													
46	62	13C3-PFHxS	401.9 > 79.9	1.82e3	1.82e3	0.250	1.00	3.79	3.79	12.5	50.0000	100.0		
47	64	13C9-PFNA	472.2 > 426.9	6.91e3	6.91e3	0.250	1.00	4.62	4.62	12.5	50.0000	100.0		
48	65	13C4-PFOS	503 > 79.9	1.71e3	1.71e3	0.250	1.00	4.71	4.71	12.5	50.0000	100.0		
49	66	13C6-PFDA	519.1 > 473.7	7.03e3	7.03e3	0.250	1.00	5.01	5.01	12.5	50.0000	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	8.12e3	8.12e3	0.250	1.00	5.33	5.33	12.5	50.0000	100.0		

CGH 6/19/2018

Vista Analytical Laboratory

MM 6/19/2018

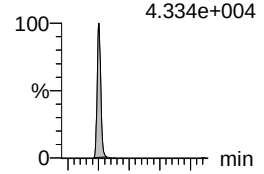
Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-39.qld

Last Altered: Tuesday, June 19, 2018 16:07:54 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 16:10:01 Pacific Daylight Time

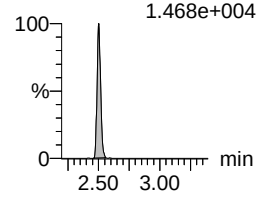
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

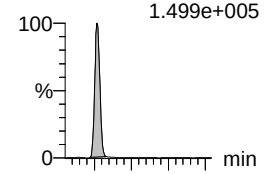
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
4.334e+004



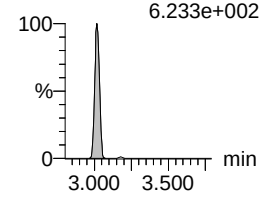
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.468e+004



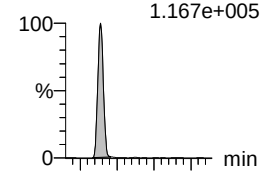
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
1.499e+005



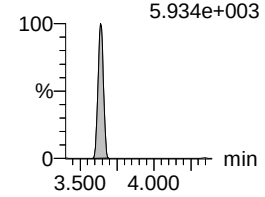
F9:MRM of 2 channels,ES-
313.2 > 119
6.233e+002



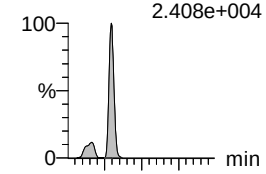
PFHpA
F16:MRM of 2 channels,ES-
363.0 > 318.9
1.167e+005



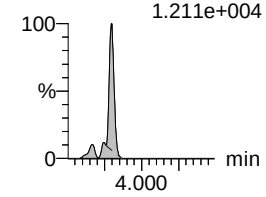
F16:MRM of 2 channels,ES-
363.0 > 169.0
5.934e+003



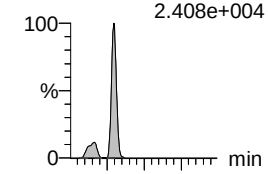
L-PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
2.408e+004



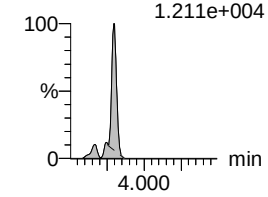
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.211e+004



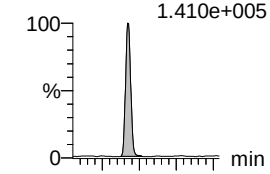
Total PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
2.408e+004



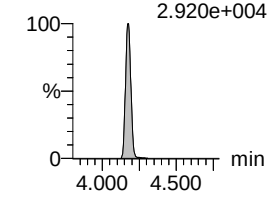
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.211e+004



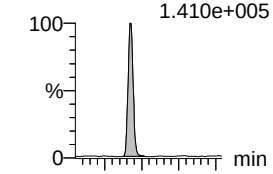
L-PFOA
F21:MRM of 2 channels,ES-
413 > 368.7
1.410e+005



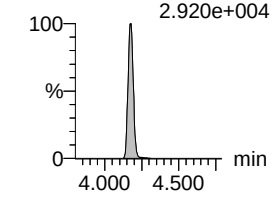
F21:MRM of 2 channels,ES-
413 > 169
2.920e+004



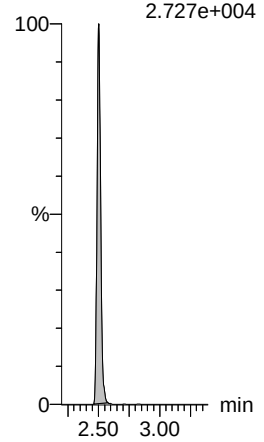
Total PFOA
F21:MRM of 2 channels,ES-
413 > 368.7
1.410e+005



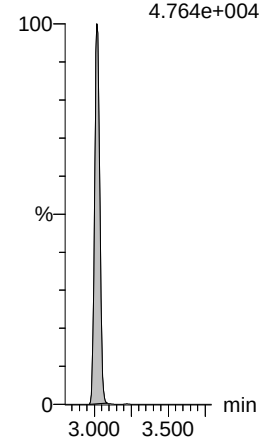
F21:MRM of 2 channels,ES-
413 > 169
2.920e+004



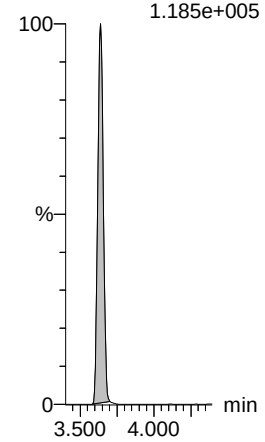
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.727e+004



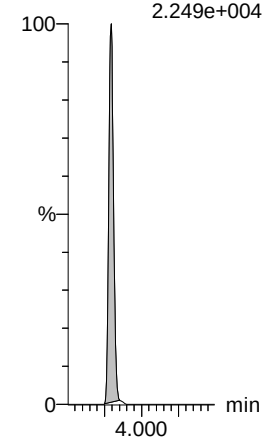
13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
4.764e+004



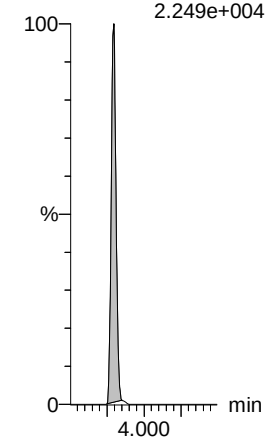
13C4-PFHpA
F17:MRM of 1 channel,ES-
367.2 > 321.8
1.185e+005



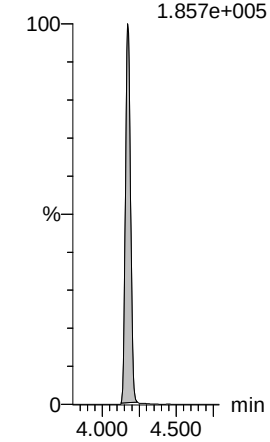
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.249e+004



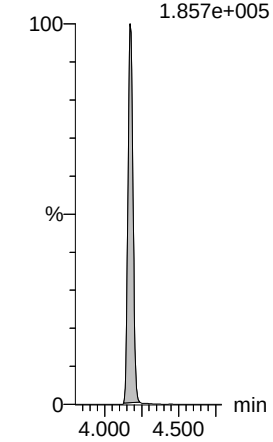
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.249e+004



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
1.857e+005



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
1.857e+005



CGH 6/19/2018

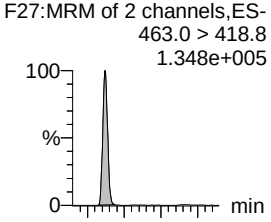
MM 6/19/2018

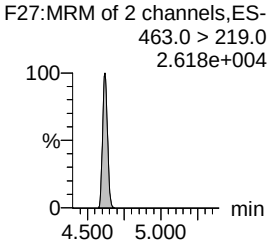
Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-39.qld

Last Altered: Tuesday, June 19, 2018 16:07:54 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 16:10:01 Pacific Daylight Time

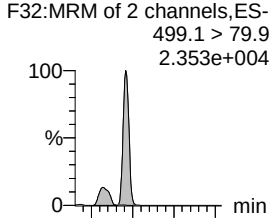
Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

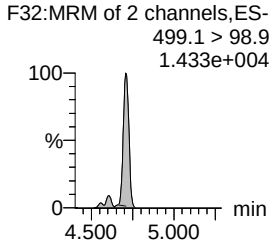
PFNA



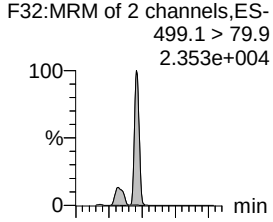


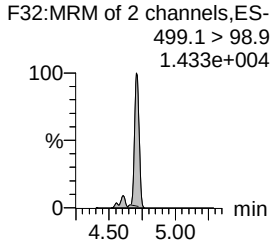
L-PFOS



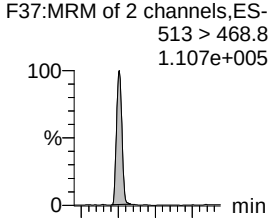


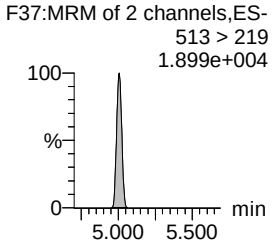
Total PFOS



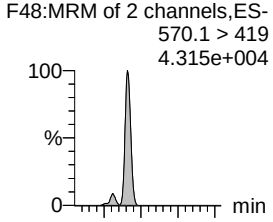


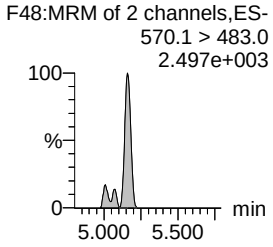
PFDA





L-MeFOSAA





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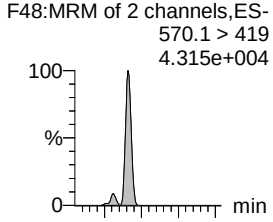
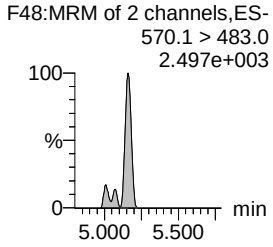
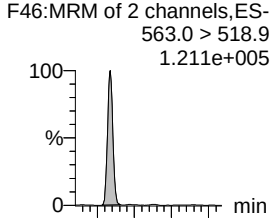
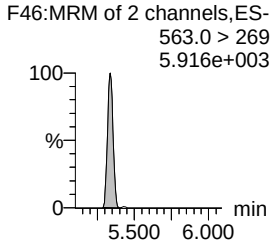


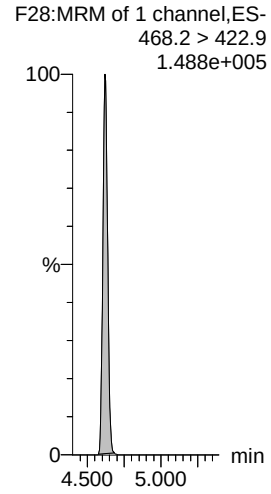


PFUdA

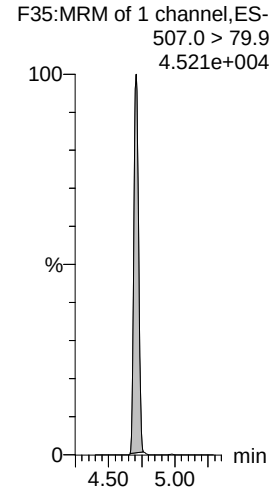




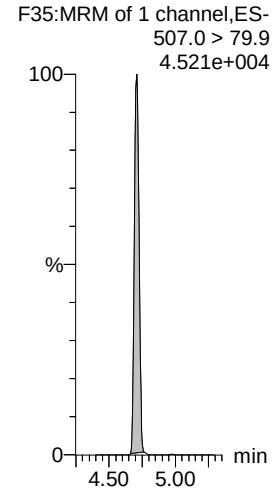
13C5-PFNA



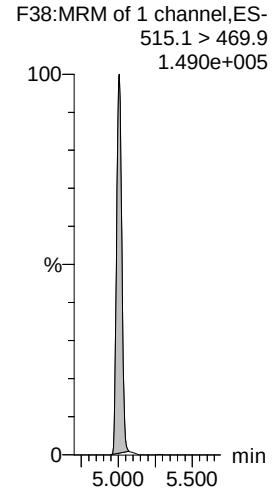
13C8-PFOS



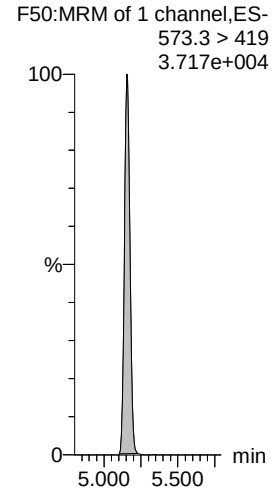
13C8-PFOS



13C2-PFDA



d3-N-MeFOSAA



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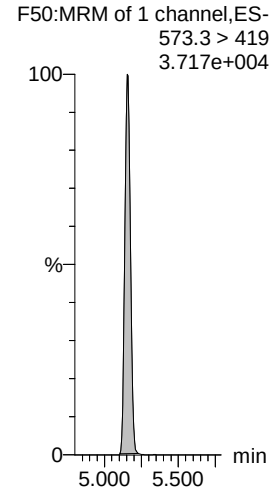
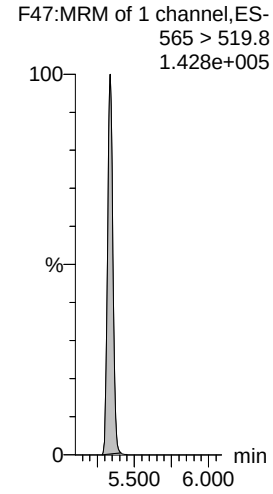


13C2-PFUdA



CGH 6/19/2018

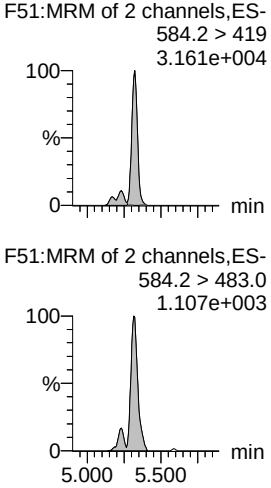
MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-39.qld

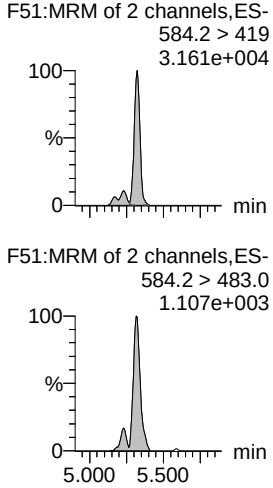
Last Altered: Tuesday, June 19, 2018 16:07:54 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 16:10:01 Pacific Daylight Time

Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

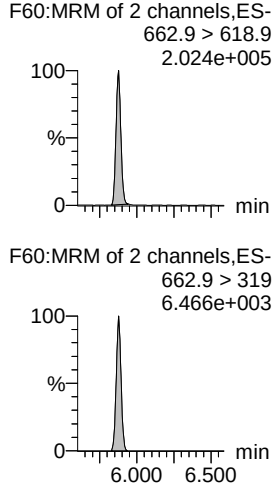
L-EtFOSAA



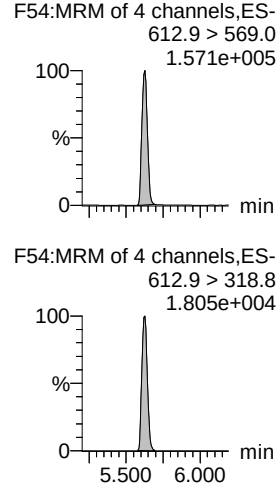
Total N-EtFOSAA



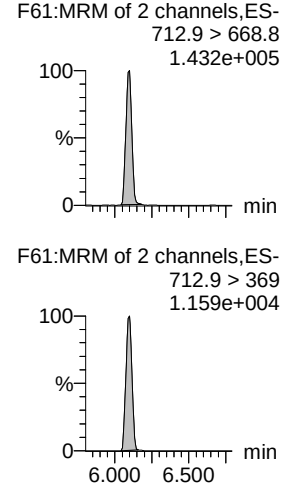
PFTrDA



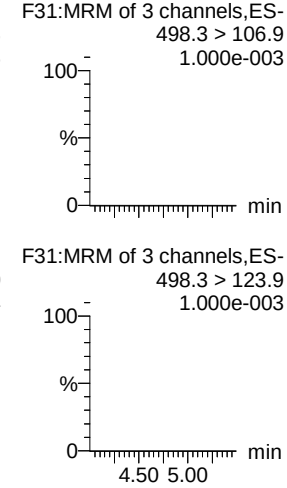
PFDoA



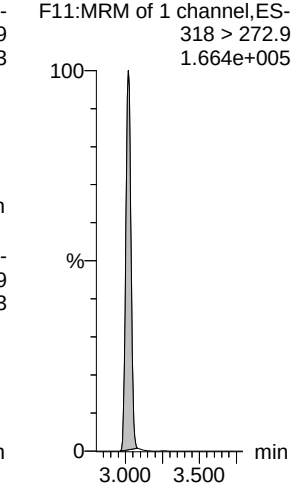
PFTeDA



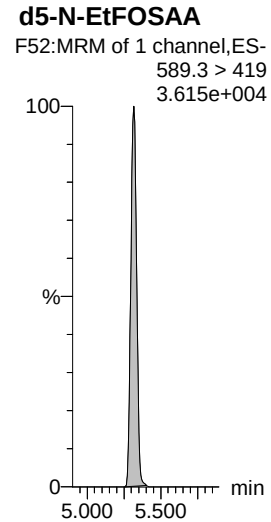
TCDA



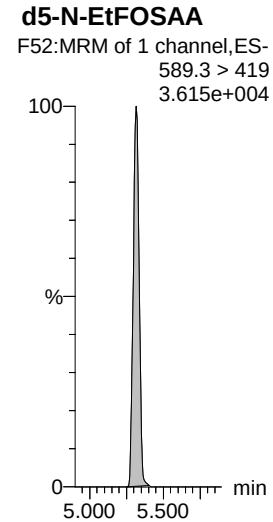
13C5-PFHxA



d5-N-EtFOSAA



d5-N-EtFOSAA



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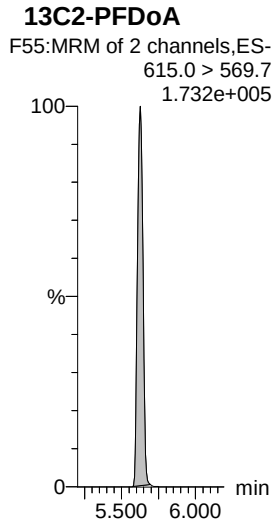

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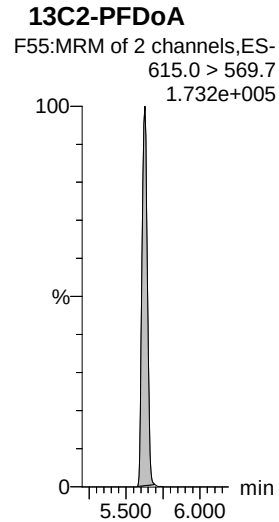
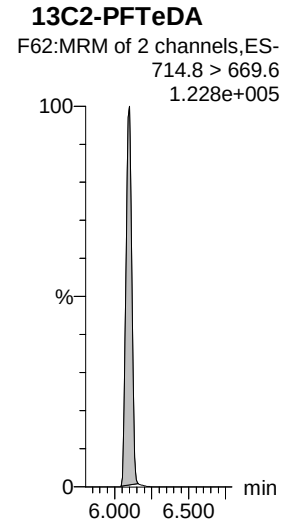
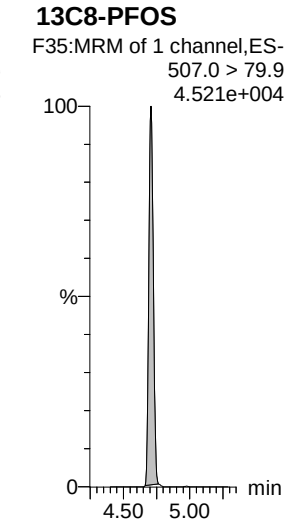


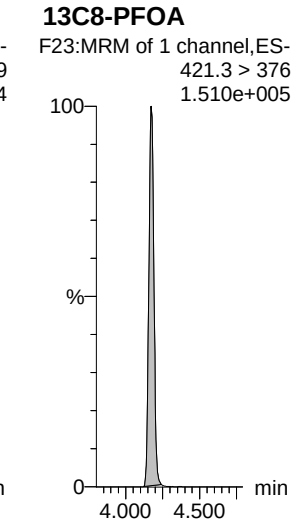
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



CGH 6/19/2018

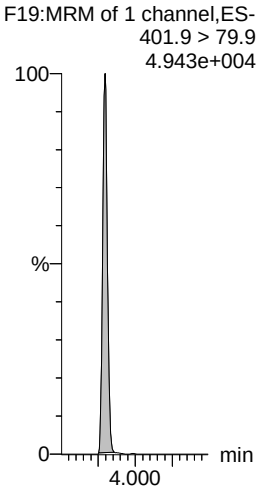
MM 6/19/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-39.qld

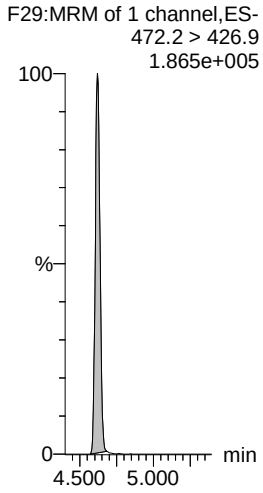
Last Altered: Tuesday, June 19, 2018 16:07:54 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 16:10:01 Pacific Daylight Time

Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

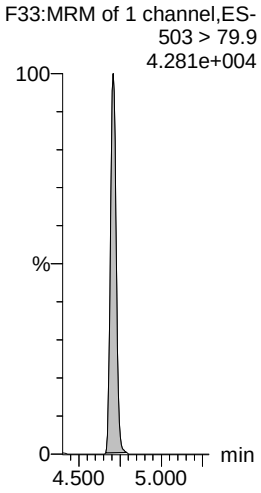
13C3-PFHxS



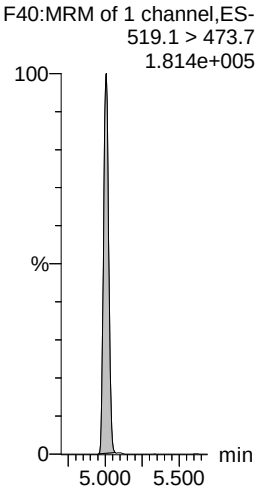
13C9-PFNA



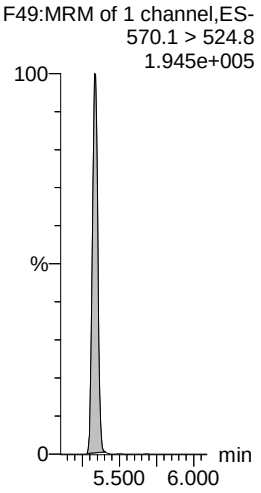
13C4-PFOS



13C6-PFDA



13C7-PFUdA



CGH 6/19/2018

Vista Analytical Laboratory

rev ANP 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-60.qld

Last Altered: Thursday, June 21, 2018 11:25:28 Pacific Daylight Time
Printed: Thursday, June 21, 2018 12:46:40 Pacific Daylight Time

Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

	#	Name	Trace	Area	IS Area	wt/vol	RRF	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	3	PFBS	299.0 > 79.7		9.68e2	0.125		2.50						
2	5	PFHxA	313.2 > 268.9		2.74e3	0.125		3.02						
3	7	PFHpA	363.0 > 318.9		7.23e3	0.125		3.63						
4	8	L-PFHxS	398.9 > 79.6	3.99e0	9.38e2	0.125	0.000	3.81	3.79	0.0532	0.2422		12.424	YES
5	68	Total PFHxS	398.9 > 79.6	3.99e0	9.38e2	0.125		4.05		0.0532	0.2422			
6	11	L-PFOA	413 > 368.7		9.64e3	0.125		4.24						
7	69	Total PFOA	413 > 368.7	0.00e0	9.64e3	0.125		4.30		0.000				
8	38	13C3-PFBS	302. > 98.8	9.68e2	9.74e3	0.125	0.0994	2.50	2.50	1.24	93.0108	93.2		
9	40	13C2-PFHxA	315 > 269.8	2.74e3	9.74e3	0.125	0.703	3.02	3.02	3.52	37.5342	94.0		
10	41	13C4-PFHpA	367.2 > 321.8	7.23e3	9.74e3	0.125	0.742	3.64	3.63	9.28	97.7941	98.0		
11	42	18O2-PFHxS	403.0 > 102.6	9.38e2	2.19e3	0.125	0.429	3.80	3.79	5.36	90.7519	90.9		
12	42	18O2-PFHxS	403.0 > 102.6	9.38e2	2.19e3	0.125	0.429	3.80	3.79	5.36	90.7519	90.9		
13	44	13C2-PFOA	414.9 > 369.7	9.64e3	8.87e3	0.125	1.09	4.17	4.17	13.6	80.2420	80.4		
14	44	13C2-PFOA	414.9 > 369.7	9.64e3	8.87e3	0.125	1.09	4.17	4.17	13.6	80.2420	80.4		
15	-1													
16	14	PFNA	463.0 > 418.8		7.59e3	0.125		4.62						
17	16	L-PFOS	499.1 > 79.9		2.16e3	0.125		4.72						
18	70	Total PFOS	499.1 > 79.9	0.00e0	2.16e3	0.125		4.90		0.000				
19	18	PFDA	513 > 468.8		9.36e3	0.125		5.01						
20	21	L-MeFOSAA	570.1 > 419		1.80e3	0.125		5.06						
21	71	Total N-MeFOSAA	570.1 > 419	0.00e0	1.80e3	0.125		5.55		0.000				
22	25	PFUdA	563.0 > 518.9		6.87e3	0.125		5.34						
23	45	13C5-PFNA	468.2 > 422.9	7.59e3	9.64e3	0.125	0.787	4.62	4.61	9.84	84.3678	84.5		
24	47	13C8-PFOS	507.0 > 79.9	2.16e3	2.52e3	0.125	0.857	4.71	4.70	10.7	84.8236	85.0		
25	47	13C8-PFOS	507.0 > 79.9	2.16e3	2.52e3	0.125	0.857	4.71	4.70	10.7	84.8236	85.0		
26	48	13C2-PFDA	515.1 > 469.9	9.36e3	9.55e3	0.125	0.981	5.01	5.00	12.3	78.9028	79.1		
27	50	d3-N-MeFOSAA	573.3 > 419	1.80e3	1.01e4	0.125	0.179	5.16	5.15	2.24	68.2397	68.4		
28	50	d3-N-MeFOSAA	573.3 > 419	1.80e3	1.01e4	0.125	0.179	5.16	5.15	2.24	68.2397	68.4		
29	52	13C2-PFUdA	565 > 519.8	6.87e3	1.01e4	0.125	0.682	5.34	5.33	8.52	66.3742	66.5		
30	-1													
31	23	L-EtFOSAA	584.2 > 419		2.51e3	0.125		5.34						
32	72	Total N-EtFOSAA	584.2 > 419	0.00e0	2.51e3	0.125		5.70		0.000				
33	29	PFTrDA	662.9 > 618.9		7.07e3	0.125		5.88						
34	27	PFDoA	612.9 > 569.0		7.07e3	0.125		5.63						
35	30	PFTeDA	712.9 > 668.8		5.81e3	0.125		6.10						
36	73	TCDA	498.3>106.9			0.125		5.11						

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Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-60.qld

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Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

	#	Name	Trace	Area	IS Area	wt/vol	RRF	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	61	13C5-PFHxA	318 > 272.9	9.74e3	9.74e3	0.125	1.00	3.02	3.02	12.5	99.7924	100.0		
38	51	d5-N-EtFOSAA	589.3 > 419	2.51e3	1.01e4	0.125	0.249	5.32	5.31	3.11	78.3169	78.5		
39	51	d5-N-EtFOSAA	589.3 > 419	2.51e3	1.01e4	0.125	0.249	5.32	5.31	3.11	78.3169	78.5		
40	53	13C2-PFDoA	615.0 > 569.7	7.07e3	9.55e3	0.125	0.741	5.63	5.62	9.26	60.6784	60.8		
41	53	13C2-PFDoA	615.0 > 569.7	7.07e3	9.55e3	0.125	0.741	5.63	5.62	9.26	60.6784	60.8		
42	55	13C2-PFTeDA	714.8 > 669.6	5.81e3	1.01e4	0.125	0.576	6.10	6.09	7.20	70.1604	70.3		
43	47	13C8-PFOS	507.0 > 79.9	2.16e3	2.52e3	0.125	0.857	4.71	4.70	10.7	84.8236	85.0		
44	63	13C8-PFOA	421.3 > 376	8.87e3	8.87e3	0.125	1.00	4.17	4.17	12.5	99.7924	100.0		
45	-1													
46	62	13C3-PFHxS	401.9 > 79.9	2.19e3	2.19e3	0.125	1.00	3.79	3.79	12.5	99.7924	100.0		
47	64	13C9-PFNA	472.2 > 426.9	9.64e3	9.64e3	0.125	1.00	4.62	4.61	12.5	99.7924	100.0		
48	65	13C4-PFOS	503 > 79.9	2.52e3	2.52e3	0.125	1.00	4.71	4.70	12.5	99.7924	100.0		
49	66	13C6-PFDA	519.1 > 473.7	9.55e3	9.55e3	0.125	1.00	5.01	5.00	12.5	99.7924	100.0		
50	67	13C7-PFUdA	570.1 > 524.8	1.01e4	1.01e4	0.125	1.00	5.33	5.33	12.5	99.7924	100.0		

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Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-60.qld

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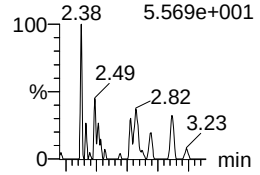
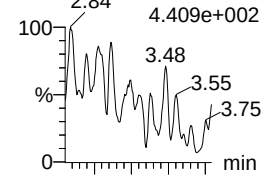
Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

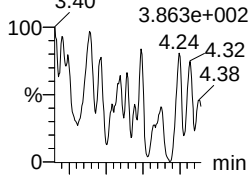
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
5.569e+001



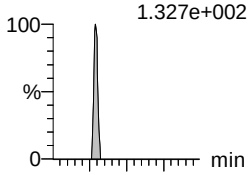
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
4.409e+002



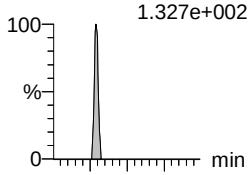
PFHpA
F16:MRM of 2 channels,ES-
363.0 > 318.9
3.863e+002



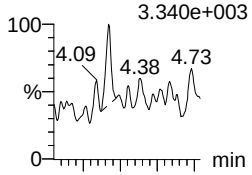
L-PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
1.327e+002



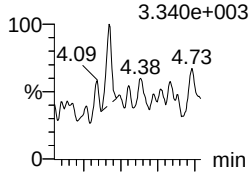
Total PFHxS
F18:MRM of 2 channels,ES-
398.9 > 79.6
1.327e+002



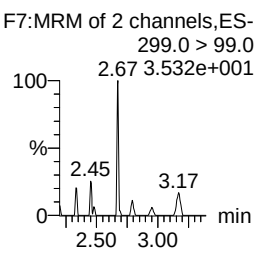
L-PFOA
F21:MRM of 2 channels,ES-
413 > 368.7
3.340e+003



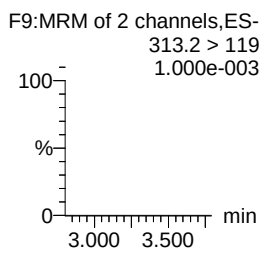
Total PFOA
F21:MRM of 2 channels,ES-
413 > 368.7
3.340e+003



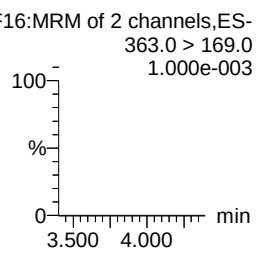
F7:MRM of 2 channels,ES-
299.0 > 99.0
2.67 3.532e+001



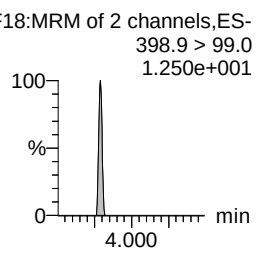
F9:MRM of 2 channels,ES-
313.2 > 119
1.000e-003



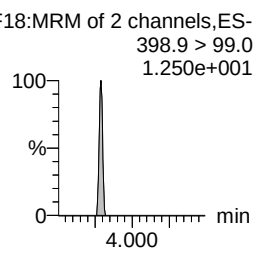
F16:MRM of 2 channels,ES-
363.0 > 169.0
1.000e-003



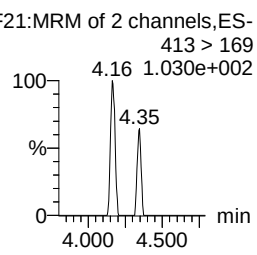
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.250e+001



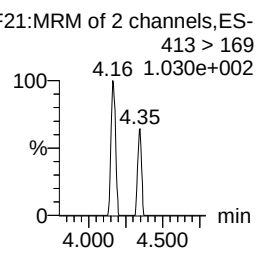
F18:MRM of 2 channels,ES-
398.9 > 99.0
1.250e+001



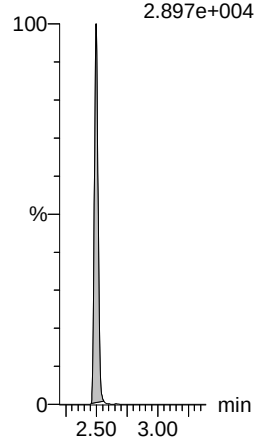
F21:MRM of 2 channels,ES-
413 > 169
1.030e+002



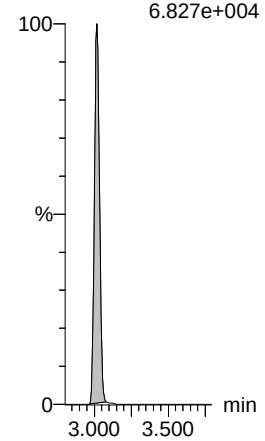
F21:MRM of 2 channels,ES-
413 > 169
1.030e+002



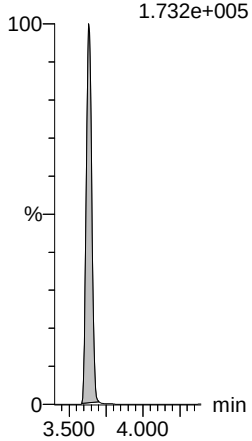
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.897e+004



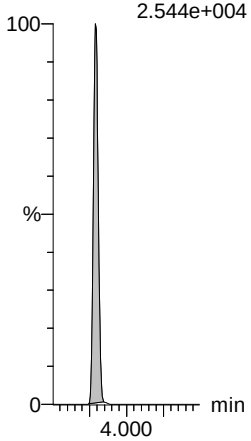
13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
6.827e+004



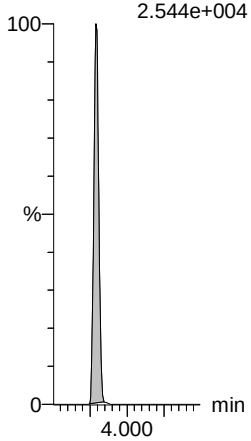
13C4-PFHpA
F17:MRM of 1 channel,ES-
367.2 > 321.8
1.732e+005



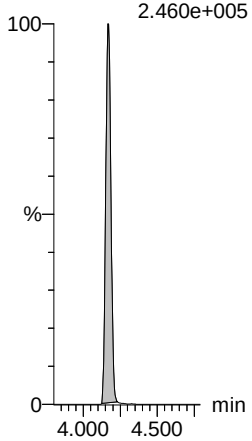
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.544e+004



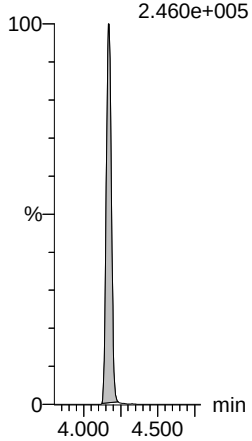
18O2-PFHxS
F20:MRM of 1 channel,ES-
403.0 > 102.6
2.544e+004



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
2.460e+005



13C2-PFOA
F22:MRM of 1 channel,ES-
414.9 > 369.7
2.460e+005



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Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-60.qld

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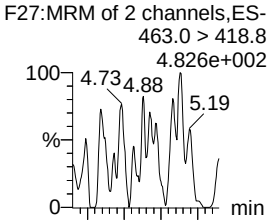
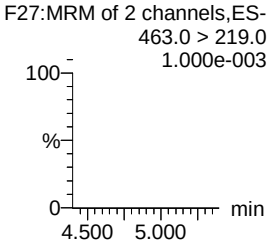
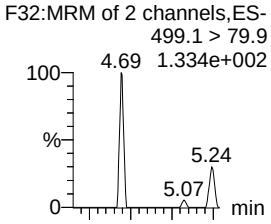
Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

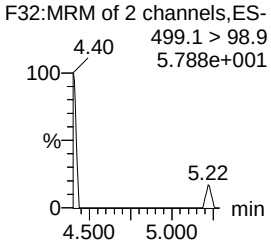
PFNA



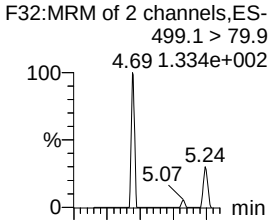


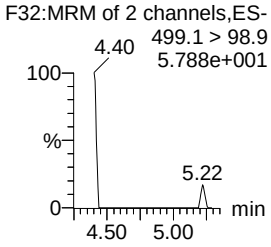
L-PFOS



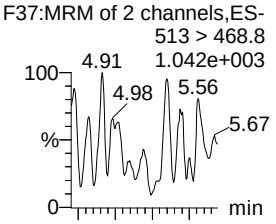


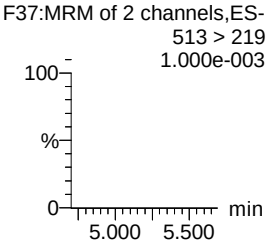
Total PFOS



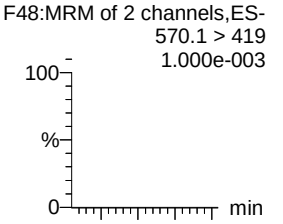


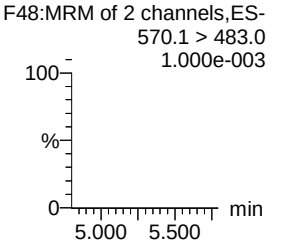
PFDA



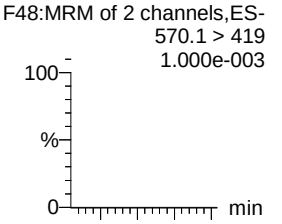


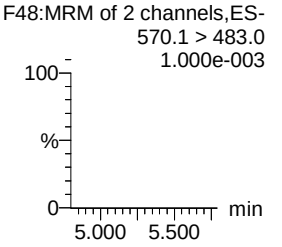
L-MeFOSAA



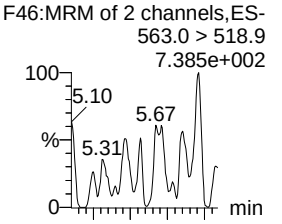


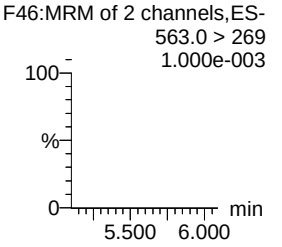
Total N-MeFOSAA



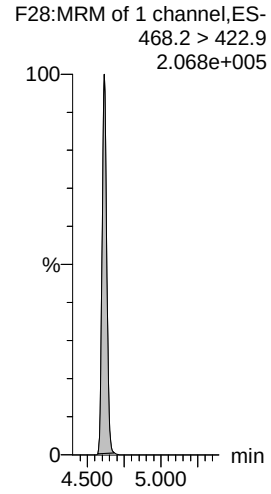


PFUdA

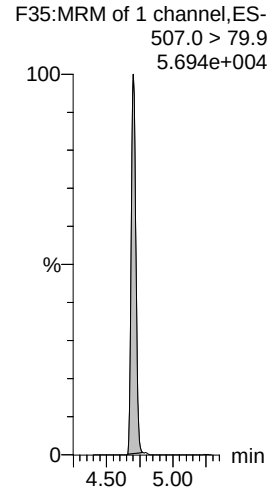




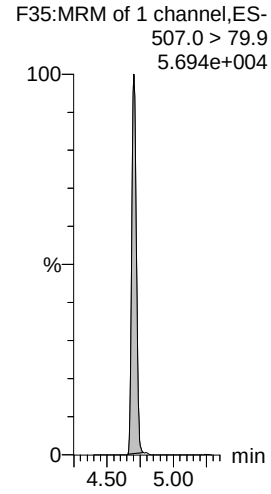
13C5-PFNA



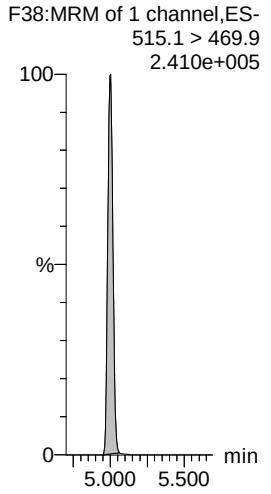
13C8-PFOS



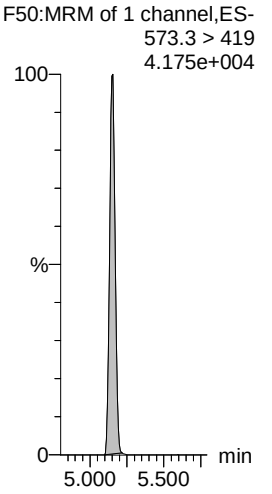
13C8-PFOS



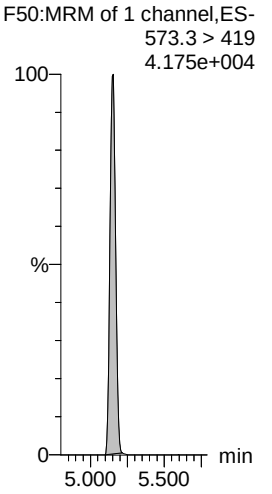
13C2-PFDA



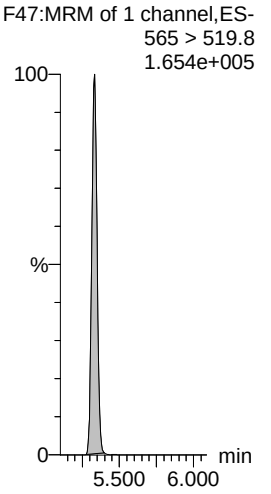
d3-N-MeFOSAA



d3-N-MeFOSAA



13C2-PFUdA



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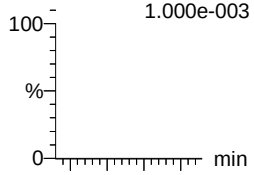
rev ANP 6/21/2018

Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-60.qld

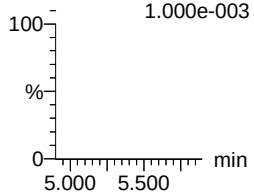
Last Altered: Thursday, June 21, 2018 11:25:28 Pacific Daylight Time
Printed: Thursday, June 21, 2018 12:46:40 Pacific Daylight Time

Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

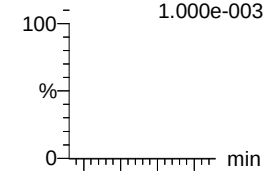
L-EtFOSAA
F51:MRM of 2 channels,ES-
584.2 > 419
1.000e-003



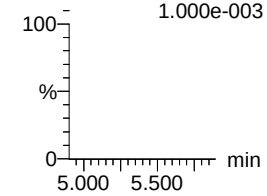
F51:MRM of 2 channels,ES-
584.2 > 483.0
1.000e-003



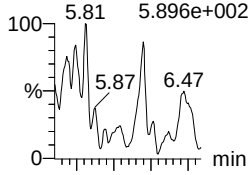
Total N-EtFOSAA
F51:MRM of 2 channels,ES-
584.2 > 419
1.000e-003



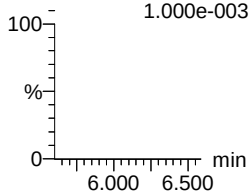
F51:MRM of 2 channels,ES-
584.2 > 483.0
1.000e-003



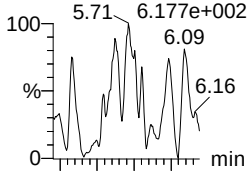
PFTrDA
F60:MRM of 2 channels,ES-
662.9 > 618.9
5.896e+002



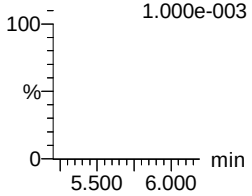
F60:MRM of 2 channels,ES-
662.9 > 319
1.000e-003



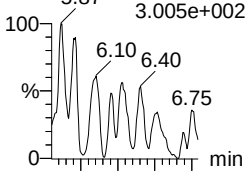
PFDoA
F54:MRM of 4 channels,ES-
612.9 > 569.0
6.177e+002



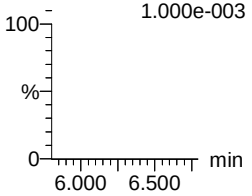
F54:MRM of 4 channels,ES-
612.9 > 318.8
1.000e-003



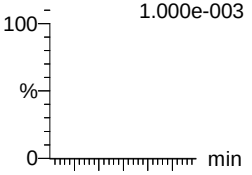
PFTeDA
F61:MRM of 2 channels,ES-
712.9 > 668.8
3.005e+002



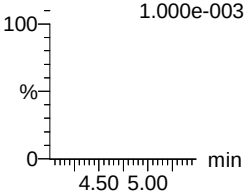
F61:MRM of 2 channels,ES-
712.9 > 369
1.000e-003



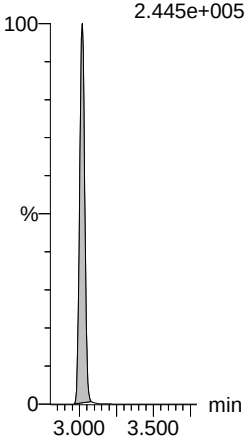
TCDA
F31:MRM of 3 channels,ES-
498.3 > 106.9
1.000e-003



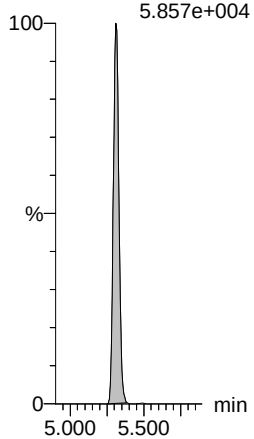
F31:MRM of 3 channels,ES-
498.3 > 123.9
1.000e-003



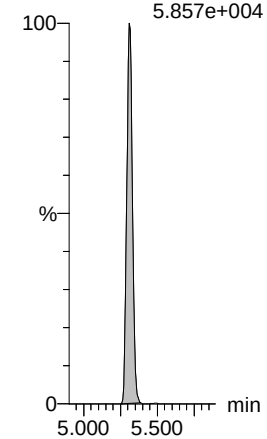
13C5-PFHxA
F11:MRM of 1 channel,ES-
318 > 272.9
2.445e+005



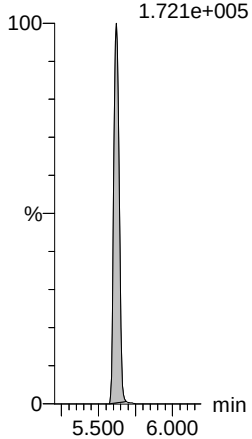
d5-N-EtFOSAA
F52:MRM of 1 channel,ES-
589.3 > 419
5.857e+004



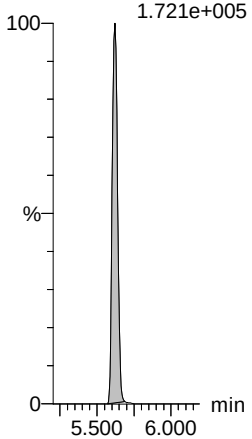
d5-N-EtFOSAA
F52:MRM of 1 channel,ES-
589.3 > 419
5.857e+004



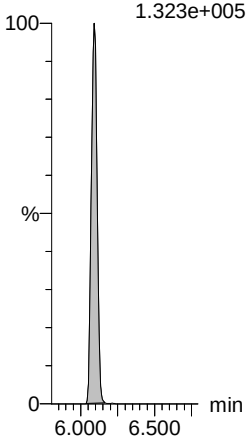
13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
1.721e+005



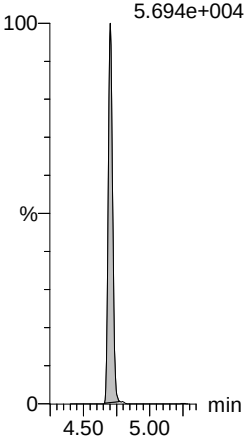
13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
1.721e+005



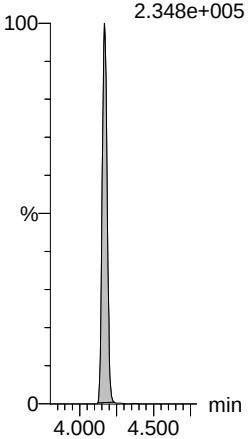
13C2-PFTeDA
F62:MRM of 2 channels,ES-
714.8 > 669.6
1.323e+005



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
5.694e+004



13C8-PFOA
F23:MRM of 1 channel,ES-
421.3 > 376
2.348e+005



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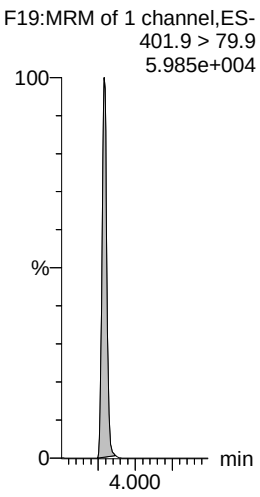
Dataset: Z:\Projects\PFAS.PRO\Results\180618M1\180618M1-60.qld

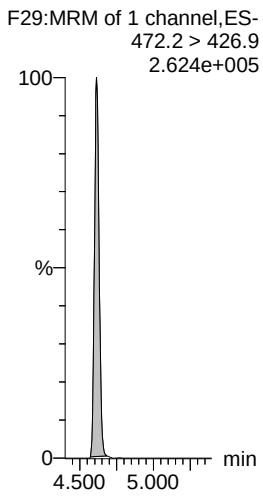
Last Altered: Thursday, June 21, 2018 11:25:28 Pacific Daylight Time
Printed: Thursday, June 21, 2018 12:46:40 Pacific Daylight Time

Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

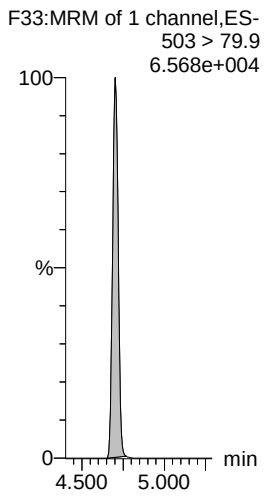
13C3-PFHxS



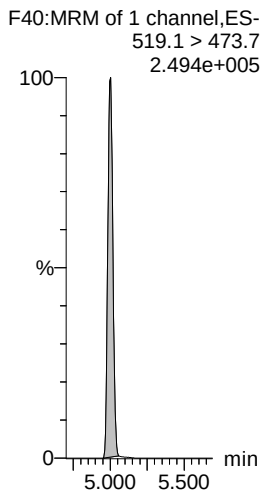
13C9-PFNA



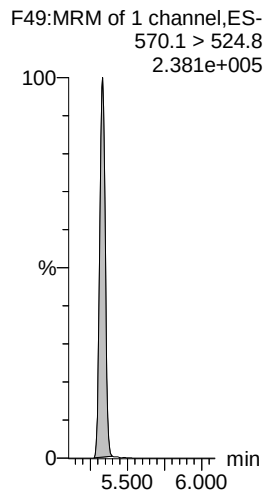
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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INJECTION INTERNAL STANDARD (IIS) AREAS,

INSTRUMENT BLANKS (IB)

AND

CONTINUTING CALIBRATION VERIFICATIONS CCV)

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, June 20, 2018 11:59:35 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:59:41 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_RS-6-19-18.mdb 19 Jun 2018 13:56:33
Calibration: 20 Jun 2018 11:59:35

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-3 PFC CS0 18F1106	8.38e3	100.0	NO
2	2	13C5-PFHxA	ST180617M1-3 PFC CS0 18F1106	1.13e4	100.0	NO
3	3	13C3-PFHxS	ST180617M1-3 PFC CS0 18F1106	2.60e3	100.0	NO
4	4	13C8-PFOA	ST180617M1-3 PFC CS0 18F1106	1.05e4	100.0	NO
5	5	13C9-PFNA	ST180617M1-3 PFC CS0 18F1106	1.23e4	100.0	NO
6	6	13C4-PFOS	ST180617M1-3 PFC CS0 18F1106	2.79e3	100.0	NO
7	7	13C6-PFDA	ST180617M1-3 PFC CS0 18F1106	1.23e4	100.0	NO
8	8	13C7-PFUdA	ST180617M1-3 PFC CS0 18F1106	1.43e4	100.0	NO

Name: 180617M1_5, Date: 17-Jun-2018, Time: 17:08:32, ID: ST180617M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-4 PFC CS1 18F1107	7.02e3	83.8	NO
2	2	13C5-PFHxA	ST180617M1-4 PFC CS1 18F1107	1.04e4	92.1	NO
3	3	13C3-PFHxS	ST180617M1-4 PFC CS1 18F1107	2.31e3	88.7	NO
4	4	13C8-PFOA	ST180617M1-4 PFC CS1 18F1107	9.54e3	90.5	NO
5	5	13C9-PFNA	ST180617M1-4 PFC CS1 18F1107	1.05e4	85.0	NO
6	6	13C4-PFOS	ST180617M1-4 PFC CS1 18F1107	2.29e3	82.4	NO
7	7	13C6-PFDA	ST180617M1-4 PFC CS1 18F1107	9.89e3	80.7	NO
8	8	13C7-PFUdA	ST180617M1-4 PFC CS1 18F1107	1.29e4	90.3	NO

Name: 180617M1_6, Date: 17-Jun-2018, Time: 17:19:02, ID: ST180617M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-5 PFC CS2 18F1108	7.32e3	87.4	NO
2	2	13C5-PFHxA	ST180617M1-5 PFC CS2 18F1108	9.61e3	85.3	NO
3	3	13C3-PFHxS	ST180617M1-5 PFC CS2 18F1108	2.16e3	83.1	NO
4	4	13C8-PFOA	ST180617M1-5 PFC CS2 18F1108	9.27e3	87.9	NO
5	5	13C9-PFNA	ST180617M1-5 PFC CS2 18F1108	9.87e3	80.2	NO
6	6	13C4-PFOS	ST180617M1-5 PFC CS2 18F1108	2.25e3	80.9	NO
7	7	13C6-PFDA	ST180617M1-5 PFC CS2 18F1108	1.10e4	89.4	NO
8	8	13C7-PFUdA	ST180617M1-5 PFC CS2 18F1108	1.21e4	85.0	NO

Name: 180617M1_7, Date: 17-Jun-2018, Time: 17:29:28, ID: ST180617M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-6 PFC CS3 18F1109	7.43e3	88.6	NO
2	2	13C5-PFHxA	ST180617M1-6 PFC CS3 18F1109	1.01e4	90.1	NO
3	3	13C3-PFHxS	ST180617M1-6 PFC CS3 18F1109	2.25e3	86.5	NO
4	4	13C8-PFOA	ST180617M1-6 PFC CS3 18F1109	9.33e3	88.5	NO
5	5	13C9-PFNA	ST180617M1-6 PFC CS3 18F1109	1.06e4	86.3	NO
6	6	13C4-PFOS	ST180617M1-6 PFC CS3 18F1109	2.23e3	80.2	NO
7	7	13C6-PFDA	ST180617M1-6 PFC CS3 18F1109	1.03e4	84.4	NO
8	8	13C7-PFUdA	ST180617M1-6 PFC CS3 18F1109	1.29e4	90.2	NO

Dataset: Untitled

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Name: 180617M1_8, Date: 17-Jun-2018, Time: 17:39:58, ID: ST180617M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-7 PFC CS4 18F1110	7.37e3	87.9	NO
2	2	13C5-PFHxA	ST180617M1-7 PFC CS4 18F1110	9.35e3	83.0	NO
3	3	13C3-PFHxS	ST180617M1-7 PFC CS4 18F1110	2.16e3	83.3	NO
4	4	13C8-PFOA	ST180617M1-7 PFC CS4 18F1110	8.75e3	83.0	NO
5	5	13C9-PFNA	ST180617M1-7 PFC CS4 18F1110	1.01e4	81.9	NO
6	6	13C4-PFOS	ST180617M1-7 PFC CS4 18F1110	2.24e3	80.6	NO
7	7	13C6-PFDA	ST180617M1-7 PFC CS4 18F1110	9.79e3	79.9	NO
8	8	13C7-PFUdA	ST180617M1-7 PFC CS4 18F1110	1.17e4	82.1	NO

Name: 180617M1_9, Date: 17-Jun-2018, Time: 17:50:23, ID: ST180617M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-8 PFC CS5 18F1111	7.39e3	88.3	NO
2	2	13C5-PFHxA	ST180617M1-8 PFC CS5 18F1111	9.40e3	83.4	NO
3	3	13C3-PFHxS	ST180617M1-8 PFC CS5 18F1111	2.03e3	78.2	NO
4	4	13C8-PFOA	ST180617M1-8 PFC CS5 18F1111	8.80e3	83.5	NO
5	5	13C9-PFNA	ST180617M1-8 PFC CS5 18F1111	9.43e3	76.6	NO
6	6	13C4-PFOS	ST180617M1-8 PFC CS5 18F1111	2.14e3	76.7	NO
7	7	13C6-PFDA	ST180617M1-8 PFC CS5 18F1111	9.86e3	80.5	NO
8	8	13C7-PFUdA	ST180617M1-8 PFC CS5 18F1111	1.13e4	79.0	NO

Name: 180617M1_10, Date: 17-Jun-2018, Time: 18:00:53, ID: ST180617M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-9 PFC CS6 18F1112	7.78e3	92.8	NO
2	2	13C5-PFHxA	ST180617M1-9 PFC CS6 18F1112	8.94e3	79.4	NO
3	3	13C3-PFHxS	ST180617M1-9 PFC CS6 18F1112	2.00e3	77.1	NO
4	4	13C8-PFOA	ST180617M1-9 PFC CS6 18F1112	8.58e3	81.4	NO
5	5	13C9-PFNA	ST180617M1-9 PFC CS6 18F1112	9.23e3	74.9	NO
6	6	13C4-PFOS	ST180617M1-9 PFC CS6 18F1112	2.15e3	77.3	NO
7	7	13C6-PFDA	ST180617M1-9 PFC CS6 18F1112	9.39e3	76.6	NO
8	8	13C7-PFUdA	ST180617M1-9 PFC CS6 18F1112	1.13e4	78.8	NO

Name: 180617M1_11, Date: 17-Jun-2018, Time: 18:11:18, ID: ST180617M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-10 PFC CS7 18F1113	7.32e3	87.3	NO
2	2	13C5-PFHxA	ST180617M1-10 PFC CS7 18F1113	8.51e3	75.6	NO
3	3	13C3-PFHxS	ST180617M1-10 PFC CS7 18F1113	1.85e3	71.1	NO
4	4	13C8-PFOA	ST180617M1-10 PFC CS7 18F1113	8.00e3	75.9	NO
5	5	13C9-PFNA	ST180617M1-10 PFC CS7 18F1113	9.08e3	73.7	NO
6	6	13C4-PFOS	ST180617M1-10 PFC CS7 18F1113	2.15e3	77.2	NO
7	7	13C6-PFDA	ST180617M1-10 PFC CS7 18F1113	9.01e3	73.5	NO
8	8	13C7-PFUdA	ST180617M1-10 PFC CS7 18F1113	1.04e4	72.9	NO

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Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180617M1_13, Date: 17-Jun-2018, Time: 18:32:13, ID: ICV180617M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ICV180617M1-1 PFC 537 ICV 18F1103	7.17e3	85.5	NO
2	2	13C5-PFHxA	ICV180617M1-1 PFC 537 ICV 18F1103	1.02e4	90.5	NO
3	3	13C3-PFHxS	ICV180617M1-1 PFC 537 ICV 18F1103	2.19e3	84.5	NO
4	4	13C8-PFOA	ICV180617M1-1 PFC 537 ICV 18F1103	9.96e3	94.4	NO
5	5	13C9-PFNA	ICV180617M1-1 PFC 537 ICV 18F1103	1.10e4	89.2	NO
6	6	13C4-PFOS	ICV180617M1-1 PFC 537 ICV 18F1103	2.30e3	82.5	NO
7	7	13C6-PFDA	ICV180617M1-1 PFC 537 ICV 18F1103	1.09e4	89.4	NO
8	8	13C7-PFUdA	ICV180617M1-1 PFC 537 ICV 18F1103	1.30e4	91.0	NO

Name: 180617M1_14, Date: 17-Jun-2018, Time: 18:42:47, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180617M1_15, Date: 17-Jun-2018, Time: 18:53:14, ID: 1801031-05 MW-B586-01 0.12111, Description: MW-B586-01

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801031-05 MW-B586-01 0.12111	7.10e3	84.8	NO
2	2	13C5-PFHxA	1801031-05 MW-B586-01 0.12111	9.35e3	83.0	NO
3	3	13C3-PFHxS	1801031-05 MW-B586-01 0.12111	2.36e3	90.8	NO
4	4	13C8-PFOA	1801031-05 MW-B586-01 0.12111	8.93e3	84.7	NO
5	5	13C9-PFNA	1801031-05 MW-B586-01 0.12111	9.68e3	78.6	NO
6	6	13C4-PFOS	1801031-05 MW-B586-01 0.12111	2.43e3	87.3	NO
7	7	13C6-PFDA	1801031-05 MW-B586-01 0.12111	1.06e4	86.9	NO
8	8	13C7-PFUdA	1801031-05 MW-B586-01 0.12111	1.21e4	85.0	NO

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Name: 180617M1_16, Date: 17-Jun-2018, Time: 19:03:38, ID: 1801031-02@5X MW-323 0.12007, Description: MW-323

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801031-02@5X MW-323 0.12007	1.77e3	21.1	YES
2	2	13C5-PFHxA	1801031-02@5X MW-323 0.12007	2.24e3	19.8	YES
3	3	13C3-PFHxS	1801031-02@5X MW-323 0.12007	5.43e2	20.9	YES
4	4	13C8-PFOA	1801031-02@5X MW-323 0.12007	2.00e3	18.9	YES
5	5	13C9-PFNA	1801031-02@5X MW-323 0.12007	2.50e3	20.3	YES
6	6	13C4-PFOS	1801031-02@5X MW-323 0.12007	5.69e2	20.4	YES
7	7	13C6-PFDA	1801031-02@5X MW-323 0.12007	2.32e3	18.9	YES
8	8	13C7-PFUdA	1801031-02@5X MW-323 0.12007	2.78e3	19.5	YES

Name: 180617M1_17, Date: 17-Jun-2018, Time: 19:14:09, ID: 1801031-04@30X MW-09-001 0.11999, Description: MW-09-001

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801031-04@30X MW-09-001 0.11999	3.59e2	429.0	YES
2	2	13C5-PFHxA	1801031-04@30X MW-09-001 0.11999	3.63e2	322.1	YES
3	3	13C3-PFHxS	1801031-04@30X MW-09-001 0.11999	6.96e1	267.7	YES
4	4	13C8-PFOA	1801031-04@30X MW-09-001 0.11999	3.61e2	342.7	YES
5	5	13C9-PFNA	1801031-04@30X MW-09-001 0.11999	4.01e2	325.3	YES
6	6	13C4-PFOS	1801031-04@30X MW-09-001 0.11999	7.77e1	279.1	YES
7	7	13C6-PFDA	1801031-04@30X MW-09-001 0.11999	4.73e2	386.1	YES
8	8	13C7-PFUdA	1801031-04@30X MW-09-001 0.11999	4.78e2	334.5	YES

Name: 180617M1_18, Date: 17-Jun-2018, Time: 19:24:34, ID: 1801031-06@5X SW-52 0.12349, Description: SW-52

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801031-06@5X SW-52 0.12349	1.52e3	18.1	YES
2	2	13C5-PFHxA	1801031-06@5X SW-52 0.12349	1.83e3	16.2	YES
3	3	13C3-PFHxS	1801031-06@5X SW-52 0.12349	4.75e2	18.3	YES
4	4	13C8-PFOA	1801031-06@5X SW-52 0.12349	1.68e3	15.9	YES
5	5	13C9-PFNA	1801031-06@5X SW-52 0.12349	1.91e3	15.5	YES
6	6	13C4-PFOS	1801031-06@5X SW-52 0.12349	5.60e2	20.1	YES
7	7	13C6-PFDA	1801031-06@5X SW-52 0.12349	1.97e3	16.1	YES
8	8	13C7-PFUdA	1801031-06@5X SW-52 0.12349	2.17e3	15.2	YES

Name: 180617M1_19, Date: 17-Jun-2018, Time: 19:35:04, ID: 1801119-06@5X PFAS-B14-MW-02-053118 0.125, Description: PFAS-B14-MW-02-053118

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801119-06@5X PFAS-B14-MW-02-05...	1.05e3	12.6	YES
2	2	13C5-PFHxA	1801119-06@5X PFAS-B14-MW-02-05...	1.27e3	11.2	YES
3	3	13C3-PFHxS	1801119-06@5X PFAS-B14-MW-02-05...	3.78e2	14.5	YES
4	4	13C8-PFOA	1801119-06@5X PFAS-B14-MW-02-05...	1.36e3	12.9	YES
5	5	13C9-PFNA	1801119-06@5X PFAS-B14-MW-02-05...	1.44e3	11.7	YES
6	6	13C4-PFOS	1801119-06@5X PFAS-B14-MW-02-05...	3.20e2	11.5	YES
7	7	13C6-PFDA	1801119-06@5X PFAS-B14-MW-02-05...	1.38e3	11.3	YES
8	8	13C7-PFUdA	1801119-06@5X PFAS-B14-MW-02-05...	1.97e3	13.8	YES

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Name: 180617M1_20, Date: 17-Jun-2018, Time: 19:45:29, ID: 1801043-10@10X, Description: 1801043-10@10X

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801043-10@10X	8.99e2	10.7	YES
2	2	13C5-PFHxA	1801043-10@10X	1.03e3	9.1	YES
3	3	13C3-PFHxS	1801043-10@10X	2.40e2	9.2	YES
4	4	13C8-PFOA	1801043-10@10X	1.03e3	9.7	YES
5	5	13C9-PFNA	1801043-10@10X	1.06e3	8.6	YES
6	6	13C4-PFOS	1801043-10@10X	2.39e2	8.6	YES
7	7	13C6-PFDA	1801043-10@10X	1.14e3	9.3	YES
8	8	13C7-PFUdA	1801043-10@10X	1.39e3	9.7	YES

Name: 180617M1_21, Date: 17-Jun-2018, Time: 19:55:59, ID: 1800986-04RE1, Description: 1800986-04RE1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1800986-04RE1	8.35e3	99.7	NO
2	2	13C5-PFHxA	1800986-04RE1	9.43e3	83.7	NO
3	3	13C3-PFHxS	1800986-04RE1	2.76e3	106.1	NO
4	4	13C8-PFOA	1800986-04RE1	1.05e4	99.3	NO
5	5	13C9-PFNA	1800986-04RE1	1.19e4	96.8	NO
6	6	13C4-PFOS	1800986-04RE1	2.55e3	91.5	NO
7	7	13C6-PFDA	1800986-04RE1	1.24e4	100.9	NO
8	8	13C7-PFUdA	1800986-04RE1	1.51e4	106.1	NO

Name: 180617M1_22, Date: 17-Jun-2018, Time: 20:06:29, ID: SBQC, Description: SBQC

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	SBQC			NO
2	2	13C5-PFHxA	SBQC			NO
3	3	13C3-PFHxS	SBQC			NO
4	4	13C8-PFOA	SBQC			NO
5	5	13C9-PFNA	SBQC			NO
6	6	13C4-PFOS	SBQC			NO
7	7	13C6-PFDA	SBQC			NO
8	8	13C7-PFUdA	SBQC			NO

Name: 180617M1_23, Date: 17-Jun-2018, Time: 20:16:53, ID: 1801153-01 REEPDW1116FRB 0.12296, Description: REEPDW1116FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801153-01 REEPDW1116FRB 0.12296	6.36e3	75.9	NO
2	2	13C5-PFHxA	1801153-01 REEPDW1116FRB 0.12296	8.23e3	73.0	NO
3	3	13C3-PFHxS	1801153-01 REEPDW1116FRB 0.12296	1.86e3	71.6	NO
4	4	13C8-PFOA	1801153-01 REEPDW1116FRB 0.12296	7.38e3	70.0	NO
5	5	13C9-PFNA	1801153-01 REEPDW1116FRB 0.12296	8.29e3	67.3	NO
6	6	13C4-PFOS	1801153-01 REEPDW1116FRB 0.12296	2.08e3	74.6	NO
7	7	13C6-PFDA	1801153-01 REEPDW1116FRB 0.12296	8.70e3	71.0	NO
8	8	13C7-PFUdA	1801153-01 REEPDW1116FRB 0.12296	1.03e4	72.3	NO

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Name: 180617M1_24, Date: 17-Jun-2018, Time: 20:27:24, ID: 1801153-02 REEPDW1120FRB 0.12208, Description: REEPDW1120FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801153-02 REEPDW1120FRB 0.12208	6.54e3	78.1	NO
2	2	13C5-PFHxA	1801153-02 REEPDW1120FRB 0.12208	8.22e3	73.0	NO
3	3	13C3-PFHxS	1801153-02 REEPDW1120FRB 0.12208	2.11e3	81.0	NO
4	4	13C8-PFOA	1801153-02 REEPDW1120FRB 0.12208	7.01e3	66.5	NO
5	5	13C9-PFNA	1801153-02 REEPDW1120FRB 0.12208	7.86e3	63.8	NO
6	6	13C4-PFOS	1801153-02 REEPDW1120FRB 0.12208	2.19e3	78.6	NO
7	7	13C6-PFDA	1801153-02 REEPDW1120FRB 0.12208	8.36e3	68.2	NO
8	8	13C7-PFUdA	1801153-02 REEPDW1120FRB 0.12208	1.04e4	73.2	NO

Name: 180617M1_25, Date: 17-Jun-2018, Time: 20:37:48, ID: 1801153-03 REEPDW1110FRB 0.11956, Description: REEPDW1110FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801153-03 REEPDW1110FRB 0.11956	6.38e3	76.1	NO
2	2	13C5-PFHxA	1801153-03 REEPDW1110FRB 0.11956	8.24e3	73.2	NO
3	3	13C3-PFHxS	1801153-03 REEPDW1110FRB 0.11956	1.99e3	76.7	NO
4	4	13C8-PFOA	1801153-03 REEPDW1110FRB 0.11956	7.69e3	72.9	NO
5	5	13C9-PFNA	1801153-03 REEPDW1110FRB 0.11956	8.62e3	70.0	NO
6	6	13C4-PFOS	1801153-03 REEPDW1110FRB 0.11956	2.17e3	78.0	NO
7	7	13C6-PFDA	1801153-03 REEPDW1110FRB 0.11956	8.71e3	71.1	NO
8	8	13C7-PFUdA	1801153-03 REEPDW1110FRB 0.11956	1.08e4	75.3	NO

Name: 180617M1_26, Date: 17-Jun-2018, Time: 20:48:19, ID: 1801153-04 REEPDW1111FRB 0.12237, Description: REEPDW1111FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801153-04 REEPDW1111FRB 0.12237	6.58e3	78.6	NO
2	2	13C5-PFHxA	1801153-04 REEPDW1111FRB 0.12237	8.04e3	71.4	NO
3	3	13C3-PFHxS	1801153-04 REEPDW1111FRB 0.12237	1.73e3	66.5	NO
4	4	13C8-PFOA	1801153-04 REEPDW1111FRB 0.12237	7.34e3	69.6	NO
5	5	13C9-PFNA	1801153-04 REEPDW1111FRB 0.12237	7.92e3	64.3	NO
6	6	13C4-PFOS	1801153-04 REEPDW1111FRB 0.12237	2.11e3	75.7	NO
7	7	13C6-PFDA	1801153-04 REEPDW1111FRB 0.12237	8.15e3	66.5	NO
8	8	13C7-PFUdA	1801153-04 REEPDW1111FRB 0.12237	9.48e3	66.4	NO

Name: 180617M1_27, Date: 17-Jun-2018, Time: 20:58:49, ID: 1801153-05 REEPDW1112FRB 0.12166, Description: REEPDW1112FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801153-05 REEPDW1112FRB 0.12166	6.76e3	80.7	NO
2	2	13C5-PFHxA	1801153-05 REEPDW1112FRB 0.12166	8.17e3	72.5	NO
3	3	13C3-PFHxS	1801153-05 REEPDW1112FRB 0.12166	1.95e3	74.9	NO
4	4	13C8-PFOA	1801153-05 REEPDW1112FRB 0.12166	7.57e3	71.8	NO
5	5	13C9-PFNA	1801153-05 REEPDW1112FRB 0.12166	8.51e3	69.1	NO
6	6	13C4-PFOS	1801153-05 REEPDW1112FRB 0.12166	2.17e3	77.9	NO
7	7	13C6-PFDA	1801153-05 REEPDW1112FRB 0.12166	9.42e3	76.9	NO
8	8	13C7-PFUdA	1801153-05 REEPDW1112FRB 0.12166	1.08e4	75.6	NO

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Name: 180617M1_28, Date: 17-Jun-2018, Time: 21:09:14, ID: B8F0081-BS1 OPR 2, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0081-BS1 OPR 2	7.32e3	87.4	NO
2	2	13C5-PFHxA	B8F0081-BS1 OPR 2	8.65e3	76.7	NO
3	3	13C3-PFHxS	B8F0081-BS1 OPR 2	1.93e3	74.1	NO
4	4	13C8-PFOA	B8F0081-BS1 OPR 2	8.31e3	78.8	NO
5	5	13C9-PFNA	B8F0081-BS1 OPR 2	1.26e4	102.7	NO
6	6	13C4-PFOS	B8F0081-BS1 OPR 2	2.32e3	83.4	NO
7	7	13C6-PFDA	B8F0081-BS1 OPR 2	9.91e3	80.9	NO
8	8	13C7-PFUdA	B8F0081-BS1 OPR 2	1.52e4	106.6	NO

Name: 180617M1_29, Date: 17-Jun-2018, Time: 21:19:44, ID: B8F0081-BLK1 Method Blank 2, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0081-BLK1 Method Blank 2	7.12e3	85.0	NO
2	2	13C5-PFHxA	B8F0081-BLK1 Method Blank 2	8.03e3	71.2	NO
3	3	13C3-PFHxS	B8F0081-BLK1 Method Blank 2	1.94e3	74.8	NO
4	4	13C8-PFOA	B8F0081-BLK1 Method Blank 2	8.54e3	81.0	NO
5	5	13C9-PFNA	B8F0081-BLK1 Method Blank 2	1.21e4	98.2	NO
6	6	13C4-PFOS	B8F0081-BLK1 Method Blank 2	2.04e3	73.3	NO
7	7	13C6-PFDA	B8F0081-BLK1 Method Blank 2	9.58e3	78.2	NO
8	8	13C7-PFUdA	B8F0081-BLK1 Method Blank 2	1.39e4	97.1	NO

Name: 180617M1_30, Date: 17-Jun-2018, Time: 21:30:08, ID: B8F0081-MS1 Matrix Spike 2, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0081-MS1 Matrix Spike 2	7.72e3	92.1	NO
2	2	13C5-PFHxA	B8F0081-MS1 Matrix Spike 2	9.00e3	79.9	NO
3	3	13C3-PFHxS	B8F0081-MS1 Matrix Spike 2	2.22e3	85.3	NO
4	4	13C8-PFOA	B8F0081-MS1 Matrix Spike 2	9.05e3	85.8	NO
5	5	13C9-PFNA	B8F0081-MS1 Matrix Spike 2	1.05e4	85.6	NO
6	6	13C4-PFOS	B8F0081-MS1 Matrix Spike 2	2.16e3	77.4	NO
7	7	13C6-PFDA	B8F0081-MS1 Matrix Spike 2	1.10e4	89.9	NO
8	8	13C7-PFUdA	B8F0081-MS1 Matrix Spike 2	1.58e4	110.6	NO

Name: 180617M1_31, Date: 17-Jun-2018, Time: 21:40:38, ID: B8F0081-MSD1 Matrix Spike Dup 2.03, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0081-MSD1 Matrix Spike Dup 2.03	7.04e3	84.1	NO
2	2	13C5-PFHxA	B8F0081-MSD1 Matrix Spike Dup 2.03	8.23e3	73.0	NO
3	3	13C3-PFHxS	B8F0081-MSD1 Matrix Spike Dup 2.03	1.95e3	74.9	NO
4	4	13C8-PFOA	B8F0081-MSD1 Matrix Spike Dup 2.03	8.08e3	76.7	NO
5	5	13C9-PFNA	B8F0081-MSD1 Matrix Spike Dup 2.03	9.24e3	75.0	NO
6	6	13C4-PFOS	B8F0081-MSD1 Matrix Spike Dup 2.03	2.11e3	75.7	NO
7	7	13C6-PFDA	B8F0081-MSD1 Matrix Spike Dup 2.03	9.31e3	76.0	NO
8	8	13C7-PFUdA	B8F0081-MSD1 Matrix Spike Dup 2.03	1.34e4	94.1	NO

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Name: 180617M1_32, Date: 17-Jun-2018, Time: 21:51:03, ID: 1801017-01 TSalmon1-180430UV 2.04, Description: TSalmon1-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-01 TSalmon1-180430UV 2.04	7.00e3	83.5	NO
2	2	13C5-PFHxA	1801017-01 TSalmon1-180430UV 2.04	8.25e3	73.2	NO
3	3	13C3-PFHxS	1801017-01 TSalmon1-180430UV 2.04	1.98e3	76.2	NO
4	4	13C8-PFOA	1801017-01 TSalmon1-180430UV 2.04	8.37e3	79.5	NO
5	5	13C9-PFNA	1801017-01 TSalmon1-180430UV 2.04	9.08e3	73.7	NO
6	6	13C4-PFOS	1801017-01 TSalmon1-180430UV 2.04	2.03e3	72.9	NO
7	7	13C6-PFDA	1801017-01 TSalmon1-180430UV 2.04	9.36e3	76.4	NO
8	8	13C7-PFUdA	1801017-01 TSalmon1-180430UV 2.04	1.31e4	91.5	NO

Name: 180617M1_33, Date: 17-Jun-2018, Time: 22:01:33, ID: 1801017-02 TSalmon2-180430UV 2.03, Description: TSalmon2-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-02 TSalmon2-180430UV 2.03	7.10e3	84.7	NO
2	2	13C5-PFHxA	1801017-02 TSalmon2-180430UV 2.03	8.49e3	75.4	NO
3	3	13C3-PFHxS	1801017-02 TSalmon2-180430UV 2.03	1.96e3	75.4	NO
4	4	13C8-PFOA	1801017-02 TSalmon2-180430UV 2.03	8.37e3	79.4	NO
5	5	13C9-PFNA	1801017-02 TSalmon2-180430UV 2.03	9.85e3	80.0	NO
6	6	13C4-PFOS	1801017-02 TSalmon2-180430UV 2.03	2.18e3	78.2	NO
7	7	13C6-PFDA	1801017-02 TSalmon2-180430UV 2.03	1.02e4	83.4	NO
8	8	13C7-PFUdA	1801017-02 TSalmon2-180430UV 2.03	1.36e4	95.3	NO

Name: 180617M1_34, Date: 17-Jun-2018, Time: 22:12:03, ID: 1801017-03 THalibut1-180430UV 2.03, Description: THalibut1-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-03 THalibut1-180430UV 2.03	7.63e3	91.1	NO
2	2	13C5-PFHxA	1801017-03 THalibut1-180430UV 2.03	8.88e3	78.8	NO
3	3	13C3-PFHxS	1801017-03 THalibut1-180430UV 2.03	2.03e3	78.0	NO
4	4	13C8-PFOA	1801017-03 THalibut1-180430UV 2.03	8.71e3	82.7	NO
5	5	13C9-PFNA	1801017-03 THalibut1-180430UV 2.03	9.72e3	78.9	NO
6	6	13C4-PFOS	1801017-03 THalibut1-180430UV 2.03	2.16e3	77.4	NO
7	7	13C6-PFDA	1801017-03 THalibut1-180430UV 2.03	1.02e4	82.9	NO
8	8	13C7-PFUdA	1801017-03 THalibut1-180430UV 2.03	1.15e4	80.6	NO

Name: 180617M1_35, Date: 17-Jun-2018, Time: 22:22:28, ID: ST180617M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-11 PFC CS3 18F1109	7.70e3	91.9	NO
2	2	13C5-PFHxA	ST180617M1-11 PFC CS3 18F1109	1.09e4	96.5	NO
3	3	13C3-PFHxS	ST180617M1-11 PFC CS3 18F1109	2.20e3	84.7	NO
4	4	13C8-PFOA	ST180617M1-11 PFC CS3 18F1109	9.96e3	94.5	NO
5	5	13C9-PFNA	ST180617M1-11 PFC CS3 18F1109	1.07e4	87.0	NO
6	6	13C4-PFOS	ST180617M1-11 PFC CS3 18F1109	2.47e3	88.5	NO
7	7	13C6-PFDA	ST180617M1-11 PFC CS3 18F1109	1.09e4	88.8	NO
8	8	13C7-PFUdA	ST180617M1-11 PFC CS3 18F1109	1.20e4	84.3	NO

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Name: 180617M1_36, Date: 17-Jun-2018, Time: 22:32:58, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180617M1_37, Date: 17-Jun-2018, Time: 22:43:22, ID: 1801017-04 THalibut2-180430UV 2.01, Description: THalibut2-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-04 THalibut2-180430UV 2.01	6.99e3	83.4	NO
2	2	13C5-PFHxA	1801017-04 THalibut2-180430UV 2.01	8.04e3	71.4	NO
3	3	13C3-PFHxS	1801017-04 THalibut2-180430UV 2.01	1.70e3	65.6	NO
4	4	13C8-PFOA	1801017-04 THalibut2-180430UV 2.01	7.94e3	75.4	NO
5	5	13C9-PFNA	1801017-04 THalibut2-180430UV 2.01	8.93e3	72.5	NO
6	6	13C4-PFOS	1801017-04 THalibut2-180430UV 2.01	1.95e3	70.0	NO
7	7	13C6-PFDA	1801017-04 THalibut2-180430UV 2.01	8.55e3	69.7	NO
8	8	13C7-PFUdA	1801017-04 THalibut2-180430UV 2.01	1.05e4	73.9	NO

Name: 180617M1_38, Date: 17-Jun-2018, Time: 22:53:52, ID: 1801017-05 TPetSole1-180430UV 2.01, Description: TPetSole1-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-05 TPetSole1-180430UV 2.01	7.03e3	84.0	NO
2	2	13C5-PFHxA	1801017-05 TPetSole1-180430UV 2.01	8.47e3	75.2	NO
3	3	13C3-PFHxS	1801017-05 TPetSole1-180430UV 2.01	1.96e3	75.5	NO
4	4	13C8-PFOA	1801017-05 TPetSole1-180430UV 2.01	8.29e3	78.6	NO
5	5	13C9-PFNA	1801017-05 TPetSole1-180430UV 2.01	8.42e3	68.4	NO
6	6	13C4-PFOS	1801017-05 TPetSole1-180430UV 2.01	1.85e3	66.6	NO
7	7	13C6-PFDA	1801017-05 TPetSole1-180430UV 2.01	8.26e3	67.4	NO
8	8	13C7-PFUdA	1801017-05 TPetSole1-180430UV 2.01	1.09e4	76.1	NO

Name: 180617M1_39, Date: 17-Jun-2018, Time: 23:04:16, ID: 1801017-06 TPetSole2-180430UV 2.01, Description: TPetSole2-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-06 TPetSole2-180430UV 2.01	6.60e3	78.7	NO
2	2	13C5-PFHxA	1801017-06 TPetSole2-180430UV 2.01	8.00e3	71.0	NO
3	3	13C3-PFHxS	1801017-06 TPetSole2-180430UV 2.01	1.66e3	63.8	NO
4	4	13C8-PFOA	1801017-06 TPetSole2-180430UV 2.01	7.94e3	75.4	NO
5	5	13C9-PFNA	1801017-06 TPetSole2-180430UV 2.01	8.94e3	72.6	NO
6	6	13C4-PFOS	1801017-06 TPetSole2-180430UV 2.01	2.08e3	74.8	NO
7	7	13C6-PFDA	1801017-06 TPetSole2-180430UV 2.01	7.98e3	65.1	NO
8	8	13C7-PFUdA	1801017-06 TPetSole2-180430UV 2.01	9.71e3	68.0	NO

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Name: 180617M1_40, Date: 17-Jun-2018, Time: 23:14:47, ID: 1801017-07 TRockfish1-180430UV 2.04, Description: TRockfish1-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-07 TRockfish1-180430UV 2.04	6.75e3	80.5	NO
2	2	13C5-PFHxA	1801017-07 TRockfish1-180430UV 2.04	8.12e3	72.0	NO
3	3	13C3-PFHxS	1801017-07 TRockfish1-180430UV 2.04	1.81e3	69.8	NO
4	4	13C8-PFOA	1801017-07 TRockfish1-180430UV 2.04	8.25e3	78.2	NO
5	5	13C9-PFNA	1801017-07 TRockfish1-180430UV 2.04	8.41e3	68.2	NO
6	6	13C4-PFOS	1801017-07 TRockfish1-180430UV 2.04	1.99e3	71.6	NO
7	7	13C6-PFDA	1801017-07 TRockfish1-180430UV 2.04	9.22e3	75.3	NO
8	8	13C7-PFUdA	1801017-07 TRockfish1-180430UV 2.04	1.13e4	79.4	NO

Name: 180617M1_41, Date: 17-Jun-2018, Time: 23:25:11, ID: 1801017-08 TRockfish2-180430UV 2, Description: TRockfish2-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-08 TRockfish2-180430UV 2	7.21e3	86.1	NO
2	2	13C5-PFHxA	1801017-08 TRockfish2-180430UV 2	8.46e3	75.1	NO
3	3	13C3-PFHxS	1801017-08 TRockfish2-180430UV 2	2.10e3	80.6	NO
4	4	13C8-PFOA	1801017-08 TRockfish2-180430UV 2	8.28e3	78.5	NO
5	5	13C9-PFNA	1801017-08 TRockfish2-180430UV 2	9.28e3	75.3	NO
6	6	13C4-PFOS	1801017-08 TRockfish2-180430UV 2	2.22e3	79.7	NO
7	7	13C6-PFDA	1801017-08 TRockfish2-180430UV 2	1.07e4	87.2	NO
8	8	13C7-PFUdA	1801017-08 TRockfish2-180430UV 2	1.22e4	85.8	NO

Name: 180617M1_42, Date: 17-Jun-2018, Time: 23:35:41, ID: 1801017-09 TSablefish1-180430UV 2, Description: TSablefish1-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-09 TSablefish1-180430UV 2	6.90e3	82.4	NO
2	2	13C5-PFHxA	1801017-09 TSablefish1-180430UV 2	8.69e3	77.2	NO
3	3	13C3-PFHxS	1801017-09 TSablefish1-180430UV 2	1.94e3	74.6	NO
4	4	13C8-PFOA	1801017-09 TSablefish1-180430UV 2	7.82e3	74.2	NO
5	5	13C9-PFNA	1801017-09 TSablefish1-180430UV 2	9.53e3	77.4	NO
6	6	13C4-PFOS	1801017-09 TSablefish1-180430UV 2	2.02e3	72.6	NO
7	7	13C6-PFDA	1801017-09 TSablefish1-180430UV 2	8.78e3	71.6	NO
8	8	13C7-PFUdA	1801017-09 TSablefish1-180430UV 2	1.03e4	72.2	NO

Name: 180617M1_43, Date: 17-Jun-2018, Time: 23:46:05, ID: 1801017-10 TSablefish2-180430UV 2.04, Description: TSablefish2-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-10 TSablefish2-180430UV 2.04	7.49e3	89.3	NO
2	2	13C5-PFHxA	1801017-10 TSablefish2-180430UV 2.04	8.91e3	79.1	NO
3	3	13C3-PFHxS	1801017-10 TSablefish2-180430UV 2.04	1.97e3	75.9	NO
4	4	13C8-PFOA	1801017-10 TSablefish2-180430UV 2.04	8.46e3	80.3	NO
5	5	13C9-PFNA	1801017-10 TSablefish2-180430UV 2.04	9.57e3	77.7	NO
6	6	13C4-PFOS	1801017-10 TSablefish2-180430UV 2.04	2.20e3	78.9	NO
7	7	13C6-PFDA	1801017-10 TSablefish2-180430UV 2.04	8.86e3	72.3	NO
8	8	13C7-PFUdA	1801017-10 TSablefish2-180430UV 2.04	1.22e4	85.6	NO

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Name: 180617M1_44, Date: 17-Jun-2018, Time: 23:56:36, ID: 1801017-11 TSablefish3-180430UV 2, Description: TSablefish3-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-11 TSablefish3-180430UV 2	7.68e3	91.7	NO
2	2	13C5-PFHxA	1801017-11 TSablefish3-180430UV 2	9.18e3	81.5	NO
3	3	13C3-PFHxS	1801017-11 TSablefish3-180430UV 2	1.99e3	76.6	NO
4	4	13C8-PFOA	1801017-11 TSablefish3-180430UV 2	8.47e3	80.4	NO
5	5	13C9-PFNA	1801017-11 TSablefish3-180430UV 2	9.49e3	77.0	NO
6	6	13C4-PFOS	1801017-11 TSablefish3-180430UV 2	2.32e3	83.1	NO
7	7	13C6-PFDA	1801017-11 TSablefish3-180430UV 2	1.04e4	85.2	NO
8	8	13C7-PFUdA	1801017-11 TSablefish3-180430UV 2	1.21e4	84.9	NO

Name: 180617M1_45, Date: 18-Jun-2018, Time: 00:07:06, ID: 1801017-12 TTrout1-180430UV 2.04, Description: TTrout1-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-12 TTrout1-180430UV 2.04	6.91e3	82.5	NO
2	2	13C5-PFHxA	1801017-12 TTrout1-180430UV 2.04	8.17e3	72.6	NO
3	3	13C3-PFHxS	1801017-12 TTrout1-180430UV 2.04	2.02e3	77.7	NO
4	4	13C8-PFOA	1801017-12 TTrout1-180430UV 2.04	8.12e3	77.0	NO
5	5	13C9-PFNA	1801017-12 TTrout1-180430UV 2.04	8.92e3	72.4	NO
6	6	13C4-PFOS	1801017-12 TTrout1-180430UV 2.04	2.02e3	72.3	NO
7	7	13C6-PFDA	1801017-12 TTrout1-180430UV 2.04	9.79e3	79.9	NO
8	8	13C7-PFUdA	1801017-12 TTrout1-180430UV 2.04	1.22e4	85.3	NO

Name: 180617M1_46, Date: 18-Jun-2018, Time: 00:17:30, ID: 1801017-13 TTrout2-180430UV 2.04, Description: TTrout2-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-13 TTrout2-180430UV 2.04	7.16e3	85.4	NO
2	2	13C5-PFHxA	1801017-13 TTrout2-180430UV 2.04	8.51e3	75.6	NO
3	3	13C3-PFHxS	1801017-13 TTrout2-180430UV 2.04	1.95e3	75.0	NO
4	4	13C8-PFOA	1801017-13 TTrout2-180430UV 2.04	8.62e3	81.8	NO
5	5	13C9-PFNA	1801017-13 TTrout2-180430UV 2.04	1.01e4	81.8	NO
6	6	13C4-PFOS	1801017-13 TTrout2-180430UV 2.04	2.17e3	77.7	NO
7	7	13C6-PFDA	1801017-13 TTrout2-180430UV 2.04	9.78e3	79.8	NO
8	8	13C7-PFUdA	1801017-13 TTrout2-180430UV 2.04	1.25e4	87.6	NO

Name: 180617M1_47, Date: 18-Jun-2018, Time: 00:28:01, ID: B8F0090-BS1 OPR 0.125, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0090-BS1 OPR 0.125	5.02e3	60.0	NO
2	2	13C5-PFHxA	B8F0090-BS1 OPR 0.125	6.35e3	56.4	NO
3	3	13C3-PFHxS	B8F0090-BS1 OPR 0.125	1.80e3	69.3	NO
4	4	13C8-PFOA	B8F0090-BS1 OPR 0.125	6.77e3	64.2	NO
5	5	13C9-PFNA	B8F0090-BS1 OPR 0.125	7.61e3	61.8	NO
6	6	13C4-PFOS	B8F0090-BS1 OPR 0.125	2.03e3	72.9	NO
7	7	13C6-PFDA	B8F0090-BS1 OPR 0.125	7.79e3	63.6	NO
8	8	13C7-PFUdA	B8F0090-BS1 OPR 0.125	9.50e3	66.5	NO

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Name: 180617M1_48, Date: 18-Jun-2018, Time: 00:38:26, ID: B8F0090-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0090-BLK1 Method Blank 0.125	5.56e3	66.3	NO
2	2	13C5-PFHxA	B8F0090-BLK1 Method Blank 0.125	7.01e3	62.3	NO
3	3	13C3-PFHxS	B8F0090-BLK1 Method Blank 0.125	1.75e3	67.2	NO
4	4	13C8-PFOA	B8F0090-BLK1 Method Blank 0.125	7.18e3	68.1	NO
5	5	13C9-PFNA	B8F0090-BLK1 Method Blank 0.125	7.97e3	64.7	NO
6	6	13C4-PFOS	B8F0090-BLK1 Method Blank 0.125	1.94e3	69.7	NO
7	7	13C6-PFDA	B8F0090-BLK1 Method Blank 0.125	8.23e3	67.2	NO
8	8	13C7-PFUdA	B8F0090-BLK1 Method Blank 0.125	9.80e3	68.7	NO

Name: 180617M1_49, Date: 18-Jun-2018, Time: 00:48:56, ID: B8F0090-MS1 Matrix Spike 0.11573, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0090-MS1 Matrix Spike 0.11573	4.90e3	58.5	NO
2	2	13C5-PFHxA	B8F0090-MS1 Matrix Spike 0.11573	5.79e3	51.4	NO
3	3	13C3-PFHxS	B8F0090-MS1 Matrix Spike 0.11573	1.93e3	74.2	NO
4	4	13C8-PFOA	B8F0090-MS1 Matrix Spike 0.11573	5.61e3	53.2	NO
5	5	13C9-PFNA	B8F0090-MS1 Matrix Spike 0.11573	6.89e3	55.9	NO
6	6	13C4-PFOS	B8F0090-MS1 Matrix Spike 0.11573	2.07e3	74.2	NO
7	7	13C6-PFDA	B8F0090-MS1 Matrix Spike 0.11573	7.15e3	58.4	NO
8	8	13C7-PFUdA	B8F0090-MS1 Matrix Spike 0.11573	9.14e3	64.0	NO

Name: 180617M1_50, Date: 18-Jun-2018, Time: 00:59:20, ID: B8F0090-MSD1 Matrix Spike Dup 0.11124, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0090-MSD1 Matrix Spike Dup 0.11124	5.56e3	66.4	NO
2	2	13C5-PFHxA	B8F0090-MSD1 Matrix Spike Dup 0.11124	6.94e3	61.6	NO
3	3	13C3-PFHxS	B8F0090-MSD1 Matrix Spike Dup 0.11124	2.08e3	80.1	NO
4	4	13C8-PFOA	B8F0090-MSD1 Matrix Spike Dup 0.11124	6.74e3	64.0	NO
5	5	13C9-PFNA	B8F0090-MSD1 Matrix Spike Dup 0.11124	7.68e3	62.3	NO
6	6	13C4-PFOS	B8F0090-MSD1 Matrix Spike Dup 0.11124	2.21e3	79.2	NO
7	7	13C6-PFDA	B8F0090-MSD1 Matrix Spike Dup 0.11124	7.74e3	63.1	NO
8	8	13C7-PFUdA	B8F0090-MSD1 Matrix Spike Dup 0.11124	9.39e3	65.8	NO

Name: 180617M1_51, Date: 18-Jun-2018, Time: 01:09:50, ID: 1801121-01 REEPDW1070FRB 0.11502, Description: REEPDW1070FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-01 REEPDW1070FRB 0.11502	6.90e3	82.3	NO
2	2	13C5-PFHxA	1801121-01 REEPDW1070FRB 0.11502	8.16e3	72.4	NO
3	3	13C3-PFHxS	1801121-01 REEPDW1070FRB 0.11502	2.03e3	78.0	NO
4	4	13C8-PFOA	1801121-01 REEPDW1070FRB 0.11502	8.29e3	78.6	NO
5	5	13C9-PFNA	1801121-01 REEPDW1070FRB 0.11502	8.45e3	68.6	NO
6	6	13C4-PFOS	1801121-01 REEPDW1070FRB 0.11502	2.02e3	72.6	NO
7	7	13C6-PFDA	1801121-01 REEPDW1070FRB 0.11502	8.63e3	70.4	NO
8	8	13C7-PFUdA	1801121-01 REEPDW1070FRB 0.11502	1.08e4	75.4	NO

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Name: 180617M1_52, Date: 18-Jun-2018, Time: 01:20:14, ID: 1801121-02 REEPDW1075FRB 0.11791, Description: REEPDW1075FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-02 REEPDW1075FRB 0.11791	5.93e3	70.8	NO
2	2	13C5-PFHxA	1801121-02 REEPDW1075FRB 0.11791	7.38e3	65.5	NO
3	3	13C3-PFHxS	1801121-02 REEPDW1075FRB 0.11791	1.69e3	65.1	NO
4	4	13C8-PFOA	1801121-02 REEPDW1075FRB 0.11791	6.93e3	65.7	NO
5	5	13C9-PFNA	1801121-02 REEPDW1075FRB 0.11791	7.73e3	62.7	NO
6	6	13C4-PFOS	1801121-02 REEPDW1075FRB 0.11791	1.72e3	61.7	NO
7	7	13C6-PFDA	1801121-02 REEPDW1075FRB 0.11791	7.81e3	63.7	NO
8	8	13C7-PFUdA	1801121-02 REEPDW1075FRB 0.11791	8.82e3	61.8	NO

Name: 180617M1_53, Date: 18-Jun-2018, Time: 01:30:45, ID: 1801121-03 REEPDW1076FRB 0.11453, Description: REEPDW1076FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-03 REEPDW1076FRB 0.11453	6.74e3	80.4	NO
2	2	13C5-PFHxA	1801121-03 REEPDW1076FRB 0.11453	8.52e3	75.6	NO
3	3	13C3-PFHxS	1801121-03 REEPDW1076FRB 0.11453	2.15e3	82.9	NO
4	4	13C8-PFOA	1801121-03 REEPDW1076FRB 0.11453	8.00e3	75.9	NO
5	5	13C9-PFNA	1801121-03 REEPDW1076FRB 0.11453	9.15e3	74.2	NO
6	6	13C4-PFOS	1801121-03 REEPDW1076FRB 0.11453	2.47e3	88.8	NO
7	7	13C6-PFDA	1801121-03 REEPDW1076FRB 0.11453	9.36e3	76.4	NO
8	8	13C7-PFUdA	1801121-03 REEPDW1076FRB 0.11453	1.09e4	76.6	NO

Name: 180617M1_54, Date: 18-Jun-2018, Time: 01:41:15, ID: 1801121-04 REEPDW1077FRB 0.11519, Description: REEPDW1077FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-04 REEPDW1077FRB 0.11519	6.46e3	77.0	NO
2	2	13C5-PFHxA	1801121-04 REEPDW1077FRB 0.11519	7.75e3	68.8	NO
3	3	13C3-PFHxS	1801121-04 REEPDW1077FRB 0.11519	2.00e3	77.0	NO
4	4	13C8-PFOA	1801121-04 REEPDW1077FRB 0.11519	7.41e3	70.3	NO
5	5	13C9-PFNA	1801121-04 REEPDW1077FRB 0.11519	8.13e3	66.0	NO
6	6	13C4-PFOS	1801121-04 REEPDW1077FRB 0.11519	2.11e3	75.9	NO
7	7	13C6-PFDA	1801121-04 REEPDW1077FRB 0.11519	8.33e3	68.0	NO
8	8	13C7-PFUdA	1801121-04 REEPDW1077FRB 0.11519	1.03e4	72.0	NO

Name: 180617M1_55, Date: 18-Jun-2018, Time: 01:51:40, ID: 1801121-05 REEPDW1080FRB 0.11536, Description: REEPDW1080FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-05 REEPDW1080FRB 0.11536	5.34e3	63.8	NO
2	2	13C5-PFHxA	1801121-05 REEPDW1080FRB 0.11536	6.94e3	61.6	NO
3	3	13C3-PFHxS	1801121-05 REEPDW1080FRB 0.11536	1.73e3	66.5	NO
4	4	13C8-PFOA	1801121-05 REEPDW1080FRB 0.11536	6.68e3	63.4	NO
5	5	13C9-PFNA	1801121-05 REEPDW1080FRB 0.11536	7.80e3	63.3	NO
6	6	13C4-PFOS	1801121-05 REEPDW1080FRB 0.11536	1.76e3	63.3	NO
7	7	13C6-PFDA	1801121-05 REEPDW1080FRB 0.11536	7.68e3	62.7	NO
8	8	13C7-PFUdA	1801121-05 REEPDW1080FRB 0.11536	8.61e3	60.3	NO

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Name: 180617M1_56, Date: 18-Jun-2018, Time: 02:02:10, ID: 1801121-06 REEPDW1081FRB 0.11512, Description: REEPDW1081FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-06 REEPDW1081FRB 0.11512	5.93e3	70.7	NO
2	2	13C5-PFHxA	1801121-06 REEPDW1081FRB 0.11512	7.45e3	66.2	NO
3	3	13C3-PFHxS	1801121-06 REEPDW1081FRB 0.11512	1.74e3	67.1	NO
4	4	13C8-PFOA	1801121-06 REEPDW1081FRB 0.11512	7.64e3	72.5	NO
5	5	13C9-PFNA	1801121-06 REEPDW1081FRB 0.11512	8.29e3	67.3	NO
6	6	13C4-PFOS	1801121-06 REEPDW1081FRB 0.11512	1.96e3	70.3	NO
7	7	13C6-PFDA	1801121-06 REEPDW1081FRB 0.11512	8.05e3	65.7	NO
8	8	13C7-PFUdA	1801121-06 REEPDW1081FRB 0.11512	1.02e4	71.5	NO

Name: 180617M1_57, Date: 18-Jun-2018, Time: 02:12:35, ID: 1801121-07 REEPDW1082FRB 0.11821, Description: REEPDW1082FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-07 REEPDW1082FRB 0.11821	6.99e3	83.4	NO
2	2	13C5-PFHxA	1801121-07 REEPDW1082FRB 0.11821	8.66e3	76.9	NO
3	3	13C3-PFHxS	1801121-07 REEPDW1082FRB 0.11821	2.35e3	90.3	NO
4	4	13C8-PFOA	1801121-07 REEPDW1082FRB 0.11821	8.62e3	81.8	NO
5	5	13C9-PFNA	1801121-07 REEPDW1082FRB 0.11821	9.76e3	79.2	NO
6	6	13C4-PFOS	1801121-07 REEPDW1082FRB 0.11821	2.49e3	89.4	NO
7	7	13C6-PFDA	1801121-07 REEPDW1082FRB 0.11821	9.44e3	77.0	NO
8	8	13C7-PFUdA	1801121-07 REEPDW1082FRB 0.11821	1.26e4	88.2	NO

Name: 180617M1_58, Date: 18-Jun-2018, Time: 02:23:05, ID: 1801121-08 REEPDW1083FRB 0.11578, Description: REEPDW1083FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-08 REEPDW1083FRB 0.11578	5.33e3	63.7	NO
2	2	13C5-PFHxA	1801121-08 REEPDW1083FRB 0.11578	6.70e3	59.4	NO
3	3	13C3-PFHxS	1801121-08 REEPDW1083FRB 0.11578	1.86e3	71.6	NO
4	4	13C8-PFOA	1801121-08 REEPDW1083FRB 0.11578	6.85e3	65.0	NO
5	5	13C9-PFNA	1801121-08 REEPDW1083FRB 0.11578	7.63e3	61.9	NO
6	6	13C4-PFOS	1801121-08 REEPDW1083FRB 0.11578	2.05e3	73.8	NO
7	7	13C6-PFDA	1801121-08 REEPDW1083FRB 0.11578	8.17e3	66.7	NO
8	8	13C7-PFUdA	1801121-08 REEPDW1083FRB 0.11578	1.02e4	71.5	NO

Name: 180617M1_59, Date: 18-Jun-2018, Time: 02:33:30, ID: 1801121-09 REEPDW1084FRB 0.11297, Description: REEPDW1084FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-09 REEPDW1084FRB 0.11297	5.90e3	70.4	NO
2	2	13C5-PFHxA	1801121-09 REEPDW1084FRB 0.11297	7.21e3	64.0	NO
3	3	13C3-PFHxS	1801121-09 REEPDW1084FRB 0.11297	2.12e3	81.5	NO
4	4	13C8-PFOA	1801121-09 REEPDW1084FRB 0.11297	7.26e3	68.9	NO
5	5	13C9-PFNA	1801121-09 REEPDW1084FRB 0.11297	8.04e3	65.3	NO
6	6	13C4-PFOS	1801121-09 REEPDW1084FRB 0.11297	2.50e3	89.9	NO
7	7	13C6-PFDA	1801121-09 REEPDW1084FRB 0.11297	8.73e3	71.3	NO
8	8	13C7-PFUdA	1801121-09 REEPDW1084FRB 0.11297	1.06e4	73.9	NO

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Name: 180617M1_60, Date: 18-Jun-2018, Time: 02:44:01, ID: 1801121-10 REEPDW1085FRB 0.115, Description: REEPDW1085FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801121-10 REEPDW1085FRB 0.115	6.19e3	73.9	NO
2	2	13C5-PFHxA	1801121-10 REEPDW1085FRB 0.115	7.40e3	65.7	NO
3	3	13C3-PFHxS	1801121-10 REEPDW1085FRB 0.115	2.14e3	82.2	NO
4	4	13C8-PFOA	1801121-10 REEPDW1085FRB 0.115	7.17e3	68.0	NO
5	5	13C9-PFNA	1801121-10 REEPDW1085FRB 0.115	8.65e3	70.2	NO
6	6	13C4-PFOS	1801121-10 REEPDW1085FRB 0.115	2.24e3	80.3	NO
7	7	13C6-PFDA	1801121-10 REEPDW1085FRB 0.115	8.05e3	65.7	NO
8	8	13C7-PFUdA	1801121-10 REEPDW1085FRB 0.115	1.06e4	74.4	NO

Name: 180617M1_61, Date: 18-Jun-2018, Time: 02:54:26, ID: ST180617M1-12 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-12 PFC CS3 18F1109	8.28e3	98.8	NO
2	2	13C5-PFHxA	ST180617M1-12 PFC CS3 18F1109	1.11e4	98.1	NO
3	3	13C3-PFHxS	ST180617M1-12 PFC CS3 18F1109	2.41e3	92.8	NO
4	4	13C8-PFOA	ST180617M1-12 PFC CS3 18F1109	1.08e4	102.9	NO
5	5	13C9-PFNA	ST180617M1-12 PFC CS3 18F1109	1.12e4	90.8	NO
6	6	13C4-PFOS	ST180617M1-12 PFC CS3 18F1109	2.75e3	98.7	NO
7	7	13C6-PFDA	ST180617M1-12 PFC CS3 18F1109	1.11e4	90.9	NO
8	8	13C7-PFUdA	ST180617M1-12 PFC CS3 18F1109	1.39e4	97.3	NO

Name: 180617M1_62, Date: 18-Jun-2018, Time: 03:04:56, ID: ST180617M1-13 PFC CS0 18F1106, Description: PFC CS0 18F1106

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-13 PFC CS0 18F1106	8.91e3	106.3	NO
2	2	13C5-PFHxA	ST180617M1-13 PFC CS0 18F1106	1.21e4	107.2	NO
3	3	13C3-PFHxS	ST180617M1-13 PFC CS0 18F1106	2.68e3	103.1	NO
4	4	13C8-PFOA	ST180617M1-13 PFC CS0 18F1106	1.14e4	107.8	NO
5	5	13C9-PFNA	ST180617M1-13 PFC CS0 18F1106	1.30e4	105.7	NO
6	6	13C4-PFOS	ST180617M1-13 PFC CS0 18F1106	2.96e3	106.1	NO
7	7	13C6-PFDA	ST180617M1-13 PFC CS0 18F1106	1.21e4	98.5	NO
8	8	13C7-PFUdA	ST180617M1-13 PFC CS0 18F1106	1.30e4	90.8	NO

Name: 180617M1_63, Date: 18-Jun-2018, Time: 03:15:21, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA	5.36e0	0.0	YES

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Name: 180617M1_64, Date: 18-Jun-2018, Time: 03:25:51, ID: 1801017-14 TTrout3-180430UV 2.01, Description: TTrout3-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-14 TTrout3-180430UV 2.01	7.74e3	92.4	NO
2	2	13C5-PFHxA	1801017-14 TTrout3-180430UV 2.01	9.28e3	82.4	NO
3	3	13C3-PFHxS	1801017-14 TTrout3-180430UV 2.01	2.10e3	80.8	NO
4	4	13C8-PFOA	1801017-14 TTrout3-180430UV 2.01	8.30e3	78.7	NO
5	5	13C9-PFNA	1801017-14 TTrout3-180430UV 2.01	9.68e3	78.6	NO
6	6	13C4-PFOS	1801017-14 TTrout3-180430UV 2.01	2.22e3	79.7	NO
7	7	13C6-PFDA	1801017-14 TTrout3-180430UV 2.01	1.12e4	91.5	NO
8	8	13C7-PFUdA	1801017-14 TTrout3-180430UV 2.01	1.38e4	96.6	NO

Name: 180617M1_65, Date: 18-Jun-2018, Time: 03:36:16, ID: 1801017-15 TTrout4-180430UV 2.02, Description: TTrout4-180430UV

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801017-15 TTrout4-180430UV 2.02	7.71e3	92.1	NO
2	2	13C5-PFHxA	1801017-15 TTrout4-180430UV 2.02	8.80e3	78.1	NO
3	3	13C3-PFHxS	1801017-15 TTrout4-180430UV 2.02	2.21e3	85.2	NO
4	4	13C8-PFOA	1801017-15 TTrout4-180430UV 2.02	8.79e3	83.4	NO
5	5	13C9-PFNA	1801017-15 TTrout4-180430UV 2.02	1.01e4	82.1	NO
6	6	13C4-PFOS	1801017-15 TTrout4-180430UV 2.02	2.26e3	81.1	NO
7	7	13C6-PFDA	1801017-15 TTrout4-180430UV 2.02	1.06e4	86.7	NO
8	8	13C7-PFUdA	1801017-15 TTrout4-180430UV 2.02	1.38e4	96.5	NO

Name: 180617M1_66, Date: 18-Jun-2018, Time: 03:46:47, ID: 1801151-01 REEPDW1116 0.11145, Description: REEPDW1116

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-01 REEPDW1116 0.11145	5.17e3	61.7	NO
2	2	13C5-PFHxA	1801151-01 REEPDW1116 0.11145	6.56e3	58.2	NO
3	3	13C3-PFHxS	1801151-01 REEPDW1116 0.11145	1.93e3	74.4	NO
4	4	13C8-PFOA	1801151-01 REEPDW1116 0.11145	6.38e3	60.6	NO
5	5	13C9-PFNA	1801151-01 REEPDW1116 0.11145	7.67e3	62.2	NO
6	6	13C4-PFOS	1801151-01 REEPDW1116 0.11145	1.85e3	66.3	NO
7	7	13C6-PFDA	1801151-01 REEPDW1116 0.11145	7.57e3	61.8	NO
8	8	13C7-PFUdA	1801151-01 REEPDW1116 0.11145	9.66e3	67.6	NO

Name: 180617M1_67, Date: 18-Jun-2018, Time: 03:57:11, ID: 1801151-02 REEPDW1120 0.11804, Description: REEPDW1120

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-02 REEPDW1120 0.11804	5.26e3	62.8	NO
2	2	13C5-PFHxA	1801151-02 REEPDW1120 0.11804	6.48e3	57.5	NO
3	3	13C3-PFHxS	1801151-02 REEPDW1120 0.11804	1.80e3	69.3	NO
4	4	13C8-PFOA	1801151-02 REEPDW1120 0.11804	6.82e3	64.7	NO
5	5	13C9-PFNA	1801151-02 REEPDW1120 0.11804	7.55e3	61.3	NO
6	6	13C4-PFOS	1801151-02 REEPDW1120 0.11804	2.00e3	71.8	NO
7	7	13C6-PFDA	1801151-02 REEPDW1120 0.11804	7.50e3	61.2	NO
8	8	13C7-PFUdA	1801151-02 REEPDW1120 0.11804	9.74e3	68.2	NO

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Name: 180617M1_68, Date: 18-Jun-2018, Time: 04:07:41, ID: 1801151-03 REEPDW561 0.11524, Description: REEPDW561

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-03 REEPDW561 0.11524	5.53e3	66.1	NO
2	2	13C5-PFHxA	1801151-03 REEPDW561 0.11524	6.96e3	61.8	NO
3	3	13C3-PFHxS	1801151-03 REEPDW561 0.11524	1.96e3	75.3	NO
4	4	13C8-PFOA	1801151-03 REEPDW561 0.11524	6.69e3	63.4	NO
5	5	13C9-PFNA	1801151-03 REEPDW561 0.11524	7.62e3	61.8	NO
6	6	13C4-PFOS	1801151-03 REEPDW561 0.11524	2.20e3	79.0	NO
7	7	13C6-PFDA	1801151-03 REEPDW561 0.11524	7.85e3	64.1	NO
8	8	13C7-PFUdA	1801151-03 REEPDW561 0.11524	9.14e3	64.0	NO

Name: 180617M1_69, Date: 18-Jun-2018, Time: 04:18:06, ID: 1801151-04 REEPDW1110 0.11388, Description: REEPDW1110

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-04 REEPDW1110 0.11388	5.78e3	69.0	NO
2	2	13C5-PFHxA	1801151-04 REEPDW1110 0.11388	7.33e3	65.1	NO
3	3	13C3-PFHxS	1801151-04 REEPDW1110 0.11388	1.96e3	75.3	NO
4	4	13C8-PFOA	1801151-04 REEPDW1110 0.11388	7.14e3	67.7	NO
5	5	13C9-PFNA	1801151-04 REEPDW1110 0.11388	7.57e3	61.5	NO
6	6	13C4-PFOS	1801151-04 REEPDW1110 0.11388	2.10e3	75.3	NO
7	7	13C6-PFDA	1801151-04 REEPDW1110 0.11388	7.89e3	64.4	NO
8	8	13C7-PFUdA	1801151-04 REEPDW1110 0.11388	9.96e3	69.8	NO

Name: 180617M1_70, Date: 18-Jun-2018, Time: 04:28:36, ID: 1801151-05 REEPDW560 0.11804, Description: REEPDW560

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-05 REEPDW560 0.11804	5.41e3	64.6	NO
2	2	13C5-PFHxA	1801151-05 REEPDW560 0.11804	6.67e3	59.2	NO
3	3	13C3-PFHxS	1801151-05 REEPDW560 0.11804	1.90e3	73.0	NO
4	4	13C8-PFOA	1801151-05 REEPDW560 0.11804	6.54e3	62.0	NO
5	5	13C9-PFNA	1801151-05 REEPDW560 0.11804	7.46e3	60.5	NO
6	6	13C4-PFOS	1801151-05 REEPDW560 0.11804	1.84e3	66.1	NO
7	7	13C6-PFDA	1801151-05 REEPDW560 0.11804	7.54e3	61.5	NO
8	8	13C7-PFUdA	1801151-05 REEPDW560 0.11804	9.33e3	65.3	NO

Name: 180617M1_71, Date: 18-Jun-2018, Time: 04:39:06, ID: 1801151-06 REEPDW1111 0.11782, Description: REEPDW1111

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-06 REEPDW1111 0.11782	5.98e3	71.4	NO
2	2	13C5-PFHxA	1801151-06 REEPDW1111 0.11782	7.32e3	64.9	NO
3	3	13C3-PFHxS	1801151-06 REEPDW1111 0.11782	1.96e3	75.4	NO
4	4	13C8-PFOA	1801151-06 REEPDW1111 0.11782	7.14e3	67.7	NO
5	5	13C9-PFNA	1801151-06 REEPDW1111 0.11782	8.30e3	67.4	NO
6	6	13C4-PFOS	1801151-06 REEPDW1111 0.11782	2.03e3	72.9	NO
7	7	13C6-PFDA	1801151-06 REEPDW1111 0.11782	8.54e3	69.7	NO
8	8	13C7-PFUdA	1801151-06 REEPDW1111 0.11782	1.06e4	74.0	NO

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Name: 180617M1_72, Date: 18-Jun-2018, Time: 04:49:30, ID: 1801151-07 REEPDW1112 0.1175, Description: REEPDW1112

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801151-07 REEPDW1112 0.1175	5.07e3	60.5	NO
2	2	13C5-PFHxA	1801151-07 REEPDW1112 0.1175	6.55e3	58.2	NO
3	3	13C3-PFHxS	1801151-07 REEPDW1112 0.1175	1.89e3	72.8	NO
4	4	13C8-PFOA	1801151-07 REEPDW1112 0.1175	6.13e3	58.2	NO
5	5	13C9-PFNA	1801151-07 REEPDW1112 0.1175	7.07e3	57.4	NO
6	6	13C4-PFOS	1801151-07 REEPDW1112 0.1175	1.91e3	68.6	NO
7	7	13C6-PFDA	1801151-07 REEPDW1112 0.1175	8.48e3	69.2	NO
8	8	13C7-PFUdA	1801151-07 REEPDW1112 0.1175	9.41e3	65.9	NO

Name: 180617M1_73, Date: 18-Jun-2018, Time: 05:00:01, ID: B8F0061-BS1 OPR 1, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0061-BS1 OPR 1	7.15e3	85.4	NO
2	2	13C5-PFHxA	B8F0061-BS1 OPR 1	9.55e3	84.8	NO
3	3	13C3-PFHxS	B8F0061-BS1 OPR 1	2.24e3	86.2	NO
4	4	13C8-PFOA	B8F0061-BS1 OPR 1	9.03e3	85.7	NO
5	5	13C9-PFNA	B8F0061-BS1 OPR 1	1.04e4	84.6	NO
6	6	13C4-PFOS	B8F0061-BS1 OPR 1	2.15e3	77.3	NO
7	7	13C6-PFDA	B8F0061-BS1 OPR 1	1.02e4	83.3	NO
8	8	13C7-PFUdA	B8F0061-BS1 OPR 1	1.22e4	85.5	NO

Name: 180617M1_74, Date: 18-Jun-2018, Time: 05:10:25, ID: B8F0061-BLK1 Method Blank 1, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0061-BLK1 Method Blank 1	7.42e3	88.5	NO
2	2	13C5-PFHxA	B8F0061-BLK1 Method Blank 1	9.68e3	85.9	NO
3	3	13C3-PFHxS	B8F0061-BLK1 Method Blank 1	2.41e3	92.8	NO
4	4	13C8-PFOA	B8F0061-BLK1 Method Blank 1	9.15e3	86.8	NO
5	5	13C9-PFNA	B8F0061-BLK1 Method Blank 1	1.13e4	91.4	NO
6	6	13C4-PFOS	B8F0061-BLK1 Method Blank 1	2.64e3	94.6	NO
7	7	13C6-PFDA	B8F0061-BLK1 Method Blank 1	1.09e4	89.0	NO
8	8	13C7-PFUdA	B8F0061-BLK1 Method Blank 1	1.25e4	87.8	NO

Name: 180617M1_75, Date: 18-Jun-2018, Time: 05:20:56, ID: B8F0061-MS1 Matrix Spike 1.15, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0061-MS1 Matrix Spike 1.15	6.48e3	77.3	NO
2	2	13C5-PFHxA	B8F0061-MS1 Matrix Spike 1.15	8.22e3	73.0	NO
3	3	13C3-PFHxS	B8F0061-MS1 Matrix Spike 1.15	1.77e3	68.0	NO
4	4	13C8-PFOA	B8F0061-MS1 Matrix Spike 1.15	7.64e3	72.5	NO
5	5	13C9-PFNA	B8F0061-MS1 Matrix Spike 1.15	8.88e3	72.1	NO
6	6	13C4-PFOS	B8F0061-MS1 Matrix Spike 1.15	1.90e3	68.3	NO
7	7	13C6-PFDA	B8F0061-MS1 Matrix Spike 1.15	8.56e3	69.8	NO
8	8	13C7-PFUdA	B8F0061-MS1 Matrix Spike 1.15	9.69e3	67.8	NO

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Name: 180617M1_76, Date: 18-Jun-2018, Time: 05:31:21, ID: B8F0061-MSD1 Matrix Spike Dup 1.18, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0061-MSD1 Matrix Spike Dup 1.18	6.66e3	79.5	NO
2	2	13C5-PFHxA	B8F0061-MSD1 Matrix Spike Dup 1.18	8.34e3	74.0	NO
3	3	13C3-PFHxS	B8F0061-MSD1 Matrix Spike Dup 1.18	1.85e3	71.0	NO
4	4	13C8-PFOA	B8F0061-MSD1 Matrix Spike Dup 1.18	8.01e3	76.0	NO
5	5	13C9-PFNA	B8F0061-MSD1 Matrix Spike Dup 1.18	8.66e3	70.3	NO
6	6	13C4-PFOS	B8F0061-MSD1 Matrix Spike Dup 1.18	1.94e3	69.6	NO
7	7	13C6-PFDA	B8F0061-MSD1 Matrix Spike Dup 1.18	8.41e3	68.6	NO
8	8	13C7-PFUdA	B8F0061-MSD1 Matrix Spike Dup 1.18	1.08e4	75.7	NO

Name: 180617M1_77, Date: 18-Jun-2018, Time: 05:41:51, ID: 1801138-01 MCLPCC107 1.15, Description: MCLPCC107

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-01 MCLPCC107 1.15	6.88e3	82.1	NO
2	2	13C5-PFHxA	1801138-01 MCLPCC107 1.15	8.37e3	74.3	NO
3	3	13C3-PFHxS	1801138-01 MCLPCC107 1.15	1.96e3	75.4	NO
4	4	13C8-PFOA	1801138-01 MCLPCC107 1.15	8.48e3	80.5	NO
5	5	13C9-PFNA	1801138-01 MCLPCC107 1.15	9.17e3	74.5	NO
6	6	13C4-PFOS	1801138-01 MCLPCC107 1.15	2.08e3	74.6	NO
7	7	13C6-PFDA	1801138-01 MCLPCC107 1.15	9.62e3	78.5	NO
8	8	13C7-PFUdA	1801138-01 MCLPCC107 1.15	1.18e4	82.7	NO

Name: 180617M1_78, Date: 18-Jun-2018, Time: 05:52:16, ID: ST180617M1-14 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-14 PFC CS3 18F1109	8.34e3	99.5	NO
2	2	13C5-PFHxA	ST180617M1-14 PFC CS3 18F1109	1.19e4	105.3	NO
3	3	13C3-PFHxS	ST180617M1-14 PFC CS3 18F1109	2.60e3	99.9	NO
4	4	13C8-PFOA	ST180617M1-14 PFC CS3 18F1109	1.07e4	101.1	NO
5	5	13C9-PFNA	ST180617M1-14 PFC CS3 18F1109	1.21e4	98.1	NO
6	6	13C4-PFOS	ST180617M1-14 PFC CS3 18F1109	2.75e3	98.8	NO
7	7	13C6-PFDA	ST180617M1-14 PFC CS3 18F1109	1.12e4	91.7	NO
8	8	13C7-PFUdA	ST180617M1-14 PFC CS3 18F1109	1.43e4	100.4	NO

Name: 180617M1_79, Date: 18-Jun-2018, Time: 06:02:46, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180617M1_80, Date: 18-Jun-2018, Time: 06:13:12, ID: 1801138-03 MCLPCC101 1.13, Description: MCLPCC101

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-03 MCLPCC101 1.13	6.40e3	76.4	NO
2	2	13C5-PFHxA	1801138-03 MCLPCC101 1.13	8.03e3	71.2	NO
3	3	13C3-PFHxS	1801138-03 MCLPCC101 1.13	1.69e3	64.9	NO
4	4	13C8-PFOA	1801138-03 MCLPCC101 1.13	7.54e3	71.5	NO
5	5	13C9-PFNA	1801138-03 MCLPCC101 1.13	7.60e3	61.7	NO
6	6	13C4-PFOS	1801138-03 MCLPCC101 1.13	1.36e3	48.9	YES
7	7	13C6-PFDA	1801138-03 MCLPCC101 1.13	8.71e3	71.0	NO
8	8	13C7-PFUdA	1801138-03 MCLPCC101 1.13	1.04e4	72.5	NO

Name: 180617M1_81, Date: 18-Jun-2018, Time: 06:23:42, ID: 1801138-04 MCLPCD185 1.55, Description: MCLPCD185

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-04 MCLPCD185 1.55	6.44e3	76.9	NO
2	2	13C5-PFHxA	1801138-04 MCLPCD185 1.55	8.24e3	73.1	NO
3	3	13C3-PFHxS	1801138-04 MCLPCD185 1.55	1.68e3	64.6	NO
4	4	13C8-PFOA	1801138-04 MCLPCD185 1.55	7.26e3	68.8	NO
5	5	13C9-PFNA	1801138-04 MCLPCD185 1.55	7.93e3	64.4	NO
6	6	13C4-PFOS	1801138-04 MCLPCD185 1.55	1.98e3	70.9	NO
7	7	13C6-PFDA	1801138-04 MCLPCD185 1.55	9.13e3	74.5	NO
8	8	13C7-PFUdA	1801138-04 MCLPCD185 1.55	1.13e4	79.0	NO

Name: 180617M1_82, Date: 18-Jun-2018, Time: 06:34:07, ID: 1801138-05 MCLP41512 1.12, Description: MCLP41512

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-05 MCLP41512 1.12	6.72e3	80.2	NO
2	2	13C5-PFHxA	1801138-05 MCLP41512 1.12	6.90e3	61.3	NO
3	3	13C3-PFHxS	1801138-05 MCLP41512 1.12	1.42e3	54.7	NO
4	4	13C8-PFOA	1801138-05 MCLP41512 1.12	7.40e3	70.2	NO
5	5	13C9-PFNA	1801138-05 MCLP41512 1.12	7.28e3	59.1	NO
6	6	13C4-PFOS	1801138-05 MCLP41512 1.12	3.57e2	12.8	YES
7	7	13C6-PFDA	1801138-05 MCLP41512 1.12	8.30e3	67.8	NO
8	8	13C7-PFUdA	1801138-05 MCLP41512 1.12	9.92e3	69.5	NO

Name: 180617M1_83, Date: 18-Jun-2018, Time: 06:44:37, ID: 1801138-06 MCLP41513 1.13, Description: MCLP41513

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-06 MCLP41513 1.13	5.18e3	61.9	NO
2	2	13C5-PFHxA	1801138-06 MCLP41513 1.13	6.08e3	53.9	NO
3	3	13C3-PFHxS	1801138-06 MCLP41513 1.13	1.47e3	56.7	NO
4	4	13C8-PFOA	1801138-06 MCLP41513 1.13	7.01e3	66.5	NO
5	5	13C9-PFNA	1801138-06 MCLP41513 1.13	7.81e3	63.4	NO
6	6	13C4-PFOS	1801138-06 MCLP41513 1.13	1.43e3	51.4	NO
7	7	13C6-PFDA	1801138-06 MCLP41513 1.13	8.39e3	68.5	NO
8	8	13C7-PFUdA	1801138-06 MCLP41513 1.13	1.03e4	71.9	NO

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Name: 180617M1_84, Date: 18-Jun-2018, Time: 06:55:02, ID: 1801138-07 MCLP41283 1.12, Description: MCLP41283

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-07 MCLP41283 1.12	6.61e3	78.9	NO
2	2	13C5-PFHxA	1801138-07 MCLP41283 1.12	8.17e3	72.5	NO
3	3	13C3-PFHxS	1801138-07 MCLP41283 1.12	1.80e3	69.3	NO
4	4	13C8-PFOA	1801138-07 MCLP41283 1.12	8.05e3	76.4	NO
5	5	13C9-PFNA	1801138-07 MCLP41283 1.12	8.83e3	71.7	NO
6	6	13C4-PFOS	1801138-07 MCLP41283 1.12	1.41e3	50.5	NO
7	7	13C6-PFDA	1801138-07 MCLP41283 1.12	8.46e3	69.1	NO
8	8	13C7-PFUdA	1801138-07 MCLP41283 1.12	1.05e4	73.3	NO

Name: 180617M1_85, Date: 18-Jun-2018, Time: 07:05:32, ID: 1801138-08 MCLP41284 1.13, Description: MCLP41284

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-08 MCLP41284 1.13	6.61e3	78.9	NO
2	2	13C5-PFHxA	1801138-08 MCLP41284 1.13	8.35e3	74.1	NO
3	3	13C3-PFHxS	1801138-08 MCLP41284 1.13	1.91e3	73.4	NO
4	4	13C8-PFOA	1801138-08 MCLP41284 1.13	8.34e3	79.1	NO
5	5	13C9-PFNA	1801138-08 MCLP41284 1.13	8.28e3	67.2	NO
6	6	13C4-PFOS	1801138-08 MCLP41284 1.13	1.20e3	43.2	YES
7	7	13C6-PFDA	1801138-08 MCLP41284 1.13	8.84e3	72.1	NO
8	8	13C7-PFUdA	1801138-08 MCLP41284 1.13	1.15e4	80.3	NO

Name: 180617M1_86, Date: 18-Jun-2018, Time: 07:16:02, ID: 1801138-09 MCLP41280 1.12, Description: MCLP41280

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-09 MCLP41280 1.12	7.35e3	87.7	NO
2	2	13C5-PFHxA	1801138-09 MCLP41280 1.12	8.54e3	75.8	NO
3	3	13C3-PFHxS	1801138-09 MCLP41280 1.12	2.11e3	81.1	NO
4	4	13C8-PFOA	1801138-09 MCLP41280 1.12	8.52e3	80.8	NO
5	5	13C9-PFNA	1801138-09 MCLP41280 1.12	9.39e3	76.2	NO
6	6	13C4-PFOS	1801138-09 MCLP41280 1.12	2.02e3	72.6	NO
7	7	13C6-PFDA	1801138-09 MCLP41280 1.12	9.41e3	76.8	NO
8	8	13C7-PFUdA	1801138-09 MCLP41280 1.12	1.08e4	75.5	NO

Name: 180617M1_87, Date: 18-Jun-2018, Time: 07:26:27, ID: 1801138-10 MCLP41281 1.11, Description: MCLP41281

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-10 MCLP41281 1.11	6.63e3	79.2	NO
2	2	13C5-PFHxA	1801138-10 MCLP41281 1.11	8.78e3	77.9	NO
3	3	13C3-PFHxS	1801138-10 MCLP41281 1.11	1.99e3	76.6	NO
4	4	13C8-PFOA	1801138-10 MCLP41281 1.11	8.12e3	77.0	NO
5	5	13C9-PFNA	1801138-10 MCLP41281 1.11	9.13e3	74.1	NO
6	6	13C4-PFOS	1801138-10 MCLP41281 1.11	1.91e3	68.4	NO
7	7	13C6-PFDA	1801138-10 MCLP41281 1.11	9.25e3	75.5	NO
8	8	13C7-PFUdA	1801138-10 MCLP41281 1.11	1.06e4	74.1	NO

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Name: 180617M1_88, Date: 18-Jun-2018, Time: 07:36:58, ID: 1801138-11 MCLP41277 1.12, Description: MCLP41277

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-11 MCLP41277 1.12	7.23e3	86.3	NO
2	2	13C5-PFHxA	1801138-11 MCLP41277 1.12	9.00e3	79.9	NO
3	3	13C3-PFHxS	1801138-11 MCLP41277 1.12	1.94e3	74.6	NO
4	4	13C8-PFOA	1801138-11 MCLP41277 1.12	8.29e3	78.6	NO
5	5	13C9-PFNA	1801138-11 MCLP41277 1.12	9.26e3	75.2	NO
6	6	13C4-PFOS	1801138-11 MCLP41277 1.12	2.06e3	74.0	NO
7	7	13C6-PFDA	1801138-11 MCLP41277 1.12	9.19e3	75.0	NO
8	8	13C7-PFUdA	1801138-11 MCLP41277 1.12	9.65e3	67.6	NO

Name: 180617M1_89, Date: 18-Jun-2018, Time: 07:47:23, ID: 1801138-12 MCLP41278 1.18, Description: MCLP41278

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-12 MCLP41278 1.18	6.98e3	83.3	NO
2	2	13C5-PFHxA	1801138-12 MCLP41278 1.18	8.52e3	75.6	NO
3	3	13C3-PFHxS	1801138-12 MCLP41278 1.18	2.11e3	81.0	NO
4	4	13C8-PFOA	1801138-12 MCLP41278 1.18	8.42e3	79.9	NO
5	5	13C9-PFNA	1801138-12 MCLP41278 1.18	8.99e3	73.0	NO
6	6	13C4-PFOS	1801138-12 MCLP41278 1.18	2.11e3	75.9	NO
7	7	13C6-PFDA	1801138-12 MCLP41278 1.18	9.53e3	77.8	NO
8	8	13C7-PFUdA	1801138-12 MCLP41278 1.18	1.19e4	83.3	NO

Name: 180617M1_90, Date: 18-Jun-2018, Time: 07:57:53, ID: ST180617M1-15 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-15 PFC CS3 18F1109	8.83e3	105.4	NO
2	2	13C5-PFHxA	ST180617M1-15 PFC CS3 18F1109	1.22e4	108.1	NO
3	3	13C3-PFHxS	ST180617M1-15 PFC CS3 18F1109	2.63e3	101.1	NO
4	4	13C8-PFOA	ST180617M1-15 PFC CS3 18F1109	1.13e4	107.2	NO
5	5	13C9-PFNA	ST180617M1-15 PFC CS3 18F1109	1.20e4	97.5	NO
6	6	13C4-PFOS	ST180617M1-15 PFC CS3 18F1109	2.79e3	100.1	NO
7	7	13C6-PFDA	ST180617M1-15 PFC CS3 18F1109	1.18e4	96.0	NO
8	8	13C7-PFUdA	ST180617M1-15 PFC CS3 18F1109	1.43e4	100.4	NO

Name: 180617M1_91, Date: 18-Jun-2018, Time: 08:08:23, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180617M1_92, Date: 18-Jun-2018, Time: 08:18:49, ID: 1801138-13 MCLP41274 1.11, Description: MCLP41274

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-13 MCLP41274 1.11	7.27e3	86.8	NO
2	2	13C5-PFHxA	1801138-13 MCLP41274 1.11	8.89e3	78.9	NO
3	3	13C3-PFHxS	1801138-13 MCLP41274 1.11	2.15e3	82.6	NO
4	4	13C8-PFOA	1801138-13 MCLP41274 1.11	8.72e3	82.7	NO
5	5	13C9-PFNA	1801138-13 MCLP41274 1.11	9.11e3	73.9	NO
6	6	13C4-PFOS	1801138-13 MCLP41274 1.11	2.35e3	84.5	NO
7	7	13C6-PFDA	1801138-13 MCLP41274 1.11	9.09e3	74.2	NO
8	8	13C7-PFUdA	1801138-13 MCLP41274 1.11	1.18e4	82.8	NO

Name: 180617M1_93, Date: 18-Jun-2018, Time: 08:29:19, ID: 1801138-14 MCLP41275 1.15, Description: MCLP41275

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-14 MCLP41275 1.15	7.71e3	92.0	NO
2	2	13C5-PFHxA	1801138-14 MCLP41275 1.15	9.98e3	88.6	NO
3	3	13C3-PFHxS	1801138-14 MCLP41275 1.15	2.31e3	88.8	NO
4	4	13C8-PFOA	1801138-14 MCLP41275 1.15	9.38e3	89.0	NO
5	5	13C9-PFNA	1801138-14 MCLP41275 1.15	1.03e4	83.5	NO
6	6	13C4-PFOS	1801138-14 MCLP41275 1.15	2.33e3	83.5	NO
7	7	13C6-PFDA	1801138-14 MCLP41275 1.15	1.04e4	85.2	NO
8	8	13C7-PFUdA	1801138-14 MCLP41275 1.15	1.29e4	90.3	NO

Name: 180617M1_94, Date: 18-Jun-2018, Time: 08:39:44, ID: 1801138-15 MCLPCH307 1.15, Description: MCLPCH307

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-15 MCLPCH307 1.15	6.62e3	79.0	NO
2	2	13C5-PFHxA	1801138-15 MCLPCH307 1.15	8.02e3	71.2	NO
3	3	13C3-PFHxS	1801138-15 MCLPCH307 1.15	2.20e3	84.6	NO
4	4	13C8-PFOA	1801138-15 MCLPCH307 1.15	7.74e3	73.5	NO
5	5	13C9-PFNA	1801138-15 MCLPCH307 1.15	8.43e3	68.4	NO
6	6	13C4-PFOS	1801138-15 MCLPCH307 1.15	2.31e3	83.0	NO
7	7	13C6-PFDA	1801138-15 MCLPCH307 1.15	9.49e3	77.4	NO
8	8	13C7-PFUdA	1801138-15 MCLPCH307 1.15	1.05e4	73.2	NO

Name: 180617M1_95, Date: 18-Jun-2018, Time: 08:50:15, ID: 1801138-16 MCLPCH304 1.12, Description: MCLPCH304

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-16 MCLPCH304 1.12	7.17e3	85.6	NO
2	2	13C5-PFHxA	1801138-16 MCLPCH304 1.12	8.66e3	76.9	NO
3	3	13C3-PFHxS	1801138-16 MCLPCH304 1.12	1.81e3	69.6	NO
4	4	13C8-PFOA	1801138-16 MCLPCH304 1.12	8.51e3	80.7	NO
5	5	13C9-PFNA	1801138-16 MCLPCH304 1.12	9.53e3	77.4	NO
6	6	13C4-PFOS	1801138-16 MCLPCH304 1.12	2.16e3	77.6	NO
7	7	13C6-PFDA	1801138-16 MCLPCH304 1.12	9.05e3	73.9	NO
8	8	13C7-PFUdA	1801138-16 MCLPCH304 1.12	1.10e4	77.0	NO

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Name: 180617M1_96, Date: 18-Jun-2018, Time: 09:00:39, ID: 1801138-17 MCLPCH310 1.13, Description: MCLPCH310

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-17 MCLPCH310 1.13	7.32e3	87.4	NO
2	2	13C5-PFHxA	1801138-17 MCLPCH310 1.13	8.93e3	79.3	NO
3	3	13C3-PFHxS	1801138-17 MCLPCH310 1.13	2.18e3	84.0	NO
4	4	13C8-PFOA	1801138-17 MCLPCH310 1.13	8.99e3	85.3	NO
5	5	13C9-PFNA	1801138-17 MCLPCH310 1.13	9.55e3	77.6	NO
6	6	13C4-PFOS	1801138-17 MCLPCH310 1.13	2.39e3	86.0	NO
7	7	13C6-PFDA	1801138-17 MCLPCH310 1.13	9.29e3	75.8	NO
8	8	13C7-PFUdA	1801138-17 MCLPCH310 1.13	1.15e4	80.3	NO

Name: 180617M1_97, Date: 18-Jun-2018, Time: 09:11:09, ID: 1801138-18 MCLPCH313 1.13, Description: MCLPCH313

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-18 MCLPCH313 1.13	8.70e3	103.9	NO
2	2	13C5-PFHxA	1801138-18 MCLPCH313 1.13	1.03e4	91.7	NO
3	3	13C3-PFHxS	1801138-18 MCLPCH313 1.13	2.30e3	88.5	NO
4	4	13C8-PFOA	1801138-18 MCLPCH313 1.13	9.97e3	94.5	NO
5	5	13C9-PFNA	1801138-18 MCLPCH313 1.13	1.13e4	91.7	NO
6	6	13C4-PFOS	1801138-18 MCLPCH313 1.13	2.71e3	97.4	NO
7	7	13C6-PFDA	1801138-18 MCLPCH313 1.13	1.16e4	95.0	NO
8	8	13C7-PFUdA	1801138-18 MCLPCH313 1.13	1.40e4	98.1	NO

Name: 180617M1_98, Date: 18-Jun-2018, Time: 09:21:33, ID: 1801075-01 EB1-1805300925JLB 0.25951, Description: EB1-1805300925JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-01 EB1-1805300925JLB 0.25...	7.69e3	91.7	NO
2	2	13C5-PFHxA	1801075-01 EB1-1805300925JLB 0.25...	9.45e3	83.9	NO
3	3	13C3-PFHxS	1801075-01 EB1-1805300925JLB 0.25...	2.18e3	83.9	NO
4	4	13C8-PFOA	1801075-01 EB1-1805300925JLB 0.25...	8.35e3	79.2	NO
5	5	13C9-PFNA	1801075-01 EB1-1805300925JLB 0.25...	9.11e3	74.0	NO
6	6	13C4-PFOS	1801075-01 EB1-1805300925JLB 0.25...	2.17e3	77.9	NO
7	7	13C6-PFDA	1801075-01 EB1-1805300925JLB 0.25...	9.08e3	74.1	NO
8	8	13C7-PFUdA	1801075-01 EB1-1805300925JLB 0.25...	9.96e3	69.7	NO

Name: 180617M1_99, Date: 18-Jun-2018, Time: 09:32:04, ID: 1801075-02 SW1805300930JLB 0.25289, Description: SW1805300930JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-02 SW1805300930JLB 0.25289	7.16e3	85.5	NO
2	2	13C5-PFHxA	1801075-02 SW1805300930JLB 0.25289	8.32e3	73.8	NO
3	3	13C3-PFHxS	1801075-02 SW1805300930JLB 0.25289	2.02e3	77.6	NO
4	4	13C8-PFOA	1801075-02 SW1805300930JLB 0.25289	7.84e3	74.4	NO
5	5	13C9-PFNA	1801075-02 SW1805300930JLB 0.25289	8.05e3	65.3	NO
6	6	13C4-PFOS	1801075-02 SW1805300930JLB 0.25289	1.92e3	68.8	NO
7	7	13C6-PFDA	1801075-02 SW1805300930JLB 0.25289	8.47e3	69.1	NO
8	8	13C7-PFUdA	1801075-02 SW1805300930JLB 0.25289	9.95e3	69.7	NO

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Name: 180617M1_100, Date: 18-Jun-2018, Time: 09:42:29, ID: 1801075-03 SW1805300950JLB 0.25061, Description: SW1805300950JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-03 SW1805300950JLB 0.25061	6.71e3	80.0	NO
2	2	13C5-PFHxA	1801075-03 SW1805300950JLB 0.25061	7.82e3	69.5	NO
3	3	13C3-PFHxS	1801075-03 SW1805300950JLB 0.25061	2.00e3	77.0	NO
4	4	13C8-PFOA	1801075-03 SW1805300950JLB 0.25061	7.27e3	69.0	NO
5	5	13C9-PFNA	1801075-03 SW1805300950JLB 0.25061	8.16e3	66.3	NO
6	6	13C4-PFOS	1801075-03 SW1805300950JLB 0.25061	1.68e3	60.5	NO
7	7	13C6-PFDA	1801075-03 SW1805300950JLB 0.25061	8.62e3	70.4	NO
8	8	13C7-PFUdA	1801075-03 SW1805300950JLB 0.25061	1.03e4	71.9	NO

Name: 180617M1_101, Date: 18-Jun-2018, Time: 09:52:59, ID: 1801075-04 SW1805301015JLB 0.25195, Description: SW1805301015JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-04 SW1805301015JLB 0.25195	6.93e3	82.7	NO
2	2	13C5-PFHxA	1801075-04 SW1805301015JLB 0.25195	8.35e3	74.1	NO
3	3	13C3-PFHxS	1801075-04 SW1805301015JLB 0.25195	1.92e3	73.9	NO
4	4	13C8-PFOA	1801075-04 SW1805301015JLB 0.25195	7.98e3	75.8	NO
5	5	13C9-PFNA	1801075-04 SW1805301015JLB 0.25195	8.61e3	69.9	NO
6	6	13C4-PFOS	1801075-04 SW1805301015JLB 0.25195	2.14e3	76.8	NO
7	7	13C6-PFDA	1801075-04 SW1805301015JLB 0.25195	8.71e3	71.1	NO
8	8	13C7-PFUdA	1801075-04 SW1805301015JLB 0.25195	1.10e4	77.1	NO

Name: 180617M1_102, Date: 18-Jun-2018, Time: 10:03:24, ID: 1801075-05 RW1805301030JLB 0.25822, Description: RW1805301030JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-05 RW1805301030JLB 0.25822	7.36e3	87.9	NO
2	2	13C5-PFHxA	1801075-05 RW1805301030JLB 0.25822	8.43e3	74.9	NO
3	3	13C3-PFHxS	1801075-05 RW1805301030JLB 0.25822	2.00e3	76.8	NO
4	4	13C8-PFOA	1801075-05 RW1805301030JLB 0.25822	5.89e3	55.8	NO
5	5	13C9-PFNA	1801075-05 RW1805301030JLB 0.25822	5.73e3	46.5	YES
6	6	13C4-PFOS	1801075-05 RW1805301030JLB 0.25822	1.90e3	68.1	NO
7	7	13C6-PFDA	1801075-05 RW1805301030JLB 0.25822	5.61e3	45.8	YES
8	8	13C7-PFUdA	1801075-05 RW1805301030JLB 0.25822	6.74e3	47.2	YES

Name: 180617M1_103, Date: 18-Jun-2018, Time: 10:13:55, ID: 1801075-06 FB1805301035JLB 0.25636, Description: FB1805301035JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-06 FB1805301035JLB 0.25636	6.97e3	83.1	NO
2	2	13C5-PFHxA	1801075-06 FB1805301035JLB 0.25636	7.84e3	69.6	NO
3	3	13C3-PFHxS	1801075-06 FB1805301035JLB 0.25636	1.87e3	72.0	NO
4	4	13C8-PFOA	1801075-06 FB1805301035JLB 0.25636	7.51e3	71.2	NO
5	5	13C9-PFNA	1801075-06 FB1805301035JLB 0.25636	7.80e3	63.3	NO
6	6	13C4-PFOS	1801075-06 FB1805301035JLB 0.25636	1.91e3	68.6	NO
7	7	13C6-PFDA	1801075-06 FB1805301035JLB 0.25636	7.68e3	62.7	NO
8	8	13C7-PFUdA	1801075-06 FB1805301035JLB 0.25636	9.97e3	69.8	NO

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Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-16 PFC CS3 18F1109	7.86e3	93.8	NO
2	2	13C5-PFHxA	ST180617M1-16 PFC CS3 18F1109	1.08e4	95.5	NO
3	3	13C3-PFHxS	ST180617M1-16 PFC CS3 18F1109	2.55e3	97.9	NO
4	4	13C8-PFOA	ST180617M1-16 PFC CS3 18F1109	1.00e4	95.3	NO
5	5	13C9-PFNA	ST180617M1-16 PFC CS3 18F1109	1.15e4	93.1	NO
6	6	13C4-PFOS	ST180617M1-16 PFC CS3 18F1109	2.52e3	90.6	NO
7	7	13C6-PFDA	ST180617M1-16 PFC CS3 18F1109	1.03e4	84.1	NO
8	8	13C7-PFUdA	ST180617M1-16 PFC CS3 18F1109	1.22e4	85.7	NO

Name: 180617M1_105, Date: 18-Jun-2018, Time: 10:34:50, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180617M1_106, Date: 18-Jun-2018, Time: 10:45:15, ID: B8F0069-BS1 OPR 0.25, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0069-BS1 OPR 0.25	4.92e3	58.7	NO
2	2	13C5-PFHxA	B8F0069-BS1 OPR 0.25	6.38e3	56.6	NO
3	3	13C3-PFHxS	B8F0069-BS1 OPR 0.25	1.75e3	67.3	NO
4	4	13C8-PFOA	B8F0069-BS1 OPR 0.25	6.76e3	64.2	NO
5	5	13C9-PFNA	B8F0069-BS1 OPR 0.25	7.61e3	61.8	NO
6	6	13C4-PFOS	B8F0069-BS1 OPR 0.25	1.99e3	71.6	NO
7	7	13C6-PFDA	B8F0069-BS1 OPR 0.25	7.91e3	64.6	NO
8	8	13C7-PFUdA	B8F0069-BS1 OPR 0.25	9.41e3	65.9	NO

Name: 180617M1_107, Date: 18-Jun-2018, Time: 10:55:45, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0069-BSD1 LCSD 0.25	4.44e3	53.0	NO
2	2	13C5-PFHxA	B8F0069-BSD1 LCSD 0.25	5.46e3	48.5	YES
3	3	13C3-PFHxS	B8F0069-BSD1 LCSD 0.25	1.49e3	57.2	NO
4	4	13C8-PFOA	B8F0069-BSD1 LCSD 0.25	5.36e3	50.8	NO
5	5	13C9-PFNA	B8F0069-BSD1 LCSD 0.25	6.31e3	51.2	NO
6	6	13C4-PFOS	B8F0069-BSD1 LCSD 0.25	1.65e3	59.1	NO
7	7	13C6-PFDA	B8F0069-BSD1 LCSD 0.25	6.22e3	50.8	NO
8	8	13C7-PFUdA	B8F0069-BSD1 LCSD 0.25	7.49e3	52.4	NO

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Name: 180617M1_108, Date: 18-Jun-2018, Time: 11:06:10, ID: B8F0069-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0069-BLK1 Method Blank 0.25	6.18e3	73.7	NO
2	2	13C5-PFHxA	B8F0069-BLK1 Method Blank 0.25	8.10e3	71.9	NO
3	3	13C3-PFHxS	B8F0069-BLK1 Method Blank 0.25	1.97e3	75.8	NO
4	4	13C8-PFOA	B8F0069-BLK1 Method Blank 0.25	7.26e3	68.9	NO
5	5	13C9-PFNA	B8F0069-BLK1 Method Blank 0.25	8.39e3	68.1	NO
6	6	13C4-PFOS	B8F0069-BLK1 Method Blank 0.25	2.08e3	74.5	NO
7	7	13C6-PFDA	B8F0069-BLK1 Method Blank 0.25	8.42e3	68.7	NO
8	8	13C7-PFUdA	B8F0069-BLK1 Method Blank 0.25	1.12e4	78.1	NO

Name: 180617M1_109, Date: 18-Jun-2018, Time: 11:16:41, ID: 1801080-01 MCLP00502 0.11474, Description: MCLP00502

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801080-01 MCLP00502 0.11474	5.21e3	62.2	NO
2	2	13C5-PFHxA	1801080-01 MCLP00502 0.11474	6.13e3	54.4	NO
3	3	13C3-PFHxS	1801080-01 MCLP00502 0.11474	1.85e3	71.3	NO
4	4	13C8-PFOA	1801080-01 MCLP00502 0.11474	6.48e3	61.5	NO
5	5	13C9-PFNA	1801080-01 MCLP00502 0.11474	7.24e3	58.8	NO
6	6	13C4-PFOS	1801080-01 MCLP00502 0.11474	2.15e3	77.0	NO
7	7	13C6-PFDA	1801080-01 MCLP00502 0.11474	7.32e3	59.7	NO
8	8	13C7-PFUdA	1801080-01 MCLP00502 0.11474	8.93e3	62.5	NO

Name: 180617M1_110, Date: 18-Jun-2018, Time: 11:27:05, ID: 1801080-02 MCLP00503 0.1174, Description: MCLP00503

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801080-02 MCLP00503 0.1174	4.21e3	50.3	NO
2	2	13C5-PFHxA	1801080-02 MCLP00503 0.1174	5.56e3	49.4	YES
3	3	13C3-PFHxS	1801080-02 MCLP00503 0.1174	2.01e3	77.3	NO
4	4	13C8-PFOA	1801080-02 MCLP00503 0.1174	5.53e3	52.5	NO
5	5	13C9-PFNA	1801080-02 MCLP00503 0.1174	6.64e3	53.9	NO
6	6	13C4-PFOS	1801080-02 MCLP00503 0.1174	2.14e3	76.8	NO
7	7	13C6-PFDA	1801080-02 MCLP00503 0.1174	6.76e3	55.2	NO
8	8	13C7-PFUdA	1801080-02 MCLP00503 0.1174	9.23e3	64.6	NO

Name: 180617M1_111, Date: 18-Jun-2018, Time: 11:37:36, ID: 1801083-01 REEPDW1064FRB 0.11793, Description: REEPDW1064FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-01 REEPDW1064FRB 0.11793	4.83e3	57.6	NO
2	2	13C5-PFHxA	1801083-01 REEPDW1064FRB 0.11793	5.77e3	51.2	NO
3	3	13C3-PFHxS	1801083-01 REEPDW1064FRB 0.11793	1.52e3	58.5	NO
4	4	13C8-PFOA	1801083-01 REEPDW1064FRB 0.11793	5.71e3	54.2	NO
5	5	13C9-PFNA	1801083-01 REEPDW1064FRB 0.11793	6.57e3	53.3	NO
6	6	13C4-PFOS	1801083-01 REEPDW1064FRB 0.11793	1.67e3	59.9	NO
7	7	13C6-PFDA	1801083-01 REEPDW1064FRB 0.11793	6.65e3	54.3	NO
8	8	13C7-PFUdA	1801083-01 REEPDW1064FRB 0.11793	7.65e3	53.6	NO

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Name: 180617M1_112, Date: 18-Jun-2018, Time: 11:48:01, ID: 1801083-02 REEPDW1065FRB 0.11917, Description: REEPDW1065FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-02 REEPDW1065FRB 0.11917	4.71e3	56.2	NO
2	2	13C5-PFHxA	1801083-02 REEPDW1065FRB 0.11917	5.82e3	51.7	NO
3	3	13C3-PFHxS	1801083-02 REEPDW1065FRB 0.11917	1.66e3	63.9	NO
4	4	13C8-PFOA	1801083-02 REEPDW1065FRB 0.11917	6.20e3	58.8	NO
5	5	13C9-PFNA	1801083-02 REEPDW1065FRB 0.11917	7.17e3	58.2	NO
6	6	13C4-PFOS	1801083-02 REEPDW1065FRB 0.11917	1.98e3	71.0	NO
7	7	13C6-PFDA	1801083-02 REEPDW1065FRB 0.11917	7.23e3	59.0	NO
8	8	13C7-PFUdA	1801083-02 REEPDW1065FRB 0.11917	8.07e3	56.5	NO

Name: 180617M1_113, Date: 18-Jun-2018, Time: 11:58:32, ID: 1801083-03 REEPDW1066FRB 0.11325, Description: REEPDW1066FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-03 REEPDW1066FRB 0.11325	5.26e3	62.7	NO
2	2	13C5-PFHxA	1801083-03 REEPDW1066FRB 0.11325	6.64e3	58.9	NO
3	3	13C3-PFHxS	1801083-03 REEPDW1066FRB 0.11325	1.77e3	68.3	NO
4	4	13C8-PFOA	1801083-03 REEPDW1066FRB 0.11325	6.10e3	57.8	NO
5	5	13C9-PFNA	1801083-03 REEPDW1066FRB 0.11325	7.53e3	61.1	NO
6	6	13C4-PFOS	1801083-03 REEPDW1066FRB 0.11325	1.94e3	69.6	NO
7	7	13C6-PFDA	1801083-03 REEPDW1066FRB 0.11325	7.04e3	57.4	NO
8	8	13C7-PFUdA	1801083-03 REEPDW1066FRB 0.11325	9.18e3	64.3	NO

Name: 180617M1_114, Date: 18-Jun-2018, Time: 12:09:02, ID: 1801083-04 REEPDW1067FRB 0.11388, Description: REEPDW1067FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-04 REEPDW1067FRB 0.11388	5.27e3	62.8	NO
2	2	13C5-PFHxA	1801083-04 REEPDW1067FRB 0.11388	6.60e3	58.6	NO
3	3	13C3-PFHxS	1801083-04 REEPDW1067FRB 0.11388	1.68e3	64.7	NO
4	4	13C8-PFOA	1801083-04 REEPDW1067FRB 0.11388	6.09e3	57.8	NO
5	5	13C9-PFNA	1801083-04 REEPDW1067FRB 0.11388	6.67e3	54.2	NO
6	6	13C4-PFOS	1801083-04 REEPDW1067FRB 0.11388	1.83e3	65.7	NO
7	7	13C6-PFDA	1801083-04 REEPDW1067FRB 0.11388	7.20e3	58.7	NO
8	8	13C7-PFUdA	1801083-04 REEPDW1067FRB 0.11388	9.07e3	63.5	NO

Name: 180617M1_115, Date: 18-Jun-2018, Time: 12:19:27, ID: 1801083-05 REEPDW1068FRB 0.11908, Description: REEPDW1068FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-05 REEPDW1068FRB 0.11908	5.56e3	66.4	NO
2	2	13C5-PFHxA	1801083-05 REEPDW1068FRB 0.11908	6.76e3	60.0	NO
3	3	13C3-PFHxS	1801083-05 REEPDW1068FRB 0.11908	1.74e3	67.1	NO
4	4	13C8-PFOA	1801083-05 REEPDW1068FRB 0.11908	6.52e3	61.9	NO
5	5	13C9-PFNA	1801083-05 REEPDW1068FRB 0.11908	7.30e3	59.3	NO
6	6	13C4-PFOS	1801083-05 REEPDW1068FRB 0.11908	1.80e3	64.5	NO
7	7	13C6-PFDA	1801083-05 REEPDW1068FRB 0.11908	7.02e3	57.3	NO
8	8	13C7-PFUdA	1801083-05 REEPDW1068FRB 0.11908	8.05e3	56.4	NO

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Name: 180617M1_116, Date: 18-Jun-2018, Time: 12:29:57, ID: 1801083-06 REEPDW1069FRB 0.11912, Description: REEPDW1069FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-06 REEPDW1069FRB 0.11912	5.31e3	63.4	NO
2	2	13C5-PFHxA	1801083-06 REEPDW1069FRB 0.11912	6.41e3	56.9	NO
3	3	13C3-PFHxS	1801083-06 REEPDW1069FRB 0.11912	1.73e3	66.6	NO
4	4	13C8-PFOA	1801083-06 REEPDW1069FRB 0.11912	6.55e3	62.2	NO
5	5	13C9-PFNA	1801083-06 REEPDW1069FRB 0.11912	6.92e3	56.2	NO
6	6	13C4-PFOS	1801083-06 REEPDW1069FRB 0.11912	1.84e3	66.1	NO
7	7	13C6-PFDA	1801083-06 REEPDW1069FRB 0.11912	7.44e3	60.7	NO
8	8	13C7-PFUdA	1801083-06 REEPDW1069FRB 0.11912	8.41e3	58.9	NO

Name: 180617M1_117, Date: 18-Jun-2018, Time: 12:40:23, ID: 1801083-07 REEPDW1059FRB 0.11508, Description: REEPDW1059FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-07 REEPDW1059FRB 0.11508	6.47e3	77.2	NO
2	2	13C5-PFHxA	1801083-07 REEPDW1059FRB 0.11508	7.58e3	67.3	NO
3	3	13C3-PFHxS	1801083-07 REEPDW1059FRB 0.11508	1.86e3	71.7	NO
4	4	13C8-PFOA	1801083-07 REEPDW1059FRB 0.11508	7.53e3	71.4	NO
5	5	13C9-PFNA	1801083-07 REEPDW1059FRB 0.11508	7.86e3	63.8	NO
6	6	13C4-PFOS	1801083-07 REEPDW1059FRB 0.11508	1.98e3	71.1	NO
7	7	13C6-PFDA	1801083-07 REEPDW1059FRB 0.11508	7.51e3	61.3	NO
8	8	13C7-PFUdA	1801083-07 REEPDW1059FRB 0.11508	9.64e3	67.5	NO

Name: 180617M1_118, Date: 18-Jun-2018, Time: 12:50:53, ID: 1801083-08 REEPDW1071FRB 0.11433, Description: REEPDW1071FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-08 REEPDW1071FRB 0.11433	5.63e3	67.2	NO
2	2	13C5-PFHxA	1801083-08 REEPDW1071FRB 0.11433	7.06e3	62.6	NO
3	3	13C3-PFHxS	1801083-08 REEPDW1071FRB 0.11433	1.76e3	67.9	NO
4	4	13C8-PFOA	1801083-08 REEPDW1071FRB 0.11433	6.63e3	62.9	NO
5	5	13C9-PFNA	1801083-08 REEPDW1071FRB 0.11433	7.57e3	61.5	NO
6	6	13C4-PFOS	1801083-08 REEPDW1071FRB 0.11433	1.91e3	68.4	NO
7	7	13C6-PFDA	1801083-08 REEPDW1071FRB 0.11433	7.52e3	61.4	NO
8	8	13C7-PFUdA	1801083-08 REEPDW1071FRB 0.11433	9.03e3	63.2	NO

Name: 180617M1_119, Date: 18-Jun-2018, Time: 13:01:18, ID: 1801083-09 REEPDW1072FRB 0.11757, Description: REEPDW1072FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-09 REEPDW1072FRB 0.11757	6.67e3	79.7	NO
2	2	13C5-PFHxA	1801083-09 REEPDW1072FRB 0.11757	7.78e3	69.1	NO
3	3	13C3-PFHxS	1801083-09 REEPDW1072FRB 0.11757	2.06e3	79.4	NO
4	4	13C8-PFOA	1801083-09 REEPDW1072FRB 0.11757	8.01e3	76.0	NO
5	5	13C9-PFNA	1801083-09 REEPDW1072FRB 0.11757	7.47e3	60.7	NO
6	6	13C4-PFOS	1801083-09 REEPDW1072FRB 0.11757	2.02e3	72.4	NO
7	7	13C6-PFDA	1801083-09 REEPDW1072FRB 0.11757	8.26e3	67.5	NO
8	8	13C7-PFUdA	1801083-09 REEPDW1072FRB 0.11757	9.91e3	69.4	NO

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Name: 180617M1_120, Date: 18-Jun-2018, Time: 13:11:40, ID: 1801083-10 REEPDW1073FRB 0.11942, Description: REEPDW1073FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-10 REEPDW1073FRB 0.11942	6.18e3	73.8	NO
2	2	13C5-PFHxA	1801083-10 REEPDW1073FRB 0.11942	7.27e3	64.5	NO
3	3	13C3-PFHxS	1801083-10 REEPDW1073FRB 0.11942	1.93e3	74.3	NO
4	4	13C8-PFOA	1801083-10 REEPDW1073FRB 0.11942	7.15e3	67.8	NO
5	5	13C9-PFNA	1801083-10 REEPDW1073FRB 0.11942	7.48e3	60.7	NO
6	6	13C4-PFOS	1801083-10 REEPDW1073FRB 0.11942	2.01e3	72.3	NO
7	7	13C6-PFDA	1801083-10 REEPDW1073FRB 0.11942	7.19e3	58.7	NO
8	8	13C7-PFUdA	1801083-10 REEPDW1073FRB 0.11942	9.00e3	63.1	NO

Name: 180617M1_121, Date: 18-Jun-2018, Time: 13:22:11, ID: 1801083-11 REEPDW1074FRB 0.11998, Description: REEPDW1074FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-11 REEPDW1074FRB 0.11998	7.11e3	84.9	NO
2	2	13C5-PFHxA	1801083-11 REEPDW1074FRB 0.11998	8.72e3	77.4	NO
3	3	13C3-PFHxS	1801083-11 REEPDW1074FRB 0.11998	2.01e3	77.4	NO
4	4	13C8-PFOA	1801083-11 REEPDW1074FRB 0.11998	7.83e3	74.2	NO
5	5	13C9-PFNA	1801083-11 REEPDW1074FRB 0.11998	9.01e3	73.1	NO
6	6	13C4-PFOS	1801083-11 REEPDW1074FRB 0.11998	2.20e3	79.0	NO
7	7	13C6-PFDA	1801083-11 REEPDW1074FRB 0.11998	8.55e3	69.7	NO
8	8	13C7-PFUdA	1801083-11 REEPDW1074FRB 0.11998	1.06e4	74.5	NO

Name: 180617M1_122, Date: 18-Jun-2018, Time: 13:32:35, ID: 1801083-12 REEPDW1058FRB 0.11864, Description: REEPDW1058FRB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801083-12 REEPDW1058FRB 0.11864	6.34e3	75.7	NO
2	2	13C5-PFHxA	1801083-12 REEPDW1058FRB 0.11864	7.45e3	66.1	NO
3	3	13C3-PFHxS	1801083-12 REEPDW1058FRB 0.11864	1.89e3	72.9	NO
4	4	13C8-PFOA	1801083-12 REEPDW1058FRB 0.11864	7.37e3	69.9	NO
5	5	13C9-PFNA	1801083-12 REEPDW1058FRB 0.11864	7.86e3	63.8	NO
6	6	13C4-PFOS	1801083-12 REEPDW1058FRB 0.11864	1.91e3	68.4	NO
7	7	13C6-PFDA	1801083-12 REEPDW1058FRB 0.11864	7.36e3	60.1	NO
8	8	13C7-PFUdA	1801083-12 REEPDW1058FRB 0.11864	9.92e3	69.5	NO

Name: 180617M1_123, Date: 18-Jun-2018, Time: 13:43:06, ID: 1801126-01 OF-INF01-0618 0.24968, Description: OF-INF01-0618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801126-01 OF-INF01-0618 0.24968	4.52e3	54.0	NO
2	2	13C5-PFHxA	1801126-01 OF-INF01-0618 0.24968	5.41e3	48.0	YES
3	3	13C3-PFHxS	1801126-01 OF-INF01-0618 0.24968	1.42e3	54.5	NO
4	4	13C8-PFOA	1801126-01 OF-INF01-0618 0.24968	5.30e3	50.3	NO
5	5	13C9-PFNA	1801126-01 OF-INF01-0618 0.24968	5.45e3	44.3	YES
6	6	13C4-PFOS	1801126-01 OF-INF01-0618 0.24968	1.34e3	48.1	YES
7	7	13C6-PFDA	1801126-01 OF-INF01-0618 0.24968	5.65e3	46.1	YES
8	8	13C7-PFUdA	1801126-01 OF-INF01-0618 0.24968	6.50e3	45.5	YES

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Name: 180617M1_124, Date: 18-Jun-2018, Time: 13:53:31, ID: 1801126-02 OF-SAC01-0618 0.24617, Description: OF-SAC01-0618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801126-02 OF-SAC01-0618 0.24617	6.08e3	72.6	NO
2	2	13C5-PFHxA	1801126-02 OF-SAC01-0618 0.24617	7.44e3	66.0	NO
3	3	13C3-PFHxS	1801126-02 OF-SAC01-0618 0.24617	1.70e3	65.6	NO
4	4	13C8-PFOA	1801126-02 OF-SAC01-0618 0.24617	6.82e3	64.7	NO
5	5	13C9-PFNA	1801126-02 OF-SAC01-0618 0.24617	7.79e3	63.3	NO
6	6	13C4-PFOS	1801126-02 OF-SAC01-0618 0.24617	1.91e3	68.7	NO
7	7	13C6-PFDA	1801126-02 OF-SAC01-0618 0.24617	8.30e3	67.7	NO
8	8	13C7-PFUdA	1801126-02 OF-SAC01-0618 0.24617	8.98e3	62.9	NO

Name: 180617M1_125, Date: 18-Jun-2018, Time: 14:04:01, ID: 1801126-03 OF-MID01-0618 0.24433, Description: OF-MID01-0618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801126-03 OF-MID01-0618 0.24433	6.29e3	75.0	NO
2	2	13C5-PFHxA	1801126-03 OF-MID01-0618 0.24433	7.48e3	66.4	NO
3	3	13C3-PFHxS	1801126-03 OF-MID01-0618 0.24433	1.90e3	73.2	NO
4	4	13C8-PFOA	1801126-03 OF-MID01-0618 0.24433	7.38e3	70.0	NO
5	5	13C9-PFNA	1801126-03 OF-MID01-0618 0.24433	8.34e3	67.7	NO
6	6	13C4-PFOS	1801126-03 OF-MID01-0618 0.24433	2.01e3	72.1	NO
7	7	13C6-PFDA	1801126-03 OF-MID01-0618 0.24433	7.93e3	64.7	NO
8	8	13C7-PFUdA	1801126-03 OF-MID01-0618 0.24433	9.49e3	66.5	NO

Name: 180617M1_126, Date: 18-Jun-2018, Time: 14:14:26, ID: 1801126-04 OF-EFF01-0618 0.2429, Description: OF-EFF01-0618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801126-04 OF-EFF01-0618 0.2429	5.29e3	63.1	NO
2	2	13C5-PFHxA	1801126-04 OF-EFF01-0618 0.2429	6.66e3	59.1	NO
3	3	13C3-PFHxS	1801126-04 OF-EFF01-0618 0.2429	1.64e3	62.9	NO
4	4	13C8-PFOA	1801126-04 OF-EFF01-0618 0.2429	6.15e3	58.3	NO
5	5	13C9-PFNA	1801126-04 OF-EFF01-0618 0.2429	7.03e3	57.0	NO
6	6	13C4-PFOS	1801126-04 OF-EFF01-0618 0.2429	1.67e3	59.8	NO
7	7	13C6-PFDA	1801126-04 OF-EFF01-0618 0.2429	7.30e3	59.6	NO
8	8	13C7-PFUdA	1801126-04 OF-EFF01-0618 0.2429	8.39e3	58.7	NO

Name: 180617M1_127, Date: 18-Jun-2018, Time: 14:24:56, ID: 1801138-02 MCLPCC416 0.11707, Description: MCLPCC416

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-02 MCLPCC416 0.11707	6.06e3	72.4	NO
2	2	13C5-PFHxA	1801138-02 MCLPCC416 0.11707	7.21e3	64.0	NO
3	3	13C3-PFHxS	1801138-02 MCLPCC416 0.11707	1.62e3	62.4	NO
4	4	13C8-PFOA	1801138-02 MCLPCC416 0.11707	7.76e3	73.6	NO
5	5	13C9-PFNA	1801138-02 MCLPCC416 0.11707	8.14e3	66.1	NO
6	6	13C4-PFOS	1801138-02 MCLPCC416 0.11707	2.05e3	73.7	NO
7	7	13C6-PFDA	1801138-02 MCLPCC416 0.11707	8.86e3	72.3	NO
8	8	13C7-PFUdA	1801138-02 MCLPCC416 0.11707	9.73e3	68.2	NO

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Name: 180617M1_128, Date: 18-Jun-2018, Time: 14:35:22, ID: ST180617M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-17 PFC CS3 18F1109	6.13e3	73.1	NO
2	2	13C5-PFHxA	ST180617M1-17 PFC CS3 18F1109	7.13e3	63.3	NO
3	3	13C3-PFHxS	ST180617M1-17 PFC CS3 18F1109	1.81e3	69.8	NO
4	4	13C8-PFOA	ST180617M1-17 PFC CS3 18F1109	7.05e3	66.9	NO
5	5	13C9-PFNA	ST180617M1-17 PFC CS3 18F1109	7.74e3	62.8	NO
6	6	13C4-PFOS	ST180617M1-17 PFC CS3 18F1109	2.00e3	71.8	NO
7	7	13C6-PFDA	ST180617M1-17 PFC CS3 18F1109	7.85e3	64.0	NO
8	8	13C7-PFUdA	ST180617M1-17 PFC CS3 18F1109	8.31e3	58.2	NO

Name: 180617M1_129, Date: 18-Jun-2018, Time: 14:45:44, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180617M1-18 PFC CS3 18F1109	7.98e3	95.2	NO
2	2	13C5-PFHxA	ST180617M1-18 PFC CS3 18F1109	9.70e3	86.1	NO
3	3	13C3-PFHxS	ST180617M1-18 PFC CS3 18F1109	1.34e3	51.6	NO
4	4	13C8-PFOA	ST180617M1-18 PFC CS3 18F1109	5.76e3	54.6	NO
5	5	13C9-PFNA	ST180617M1-18 PFC CS3 18F1109	6.60e3	53.6	NO
6	6	13C4-PFOS	ST180617M1-18 PFC CS3 18F1109	1.13e3	40.5	YES
7	7	13C6-PFDA	ST180617M1-18 PFC CS3 18F1109	6.82e3	55.7	NO
8	8	13C7-PFUdA	ST180617M1-18 PFC CS3 18F1109	1.34e4	94.1	NO

Vista Analytical Laboratory

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Last Altered: Monday, June 18, 2018 16:28:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:28:53 Pacific Daylight Time

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Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

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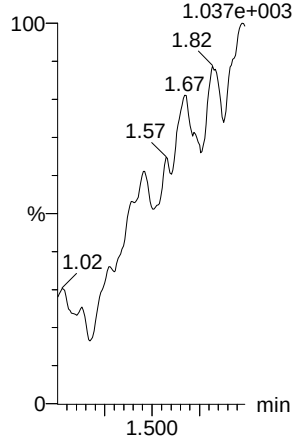

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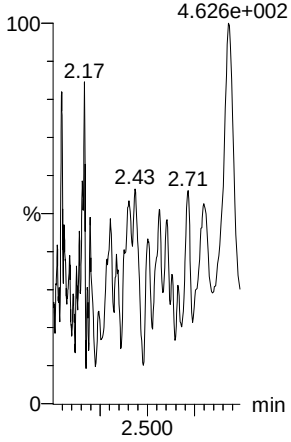

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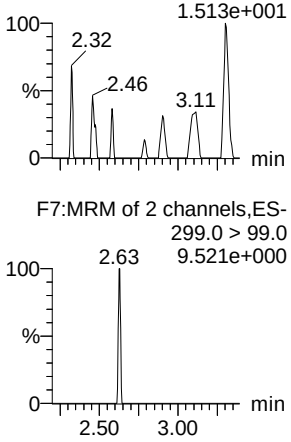

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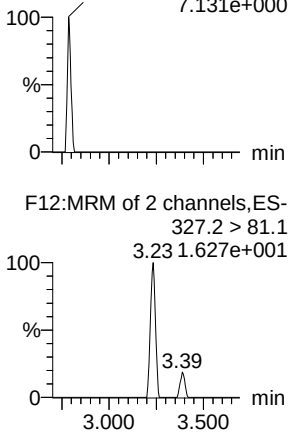

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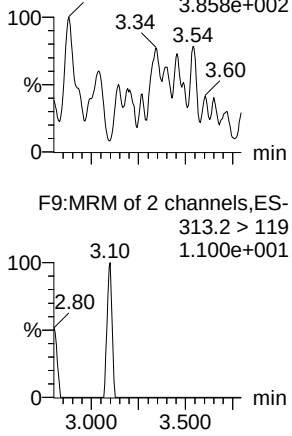

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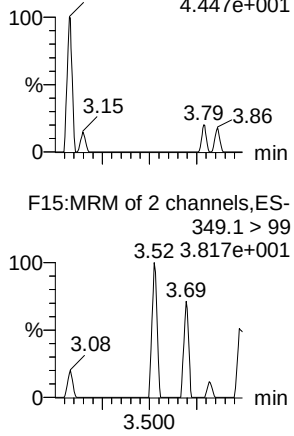

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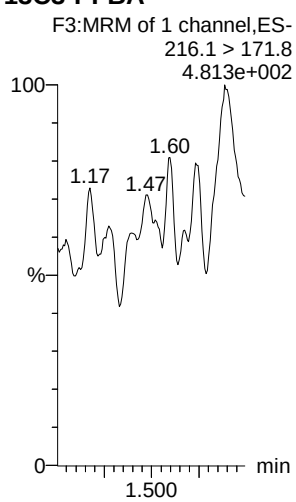

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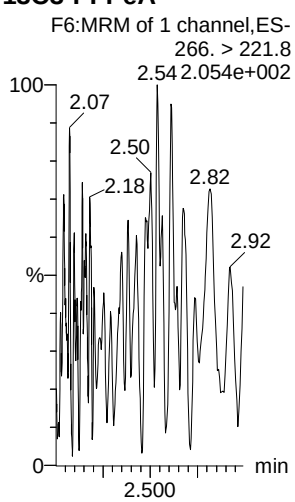

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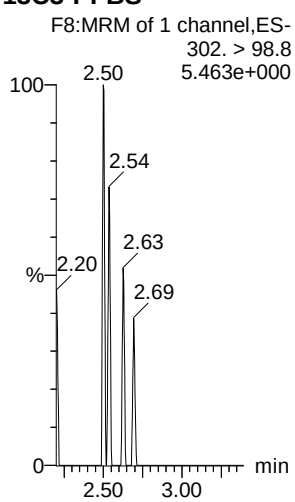

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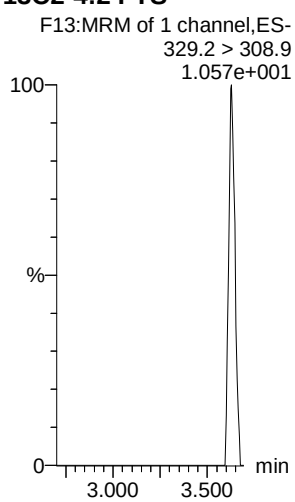

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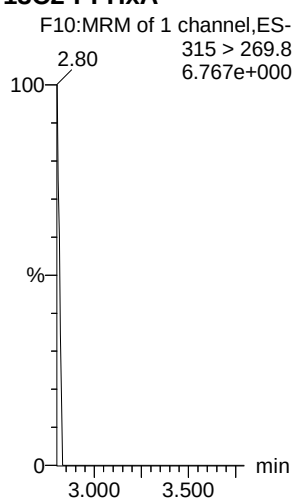

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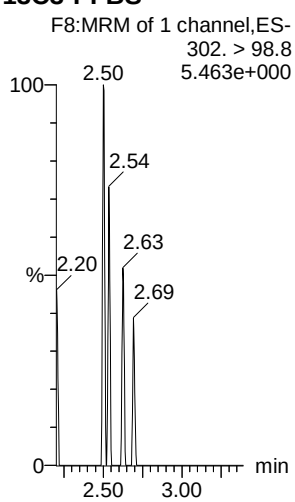

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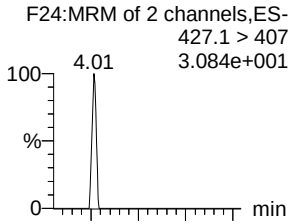
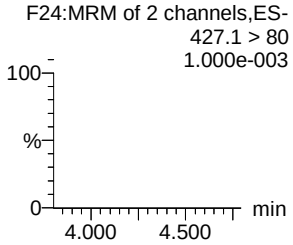
Printed: Monday, June 18, 2018 16:28:53 Pacific Daylight Time

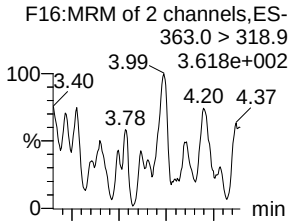
Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

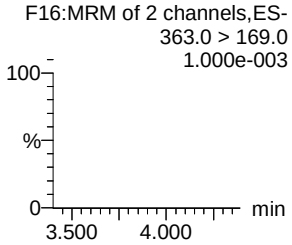
6:2 FTS



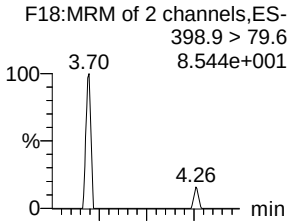


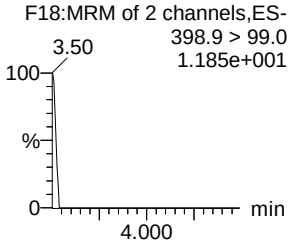
PFHpA





L-PFHxS





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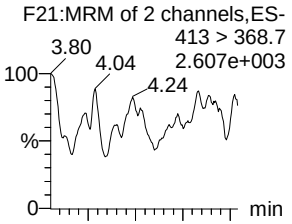

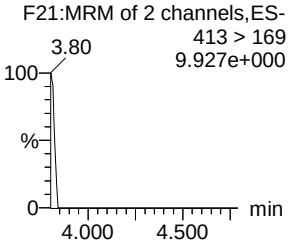

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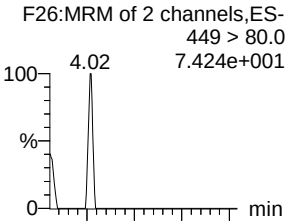

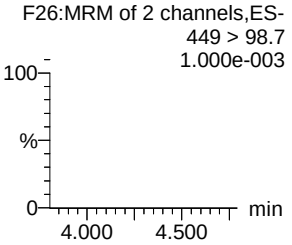

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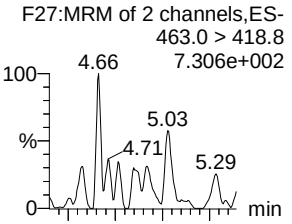

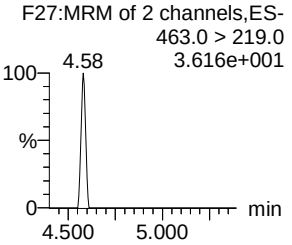

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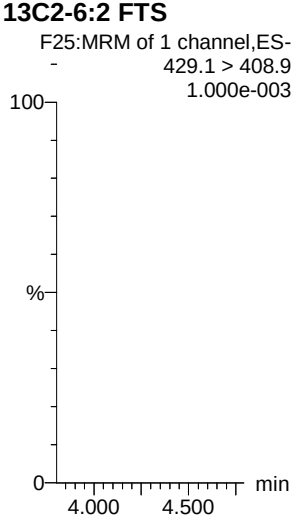

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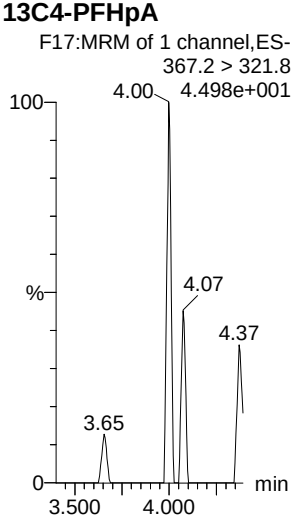
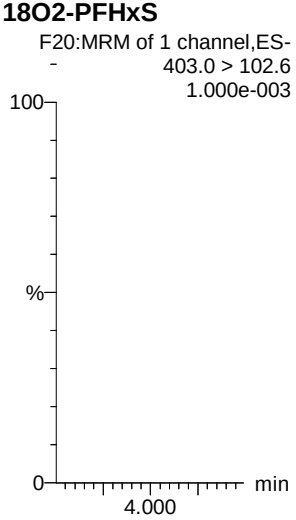


18O2-PFHxS



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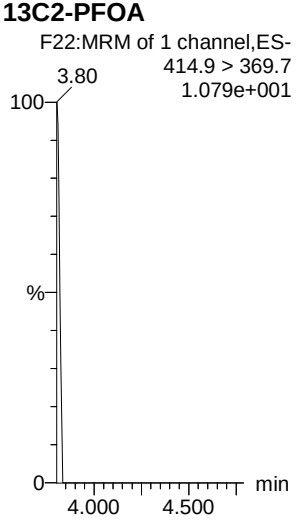

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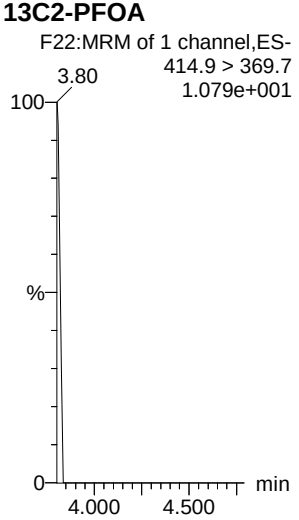

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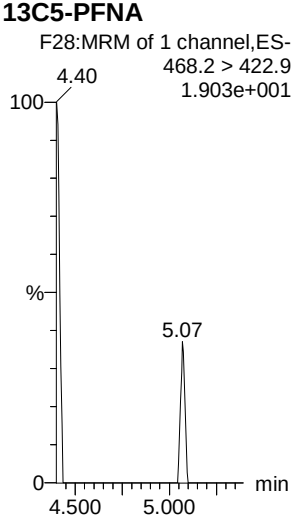

Vista Analytical Laboratory

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Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

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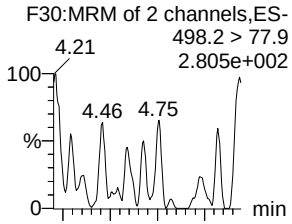
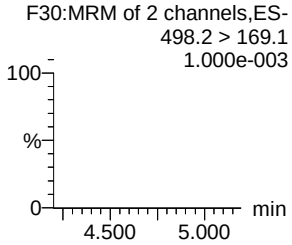
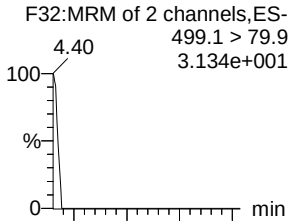
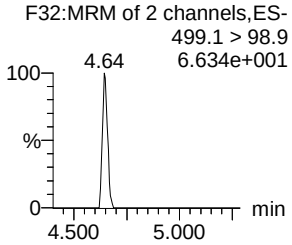




L-PFOS





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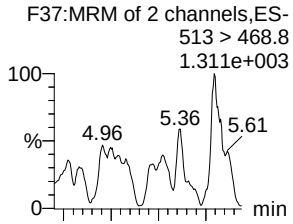

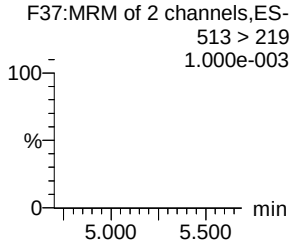

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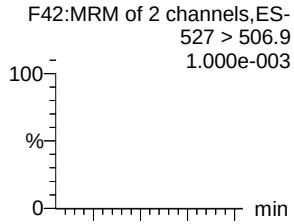

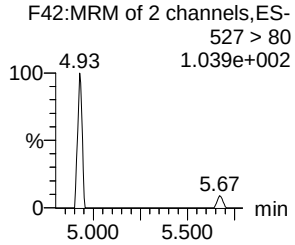

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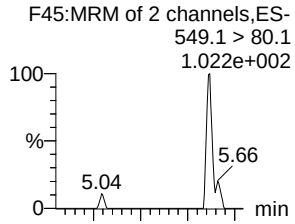

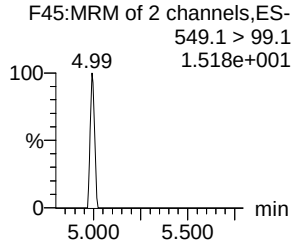

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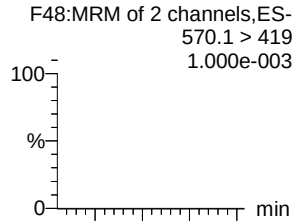

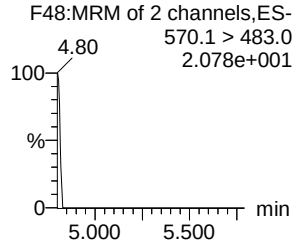

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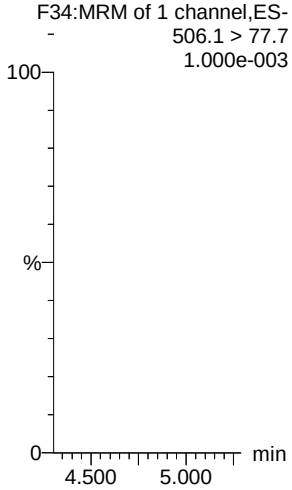

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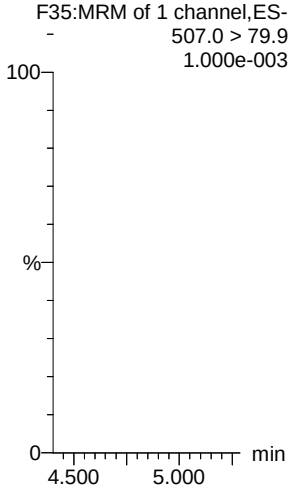

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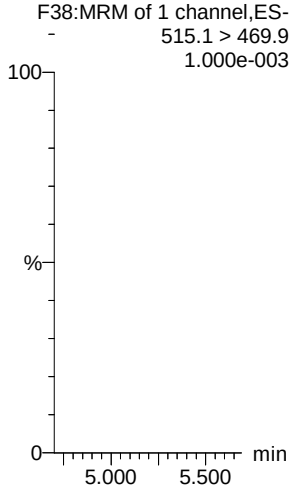

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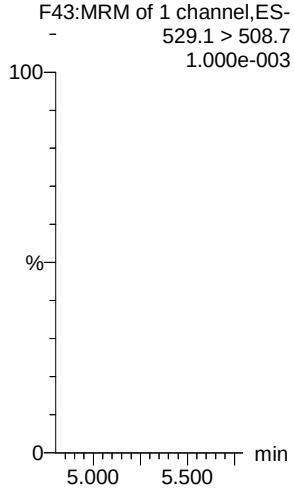

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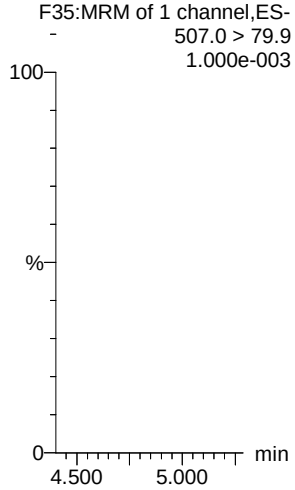

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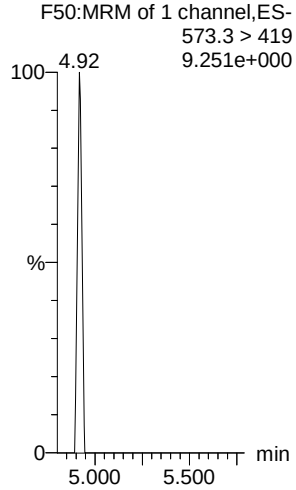

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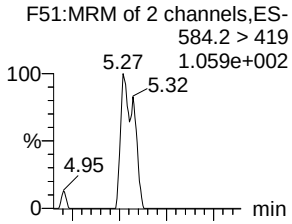
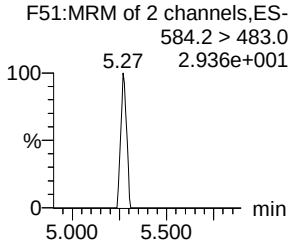
Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

L-EtFOSAA





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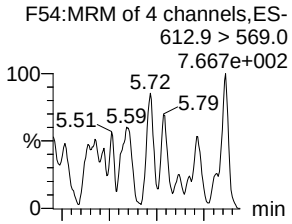
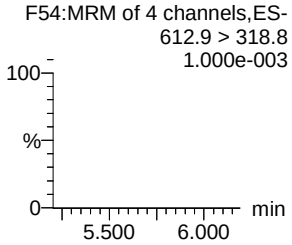
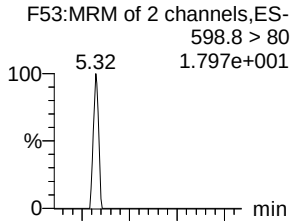
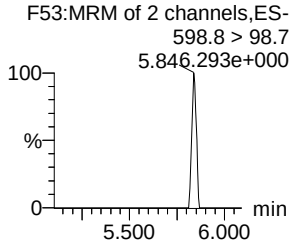


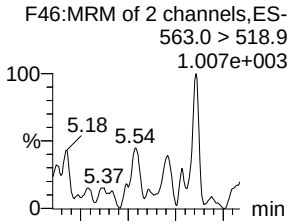


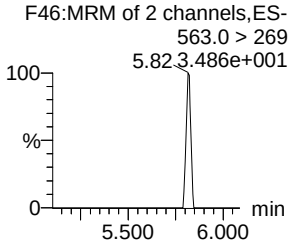
PFDS



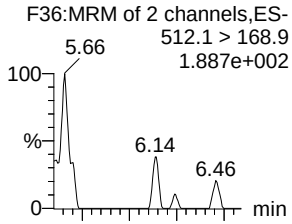


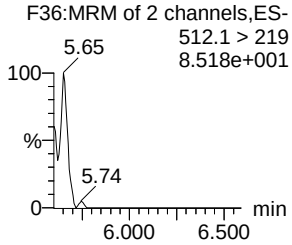
PFUdA



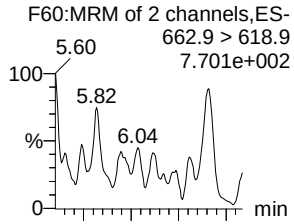


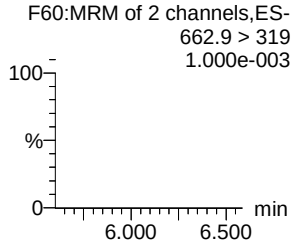
N-MeFOSA



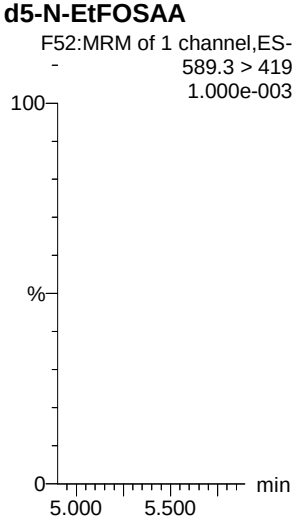


PFTrDA

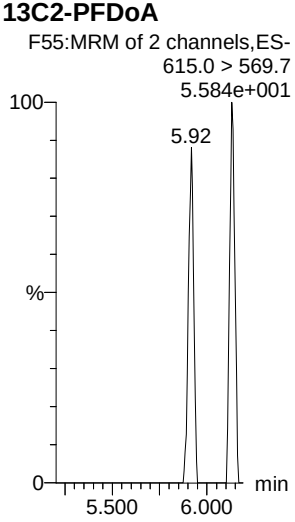




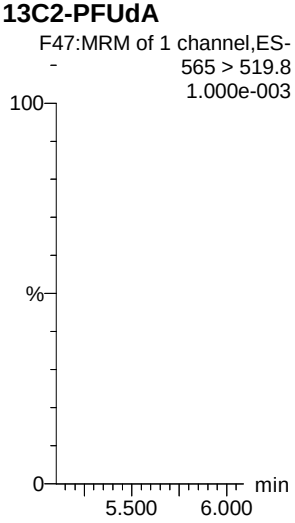
d5-N-EtFOSAA



13C2-PFDoA



13C2-PFUdA



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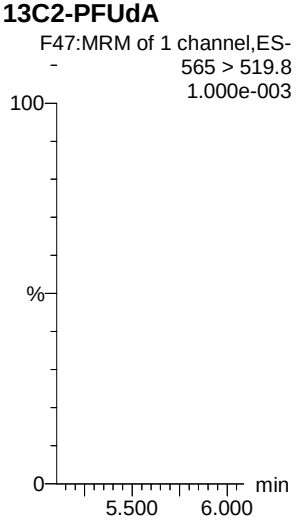
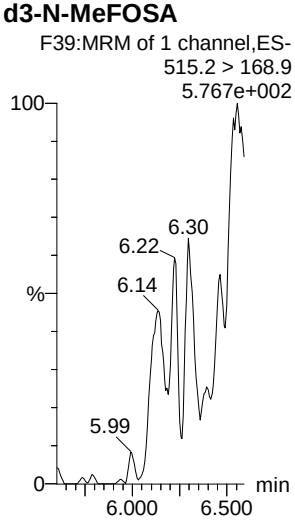
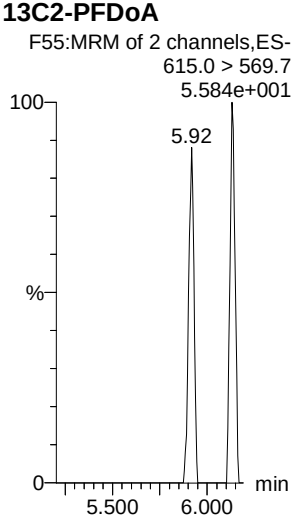


d3-N-MeFOSA



13C2-PFDoA



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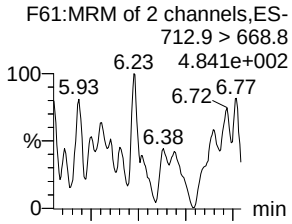
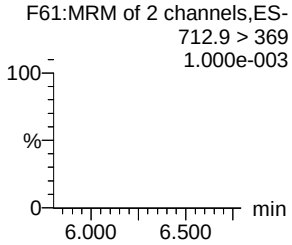
Last Altered: Monday, June 18, 2018 16:28:42 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:28:53 Pacific Daylight Time

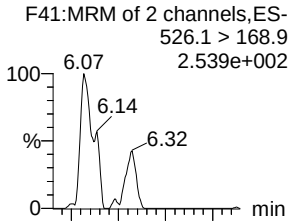
Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

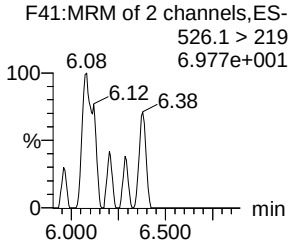
PFTeDA



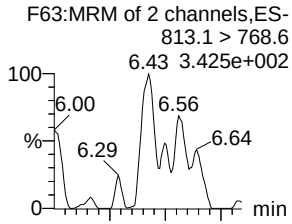


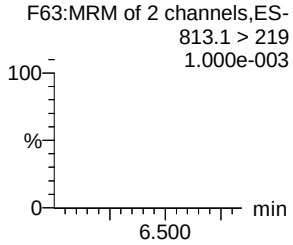
N-EtFOSA



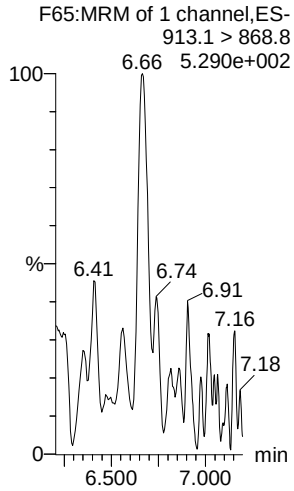


PFHxDA

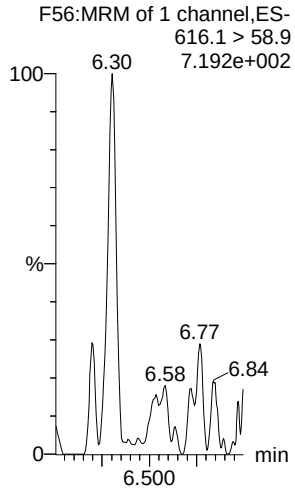




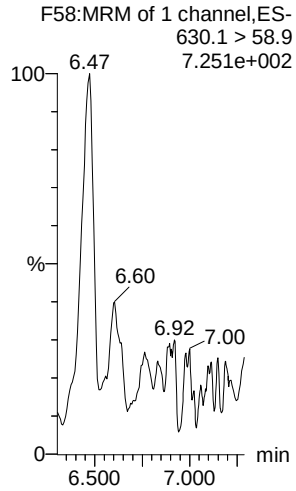
PFODA



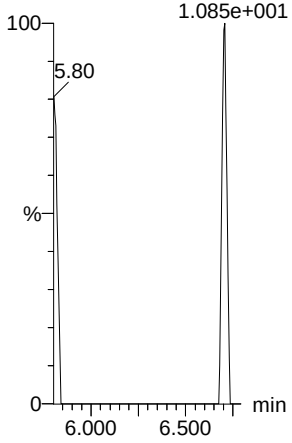
N-MeFOSE



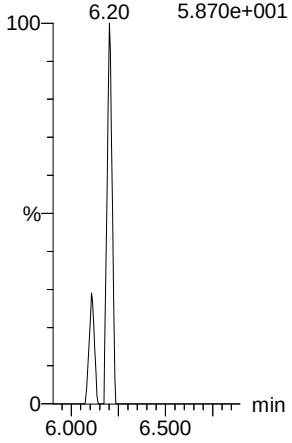
N-EtFOSE



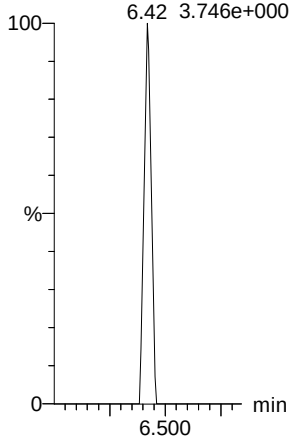
13C2-PFTeDA



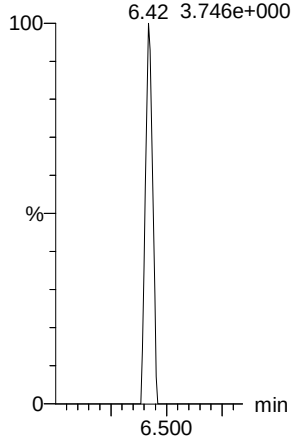
d5-N-ETFOSA



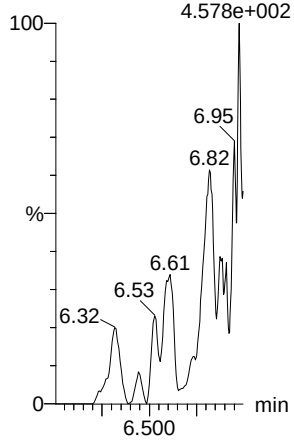
13C2-PFHxDA



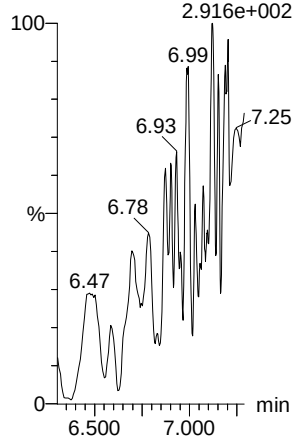
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Vista Analytical Laboratory

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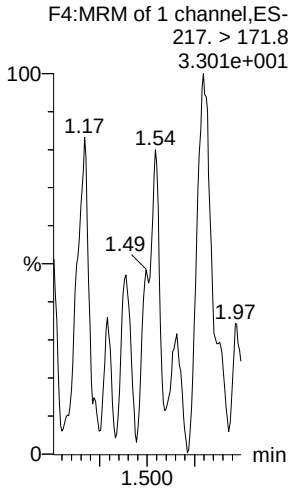
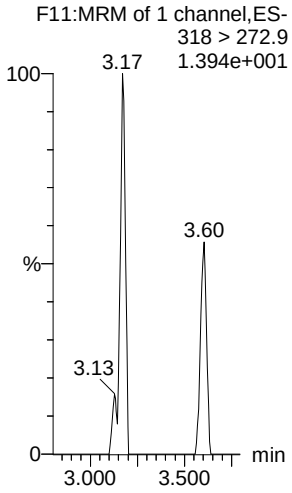
Name: 180617M1_12, Date: 17-Jun-2018, Time: 18:21:49, ID: IPA, Description: IPA

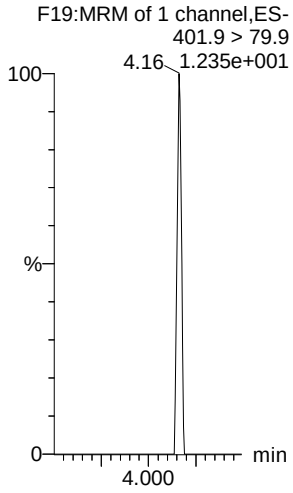
13C4-PFBA



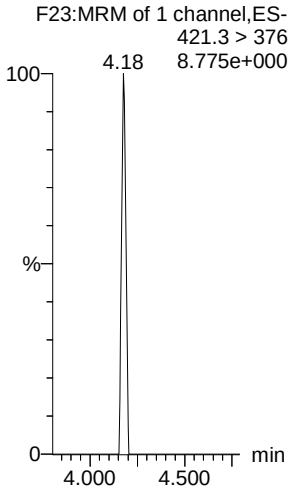
13C5-PFHxA



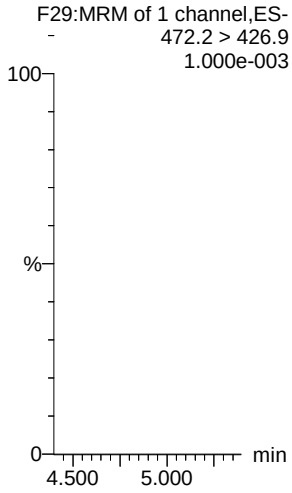
13C3-PFHxS



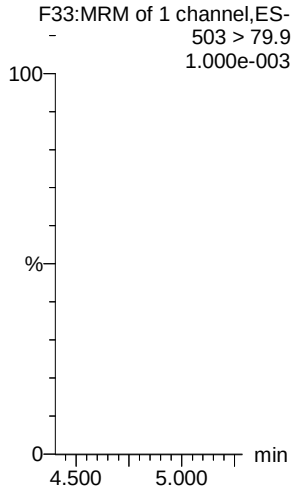
13C8-PFOA



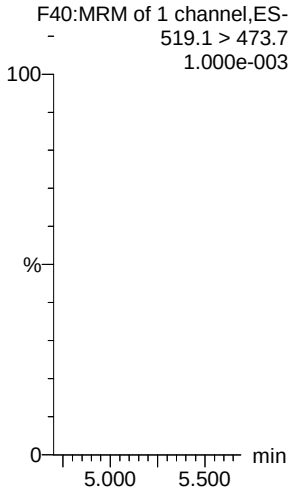
13C9-PFNA



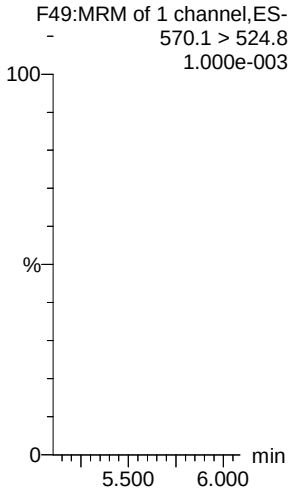
13C4-PFOS



13C6-PFDA



13C7-PFUdA



LC Calibration Standards Review Checklist Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	other
Calibration ID: ST180617m1-3	(L) M H	☑	☑	☑	☑	☑	☑	N/A ☐
Calibration ID: -11	L (M) H (A)	☑	☑	☑	☑	☑	☑	☐
Calibration ID: -12	L (M) H (B)	☑	☑	☑	☑	☑	☑	☐
Calibration ID: -13	(L) M H (C)	☑	☑	☑	☑	☑	☑	☐
Calibration ID: -14	L (M) H (A)	☑	☑	☑	☑	☑	☑	☐
Calibration ID: -15	L (M) H	☑	☑	☑	☑	☑	☑	☐
Calibration ID: -16	L (M) H (A)	☑	☑	☑	☒	☑	☑	☐
Calibration ID: -17	L M H (D)	☐	☐	☐	☐	☐	☐	☑
Calibration ID: -18	L M H (E)	☑	☑	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

incorrect line out AR 6/18/18

NA AR 6/18/18

6/18/18

Full Mass Cal. Date: 6/17/18

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☑

IIS Area Saved ☑

Reviewed By: 6/18/18
Initials/Date

Comments:

(A) DB-N-meFOSSA >150% AR 6/18/18
(B) PFTeDA >130% AR 6/18/18
(C) DB-N-meFOSSA >150%, PFODA >130% AR 6/18/18
(D) Line item was skipped AR 6/18/18
(E) PFPeS/PFHps < 70% 13C2-DOA > 150% AR 6/18/18

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

√jm 6/19/18

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

AL 6/18/18

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	740.045	7564.978	1.00	1.23	1.223	1.1	109.9	NO		
2	2	PFPeA	263.1 > 218.9	906.712	10594.783	1.00	2.20	1.070	1.0	102.5	NO		
3	3	PFBS	299.0 > 79.7	207.577	1223.964	1.00	2.48	2.120	1.1	107.6	NO	2.701	NO
4	4	4:2 FTS	327.2>307.2	249.566	2728.849	1.00	2.89	1.143	1.1	110.5	NO	2.195	NO
5	5	PFHxA	313.2 > 268.9	1197.926	3365.177	1.00	2.99	1.780	1.1	110.3	NO	673.370	YES
6	6	PFPeS	349.1>80.1	201.619	1223.964	1.00	3.19	2.059	1.2	115.6	NO	1.880	NO
7	36	13C3-PFBA	216.1 > 171.8	7564.978	8378.785	1.00	1.22	11.286	12.9	103.0	NO		
8	37	13C3-PFPeA	266. > 221.8	10594.783	11266.585	1.00	2.20	11.755	12.3	98.4	NO		
9	38	13C3-PFBS	302. > 98.8	1223.964	11266.585	1.00	2.49	1.358	11.5	92.2	NO		
10	39	13C2-4:2 FTS	329.2>308.9	2728.849	11266.585	1.00	2.89	3.028	12.7	101.4	NO		
11	40	13C2-PFHxA	315 > 269.8	3365.177	11266.585	1.00	2.99	3.734	5.1	101.4	NO		
12	38	13C3-PFBS	302. > 98.8	1223.964	11266.585	1.00	2.49	1.358	11.5	92.2	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	285.635	2555.026	1.00	4.10	1.397	1.1	108.1	NO	3.112	NO
15	7	PFHpA	363.0 > 318.9	1002.224	9196.543	1.00	3.62	1.362	1.1	105.7	NO	23.767	YES
16	8	L-PFHxS	398.9 > 79.6	156.032	1090.806	1.00	3.77	1.788	1.0	96.0	NO	2.449	YES
17	11	L-PFOA	413 > 368.7	1179.412	13213.531	1.00	4.15	1.116	1.1	109.3	NO	4.371	NO
18	13	PFHpS	449 > 80.0	213.172	13213.531	1.00	4.26	0.202	1.0	102.7	NO	1.839	NO
19	14	PFNA	463.0 > 418.8	1180.238	11361.654	1.00	4.59	1.298	0.9	93.4	NO	4.629	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	2555.026	10540.725	1.00	4.10	3.030	11.9	94.9	NO		
21	41	13C4-PFHpA	367.2 > 321.8	9196.543	11266.585	1.00	3.62	10.203	13.8	110.3	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1090.806	2598.531	1.00	3.77	5.247	13.2	105.2	NO		
23	44	13C2-PFOA	414.9 > 369.7	13213.531	10540.725	1.00	4.15	15.670	12.1	97.1	NO		
24	44	13C2-PFOA	414.9 > 369.7	13213.531	10540.725	1.00	4.15	15.670	12.1	97.1	NO		
25	45	13C5-PFNA	468.2 > 422.9	11361.654	12318.721	1.00	4.60	11.529	12.5	100.0	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	289.328	4389.011	1.00	4.66	0.824	1.0	95.2	NO	139.368	YES
28	16	L-PFOS	499.1 > 79.9	222.147	2706.077	1.00	4.69	1.026	1.2	116.6	NO	1.770	NO
29	18	PFDA	513 > 468.8	1211.947	12972.296	1.00	4.99	1.168	1.0	95.8	NO	6.020	NO
30	19	8:2 FTS	527 > 506.9	306.366	2532.866	1.00	4.95	1.512	1.0	98.1	NO	2.861	NO
31	20	PFNS	549.1>80.1	184.831	2706.077	1.00	5.05	0.854	0.9	86.7	NO	2.156	YES
32	21	L-MeFOSAA	570.1 > 419	450.290	3796.870	1.00	5.13	1.482	0.8	83.2	NO	15.844	NO
33	46	13C8-PFOSA	506.1 > 77.7	4389.011	14278.122	1.00	4.65	3.842	12.5	100.0	NO		
34	47	13C8-PFOS	507.0 > 79.9	2706.077	2785.765	1.00	4.68	12.142	12.2	97.5	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	12972.296	12253.015	1.00	4.98	13.234	11.9	95.6	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	2532.866	11266.585	1.00	4.95	2.810	13.9	111.4	NO		
37	47	13C8-PFOS	507.0 > 79.9	2706.077	2785.765	1.00	4.68	12.142	12.2	97.5	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	3796.870	14278.122	1.00	5.14	3.324	16.5	132.1	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	385.905	3993.672	1.00	5.30	1.208	1.1	113.5	NO	18.587	NO
41	27	PFDoA	612.9 > 569.0	1485.023	14644.639	1.00	5.61	1.268	0.9	93.5	NO	7.747	NO
42	26	PFDS	598.8 > 80	249.587	14213.182	1.00	5.37	0.220	1.1	106.7	NO	2.136	NO
43	25	PFUdA	563.0 > 518.9	1238.896	14213.182	1.00	5.31	1.090	1.0	99.9	NO	26.638	YES
44	28	N-MeFOSA	512.1 > 168.9	680.791	17959.051	1.00	5.69	5.686	5.3	106.9	NO	1.459	NO
45	29	PFTrDA	662.9 > 618.9	1728.218	14644.639	1.00	5.85	1.475	1.1	110.2	NO	44.092	YES
46	51	d5-N-EtFOSAA	589.3 > 419	3993.672	14278.122	1.00	5.30	3.496	14.5	115.7	NO		
47	53	13C2-PFDoA	615.0 > 569.7	14644.639	12253.015	1.00	5.60	14.940	11.3	90.2	NO		
48	52	13C2-PFUdA	565 > 519.8	14213.182	14278.122	1.00	5.31	12.443	13.2	105.9	NO		
49	52	13C2-PFUdA	565 > 519.8	14213.182	14278.122	1.00	5.31	12.443	13.2	105.9	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	17959.051	14278.122	1.00	5.72	15.723	155.9	103.9	NO		
51	53	13C2-PFDoA	615.0 > 569.7	14644.639	12253.015	1.00	5.60	14.940	11.3	90.2	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	1461.626	11708.430	1.00	6.08	1.560	1.3	129.7	NO	14.108	NO
54	31	N-EtFOSA	526.1 > 168.9	755.875	23268.188	1.00	6.12	4.873	5.3	106.4	NO	1.311	NO
55	32	PFHxDA	813.1 > 768.6	924.482	6297.304	1.00	6.43	0.734	1.1	109.4	NO	49.177	YES
56	33	PFODA	913.1 > 868.8	928.931	6297.304	1.00	6.67	0.738	1.2	116.0	NO		
57	34	N-MeFOSE	616.1 > 58.9	699.521	25514.502	1.00	6.31	4.112	4.4	87.2	NO		
58	35	N-EtFOSE	630.1 > 58.9	966.187	23901.832	1.00	6.47	6.063	5.3	105.9	NO		
59	55	13C2-PFTeDA	714.8 > 669.6	11708.430	14278.122	1.00	6.08	10.250	10.8	86.7	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	23268.188	14278.122	1.00	6.14	20.370	155.7	103.8	NO		
61	57	13C2-PFHxDA	815 > 769.7	6297.304	14278.122	1.00	6.43	5.513	4.7	93.7	NO		
62	57	13C2-PFHxDA	815 > 769.7	6297.304	14278.122	1.00	6.43	5.513	4.7	93.7	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	25514.502	14278.122	1.00	6.30	22.337	159.6	106.4	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	23901.832	14278.122	1.00	6.46	20.925	163.9	109.3	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	8378.785	8378.785	1.00	1.23	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	11266.585	11266.585	1.00	2.99	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	2598.531	2598.531	1.00	3.77	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

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Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	10540.725	10540.725	1.00	4.15	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	12318.721	12318.721	1.00	4.60	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	2785.765	2785.765	1.00	4.68	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	12253.015	12253.015	1.00	4.98	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	14278.122	14278.122	1.00	5.31	12.500	12.5	100.0	NO		

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Compound name: PFBA

	#	Name		ID	Acq.Date	Acq.Time
1	1	180617M1_4	(A)	ST180617M1-3 PFC CS0 18F1106	17-Jun-18	16:58:07
2	2	180617M1_5		ST180617M1-4 PFC CS1 18F1107	17-Jun-18	17:08:32
3	3	180617M1_6		ST180617M1-5 PFC CS2 18F1108	17-Jun-18	17:19:02
4	4	180617M1_7		ST180617M1-6 PFC CS3 18F1109	17-Jun-18	17:29:28
5	5	180617M1_8		ST180617M1-7 PFC CS4 18F1110	17-Jun-18	17:39:58
6	6	180617M1_9		ST180617M1-8 PFC CS5 18F1111	17-Jun-18	17:50:23
7	7	180617M1_10		ST180617M1-9 PFC CS6 18F1112	17-Jun-18	18:00:53
8	8	180617M1_11		ST180617M1-10 PFC CS7 18F1113	17-Jun-18	18:11:18
9	9	180617M1_12		IPA	17-Jun-18	18:21:49
10	10	180617M1_13		ICV180617M1-1 PFC 537 ICV 18F1103	17-Jun-18	18:32:13
11	11	180617M1_14		IPA	17-Jun-18	18:42:47
12	12	180617M1_15		1801031-05 MW-B586-01 0.12111	17-Jun-18	18:53:14
13	13	180617M1_16		1801031-02@5X MW-323 0.12007	17-Jun-18	19:03:38
14	14	180617M1_17		1801031-04@30X MW-09-001 0.11999	17-Jun-18	19:14:09
15	15	180617M1_18		1801031-06@5X SW-52 0.12349	17-Jun-18	19:24:34
16	16	180617M1_19		1801119-06@5X PFAS-B14-MW-02-05...	17-Jun-18	19:35:04
17	17	180617M1_20		1801043-10@10X	17-Jun-18	19:45:29
18	18	180617M1_21		1800986-04RE1	17-Jun-18	19:55:59
19	19	180617M1_22		SBQC	17-Jun-18	20:06:29
20	20	180617M1_23		1801153-01 REEPDW1116FRB 0.12296	17-Jun-18	20:16:53
21	21	180617M1_24		1801153-02 REEPDW1120FRB 0.12208	17-Jun-18	20:27:24
22	22	180617M1_25		1801153-03 REEPDW1110FRB 0.11956	17-Jun-18	20:37:48
23	23	180617M1_26		1801153-04 REEPDW1111FRB 0.12237	17-Jun-18	20:48:19
24	24	180617M1_27		1801153-05 REEPDW1112FRB 0.12166	17-Jun-18	20:58:49
25	25	180617M1_28		B8F0081-BS1 OPR 2	17-Jun-18	21:09:14
26	26	180617M1_29		B8F0081-BLK1 Method Blank 2	17-Jun-18	21:19:44
27	27	180617M1_30		B8F0081-MS1 Matrix Spike 2	17-Jun-18	21:30:08
28	28	180617M1_31		B8F0081-MSD1 Matrix Spike Dup 2.03	17-Jun-18	21:40:38
29	29	180617M1_32		1801017-01 TSalmon1-180430UV 2.04	17-Jun-18	21:51:03
30	30	180617M1_33		1801017-02 TSalmon2-180430UV 2.03	17-Jun-18	22:01:33
31	31	180617M1_34		1801017-03 THalibut1-180430UV 2.03	17-Jun-18	22:12:03

(A) CS0 fell into previous CRV
CRV not used
AA 6/18/18

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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
32	32	180617M1_35	ST180617M1-11 PFC CS3 18F1109	17-Jun-18	22:22:28
33	33	180617M1_36	IPA	17-Jun-18	22:32:58
34	34	180617M1_37	1801017-04 THalibut2-180430UV 2.01	17-Jun-18	22:43:22
35	35	180617M1_38	1801017-05 TPetSole1-180430UV 2.01	17-Jun-18	22:53:52
36	36	180617M1_39	1801017-06 TPetSole2-180430UV 2.01	17-Jun-18	23:04:16
37	37	180617M1_40	1801017-07 TRockfish1-180430UV 2.04	17-Jun-18	23:14:47
38	38	180617M1_41	1801017-08 TRockfish2-180430UV 2	17-Jun-18	23:25:11
39	39	180617M1_42	1801017-09 TSablefish1-180430UV 2	17-Jun-18	23:35:41
40	40	180617M1_43	1801017-10 TSablefish2-180430UV 2.04	17-Jun-18	23:46:05
41	41	180617M1_44	1801017-11 TSablefish3-180430UV 2	17-Jun-18	23:56:36
42	42	180617M1_45	1801017-12 TTrout1-180430UV 2.04	18-Jun-18	00:07:06
43	43	180617M1_46	1801017-13 TTrout2-180430UV 2.04	18-Jun-18	00:17:30
44	44	180617M1_47	B8F0090-BS1 OPR 0.125	18-Jun-18	00:28:01
45	45	180617M1_48	B8F0090-BLK1 Method Blank 0.125	18-Jun-18	00:38:26
46	46	180617M1_49	B8F0090-MS1 Matrix Spike 0.11573	18-Jun-18	00:48:56
47	47	180617M1_50	B8F0090-MSD1 Matrix Spike Dup 0.111...	18-Jun-18	00:59:20
48	48	180617M1_51	1801121-01 REEPDW1070FRB 0.11502	18-Jun-18	01:09:50
49	49	180617M1_52	1801121-02 REEPDW1075FRB 0.11791	18-Jun-18	01:20:14
50	50	180617M1_53	1801121-03 REEPDW1076FRB 0.11453	18-Jun-18	01:30:45
51	51	180617M1_54	1801121-04 REEPDW1077FRB 0.11519	18-Jun-18	01:41:15
52	52	180617M1_55	1801121-05 REEPDW1080FRB 0.11536	18-Jun-18	01:51:40
53	53	180617M1_56	1801121-06 REEPDW1081FRB 0.11512	18-Jun-18	02:02:10
54	54	180617M1_57	1801121-07 REEPDW1082FRB 0.11821	18-Jun-18	02:12:35
55	55	180617M1_58	1801121-08 REEPDW1083FRB 0.11578	18-Jun-18	02:23:05
56	56	180617M1_59	1801121-09 REEPDW1084FRB 0.11297	18-Jun-18	02:33:30
57	57	180617M1_60	1801121-10 REEPDW1085FRB 0.115	18-Jun-18	02:44:01
58	58	180617M1_61	ST180617M1-12 PFC CS3 18F1109	18-Jun-18	02:54:26
59	59	180617M1_62	ST180617M1-13 PFC CS0 18F1106	18-Jun-18	03:04:56
60	60	180617M1_63	IPA	18-Jun-18	03:15:21
61	61	180617M1_64	1801017-14 TTrout3-180430UV 2.01	18-Jun-18	03:25:51
62	62	180617M1_65	1801017-15 TTrout4-180430UV 2.02	18-Jun-18	03:36:16
63	63	180617M1_66	1801151-01 REEPDW1116 0.11145	18-Jun-18	03:46:47
64	64	180617M1_67	1801151-02 REEPDW1120 0.11804	18-Jun-18	03:57:11
65	65	180617M1_68	1801151-03 REEPDW561 0.11524	18-Jun-18	04:07:41

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Compound name: PFBA

	# Name	ID	Acq.Date	Acq.Time
66	66 180617M1_69	1801151-04 REEPDW1110 0.11388	18-Jun-18	04:18:06
67	67 180617M1_70	1801151-05 REEPDW560 0.11804	18-Jun-18	04:28:36
68	68 180617M1_71	1801151-06 REEPDW1111 0.11782	18-Jun-18	04:39:06
69	69 180617M1_72	1801151-07 REEPDW1112 0.1175	18-Jun-18	04:49:30
70	70 180617M1_73	B8F0061-BS1 OPR 1	18-Jun-18	05:00:01
71	71 180617M1_74	B8F0061-BLK1 Method Blank 1	18-Jun-18	05:10:25
72	72 180617M1_75	B8F0061-MS1 Matrix Spike 1.15	18-Jun-18	05:20:56
73	73 180617M1_76	B8F0061-MSD1 Matrix Spike Dup 1.18	18-Jun-18	05:31:21
74	74 180617M1_77	1801138-01 MCLPCC107 1.15	18-Jun-18	05:41:51
75	75 180617M1_78	ST180617M1-14 PFC CS3 18F1109	18-Jun-18	05:52:16
76	76 180617M1_79	IPA	18-Jun-18	06:02:46
77	77 180617M1_80	1801138-03 MCLPCC101 1.13	18-Jun-18	06:13:12
78	78 180617M1_81	1801138-04 MCLPCD185 1.55	18-Jun-18	06:23:42
79	79 180617M1_82	1801138-05 MCLP41512 1.12	18-Jun-18	06:34:07
80	80 180617M1_83	1801138-06 MCLP41513 1.13	18-Jun-18	06:44:37
81	81 180617M1_84	1801138-07 MCLP41283 1.12	18-Jun-18	06:55:02
82	82 180617M1_85	1801138-08 MCLP41284 1.13	18-Jun-18	07:05:32
83	83 180617M1_86	1801138-09 MCLP41280 1.12	18-Jun-18	07:16:02
84	84 180617M1_87	1801138-10 MCLP41281 1.11	18-Jun-18	07:26:27
85	85 180617M1_88	1801138-11 MCLP41277 1.12	18-Jun-18	07:36:58
86	86 180617M1_89	1801138-12 MCLP41278 1.18	18-Jun-18	07:47:23
87	87 180617M1_90	ST180617M1-15 PFC CS3 18F1109	18-Jun-18	07:57:53
88	88 180617M1_91	IPA	18-Jun-18	08:08:23
89	89 180617M1_92	1801138-13 MCLP41274 1.11	18-Jun-18	08:18:49
90	90 180617M1_93	1801138-14 MCLP41275 1.15	18-Jun-18	08:29:19
91	91 180617M1_94	1801138-15 MCLPCH307 1.15	18-Jun-18	08:39:44
92	92 180617M1_95	1801138-16 MCLPCH304 1.12	18-Jun-18	08:50:15
93	93 180617M1_96	1801138-17 MCLPCH310 1.13	18-Jun-18	09:00:39
94	94 180617M1_97	1801138-18 MCLPCH313 1.13	18-Jun-18	09:11:09
95	95 180617M1_98	1801075-01 EB1-1805300925JLB 0.25...	18-Jun-18	09:21:33
96	96 180617M1_99	1801075-02 SW1805300930JLB 0.25289	18-Jun-18	09:32:04
97	97 180617M1_100	1801075-03 SW1805300950JLB 0.25061	18-Jun-18	09:42:29
98	98 180617M1_101	1801075-04 SW1805301015JLB 0.25195	18-Jun-18	09:52:59
99	99 180617M1_102	1801075-05 RW1805301030JLB 0.25822	18-Jun-18	10:03:24

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Compound name: PFBA

	#	Name		ID	Acq.Date	Acq.Time
100	1...	180617M1_103		1801075-06 FB1805301035JLB 0.25636	18-Jun-18	10:13:55
101	1...	180617M1_104		ST180617M1-16 PFC CS3 18F1109	18-Jun-18	10:24:20
102	1...	180617M1_105		IPA	18-Jun-18	10:34:50
103	1...	180617M1_106		B8F0069-BS1 OPR 0.25	18-Jun-18	10:45:15
104	1...	180617M1_107		B8F0069-BSD1 LCSD 0.25	18-Jun-18	10:55:45
105	1...	180617M1_108		B8F0069-BLK1 Method Blank 0.25	18-Jun-18	11:06:10
106	1...	180617M1_109		1801080-01 MCLP00502 0.11474	18-Jun-18	11:16:41
107	1...	180617M1_110		1801080-02 MCLP00503 0.1174	18-Jun-18	11:27:05
108	1...	180617M1_111		1801083-01 REEPDW1064FRB 0.11793	18-Jun-18	11:37:36
109	1...	180617M1_112		1801083-02 REEPDW1065FRB 0.11917	18-Jun-18	11:48:01
110	1...	180617M1_113		1801083-03 REEPDW1066FRB 0.11325	18-Jun-18	11:58:32
111	1...	180617M1_114		1801083-04 REEPDW1067FRB 0.11388	18-Jun-18	12:09:02
112	1...	180617M1_115		1801083-05 REEPDW1068FRB 0.11908	18-Jun-18	12:19:27
113	1...	180617M1_116		1801083-06 REEPDW1069FRB 0.11912	18-Jun-18	12:29:57
114	1...	180617M1_117		1801083-07 REEPDW1059FRB 0.11508	18-Jun-18	12:40:23
115	1...	180617M1_118		1801083-08 REEPDW1071FRB 0.11433	18-Jun-18	12:50:53
116	1...	180617M1_119		1801083-09 REEPDW1072FRB 0.11757	18-Jun-18	13:01:18
117	1...	180617M1_120		1801083-10 REEPDW1073FRB 0.11942	18-Jun-18	13:11:40
118	1...	180617M1_121		1801083-11 REEPDW1074FRB 0.11998	18-Jun-18	13:22:11
119	1...	180617M1_122		1801083-12 REEPDW1058FRB 0.11864	18-Jun-18	13:32:35
120	1...	180617M1_123		1801126-01 OF-INF01-0618 0.24968	18-Jun-18	13:43:06
121	1...	180617M1_124		1801126-02 OF-SAC01-0618 0.24617	18-Jun-18	13:53:31
122	1...	180617M1_125		1801126-03 OF-MID01-0618 0.24433	18-Jun-18	14:04:01
123	1...	180617M1_126		1801126-04 OF-EFF01-0618 0.2429	18-Jun-18	14:14:26
124	1...	180617M1_127		1801138-02 MCLPCC416 0.11707	18-Jun-18	14:24:56
125	1...	180617M1_128	Ⓐ	ST180617M1-17 PFC CS3 18F1109	18-Jun-18	14:35:22
126	1...	180617M1_129		IPA	18-Jun-18	14:45:44
127	1...	180617M1_130		ST180617M1-18 PFC CS3 18F1109	18-Jun-18	15:37:03
128	1...	180617M1_131		IPA	18-Jun-18	15:47:41

Ⓐ incorrect vial position
AR 6/13/18

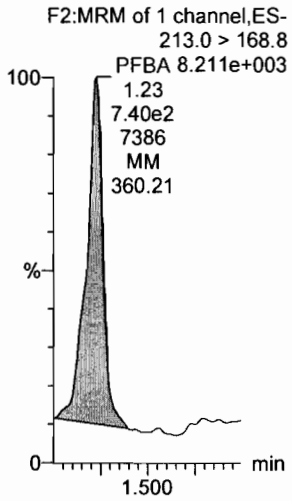
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

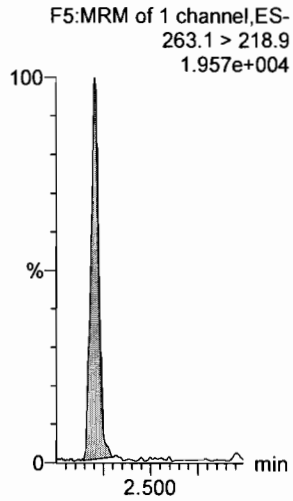
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

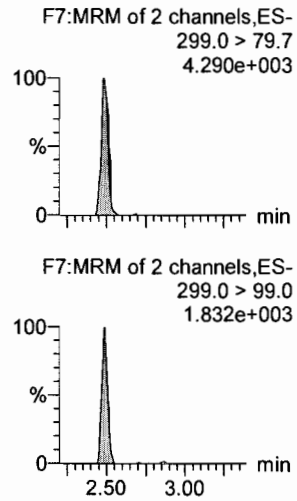
PFBA



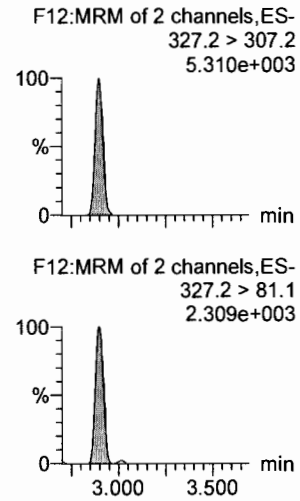
PFPeA



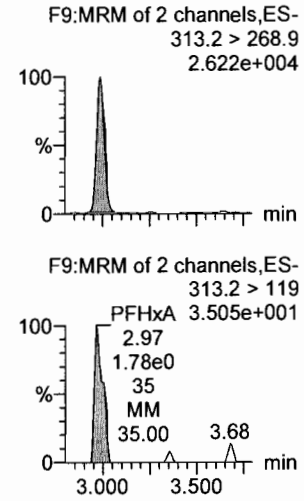
PFBS



4:2 FTS



PFHxA



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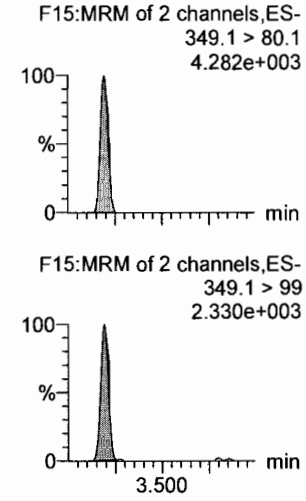
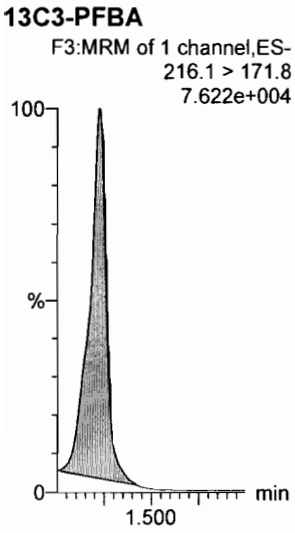
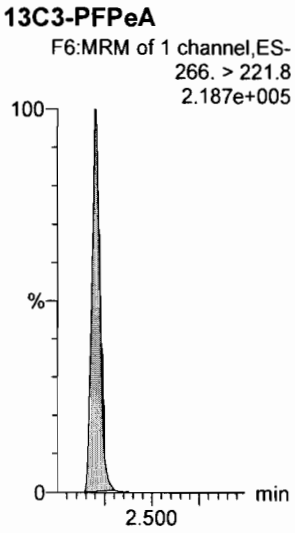


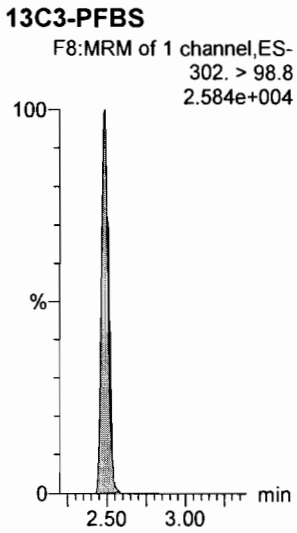
13C3-PFBA



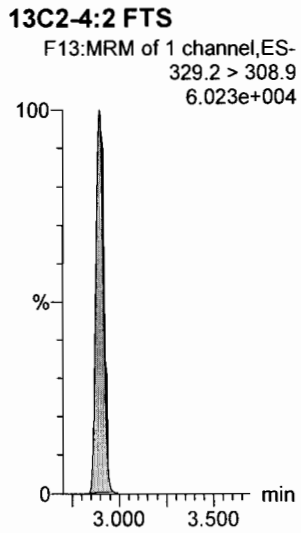
13C3-PFPeA



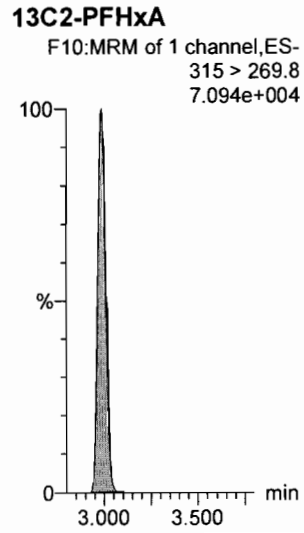
13C3-PFBS



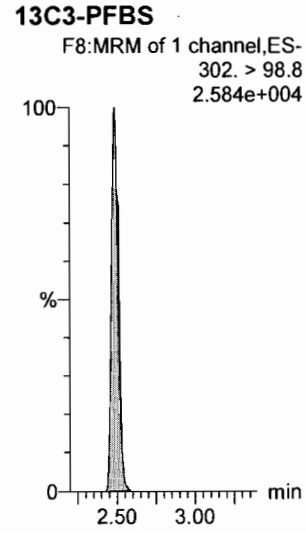
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS



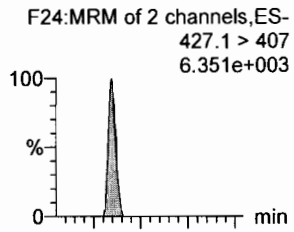
Vista Analytical Laboratory

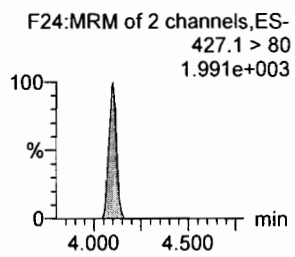
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

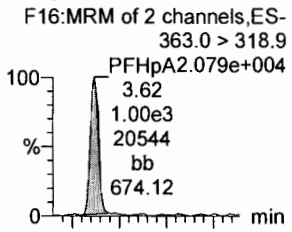
Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

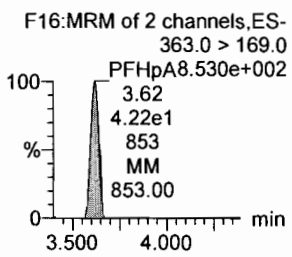
6:2 FTS



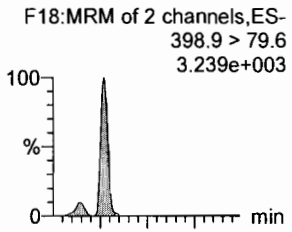


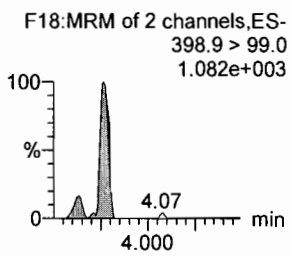
PFHpA



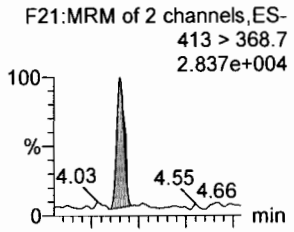


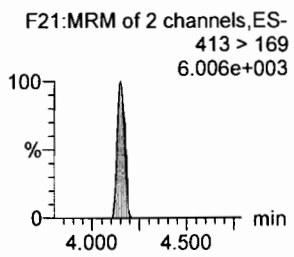
L-PFHxS



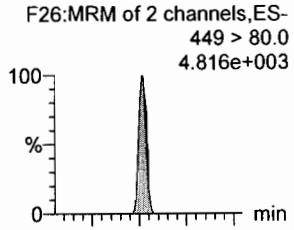


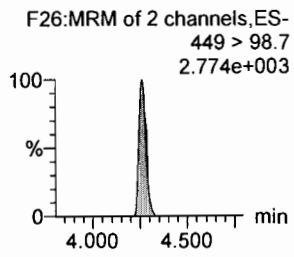
L-PFOA



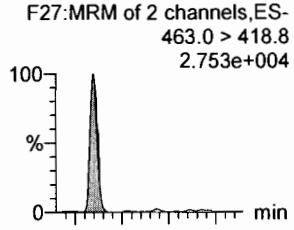


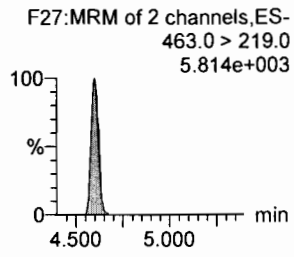
PFHpS



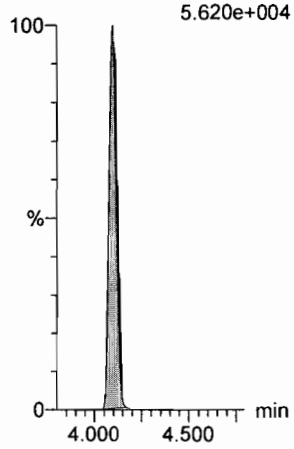


PFNA

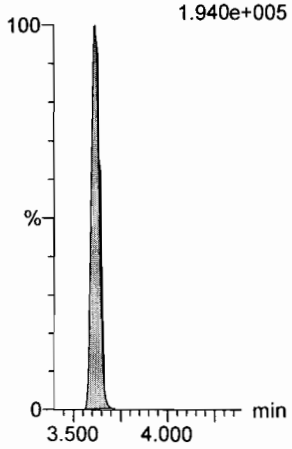




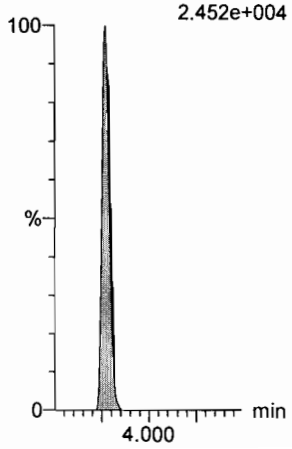
13C2-6:2 FTS



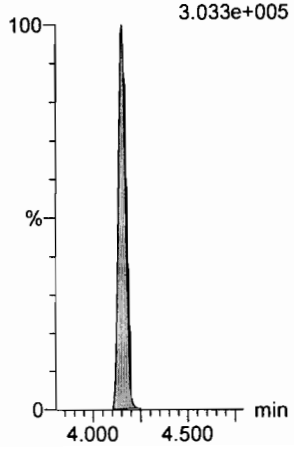
13C4-PFHpA



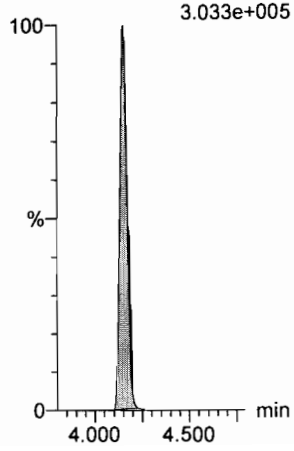
18O2-PFHxS



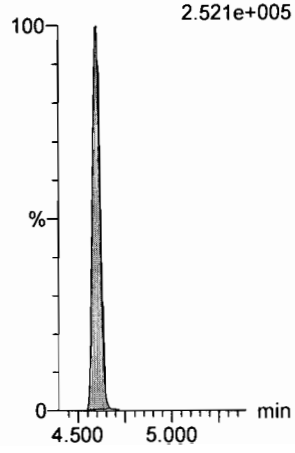
13C2-PFOA



13C2-PFOA



13C5-PFNA

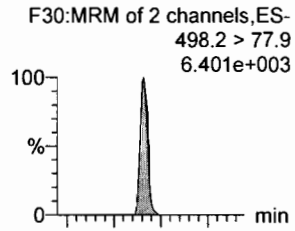


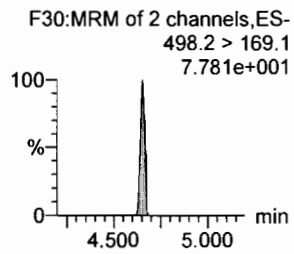
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

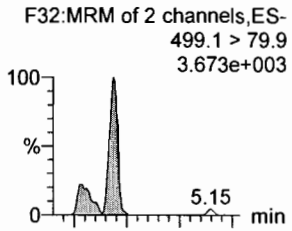
Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

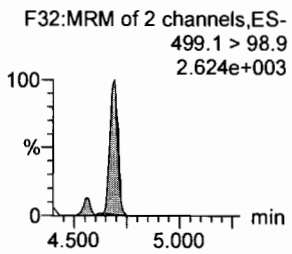
PFOSA



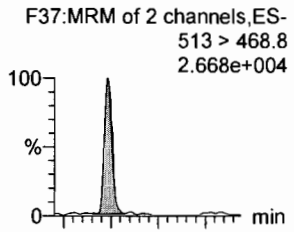


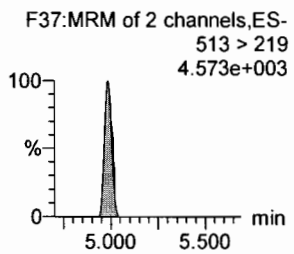
L-PFOS



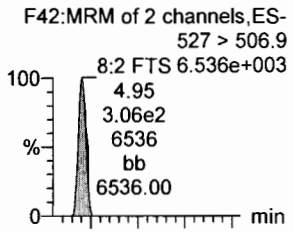


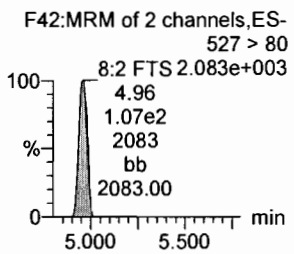
PFDA



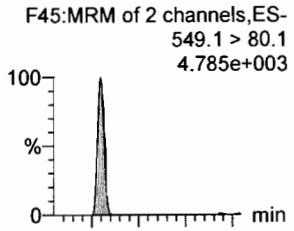


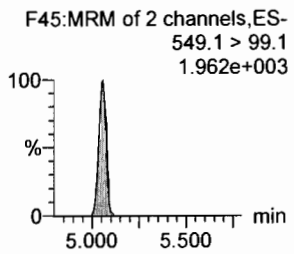
8:2 FTS



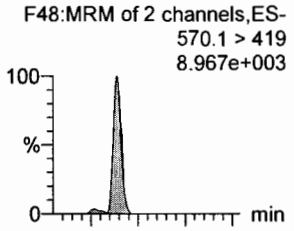


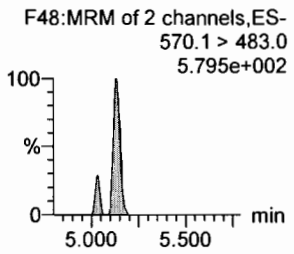
PFNS



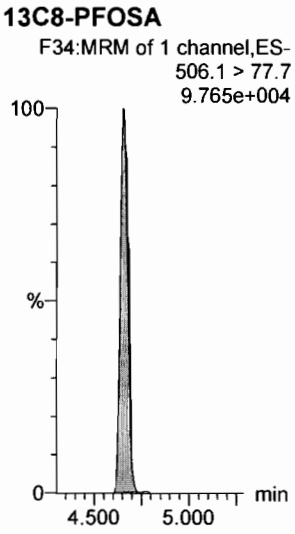


L-MeFOSAA

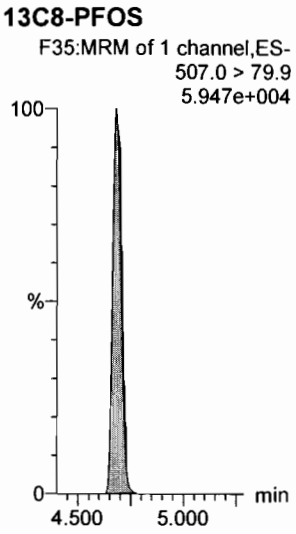




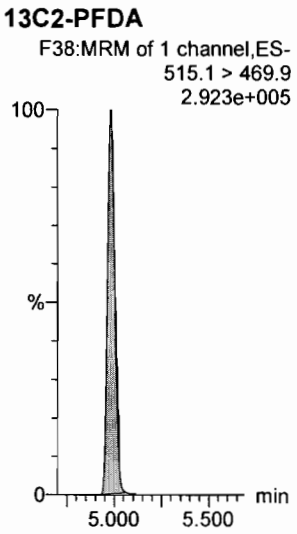
13C8-PFOSA



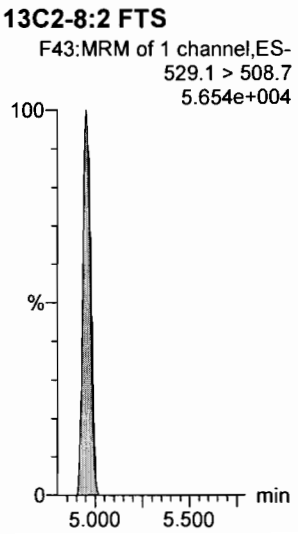
13C8-PFOS



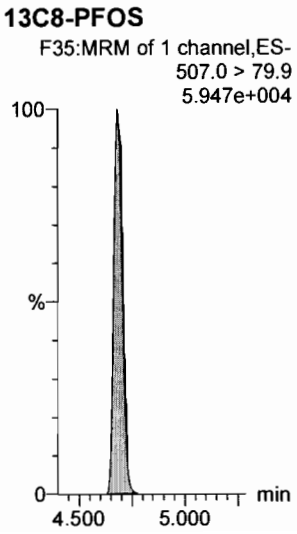
13C2-PFDA



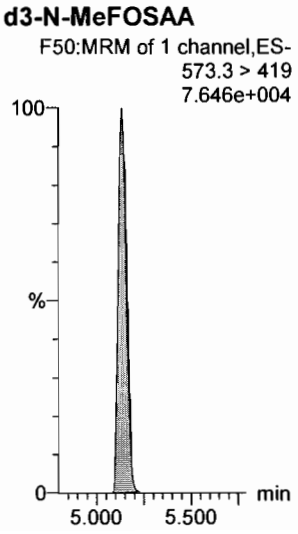
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

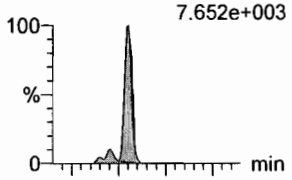


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

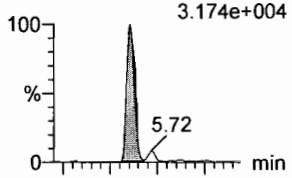
Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

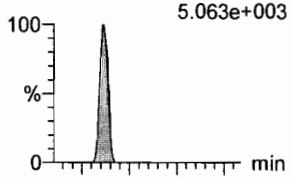
L-EtFOSAA
F51:MRM of 2 channels,ES-
584.2 > 419
7.652e+003



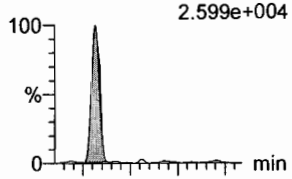
PFDoA
F54:MRM of 4 channels,ES-
612.9 > 569.0
3.174e+004



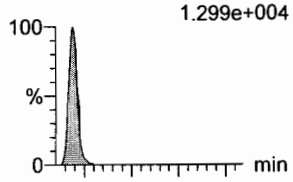
PFDS
F53:MRM of 2 channels,ES-
598.8 > 80
5.063e+003



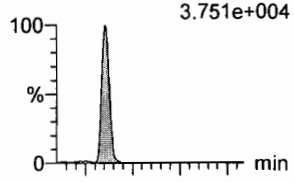
PFUdA
F46:MRM of 2 channels,ES-
563.0 > 518.9
2.599e+004



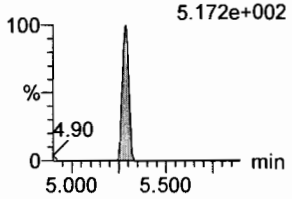
N-MeFOSA
F36:MRM of 2 channels,ES-
512.1 > 168.9
1.299e+004



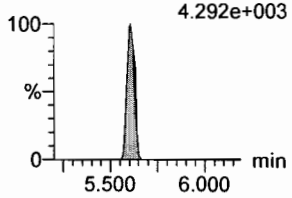
PFTrDA
F60:MRM of 2 channels,ES-
662.9 > 618.9
3.751e+004



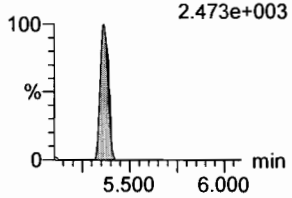
F51:MRM of 2 channels,ES-
584.2 > 483.0
5.172e+002



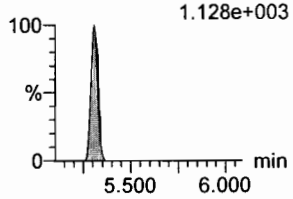
F54:MRM of 4 channels,ES-
612.9 > 318.8
4.292e+003



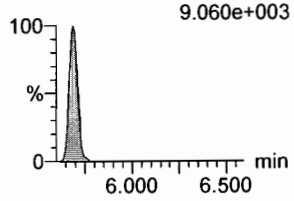
F53:MRM of 2 channels,ES-
598.8 > 98.7
2.473e+003



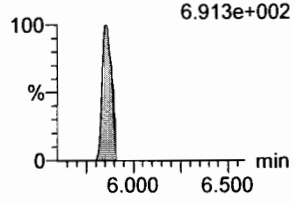
F46:MRM of 2 channels,ES-
563.0 > 269
1.128e+003



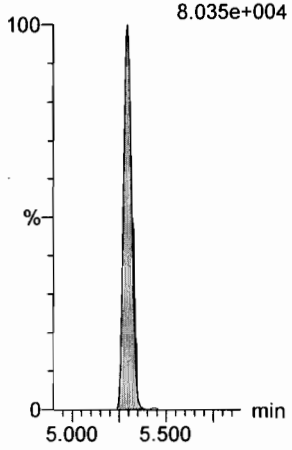
F36:MRM of 2 channels,ES-
512.1 > 219
9.060e+003



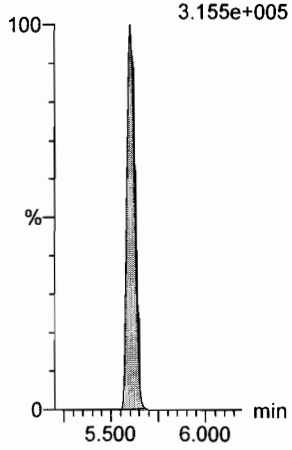
F60:MRM of 2 channels,ES-
662.9 > 319
6.913e+002



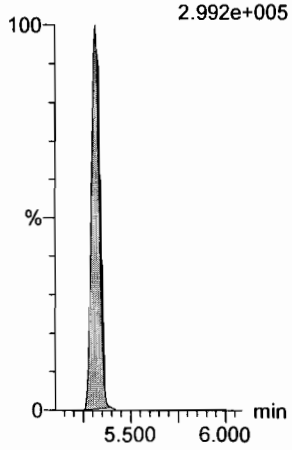
d5-N-EtFOSAA
F52:MRM of 1 channel,ES-
589.3 > 419
8.035e+004



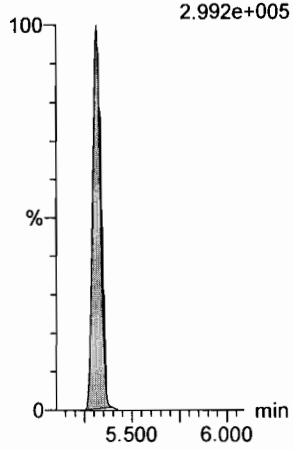
13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
3.155e+005



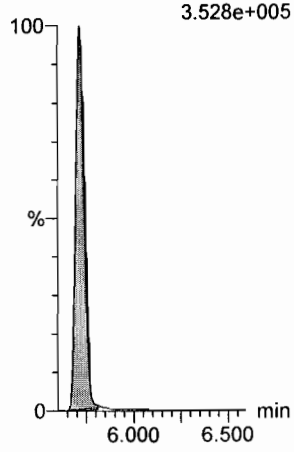
13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
2.992e+005



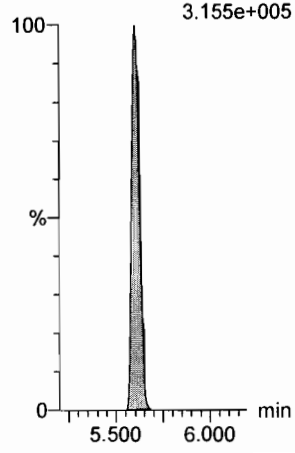
13C2-PFUdA
F47:MRM of 1 channel,ES-
565 > 519.8
2.992e+005



d3-N-MeFOSA
F39:MRM of 1 channel,ES-
515.2 > 168.9
3.528e+005



13C2-PFDoA
F55:MRM of 2 channels,ES-
615.0 > 569.7
3.155e+005



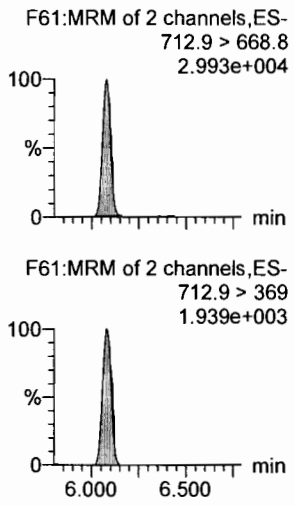
Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

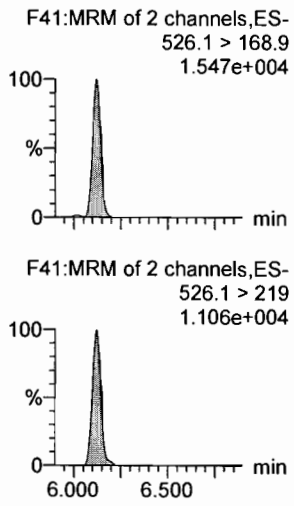
Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

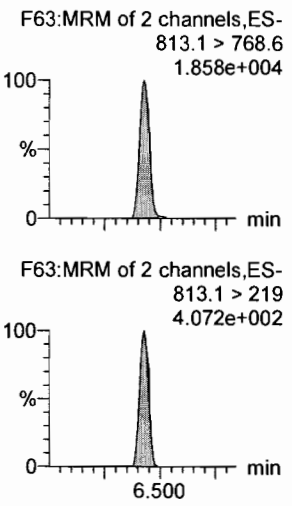
PFTeDA



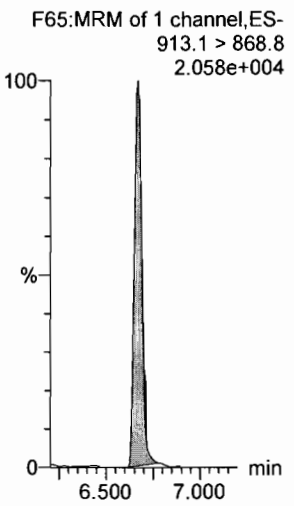
N-EtFOSA



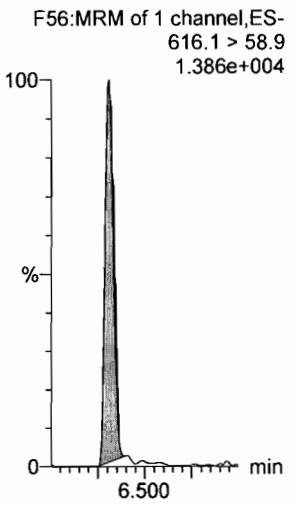
PFHxDA



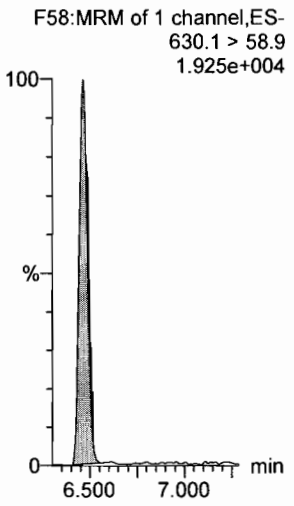
PFODA



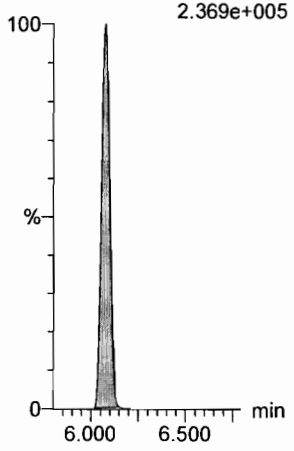
N-MeFOSE



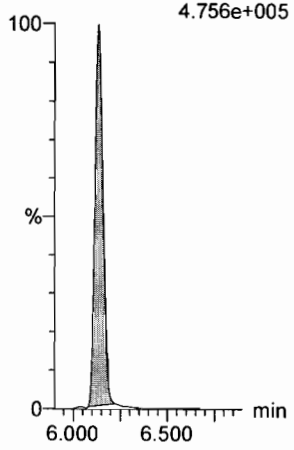
N-EtFOSE



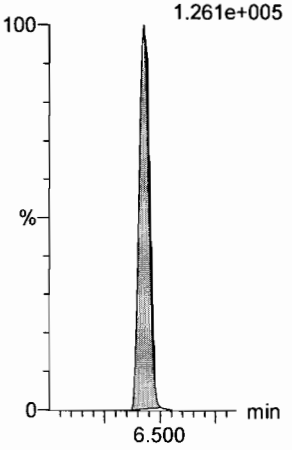
13C2-PFTeDA



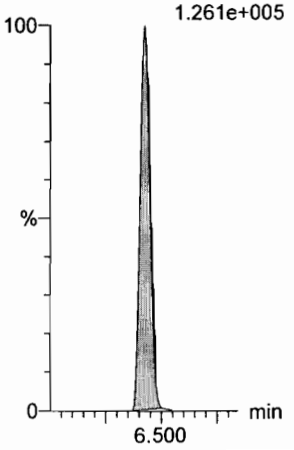
d5-N-ETFOSA



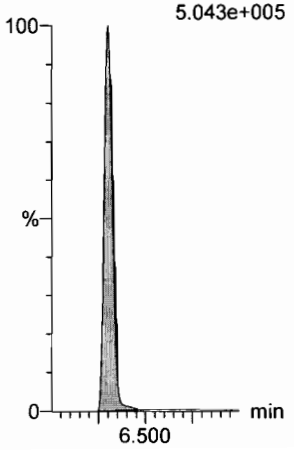
13C2-PFHxDA



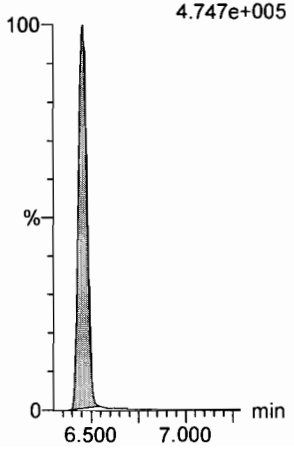
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

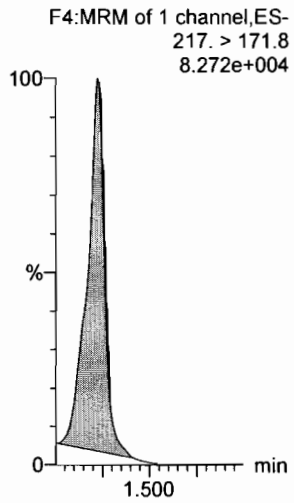


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-4.qld

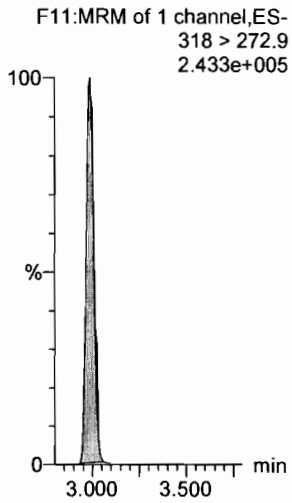
Last Altered: Monday, June 18, 2018 15:58:43 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:58:53 Pacific Daylight Time

Name: 180617M1_4, Date: 17-Jun-2018, Time: 16:58:07, ID: ST180617M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

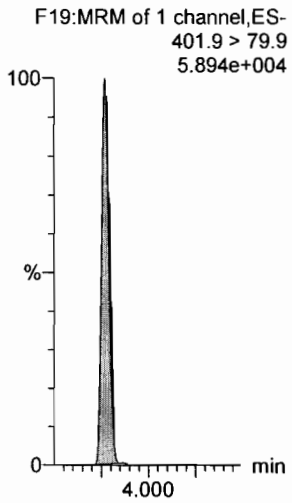
13C4-PFBA



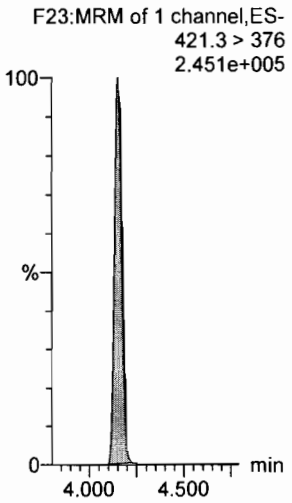
13C5-PFHxA



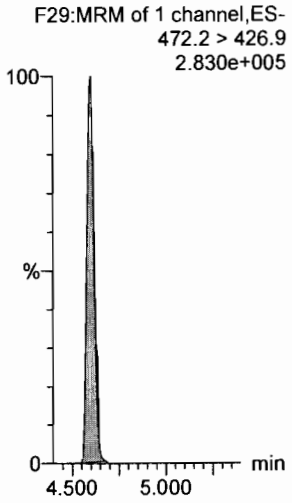
13C3-PFHxS



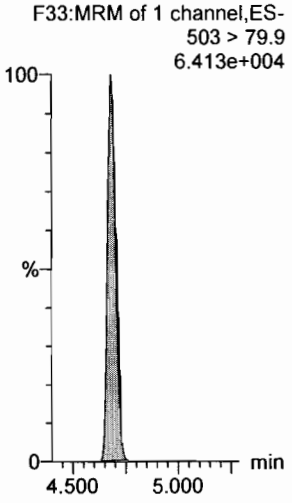
13C8-PFOA



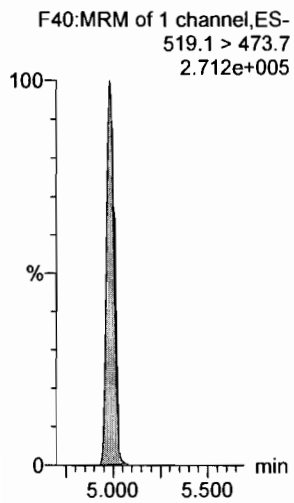
13C9-PFNA



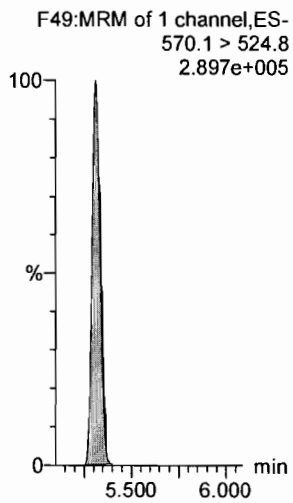
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

✓ JM 6/18/18 AR 6/18/18

Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	6148.898	7143.366	1.00	1.23	10.760	9.8	98.3	NO		
2	2	PFPeA	263.1 > 218.9	8019.258	10069.788	1.00	2.21	9.955	10.3	102.8	NO		
3	3	PFBS	299.0 > 79.7	1908.972	1218.526	1.00	2.49	19.583	10.1	101.4	NO	2.723	NO
4	4	4:2 FTS	327.2>307.2	1846.303	2482.573	1.00	2.91	9.296	9.1	91.1	NO	1.506	NO
5	5	PFHxA	313.2 > 268.9	10115.021	3354.455	1.00	2.99	15.077	9.8	98.2	NO	196.909	NO
6	6	PFPeS	349.1>80.1	1757.802	1218.526	1.00	3.20	18.032	10.3	103.0	NO	1.743	NO
7	36	13C3-PFBA	216.1 > 171.8	7143.366	7862.875	1.00	1.23	11.356	13.0	103.6	NO		
8	37	13C3-PFPeA	266. > 221.8	10069.788	10756.623	1.00	2.21	11.702	12.3	98.0	NO		
9	38	13C3-PFBS	302. > 98.8	1218.526	10756.623	1.00	2.49	1.416	12.0	96.2	NO		
10	39	13C2-4:2 FTS	329.2>308.9	2482.573	10756.623	1.00	2.90	2.885	12.1	96.6	NO		
11	40	13C2-PFHxA	315 > 269.8	3354.455	10756.623	1.00	2.99	3.898	5.3	105.9	NO		
12	38	13C3-PFBS	302. > 98.8	1218.526	10756.623	1.00	2.49	1.416	12.0	96.2	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	2093.031	2320.649	1.00	4.10	11.274	10.7	106.6	NO	2.895	NO
15	7	PFHpA	363.0 > 318.9	7696.535	8664.869	1.00	3.62	11.103	9.3	92.8	NO	16.943	NO
16	8	L-PFHxS	398.9 > 79.6	1345.303	982.110	1.00	3.77	17.123	9.0	89.6	NO	1.466	NO
17	11	L-PFOA	413 > 368.7	9028.967	12670.719	1.00	4.15	8.907	9.5	94.9	NO	3.874	NO
18	13	PFHpS	449 > 80.0	1855.968	12670.719	1.00	4.27	1.831	8.9	88.8	NO	2.128	NO
19	14	PFNA	463.0 > 418.8	10193.453	10615.577	1.00	4.60	12.003	9.4	93.6	NO	4.374	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	2320.649	10043.736	1.00	4.10	2.888	11.3	90.4	NO		
21	41	13C4-PFHpA	367.2 > 321.8	8664.869	10756.623	1.00	3.62	10.069	13.6	108.9	NO		
22	42	18O2-PFHxS	403.0 > 102.6	982.110	2545.207	1.00	3.78	4.823	12.1	96.7	NO		
23	44	13C2-PFOA	414.9 > 369.7	12670.719	10043.736	1.00	4.15	15.769	12.2	97.7	NO		
24	44	13C2-PFOA	414.9 > 369.7	12670.719	10043.736	1.00	4.15	15.769	12.2	97.7	NO		
25	45	13C5-PFNA	468.2 > 422.9	10615.577	11470.827	1.00	4.60	11.568	12.5	100.3	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	2630.761	4015.258	1.00	4.66	8.190	10.4	103.9	NO	27.373	NO
28	16	L-PFOS	499.1 > 79.9	1991.614	2631.515	1.00	4.69	9.460	10.9	109.0	NO	2.077	NO
29	18	PFDA	513 > 468.8	10682.686	12909.350	1.00	4.99	10.344	9.3	92.8	NO	5.824	NO
30	19	8:2 FTS	527 > 506.9	2484.051	1864.383	1.00	4.95	16.655	11.2	112.0	NO	2.618	NO
31	20	PFNS	549.1>80.1	1595.429	2631.515	1.00	5.05	7.578	9.8	97.7	NO	1.910	NO
32	21	L-MeFOSAA	570.1 > 419	4530.171	3823.854	1.00	5.14	14.809	7.7	76.6	NO	19.386	NO
33	46	13C8-PFOSA	506.1 > 77.7	4015.258	12240.965	1.00	4.66	4.100	13.3	106.7	NO		
34	47	13C8-PFOS	507.0 > 79.9	2631.515	2524.700	1.00	4.69	13.029	13.1	104.7	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

(A) Above limit criteria
DJR 6/18/18

Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	12909.350	10306.769	1.00	4.99	15.656	14.1	113.1	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	1864.383	10756.623	1.00	4.96	2.167	10.7	85.9	NO		
37	47	13C8-PFOS	507.0 > 79.9	2631.515	2524.700	1.00	4.69	13.029	13.1	104.7	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	3823.854	12240.965	1.00	5.14	3.905	19.4	155.2	(A) YES		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	3264.767	3844.379	1.00	5.30	10.615	10.7	107.1	NO	21.830	NO
41	27	PFDoA	612.9 > 569.0	12209.864	12460.374	1.00	5.61	12.249	11.1	111.1	NO	9.144	NO
42	26	PFDS	598.8 > 80	2133.067	12786.588	1.00	5.36	2.085	10.2	102.4	NO	2.133	NO
43	25	PFUdA	563.0 > 518.9	9347.792	12786.588	1.00	5.32	9.138	9.6	96.3	NO	14.144	NO
44	28	N-MeFOSA	512.1 > 168.9	6025.387	17400.566	1.00	5.69	51.941	50.4	100.8	NO	1.346	NO
45	29	PFTrDA	662.9 > 618.9	13643.557	12460.374	1.00	5.86	13.687	11.0	110.4	NO	29.954	NO
46	51	d5-N-EtFOSAA	589.3 > 419	3844.379	12240.965	1.00	5.30	3.926	16.2	129.9	NO		
47	53	13C2-PFDoA	615.0 > 569.7	12460.374	10306.769	1.00	5.60	15.112	11.4	91.3	NO		
48	52	13C2-PFUdA	565 > 519.8	12786.588	12240.965	1.00	5.32	13.057	13.9	111.1	NO		
49	52	13C2-PFUdA	565 > 519.8	12786.588	12240.965	1.00	5.32	13.057	13.9	111.1	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	17400.566	12240.965	1.00	5.72	17.769	176.2	117.5	NO		
51	53	13C2-PFDoA	615.0 > 569.7	12460.374	10306.769	1.00	5.60	15.112	11.4	91.3	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	11340.960	9973.812	1.00	6.08	14.213	12.0	120.1	NO	12.357	NO
54	31	N-EtFOSA	526.1 > 168.9	6722.102	23732.998	1.00	6.12	42.486	49.5	99.0	NO	1.418	NO
55	32	PFHxDA	813.1 > 768.6	6951.458	6340.833	1.00	6.43	5.482	8.7	87.5	NO	26.039	NO
56	33	PFODA	913.1 > 868.8	9076.086	6340.833	1.00	6.67	7.157	11.6	116.3	NO		
57	34	N-MeFOSE	616.1 > 58.9	7308.727	26765.486	1.00	6.32	40.960	46.6	93.3	NO		
58	35	N-EtFOSE	630.1 > 58.9	9265.035	23093.221	1.00	6.47	60.180	55.9	111.8	NO		
59	55	13C2-PFTeDA	714.8 > 669.6	9973.812	12240.965	1.00	6.08	10.185	10.8	86.2	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	23732.998	12240.965	1.00	6.14	24.235	185.2	123.5	NO		
61	57	13C2-PFHxDA	815 > 769.7	6340.833	12240.965	1.00	6.43	6.475	5.5	110.1	NO		
62	57	13C2-PFHxDA	815 > 769.7	6340.833	12240.965	1.00	6.43	6.475	5.5	110.1	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	26765.486	12240.965	1.00	6.30	27.332	195.3	130.2	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	23093.221	12240.965	1.00	6.46	23.582	184.7	123.1	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	7862.875	7862.875	1.00	1.23	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	10756.623	10756.623	1.00	2.99	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	2545.207	2545.207	1.00	3.77	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	10043.736	10043.736	1.00	4.15	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	11470.827	11470.827	1.00	4.60	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	2524.700	2524.700	1.00	4.69	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	10306.769	10306.769	1.00	4.99	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	12240.965	12240.965	1.00	5.31	12.500	12.5	100.0	NO		

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Compound name: PFBA

	#	Name		ID	Acq.Date	Acq.Time
1	1	180617M1_4	(A)	ST180617M1-3 PFC CS0 18F1106	17-Jun-18	16:58:07
2	2	180617M1_5		ST180617M1-4 PFC CS1 18F1107	17-Jun-18	17:08:32
3	3	180617M1_6		ST180617M1-5 PFC CS2 18F1108	17-Jun-18	17:19:02
4	4	180617M1_7		ST180617M1-6 PFC CS3 18F1109	17-Jun-18	17:29:28
5	5	180617M1_8		ST180617M1-7 PFC CS4 18F1110	17-Jun-18	17:39:58
6	6	180617M1_9		ST180617M1-8 PFC CS5 18F1111	17-Jun-18	17:50:23
7	7	180617M1_10		ST180617M1-9 PFC CS6 18F1112	17-Jun-18	18:00:53
8	8	180617M1_11		ST180617M1-10 PFC CS7 18F1113	17-Jun-18	18:11:18
9	9	180617M1_12		IPA	17-Jun-18	18:21:49
10	10	180617M1_13		ICV180617M1-1 PFC 537 ICV 18F1103	17-Jun-18	18:32:13
11	11	180617M1_14		IPA	17-Jun-18	18:42:47
12	12	180617M1_15		1801031-05 MW-B586-01 0.12111	17-Jun-18	18:53:14
13	13	180617M1_16		1801031-02@5X MW-323 0.12007	17-Jun-18	19:03:38
14	14	180617M1_17		1801031-04@30X MW-09-001 0.11999	17-Jun-18	19:14:09
15	15	180617M1_18		1801031-06@5X SW-52 0.12349	17-Jun-18	19:24:34
16	16	180617M1_19		1801119-06@5X PFAS-B14-MW-02-05...	17-Jun-18	19:35:04
17	17	180617M1_20		1801043-10@10X	17-Jun-18	19:45:29
18	18	180617M1_21		1800986-04RE1	17-Jun-18	19:55:59
19	19	180617M1_22		SBQC	17-Jun-18	20:06:29
20	20	180617M1_23		1801153-01 REEPDW1116FRB 0.12296	17-Jun-18	20:16:53
21	21	180617M1_24		1801153-02 REEPDW1120FRB 0.12208	17-Jun-18	20:27:24
22	22	180617M1_25		1801153-03 REEPDW1110FRB 0.11956	17-Jun-18	20:37:48
23	23	180617M1_26		1801153-04 REEPDW1111FRB 0.12237	17-Jun-18	20:48:19
24	24	180617M1_27		1801153-05 REEPDW1112FRB 0.12166	17-Jun-18	20:58:49
25	25	180617M1_28		B8F0081-BS1 OPR 2	17-Jun-18	21:09:14
26	26	180617M1_29		B8F0081-BLK1 Method Blank 2	17-Jun-18	21:19:44
27	27	180617M1_30		B8F0081-MS1 Matrix Spike 2	17-Jun-18	21:30:08
28	28	180617M1_31		B8F0081-MSD1 Matrix Spike Dup 2.03	17-Jun-18	21:40:38
29	29	180617M1_32		1801017-01 TSalmon1-180430UV 2.04	17-Jun-18	21:51:03
30	30	180617M1_33		1801017-02 TSalmon2-180430UV 2.03	17-Jun-18	22:01:33
31	31	180617M1_34		1801017-03 THalibut1-180430UV 2.03	17-Jun-18	22:12:03

(A) CS0 fell into previous CRV
CRV not used
AR 6/18/18

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Compound name: PFBA

	# Name	ID	Acq.Date	Acq.Time
32	32 180617M1_35	ST180617M1-11 PFC CS3 18F1109	17-Jun-18	22:22:28
33	33 180617M1_36	IPA	17-Jun-18	22:32:58
34	34 180617M1_37	1801017-04 THalibut2-180430UV 2.01	17-Jun-18	22:43:22
35	35 180617M1_38	1801017-05 TPetSole1-180430UV 2.01	17-Jun-18	22:53:52
36	36 180617M1_39	1801017-06 TPetSole2-180430UV 2.01	17-Jun-18	23:04:16
37	37 180617M1_40	1801017-07 TRockfish1-180430UV 2.04	17-Jun-18	23:14:47
38	38 180617M1_41	1801017-08 TRockfish2-180430UV 2	17-Jun-18	23:25:11
39	39 180617M1_42	1801017-09 TSablefish1-180430UV 2	17-Jun-18	23:35:41
40	40 180617M1_43	1801017-10 TSablefish2-180430UV 2.04	17-Jun-18	23:46:05
41	41 180617M1_44	1801017-11 TSablefish3-180430UV 2	17-Jun-18	23:56:36
42	42 180617M1_45	1801017-12 TTrout1-180430UV 2.04	18-Jun-18	00:07:06
43	43 180617M1_46	1801017-13 TTrout2-180430UV 2.04	18-Jun-18	00:17:30
44	44 180617M1_47	B8F0090-BS1 OPR 0.125	18-Jun-18	00:28:01
45	45 180617M1_48	B8F0090-BLK1 Method Blank 0.125	18-Jun-18	00:38:26
46	46 180617M1_49	B8F0090-MS1 Matrix Spike 0.11573	18-Jun-18	00:48:56
47	47 180617M1_50	B8F0090-MSD1 Matrix Spike Dup 0.111...	18-Jun-18	00:59:20
48	48 180617M1_51	1801121-01 REEPDW1070FRB 0.11502	18-Jun-18	01:09:50
49	49 180617M1_52	1801121-02 REEPDW1075FRB 0.11791	18-Jun-18	01:20:14
50	50 180617M1_53	1801121-03 REEPDW1076FRB 0.11453	18-Jun-18	01:30:45
51	51 180617M1_54	1801121-04 REEPDW1077FRB 0.11519	18-Jun-18	01:41:15
52	52 180617M1_55	1801121-05 REEPDW1080FRB 0.11536	18-Jun-18	01:51:40
53	53 180617M1_56	1801121-06 REEPDW1081FRB 0.11512	18-Jun-18	02:02:10
54	54 180617M1_57	1801121-07 REEPDW1082FRB 0.11821	18-Jun-18	02:12:35
55	55 180617M1_58	1801121-08 REEPDW1083FRB 0.11578	18-Jun-18	02:23:05
56	56 180617M1_59	1801121-09 REEPDW1084FRB 0.11297	18-Jun-18	02:33:30
57	57 180617M1_60	1801121-10 REEPDW1085FRB 0.115	18-Jun-18	02:44:01
58	58 180617M1_61	ST180617M1-12 PFC CS3 18F1109	18-Jun-18	02:54:26
59	59 180617M1_62	ST180617M1-13 PFC CS0 18F1106	18-Jun-18	03:04:56
60	60 180617M1_63	IPA	18-Jun-18	03:15:21
61	61 180617M1_64	1801017-14 TTrout3-180430UV 2.01	18-Jun-18	03:25:51
62	62 180617M1_65	1801017-15 TTrout4-180430UV 2.02	18-Jun-18	03:36:16
63	63 180617M1_66	1801151-01 REEPDW1116 0.11145	18-Jun-18	03:46:47
64	64 180617M1_67	1801151-02 REEPDW1120 0.11804	18-Jun-18	03:57:11
65	65 180617M1_68	1801151-03 REEPDW561 0.11524	18-Jun-18	04:07:41

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Compound name: PFBA

	# Name	ID	Acq.Date	Acq.Time
66	66 180617M1_69	1801151-04 REEPDW1110 0.11388	18-Jun-18	04:18:06
67	67 180617M1_70	1801151-05 REEPDW560 0.11804	18-Jun-18	04:28:36
68	68 180617M1_71	1801151-06 REEPDW1111 0.11782	18-Jun-18	04:39:06
69	69 180617M1_72	1801151-07 REEPDW1112 0.1175	18-Jun-18	04:49:30
70	70 180617M1_73	B8F0061-BS1 OPR 1	18-Jun-18	05:00:01
71	71 180617M1_74	B8F0061-BLK1 Method Blank 1	18-Jun-18	05:10:25
72	72 180617M1_75	B8F0061-MS1 Matrix Spike 1.15	18-Jun-18	05:20:56
73	73 180617M1_76	B8F0061-MSD1 Matrix Spike Dup 1.18	18-Jun-18	05:31:21
74	74 180617M1_77	1801138-01 MCLPCC107 1.15	18-Jun-18	05:41:51
75	75 180617M1_78	ST180617M1-14 PFC CS3 18F1109	18-Jun-18	05:52:16
76	76 180617M1_79	IPA	18-Jun-18	06:02:46
77	77 180617M1_80	1801138-03 MCLPCC101 1.13	18-Jun-18	06:13:12
78	78 180617M1_81	1801138-04 MCLPCD185 1.55	18-Jun-18	06:23:42
79	79 180617M1_82	1801138-05 MCLP41512 1.12	18-Jun-18	06:34:07
80	80 180617M1_83	1801138-06 MCLP41513 1.13	18-Jun-18	06:44:37
81	81 180617M1_84	1801138-07 MCLP41283 1.12	18-Jun-18	06:55:02
82	82 180617M1_85	1801138-08 MCLP41284 1.13	18-Jun-18	07:05:32
83	83 180617M1_86	1801138-09 MCLP41280 1.12	18-Jun-18	07:16:02
84	84 180617M1_87	1801138-10 MCLP41281 1.11	18-Jun-18	07:26:27
85	85 180617M1_88	1801138-11 MCLP41277 1.12	18-Jun-18	07:36:58
86	86 180617M1_89	1801138-12 MCLP41278 1.18	18-Jun-18	07:47:23
87	87 180617M1_90	ST180617M1-15 PFC CS3 18F1109	18-Jun-18	07:57:53
88	88 180617M1_91	IPA	18-Jun-18	08:08:23
89	89 180617M1_92	1801138-13 MCLP41274 1.11	18-Jun-18	08:18:49
90	90 180617M1_93	1801138-14 MCLP41275 1.15	18-Jun-18	08:29:19
91	91 180617M1_94	1801138-15 MCLPCH307 1.15	18-Jun-18	08:39:44
92	92 180617M1_95	1801138-16 MCLPCH304 1.12	18-Jun-18	08:50:15
93	93 180617M1_96	1801138-17 MCLPCH310 1.13	18-Jun-18	09:00:39
94	94 180617M1_97	1801138-18 MCLPCH313 1.13	18-Jun-18	09:11:09
95	95 180617M1_98	1801075-01 EB1-1805300925JLB 0.25...	18-Jun-18	09:21:33
96	96 180617M1_99	1801075-02 SW1805300930JLB 0.25289	18-Jun-18	09:32:04
97	97 180617M1_100	1801075-03 SW1805300950JLB 0.25061	18-Jun-18	09:42:29
98	98 180617M1_101	1801075-04 SW1805301015JLB 0.25195	18-Jun-18	09:52:59
99	99 180617M1_102	1801075-05 RW1805301030JLB 0.25822	18-Jun-18	10:03:24

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Compound name: PFBA

	#	Name		ID	Acq.Date	Acq.Time
100	1...	180617M1_103		1801075-06 FB1805301035JLB 0.25636	18-Jun-18	10:13:55
101	1...	180617M1_104		ST180617M1-16 PFC CS3 18F1109	18-Jun-18	10:24:20
102	1...	180617M1_105		IPA	18-Jun-18	10:34:50
103	1...	180617M1_106		B8F0069-BS1 OPR 0.25	18-Jun-18	10:45:15
104	1...	180617M1_107		B8F0069-BSD1 LCSD 0.25	18-Jun-18	10:55:45
105	1...	180617M1_108		B8F0069-BLK1 Method Blank 0.25	18-Jun-18	11:06:10
106	1...	180617M1_109		1801080-01 MCLP00502 0.11474	18-Jun-18	11:16:41
107	1...	180617M1_110		1801080-02 MCLP00503 0.1174	18-Jun-18	11:27:05
108	1...	180617M1_111		1801083-01 REEPDW1064FRB 0.11793	18-Jun-18	11:37:36
109	1...	180617M1_112		1801083-02 REEPDW1065FRB 0.11917	18-Jun-18	11:48:01
110	1...	180617M1_113		1801083-03 REEPDW1066FRB 0.11325	18-Jun-18	11:58:32
111	1...	180617M1_114		1801083-04 REEPDW1067FRB 0.11388	18-Jun-18	12:09:02
112	1...	180617M1_115		1801083-05 REEPDW1068FRB 0.11908	18-Jun-18	12:19:27
113	1...	180617M1_116		1801083-06 REEPDW1069FRB 0.11912	18-Jun-18	12:29:57
114	1...	180617M1_117		1801083-07 REEPDW1059FRB 0.11508	18-Jun-18	12:40:23
115	1...	180617M1_118		1801083-08 REEPDW1071FRB 0.11433	18-Jun-18	12:50:53
116	1...	180617M1_119		1801083-09 REEPDW1072FRB 0.11757	18-Jun-18	13:01:18
117	1...	180617M1_120		1801083-10 REEPDW1073FRB 0.11942	18-Jun-18	13:11:40
118	1...	180617M1_121		1801083-11 REEPDW1074FRB 0.11998	18-Jun-18	13:22:11
119	1...	180617M1_122		1801083-12 REEPDW1058FRB 0.11864	18-Jun-18	13:32:35
120	1...	180617M1_123		1801126-01 OF-INF01-0618 0.24968	18-Jun-18	13:43:06
121	1...	180617M1_124		1801126-02 OF-SAC01-0618 0.24617	18-Jun-18	13:53:31
122	1...	180617M1_125		1801126-03 OF-MID01-0618 0.24433	18-Jun-18	14:04:01
123	1...	180617M1_126		1801126-04 OF-EFF01-0618 0.2429	18-Jun-18	14:14:26
124	1...	180617M1_127		1801138-02 MCLPCC416 0.11707	18-Jun-18	14:24:56
125	1...	180617M1_128	Ⓐ	ST180617M1-17 PFC CS3 18F1109	18-Jun-18	14:35:22
126	1...	180617M1_129		IPA	18-Jun-18	14:45:44
127	1...	180617M1_130		ST180617M1-18 PFC CS3 18F1109	18-Jun-18	15:37:03
128	1...	180617M1_131		IPA	18-Jun-18	15:47:41

Ⓐ incorrect vial position
AR 6/13/18

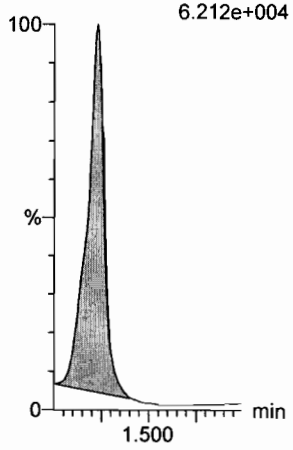
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

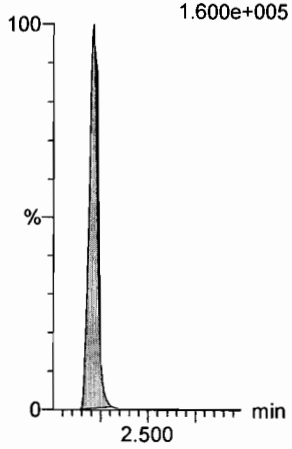
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

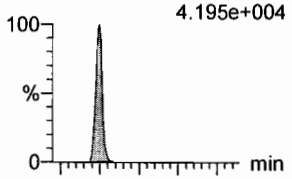
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
6.212e+004



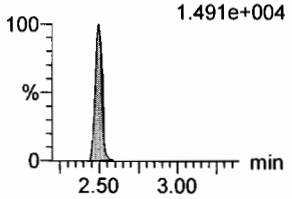
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
1.600e+005



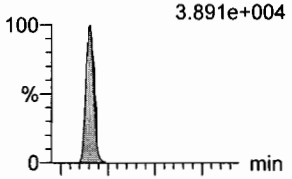
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
4.195e+004



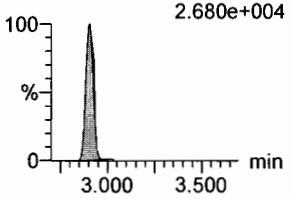
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.491e+004



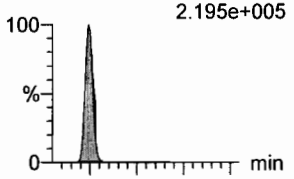
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
3.891e+004



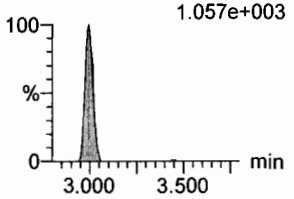
F12:MRM of 2 channels,ES-
327.2 > 81.1
2.680e+004



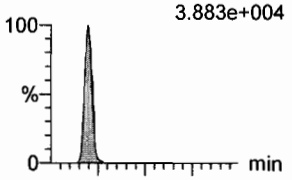
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
2.195e+005



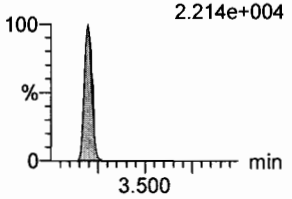
F9:MRM of 2 channels,ES-
313.2 > 119
1.057e+003



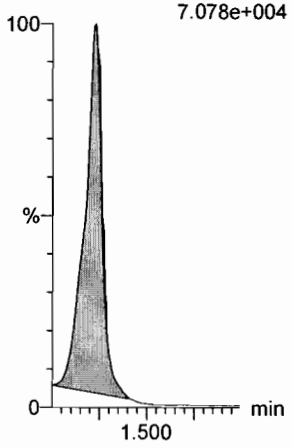
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
3.883e+004



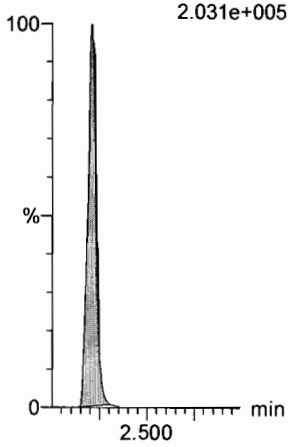
F15:MRM of 2 channels,ES-
349.1 > 99
2.214e+004



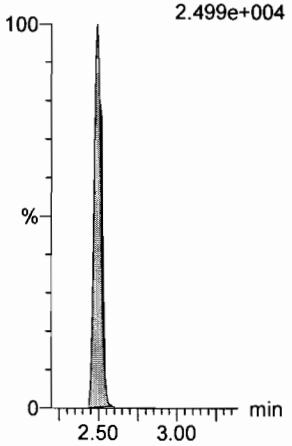
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
7.078e+004



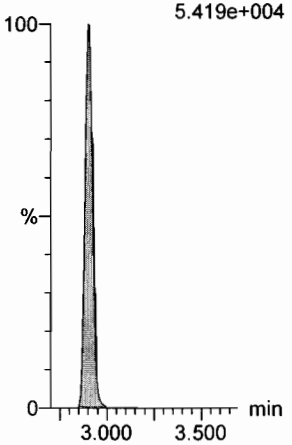
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.031e+005



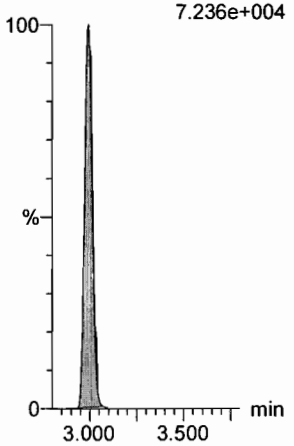
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.499e+004



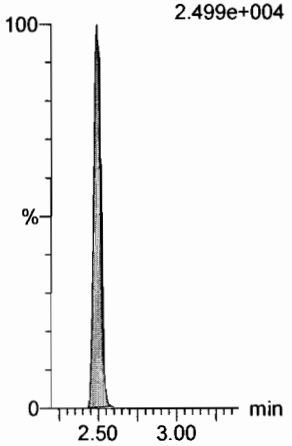
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
5.419e+004



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
7.236e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.499e+004

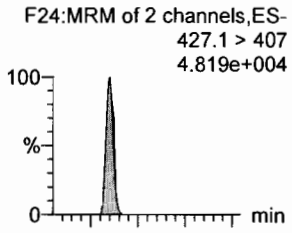


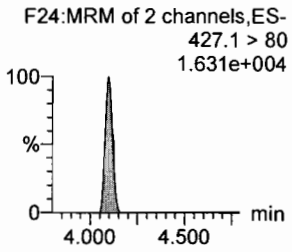
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

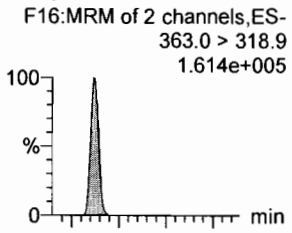
Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

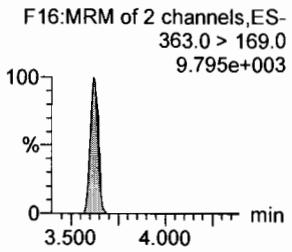
6:2 FTS



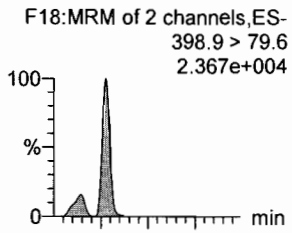


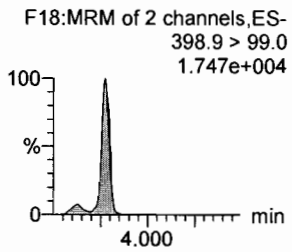
PFHpA



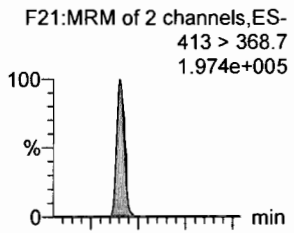


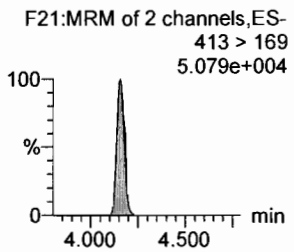
L-PFHxS





L-PFOA





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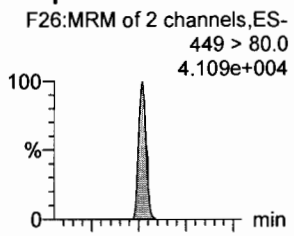

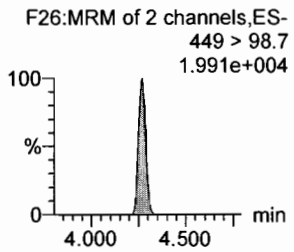

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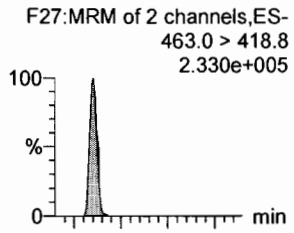
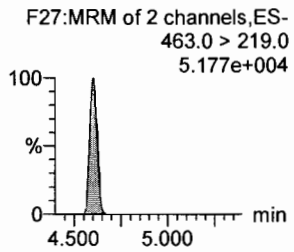
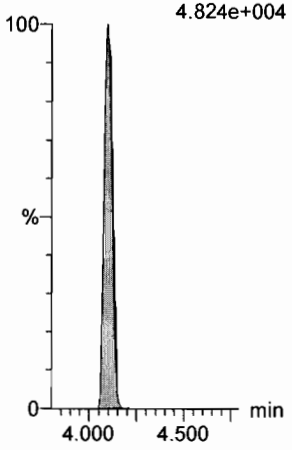
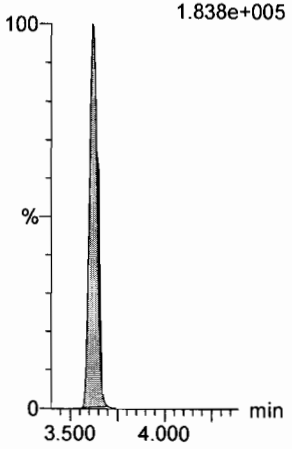




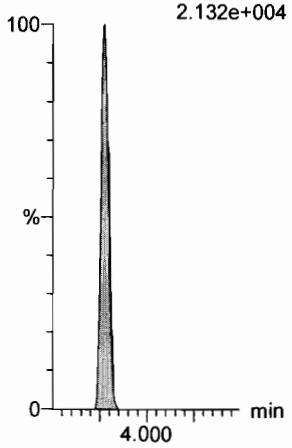
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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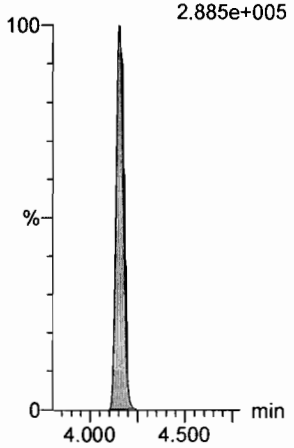
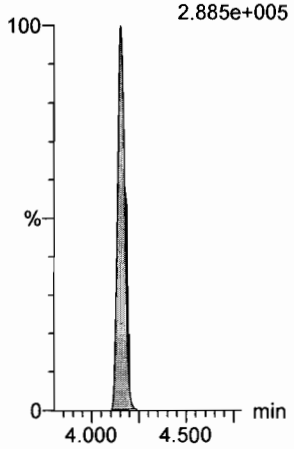
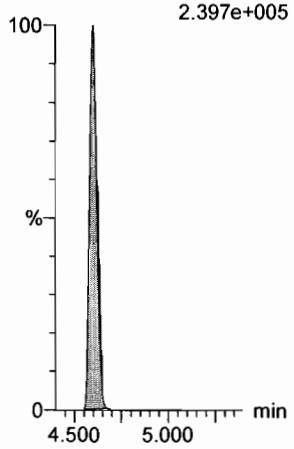


13C2-PFOA



13C5-PFNA

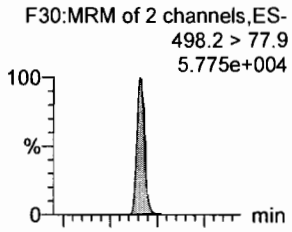


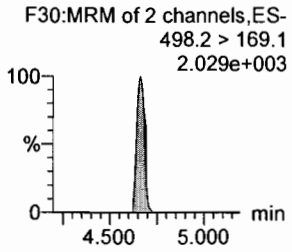
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

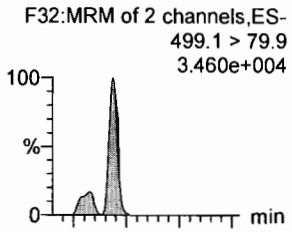
Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

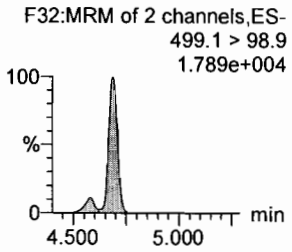
PFOSA





L-PFOS





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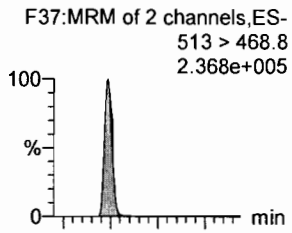
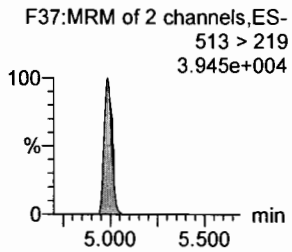
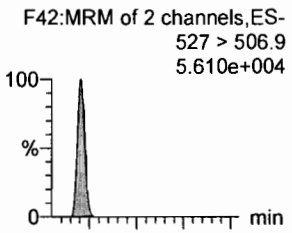
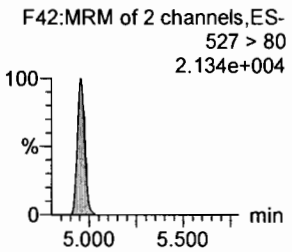




8:2 FTS





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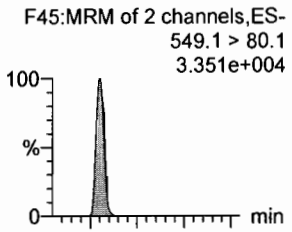
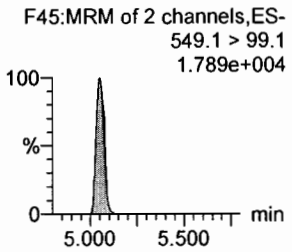
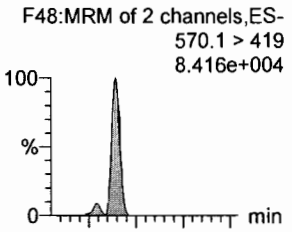
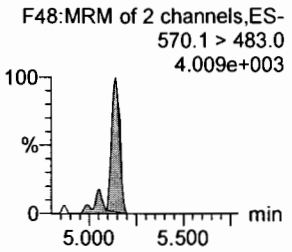


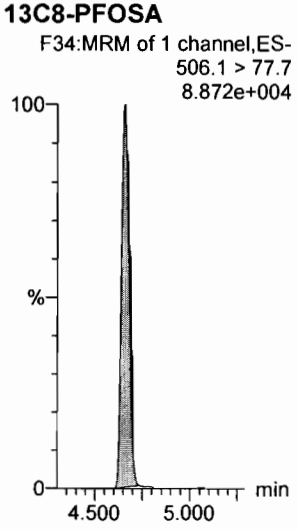


L-MeFOSAA

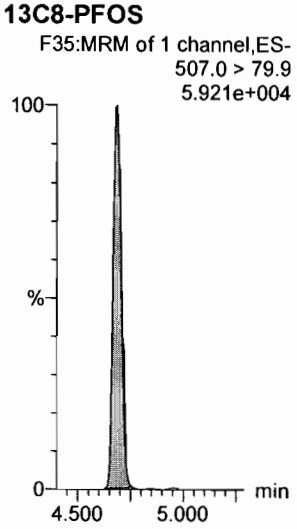




13C8-PFOSA



13C8-PFOS



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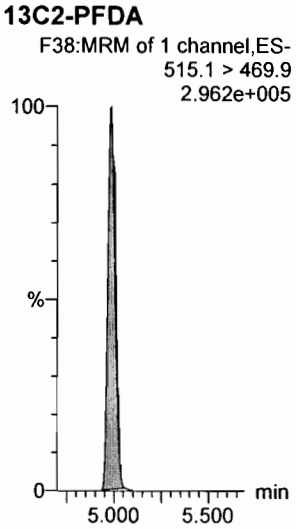
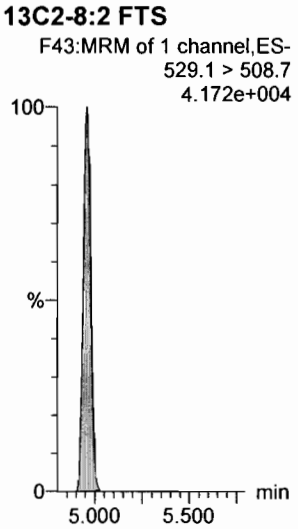
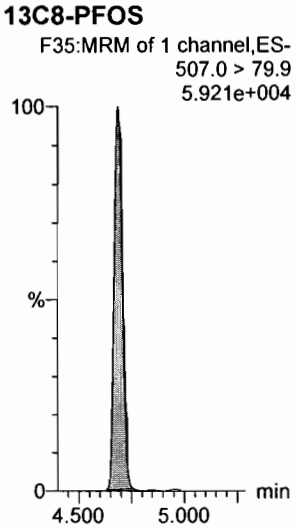


13C2-8:2 FTS



13C8-PFOS



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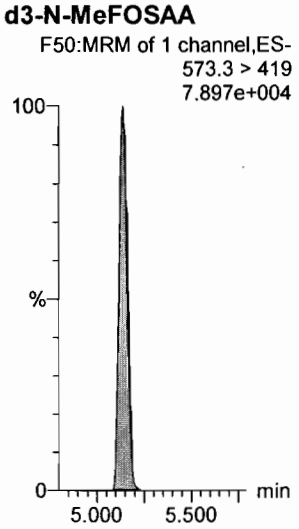

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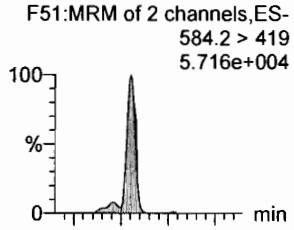
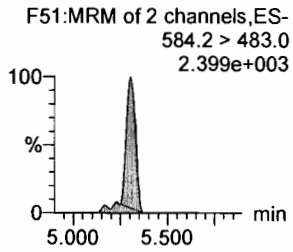
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

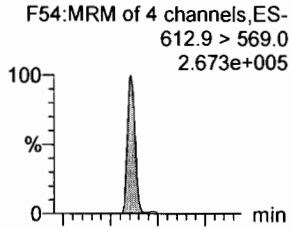
Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

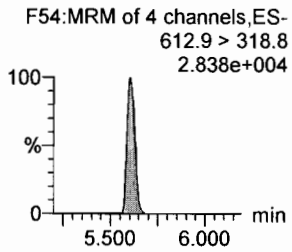
L-EtFOSAA



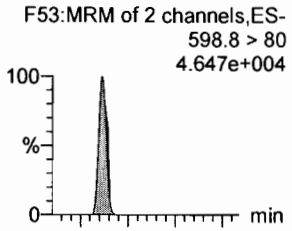


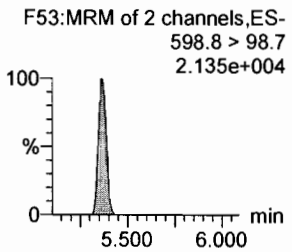
PFDoA



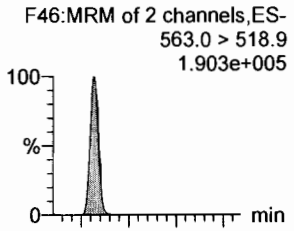


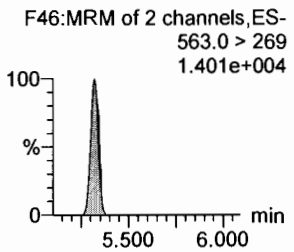
PFDS



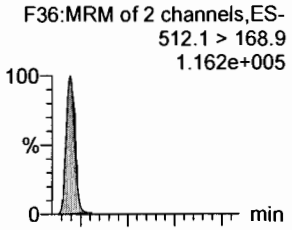


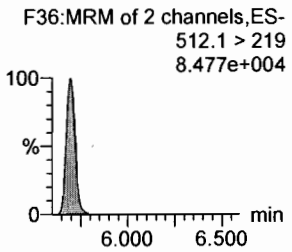
PFUdA



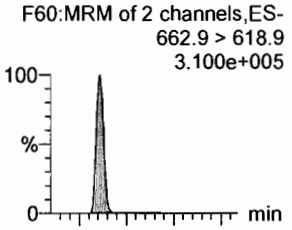


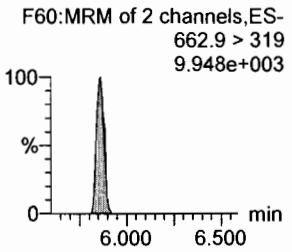
N-MeFOSA



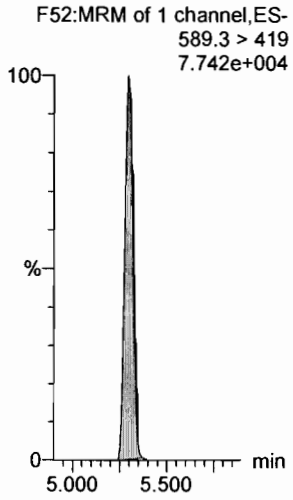


PFTrDA

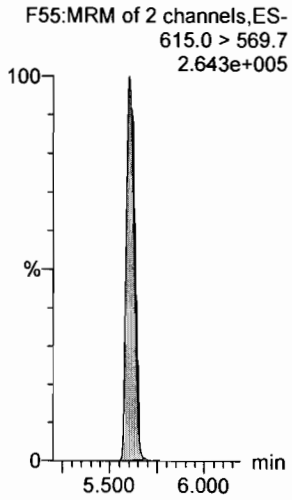




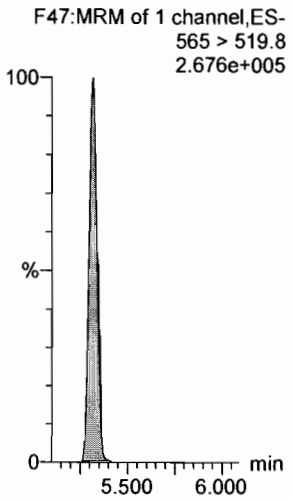
d5-N-EtFOSAA



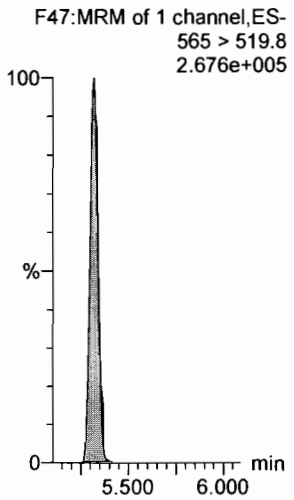
13C2-PFDoA



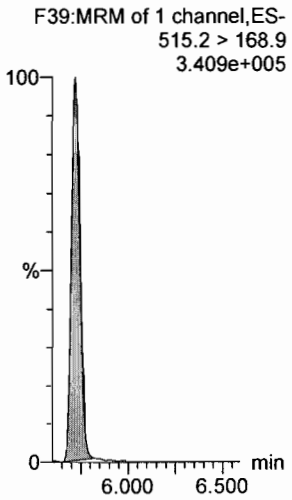
13C2-PFUdA



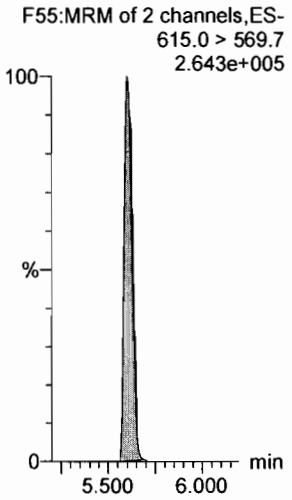
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

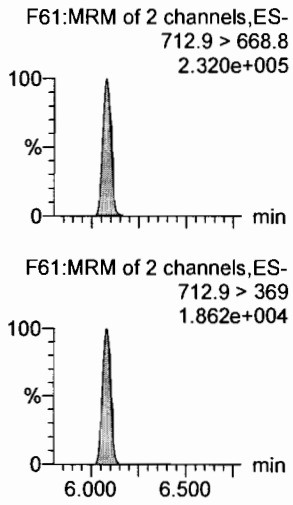


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

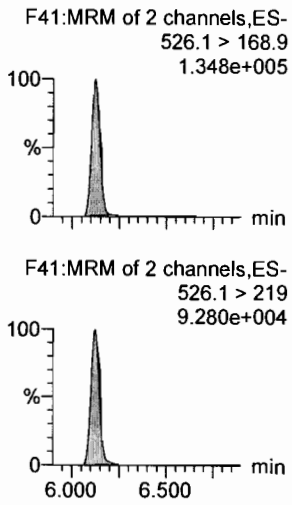
Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

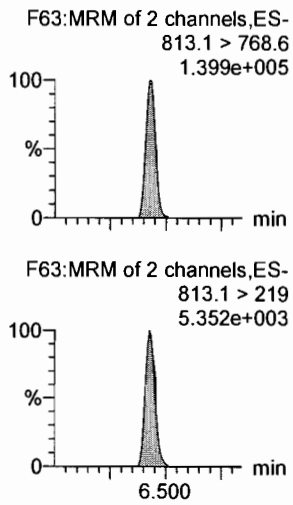
PFTeDA



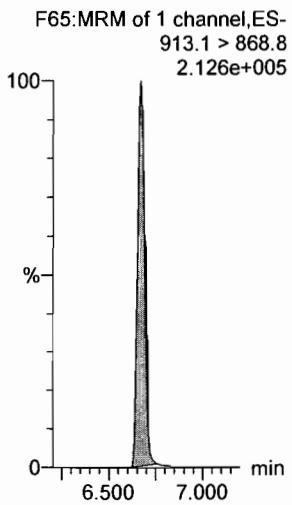
N-EtFOSA



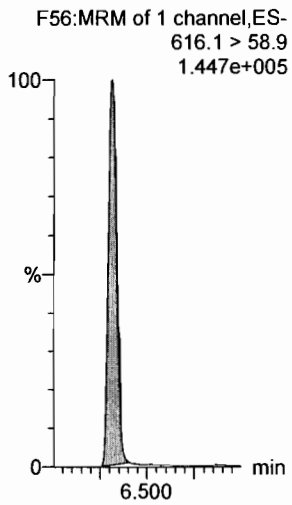
PFHxDA



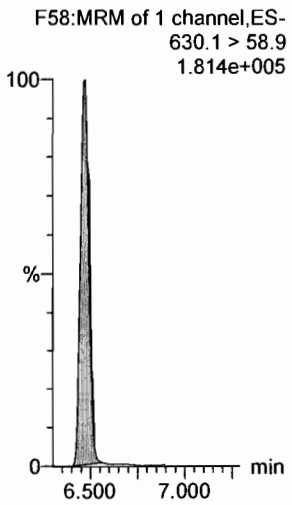
PFODA



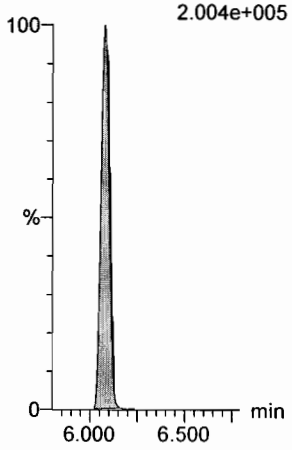
N-MeFOSE



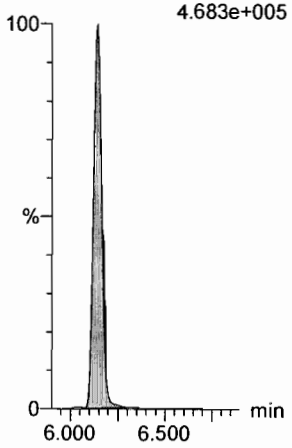
N-EtFOSE



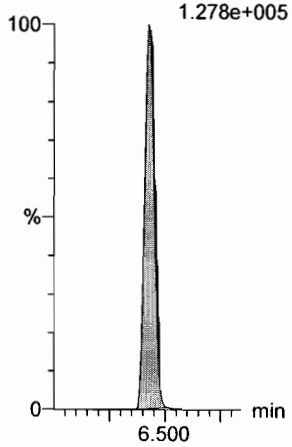
13C2-PFTeDA



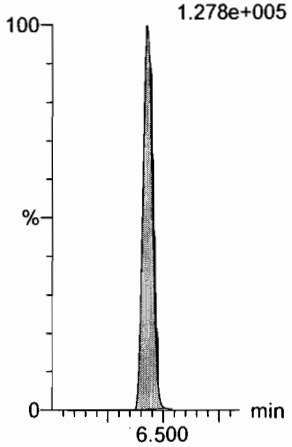
d5-N-ETFOSA



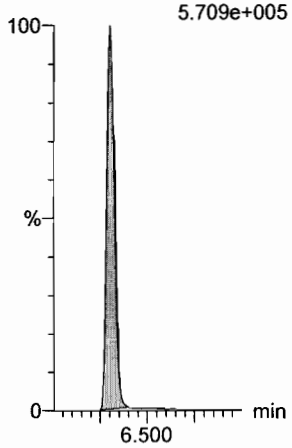
13C2-PFHxDA



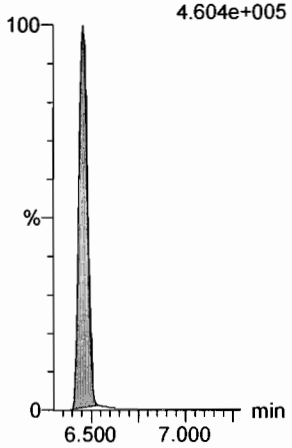
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

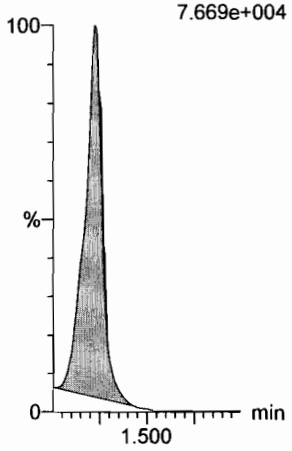


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-104.qld

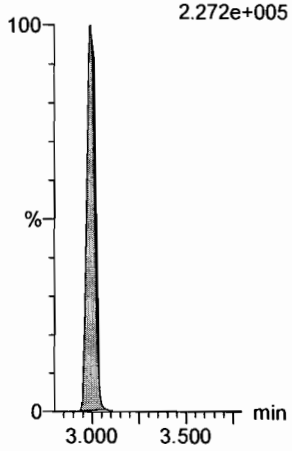
Last Altered: Monday, June 18, 2018 16:06:30 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:06:35 Pacific Daylight Time

Name: 180617M1_104, Date: 18-Jun-2018, Time: 10:24:20, ID: ST180617M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

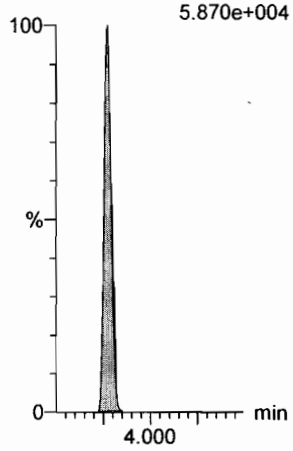
13C4-PFBA



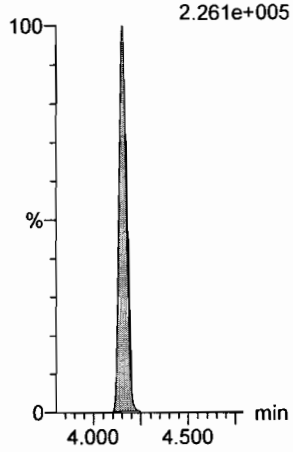
13C5-PFHxA



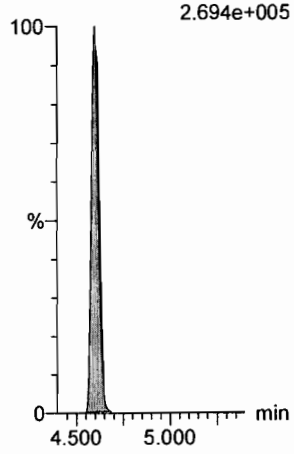
13C3-PFHxS



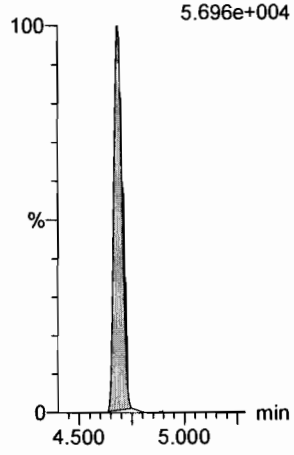
13C8-PFOA



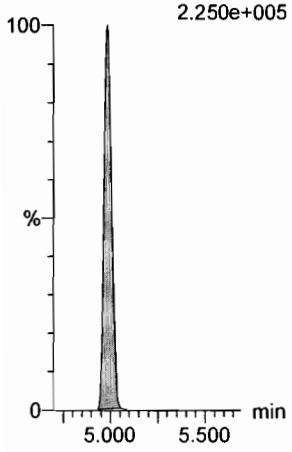
13C9-PFNA



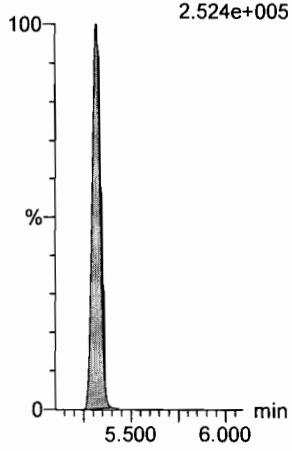
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

JM 6/18/18 AL 6/18/18

(A) Below limit criteria
AL 6/18/18

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	6385.197	7158.873	1.00	1.26	11.149	10.2	101.8	NO		
2	2	PFPeA	263.1 > 218.9	7291.910	9491.715	1.00	2.19	9.603	9.9	99.1	NO		
3	3	PFBS	299.0 > 79.7	1629.469	989.294	1.00	2.47	20.589	10.7	106.6	NO	2.962	NO
4	4	4:2 FTS	327.2>307.2	1714.932	2193.236	1.00	2.89	9.774	9.6	95.9	NO	1.919	NO
5	5	PFHxA	313.2 > 268.9	8290.888	2647.923	1.00	2.98	15.655	10.2	102.0	NO		
6	6	PFPeS	349.1>80.1	907.917	989.294	1.00	3.18	11.472	6.5	65.4	(A) YES	1.459	NO
7	36	13C3-PFBA	216.1 > 171.8	7158.873	7976.471	1.00	1.26	11.219	12.8	102.4	NO		
8	37	13C3-PFPeA	266. > 221.8	9491.715	9702.013	1.00	2.19	12.229	12.8	102.4	NO		
9	38	13C3-PFBS	302. > 98.8	989.294	9702.013	1.00	2.47	1.275	10.8	86.6	NO		
10	39	13C2-4:2 FTS	329.2>308.9	2193.236	9702.013	1.00	2.89	2.826	11.8	94.7	NO		
11	40	13C2-PFHxA	315 > 269.8	2647.923	9702.013	1.00	2.98	3.412	4.6	92.7	NO		
12	38	13C3-PFBS	302. > 98.8	989.294	9702.013	1.00	2.47	1.275	10.8	86.6	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	1806.157	1988.016	1.00	4.09	11.357	10.7	107.4	NO	3.171	NO
15	7	PFHpA	363.0 > 318.9	6051.767	6265.396	1.00	3.61	12.074	10.1	101.0	NO	15.466	NO
16	8	L-PFHxS	398.9 > 79.6	945.876	683.135	1.00	3.76	17.308	9.1	90.6	NO	2.068	NO
17	11	L-PFOA	413 > 368.7	6516.385	8927.971	1.00	4.14	9.124	9.7	97.2	NO	3.933	NO
18	13	PFHpS	449 > 80.0	936.816	8927.971	1.00	4.25	1.312	6.4	63.8	(A) YES	1.704	NO
19	14	PFNA	463.0 > 418.8	6208.691	5983.285	1.00	4.59	12.971	10.1	101.2	NO	4.423	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	1988.016	5755.091	1.00	4.08	4.318	16.9	135.2	NO		
21	41	13C4-PFHpA	367.2 > 321.8	6265.396	9702.013	1.00	3.61	8.072	10.9	87.3	NO		
22	42	18O2-PFHxS	403.0 > 102.6	683.135	1341.472	1.00	3.76	6.366	16.0	127.6	NO		
23	44	13C2-PFOA	414.9 > 369.7	8927.971	5755.091	1.00	4.14	19.391	15.0	120.2	NO		
24	44	13C2-PFOA	414.9 > 369.7	8927.971	5755.091	1.00	4.14	19.391	15.0	120.2	NO		
25	45	13C5-PFNA	468.2 > 422.9	5983.285	6597.246	1.00	4.59	11.337	12.3	98.3	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	1751.045	2910.393	1.00	4.64	7.521	9.5	95.4	NO	44.593	YES
28	16	L-PFOS	499.1 > 79.9	802.684	1279.235	1.00	4.67	7.843	9.0	90.3	NO	1.827	NO
29	18	PFDA	513 > 468.8	6545.300	7779.072	1.00	4.98	10.517	9.4	94.4	NO	6.062	NO
30	19	8:2 FTS	527 > 506.9	1998.804	1528.122	1.00	4.94	16.350	11.0	109.9	NO	3.157	NO
31	20	PFNS	549.1>80.1	643.673	1279.235	1.00	5.04	6.290	8.1	80.7	NO	1.778	NO
32	21	L-MeFOSAA	570.1 > 419	2650.295	1869.373	1.00	5.13	17.722	9.2	91.6	NO	26.977	YES
33	46	13C8-PFOSA	506.1 > 77.7	2910.393	13431.787	1.00	4.64	2.708	8.8	70.5	NO		
34	47	13C8-PFOS	507.0 > 79.9	1279.235	1129.501	1.00	4.67	14.157	14.2	113.7	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

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(A) Above limit criteria
AR 6/18/18

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	7779.072	6824.703	1.00	4.97	14.248	12.9	102.9	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	1528.122	9702.013	1.00	4.95	1.969	9.8	78.1	NO		
37	47	13C8-PFOS	507.0 > 79.9	1279.235	1129.501	1.00	4.67	14.157	14.2	113.7	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	1869.373	13431.787	1.00	5.12	1.740	8.6	69.2	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	2281.313	2789.860	1.00	5.29	10.221	10.3	103.1	NO	19.834	NO
41	27	PFDoA	612.9 > 569.0	14964.454	14875.238	1.00	5.60	12.575	11.4	114.1	NO	9.240	NO
42	26	PFDS	598.8 > 80	1629.466	13184.524	1.00	5.35	1.545	7.6	75.8	NO	1.773	NO
43	25	PFUdA	563.0 > 518.9	10286.841	13184.524	1.00	5.31	9.753	10.3	102.8	NO	12.462	NO
44	28	N-MeFOSA	512.1 > 168.9	5534.283	15269.932	1.00	5.68	54.365	52.7	105.5	NO	1.446	NO
45	29	PFTrDA	662.9 > 618.9	14595.136	14875.238	1.00	5.84	12.265	9.9	98.8	NO	25.961	NO
46	51	d5-N-EtFOSAA	589.3 > 419	2789.860	13431.787	1.00	5.28	2.596	10.7	85.9	NO		
47	53	13C2-PFDoA	615.0 > 569.7	14875.238	6824.703	1.00	5.59	27.245	20.6	164.5	(A) YES		
48	52	13C2-PFUdA	565 > 519.8	13184.524	13431.787	1.00	5.31	12.270	13.1	104.4	NO		
49	52	13C2-PFUdA	565 > 519.8	13184.524	13431.787	1.00	5.31	12.270	13.1	104.4	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	15269.932	13431.787	1.00	5.71	14.211	140.9	93.9	NO		
51	53	13C2-PFDoA	615.0 > 569.7	14875.238	6824.703	1.00	5.59	27.245	20.6	164.5	(A) YES		
52	-1												
53	30	PFTeDA	712.9 > 668.8	10972.549	9142.979	1.00	6.07	15.001	12.7	126.8	NO	13.312	NO
54	31	N-EtFOSA	526.1 > 168.9	5218.904	17760.297	1.00	6.11	44.078	51.4	102.7	NO	1.504	NO
55	32	PFHxDA	813.1 > 768.6	5009.748	5204.468	1.00	6.42	4.813	7.7	76.7	NO	23.872	NO
56	33	PFODA	913.1 > 868.8	6688.875	5204.468	1.00	6.66	6.426	10.4	104.4	NO		
57	34	N-MeFOSE	616.1 > 58.9	4553.874	16859.303	1.00	6.31	40.517	46.1	92.2	NO		
58	35	N-EtFOSE	630.1 > 58.9	5190.330	14635.804	1.00	6.47	53.195	49.4	98.8	NO		
59	55	13C2-PFTeDA	714.8 > 669.6	9142.979	13431.787	1.00	6.07	8.509	9.0	72.0	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	17760.297	13431.787	1.00	6.13	16.528	126.3	84.2	NO		
61	57	13C2-PFHxDA	815 > 769.7	5204.468	13431.787	1.00	6.42	4.843	4.1	82.3	NO		
62	57	13C2-PFHxDA	815 > 769.7	5204.468	13431.787	1.00	6.42	4.843	4.1	82.3	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	16859.303	13431.787	1.00	6.30	15.690	112.1	74.7	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	14635.804	13431.787	1.00	6.45	13.620	106.7	71.1	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	7976.471	7976.471	1.00	1.26	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	9702.013	9702.013	1.00	2.98	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	1341.472	1341.472	1.00	3.76	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	5755.091	5755.091	1.00	4.14	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	6597.246	6597.246	1.00	4.59	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	1129.501	1129.501	1.00	4.67	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	6824.703	6824.703	1.00	4.97	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	13431.787	13431.787	1.00	5.31	12.500	12.5	100.0	NO		

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Compound name: PFBA

	#	Name		ID	Acq.Date	Acq.Time
1	1	180617M1_4	(A)	ST180617M1-3 PFC CS0 18F1106	17-Jun-18	16:58:07
2	2	180617M1_5		ST180617M1-4 PFC CS1 18F1107	17-Jun-18	17:08:32
3	3	180617M1_6		ST180617M1-5 PFC CS2 18F1108	17-Jun-18	17:19:02
4	4	180617M1_7		ST180617M1-6 PFC CS3 18F1109	17-Jun-18	17:29:28
5	5	180617M1_8		ST180617M1-7 PFC CS4 18F1110	17-Jun-18	17:39:58
6	6	180617M1_9		ST180617M1-8 PFC CS5 18F1111	17-Jun-18	17:50:23
7	7	180617M1_10		ST180617M1-9 PFC CS6 18F1112	17-Jun-18	18:00:53
8	8	180617M1_11		ST180617M1-10 PFC CS7 18F1113	17-Jun-18	18:11:18
9	9	180617M1_12		IPA	17-Jun-18	18:21:49
10	10	180617M1_13		ICV180617M1-1 PFC 537 ICV 18F1103	17-Jun-18	18:32:13
11	11	180617M1_14		IPA	17-Jun-18	18:42:47
12	12	180617M1_15		1801031-05 MW-B586-01 0.12111	17-Jun-18	18:53:14
13	13	180617M1_16		1801031-02@5X MW-323 0.12007	17-Jun-18	19:03:38
14	14	180617M1_17		1801031-04@30X MW-09-001 0.11999	17-Jun-18	19:14:09
15	15	180617M1_18		1801031-06@5X SW-52 0.12349	17-Jun-18	19:24:34
16	16	180617M1_19		1801119-06@5X PFAS-B14-MW-02-05...	17-Jun-18	19:35:04
17	17	180617M1_20		1801043-10@10X	17-Jun-18	19:45:29
18	18	180617M1_21		1800986-04RE1	17-Jun-18	19:55:59
19	19	180617M1_22		SBQC	17-Jun-18	20:06:29
20	20	180617M1_23		1801153-01 REEPDW1116FRB 0.12296	17-Jun-18	20:16:53
21	21	180617M1_24		1801153-02 REEPDW1120FRB 0.12208	17-Jun-18	20:27:24
22	22	180617M1_25		1801153-03 REEPDW1110FRB 0.11956	17-Jun-18	20:37:48
23	23	180617M1_26		1801153-04 REEPDW1111FRB 0.12237	17-Jun-18	20:48:19
24	24	180617M1_27		1801153-05 REEPDW1112FRB 0.12166	17-Jun-18	20:58:49
25	25	180617M1_28		B8F0081-BS1 OPR 2	17-Jun-18	21:09:14
26	26	180617M1_29		B8F0081-BLK1 Method Blank 2	17-Jun-18	21:19:44
27	27	180617M1_30		B8F0081-MS1 Matrix Spike 2	17-Jun-18	21:30:08
28	28	180617M1_31		B8F0081-MSD1 Matrix Spike Dup 2.03	17-Jun-18	21:40:38
29	29	180617M1_32		1801017-01 TSalmon1-180430UV 2.04	17-Jun-18	21:51:03
30	30	180617M1_33		1801017-02 TSalmon2-180430UV 2.03	17-Jun-18	22:01:33
31	31	180617M1_34		1801017-03 THalibut1-180430UV 2.03	17-Jun-18	22:12:03

(A) CSO fell into previous CRV
CRV not used
AR 6/18/18

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Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Compound name: PFBA

	# Name	ID	Acq Date	Acq Time
32	32 180617M1_35	ST180617M1-11 PFC CS3 18F1109	17-Jun-18	22:22:28
33	33 180617M1_36	IPA	17-Jun-18	22:32:58
34	34 180617M1_37	1801017-04 THalibut2-180430UV 2.01	17-Jun-18	22:43:22
35	35 180617M1_38	1801017-05 TPetSole1-180430UV 2.01	17-Jun-18	22:53:52
36	36 180617M1_39	1801017-06 TPetSole2-180430UV 2.01	17-Jun-18	23:04:16
37	37 180617M1_40	1801017-07 TRockfish1-180430UV 2.04	17-Jun-18	23:14:47
38	38 180617M1_41	1801017-08 TRockfish2-180430UV 2	17-Jun-18	23:25:11
39	39 180617M1_42	1801017-09 TSablefish1-180430UV 2	17-Jun-18	23:35:41
40	40 180617M1_43	1801017-10 TSablefish2-180430UV 2.04	17-Jun-18	23:46:05
41	41 180617M1_44	1801017-11 TSablefish3-180430UV 2	17-Jun-18	23:56:36
42	42 180617M1_45	1801017-12 TTrout1-180430UV 2.04	18-Jun-18	00:07:06
43	43 180617M1_46	1801017-13 TTrout2-180430UV 2.04	18-Jun-18	00:17:30
44	44 180617M1_47	B8F0090-BS1 OPR 0.125	18-Jun-18	00:28:01
45	45 180617M1_48	B8F0090-BLK1 Method Blank 0.125	18-Jun-18	00:38:26
46	46 180617M1_49	B8F0090-MS1 Matrix Spike 0.11573	18-Jun-18	00:48:56
47	47 180617M1_50	B8F0090-MSD1 Matrix Spike Dup 0.111...	18-Jun-18	00:59:20
48	48 180617M1_51	1801121-01 REEPDW1070FRB 0.11502	18-Jun-18	01:09:50
49	49 180617M1_52	1801121-02 REEPDW1075FRB 0.11791	18-Jun-18	01:20:14
50	50 180617M1_53	1801121-03 REEPDW1076FRB 0.11453	18-Jun-18	01:30:45
51	51 180617M1_54	1801121-04 REEPDW1077FRB 0.11519	18-Jun-18	01:41:15
52	52 180617M1_55	1801121-05 REEPDW1080FRB 0.11536	18-Jun-18	01:51:40
53	53 180617M1_56	1801121-06 REEPDW1081FRB 0.11512	18-Jun-18	02:02:10
54	54 180617M1_57	1801121-07 REEPDW1082FRB 0.11821	18-Jun-18	02:12:35
55	55 180617M1_58	1801121-08 REEPDW1083FRB 0.11578	18-Jun-18	02:23:05
56	56 180617M1_59	1801121-09 REEPDW1084FRB 0.11297	18-Jun-18	02:33:30
57	57 180617M1_60	1801121-10 REEPDW1085FRB 0.115	18-Jun-18	02:44:01
58	58 180617M1_61	ST180617M1-12 PFC CS3 18F1109	18-Jun-18	02:54:26
59	59 180617M1_62	ST180617M1-13 PFC CS0 18F1106	18-Jun-18	03:04:56
60	60 180617M1_63	IPA	18-Jun-18	03:15:21
61	61 180617M1_64	1801017-14 TTrout3-180430UV 2.01	18-Jun-18	03:25:51
62	62 180617M1_65	1801017-15 TTrout4-180430UV 2.02	18-Jun-18	03:36:16
63	63 180617M1_66	1801151-01 REEPDW1116 0.11145	18-Jun-18	03:46:47
64	64 180617M1_67	1801151-02 REEPDW1120 0.11804	18-Jun-18	03:57:11
65	65 180617M1_68	1801151-03 REEPDW561 0.11524	18-Jun-18	04:07:41

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Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
66	66	180617M1_69	1801151-04 REEPDW1110 0.11388	18-Jun-18	04:18:06
67	67	180617M1_70	1801151-05 REEPDW560 0.11804	18-Jun-18	04:28:36
68	68	180617M1_71	1801151-06 REEPDW1111 0.11782	18-Jun-18	04:39:06
69	69	180617M1_72	1801151-07 REEPDW1112 0.1175	18-Jun-18	04:49:30
70	70	180617M1_73	B8F0061-BS1 OPR 1	18-Jun-18	05:00:01
71	71	180617M1_74	B8F0061-BLK1 Method Blank 1	18-Jun-18	05:10:25
72	72	180617M1_75	B8F0061-MS1 Matrix Spike 1.15	18-Jun-18	05:20:56
73	73	180617M1_76	B8F0061-MSD1 Matrix Spike Dup 1.18	18-Jun-18	05:31:21
74	74	180617M1_77	1801138-01 MCLPCC107 1.15	18-Jun-18	05:41:51
75	75	180617M1_78	ST180617M1-14 PFC CS3 18F1109	18-Jun-18	05:52:16
76	76	180617M1_79	IPA	18-Jun-18	06:02:46
77	77	180617M1_80	1801138-03 MCLPCC101 1.13	18-Jun-18	06:13:12
78	78	180617M1_81	1801138-04 MCLPCD185 1.55	18-Jun-18	06:23:42
79	79	180617M1_82	1801138-05 MCLP41512 1.12	18-Jun-18	06:34:07
80	80	180617M1_83	1801138-06 MCLP41513 1.13	18-Jun-18	06:44:37
81	81	180617M1_84	1801138-07 MCLP41283 1.12	18-Jun-18	06:55:02
82	82	180617M1_85	1801138-08 MCLP41284 1.13	18-Jun-18	07:05:32
83	83	180617M1_86	1801138-09 MCLP41280 1.12	18-Jun-18	07:16:02
84	84	180617M1_87	1801138-10 MCLP41281 1.11	18-Jun-18	07:26:27
85	85	180617M1_88	1801138-11 MCLP41277 1.12	18-Jun-18	07:36:58
86	86	180617M1_89	1801138-12 MCLP41278 1.18	18-Jun-18	07:47:23
87	87	180617M1_90	ST180617M1-15 PFC CS3 18F1109	18-Jun-18	07:57:53
88	88	180617M1_91	IPA	18-Jun-18	08:08:23
89	89	180617M1_92	1801138-13 MCLP41274 1.11	18-Jun-18	08:18:49
90	90	180617M1_93	1801138-14 MCLP41275 1.15	18-Jun-18	08:29:19
91	91	180617M1_94	1801138-15 MCLPCH307 1.15	18-Jun-18	08:39:44
92	92	180617M1_95	1801138-16 MCLPCH304 1.12	18-Jun-18	08:50:15
93	93	180617M1_96	1801138-17 MCLPCH310 1.13	18-Jun-18	09:00:39
94	94	180617M1_97	1801138-18 MCLPCH313 1.13	18-Jun-18	09:11:09
95	95	180617M1_98	1801075-01 EB1-1805300925JLB 0.25...	18-Jun-18	09:21:33
96	96	180617M1_99	1801075-02 SW1805300930JLB 0.25289	18-Jun-18	09:32:04
97	97	180617M1_100	1801075-03 SW1805300950JLB 0.25061	18-Jun-18	09:42:29
98	98	180617M1_101	1801075-04 SW1805301015JLB 0.25195	18-Jun-18	09:52:59
99	99	180617M1_102	1801075-05 RW1805301030JLB 0.25822	18-Jun-18	10:03:24

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Monday, June 18, 2018 16:19:44 Pacific Daylight Time
Printed: Monday, June 18, 2018 16:19:50 Pacific Daylight Time

Compound name: PFBA

	#	Name		ID	Acq.Date	Acq.Time
100	1...	180617M1_103		1801075-06 FB1805301035JLB 0.25636	18-Jun-18	10:13:55
101	1...	180617M1_104		ST180617M1-16 PFC CS3 18F1109	18-Jun-18	10:24:20
102	1...	180617M1_105		IPA	18-Jun-18	10:34:50
103	1...	180617M1_106		B8F0069-BS1 OPR 0.25	18-Jun-18	10:45:15
104	1...	180617M1_107		B8F0069-BSD1 LCSD 0.25	18-Jun-18	10:55:45
105	1...	180617M1_108		B8F0069-BLK1 Method Blank 0.25	18-Jun-18	11:06:10
106	1...	180617M1_109		1801080-01 MCLP00502 0.11474	18-Jun-18	11:16:41
107	1...	180617M1_110		1801080-02 MCLP00503 0.1174	18-Jun-18	11:27:05
108	1...	180617M1_111		1801083-01 REEPDW1064FRB 0.11793	18-Jun-18	11:37:36
109	1...	180617M1_112		1801083-02 REEPDW1065FRB 0.11917	18-Jun-18	11:48:01
110	1...	180617M1_113		1801083-03 REEPDW1066FRB 0.11325	18-Jun-18	11:58:32
111	1...	180617M1_114		1801083-04 REEPDW1067FRB 0.11388	18-Jun-18	12:09:02
112	1...	180617M1_115		1801083-05 REEPDW1068FRB 0.11908	18-Jun-18	12:19:27
113	1...	180617M1_116		1801083-06 REEPDW1069FRB 0.11912	18-Jun-18	12:29:57
114	1...	180617M1_117		1801083-07 REEPDW1059FRB 0.11508	18-Jun-18	12:40:23
115	1...	180617M1_118		1801083-08 REEPDW1071FRB 0.11433	18-Jun-18	12:50:53
116	1...	180617M1_119		1801083-09 REEPDW1072FRB 0.11757	18-Jun-18	13:01:18
117	1...	180617M1_120		1801083-10 REEPDW1073FRB 0.11942	18-Jun-18	13:11:40
118	1...	180617M1_121		1801083-11 REEPDW1074FRB 0.11998	18-Jun-18	13:22:11
119	1...	180617M1_122		1801083-12 REEPDW1058FRB 0.11864	18-Jun-18	13:32:35
120	1...	180617M1_123		1801126-01 OF-INF01-0618 0.24968	18-Jun-18	13:43:06
121	1...	180617M1_124		1801126-02 OF-SAC01-0618 0.24617	18-Jun-18	13:53:31
122	1...	180617M1_125		1801126-03 OF-MID01-0618 0.24433	18-Jun-18	14:04:01
123	1...	180617M1_126		1801126-04 OF-EFF01-0618 0.2429	18-Jun-18	14:14:26
124	1...	180617M1_127		1801138-02 MCLPCC416 0.11707	18-Jun-18	14:24:56
125	1...	180617M1_128	Ⓐ	ST180617M1-17 PFC CS3 18F1109	18-Jun-18	14:35:22
126	1...	180617M1_129		IPA	18-Jun-18	14:45:44
127	1...	180617M1_130		ST180617M1-18 PFC CS3 18F1109	18-Jun-18	15:37:03
128	1...	180617M1_131		IPA	18-Jun-18	15:47:41

Ⓐ incorrect vial position
AR 6/18/18

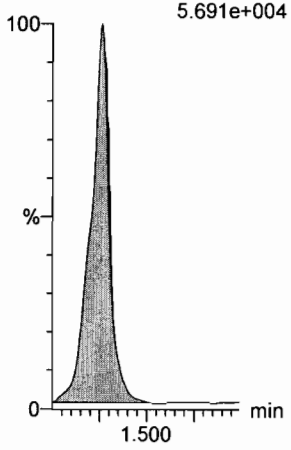
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

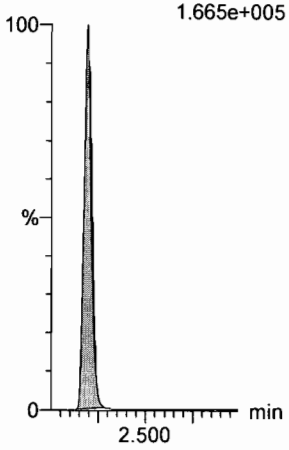
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061718.mdb 18 Jun 2018 09:20:09
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

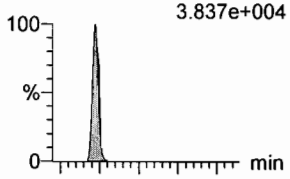
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
5.691e+004



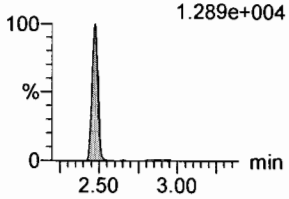
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
1.665e+005



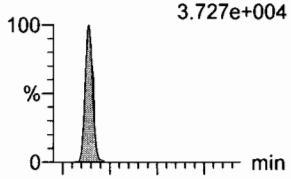
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
3.837e+004



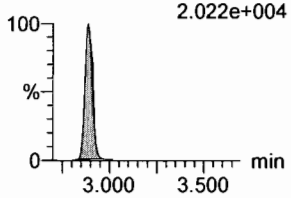
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.289e+004



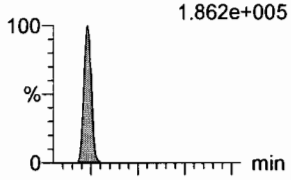
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
3.727e+004



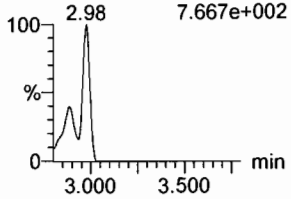
F12:MRM of 2 channels,ES-
327.2 > 81.1
2.022e+004



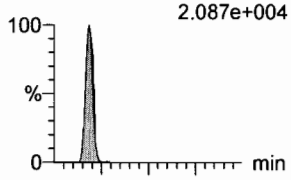
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
1.862e+005



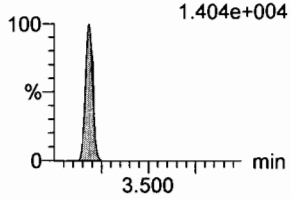
F9:MRM of 2 channels,ES-
313.2 > 119
7.667e+002



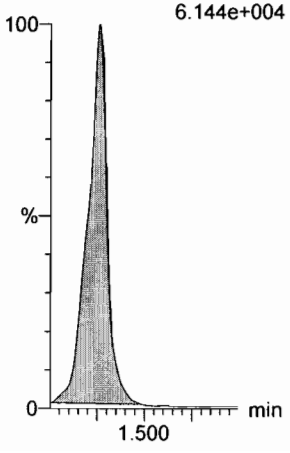
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
2.087e+004



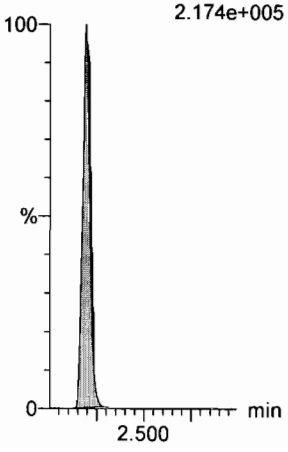
F15:MRM of 2 channels,ES-
349.1 > 99
1.404e+004



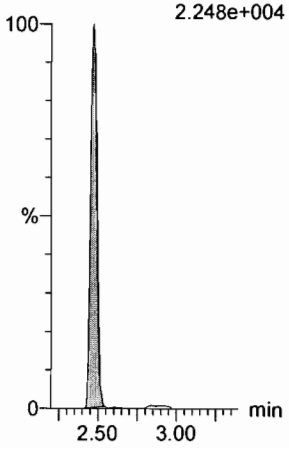
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
6.144e+004



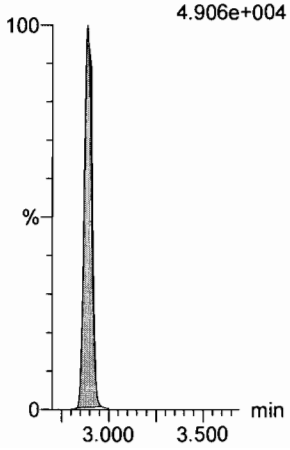
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.174e+005



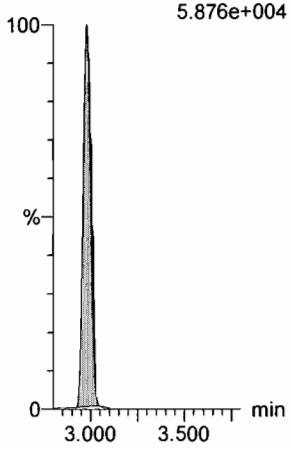
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.248e+004



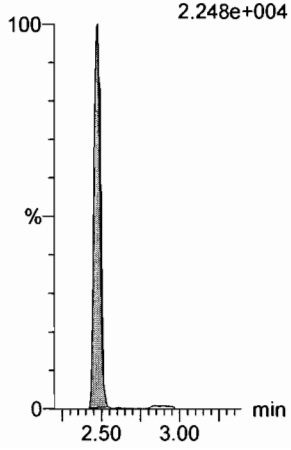
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
4.906e+004



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
5.876e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.248e+004

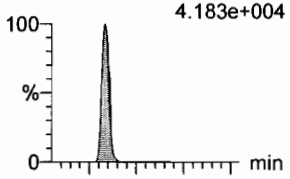


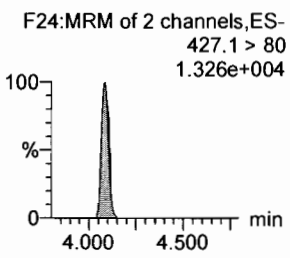
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

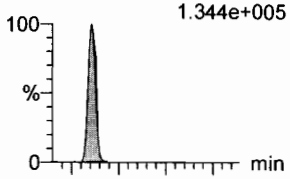
Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

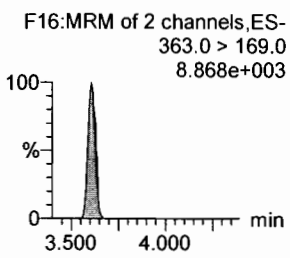
6:2 FTS



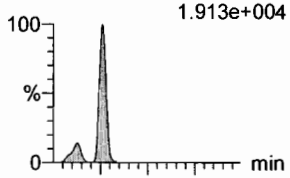


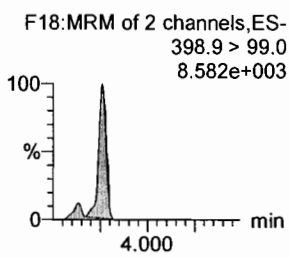
PFHpA



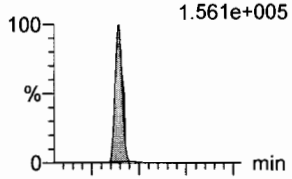


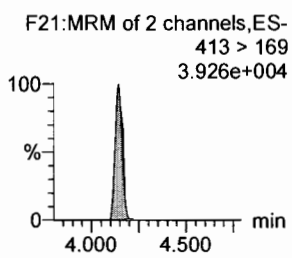
L-PFHxS



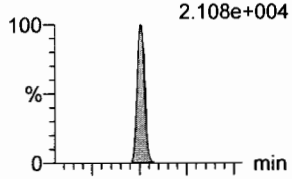


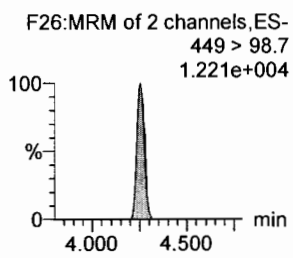
L-PFOA



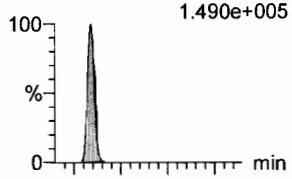


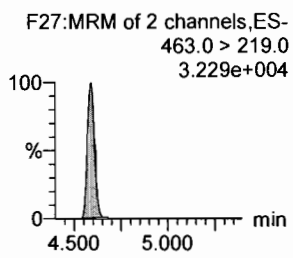
PFHpS



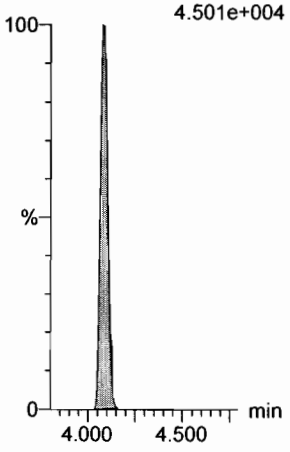


PFNA

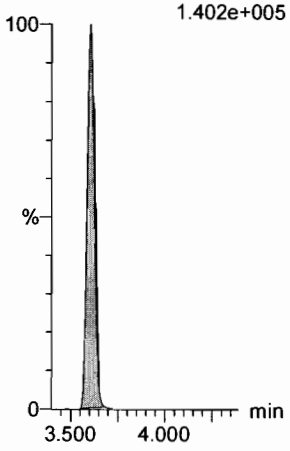




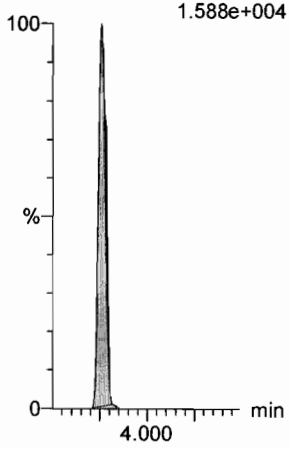
13C2-6:2 FTS



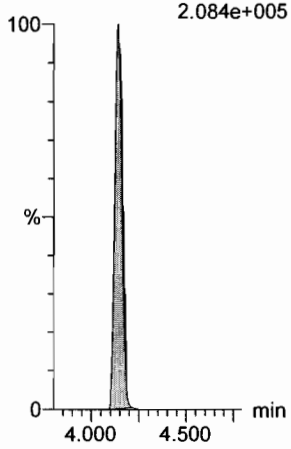
13C4-PFHpA



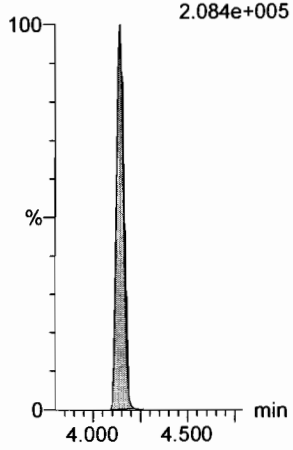
18O2-PFHxS



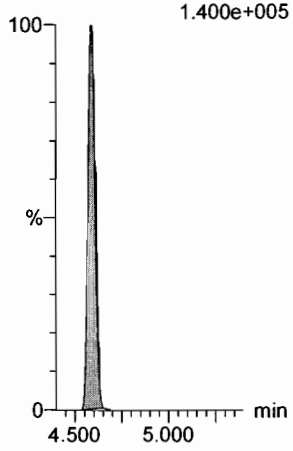
13C2-PFOA



13C2-PFOA



13C5-PFNA

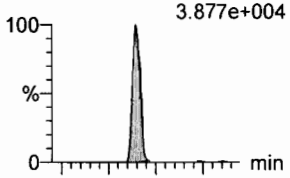


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

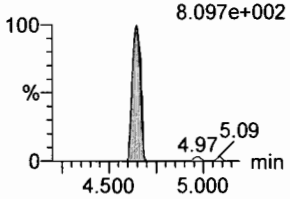
Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

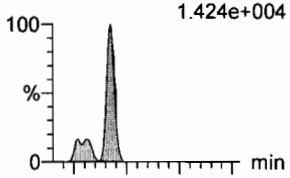
PFOSA
F30:MRM of 2 channels,ES-
498.2 > 77.9
3.877e+004



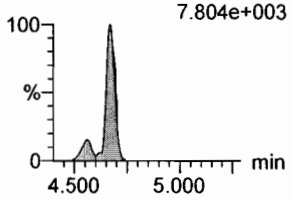
F30:MRM of 2 channels,ES-
498.2 > 169.1
8.097e+002



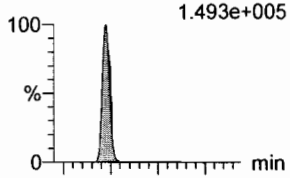
L-PFOS
F32:MRM of 2 channels,ES-
499.1 > 79.9
1.424e+004



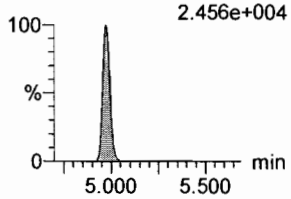
F32:MRM of 2 channels,ES-
499.1 > 98.9
7.804e+003



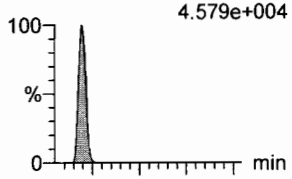
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
1.493e+005



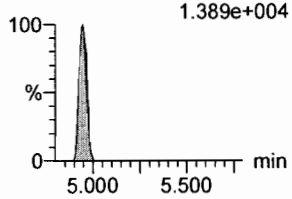
F37:MRM of 2 channels,ES-
513 > 219
2.456e+004



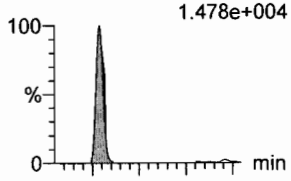
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
4.579e+004



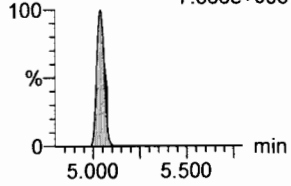
F42:MRM of 2 channels,ES-
527 > 80
1.389e+004



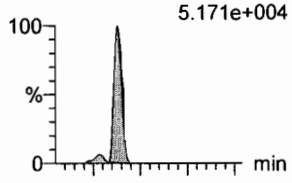
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
1.478e+004



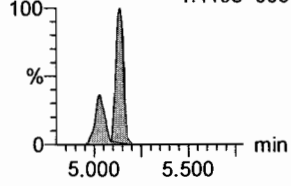
F45:MRM of 2 channels,ES-
549.1 > 99.1
7.866e+003



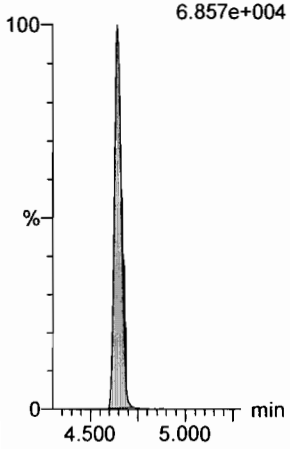
L-MeFOSAA
F48:MRM of 2 channels,ES-
570.1 > 419
5.171e+004



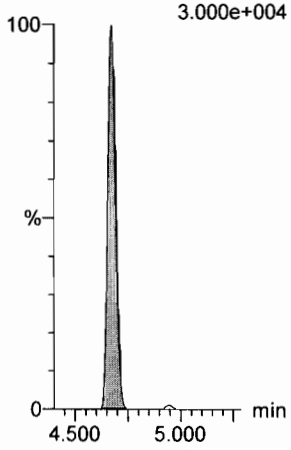
F48:MRM of 2 channels,ES-
570.1 > 483.0
1.419e+003



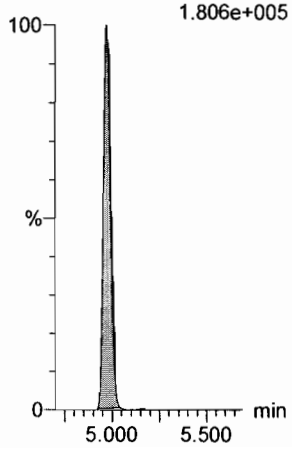
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
6.857e+004



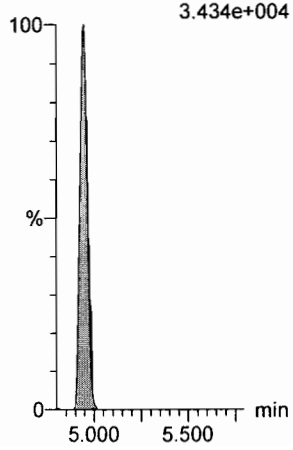
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
3.000e+004



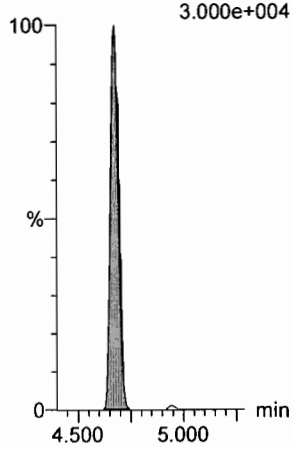
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
1.806e+005



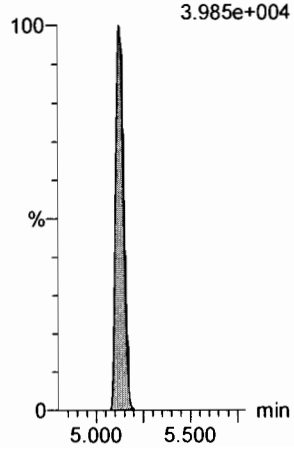
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
3.434e+004



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
3.000e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
3.985e+004

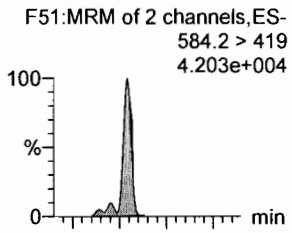


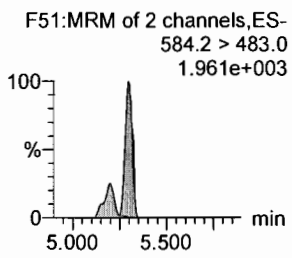
Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

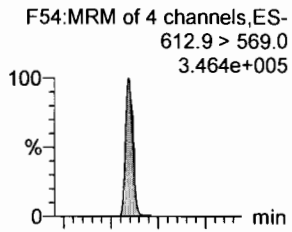
Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

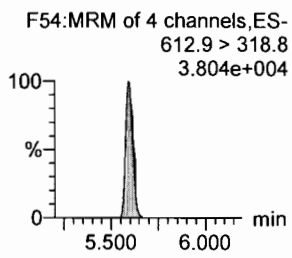
L-EtFOSAA



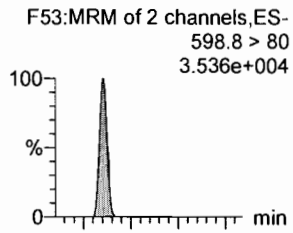


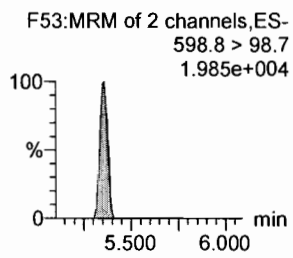
PFDoA



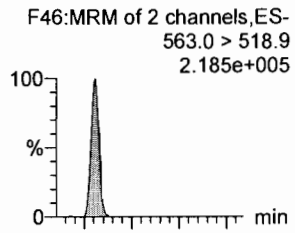


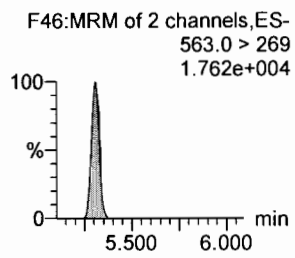
PFDS



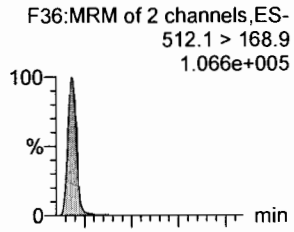


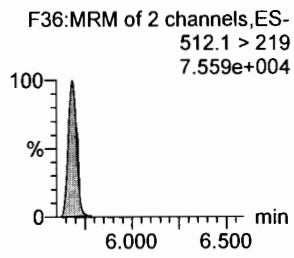
PFUdA



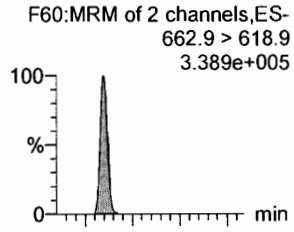


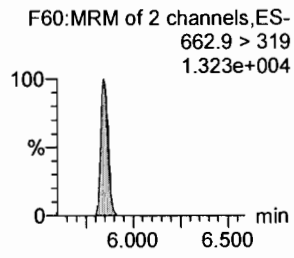
N-MeFOSA



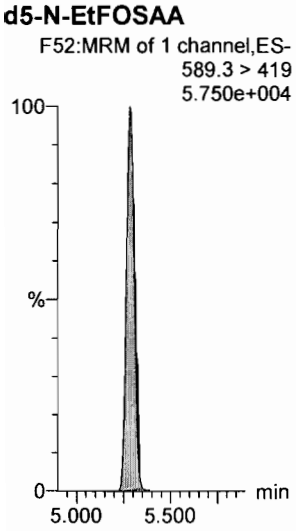


PFTrDA

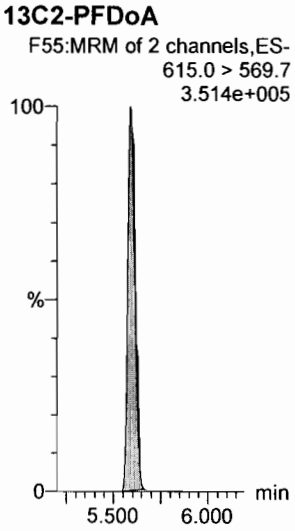




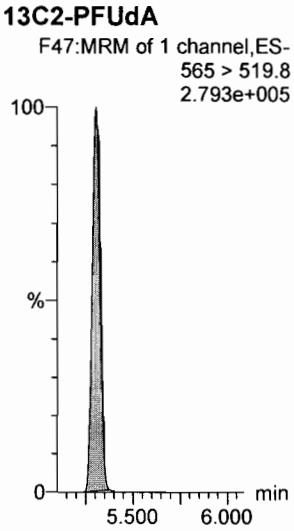
d5-N-EtFOSAA



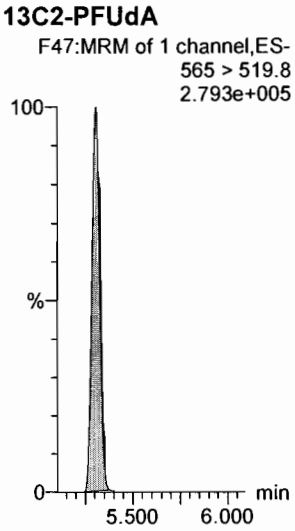
13C2-PFDoA



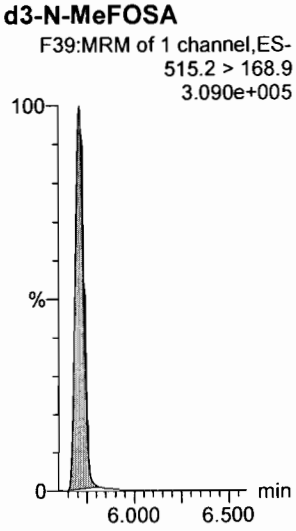
13C2-PFUdA



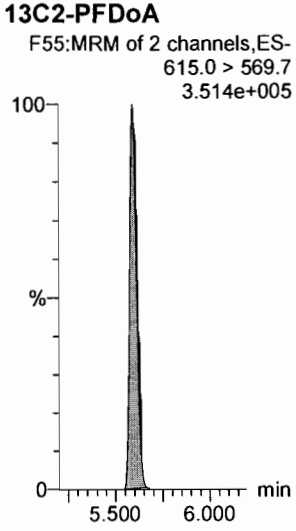
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

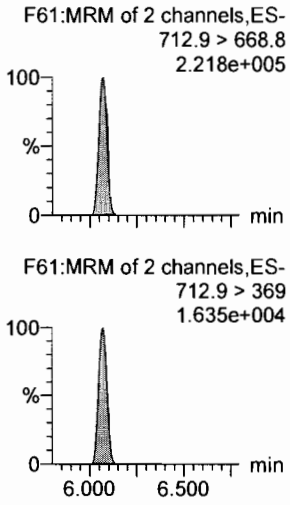


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

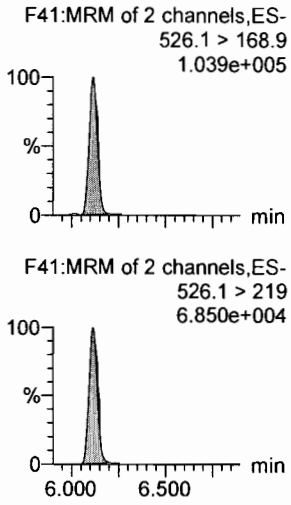
Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

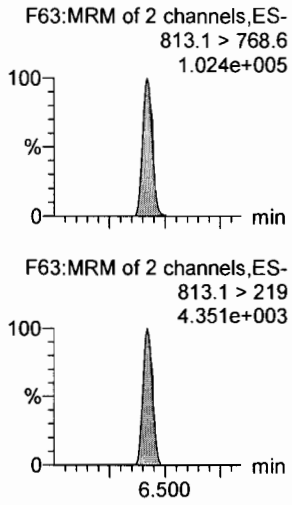
PFTeDA



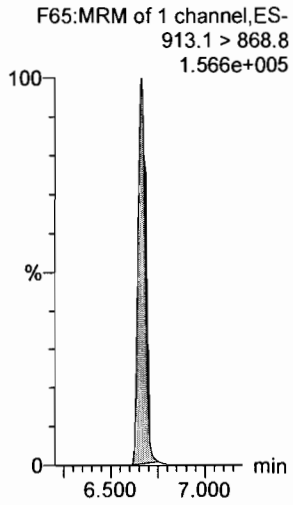
N-EtFOSA



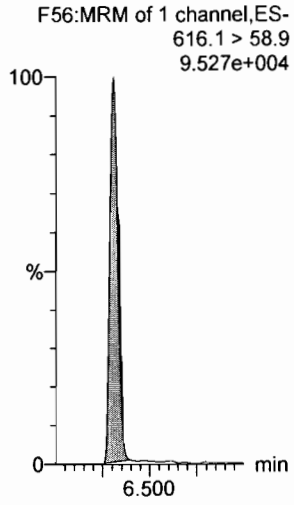
PFHxDA



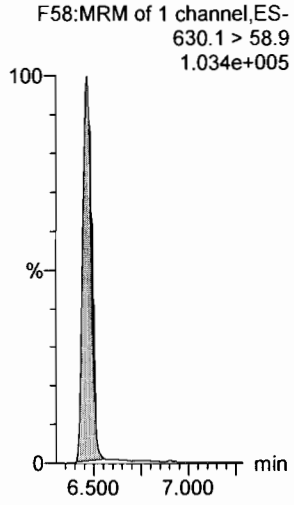
PFODA



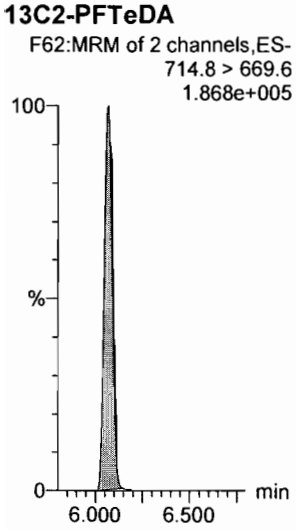
N-MeFOSE



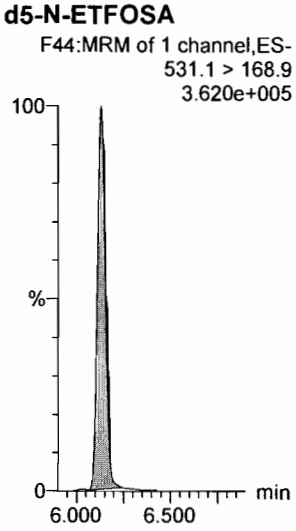
N-EtFOSE



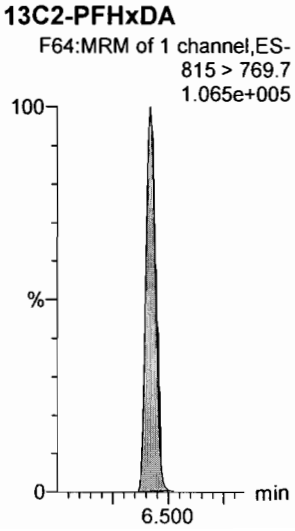
13C2-PFTeDA



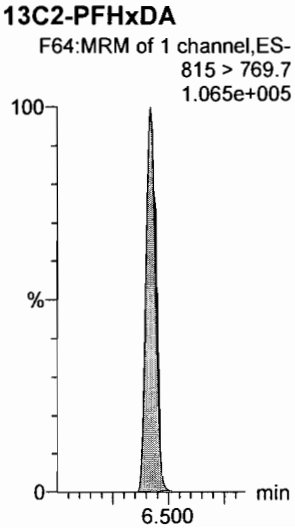
d5-N-ETFOSA



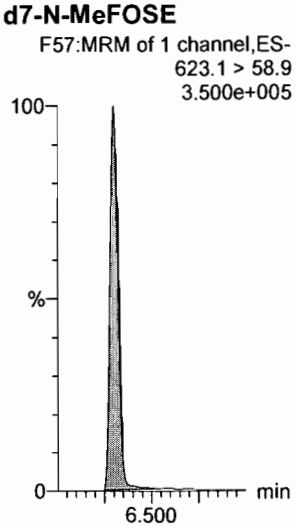
13C2-PFHxDA



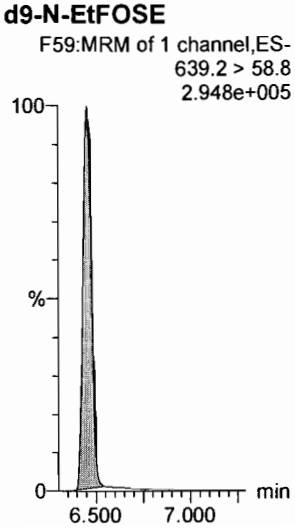
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

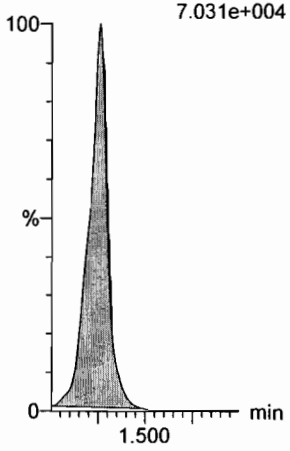


Dataset: F:\Projects\PFAS.PRO\Results\180617M1\180617M1-130.qld

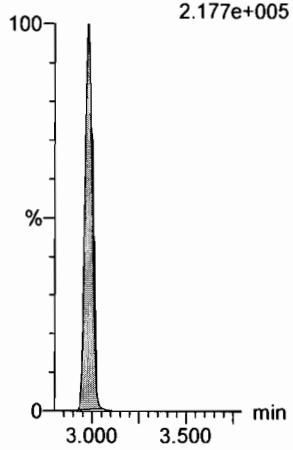
Last Altered: Monday, June 18, 2018 15:54:25 Pacific Daylight Time
Printed: Monday, June 18, 2018 15:55:48 Pacific Daylight Time

Name: 180617M1_130, Date: 18-Jun-2018, Time: 15:37:03, ID: ST180617M1-18 PFC CS3 18F1109, Description: PFC CS3 18F1109

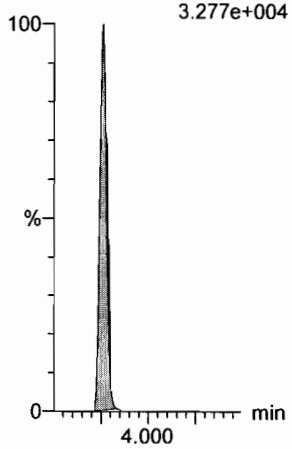
13C4-PFBA



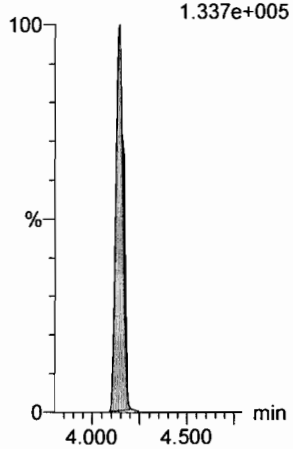
13C5-PFHxA



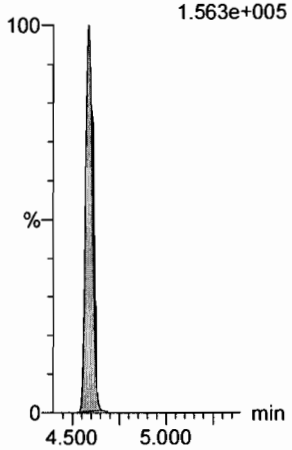
13C3-PFHxS



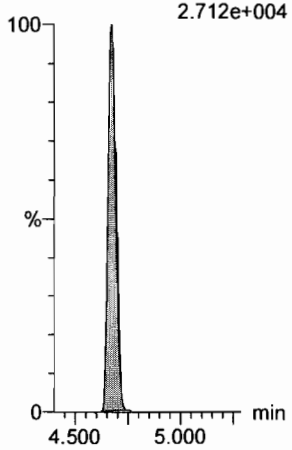
13C8-PFOA



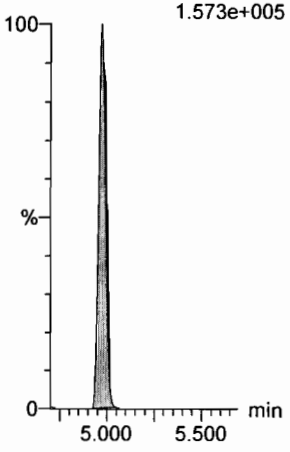
13C9-PFNA



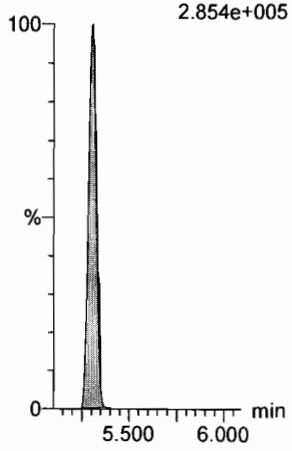
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 13:56:35 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 14:02:20 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_RS-6-19-18.mdb 19 Jun 2018 13:56:33
Calibration: 19 Jun 2018 13:56:34

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-6 PFC CS3 18F1109	9.98e3	100.0	NO
2	2	13C5-PFHxA	ST180618M1-6 PFC CS3 18F1109	1.18e4	100.0	NO
3	3	13C3-PFHxS	ST180618M1-6 PFC CS3 18F1109	2.47e3	100.0	NO
4	4	13C8-PFOA	ST180618M1-6 PFC CS3 18F1109	9.80e3	100.0	NO
5	5	13C9-PFNA	ST180618M1-6 PFC CS3 18F1109	1.10e4	100.0	NO
6	6	13C4-PFOS	ST180618M1-6 PFC CS3 18F1109	2.62e3	100.0	NO
7	7	13C6-PFDA	ST180618M1-6 PFC CS3 18F1109	1.10e4	100.0	NO
8	8	13C7-PFUdA	ST180618M1-6 PFC CS3 18F1109	1.27e4	100.0	NO

Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-7 PFC CS4 18F1110	9.85e3	98.7	NO
2	2	13C5-PFHxA	ST180618M1-7 PFC CS4 18F1110	1.11e4	94.1	NO
3	3	13C3-PFHxS	ST180618M1-7 PFC CS4 18F1110	2.26e3	91.3	NO
4	4	13C8-PFOA	ST180618M1-7 PFC CS4 18F1110	9.83e3	100.3	NO
5	5	13C9-PFNA	ST180618M1-7 PFC CS4 18F1110	1.06e4	96.2	NO
6	6	13C4-PFOS	ST180618M1-7 PFC CS4 18F1110	2.32e3	88.5	NO
7	7	13C6-PFDA	ST180618M1-7 PFC CS4 18F1110	9.76e3	88.6	NO
8	8	13C7-PFUdA	ST180618M1-7 PFC CS4 18F1110	1.26e4	99.4	NO

Name: 180618M1_23, Date: 18-Jun-2018, Time: 20:38:55, ID: ST180618M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-8 PFC CS5 18F1111	9.47e3	94.8	NO
2	2	13C5-PFHxA	ST180618M1-8 PFC CS5 18F1111	1.09e4	92.0	NO
3	3	13C3-PFHxS	ST180618M1-8 PFC CS5 18F1111	2.34e3	94.5	NO
4	4	13C8-PFOA	ST180618M1-8 PFC CS5 18F1111	9.11e3	93.0	NO
5	5	13C9-PFNA	ST180618M1-8 PFC CS5 18F1111	1.02e4	92.4	NO
6	6	13C4-PFOS	ST180618M1-8 PFC CS5 18F1111	2.51e3	95.9	NO
7	7	13C6-PFDA	ST180618M1-8 PFC CS5 18F1111	1.03e4	93.5	NO
8	8	13C7-PFUdA	ST180618M1-8 PFC CS5 18F1111	1.13e4	89.5	NO

Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-9 PFC CS6 18F1112	9.45e3	94.7	NO
2	2	13C5-PFHxA	ST180618M1-9 PFC CS6 18F1112	1.06e4	89.3	NO
3	3	13C3-PFHxS	ST180618M1-9 PFC CS6 18F1112	2.14e3	86.7	NO
4	4	13C8-PFOA	ST180618M1-9 PFC CS6 18F1112	8.71e3	88.9	NO
5	5	13C9-PFNA	ST180618M1-9 PFC CS6 18F1112	1.01e4	91.9	NO
6	6	13C4-PFOS	ST180618M1-9 PFC CS6 18F1112	2.40e3	91.6	NO
7	7	13C6-PFDA	ST180618M1-9 PFC CS6 18F1112	1.01e4	91.7	NO
8	8	13C7-PFUdA	ST180618M1-9 PFC CS6 18F1112	1.20e4	94.9	NO

Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 13:56:35 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 14:02:20 Pacific Daylight Time

Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-10 PFC CS7 18F1113	9.34e3	93.6	NO
2	2	13C5-PFHxA	ST180618M1-10 PFC CS7 18F1113	1.01e4	85.5	NO
3	3	13C3-PFHxS	ST180618M1-10 PFC CS7 18F1113	2.11e3	85.2	NO
4	4	13C8-PFOA	ST180618M1-10 PFC CS7 18F1113	8.35e3	85.2	NO
5	5	13C9-PFNA	ST180618M1-10 PFC CS7 18F1113	9.14e3	83.0	NO
6	6	13C4-PFOS	ST180618M1-10 PFC CS7 18F1113	2.19e3	83.6	NO
7	7	13C6-PFDA	ST180618M1-10 PFC CS7 18F1113	9.82e3	89.2	NO
8	8	13C7-PFUdA	ST180618M1-10 PFC CS7 18F1113	1.08e4	85.3	NO

Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ICV180618M1-1 PFC 537 ICV 18F1103	9.65e3	96.6	NO
2	2	13C5-PFHxA	ICV180618M1-1 PFC 537 ICV 18F1103	1.29e4	108.6	NO
3	3	13C3-PFHxS	ICV180618M1-1 PFC 537 ICV 18F1103	2.40e3	97.1	NO
4	4	13C8-PFOA	ICV180618M1-1 PFC 537 ICV 18F1103	1.05e4	107.2	NO
5	5	13C9-PFNA	ICV180618M1-1 PFC 537 ICV 18F1103	1.19e4	108.1	NO
6	6	13C4-PFOS	ICV180618M1-1 PFC 537 ICV 18F1103	2.60e3	99.3	NO
7	7	13C6-PFDA	ICV180618M1-1 PFC 537 ICV 18F1103	1.20e4	109.4	NO
8	8	13C7-PFUdA	ICV180618M1-1 PFC 537 ICV 18F1103	1.37e4	108.4	NO

Name: 180618M1_28, Date: 18-Jun-2018, Time: 21:31:07, ID: 1801075-06 FB1805301035JLB 0.25636, Description: FB1805301035JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-06 FB1805301035JLB 0.25636	9.44e3	94.6	NO
2	2	13C5-PFHxA	1801075-06 FB1805301035JLB 0.25636	1.10e4	92.7	NO
3	3	13C3-PFHxS	1801075-06 FB1805301035JLB 0.25636	2.53e3	102.3	NO
4	4	13C8-PFOA	1801075-06 FB1805301035JLB 0.25636	8.28e3	84.5	NO
5	5	13C9-PFNA	1801075-06 FB1805301035JLB 0.25636	8.93e3	81.0	NO
6	6	13C4-PFOS	1801075-06 FB1805301035JLB 0.25636	2.47e3	94.1	NO
7	7	13C6-PFDA	1801075-06 FB1805301035JLB 0.25636	1.03e4	93.4	NO
8	8	13C7-PFUdA	1801075-06 FB1805301035JLB 0.25636	1.18e4	92.8	NO

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Name: 180618M1_29, Date: 18-Jun-2018, Time: 21:41:37, ID: 1801138-04 MCLPCD185 1.55, Description: MCLPCD185

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-04 MCLPCD185 1.55	8.71e3	87.3	NO
2	2	13C5-PFHxA	1801138-04 MCLPCD185 1.55	1.05e4	88.7	NO
3	3	13C3-PFHxS	1801138-04 MCLPCD185 1.55	2.16e3	87.6	NO
4	4	13C8-PFOA	1801138-04 MCLPCD185 1.55	8.88e3	90.6	NO
5	5	13C9-PFNA	1801138-04 MCLPCD185 1.55	9.55e3	86.7	NO
6	6	13C4-PFOS	1801138-04 MCLPCD185 1.55	2.39e3	91.0	NO
7	7	13C6-PFDA	1801138-04 MCLPCD185 1.55	1.06e4	96.2	NO
8	8	13C7-PFUdA	1801138-04 MCLPCD185 1.55	1.33e4	104.6	NO

Name: 180618M1_30, Date: 18-Jun-2018, Time: 21:52:02, ID: 1801138-13 MCLP41274 1.11, Description: MCLP41274

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-13 MCLP41274 1.11	9.71e3	97.3	NO
2	2	13C5-PFHxA	1801138-13 MCLP41274 1.11	1.20e4	101.2	NO
3	3	13C3-PFHxS	1801138-13 MCLP41274 1.11	2.55e3	103.0	NO
4	4	13C8-PFOA	1801138-13 MCLP41274 1.11	9.83e3	100.3	NO
5	5	13C9-PFNA	1801138-13 MCLP41274 1.11	1.13e4	102.7	NO
6	6	13C4-PFOS	1801138-13 MCLP41274 1.11	2.77e3	105.5	NO
7	7	13C6-PFDA	1801138-13 MCLP41274 1.11	1.27e4	114.9	NO
8	8	13C7-PFUdA	1801138-13 MCLP41274 1.11	1.40e4	110.2	NO

Name: 180618M1_31, Date: 18-Jun-2018, Time: 22:02:32, ID: 1801138-17 MCLPCH310 1.13, Description: MCLPCH310

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-17 MCLPCH310 1.13	9.65e3	96.6	NO
2	2	13C5-PFHxA	1801138-17 MCLPCH310 1.13	1.20e4	101.4	NO
3	3	13C3-PFHxS	1801138-17 MCLPCH310 1.13	2.67e3	108.0	NO
4	4	13C8-PFOA	1801138-17 MCLPCH310 1.13	1.04e4	106.4	NO
5	5	13C9-PFNA	1801138-17 MCLPCH310 1.13	1.19e4	108.2	NO
6	6	13C4-PFOS	1801138-17 MCLPCH310 1.13	2.93e3	111.8	NO
7	7	13C6-PFDA	1801138-17 MCLPCH310 1.13	1.25e4	113.4	NO
8	8	13C7-PFUdA	1801138-17 MCLPCH310 1.13	1.51e4	119.0	NO

Name: 180618M1_32, Date: 18-Jun-2018, Time: 22:12:57, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180618M1_33, Date: 18-Jun-2018, Time: 22:23:28, ID: 1801075-02@5X SW1805300930JLB 0.25289, Description: SW1805300930JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-02@5X SW1805300930JLB 0...	1.78e3	17.8	YES
2	2	13C5-PFHxA	1801075-02@5X SW1805300930JLB 0...	2.18e3	18.4	YES
3	3	13C3-PFHxS	1801075-02@5X SW1805300930JLB 0...	4.78e2	19.3	YES
4	4	13C8-PFOA	1801075-02@5X SW1805300930JLB 0...	1.80e3	18.3	YES
5	5	13C9-PFNA	1801075-02@5X SW1805300930JLB 0...	2.00e3	18.1	YES
6	6	13C4-PFOS	1801075-02@5X SW1805300930JLB 0...	4.48e2	17.1	YES
7	7	13C6-PFDA	1801075-02@5X SW1805300930JLB 0...	1.88e3	17.0	YES
8	8	13C7-PFUdA	1801075-02@5X SW1805300930JLB 0...	2.06e3	16.3	YES

Name: 180618M1_34, Date: 18-Jun-2018, Time: 22:33:52, ID: 1801075-03@10X SW1805300950JLB 0.25061, Description: SW1805300950JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-03@10X SW1805300950JLB ...	7.94e2	7.9	YES
2	2	13C5-PFHxA	1801075-03@10X SW1805300950JLB ...	9.50e2	8.0	YES
3	3	13C3-PFHxS	1801075-03@10X SW1805300950JLB ...	2.15e2	8.7	YES
4	4	13C8-PFOA	1801075-03@10X SW1805300950JLB ...	7.58e2	7.7	YES
5	5	13C9-PFNA	1801075-03@10X SW1805300950JLB ...	8.51e2	7.7	YES
6	6	13C4-PFOS	1801075-03@10X SW1805300950JLB ...	2.28e2	8.7	YES
7	7	13C6-PFDA	1801075-03@10X SW1805300950JLB ...	8.21e2	7.5	YES
8	8	13C7-PFUdA	1801075-03@10X SW1805300950JLB ...	1.10e3	8.7	YES

Name: 180618M1_35, Date: 18-Jun-2018, Time: 22:44:23, ID: 1801075-04@5X SW1805301015JLB 0.25195, Description: SW1805301015JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-04@5X SW1805301015JLB 0...	2.02e3	20.2	YES
2	2	13C5-PFHxA	1801075-04@5X SW1805301015JLB 0...	2.40e3	20.2	YES
3	3	13C3-PFHxS	1801075-04@5X SW1805301015JLB 0...	6.13e2	24.8	YES
4	4	13C8-PFOA	1801075-04@5X SW1805301015JLB 0...	2.06e3	21.0	YES
5	5	13C9-PFNA	1801075-04@5X SW1805301015JLB 0...	2.23e3	20.2	YES
6	6	13C4-PFOS	1801075-04@5X SW1805301015JLB 0...	5.71e2	21.8	YES
7	7	13C6-PFDA	1801075-04@5X SW1805301015JLB 0...	2.42e3	22.0	YES
8	8	13C7-PFUdA	1801075-04@5X SW1805301015JLB 0...	2.66e3	21.0	YES

Name: 180618M1_36, Date: 18-Jun-2018, Time: 22:54:47, ID: 1801075-05@5X RW1805301030JLB 0.25822, Description: RW1805301030JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801075-05@5X RW1805301030JLB 0...	2.05e3	20.6	YES
2	2	13C5-PFHxA	1801075-05@5X RW1805301030JLB 0...	2.27e3	19.1	YES
3	3	13C3-PFHxS	1801075-05@5X RW1805301030JLB 0...	5.24e2	21.2	YES
4	4	13C8-PFOA	1801075-05@5X RW1805301030JLB 0...	1.45e3	14.8	YES
5	5	13C9-PFNA	1801075-05@5X RW1805301030JLB 0...	1.49e3	13.5	YES
6	6	13C4-PFOS	1801075-05@5X RW1805301030JLB 0...	5.24e2	20.0	YES
7	7	13C6-PFDA	1801075-05@5X RW1805301030JLB 0...	1.34e3	12.1	YES
8	8	13C7-PFUdA	1801075-05@5X RW1805301030JLB 0...	1.72e3	13.6	YES

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Name: 180618M1_37, Date: 18-Jun-2018, Time: 23:05:17, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_38, Date: 18-Jun-2018, Time: 23:15:42, ID: 1801051-16 PFAS-MW14-009-052318 0.11317, Description: PFAS-MW14-009-052318

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801051-16 PFAS-MW14-009-052318 ...	7.80e3	78.1	NO
2	2	13C5-PFHxA	1801051-16 PFAS-MW14-009-052318 ...	9.83e3	83.1	NO
3	3	13C3-PFHxS	1801051-16 PFAS-MW14-009-052318 ...	2.20e3	88.8	NO
4	4	13C8-PFOA	1801051-16 PFAS-MW14-009-052318 ...	8.02e3	81.9	NO
5	5	13C9-PFNA	1801051-16 PFAS-MW14-009-052318 ...	9.26e3	84.1	NO
6	6	13C4-PFOS	1801051-16 PFAS-MW14-009-052318 ...	2.12e3	80.8	NO
7	7	13C6-PFDA	1801051-16 PFAS-MW14-009-052318 ...	9.38e3	85.2	NO
8	8	13C7-PFUdA	1801051-16 PFAS-MW14-009-052318 ...	1.20e4	95.0	NO

Name: 180618M1_39, Date: 18-Jun-2018, Time: 23:26:13, ID: B8F0069-BSD1 LCSD 0.25, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0069-BSD1 LCSD 0.25	5.91e3	59.2	NO
2	2	13C5-PFHxA	B8F0069-BSD1 LCSD 0.25	6.70e3	56.5	NO
3	3	13C3-PFHxS	B8F0069-BSD1 LCSD 0.25	1.82e3	73.5	NO
4	4	13C8-PFOA	B8F0069-BSD1 LCSD 0.25	5.78e3	58.9	NO
5	5	13C9-PFNA	B8F0069-BSD1 LCSD 0.25	6.91e3	62.7	NO
6	6	13C4-PFOS	B8F0069-BSD1 LCSD 0.25	1.71e3	65.1	NO
7	7	13C6-PFDA	B8F0069-BSD1 LCSD 0.25	7.03e3	63.8	NO
8	8	13C7-PFUdA	B8F0069-BSD1 LCSD 0.25	8.12e3	64.1	NO

Name: 180618M1_40, Date: 18-Jun-2018, Time: 23:36:43, ID: 1801080-02 MCLP00503 0.1174, Description: MCLP00503

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801080-02 MCLP00503 0.1174	5.09e3	51.0	NO
2	2	13C5-PFHxA	1801080-02 MCLP00503 0.1174	6.93e3	58.5	NO
3	3	13C3-PFHxS	1801080-02 MCLP00503 0.1174	2.11e3	85.4	NO
4	4	13C8-PFOA	1801080-02 MCLP00503 0.1174	6.10e3	62.2	NO
5	5	13C9-PFNA	1801080-02 MCLP00503 0.1174	7.42e3	67.4	NO
6	6	13C4-PFOS	1801080-02 MCLP00503 0.1174	2.16e3	82.2	NO
7	7	13C6-PFDA	1801080-02 MCLP00503 0.1174	7.65e3	69.5	NO
8	8	13C7-PFUdA	1801080-02 MCLP00503 0.1174	8.73e3	68.9	NO

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Name: 180618M1_41, Date: 18-Jun-2018, Time: 23:47:08, ID: 1801138-01@5X MCLPCC107 1.15, Description: MCLPCC107

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-01@5X MCLPCC107 1.15	1.64e3	16.4	YES
2	2	13C5-PFHxA	1801138-01@5X MCLPCC107 1.15	1.98e3	16.7	YES
3	3	13C3-PFHxS	1801138-01@5X MCLPCC107 1.15	4.05e2	16.4	YES
4	4	13C8-PFOA	1801138-01@5X MCLPCC107 1.15	1.67e3	17.0	YES
5	5	13C9-PFNA	1801138-01@5X MCLPCC107 1.15	1.68e3	15.3	YES
6	6	13C4-PFOS	1801138-01@5X MCLPCC107 1.15	4.04e2	15.4	YES
7	7	13C6-PFDA	1801138-01@5X MCLPCC107 1.15	1.79e3	16.2	YES
8	8	13C7-PFUdA	1801138-01@5X MCLPCC107 1.15	2.42e3	19.1	YES

Name: 180618M1_42, Date: 18-Jun-2018, Time: 23:57:38, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-11 PFC CS3 18F1109	9.86e3	98.8	NO
2	2	13C5-PFHxA	ST180618M1-11 PFC CS3 18F1109	1.27e4	107.3	NO
3	3	13C3-PFHxS	ST180618M1-11 PFC CS3 18F1109	2.75e3	111.4	NO
4	4	13C8-PFOA	ST180618M1-11 PFC CS3 18F1109	1.09e4	110.7	NO
5	5	13C9-PFNA	ST180618M1-11 PFC CS3 18F1109	1.22e4	110.7	NO
6	6	13C4-PFOS	ST180618M1-11 PFC CS3 18F1109	2.80e3	106.8	NO
7	7	13C6-PFDA	ST180618M1-11 PFC CS3 18F1109	1.19e4	108.4	NO
8	8	13C7-PFUdA	ST180618M1-11 PFC CS3 18F1109	1.27e4	100.2	NO

Name: 180618M1_44, Date: 19-Jun-2018, Time: 00:18:32, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180618M1_45, Date: 19-Jun-2018, Time: 00:28:57, ID: 1801138-03@20X MCLPCC101 1.13, Description: MCLPCC101

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-03@20X MCLPCC101 1.13	4.34e2	4.3	YES
2	2	13C5-PFHxA	1801138-03@20X MCLPCC101 1.13	6.08e2	5.1	YES
3	3	13C3-PFHxS	1801138-03@20X MCLPCC101 1.13	1.25e2	5.0	YES
4	4	13C8-PFOA	1801138-03@20X MCLPCC101 1.13	4.86e2	5.0	YES
5	5	13C9-PFNA	1801138-03@20X MCLPCC101 1.13	5.73e2	5.2	YES
6	6	13C4-PFOS	1801138-03@20X MCLPCC101 1.13	1.06e2	4.0	YES
7	7	13C6-PFDA	1801138-03@20X MCLPCC101 1.13	5.53e2	5.0	YES
8	8	13C7-PFUdA	1801138-03@20X MCLPCC101 1.13	4.98e2	3.9	YES

Name: 180618M1_46, Date: 19-Jun-2018, Time: 00:39:27, ID: 1801138-05@50X MCLP41512 1.12, Description: MCLP41512

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-05@50X MCLP41512 1.12	1.71e2	1.7	YES
2	2	13C5-PFHxA	1801138-05@50X MCLP41512 1.12	2.23e2	1.9	YES
3	3	13C3-PFHxS	1801138-05@50X MCLP41512 1.12	3.67e1	1.5	YES
4	4	13C8-PFOA	1801138-05@50X MCLP41512 1.12	1.80e2	1.8	YES
5	5	13C9-PFNA	1801138-05@50X MCLP41512 1.12	1.77e2	1.6	YES
6	6	13C4-PFOS	1801138-05@50X MCLP41512 1.12	3.71e1	1.4	YES
7	7	13C6-PFDA	1801138-05@50X MCLP41512 1.12	2.15e2	2.0	YES
8	8	13C7-PFUdA	1801138-05@50X MCLP41512 1.12	1.87e2	1.5	YES

Name: 180618M1_47, Date: 19-Jun-2018, Time: 00:49:52, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_48, Date: 19-Jun-2018, Time: 01:00:22, ID: 1801138-06@30X MCLP41513 1.13, Description: MCLP41513

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-06@30X MCLP41513 1.13	2.67e2	2.7	YES
2	2	13C5-PFHxA	1801138-06@30X MCLP41513 1.13	3.19e2	2.7	YES
3	3	13C3-PFHxS	1801138-06@30X MCLP41513 1.13	6.76e1	2.7	YES
4	4	13C8-PFOA	1801138-06@30X MCLP41513 1.13	3.44e2	3.5	YES
5	5	13C9-PFNA	1801138-06@30X MCLP41513 1.13	3.48e2	3.2	YES
6	6	13C4-PFOS	1801138-06@30X MCLP41513 1.13	6.21e1	2.4	YES
7	7	13C6-PFDA	1801138-06@30X MCLP41513 1.13	3.70e2	3.4	YES
8	8	13C7-PFUdA	1801138-06@30X MCLP41513 1.13	4.41e2	3.5	YES

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Name: 180618M1_49, Date: 19-Jun-2018, Time: 01:10:47, ID: 1801138-07@20X MCLP41283 1.12, Description: MCLP41283

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-07@20X MCLP41283 1.12	4.39e2	4.4	YES
2	2	13C5-PFHxA	1801138-07@20X MCLP41283 1.12	5.76e2	4.9	YES
3	3	13C3-PFHxS	1801138-07@20X MCLP41283 1.12	1.39e2	5.6	YES
4	4	13C8-PFOA	1801138-07@20X MCLP41283 1.12	4.78e2	4.9	YES
5	5	13C9-PFNA	1801138-07@20X MCLP41283 1.12	4.86e2	4.4	YES
6	6	13C4-PFOS	1801138-07@20X MCLP41283 1.12	9.85e1	3.8	YES
7	7	13C6-PFDA	1801138-07@20X MCLP41283 1.12	5.14e2	4.7	YES
8	8	13C7-PFUdA	1801138-07@20X MCLP41283 1.12	6.23e2	4.9	YES

Name: 180618M1_50, Date: 19-Jun-2018, Time: 01:21:17, ID: 1801138-08@30X MCLP41284 1.13, Description: MCLP41284

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-08@30X MCLP41284 1.13	3.04e2	3.0	YES
2	2	13C5-PFHxA	1801138-08@30X MCLP41284 1.13	3.77e2	3.2	YES
3	3	13C3-PFHxS	1801138-08@30X MCLP41284 1.13	6.13e1	2.5	YES
4	4	13C8-PFOA	1801138-08@30X MCLP41284 1.13	3.24e2	3.3	YES
5	5	13C9-PFNA	1801138-08@30X MCLP41284 1.13	3.58e2	3.3	YES
6	6	13C4-PFOS	1801138-08@30X MCLP41284 1.13	9.43e1	3.6	YES
7	7	13C6-PFDA	1801138-08@30X MCLP41284 1.13	2.87e2	2.6	YES
8	8	13C7-PFUdA	1801138-08@30X MCLP41284 1.13	3.92e2	3.1	YES

Name: 180618M1_51, Date: 19-Jun-2018, Time: 01:31:41, ID: 1801138-09@5X MCLP41280 1.12, Description: MCLP41280

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-09@5X MCLP41280 1.12	1.95e3	19.5	YES
2	2	13C5-PFHxA	1801138-09@5X MCLP41280 1.12	2.40e3	20.3	YES
3	3	13C3-PFHxS	1801138-09@5X MCLP41280 1.12	5.44e2	22.0	YES
4	4	13C8-PFOA	1801138-09@5X MCLP41280 1.12	2.04e3	20.8	YES
5	5	13C9-PFNA	1801138-09@5X MCLP41280 1.12	2.29e3	20.8	YES
6	6	13C4-PFOS	1801138-09@5X MCLP41280 1.12	5.32e2	20.3	YES
7	7	13C6-PFDA	1801138-09@5X MCLP41280 1.12	2.14e3	19.4	YES
8	8	13C7-PFUdA	1801138-09@5X MCLP41280 1.12	2.47e3	19.5	YES

Name: 180618M1_52, Date: 19-Jun-2018, Time: 01:42:12, ID: 1801138-10@10X MCLP41281 1.11, Description: MCLP41281

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-10@10X MCLP41281 1.11	9.16e2	9.2	YES
2	2	13C5-PFHxA	1801138-10@10X MCLP41281 1.11	1.14e3	9.6	YES
3	3	13C3-PFHxS	1801138-10@10X MCLP41281 1.11	2.43e2	9.8	YES
4	4	13C8-PFOA	1801138-10@10X MCLP41281 1.11	1.02e3	10.4	YES
5	5	13C9-PFNA	1801138-10@10X MCLP41281 1.11	1.05e3	9.5	YES
6	6	13C4-PFOS	1801138-10@10X MCLP41281 1.11	2.11e2	8.0	YES
7	7	13C6-PFDA	1801138-10@10X MCLP41281 1.11	1.12e3	10.1	YES
8	8	13C7-PFUdA	1801138-10@10X MCLP41281 1.11	1.24e3	9.8	YES

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Name: 180618M1_53, Date: 19-Jun-2018, Time: 01:52:42, ID: 1801138-11@5X MCLP41277 1.12, Description: MCLP41277

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-11@5X MCLP41277 1.12	1.90e3	19.0	YES
2	2	13C5-PFHxA	1801138-11@5X MCLP41277 1.12	2.32e3	19.6	YES
3	3	13C3-PFHxS	1801138-11@5X MCLP41277 1.12	5.09e2	20.6	YES
4	4	13C8-PFOA	1801138-11@5X MCLP41277 1.12	1.87e3	19.1	YES
5	5	13C9-PFNA	1801138-11@5X MCLP41277 1.12	2.11e3	19.2	YES
6	6	13C4-PFOS	1801138-11@5X MCLP41277 1.12	4.48e2	17.1	YES
7	7	13C6-PFDA	1801138-11@5X MCLP41277 1.12	1.97e3	17.9	YES
8	8	13C7-PFUdA	1801138-11@5X MCLP41277 1.12	2.40e3	18.9	YES

Name: 180618M1_54, Date: 19-Jun-2018, Time: 02:03:06, ID: 1801138-12@5X MCLP41278 1.18, Description: MCLP41278

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-12@5X MCLP41278 1.18	1.78e3	17.8	YES
2	2	13C5-PFHxA	1801138-12@5X MCLP41278 1.18	2.26e3	19.1	YES
3	3	13C3-PFHxS	1801138-12@5X MCLP41278 1.18	4.57e2	18.5	YES
4	4	13C8-PFOA	1801138-12@5X MCLP41278 1.18	2.00e3	20.4	YES
5	5	13C9-PFNA	1801138-12@5X MCLP41278 1.18	2.41e3	21.9	YES
6	6	13C4-PFOS	1801138-12@5X MCLP41278 1.18	4.87e2	18.6	YES
7	7	13C6-PFDA	1801138-12@5X MCLP41278 1.18	1.97e3	17.9	YES
8	8	13C7-PFUdA	1801138-12@5X MCLP41278 1.18	2.41e3	19.0	YES

Name: 180618M1_55, Date: 19-Jun-2018, Time: 02:13:36, ID: 1801138-16@5X MCLPCH304 1.12, Description: MCLPCH304

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801138-16@5X MCLPCH304 1.12	1.95e3	19.6	YES
2	2	13C5-PFHxA	1801138-16@5X MCLPCH304 1.12	2.32e3	19.6	YES
3	3	13C3-PFHxS	1801138-16@5X MCLPCH304 1.12	5.15e2	20.8	YES
4	4	13C8-PFOA	1801138-16@5X MCLPCH304 1.12	2.22e3	22.7	YES
5	5	13C9-PFNA	1801138-16@5X MCLPCH304 1.12	2.37e3	21.5	YES
6	6	13C4-PFOS	1801138-16@5X MCLPCH304 1.12	5.57e2	21.2	YES
7	7	13C6-PFDA	1801138-16@5X MCLPCH304 1.12	2.31e3	21.0	YES
8	8	13C7-PFUdA	1801138-16@5X MCLPCH304 1.12	2.58e3	20.4	YES

Name: 180618M1_56, Date: 19-Jun-2018, Time: 02:24:01, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180618M1_57, Date: 19-Jun-2018, Time: 02:34:31, ID: ST180618M1-12 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-12 PFC CS3 18F1109	1.01e4	100.9	NO
2	2	13C5-PFHxA	ST180618M1-12 PFC CS3 18F1109	1.36e4	114.7	NO
3	3	13C3-PFHxS	ST180618M1-12 PFC CS3 18F1109	2.90e3	117.2	NO
4	4	13C8-PFOA	ST180618M1-12 PFC CS3 18F1109	1.18e4	120.8	NO
5	5	13C9-PFNA	ST180618M1-12 PFC CS3 18F1109	1.25e4	113.1	NO
6	6	13C4-PFOS	ST180618M1-12 PFC CS3 18F1109	2.93e3	111.6	NO
7	7	13C6-PFDA	ST180618M1-12 PFC CS3 18F1109	1.23e4	111.2	NO
8	8	13C7-PFUdA	ST180618M1-12 PFC CS3 18F1109	1.37e4	107.8	NO

Name: 180618M1_58, Date: 19-Jun-2018, Time: 02:44:56, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_59, Date: 19-Jun-2018, Time: 02:55:26, ID: 1801126-01 OF-INF01-0618 0.24968, Description: OF-INF01-0618

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801126-01 OF-INF01-0618 0.24968	6.21e3	62.2	NO
2	2	13C5-PFHxA	1801126-01 OF-INF01-0618 0.24968	7.67e3	64.8	NO
3	3	13C3-PFHxS	1801126-01 OF-INF01-0618 0.24968	1.88e3	75.9	NO
4	4	13C8-PFOA	1801126-01 OF-INF01-0618 0.24968	6.57e3	67.1	NO
5	5	13C9-PFNA	1801126-01 OF-INF01-0618 0.24968	6.77e3	61.5	NO
6	6	13C4-PFOS	1801126-01 OF-INF01-0618 0.24968	1.93e3	73.4	NO
7	7	13C6-PFDA	1801126-01 OF-INF01-0618 0.24968	6.58e3	59.8	NO
8	8	13C7-PFUdA	1801126-01 OF-INF01-0618 0.24968	7.81e3	61.6	NO

Name: 180618M1_60, Date: 19-Jun-2018, Time: 03:05:51, ID: 1801084-01 EB-20180531 0.12526, Description: EB-20180531

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801084-01 EB-20180531 0.12526	7.90e3	79.1	NO
2	2	13C5-PFHxA	1801084-01 EB-20180531 0.12526	9.74e3	82.2	NO
3	3	13C3-PFHxS	1801084-01 EB-20180531 0.12526	2.19e3	88.5	NO
4	4	13C8-PFOA	1801084-01 EB-20180531 0.12526	8.87e3	90.5	NO
5	5	13C9-PFNA	1801084-01 EB-20180531 0.12526	9.64e3	87.5	NO
6	6	13C4-PFOS	1801084-01 EB-20180531 0.12526	2.52e3	96.2	NO
7	7	13C6-PFDA	1801084-01 EB-20180531 0.12526	9.55e3	86.7	NO
8	8	13C7-PFUdA	1801084-01 EB-20180531 0.12526	1.01e4	79.6	NO

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Name: 180618M1_61, Date: 19-Jun-2018, Time: 03:16:21, ID: 1801107-01 DPH-Ireland 0.12021, Description: DPH-Ireland

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801107-01 DPH-Ireland 0.12021	8.13e3	81.4	NO
2	2	13C5-PFHxA	1801107-01 DPH-Ireland 0.12021	9.06e3	76.5	NO
3	3	13C3-PFHxS	1801107-01 DPH-Ireland 0.12021	2.21e3	89.2	NO
4	4	13C8-PFOA	1801107-01 DPH-Ireland 0.12021	6.40e3	65.3	NO
5	5	13C9-PFNA	1801107-01 DPH-Ireland 0.12021	6.40e3	58.1	NO
6	6	13C4-PFOS	1801107-01 DPH-Ireland 0.12021	2.34e3	89.1	NO
7	7	13C6-PFDA	1801107-01 DPH-Ireland 0.12021	6.27e3	56.9	NO
8	8	13C7-PFUdA	1801107-01 DPH-Ireland 0.12021	7.13e3	56.3	NO

Name: 180618M1_62, Date: 19-Jun-2018, Time: 03:26:46, ID: 1801107-02 DPH-#1 0.12757, Description: DPH-#1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801107-02 DPH-#1 0.12757	7.71e3	77.2	NO
2	2	13C5-PFHxA	1801107-02 DPH-#1 0.12757	8.77e3	74.0	NO
3	3	13C3-PFHxS	1801107-02 DPH-#1 0.12757	2.06e3	83.4	NO
4	4	13C8-PFOA	1801107-02 DPH-#1 0.12757	7.41e3	75.6	NO
5	5	13C9-PFNA	1801107-02 DPH-#1 0.12757	8.45e3	76.8	NO
6	6	13C4-PFOS	1801107-02 DPH-#1 0.12757	2.17e3	82.9	NO
7	7	13C6-PFDA	1801107-02 DPH-#1 0.12757	7.82e3	71.0	NO
8	8	13C7-PFUdA	1801107-02 DPH-#1 0.12757	9.59e3	75.7	NO

Name: 180618M1_63, Date: 19-Jun-2018, Time: 03:37:16, ID: 1801107-03 EX4 0.12575, Description: EX4

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801107-03 EX4 0.12575	8.43e3	84.5	NO
2	2	13C5-PFHxA	1801107-03 EX4 0.12575	9.72e3	82.0	NO
3	3	13C3-PFHxS	1801107-03 EX4 0.12575	2.17e3	87.9	NO
4	4	13C8-PFOA	1801107-03 EX4 0.12575	8.13e3	82.9	NO
5	5	13C9-PFNA	1801107-03 EX4 0.12575	9.13e3	82.9	NO
6	6	13C4-PFOS	1801107-03 EX4 0.12575	2.47e3	94.3	NO
7	7	13C6-PFDA	1801107-03 EX4 0.12575	8.06e3	73.1	NO
8	8	13C7-PFUdA	1801107-03 EX4 0.12575	9.13e3	72.1	NO

Name: 180618M1_64, Date: 19-Jun-2018, Time: 03:47:41, ID: B8F0123-BS1 OPR 0.25, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0123-BS1 OPR 0.25	8.35e3	83.6	NO
2	2	13C5-PFHxA	B8F0123-BS1 OPR 0.25	1.00e4	84.7	NO
3	3	13C3-PFHxS	B8F0123-BS1 OPR 0.25	2.20e3	89.1	NO
4	4	13C8-PFOA	B8F0123-BS1 OPR 0.25	8.91e3	90.9	NO
5	5	13C9-PFNA	B8F0123-BS1 OPR 0.25	9.58e3	87.0	NO
6	6	13C4-PFOS	B8F0123-BS1 OPR 0.25	2.37e3	90.5	NO
7	7	13C6-PFDA	B8F0123-BS1 OPR 0.25	8.44e3	76.6	NO
8	8	13C7-PFUdA	B8F0123-BS1 OPR 0.25	9.93e3	78.4	NO

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Name: 180618M1_65, Date: 19-Jun-2018, Time: 03:58:11, ID: B8F0123-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0123-BLK1 Method Blank 0.25	8.67e3	86.8	NO
2	2	13C5-PFHxA	B8F0123-BLK1 Method Blank 0.25	1.04e4	88.1	NO
3	3	13C3-PFHxS	B8F0123-BLK1 Method Blank 0.25	2.10e3	84.7	NO
4	4	13C8-PFOA	B8F0123-BLK1 Method Blank 0.25	8.68e3	88.5	NO
5	5	13C9-PFNA	B8F0123-BLK1 Method Blank 0.25	1.00e4	91.1	NO
6	6	13C4-PFOS	B8F0123-BLK1 Method Blank 0.25	2.28e3	87.1	NO
7	7	13C6-PFDA	B8F0123-BLK1 Method Blank 0.25	9.13e3	82.9	NO
8	8	13C7-PFUdA	B8F0123-BLK1 Method Blank 0.25	1.12e4	88.6	NO

Name: 180618M1_66, Date: 19-Jun-2018, Time: 04:08:37, ID: 1801048-02RE1 WT1805231405GSC 0.2457, Description: WT1805231405GSC

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801048-02RE1 WT1805231405GSC 0...	8.11e3	81.3	NO
2	2	13C5-PFHxA	1801048-02RE1 WT1805231405GSC 0...	9.66e3	81.6	NO
3	3	13C3-PFHxS	1801048-02RE1 WT1805231405GSC 0...	2.06e3	83.5	NO
4	4	13C8-PFOA	1801048-02RE1 WT1805231405GSC 0...	8.39e3	85.6	NO
5	5	13C9-PFNA	1801048-02RE1 WT1805231405GSC 0...	9.01e3	81.8	NO
6	6	13C4-PFOS	1801048-02RE1 WT1805231405GSC 0...	2.15e3	82.1	NO
7	7	13C6-PFDA	1801048-02RE1 WT1805231405GSC 0...	8.76e3	79.5	NO
8	8	13C7-PFUdA	1801048-02RE1 WT1805231405GSC 0...	9.11e3	71.9	NO

Name: 180618M1_67, Date: 19-Jun-2018, Time: 04:19:07, ID: 1801049-10RE1 FB1805231310GSC 0.24835, Description: FB1805231310GSC

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801049-10RE1 FB1805231310GSC 0....	7.64e3	76.5	NO
2	2	13C5-PFHxA	1801049-10RE1 FB1805231310GSC 0....	9.11e3	76.9	NO
3	3	13C3-PFHxS	1801049-10RE1 FB1805231310GSC 0....	2.10e3	85.0	NO
4	4	13C8-PFOA	1801049-10RE1 FB1805231310GSC 0....	8.45e3	86.2	NO
5	5	13C9-PFNA	1801049-10RE1 FB1805231310GSC 0....	9.29e3	84.4	NO
6	6	13C4-PFOS	1801049-10RE1 FB1805231310GSC 0....	1.96e3	74.7	NO
7	7	13C6-PFDA	1801049-10RE1 FB1805231310GSC 0....	7.97e3	72.4	NO
8	8	13C7-PFUdA	1801049-10RE1 FB1805231310GSC 0....	9.50e3	75.0	NO

Name: 180618M1_68, Date: 19-Jun-2018, Time: 04:29:32, ID: 1801198-01 FM1806061700NR 0.06382, Description: FM1806061700NR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801198-01 FM1806061700NR 0.06382	8.18e3	81.9	NO
2	2	13C5-PFHxA	1801198-01 FM1806061700NR 0.06382	1.00e4	84.5	NO
3	3	13C3-PFHxS	1801198-01 FM1806061700NR 0.06382	2.23e3	90.2	NO
4	4	13C8-PFOA	1801198-01 FM1806061700NR 0.06382	8.32e3	84.8	NO
5	5	13C9-PFNA	1801198-01 FM1806061700NR 0.06382	9.69e3	88.0	NO
6	6	13C4-PFOS	1801198-01 FM1806061700NR 0.06382	2.21e3	84.1	NO
7	7	13C6-PFDA	1801198-01 FM1806061700NR 0.06382	8.66e3	78.7	NO
8	8	13C7-PFUdA	1801198-01 FM1806061700NR 0.06382	1.10e4	86.5	NO

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Name: 180618M1_69, Date: 19-Jun-2018, Time: 04:40:02, ID: 1801198-02 SW1806061705NR 0.25265, Description: SW1806061705NR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801198-02 SW1806061705NR 0.25265	1.01e4	101.6	NO
2	2	13C5-PFHxA	1801198-02 SW1806061705NR 0.25265	1.22e4	103.1	NO
3	3	13C3-PFHxS	1801198-02 SW1806061705NR 0.25265	2.70e3	109.0	NO
4	4	13C8-PFOA	1801198-02 SW1806061705NR 0.25265	1.01e4	103.4	NO
5	5	13C9-PFNA	1801198-02 SW1806061705NR 0.25265	1.19e4	108.2	NO
6	6	13C4-PFOS	1801198-02 SW1806061705NR 0.25265	2.46e3	93.9	NO
7	7	13C6-PFDA	1801198-02 SW1806061705NR 0.25265	1.11e4	100.4	NO
8	8	13C7-PFUdA	1801198-02 SW1806061705NR 0.25265	1.24e4	98.1	NO

Name: 180618M1_70, Date: 19-Jun-2018, Time: 04:50:32, ID: 1801247-01 FM1806081120JLB 0.0242, Description: FM1806081120JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801247-01 FM1806081120JLB 0.0242	9.52e3	95.3	NO
2	2	13C5-PFHxA	1801247-01 FM1806081120JLB 0.0242	1.10e4	93.2	NO
3	3	13C3-PFHxS	1801247-01 FM1806081120JLB 0.0242	2.54e3	102.7	NO
4	4	13C8-PFOA	1801247-01 FM1806081120JLB 0.0242	9.69e3	98.9	NO
5	5	13C9-PFNA	1801247-01 FM1806081120JLB 0.0242	1.03e4	93.7	NO
6	6	13C4-PFOS	1801247-01 FM1806081120JLB 0.0242	2.11e3	80.4	NO
7	7	13C6-PFDA	1801247-01 FM1806081120JLB 0.0242	1.03e4	93.2	NO
8	8	13C7-PFUdA	1801247-01 FM1806081120JLB 0.0242	1.22e4	96.7	NO

Name: 180618M1_71, Date: 19-Jun-2018, Time: 05:00:57, ID: 1801247-02 SW1806081125JLB 0.25158, Description: SW1806081125JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801247-02 SW1806081125JLB 0.25158	1.04e4	104.4	NO
2	2	13C5-PFHxA	1801247-02 SW1806081125JLB 0.25158	1.26e4	106.6	NO
3	3	13C3-PFHxS	1801247-02 SW1806081125JLB 0.25158	2.82e3	113.9	NO
4	4	13C8-PFOA	1801247-02 SW1806081125JLB 0.25158	1.08e4	109.8	NO
5	5	13C9-PFNA	1801247-02 SW1806081125JLB 0.25158	1.11e4	100.6	NO
6	6	13C4-PFOS	1801247-02 SW1806081125JLB 0.25158	3.09e3	117.8	NO
7	7	13C6-PFDA	1801247-02 SW1806081125JLB 0.25158	1.08e4	98.0	NO
8	8	13C7-PFUdA	1801247-02 SW1806081125JLB 0.25158	1.29e4	101.5	NO

Name: 180618M1_72, Date: 19-Jun-2018, Time: 05:11:28, ID: B8F0082-BS1 OPR 0.25, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0082-BS1 OPR 0.25	7.58e3	75.9	NO
2	2	13C5-PFHxA	B8F0082-BS1 OPR 0.25	8.80e3	74.3	NO
3	3	13C3-PFHxS	B8F0082-BS1 OPR 0.25	2.29e3	92.7	NO
4	4	13C8-PFOA	B8F0082-BS1 OPR 0.25	7.42e3	75.7	NO
5	5	13C9-PFNA	B8F0082-BS1 OPR 0.25	7.98e3	72.5	NO
6	6	13C4-PFOS	B8F0082-BS1 OPR 0.25	2.20e3	84.0	NO
7	7	13C6-PFDA	B8F0082-BS1 OPR 0.25	7.90e3	71.7	NO
8	8	13C7-PFUdA	B8F0082-BS1 OPR 0.25	9.67e3	76.3	NO

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Name: 180618M1_73, Date: 19-Jun-2018, Time: 05:21:50, ID: B8F0082-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0082-BLK1 Method Blank 0.25	9.94e3	99.6	NO
2	2	13C5-PFHxA	B8F0082-BLK1 Method Blank 0.25	1.18e4	99.9	NO
3	3	13C3-PFHxS	B8F0082-BLK1 Method Blank 0.25	2.62e3	106.1	NO
4	4	13C8-PFOA	B8F0082-BLK1 Method Blank 0.25	9.63e3	98.3	NO
5	5	13C9-PFNA	B8F0082-BLK1 Method Blank 0.25	1.02e4	92.5	NO
6	6	13C4-PFOS	B8F0082-BLK1 Method Blank 0.25	2.63e3	100.4	NO
7	7	13C6-PFDA	B8F0082-BLK1 Method Blank 0.25	9.89e3	89.8	NO
8	8	13C7-PFUdA	B8F0082-BLK1 Method Blank 0.25	1.19e4	93.6	NO

Name: 180618M1_74, Date: 19-Jun-2018, Time: 05:32:20, ID: 1801152-01 WR1806051445JLB 0.248, Description: WR1806051445JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801152-01 WR1806051445JLB 0.248	9.46e3	94.8	NO
2	2	13C5-PFHxA	1801152-01 WR1806051445JLB 0.248	1.15e4	97.3	NO
3	3	13C3-PFHxS	1801152-01 WR1806051445JLB 0.248	2.50e3	101.1	NO
4	4	13C8-PFOA	1801152-01 WR1806051445JLB 0.248	9.31e3	95.0	NO
5	5	13C9-PFNA	1801152-01 WR1806051445JLB 0.248	1.03e4	93.4	NO
6	6	13C4-PFOS	1801152-01 WR1806051445JLB 0.248	2.39e3	91.0	NO
7	7	13C6-PFDA	1801152-01 WR1806051445JLB 0.248	9.82e3	89.1	NO
8	8	13C7-PFUdA	1801152-01 WR1806051445JLB 0.248	1.16e4	91.2	NO

Name: 180618M1_75, Date: 19-Jun-2018, Time: 05:42:50, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_76, Date: 19-Jun-2018, Time: 05:53:16, ID: ST180618M1-13 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-13 PFC CS3 18F1109	9.79e3	98.1	NO
2	2	13C5-PFHxA	ST180618M1-13 PFC CS3 18F1109	1.40e4	118.2	NO
3	3	13C3-PFHxS	ST180618M1-13 PFC CS3 18F1109	2.87e3	116.2	NO
4	4	13C8-PFOA	ST180618M1-13 PFC CS3 18F1109	1.17e4	119.2	NO
5	5	13C9-PFNA	ST180618M1-13 PFC CS3 18F1109	1.29e4	116.7	NO
6	6	13C4-PFOS	ST180618M1-13 PFC CS3 18F1109	2.81e3	107.0	NO
7	7	13C6-PFDA	ST180618M1-13 PFC CS3 18F1109	1.21e4	109.9	NO
8	8	13C7-PFUdA	ST180618M1-13 PFC CS3 18F1109	1.39e4	109.5	NO

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Name: 180618M1_77, Date: 19-Jun-2018, Time: 06:03:46, ID: ST180618M1-14 PFC CS0 18F1106, Description: PFC CS0 18F1106

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-14 PFC CS0 18F1106	1.16e4	116.0	NO
2	2	13C5-PFHxA	ST180618M1-14 PFC CS0 18F1106	1.54e4	130.4	NO
3	3	13C3-PFHxS	ST180618M1-14 PFC CS0 18F1106	2.87e3	115.9	NO
4	4	13C8-PFOA	ST180618M1-14 PFC CS0 18F1106	1.29e4	131.1	NO
5	5	13C9-PFNA	ST180618M1-14 PFC CS0 18F1106	1.35e4	122.6	NO
6	6	13C4-PFOS	ST180618M1-14 PFC CS0 18F1106	2.91e3	111.1	NO
7	7	13C6-PFDA	ST180618M1-14 PFC CS0 18F1106	1.31e4	118.7	NO
8	8	13C7-PFUdA	ST180618M1-14 PFC CS0 18F1106	1.41e4	111.2	NO

Name: 180618M1_78, Date: 19-Jun-2018, Time: 06:14:10, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_79, Date: 19-Jun-2018, Time: 06:24:41, ID: 1801154-01 WIR1806051350JLB 0.24359, Description: WIR1806051350JLB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801154-01 WIR1806051350JLB 0.243...	9.49e3	95.0	NO
2	2	13C5-PFHxA	1801154-01 WIR1806051350JLB 0.243...	1.07e4	90.5	NO
3	3	13C3-PFHxS	1801154-01 WIR1806051350JLB 0.243...	2.70e3	109.4	NO
4	4	13C8-PFOA	1801154-01 WIR1806051350JLB 0.243...	8.14e3	83.0	NO
5	5	13C9-PFNA	1801154-01 WIR1806051350JLB 0.243...	8.98e3	81.5	NO
6	6	13C4-PFOS	1801154-01 WIR1806051350JLB 0.243...	2.51e3	95.5	NO
7	7	13C6-PFDA	1801154-01 WIR1806051350JLB 0.243...	8.34e3	75.7	NO
8	8	13C7-PFUdA	1801154-01 WIR1806051350JLB 0.243...	9.80e3	77.4	NO

Name: 180618M1_80, Date: 19-Jun-2018, Time: 06:35:11, ID: 1801168-01 GW0370431806051335MK 0.25187, Description: GW0370431806051335MK

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801168-01 GW0370431806051335MK...	8.42e3	84.3	NO
2	2	13C5-PFHxA	1801168-01 GW0370431806051335MK...	1.01e4	85.0	NO
3	3	13C3-PFHxS	1801168-01 GW0370431806051335MK...	2.16e3	87.4	NO
4	4	13C8-PFOA	1801168-01 GW0370431806051335MK...	8.43e3	86.0	NO
5	5	13C9-PFNA	1801168-01 GW0370431806051335MK...	9.31e3	84.6	NO
6	6	13C4-PFOS	1801168-01 GW0370431806051335MK...	2.56e3	97.8	NO
7	7	13C6-PFDA	1801168-01 GW0370431806051335MK...	8.82e3	80.1	NO
8	8	13C7-PFUdA	1801168-01 GW0370431806051335MK...	9.62e3	75.9	NO

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Name: 180618M1_81, Date: 19-Jun-2018, Time: 06:45:36, ID: 1801168-02 FB1806051340MK 0.2477, Description: FB1806051340MK

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801168-02 FB1806051340MK 0.2477	9.23e3	92.5	NO
2	2	13C5-PFHxA	1801168-02 FB1806051340MK 0.2477	1.10e4	92.9	NO
3	3	13C3-PFHxS	1801168-02 FB1806051340MK 0.2477	2.54e3	102.9	NO
4	4	13C8-PFOA	1801168-02 FB1806051340MK 0.2477	9.08e3	92.7	NO
5	5	13C9-PFNA	1801168-02 FB1806051340MK 0.2477	1.02e4	92.5	NO
6	6	13C4-PFOS	1801168-02 FB1806051340MK 0.2477	2.52e3	96.1	NO
7	7	13C6-PFDA	1801168-02 FB1806051340MK 0.2477	9.96e3	90.5	NO
8	8	13C7-PFUdA	1801168-02 FB1806051340MK 0.2477	1.19e4	93.7	NO

Name: 180618M1_82, Date: 19-Jun-2018, Time: 06:56:06, ID: 1801168-03 GW0370431806051450MK 0.25302, Description: GW0370431806051450MK

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801168-03 GW0370431806051450MK...	7.12e3	71.3	NO
2	2	13C5-PFHxA	1801168-03 GW0370431806051450MK...	8.72e3	73.6	NO
3	3	13C3-PFHxS	1801168-03 GW0370431806051450MK...	2.12e3	85.7	NO
4	4	13C8-PFOA	1801168-03 GW0370431806051450MK...	7.36e3	75.1	NO
5	5	13C9-PFNA	1801168-03 GW0370431806051450MK...	8.11e3	73.6	NO
6	6	13C4-PFOS	1801168-03 GW0370431806051450MK...	2.17e3	82.6	NO
7	7	13C6-PFDA	1801168-03 GW0370431806051450MK...	7.20e3	65.4	NO
8	8	13C7-PFUdA	1801168-03 GW0370431806051450MK...	9.03e3	71.3	NO

Name: 180618M1_83, Date: 19-Jun-2018, Time: 07:06:30, ID: 1801179-01 Trip Blank 0.11827, Description: Trip Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801179-01 Trip Blank 0.11827	8.20e3	82.2	NO
2	2	13C5-PFHxA	1801179-01 Trip Blank 0.11827	9.49e3	80.1	NO
3	3	13C3-PFHxS	1801179-01 Trip Blank 0.11827	2.11e3	85.5	NO
4	4	13C8-PFOA	1801179-01 Trip Blank 0.11827	8.22e3	83.9	NO
5	5	13C9-PFNA	1801179-01 Trip Blank 0.11827	9.04e3	82.1	NO
6	6	13C4-PFOS	1801179-01 Trip Blank 0.11827	2.10e3	80.1	NO
7	7	13C6-PFDA	1801179-01 Trip Blank 0.11827	8.35e3	75.8	NO
8	8	13C7-PFUdA	1801179-01 Trip Blank 0.11827	1.05e4	82.7	NO

Name: 180618M1_84, Date: 19-Jun-2018, Time: 07:17:00, ID: 1801179-02 MW-1 0.11333, Description: MW-1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801179-02 MW-1 0.11333	8.92e3	89.3	NO
2	2	13C5-PFHxA	1801179-02 MW-1 0.11333	1.07e4	90.3	NO
3	3	13C3-PFHxS	1801179-02 MW-1 0.11333	2.36e3	95.4	NO
4	4	13C8-PFOA	1801179-02 MW-1 0.11333	8.63e3	88.0	NO
5	5	13C9-PFNA	1801179-02 MW-1 0.11333	9.69e3	88.0	NO
6	6	13C4-PFOS	1801179-02 MW-1 0.11333	2.61e3	99.5	NO
7	7	13C6-PFDA	1801179-02 MW-1 0.11333	8.71e3	79.1	NO
8	8	13C7-PFUdA	1801179-02 MW-1 0.11333	1.09e4	86.1	NO

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Name: 180618M1_85, Date: 19-Jun-2018, Time: 07:27:25, ID: 1801179-03 DW-1 0.11606, Description: DW-1

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801179-03 DW-1 0.11606	8.15e3	81.7	NO
2	2	13C5-PFHxA	1801179-03 DW-1 0.11606	9.94e3	84.0	NO
3	3	13C3-PFHxS	1801179-03 DW-1 0.11606	2.17e3	87.7	NO
4	4	13C8-PFOA	1801179-03 DW-1 0.11606	6.98e3	71.2	NO
5	5	13C9-PFNA	1801179-03 DW-1 0.11606	7.70e3	70.0	NO
6	6	13C4-PFOS	1801179-03 DW-1 0.11606	2.33e3	89.0	NO
7	7	13C6-PFDA	1801179-03 DW-1 0.11606	7.90e3	71.7	NO
8	8	13C7-PFUdA	1801179-03 DW-1 0.11606	9.37e3	74.0	NO

Name: 180618M1_86, Date: 19-Jun-2018, Time: 07:37:56, ID: 1801179-04 MW-3 0.11011, Description: MW-3

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801179-04 MW-3 0.11011	8.37e3	83.9	NO
2	2	13C5-PFHxA	1801179-04 MW-3 0.11011	9.74e3	82.3	NO
3	3	13C3-PFHxS	1801179-04 MW-3 0.11011	2.28e3	92.3	NO
4	4	13C8-PFOA	1801179-04 MW-3 0.11011	8.42e3	85.9	NO
5	5	13C9-PFNA	1801179-04 MW-3 0.11011	9.02e3	81.9	NO
6	6	13C4-PFOS	1801179-04 MW-3 0.11011	2.41e3	92.1	NO
7	7	13C6-PFDA	1801179-04 MW-3 0.11011	8.25e3	74.9	NO
8	8	13C7-PFUdA	1801179-04 MW-3 0.11011	1.02e4	80.8	NO

Name: 180618M1_87, Date: 19-Jun-2018, Time: 07:48:25, ID: 1801179-05 DOT-2 0.11852, Description: DOT-2

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801179-05 DOT-2 0.11852	8.33e3	83.5	NO
2	2	13C5-PFHxA	1801179-05 DOT-2 0.11852	9.56e3	80.8	NO
3	3	13C3-PFHxS	1801179-05 DOT-2 0.11852	2.32e3	93.9	NO
4	4	13C8-PFOA	1801179-05 DOT-2 0.11852	8.12e3	82.8	NO
5	5	13C9-PFNA	1801179-05 DOT-2 0.11852	8.40e3	76.3	NO
6	6	13C4-PFOS	1801179-05 DOT-2 0.11852	2.27e3	86.7	NO
7	7	13C6-PFDA	1801179-05 DOT-2 0.11852	7.12e3	64.6	NO
8	8	13C7-PFUdA	1801179-05 DOT-2 0.11852	9.13e3	72.1	NO

Name: 180618M1_88, Date: 19-Jun-2018, Time: 07:58:51, ID: B8F0080-MS1 Matrix Spike 0.00991, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0080-MS1 Matrix Spike 0.00991	7.13e3	71.4	NO
2	2	13C5-PFHxA	B8F0080-MS1 Matrix Spike 0.00991	9.11e3	76.9	NO
3	3	13C3-PFHxS	B8F0080-MS1 Matrix Spike 0.00991	1.90e3	76.8	NO
4	4	13C8-PFOA	B8F0080-MS1 Matrix Spike 0.00991	7.88e3	80.4	NO
5	5	13C9-PFNA	B8F0080-MS1 Matrix Spike 0.00991	1.47e4	133.6	NO
6	6	13C4-PFOS	B8F0080-MS1 Matrix Spike 0.00991	3.92e3	149.6	NO
7	7	13C6-PFDA	B8F0080-MS1 Matrix Spike 0.00991	8.73e3	79.2	NO
8	8	13C7-PFUdA	B8F0080-MS1 Matrix Spike 0.00991	2.29e4	181.1	YES

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Name: 180618M1_89, Date: 19-Jun-2018, Time: 08:09:22, ID: B8F0080-MSD1 Matrix Spike Dup 0.00988, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0080-MSD1 Matrix Spike Dup 0.009...	8.59e3	86.1	NO
2	2	13C5-PFHxA	B8F0080-MSD1 Matrix Spike Dup 0.009...	1.08e4	91.4	NO
3	3	13C3-PFHxS	B8F0080-MSD1 Matrix Spike Dup 0.009...	2.33e3	94.4	NO
4	4	13C8-PFOA	B8F0080-MSD1 Matrix Spike Dup 0.009...	9.40e3	95.9	NO
5	5	13C9-PFNA	B8F0080-MSD1 Matrix Spike Dup 0.009...	1.03e4	93.1	NO
6	6	13C4-PFOS	B8F0080-MSD1 Matrix Spike Dup 0.009...	2.32e3	88.4	NO
7	7	13C6-PFDA	B8F0080-MSD1 Matrix Spike Dup 0.009...	3.12e3	28.3	YES
8	8	13C7-PFUdA	B8F0080-MSD1 Matrix Spike Dup 0.009...	5.48e3	43.3	YES

Name: 180618M1_90, Date: 19-Jun-2018, Time: 08:19:52, ID: 1801221-02 18FWA-B2121-WX-W02 0.00979, Description: 18FWA-B2121-WX-W02

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801221-02 18FWA-B2121-WX-W02 0....	8.70e3	87.1	NO
2	2	13C5-PFHxA	1801221-02 18FWA-B2121-WX-W02 0....	1.05e4	88.5	NO
3	3	13C3-PFHxS	1801221-02 18FWA-B2121-WX-W02 0....	2.37e3	95.8	NO
4	4	13C8-PFOA	1801221-02 18FWA-B2121-WX-W02 0....	9.67e3	98.6	NO
5	5	13C9-PFNA	1801221-02 18FWA-B2121-WX-W02 0....	1.09e4	99.0	NO
6	6	13C4-PFOS	1801221-02 18FWA-B2121-WX-W02 0....	2.27e3	86.6	NO
7	7	13C6-PFDA	1801221-02 18FWA-B2121-WX-W02 0....	3.32e3	30.1	YES
8	8	13C7-PFUdA	1801221-02 18FWA-B2121-WX-W02 0....	5.47e3	43.2	YES

Name: 180618M1_91, Date: 19-Jun-2018, Time: 08:30:16, ID: B8F0089-BS1 OPR 0.125, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0089-BS1 OPR 0.125	9.76e3	97.8	NO
2	2	13C5-PFHxA	B8F0089-BS1 OPR 0.125	1.19e4	100.2	NO
3	3	13C3-PFHxS	B8F0089-BS1 OPR 0.125	2.56e3	103.6	NO
4	4	13C8-PFOA	B8F0089-BS1 OPR 0.125	9.97e3	101.7	NO
5	5	13C9-PFNA	B8F0089-BS1 OPR 0.125	1.13e4	102.4	NO
6	6	13C4-PFOS	B8F0089-BS1 OPR 0.125	2.75e3	104.8	NO
7	7	13C6-PFDA	B8F0089-BS1 OPR 0.125	1.05e4	95.6	NO
8	8	13C7-PFUdA	B8F0089-BS1 OPR 0.125	1.25e4	98.8	NO

Name: 180618M1_92, Date: 19-Jun-2018, Time: 08:40:46, ID: B8F0089-MS1 Matrix Spike 0.11685, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0089-MS1 Matrix Spike 0.11685	6.93e3	69.4	NO
2	2	13C5-PFHxA	B8F0089-MS1 Matrix Spike 0.11685	8.45e3	71.4	NO
3	3	13C3-PFHxS	B8F0089-MS1 Matrix Spike 0.11685	2.09e3	84.6	NO
4	4	13C8-PFOA	B8F0089-MS1 Matrix Spike 0.11685	8.07e3	82.3	NO
5	5	13C9-PFNA	B8F0089-MS1 Matrix Spike 0.11685	9.12e3	82.9	NO
6	6	13C4-PFOS	B8F0089-MS1 Matrix Spike 0.11685	2.26e3	86.2	NO
7	7	13C6-PFDA	B8F0089-MS1 Matrix Spike 0.11685	7.93e3	72.0	NO
8	8	13C7-PFUdA	B8F0089-MS1 Matrix Spike 0.11685	9.46e3	74.7	NO

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Name: 180618M1_93, Date: 19-Jun-2018, Time: 08:51:11, ID: B8F0089-MSD1 Matrix Spike Dup 0.11789, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0089-MSD1 Matrix Spike Dup 0.117...	7.82e3	78.3	NO
2	2	13C5-PFHxA	B8F0089-MSD1 Matrix Spike Dup 0.117...	1.05e4	88.3	NO
3	3	13C3-PFHxS	B8F0089-MSD1 Matrix Spike Dup 0.117...	2.63e3	106.4	NO
4	4	13C8-PFOA	B8F0089-MSD1 Matrix Spike Dup 0.117...	9.42e3	96.2	NO
5	5	13C9-PFNA	B8F0089-MSD1 Matrix Spike Dup 0.117...	1.10e4	99.9	NO
6	6	13C4-PFOS	B8F0089-MSD1 Matrix Spike Dup 0.117...	2.79e3	106.5	NO
7	7	13C6-PFDA	B8F0089-MSD1 Matrix Spike Dup 0.117...	1.04e4	94.7	NO
8	8	13C7-PFUdA	B8F0089-MSD1 Matrix Spike Dup 0.117...	1.17e4	92.2	NO

Name: 180618M1_94, Date: 19-Jun-2018, Time: 09:01:41, ID: B8F0089-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0089-BLK1 Method Blank 0.125	7.60e3	76.1	NO
2	2	13C5-PFHxA	B8F0089-BLK1 Method Blank 0.125	9.80e3	82.7	NO
3	3	13C3-PFHxS	B8F0089-BLK1 Method Blank 0.125	2.05e3	82.8	NO
4	4	13C8-PFOA	B8F0089-BLK1 Method Blank 0.125	8.43e3	86.0	NO
5	5	13C9-PFNA	B8F0089-BLK1 Method Blank 0.125	9.10e3	82.6	NO
6	6	13C4-PFOS	B8F0089-BLK1 Method Blank 0.125	2.32e3	88.6	NO
7	7	13C6-PFDA	B8F0089-BLK1 Method Blank 0.125	9.29e3	84.4	NO
8	8	13C7-PFUdA	B8F0089-BLK1 Method Blank 0.125	1.01e4	79.9	NO

Name: 180618M1_95, Date: 19-Jun-2018, Time: 09:12:06, ID: 1801120-01 REEPDW1070 0.12305, Description: REEPDW1070

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-01 REEPDW1070 0.12305	5.86e3	58.7	NO
2	2	13C5-PFHxA	1801120-01 REEPDW1070 0.12305	8.08e3	68.3	NO
3	3	13C3-PFHxS	1801120-01 REEPDW1070 0.12305	2.20e3	88.9	NO
4	4	13C8-PFOA	1801120-01 REEPDW1070 0.12305	7.55e3	77.1	NO
5	5	13C9-PFNA	1801120-01 REEPDW1070 0.12305	8.27e3	75.1	NO
6	6	13C4-PFOS	1801120-01 REEPDW1070 0.12305	2.41e3	91.9	NO
7	7	13C6-PFDA	1801120-01 REEPDW1070 0.12305	8.25e3	74.9	NO
8	8	13C7-PFUdA	1801120-01 REEPDW1070 0.12305	9.71e3	76.6	NO

Name: 180618M1_96, Date: 19-Jun-2018, Time: 09:22:37, ID: 1801120-02 REEPDW556 0.12328, Description: REEPDW556

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-02 REEPDW556 0.12328	7.55e3	75.6	NO
2	2	13C5-PFHxA	1801120-02 REEPDW556 0.12328	9.66e3	81.6	NO
3	3	13C3-PFHxS	1801120-02 REEPDW556 0.12328	2.35e3	94.9	NO
4	4	13C8-PFOA	1801120-02 REEPDW556 0.12328	8.22e3	83.9	NO
5	5	13C9-PFNA	1801120-02 REEPDW556 0.12328	9.36e3	85.0	NO
6	6	13C4-PFOS	1801120-02 REEPDW556 0.12328	2.44e3	92.9	NO
7	7	13C6-PFDA	1801120-02 REEPDW556 0.12328	9.71e3	88.1	NO
8	8	13C7-PFUdA	1801120-02 REEPDW556 0.12328	1.00e4	79.2	NO

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Name: 180618M1_97, Date: 19-Jun-2018, Time: 09:33:02, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_98, Date: 19-Jun-2018, Time: 09:43:32, ID: ST180618M1-15 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-15 PFC CS3 18F1109	1.01e4	100.7	NO
2	2	13C5-PFHxA	ST180618M1-15 PFC CS3 18F1109	1.37e4	116.0	NO
3	3	13C3-PFHxS	ST180618M1-15 PFC CS3 18F1109	2.82e3	114.1	NO
4	4	13C8-PFOA	ST180618M1-15 PFC CS3 18F1109	1.12e4	114.5	NO
5	5	13C9-PFNA	ST180618M1-15 PFC CS3 18F1109	1.25e4	113.2	NO
6	6	13C4-PFOS	ST180618M1-15 PFC CS3 18F1109	2.84e3	108.4	NO
7	7	13C6-PFDA	ST180618M1-15 PFC CS3 18F1109	1.11e4	100.8	NO
8	8	13C7-PFUdA	ST180618M1-15 PFC CS3 18F1109	1.30e4	102.9	NO

Name: 180618M1_99, Date: 19-Jun-2018, Time: 09:53:57, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180618M1_100, Date: 19-Jun-2018, Time: 10:04:28, ID: 1801120-03 REEPDW1075 0.12427, Description: REEPDW1075

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-03 REEPDW1075 0.12427	6.95e3	69.6	NO
2	2	13C5-PFHxA	1801120-03 REEPDW1075 0.12427	9.17e3	77.4	NO
3	3	13C3-PFHxS	1801120-03 REEPDW1075 0.12427	2.07e3	83.6	NO
4	4	13C8-PFOA	1801120-03 REEPDW1075 0.12427	7.59e3	77.4	NO
5	5	13C9-PFNA	1801120-03 REEPDW1075 0.12427	8.67e3	78.7	NO
6	6	13C4-PFOS	1801120-03 REEPDW1075 0.12427	2.15e3	82.2	NO
7	7	13C6-PFDA	1801120-03 REEPDW1075 0.12427	8.32e3	75.5	NO
8	8	13C7-PFUdA	1801120-03 REEPDW1075 0.12427	9.48e3	74.8	NO

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Name: 180618M1_101, Date: 19-Jun-2018, Time: 10:14:54, ID: 1801120-04 REEPDW1076 0.12353, Description: REEPDW1076

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-04 REEPDW1076 0.12353	6.79e3	68.0	NO
2	2	13C5-PFHxA	1801120-04 REEPDW1076 0.12353	8.64e3	73.0	NO
3	3	13C3-PFHxS	1801120-04 REEPDW1076 0.12353	2.15e3	86.8	NO
4	4	13C8-PFOA	1801120-04 REEPDW1076 0.12353	7.69e3	78.5	NO
5	5	13C9-PFNA	1801120-04 REEPDW1076 0.12353	8.54e3	77.6	NO
6	6	13C4-PFOS	1801120-04 REEPDW1076 0.12353	2.34e3	89.1	NO
7	7	13C6-PFDA	1801120-04 REEPDW1076 0.12353	9.28e3	84.2	NO
8	8	13C7-PFUdA	1801120-04 REEPDW1076 0.12353	1.04e4	82.4	NO

Name: 180618M1_102, Date: 19-Jun-2018, Time: 10:25:24, ID: 1801120-05 REEPDW1077 0.12303, Description: REEPDW1077

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-05 REEPDW1077 0.12303	5.05e3	50.5	NO
2	2	13C5-PFHxA	1801120-05 REEPDW1077 0.12303	6.61e3	55.8	NO
3	3	13C3-PFHxS	1801120-05 REEPDW1077 0.12303	2.20e3	89.0	NO
4	4	13C8-PFOA	1801120-05 REEPDW1077 0.12303	6.26e3	63.8	NO
5	5	13C9-PFNA	1801120-05 REEPDW1077 0.12303	7.71e3	70.0	NO
6	6	13C4-PFOS	1801120-05 REEPDW1077 0.12303	2.31e3	88.1	NO
7	7	13C6-PFDA	1801120-05 REEPDW1077 0.12303	7.54e3	68.4	NO
8	8	13C7-PFUdA	1801120-05 REEPDW1077 0.12303	9.10e3	71.8	NO

Name: 180618M1_103, Date: 19-Jun-2018, Time: 10:35:48, ID: 1801120-06 REEPDW1080 0.11736, Description: REEPDW1080

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-06 REEPDW1080 0.11736	6.82e3	68.3	NO
2	2	13C5-PFHxA	1801120-06 REEPDW1080 0.11736	8.82e3	74.5	NO
3	3	13C3-PFHxS	1801120-06 REEPDW1080 0.11736	2.09e3	84.6	NO
4	4	13C8-PFOA	1801120-06 REEPDW1080 0.11736	7.65e3	78.0	NO
5	5	13C9-PFNA	1801120-06 REEPDW1080 0.11736	8.27e3	75.1	NO
6	6	13C4-PFOS	1801120-06 REEPDW1080 0.11736	2.05e3	78.2	NO
7	7	13C6-PFDA	1801120-06 REEPDW1080 0.11736	8.03e3	72.9	NO
8	8	13C7-PFUdA	1801120-06 REEPDW1080 0.11736	8.70e3	68.7	NO

Name: 180618M1_104, Date: 19-Jun-2018, Time: 10:46:18, ID: 1801120-07 REEPDW557 0.11966, Description: REEPDW557

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-07 REEPDW557 0.11966	6.93e3	69.4	NO
2	2	13C5-PFHxA	1801120-07 REEPDW557 0.11966	8.91e3	75.2	NO
3	3	13C3-PFHxS	1801120-07 REEPDW557 0.11966	2.06e3	83.5	NO
4	4	13C8-PFOA	1801120-07 REEPDW557 0.11966	8.02e3	81.8	NO
5	5	13C9-PFNA	1801120-07 REEPDW557 0.11966	8.49e3	77.1	NO
6	6	13C4-PFOS	1801120-07 REEPDW557 0.11966	2.34e3	89.2	NO
7	7	13C6-PFDA	1801120-07 REEPDW557 0.11966	9.49e3	86.2	NO
8	8	13C7-PFUdA	1801120-07 REEPDW557 0.11966	1.01e4	79.7	NO

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Name: 180618M1_105, Date: 19-Jun-2018, Time: 10:56:44, ID: 1801120-08 REEPDW1081 0.11404, Description: REEPDW1081

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-08 REEPDW1081 0.11404	7.85e3	78.6	NO
2	2	13C5-PFHxA	1801120-08 REEPDW1081 0.11404	9.75e3	82.3	NO
3	3	13C3-PFHxS	1801120-08 REEPDW1081 0.11404	2.14e3	86.6	NO
4	4	13C8-PFOA	1801120-08 REEPDW1081 0.11404	7.84e3	80.0	NO
5	5	13C9-PFNA	1801120-08 REEPDW1081 0.11404	8.44e3	76.6	NO
6	6	13C4-PFOS	1801120-08 REEPDW1081 0.11404	2.53e3	96.5	NO
7	7	13C6-PFDA	1801120-08 REEPDW1081 0.11404	8.42e3	76.4	NO
8	8	13C7-PFUdA	1801120-08 REEPDW1081 0.11404	9.93e3	78.4	NO

Name: 180618M1_106, Date: 19-Jun-2018, Time: 11:07:14, ID: 1801120-09 REEPDW1082 0.12146, Description: REEPDW1082

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-09 REEPDW1082 0.12146	7.79e3	78.0	NO
2	2	13C5-PFHxA	1801120-09 REEPDW1082 0.12146	9.74e3	82.3	NO
3	3	13C3-PFHxS	1801120-09 REEPDW1082 0.12146	2.25e3	91.0	NO
4	4	13C8-PFOA	1801120-09 REEPDW1082 0.12146	8.39e3	85.6	NO
5	5	13C9-PFNA	1801120-09 REEPDW1082 0.12146	9.62e3	87.3	NO
6	6	13C4-PFOS	1801120-09 REEPDW1082 0.12146	2.10e3	80.2	NO
7	7	13C6-PFDA	1801120-09 REEPDW1082 0.12146	1.02e4	92.5	NO
8	8	13C7-PFUdA	1801120-09 REEPDW1082 0.12146	1.18e4	93.0	NO

Name: 180618M1_107, Date: 19-Jun-2018, Time: 11:17:38, ID: 1801120-10 REEPDW1083 0.12257, Description: REEPDW1083

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-10 REEPDW1083 0.12257	6.70e3	67.1	NO
2	2	13C5-PFHxA	1801120-10 REEPDW1083 0.12257	9.12e3	77.0	NO
3	3	13C3-PFHxS	1801120-10 REEPDW1083 0.12257	2.27e3	91.7	NO
4	4	13C8-PFOA	1801120-10 REEPDW1083 0.12257	7.99e3	81.5	NO
5	5	13C9-PFNA	1801120-10 REEPDW1083 0.12257	9.14e3	83.0	NO
6	6	13C4-PFOS	1801120-10 REEPDW1083 0.12257	2.21e3	84.3	NO
7	7	13C6-PFDA	1801120-10 REEPDW1083 0.12257	8.91e3	80.9	NO
8	8	13C7-PFUdA	1801120-10 REEPDW1083 0.12257	1.04e4	82.3	NO

Name: 180618M1_108, Date: 19-Jun-2018, Time: 11:28:08, ID: 1801120-11 REEPDW1084 0.12365, Description: REEPDW1084

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-11 REEPDW1084 0.12365	7.13e3	71.5	NO
2	2	13C5-PFHxA	1801120-11 REEPDW1084 0.12365	8.82e3	74.5	NO
3	3	13C3-PFHxS	1801120-11 REEPDW1084 0.12365	2.12e3	85.6	NO
4	4	13C8-PFOA	1801120-11 REEPDW1084 0.12365	8.07e3	82.3	NO
5	5	13C9-PFNA	1801120-11 REEPDW1084 0.12365	9.09e3	82.6	NO
6	6	13C4-PFOS	1801120-11 REEPDW1084 0.12365	2.33e3	88.8	NO
7	7	13C6-PFDA	1801120-11 REEPDW1084 0.12365	8.73e3	79.2	NO
8	8	13C7-PFUdA	1801120-11 REEPDW1084 0.12365	9.87e3	77.9	NO

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Name: 180618M1_109, Date: 19-Jun-2018, Time: 11:38:33, ID: 1801120-12 REEPDW1085 0.12217, Description: REEPDW1085

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801120-12 REEPDW1085 0.12217	6.43e3	64.4	NO
2	2	13C5-PFHxA	1801120-12 REEPDW1085 0.12217	8.51e3	71.9	NO
3	3	13C3-PFHxS	1801120-12 REEPDW1085 0.12217	2.14e3	86.5	NO
4	4	13C8-PFOA	1801120-12 REEPDW1085 0.12217	7.37e3	75.2	NO
5	5	13C9-PFNA	1801120-12 REEPDW1085 0.12217	8.34e3	75.7	NO
6	6	13C4-PFOS	1801120-12 REEPDW1085 0.12217	2.51e3	95.6	NO
7	7	13C6-PFDA	1801120-12 REEPDW1085 0.12217	8.16e3	74.1	NO
8	8	13C7-PFUdA	1801120-12 REEPDW1085 0.12217	9.74e3	76.9	NO

Name: 180618M1_110, Date: 19-Jun-2018, Time: 11:49:03, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA	8.34e0	0.1	YES

Name: 180618M1_111, Date: 19-Jun-2018, Time: 11:59:28, ID: ST180618M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180618M1-16 PFC CS3 18F1109	1.00e4	100.4	NO
2	2	13C5-PFHxA	ST180618M1-16 PFC CS3 18F1109	1.42e4	119.6	NO
3	3	13C3-PFHxS	ST180618M1-16 PFC CS3 18F1109	2.75e3	111.1	NO
4	4	13C8-PFOA	ST180618M1-16 PFC CS3 18F1109	1.16e4	118.3	NO
5	5	13C9-PFNA	ST180618M1-16 PFC CS3 18F1109	1.29e4	117.5	NO
6	6	13C4-PFOS	ST180618M1-16 PFC CS3 18F1109	2.83e3	108.1	NO
7	7	13C6-PFDA	ST180618M1-16 PFC CS3 18F1109	1.23e4	111.7	NO
8	8	13C7-PFUdA	ST180618M1-16 PFC CS3 18F1109	1.35e4	106.7	NO

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Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 10:39:30 Pacific Daylight Time
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Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

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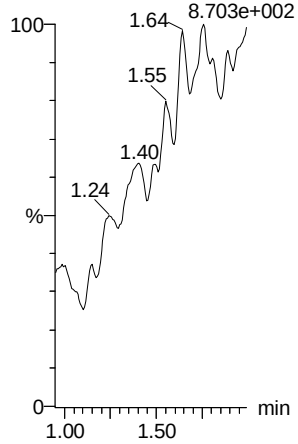

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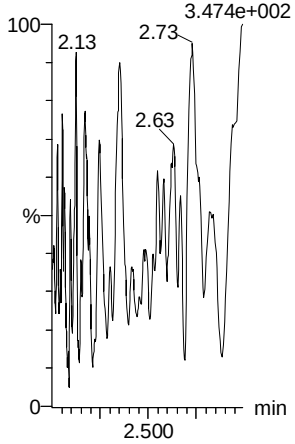
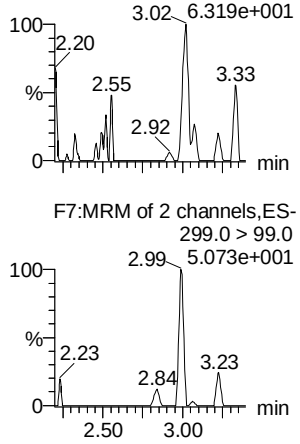


PFBS



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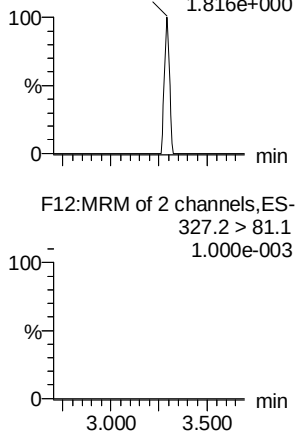

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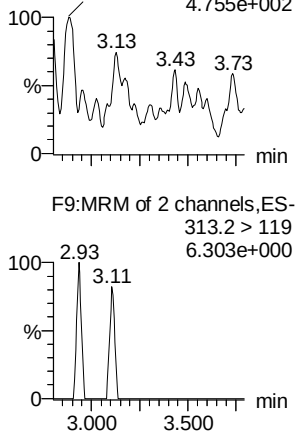

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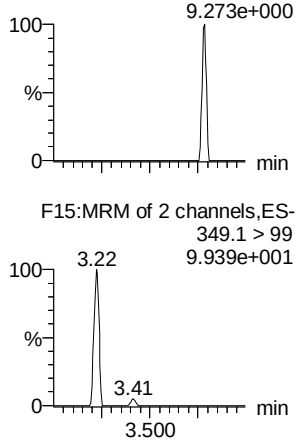

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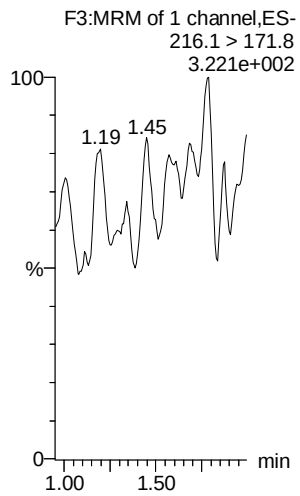

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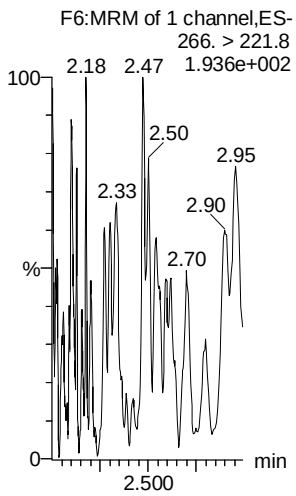

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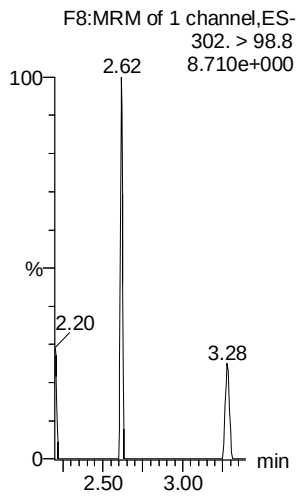

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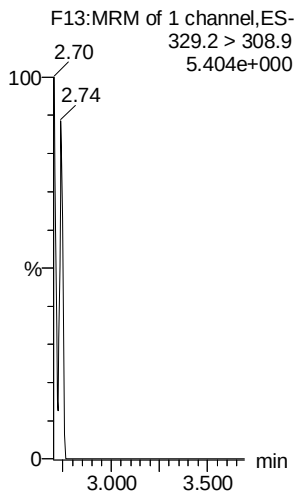

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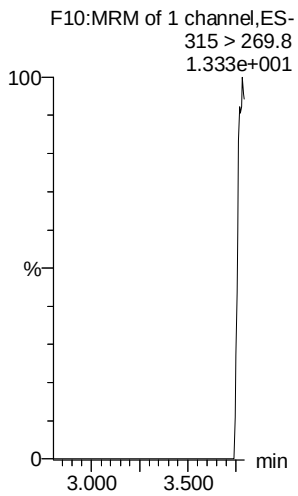

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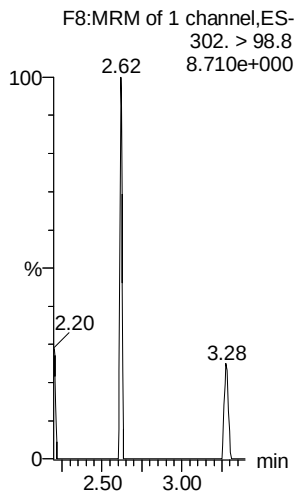

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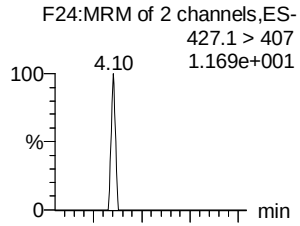
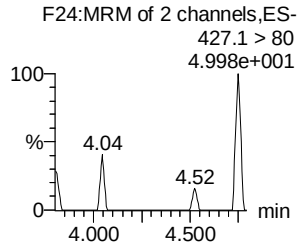
Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

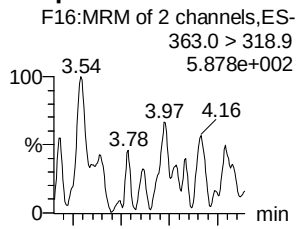
Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

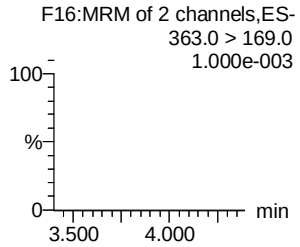
6:2 FTS



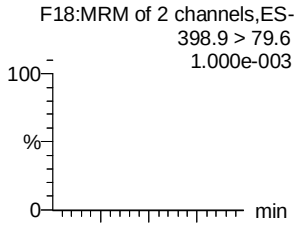


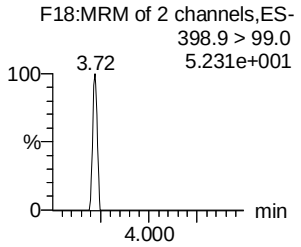
PFHpA





L-PFHxS





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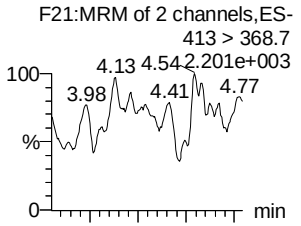

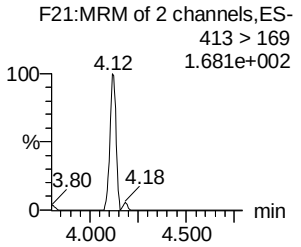

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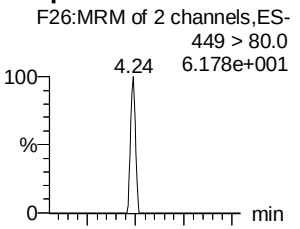

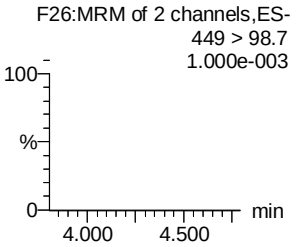

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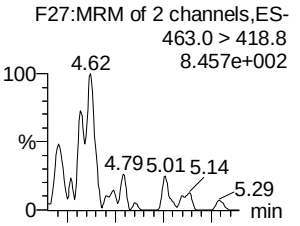

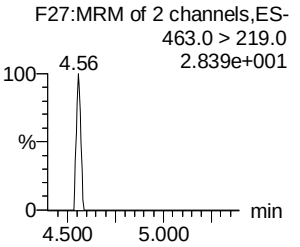

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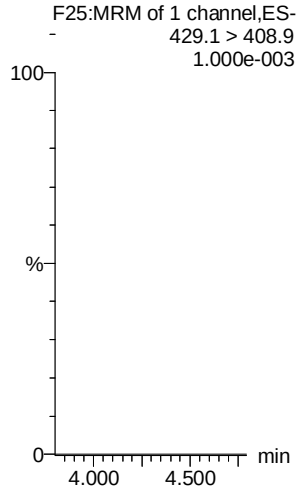

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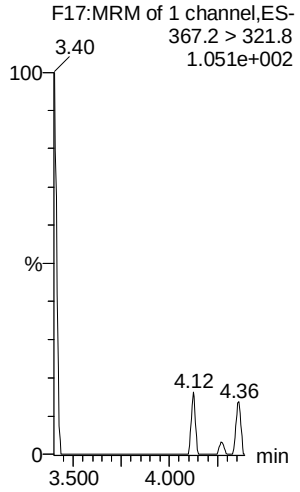
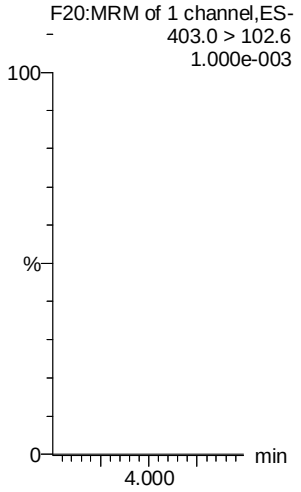


18O2-PFHxS



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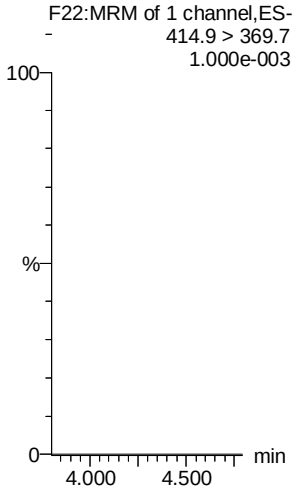

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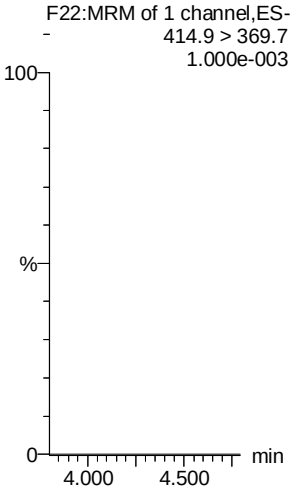

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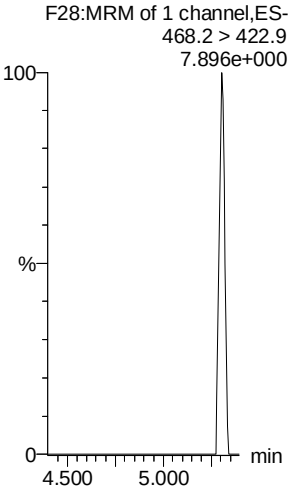

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Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

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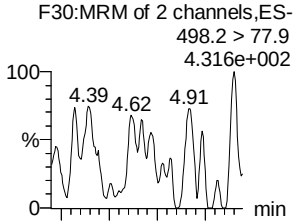
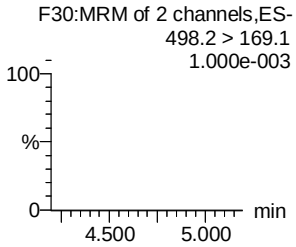
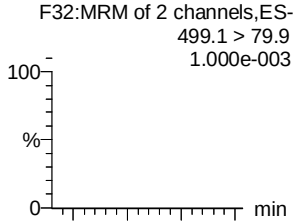
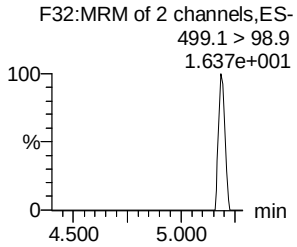




L-PFOS





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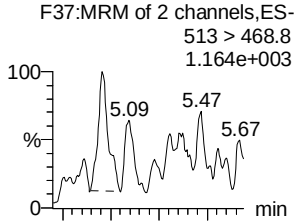
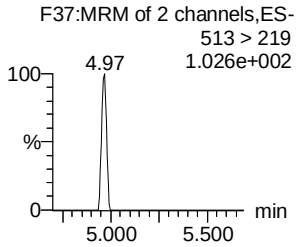
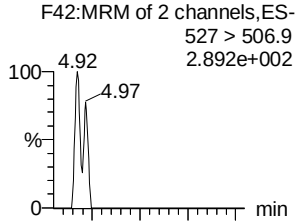
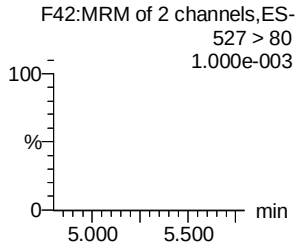




8:2 FTS





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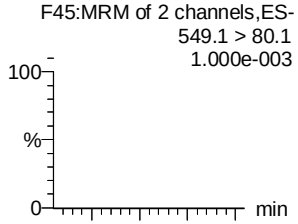

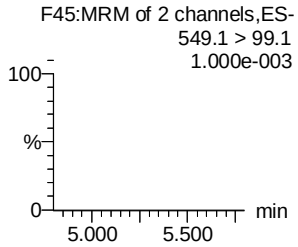

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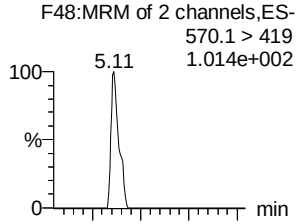

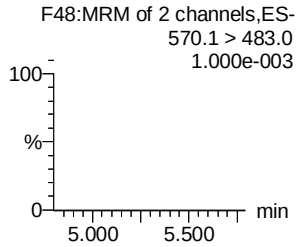

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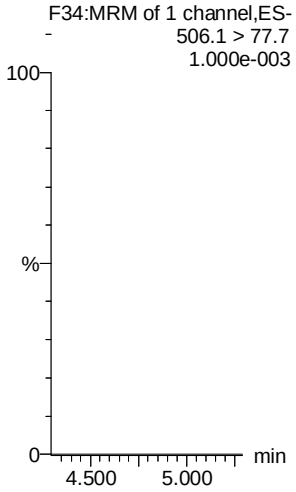

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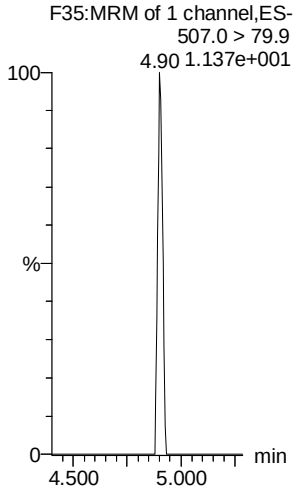

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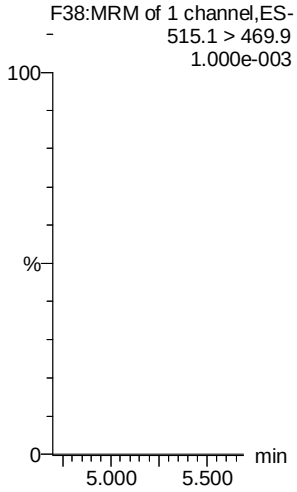

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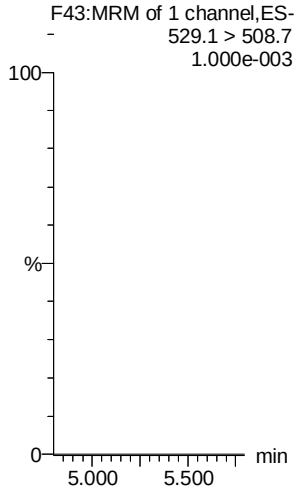

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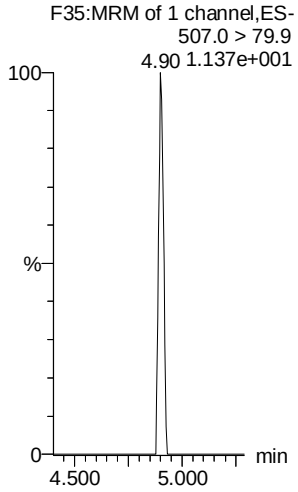

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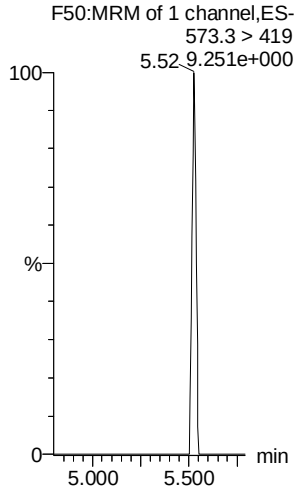

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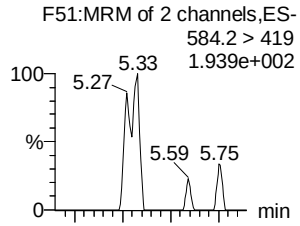
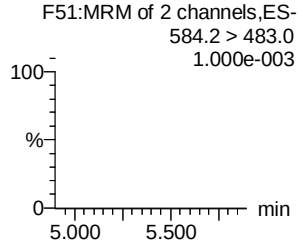
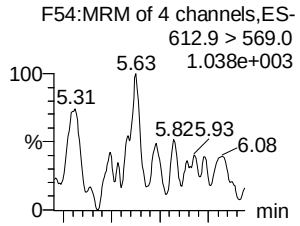
Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

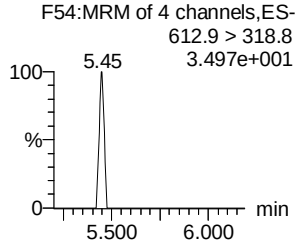
L-EtFOSAA



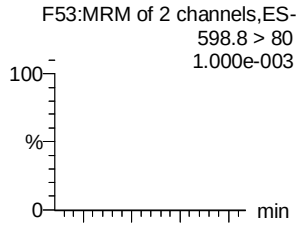


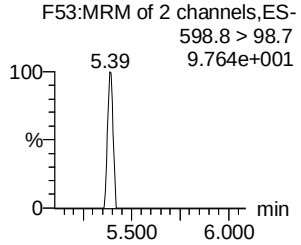
PFDoA



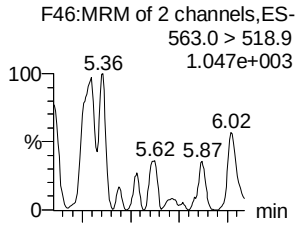


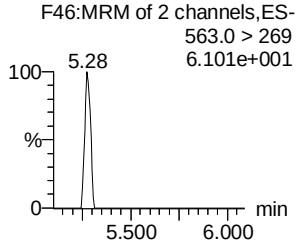
PFDS



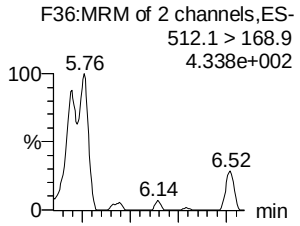


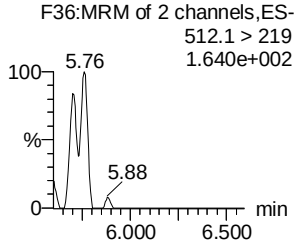
PFUdA



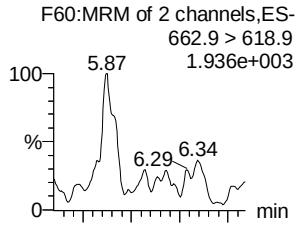


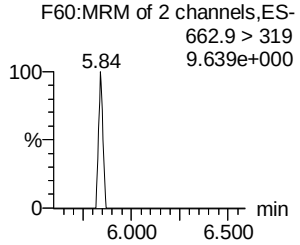
N-MeFOSA



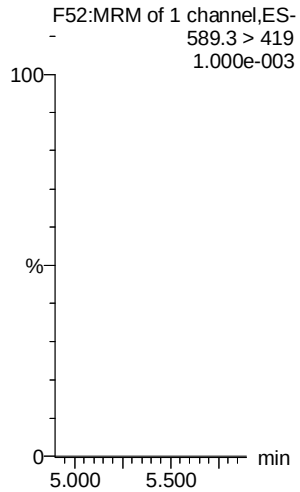


PFTrDA

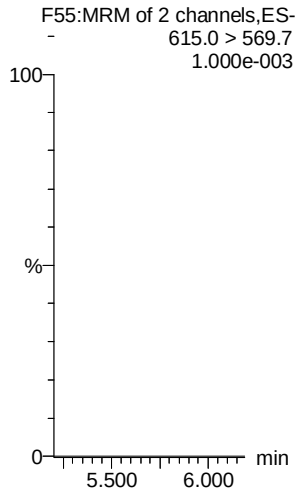




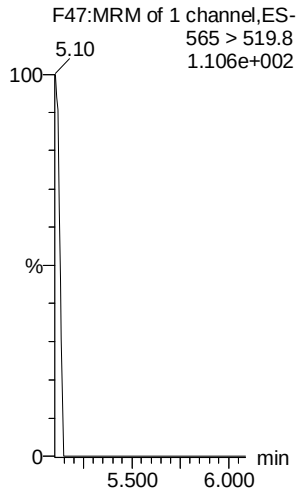
d5-N-EtFOSAA



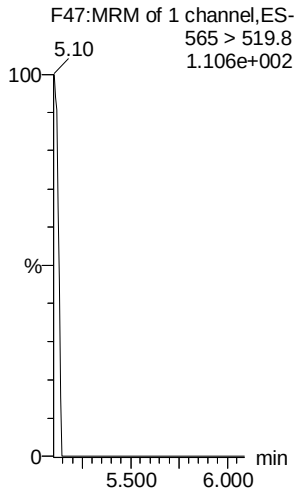
13C2-PFDoA



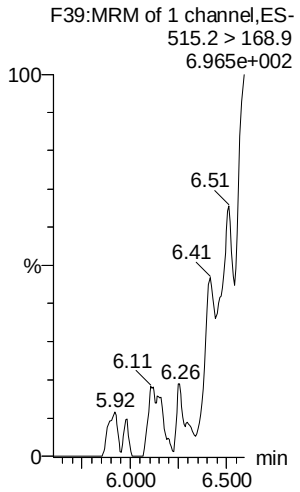
13C2-PFUdA



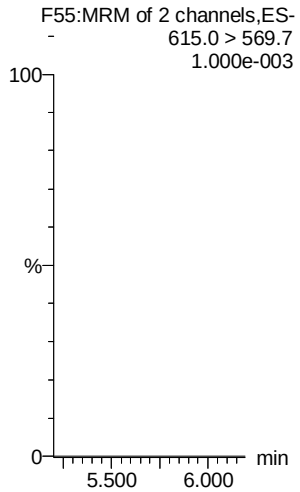
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

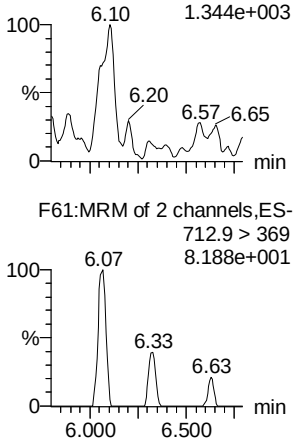


Dataset: Untitled

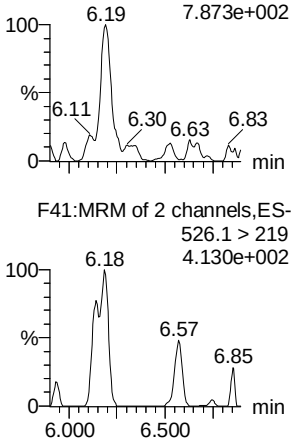
Last Altered: Tuesday, June 19, 2018 10:39:30 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

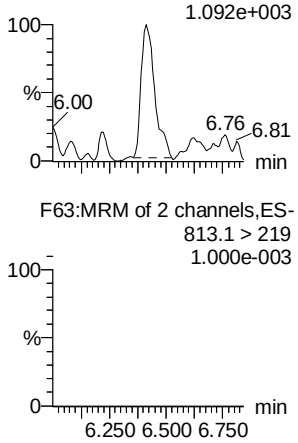
PFTeDA



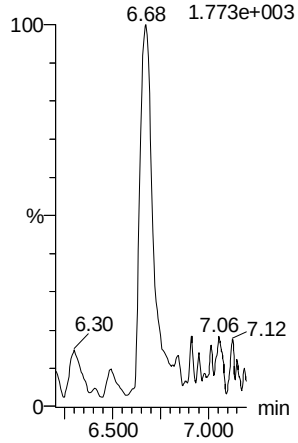
N-EtFOSA



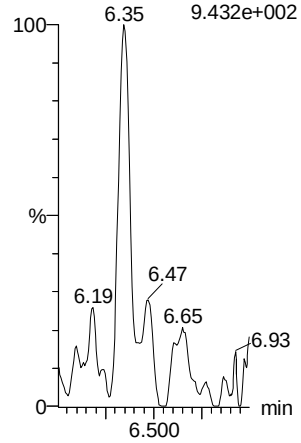
PFHxDA



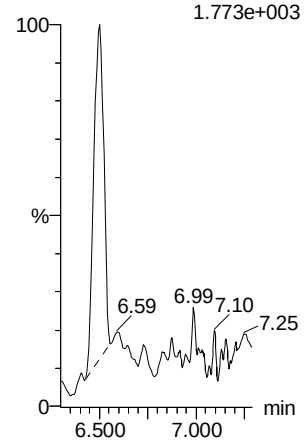
PFODA



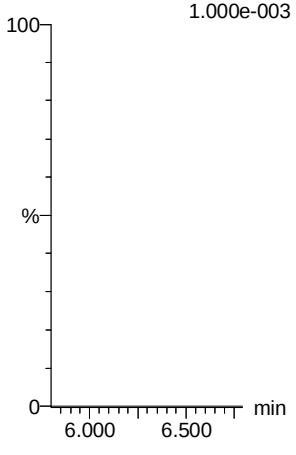
N-MeFOSE



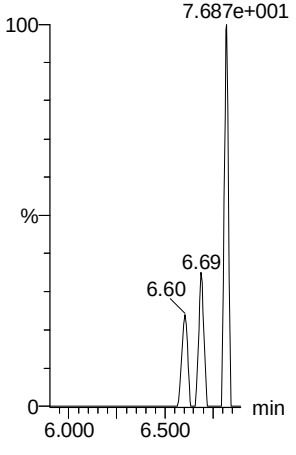
N-EtFOSE



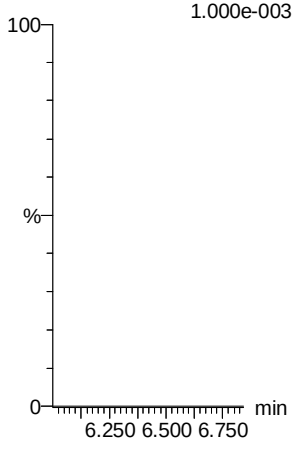
13C2-PFTeDA



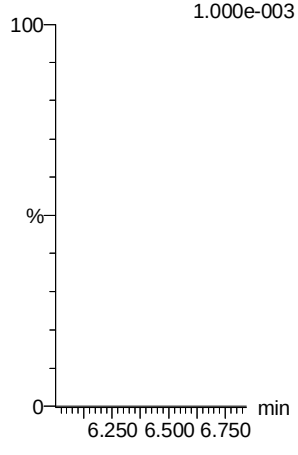
d5-N-ETFOSA



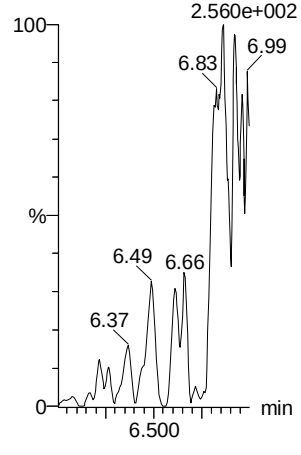
13C2-PFHxDA



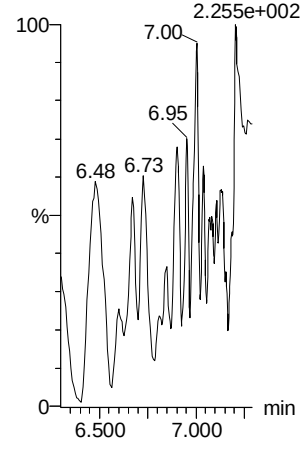
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



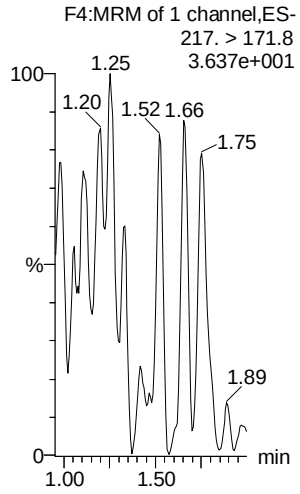
Vista Analytical Laboratory

Dataset: Untitled

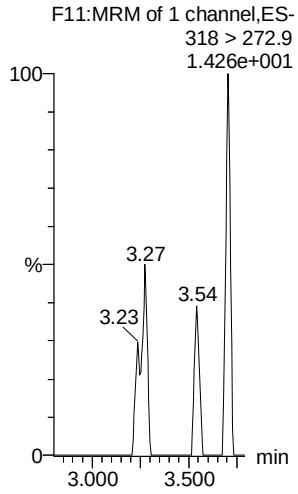
Last Altered: Tuesday, June 19, 2018 10:39:30 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

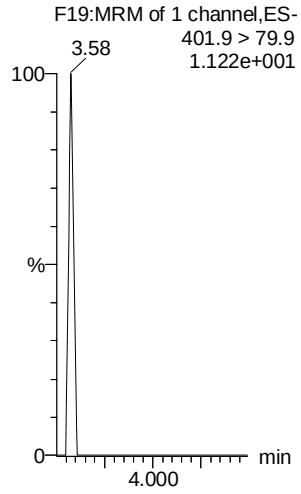
13C4-PFBA



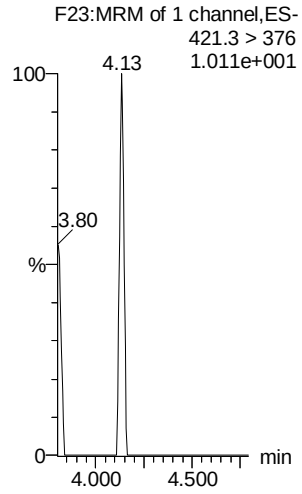
13C5-PFHxA



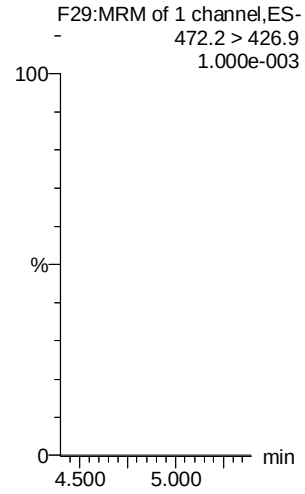
13C3-PFHxS



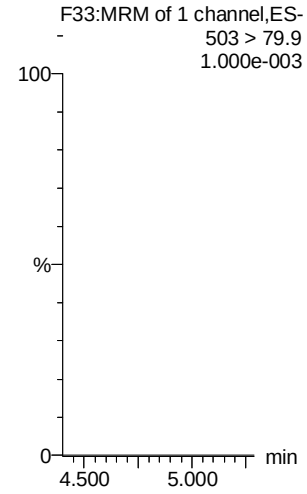
13C8-PFOA



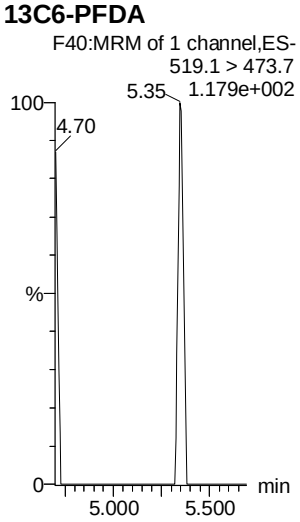
13C9-PFNA



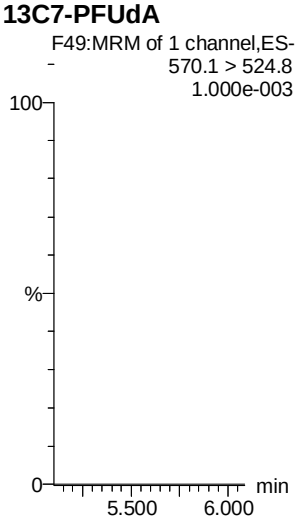
13C4-PFOS



13C6-PFDA



13C7-PFUdA



LC Calibration Standards Review Checklist 604

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	
Calibration ID:	STL0606181M1-11	L (M) H	☑	☑	☑	☑	☑	☑	☐
Calibration ID:	-12	L (M) H	☑	☑	☑	☑	☑	☑	☐
Calibration ID:	-13	L (M) H	☑	☑	☑	☑	☑	☑	☐
Calibration ID:	-14	(L) M H	☑	☑(A)	☑	☑	☑	☑	☐
Calibration ID:	-15	L (M) H	☑	☑	☑	☑	☑	☑	☐
Calibration ID:	16	L (M) H	☑	☑ 6/19/18	☑	☑	☑	☑	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 6/19/18

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☑

IIS Area Saved ☑

Reviewed By: 6/19/18
Initials/Date

Comments:

(A) PFOSA > 130%.

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

√ MBF 6/19/18

Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	7564.039	8812.296	1.00	1.19	10.729	9.7	97.2	NO		
2	2	PFPeA	263.1 > 218.9	9418.872	12217.544	1.00	2.20	9.637	10.0	99.9	NO		
3	3	PFBS	299.0 > 79.7	2228.145	1406.364	1.00	2.50	19.804	9.4	94.5	NO	3.030	NO
4	4	4:2 FTS	327.2>307.2	2194.098	2924.589	1.00	2.94	9.378	9.5	94.7	NO	1.783	NO
5	5	PFHxA	313.2 > 268.9	11822.038	3712.182	1.00	3.02	15.923	10.5	104.6	NO	300.120	NO
6	6	PFPeS	349.1>80.1	1766.189	1406.364	1.00	3.22	15.698	10.1	100.7	NO	1.708	NO
7	36	13C3-PFBA	216.1 > 171.8	8812.296	9861.958	1.00	1.18	11.170	12.8	102.4	NO		
8	37	13C3-PFPeA	266. > 221.8	12217.544	12706.438	1.00	2.20	12.019	12.7	101.3	NO		
9	38	13C3-PFBS	302. > 98.8	1406.364	12706.438	1.00	2.50	1.384	13.0	103.8	NO		
10	39	13C2-4:2 FTS	329.2>308.9	2924.589	12706.438	1.00	2.94	2.877	12.1	96.5	NO		
11	40	13C2-PFHxA	315 > 269.8	3712.182	12706.438	1.00	3.02	3.652	4.9	97.6	NO		
12	38	13C3-PFBS	302. > 98.8	1406.364	12706.438	1.00	2.50	1.384	13.0	103.8	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	2467.272	2918.701	1.00	4.12	10.567	10.6	106.4	NO	3.332	NO
15	7	PFHpA	363.0 > 318.9	10139.194	9932.195	1.00	3.64	12.761	10.8	107.7	NO	22.470	NO
16	8	L-PFHxS	398.9 > 79.6	1924.007	1219.580	1.00	3.79	19.720	10.5	105.2	NO	2.169	NO
17	11	L-PFOA	413 > 368.7	11005.935	15072.718	1.00	4.17	9.127	9.8	97.6	NO	4.618	NO
18	13	PFHpS	449 > 80.0	1942.098	15072.718	1.00	4.29	1.611	9.1	90.5	NO	1.558	NO
19	14	PFNA	463.0 > 418.8	11288.665	11565.914	1.00	4.62	12.200	9.6	96.0	NO	4.845	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	2918.701	10852.458	1.00	4.12	3.362	11.7	94.0	NO		
21	41	13C4-PFHpA	367.2 > 321.8	9932.195	12706.438	1.00	3.64	9.771	12.9	103.2	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1219.580	2753.439	1.00	3.80	5.537	11.7	94.0	NO		
23	44	13C2-PFOA	414.9 > 369.7	15072.718	10852.458	1.00	4.17	17.361	12.8	102.8	NO		
24	44	13C2-PFOA	414.9 > 369.7	15072.718	10852.458	1.00	4.17	17.361	12.8	102.8	NO		
25	45	13C5-PFNA	468.2 > 422.9	11565.914	12189.678	1.00	4.62	11.860	12.7	101.9	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	2564.931	4719.986	1.00	4.68	6.793	9.0	89.6	NO	29.981	NO
28	16	L-PFOS	499.1 > 79.9	1960.101	2975.747	1.00	4.71	8.234	9.4	93.6	NO	1.868	NO
29	18	PFDA	513 > 468.8	10840.729	14789.985	1.00	5.01	9.162	9.2	92.0	NO	5.850	NO
30	19	8:2 FTS	527 > 506.9	2740.118	2414.006	1.00	4.97	14.189	9.0	89.8	NO	2.552	NO
31	20	PFNS	549.1>80.1	1524.076	2975.747	1.00	5.07	6.402	8.9	89.4	NO	1.637	NO
32	21	L-MeFOSAA	570.1 > 419	5099.596	3739.259	1.00	5.16	17.047	9.7	97.1	NO	15.546	NO
33	46	13C8-PFOSA	506.1 > 77.7	4719.986	12692.878	1.00	4.68	4.648	13.9	111.0	NO		
34	47	13C8-PFOS	507.0 > 79.9	2975.747	2800.258	1.00	4.71	13.283	13.2	105.4	NO		

6/19/18

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	14789.985	11943.037	1.00	5.00	15.480	12.5	99.9	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	2414.006	12706.438	1.00	4.97	2.375	12.4	99.3	NO		
37	47	13C8-PFOS	507.0 > 79.9	2975.747	2800.258	1.00	4.71	13.283	13.2	105.4	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	3739.259	12692.878	1.00	5.15	3.682	14.1	112.7	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	3501.375	4427.150	1.00	5.32	9.886	9.5	95.4	NO	14.065	NO
41	27	PFDoA	612.9 > 569.0	14888.189	13592.658	1.00	5.63	13.691	11.2	112.0	NO	8.953	NO
42	26	PFDS	598.8 > 80	2159.972	13899.805	1.00	5.39	1.942	9.5	95.1	NO	1.695	NO
43	25	PFUdA	563.0 > 518.9	11141.590	13899.805	1.00	5.34	10.020	9.8	98.4	NO	13.048	NO
44	28	N-MeFOSA	512.1 > 168.9	7533.246	20879.322	1.00	5.76	54.120	50.6	101.2	NO	1.387	NO
45	29	PFTrDA	662.9 > 618.9	15776.162	13592.658	1.00	5.88	14.508	11.0	109.7	NO	27.464	NO
46	51	d5-N-EtFOSAA	589.3 > 419	4427.150	12692.878	1.00	5.32	4.360	13.7	110.0	NO		
47	53	13C2-PFDoA	615.0 > 569.7	13592.658	11943.037	1.00	5.63	14.227	11.7	93.4	NO		
48	52	13C2-PFUdA	565 > 519.8	13899.805	12692.878	1.00	5.34	13.689	13.4	106.9	NO		
49	52	13C2-PFUdA	565 > 519.8	13899.805	12692.878	1.00	5.34	13.689	13.4	106.9	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	20879.322	12692.878	1.00	5.79	20.562	166.6	111.1	NO		
51	53	13C2-PFDoA	615.0 > 569.7	13592.658	11943.037	1.00	5.63	14.227	11.7	93.4	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	12524.498	11186.259	1.00	6.09	13.995	9.0	89.9	NO	11.863	NO
54	31	N-EtFOSA	526.1 > 168.9	7901.315	26854.764	1.00	6.18	44.134	50.2	100.5	NO	1.402	NO
55	32	PFHxDA	813.1 > 768.6	7775.750	6885.727	1.00	6.44	5.646	9.9	98.9	NO	38.283	YES
56	33	PFODA	913.1 > 868.8	10258.419	6885.727	1.00	6.68	7.449	10.6	105.7	NO		
57	34	N-MeFOSE	616.1 > 58.9	8244.132	24310.891	1.00	6.35	50.867	59.0	118.0	NO		
58	35	N-EtFOSE	630.1 > 58.9	9074.396	24281.098	1.00	6.50	56.058	50.5	101.0	NO		
59	55	13C2-PFTeDA	714.8 > 669.6	11186.259	12692.878	1.00	6.09	11.016	13.5	107.6	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	26854.764	12692.878	1.00	6.20	26.447	166.6	111.0	NO		
61	57	13C2-PFHxDA	815 > 769.7	6885.727	12692.878	1.00	6.44	6.781	5.2	104.1	NO		
62	57	13C2-PFHxDA	815 > 769.7	6885.727	12692.878	1.00	6.44	6.781	5.2	104.1	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	24310.891	12692.878	1.00	6.35	23.941	155.6	103.7	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	24281.098	12692.878	1.00	6.49	23.912	161.4	107.6	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	9861.958	9861.958	1.00	1.18	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	12706.438	12706.438	1.00	3.02	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	2753.439	2753.439	1.00	3.79	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	10852.458	10852.458	1.00	4.17	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	12189.678	12189.678	1.00	4.62	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	2800.258	2800.258	1.00	4.71	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	11943.037	11943.037	1.00	5.00	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	12692.878	12692.878	1.00	5.33	12.500	12.5	100.0	NO		

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Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 13:45:02 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 13:45:53 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	180618M1_15	IPA	18-Jun-18	19:12:26
2	2	180618M1_16	ST180618M1-1 PFC CS-2 18F1104	18-Jun-18	19:22:59
3	3	180618M1_17	ST180618M1-2 PFC CS-1 18F1105	18-Jun-18	19:33:27
4	4	180618M1_18	ST180618M1-3 PFC CS0 18F1106	18-Jun-18	19:46:40
5	5	180618M1_19	ST180618M1-4 PFC CS1 18F1107	18-Jun-18	19:57:06
6	6	180618M1_20	ST180618M1-5 PFC CS2 18F1108	18-Jun-18	20:07:36
7	7	180618M1_21	ST180618M1-6 PFC CS3 18F1109	18-Jun-18	20:18:01
8	8	180618M1_22	ST180618M1-7 PFC CS4 18F1110	18-Jun-18	20:28:31
9	9	180618M1_23	ST180618M1-8 PFC CS5 18F1111	18-Jun-18	20:38:55
10	10	180618M1_24	ST180618M1-9 PFC CS6 18F1112	18-Jun-18	20:49:18
11	11	180618M1_25	ST180618M1-10 PFC CS7 18F1113	18-Jun-18	20:59:48
12	12	180618M1_26	IPA	18-Jun-18	21:10:13
13	13	180618M1_27	ICV180618M1-1 PFC 537 ICV 18F1103	18-Jun-18	21:20:43
14	14	180618M1_28	1801075-06 FB1805301035JLB 0.25636	18-Jun-18	21:31:07
15	15	180618M1_29	1801138-04 MCLPCD185 1.55	18-Jun-18	21:41:37
16	16	180618M1_30	1801138-13 MCLP41274 1.11	18-Jun-18	21:52:02
17	17	180618M1_31	1801138-17 MCLPCH310 1.13	18-Jun-18	22:02:32
18	18	180618M1_32	IPA	18-Jun-18	22:12:57
19	19	180618M1_33	1801075-02@5X SW1805300930JLB 0...	18-Jun-18	22:23:28
20	20	180618M1_34	1801075-03@10X SW1805300950JLB ...	18-Jun-18	22:33:52
21	21	180618M1_35	1801075-04@5X SW1805301015JLB 0...	18-Jun-18	22:44:23
22	22	180618M1_36	1801075-05@5X RW1805301030JLB 0...	18-Jun-18	22:54:47
23	23	180618M1_37	IPA	18-Jun-18	23:05:17
24	24	180618M1_38	1801051-16 PFAS-MW14-009-052318 ...	18-Jun-18	23:15:42
25	25	180618M1_39	B8F0069-BSD1 LCSD 0.25	18-Jun-18	23:26:13
26	26	180618M1_40	1801080-02 MCLP00503 0.1174	18-Jun-18	23:36:43
27	27	180618M1_41	1801138-01@5X MCLPCC107 1.15	18-Jun-18	23:47:08
28	28	180618M1_42	IPA	18-Jun-18	23:57:38
29	29	180618M1_43	ST180618M1-11 PFC CS3 18F1109	19-Jun-18	00:08:02
30	30	180618M1_44	IPA	19-Jun-18	00:18:32
31	31	180618M1_45	1801138-03@20X MCLPCC101 1.13	19-Jun-18	00:28:57
32	32	180618M1_46	1801138-05@50X MCLP41512 1.12	19-Jun-18	00:39:27

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Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 13:45:02 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 13:45:53 Pacific Daylight Time

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
33	33	180618M1_47	IPA	19-Jun-18	00:49:52
34	34	180618M1_48	1801138-06@30X MCLP41513 1.13	19-Jun-18	01:00:22
35	35	180618M1_49	1801138-07@20X MCLP41283 1.12	19-Jun-18	01:10:47
36	36	180618M1_50	1801138-08@30X MCLP41284 1.13	19-Jun-18	01:21:17
37	37	180618M1_51	1801138-09@5X MCLP41280 1.12	19-Jun-18	01:31:41
38	38	180618M1_52	1801138-10@10X MCLP41281 1.11	19-Jun-18	01:42:12
39	39	180618M1_53	1801138-11@5X MCLP41277 1.12	19-Jun-18	01:52:42
40	40	180618M1_54	1801138-12@5X MCLP41278 1.18	19-Jun-18	02:03:06
41	41	180618M1_55	1801138-16@5X MCLPCH304 1.12	19-Jun-18	02:13:36
42	42	180618M1_56	IPA	19-Jun-18	02:24:01
43	43	180618M1_57	ST180618M1-12 PFC CS3 18F1109	19-Jun-18	02:34:31
44	44	180618M1_58	IPA	19-Jun-18	02:44:56
45	45	180618M1_59	1801126-01 OF-INF01-0618 0.24968	19-Jun-18	02:55:26
46	46	180618M1_60	1801084-01 EB-20180531 0.12526	19-Jun-18	03:05:51
47	47	180618M1_61	1801107-01 DPH-Ireland 0.12021	19-Jun-18	03:16:21
48	48	180618M1_62	1801107-02 DPH-#1 0.12757	19-Jun-18	03:26:46
49	49	180618M1_63	1801107-03 EX4 0.12575	19-Jun-18	03:37:16
50	50	180618M1_64	B8F0123-BS1 OPR 0.25	19-Jun-18	03:47:41
51	51	180618M1_65	B8F0123-BLK1 Method Blank 0.25	19-Jun-18	03:58:11
52	52	180618M1_66	1801048-02RE1 WT1805231405GSC 0...	19-Jun-18	04:08:37
53	53	180618M1_67	1801049-10RE1 FB1805231310GSC 0....	19-Jun-18	04:19:07
54	54	180618M1_68	1801198-01 FM1806061700NR 0.06382	19-Jun-18	04:29:32
55	55	180618M1_69	1801198-02 SW1806061705NR 0.25265	19-Jun-18	04:40:02
56	56	180618M1_70	1801247-01 FM1806081120JLB 0.0242	19-Jun-18	04:50:32
57	57	180618M1_71	1801247-02 SW1806081125JLB 0.25158	19-Jun-18	05:00:57
58	58	180618M1_72	B8F0082-BS1 OPR 0.25	19-Jun-18	05:11:28
59	59	180618M1_73	B8F0082-BLK1 Method Blank 0.25	19-Jun-18	05:21:50
60	60	180618M1_74	1801152-01 WR1806051445JLB 0.248	19-Jun-18	05:32:20
61	61	180618M1_75	IPA	19-Jun-18	05:42:50
62	62	180618M1_76	ST180618M1-13 PFC CS3 18F1109	19-Jun-18	05:53:16
63	63	180618M1_77	ST180618M1-14 PFC CS0 18F1106	19-Jun-18	06:03:46
64	64	180618M1_78	IPA	19-Jun-18	06:14:10
65	65	180618M1_79	1801154-01 WIR1806051350JLB 0.243...	19-Jun-18	06:24:41
66	66	180618M1_80	1801168-01 GW0370431806051335MK...	19-Jun-18	06:35:11
67	67	180618M1_81	1801168-02 FB1806051340MK 0.2477	19-Jun-18	06:45:36
68	68	180618M1_82	1801168-03 GW0370431806051450MK...	19-Jun-18	06:56:06

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Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 13:45:02 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 13:45:53 Pacific Daylight Time

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
69	69	180618M1_83	1801179-01 Trip Blank 0.11827	19-Jun-18	07:06:30
70	70	180618M1_84	1801179-02 MW-1 0.11333	19-Jun-18	07:17:00
71	71	180618M1_85	1801179-03 DW-1 0.11606	19-Jun-18	07:27:25
72	72	180618M1_86	1801179-04 MW-3 0.11011	19-Jun-18	07:37:56
73	73	180618M1_87	1801179-05 DOT-2 0.11852	19-Jun-18	07:48:25
74	74	180618M1_88	B8F0080-MS1 Matrix Spike 0.00991	19-Jun-18	07:58:51
75	75	180618M1_89	B8F0080-MSD1 Matrix Spike Dup 0.009...	19-Jun-18	08:09:22
76	76	180618M1_90	1801221-02 18FWA-B2121-WX-W02 0....	19-Jun-18	08:19:52
77	77	180618M1_91	B8F0089-BS1 OPR 0.125	19-Jun-18	08:30:16
78	78	180618M1_92	B8F0089-MS1 Matrix Spike 0.11685	19-Jun-18	08:40:46
79	79	180618M1_93	B8F0089-MSD1 Matrix Spike Dup 0.117...	19-Jun-18	08:51:11
80	80	180618M1_94	B8F0089-BLK1 Method Blank 0.125	19-Jun-18	09:01:41
81	81	180618M1_95	1801120-01 REEPDW1070 0.12305	19-Jun-18	09:12:06
82	82	180618M1_96	1801120-02 REEPDW556 0.12328	19-Jun-18	09:22:37
83	83	180618M1_97	IPA	19-Jun-18	09:33:02
84	84	180618M1_98	ST180618M1-15 PFC CS3 18F1109	19-Jun-18	09:43:32
85	85	180618M1_99	IPA	19-Jun-18	09:53:57
86	86	180618M1_100	1801120-03 REEPDW1075 0.12427	19-Jun-18	10:04:28
87	87	180618M1_101	1801120-04 REEPDW1076 0.12353	19-Jun-18	10:14:54
88	88	180618M1_102	1801120-05 REEPDW1077 0.12303	19-Jun-18	10:25:24
89	89	180618M1_103	1801120-06 REEPDW1080 0.11736	19-Jun-18	10:35:48
90	90	180618M1_104	1801120-07 REEPDW557 0.11966	19-Jun-18	10:46:18
91	91	180618M1_105	1801120-08 REEPDW1081 0.11404	19-Jun-18	10:56:44
92	92	180618M1_106	1801120-09 REEPDW1082 0.12146	19-Jun-18	11:07:14
93	93	180618M1_107	1801120-10 REEPDW1083 0.12257	19-Jun-18	11:17:38
94	94	180618M1_108	1801120-11 REEPDW1084 0.12365	19-Jun-18	11:28:08
95	95	180618M1_109	1801120-12 REEPDW1085 0.12217	19-Jun-18	11:38:33
96	96	180618M1_110	IPA	19-Jun-18	11:49:03
97	97	180618M1_111	ST180618M1-16 PFC CS3 18F1109	19-Jun-18	11:59:28
98	98	180618M1_112	IPA	19-Jun-18	12:09:58

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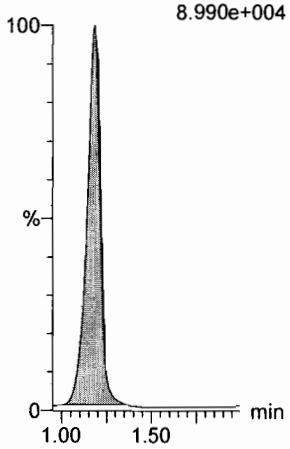
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

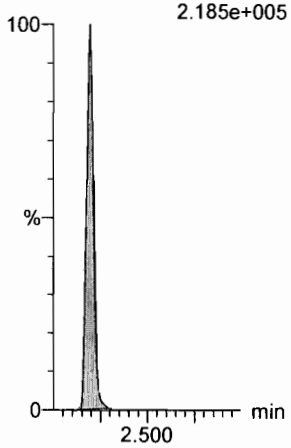
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

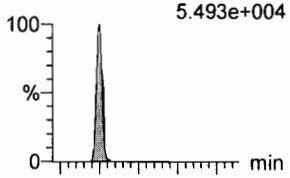
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
8.990e+004



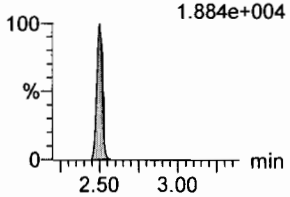
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
2.185e+005



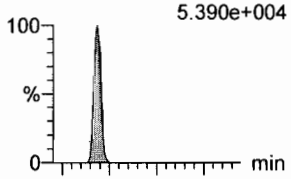
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
5.493e+004



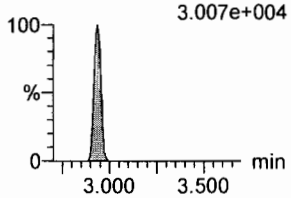
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.884e+004



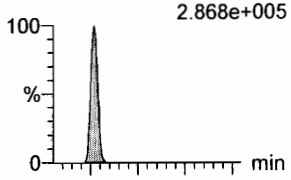
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
5.390e+004



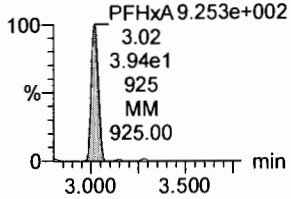
F12:MRM of 2 channels,ES-
327.2 > 81.1
3.007e+004



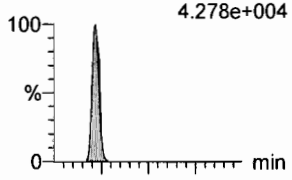
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
2.868e+005



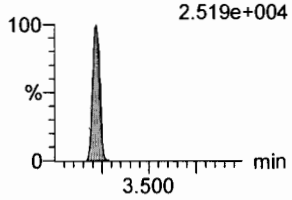
F9:MRM of 2 channels,ES-
313.2 > 119
PFHxA 9.253e+002



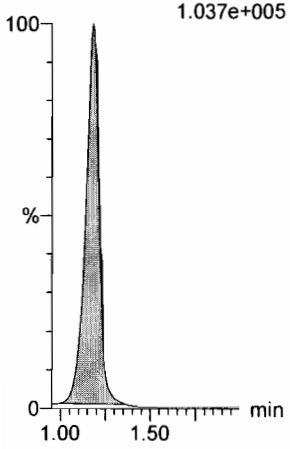
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
4.278e+004



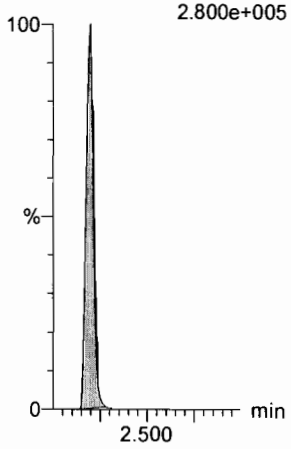
F15:MRM of 2 channels,ES-
349.1 > 99
2.519e+004



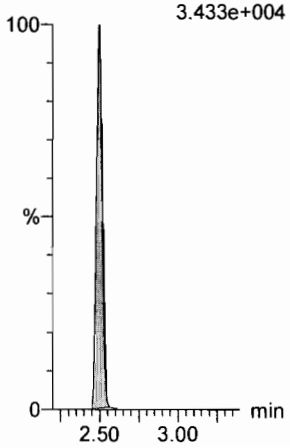
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
1.037e+005



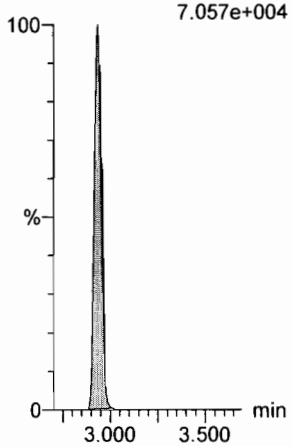
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.800e+005



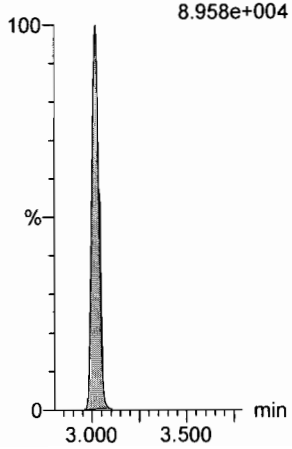
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.433e+004



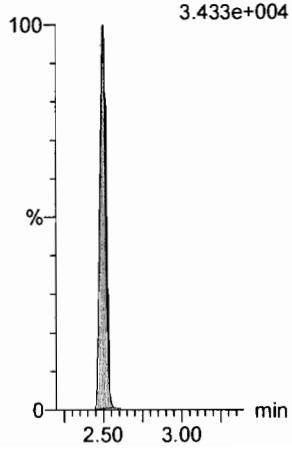
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
7.057e+004



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
8.958e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.433e+004

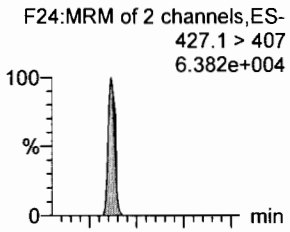


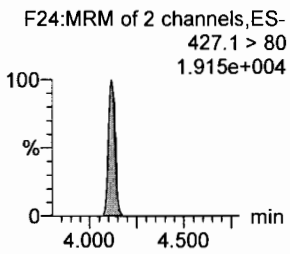
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

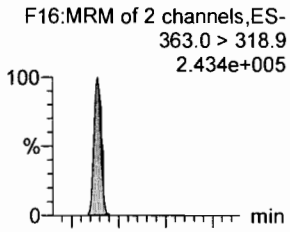
Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

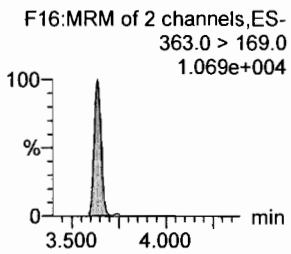
6:2 FTS



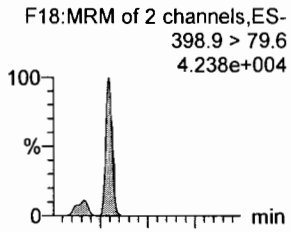


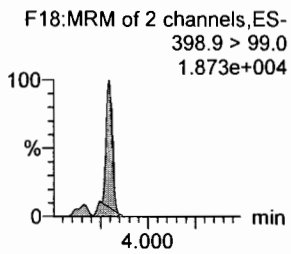
PFHpA



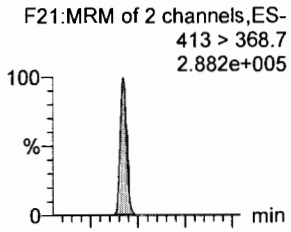


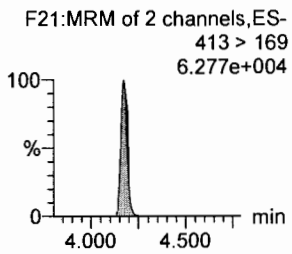
L-PFHxS



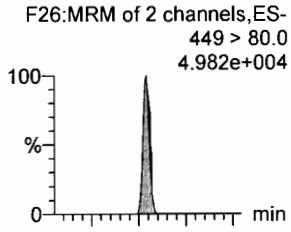


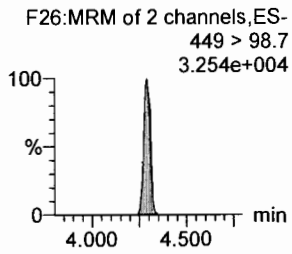
L-PFOA





PFHpS





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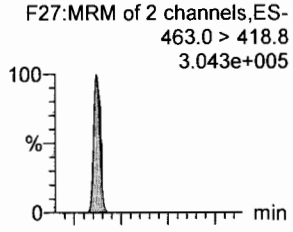
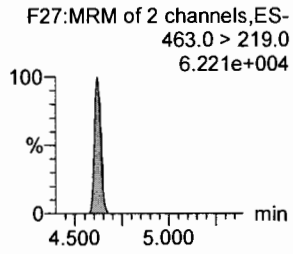
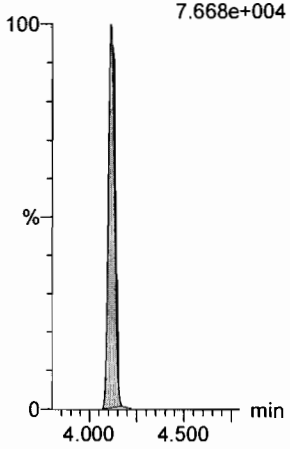
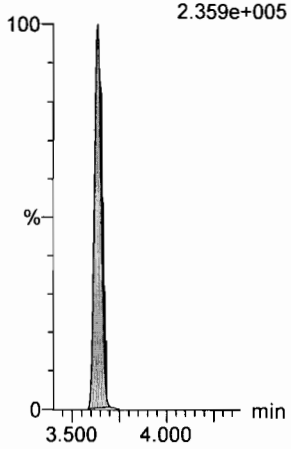




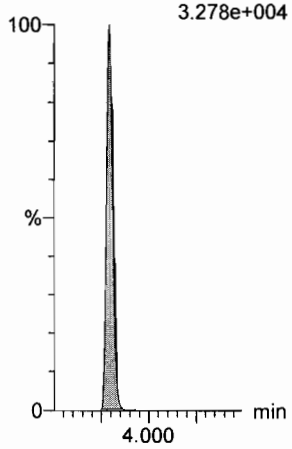
13C2-6:2 FTS



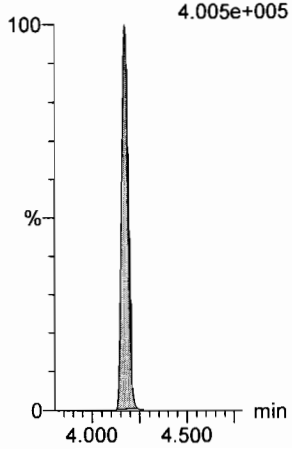
13C4-PFHpA



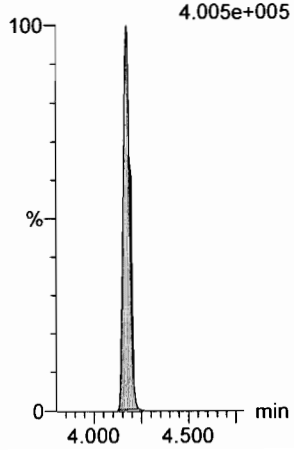
18O2-PFHxS



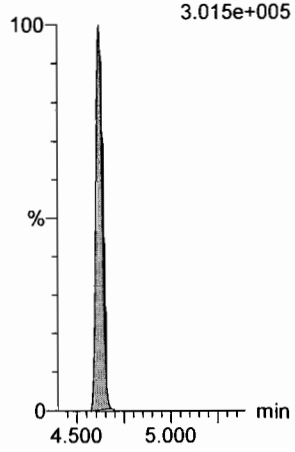
13C2-PFOA



13C2-PFOA



13C5-PFNA

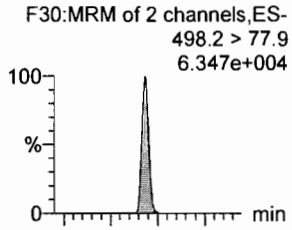


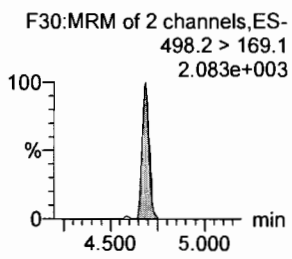
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

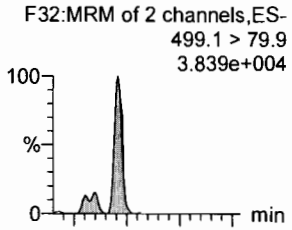
Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

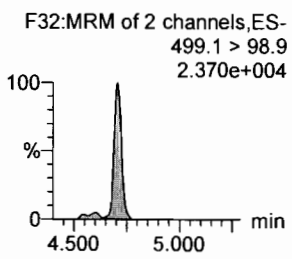
PFOSA



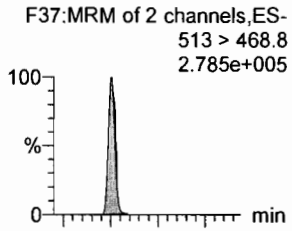


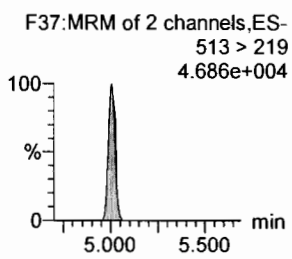
L-PFOS



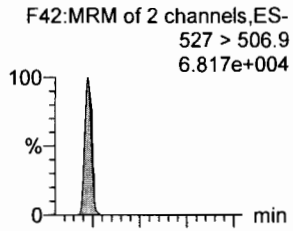


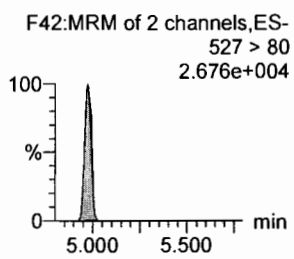
PFDA



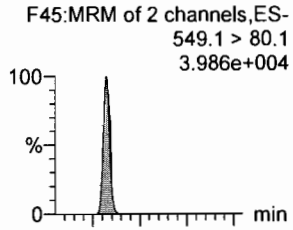


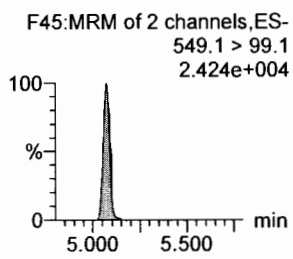
8:2 FTS





PFNS





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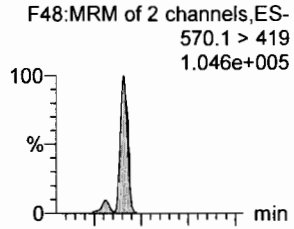
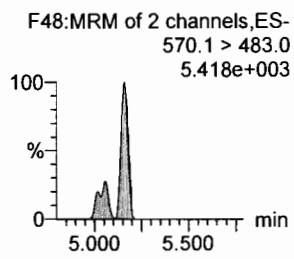
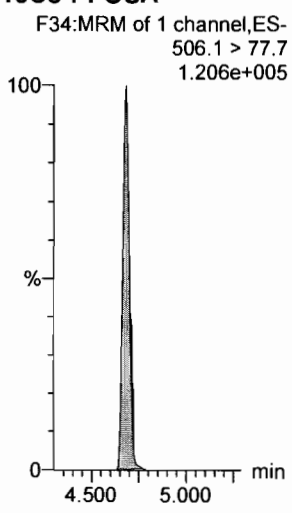
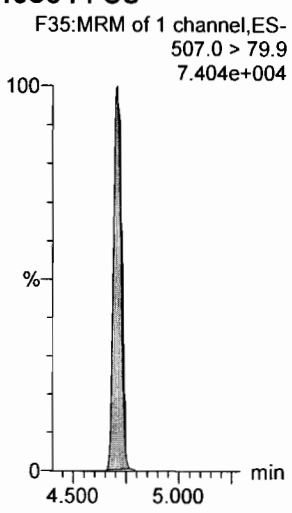




13C8-PFOSA



13C8-PFOS



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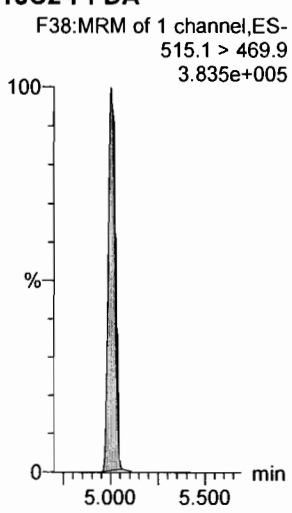
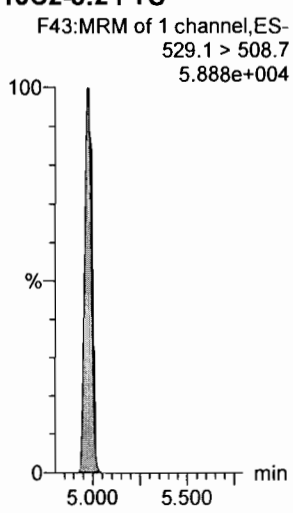
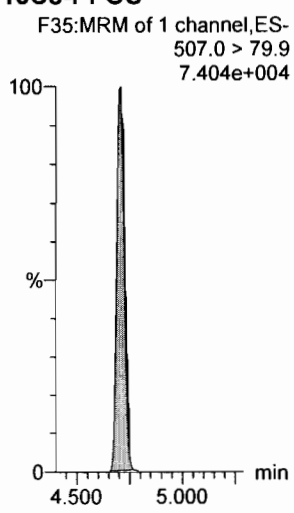


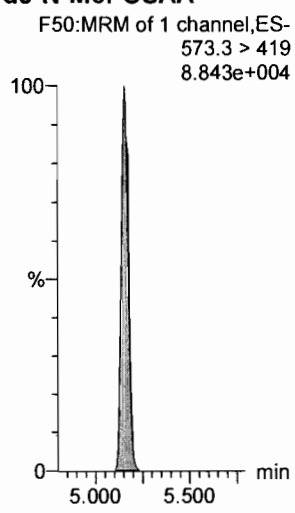
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

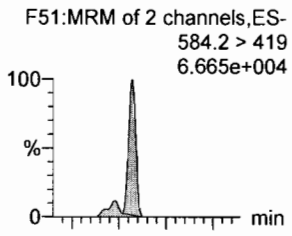


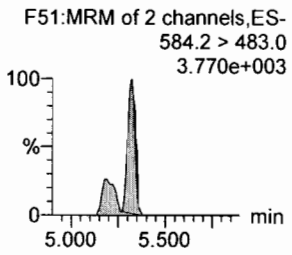
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

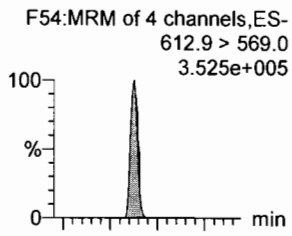
Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

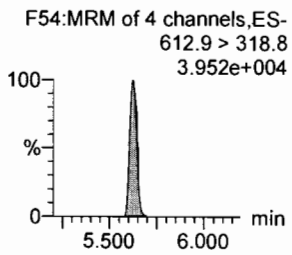
L-EtFOSAA



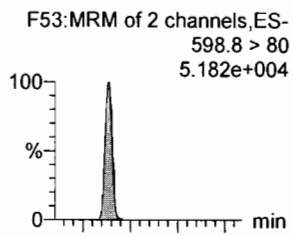


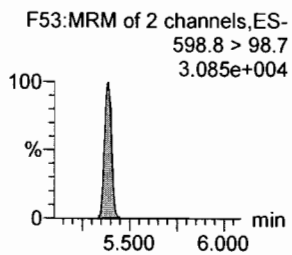
PFDoA



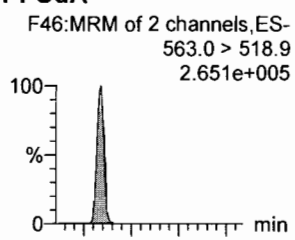


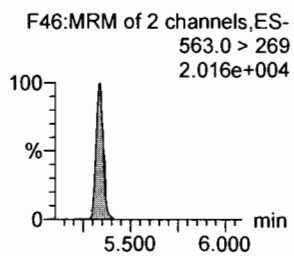
PFDS



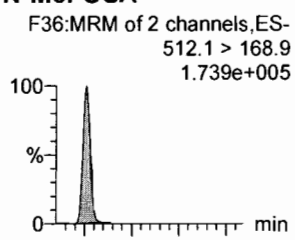


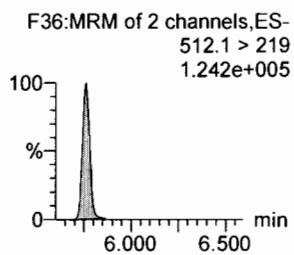
PFUdA



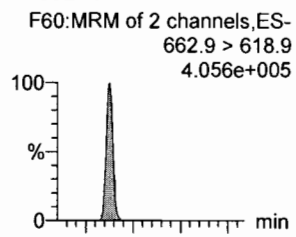


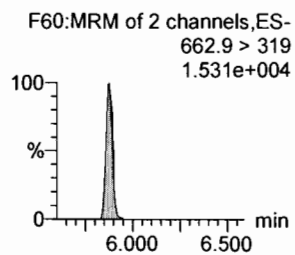
N-MeFOSA



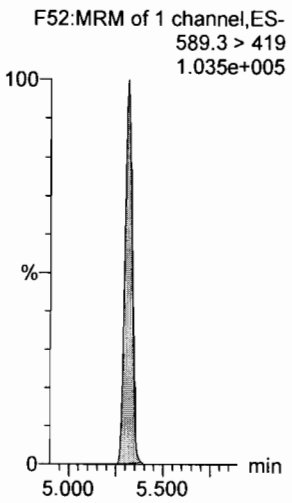


PFTrDA

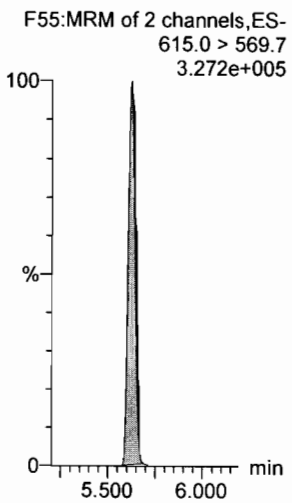




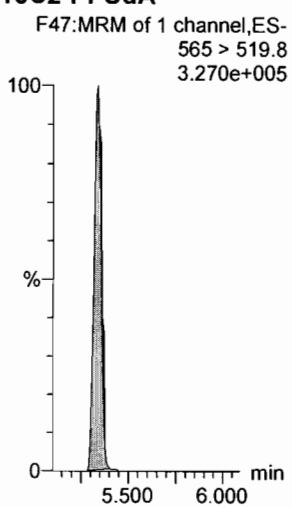
d5-N-EtFOSAA



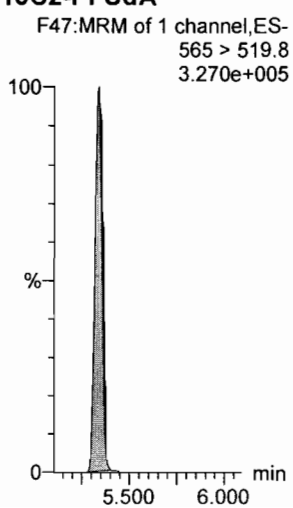
13C2-PFDoA



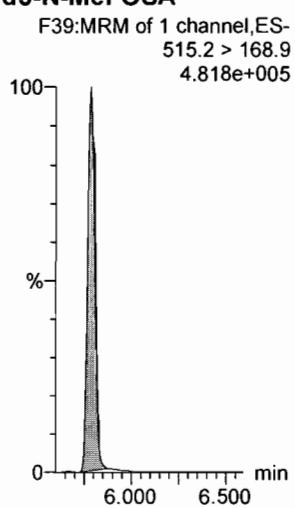
13C2-PFUdA



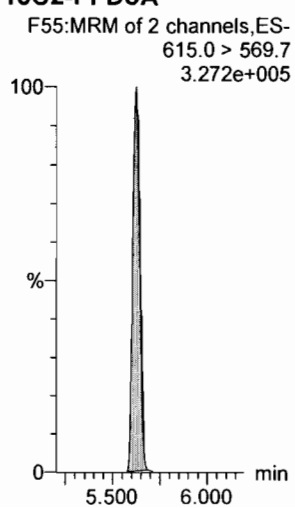
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

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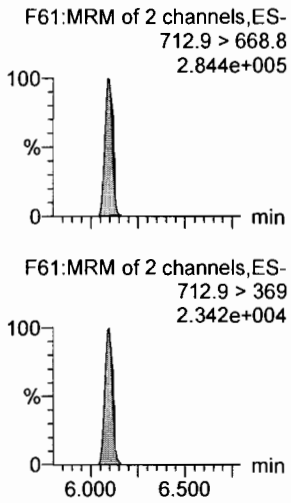
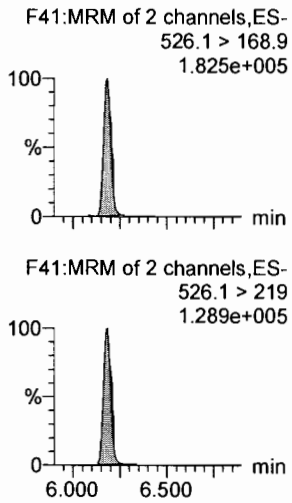
Printed: Tuesday, June 19, 2018 12:06:31 Pacific Daylight Time

Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

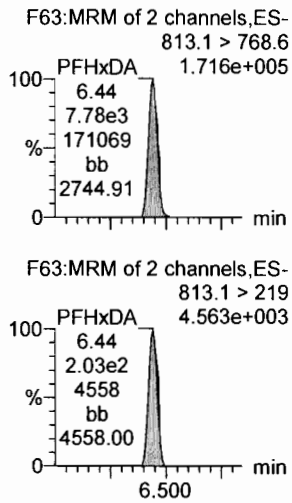
PFTeDA



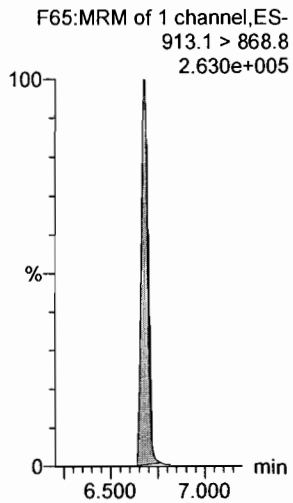
N-EtFOSA



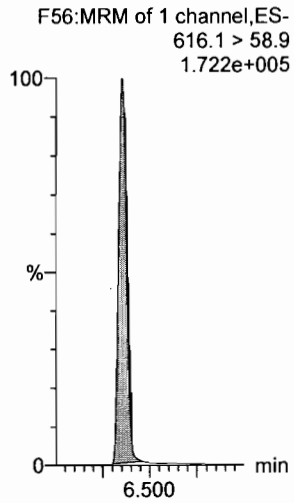
PFHxDA



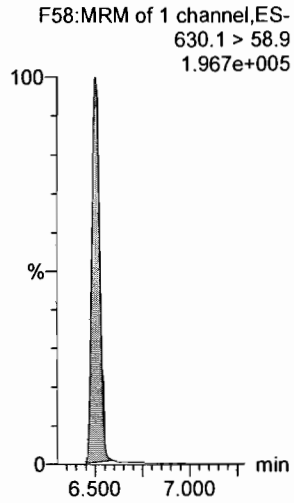
PFODA



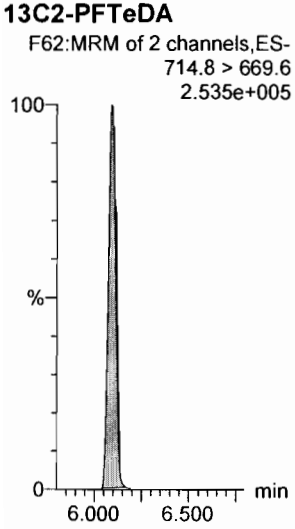
N-MeFOSE



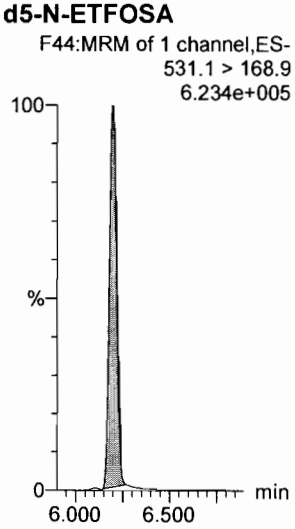
N-EtFOSE



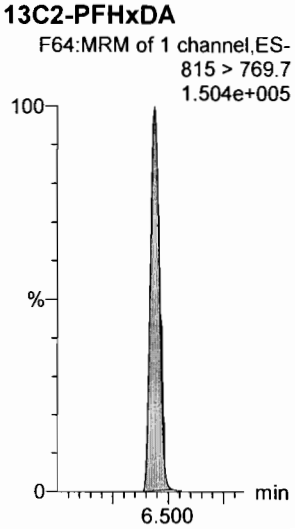
13C2-PFTeDA



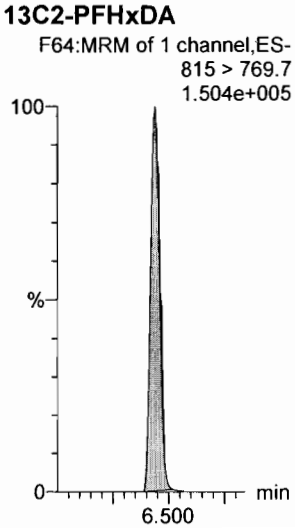
d5-N-ETFOSA



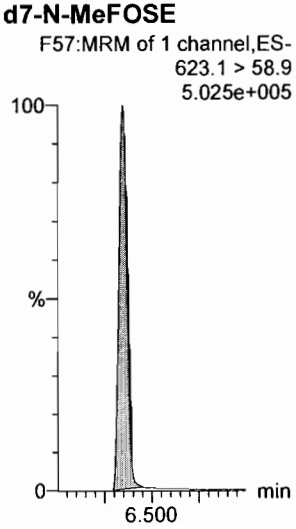
13C2-PFHxDA



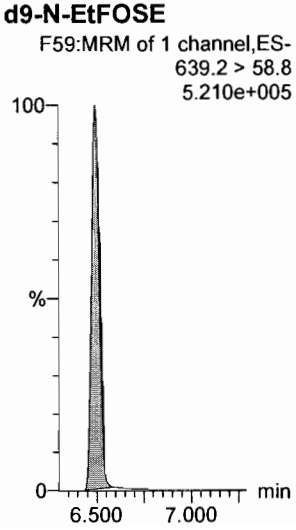
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-43.qld

Last Altered: Tuesday, June 19, 2018 12:06:09 Pacific Daylight Time
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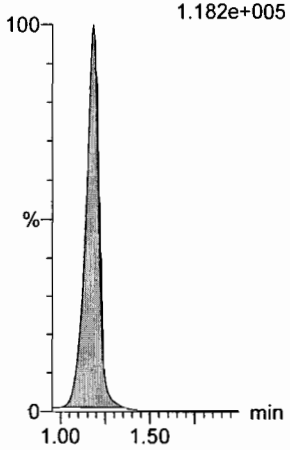
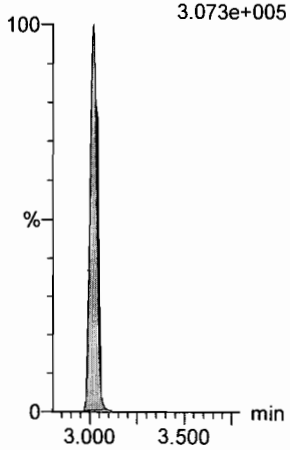
Name: 180618M1_43, Date: 19-Jun-2018, Time: 00:08:02, ID: ST180618M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

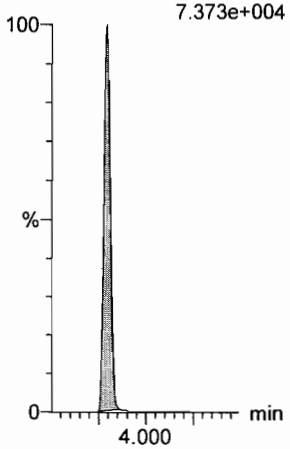
13C4-PFBA



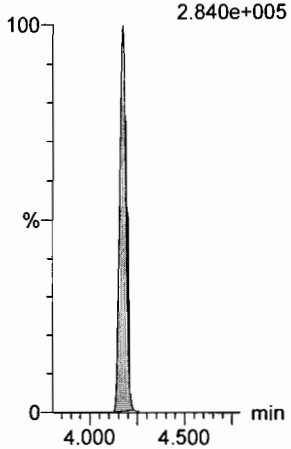
13C5-PFHxA



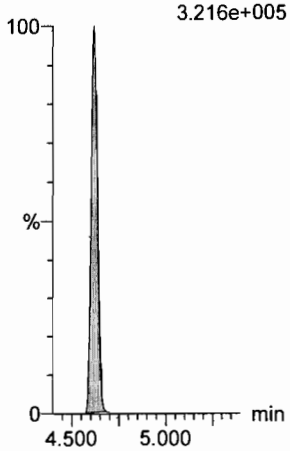
13C3-PFHxS



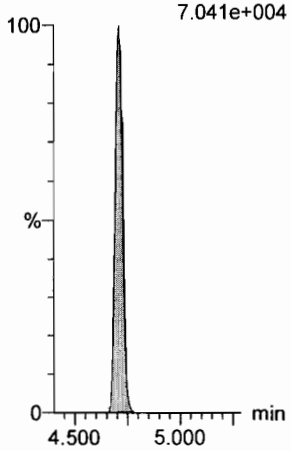
13C8-PFOA



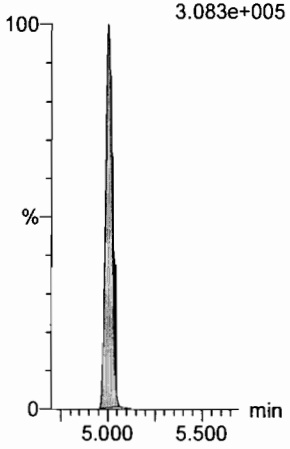
13C9-PFNA



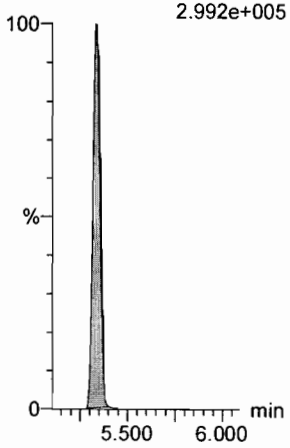
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

Dataset: Untitled

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_RS-6-19-18.mdb 19 Jun 2018 13:56:33
Calibration: 20 Jun 2018 11:52:00

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-6 PFC CS3 18F1109	8.84e3	100.0	NO
2	2	13C5-PFHxA	ST180619M1-6 PFC CS3 18F1109	1.57e4	100.0	NO
3	3	13C3-PFHxS	ST180619M1-6 PFC CS3 18F1109	3.24e3	100.0	NO
4	4	13C8-PFOA	ST180619M1-6 PFC CS3 18F1109	1.51e4	100.0	NO
5	5	13C9-PFNA	ST180619M1-6 PFC CS3 18F1109	1.68e4	100.0	NO
6	6	13C4-PFOS	ST180619M1-6 PFC CS3 18F1109	3.56e3	100.0	NO
7	7	13C6-PFDA	ST180619M1-6 PFC CS3 18F1109	1.64e4	100.0	NO
8	8	13C7-PFUdA	ST180619M1-6 PFC CS3 18F1109	1.85e4	100.0	NO

Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-7 PFC CS4 18F1110	8.90e3	100.7	NO
2	2	13C5-PFHxA	ST180619M1-7 PFC CS4 18F1110	1.46e4	92.9	NO
3	3	13C3-PFHxS	ST180619M1-7 PFC CS4 18F1110	3.13e3	96.5	NO
4	4	13C8-PFOA	ST180619M1-7 PFC CS4 18F1110	1.38e4	91.3	NO
5	5	13C9-PFNA	ST180619M1-7 PFC CS4 18F1110	1.56e4	92.9	NO
6	6	13C4-PFOS	ST180619M1-7 PFC CS4 18F1110	3.35e3	94.0	NO
7	7	13C6-PFDA	ST180619M1-7 PFC CS4 18F1110	1.48e4	90.1	NO
8	8	13C7-PFUdA	ST180619M1-7 PFC CS4 18F1110	1.73e4	93.4	NO

Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-8 PFC CS5 18F1111	9.05e3	102.4	NO
2	2	13C5-PFHxA	ST180619M1-8 PFC CS5 18F1111	1.42e4	90.0	NO
3	3	13C3-PFHxS	ST180619M1-8 PFC CS5 18F1111	2.99e3	92.2	NO
4	4	13C8-PFOA	ST180619M1-8 PFC CS5 18F1111	1.36e4	89.8	NO
5	5	13C9-PFNA	ST180619M1-8 PFC CS5 18F1111	1.61e4	95.6	NO
6	6	13C4-PFOS	ST180619M1-8 PFC CS5 18F1111	3.03e3	85.1	NO
7	7	13C6-PFDA	ST180619M1-8 PFC CS5 18F1111	1.39e4	85.0	NO
8	8	13C7-PFUdA	ST180619M1-8 PFC CS5 18F1111	1.71e4	92.8	NO

Name: 180619M1_10, Date: 19-Jun-2018, Time: 19:11:14, ID: ST180619M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-9 PFC CS6 18F1112	8.90e3	100.7	NO
2	2	13C5-PFHxA	ST180619M1-9 PFC CS6 18F1112	1.38e4	87.6	NO
3	3	13C3-PFHxS	ST180619M1-9 PFC CS6 18F1112	2.71e3	83.6	NO
4	4	13C8-PFOA	ST180619M1-9 PFC CS6 18F1112	1.33e4	87.5	NO
5	5	13C9-PFNA	ST180619M1-9 PFC CS6 18F1112	1.44e4	85.9	NO
6	6	13C4-PFOS	ST180619M1-9 PFC CS6 18F1112	3.12e3	87.7	NO
7	7	13C6-PFDA	ST180619M1-9 PFC CS6 18F1112	1.32e4	80.3	NO
8	8	13C7-PFUdA	ST180619M1-9 PFC CS6 18F1112	1.51e4	81.6	NO

Dataset: Untitled

Last Altered: Wednesday, June 20, 2018 11:52:21 Pacific Daylight Time
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Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-10 PFC CS7 18F1113	8.79e3	99.4	NO
2	2	13C5-PFHxA	ST180619M1-10 PFC CS7 18F1113	1.25e4	79.7	NO
3	3	13C3-PFHxS	ST180619M1-10 PFC CS7 18F1113	2.55e3	78.6	NO
4	4	13C8-PFOA	ST180619M1-10 PFC CS7 18F1113	1.20e4	79.6	NO
5	5	13C9-PFNA	ST180619M1-10 PFC CS7 18F1113	1.38e4	82.2	NO
6	6	13C4-PFOS	ST180619M1-10 PFC CS7 18F1113	2.84e3	79.6	NO
7	7	13C6-PFDA	ST180619M1-10 PFC CS7 18F1113	1.23e4	75.4	NO
8	8	13C7-PFUdA	ST180619M1-10 PFC CS7 18F1113	1.40e4	76.0	NO

Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ICV180619M1-1 PFC 537 ICV 18F1103	9.37e3	105.9	NO
2	2	13C5-PFHxA	ICV180619M1-1 PFC 537 ICV 18F1103	1.47e4	93.4	NO
3	3	13C3-PFHxS	ICV180619M1-1 PFC 537 ICV 18F1103	3.16e3	97.3	NO
4	4	13C8-PFOA	ICV180619M1-1 PFC 537 ICV 18F1103	1.51e4	100.0	NO
5	5	13C9-PFNA	ICV180619M1-1 PFC 537 ICV 18F1103	1.56e4	92.7	NO
6	6	13C4-PFOS	ICV180619M1-1 PFC 537 ICV 18F1103	3.37e3	94.7	NO
7	7	13C6-PFDA	ICV180619M1-1 PFC 537 ICV 18F1103	1.49e4	90.7	NO
8	8	13C7-PFUdA	ICV180619M1-1 PFC 537 ICV 18F1103	1.70e4	91.9	NO

Name: 180619M1_14, Date: 19-Jun-2018, Time: 19:53:04, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Dataset: Untitled

Last Altered: Wednesday, June 20, 2018 11:52:21 Pacific Daylight Time
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Name: 180619M1_15, Date: 19-Jun-2018, Time: 20:03:34, ID: 1801119-07 B81-MW-13D-053118 0.125, Description: B81-MW-13D-053118

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801119-07 B81-MW-13D-053118 0.125	6.98e3	79.0	NO
2	2	13C5-PFHxA	1801119-07 B81-MW-13D-053118 0.125	9.10e3	57.8	NO
3	3	13C3-PFHxS	1801119-07 B81-MW-13D-053118 0.125	1.93e3	59.5	NO
4	4	13C8-PFOA	1801119-07 B81-MW-13D-053118 0.125	9.02e3	59.5	NO
5	5	13C9-PFNA	1801119-07 B81-MW-13D-053118 0.125	1.05e4	62.6	NO
6	6	13C4-PFOS	1801119-07 B81-MW-13D-053118 0.125	1.99e3	55.9	NO
7	7	13C6-PFDA	1801119-07 B81-MW-13D-053118 0.125	8.68e3	53.0	NO
8	8	13C7-PFUdA	1801119-07 B81-MW-13D-053118 0.125	1.13e4	61.0	NO

Name: 180619M1_16, Date: 19-Jun-2018, Time: 20:13:58, ID: 1801031-04@50X MW-09-001 0.11999, Description: MW-09-001

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801031-04@50X MW-09-001 0.11999	8.32e3	94.1	NO
2	2	13C5-PFHxA	1801031-04@50X MW-09-001 0.11999	9.33e3	59.3	NO
3	3	13C3-PFHxS	1801031-04@50X MW-09-001 0.11999	1.43e3	44.0	YES
4	4	13C8-PFOA	1801031-04@50X MW-09-001 0.11999	2.02e4	133.3	NO
5	5	13C9-PFNA	1801031-04@50X MW-09-001 0.11999	3.19e4	189.6	YES
6	6	13C4-PFOS	1801031-04@50X MW-09-001 0.11999	4.21e3	118.2	NO
7	7	13C6-PFDA	1801031-04@50X MW-09-001 0.11999	2.86e4	174.3	YES
8	8	13C7-PFUdA	1801031-04@50X MW-09-001 0.11999	2.40e4	129.8	NO

Name: 180619M1_17, Date: 19-Jun-2018, Time: 20:24:29, ID: 1801150-01 MCLPCG268 0.11906, Description: MCLPCG268

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-01 MCLPCG268 0.11906	7.71e3	87.3	NO
2	2	13C5-PFHxA	1801150-01 MCLPCG268 0.11906	9.85e3	62.6	NO
3	3	13C3-PFHxS	1801150-01 MCLPCG268 0.11906	2.16e3	66.5	NO
4	4	13C8-PFOA	1801150-01 MCLPCG268 0.11906	9.88e3	65.3	NO
5	5	13C9-PFNA	1801150-01 MCLPCG268 0.11906	1.07e4	63.6	NO
6	6	13C4-PFOS	1801150-01 MCLPCG268 0.11906	2.25e3	63.2	NO
7	7	13C6-PFDA	1801150-01 MCLPCG268 0.11906	1.02e4	62.4	NO
8	8	13C7-PFUdA	1801150-01 MCLPCG268 0.11906	1.13e4	61.0	NO

Name: 180619M1_18, Date: 19-Jun-2018, Time: 20:34:59, ID: 1801150-02 MCLPCG395 0.1162, Description: MCLPCG395

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-02 MCLPCG395 0.1162	6.13e3	69.3	NO
2	2	13C5-PFHxA	1801150-02 MCLPCG395 0.1162	7.86e3	50.0	NO
3	3	13C3-PFHxS	1801150-02 MCLPCG395 0.1162	1.82e3	56.2	NO
4	4	13C8-PFOA	1801150-02 MCLPCG395 0.1162	7.98e3	52.7	NO
5	5	13C9-PFNA	1801150-02 MCLPCG395 0.1162	8.95e3	53.3	NO
6	6	13C4-PFOS	1801150-02 MCLPCG395 0.1162	2.05e3	57.6	NO
7	7	13C6-PFDA	1801150-02 MCLPCG395 0.1162	7.77e3	47.4	YES
8	8	13C7-PFUdA	1801150-02 MCLPCG395 0.1162	9.07e3	49.1	YES

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Name: 180619M1_19, Date: 19-Jun-2018, Time: 20:45:23, ID: 1801150-03 MCLPCG273 0.12124, Description: MCLPCG273

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-03 MCLPCG273 0.12124	6.33e3	71.6	NO
2	2	13C5-PFHxA	1801150-03 MCLPCG273 0.12124	8.43e3	53.6	NO
3	3	13C3-PFHxS	1801150-03 MCLPCG273 0.12124	2.13e3	65.7	NO
4	4	13C8-PFOA	1801150-03 MCLPCG273 0.12124	8.67e3	57.2	NO
5	5	13C9-PFNA	1801150-03 MCLPCG273 0.12124	9.02e3	53.7	NO
6	6	13C4-PFOS	1801150-03 MCLPCG273 0.12124	2.33e3	65.3	NO
7	7	13C6-PFDA	1801150-03 MCLPCG273 0.12124	8.70e3	53.1	NO
8	8	13C7-PFUdA	1801150-03 MCLPCG273 0.12124	1.02e4	55.0	NO

Name: 180619M1_20, Date: 19-Jun-2018, Time: 20:55:53, ID: 1801150-04 MCLPCG266 0.11975, Description: MCLPCG266

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-04 MCLPCG266 0.11975	7.26e3	82.1	NO
2	2	13C5-PFHxA	1801150-04 MCLPCG266 0.11975	9.61e3	61.1	NO
3	3	13C3-PFHxS	1801150-04 MCLPCG266 0.11975	2.13e3	65.6	NO
4	4	13C8-PFOA	1801150-04 MCLPCG266 0.11975	9.52e3	62.9	NO
5	5	13C9-PFNA	1801150-04 MCLPCG266 0.11975	1.07e4	63.6	NO
6	6	13C4-PFOS	1801150-04 MCLPCG266 0.11975	2.16e3	60.6	NO
7	7	13C6-PFDA	1801150-04 MCLPCG266 0.11975	9.38e3	57.2	NO
8	8	13C7-PFUdA	1801150-04 MCLPCG266 0.11975	1.14e4	61.8	NO

Name: 180619M1_21, Date: 19-Jun-2018, Time: 21:06:18, ID: 1801150-05 MCLPCG270 0.11659, Description: MCLPCG270

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-05 MCLPCG270 0.11659	6.97e3	78.9	NO
2	2	13C5-PFHxA	1801150-05 MCLPCG270 0.11659	8.98e3	57.1	NO
3	3	13C3-PFHxS	1801150-05 MCLPCG270 0.11659	2.19e3	67.5	NO
4	4	13C8-PFOA	1801150-05 MCLPCG270 0.11659	9.44e3	62.4	NO
5	5	13C9-PFNA	1801150-05 MCLPCG270 0.11659	1.01e4	60.3	NO
6	6	13C4-PFOS	1801150-05 MCLPCG270 0.11659	2.59e3	72.6	NO
7	7	13C6-PFDA	1801150-05 MCLPCG270 0.11659	9.07e3	55.3	NO
8	8	13C7-PFUdA	1801150-05 MCLPCG270 0.11659	1.20e4	65.1	NO

Name: 180619M1_22, Date: 19-Jun-2018, Time: 21:16:49, ID: 1801150-06 MCLPCG272 0.11327, Description: MCLPCG272

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-06 MCLPCG272 0.11327	6.54e3	74.0	NO
2	2	13C5-PFHxA	1801150-06 MCLPCG272 0.11327	8.36e3	53.2	NO
3	3	13C3-PFHxS	1801150-06 MCLPCG272 0.11327	1.89e3	58.3	NO
4	4	13C8-PFOA	1801150-06 MCLPCG272 0.11327	8.69e3	57.4	NO
5	5	13C9-PFNA	1801150-06 MCLPCG272 0.11327	9.60e3	57.1	NO
6	6	13C4-PFOS	1801150-06 MCLPCG272 0.11327	1.97e3	55.2	NO
7	7	13C6-PFDA	1801150-06 MCLPCG272 0.11327	8.78e3	53.6	NO
8	8	13C7-PFUdA	1801150-06 MCLPCG272 0.11327	1.06e4	57.3	NO

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Name: 180619M1_23, Date: 19-Jun-2018, Time: 21:27:13, ID: 1801150-07 MCLPCG402 0.11588, Description: MCLPCG402

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-07 MCLPCG402 0.11588	5.94e3	67.2	NO
2	2	13C5-PFHxA	1801150-07 MCLPCG402 0.11588	7.64e3	48.6	YES
3	3	13C3-PFHxS	1801150-07 MCLPCG402 0.11588	2.00e3	61.5	NO
4	4	13C8-PFOA	1801150-07 MCLPCG402 0.11588	8.29e3	54.8	NO
5	5	13C9-PFNA	1801150-07 MCLPCG402 0.11588	8.63e3	51.3	NO
6	6	13C4-PFOS	1801150-07 MCLPCG402 0.11588	1.97e3	55.4	NO
7	7	13C6-PFDA	1801150-07 MCLPCG402 0.11588	8.29e3	50.6	NO
8	8	13C7-PFUdA	1801150-07 MCLPCG402 0.11588	1.01e4	54.8	NO

Name: 180619M1_24, Date: 19-Jun-2018, Time: 21:37:43, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_25, Date: 19-Jun-2018, Time: 21:48:09, ID: ST180619M1-11 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-11 PFC CS3 18F1109	9.72e3	109.9	NO
2	2	13C5-PFHxA	ST180619M1-11 PFC CS3 18F1109	1.57e4	100.1	NO
3	3	13C3-PFHxS	ST180619M1-11 PFC CS3 18F1109	3.00e3	92.5	NO
4	4	13C8-PFOA	ST180619M1-11 PFC CS3 18F1109	1.59e4	104.8	NO
5	5	13C9-PFNA	ST180619M1-11 PFC CS3 18F1109	1.71e4	102.0	NO
6	6	13C4-PFOS	ST180619M1-11 PFC CS3 18F1109	3.64e3	102.2	NO
7	7	13C6-PFDA	ST180619M1-11 PFC CS3 18F1109	1.58e4	96.4	NO
8	8	13C7-PFUdA	ST180619M1-11 PFC CS3 18F1109	1.90e4	103.0	NO

Name: 180619M1_26, Date: 19-Jun-2018, Time: 21:58:39, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180619M1_27, Date: 19-Jun-2018, Time: 22:09:04, ID: 1801150-08 MCLPCG267 0.1316, Description: MCLPCG267

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801150-08 MCLPCG267 0.1316	7.51e3	85.0	NO
2	2	13C5-PFHxA	1801150-08 MCLPCG267 0.1316	9.40e3	59.7	NO
3	3	13C3-PFHxS	1801150-08 MCLPCG267 0.1316	2.25e3	69.4	NO
4	4	13C8-PFOA	1801150-08 MCLPCG267 0.1316	1.02e4	67.3	NO
5	5	13C9-PFNA	1801150-08 MCLPCG267 0.1316	1.11e4	66.0	NO
6	6	13C4-PFOS	1801150-08 MCLPCG267 0.1316	2.32e3	65.1	NO
7	7	13C6-PFDA	1801150-08 MCLPCG267 0.1316	9.27e3	56.6	NO
8	8	13C7-PFUdA	1801150-08 MCLPCG267 0.1316	1.21e4	65.6	NO

Name: 180619M1_28, Date: 19-Jun-2018, Time: 22:19:34, ID: B8F0086-BS1 OPR 0.125, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0086-BS1 OPR 0.125	7.12e3	80.5	NO
2	2	13C5-PFHxA	B8F0086-BS1 OPR 0.125	1.01e4	63.9	NO
3	3	13C3-PFHxS	B8F0086-BS1 OPR 0.125	2.67e3	82.4	NO
4	4	13C8-PFOA	B8F0086-BS1 OPR 0.125	9.78e3	64.6	NO
5	5	13C9-PFNA	B8F0086-BS1 OPR 0.125	1.16e4	68.7	NO
6	6	13C4-PFOS	B8F0086-BS1 OPR 0.125	2.85e3	79.9	NO
7	7	13C6-PFDA	B8F0086-BS1 OPR 0.125	1.09e4	66.3	NO
8	8	13C7-PFUdA	B8F0086-BS1 OPR 0.125	1.40e4	75.8	NO

Name: 180619M1_29, Date: 19-Jun-2018, Time: 22:30:00, ID: B8F0086-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0086-BLK1 Method Blank 0.125	7.48e3	84.6	NO
2	2	13C5-PFHxA	B8F0086-BLK1 Method Blank 0.125	9.44e3	60.0	NO
3	3	13C3-PFHxS	B8F0086-BLK1 Method Blank 0.125	2.32e3	71.6	NO
4	4	13C8-PFOA	B8F0086-BLK1 Method Blank 0.125	9.74e3	64.3	NO
5	5	13C9-PFNA	B8F0086-BLK1 Method Blank 0.125	1.08e4	64.5	NO
6	6	13C4-PFOS	B8F0086-BLK1 Method Blank 0.125	2.40e3	67.3	NO
7	7	13C6-PFDA	B8F0086-BLK1 Method Blank 0.125	1.04e4	63.6	NO
8	8	13C7-PFUdA	B8F0086-BLK1 Method Blank 0.125	1.22e4	65.9	NO

Name: 180619M1_30, Date: 19-Jun-2018, Time: 22:40:30, ID: B8F0086-MS1 Matrix Spike 0.11664, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0086-MS1 Matrix Spike 0.11664	5.55e3	62.8	NO
2	2	13C5-PFHxA	B8F0086-MS1 Matrix Spike 0.11664	7.04e3	44.7	YES
3	3	13C3-PFHxS	B8F0086-MS1 Matrix Spike 0.11664	2.57e3	79.1	NO
4	4	13C8-PFOA	B8F0086-MS1 Matrix Spike 0.11664	7.01e3	46.3	YES
5	5	13C9-PFNA	B8F0086-MS1 Matrix Spike 0.11664	8.26e3	49.2	YES
6	6	13C4-PFOS	B8F0086-MS1 Matrix Spike 0.11664	2.57e3	72.1	NO
7	7	13C6-PFDA	B8F0086-MS1 Matrix Spike 0.11664	7.78e3	47.5	YES
8	8	13C7-PFUdA	B8F0086-MS1 Matrix Spike 0.11664	8.74e3	47.3	YES

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Name: 180619M1_31, Date: 19-Jun-2018, Time: 22:50:54, ID: B8F0086-MSD1 Matrix Spike Dup 0.11914, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0086-MSD1 Matrix Spike Dup 0.119...	5.03e3	56.9	NO
2	2	13C5-PFHxA	B8F0086-MSD1 Matrix Spike Dup 0.119...	6.49e3	41.3	YES
3	3	13C3-PFHxS	B8F0086-MSD1 Matrix Spike Dup 0.119...	2.63e3	81.2	NO
4	4	13C8-PFOA	B8F0086-MSD1 Matrix Spike Dup 0.119...	6.48e3	42.8	YES
5	5	13C9-PFNA	B8F0086-MSD1 Matrix Spike Dup 0.119...	7.58e3	45.1	YES
6	6	13C4-PFOS	B8F0086-MSD1 Matrix Spike Dup 0.119...	2.66e3	74.7	NO
7	7	13C6-PFDA	B8F0086-MSD1 Matrix Spike Dup 0.119...	7.15e3	43.6	YES
8	8	13C7-PFUdA	B8F0086-MSD1 Matrix Spike Dup 0.119...	9.17e3	49.6	YES

Name: 180619M1_32, Date: 19-Jun-2018, Time: 23:01:24, ID: 1801132-01 REEPDW1093 0.11853, Description: REEPDW1093

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-01 REEPDW1093 0.11853	5.71e3	64.6	NO
2	2	13C5-PFHxA	1801132-01 REEPDW1093 0.11853	7.95e3	50.6	NO
3	3	13C3-PFHxS	1801132-01 REEPDW1093 0.11853	2.80e3	86.3	NO
4	4	13C8-PFOA	1801132-01 REEPDW1093 0.11853	9.35e3	61.7	NO
5	5	13C9-PFNA	1801132-01 REEPDW1093 0.11853	1.01e4	60.1	NO
6	6	13C4-PFOS	1801132-01 REEPDW1093 0.11853	2.75e3	77.0	NO
7	7	13C6-PFDA	1801132-01 REEPDW1093 0.11853	9.90e3	60.4	NO
8	8	13C7-PFUdA	1801132-01 REEPDW1093 0.11853	1.13e4	61.1	NO

Name: 180619M1_33, Date: 19-Jun-2018, Time: 23:11:49, ID: 1801132-02 REEPDW1094 0.11599, Description: REEPDW1094

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-02 REEPDW1094 0.11599	4.90e3	55.4	NO
2	2	13C5-PFHxA	1801132-02 REEPDW1094 0.11599	6.08e3	38.7	YES
3	3	13C3-PFHxS	1801132-02 REEPDW1094 0.11599	2.49e3	76.9	NO
4	4	13C8-PFOA	1801132-02 REEPDW1094 0.11599	6.31e3	41.6	YES
5	5	13C9-PFNA	1801132-02 REEPDW1094 0.11599	7.00e3	41.6	YES
6	6	13C4-PFOS	1801132-02 REEPDW1094 0.11599	2.63e3	73.7	NO
7	7	13C6-PFDA	1801132-02 REEPDW1094 0.11599	7.55e3	46.1	YES
8	8	13C7-PFUdA	1801132-02 REEPDW1094 0.11599	9.16e3	49.6	YES

Name: 180619M1_34, Date: 19-Jun-2018, Time: 23:22:20, ID: 1801132-03 REEPDW1099 0.11584, Description: REEPDW1099

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-03 REEPDW1099 0.11584	6.36e3	72.0	NO
2	2	13C5-PFHxA	1801132-03 REEPDW1099 0.11584	8.21e3	52.2	NO
3	3	13C3-PFHxS	1801132-03 REEPDW1099 0.11584	2.45e3	75.6	NO
4	4	13C8-PFOA	1801132-03 REEPDW1099 0.11584	8.92e3	58.9	NO
5	5	13C9-PFNA	1801132-03 REEPDW1099 0.11584	9.21e3	54.8	NO
6	6	13C4-PFOS	1801132-03 REEPDW1099 0.11584	2.49e3	69.9	NO
7	7	13C6-PFDA	1801132-03 REEPDW1099 0.11584	8.73e3	53.3	NO
8	8	13C7-PFUdA	1801132-03 REEPDW1099 0.11584	9.96e3	53.9	NO

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Name: 180619M1_35, Date: 19-Jun-2018, Time: 23:32:44, ID: 1801132-04 REEPDW1100 0.11372, Description: REEPDW1100

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-04 REEPDW1100 0.11372	6.25e3	70.7	NO
2	2	13C5-PFHxA	1801132-04 REEPDW1100 0.11372	8.33e3	52.9	NO
3	3	13C3-PFHxS	1801132-04 REEPDW1100 0.11372	2.05e3	63.2	NO
4	4	13C8-PFOA	1801132-04 REEPDW1100 0.11372	8.43e3	55.7	NO
5	5	13C9-PFNA	1801132-04 REEPDW1100 0.11372	9.23e3	54.9	NO
6	6	13C4-PFOS	1801132-04 REEPDW1100 0.11372	2.46e3	69.0	NO
7	7	13C6-PFDA	1801132-04 REEPDW1100 0.11372	7.75e3	47.3	YES
8	8	13C7-PFUdA	1801132-04 REEPDW1100 0.11372	9.72e3	52.6	NO

Name: 180619M1_36, Date: 19-Jun-2018, Time: 23:43:15, ID: 1801132-05 REEPDW559 0.11771, Description: REEPDW559

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-05 REEPDW559 0.11771	7.76e3	87.8	NO
2	2	13C5-PFHxA	1801132-05 REEPDW559 0.11771	9.32e3	59.2	NO
3	3	13C3-PFHxS	1801132-05 REEPDW559 0.11771	2.38e3	73.2	NO
4	4	13C8-PFOA	1801132-05 REEPDW559 0.11771	1.01e4	66.6	NO
5	5	13C9-PFNA	1801132-05 REEPDW559 0.11771	1.12e4	66.6	NO
6	6	13C4-PFOS	1801132-05 REEPDW559 0.11771	2.60e3	72.9	NO
7	7	13C6-PFDA	1801132-05 REEPDW559 0.11771	9.31e3	56.9	NO
8	8	13C7-PFUdA	1801132-05 REEPDW559 0.11771	1.14e4	61.9	NO

Name: 180619M1_37, Date: 19-Jun-2018, Time: 23:53:40, ID: 1801132-06 REEPDW1101 0.11368, Description: REEPDW1101

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-06 REEPDW1101 0.11368	6.98e3	79.0	NO
2	2	13C5-PFHxA	1801132-06 REEPDW1101 0.11368	9.04e3	57.4	NO
3	3	13C3-PFHxS	1801132-06 REEPDW1101 0.11368	2.03e3	62.6	NO
4	4	13C8-PFOA	1801132-06 REEPDW1101 0.11368	9.46e3	62.4	NO
5	5	13C9-PFNA	1801132-06 REEPDW1101 0.11368	9.89e3	58.8	NO
6	6	13C4-PFOS	1801132-06 REEPDW1101 0.11368	2.18e3	61.3	NO
7	7	13C6-PFDA	1801132-06 REEPDW1101 0.11368	7.91e3	48.3	YES
8	8	13C7-PFUdA	1801132-06 REEPDW1101 0.11368	1.00e4	54.2	NO

Name: 180619M1_38, Date: 20-Jun-2018, Time: 00:04:02, ID: 1801132-07 REEPDW1108 0.11557, Description: REEPDW1108

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-07 REEPDW1108 0.11557	8.20e3	92.8	NO
2	2	13C5-PFHxA	1801132-07 REEPDW1108 0.11557	1.02e4	64.6	NO
3	3	13C3-PFHxS	1801132-07 REEPDW1108 0.11557	2.27e3	69.8	NO
4	4	13C8-PFOA	1801132-07 REEPDW1108 0.11557	1.11e4	73.5	NO
5	5	13C9-PFNA	1801132-07 REEPDW1108 0.11557	1.16e4	69.3	NO
6	6	13C4-PFOS	1801132-07 REEPDW1108 0.11557	2.46e3	69.1	NO
7	7	13C6-PFDA	1801132-07 REEPDW1108 0.11557	1.02e4	62.1	NO
8	8	13C7-PFUdA	1801132-07 REEPDW1108 0.11557	1.22e4	66.0	NO

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Name: 180619M1_39, Date: 20-Jun-2018, Time: 00:14:32, ID: 1801132-08 REEPDW1102 0.11553, Description: REEPDW1102

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-08 REEPDW1102 0.11553	9.73e3	110.0	NO
2	2	13C5-PFHxA	1801132-08 REEPDW1102 0.11553	1.20e4	76.0	NO
3	3	13C3-PFHxS	1801132-08 REEPDW1102 0.11553	2.64e3	81.3	NO
4	4	13C8-PFOA	1801132-08 REEPDW1102 0.11553	1.28e4	84.3	NO
5	5	13C9-PFNA	1801132-08 REEPDW1102 0.11553	1.29e4	77.0	NO
6	6	13C4-PFOS	1801132-08 REEPDW1102 0.11553	2.75e3	77.1	NO
7	7	13C6-PFDA	1801132-08 REEPDW1102 0.11553	1.16e4	70.9	NO
8	8	13C7-PFUdA	1801132-08 REEPDW1102 0.11553	1.55e4	83.8	NO

Name: 180619M1_40, Date: 20-Jun-2018, Time: 00:25:03, ID: 1801132-09 REEPDW1103 0.10358, Description: REEPDW1103

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-09 REEPDW1103 0.10358	8.06e3	91.1	NO
2	2	13C5-PFHxA	1801132-09 REEPDW1103 0.10358	1.06e4	67.5	NO
3	3	13C3-PFHxS	1801132-09 REEPDW1103 0.10358	2.31e3	71.1	NO
4	4	13C8-PFOA	1801132-09 REEPDW1103 0.10358	9.76e3	64.5	NO
5	5	13C9-PFNA	1801132-09 REEPDW1103 0.10358	1.21e4	71.9	NO
6	6	13C4-PFOS	1801132-09 REEPDW1103 0.10358	2.37e3	66.6	NO
7	7	13C6-PFDA	1801132-09 REEPDW1103 0.10358	9.30e3	56.8	NO
8	8	13C7-PFUdA	1801132-09 REEPDW1103 0.10358	1.14e4	61.5	NO

Name: 180619M1_41, Date: 20-Jun-2018, Time: 00:35:27, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_42, Date: 20-Jun-2018, Time: 00:45:57, ID: ST180619M1-12 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-12 PFC CS3 18F1109	1.00e4	113.1	NO
2	2	13C5-PFHxA	ST180619M1-12 PFC CS3 18F1109	1.64e4	104.5	NO
3	3	13C3-PFHxS	ST180619M1-12 PFC CS3 18F1109	3.52e3	108.6	NO
4	4	13C8-PFOA	ST180619M1-12 PFC CS3 18F1109	1.59e4	105.1	NO
5	5	13C9-PFNA	ST180619M1-12 PFC CS3 18F1109	1.81e4	107.7	NO
6	6	13C4-PFOS	ST180619M1-12 PFC CS3 18F1109	3.66e3	102.7	NO
7	7	13C6-PFDA	ST180619M1-12 PFC CS3 18F1109	1.50e4	91.5	NO
8	8	13C7-PFUdA	ST180619M1-12 PFC CS3 18F1109	1.87e4	101.2	NO

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Name: 180619M1_43, Date: 20-Jun-2018, Time: 00:56:23, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_44, Date: 20-Jun-2018, Time: 01:06:53, ID: 1801132-10 REEPDW1105 0.11546, Description: REEPDW1105

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-10 REEPDW1105 0.11546	9.39e3	106.2	NO
2	2	13C5-PFHxA	1801132-10 REEPDW1105 0.11546	1.12e4	71.0	NO
3	3	13C3-PFHxS	1801132-10 REEPDW1105 0.11546	2.40e3	73.9	NO
4	4	13C8-PFOA	1801132-10 REEPDW1105 0.11546	1.19e4	78.8	NO
5	5	13C9-PFNA	1801132-10 REEPDW1105 0.11546	1.21e4	72.1	NO
6	6	13C4-PFOS	1801132-10 REEPDW1105 0.11546	2.74e3	76.8	NO
7	7	13C6-PFDA	1801132-10 REEPDW1105 0.11546	1.22e4	74.2	NO
8	8	13C7-PFUdA	1801132-10 REEPDW1105 0.11546	1.33e4	72.2	NO

Name: 180619M1_45, Date: 20-Jun-2018, Time: 01:17:18, ID: 1801132-11 REEPDW1106 0.11477, Description: REEPDW1106

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-11 REEPDW1106 0.11477	8.85e3	100.1	NO
2	2	13C5-PFHxA	1801132-11 REEPDW1106 0.11477	1.08e4	68.7	NO
3	3	13C3-PFHxS	1801132-11 REEPDW1106 0.11477	2.44e3	75.2	NO
4	4	13C8-PFOA	1801132-11 REEPDW1106 0.11477	1.04e4	68.9	NO
5	5	13C9-PFNA	1801132-11 REEPDW1106 0.11477	1.22e4	72.8	NO
6	6	13C4-PFOS	1801132-11 REEPDW1106 0.11477	2.62e3	73.6	NO
7	7	13C6-PFDA	1801132-11 REEPDW1106 0.11477	1.06e4	64.7	NO
8	8	13C7-PFUdA	1801132-11 REEPDW1106 0.11477	1.31e4	70.7	NO

Name: 180619M1_46, Date: 20-Jun-2018, Time: 01:27:48, ID: 1801132-12 REEPDW1107 0.11261, Description: REEPDW1107

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-12 REEPDW1107 0.11261	8.91e3	100.7	NO
2	2	13C5-PFHxA	1801132-12 REEPDW1107 0.11261	1.14e4	72.7	NO
3	3	13C3-PFHxS	1801132-12 REEPDW1107 0.11261	2.45e3	75.7	NO
4	4	13C8-PFOA	1801132-12 REEPDW1107 0.11261	1.14e4	75.1	NO
5	5	13C9-PFNA	1801132-12 REEPDW1107 0.11261	1.21e4	72.2	NO
6	6	13C4-PFOS	1801132-12 REEPDW1107 0.11261	2.54e3	71.3	NO
7	7	13C6-PFDA	1801132-12 REEPDW1107 0.11261	1.00e4	61.1	NO
8	8	13C7-PFUdA	1801132-12 REEPDW1107 0.11261	1.24e4	67.1	NO

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Name: 180619M1_47, Date: 20-Jun-2018, Time: 01:38:13, ID: 1801132-13 REEPDW1109 0.12035, Description: REEPDW1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801132-13 REEPDW1109 0.12035	1.01e4	113.8	NO
2	2	13C5-PFHxA	1801132-13 REEPDW1109 0.12035	1.22e4	77.4	NO
3	3	13C3-PFHxS	1801132-13 REEPDW1109 0.12035	2.61e3	80.3	NO
4	4	13C8-PFOA	1801132-13 REEPDW1109 0.12035	1.29e4	85.2	NO
5	5	13C9-PFNA	1801132-13 REEPDW1109 0.12035	1.40e4	83.4	NO
6	6	13C4-PFOS	1801132-13 REEPDW1109 0.12035	2.68e3	75.1	NO
7	7	13C6-PFDA	1801132-13 REEPDW1109 0.12035	1.14e4	69.3	NO
8	8	13C7-PFUdA	1801132-13 REEPDW1109 0.12035	1.39e4	75.3	NO

Name: 180619M1_48, Date: 20-Jun-2018, Time: 01:48:43, ID: B8F0100-BS1 OPR 2, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0100-BS1 OPR 2	1.03e4	116.6	NO
2	2	13C5-PFHxA	B8F0100-BS1 OPR 2	1.26e4	79.8	NO
3	3	13C3-PFHxS	B8F0100-BS1 OPR 2	2.87e3	88.4	NO
4	4	13C8-PFOA	B8F0100-BS1 OPR 2	1.42e4	93.8	NO
5	5	13C9-PFNA	B8F0100-BS1 OPR 2	1.82e4	108.2	NO
6	6	13C4-PFOS	B8F0100-BS1 OPR 2	3.29e3	92.4	NO
7	7	13C6-PFDA	B8F0100-BS1 OPR 2	1.30e4	79.5	NO
8	8	13C7-PFUdA	B8F0100-BS1 OPR 2	2.11e4	114.0	NO

Name: 180619M1_49, Date: 20-Jun-2018, Time: 01:59:07, ID: B8F0100-BLK1 Method Blank 2, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0100-BLK1 Method Blank 2	1.05e4	119.1	NO
2	2	13C5-PFHxA	B8F0100-BLK1 Method Blank 2	1.28e4	81.2	NO
3	3	13C3-PFHxS	B8F0100-BLK1 Method Blank 2	2.84e3	87.6	NO
4	4	13C8-PFOA	B8F0100-BLK1 Method Blank 2	1.38e4	91.0	NO
5	5	13C9-PFNA	B8F0100-BLK1 Method Blank 2	1.91e4	113.7	NO
6	6	13C4-PFOS	B8F0100-BLK1 Method Blank 2	3.29e3	92.4	NO
7	7	13C6-PFDA	B8F0100-BLK1 Method Blank 2	1.43e4	87.2	NO
8	8	13C7-PFUdA	B8F0100-BLK1 Method Blank 2	1.98e4	106.9	NO

Name: 180619M1_50, Date: 20-Jun-2018, Time: 02:09:37, ID: B8F0100-MS1 Matrix Spike 2, Description: Matrix Spike

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0100-MS1 Matrix Spike 2	9.36e3	105.9	NO
2	2	13C5-PFHxA	B8F0100-MS1 Matrix Spike 2	1.19e4	75.9	NO
3	3	13C3-PFHxS	B8F0100-MS1 Matrix Spike 2	2.51e3	77.3	NO
4	4	13C8-PFOA	B8F0100-MS1 Matrix Spike 2	1.15e4	76.3	NO
5	5	13C9-PFNA	B8F0100-MS1 Matrix Spike 2	1.28e4	76.1	NO
6	6	13C4-PFOS	B8F0100-MS1 Matrix Spike 2	2.81e3	78.7	NO
7	7	13C6-PFDA	B8F0100-MS1 Matrix Spike 2	1.09e4	66.8	NO
8	8	13C7-PFUdA	B8F0100-MS1 Matrix Spike 2	1.41e4	76.5	NO

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Name: 180619M1_51, Date: 20-Jun-2018, Time: 02:20:02, ID: B8F0100-MSD1 Matrix Spike Dup 2.03, Description: Matrix Spike Dup

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0100-MSD1 Matrix Spike Dup 2.03	9.57e3	108.3	NO
2	2	13C5-PFHxA	B8F0100-MSD1 Matrix Spike Dup 2.03	1.15e4	73.4	NO
3	3	13C3-PFHxS	B8F0100-MSD1 Matrix Spike Dup 2.03	2.43e3	75.0	NO
4	4	13C8-PFOA	B8F0100-MSD1 Matrix Spike Dup 2.03	1.26e4	83.5	NO
5	5	13C9-PFNA	B8F0100-MSD1 Matrix Spike Dup 2.03	1.30e4	77.4	NO
6	6	13C4-PFOS	B8F0100-MSD1 Matrix Spike Dup 2.03	3.02e3	84.8	NO
7	7	13C6-PFDA	B8F0100-MSD1 Matrix Spike Dup 2.03	1.17e4	71.2	NO
8	8	13C7-PFUdA	B8F0100-MSD1 Matrix Spike Dup 2.03	1.45e4	78.5	NO

Name: 180619M1_52, Date: 20-Jun-2018, Time: 02:30:32, ID: 1801018-01 THalibut1-180502DB 2.02, Description: THalibut1-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-01 THalibut1-180502DB 2.02	9.21e3	104.2	NO
2	2	13C5-PFHxA	1801018-01 THalibut1-180502DB 2.02	1.14e4	72.6	NO
3	3	13C3-PFHxS	1801018-01 THalibut1-180502DB 2.02	2.47e3	76.1	NO
4	4	13C8-PFOA	1801018-01 THalibut1-180502DB 2.02	1.16e4	76.8	NO
5	5	13C9-PFNA	1801018-01 THalibut1-180502DB 2.02	1.34e4	79.7	NO
6	6	13C4-PFOS	1801018-01 THalibut1-180502DB 2.02	2.56e3	71.9	NO
7	7	13C6-PFDA	1801018-01 THalibut1-180502DB 2.02	1.04e4	63.2	NO
8	8	13C7-PFUdA	1801018-01 THalibut1-180502DB 2.02	1.40e4	75.5	NO

Name: 180619M1_53, Date: 20-Jun-2018, Time: 02:40:54, ID: 1801018-02 TWhiteFish1-180502DB 2, Description: TWhiteFish1-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-02 TWhiteFish1-180502DB 2	9.08e3	102.7	NO
2	2	13C5-PFHxA	1801018-02 TWhiteFish1-180502DB 2	1.15e4	73.1	NO
3	3	13C3-PFHxS	1801018-02 TWhiteFish1-180502DB 2	2.65e3	81.8	NO
4	4	13C8-PFOA	1801018-02 TWhiteFish1-180502DB 2	1.20e4	79.3	NO
5	5	13C9-PFNA	1801018-02 TWhiteFish1-180502DB 2	1.33e4	78.9	NO
6	6	13C4-PFOS	1801018-02 TWhiteFish1-180502DB 2	2.63e3	73.8	NO
7	7	13C6-PFDA	1801018-02 TWhiteFish1-180502DB 2	1.10e4	67.2	NO
8	8	13C7-PFUdA	1801018-02 TWhiteFish1-180502DB 2	1.47e4	79.5	NO

Name: 180619M1_54, Date: 20-Jun-2018, Time: 02:51:24, ID: 1801018-03 TWhiteFish2-180502DB 2.01, Description: TWhiteFish2-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-03 TWhiteFish2-180502DB 2.01	1.18e4	133.2	NO
2	2	13C5-PFHxA	1801018-03 TWhiteFish2-180502DB 2.01	1.49e4	94.5	NO
3	3	13C3-PFHxS	1801018-03 TWhiteFish2-180502DB 2.01	3.04e3	93.7	NO
4	4	13C8-PFOA	1801018-03 TWhiteFish2-180502DB 2.01	1.50e4	98.8	NO
5	5	13C9-PFNA	1801018-03 TWhiteFish2-180502DB 2.01	1.59e4	94.9	NO
6	6	13C4-PFOS	1801018-03 TWhiteFish2-180502DB 2.01	3.30e3	92.5	NO
7	7	13C6-PFDA	1801018-03 TWhiteFish2-180502DB 2.01	1.46e4	89.3	NO
8	8	13C7-PFUdA	1801018-03 TWhiteFish2-180502DB 2.01	1.85e4	100.3	NO

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Name: 180619M1_55, Date: 20-Jun-2018, Time: 03:01:50, ID: 1801018-04 TWhiteFish3-180502DB 2.02, Description: TWhiteFish3-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-04 TWhiteFish3-180502DB 2.02	8.40e3	95.0	NO
2	2	13C5-PFHxA	1801018-04 TWhiteFish3-180502DB 2.02	1.10e4	69.9	NO
3	3	13C3-PFHxS	1801018-04 TWhiteFish3-180502DB 2.02	2.19e3	67.5	NO
4	4	13C8-PFOA	1801018-04 TWhiteFish3-180502DB 2.02	1.05e4	69.0	NO
5	5	13C9-PFNA	1801018-04 TWhiteFish3-180502DB 2.02	1.18e4	70.2	NO
6	6	13C4-PFOS	1801018-04 TWhiteFish3-180502DB 2.02	2.32e3	65.1	NO
7	7	13C6-PFDA	1801018-04 TWhiteFish3-180502DB 2.02	1.04e4	63.5	NO
8	8	13C7-PFUdA	1801018-04 TWhiteFish3-180502DB 2.02	1.32e4	71.7	NO

Name: 180619M1_56, Date: 20-Jun-2018, Time: 03:12:20, ID: 1801018-05 TPerch1-180502DB 2.01, Description: TPerch1-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-05 TPerch1-180502DB 2.01	9.24e3	104.6	NO
2	2	13C5-PFHxA	1801018-05 TPerch1-180502DB 2.01	1.20e4	76.5	NO
3	3	13C3-PFHxS	1801018-05 TPerch1-180502DB 2.01	2.50e3	77.1	NO
4	4	13C8-PFOA	1801018-05 TPerch1-180502DB 2.01	1.23e4	81.2	NO
5	5	13C9-PFNA	1801018-05 TPerch1-180502DB 2.01	1.31e4	77.9	NO
6	6	13C4-PFOS	1801018-05 TPerch1-180502DB 2.01	2.53e3	70.9	NO
7	7	13C6-PFDA	1801018-05 TPerch1-180502DB 2.01	1.10e4	67.0	NO
8	8	13C7-PFUdA	1801018-05 TPerch1-180502DB 2.01	1.33e4	72.1	NO

Name: 180619M1_57, Date: 20-Jun-2018, Time: 03:22:45, ID: 1801018-06 TPerch2-180502DB 2.04, Description: TPerch2-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-06 TPerch2-180502DB 2.04	9.72e3	109.9	NO
2	2	13C5-PFHxA	1801018-06 TPerch2-180502DB 2.04	1.23e4	78.4	NO
3	3	13C3-PFHxS	1801018-06 TPerch2-180502DB 2.04	2.61e3	80.5	NO
4	4	13C8-PFOA	1801018-06 TPerch2-180502DB 2.04	1.26e4	83.3	NO
5	5	13C9-PFNA	1801018-06 TPerch2-180502DB 2.04	1.31e4	77.7	NO
6	6	13C4-PFOS	1801018-06 TPerch2-180502DB 2.04	2.85e3	79.9	NO
7	7	13C6-PFDA	1801018-06 TPerch2-180502DB 2.04	1.18e4	71.8	NO
8	8	13C7-PFUdA	1801018-06 TPerch2-180502DB 2.04	1.53e4	83.1	NO

Name: 180619M1_58, Date: 20-Jun-2018, Time: 03:33:16, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

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Name: 180619M1_59, Date: 20-Jun-2018, Time: 03:43:40, ID: ST180619M1-13 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-13 PFC CS3 18F1109	1.02e4	115.1	NO
2	2	13C5-PFHxA	ST180619M1-13 PFC CS3 18F1109	1.61e4	102.2	NO
3	3	13C3-PFHxS	ST180619M1-13 PFC CS3 18F1109	3.39e3	104.5	NO
4	4	13C8-PFOA	ST180619M1-13 PFC CS3 18F1109	1.60e4	105.8	NO
5	5	13C9-PFNA	ST180619M1-13 PFC CS3 18F1109	1.73e4	102.9	NO
6	6	13C4-PFOS	ST180619M1-13 PFC CS3 18F1109	3.70e3	103.9	NO
7	7	13C6-PFDA	ST180619M1-13 PFC CS3 18F1109	1.50e4	91.7	NO
8	8	13C7-PFUdA	ST180619M1-13 PFC CS3 18F1109	1.86e4	100.5	NO

Name: 180619M1_60, Date: 20-Jun-2018, Time: 03:54:10, ID: ST180619M1-14 PFC CS0 18F1106, Description: PFC CS0 18F1106

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-14 PFC CS0 18F1106	1.08e4	122.3	NO
2	2	13C5-PFHxA	ST180619M1-14 PFC CS0 18F1106	1.80e4	114.4	NO
3	3	13C3-PFHxS	ST180619M1-14 PFC CS0 18F1106	3.84e3	118.5	NO
4	4	13C8-PFOA	ST180619M1-14 PFC CS0 18F1106	1.82e4	120.0	NO
5	5	13C9-PFNA	ST180619M1-14 PFC CS0 18F1106	2.02e4	120.1	NO
6	6	13C4-PFOS	ST180619M1-14 PFC CS0 18F1106	4.17e3	117.0	NO
7	7	13C6-PFDA	ST180619M1-14 PFC CS0 18F1106	1.72e4	104.9	NO
8	8	13C7-PFUdA	ST180619M1-14 PFC CS0 18F1106	1.88e4	101.9	NO

Name: 180619M1_61, Date: 20-Jun-2018, Time: 04:04:41, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_62, Date: 20-Jun-2018, Time: 04:15:05, ID: 1801018-07 TTrout1-180502DB 2.04, Description: TTrout1-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-07 TTrout1-180502DB 2.04	1.12e4	126.1	NO
2	2	13C5-PFHxA	1801018-07 TTrout1-180502DB 2.04	1.37e4	87.2	NO
3	3	13C3-PFHxS	1801018-07 TTrout1-180502DB 2.04	3.16e3	97.5	NO
4	4	13C8-PFOA	1801018-07 TTrout1-180502DB 2.04	1.44e4	95.4	NO
5	5	13C9-PFNA	1801018-07 TTrout1-180502DB 2.04	1.54e4	91.4	NO
6	6	13C4-PFOS	1801018-07 TTrout1-180502DB 2.04	3.34e3	93.8	NO
7	7	13C6-PFDA	1801018-07 TTrout1-180502DB 2.04	1.37e4	83.8	NO
8	8	13C7-PFUdA	1801018-07 TTrout1-180502DB 2.04	1.73e4	93.7	NO

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Name: 180619M1_63, Date: 20-Jun-2018, Time: 04:25:36, ID: 1801018-08 TTrout2-180502DB 2.04, Description: TTrout2-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-08 TTrout2-180502DB 2.04	1.05e4	118.8	NO
2	2	13C5-PFHxA	1801018-08 TTrout2-180502DB 2.04	1.32e4	83.7	NO
3	3	13C3-PFHxS	1801018-08 TTrout2-180502DB 2.04	2.94e3	90.7	NO
4	4	13C8-PFOA	1801018-08 TTrout2-180502DB 2.04	1.45e4	95.9	NO
5	5	13C9-PFNA	1801018-08 TTrout2-180502DB 2.04	1.46e4	87.0	NO
6	6	13C4-PFOS	1801018-08 TTrout2-180502DB 2.04	3.22e3	90.4	NO
7	7	13C6-PFDA	1801018-08 TTrout2-180502DB 2.04	1.40e4	85.3	NO
8	8	13C7-PFUdA	1801018-08 TTrout2-180502DB 2.04	1.80e4	97.2	NO

Name: 180619M1_64, Date: 20-Jun-2018, Time: 04:36:01, ID: 1801018-09 TSwordfish1-180502DB 2.03, Description: TSwordfish1-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-09 TSwordfish1-180502DB 2.03	9.50e3	107.5	NO
2	2	13C5-PFHxA	1801018-09 TSwordfish1-180502DB 2.03	1.27e4	80.6	NO
3	3	13C3-PFHxS	1801018-09 TSwordfish1-180502DB 2.03	2.60e3	80.0	NO
4	4	13C8-PFOA	1801018-09 TSwordfish1-180502DB 2.03	1.27e4	83.6	NO
5	5	13C9-PFNA	1801018-09 TSwordfish1-180502DB 2.03	1.30e4	77.2	NO
6	6	13C4-PFOS	1801018-09 TSwordfish1-180502DB 2.03	2.96e3	83.2	NO
7	7	13C6-PFDA	1801018-09 TSwordfish1-180502DB 2.03	1.22e4	74.6	NO
8	8	13C7-PFUdA	1801018-09 TSwordfish1-180502DB 2.03	1.47e4	79.8	NO

Name: 180619M1_65, Date: 20-Jun-2018, Time: 04:46:31, ID: 1801018-10 TWalleye1-180502DB 2.04, Description: TWalleye1-180502DB

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801018-10 TWalleye1-180502DB 2.04	1.05e4	118.4	NO
2	2	13C5-PFHxA	1801018-10 TWalleye1-180502DB 2.04	1.28e4	81.4	NO
3	3	13C3-PFHxS	1801018-10 TWalleye1-180502DB 2.04	2.93e3	90.3	NO
4	4	13C8-PFOA	1801018-10 TWalleye1-180502DB 2.04	1.39e4	91.7	NO
5	5	13C9-PFNA	1801018-10 TWalleye1-180502DB 2.04	1.51e4	89.7	NO
6	6	13C4-PFOS	1801018-10 TWalleye1-180502DB 2.04	3.08e3	86.5	NO
7	7	13C6-PFDA	1801018-10 TWalleye1-180502DB 2.04	1.23e4	75.3	NO
8	8	13C7-PFUdA	1801018-10 TWalleye1-180502DB 2.04	1.61e4	87.0	NO

Name: 180619M1_66, Date: 20-Jun-2018, Time: 04:56:56, ID: B8F0107-BS1 OPR 0.125, Description: OPR

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0107-BS1 OPR 0.125	9.21e3	104.2	NO
2	2	13C5-PFHxA	B8F0107-BS1 OPR 0.125	1.21e4	77.0	NO
3	3	13C3-PFHxS	B8F0107-BS1 OPR 0.125	2.75e3	84.7	NO
4	4	13C8-PFOA	B8F0107-BS1 OPR 0.125	1.21e4	80.2	NO
5	5	13C9-PFNA	B8F0107-BS1 OPR 0.125	1.33e4	79.1	NO
6	6	13C4-PFOS	B8F0107-BS1 OPR 0.125	3.08e3	86.4	NO
7	7	13C6-PFDA	B8F0107-BS1 OPR 0.125	1.10e4	66.8	NO
8	8	13C7-PFUdA	B8F0107-BS1 OPR 0.125	1.35e4	72.9	NO

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Name: 180619M1_67, Date: 20-Jun-2018, Time: 05:07:26, ID: B8F0107-BSD1 LCSD 0.125, Description: LCSD

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0107-BSD1 LCSD 0.125	8.84e3	100.0	NO
2	2	13C5-PFHxA	B8F0107-BSD1 LCSD 0.125	1.17e4	74.2	NO
3	3	13C3-PFHxS	B8F0107-BSD1 LCSD 0.125	2.85e3	87.9	NO
4	4	13C8-PFOA	B8F0107-BSD1 LCSD 0.125	1.31e4	86.2	NO
5	5	13C9-PFNA	B8F0107-BSD1 LCSD 0.125	1.46e4	87.1	NO
6	6	13C4-PFOS	B8F0107-BSD1 LCSD 0.125	3.05e3	85.6	NO
7	7	13C6-PFDA	B8F0107-BSD1 LCSD 0.125	1.25e4	76.5	NO
8	8	13C7-PFUdA	B8F0107-BSD1 LCSD 0.125	1.50e4	81.5	NO

Name: 180619M1_68, Date: 20-Jun-2018, Time: 05:17:51, ID: B8F0107-BLK1 Method Blank 0.125, Description: Method Blank

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	B8F0107-BLK1 Method Blank 0.125	7.91e3	89.4	NO
2	2	13C5-PFHxA	B8F0107-BLK1 Method Blank 0.125	1.12e4	71.2	NO
3	3	13C3-PFHxS	B8F0107-BLK1 Method Blank 0.125	3.03e3	93.3	NO
4	4	13C8-PFOA	B8F0107-BLK1 Method Blank 0.125	1.12e4	74.2	NO
5	5	13C9-PFNA	B8F0107-BLK1 Method Blank 0.125	1.24e4	74.0	NO
6	6	13C4-PFOS	B8F0107-BLK1 Method Blank 0.125	3.16e3	88.6	NO
7	7	13C6-PFDA	B8F0107-BLK1 Method Blank 0.125	1.12e4	68.5	NO
8	8	13C7-PFUdA	B8F0107-BLK1 Method Blank 0.125	1.36e4	73.6	NO

Name: 180619M1_69, Date: 20-Jun-2018, Time: 05:28:21, ID: 1801164-01 MCLPCH325 0.11979, Description: MCLPCH325

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-01 MCLPCH325 0.11979	5.78e3	65.4	NO
2	2	13C5-PFHxA	1801164-01 MCLPCH325 0.11979	8.53e3	54.2	NO
3	3	13C3-PFHxS	1801164-01 MCLPCH325 0.11979	2.85e3	88.0	NO
4	4	13C8-PFOA	1801164-01 MCLPCH325 0.11979	1.05e4	69.3	NO
5	5	13C9-PFNA	1801164-01 MCLPCH325 0.11979	1.14e4	68.0	NO
6	6	13C4-PFOS	1801164-01 MCLPCH325 0.11979	2.87e3	80.6	NO
7	7	13C6-PFDA	1801164-01 MCLPCH325 0.11979	1.03e4	62.8	NO
8	8	13C7-PFUdA	1801164-01 MCLPCH325 0.11979	1.37e4	74.2	NO

Name: 180619M1_70, Date: 20-Jun-2018, Time: 05:38:47, ID: 1801164-02 MCLPCH329 0.1213, Description: MCLPCH329

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-02 MCLPCH329 0.1213	7.74e3	87.5	NO
2	2	13C5-PFHxA	1801164-02 MCLPCH329 0.1213	9.99e3	63.5	NO
3	3	13C3-PFHxS	1801164-02 MCLPCH329 0.1213	2.47e3	76.1	NO
4	4	13C8-PFOA	1801164-02 MCLPCH329 0.1213	1.10e4	72.8	NO
5	5	13C9-PFNA	1801164-02 MCLPCH329 0.1213	1.18e4	70.1	NO
6	6	13C4-PFOS	1801164-02 MCLPCH329 0.1213	2.71e3	75.9	NO
7	7	13C6-PFDA	1801164-02 MCLPCH329 0.1213	1.01e4	61.9	NO
8	8	13C7-PFUdA	1801164-02 MCLPCH329 0.1213	1.25e4	67.8	NO

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Name: 180619M1_71, Date: 20-Jun-2018, Time: 05:49:17, ID: 1801164-03 MCLPCH437 0.11893, Description: MCLPCH437

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-03 MCLPCH437 0.11893	7.97e3	90.1	NO
2	2	13C5-PFHxA	1801164-03 MCLPCH437 0.11893	1.05e4	66.5	NO
3	3	13C3-PFHxS	1801164-03 MCLPCH437 0.11893	2.47e3	76.1	NO
4	4	13C8-PFOA	1801164-03 MCLPCH437 0.11893	1.11e4	73.5	NO
5	5	13C9-PFNA	1801164-03 MCLPCH437 0.11893	1.22e4	72.7	NO
6	6	13C4-PFOS	1801164-03 MCLPCH437 0.11893	2.65e3	74.2	NO
7	7	13C6-PFDA	1801164-03 MCLPCH437 0.11893	1.02e4	62.5	NO
8	8	13C7-PFUdA	1801164-03 MCLPCH437 0.11893	1.29e4	69.6	NO

Name: 180619M1_72, Date: 20-Jun-2018, Time: 05:59:41, ID: 1801164-04 MCLPCH331 0.11875, Description: MCLPCH331

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-04 MCLPCH331 0.11875	7.33e3	83.0	NO
2	2	13C5-PFHxA	1801164-04 MCLPCH331 0.11875	9.85e3	62.6	NO
3	3	13C3-PFHxS	1801164-04 MCLPCH331 0.11875	2.62e3	80.9	NO
4	4	13C8-PFOA	1801164-04 MCLPCH331 0.11875	1.06e4	69.7	NO
5	5	13C9-PFNA	1801164-04 MCLPCH331 0.11875	1.16e4	69.1	NO
6	6	13C4-PFOS	1801164-04 MCLPCH331 0.11875	2.88e3	80.9	NO
7	7	13C6-PFDA	1801164-04 MCLPCH331 0.11875	1.06e4	64.6	NO
8	8	13C7-PFUdA	1801164-04 MCLPCH331 0.11875	1.32e4	71.3	NO

Name: 180619M1_73, Date: 20-Jun-2018, Time: 06:10:11, ID: 1801164-05 MCLPCH403 0.1203, Description: MCLPCH403

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-05 MCLPCH403 0.1203	6.58e3	74.4	NO
2	2	13C5-PFHxA	1801164-05 MCLPCH403 0.1203	8.77e3	55.7	NO
3	3	13C3-PFHxS	1801164-05 MCLPCH403 0.1203	2.98e3	91.7	NO
4	4	13C8-PFOA	1801164-05 MCLPCH403 0.1203	1.03e4	68.0	NO
5	5	13C9-PFNA	1801164-05 MCLPCH403 0.1203	1.14e4	68.0	NO
6	6	13C4-PFOS	1801164-05 MCLPCH403 0.1203	2.99e3	84.0	NO
7	7	13C6-PFDA	1801164-05 MCLPCH403 0.1203	1.04e4	63.7	NO
8	8	13C7-PFUdA	1801164-05 MCLPCH403 0.1203	1.25e4	67.6	NO

Name: 180619M1_74, Date: 20-Jun-2018, Time: 06:20:36, ID: 1801164-06 MCLPXX352 0.12033, Description: MCLPXX352

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-06 MCLPXX352 0.12033	7.47e3	84.5	NO
2	2	13C5-PFHxA	1801164-06 MCLPXX352 0.12033	1.02e4	65.0	NO
3	3	13C3-PFHxS	1801164-06 MCLPXX352 0.12033	2.60e3	80.0	NO
4	4	13C8-PFOA	1801164-06 MCLPXX352 0.12033	1.12e4	73.8	NO
5	5	13C9-PFNA	1801164-06 MCLPXX352 0.12033	1.22e4	72.8	NO
6	6	13C4-PFOS	1801164-06 MCLPXX352 0.12033	2.52e3	70.8	NO
7	7	13C6-PFDA	1801164-06 MCLPXX352 0.12033	1.00e4	61.3	NO
8	8	13C7-PFUdA	1801164-06 MCLPXX352 0.12033	1.26e4	68.4	NO

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Name: 180619M1_75, Date: 20-Jun-2018, Time: 06:31:06, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA	5.83e0	0.1	YES
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA			NO
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_76, Date: 20-Jun-2018, Time: 06:41:31, ID: ST180619M1-15 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-15 PFC CS3 18F1109	1.13e4	128.0	NO
2	2	13C5-PFHxA	ST180619M1-15 PFC CS3 18F1109	1.67e4	106.4	NO
3	3	13C3-PFHxS	ST180619M1-15 PFC CS3 18F1109	3.50e3	107.9	NO
4	4	13C8-PFOA	ST180619M1-15 PFC CS3 18F1109	1.64e4	108.3	NO
5	5	13C9-PFNA	ST180619M1-15 PFC CS3 18F1109	1.88e4	111.6	NO
6	6	13C4-PFOS	ST180619M1-15 PFC CS3 18F1109	3.76e3	105.5	NO
7	7	13C6-PFDA	ST180619M1-15 PFC CS3 18F1109	1.51e4	92.0	NO
8	8	13C7-PFUdA	ST180619M1-15 PFC CS3 18F1109	1.83e4	99.0	NO

Name: 180619M1_77, Date: 20-Jun-2018, Time: 06:52:01, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA	1.16e1	0.1	YES
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA	7.60e0	0.1	YES
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA	9.12e0	0.3	YES
7	7	13C6-PFDA	IPA	1.61e1	0.1	YES
8	8	13C7-PFUdA	IPA	2.10e1	0.1	YES

Name: 180619M1_78, Date: 20-Jun-2018, Time: 07:02:26, ID: 1801164-07 MCLPXX354 0.11412, Description: MCLPXX354

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-07 MCLPXX354 0.11412	6.38e3	72.1	NO
2	2	13C5-PFHxA	1801164-07 MCLPXX354 0.11412	8.67e3	55.1	NO
3	3	13C3-PFHxS	1801164-07 MCLPXX354 0.11412	2.85e3	88.0	NO
4	4	13C8-PFOA	1801164-07 MCLPXX354 0.11412	9.52e3	62.9	NO
5	5	13C9-PFNA	1801164-07 MCLPXX354 0.11412	1.09e4	64.8	NO
6	6	13C4-PFOS	1801164-07 MCLPXX354 0.11412	3.40e3	95.4	NO
7	7	13C6-PFDA	1801164-07 MCLPXX354 0.11412	9.58e3	58.5	NO
8	8	13C7-PFUdA	1801164-07 MCLPXX354 0.11412	1.32e4	71.4	NO

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Name: 180619M1_79, Date: 20-Jun-2018, Time: 07:12:57, ID: 1801164-08 MCLPXX393 0.1177, Description: MCLPXX393

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-08 MCLPXX393 0.1177	6.51e3	73.7	NO
2	2	13C5-PFHxA	1801164-08 MCLPXX393 0.1177	9.08e3	57.7	NO
3	3	13C3-PFHxS	1801164-08 MCLPXX393 0.1177	2.62e3	80.7	NO
4	4	13C8-PFOA	1801164-08 MCLPXX393 0.1177	9.92e3	65.5	NO
5	5	13C9-PFNA	1801164-08 MCLPXX393 0.1177	1.18e4	70.1	NO
6	6	13C4-PFOS	1801164-08 MCLPXX393 0.1177	2.94e3	82.6	NO
7	7	13C6-PFDA	1801164-08 MCLPXX393 0.1177	9.48e3	57.8	NO
8	8	13C7-PFUdA	1801164-08 MCLPXX393 0.1177	1.19e4	64.6	NO

Name: 180619M1_80, Date: 20-Jun-2018, Time: 07:23:21, ID: 1801164-09 MCLPXX358 0.12144, Description: MCLPXX358

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-09 MCLPXX358 0.12144	7.43e3	84.1	NO
2	2	13C5-PFHxA	1801164-09 MCLPXX358 0.12144	1.03e4	65.6	NO
3	3	13C3-PFHxS	1801164-09 MCLPXX358 0.12144	2.41e3	74.3	NO
4	4	13C8-PFOA	1801164-09 MCLPXX358 0.12144	1.07e4	71.0	NO
5	5	13C9-PFNA	1801164-09 MCLPXX358 0.12144	1.14e4	67.9	NO
6	6	13C4-PFOS	1801164-09 MCLPXX358 0.12144	2.87e3	80.6	NO
7	7	13C6-PFDA	1801164-09 MCLPXX358 0.12144	1.01e4	61.8	NO
8	8	13C7-PFUdA	1801164-09 MCLPXX358 0.12144	1.26e4	68.2	NO

Name: 180619M1_81, Date: 20-Jun-2018, Time: 07:33:51, ID: 1801164-10 MCLPCD433 0.11801, Description: MCLPCD433

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-10 MCLPCD433 0.11801	8.65e3	97.9	NO
2	2	13C5-PFHxA	1801164-10 MCLPCD433 0.11801	1.16e4	73.8	NO
3	3	13C3-PFHxS	1801164-10 MCLPCD433 0.11801	2.57e3	79.1	NO
4	4	13C8-PFOA	1801164-10 MCLPCD433 0.11801	1.26e4	83.5	NO
5	5	13C9-PFNA	1801164-10 MCLPCD433 0.11801	1.31e4	78.1	NO
6	6	13C4-PFOS	1801164-10 MCLPCD433 0.11801	2.99e3	83.8	NO
7	7	13C6-PFDA	1801164-10 MCLPCD433 0.11801	1.25e4	76.1	NO
8	8	13C7-PFUdA	1801164-10 MCLPCD433 0.11801	1.18e4	64.1	NO

Name: 180619M1_82, Date: 20-Jun-2018, Time: 07:44:15, ID: 1801164-11 MCLPCD135 0.1208, Description: MCLPCD135

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-11 MCLPCD135 0.1208	8.36e3	94.5	NO
2	2	13C5-PFHxA	1801164-11 MCLPCD135 0.1208	1.07e4	68.1	NO
3	3	13C3-PFHxS	1801164-11 MCLPCD135 0.1208	2.56e3	78.9	NO
4	4	13C8-PFOA	1801164-11 MCLPCD135 0.1208	1.12e4	73.8	NO
5	5	13C9-PFNA	1801164-11 MCLPCD135 0.1208	1.17e4	69.6	NO
6	6	13C4-PFOS	1801164-11 MCLPCD135 0.1208	2.81e3	78.9	NO
7	7	13C6-PFDA	1801164-11 MCLPCD135 0.1208	1.08e4	66.1	NO
8	8	13C7-PFUdA	1801164-11 MCLPCD135 0.1208	1.32e4	71.5	NO

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Name: 180619M1_83, Date: 20-Jun-2018, Time: 07:54:37, ID: 1801164-12 MCLPCD134 0.12058, Description: MCLPCD134

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-12 MCLPCD134 0.12058	8.27e3	93.6	NO
2	2	13C5-PFHxA	1801164-12 MCLPCD134 0.12058	1.08e4	68.7	NO
3	3	13C3-PFHxS	1801164-12 MCLPCD134 0.12058	2.68e3	82.6	NO
4	4	13C8-PFOA	1801164-12 MCLPCD134 0.12058	1.18e4	78.0	NO
5	5	13C9-PFNA	1801164-12 MCLPCD134 0.12058	1.22e4	72.5	NO
6	6	13C4-PFOS	1801164-12 MCLPCD134 0.12058	2.39e3	67.1	NO
7	7	13C6-PFDA	1801164-12 MCLPCD134 0.12058	1.17e4	71.5	NO
8	8	13C7-PFUdA	1801164-12 MCLPCD134 0.12058	1.46e4	78.9	NO

Name: 180619M1_84, Date: 20-Jun-2018, Time: 08:05:07, ID: 1801164-13 MCLPCD125 0.1193, Description: MCLPCD125

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801164-13 MCLPCD125 0.1193	7.26e3	82.2	NO
2	2	13C5-PFHxA	1801164-13 MCLPCD125 0.1193	8.49e3	54.0	NO
3	3	13C3-PFHxS	1801164-13 MCLPCD125 0.1193	2.32e3	71.6	NO
4	4	13C8-PFOA	1801164-13 MCLPCD125 0.1193	1.06e4	70.2	NO
5	5	13C9-PFNA	1801164-13 MCLPCD125 0.1193	1.03e4	61.3	NO
6	6	13C4-PFOS	1801164-13 MCLPCD125 0.1193	2.87e3	80.4	NO
7	7	13C6-PFDA	1801164-13 MCLPCD125 0.1193	9.91e3	60.5	NO
8	8	13C7-PFUdA	1801164-13 MCLPCD125 0.1193	1.23e4	66.5	NO

Name: 180619M1_85, Date: 20-Jun-2018, Time: 08:15:32, ID: 1801166-01 REEPDW1118 0.11996, Description: REEPDW1118

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801166-01 REEPDW1118 0.11996	8.08e3	91.4	NO
2	2	13C5-PFHxA	1801166-01 REEPDW1118 0.11996	1.05e4	67.0	NO
3	3	13C3-PFHxS	1801166-01 REEPDW1118 0.11996	2.51e3	77.3	NO
4	4	13C8-PFOA	1801166-01 REEPDW1118 0.11996	1.04e4	68.8	NO
5	5	13C9-PFNA	1801166-01 REEPDW1118 0.11996	1.19e4	71.1	NO
6	6	13C4-PFOS	1801166-01 REEPDW1118 0.11996	2.84e3	79.6	NO
7	7	13C6-PFDA	1801166-01 REEPDW1118 0.11996	1.07e4	65.4	NO
8	8	13C7-PFUdA	1801166-01 REEPDW1118 0.11996	1.32e4	71.3	NO

Name: 180619M1_86, Date: 20-Jun-2018, Time: 08:26:03, ID: 1801166-02 REEPDW1113 0.11856, Description: REEPDW1113

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801166-02 REEPDW1113 0.11856	7.24e3	81.9	NO
2	2	13C5-PFHxA	1801166-02 REEPDW1113 0.11856	1.02e4	64.6	NO
3	3	13C3-PFHxS	1801166-02 REEPDW1113 0.11856	2.62e3	80.7	NO
4	4	13C8-PFOA	1801166-02 REEPDW1113 0.11856	1.08e4	71.6	NO
5	5	13C9-PFNA	1801166-02 REEPDW1113 0.11856	1.22e4	72.5	NO
6	6	13C4-PFOS	1801166-02 REEPDW1113 0.11856	3.06e3	85.8	NO
7	7	13C6-PFDA	1801166-02 REEPDW1113 0.11856	1.10e4	66.9	NO
8	8	13C7-PFUdA	1801166-02 REEPDW1113 0.11856	1.31e4	71.0	NO

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Name: 180619M1_87, Date: 20-Jun-2018, Time: 08:36:33, ID: 1801166-03 REEPDW1114 0.11872, Description: REEPDW1114

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	1801166-03 REEPDW1114 0.11872	7.67e3	86.8	NO
2	2	13C5-PFHxA	1801166-03 REEPDW1114 0.11872	1.08e4	68.9	NO
3	3	13C3-PFHxS	1801166-03 REEPDW1114 0.11872	2.82e3	87.1	NO
4	4	13C8-PFOA	1801166-03 REEPDW1114 0.11872	1.18e4	77.9	NO
5	5	13C9-PFNA	1801166-03 REEPDW1114 0.11872	1.31e4	77.8	NO
6	6	13C4-PFOS	1801166-03 REEPDW1114 0.11872	2.68e3	75.1	NO
7	7	13C6-PFDA	1801166-03 REEPDW1114 0.11872	1.14e4	69.5	NO
8	8	13C7-PFUdA	1801166-03 REEPDW1114 0.11872	1.36e4	73.7	NO

Name: 180619M1_88, Date: 20-Jun-2018, Time: 08:46:58, ID: IPA, Description: IPA

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	IPA			NO
2	2	13C5-PFHxA	IPA			NO
3	3	13C3-PFHxS	IPA			NO
4	4	13C8-PFOA	IPA			NO
5	5	13C9-PFNA	IPA			NO
6	6	13C4-PFOS	IPA			NO
7	7	13C6-PFDA	IPA	6.00e0	0.0	YES
8	8	13C7-PFUdA	IPA			NO

Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	ID	Area	%Rec	Area Out
1	1	13C4-PFBA	ST180619M1-16 PFC CS3 18F1109	1.13e4	127.3	NO
2	2	13C5-PFHxA	ST180619M1-16 PFC CS3 18F1109	1.68e4	106.7	NO
3	3	13C3-PFHxS	ST180619M1-16 PFC CS3 18F1109	3.62e3	111.5	NO
4	4	13C8-PFOA	ST180619M1-16 PFC CS3 18F1109	1.86e4	122.9	NO
5	5	13C9-PFNA	ST180619M1-16 PFC CS3 18F1109	1.75e4	104.1	NO
6	6	13C4-PFOS	ST180619M1-16 PFC CS3 18F1109	3.82e3	107.2	NO
7	7	13C6-PFDA	ST180619M1-16 PFC CS3 18F1109	1.68e4	102.7	NO
8	8	13C7-PFUdA	ST180619M1-16 PFC CS3 18F1109	1.98e4	106.9	NO

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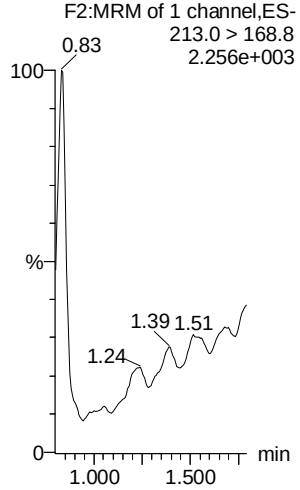

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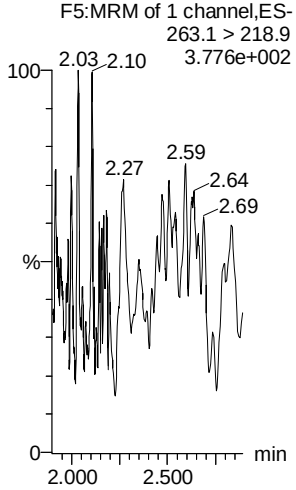

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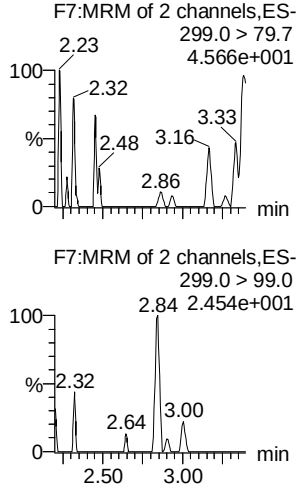

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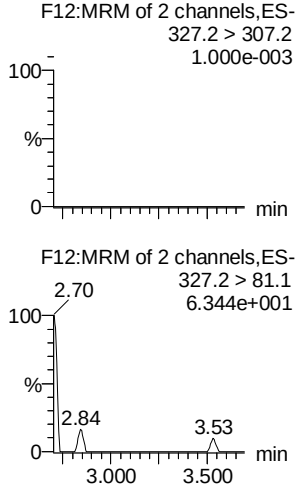

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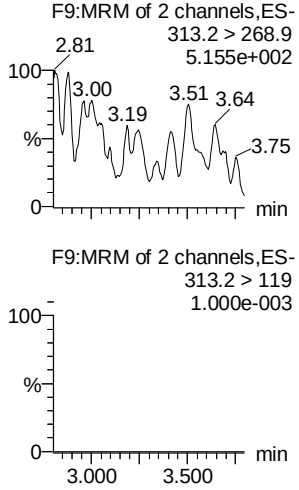

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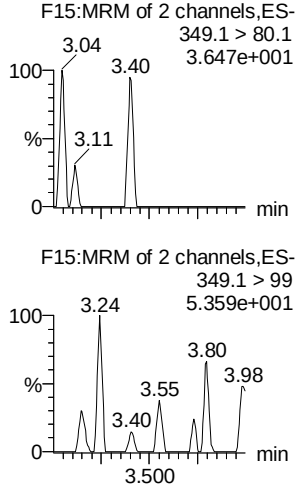

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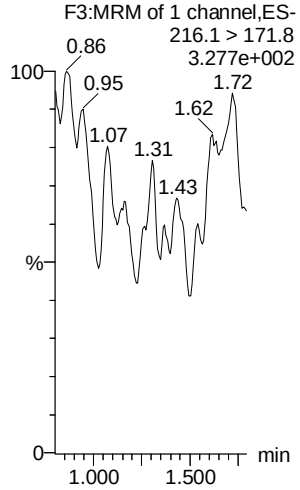

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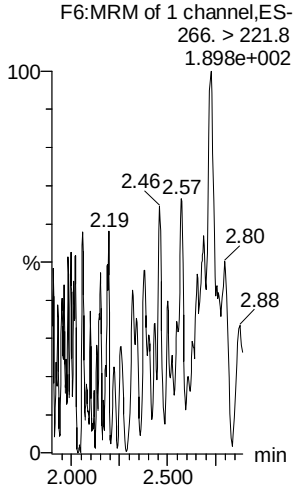

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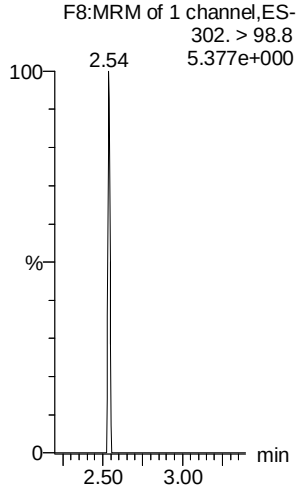

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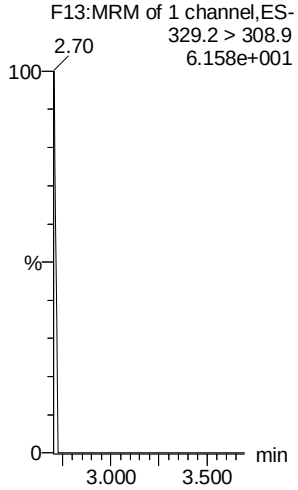

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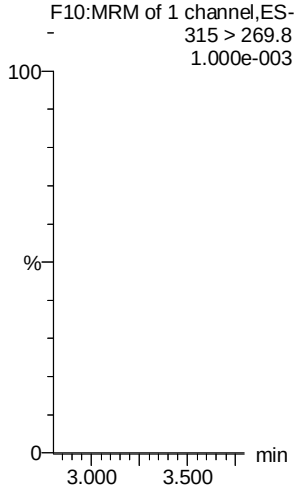

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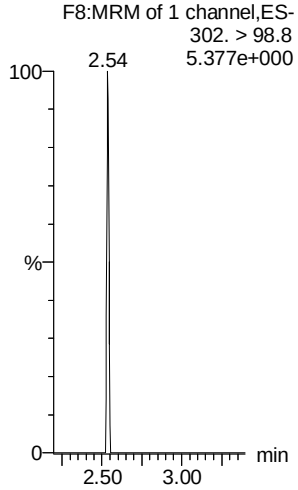

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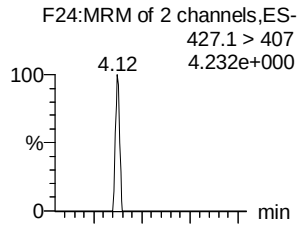
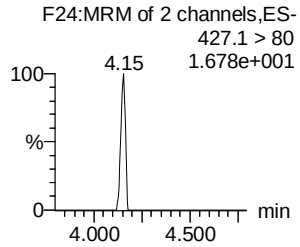
Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

6:2 FTS





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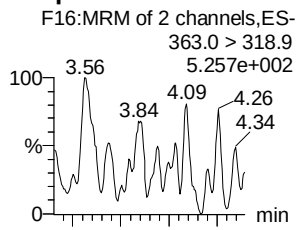
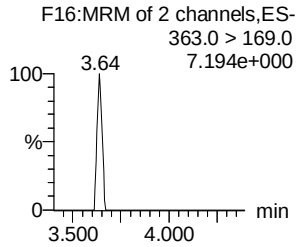
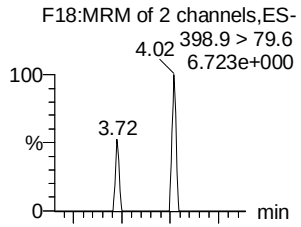
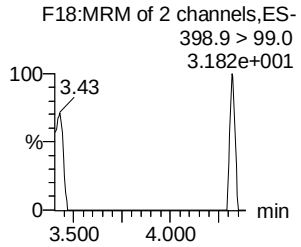




L-PFHxS





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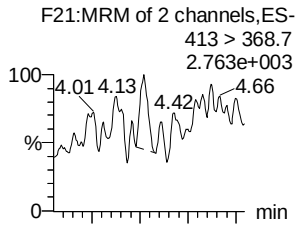

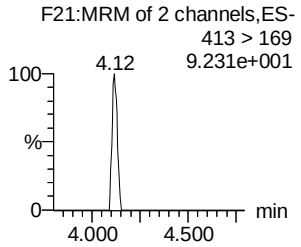

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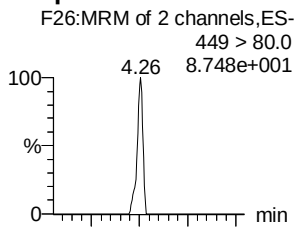

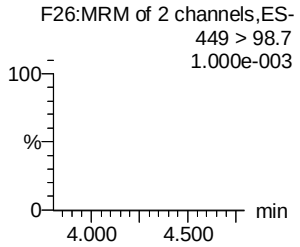

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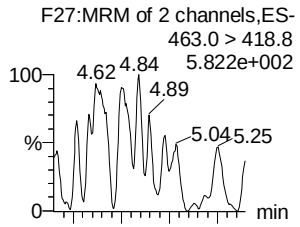

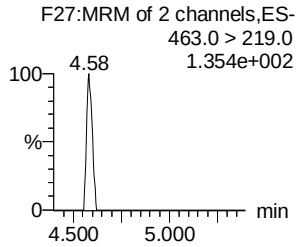

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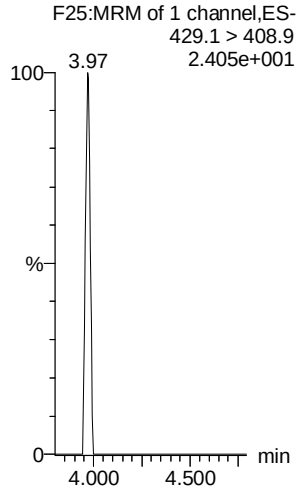

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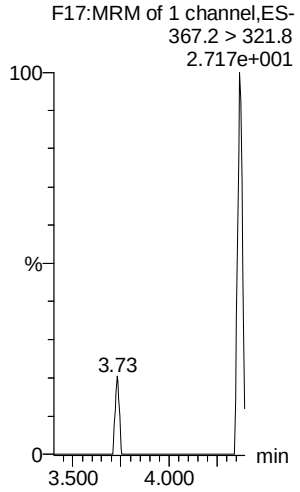
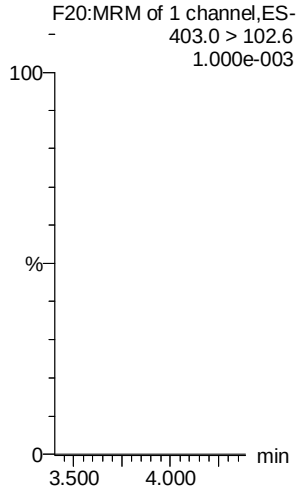


18O2-PFHxS



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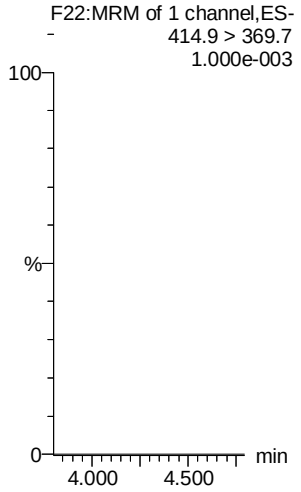

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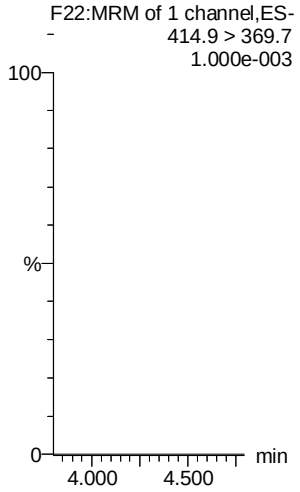

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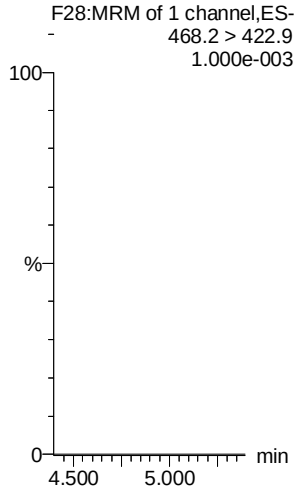

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Last Altered: Wednesday, June 20, 2018 11:04:06 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:04:18 Pacific Daylight Time

Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

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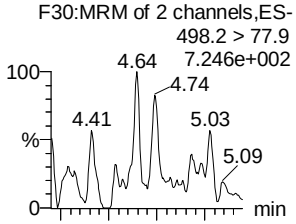

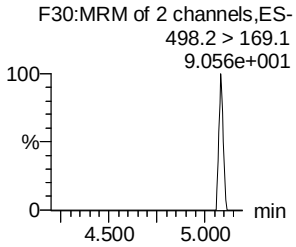

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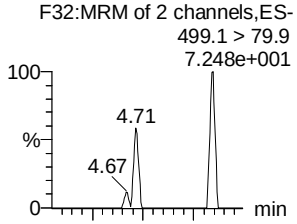

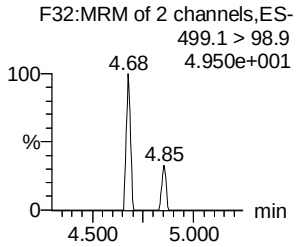

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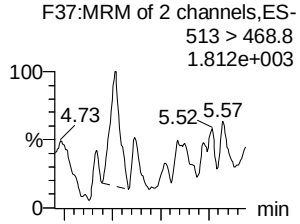

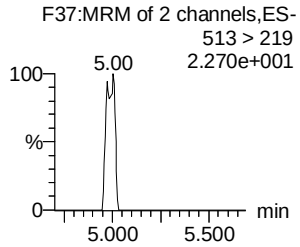

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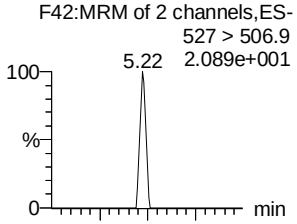

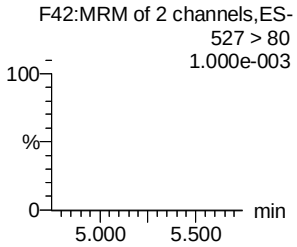

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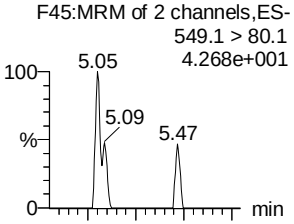

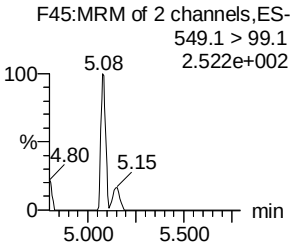

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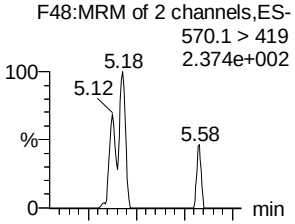

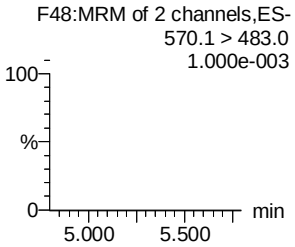

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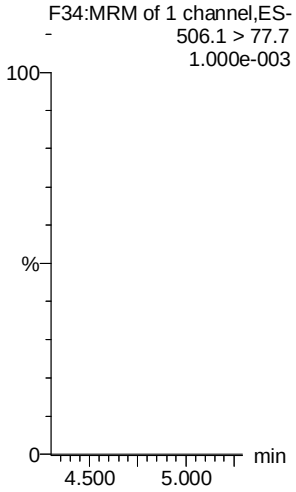

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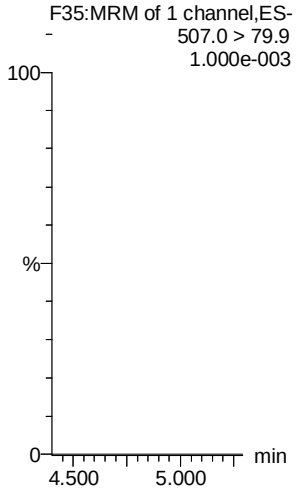

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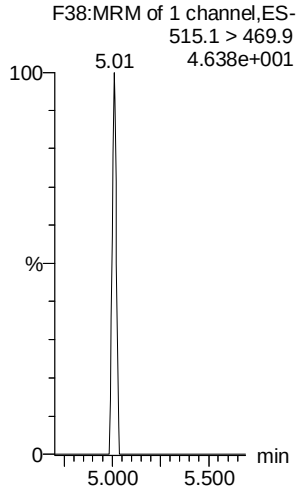

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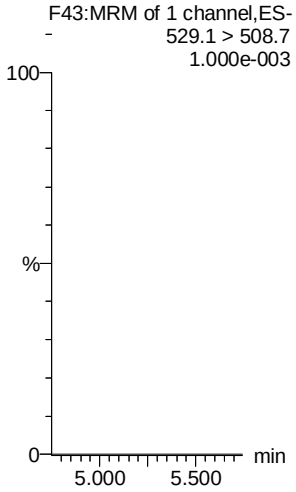

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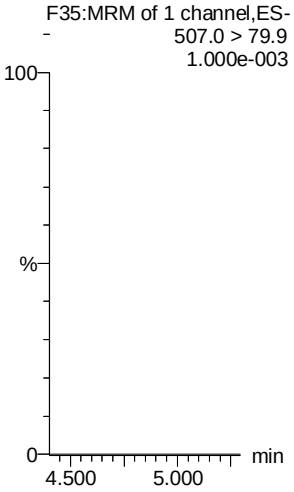

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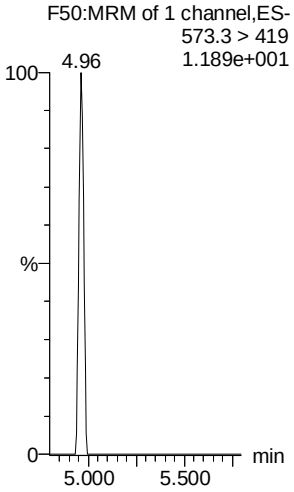

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Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

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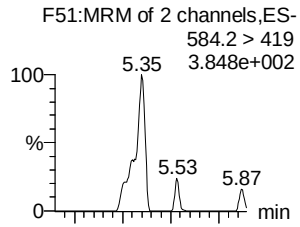

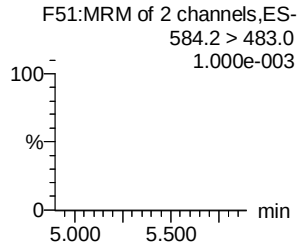

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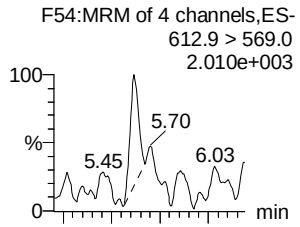

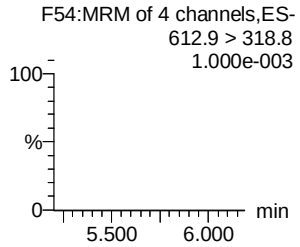

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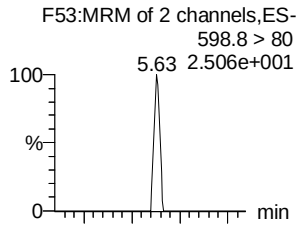

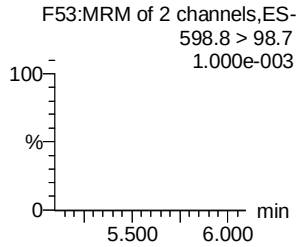

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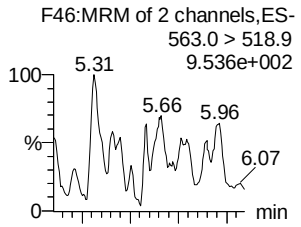

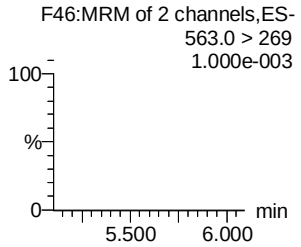

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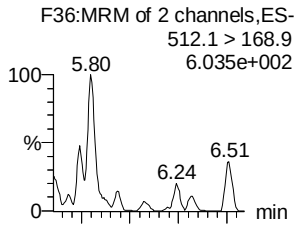

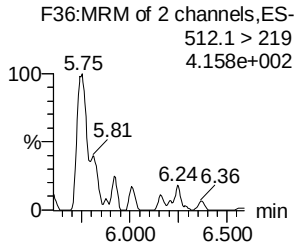

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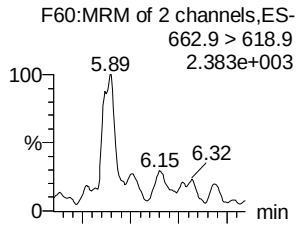

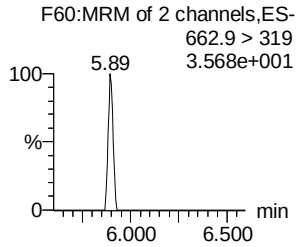

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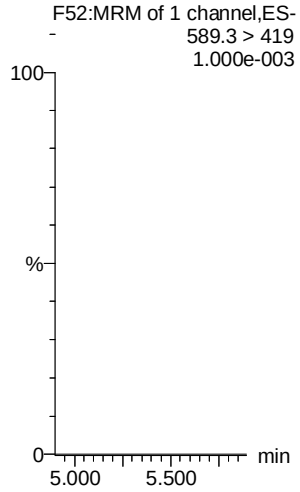

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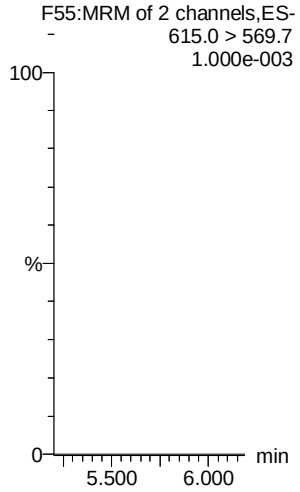

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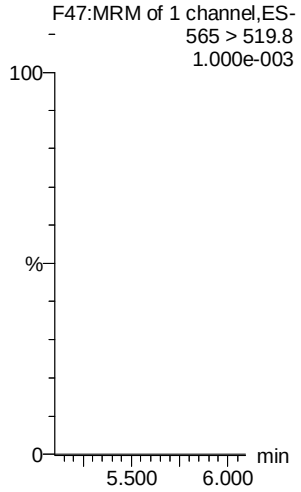

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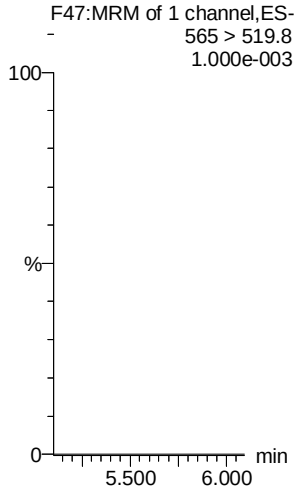

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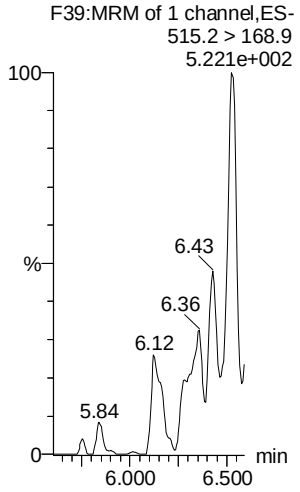

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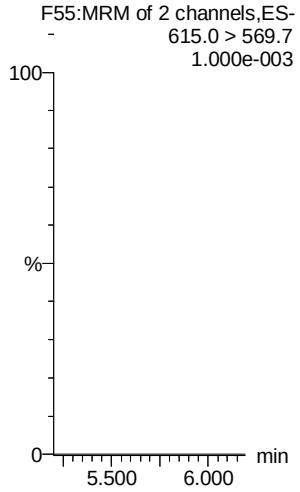

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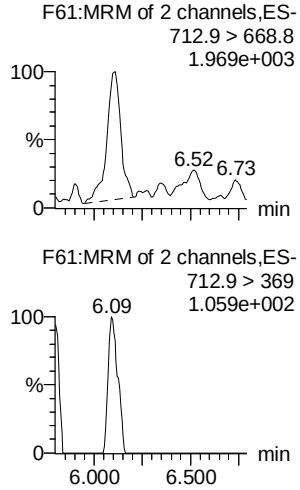

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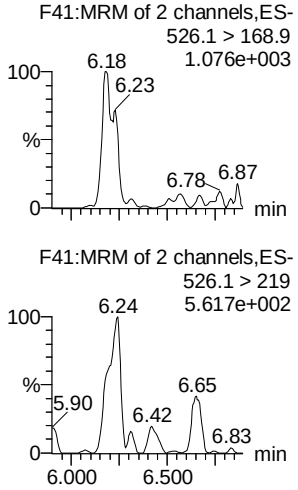

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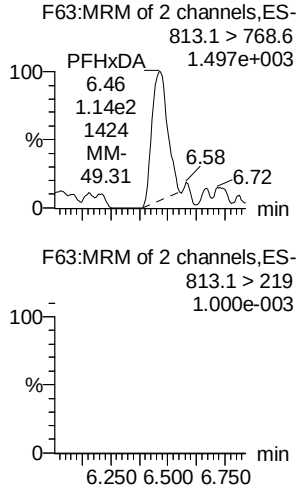

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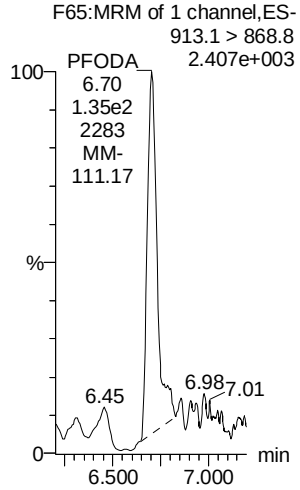

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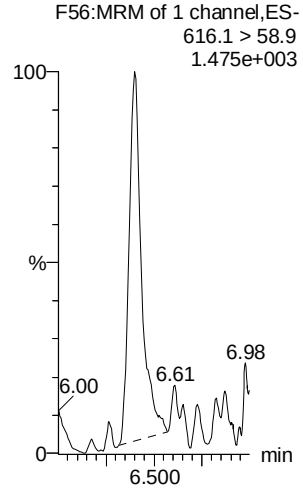

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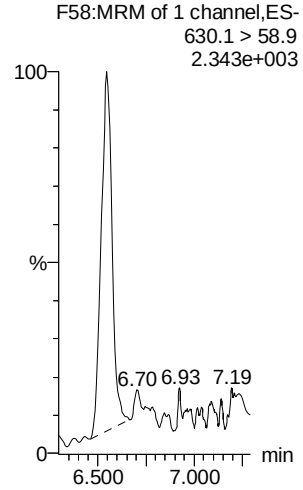

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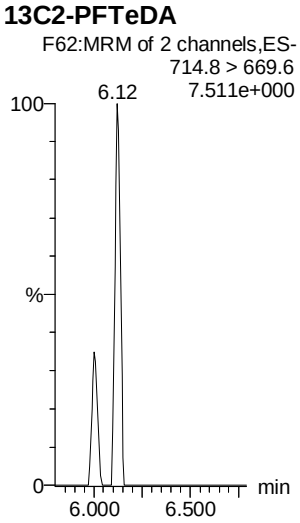
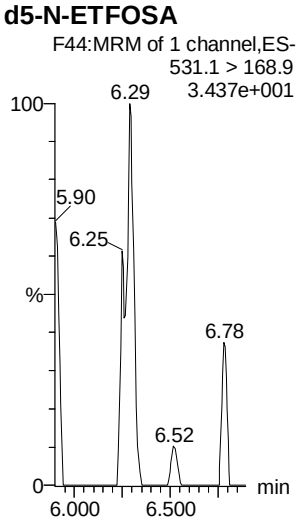


d5-N-ETFOSA



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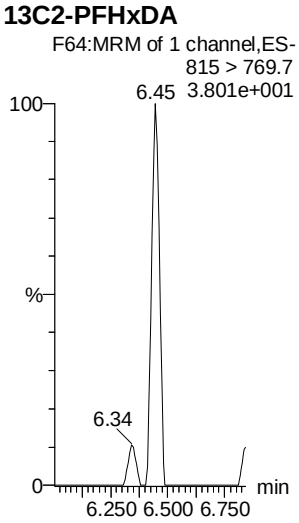

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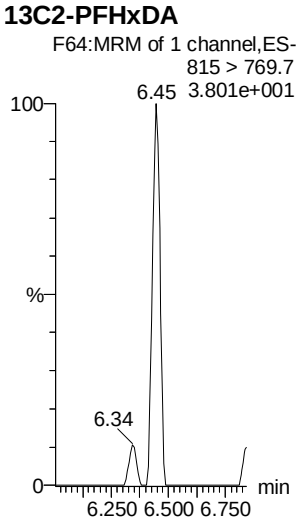

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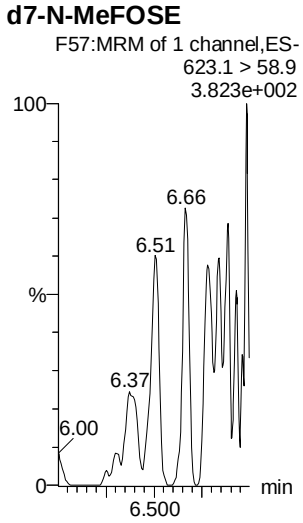

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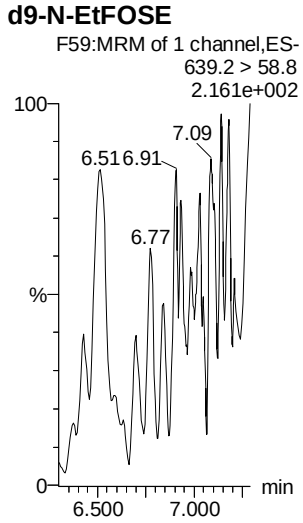

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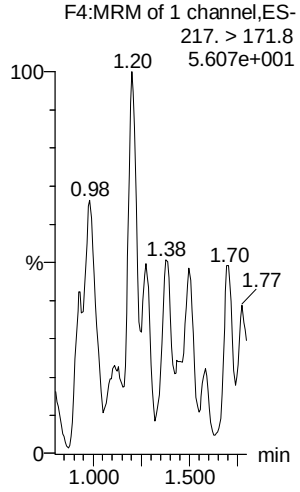

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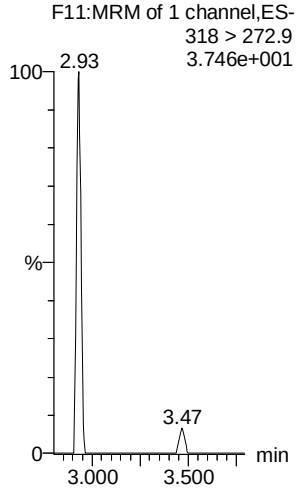

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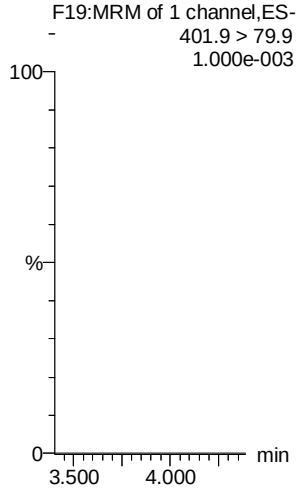

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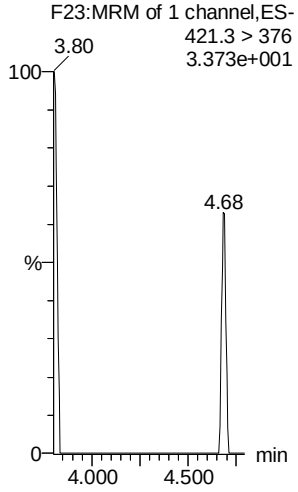

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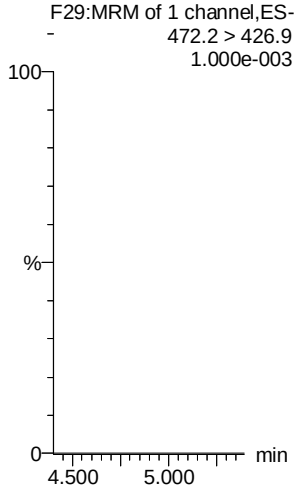

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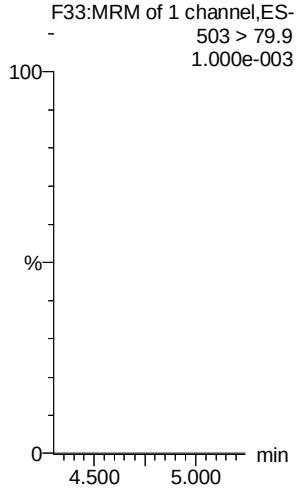
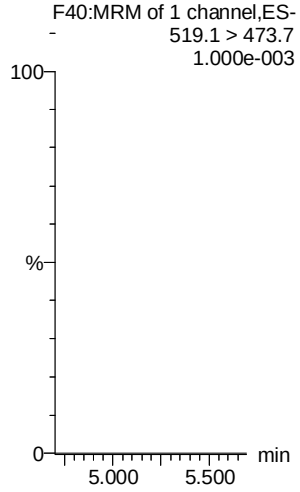
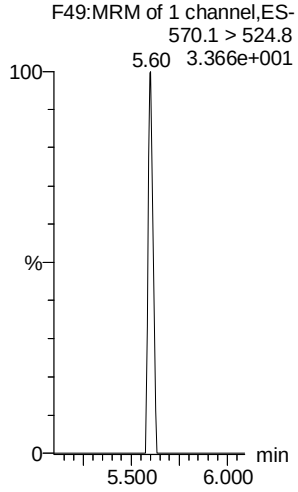


13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
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√AD 6/20/18

Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	8362.400	9829.890	1.00	1.16	10.634	9.8	97.9	NO		
2	2	PFPeA	263.1 > 218.9	12122.978	15553.187	1.00	2.17	9.743	9.8	98.0	NO		
3	3	PFBS	299.0 > 79.7	2916.623	1779.061	1.00	2.48	20.493	10.5	105.0	NO	2.846	NO
4	4	4:2 FTS	327.2>307.2	2784.104	3994.233	1.00	2.93	8.713	10.6	105.7	NO	1.876	NO
5	5	PFHxA	313.2 > 268.9	14279.599	5257.086	1.00	3.02	13.581	9.6	96.2	NO	259.403	NO
6	6	PFPeS	349.1>80.1	2578.241	1779.061	1.00	3.22	18.115	11.0	110.0	NO	1.673	NO
7	36	13C3-PFBA	216.1 > 171.8	9829.890	11251.265	1.00	1.16	10.921	12.4	98.9	NO		
8	37	13C3-PFPeA	266. > 221.8	15553.187	16788.936	1.00	2.17	11.580	12.9	103.1	NO		
9	38	13C3-PFBS	302. > 98.8	1779.061	16788.936	1.00	2.49	1.325	12.6	100.7	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3994.233	16788.936	1.00	2.93	2.974	11.8	94.7	NO		
11	40	13C2-PFHxA	315 > 269.8	5257.086	16788.936	1.00	3.01	3.914	5.2	103.4	NO		
12	38	13C3-PFBS	302. > 98.8	1779.061	16788.936	1.00	2.49	1.325	12.6	100.7	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	2949.525	4168.078	1.00	4.12	8.846	9.3	92.9	NO	2.798	NO
15	7	PFHpA	363.0 > 318.9	13927.422	14182.925	1.00	3.64	12.275	10.9	108.6	NO	29.566	NO
16	8	L-PFHxS	398.9 > 79.6	2208.344	1671.342	1.00	3.80	16.516	8.7	86.7	NO	1.719	NO
17	11	L-PFOA	413 > 368.7	14653.129	20233.309	1.00	4.18	9.053	9.4	93.7	NO	4.852	NO
18	13	PFHpS	449 > 80.0	2996.436	20233.309	1.00	4.30	1.851	10.4	103.6	NO	1.931	NO
19	14	PFNA	463.0 > 418.8	15043.557	16924.074	1.00	4.63	11.111	9.3	93.5	NO	5.503	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	4168.078	18611.008	1.00	4.12	2.799	10.3	82.3	NO		
21	41	13C4-PFHpA	367.2 > 321.8	14182.925	16788.936	1.00	3.64	10.560	13.0	104.4	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1671.342	3616.808	1.00	3.80	5.776	13.3	106.5	NO		
23	44	13C2-PFOA	414.9 > 369.7	20233.309	18611.008	1.00	4.18	13.590	11.4	91.5	NO		
24	44	13C2-PFOA	414.9 > 369.7	20233.309	18611.008	1.00	4.18	13.590	11.4	91.5	NO		
25	45	13C5-PFNA	468.2 > 422.9	16924.074	17497.207	1.00	4.63	12.091	12.8	102.5	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	3527.382	5540.195	1.00	4.69	7.959	9.7	97.4	NO	25.465	NO
28	16	L-PFOS	499.1 > 79.9	2709.363	3940.701	1.00	4.72	8.594	9.3	92.7	NO	2.007	NO
29	18	PFDA	513 > 468.8	14889.690	21599.088	1.00	5.02	8.617	9.6	95.8	NO	7.111	NO
30	19	8:2 FTS	527 > 506.9	3255.338	3120.206	1.00	4.99	13.041	9.3	93.1	NO	2.642	NO
31	20	PFNS	549.1>80.1	2470.247	3940.701	1.00	5.08	7.836	9.8	98.4	NO	1.778	NO
32	21	L-MeFOSAA	570.1 > 419	6740.467	5596.600	1.00	5.17	15.055	10.9	108.6	NO	11.725	NO
33	46	13C8-PFOSA	506.1 > 77.7	5540.195	19757.936	1.00	4.69	3.505	12.3	98.4	NO		
34	47	13C8-PFOS	507.0 > 79.9	3940.701	3819.615	1.00	4.72	12.896	12.9	103.0	NO		

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Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

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Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	21599.088	16827.025	1.00	5.02	16.045	12.2	97.9	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	3120.206	16788.936	1.00	4.99	2.323	11.7	93.8	NO		
37	47	13C8-PFOS	507.0 > 79.9	3940.701	3819.615	1.00	4.72	12.896	12.9	103.0	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	5596.600	19757.936	1.00	5.17	3.541	12.5	99.6	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	5256.318	5855.439	1.00	5.34	11.221	10.2	102.2	NO	9.217	NO
41	27	PFDoA	612.9 > 569.0	19769.268	19111.826	1.00	5.65	12.930	11.1	110.6	NO	10.207	NO
42	26	PFDS	598.8 > 80	2840.963	20563.297	1.00	5.41	1.727	9.8	97.6	NO	2.071	NO
43	25	PFUdA	563.0 > 518.9	15941.096	20563.297	1.00	5.35	9.690	9.8	98.2	NO	16.385	NO
44	28	N-MeFOSA	512.1 > 168.9	10453.590	29196.564	1.00	5.80	53.706	49.9	99.9	NO	1.287	NO
45	29	PFTrDA	662.9 > 618.9	19445.031	19111.826	1.00	5.90	12.718	10.1	101.1	NO	36.837	NO
46	51	d5-N-EtFOSAA	589.3 > 419	5855.439	19757.936	1.00	5.33	3.704	13.7	109.5	NO		
47	53	13C2-PFDoA	615.0 > 569.7	19111.826	16827.025	1.00	5.65	14.197	11.2	89.5	NO		
48	52	13C2-PFUdA	565 > 519.8	20563.297	19757.936	1.00	5.35	13.010	12.5	100.4	NO		
49	52	13C2-PFUdA	565 > 519.8	20563.297	19757.936	1.00	5.35	13.010	12.5	100.4	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	29196.564	19757.936	1.00	5.82	18.471	160.4	107.0	NO		
51	53	13C2-PFDoA	615.0 > 569.7	19111.826	16827.025	1.00	5.65	14.197	11.2	89.5	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	17550.055	14846.188	1.00	6.12	14.777	11.4	113.9	NO	11.474	NO
54	31	N-EtFOSA	526.1 > 168.9	11722.490	38459.730	1.00	6.23	45.720	49.9	99.7	NO	1.383	NO
55	32	PFHxDA	813.1 > 768.6	8229.288	9811.501	1.00	6.47	4.194	7.7	77.5	NO	27.381	NO
56	33	PFODA	913.1 > 868.8	14458.307	9811.501	1.00	6.71	7.368	10.6	106.2	NO		
57	34	N-MeFOSE	616.1 > 58.9	10731.900	36141.445	1.00	6.41	44.541	46.4	92.9	NO		
58	35	N-EtFOSE	630.1 > 58.9	12002.113	37499.328	1.00	6.56	48.009	44.9	89.7	NO		
59	55	13C2-PFTeDA	714.8 > 669.6	14846.188	19757.936	1.00	6.12	9.393	10.5	84.1	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	38459.730	19757.936	1.00	6.25	24.332	165.4	110.3	NO		
61	57	13C2-PFHxDA	815 > 769.7	9811.501	19757.936	1.00	6.47	6.207	5.0	99.5	NO		
62	57	13C2-PFHxDA	815 > 769.7	9811.501	19757.936	1.00	6.47	6.207	5.0	99.5	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	36141.445	19757.936	1.00	6.40	22.865	159.0	106.0	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	37499.328	19757.936	1.00	6.54	23.724	177.8	118.5	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	11251.265	11251.265	1.00	1.15	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	16788.936	16788.936	1.00	3.01	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	3616.808	3616.808	1.00	3.80	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

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Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	18611.008	18611.008	1.00	4.18	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	17497.207	17497.207	1.00	4.63	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	3819.615	3819.615	1.00	4.72	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	16827.025	16827.025	1.00	5.02	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	19757.936	19757.936	1.00	5.35	12.500	12.5	100.0	NO		

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	180619M1_1	IPA	19-Jun-18	17:11:07
2	2	180619M1_2	ST180619M1-1 PFC CS-2 18F1104	19-Jun-18	17:21:34
3	3	180619M1_3	ST180619M1-2 PFC CS-1 18F1105	19-Jun-18	17:31:58
4	4	180619M1_4	ST180619M1-3 PFC CS0 18F1106	19-Jun-18	17:42:28
5	5	180619M1_5	ST180619M1-4 PFC CS1 18F1107	19-Jun-18	17:52:54
6	6	180619M1_6	ST180619M1-5 PFC CS2 18F1108	19-Jun-18	18:26:46
7	7	180619M1_7	ST180619M1-6 PFC CS3 18F1109	19-Jun-18	18:39:53
8	8	180619M1_8	ST180619M1-7 PFC CS4 18F1110	19-Jun-18	18:50:19
9	9	180619M1_9	ST180619M1-8 PFC CS5 18F1111	19-Jun-18	19:00:49
10	10	180619M1_10	ST180619M1-9 PFC CS6 18F1112	19-Jun-18	19:11:14
11	11	180619M1_11	ST180619M1-10 PFC CS7 18F1113	19-Jun-18	19:21:44
12	12	180619M1_12	IPA	19-Jun-18	19:32:09
13	13	180619M1_13	ICV180619M1-1 PFC 537 ICV 18F1103	19-Jun-18	19:42:40
14	14	180619M1_14	IPA	19-Jun-18	19:53:04
15	15	180619M1_15	1801119-07 B81-MW-13D-053118 0.125	19-Jun-18	20:03:34
16	16	180619M1_16	1801031-04@50X MW-09-001 0.11999	19-Jun-18	20:13:58
17	17	180619M1_17	1801150-01 MCLPCG268 0.11906	19-Jun-18	20:24:29
18	18	180619M1_18	1801150-02 MCLPCG395 0.1162	19-Jun-18	20:34:59
19	19	180619M1_19	1801150-03 MCLPCG273 0.12124	19-Jun-18	20:45:23
20	20	180619M1_20	1801150-04 MCLPCG266 0.11975	19-Jun-18	20:55:53
21	21	180619M1_21	1801150-05 MCLPCG270 0.11659	19-Jun-18	21:06:18
22	22	180619M1_22	1801150-06 MCLPCG272 0.11327	19-Jun-18	21:16:49
23	23	180619M1_23	1801150-07 MCLPCG402 0.11588	19-Jun-18	21:27:13
24	24	180619M1_24	IPA	19-Jun-18	21:37:43
25	25	180619M1_25	ST180619M1-11 PFC CS3 18F1109	19-Jun-18	21:48:09
26	26	180619M1_26	IPA	19-Jun-18	21:58:39
27	27	180619M1_27	1801150-08 MCLPCG267 0.1316	19-Jun-18	22:09:04
28	28	180619M1_28	B8F0086-BS1 OPR 0.125	19-Jun-18	22:19:34
29	29	180619M1_29	B8F0086-BLK1 Method Blank 0.125	19-Jun-18	22:30:00
30	30	180619M1_30	B8F0086-MS1 Matrix Spike 0.11664	19-Jun-18	22:40:30
31	31	180619M1_31	B8F0086-MSD1 Matrix Spike Dup 0.119...	19-Jun-18	22:50:54
32	32	180619M1_32	1801132-01 REEPDW1093 0.11853	19-Jun-18	23:01:24

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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
33	33	180619M1_33	1801132-02 REEPDW1094 0.11599	19-Jun-18	23:11:49
34	34	180619M1_34	1801132-03 REEPDW1099 0.11584	19-Jun-18	23:22:20
35	35	180619M1_35	1801132-04 REEPDW1100 0.11372	19-Jun-18	23:32:44
36	36	180619M1_36	1801132-05 REEPDW559 0.11771	19-Jun-18	23:43:15
37	37	180619M1_37	1801132-06 REEPDW1101 0.11368	19-Jun-18	23:53:40
38	38	180619M1_38	1801132-07 REEPDW1108 0.11557	20-Jun-18	00:04:02
39	39	180619M1_39	1801132-08 REEPDW1102 0.11553	20-Jun-18	00:14:32
40	40	180619M1_40	1801132-09 REEPDW1103 0.10358	20-Jun-18	00:25:03
41	41	180619M1_41	IPA	20-Jun-18	00:35:27
42	42	180619M1_42	ST180619M1-12 PFC CS3 18F1109	20-Jun-18	00:45:57
43	43	180619M1_43	IPA	20-Jun-18	00:56:23
44	44	180619M1_44	1801132-10 REEPDW1105 0.11546	20-Jun-18	01:06:53
45	45	180619M1_45	1801132-11 REEPDW1106 0.11477	20-Jun-18	01:17:18
46	46	180619M1_46	1801132-12 REEPDW1107 0.11261	20-Jun-18	01:27:48
47	47	180619M1_47	1801132-13 REEPDW1109 0.12035	20-Jun-18	01:38:13
48	48	180619M1_48	B8F0100-BS1 OPR 2	20-Jun-18	01:48:43
49	49	180619M1_49	B8F0100-BLK1 Method Blank 2	20-Jun-18	01:59:07
50	50	180619M1_50	B8F0100-MS1 Matrix Spike 2	20-Jun-18	02:09:37
51	51	180619M1_51	B8F0100-MSD1 Matrix Spike Dup 2.03	20-Jun-18	02:20:02
52	52	180619M1_52	1801018-01 THalibut1-180502DB 2.02	20-Jun-18	02:30:32
53	53	180619M1_53	1801018-02 TWhiteFish1-180502DB 2	20-Jun-18	02:40:54
54	54	180619M1_54	1801018-03 TWhiteFish2-180502DB 2.01	20-Jun-18	02:51:24
55	55	180619M1_55	1801018-04 TWhiteFish3-180502DB 2.02	20-Jun-18	03:01:50
56	56	180619M1_56	1801018-05 TPerch1-180502DB 2.01	20-Jun-18	03:12:20
57	57	180619M1_57	1801018-06 TPerch2-180502DB 2.04	20-Jun-18	03:22:45
58	58	180619M1_58	IPA	20-Jun-18	03:33:16
59	59	180619M1_59	ST180619M1-13 PFC CS3 18F1109	20-Jun-18	03:43:40
60	60	180619M1_60	ST180619M1-14 PFC CS0 18F1106	20-Jun-18	03:54:10
61	61	180619M1_61	IPA	20-Jun-18	04:04:41
62	62	180619M1_62	1801018-07 TTrout1-180502DB 2.04	20-Jun-18	04:15:05
63	63	180619M1_63	1801018-08 TTrout2-180502DB 2.04	20-Jun-18	04:25:36
64	64	180619M1_64	1801018-09 TSwordfish1-180502DB 2.03	20-Jun-18	04:36:01
65	65	180619M1_65	1801018-10 TWalleye1-180502DB 2.04	20-Jun-18	04:46:31
66	66	180619M1_66	B8F0107-BS1 OPR 0.125	20-Jun-18	04:56:56
67	67	180619M1_67	B8F0107-BSD1 LCSD 0.125	20-Jun-18	05:07:26
68	68	180619M1_68	B8F0107-BLK1 Method Blank 0.125	20-Jun-18	05:17:51

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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
69	69	180619M1_69	1801164-01 MCLPCH325 0.11979	20-Jun-18	05:28:21
70	70	180619M1_70	1801164-02 MCLPCH329 0.1213	20-Jun-18	05:38:47
71	71	180619M1_71	1801164-03 MCLPCH437 0.11893	20-Jun-18	05:49:17
72	72	180619M1_72	1801164-04 MCLPCH331 0.11875	20-Jun-18	05:59:41
73	73	180619M1_73	1801164-05 MCLPCH403 0.1203	20-Jun-18	06:10:11
74	74	180619M1_74	1801164-06 MCLPXX352 0.12033	20-Jun-18	06:20:36
75	75	180619M1_75	IPA	20-Jun-18	06:31:06
76	76	180619M1_76	ST180619M1-15 PFC CS3 18F1109	20-Jun-18	06:41:31
77	77	180619M1_77	IPA	20-Jun-18	06:52:01
78	78	180619M1_78	1801164-07 MCLPXX354 0.11412	20-Jun-18	07:02:26
79	79	180619M1_79	1801164-08 MCLPXX393 0.1177	20-Jun-18	07:12:57
80	80	180619M1_80	1801164-09 MCLPXX358 0.12144	20-Jun-18	07:23:21
81	81	180619M1_81	1801164-10 MCLPCD433 0.11801	20-Jun-18	07:33:51
82	82	180619M1_82	1801164-11 MCLPCD135 0.1208	20-Jun-18	07:44:15
83	83	180619M1_83	1801164-12 MCLPCD134 0.12058	20-Jun-18	07:54:37
84	84	180619M1_84	1801164-13 MCLPCD125 0.1193	20-Jun-18	08:05:07
85	85	180619M1_85	1801166-01 REEPDW1118 0.11996	20-Jun-18	08:15:32
86	86	180619M1_86	1801166-02 REEPDW1113 0.11856	20-Jun-18	08:26:03
87	87	180619M1_87	1801166-03 REEPDW1114 0.11872	20-Jun-18	08:36:33
88	88	180619M1_88	IPA	20-Jun-18	08:46:58
89	89	180619M1_89	ST180619M1-16 PFC CS3 18F1109	20-Jun-18	08:57:28
90	90	180619M1_90	IPA	20-Jun-18	09:07:53
91	91	180619M1_91	1801166-04 REEPDW1115 0.12017	20-Jun-18	09:18:23
92	92	180619M1_92	B8F0069-BS1 OPR 0.25	20-Jun-18	09:29:16
93	93	180619M1_93	1801154-01 WIR1806051350JLB 0.243...	20-Jun-18	09:39:43
94	94	180619M1_94	1801031-04@50X MW-09-001 0.11999	20-Jun-18	09:50:14
95	95	180619M1_95	1801166-05 REEPDW1117 0.12218	20-Jun-18	10:00:39
96	96	180619M1_96	1801166-06 REEPDW1119 0.12076	20-Jun-18	10:11:09
97	97	180619M1_97	B8F0024-BLK1 Method Blank 3	20-Jun-18	10:21:35
98	98	180619M1_98	B8F0024-BS1 OPR 3	20-Jun-18	10:32:05
99	99	180619M1_99	B8F0024-BS2 OPR 3	20-Jun-18	10:42:30
100	1...	180619M1_100	B8F0024-BS3 OPR 3	20-Jun-18	10:53:00
101	1...	180619M1_101	B8F0024-BS4 OPR 3	20-Jun-18	11:03:25
102	1...	180619M1_102	B8F0024-BS5 OPR 3	20-Jun-18	11:13:55
103	1...	180619M1_103	B8F0024-BS6 OPR 3	20-Jun-18	11:24:20
104	1...	180619M1_104	B8F0024-BS7 OPR 3	20-Jun-18	11:34:50

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, June 20, 2018 15:37:50 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 15:48:05 Pacific Daylight Time

Compound name: PFBA

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105	1...	180619M1_105	B8E0081-BLK1 Method Blank 1	20-Jun-18	11:45:20
106	1...	180619M1_106	B8E0081-BS1 OPR 1	20-Jun-18	11:55:45
107	1...	180619M1_107	B8E0081-BS2 OPR 1	20-Jun-18	12:06:16
108	1...	180619M1_108	B8E0081-BS3 OPR 1	20-Jun-18	12:16:41
109	1...	180619M1_109	B8E0081-BS4 OPR 1	20-Jun-18	12:27:12
110	1...	180619M1_110	B8D0023-BS2 OPR 1	20-Jun-18	12:37:36
111	1...	180619M1_111	B8D0023-BLK2 Method Blank 1	20-Jun-18	12:48:06
112	1...	180619M1_112	B8D0121-BS1 OPR 2	20-Jun-18	12:58:31
113	1...	180619M1_113	B8D0121-BLK1 Method Blank 2	20-Jun-18	13:09:01
114	1...	180619M1_114	B8F0050-BLK1 Blank 0.125	20-Jun-18	13:19:25
115	1...	180619M1_115	B8F0050-BS1 LCS 0.125	20-Jun-18	13:29:55
116	1...	180619M1_116	B8F0050-BS2 LCS 0.125	20-Jun-18	13:40:19
117	1...	180619M1_117	B8F0050-BS3 LCS 0.125	20-Jun-18	13:50:50
118	1...	180619M1_118	B8F0050-BS4 LCS 0.125	20-Jun-18	14:01:14
119	1...	180619M1_119	B8F0057-BLK1 Method Blank 0.25	20-Jun-18	14:11:46
120	1...	180619M1_120	B8F0057-BS1 OPR 0.25	20-Jun-18	14:22:14
121	1...	180619M1_121	B8F0057-BS2 OPR 0.25	20-Jun-18	14:32:39
122	1...	180619M1_122	B8F0057-BS3 OPR 0.25	20-Jun-18	14:43:09
123	1...	180619M1_123	B8F0057-BS4 OPR 0.25	20-Jun-18	14:53:33
124	1...	180619M1_124	B8F0061-MSD1@5X Matrix Spike Dup ...	20-Jun-18	15:05:08
125	1...	180619M1_125	IPA	20-Jun-18	15:15:32
126	1...	180619M1_126	ST180619M1-17 PFC CS3 18F1109	20-Jun-18	15:26:02

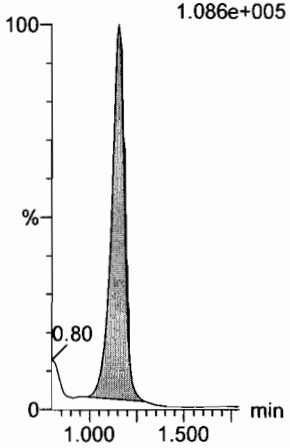
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:33:52 Pacific Daylight Time

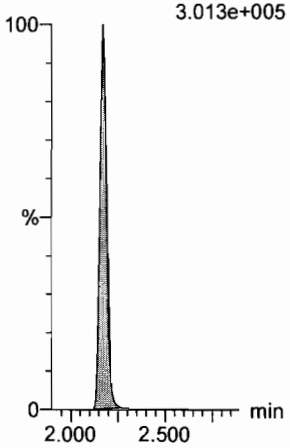
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

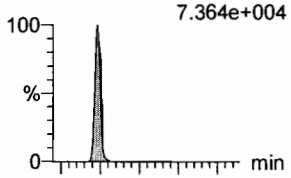
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
1.086e+005



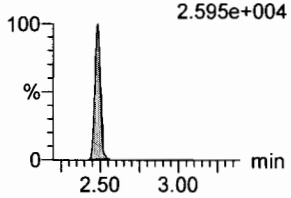
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
3.013e+005



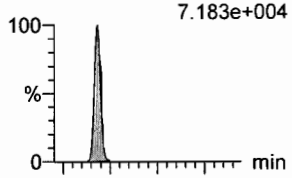
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
7.364e+004



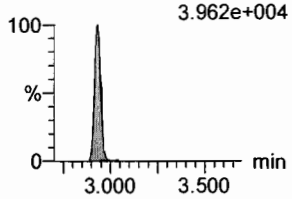
F7:MRM of 2 channels,ES-
299.0 > 99.0
2.595e+004



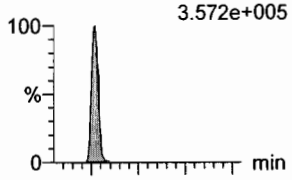
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
7.183e+004



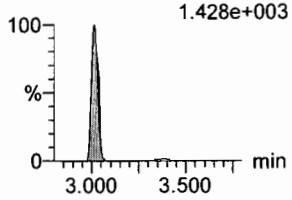
F12:MRM of 2 channels,ES-
327.2 > 81.1
3.962e+004



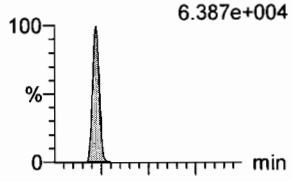
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
3.572e+005



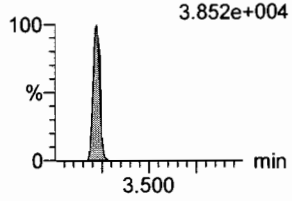
F9:MRM of 2 channels,ES-
313.2 > 119
1.428e+003



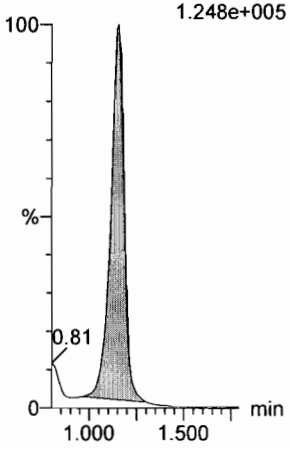
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
6.387e+004



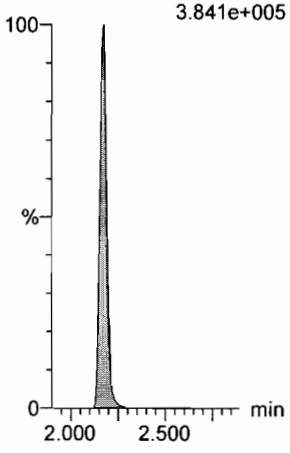
F15:MRM of 2 channels,ES-
349.1 > 99
3.852e+004



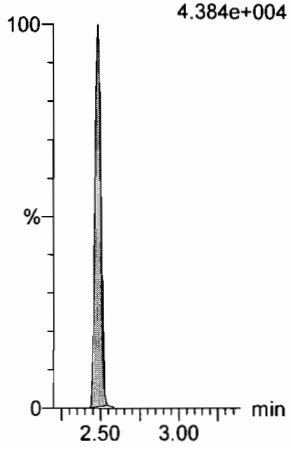
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
1.248e+005



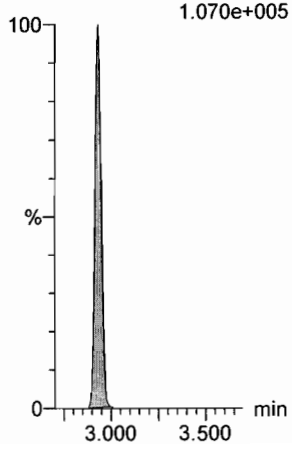
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
3.841e+005



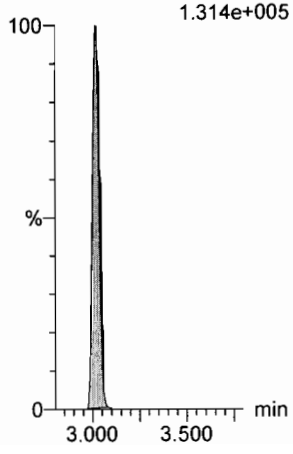
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
4.384e+004



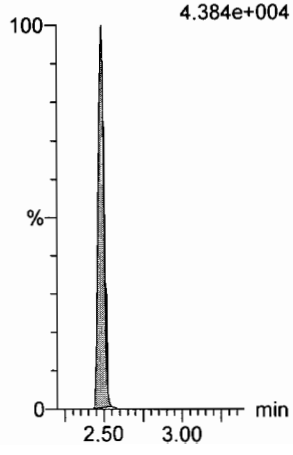
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.070e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
1.314e+005



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
4.384e+004

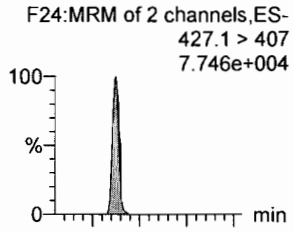


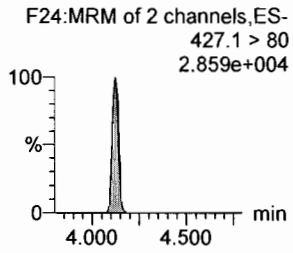
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:33:52 Pacific Daylight Time

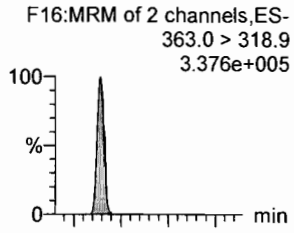
Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

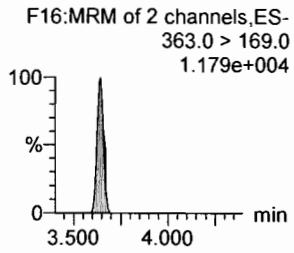
6:2 FTS



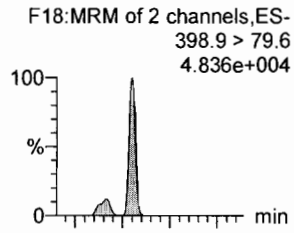


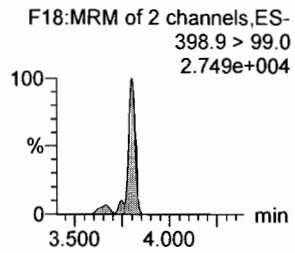
PFHpA



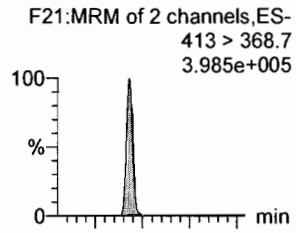


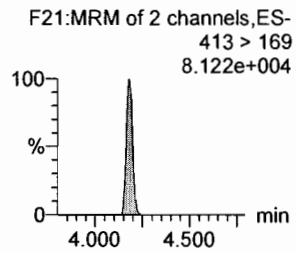
L-PFHxS





L-PFOA





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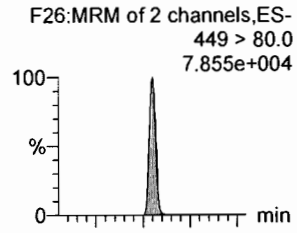

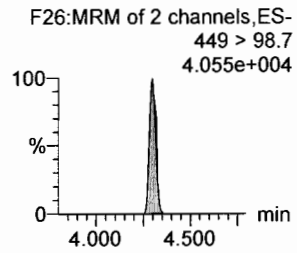

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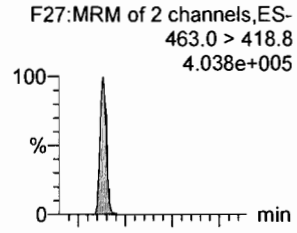
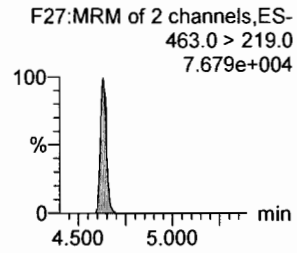
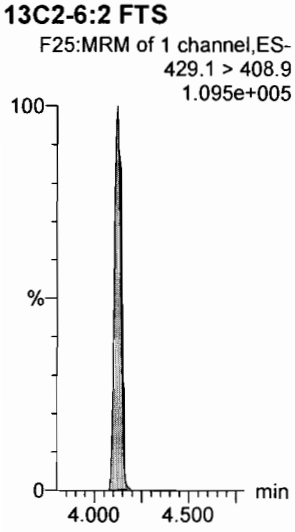
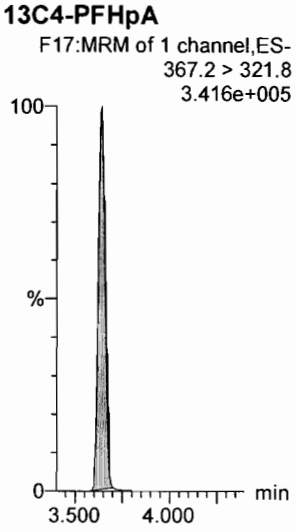




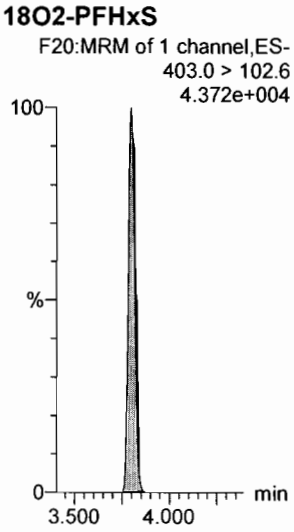
13C2-6:2 FTS



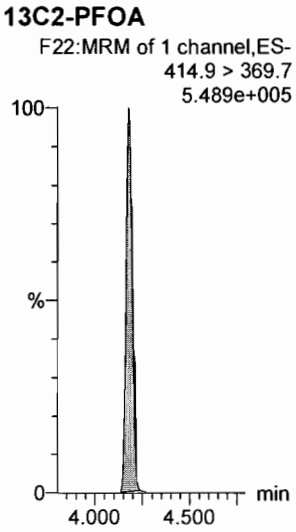
13C4-PFHpA



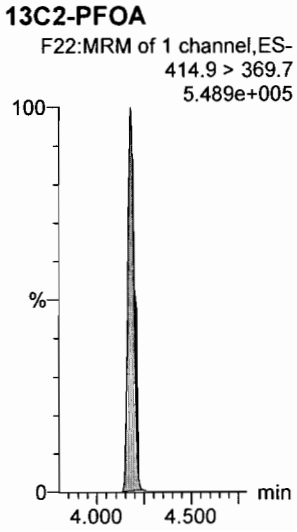
18O2-PFHxS



13C2-PFOA



13C2-PFOA



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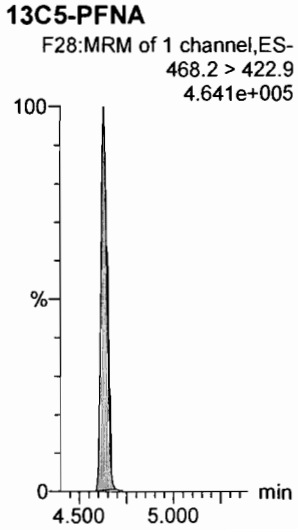
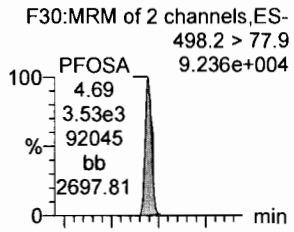


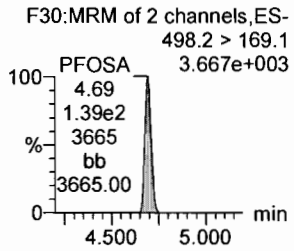
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:33:52 Pacific Daylight Time

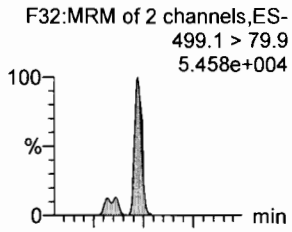
Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

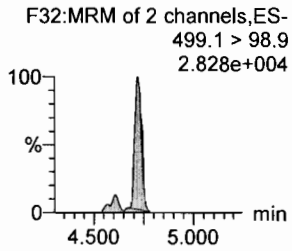
PFOSA



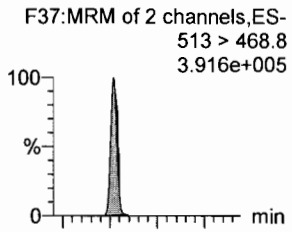


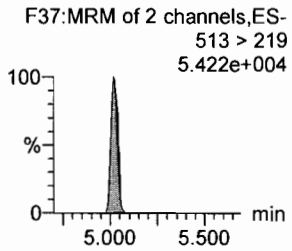
L-PFOS



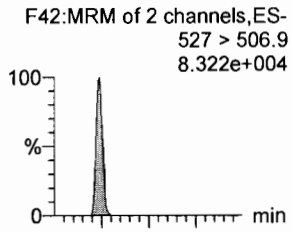


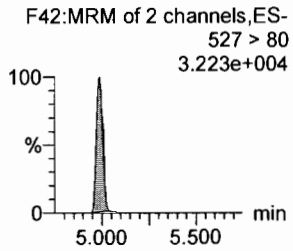
PFDA



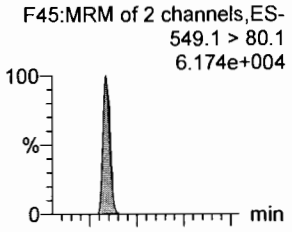


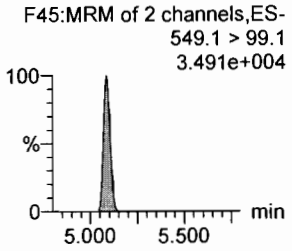
8:2 FTS



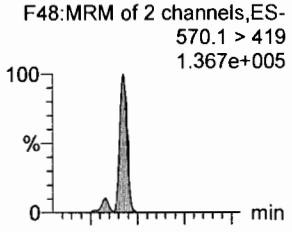


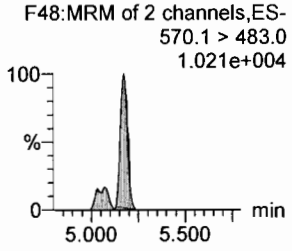
PFNS



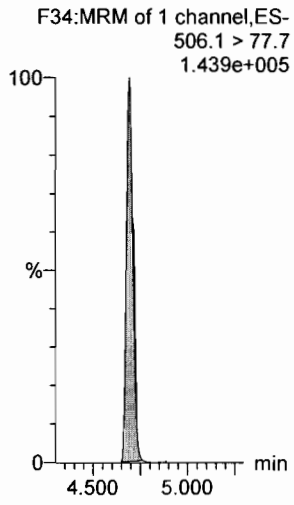


L-MeFOSAA

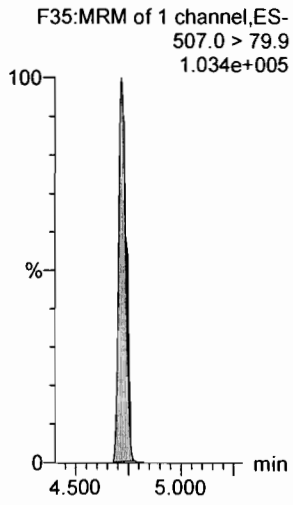




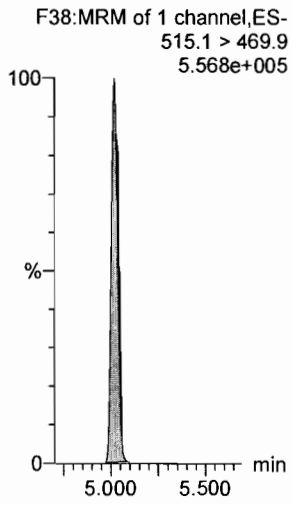
13C8-PFOSA



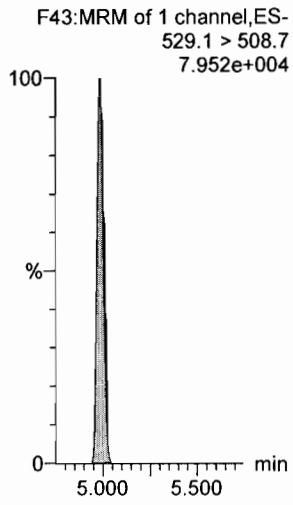
13C8-PFOS



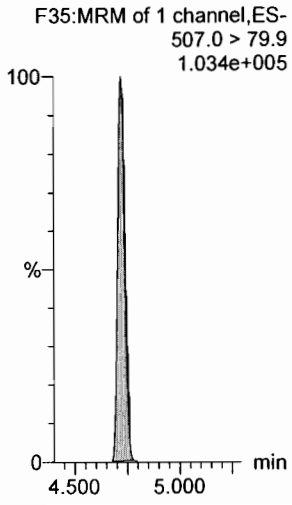
13C2-PFDA



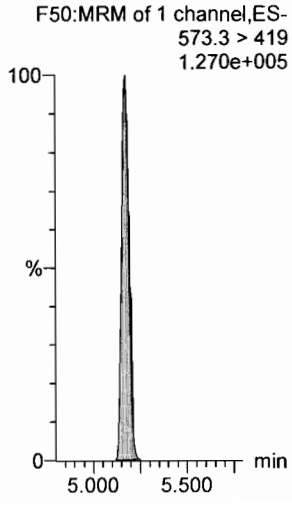
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

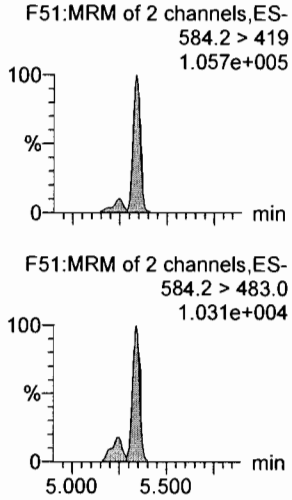


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

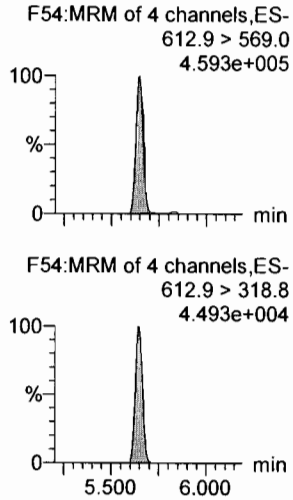
Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:33:52 Pacific Daylight Time

Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

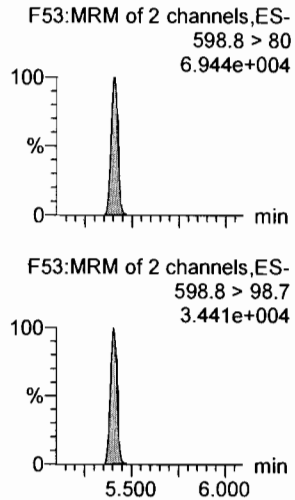
L-EtFOSAA



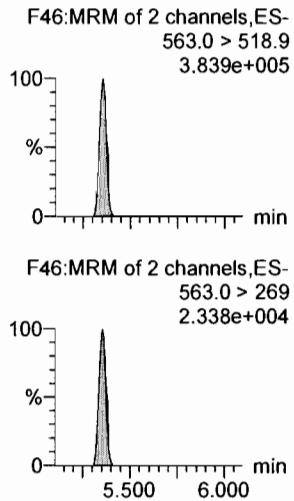
PFDoA



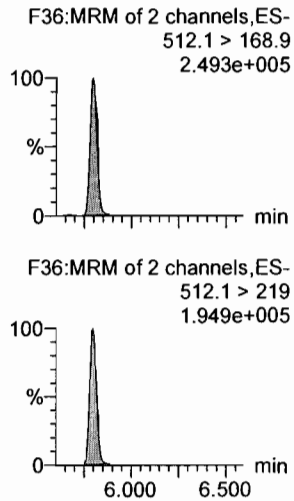
PFDS



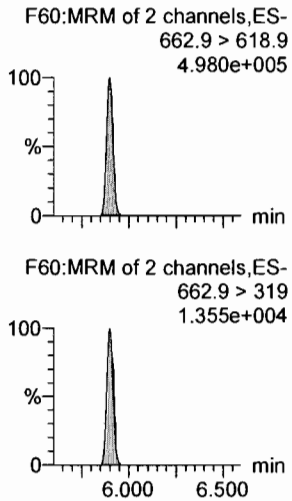
PFUdA



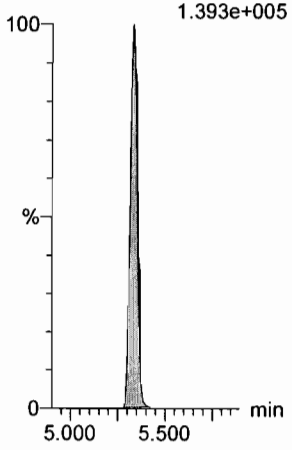
N-MeFOSA



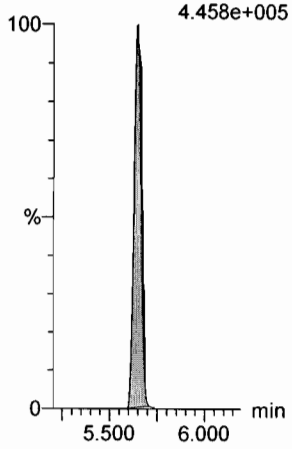
PFTrDA



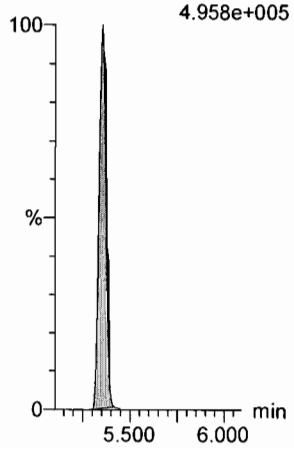
d5-N-EtFOSAA



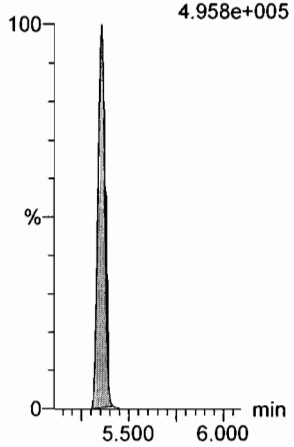
13C2-PFDoA



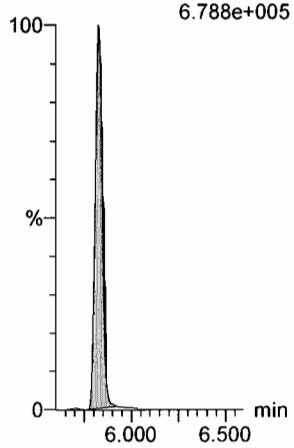
13C2-PFUdA



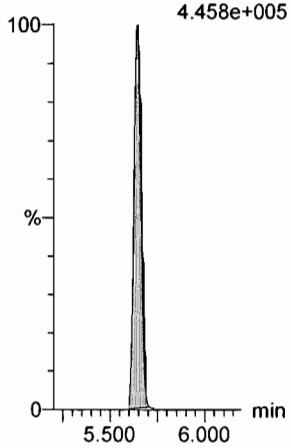
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

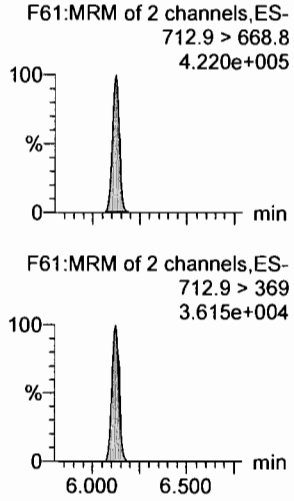


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

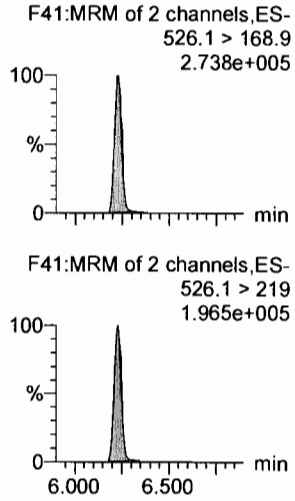
Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:33:52 Pacific Daylight Time

Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

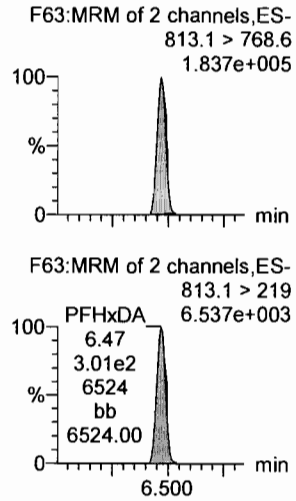
PFTeDA



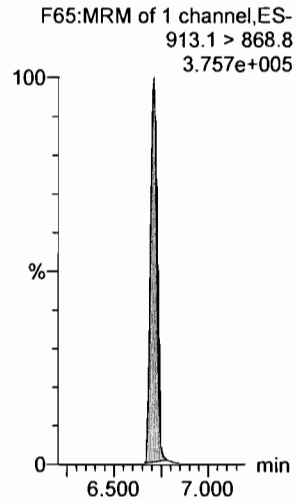
N-EtFOSA



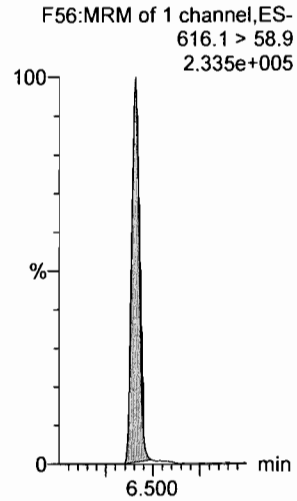
PFHxDA



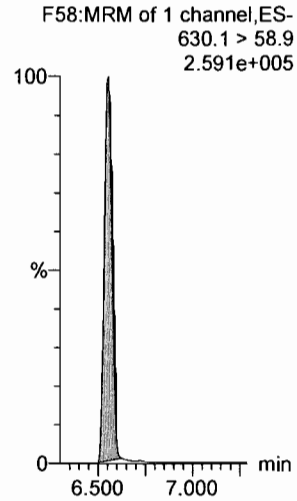
PFODA



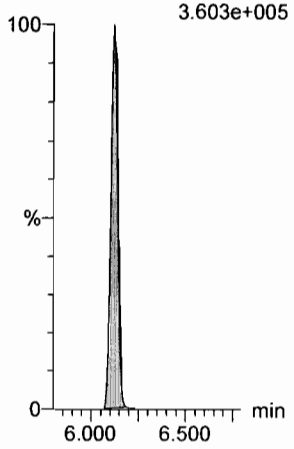
N-MeFOSE



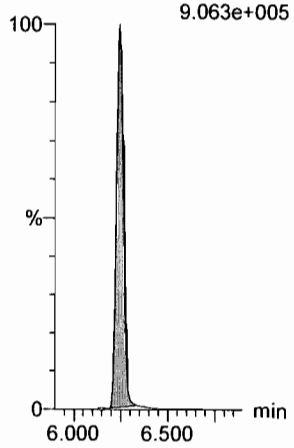
N-EtFOSE



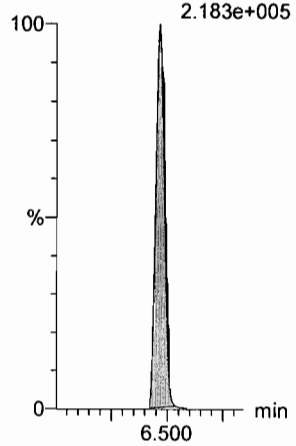
13C2-PFTeDA



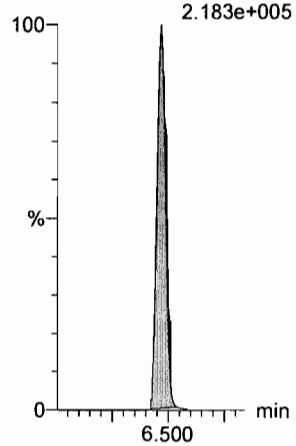
d5-N-ETFOSA



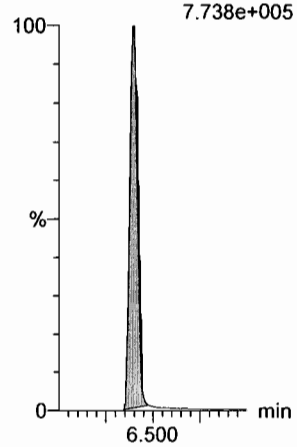
13C2-PFHxDA



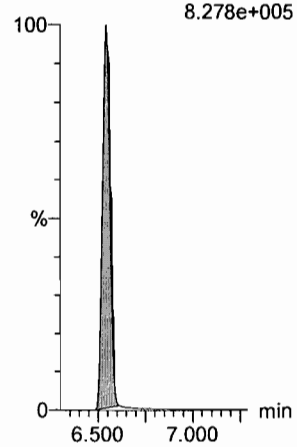
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

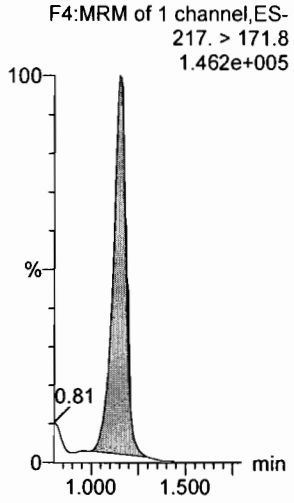


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-89.qld

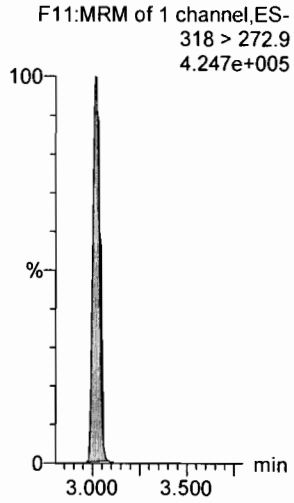
Last Altered: Wednesday, June 20, 2018 11:33:32 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:33:52 Pacific Daylight Time

Name: 180619M1_89, Date: 20-Jun-2018, Time: 08:57:28, ID: ST180619M1-16 PFC CS3 18F1109, Description: PFC CS3 18F1109

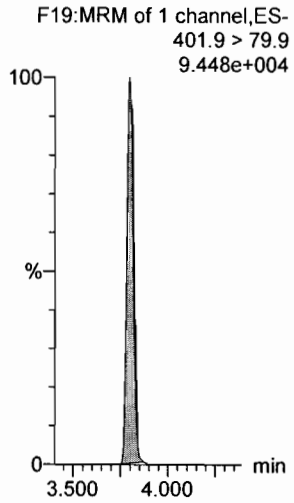
13C4-PFBA



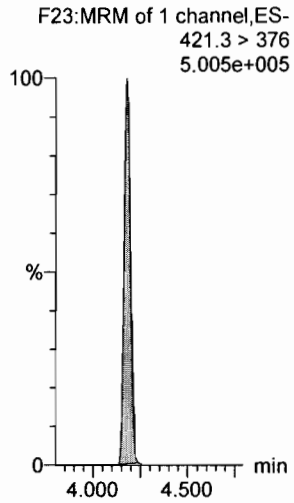
13C5-PFHxA



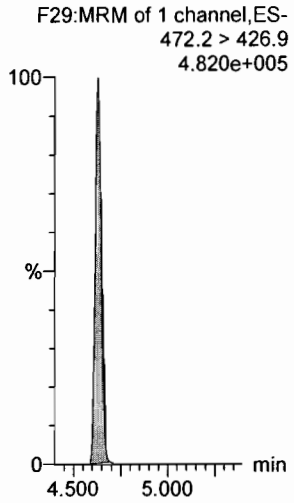
13C3-PFHxS



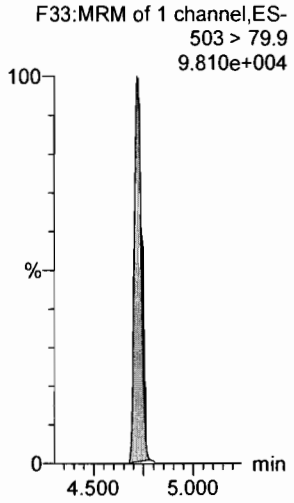
13C8-PFOA



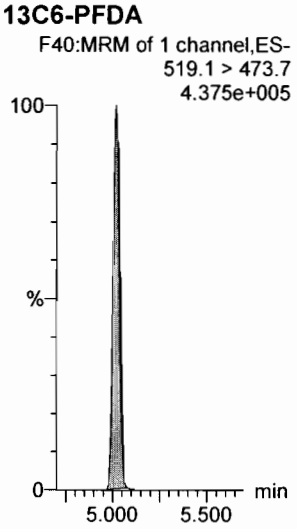
13C9-PFNA



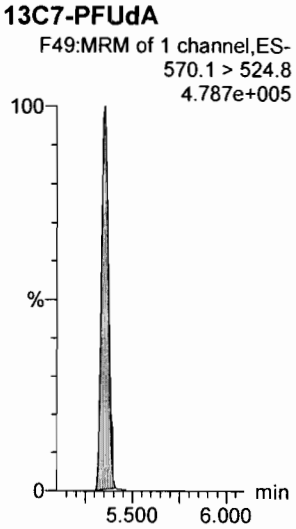
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-126.qld

Last Altered: Wednesday, June 20, 2018 15:36:58 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 15:37:15 Pacific Daylight Time

✓AD 6/20/18

Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	8549.263	9897.643	1.00	1.16	10.797	9.9	99.4	NO		
2	2	PFPeA	263.1 > 218.9	12022.375	15285.646	1.00	2.18	9.831	9.9	98.9	NO		
3	3	PFBS	299.0 > 79.7	2835.323	1855.734	1.00	2.49	19.098	9.8	97.8	NO	2.759	NO
4	4	4:2 FTS	327.2>307.2	2784.845	3877.951	1.00	2.94	8.977	10.9	109.0	NO	1.852	NO
5	5	PFHxA	313.2 > 268.9	13865.419	5024.100	1.00	3.02	13.799	9.8	97.7	NO	296.720	NO
6	6	PFPeS	349.1>80.1	2598.004	1855.734	1.00	3.23	17.500	10.6	106.2	NO	1.705	NO
7	36	13C3-PFBA	216.1 > 171.8	9897.643	11632.536	1.00	1.16	10.636	12.0	96.3	NO		
8	37	13C3-PFPeA	266. > 221.8	15285.646	17485.316	1.00	2.18	10.927	12.2	97.3	NO		
9	38	13C3-PFBS	302. > 98.8	1855.734	17485.316	1.00	2.49	1.327	12.6	100.8	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3877.951	17485.316	1.00	2.94	2.772	11.0	88.3	NO		
11	40	13C2-PFHxA	315 > 269.8	5024.100	17485.316	1.00	3.02	3.592	4.7	94.9	NO		
12	38	13C3-PFBS	302. > 98.8	1855.734	17485.316	1.00	2.49	1.327	12.6	100.8	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	2941.218	3983.484	1.00	4.12	9.229	9.7	97.0	NO	3.117	NO
15	7	PFHpA	363.0 > 318.9	13671.013	14427.467	1.00	3.64	11.845	10.5	104.7	NO	33.822	NO
16	8	L-PFHxS	398.9 > 79.6	2243.243	1512.068	1.00	3.80	18.544	9.7	97.4	NO	1.729	NO
17	11	L-PFOA	413 > 368.7	15413.729	20130.639	1.00	4.18	9.571	9.9	99.1	NO	4.849	NO
18	13	PFHpS	449 > 80.0	2675.530	20130.639	1.00	4.30	1.661	9.3	93.0	NO	1.864	NO
19	14	PFNA	463.0 > 418.8	15903.953	17759.393	1.00	4.63	11.194	9.4	94.2	NO	5.280	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	3983.484	16928.604	1.00	4.13	2.941	10.8	86.5	NO		
21	41	13C4-PFHpA	367.2 > 321.8	14427.467	17485.316	1.00	3.64	10.314	12.7	102.0	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1512.068	3256.925	1.00	3.80	5.803	13.4	107.0	NO		
23	44	13C2-PFOA	414.9 > 369.7	20130.639	16928.604	1.00	4.18	14.864	12.5	100.1	NO		
24	44	13C2-PFOA	414.9 > 369.7	20130.639	16928.604	1.00	4.18	14.864	12.5	100.1	NO		
25	45	13C5-PFNA	468.2 > 422.9	17759.393	19190.096	1.00	4.63	11.568	12.3	98.1	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	3720.608	5469.073	1.00	4.70	8.504	10.4	104.1	NO	30.890	NO
28	16	L-PFOS	499.1 > 79.9	2914.101	3925.506	1.00	4.72	9.279	10.0	100.0	NO	1.987	NO
29	18	PFDA	513 > 468.8	14871.534	21620.193	1.00	5.02	8.598	9.6	95.6	NO	6.825	NO
30	19	8:2 FTS	527 > 506.9	3308.458	3221.948	1.00	4.99	12.836	9.2	91.6	NO	2.832	NO
31	20	PFNS	549.1>80.1	2338.823	3925.506	1.00	5.09	7.448	9.4	93.6	NO	1.777	NO
32	21	L-MeFOSAA	570.1 > 419	6722.189	6080.323	1.00	5.18	13.820	10.0	99.7	NO	11.440	NO
33	46	13C8-PFOSA	506.1 > 77.7	5469.073	18139.125	1.00	4.70	3.769	13.2	105.8	NO		
34	47	13C8-PFOS	507.0 > 79.9	3925.506	3992.414	1.00	4.72	12.291	12.3	98.2	NO		

6/20/18

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-126.qld

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Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ..	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	21620.193	16370.798	1.00	5.02	16.508	12.6	100.8	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	3221.948	17485.316	1.00	4.99	2.303	11.6	93.0	NO		
37	47	13C8-PFOS	507.0 > 79.9	3925.506	3992.414	1.00	4.72	12.291	12.3	98.2	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	6080.323	18139.125	1.00	5.17	4.190	14.7	117.9	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	5391.732	5751.233	1.00	5.34	11.719	10.7	106.7	NO	12.017	NO
41	27	PFDoA	612.9 > 569.0	19395.527	20121.588	1.00	5.65	12.049	10.3	103.1	NO	9.831	NO
42	26	PFDS	598.8 > 80	3034.262	18606.664	1.00	5.41	2.038	11.5	115.3	NO	2.085	NO
43	25	PFUdA	563.0 > 518.9	14615.796	18606.664	1.00	5.35	9.819	9.9	99.5	NO	15.127	NO
44	28	N-MeFOSA	512.1 > 168.9	10178.318	28176.928	1.00	5.80	54.184	50.4	100.8	NO	1.301	NO
45	29	PFTrDA	662.9 > 618.9	20195.145	20121.588	1.00	5.90	12.546	10.0	99.8	NO	36.316	NO
46	51	d5-N-EtFOSAA	589.3 > 419	5751.233	18139.125	1.00	5.33	3.963	14.6	117.2	NO		
47	53	13C2-PFDoA	615.0 > 569.7	20121.588	16370.798	1.00	5.65	15.364	12.1	96.9	NO		
48	52	13C2-PFUdA	565 > 519.8	18606.664	18139.125	1.00	5.35	12.822	12.4	98.9	NO		
49	52	13C2-PFUdA	565 > 519.8	18606.664	18139.125	1.00	5.35	12.822	12.4	98.9	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	28176.928	18139.125	1.00	5.83	19.417	168.7	112.4	NO		
51	53	13C2-PFDoA	615.0 > 569.7	20121.588	16370.798	1.00	5.65	15.364	12.1	96.9	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	18223.594	16998.014	1.00	6.12	13.401	10.3	103.3	NO	12.475	NO
54	31	N-EtFOSA	526.1 > 168.9	11589.713	37447.297	1.00	6.23	46.424	50.6	101.3	NO	1.351	NO
55	32	PFHxDA	813.1 > 768.6	10831.300	9970.104	1.00	6.47	5.432	10.1	100.5	NO	39.314	NO
56	33	PFODA	913.1 > 868.8	13838.929	9970.104	1.00	6.71	6.940	10.0	100.0	NO		
57	34	N-MeFOSE	616.1 > 58.9	11823.490	36705.977	1.00	6.41	48.317	50.4	100.8	NO		
58	35	N-EtFOSE	630.1 > 58.9	14111.793	33611.469	1.00	6.56	62.978	59.0	117.9	NO		
59	55	13C2-PFTeDA	714.8 > 669.6	16998.014	18139.125	1.00	6.12	11.714	13.1	104.9	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	37447.297	18139.125	1.00	6.24	25.806	175.5	117.0	NO		
61	57	13C2-PFHxDA	815 > 769.7	9970.104	18139.125	1.00	6.47	6.871	5.5	110.2	NO		
62	57	13C2-PFHxDA	815 > 769.7	9970.104	18139.125	1.00	6.47	6.871	5.5	110.2	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	36705.977	18139.125	1.00	6.40	25.295	175.9	117.3	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	33611.469	18139.125	1.00	6.54	23.162	173.5	115.7	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	11632.536	11632.536	1.00	1.16	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	17485.316	17485.316	1.00	3.02	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	3256.925	3256.925	1.00	3.80	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-126.qld

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Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	16928.604	16928.604	1.00	4.18	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	19190.096	19190.096	1.00	4.63	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	3992.414	3992.414	1.00	4.72	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	16370.798	16370.798	1.00	5.02	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	18139.125	18139.125	1.00	5.35	12.500	12.5	100.0	NO		

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	180619M1_1	IPA	19-Jun-18	17:11:07
2	2	180619M1_2	ST180619M1-1 PFC CS-2 18F1104	19-Jun-18	17:21:34
3	3	180619M1_3	ST180619M1-2 PFC CS-1 18F1105	19-Jun-18	17:31:58
4	4	180619M1_4	ST180619M1-3 PFC CS0 18F1106	19-Jun-18	17:42:28
5	5	180619M1_5	ST180619M1-4 PFC CS1 18F1107	19-Jun-18	17:52:54
6	6	180619M1_6	ST180619M1-5 PFC CS2 18F1108	19-Jun-18	18:26:46
7	7	180619M1_7	ST180619M1-6 PFC CS3 18F1109	19-Jun-18	18:39:53
8	8	180619M1_8	ST180619M1-7 PFC CS4 18F1110	19-Jun-18	18:50:19
9	9	180619M1_9	ST180619M1-8 PFC CS5 18F1111	19-Jun-18	19:00:49
10	10	180619M1_10	ST180619M1-9 PFC CS6 18F1112	19-Jun-18	19:11:14
11	11	180619M1_11	ST180619M1-10 PFC CS7 18F1113	19-Jun-18	19:21:44
12	12	180619M1_12	IPA	19-Jun-18	19:32:09
13	13	180619M1_13	ICV180619M1-1 PFC 537 ICV 18F1103	19-Jun-18	19:42:40
14	14	180619M1_14	IPA	19-Jun-18	19:53:04
15	15	180619M1_15	1801119-07 B81-MW-13D-053118 0.125	19-Jun-18	20:03:34
16	16	180619M1_16	1801031-04@50X MW-09-001 0.11999	19-Jun-18	20:13:58
17	17	180619M1_17	1801150-01 MCLPCG268 0.11906	19-Jun-18	20:24:29
18	18	180619M1_18	1801150-02 MCLPCG395 0.1162	19-Jun-18	20:34:59
19	19	180619M1_19	1801150-03 MCLPCG273 0.12124	19-Jun-18	20:45:23
20	20	180619M1_20	1801150-04 MCLPCG266 0.11975	19-Jun-18	20:55:53
21	21	180619M1_21	1801150-05 MCLPCG270 0.11659	19-Jun-18	21:06:18
22	22	180619M1_22	1801150-06 MCLPCG272 0.11327	19-Jun-18	21:16:49
23	23	180619M1_23	1801150-07 MCLPCG402 0.11588	19-Jun-18	21:27:13
24	24	180619M1_24	IPA	19-Jun-18	21:37:43
25	25	180619M1_25	ST180619M1-11 PFC CS3 18F1109	19-Jun-18	21:48:09
26	26	180619M1_26	IPA	19-Jun-18	21:58:39
27	27	180619M1_27	1801150-08 MCLPCG267 0.1316	19-Jun-18	22:09:04
28	28	180619M1_28	B8F0086-BS1 OPR 0.125	19-Jun-18	22:19:34
29	29	180619M1_29	B8F0086-BLK1 Method Blank 0.125	19-Jun-18	22:30:00
30	30	180619M1_30	B8F0086-MS1 Matrix Spike 0.11664	19-Jun-18	22:40:30
31	31	180619M1_31	B8F0086-MSD1 Matrix Spike Dup 0.119...	19-Jun-18	22:50:54
32	32	180619M1_32	1801132-01 REEPDW1093 0.11853	19-Jun-18	23:01:24

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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
33	33	180619M1_33	1801132-02 REEPDW1094 0.11599	19-Jun-18	23:11:49
34	34	180619M1_34	1801132-03 REEPDW1099 0.11584	19-Jun-18	23:22:20
35	35	180619M1_35	1801132-04 REEPDW1100 0.11372	19-Jun-18	23:32:44
36	36	180619M1_36	1801132-05 REEPDW559 0.11771	19-Jun-18	23:43:15
37	37	180619M1_37	1801132-06 REEPDW1101 0.11368	19-Jun-18	23:53:40
38	38	180619M1_38	1801132-07 REEPDW1108 0.11557	20-Jun-18	00:04:02
39	39	180619M1_39	1801132-08 REEPDW1102 0.11553	20-Jun-18	00:14:32
40	40	180619M1_40	1801132-09 REEPDW1103 0.10358	20-Jun-18	00:25:03
41	41	180619M1_41	IPA	20-Jun-18	00:35:27
42	42	180619M1_42	ST180619M1-12 PFC CS3 18F1109	20-Jun-18	00:45:57
43	43	180619M1_43	IPA	20-Jun-18	00:56:23
44	44	180619M1_44	1801132-10 REEPDW1105 0.11546	20-Jun-18	01:06:53
45	45	180619M1_45	1801132-11 REEPDW1106 0.11477	20-Jun-18	01:17:18
46	46	180619M1_46	1801132-12 REEPDW1107 0.11261	20-Jun-18	01:27:48
47	47	180619M1_47	1801132-13 REEPDW1109 0.12035	20-Jun-18	01:38:13
48	48	180619M1_48	B8F0100-BS1 OPR 2	20-Jun-18	01:48:43
49	49	180619M1_49	B8F0100-BLK1 Method Blank 2	20-Jun-18	01:59:07
50	50	180619M1_50	B8F0100-MS1 Matrix Spike 2	20-Jun-18	02:09:37
51	51	180619M1_51	B8F0100-MSD1 Matrix Spike Dup 2.03	20-Jun-18	02:20:02
52	52	180619M1_52	1801018-01 THalibut1-180502DB 2.02	20-Jun-18	02:30:32
53	53	180619M1_53	1801018-02 TWhiteFish1-180502DB 2	20-Jun-18	02:40:54
54	54	180619M1_54	1801018-03 TWhiteFish2-180502DB 2.01	20-Jun-18	02:51:24
55	55	180619M1_55	1801018-04 TWhiteFish3-180502DB 2.02	20-Jun-18	03:01:50
56	56	180619M1_56	1801018-05 TPerch1-180502DB 2.01	20-Jun-18	03:12:20
57	57	180619M1_57	1801018-06 TPerch2-180502DB 2.04	20-Jun-18	03:22:45
58	58	180619M1_58	IPA	20-Jun-18	03:33:16
59	59	180619M1_59	ST180619M1-13 PFC CS3 18F1109	20-Jun-18	03:43:40
60	60	180619M1_60	ST180619M1-14 PFC CS0 18F1106	20-Jun-18	03:54:10
61	61	180619M1_61	IPA	20-Jun-18	04:04:41
62	62	180619M1_62	1801018-07 TTrout1-180502DB 2.04	20-Jun-18	04:15:05
63	63	180619M1_63	1801018-08 TTrout2-180502DB 2.04	20-Jun-18	04:25:36
64	64	180619M1_64	1801018-09 TSwordfish1-180502DB 2.03	20-Jun-18	04:36:01
65	65	180619M1_65	1801018-10 TWalleye1-180502DB 2.04	20-Jun-18	04:46:31
66	66	180619M1_66	B8F0107-BS1 OPR 0.125	20-Jun-18	04:56:56
67	67	180619M1_67	B8F0107-BSD1 LCSD 0.125	20-Jun-18	05:07:26
68	68	180619M1_68	B8F0107-BLK1 Method Blank 0.125	20-Jun-18	05:17:51

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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
69	69	180619M1_69	1801164-01 MCLPCH325 0.11979	20-Jun-18	05:28:21
70	70	180619M1_70	1801164-02 MCLPCH329 0.1213	20-Jun-18	05:38:47
71	71	180619M1_71	1801164-03 MCLPCH437 0.11893	20-Jun-18	05:49:17
72	72	180619M1_72	1801164-04 MCLPCH331 0.11875	20-Jun-18	05:59:41
73	73	180619M1_73	1801164-05 MCLPCH403 0.1203	20-Jun-18	06:10:11
74	74	180619M1_74	1801164-06 MCLPXX352 0.12033	20-Jun-18	06:20:36
75	75	180619M1_75	IPA	20-Jun-18	06:31:06
76	76	180619M1_76	ST180619M1-15 PFC CS3 18F1109	20-Jun-18	06:41:31
77	77	180619M1_77	IPA	20-Jun-18	06:52:01
78	78	180619M1_78	1801164-07 MCLPXX354 0.11412	20-Jun-18	07:02:26
79	79	180619M1_79	1801164-08 MCLPXX393 0.1177	20-Jun-18	07:12:57
80	80	180619M1_80	1801164-09 MCLPXX358 0.12144	20-Jun-18	07:23:21
81	81	180619M1_81	1801164-10 MCLPCD433 0.11801	20-Jun-18	07:33:51
82	82	180619M1_82	1801164-11 MCLPCD135 0.1208	20-Jun-18	07:44:15
83	83	180619M1_83	1801164-12 MCLPCD134 0.12058	20-Jun-18	07:54:37
84	84	180619M1_84	1801164-13 MCLPCD125 0.1193	20-Jun-18	08:05:07
85	85	180619M1_85	1801166-01 REEPDW1118 0.11996	20-Jun-18	08:15:32
86	86	180619M1_86	1801166-02 REEPDW1113 0.11856	20-Jun-18	08:26:03
87	87	180619M1_87	1801166-03 REEPDW1114 0.11872	20-Jun-18	08:36:33
88	88	180619M1_88	IPA	20-Jun-18	08:46:58
89	89	180619M1_89	ST180619M1-16 PFC CS3 18F1109	20-Jun-18	08:57:28
90	90	180619M1_90	IPA	20-Jun-18	09:07:53
91	91	180619M1_91	1801166-04 REEPDW1115 0.12017	20-Jun-18	09:18:23
92	92	180619M1_92	B8F0069-BS1 OPR 0.25	20-Jun-18	09:29:16
93	93	180619M1_93	1801154-01 WIR1806051350JLB 0.243...	20-Jun-18	09:39:43
94	94	180619M1_94	1801031-04@50X MW-09-001 0.11999	20-Jun-18	09:50:14
95	95	180619M1_95	1801166-05 REEPDW1117 0.12218	20-Jun-18	10:00:39
96	96	180619M1_96	1801166-06 REEPDW1119 0.12076	20-Jun-18	10:11:09
97	97	180619M1_97	B8F0024-BLK1 Method Blank 3	20-Jun-18	10:21:35
98	98	180619M1_98	B8F0024-BS1 OPR 3	20-Jun-18	10:32:05
99	99	180619M1_99	B8F0024-BS2 OPR 3	20-Jun-18	10:42:30
100	1...	180619M1_100	B8F0024-BS3 OPR 3	20-Jun-18	10:53:00
101	1...	180619M1_101	B8F0024-BS4 OPR 3	20-Jun-18	11:03:25
102	1...	180619M1_102	B8F0024-BS5 OPR 3	20-Jun-18	11:13:55
103	1...	180619M1_103	B8F0024-BS6 OPR 3	20-Jun-18	11:24:20
104	1...	180619M1_104	B8F0024-BS7 OPR 3	20-Jun-18	11:34:50

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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
105	1...	180619M1_105	B8E0081-BLK1 Method Blank 1	20-Jun-18	11:45:20
106	1...	180619M1_106	B8E0081-BS1 OPR 1	20-Jun-18	11:55:45
107	1...	180619M1_107	B8E0081-BS2 OPR 1	20-Jun-18	12:06:16
108	1...	180619M1_108	B8E0081-BS3 OPR 1	20-Jun-18	12:16:41
109	1...	180619M1_109	B8E0081-BS4 OPR 1	20-Jun-18	12:27:12
110	1...	180619M1_110	B8D0023-BS2 OPR 1	20-Jun-18	12:37:36
111	1...	180619M1_111	B8D0023-BLK2 Method Blank 1	20-Jun-18	12:48:06
112	1...	180619M1_112	B8D0121-BS1 OPR 2	20-Jun-18	12:58:31
113	1...	180619M1_113	B8D0121-BLK1 Method Blank 2	20-Jun-18	13:09:01
114	1...	180619M1_114	B8F0050-BLK1 Blank 0.125	20-Jun-18	13:19:25
115	1...	180619M1_115	B8F0050-BS1 LCS 0.125	20-Jun-18	13:29:55
116	1...	180619M1_116	B8F0050-BS2 LCS 0.125	20-Jun-18	13:40:19
117	1...	180619M1_117	B8F0050-BS3 LCS 0.125	20-Jun-18	13:50:50
118	1...	180619M1_118	B8F0050-BS4 LCS 0.125	20-Jun-18	14:01:14
119	1...	180619M1_119	B8F0057-BLK1 Method Blank 0.25	20-Jun-18	14:11:46
120	1...	180619M1_120	B8F0057-BS1 OPR 0.25	20-Jun-18	14:22:14
121	1...	180619M1_121	B8F0057-BS2 OPR 0.25	20-Jun-18	14:32:39
122	1...	180619M1_122	B8F0057-BS3 OPR 0.25	20-Jun-18	14:43:09
123	1...	180619M1_123	B8F0057-BS4 OPR 0.25	20-Jun-18	14:53:33
124	1...	180619M1_124	B8F0061-MSD1@5X Matrix Spike Dup ...	20-Jun-18	15:05:08
125	1...	180619M1_125	IPA	20-Jun-18	15:15:32
126	1...	180619M1_126	ST180619M1-17 PFC CS3 18F1109	20-Jun-18	15:26:02

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-126.qld

Last Altered: Wednesday, June 20, 2018 15:36:58 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 15:37:15 Pacific Daylight Time

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Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

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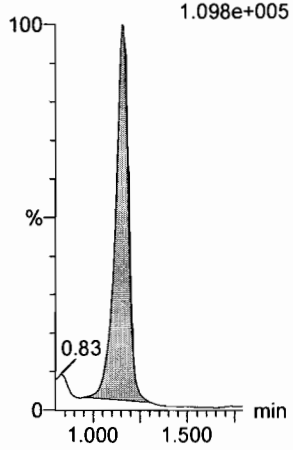

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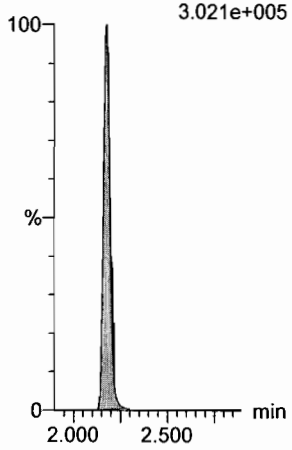

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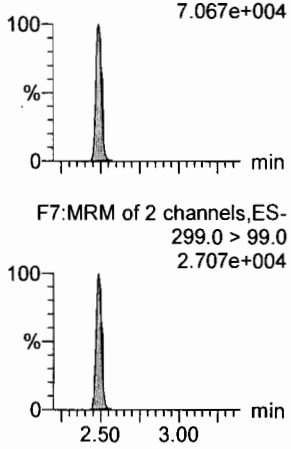

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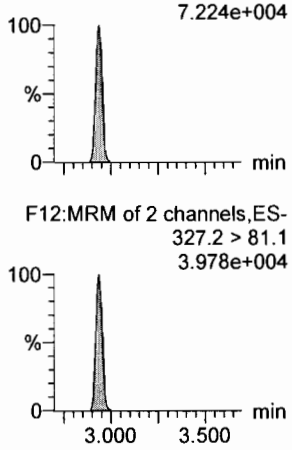

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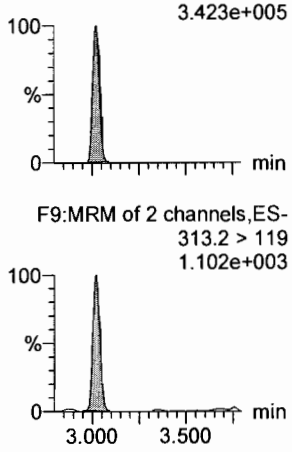

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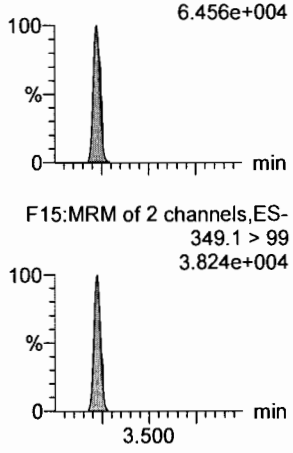

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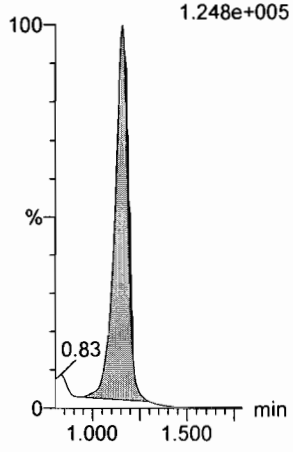

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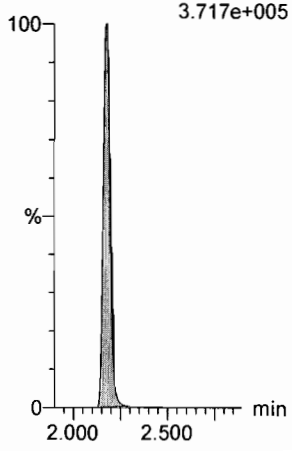

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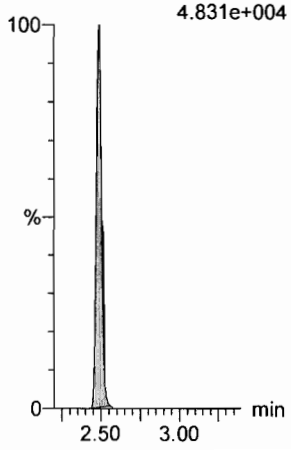

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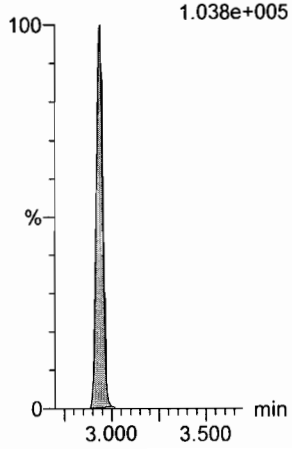

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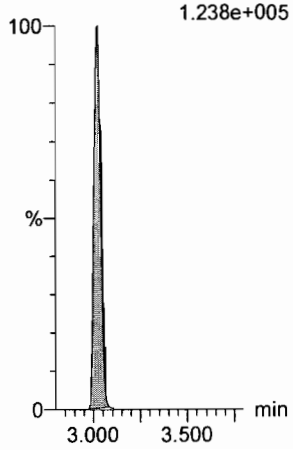

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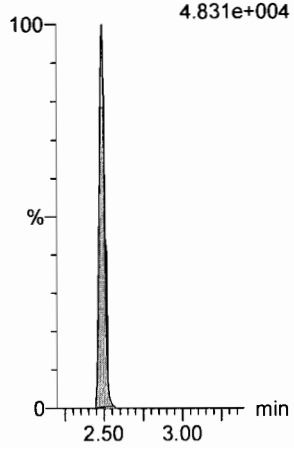

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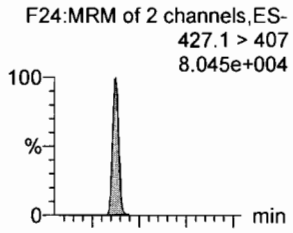
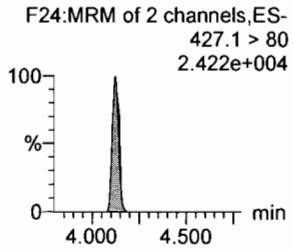
Printed: Wednesday, June 20, 2018 15:37:15 Pacific Daylight Time

Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

6:2 FTS





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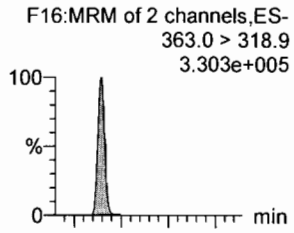

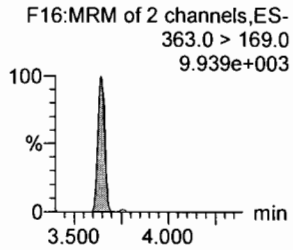

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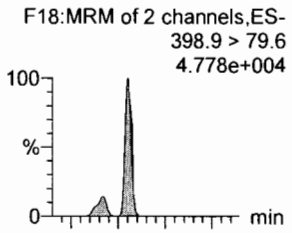

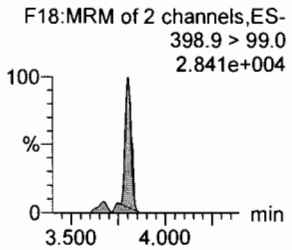

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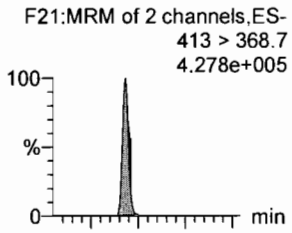

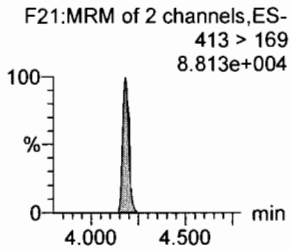

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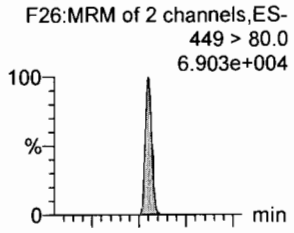

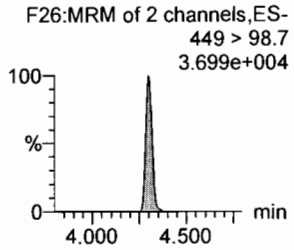

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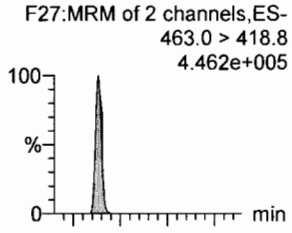

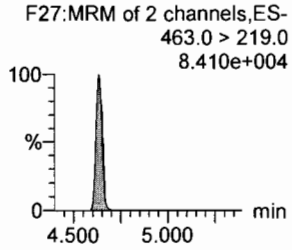

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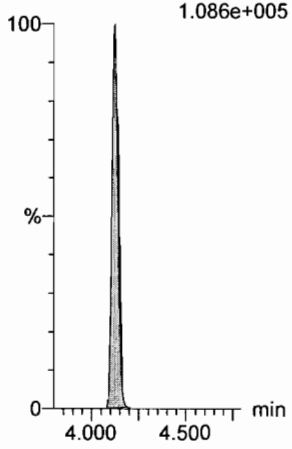
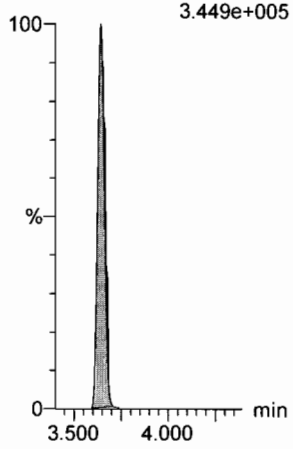
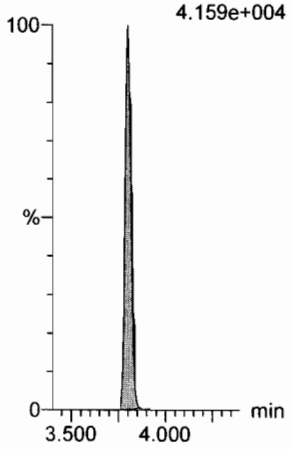


13C4-PFHpA



18O2-PFHxS



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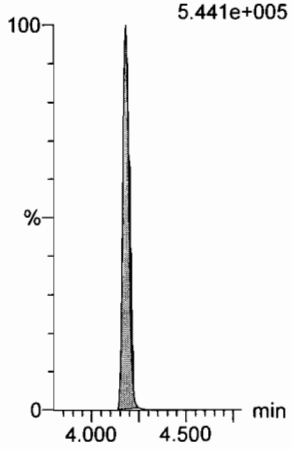

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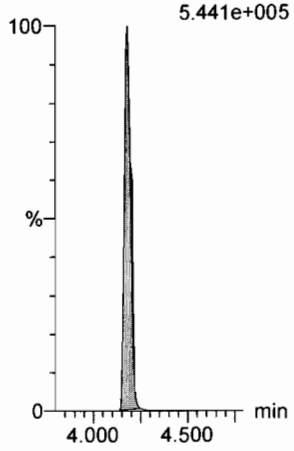

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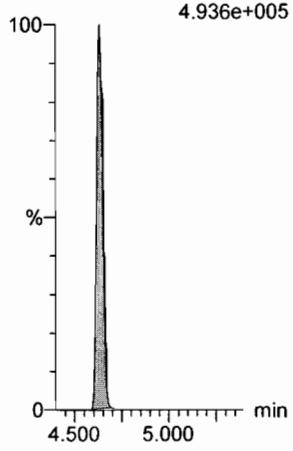

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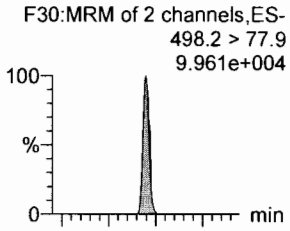
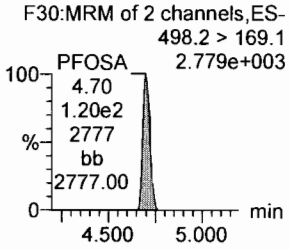
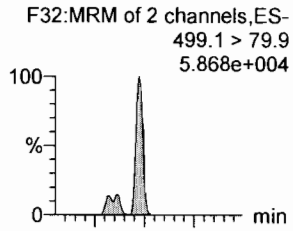
Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

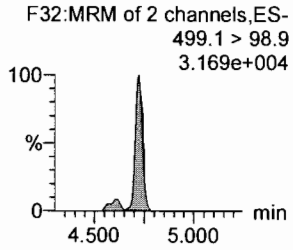
PFOSA





L-PFOS





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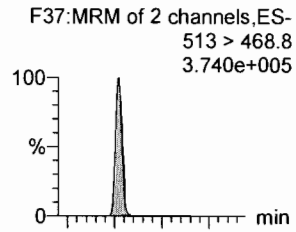

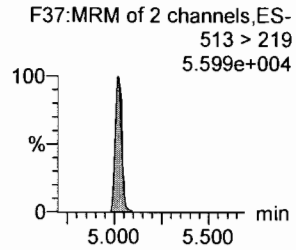

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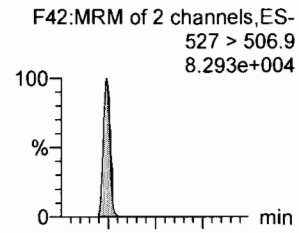

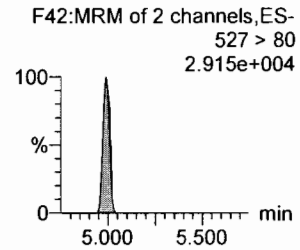

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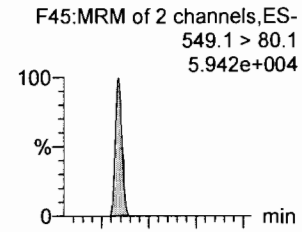

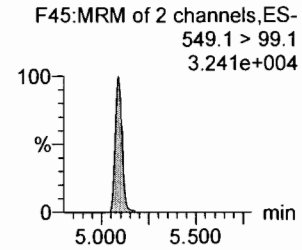

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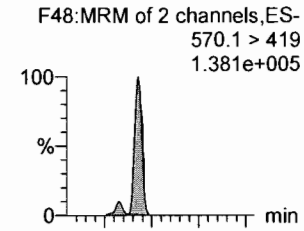
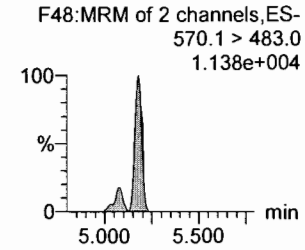
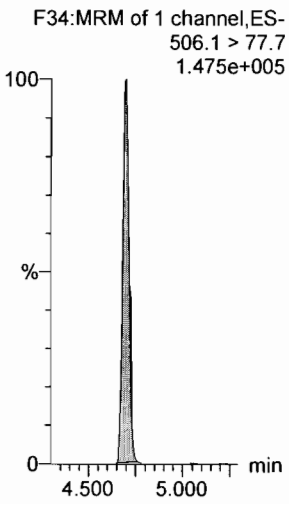




13C8-PFOSA



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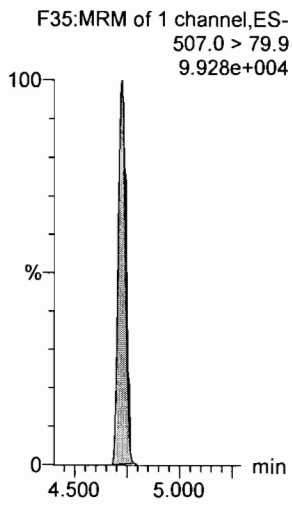

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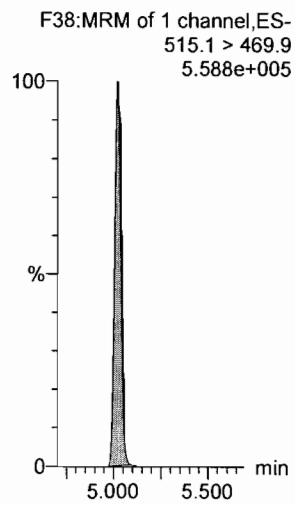
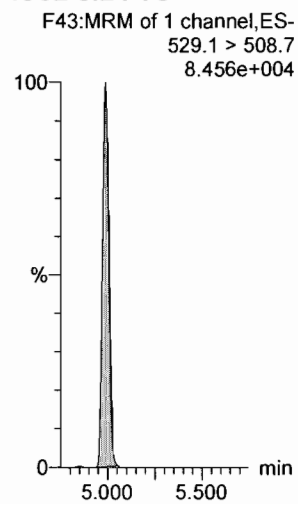


13C2-8:2 FTS



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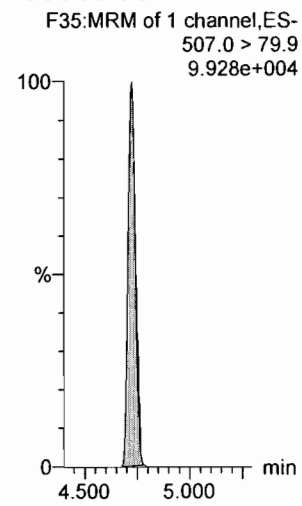

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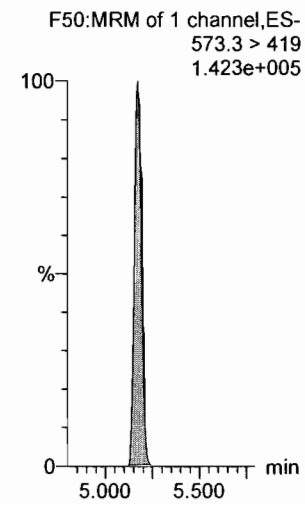

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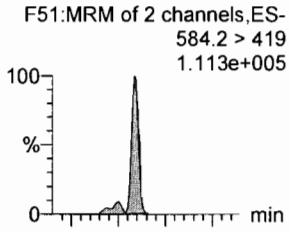
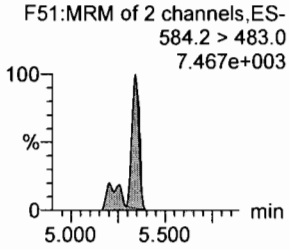
Last Altered: Wednesday, June 20, 2018 15:36:58 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 15:37:15 Pacific Daylight Time

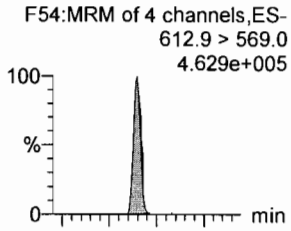
Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

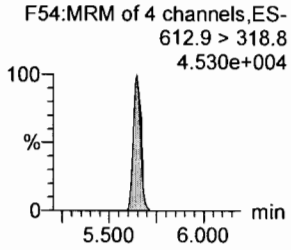
L-EtFOSAA



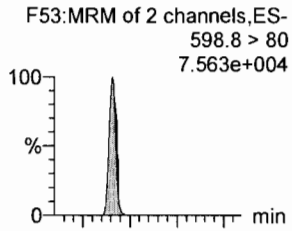


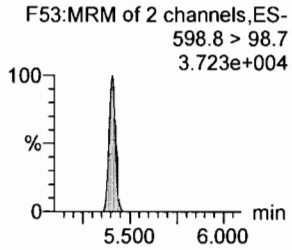
PFDoA



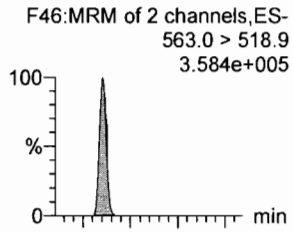


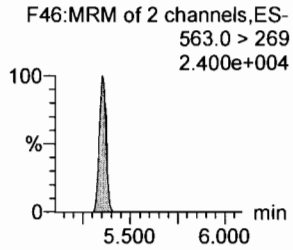
PFDS



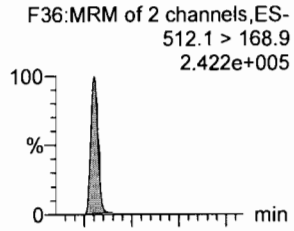


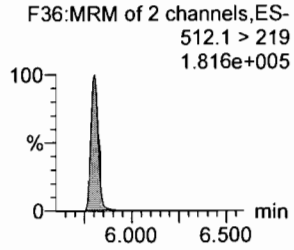
PFUdA



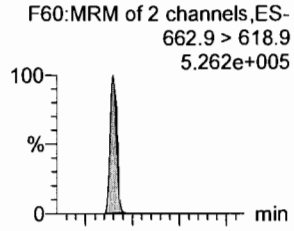


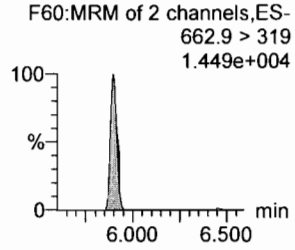
N-MeFOSA



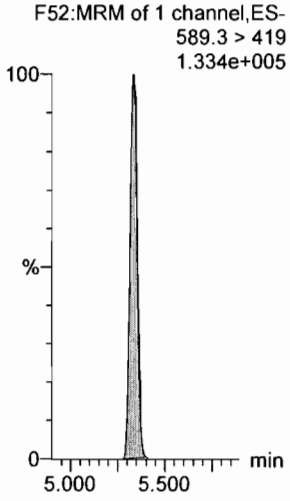


PFTrDA

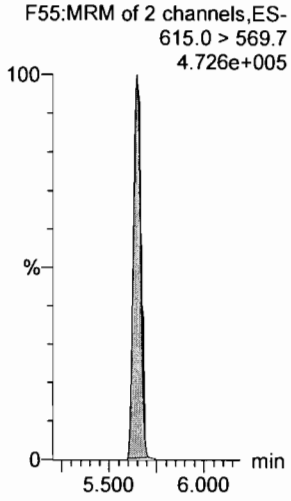




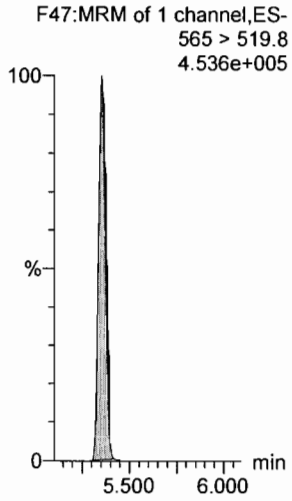
d5-N-EtFOSAA



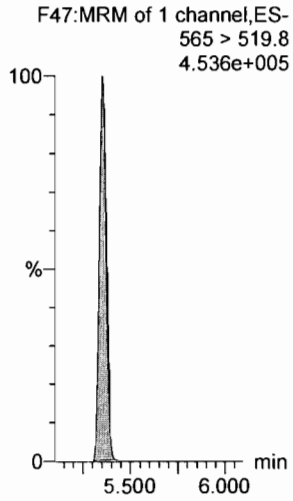
13C2-PFDoA



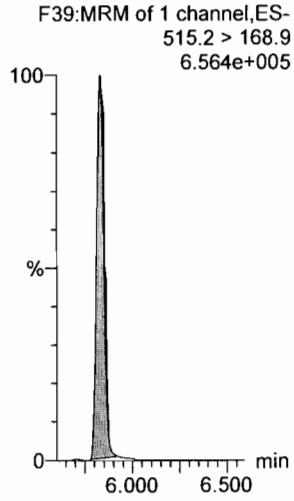
13C2-PFUdA



13C2-PFUdA



d3-N-MeFOSA



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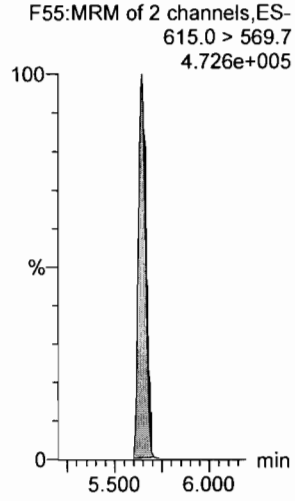
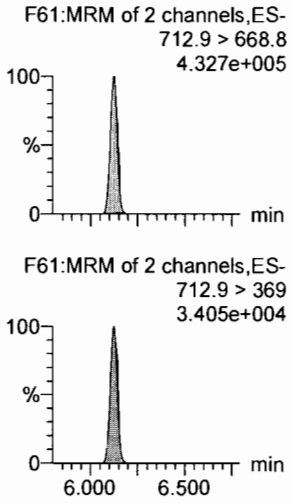


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-126.qld

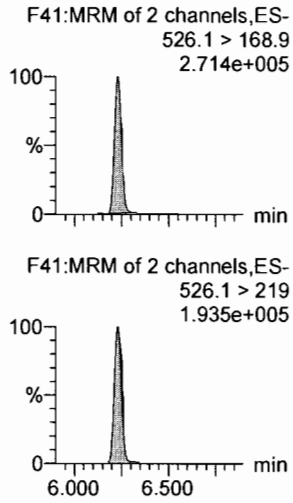
Last Altered: Wednesday, June 20, 2018 15:36:58 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 15:37:15 Pacific Daylight Time

Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

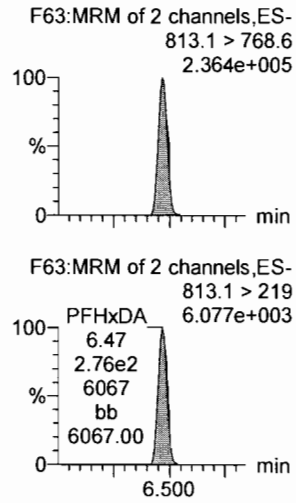
PFTeDA



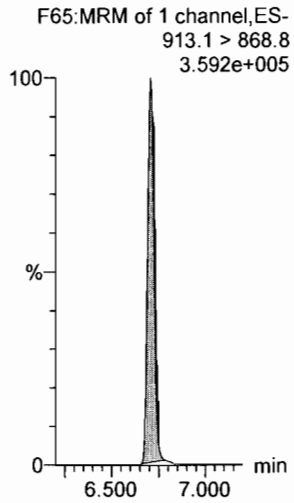
N-EtFOSA



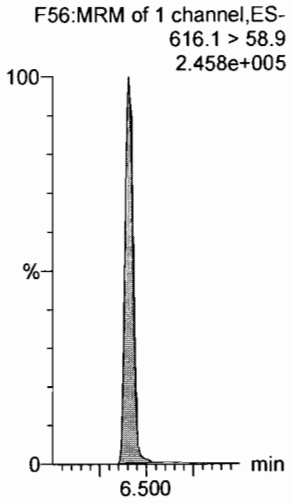
PFHxDA



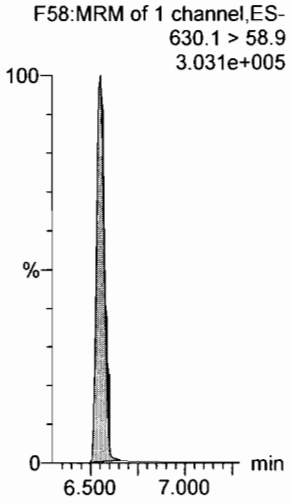
PFODA



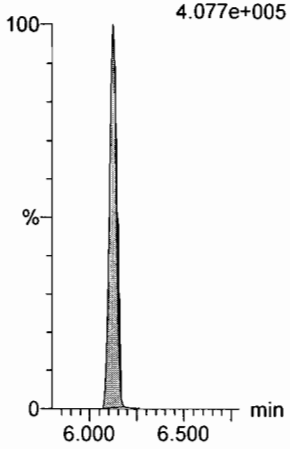
N-MeFOSE



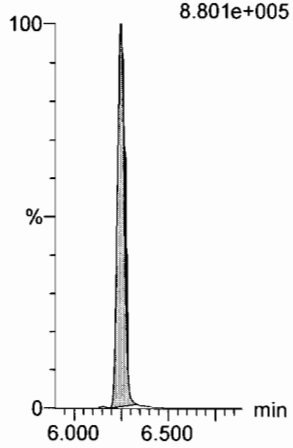
N-EtFOSE



13C2-PFTeDA



d5-N-ETFOSA



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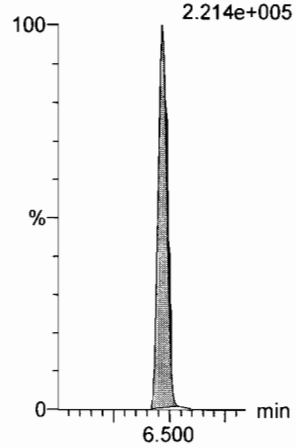
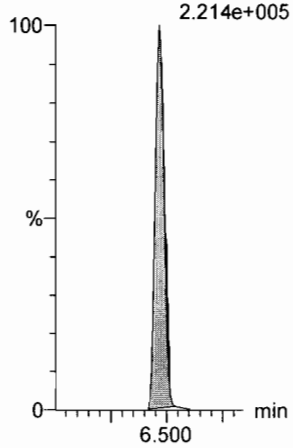
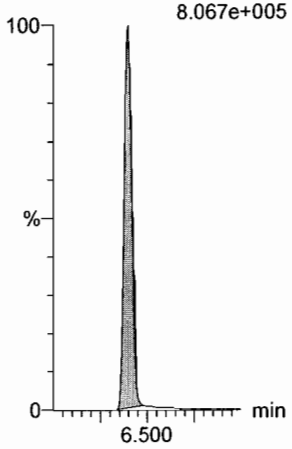


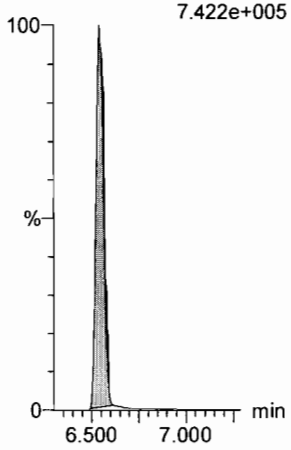
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

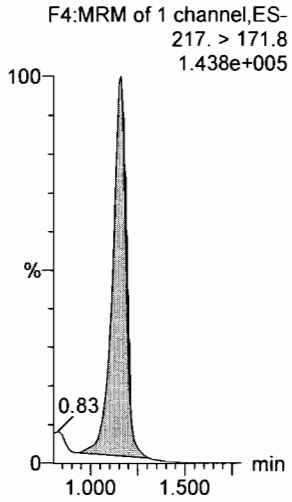


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-126.qld

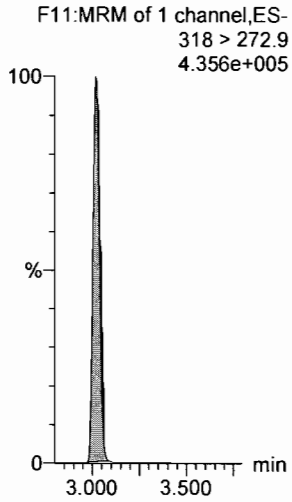
Last Altered: Wednesday, June 20, 2018 15:36:58 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 15:37:15 Pacific Daylight Time

Name: 180619M1_126, Date: 20-Jun-2018, Time: 15:26:02, ID: ST180619M1-17 PFC CS3 18F1109, Description: PFC CS3 18F1109

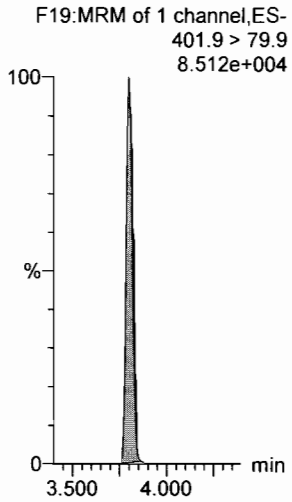
13C4-PFBA



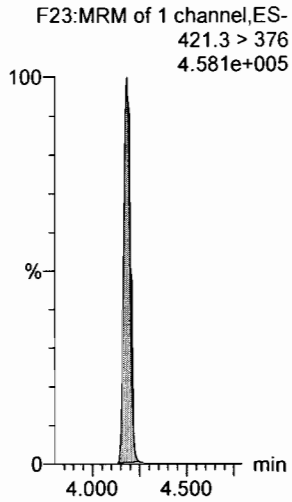
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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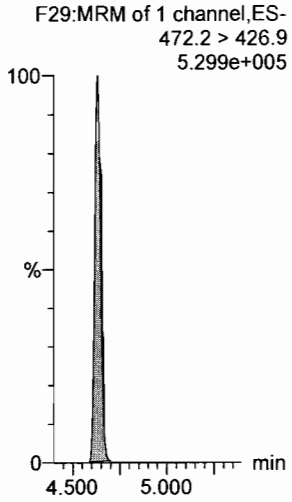
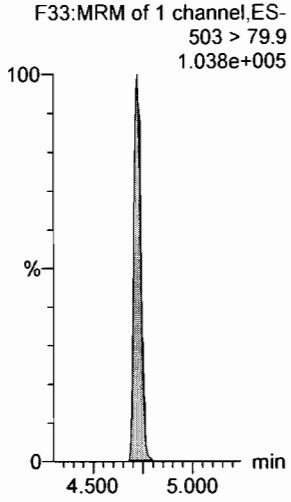
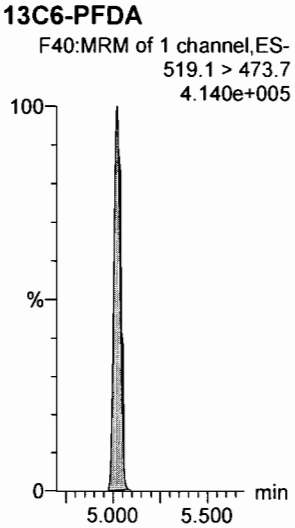


13C4-PFOS



13C6-PFDA



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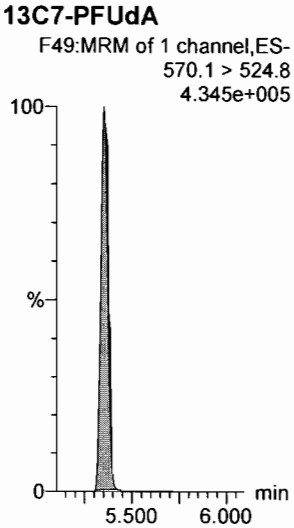

INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV) AND INSTRUMENT BLANK (IB)

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN945 SCN960**
Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:30:33 Pacific Daylight Time

high pt
✓ 4:2 FTS 100
✓ 6:2 FTS
✓ 8:2 FTS
✓ PFOS 250
✓ PFDA

low pt
✓ 6:2 FTS 0.5
✓ PFNS
✓ EtFOSAA
✓ PFUdA
✓ PFDoA

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Compound name: PFBA
Correlation coefficient: r = 0.999944, r^2 = 0.999888
Calibration curve: 1.09266 * x + 0.0224346
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

KBF 6/16/18

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	1.26	168.887	7115.639	0.297	0.3	0.4	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	1.26	306.262	6909.378	0.554	0.5	-2.7	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	1.26	654.711	7113.107	1.151	1.0	3.2	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	1.26	1286.002	6905.034	2.328	2.1	5.5	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	1.26	2988.705	6986.625	5.347	4.9	-2.5	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	1.26	6173.537	6912.854	11.163	10.2	2.0	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	1.26	31437.123	7124.386	55.158	50.5	0.9	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	1.28	61005.051	6809.097	111.992	102.5	2.5	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	1.26	158376.938	7309.970	270.824	247.8	-0.9	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	1.26	297104.250	6810.681	545.291	499.0	-0.2	NO	1.000	NO	bb

Compound name: PFPeA
Correlation coefficient: r = 0.999879, r^2 = 0.999759
Calibration curve: 0.959979 * x + 0.0855017
Response type: Internal Std (Ref 37), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	2.25	219.691	8929.475	0.308	0.2	-7.5	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	2.24	386.910	8918.778	0.542	0.5	-4.8	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	2.25	802.705	9261.319	1.083	1.0	4.0	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	2.24	1560.361	9359.479	2.084	2.1	4.1	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	2.25	3495.741	9005.114	4.852	5.0	-0.7	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	2.24	7020.828	8874.683	9.889	10.2	2.1	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	2.25	34514.578	8862.103	48.683	50.6	1.2	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	2.23	67328.922	8473.640	99.321	103.4	3.4	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	2.25	158600.609	8412.308	235.668	245.4	-1.8	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	2.24	293183.906	7628.549	480.406	500.3	0.1	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:30:33 Pacific Daylight Time

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999658
Calibration curve: 8.00139e-005 * x^2 + 1.92626 * x + 0.0470991
Response type: Internal Std (Ref 38), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	2.54	45.182	1143.024	0.494	0.2	-7.2	NO	1.000	NO	MM
2	2	180615M1_3	Standard	0.500	2.54	83.676	1101.085	0.950	0.5	-6.3	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	2.54	182.870	1134.196	2.015	1.0	2.2	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	2.53	389.894	1087.862	4.480	2.3	15.1	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	2.53	815.293	1171.879	8.696	4.5	-10.2	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	2.53	1759.021	1096.648	20.050	10.4	3.8	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	2.54	8580.002	1084.098	98.930	51.2	2.5	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	2.52	16879.131	1069.872	197.210	101.9	1.9	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	2.53	39226.195	1030.463	475.832	244.5	-2.2	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	2.53	71400.375	903.729	987.580	502.2	0.4	NO	1.000	NO	bb

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999163
Calibration curve: -0.00375509 * x^2 + 1.05697 * x + -0.0200411
Response type: Internal Std (Ref 39), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	2.94	31.711	2131.932	0.186	0.2	-22.0	NO	0.999	NO	MM
2	2	180615M1_3	Standard	0.500	2.94	87.012	2230.795	0.488	0.5	-3.8	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	2.94	196.688	2079.514	1.182	1.1	14.2	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	2.94	392.009	2148.218	2.281	2.2	9.7	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	2.94	878.384	2061.383	5.326	5.2	3.1	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	2.94	1683.885	2059.344	10.221	10.0	0.5	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	2.94	8360.872	2457.616	42.525	48.7	-2.7	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	2.93	14754.663	2689.844	68.567	101.5	1.5	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	2.94	38179.195	3712.823	128.538		↙	NO	0.999	NO	bbXI
10	10	180615M1_11	Standard	500.000	2.94	66146.500	4723.014	175.064		↙	NO	0.999	NO	bbXI

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Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999744
Calibration curve: -0.000235764 * x^2 + 1.52719 * x + 0.0953451
Response type: Internal Std (Ref 40), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	3.03	243.790	2712.165	0.449	0.2	-7.3	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	3.03	485.237	2752.889	0.881	0.5	2.9	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	3.03	988.779	2762.760	1.789	1.1	11.0	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	3.03	1989.832	2747.287	3.621	2.3	15.5	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	3.03	4331.962	2744.404	7.892	5.1	2.2	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	3.03	8428.409	2781.894	15.149	9.9	-1.3	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	3.03	42415.887	2684.666	78.997	52.1	4.2	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	3.03	77513.883	2617.985	148.041	98.4	-1.6	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	3.03	197409.313	2710.374	364.174	247.9	-0.8	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	3.03	353815.469	2504.315	706.412	501.3	0.3	NO	1.000	NO	bb

Compound name: PFPeS
Correlation coefficient: r = 0.999817, r^2 = 0.999635
Calibration curve: 1.74752 * x + 0.0397996
Response type: Internal Std (Ref 38), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	3.24	34.239	1143.024	0.374	0.2	-23.4	NO	1.000	NO	MM
2	2	180615M1_3	Standard	0.500	3.23	77.989	1101.085	0.885	0.5	-3.2	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	3.23	160.420	1134.196	1.768	1.0	-1.1	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	3.23	382.429	1087.862	4.394	2.5	24.6	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	3.23	764.771	1171.879	8.158	4.6	-7.1	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	3.23	1625.457	1096.648	18.528	10.6	5.8	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	3.24	7938.118	1084.098	91.529	52.4	4.7	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	3.23	15018.372	1069.872	175.469	100.4	0.4	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	3.23	36037.648	1030.463	437.154	250.1	0.1	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	3.23	62731.488	903.729	867.676	496.5	-0.7	NO	1.000	NO	bb

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Compound name: PFHpA
Correlation coefficient: r = 0.999772, r^2 = 0.999543
Calibration curve: 1.18418 * x + 0.110019
Response type: Internal Std (Ref 41), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	3.67	215.590	6965.361	0.387	0.2	-6.5	NO	1.000	NO	MM
2	2	180615M1_3	Standard	0.500	3.66	358.161	7095.079	0.631	0.4	-12.0	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	3.66	747.281	7201.120	1.297	1.0	0.3	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	3.66	1603.082	7147.201	2.804	2.3	13.7	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	3.66	3140.211	7108.104	5.522	4.6	-8.6	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	3.66	6970.078	6875.440	12.672	10.6	6.1	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	3.67	34342.719	6820.867	62.937	53.1	6.1	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	3.65	62641.242	6491.871	120.615	101.8	1.8	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	3.66	151853.313	6387.580	297.165	250.9	0.3	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	3.66	274633.469	5867.922	585.031	493.9	-1.2	NO	1.000	NO	bb

Compound name: L-PFHxS
Correlation coefficient: r = 0.998919, r^2 = 0.997838
Calibration curve: 1.91706 * x + -0.0530785
Response type: Internal Std (Ref 42), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	3.82	36.992	848.722	0.545	0.3	24.8	NO	0.998	NO	MM
2	2	180615M1_3	Standard	0.500	3.82	43.423	818.101	0.663	0.4	-25.2	NO	0.998	NO	MM
3	3	180615M1_4	Standard	1.000	3.81	111.592	876.635	1.591	0.9	-14.2	NO	0.998	NO	MM
4	4	180615M1_5	Standard	2.000	3.81	300.692	860.982	4.366	2.3	15.2	NO	0.998	NO	MM
5	5	180615M1_6	Standard	5.000	3.81	600.037	881.673	8.507	4.5	-10.7	NO	0.998	NO	MM
6	6	180615M1_7	Standard	10.000	3.81	1401.537	830.581	21.093	11.0	10.3	NO	0.998	NO	MM
7	7	180615M1_8	Standard	50.000	3.81	6740.882	849.156	99.229	51.8	3.6	NO	0.998	NO	MM
8	8	180615M1_9	Standard	100.000	3.81	13219.518	859.811	192.186	100.3	0.3	NO	0.998	NO	MM
9	9	180615M1_10	Standard	250.000	3.81	31248.217	875.601	446.097	232.7	-6.9	NO	0.998	NO	MM
10	10	180615M1_11	Standard	500.000	3.81	55267.113	700.298	986.493	514.6	2.9	NO	0.998	NO	MM

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Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999270
Calibration curve: -0.00237297 * x^2 + 1.05941 * x + 0.254904
Response type: Internal Std (Ref 43), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	4.13	41.124	2019.542	0.255		✓	NO	0.999	NO	MMXI
2	2	180615M1_3	Standard	0.500	4.14	118.527	1869.863	0.792	0.5	1.6	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	4.14	199.746	2090.488	1.194	0.9	-11.1	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	4.14	377.150	1761.207	2.677	2.3	14.9	NO	0.999	NO	MM
5	5	180615M1_6	Standard	5.000	4.14	889.564	2157.219	5.155	4.7	-6.5	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	4.14	1900.630	2214.437	10.729	10.1	1.2	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	4.14	9072.723	2396.221	47.328	50.0	0.1	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	4.13	18284.613	2772.127	82.448	100.0	-0.0	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	4.13	40922.742	3883.416	131.723		✓	NO	0.999	NO	bbXI
10	10	180615M1_11	Standard	500.000	4.13	71466.773	5010.936	178.277		✓	NO	0.999	NO	bbXI

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999875
Calibration curve: -5.38784e-005 * x^2 + 0.928598 * x + 0.10099
Response type: Internal Std (Ref 44), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	4.19	292.876	10752.555	0.340	0.3	3.2	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	4.19	438.604	10768.698	0.509	0.4	-12.1	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	4.19	949.243	11233.559	1.056	1.0	2.9	NO	1.000	NO	MM
4	4	180615M1_5	Standard	2.000	4.19	1974.905	11655.273	2.118	2.2	8.6	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	4.19	4013.448	10667.507	4.703	5.0	-0.9	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	4.19	7968.470	10541.658	9.449	10.1	0.7	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	4.19	39633.211	11070.792	44.750	48.2	-3.6	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	4.19	75420.531	10151.771	92.866	100.5	0.5	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	4.19	185365.141	10038.920	230.808	252.1	0.9	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	4.19	346981.813	9637.486	450.042	499.0	-0.2	NO	1.000	NO	bb

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Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999251
Calibration curve: -3.74397e-005 * x^2 + 0.207813 * x + -0.0118122
Response type: Internal Std (Ref 44), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	4.30	37.081	10752.555	0.043	0.3	5.7	NO	0.999	NO	MM
2	2	180615M1_3	Standard	0.500	4.31	89.309	10768.698	0.104	0.6	11.1	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	4.30	179.057	11233.559	0.199	1.0	1.6	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	4.31	337.477	11655.273	0.362	1.8	-10.0	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	4.31	859.884	10667.507	1.008	4.9	-1.8	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	4.31	1717.414	10541.658	2.036	9.9	-1.3	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	4.31	8310.010	11070.792	9.383	45.6	-8.8	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	4.30	16815.279	10151.771	20.705	101.5	1.5	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	4.30	40851.160	10038.920	50.866	256.7	2.7	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	4.31	72421.219	9637.486	93.932	496.5	-0.7	NO	0.999	NO	bb

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999456
Calibration curve: -3.98446e-005 * x^2 + 1.27061 * x + 0.112012
Response type: Internal Std (Ref 45), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	4.64	217.154	7718.750	0.352	0.2	-24.6	NO	0.999	NO	MM
2	2	180615M1_3	Standard	0.500	4.65	456.314	8176.569	0.698	0.5	-7.8	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	4.64	999.748	8539.701	1.463	1.1	6.4	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	4.64	1939.150	7634.552	3.175	2.4	20.5	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	4.64	4381.939	8538.417	6.415	5.0	-0.8	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	4.64	8370.118	7979.966	13.111	10.2	2.3	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	4.64	42635.457	7846.625	67.920	53.5	6.9	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	4.64	83092.180	8315.435	124.907	98.5	-1.5	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	4.64	198123.688	8015.939	308.953	244.9	-2.0	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	4.64	381717.469	7591.304	628.544	502.5	0.5	NO	0.999	NO	bb

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Compound name: PFOSA
Correlation coefficient: r = 0.999640, r^2 = 0.999279
Calibration curve: 0.780086 * x + 0.0815553
Response type: Internal Std (Ref 46), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	4.70	68.099	3624.551	0.235	0.2	-21.4	NO	0.999	NO	bb
2	2	180615M1_3	Standard	0.500	4.71	148.957	4061.513	0.458	0.5	-3.4	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	4.70	279.686	3792.060	0.922	1.1	7.7	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	4.70	579.354	3986.846	1.816	2.2	11.2	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	4.70	1265.574	3929.866	4.025	5.1	1.1	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	4.70	2405.220	3698.280	8.130	10.3	3.2	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	4.70	12256.325	3765.443	40.687	52.1	4.1	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	4.69	25696.650	4113.568	78.085	100.0	-0.0	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	4.70	56257.242	3755.479	187.251	239.9	-4.0	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	4.70	100234.844	3164.692	395.911	507.4	1.5	NO	0.999	NO	bb

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999657
Calibration curve: -0.000130206 * x^2 + 0.868303 * x + 0.0138464
Response type: Internal Std (Ref 47), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	4.73	46.080	2313.848	0.249	0.3	8.3	NO	1.000	NO	MM
2	2	180615M1_3	Standard	0.500	4.72	61.576	2227.493	0.346	0.4	-23.6	NO	1.000	NO	MM
3	3	180615M1_4	Standard	1.000	4.72	182.816	2319.040	0.985	1.1	11.9	NO	1.000	NO	MM
4	4	180615M1_5	Standard	2.000	4.73	343.679	2364.755	1.817	2.1	3.8	NO	1.000	NO	MM
5	5	180615M1_6	Standard	5.000	4.72	728.852	2253.655	4.043	4.6	-7.1	NO	1.000	NO	MM
6	6	180615M1_7	Standard	10.000	4.72	1650.000	2215.825	9.308	10.7	7.2	NO	1.000	NO	MM
7	7	180615M1_8	Standard	50.000	4.73	7635.572	2208.665	43.214	50.1	0.3	NO	1.000	NO	MM
8	8	180615M1_9	Standard	100.000	4.72	16431.063	2423.168	84.760	99.1	-0.9	NO	1.000	NO	MM
9	9	180615M1_10	Standard	250.000	4.72	37843.082	2260.932	209.223	250.3	0.1	NO	1.000	NO	MM
10	10	180615M1_11	Standard	500.000	4.72	71293.344	1867.345	477.237	604.4	20.9 ✓	NO	1.000	NO	MMX ✓

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999823
Calibration curve: -0.00078938 * x^2 + 1.11047 * x + 0.105019
Response type: Internal Std (Ref 48), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	0.250	5.03	298.400	10078.732	0.370	0.2	-4.5	NO	1.000	NO	bb
2	2 180615M1_3	Standard	0.500	5.03	515.711	10071.652	0.640	0.5	-3.6	NO	1.000	NO	bb
3	3 180615M1_4	Standard	1.000	5.02	1105.704	11227.400	1.231	1.0	1.5	NO	1.000	NO	bb
4	4 180615M1_5	Standard	2.000	5.03	2143.841	10461.155	2.562	2.2	10.8	NO	1.000	NO	bb
5	5 180615M1_6	Standard	5.000	5.02	4933.837	11068.531	5.572	4.9	-1.2	NO	1.000	NO	bb
6	6 180615M1_7	Standard	10.000	5.02	9674.907	11142.888	10.853	9.7	-2.5	NO	1.000	NO	bb
7	7 180615M1_8	Standard	50.000	5.03	45685.914	10805.157	52.852	49.2	-1.6	NO	1.000	NO	bb
8	8 180615M1_9	Standard	100.000	5.02	97907.484	11709.958	104.513	101.3	1.3	NO	1.000	NO	bb
9	9 180615M1_10	Standard	250.000	5.02	202867.688	11119.383	228.056	249.5	-0.2	NO	1.000	NO	bb
10	10 180615M1_11	Standard	500.000	5.02	372256.313	8941.521	520.404		✓	NO	1.000	NO	bbXI

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999767
Calibration curve: -0.00468238 * x^2 + 1.53911 * x + 0.00717237
Response type: Internal Std (Ref 49), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	0.250	5.00	51.239	1735.806	0.369	0.2	-5.9	NO	1.000	NO	MM
2	2 180615M1_3	Standard	0.500	4.99	89.307	1555.159	0.718	0.5	-7.5	NO	1.000	NO	bb
3	3 180615M1_4	Standard	1.000	4.99	225.884	1701.393	1.660	1.1	7.7	NO	1.000	NO	bb
4	4 180615M1_5	Standard	2.000	5.00	513.771	1990.796	3.226	2.1	5.2	NO	1.000	NO	bb
5	5 180615M1_6	Standard	5.000	4.99	1201.459	1981.235	7.580	5.0	-0.1	NO	1.000	NO	bb
6	6 180615M1_7	Standard	10.000	4.99	1943.011	1603.877	15.143	10.1	1.5	NO	1.000	NO	bb
7	7 180615M1_8	Standard	50.000	5.00	10252.608	1986.991	64.498	49.3	-1.4	NO	1.000	NO	bb
8	8 180615M1_9	Standard	100.000	4.99	21624.607	2515.682	107.449	100.6	0.6	NO	1.000	NO	bb
9	9 180615M1_10	Standard	250.000	4.99	45758.348	3471.849	164.748		✓	NO	1.000	NO	bbXI
10	10 180615M1_11	Standard	500.000	4.99	78514.063	4469.295	219.593		✓	NO	1.000	NO	bbXI

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Compound name: PFNS
Coefficient of Determination: R^2 = 0.999391
Calibration curve: 0.000128784 * x^2 + 0.753928 * x + 0.200309
Response type: Internal Std (Ref 47), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	5.09	36.979	2313.848	0.200		✓	NO	0.999	NO	MMXI
2	2	180615M1_3	Standard	0.500	5.08	84.623	2227.493	0.475	0.4	-27.2	NO	0.999	NO	MM
3	3	180615M1_4	Standard	1.000	5.08	190.408	2319.040	1.026	1.1	9.5	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	5.09	322.177	2364.755	1.703	2.0	-0.4	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	5.09	743.725	2253.655	4.125	5.2	4.0	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	5.09	1510.376	2215.825	8.520	11.0	10.1	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	5.09	7210.297	2208.665	40.807	53.4	6.7	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	5.08	14762.609	2423.168	76.153	99.1	-0.9	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	5.09	34638.004	2260.932	191.503	243.6	-2.6	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	5.09	61524.434	1867.345	411.844	502.8	0.6	NO	0.999	NO	bb

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.998335
Calibration curve: -0.00039478 * x^2 + 1.95443 * x + -0.142869
Response type: Internal Std (Ref 50), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	5.18	52.999	2616.294	0.253	0.2	-18.9	NO	0.998	NO	MM
2	2	180615M1_3	Standard	0.500	5.18	153.862	2369.068	0.812	0.5	-2.3	NO	0.998	NO	MM
3	3	180615M1_4	Standard	1.000	5.18	315.603	2412.701	1.635	0.9	-9.0	NO	0.998	NO	MM
4	4	180615M1_5	Standard	2.000	5.18	734.011	2662.503	3.446	1.8	-8.2	NO	0.998	NO	MM
5	5	180615M1_6	Standard	5.000	5.18	1921.781	2276.540	10.552	5.5	9.6	NO	0.998	NO	MM
6	6	180615M1_7	Standard	10.000	5.18	3816.401	2521.731	18.918	9.8	-2.3	NO	0.998	NO	MM
7	7	180615M1_8	Standard	50.000	5.18	19432.863	2323.056	104.565	54.2	8.3	NO	0.998	NO	MM
8	8	180615M1_9	Standard	100.000	5.18	37710.543	2695.396	174.884	91.2	-8.8	NO	0.998	NO	MM
9	9	180615M1_10	Standard	250.000	5.18	92046.039	2417.036	476.027	257.0	2.8	NO	0.998	NO	MM
10	10	180615M1_11	Standard	500.000	5.18	169391.359	2420.550	874.757	497.7	-0.5	NO	0.998	NO	MM

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Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.998595
Calibration curve: 0.000278082 * x^2 + 0.979147 * x + 0.0957392
Response type: Internal Std (Ref 51), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	5.35	33.825	2926.362	0.144	0.0	-80.1	YES	0.999	NO	MMX
2	2	180615M1_3	Standard	0.500	5.34	161.378	3158.152	0.639	0.6	10.9	NO	0.999	NO	MM
3	3	180615M1_4	Standard	1.000	5.33	256.459	3293.026	0.973	0.9	-10.4	NO	0.999	NO	MM
4	4	180615M1_5	Standard	2.000	5.34	607.138	3124.380	2.429	2.4	19.1	NO	0.999	NO	MM
5	5	180615M1_6	Standard	5.000	5.34	1094.854	2988.598	4.579	4.6	-8.5	NO	0.999	NO	MM
6	6	180615M1_7	Standard	10.000	5.34	2452.736	3097.486	9.898	10.0	-0.2	NO	0.999	NO	MM
7	7	180615M1_8	Standard	50.000	5.34	12098.916	2770.967	54.579	54.8	9.6	NO	0.999	NO	MM
8	8	180615M1_9	Standard	100.000	5.34	25950.949	3122.852	103.875	103.0	3.0	NO	0.999	NO	MM
9	9	180615M1_10	Standard	250.000	5.34	59425.922	2985.057	248.848	238.0	-4.8	NO	0.999	NO	MM
10	10	180615M1_11	Standard	500.000	5.34	106556.398	2358.276	564.800	504.5	0.9	NO	0.999	NO	MM

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Compound name: PFUdA
Correlation coefficient: r = 0.999597, r^2 = 0.999193
Calibration curve: 0.932976 * x + 0.157717
Response type: Internal Std (Ref 52), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	5.35	201.395	11125.749	0.226	0.1	-70.6	YES	0.999	NO	bbX
2	2	180615M1_3	Standard	0.500	5.35	646.749	12194.088	0.663	0.5	8.3	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	5.35	967.784	11609.731	1.042	0.9	-5.2	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	5.36	1867.111	12581.668	1.855	1.8	-9.0	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	5.35	4612.021	11587.725	4.975	5.2	3.3	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	5.35	9164.649	12912.229	8.872	9.3	-6.6	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	5.35	42518.605	10673.896	49.793	53.2	6.4	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	5.35	98080.188	12424.327	98.678	105.6	5.6	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	5.35	198370.109	10863.060	228.262	244.5	-2.2	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	5.35	369867.656	9959.426	464.218	497.4	-0.5	NO	0.999	NO	bb

Compound name: PFDS
Coefficient of Determination: R^2 = 0.998725
Calibration curve: 1.45475e-005 * x^2 + 0.20329 * x + 0.00264872
Response type: Internal Std (Ref 52), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	5.40	42.588	11125.749	0.048	0.2	-11.1	NO	0.999	NO	MM
2	2	180615M1_3	Standard	0.500	5.40	102.240	12194.088	0.105	0.5	0.5	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	5.40	185.006	11609.731	0.199	1.0	-3.3	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	5.40	442.942	12581.668	0.440	2.2	7.6	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	5.40	1024.230	11587.725	1.105	5.4	8.4	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	5.40	1999.884	12912.229	1.936	9.5	-5.0	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	5.40	9521.854	10673.896	11.151	54.6	9.3	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	5.40	18747.930	12424.327	18.862	92.2	-7.8	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	5.40	45715.500	10863.060	52.604	254.1	1.7	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	5.40	83721.984	9959.426	105.079	499.1	-0.2	NO	0.999	NO	bb

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Compound name: PFDoA
Correlation coefficient: r = 0.999810, r^2 = 0.999620
Calibration curve: 1.0797 * x + 0.257512
Response type: Internal Std (Ref 53), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	0.250	5.64	238.856	12782.133	0.234			NO	1.000	NO	MMXI
2	2 180615M1_3	Standard	0.500	5.64	684.500	12188.800	0.702	0.4	-17.7	NO	1.000	NO	bd
3	3 180615M1_4	Standard	1.000	5.64	1368.249	12766.816	1.340	1.0	0.2	NO	1.000	NO	bd
4	4 180615M1_5	Standard	2.000	5.64	2634.809	12986.960	2.536	2.1	5.5	NO	1.000	NO	bd
5	5 180615M1_6	Standard	5.000	5.64	6024.680	12800.824	5.883	5.2	4.2	NO	1.000	NO	bd
6	6 180615M1_7	Standard	10.000	5.64	11653.844	13125.948	11.098	10.0	0.4	NO	1.000	NO	bb
7	7 180615M1_8	Standard	50.000	5.64	58212.023	12550.780	57.976	53.5	6.9	NO	1.000	NO	bb
8	8 180615M1_9	Standard	100.000	5.64	125795.922	14292.035	110.023	101.7	1.7	NO	1.000	NO	bb
9	9 180615M1_10	Standard	250.000	5.64	272339.375	12645.466	269.207	249.1	-0.4	NO	1.000	NO	bb
10	10 180615M1_11	Standard	500.000	5.64	481575.688	11246.292	535.261	495.5	-0.9	NO	1.000	NO	bb

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999550
Calibration curve: -4.78241e-005 * x^2 + 1.02969 * x + 0.183629
Response type: Internal Std (Ref 54), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	1.250	5.71	120.650	14611.873	1.239	1.0	-18.0	NO	1.000	NO	bb
2	2 180615M1_3	Standard	2.500	5.72	309.544	14797.828	3.138	2.9	14.8	NO	1.000	NO	bb
3	3 180615M1_4	Standard	5.000	5.71	568.007	15156.771	5.621	5.3	5.6	NO	1.000	NO	bb
4	4 180615M1_5	Standard	10.000	5.72	1192.424	16116.560	11.098	10.6	6.0	NO	1.000	NO	bb
5	5 180615M1_6	Standard	25.000	5.71	2609.524	15258.011	25.654	24.8	-0.9	NO	1.000	NO	bb
6	6 180615M1_7	Standard	50.000	5.72	5435.532	15157.684	53.790	52.2	4.4	NO	1.000	NO	bb
7	7 180615M1_8	Standard	250.000	5.72	26094.381	15018.472	260.623	256.0	2.4	NO	1.000	NO	bb
8	8 180615M1_9	Standard	500.000	5.71	50846.059	14810.412	514.969	512.1	2.4	NO	1.000	NO	bb
9	9 180615M1_10	Standard	1250.000	5.71	115823.313	14764.519	1176.706	1210.7	-3.1	NO	1.000	NO	bb
10	10 180615M1_11	Standard	2500.000	5.71	202143.594	13238.387	2290.425	2518.9	0.8	NO	1.000	NO	bb

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999771
Calibration curve: -0.000154035 * x^2 + 1.23048 * x + 0.118765
Response type: Internal Std (Ref 53), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	5.89	367.582	12782.133	0.359	0.2	-21.8	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	5.90	773.339	12188.800	0.793	0.5	9.6	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	5.89	1386.755	12766.816	1.358	1.0	0.7	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	5.90	2965.809	12986.960	2.855	2.2	11.2	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	5.89	6421.657	12800.824	6.271	5.0	0.1	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	5.90	12870.360	13125.948	12.257	9.9	-1.2	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	5.90	63874.535	12550.780	63.616	51.9	3.9	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	5.89	135311.453	14292.035	118.345	97.3	-2.7	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	5.89	302333.906	12645.466	298.856	250.6	0.3	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	5.89	519038.656	11246.292	576.900	500.0	0.0	NO	1.000	NO	bb

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999773
Calibration curve: -0.000402574 * x^2 + 1.18631 * x + 0.0222107
Response type: Internal Std (Ref 55), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	6.12	303.140	11406.396	0.332	0.3	4.5	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	6.12	518.930	12327.053	0.526	0.4	-15.0	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	6.11	1169.205	11976.907	1.220	1.0	1.0	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	6.12	2496.482	11696.163	2.668	2.2	11.6	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	6.12	5729.608	12655.533	5.659	4.8	-4.8	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	6.11	11303.485	11660.006	12.118	10.2	2.3	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	6.12	55672.914	11651.059	59.729	51.2	2.4	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	6.11	106785.266	11961.371	111.594	97.3	-2.7	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	6.11	237863.328	10875.921	273.383	252.0	0.8	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	6.11	407102.531	10342.554	492.024	499.4	-0.1	NO	1.000	NO	bb

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Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999754
Calibration curve: -3.46888e-005 * x^2 + 0.853354 * x + 0.335802
Response type: Internal Std (Ref 56), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	1.250	6.14	171.836	19289.520	1.336	1.2	-6.2	NO	1.000	NO	bb
2	2	180615M1_3	Standard	2.500	6.14	327.388	20149.285	2.437	2.5	-1.5	NO	1.000	NO	bb
3	3	180615M1_4	Standard	5.000	6.13	615.958	20474.916	4.513	4.9	-2.1	NO	1.000	NO	bb
4	4	180615M1_5	Standard	10.000	6.14	1341.186	20933.113	9.611	10.9	8.7	NO	1.000	NO	bb
5	5	180615M1_6	Standard	25.000	6.14	2895.616	20338.100	21.356	24.7	-1.4	NO	1.000	NO	bb
6	6	180615M1_7	Standard	50.000	6.14	5773.322	20112.109	43.059	50.2	0.3	NO	1.000	NO	bb
7	7	180615M1_8	Standard	250.000	6.14	28215.988	19712.652	214.705	253.8	1.5	NO	1.000	NO	bb
8	8	180615M1_9	Standard	500.000	6.13	52686.297	18470.295	427.873	511.6	2.3	NO	1.000	NO	bb
9	9	180615M1_10	Standard	1250.000	6.14	120103.586	18178.977	991.009	1221.6	-2.3	NO	1.000	NO	bb
10	10	180615M1_11	Standard	2500.000	6.14	205177.578	15982.907	1925.597	2512.8	0.5	NO	1.000	NO	bb

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999488
Calibration curve: -0.000272233 * x^2 + 0.622808 * x + 0.0531833
Response type: Internal Std (Ref 57), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	6.45	210.627	5533.633	0.190	0.2	-11.9	NO	0.999	NO	bb
2	2	180615M1_3	Standard	0.500	6.45	438.316	6035.230	0.363	0.5	-0.4	NO	0.999	NO	bb
3	3	180615M1_4	Standard	1.000	6.45	906.253	5777.405	0.784	1.2	17.5	NO	0.999	NO	bb
4	4	180615M1_5	Standard	2.000	6.46	1649.582	5912.944	1.395	2.2	7.8	NO	0.999	NO	bb
5	5	180615M1_6	Standard	5.000	6.45	3557.750	5902.131	3.014	4.8	-4.7	NO	0.999	NO	bb
6	6	180615M1_7	Standard	10.000	6.45	6972.634	6061.157	5.752	9.2	-8.1	NO	0.999	NO	bb
7	7	180615M1_8	Standard	50.000	6.45	34850.902	5909.861	29.485	48.3	-3.4	NO	0.999	NO	bb
8	8	180615M1_9	Standard	100.000	6.45	65435.938	5278.555	61.983	104.2	4.2	NO	0.999	NO	bb
9	9	180615M1_10	Standard	250.000	6.45	157767.969	5728.673	137.700	247.9	-0.9	NO	0.999	NO	bb
10	10	180615M1_11	Standard	500.000	6.45	277806.250	5703.068	243.559	500.5	0.1	NO	0.999	NO	bb

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Compound name: PFODA
Coefficient of Determination: R^2 = 0.999795
Calibration curve: -9.90254e-005 * x^2 + 0.61413 * x + 0.0253877
Response type: Internal Std (Ref 57), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	0.250	6.70	194.973	5533.633	0.176	0.2	-1.8	NO	1.000	NO	bb
2	2	180615M1_3	Standard	0.500	6.69	395.806	6035.230	0.328	0.5	-1.5	NO	1.000	NO	bb
3	3	180615M1_4	Standard	1.000	6.69	800.984	5777.405	0.693	1.1	8.8	NO	1.000	NO	bb
4	4	180615M1_5	Standard	2.000	6.70	1659.147	5912.944	1.403	2.2	12.2	NO	1.000	NO	bb
5	5	180615M1_6	Standard	5.000	6.69	3593.789	5902.131	3.044	4.9	-1.6	NO	1.000	NO	bb
6	6	180615M1_7	Standard	10.000	6.69	7317.176	6061.157	6.036	9.8	-2.0	NO	1.000	NO	bb
7	7	180615M1_8	Standard	50.000	6.70	37053.293	5909.861	31.349	51.4	2.9	NO	1.000	NO	bb
8	8	180615M1_9	Standard	100.000	6.69	64367.547	5278.555	60.971	100.9	0.9	NO	1.000	NO	bb
9	9	180615M1_10	Standard	250.000	6.69	166039.094	5728.673	144.919	245.7	-1.7	NO	1.000	NO	bb
10	10	180615M1_11	Standard	500.000	6.69	323215.844	5703.068	283.370	502.0	0.4	NO	1.000	NO	bb

Compound name: N-MeFOSE
Correlation coefficient: r = 0.998780, r^2 = 0.997561
Calibration curve: 0.871697 * x + 0.310982
Response type: Internal Std (Ref 58), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	1.250	6.32	178.695	19449.813	1.378	1.2	-2.1	NO	0.998	NO	bb
2	2	180615M1_3	Standard	2.500	6.32	303.230	20325.451	2.238	2.2	-11.6	NO	0.998	NO	bb
3	3	180615M1_4	Standard	5.000	6.32	726.225	22110.775	4.927	5.3	5.9	NO	0.998	NO	bb
4	4	180615M1_5	Standard	10.000	6.32	1396.799	21042.510	9.957	11.1	10.7	NO	0.998	NO	bb
5	5	180615M1_6	Standard	25.000	6.32	3216.957	22871.742	21.098	23.8	-4.6	NO	0.998	NO	bb
6	6	180615M1_7	Standard	50.000	6.32	6255.905	21841.875	42.963	48.9	-2.1	NO	0.998	NO	bb
7	7	180615M1_8	Standard	250.000	6.32	30833.512	21486.973	215.248	246.6	-1.4	NO	0.998	NO	bb
8	8	180615M1_9	Standard	500.000	6.32	60254.063	18793.600	480.914	551.3	10.3	NO	0.998	NO	bb
9	9	180615M1_10	Standard	1250.000	6.32	137440.484	20202.527	1020.470	1170.3	-6.4	NO	0.998	NO	bb
10	10	180615M1_11	Standard	2500.000	6.32	275254.063	18696.998	2208.275	2532.9	1.3	NO	0.998	NO	bb

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Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.997812
Calibration curve: 1.11235e-005 * x^2 + 1.06837 * x + 0.406337
Response type: Internal Std (Ref 59), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	1.250	6.47	165.172	18238.834	1.358	0.9	-28.7	NO	0.998	NO	bb
2	2 180615M1_3	Standard	2.500	6.47	344.383	18294.520	2.824	2.3	-9.5	NO	0.998	NO	bb
3	3 180615M1_4	Standard	5.000	6.47	843.089	18897.861	6.692	5.9	17.7	NO	0.998	NO	bb
4	4 180615M1_5	Standard	10.000	6.47	1649.421	21270.021	11.632	10.5	5.1	NO	0.998	NO	bb
5	5 180615M1_6	Standard	25.000	6.47	3601.881	19731.301	27.382	25.2	1.0	NO	0.998	NO	bb
6	6 180615M1_7	Standard	50.000	6.47	7593.330	19698.006	57.823	53.7	7.4	NO	0.998	NO	bb
7	7 180615M1_8	Standard	250.000	6.47	37140.660	19515.393	285.472	266.1	6.4	NO	0.998	NO	bb
8	8 180615M1_9	Standard	500.000	6.47	66982.227	17609.141	570.575	530.7	6.1	NO	0.998	NO	bb
9	9 180615M1_10	Standard	1250.000	6.47	162322.938	19338.965	1259.035	1164.0	-6.9	NO	0.998	NO	bb
10	10 180615M1_11	Standard	2500.000	6.47	296404.656	15995.940	2779.499	2534.4	1.4	NO	0.998	NO	bb

Compound name: 13C3-PFBA
Response Factor: 0.876795
RRF SD: 0.0130668, Relative SD: 1.49029
Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	1.26	7115.639	7929.026	11.218	12.8	2.4	NO		NO	bb
2	2 180615M1_3	Standard	12.500	1.26	6909.378	7959.523	10.851	12.4	-1.0	NO		NO	bb
3	3 180615M1_4	Standard	12.500	1.26	7113.107	8052.494	11.042	12.6	0.7	NO		NO	bb
4	4 180615M1_5	Standard	12.500	1.25	6905.034	7896.618	10.930	12.5	-0.3	NO		NO	bb
5	5 180615M1_6	Standard	12.500	1.27	6986.625	8040.590	10.861	12.4	-0.9	NO		NO	bb
6	6 180615M1_7	Standard	12.500	1.25	6912.854	7887.229	10.956	12.5	-0.0	NO		NO	bb
7	7 180615M1_8	Standard	12.500	1.27	7124.386	7939.149	11.217	12.8	2.3	NO		NO	bb
8	8 180615M1_9	Standard	12.500	1.28	6809.097	7740.021	10.997	12.5	0.3	NO		NO	bb
9	9 180615M1_10	Standard	12.500	1.26	7309.970	8484.645	10.769	12.3	-1.7	NO		NO	bb
10	10 180615M1_11	Standard	12.500	1.25	6810.681	7913.281	10.758	12.3	-1.8	NO		NO	bb

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Compound name: 13C3-PFPeA
Response Factor: 0.955243
RRF SD: 0.0258312, Relative SD: 2.70415
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	2.25	8929.475	9642.497	11.576	12.1	-3.1	NO		NO	bb
2	2	180615M1_3	Standard	12.500	2.25	8918.778	9311.750	11.972	12.5	0.3	NO		NO	bb
3	3	180615M1_4	Standard	12.500	2.24	9261.319	9510.822	12.172	12.7	1.9	NO		NO	bb
4	4	180615M1_5	Standard	12.500	2.24	9359.479	9535.298	12.270	12.8	2.8	NO		NO	bb
5	5	180615M1_6	Standard	12.500	2.25	9005.114	9242.495	12.179	12.7	2.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	2.24	8874.683	9826.099	11.290	11.8	-5.5	NO		NO	bb
7	7	180615M1_8	Standard	12.500	2.25	8862.103	8992.787	12.318	12.9	3.2	NO		NO	bb
8	8	180615M1_9	Standard	12.500	2.23	8473.640	8960.422	11.821	12.4	-1.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	2.24	8412.308	8857.979	11.871	12.4	-0.6	NO		NO	bb
10	10	180615M1_11	Standard	12.500	2.24	7628.549	7988.573	11.937	12.5	-0.0	NO		NO	bb

Compound name: 13C3-PFBS
Response Factor: 0.117794
RRF SD: 0.00434604, Relative SD: 3.68954
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	2.53	1143.024	9642.497	1.482	12.6	0.6	NO		NO	bb
2	2	180615M1_3	Standard	12.500	2.53	1101.085	9311.750	1.478	12.5	0.4	NO		NO	bb
3	3	180615M1_4	Standard	12.500	2.53	1134.196	9510.822	1.491	12.7	1.2	NO		NO	bb
4	4	180615M1_5	Standard	12.500	2.53	1087.862	9535.298	1.426	12.1	-3.1	NO		NO	bb
5	5	180615M1_6	Standard	12.500	2.53	1171.879	9242.495	1.585	13.5	7.6	NO		NO	bb
6	6	180615M1_7	Standard	12.500	2.53	1096.648	9826.099	1.395	11.8	-5.3	NO		NO	bb
7	7	180615M1_8	Standard	12.500	2.54	1084.098	8992.787	1.507	12.8	2.3	NO		NO	bb
8	8	180615M1_9	Standard	12.500	2.51	1069.872	8960.422	1.492	12.7	1.4	NO		NO	bb
9	9	180615M1_10	Standard	12.500	2.53	1030.463	8857.979	1.454	12.3	-1.2	NO		NO	bb
10	10	180615M1_11	Standard	12.500	2.53	903.729	7988.573	1.414	12.0	-4.0	NO		NO	bb

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Compound name: 13C2-4:2 FTS
Response Factor: 0.238837
RRF SD: 0.0315399, Relative SD: 13.2056
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	2.94	2131.932	9642.497	2.764	11.6	-7.4	NO		NO	bb
2	2	180615M1_3	Standard	12.500	2.94	2230.795	9311.750	2.995	12.5	0.3	NO		NO	bb
3	3	180615M1_4	Standard	12.500	2.94	2079.514	9510.822	2.733	11.4	-8.5	NO		NO	bb
4	4	180615M1_5	Standard	12.500	2.94	2148.218	9535.298	2.816	11.8	-5.7	NO		NO	bb
5	5	180615M1_6	Standard	12.500	2.94	2061.383	9242.495	2.788	11.7	-6.6	NO		NO	bb
6	6	180615M1_7	Standard	12.500	2.94	2059.344	9826.099	2.620	11.0	-12.3	NO		NO	bb
7	7	180615M1_8	Standard	12.500	2.94	2457.616	8992.787	3.416	14.3	14.4	NO		NO	bb
8	8	180615M1_9	Standard	12.500	2.93	2689.844	8960.422	3.752	15.7	25.7	NO		NO	bb
9	9	180615M1_10	Standard	12.500	2.94	3712.823	8857.979	5.239	21.9	75.5	NO		NO	bbX
10	10	180615M1_11	Standard	12.500	2.94	4723.014	7988.573	7.390	30.9	147.5	NO		NO	bbX

Compound name: 13C2-PFHxA
Response Factor: 0.736433
RRF SD: 0.0247583, Relative SD: 3.36193
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	5.000	3.03	2712.165	9642.497	3.516	4.8	-4.5	NO		NO	bb
2	2	180615M1_3	Standard	5.000	3.03	2752.889	9311.750	3.695	5.0	0.4	NO		NO	bb
3	3	180615M1_4	Standard	5.000	3.03	2762.760	9510.822	3.631	4.9	-1.4	NO		NO	bb
4	4	180615M1_5	Standard	5.000	3.03	2747.287	9535.298	3.601	4.9	-2.2	NO		NO	bb
5	5	180615M1_6	Standard	5.000	3.03	2744.404	9242.495	3.712	5.0	0.8	NO		NO	bb
6	6	180615M1_7	Standard	5.000	3.03	2781.894	9826.099	3.539	4.8	-3.9	NO		NO	bb
7	7	180615M1_8	Standard	5.000	3.03	2684.666	8992.787	3.732	5.1	1.3	NO		NO	bb
8	8	180615M1_9	Standard	5.000	3.03	2617.985	8960.422	3.652	5.0	-0.8	NO		NO	bb
9	9	180615M1_10	Standard	5.000	3.03	2710.374	8857.979	3.825	5.2	3.9	NO		NO	bb
10	10	180615M1_11	Standard	5.000	3.03	2504.315	7988.573	3.919	5.3	6.4	NO		NO	bb

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Compound name: 13C4-PFHpA
Response Factor: 0.739843
RRF SD: 0.0226431, Relative SD: 3.06053
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	3.66	6965.361	9642.497	9.030	12.2	-2.4	NO		NO	bb
2	2 180615M1_3	Standard	12.500	3.66	7095.079	9311.750	9.524	12.9	3.0	NO		NO	bb
3	3 180615M1_4	Standard	12.500	3.66	7201.120	9510.822	9.464	12.8	2.3	NO		NO	bb
4	4 180615M1_5	Standard	12.500	3.66	7147.201	9535.298	9.369	12.7	1.3	NO		NO	bb
5	5 180615M1_6	Standard	12.500	3.66	7108.104	9242.495	9.613	13.0	4.0	NO		NO	bb
6	6 180615M1_7	Standard	12.500	3.66	6875.440	9826.099	8.746	11.8	-5.4	NO		NO	bb
7	7 180615M1_8	Standard	12.500	3.67	6820.867	8992.787	9.481	12.8	2.5	NO		NO	bb
8	8 180615M1_9	Standard	12.500	3.65	6491.871	8960.422	9.056	12.2	-2.1	NO		NO	bb
9	9 180615M1_10	Standard	12.500	3.66	6387.580	8857.979	9.014	12.2	-2.5	NO		NO	bb
10	10 180615M1_11	Standard	12.500	3.66	5867.922	7988.573	9.182	12.4	-0.7	NO		NO	bb

Compound name: 18O2-PFHxS
Response Factor: 0.399016
RRF SD: 0.0196964, Relative SD: 4.93624
Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	3.81	848.722	2012.980	5.270	13.2	5.7	NO		NO	bb
2	2 180615M1_3	Standard	12.500	3.81	818.101	2144.272	4.769	12.0	-4.4	NO		NO	bb
3	3 180615M1_4	Standard	12.500	3.81	876.635	2159.542	5.074	12.7	1.7	NO		NO	bb
4	4 180615M1_5	Standard	12.500	3.81	860.982	2071.925	5.194	13.0	4.1	NO		NO	bb
5	5 180615M1_6	Standard	12.500	3.81	881.673	2292.309	4.808	12.0	-3.6	NO		NO	bb
6	6 180615M1_7	Standard	12.500	3.81	830.581	2256.676	4.601	11.5	-7.8	NO		NO	bb
7	7 180615M1_8	Standard	12.500	3.81	849.156	2077.993	5.108	12.8	2.4	NO		NO	bb
8	8 180615M1_9	Standard	12.500	3.81	859.811	2167.978	4.957	12.4	-0.6	NO		NO	bb
9	9 180615M1_10	Standard	12.500	3.81	875.601	2052.306	5.333	13.4	6.9	NO		NO	bb
10	10 180615M1_11	Standard	12.500	3.81	700.298	1838.229	4.762	11.9	-4.5	NO		NO	bb

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Compound name: 13C2-6:2 FTS
Response Factor: 0.255556
RRF SD: 0.0389838, Relative SD: 15.2545
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	4.14	2019.542	8040.137	3.140	12.3	-1.7	NO		NO	bb
2	2	180615M1_3	Standard	12.500	4.14	1869.863	8419.433	2.776	10.9	-13.1	NO		NO	bb
3	3	180615M1_4	Standard	12.500	4.14	2090.488	8730.985	2.993	11.7	-6.3	NO		NO	bb
4	4	180615M1_5	Standard	12.500	4.14	1761.207	8971.189	2.454	9.6	-23.2	NO		NO	bb
5	5	180615M1_6	Standard	12.500	4.14	2157.219	8091.434	3.333	13.0	4.3	NO		NO	bb
6	6	180615M1_7	Standard	12.500	4.14	2214.437	8460.982	3.272	12.8	2.4	NO		NO	bb
7	7	180615M1_8	Standard	12.500	4.14	2396.221	8509.093	3.520	13.8	10.2	NO		NO	bb
8	8	180615M1_9	Standard	12.500	4.13	2772.127	8516.710	4.069	15.9	27.4	NO		NO	bb
9	9	180615M1_10	Standard	12.500	4.13	3883.416	7826.833	6.202	24.3	94.2 ✓	NO		NO	bbX ✓
10	10	180615M1_11	Standard	12.500	4.14	5010.936	7058.209	8.874	34.7	177.8 ✓	NO		NO	bbX ✓

Compound name: 13C2-PFOA
Response Factor: 1.29076
RRF SD: 0.0479297, Relative SD: 3.71329
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	4.20	10752.555	8040.137	16.717	13.0	3.6	NO		NO	bb
2	2	180615M1_3	Standard	12.500	4.20	10768.698	8419.433	15.988	12.4	-0.9	NO		NO	bb
3	3	180615M1_4	Standard	12.500	4.19	11233.559	8730.985	16.083	12.5	-0.3	NO		NO	bb
4	4	180615M1_5	Standard	12.500	4.20	11655.273	8971.189	16.240	12.6	0.7	NO		NO	bb
5	5	180615M1_6	Standard	12.500	4.20	10667.507	8091.434	16.480	12.8	2.1	NO		NO	bb
6	6	180615M1_7	Standard	12.500	4.19	10541.658	8460.982	15.574	12.1	-3.5	NO		NO	bb
7	7	180615M1_8	Standard	12.500	4.20	11070.792	8509.093	16.263	12.6	0.8	NO		NO	bb
8	8	180615M1_9	Standard	12.500	4.19	10151.771	8516.710	14.900	11.5	-7.7	NO		NO	bb
9	9	180615M1_10	Standard	12.500	4.19	10038.920	7826.833	16.033	12.4	-0.6	NO		NO	bb
10	10	180615M1_11	Standard	12.500	4.19	9637.486	7058.209	17.068	13.2	5.8	NO		NO	bb

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Compound name: 13C5-PFNA
Response Factor: 0.922554
RRF SD: 0.0356724, Relative SD: 3.8667
Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	4.64	7718.750	8873.885	10.873	11.8	-5.7	NO		NO	bb
2	2	180615M1_3	Standard	12.500	4.64	8176.569	8587.863	11.901	12.9	3.2	NO		NO	bb
3	3	180615M1_4	Standard	12.500	4.64	8539.701	9396.405	11.360	12.3	-1.5	NO		NO	bb
4	4	180615M1_5	Standard	12.500	4.64	7634.552	8356.252	11.420	12.4	-1.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	4.64	8538.417	9345.277	11.421	12.4	-1.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	4.64	7979.966	9048.021	11.024	11.9	-4.4	NO		NO	bb
7	7	180615M1_8	Standard	12.500	4.64	7846.625	8695.807	11.279	12.2	-2.2	NO		NO	bb
8	8	180615M1_9	Standard	12.500	4.64	8315.435	8848.766	11.747	12.7	1.9	NO		NO	bb
9	9	180615M1_10	Standard	12.500	4.64	8015.939	8152.695	12.290	13.3	6.6	NO		NO	bb
10	10	180615M1_11	Standard	12.500	4.64	7591.304	7905.698	12.003	13.0	4.1	NO		NO	bb

Compound name: 13C8-PFOSA
Response Factor: 0.30736
RRF SD: 0.015532, Relative SD: 5.05336
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	4.70	3624.551	11873.252	3.816	12.4	-0.7	NO		NO	bb
2	2	180615M1_3	Standard	12.500	4.70	4061.513	13301.438	3.817	12.4	-0.7	NO		NO	bb
3	3	180615M1_4	Standard	12.500	4.70	3792.060	12799.883	3.703	12.0	-3.6	NO		NO	bb
4	4	180615M1_5	Standard	12.500	4.70	3986.846	12471.611	3.996	13.0	4.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	4.70	3929.866	13533.568	3.630	11.8	-5.5	NO		NO	bb
6	6	180615M1_7	Standard	12.500	4.70	3698.280	12844.596	3.599	11.7	-6.3	NO		NO	bb
7	7	180615M1_8	Standard	12.500	4.70	3765.443	11731.458	4.012	13.1	4.4	NO		NO	bb
8	8	180615M1_9	Standard	12.500	4.69	4113.568	12835.986	4.006	13.0	4.3	NO		NO	bb
9	9	180615M1_10	Standard	12.500	4.70	3755.479	11261.757	4.168	13.6	8.5	NO		NO	bb
10	10	180615M1_11	Standard	12.500	4.69	3164.692	10770.176	3.673	12.0	-4.4	NO		NO	bb

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Compound name: 13C8-PFOS
Response Factor: 0.995978
RRF SD: 0.0642515, Relative SD: 6.45109
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	4.73	2313.848	2297.888	12.587	12.6	1.1	NO		NO	bb
2	2 180615M1_3	Standard	12.500	4.73	2227.493	2485.250	11.204	11.2	-10.0	NO		NO	bb
3	3 180615M1_4	Standard	12.500	4.72	2319.040	2048.136	14.153	14.2	13.7	NO		NO	bb
4	4 180615M1_5	Standard	12.500	4.73	2364.755	2459.818	12.017	12.1	-3.5	NO		NO	bb
5	5 180615M1_6	Standard	12.500	4.72	2253.655	2277.099	12.371	12.4	-0.6	NO		NO	bb
6	6 180615M1_7	Standard	12.500	4.73	2215.825	2316.078	11.959	12.0	-3.9	NO		NO	bb
7	7 180615M1_8	Standard	12.500	4.72	2208.665	2184.389	12.639	12.7	1.5	NO		NO	bb
8	8 180615M1_9	Standard	12.500	4.72	2423.168	2298.639	13.177	13.2	5.8	NO		NO	bb
9	9 180615M1_10	Standard	12.500	4.72	2260.932	2258.548	12.513	12.6	0.5	NO		NO	bb
10	10 180615M1_11	Standard	12.500	4.72	1867.345	1965.280	11.877	11.9	-4.6	NO		NO	bb

Compound name: 13C2-PFDA
Response Factor: 1.10783
RRF SD: 0.0412733, Relative SD: 3.7256
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	5.02	10078.732	9323.694	13.512	12.2	-2.4	NO		NO	bb
2	2 180615M1_3	Standard	12.500	5.03	10071.652	9591.600	13.126	11.8	-5.2	NO		NO	bb
3	3 180615M1_4	Standard	12.500	5.02	11227.400	10087.809	13.912	12.6	0.5	NO		NO	bb
4	4 180615M1_5	Standard	12.500	5.03	10461.155	9882.468	13.232	11.9	-4.4	NO		NO	bb
5	5 180615M1_6	Standard	12.500	5.03	11068.531	9706.051	14.255	12.9	2.9	NO		NO	bb
6	6 180615M1_7	Standard	12.500	5.03	11142.88	10041.236	13.871	12.5	0.2	NO		NO	bb
7	7 180615M1_8	Standard	12.500	5.03	10805.157	9546.089	14.149	12.8	2.2	NO		NO	bb
8	8 180615M1_9	Standard	12.500	5.02	11709.958	10272.332	14.249	12.9	2.9	NO		NO	bb
9	9 180615M1_10	Standard	12.500	5.02	11119.38	9431.672	14.737	13.3	6.4	NO		NO	bb
10	10 180615M1_11	Standard	12.500	5.02	8941.521	8318.816	13.436	12.1	-3.0	NO		NO	bb

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Compound name: 13C2-8:2 FTS
Response Factor: 0.201749
RRF SD: 0.0387389, Relative SD: 19.2015
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	5.00	1735.806	9642.497	2.250	11.2	-10.8	NO		NO	bb
2	2 180615M1_3	Standard	12.500	4.99	1555.159	9311.750	2.088	10.3	-17.2	NO		NO	bb
3	3 180615M1_4	Standard	12.500	5.00	1701.393	9510.822	2.236	11.1	-11.3	NO		NO	bb
4	4 180615M1_5	Standard	12.500	5.00	1990.796	9535.298	2.610	12.9	3.5	NO		NO	bb
5	5 180615M1_6	Standard	12.500	4.99	1981.235	9242.495	2.680	13.3	6.3	NO		NO	bb
6	6 180615M1_7	Standard	12.500	5.00	1603.877	9826.099	2.040	10.1	-19.1	NO		NO	bb
7	7 180615M1_8	Standard	12.500	5.00	1986.991	8992.787	2.762	13.7	9.5	NO		NO	bb
8	8 180615M1_9	Standard	12.500	4.99	2515.682	8960.422	3.509	17.4	39.2	NO		NO	bb
9	9 180615M1_10	Standard	12.500	4.99	3471.849	8857.979	4.899	24.3	94.3	NO		NO	bbX
10	10 180615M1_11	Standard	12.500	4.99	4469.295	7988.573	6.993	34.7	177.3	NO		NO	bbX

Compound name: d3-N-MeFOSAA
Response Factor: 0.201235
RRF SD: 0.018697, Relative SD: 9.29111
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	5.18	2616.294	11873.252	2.754	13.7	9.5	NO		NO	bb
2	2 180615M1_3	Standard	12.500	5.18	2369.068	13301.438	2.226	11.1	-11.5	NO		NO	bb
3	3 180615M1_4	Standard	12.500	5.18	2412.701	12799.883	2.356	11.7	-6.3	NO		NO	bb
4	4 180615M1_5	Standard	12.500	5.18	2662.503	12471.611	2.669	13.3	6.1	NO		NO	bb
5	5 180615M1_6	Standard	12.500	5.17	2276.540	13533.568	2.103	10.4	-16.4	NO		NO	bb
6	6 180615M1_7	Standard	12.500	5.17	2521.731	12844.596	2.454	12.2	-2.4	NO		NO	bb
7	7 180615M1_8	Standard	12.500	5.18	2323.056	11731.458	2.475	12.3	-1.6	NO		NO	bb
8	8 180615M1_9	Standard	12.500	5.17	2695.396	12835.986	2.625	13.0	4.3	NO		NO	bb
9	9 180615M1_10	Standard	12.500	5.18	2417.036	11261.757	2.683	13.3	6.7	NO		NO	bb
10	10 180615M1_11	Standard	12.500	5.18	2420.550	10770.176	2.809	14.0	11.7	NO		NO	bb

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Compound name: d5-N-EtFOSAA
Response Factor: 0.241718
RRF SD: 0.0145012, Relative SD: 5.99922
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	5.34	2926.362	11873.252	3.081	12.7	2.0	NO		NO	bb
2	2 180615M1_3	Standard	12.500	5.34	3158.152	13301.438	2.968	12.3	-1.8	NO		NO	bb
3	3 180615M1_4	Standard	12.500	5.33	3293.026	12799.883	3.216	13.3	6.4	NO		NO	bb
4	4 180615M1_5	Standard	12.500	5.34	3124.380	12471.611	3.131	13.0	3.6	NO		NO	bb
5	5 180615M1_6	Standard	12.500	5.34	2988.598	13533.568	2.760	11.4	-8.6	NO		NO	bb
6	6 180615M1_7	Standard	12.500	5.33	3097.486	12844.596	3.014	12.5	-0.2	NO		NO	bb
7	7 180615M1_8	Standard	12.500	5.34	2770.967	11731.458	2.952	12.2	-2.3	NO		NO	bb
8	8 180615M1_9	Standard	12.500	5.33	3122.852	12835.986	3.041	12.6	0.6	NO		NO	bb
9	9 180615M1_10	Standard	12.500	5.33	2985.057	11261.757	3.313	13.7	9.7	NO		NO	bb
10	10 180615M1_11	Standard	12.500	5.33	2358.276	10770.176	2.737	11.3	-9.4	NO		NO	bb

Compound name: 13C2-PFUdA
Response Factor: 0.939822
RRF SD: 0.0473515, Relative SD: 5.03834
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	5.36	11125.749	11873.252	11.713	12.5	-0.3	NO		NO	bb
2	2 180615M1_3	Standard	12.500	5.36	12194.088	13301.438	11.459	12.2	-2.5	NO		NO	bb
3	3 180615M1_4	Standard	12.500	5.35	11609.731	12799.883	11.338	12.1	-3.5	NO		NO	bb
4	4 180615M1_5	Standard	12.500	5.36	12581.668	12471.611	12.610	13.4	7.3	NO		NO	bb
5	5 180615M1_6	Standard	12.500	5.36	11587.725	13533.568	10.703	11.4	-8.9	NO		NO	bb
6	6 180615M1_7	Standard	12.500	5.36	12912.229	12844.596	12.566	13.4	7.0	NO		NO	bb
7	7 180615M1_8	Standard	12.500	5.35	10673.896	11731.458	11.373	12.1	-3.2	NO		NO	bb
8	8 180615M1_9	Standard	12.500	5.35	12424.327	12835.986	12.099	12.9	3.0	NO		NO	bb
9	9 180615M1_10	Standard	12.500	5.36	10863.060	11261.757	12.057	12.8	2.6	NO		NO	bb
10	10 180615M1_11	Standard	12.500	5.36	9959.426	10770.176	11.559	12.3	-1.6	NO		NO	bb

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Compound name: 13C2-PFDoA
Response Factor: 1.32462
RRF SD: 0.0401761, Relative SD: 3.03303
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	5.64	12782.133	9323.694	17.137	12.9	3.5	NO		NO	bb
2	2	180615M1_3	Standard	12.500	5.64	12188.800	9591.600	15.885	12.0	-4.1	NO		NO	bb
3	3	180615M1_4	Standard	12.500	5.64	12766.816	10087.809	15.820	11.9	-4.5	NO		NO	bb
4	4	180615M1_5	Standard	12.500	5.65	12986.960	9882.468	16.427	12.4	-0.8	NO		NO	bb
5	5	180615M1_6	Standard	12.500	5.64	12800.824	9706.051	16.486	12.4	-0.4	NO		NO	bb
6	6	180615M1_7	Standard	12.500	5.64	13125.948	10041.236	16.340	12.3	-1.3	NO		NO	bb
7	7	180615M1_8	Standard	12.500	5.64	12550.780	9546.089	16.434	12.4	-0.7	NO		NO	bb
8	8	180615M1_9	Standard	12.500	5.64	14292.035	10272.332	17.391	13.1	5.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	5.64	12645.466	9431.672	16.759	12.7	1.2	NO		NO	bb
10	10	180615M1_11	Standard	12.500	5.64	11246.292	8318.816	16.899	12.8	2.1	NO		NO	bb

Compound name: d3-N-MeFOSA
Response Factor: 0.100844
RRF SD: 0.00580953, Relative SD: 5.76092
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	150.000	5.74	14611.873	11873.252	15.383	152.5	1.7	NO		NO	bb
2	2	180615M1_3	Standard	150.000	5.74	14797.828	13301.438	13.906	137.9	-8.1	NO		NO	bb
3	3	180615M1_4	Standard	150.000	5.74	15156.771	12799.883	14.802	146.8	-2.1	NO		NO	bb
4	4	180615M1_5	Standard	150.000	5.74	16116.560	12471.611	16.153	160.2	6.8	NO		NO	bb
5	5	180615M1_6	Standard	150.000	5.74	15258.011	13533.568	14.093	139.7	-6.8	NO		NO	bb
6	6	180615M1_7	Standard	150.000	5.74	15157.684	12844.596	14.751	146.3	-2.5	NO		NO	bb
7	7	180615M1_8	Standard	150.000	5.74	15018.472	11731.458	16.002	158.7	5.8	NO		NO	bb
8	8	180615M1_9	Standard	150.000	5.74	14810.412	12835.986	14.423	143.0	-4.7	NO		NO	bb
9	9	180615M1_10	Standard	150.000	5.74	14764.519	11261.757	16.388	162.5	8.3	NO		NO	bb
10	10	180615M1_11	Standard	150.000	5.74	13238.387	10770.176	15.365	152.4	1.6	NO		NO	bb

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Compound name: 13C2-PFTeDA
Response Factor: 0.945489
RRF SD: 0.0243873, Relative SD: 2.57933
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	6.12	11406.396	11873.252	12.009	12.7	1.6	NO		NO	bb
2	2 180615M1_3	Standard	12.500	6.12	12327.053	13301.438	11.584	12.3	-2.0	NO		NO	bb
3	3 180615M1_4	Standard	12.500	6.11	11976.907	12799.883	11.696	12.4	-1.0	NO		NO	bb
4	4 180615M1_5	Standard	12.500	6.12	11696.163	12471.611	11.723	12.4	-0.8	NO		NO	bb
5	5 180615M1_6	Standard	12.500	6.12	12655.533	13533.568	11.689	12.4	-1.1	NO		NO	bb
6	6 180615M1_7	Standard	12.500	6.12	11660.006	12844.596	11.347	12.0	-4.0	NO		NO	bb
7	7 180615M1_8	Standard	12.500	6.12	11651.059	11731.458	12.414	13.1	5.0	NO		NO	bb
8	8 180615M1_9	Standard	12.500	6.11	11961.371	12835.986	11.648	12.3	-1.4	NO		NO	bb
9	9 180615M1_10	Standard	12.500	6.11	10875.921	11261.757	12.072	12.8	2.1	NO		NO	bb
10	10 180615M1_11	Standard	12.500	6.11	10342.554	10770.176	12.004	12.7	1.6	NO		NO	bb

Compound name: d5-N-ETFOSA
Response Factor: 0.130863
RRF SD: 0.00691111, Relative SD: 5.28116
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	150.000	6.15	19289.520	11873.252	20.308	155.2	3.5	NO		NO	bb
2	2 180615M1_3	Standard	150.000	6.15	20149.285	13301.438	18.935	144.7	-3.5	NO		NO	bb
3	3 180615M1_4	Standard	150.000	6.15	20474.916	12799.883	19.995	152.8	1.9	NO		NO	bb
4	4 180615M1_5	Standard	150.000	6.15	20933.113	12471.611	20.981	160.3	6.9	NO		NO	bb
5	5 180615M1_6	Standard	150.000	6.15	20338.100	13533.568	18.785	143.5	-4.3	NO		NO	bb
6	6 180615M1_7	Standard	150.000	6.15	20112.109	12844.596	19.573	149.6	-0.3	NO		NO	bb
7	7 180615M1_8	Standard	150.000	6.15	19712.652	11731.458	21.004	160.5	7.0	NO		NO	bb
8	8 180615M1_9	Standard	150.000	6.15	18470.295	12835.986	17.987	137.4	-8.4	NO		NO	bb
9	9 180615M1_10	Standard	150.000	6.15	18178.977	11261.757	20.178	154.2	2.8	NO		NO	bb
10	10 180615M1_11	Standard	150.000	6.15	15982.907	10770.176	18.550	141.8	-5.5	NO		NO	bb

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Compound name: 13C2-PFHxDA
Response Factor: 1.17661
RRF SD: 0.0890756, Relative SD: 7.5705
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	5.000	6.45	5533.633	11873.252	5.826	5.0	-1.0	NO		NO	bb
2	2	180615M1_3	Standard	5.000	6.45	6035.230	13301.438	5.672	4.8	-3.6	NO		NO	bb
3	3	180615M1_4	Standard	5.000	6.45	5777.405	12799.883	5.642	4.8	-4.1	NO		NO	bb
4	4	180615M1_5	Standard	5.000	6.46	5912.944	12471.611	5.926	5.0	0.7	NO		NO	bb
5	5	180615M1_6	Standard	5.000	6.45	5902.131	13533.568	5.451	4.6	-7.3	NO		NO	bb
6	6	180615M1_7	Standard	5.000	6.45	6061.157	12844.596	5.899	5.0	0.3	NO		NO	bb
7	7	180615M1_8	Standard	5.000	6.45	5909.861	11731.458	6.297	5.4	7.0	NO		NO	bb
8	8	180615M1_9	Standard	5.000	6.45	5278.555	12835.986	5.140	4.4	-12.6	NO		NO	bb
9	9	180615M1_10	Standard	5.000	6.45	5728.673	11261.757	6.359	5.4	8.1	NO		NO	bb
10	10	180615M1_11	Standard	5.000	6.45	5703.068	10770.176	6.619	5.6	12.5	NO		NO	bb

Compound name: d7-N-MeFOSE
Response Factor: 0.139974
RRF SD: 0.00935163, Relative SD: 6.68096
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	150.000	6.30	19449.813	11873.252	20.477	146.3	-2.5	NO		NO	bb
2	2	180615M1_3	Standard	150.000	6.31	20325.451	13301.438	19.101	136.5	-9.0	NO		NO	bb
3	3	180615M1_4	Standard	150.000	6.31	22110.775	12799.883	21.593	154.3	2.8	NO		NO	bb
4	4	180615M1_5	Standard	150.000	6.31	21042.510	12471.611	21.090	150.7	0.4	NO		NO	bb
5	5	180615M1_6	Standard	150.000	6.30	22871.742	13533.568	21.125	150.9	0.6	NO		NO	bb
6	6	180615M1_7	Standard	150.000	6.31	21841.875	12844.596	21.256	151.9	1.2	NO		NO	bb
7	7	180615M1_8	Standard	150.000	6.30	21486.973	11731.458	22.895	163.6	9.0	NO		NO	bb
8	8	180615M1_9	Standard	150.000	6.31	18793.600	12835.986	18.302	130.8	-12.8	NO		NO	bb
9	9	180615M1_10	Standard	150.000	6.30	20202.527	11261.757	22.424	160.2	6.8	NO		NO	MM
10	10	180615M1_11	Standard	150.000	6.30	18696.998	10770.176	21.700	155.0	3.4	NO		NO	bb

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Compound name: d9-N-EtFOSE
Response Factor: 0.127689
RRF SD: 0.0104915, Relative SD: 8.21647
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	150.000	6.46	18238.834	11873.252	19.202	150.4	0.3	NO		NO	bb
2	2	180615M1_3	Standard	150.000	6.46	18294.520	13301.438	17.192	134.6	-10.2	NO		NO	bb
3	3	180615M1_4	Standard	150.000	6.46	18897.861	12799.883	18.455	144.5	-3.6	NO		NO	bb
4	4	180615M1_5	Standard	150.000	6.47	21270.021	12471.611	21.318	167.0	11.3	NO		NO	bb
5	5	180615M1_6	Standard	150.000	6.46	19731.301	13533.568	18.224	142.7	-4.9	NO		NO	bb
6	6	180615M1_7	Standard	150.000	6.46	19698.006	12844.596	19.170	150.1	0.1	NO		NO	bb
7	7	180615M1_8	Standard	150.000	6.46	19515.393	11731.458	20.794	162.8	8.6	NO		NO	bb
8	8	180615M1_9	Standard	150.000	6.46	17609.141	12835.986	17.148	134.3	-10.5	NO		NO	bb
9	9	180615M1_10	Standard	150.000	6.46	19338.965	11261.757	21.465	168.1	12.1	NO		NO	bb
10	10	180615M1_11	Standard	150.000	6.46	15995.940	10770.176	18.565	145.4	-3.1	NO		NO	bb

Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	1.26	7929.026	7929.026	12.500	12.5	0.0	NO		NO	bb
2	2	180615M1_3	Standard	12.500	1.26	7959.523	7959.523	12.500	12.5	0.0	NO		NO	bb
3	3	180615M1_4	Standard	12.500	1.26	8052.494	8052.494	12.500	12.5	0.0	NO		NO	bb
4	4	180615M1_5	Standard	12.500	1.25	7896.618	7896.618	12.500	12.5	0.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	1.26	8040.590	8040.590	12.500	12.5	0.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	1.25	7887.229	7887.229	12.500	12.5	0.0	NO		NO	bb
7	7	180615M1_8	Standard	12.500	1.27	7939.149	7939.149	12.500	12.5	0.0	NO		NO	bb
8	8	180615M1_9	Standard	12.500	1.28	7740.021	7740.021	12.500	12.5	0.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	1.26	8484.645	8484.645	12.500	12.5	0.0	NO		NO	bb
10	10	180615M1_11	Standard	12.500	1.25	7913.281	7913.281	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	3.03	9642.497	9642.497	12.500	12.5	0.0	NO		NO	bb
2	2	180615M1_3	Standard	12.500	3.03	9311.750	9311.750	12.500	12.5	0.0	NO		NO	bb
3	3	180615M1_4	Standard	12.500	3.03	9510.822	9510.822	12.500	12.5	0.0	NO		NO	bb
4	4	180615M1_5	Standard	12.500	3.03	9535.298	9535.298	12.500	12.5	0.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	3.03	9242.495	9242.495	12.500	12.5	0.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	3.03	9826.099	9826.099	12.500	12.5	0.0	NO		NO	bb
7	7	180615M1_8	Standard	12.500	3.03	8992.787	8992.787	12.500	12.5	0.0	NO		NO	bb
8	8	180615M1_9	Standard	12.500	3.02	8960.422	8960.422	12.500	12.5	0.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	3.03	8857.979	8857.979	12.500	12.5	0.0	NO		NO	bb
10	10	180615M1_11	Standard	12.500	3.03	7988.573	7988.573	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	3.82	2012.980	2012.980	12.500	12.5	0.0	NO		NO	bb
2	2	180615M1_3	Standard	12.500	3.81	2144.272	2144.272	12.500	12.5	0.0	NO		NO	bb
3	3	180615M1_4	Standard	12.500	3.81	2159.542	2159.542	12.500	12.5	0.0	NO		NO	bb
4	4	180615M1_5	Standard	12.500	3.81	2071.925	2071.925	12.500	12.5	0.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	3.81	2292.309	2292.309	12.500	12.5	0.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	3.81	2256.676	2256.676	12.500	12.5	0.0	NO		NO	bb
7	7	180615M1_8	Standard	12.500	3.81	2077.993	2077.993	12.500	12.5	0.0	NO		NO	bb
8	8	180615M1_9	Standard	12.500	3.81	2167.978	2167.978	12.500	12.5	0.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	3.81	2052.306	2052.306	12.500	12.5	0.0	NO		NO	bb
10	10	180615M1_11	Standard	12.500	3.81	1838.229	1838.229	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	4.20	8040.137	8040.137	12.500	12.5	0.0	NO		NO	bb
2	2	180615M1_3	Standard	12.500	4.20	8419.433	8419.433	12.500	12.5	0.0	NO		NO	bb
3	3	180615M1_4	Standard	12.500	4.19	8730.985	8730.985	12.500	12.5	0.0	NO		NO	bb
4	4	180615M1_5	Standard	12.500	4.20	8971.189	8971.189	12.500	12.5	0.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	4.19	8091.434	8091.434	12.500	12.5	0.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	4.20	8460.982	8460.982	12.500	12.5	0.0	NO		NO	bb
7	7	180615M1_8	Standard	12.500	4.20	8509.093	8509.093	12.500	12.5	0.0	NO		NO	bb
8	8	180615M1_9	Standard	12.500	4.19	8516.710	8516.710	12.500	12.5	0.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	4.19	7826.833	7826.833	12.500	12.5	0.0	NO		NO	bb
10	10	180615M1_11	Standard	12.500	4.19	7058.209	7058.209	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	4.64	8873.885	8873.885	12.500	12.5	0.0	NO		NO	bb
2	2	180615M1_3	Standard	12.500	4.64	8587.863	8587.863	12.500	12.5	0.0	NO		NO	bb
3	3	180615M1_4	Standard	12.500	4.64	9396.405	9396.405	12.500	12.5	0.0	NO		NO	bb
4	4	180615M1_5	Standard	12.500	4.64	8356.252	8356.252	12.500	12.5	0.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	4.64	9345.277	9345.277	12.500	12.5	0.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	4.64	9048.021	9048.021	12.500	12.5	0.0	NO		NO	bb
7	7	180615M1_8	Standard	12.500	4.64	8695.807	8695.807	12.500	12.5	0.0	NO		NO	bb
8	8	180615M1_9	Standard	12.500	4.63	8848.766	8848.766	12.500	12.5	0.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	4.64	8152.695	8152.695	12.500	12.5	0.0	NO		NO	bb
10	10	180615M1_11	Standard	12.500	4.64	7905.698	7905.698	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	4.72	2297.888	2297.888	12.500	12.5	0.0	NO		NO	bb
2	2 180615M1_3	Standard	12.500	4.72	2485.250	2485.250	12.500	12.5	0.0	NO		NO	bb
3	3 180615M1_4	Standard	12.500	4.72	2048.136	2048.136	12.500	12.5	0.0	NO		NO	bb
4	4 180615M1_5	Standard	12.500	4.73	2459.818	2459.818	12.500	12.5	0.0	NO		NO	bb
5	5 180615M1_6	Standard	12.500	4.72	2277.099	2277.099	12.500	12.5	0.0	NO		NO	bb
6	6 180615M1_7	Standard	12.500	4.72	2316.078	2316.078	12.500	12.5	0.0	NO		NO	bb
7	7 180615M1_8	Standard	12.500	4.73	2184.389	2184.389	12.500	12.5	0.0	NO		NO	bb
8	8 180615M1_9	Standard	12.500	4.72	2298.639	2298.639	12.500	12.5	0.0	NO		NO	bb
9	9 180615M1_10	Standard	12.500	4.72	2258.548	2258.548	12.500	12.5	0.0	NO		NO	bb
10	10 180615M1_11	Standard	12.500	4.72	1965.280	1965.280	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180615M1_2	Standard	12.500	5.03	9323.694	9323.694	12.500	12.5	0.0	NO		NO	bb
2	2 180615M1_3	Standard	12.500	5.02	9591.600	9591.600	12.500	12.5	0.0	NO		NO	bb
3	3 180615M1_4	Standard	12.500	5.02	10087.809	10087.809	12.500	12.5	0.0	NO		NO	bb
4	4 180615M1_5	Standard	12.500	5.03	9882.468	9882.468	12.500	12.5	0.0	NO		NO	bb
5	5 180615M1_6	Standard	12.500	5.02	9706.051	9706.051	12.500	12.5	0.0	NO		NO	bb
6	6 180615M1_7	Standard	12.500	5.03	10041.236	10041.236	12.500	12.5	0.0	NO		NO	bb
7	7 180615M1_8	Standard	12.500	5.03	9546.089	9546.089	12.500	12.5	0.0	NO		NO	bb
8	8 180615M1_9	Standard	12.500	5.02	10272.332	10272.332	12.500	12.5	0.0	NO		NO	bb
9	9 180615M1_10	Standard	12.500	5.02	9431.672	9431.672	12.500	12.5	0.0	NO		NO	bb
10	10 180615M1_11	Standard	12.500	5.02	8318.816	8318.816	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:31:34 Pacific Daylight Time

Compound name: 13C7-PFUdA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180615M1_2	Standard	12.500	5.36	11873.252	11873.252	12.500	12.5	0.0	NO		NO	bb
2	2	180615M1_3	Standard	12.500	5.36	13301.438	13301.438	12.500	12.5	0.0	NO		NO	bb
3	3	180615M1_4	Standard	12.500	5.36	12799.883	12799.883	12.500	12.5	0.0	NO		NO	bb
4	4	180615M1_5	Standard	12.500	5.36	12471.611	12471.611	12.500	12.5	0.0	NO		NO	bb
5	5	180615M1_6	Standard	12.500	5.36	13533.568	13533.568	12.500	12.5	0.0	NO		NO	bb
6	6	180615M1_7	Standard	12.500	5.36	12844.596	12844.596	12.500	12.5	0.0	NO		NO	bb
7	7	180615M1_8	Standard	12.500	5.36	11731.458	11731.458	12.500	12.5	0.0	NO		NO	bb
8	8	180615M1_9	Standard	12.500	5.35	12835.986	12835.986	12.500	12.5	0.0	NO		NO	bb
9	9	180615M1_10	Standard	12.500	5.36	11261.757	11261.757	12.500	12.5	0.0	NO		NO	bb
10	10	180615M1_11	Standard	12.500	5.36	10770.176	10770.176	12.500	12.5	0.0	NO		NO	bb

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:34:29 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBA	36	0.9999	NO	
2	2	PFPeA	37	0.9998	NO	
3	3	PFBS	38	0.9997	NO	
4	4	4:2 FTS	39	0.9992	NO	
5	5	PFHxA	40	0.9997	NO	
6	6	PFPeS	38	0.9996	NO	
7	7	PFHpA	41	0.9995	NO	
8	8	L-PFHxS	42	0.9978	NO	
9	10	6:2 FTS	43	0.9993	NO	
10	11	L-PFOA	44	0.9999	NO	
11	13	PFHpS	44	0.9993	NO	
12	14	PFNA	45	0.9995	NO	
13	15	PFOSA	46	0.9993	NO	
14	16	L-PFOS	47	0.9997	NO	
15	18	PFDA	48	0.9998	NO	
16	19	8:2 FTS	49	0.9998	NO	
17	20	PFNS	47	0.9994	NO	
18	21	L-MeFOSAA	50	0.9983	NO	
19	23	L-EtFOSAA	51	0.9986	NO	

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:34:43 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	#	Name	IS#	CoD	CoD Flag	%RSD
1	25	PFUdA	52	0.9992	NO	
2	26	PFDS	52	0.9987	NO	
3	27	PFDoA	53	0.9996	NO	
4	28	N-MeFOSA	54	0.9995	NO	
5	29	PFTrDA	53	0.9998	NO	
6	30	PFTeDA	55	0.9998	NO	
7	31	N-EtFOSA	56	0.9998	NO	
8	32	PFHxDA	57	0.9995	NO	
9	33	PFODA	57	0.9998	NO	
10	34	N-MeFOSE	58	0.9976	NO	
11	35	N-EtFOSE	59	0.9978	NO	
12	36	13C3-PFBA	60		NO	1.490
13	37	13C3-PFPeA	61		NO	2.704
14	38	13C3-PFBS	61		NO	3.690
15	39	13C2-4:2 FTS	61		NO	13.206
16	40	13C2-PFHxA	61		NO	3.362
17	41	13C4-PFHpA	61		NO	3.061
18	42	18O2-PFHxS	62		NO	4.936
19	43	13C2-6:2 FTS	63		NO	15.254
20	44	13C2-PFOA	63		NO	3.713
21	45	13C5-PFNA	64		NO	3.867
22	46	13C8-PFOSA	67		NO	5.053
23	47	13C8-PFOS	65		NO	6.451
24	48	13C2-PFDA	66		NO	3.726
25	49	13C2-8:2 FTS	61		NO	19.201
26	50	d3-N-MeFOSAA	67		NO	9.291
27	51	d5-N-EtFOSAA	67		NO	5.999
28	52	13C2-PFUdA	67		NO	5.038
29	53	13C2-PFDoA	66		NO	3.033
30	54	d3-N-MeFOSA	67		NO	5.761
31	55	13C2-PFTeDA	67		NO	2.579
32	56	d5-N-ETFOSA	67		NO	5.281

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:34:43 Pacific Daylight Time

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	#	Name	IS#	CoD	CoD Flag	%RSD
33	57	13C2-PFHxDA	67		NO	7.571
34	58	d7-N-MeFOSE	67		NO	6.681
35	59	d9-N-EtFOSE	67		NO	8.216
36	60	13C4-PFBA	60		NO	0.000
37	61	13C5-PFHxA	61		NO	0.000
38	62	13C3-PFHxS	62		NO	0.000
39	63	13C8-PFOA	63		NO	0.000
40	64	13C9-PFNA	64		NO	0.000
41	65	13C4-PFOS	65		NO	0.000
42	66	13C6-PFDA	66		NO	0.000
43	67	13C7-PFUdA	67		NO	0.000

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:40:25 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	Name	Ion Ratio	Ratio out?
1	PFBA		
2	PFPeA		
3	PFBS	3.098	NO
4	4:2 FTS	1.779	NO
5	PFHxA	276.387	NO
6	PFPeS	1.757	NO
7	PFHpA	15.008	NO
8	L-PFHxS	1.967	NO
9	6:2 FTS	3.525	NO
10	L-PFOA	3.714	NO
11	PFHpS	2.094	NO
12	PFNA	4.513	NO
13	PFOSA	33.511	NO
14	L-PFOS	1.877	NO
15	PFDA	5.890	NO
16	8:2 FTS	2.247	NO
17	PFNS	1.662	NO
18	L-MeFOSAA	20.706	NO
19	L-EtFOSAA	20.304	NO

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:40:36 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	Name	Ion Ratio	Ratio out?
1	PFUdA	11.809	NO
2	PFDS	2.059	NO
3	PFDoA	8.548	NO
4	N-MeFOSA	1.432	NO
5	PFTrDA	27.962	NO
6	PFTeDA	12.439	NO
7	N-EtFOSA	1.426	NO
8	PFHxDA	37.873	NO
9	PFODA		
10	N-MeFOSE		
11	N-EtFOSE		

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Saturday, June 16, 2018 14:49:40 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:50:03 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061418.mdb 15 Jun 2018 11:46:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-14-18.cdb 15 Jun 2018 12:24:26

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	180615M1_1	IPA	15-Jun-18	18:10:26
2	2	180615M1_2	ST180615M1-1 PFC CS-2 18F1104	15-Jun-18	18:20:54
3	3	180615M1_3	ST180615M1-2 PFC CS-1 18F1105	15-Jun-18	18:31:18
4	4	180615M1_4	ST180615M1-3 PFC CS0 18F1106	15-Jun-18	18:41:48
5	5	180615M1_5	ST180615M1-4 PFC CS1 18F1107	15-Jun-18	18:52:13
6	6	180615M1_6	ST180615M1-5 PFC CS2 18F1108	15-Jun-18	19:02:43
7	7	180615M1_7	ST180615M1-6 PFC CS3 18F1109	15-Jun-18	19:13:08
8	8	180615M1_8	ST180615M1-7 PFC CS4 18F1110	15-Jun-18	19:23:38
9	9	180615M1_9	ST180615M1-8 PFC CS5 18F1111	15-Jun-18	19:38:37
10	10	180615M1_10	ST180615M1-9 PFC CS6 18F1112	15-Jun-18	19:49:05
11	11	180615M1_11	ST180615M1-10 PFC CS7 18F1113	15-Jun-18	19:59:31
12	12	180615M1_12	IPA	15-Jun-18	20:09:53
13	13	180615M1_13	ICV180615M1-1 PFC 537 ICV 18F1103	15-Jun-18	20:20:23
14	14	180615M1_14	IPA	15-Jun-18	20:30:48

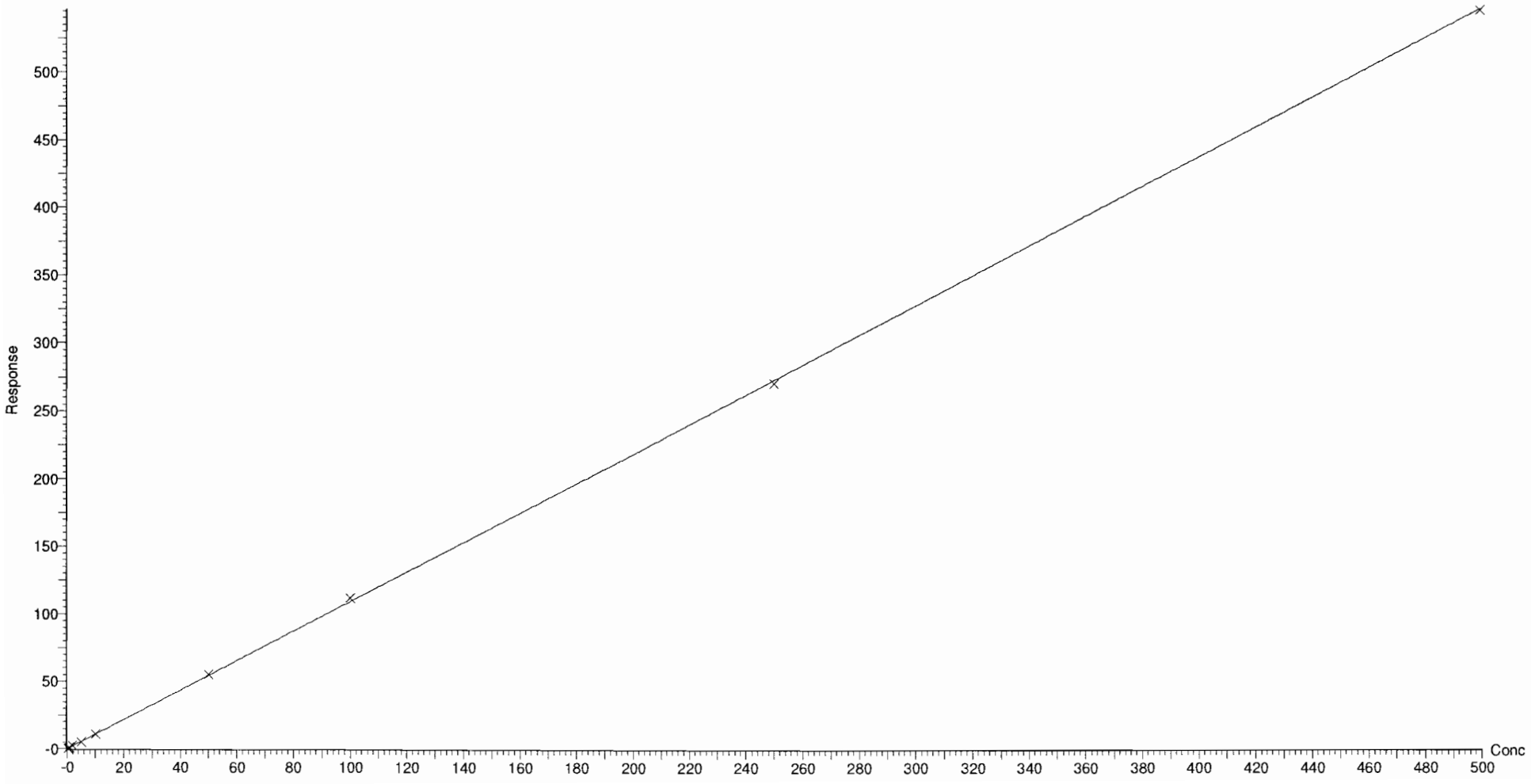
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

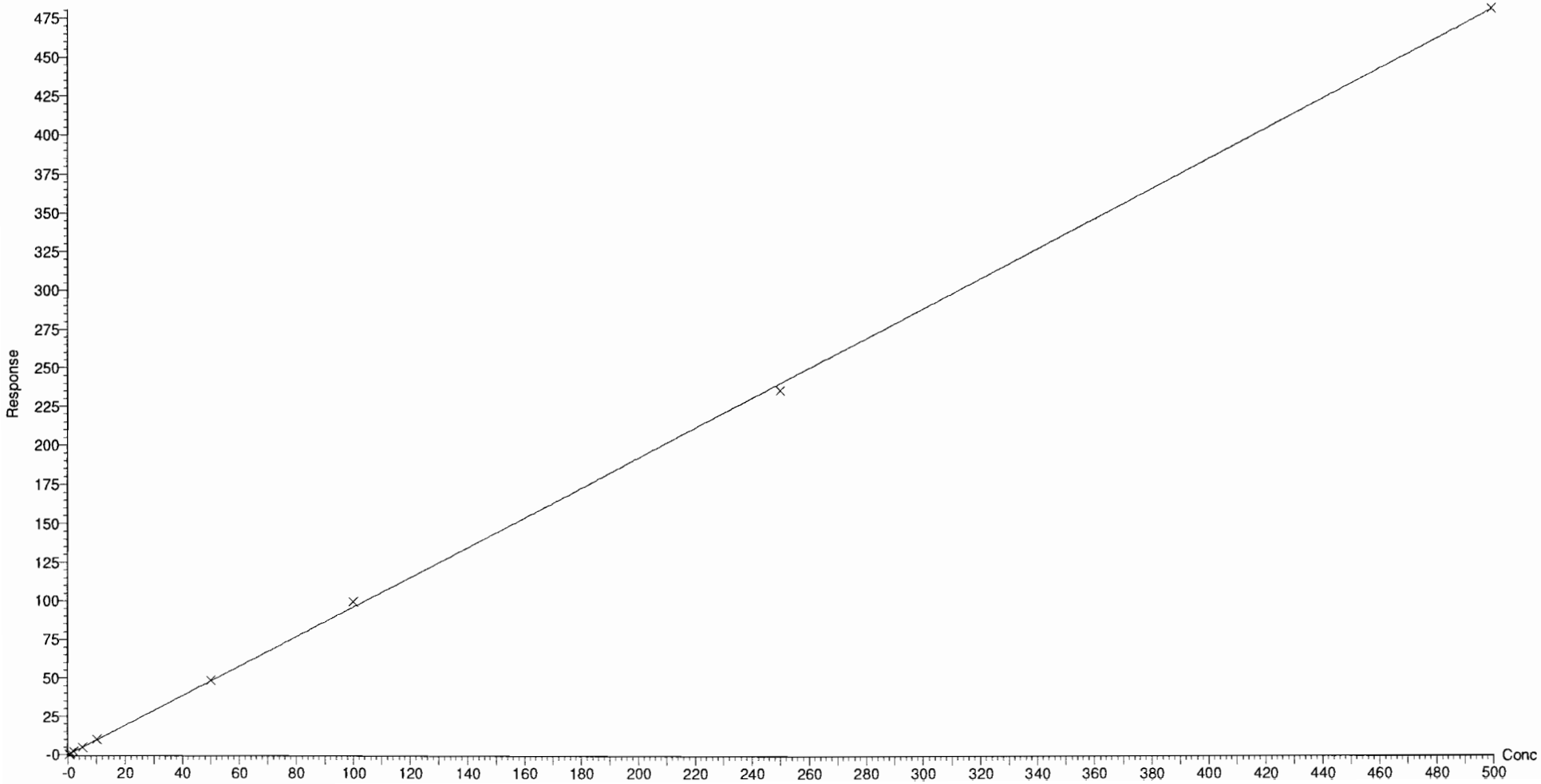
Compound name: PFBA
Correlation coefficient: r = 0.999944, r^2 = 0.999888
Calibration curve: 1.09266 * x + 0.0224346
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

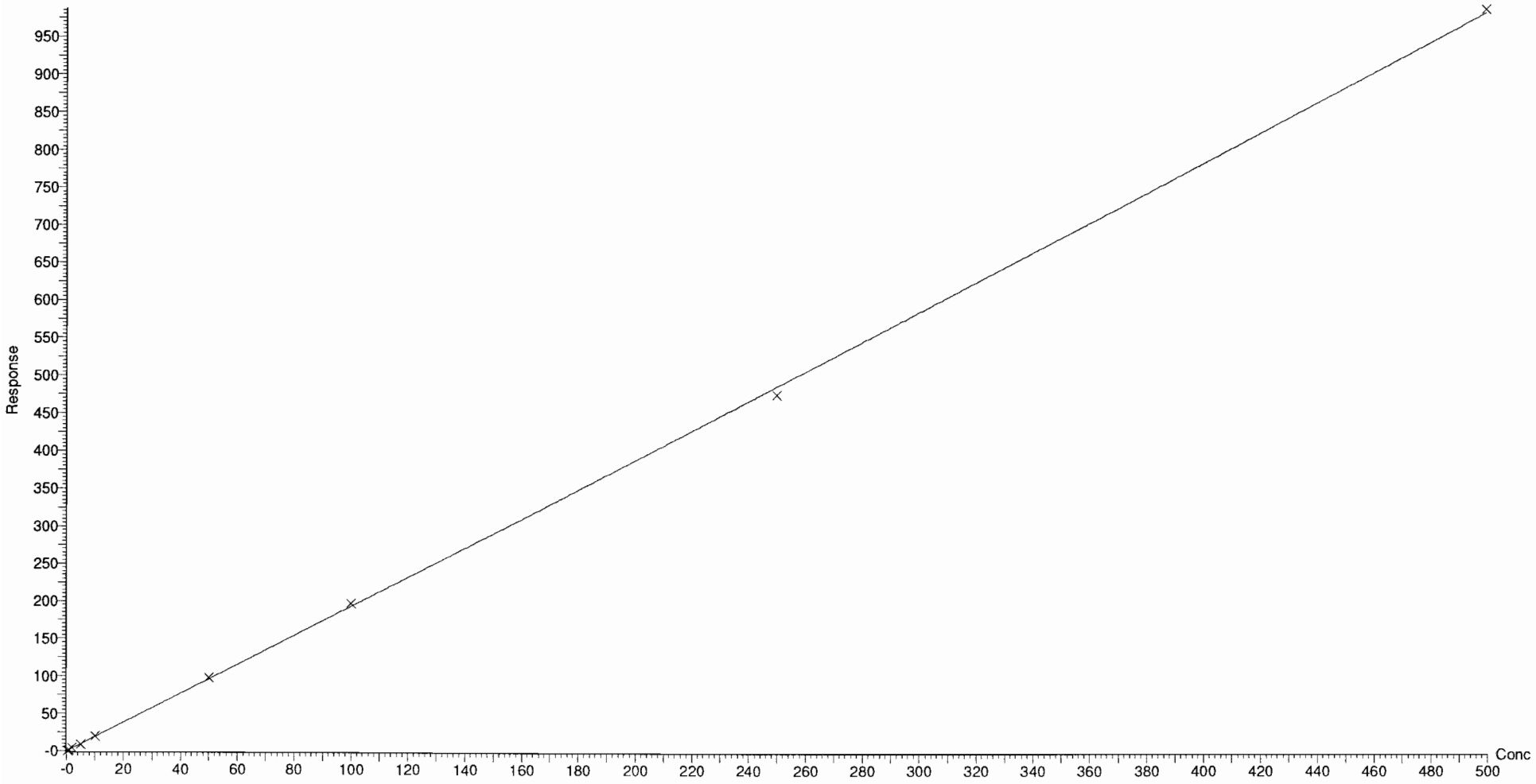
Compound name: PFPeA
Correlation coefficient: r = 0.999879, r^2 = 0.999759
Calibration curve: 0.959979 * x + 0.0855017
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

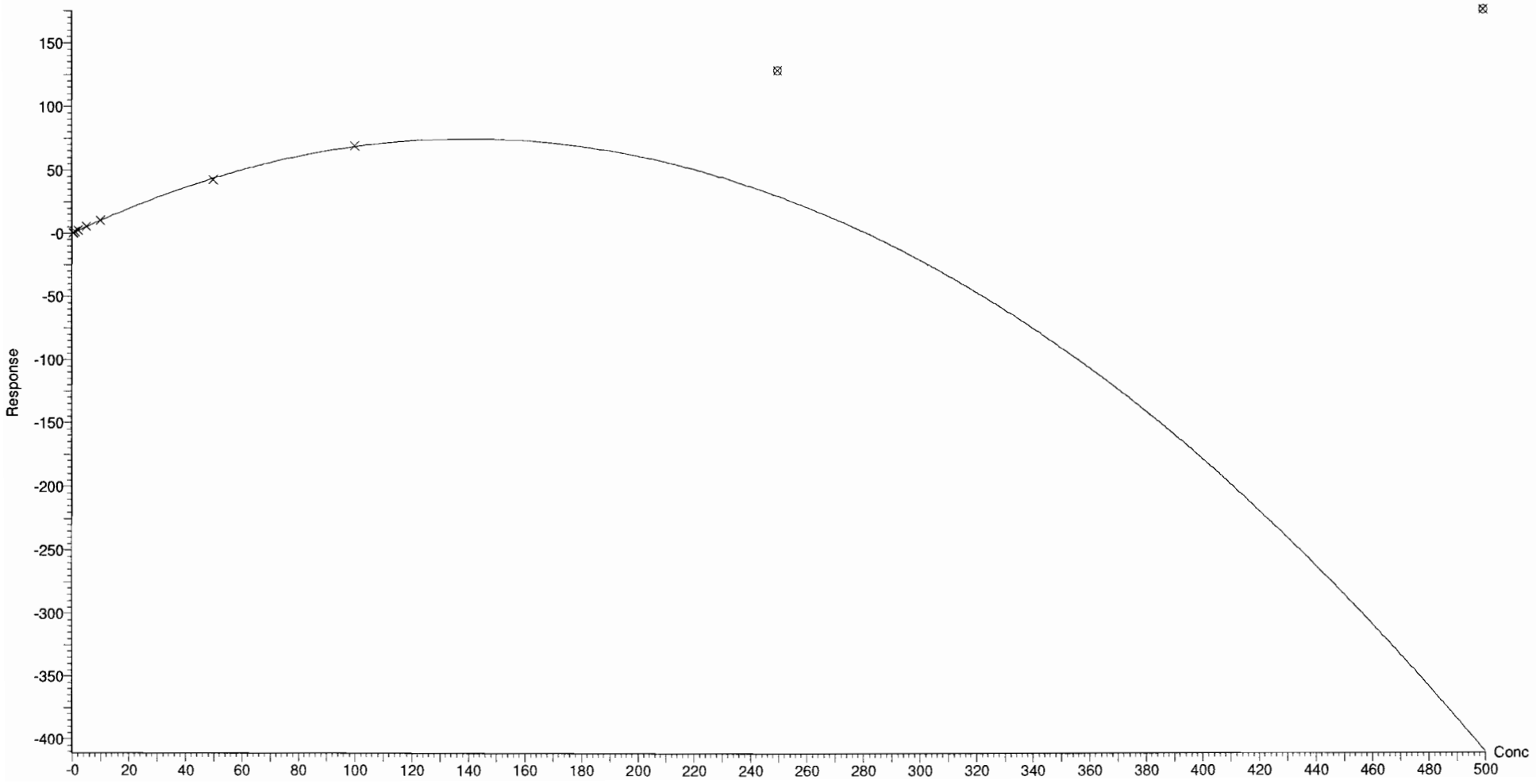
Compound name: PFBS
Coefficient of Determination: R^2 = 0.999658
Calibration curve: 8.00139e-005 * x^2 + 1.92626 * x + 0.0470991
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

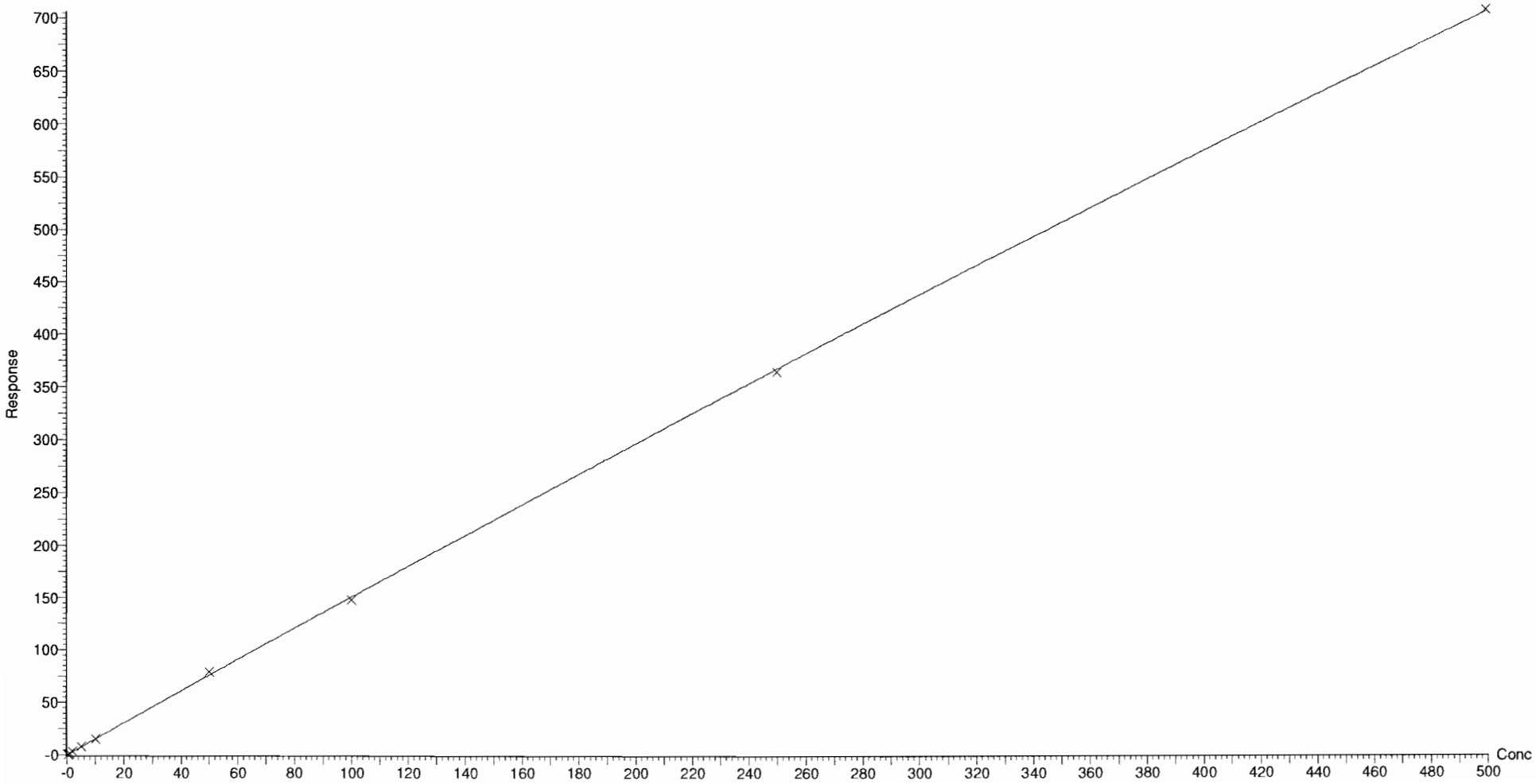
Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999163
Calibration curve: -0.00375509 * x^2 + 1.05697 * x + -0.0200411
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

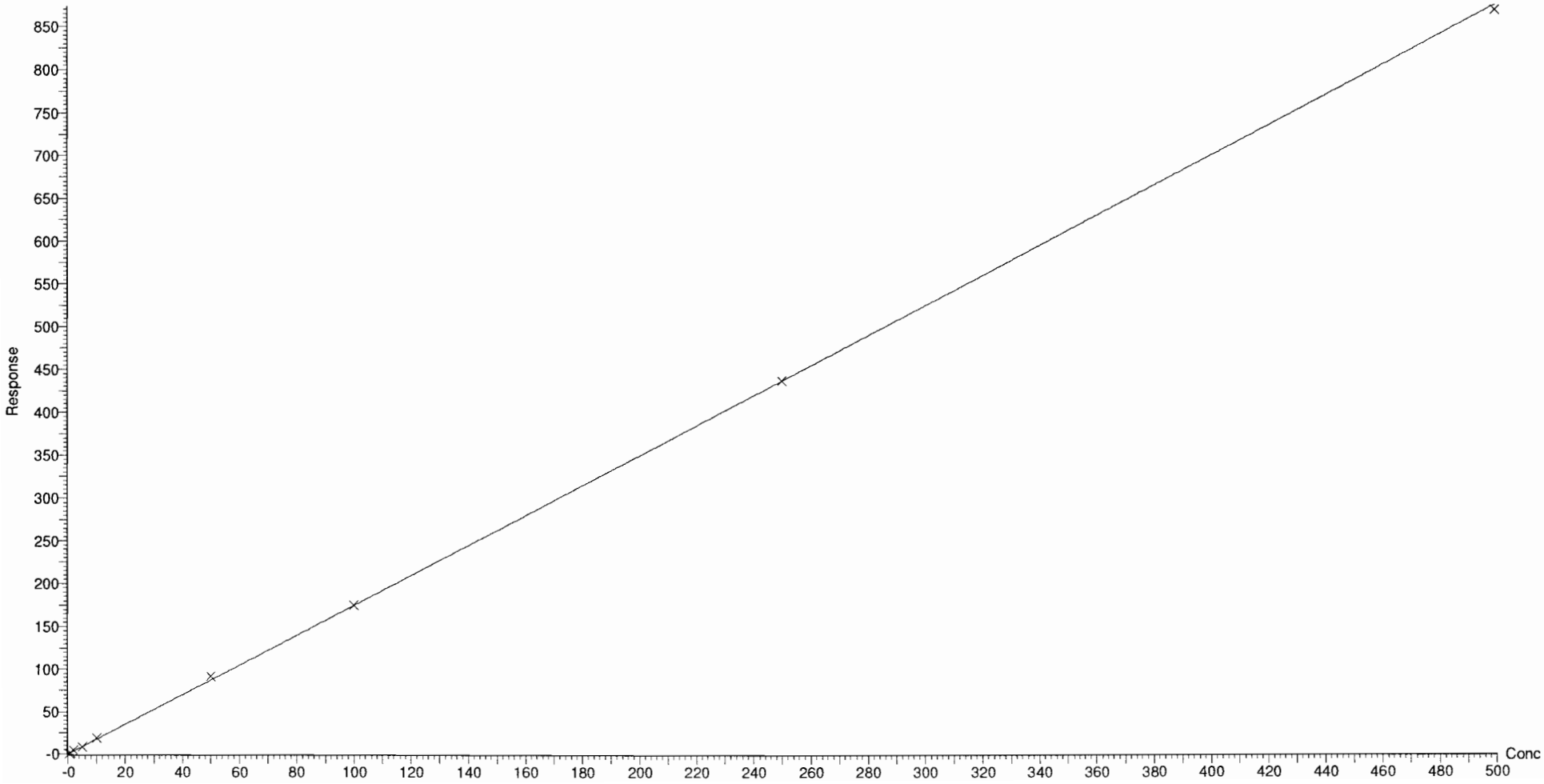
Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999744
Calibration curve: -0.000235764 * x^2 + 1.52719 * x + 0.0953451
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

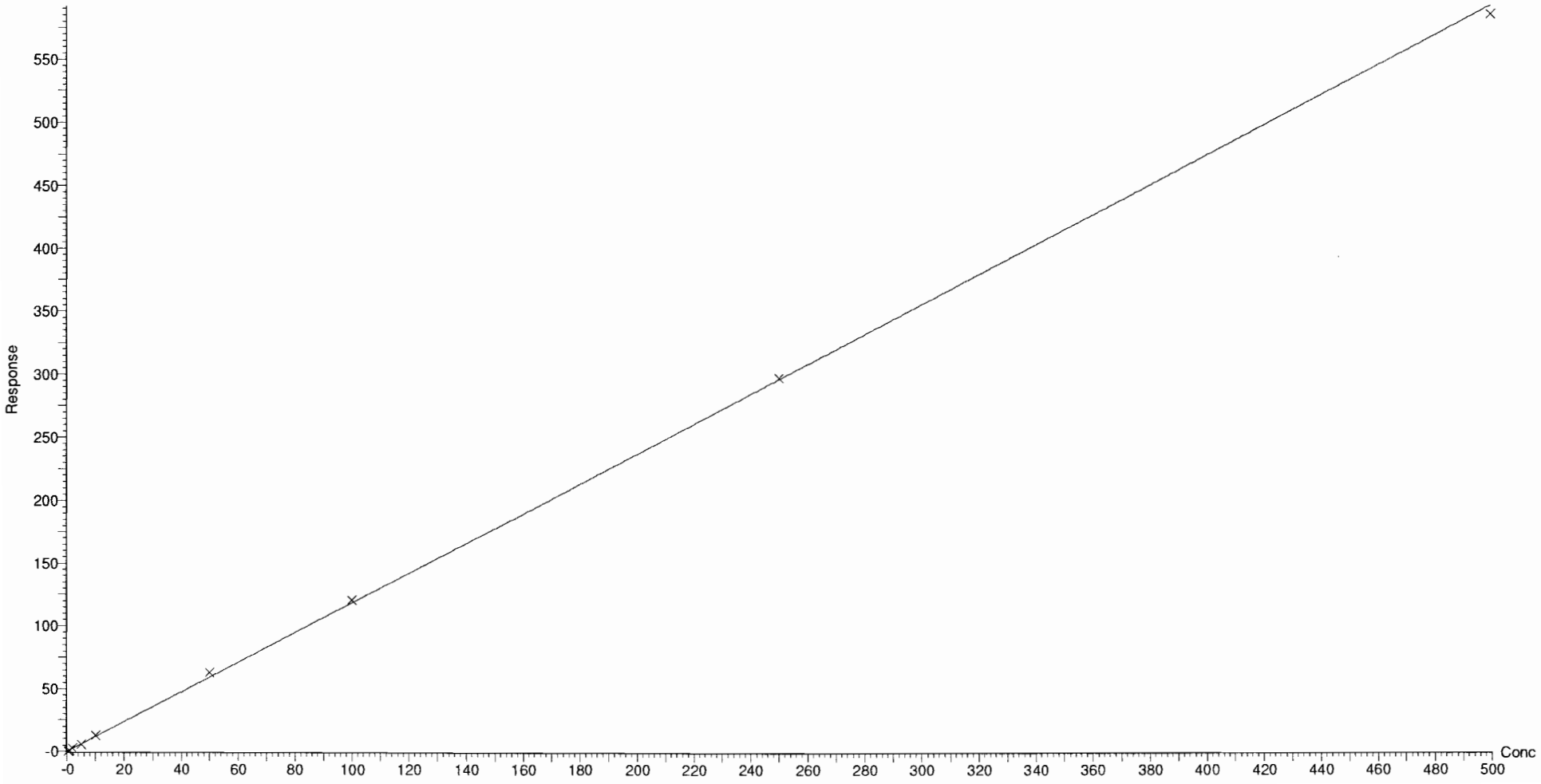
Compound name: PFPeS
Correlation coefficient: r = 0.999817, r^2 = 0.999635
Calibration curve: 1.74752 * x + 0.0397996
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

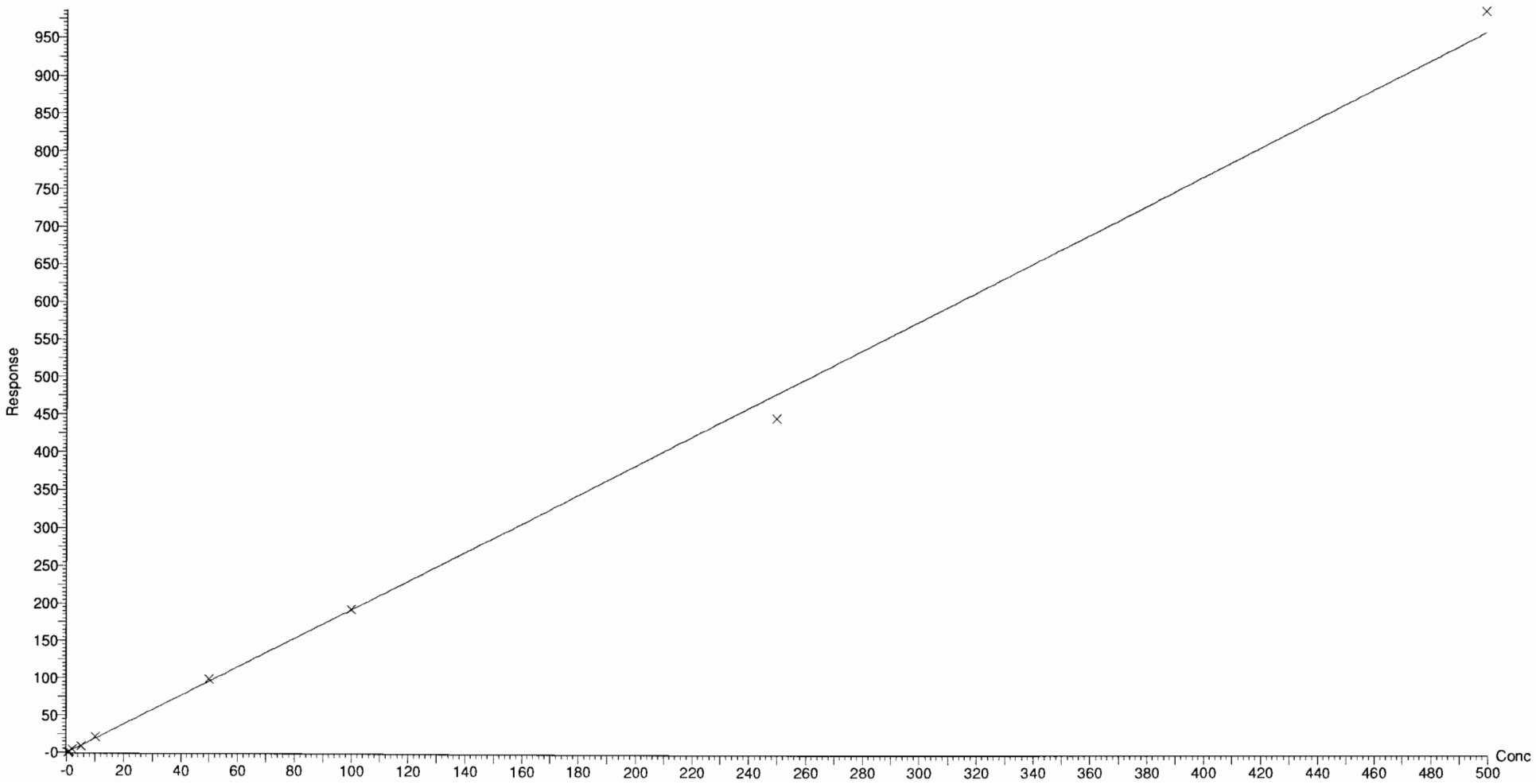
Compound name: PFHpA
Correlation coefficient: r = 0.999772, r^2 = 0.999543
Calibration curve: 1.18418 * x + 0.110019
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

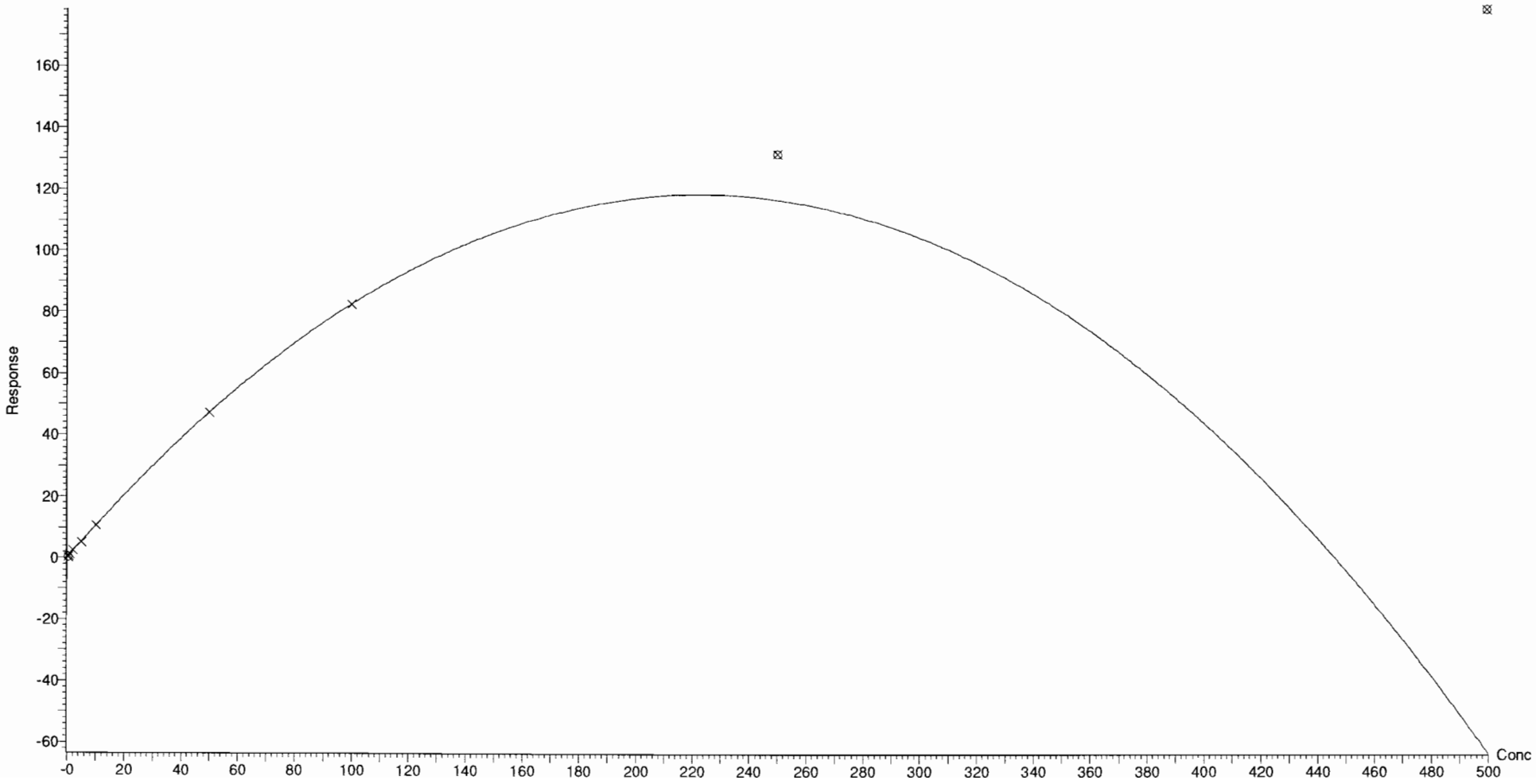
Compound name: L-PFHxS
Correlation coefficient: r = 0.998919, r^2 = 0.997838
Calibration curve: 1.91706 * x + -0.0530785
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

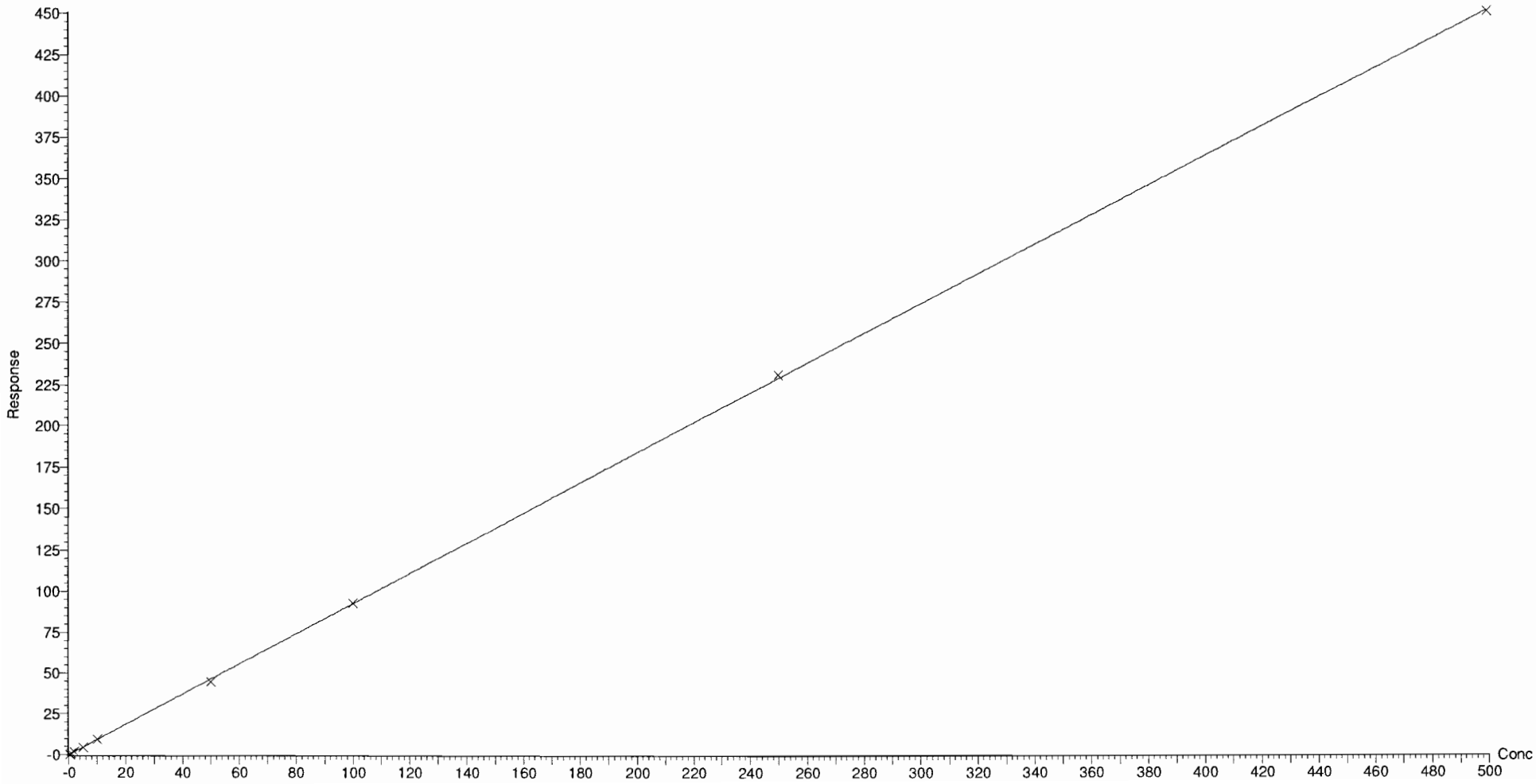
Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999270
Calibration curve: -0.00237297 * x^2 + 1.05941 * x + 0.254904
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

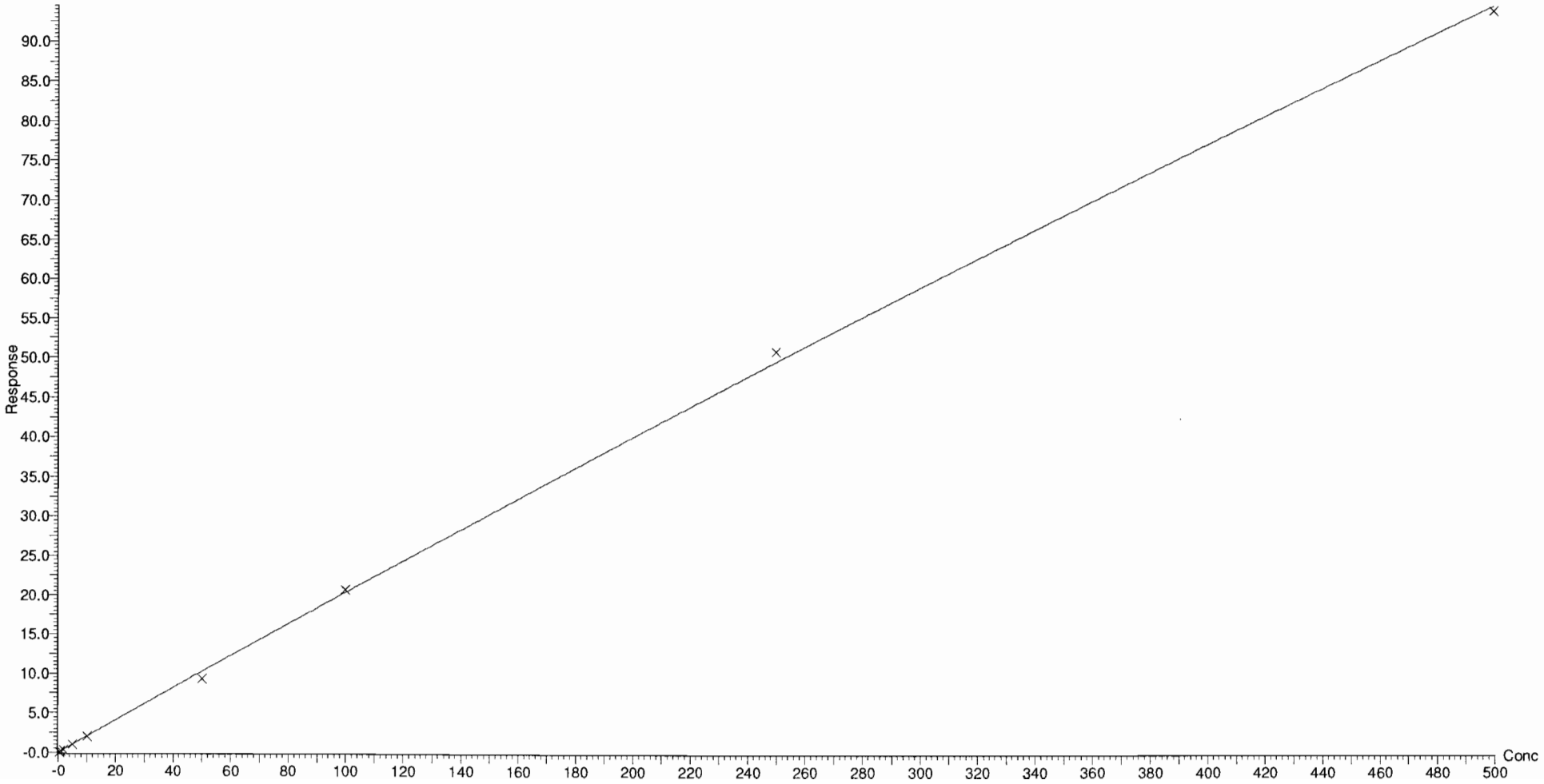
Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999875
Calibration curve: -5.38784e-005 * x^2 + 0.928598 * x + 0.10099
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

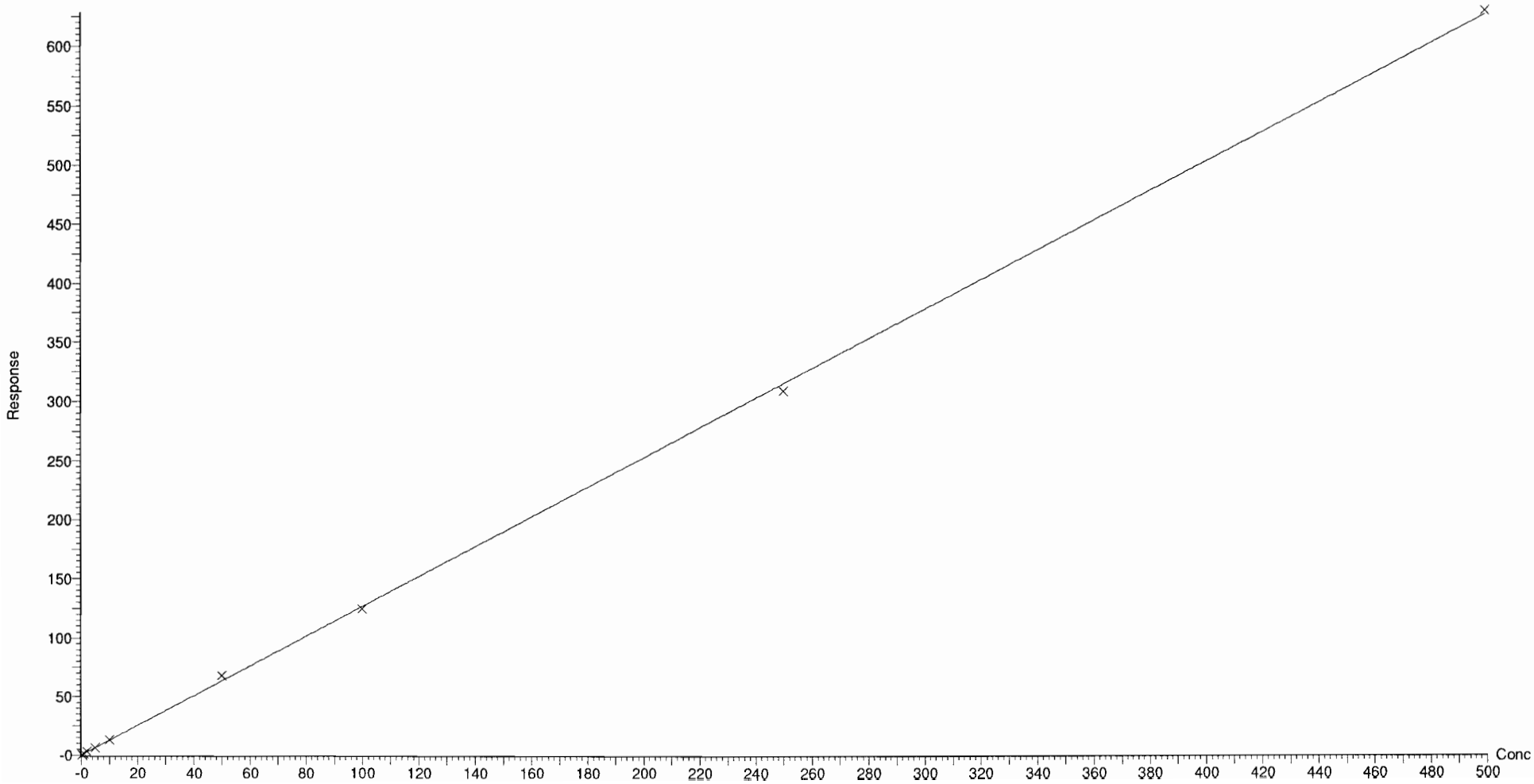
Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999251
Calibration curve: -3.74397e-005 * x^2 + 0.207813 * x + -0.0118122
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

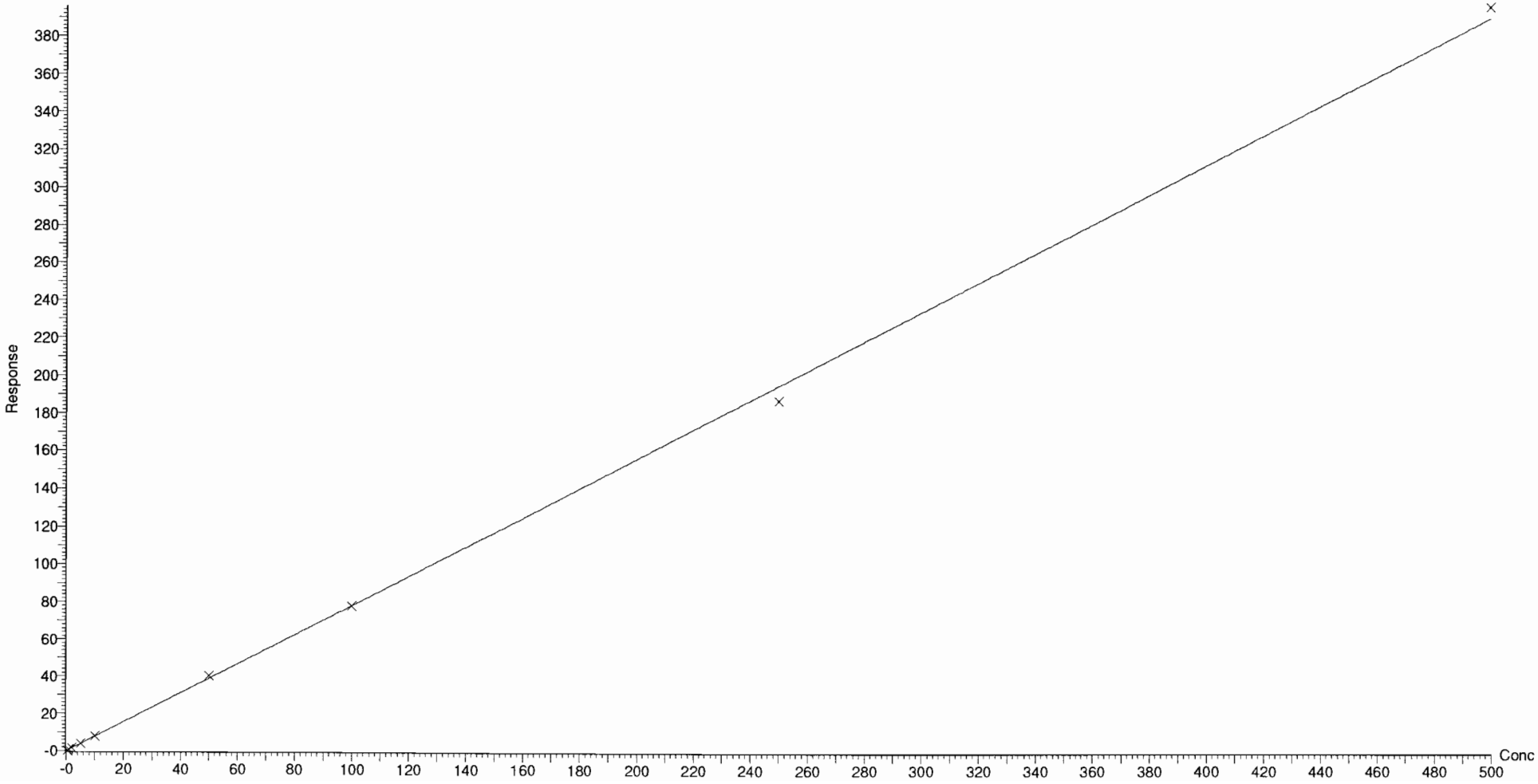
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999456
Calibration curve: -3.98446e-005 * x^2 + 1.27061 * x + 0.112012
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

Compound name: PFOSA
Correlation coefficient: r = 0.999640, r^2 = 0.999279
Calibration curve: 0.780086 * x + 0.0815553
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

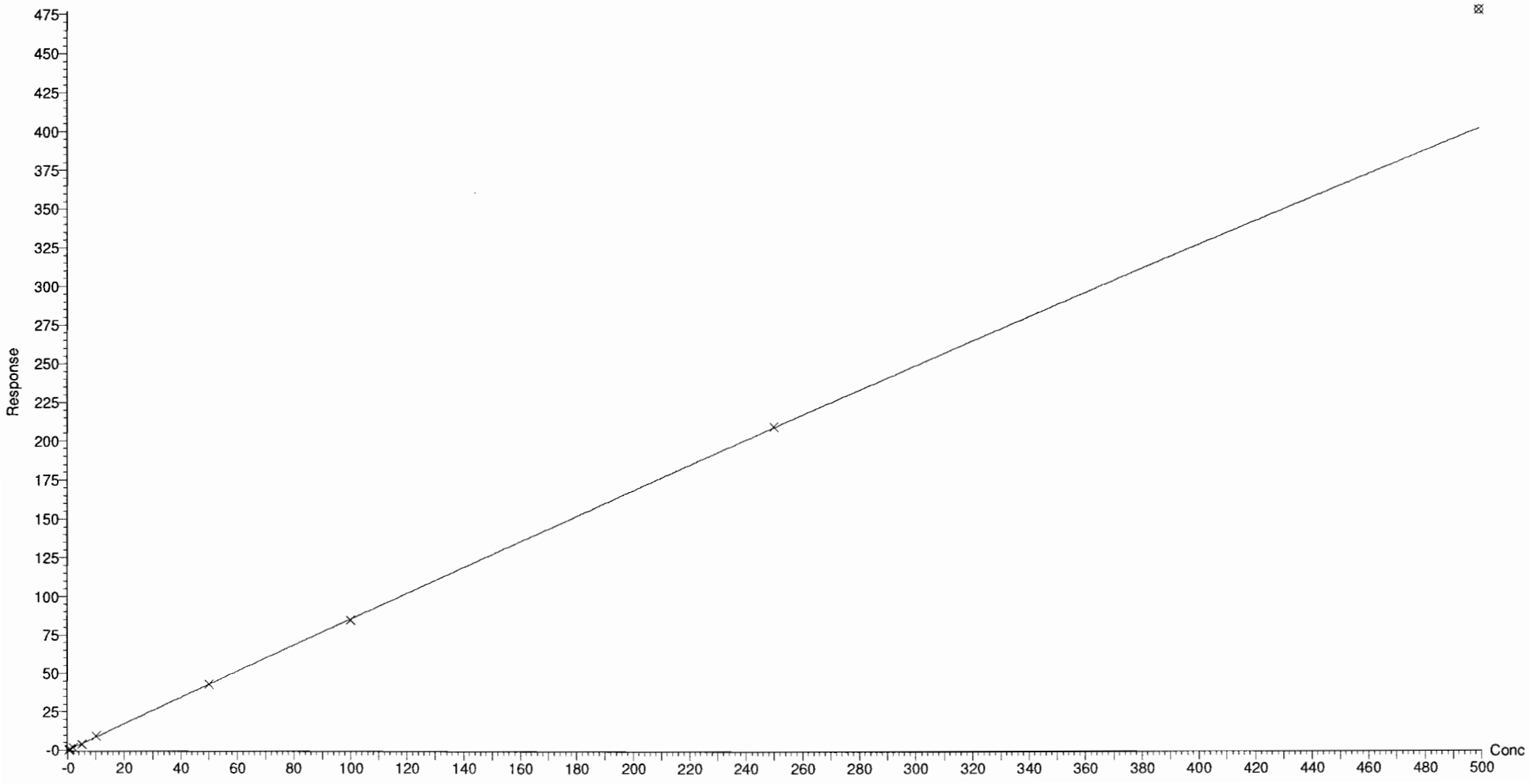


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

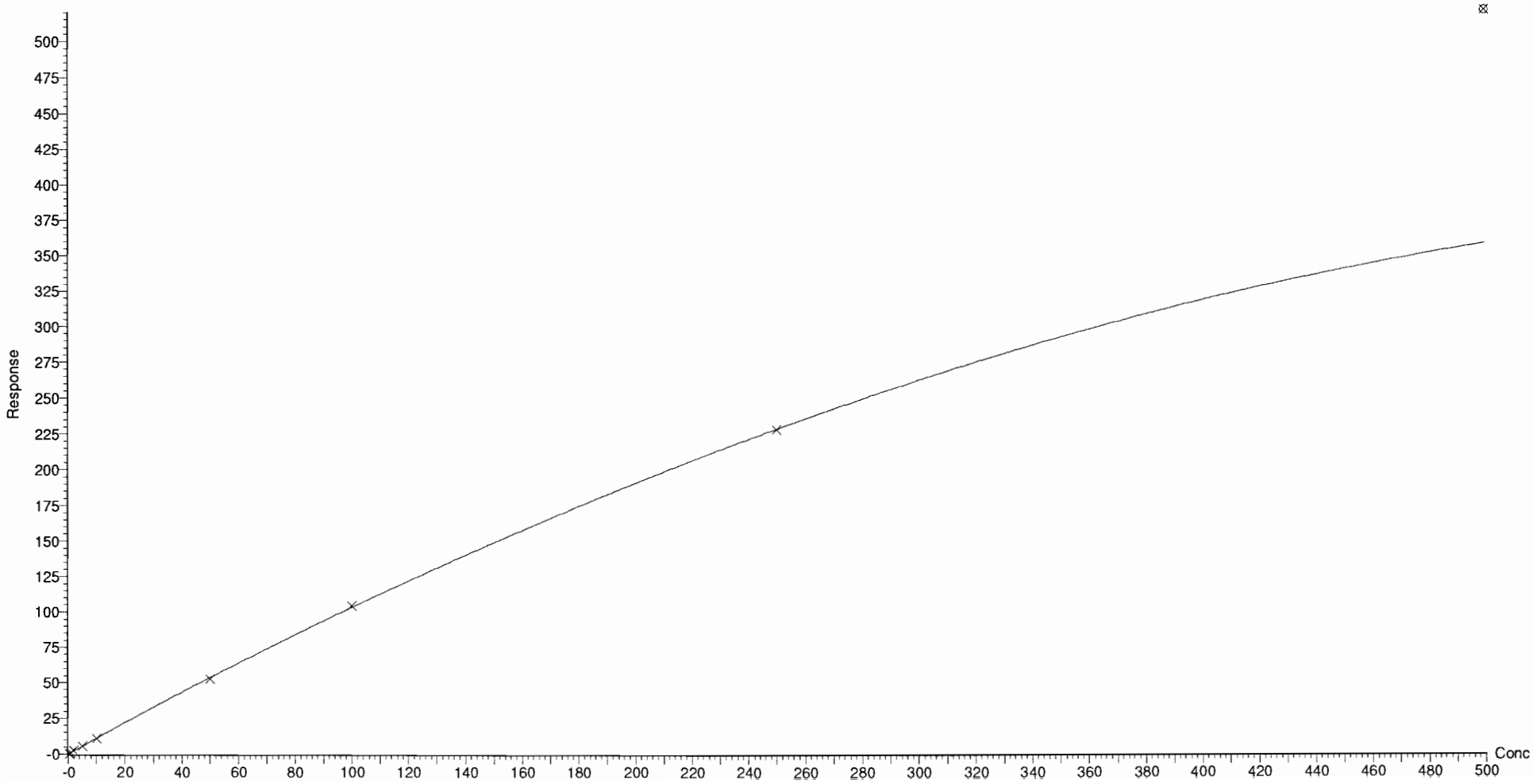
Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999657
Calibration curve: -0.000130206 * x^2 + 0.868303 * x + 0.0138464
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999823
Calibration curve: -0.00078938 * x^2 + 1.11047 * x + 0.105019
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

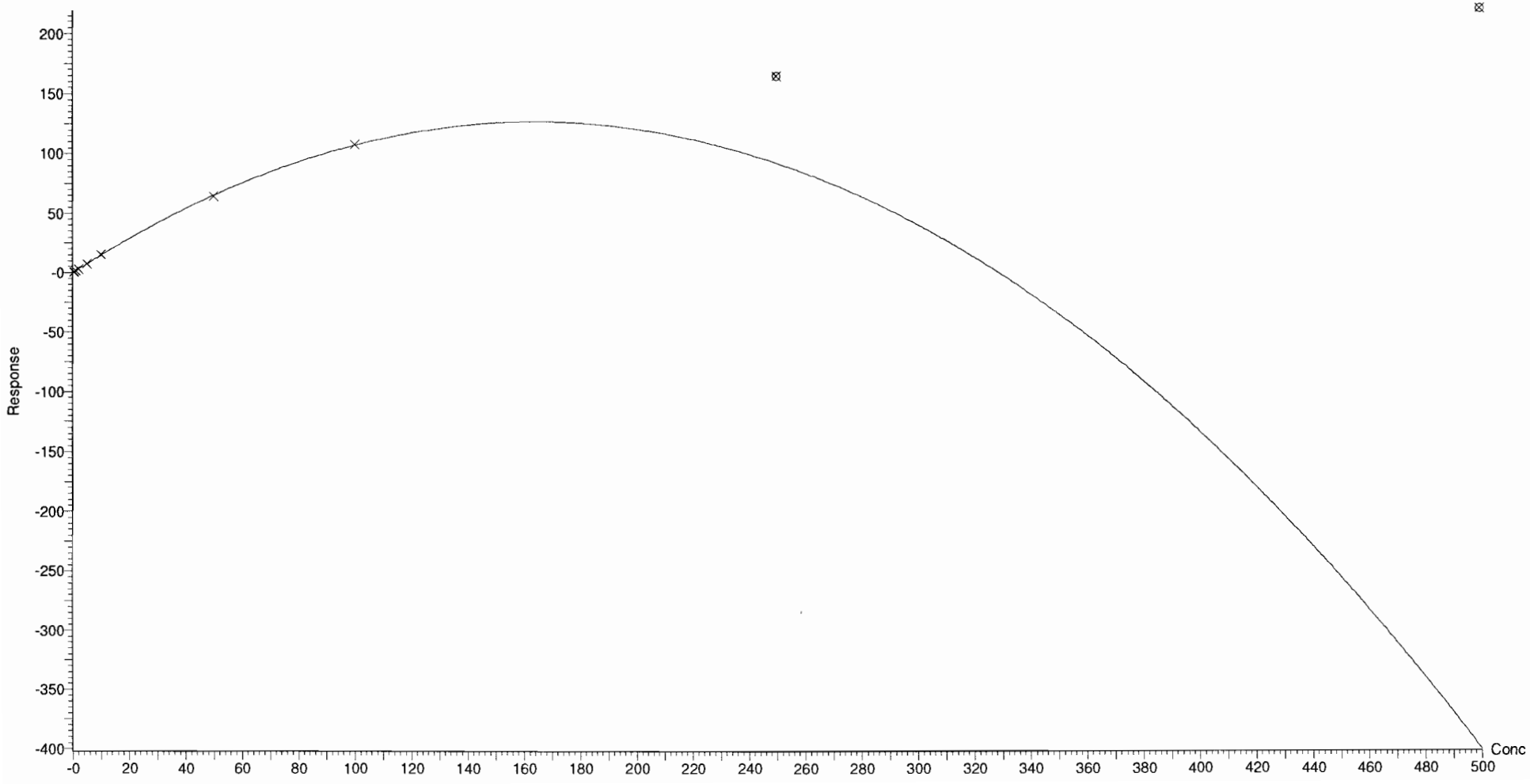


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

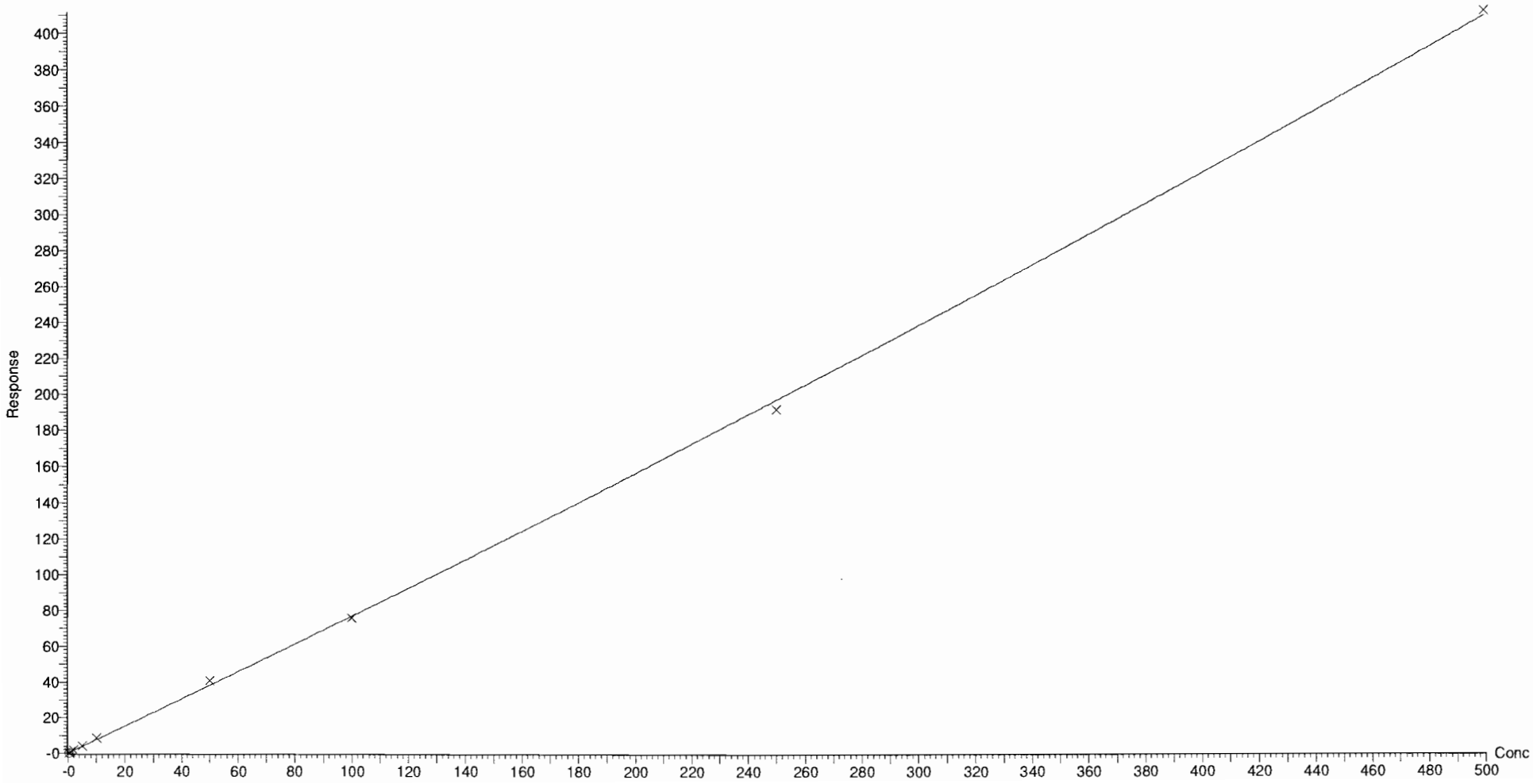
Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999767
Calibration curve: -0.00468238 * x^2 + 1.53911 * x + 0.00717237
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

Compound name: PFNS
Coefficient of Determination: R^2 = 0.999391
Calibration curve: 0.000128784 * x^2 + 0.753928 * x + 0.200309
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

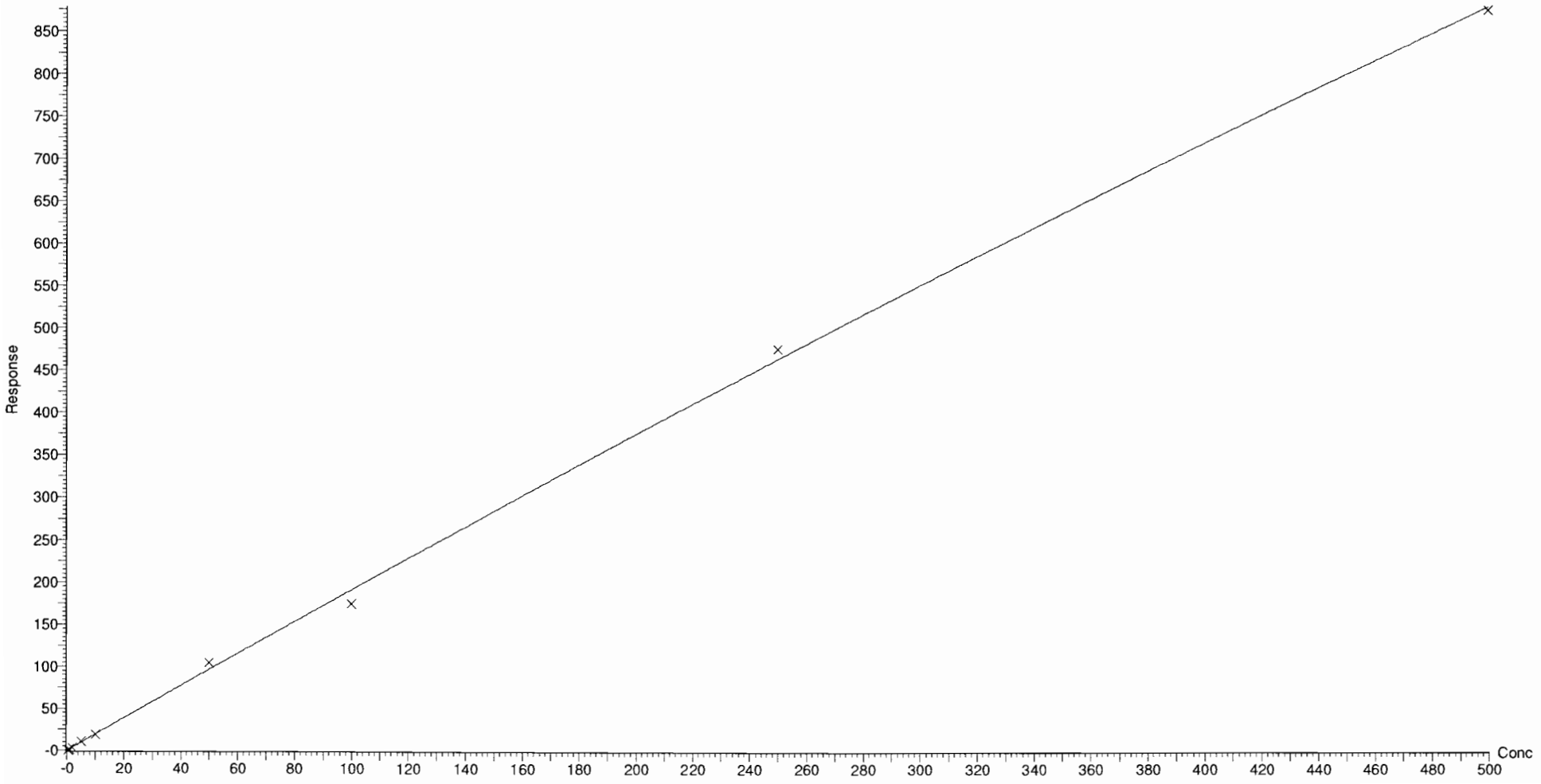


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.998335
Calibration curve: -0.00039478 * x^2 + 1.95443 * x + -0.142869
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

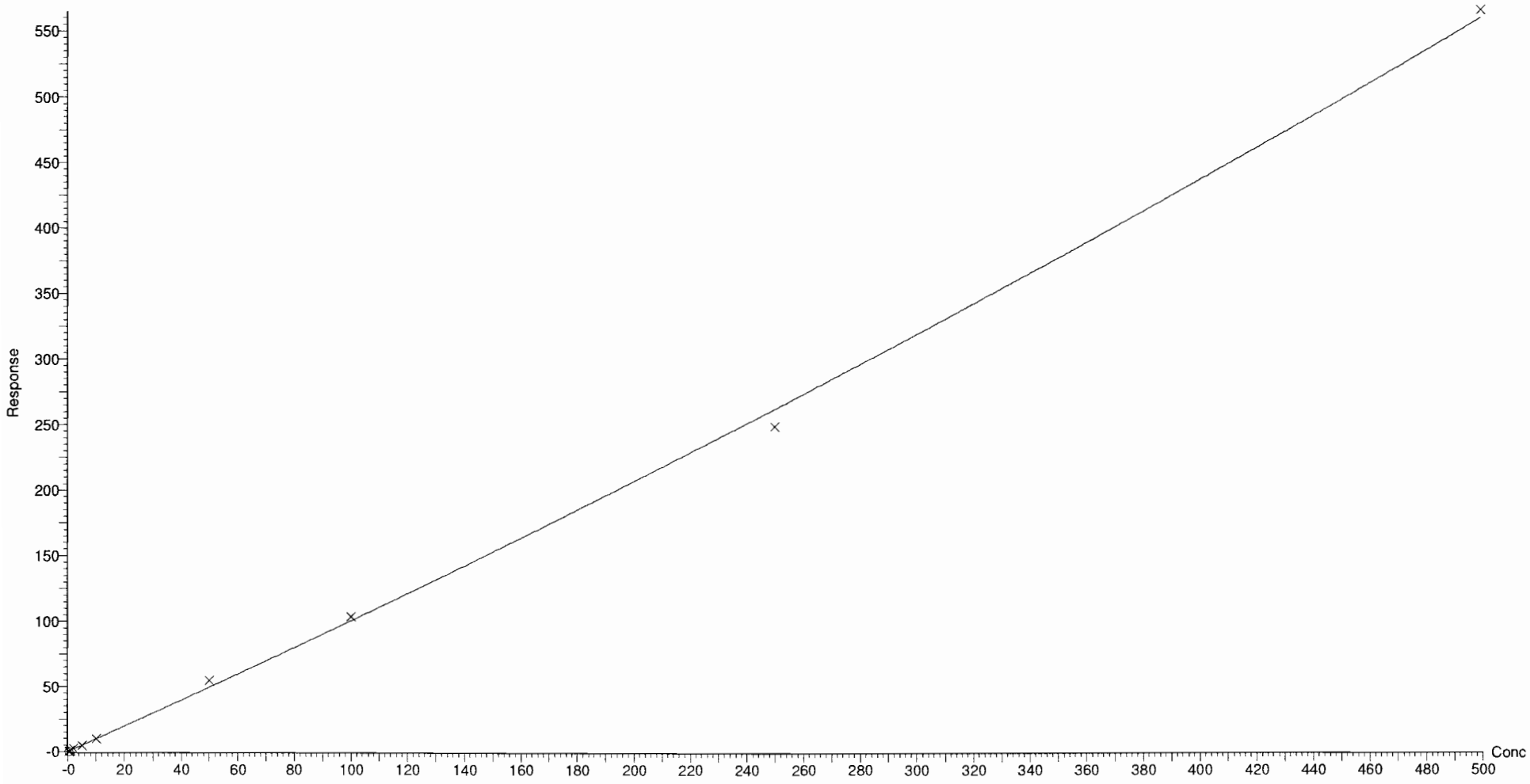


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:15 Pacific Daylight Time

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.998595
Calibration curve: 0.000278082 * x^2 + 0.979147 * x + 0.0957392
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



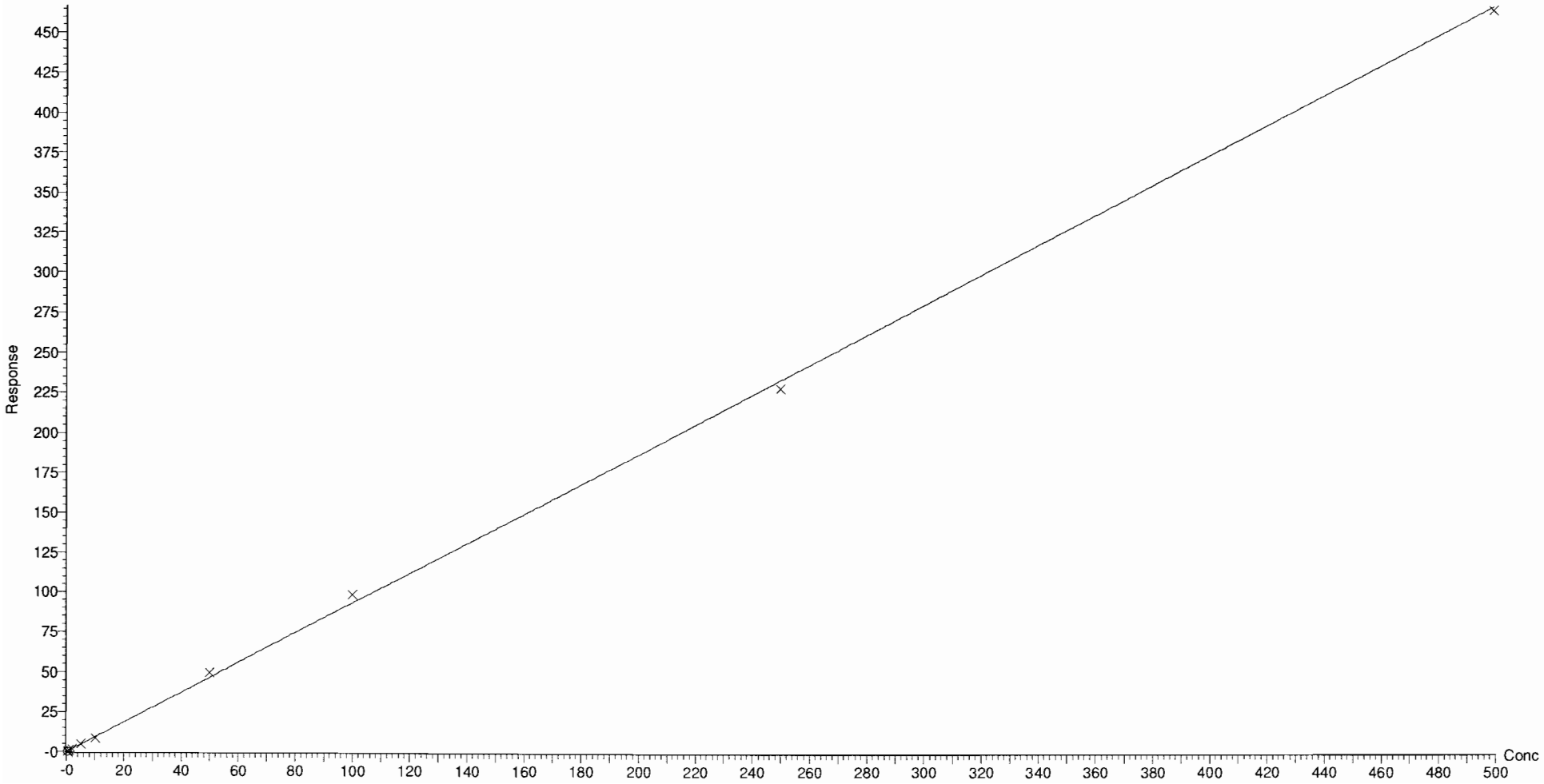
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

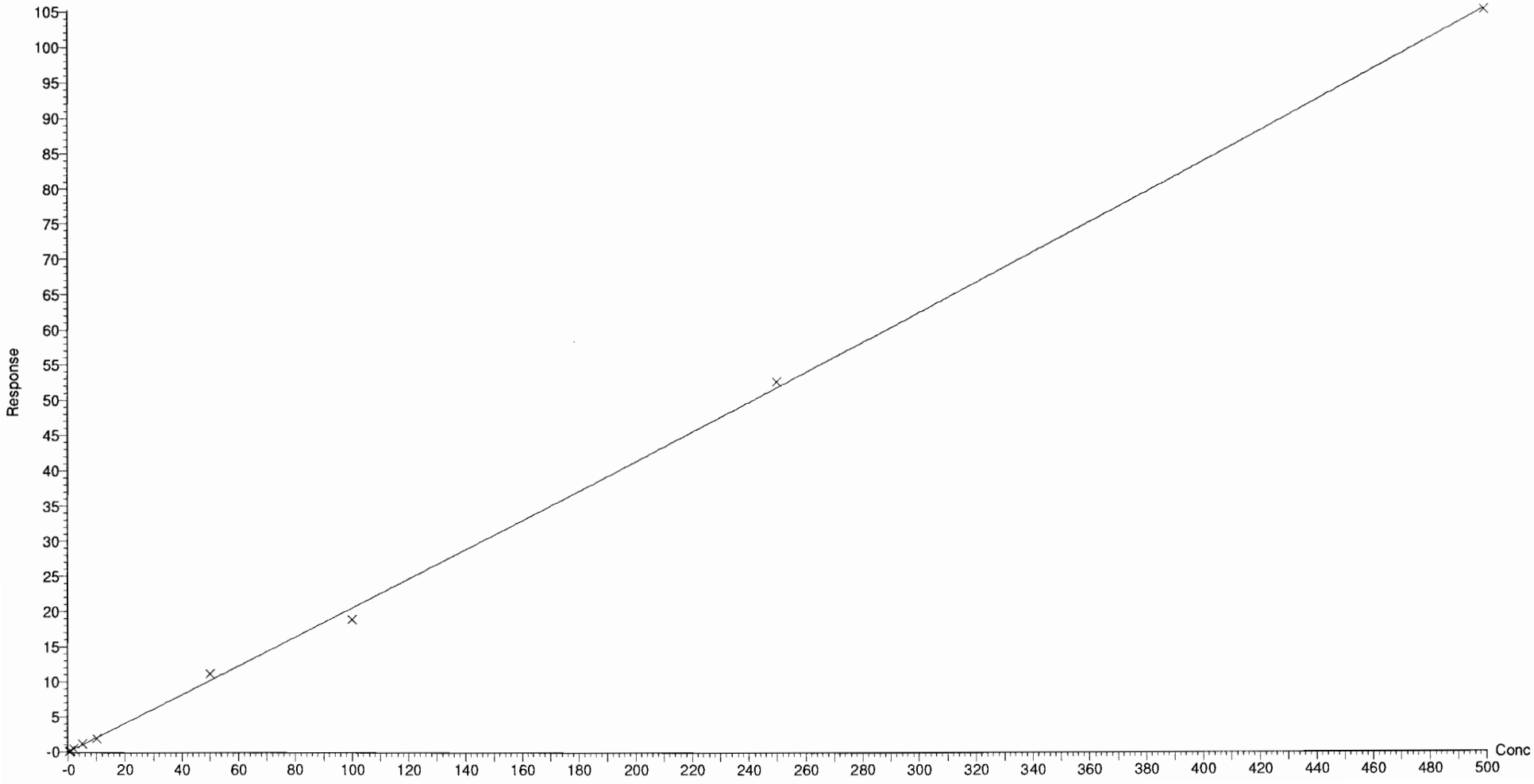
Compound name: PFUdA
Correlation coefficient: r = 0.999597, r^2 = 0.999193
Calibration curve: 0.932976 * x + 0.157717
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

Compound name: PFDS
Coefficient of Determination: R^2 = 0.998725
Calibration curve: 1.45475e-005 * x^2 + 0.20329 * x + 0.00264872
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

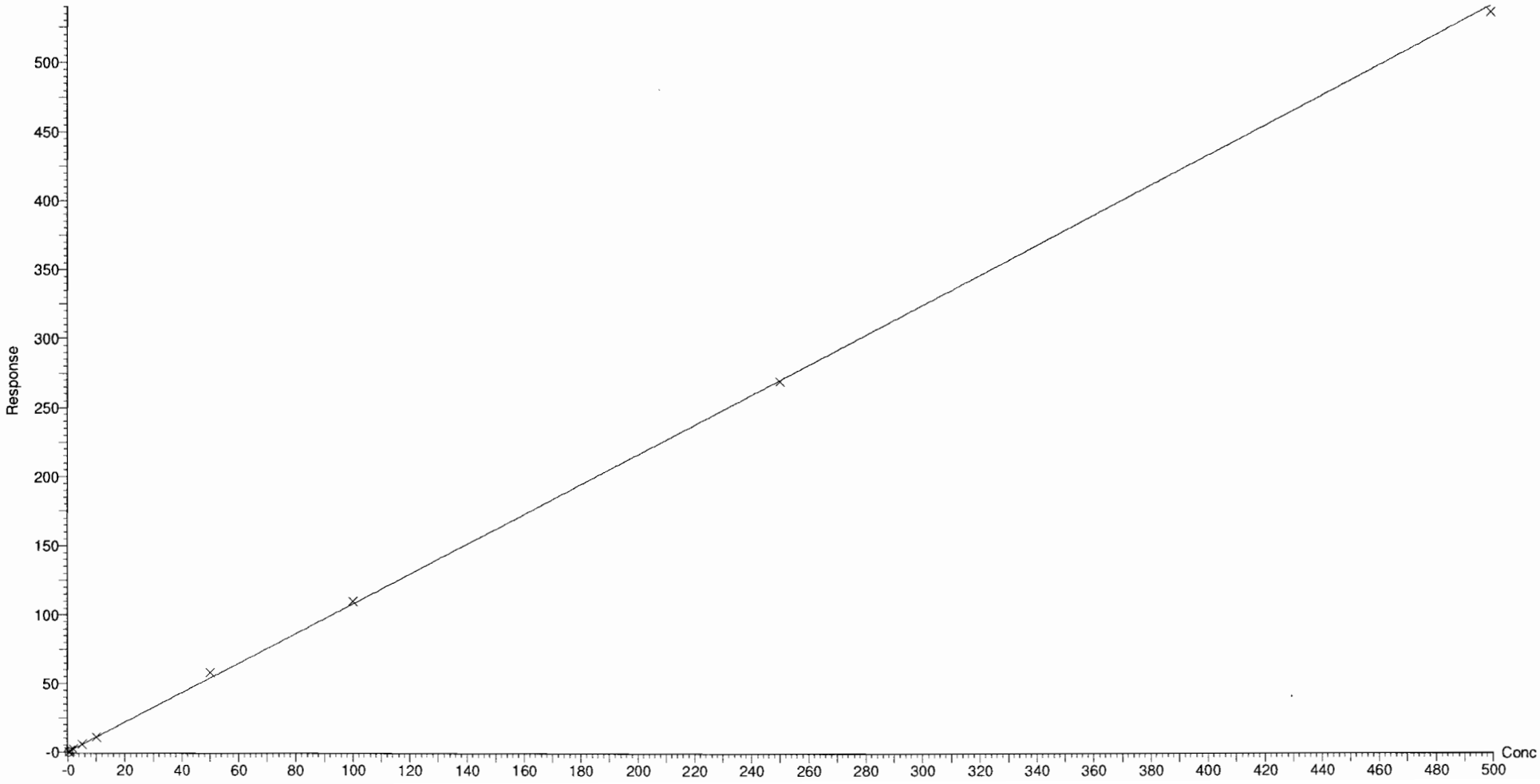


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

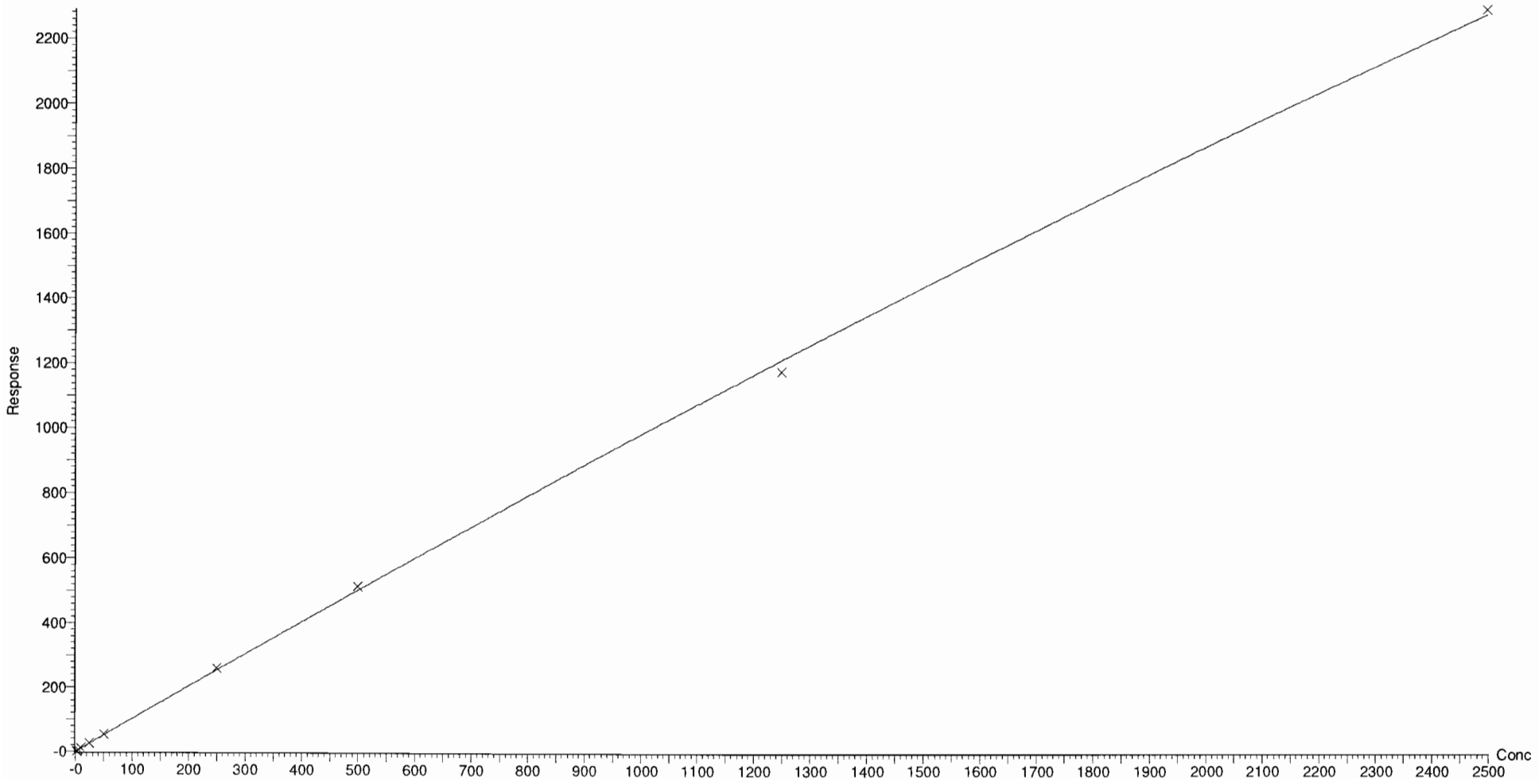
Compound name: PFDoA
Correlation coefficient: r = 0.999810, r^2 = 0.999620
Calibration curve: 1.0797 * x + 0.257512
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999550
Calibration curve: -4.78241e-005 * x^2 + 1.02969 * x + 0.183629
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

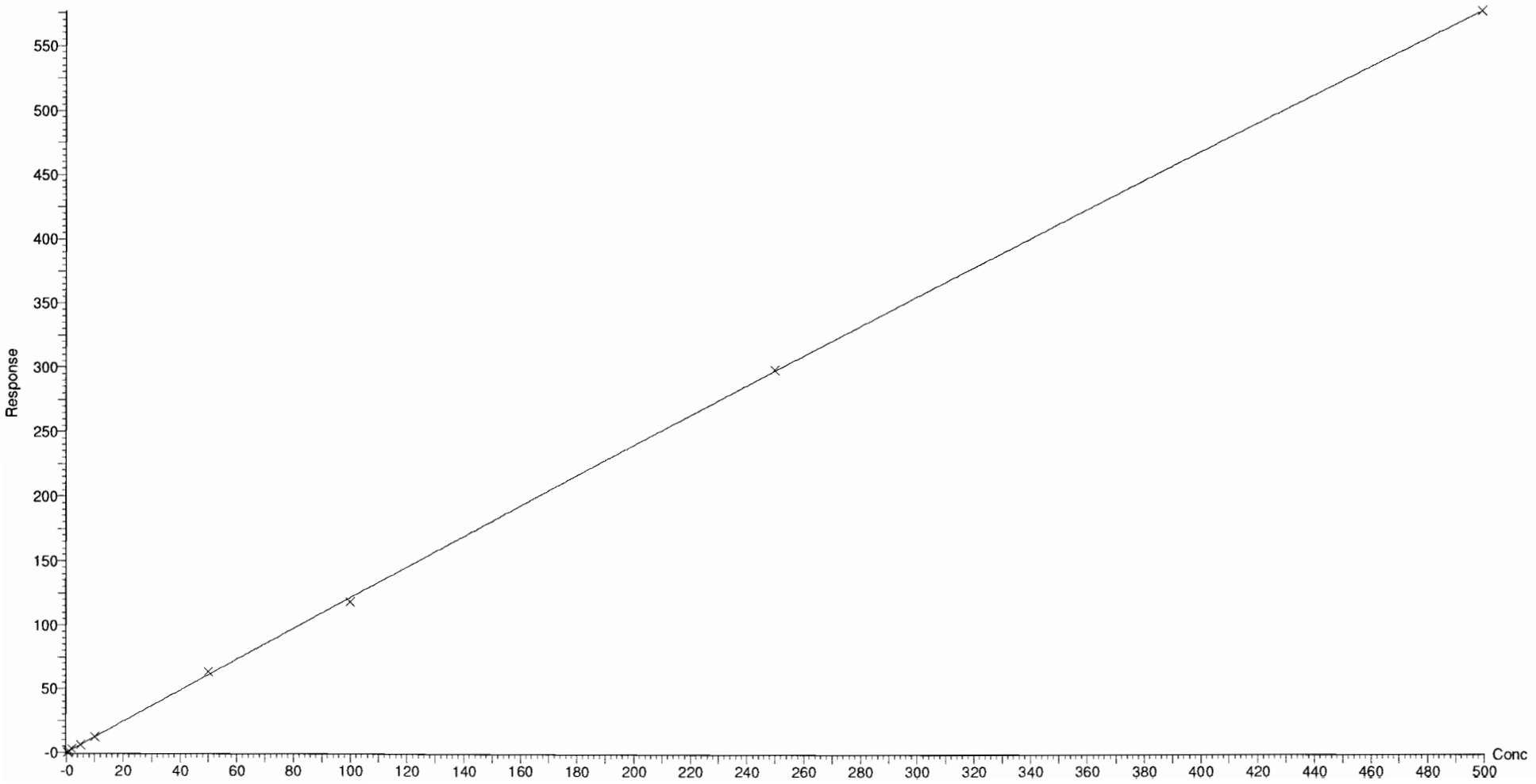


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999771
Calibration curve: -0.000154035 * x^2 + 1.23048 * x + 0.118765
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

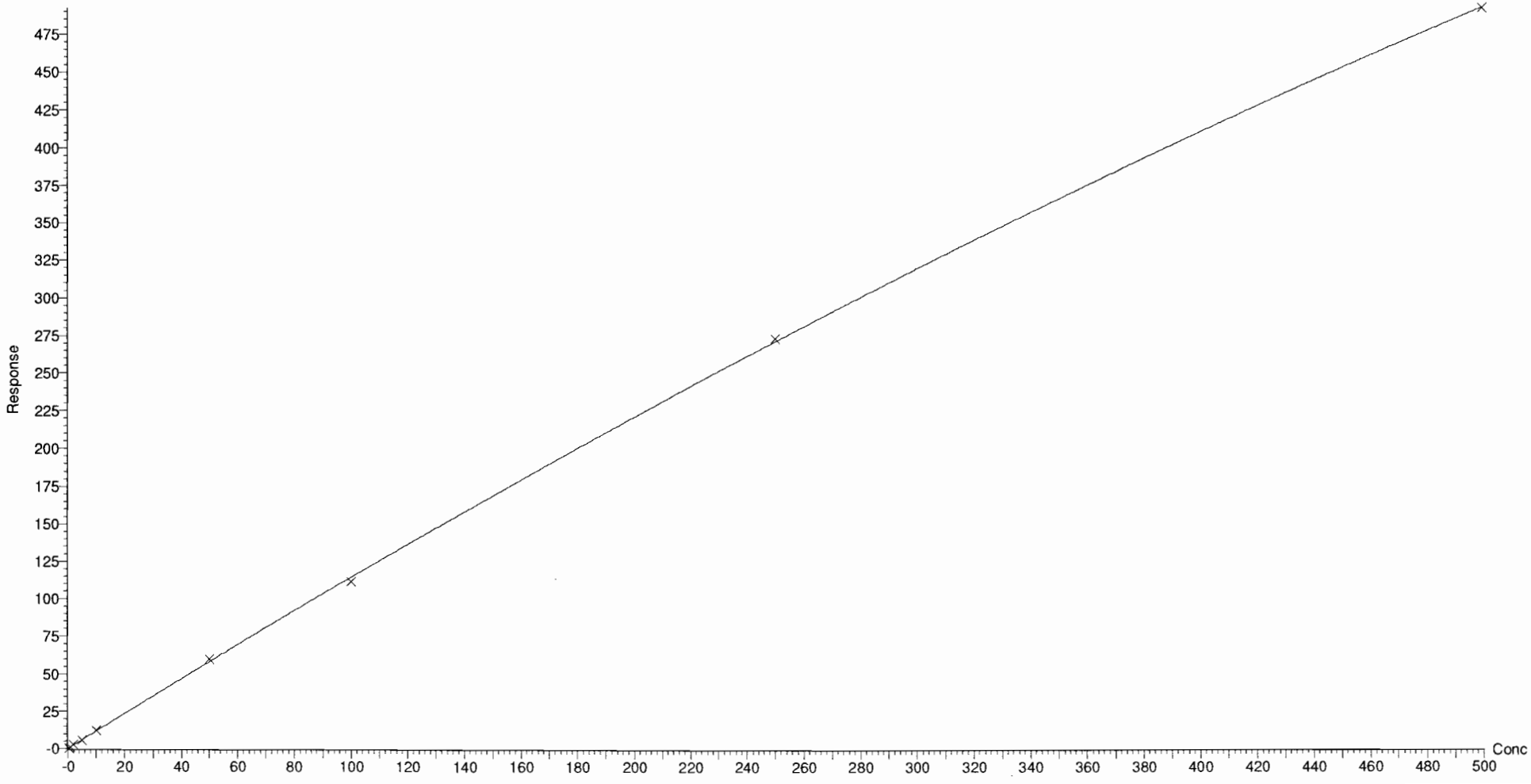


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

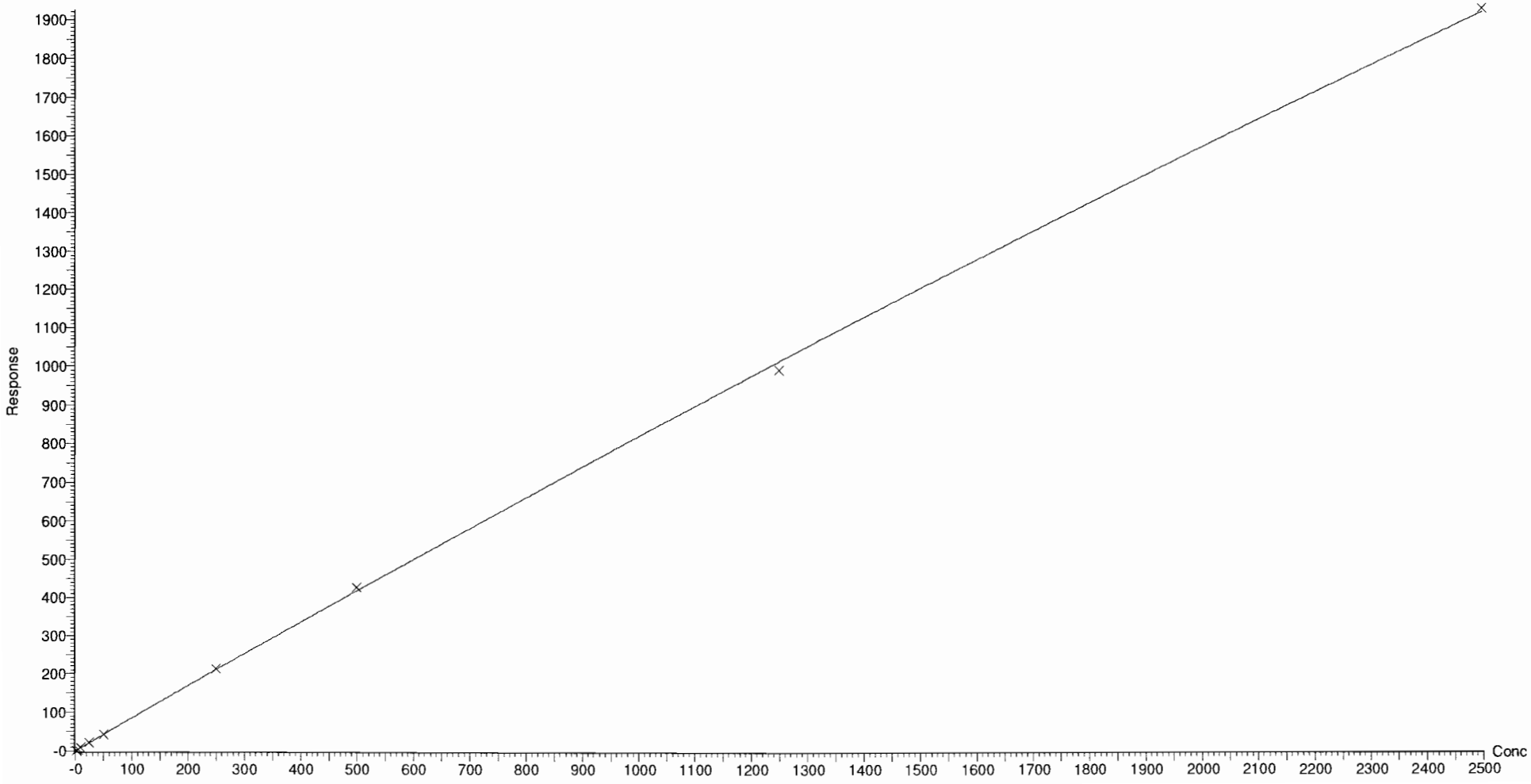
Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999773
Calibration curve: -0.000402574 * x^2 + 1.18631 * x + 0.0222107
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

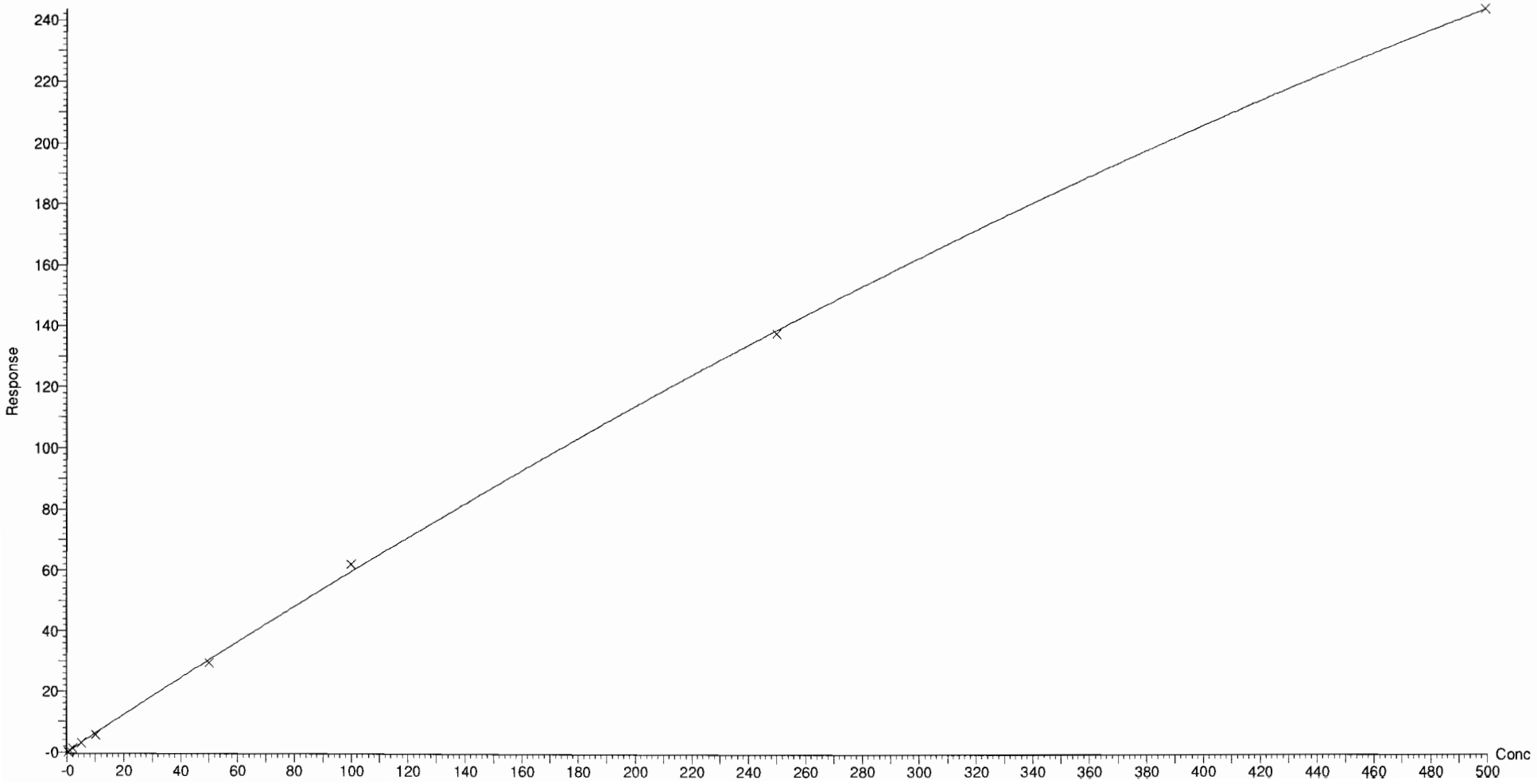
Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999754
Calibration curve: -3.46888e-005 * x^2 + 0.853354 * x + 0.335802
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999488
Calibration curve: -0.000272233 * x^2 + 0.622808 * x + 0.0531833
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

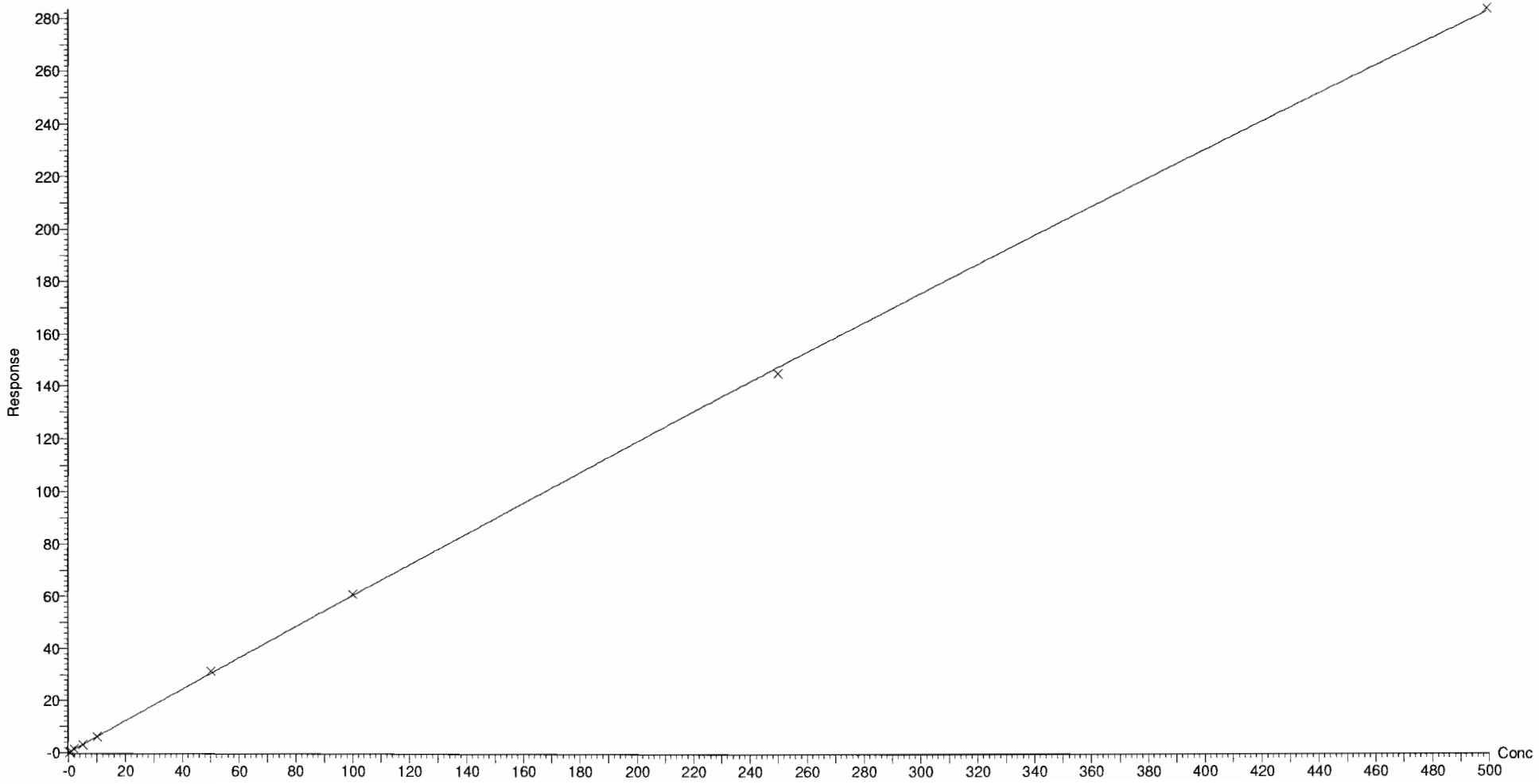


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

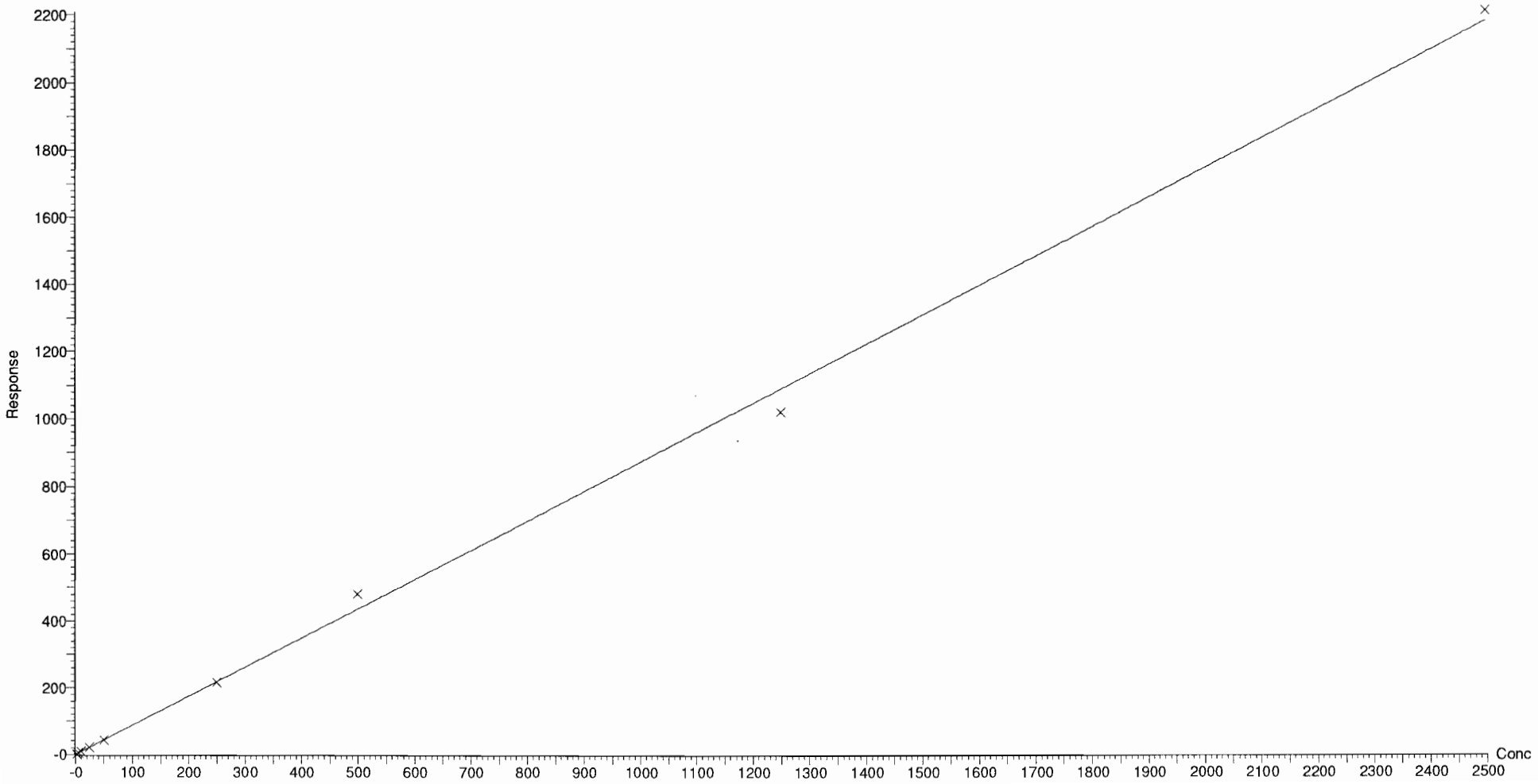
Compound name: PFODA
Coefficient of Determination: R^2 = 0.999795
Calibration curve: -9.90254e-005 * x^2 + 0.61413 * x + 0.0253877
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

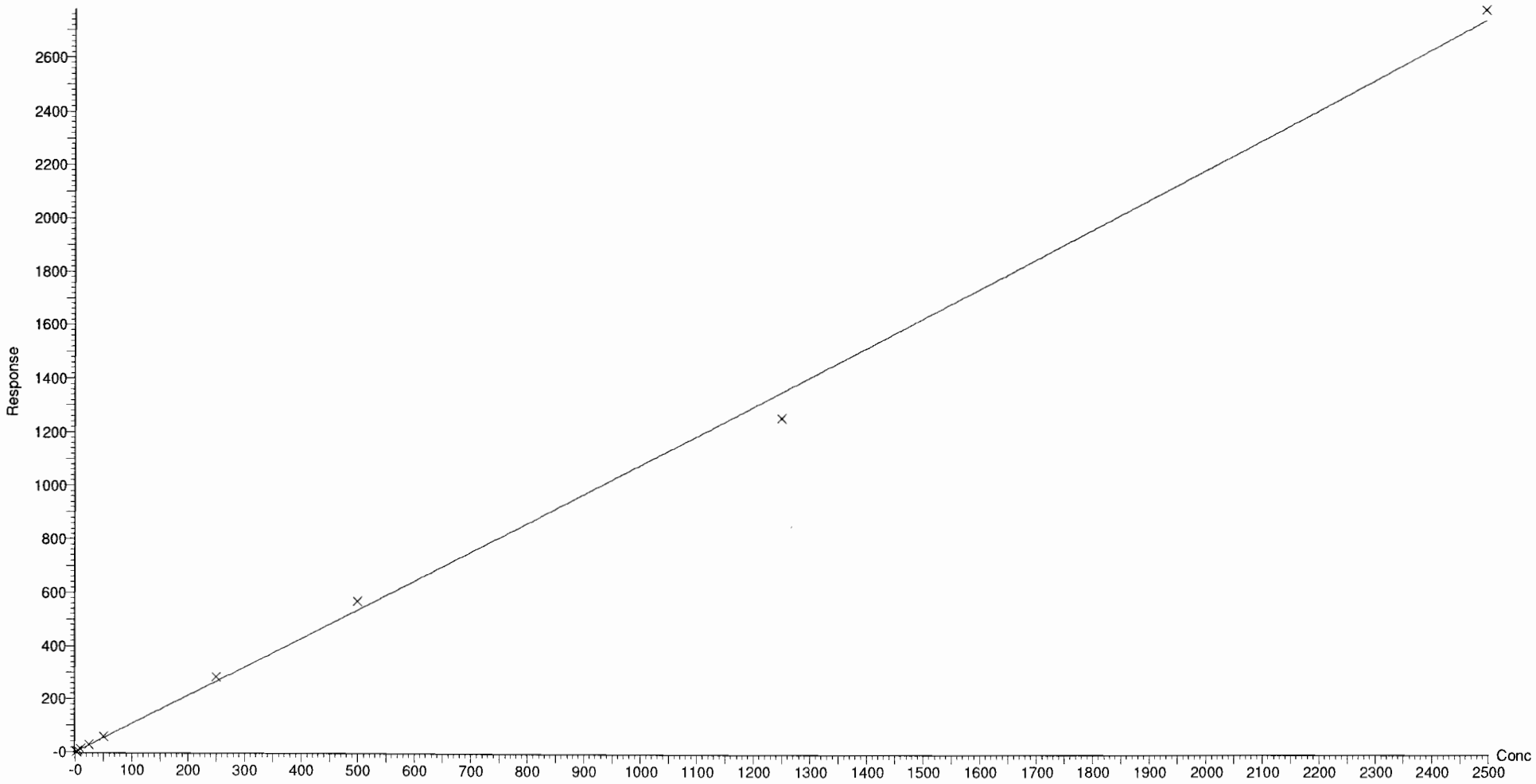
Compound name: N-MeFOSE
Correlation coefficient: r = 0.998780, r^2 = 0.997561
Calibration curve: 0.871697 * x + 0.310982
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:42:39 Pacific Daylight Time

Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.997812
Calibration curve: 1.11235e-005 * x^2 + 1.06837 * x + 0.406337
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory

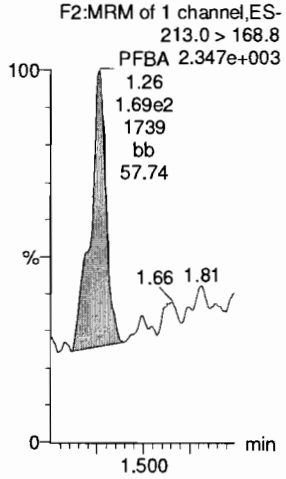
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

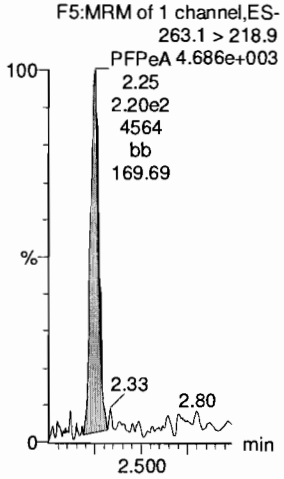
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

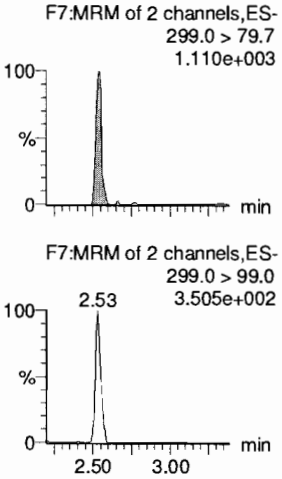
PFBA



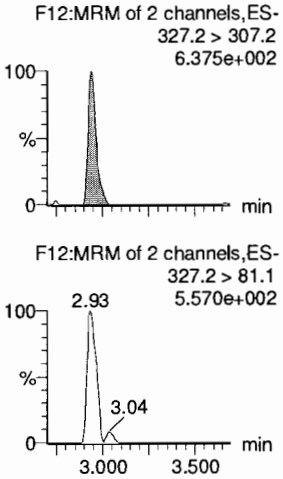
PFPeA



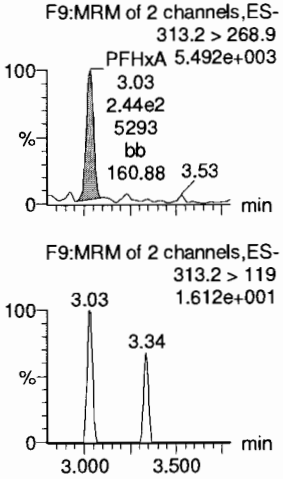
PFBS



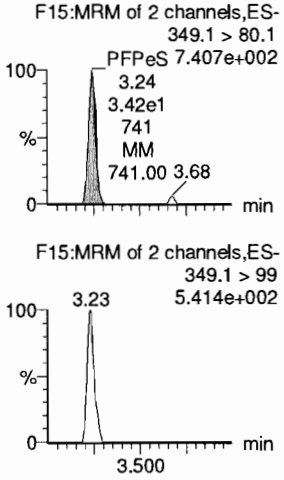
4:2 FTS



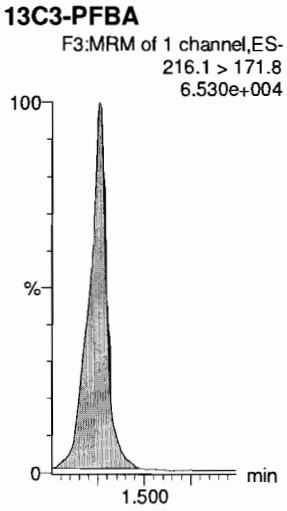
PFHxA



PFPeS



13C3-PFBA



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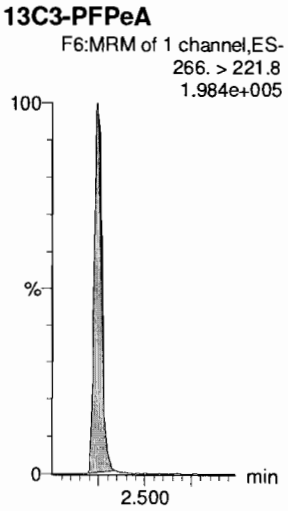
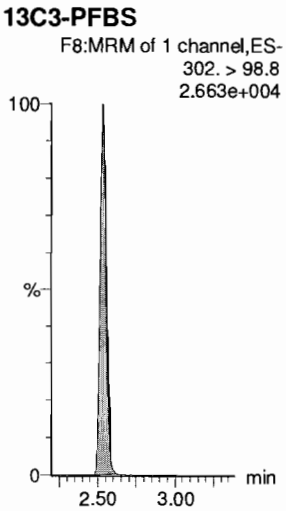
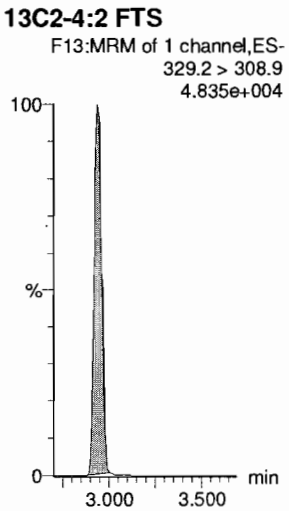


13C3-PFBS



13C2-4:2 FTS



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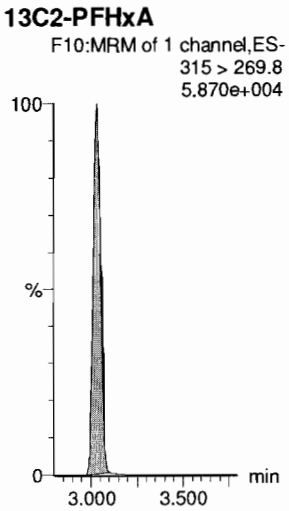

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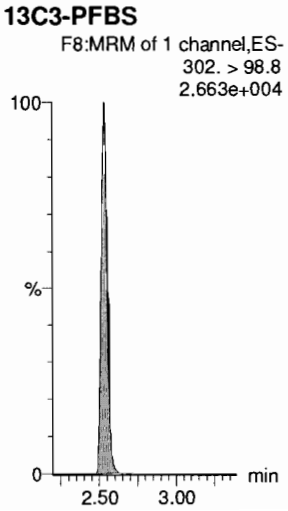

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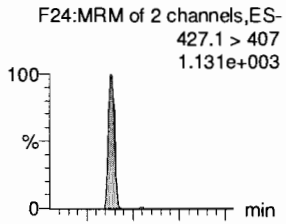
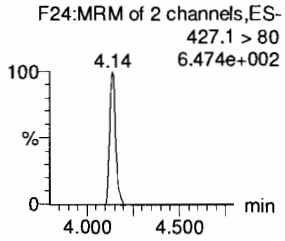
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

6:2 FTS





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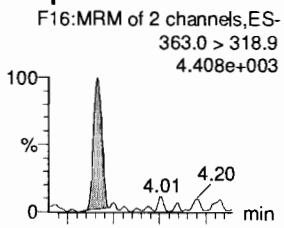

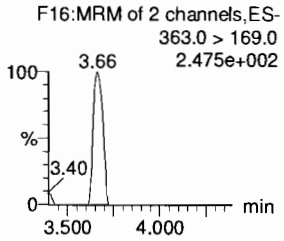

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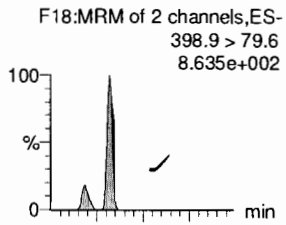

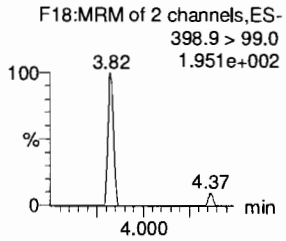

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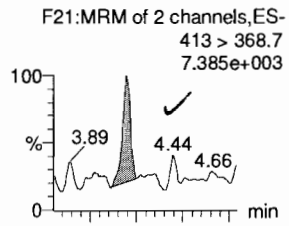

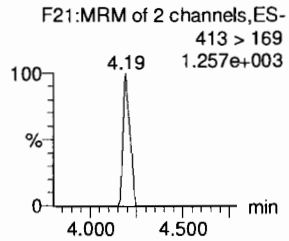

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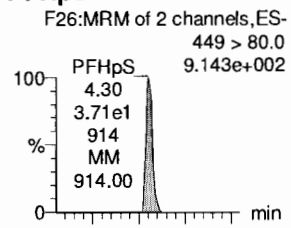

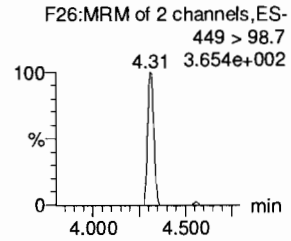

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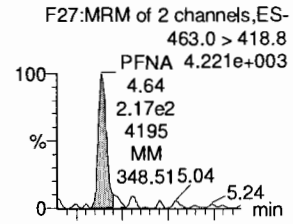
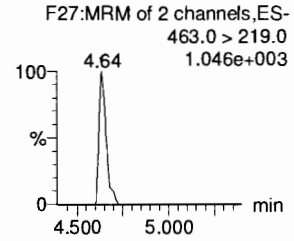
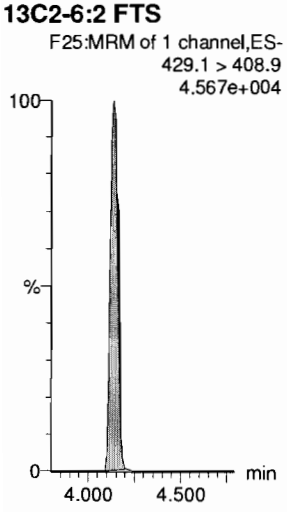
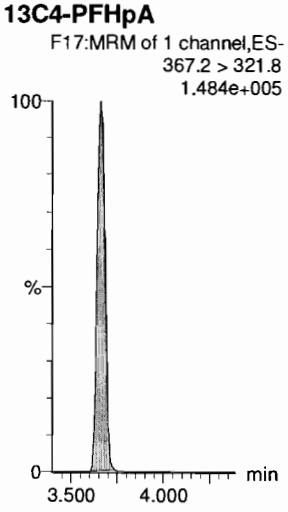




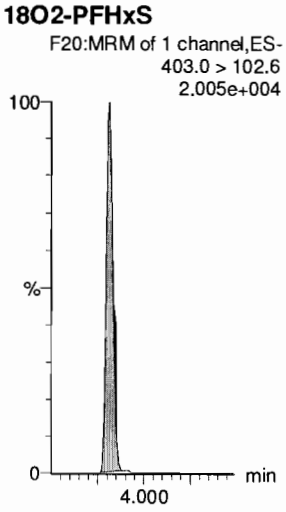
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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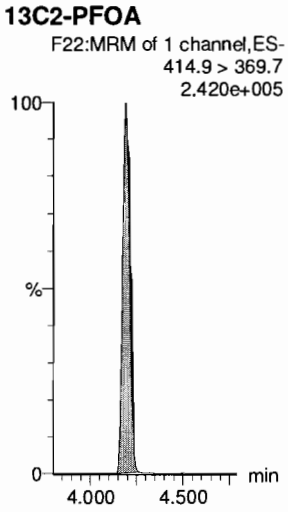

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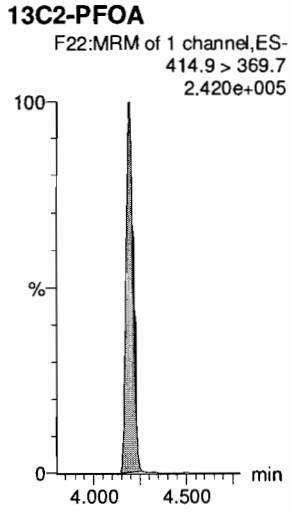

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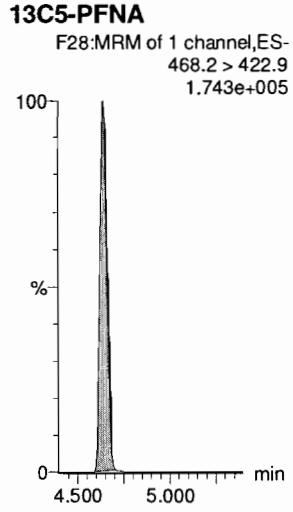
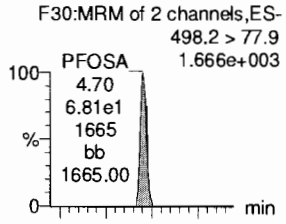


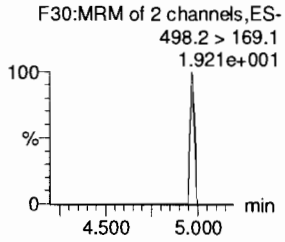
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

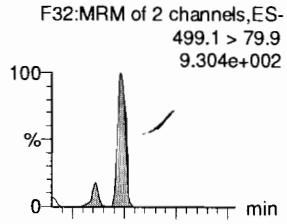
Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

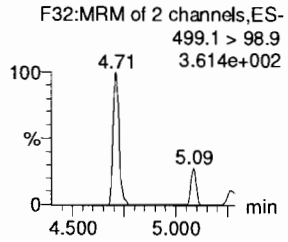
PFOSA





L-PFOS





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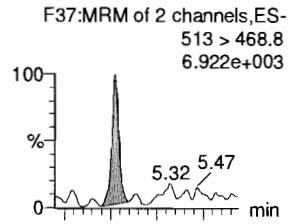
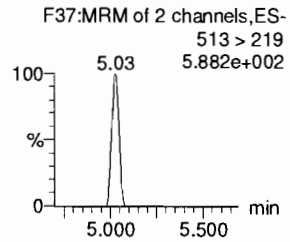
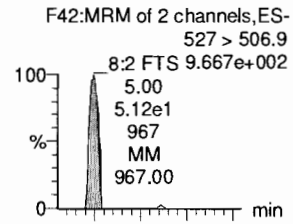
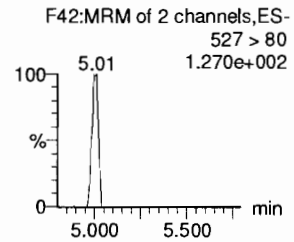


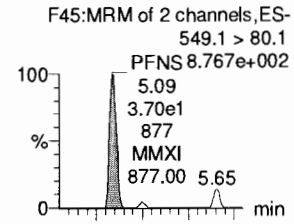


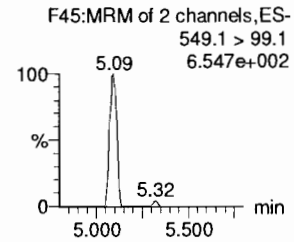
8:2 FTS





PFNS





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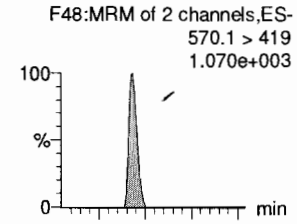

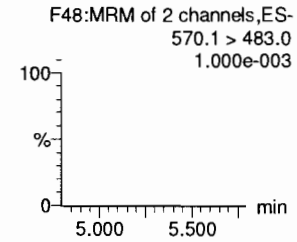

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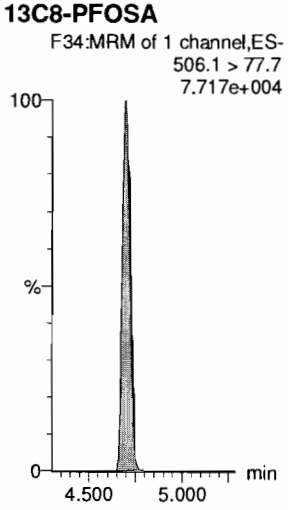

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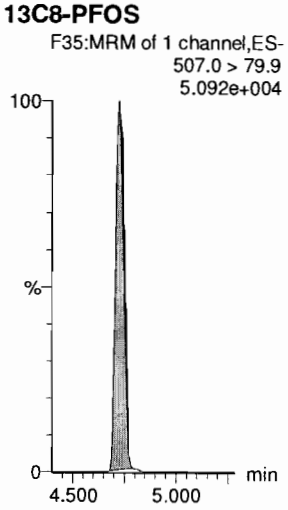

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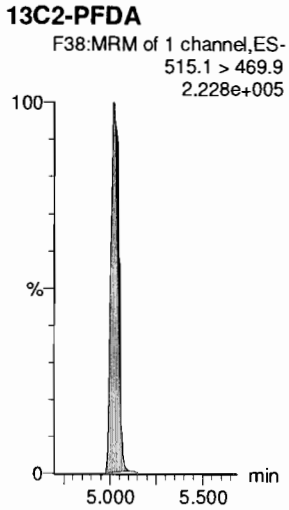
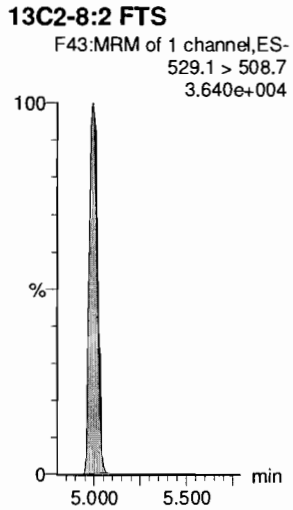
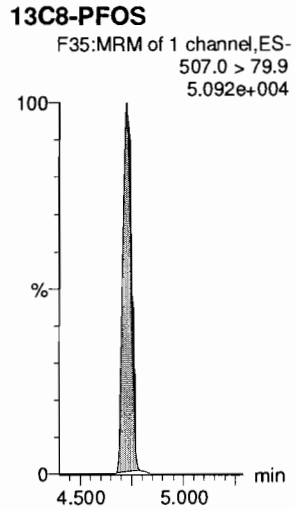


13C2-8:2 FTS



13C8-PFOS



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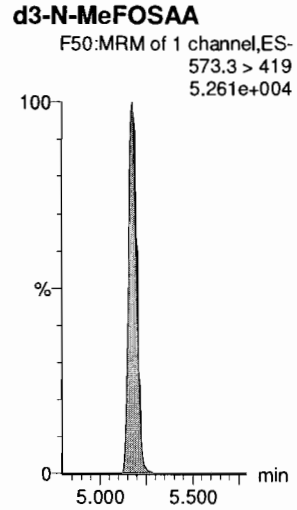
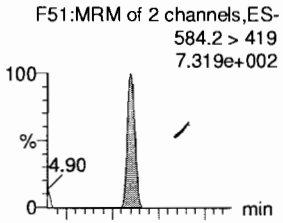


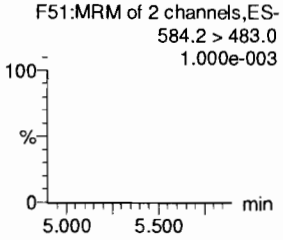
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

L-EtFOSAA





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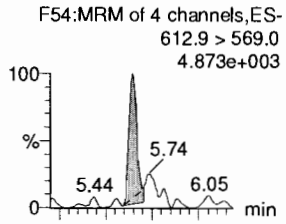

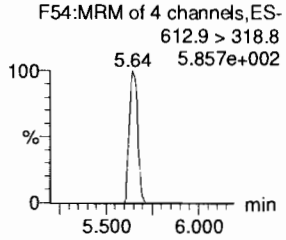

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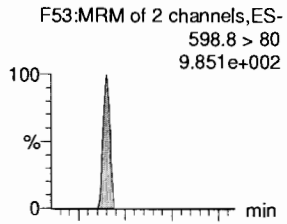

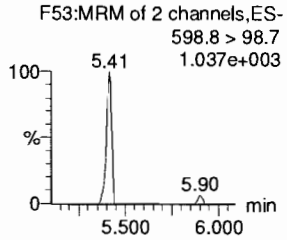

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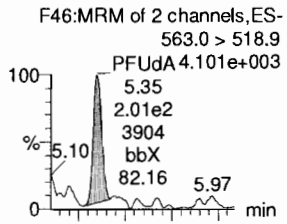

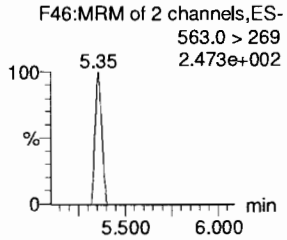

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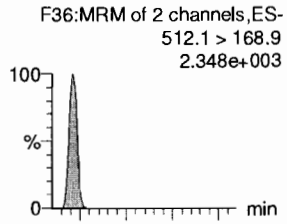

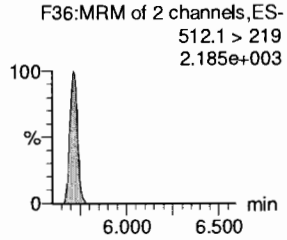

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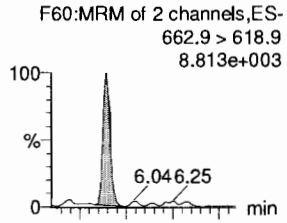
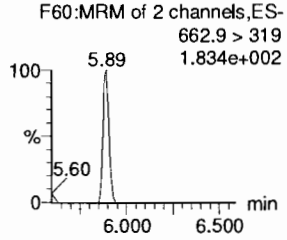
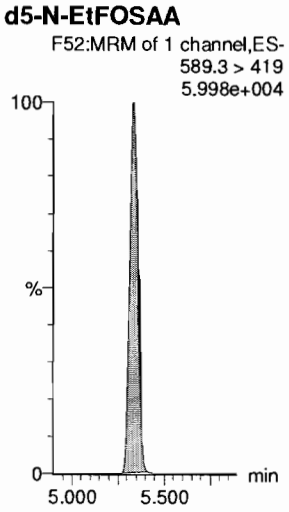
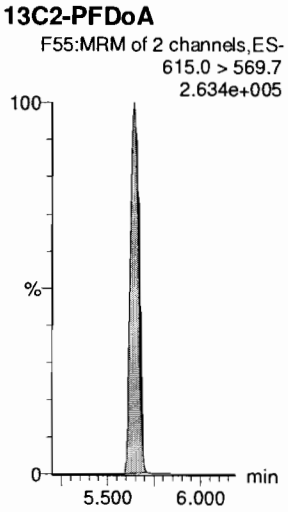




d5-N-EtFOSAA



13C2-PFDoA



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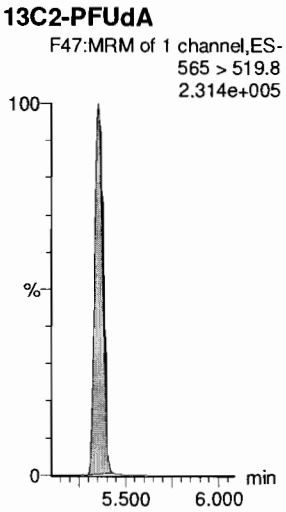
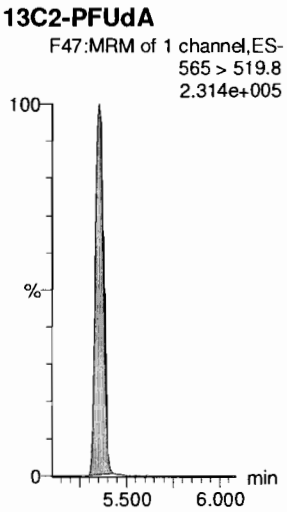


13C2-PFUdA



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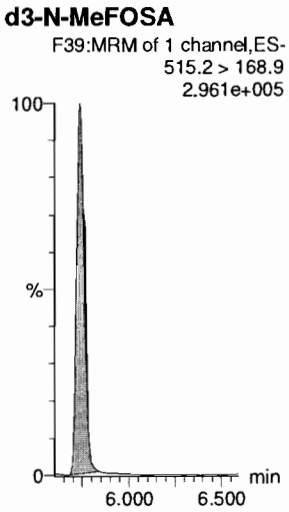
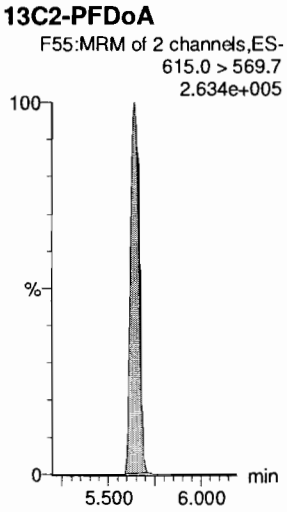


13C2-PFDoA

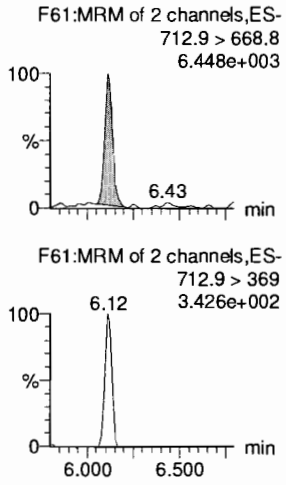


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

PFTeDA



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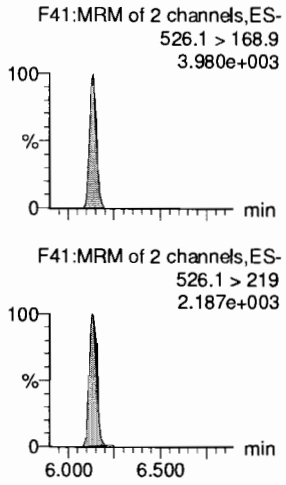
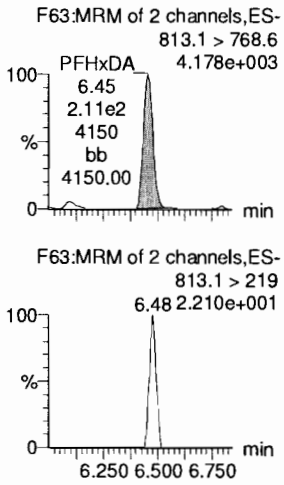
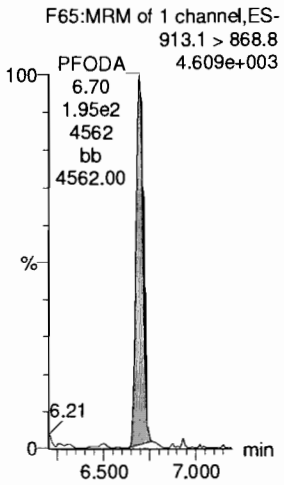


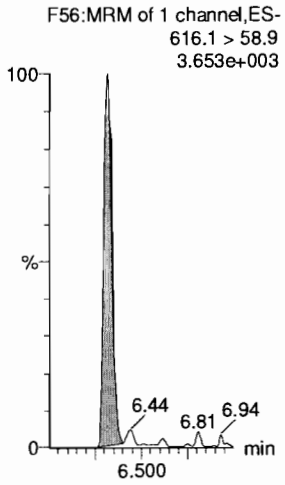
PFHxDA



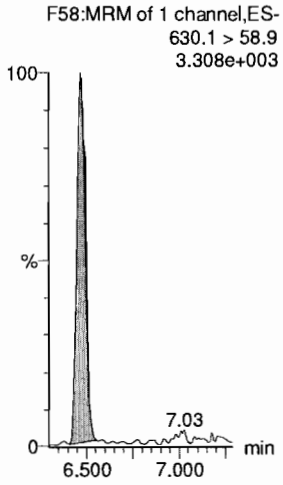
PFODA



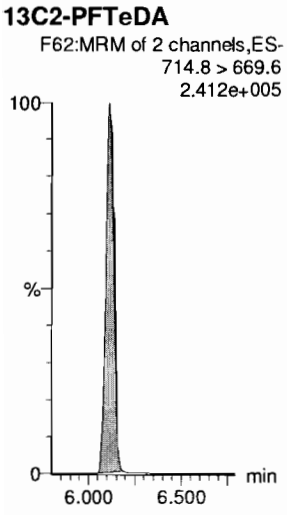
N-MeFOSE



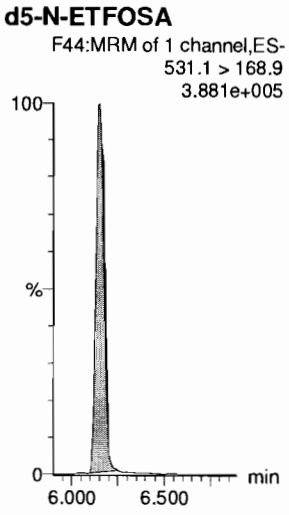
N-EtFOSE



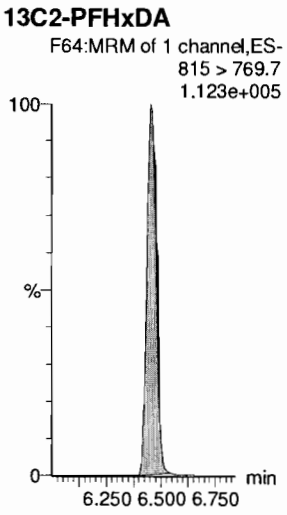
13C2-PFTeDA



d5-N-ETFOSA



13C2-PFHxDA



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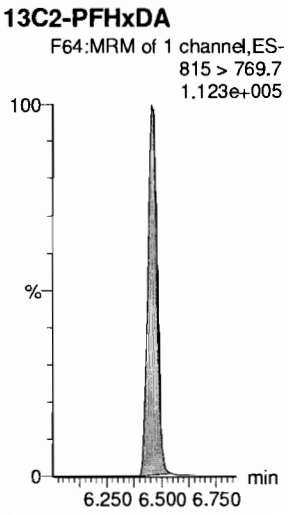
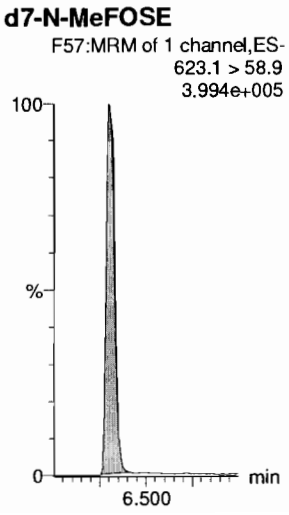
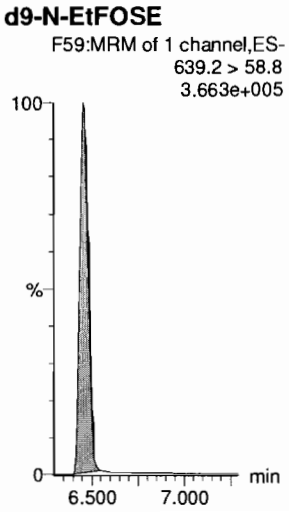


d7-N-MeFOSE



d9-N-EtFOSE

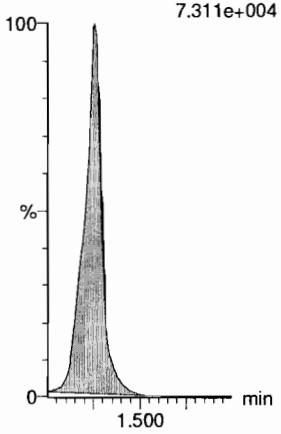


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

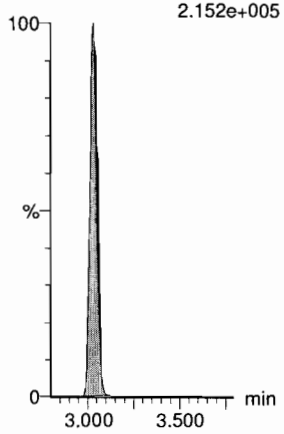
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_2, Date: 15-Jun-2018, Time: 18:20:54, ID: ST180615M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

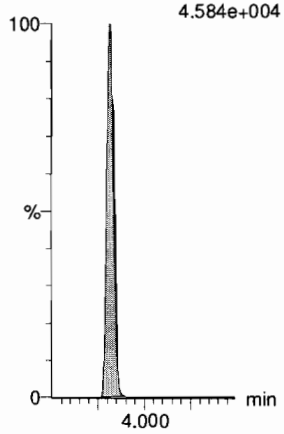
13C4-PFBA



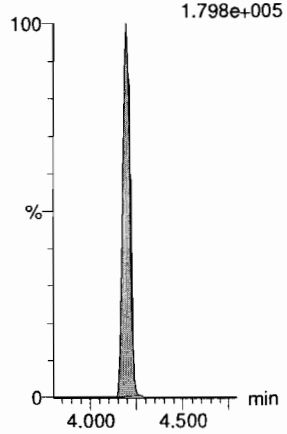
13C5-PFHxA



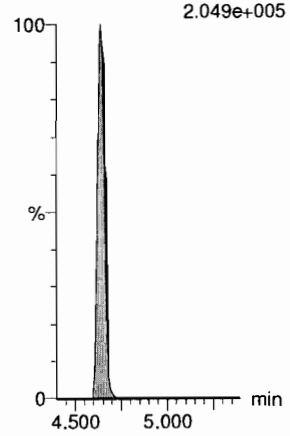
13C3-PFHxS



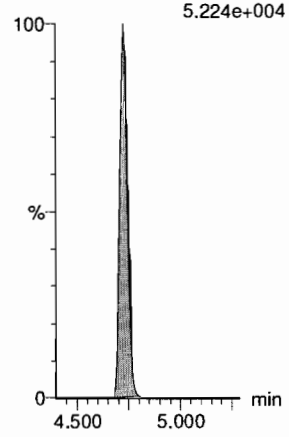
13C8-PFOA



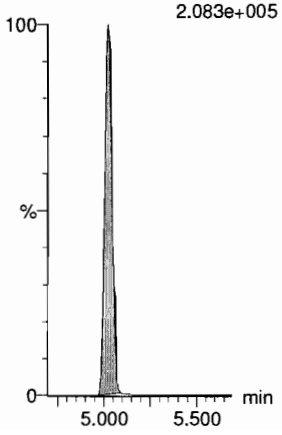
13C9-PFNA



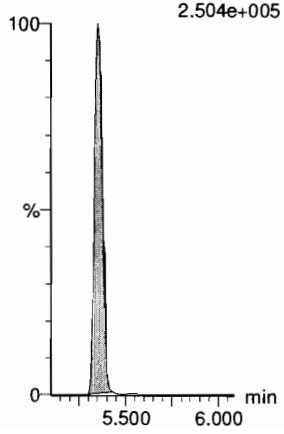
13C4-PFOS



13C6-PFDA



13C7-PFUdA

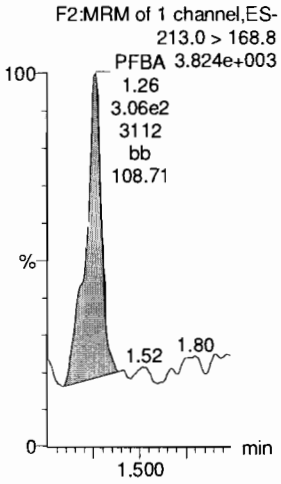


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

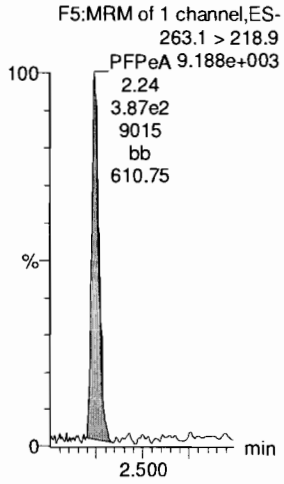
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_3, Date: 15-Jun-2018, Time: 18:31:18, ID: ST180615M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

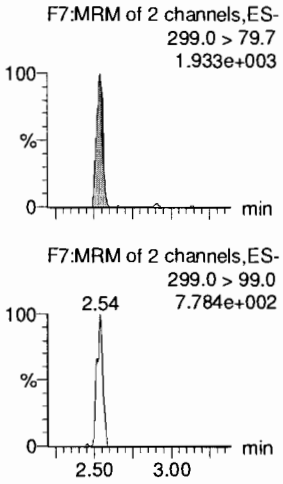
PFBA



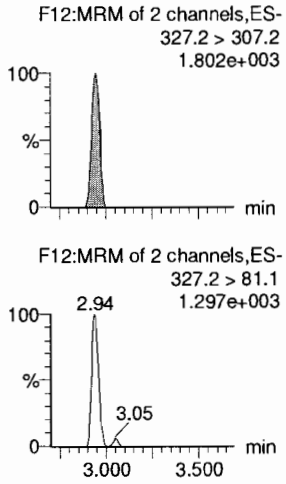
PFPeA



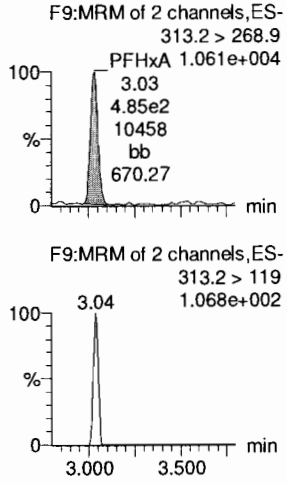
PFBS



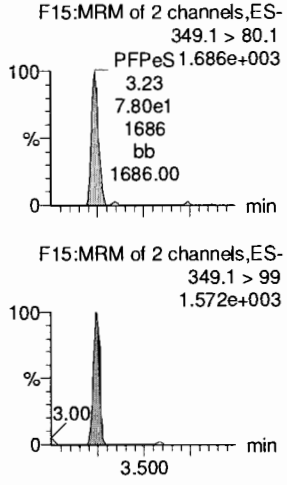
4:2 FTS



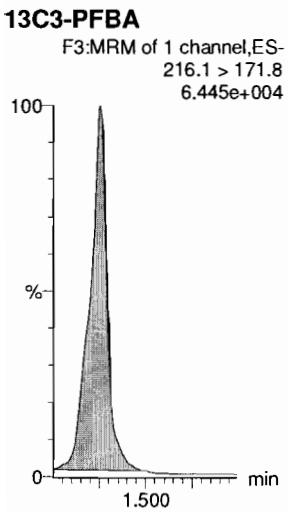
PFHxA



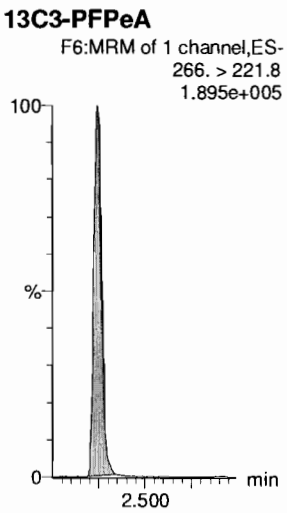
PFPeS



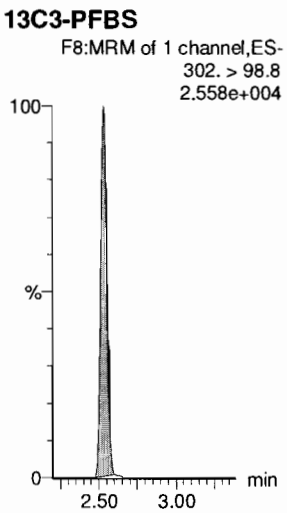
13C3-PFBA



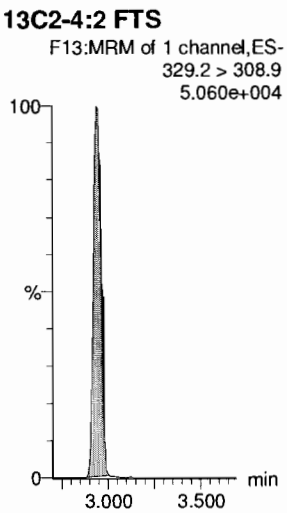
13C3-PFPeA



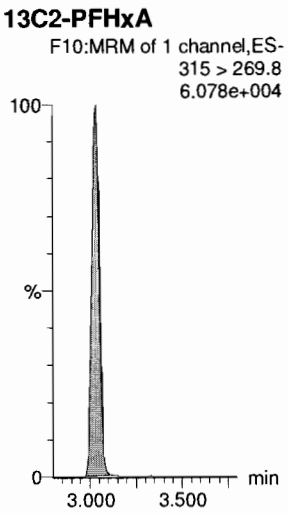
13C3-PFBS



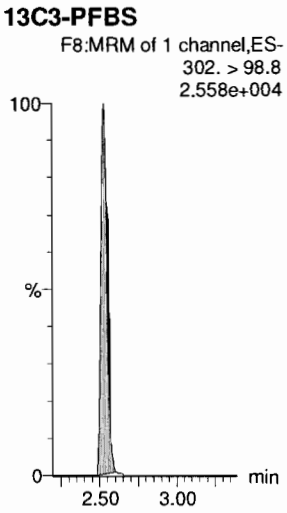
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

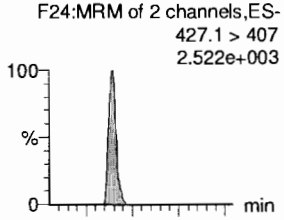


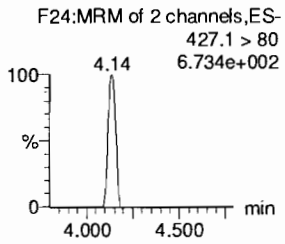
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

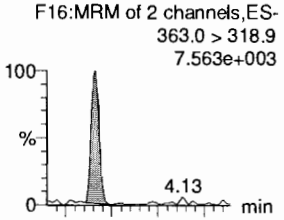
Name: 180615M1_3, Date: 15-Jun-2018, Time: 18:31:18, ID: ST180615M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

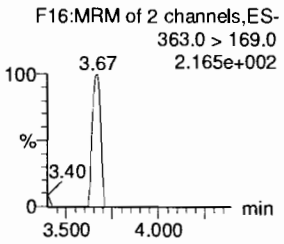
6:2 FTS



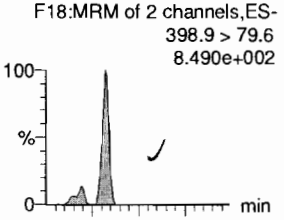


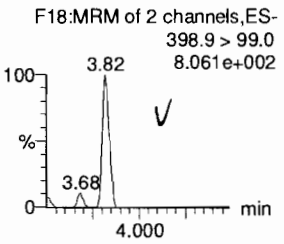
PFHpA



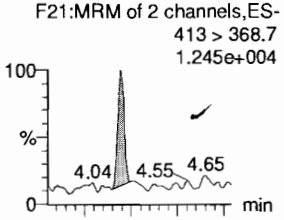


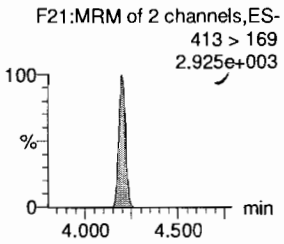
L-PFHxS



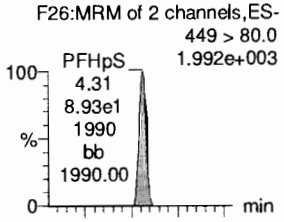


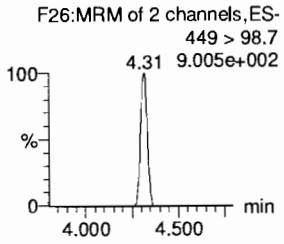
L-PFOA



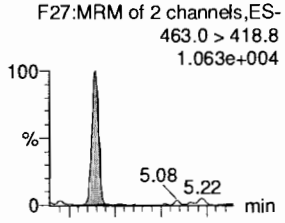


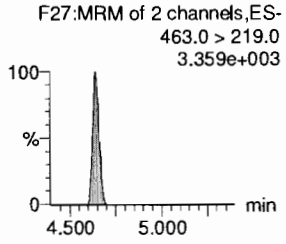
PFHpS



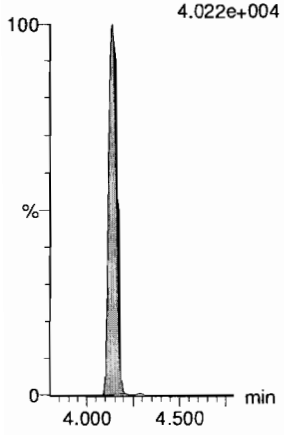


PFNA

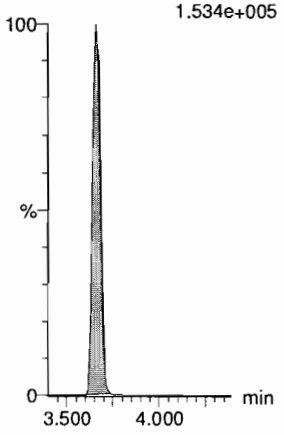




13C2-6:2 FTS



13C4-PFHpA



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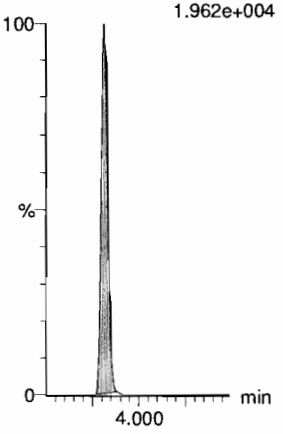

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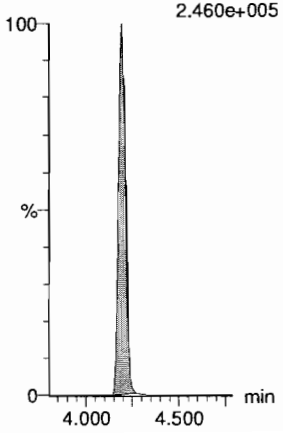

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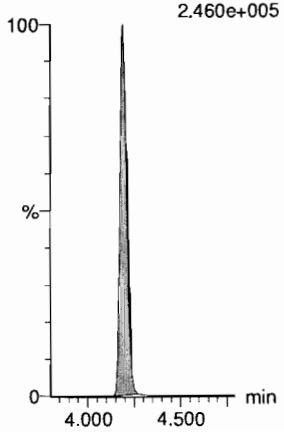

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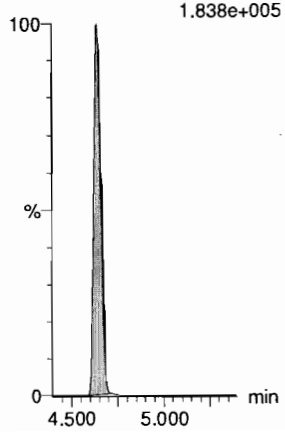

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Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_3, Date: 15-Jun-2018, Time: 18:31:18, ID: ST180615M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

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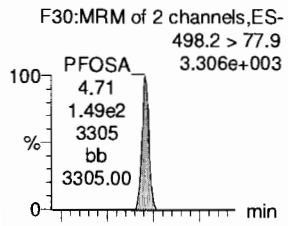

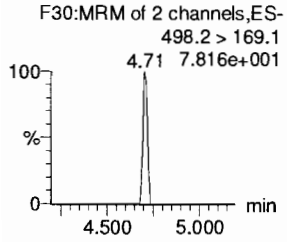

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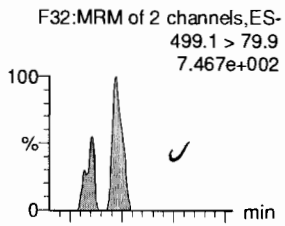

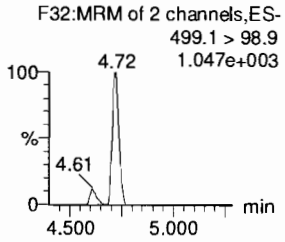

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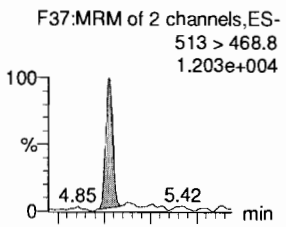
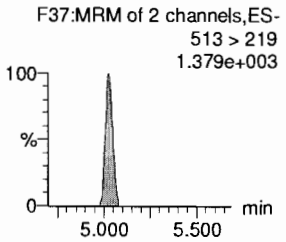
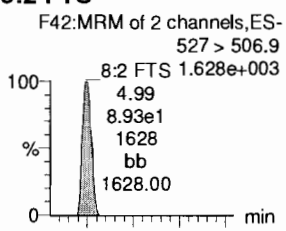
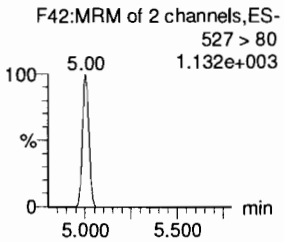




8:2 FTS





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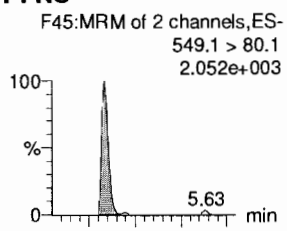

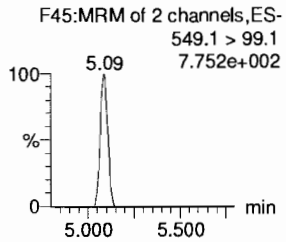

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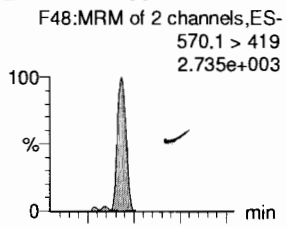

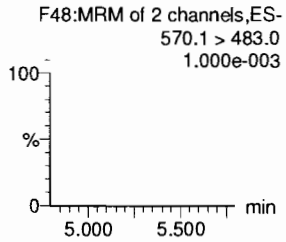

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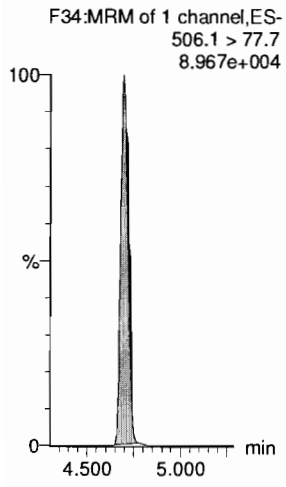

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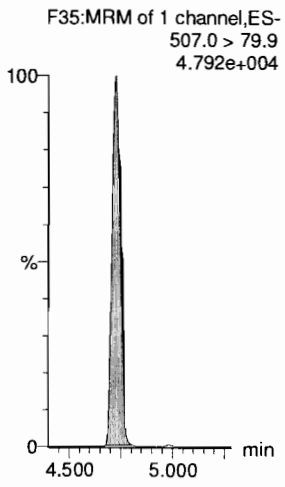

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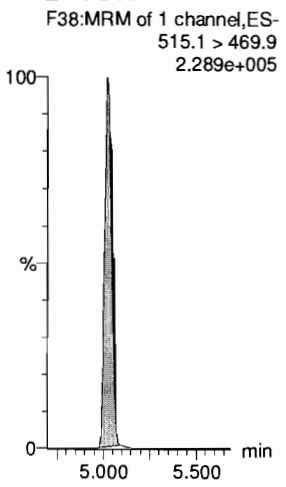
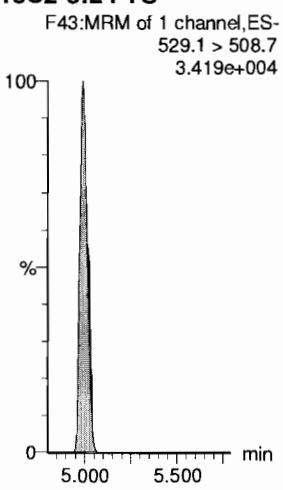


13C2-8:2 FTS



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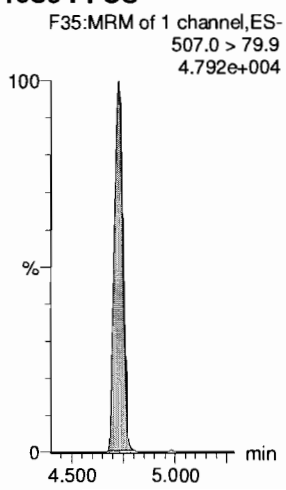

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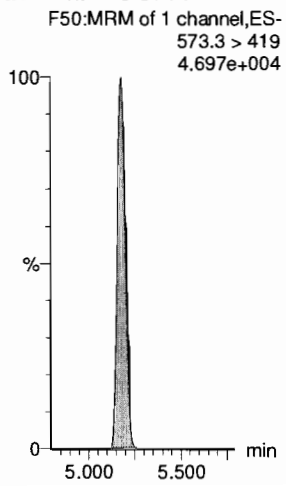

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_3, Date: 15-Jun-2018, Time: 18:31:18, ID: ST180615M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

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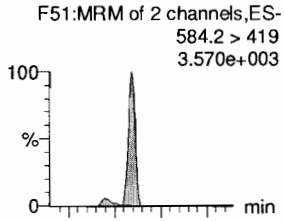

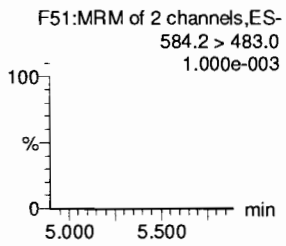

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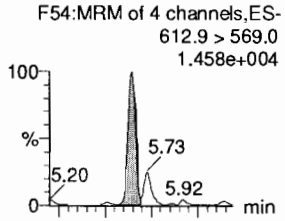

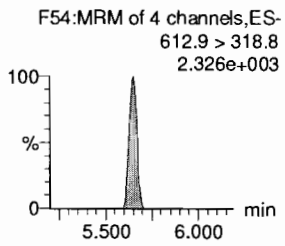

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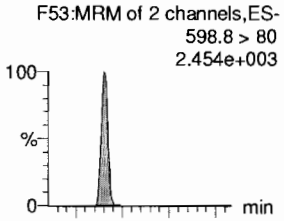

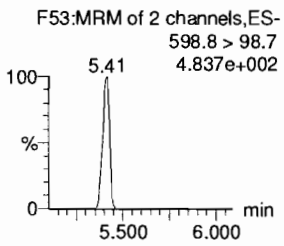

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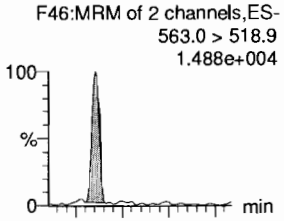

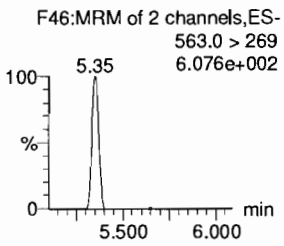

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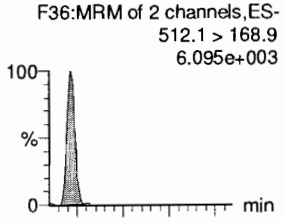

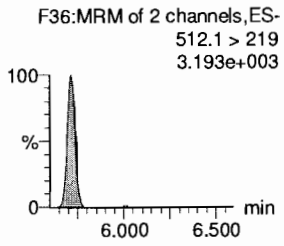

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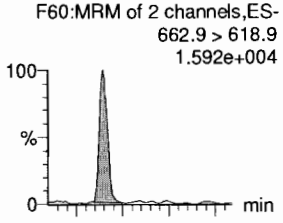

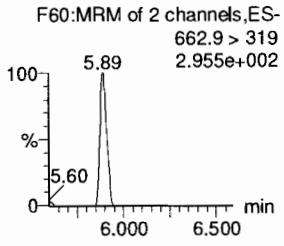

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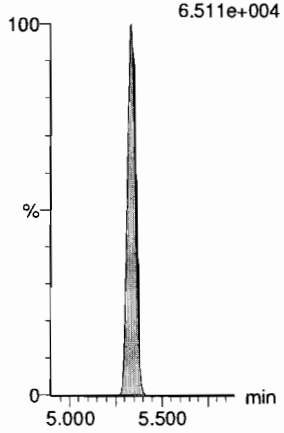

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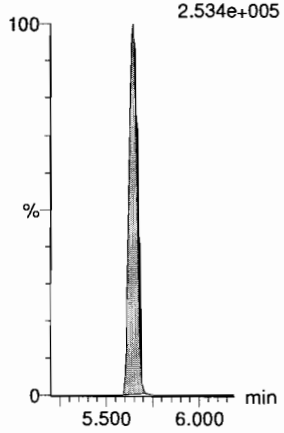

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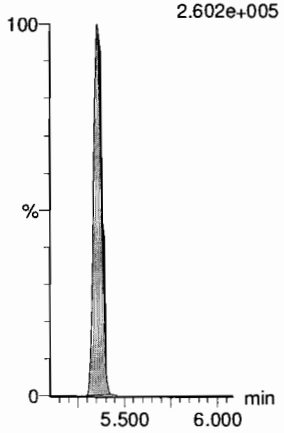

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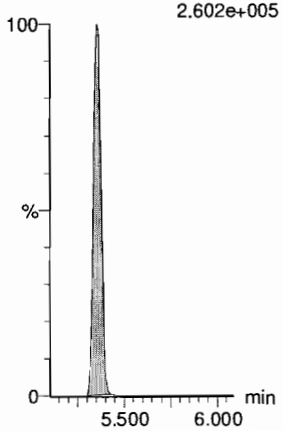

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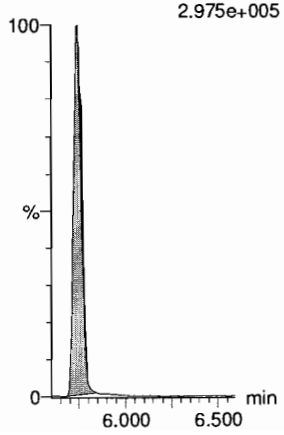

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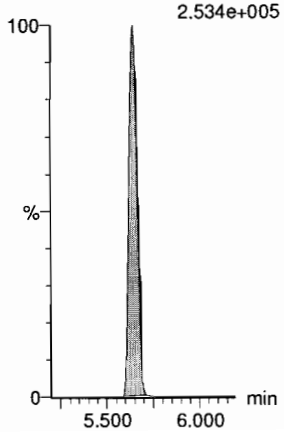

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Name: 180615M1_3, Date: 15-Jun-2018, Time: 18:31:18, ID: ST180615M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

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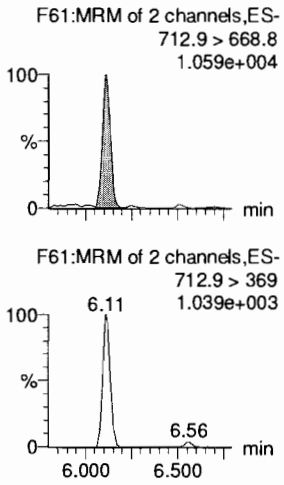

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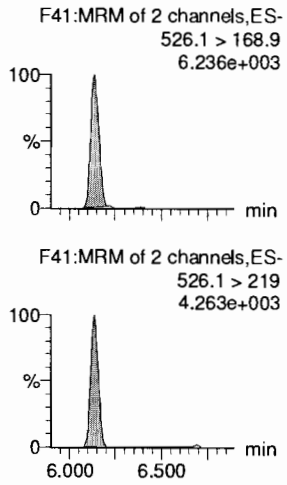

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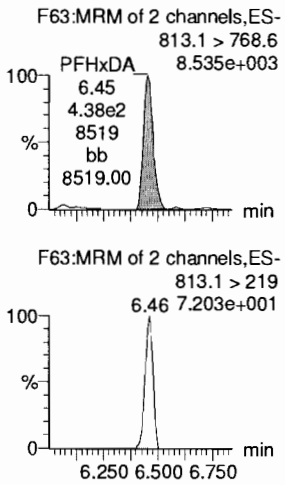

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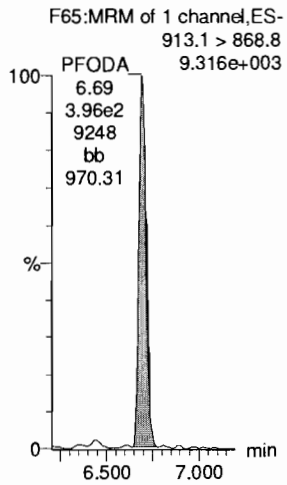

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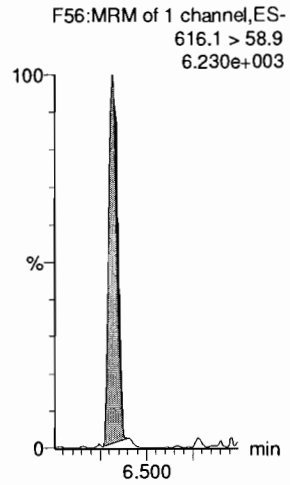

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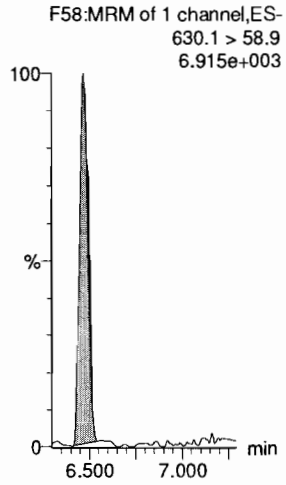

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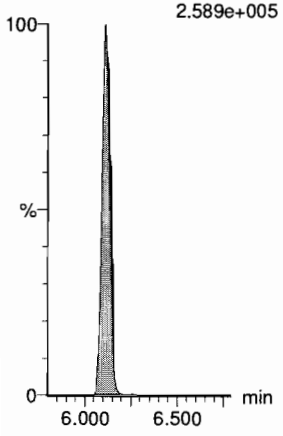
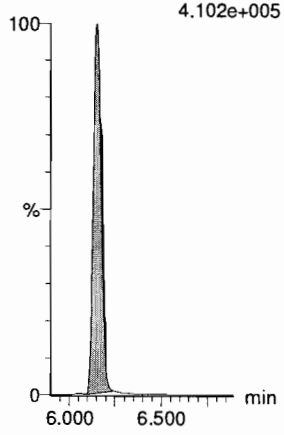


d5-N-ETFOSA



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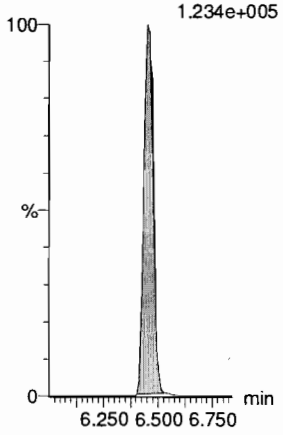

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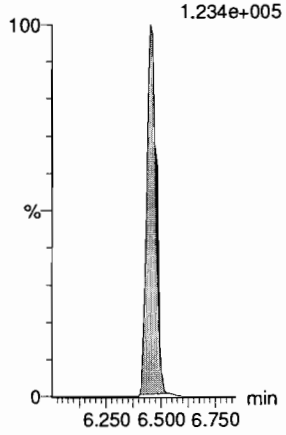
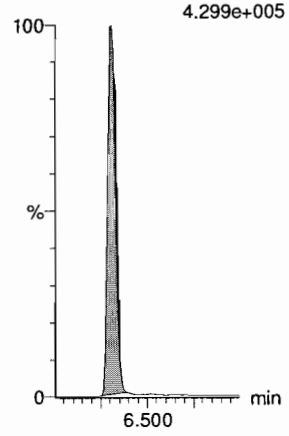
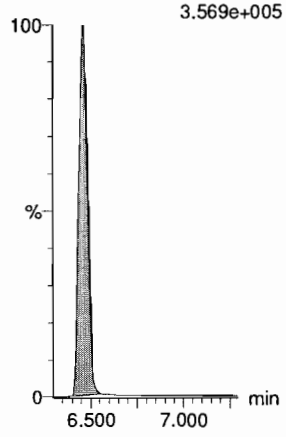


d7-N-MeFOSE



d9-N-EtFOSE

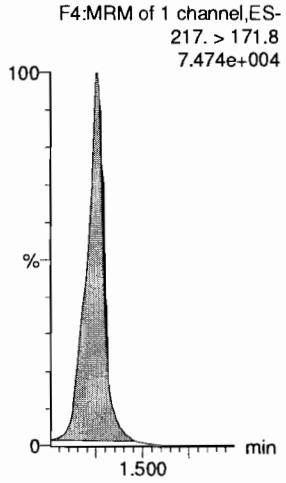


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

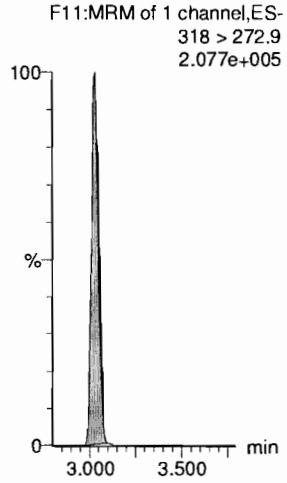
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_3, Date: 15-Jun-2018, Time: 18:31:18, ID: ST180615M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

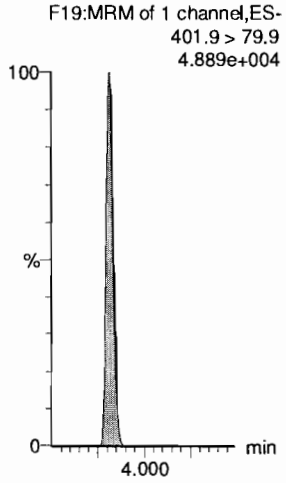
13C4-PFBA



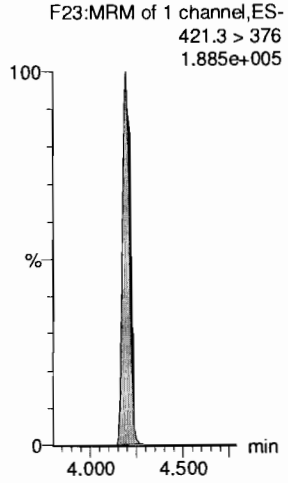
13C5-PFHxA



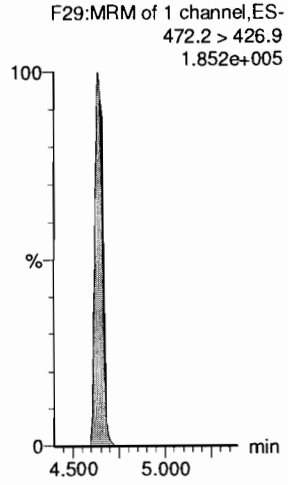
13C3-PFHxS



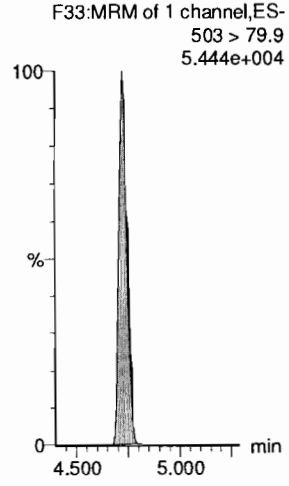
13C8-PFOA



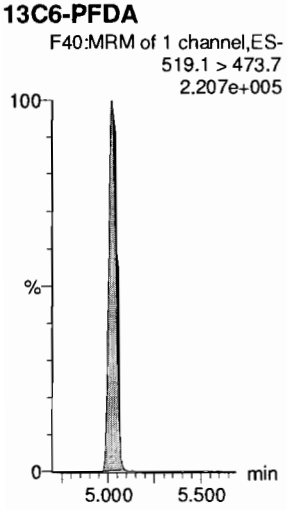
13C9-PFNA



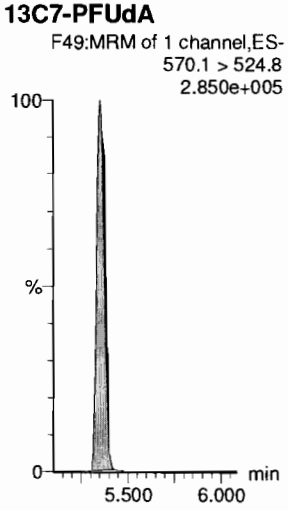
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_4, Date: 15-Jun-2018, Time: 18:41:48, ID: ST180615M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

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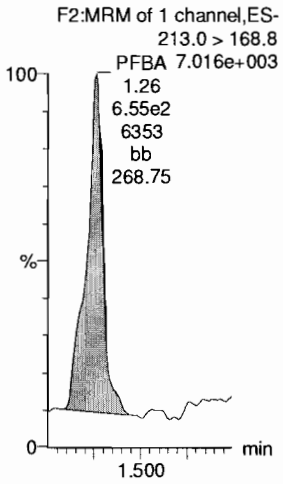
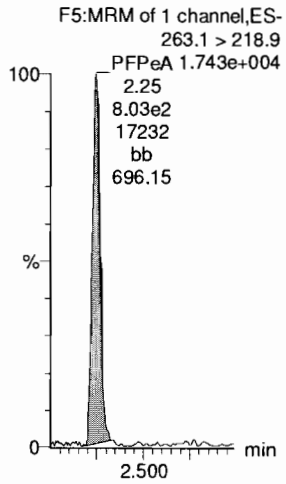
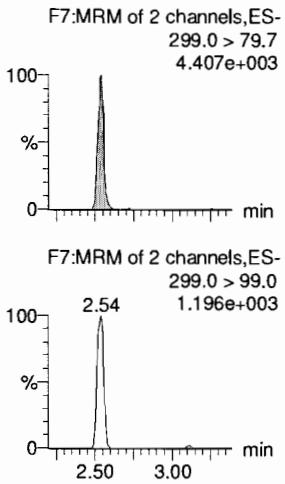


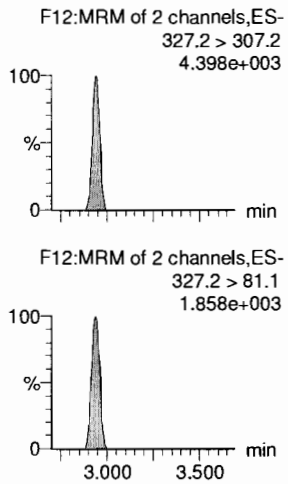
PFPeA



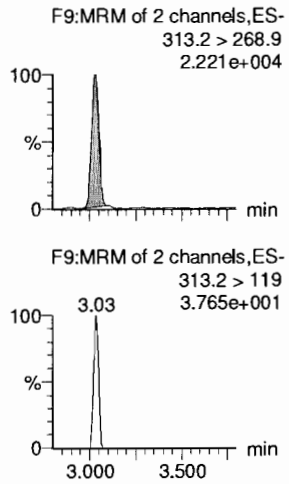
PFBS



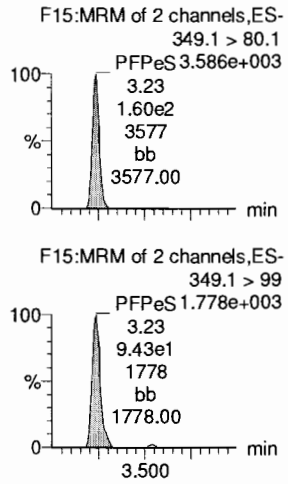
4:2 FTS



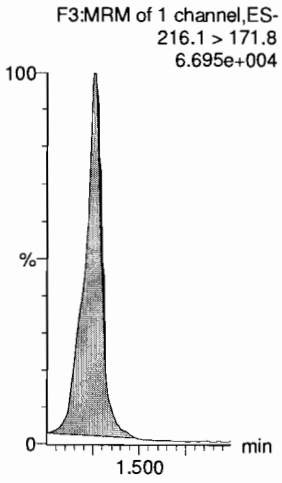
PFHxA



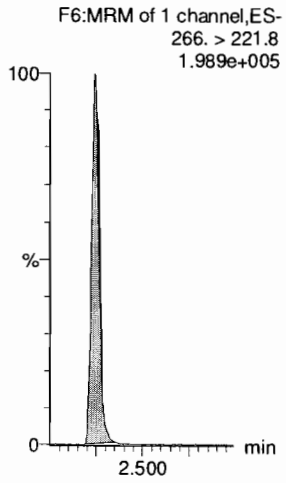
PFPeS



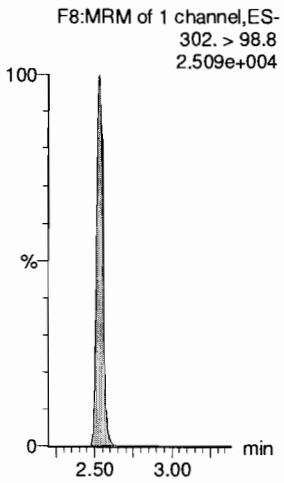
13C3-PFBA



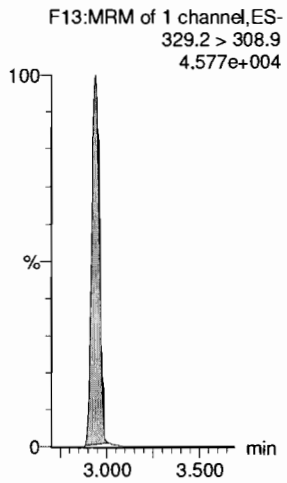
13C3-PFPeA



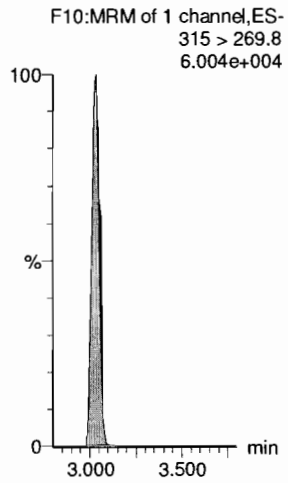
13C3-PFBS



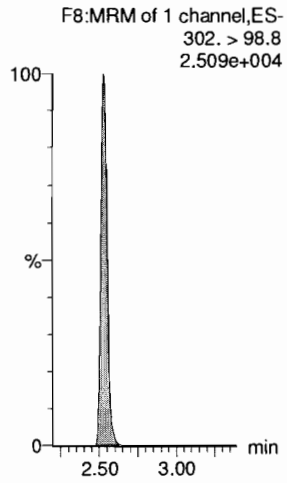
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

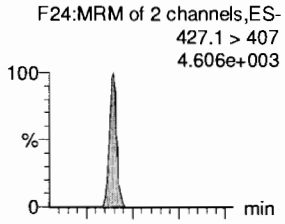


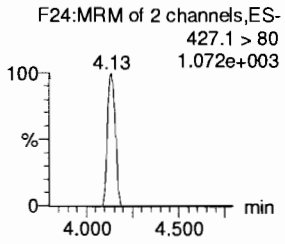
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

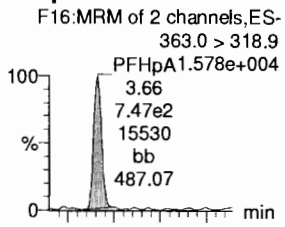
Name: 180615M1_4, Date: 15-Jun-2018, Time: 18:41:48, ID: ST180615M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

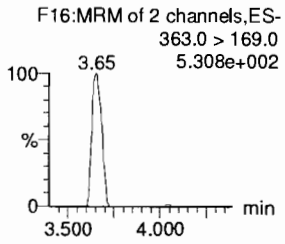
6:2 FTS



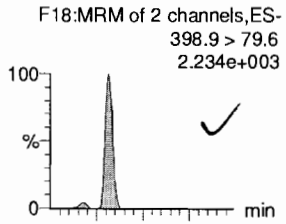


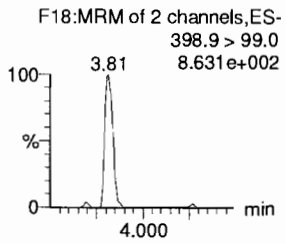
PFHpA



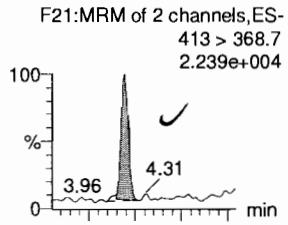


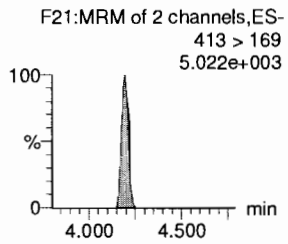
L-PFHxS



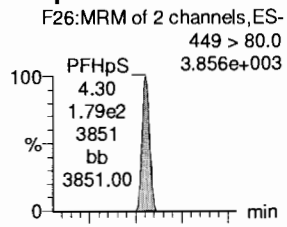


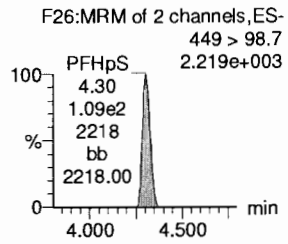
L-PFOA



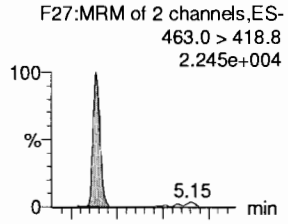


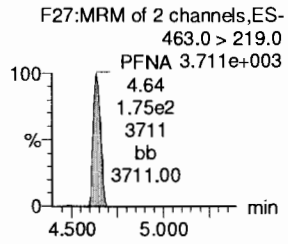
PFHpS



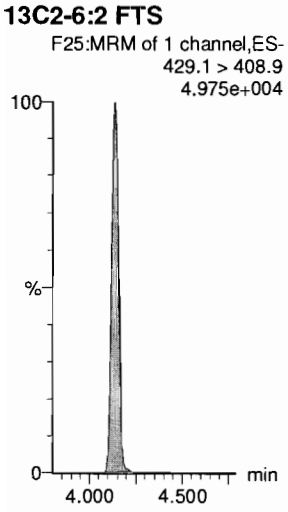


PFNA

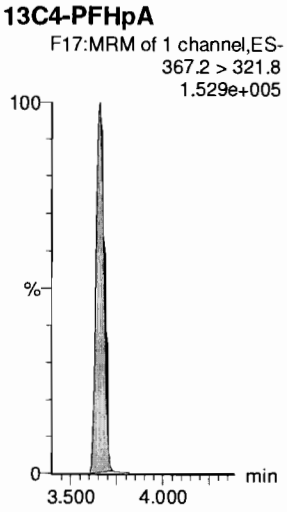




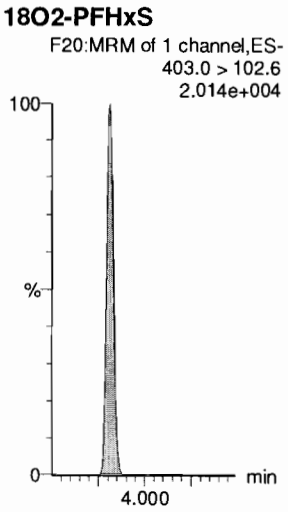
13C2-6:2 FTS



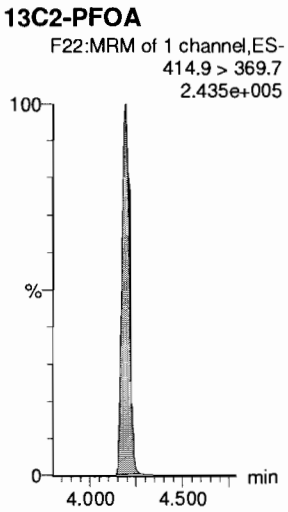
13C4-PFHpA



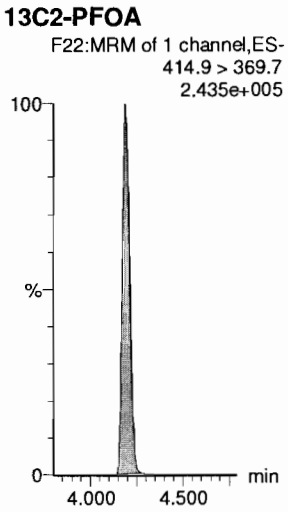
18O2-PFHxS



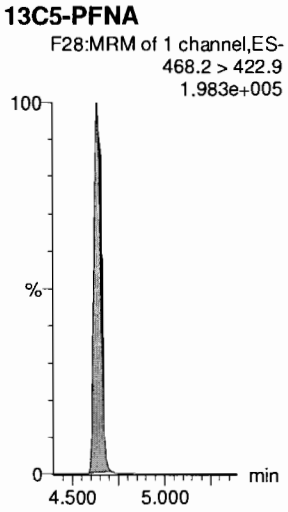
13C2-PFOA



13C2-PFOA



13C5-PFNA

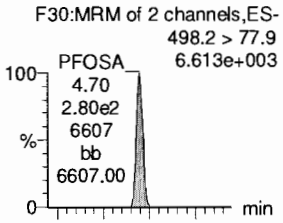


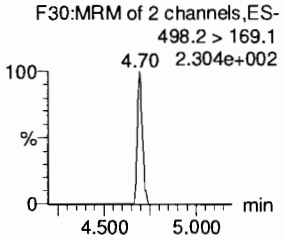
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

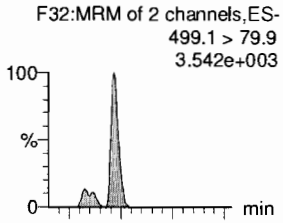
Name: 180615M1_4, Date: 15-Jun-2018, Time: 18:41:48, ID: ST180615M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

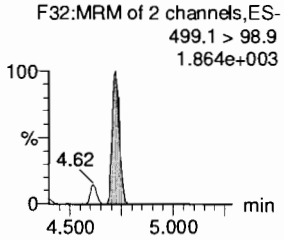
PFOSA



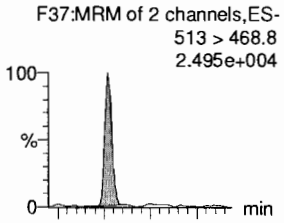


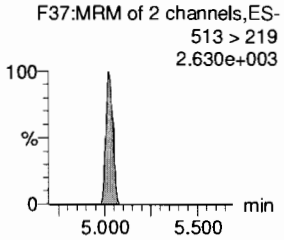
L-PFOS



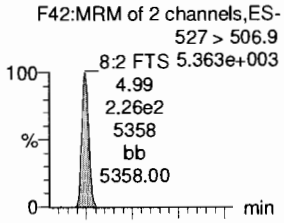


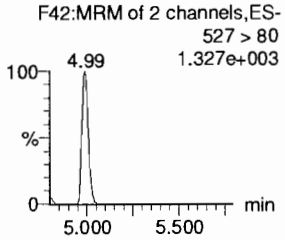
PFDA





8:2 FTS





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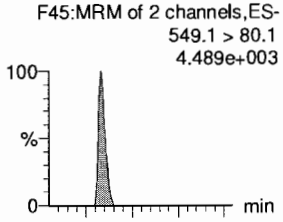
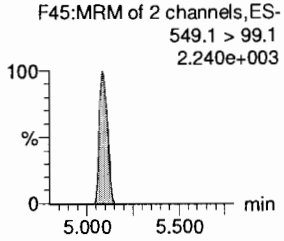
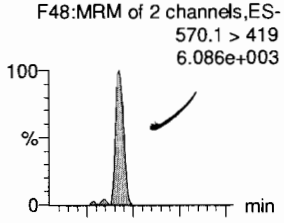
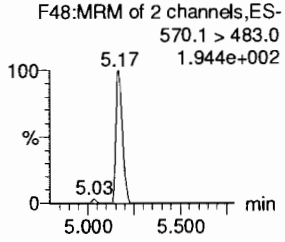


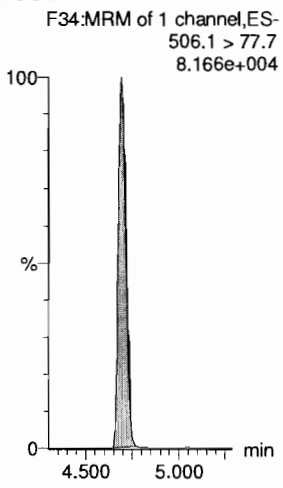


L-MeFOSAA

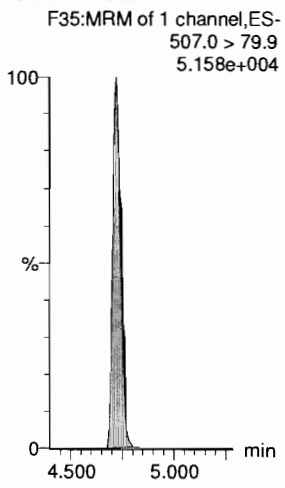




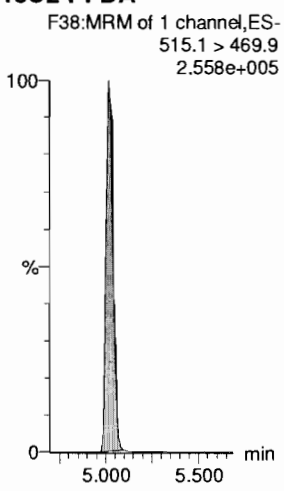
13C8-PFOSA



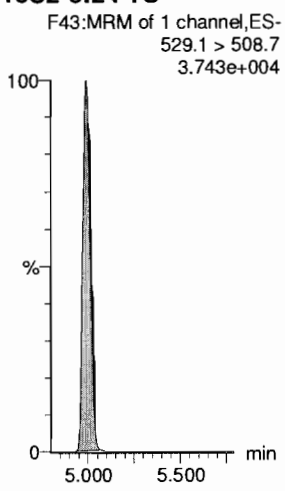
13C8-PFOS



13C2-PFDA



13C2-8:2 FTS



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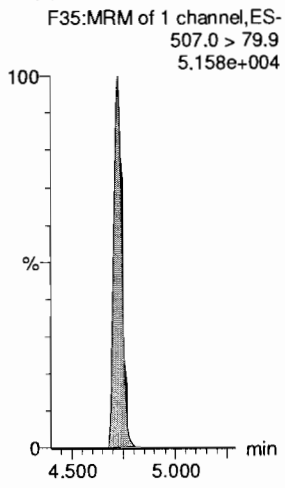
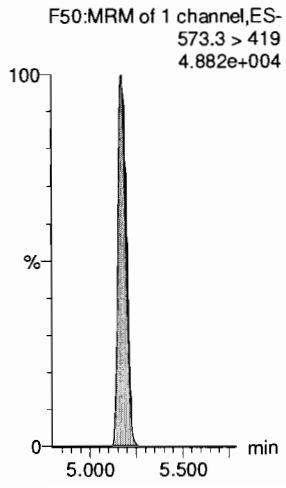


d3-N-MeFOSAA

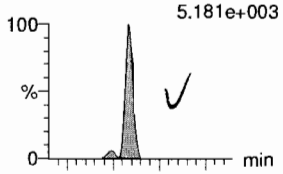


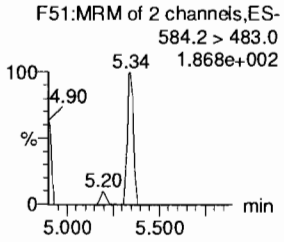
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

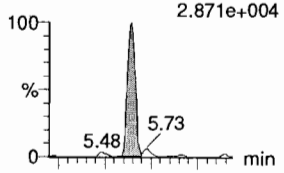
Name: 180615M1_4, Date: 15-Jun-2018, Time: 18:41:48, ID: ST180615M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

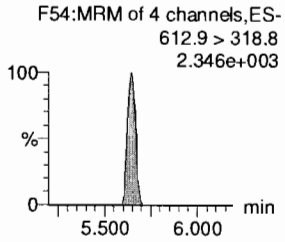
L-EtFOSAA





PFDoA





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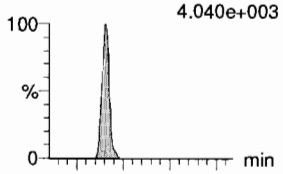
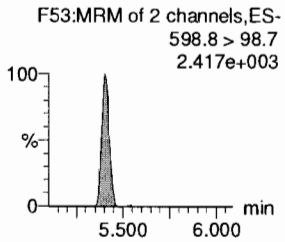
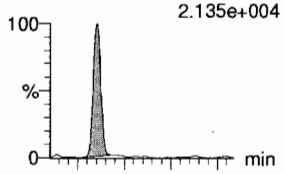
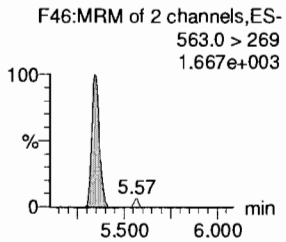




PFUdA





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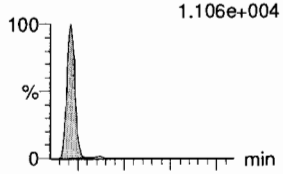

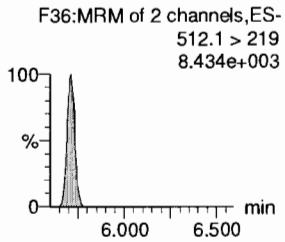

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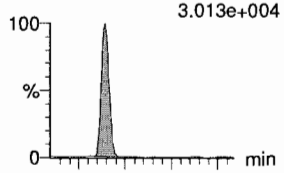
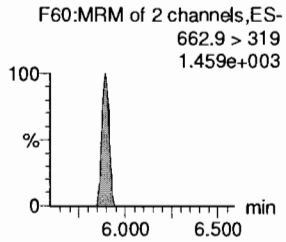
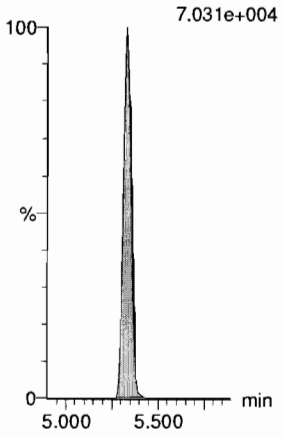
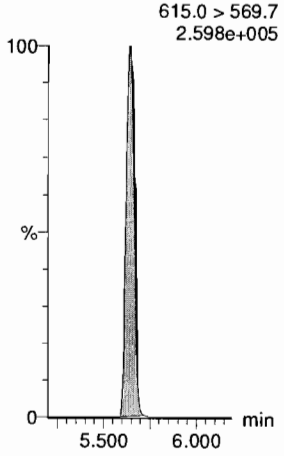




d5-N-EtFOSAA



13C2-PFDoA



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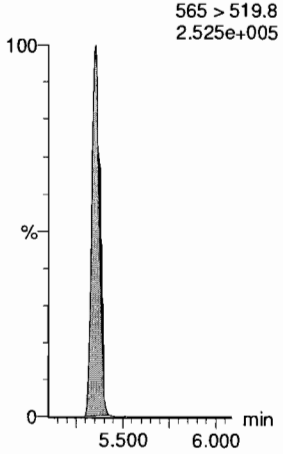

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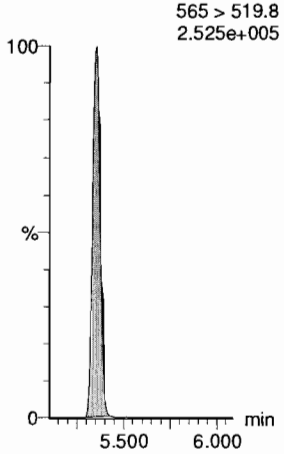

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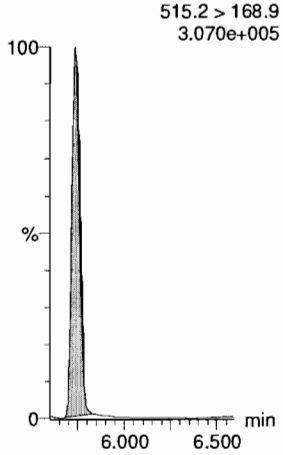

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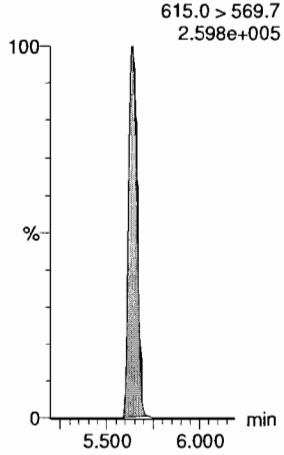
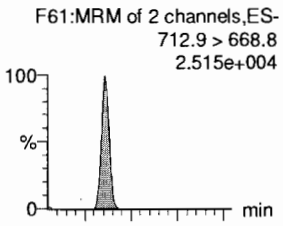


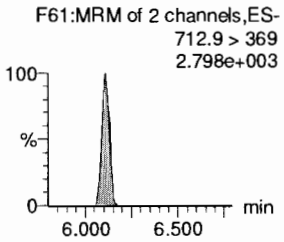
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_4, Date: 15-Jun-2018, Time: 18:41:48, ID: ST180615M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

PFTeDA





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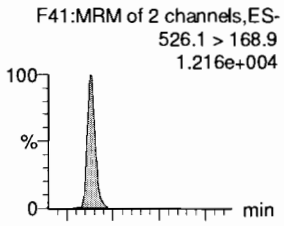

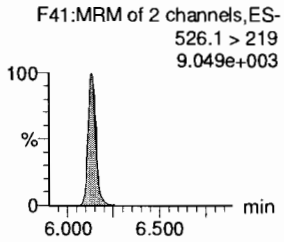

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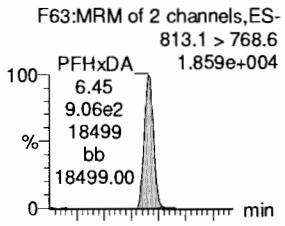

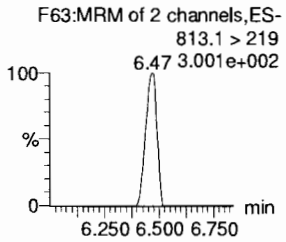

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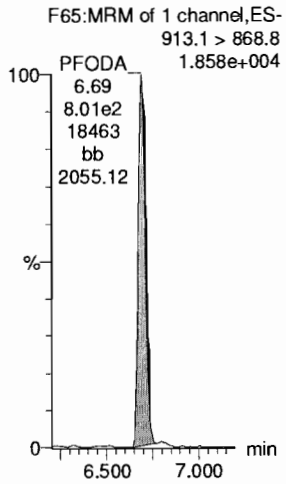
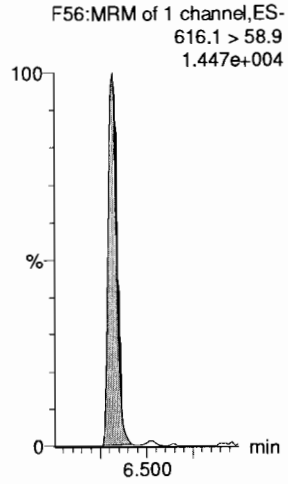
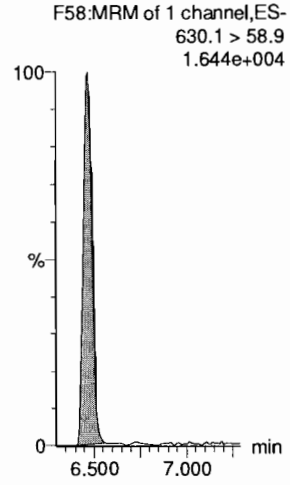


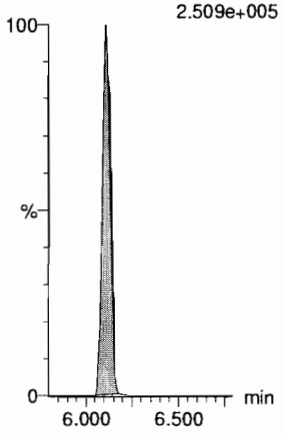
N-MeFOSE



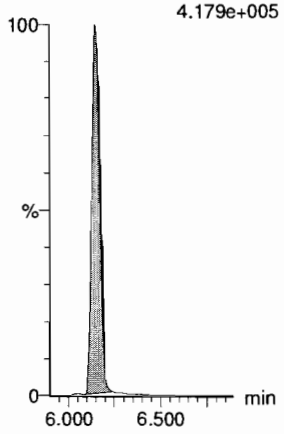
N-EtFOSE



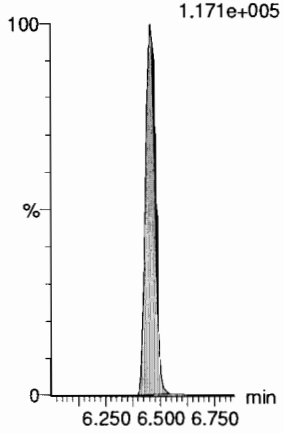
13C2-PFTeDA



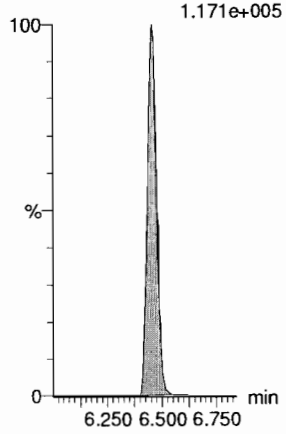
d5-N-ETFOSA



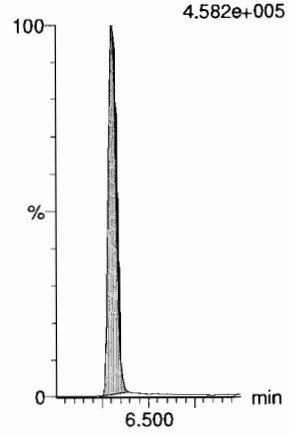
13C2-PFHxDA



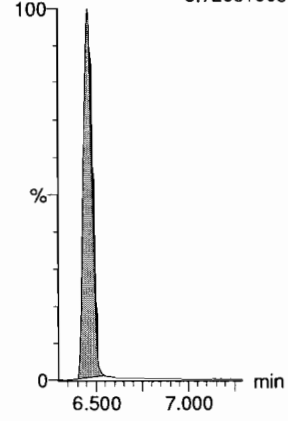
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

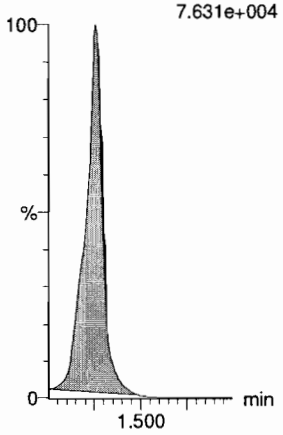


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_4, Date: 15-Jun-2018, Time: 18:41:48, ID: ST180615M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

13C4-PFBA



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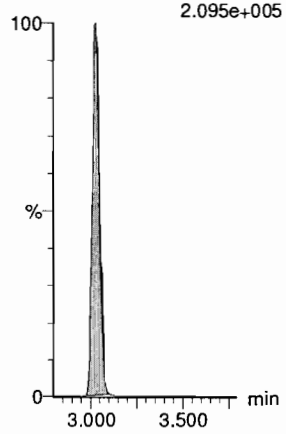
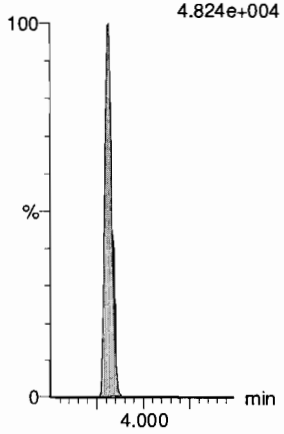


13C3-PFHxS



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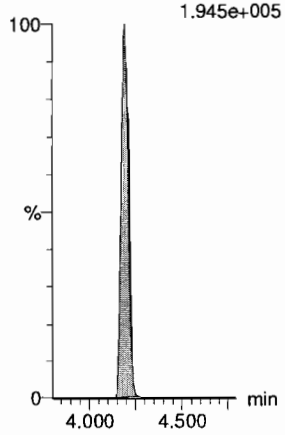

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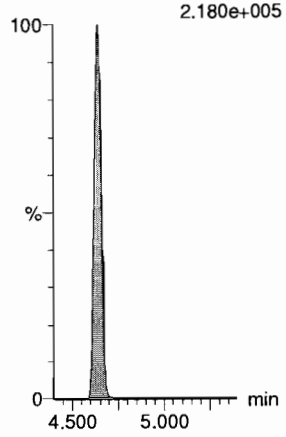
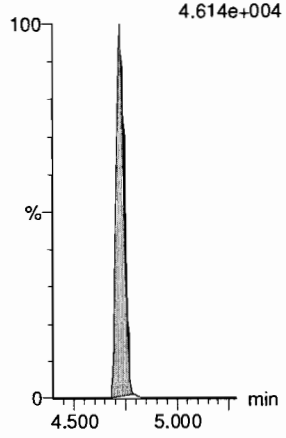
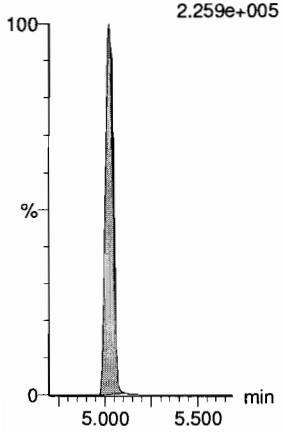


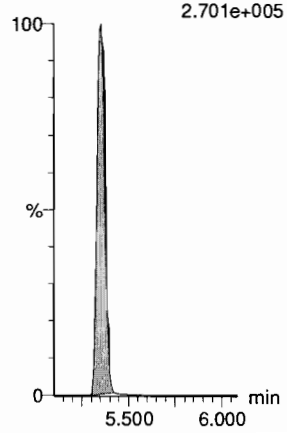
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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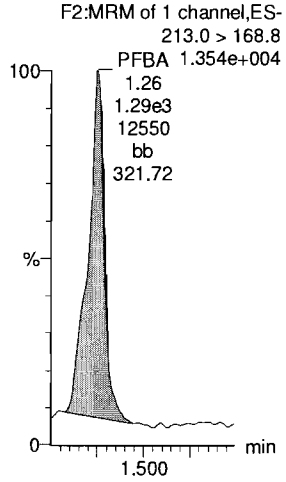
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_5, Date: 15-Jun-2018, Time: 18:52:13, ID: ST180615M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

PFBA



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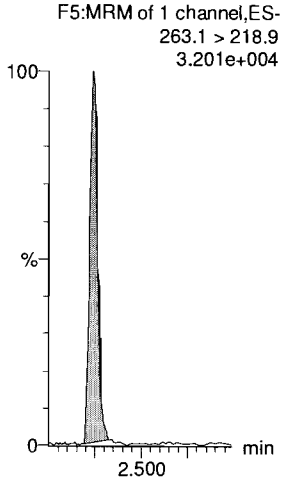

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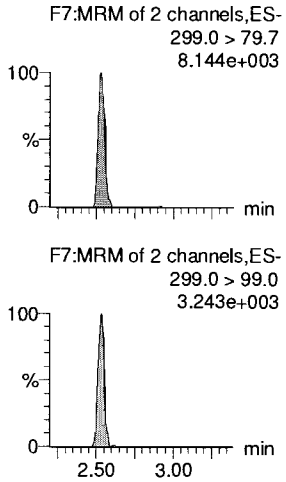
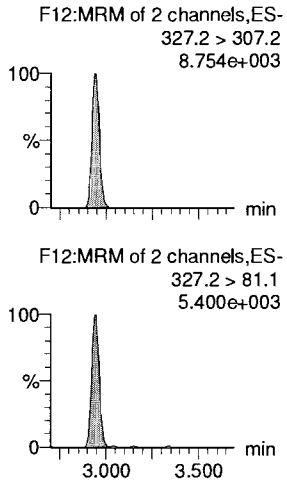
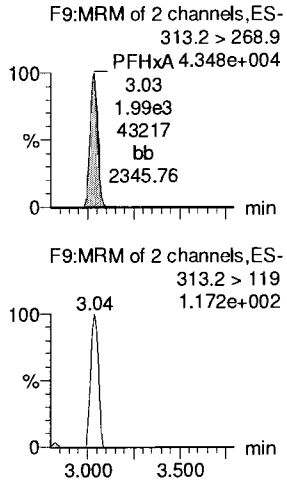


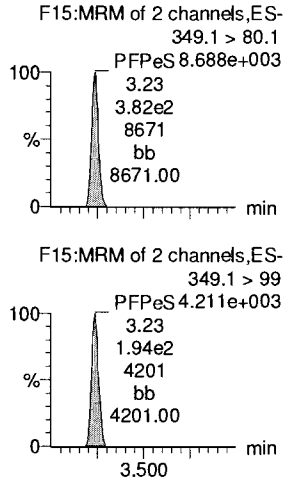
4:2 FTS



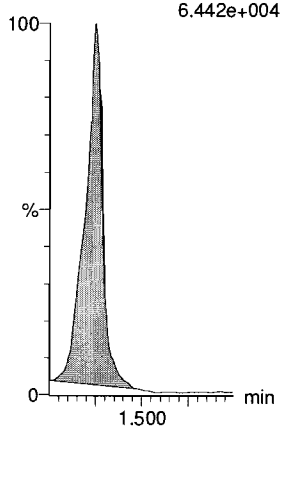
PFHxA



PFPeS



13C3-PFBA



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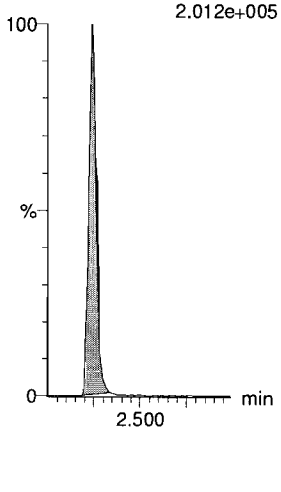

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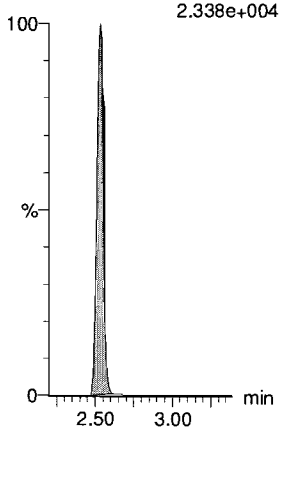
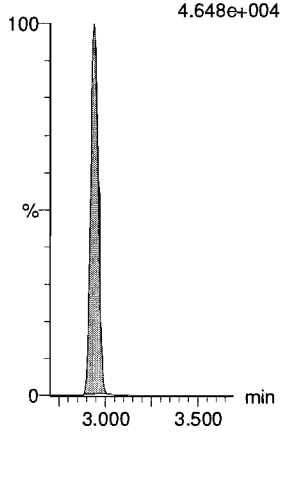


13C2-4:2 FTS



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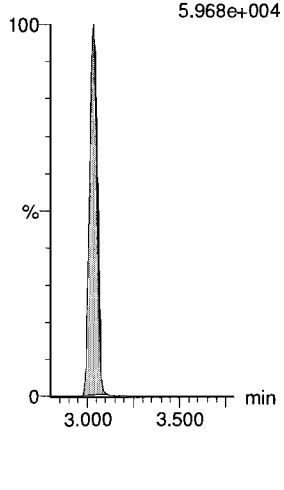

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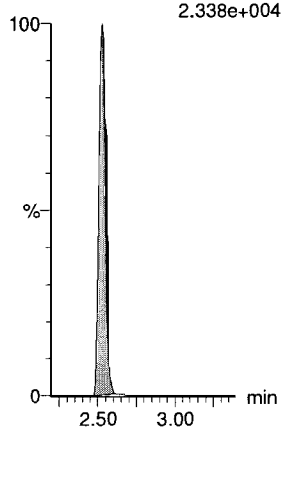
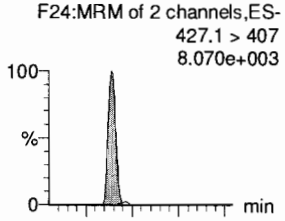


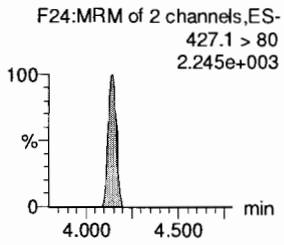
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

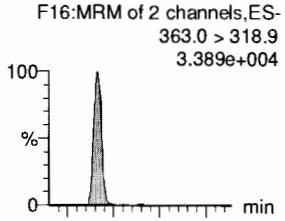
Name: 180615M1_5, Date: 15-Jun-2018, Time: 18:52:13, ID: ST180615M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

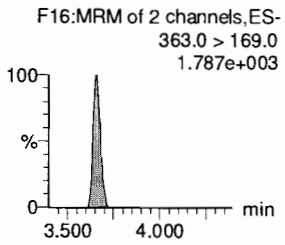
6:2 FTS





PFHpA





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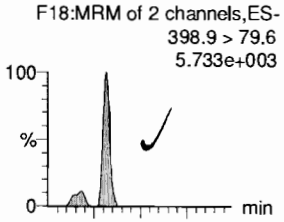
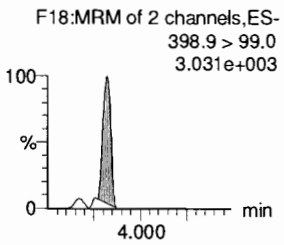
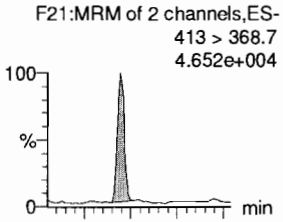
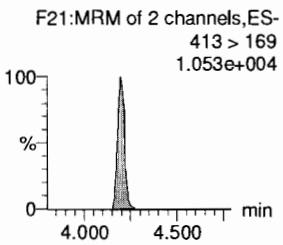




L-PFOA





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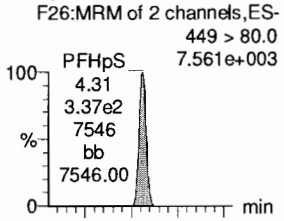

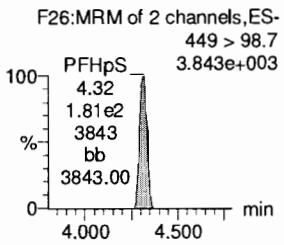

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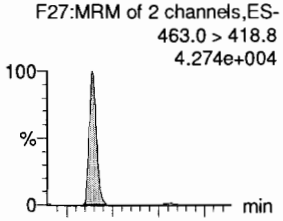
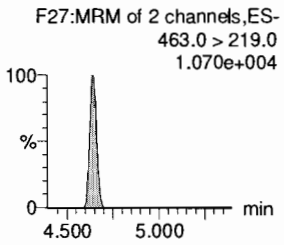
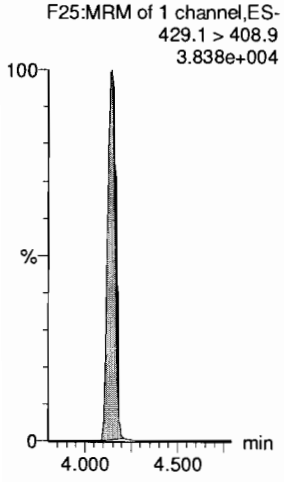
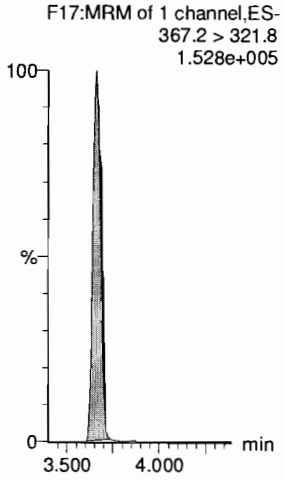




13C2-6:2 FTS



13C4-PFHpA



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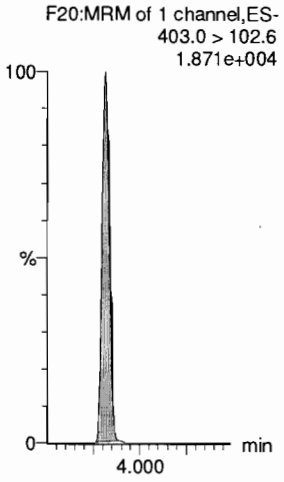

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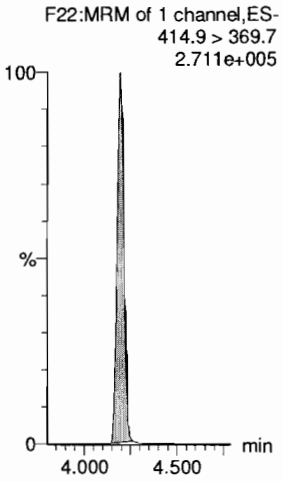

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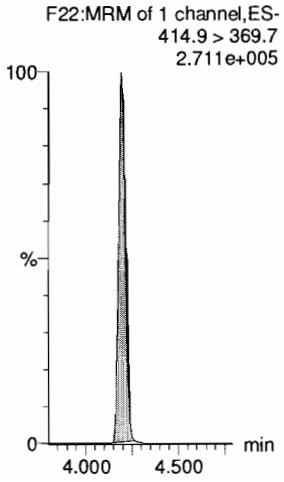

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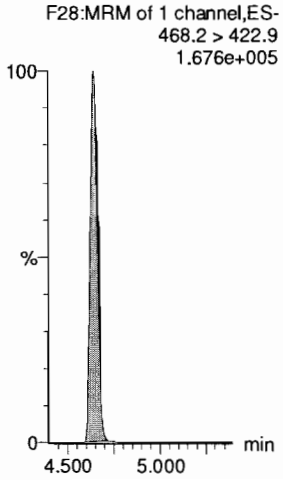
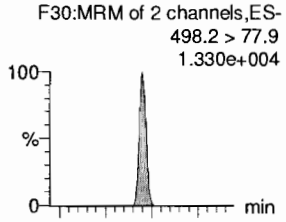


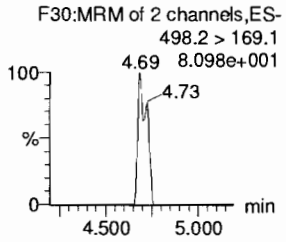
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_5, Date: 15-Jun-2018, Time: 18:52:13, ID: ST180615M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

PFOSA





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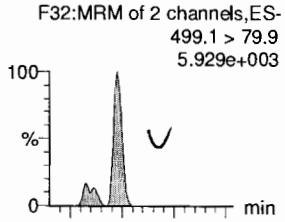

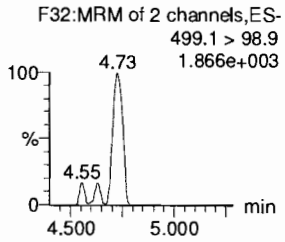

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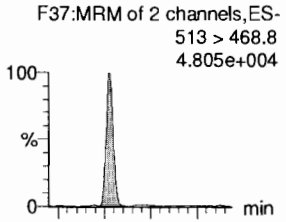
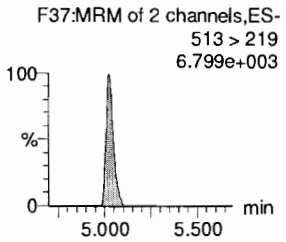
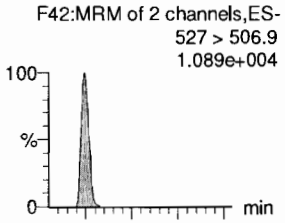
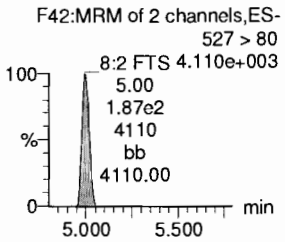




8:2 FTS





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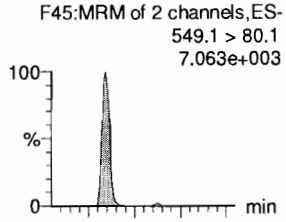

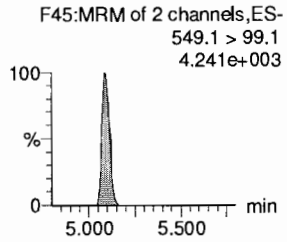

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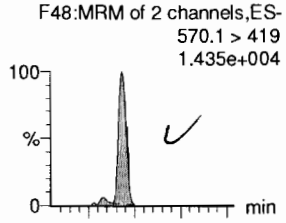

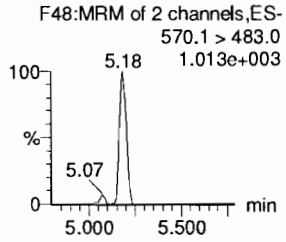

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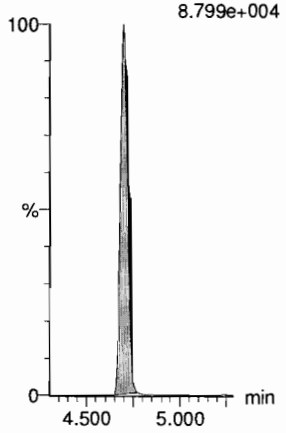

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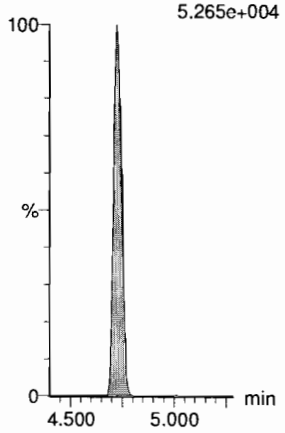

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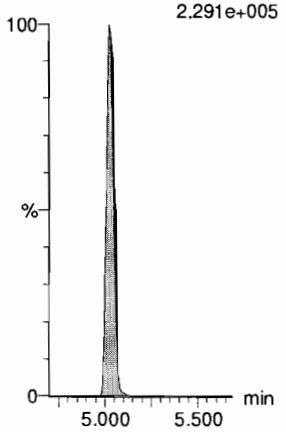
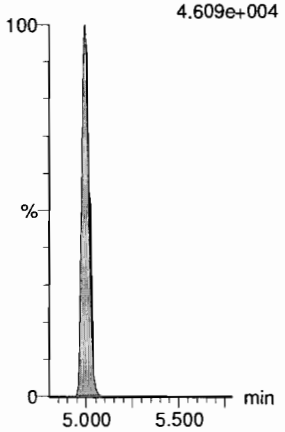


13C2-8:2 FTS



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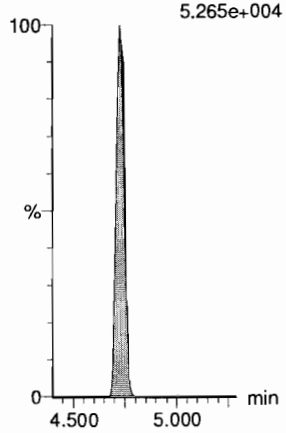
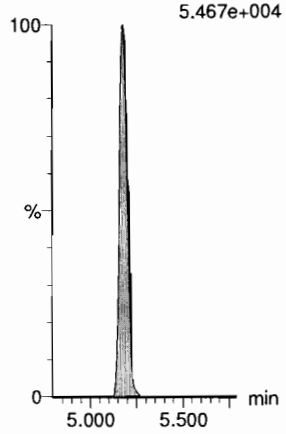


d3-N-MeFOSAA

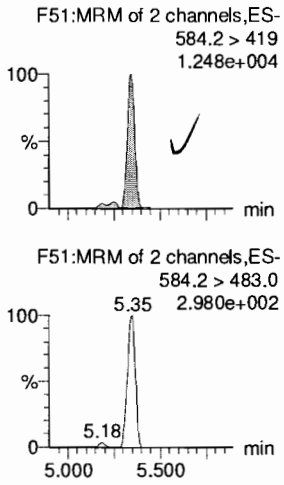


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

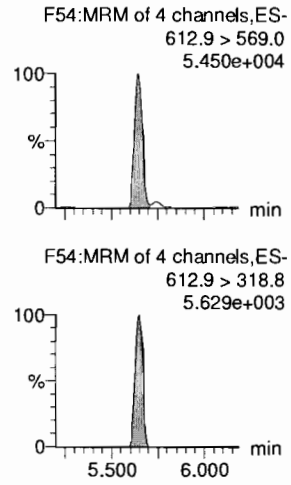
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_5, Date: 15-Jun-2018, Time: 18:52:13, ID: ST180615M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

L-EtFOSAA



PFDoA



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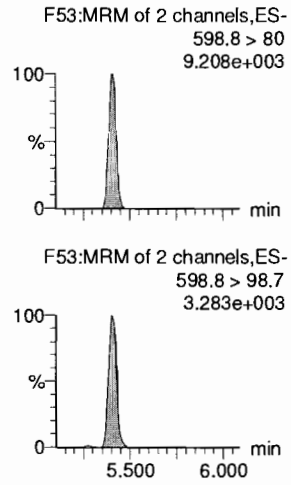

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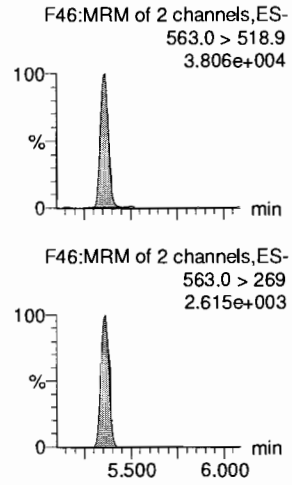

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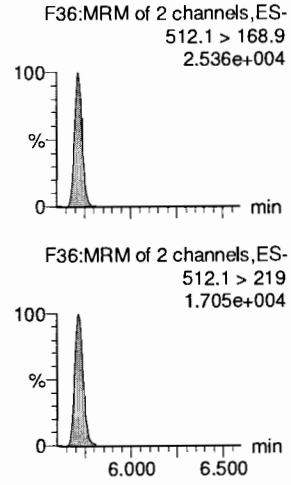

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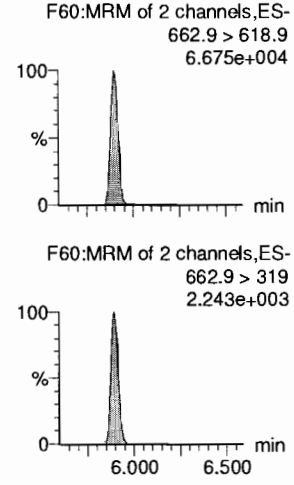
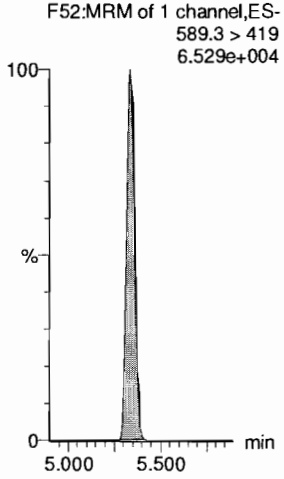


d5-N-EtFOSAA



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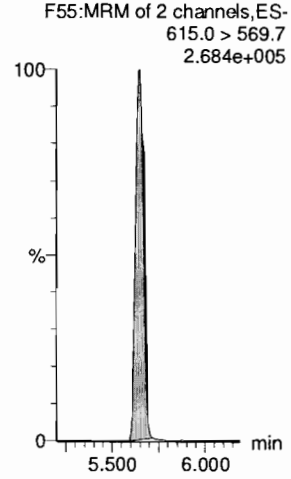

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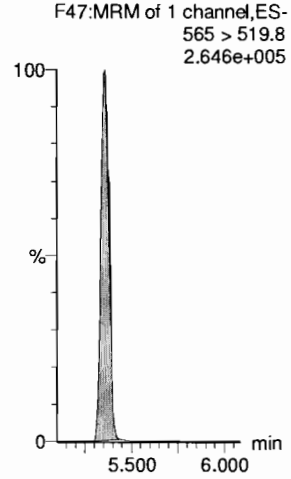

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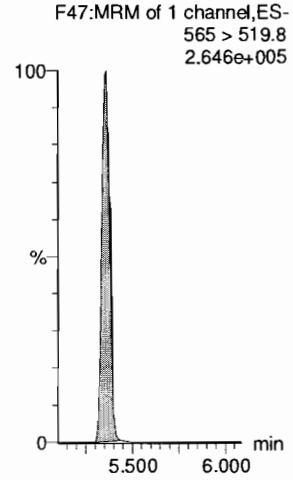

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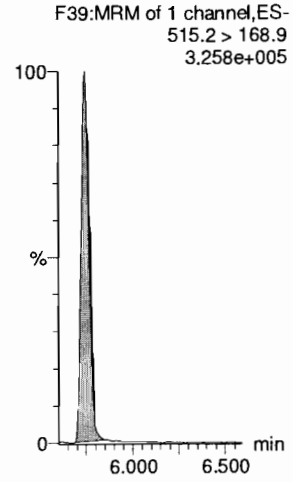
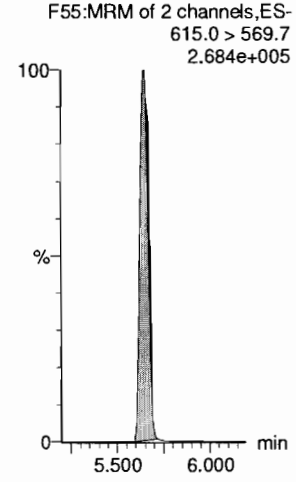


13C2-PFDoA

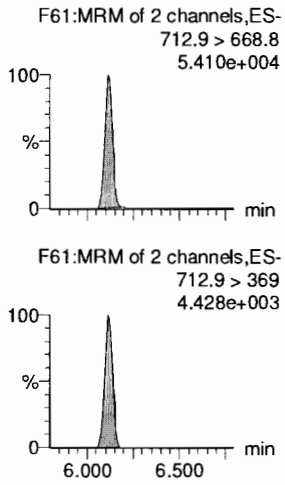


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

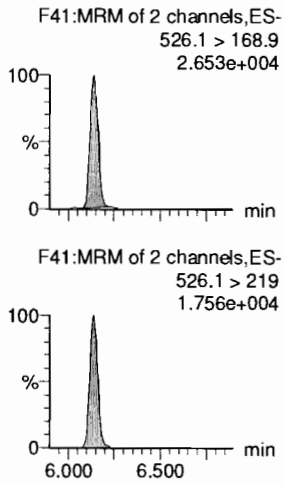
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_5, Date: 15-Jun-2018, Time: 18:52:13, ID: ST180615M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

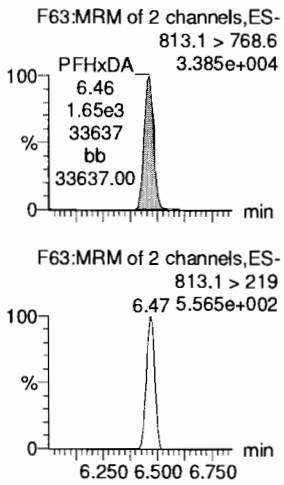
PFTeDA



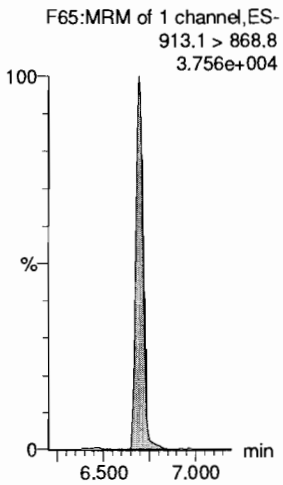
N-EtFOSA



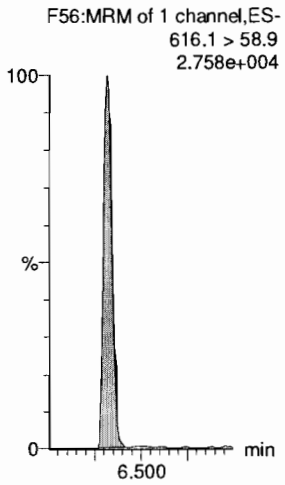
PFHxDA



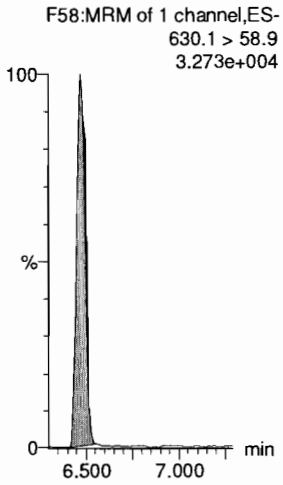
PFODA



N-MeFOSE



N-EtFOSE



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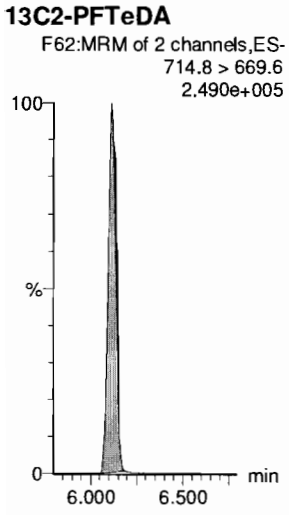
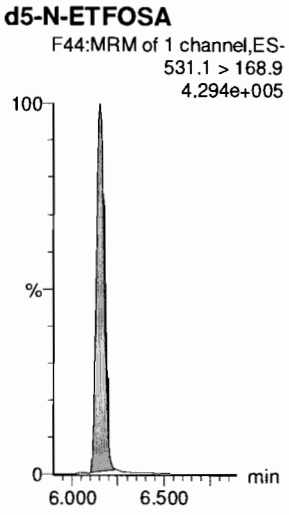


d5-N-ETFOSA



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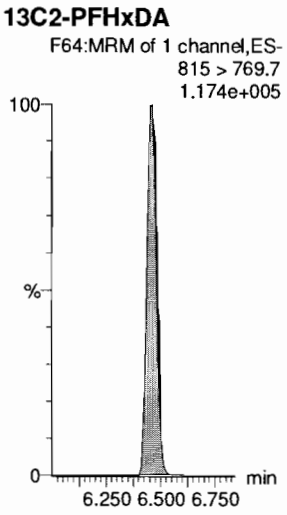
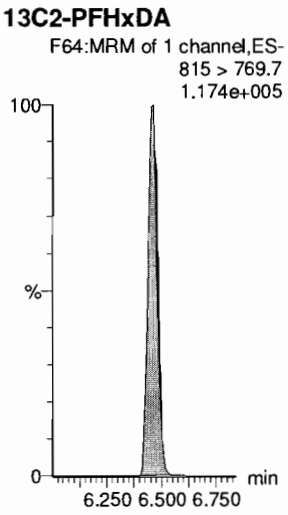


13C2-PFHxDA



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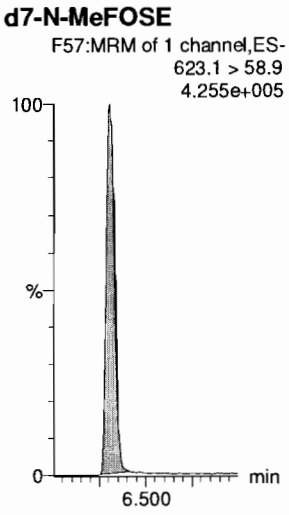
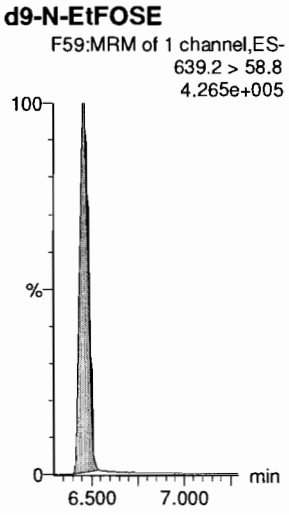


d9-N-EtFOSE



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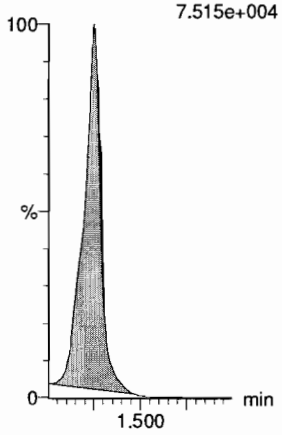
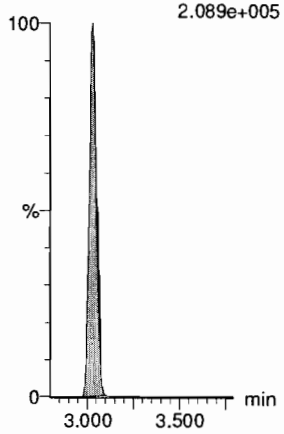
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_5, Date: 15-Jun-2018, Time: 18:52:13, ID: ST180615M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

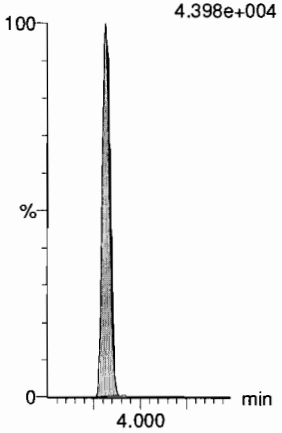
13C4-PFBA



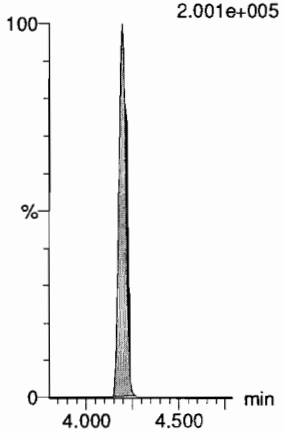
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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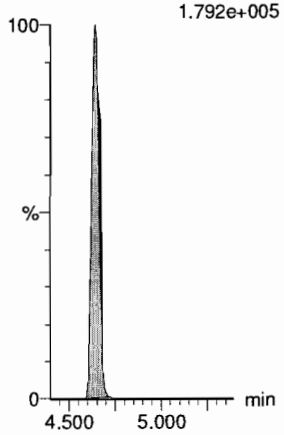
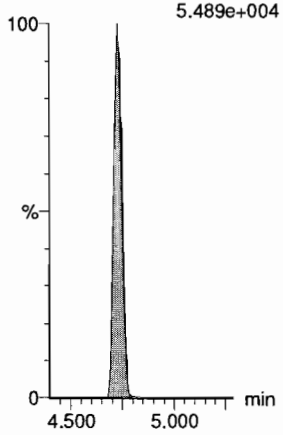
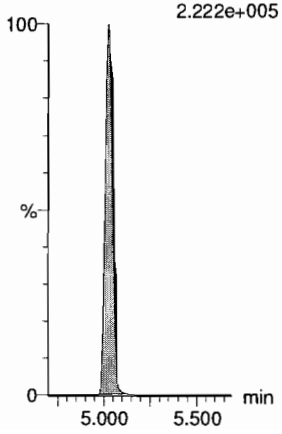


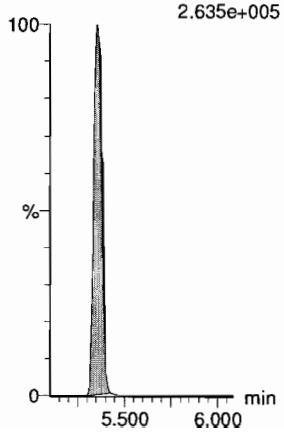
13C4-PFOS



13C6-PFDA



13C7-PFUdA

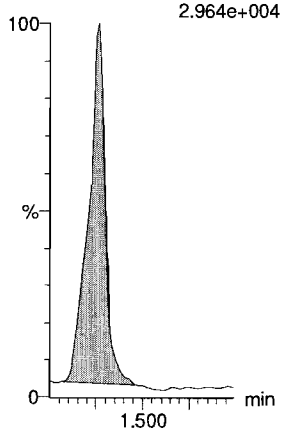


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_6, Date: 15-Jun-2018, Time: 19:02:43, ID: ST180615M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

PFBA



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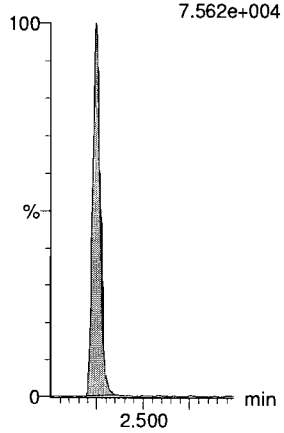
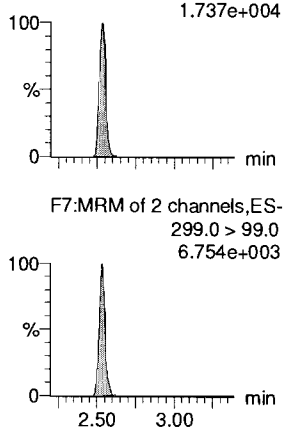
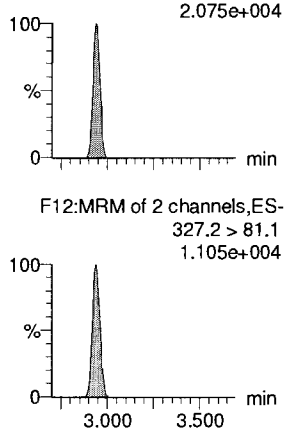


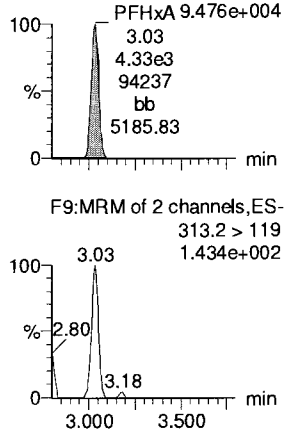
PFBS



4:2 FTS



PFHxA



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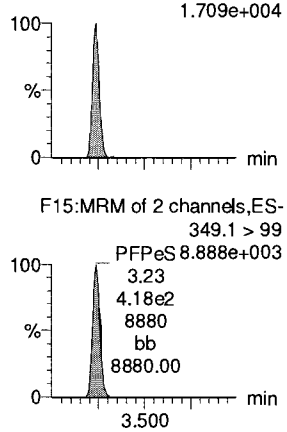
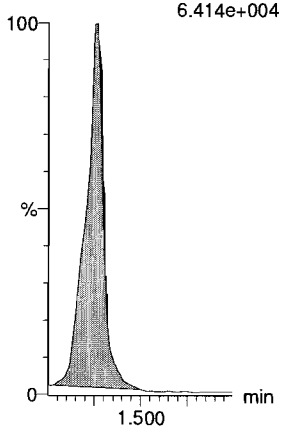
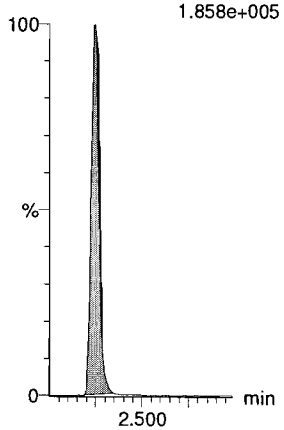


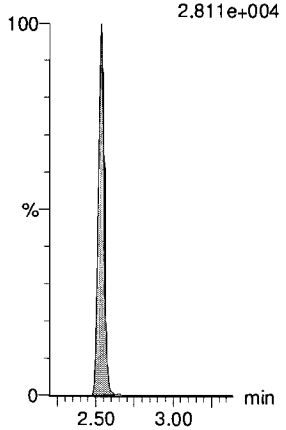
13C3-PFBA



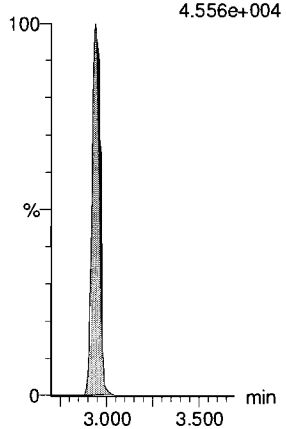
13C3-PFPeA



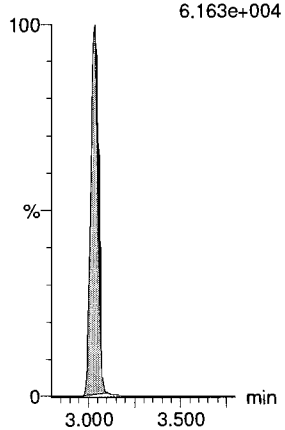
13C3-PFBS



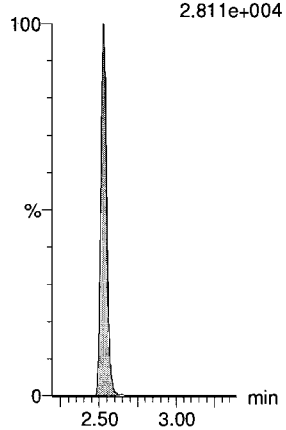
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

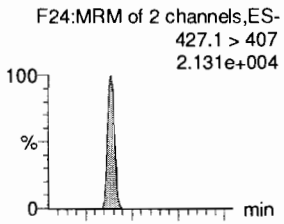


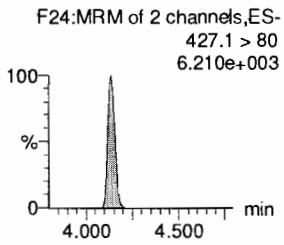
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

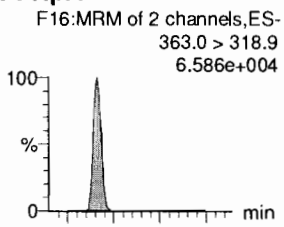
Name: 180615M1_6, Date: 15-Jun-2018, Time: 19:02:43, ID: ST180615M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

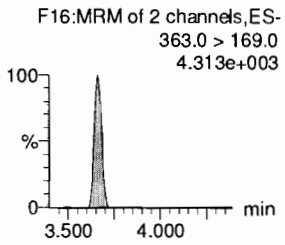
6:2 FTS



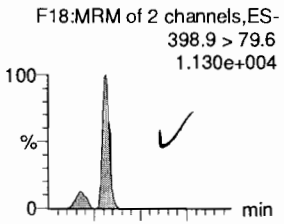


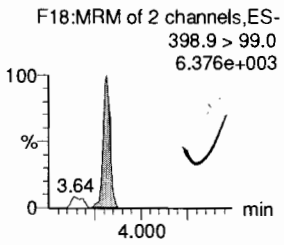
PFHpA



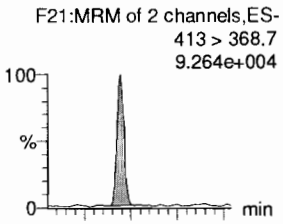


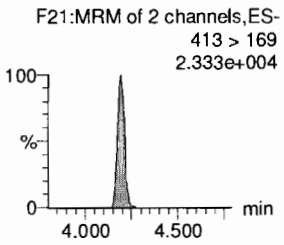
L-PFHxS





L-PFOA





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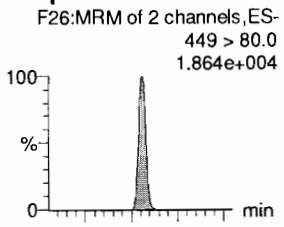
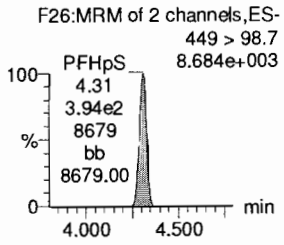
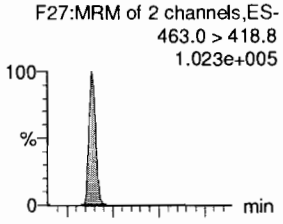
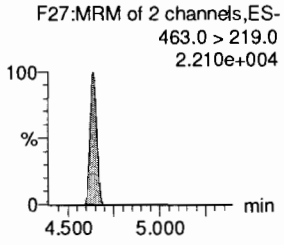


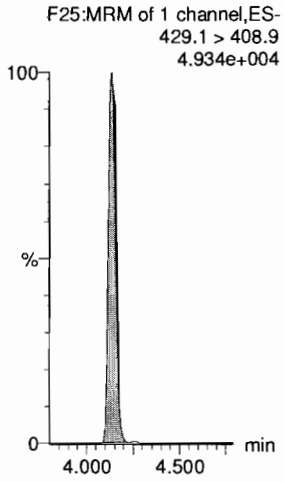


PFNA

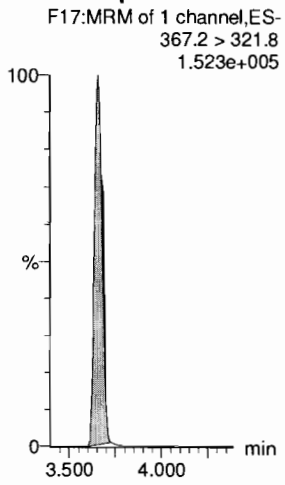




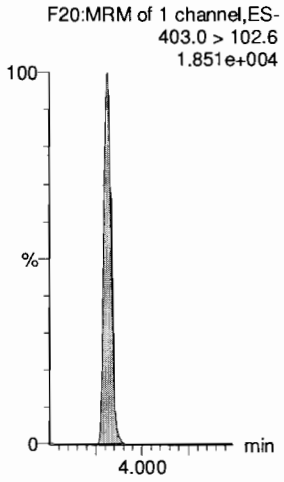
13C2-6:2 FTS



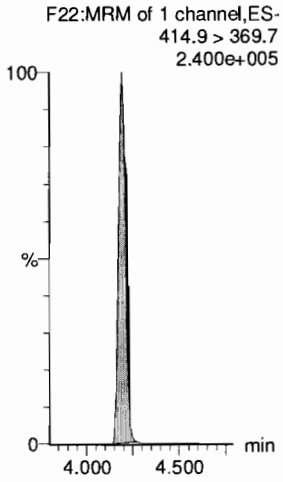
13C4-PFHpA



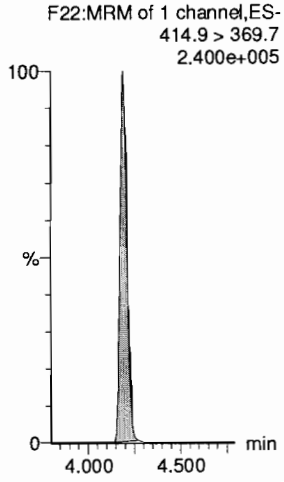
18O2-PFHxS



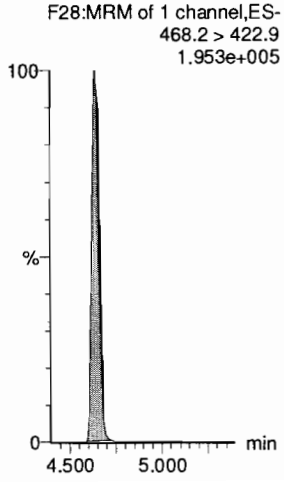
13C2-PFOA



13C2-PFOA



13C5-PFNA

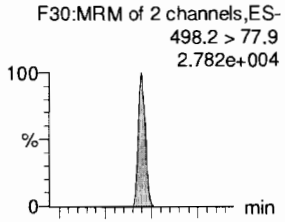


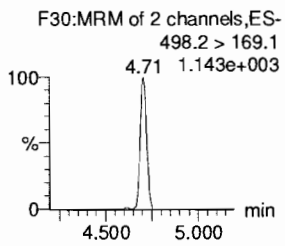
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_6, Date: 15-Jun-2018, Time: 19:02:43, ID: ST180615M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

PFOSA





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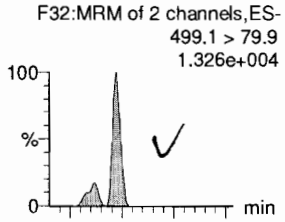

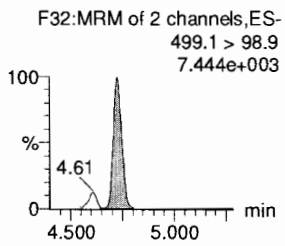

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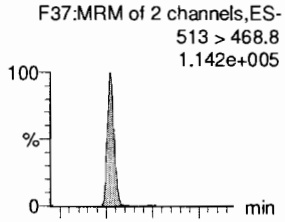
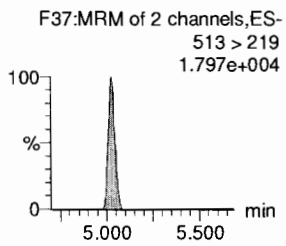
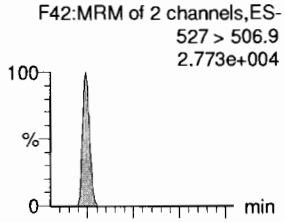
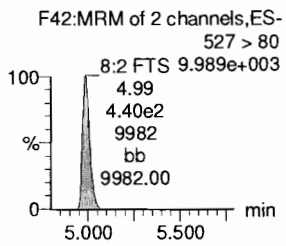




8:2 FTS





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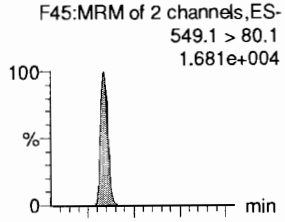

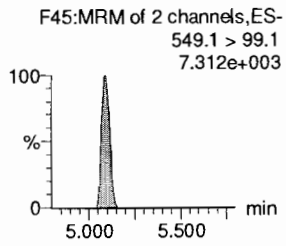

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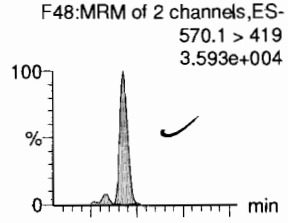

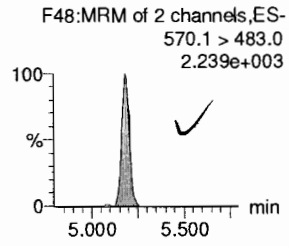

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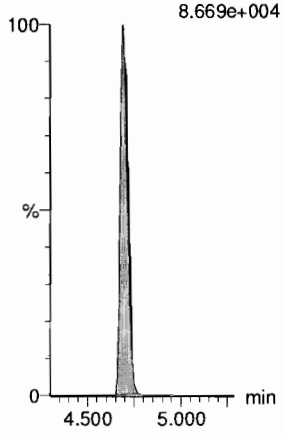

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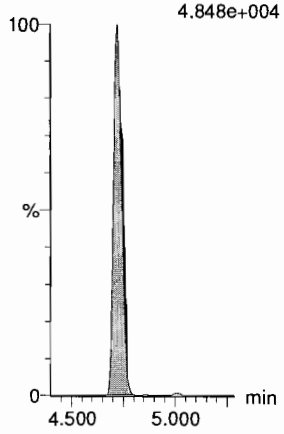
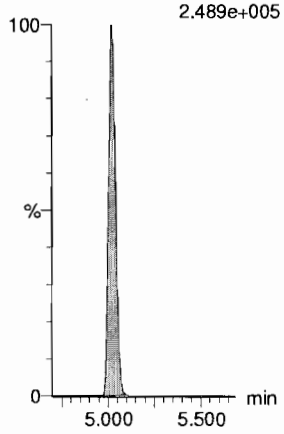
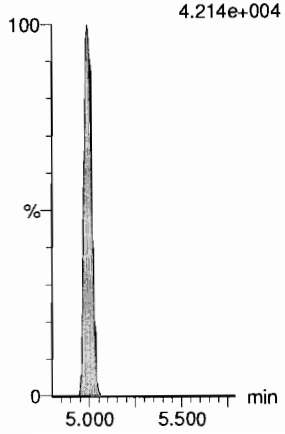


13C2-PFDA



13C2-8:2 FTS



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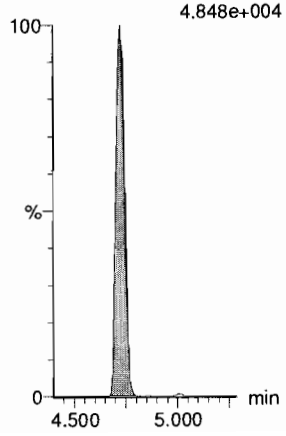
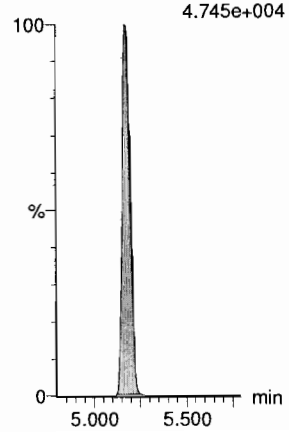


d3-N-MeFOSAA



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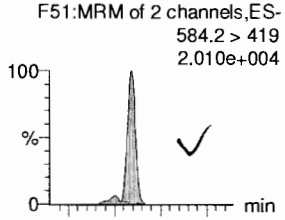
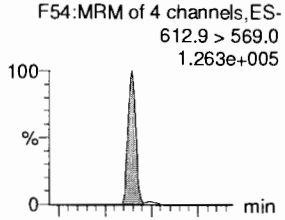
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_6, Date: 15-Jun-2018, Time: 19:02:43, ID: ST180615M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

L-EtFOSAA



PFDoA



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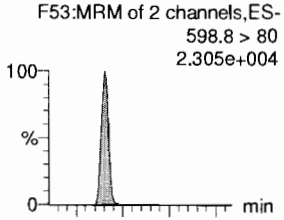

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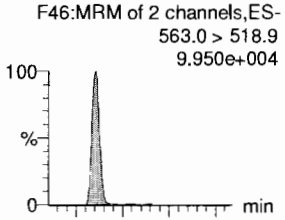

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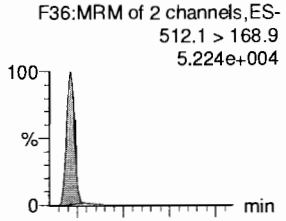

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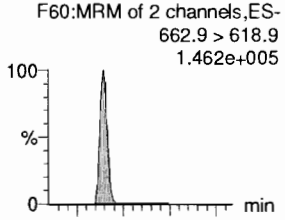
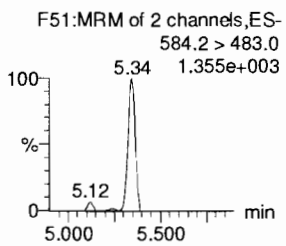
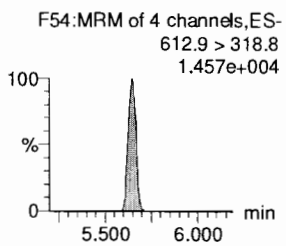
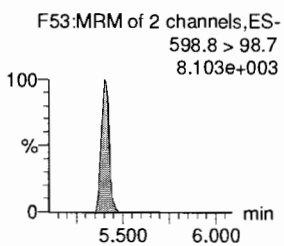
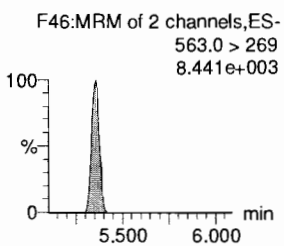
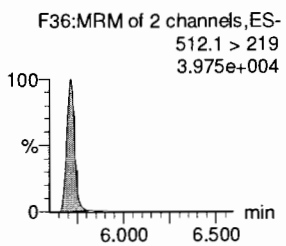


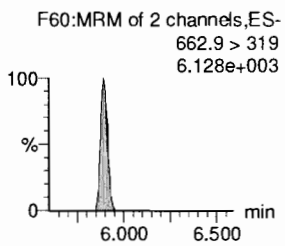




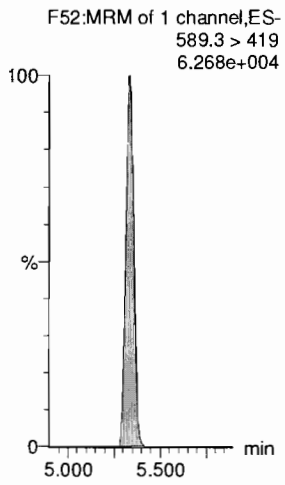








d5-N-EtFOSAA



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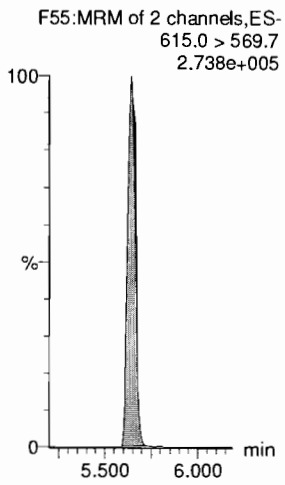

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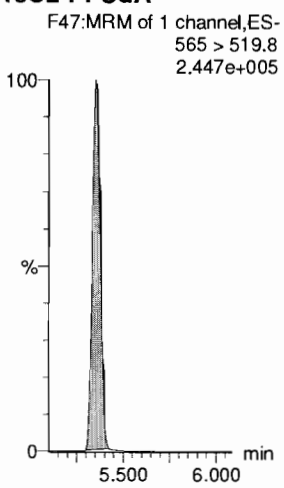

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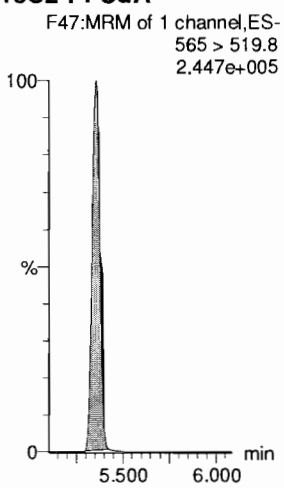

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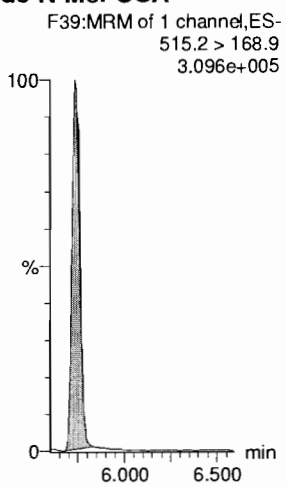

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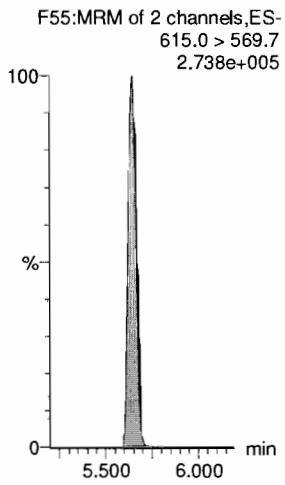

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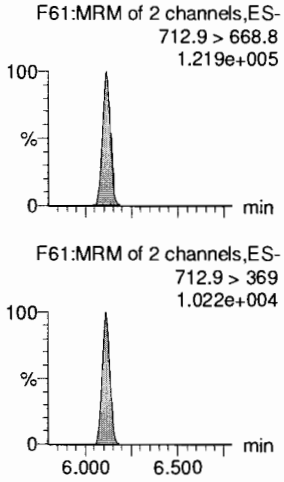

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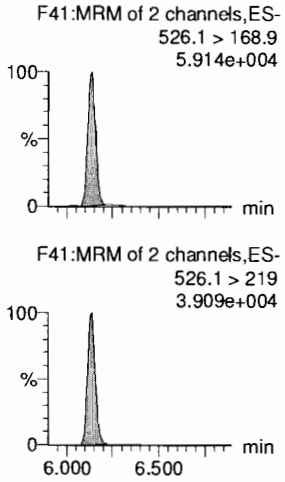

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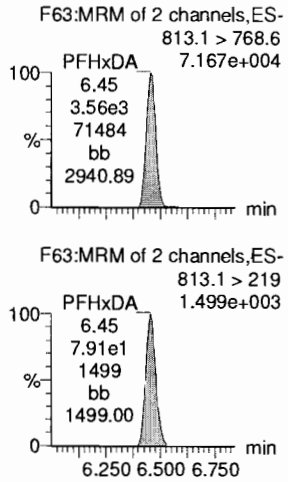
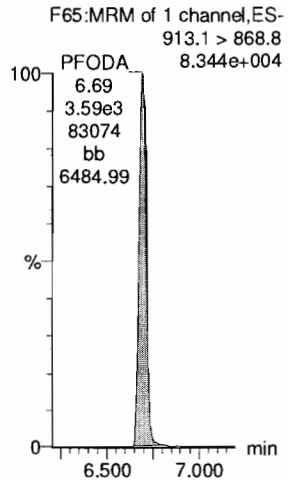


PFODA



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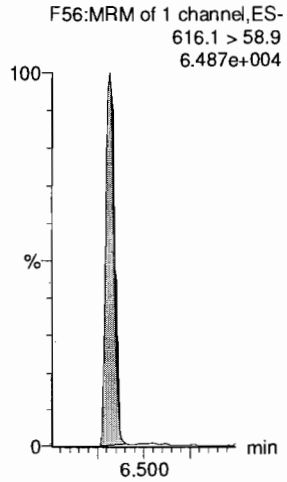
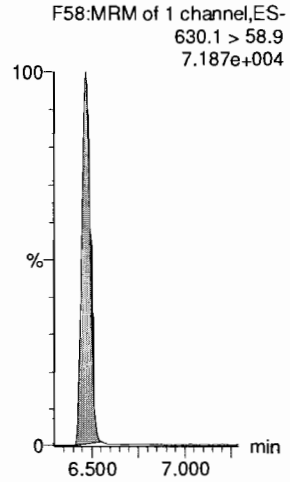


N-EtFOSE



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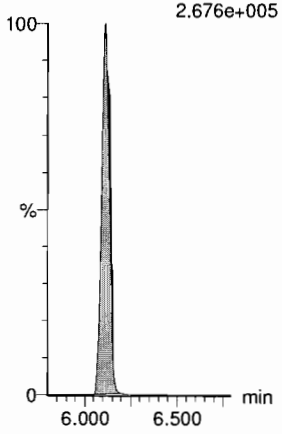
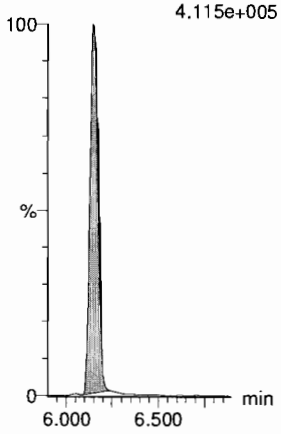


d5-N-ETFOSA



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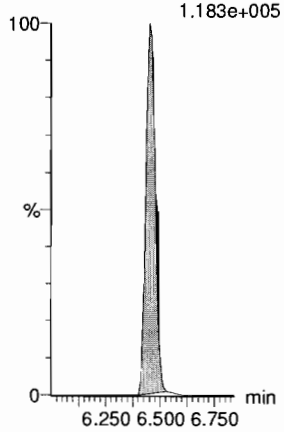

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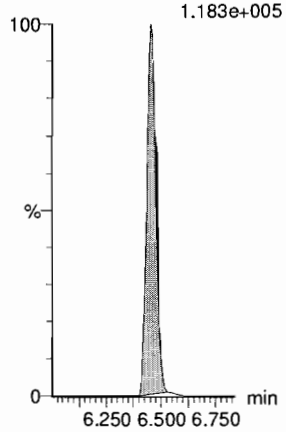
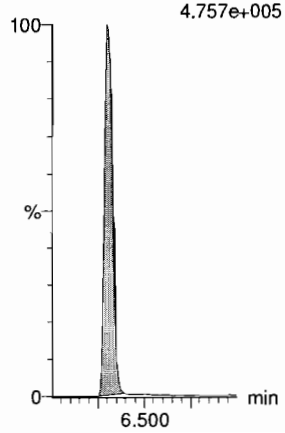
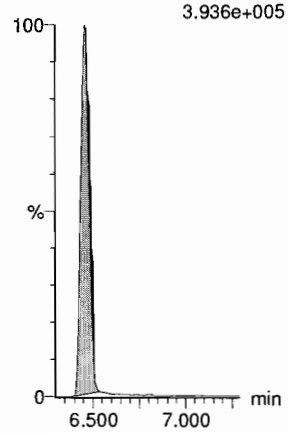


d7-N-MeFOSE



d9-N-EtFOSE



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Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_6, Date: 15-Jun-2018, Time: 19:02:43, ID: ST180615M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

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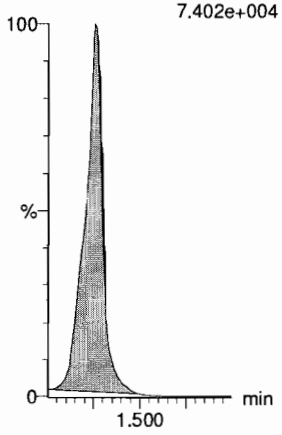

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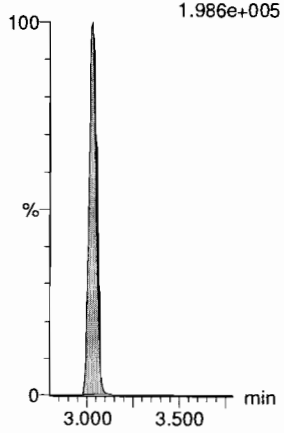

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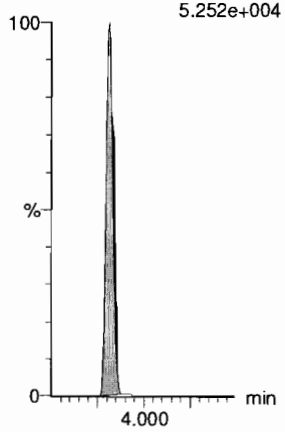

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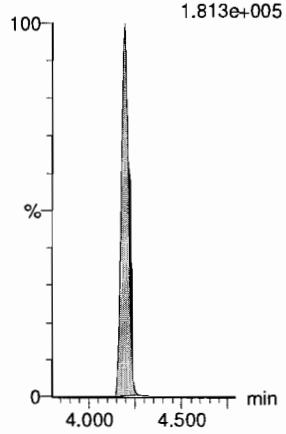

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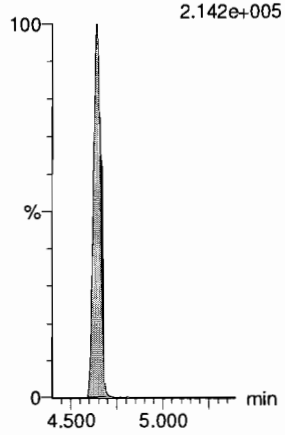
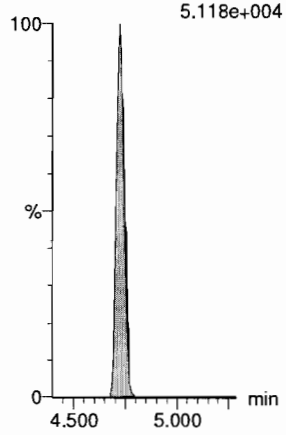


13C4-PFOS



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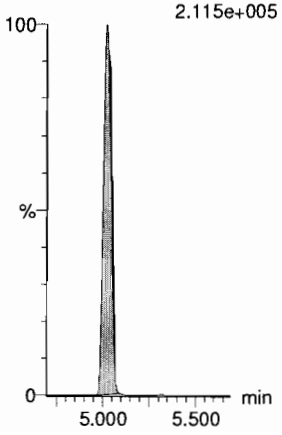
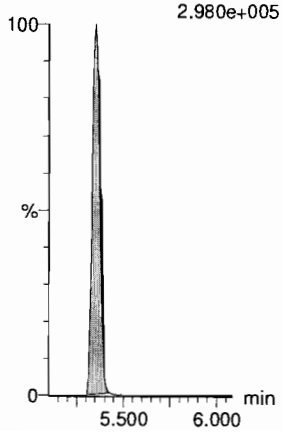


13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

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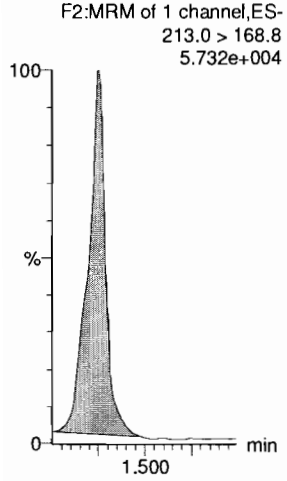

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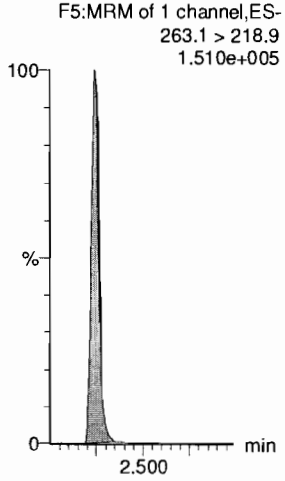

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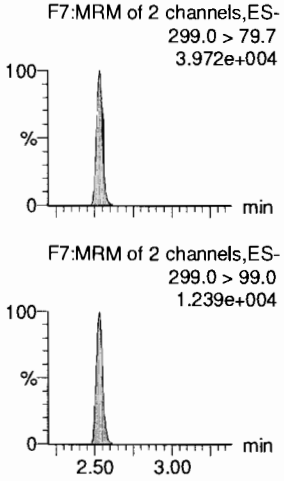

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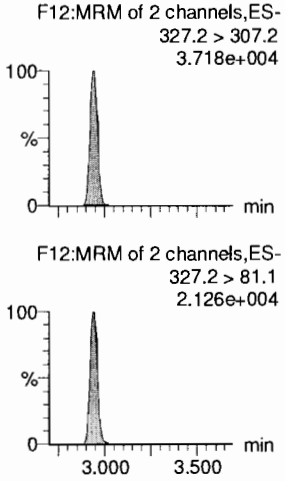

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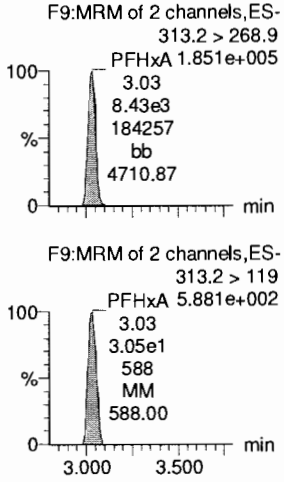

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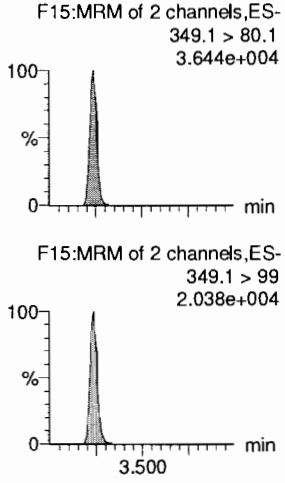

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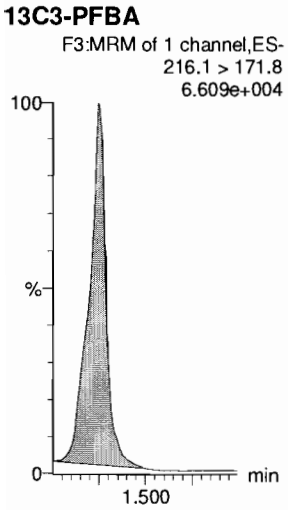

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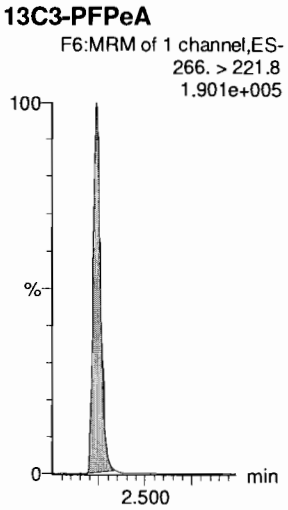

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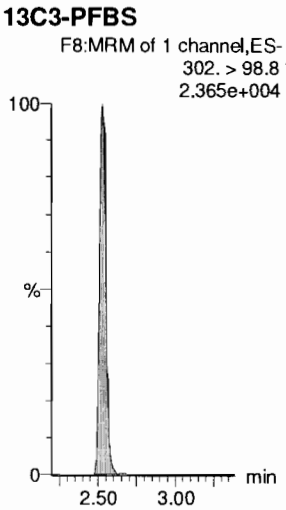
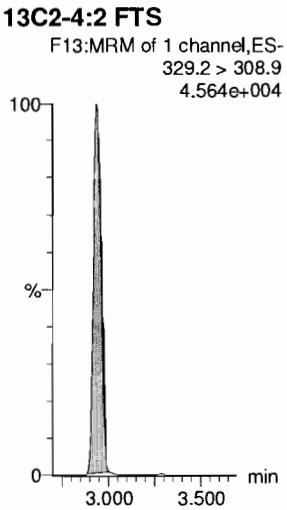


13C2-4:2 FTS



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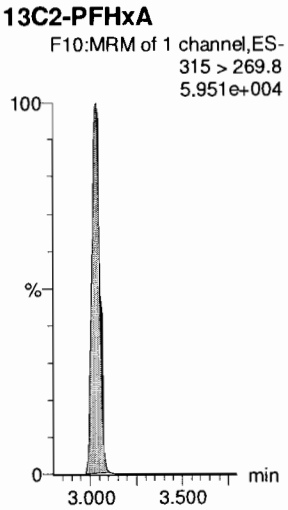

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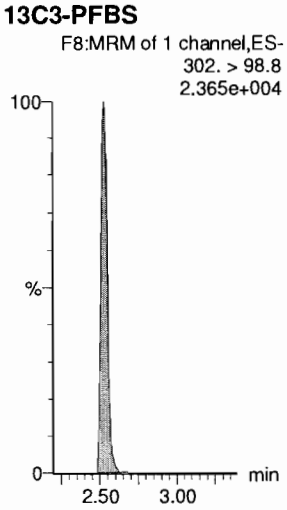

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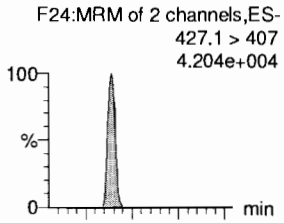
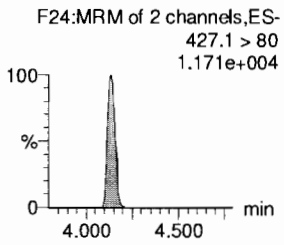
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

6:2 FTS





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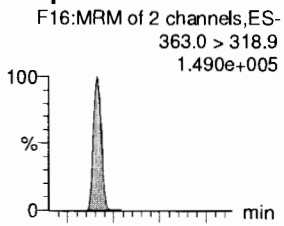
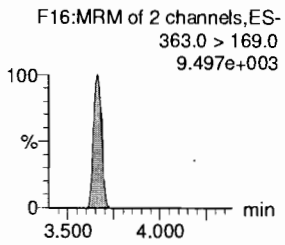
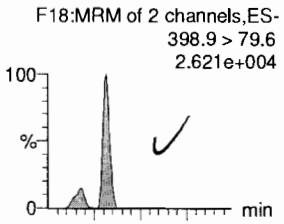
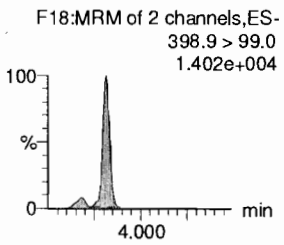


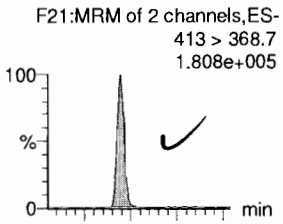


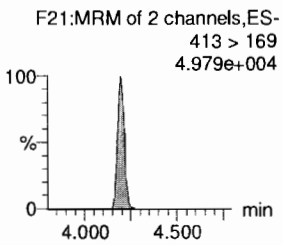
L-PFHxS





L-PFOA





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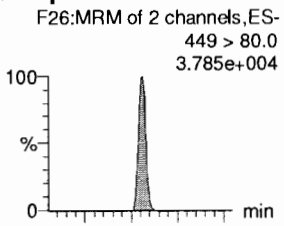

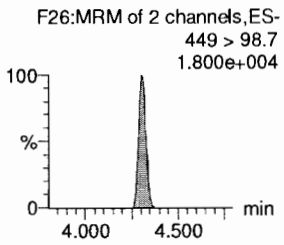

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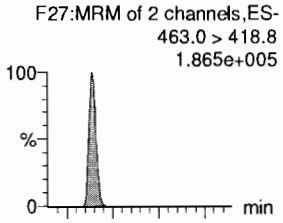
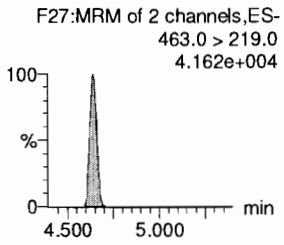
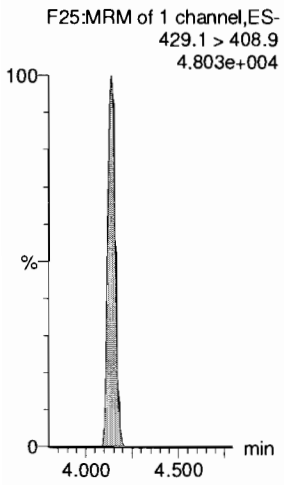




13C2-6:2 FTS



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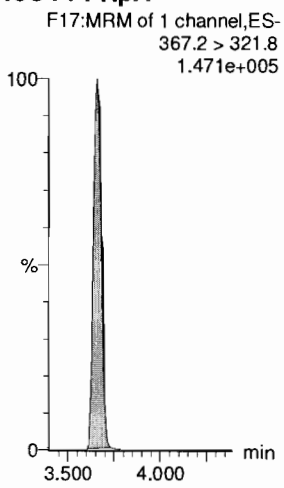
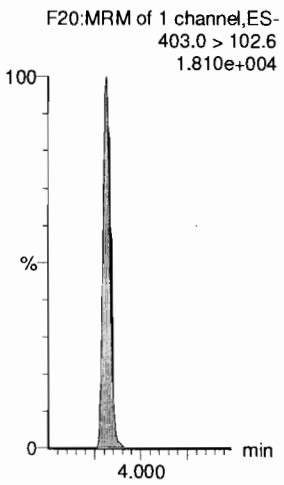


18O2-PFHxS



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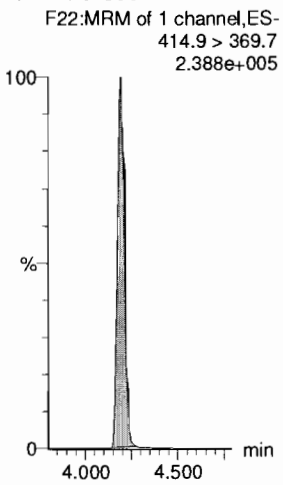
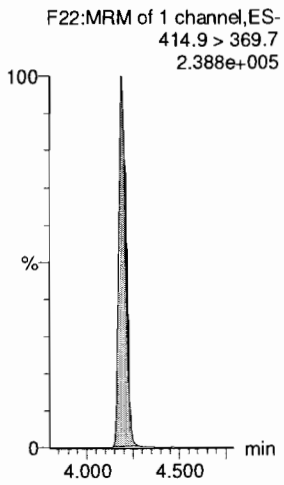
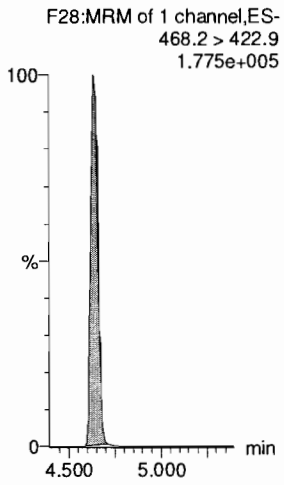


13C2-PFOA



13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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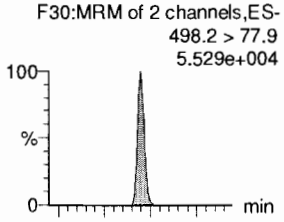
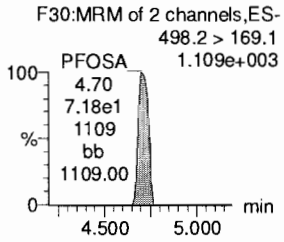
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

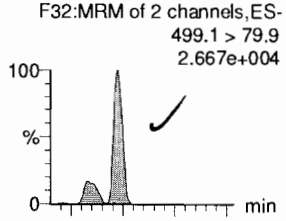
Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

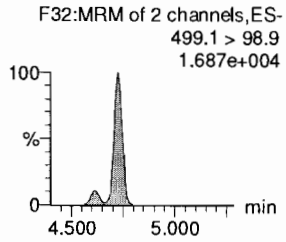
PFOSA





L-PFOS





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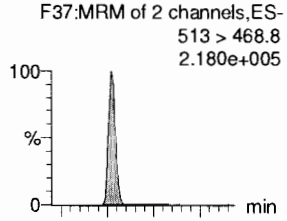
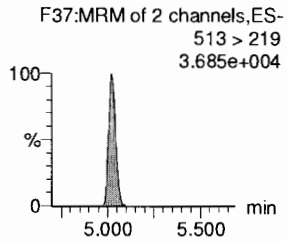
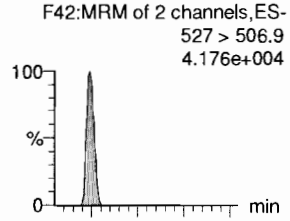
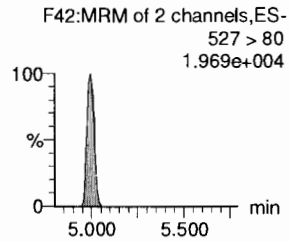




8:2 FTS





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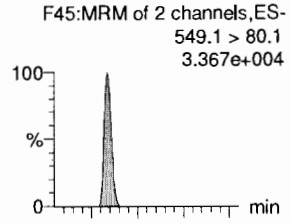

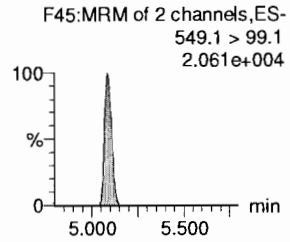

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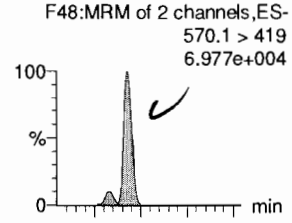
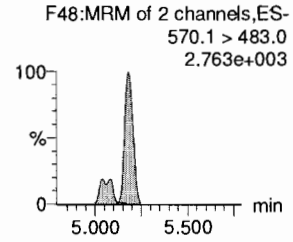
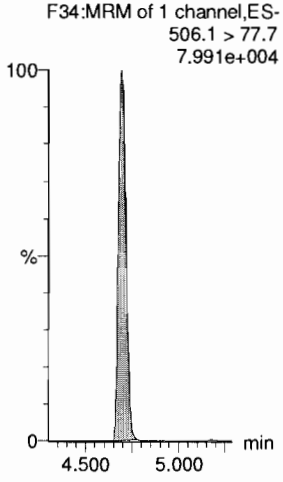
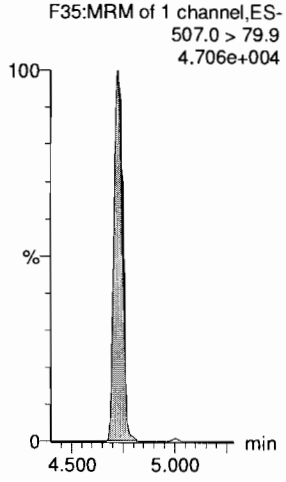




13C8-PFOSA



13C8-PFOS



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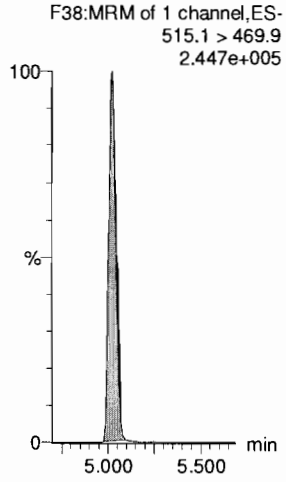
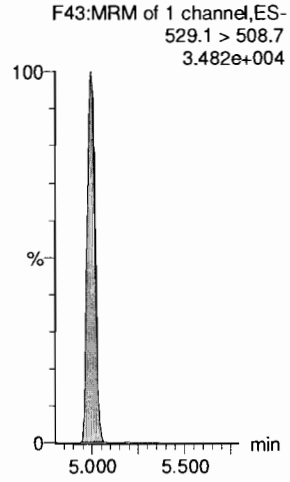


13C2-8:2 FTS



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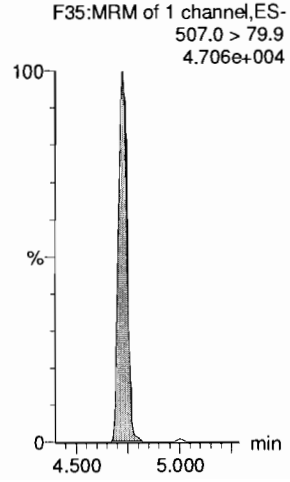

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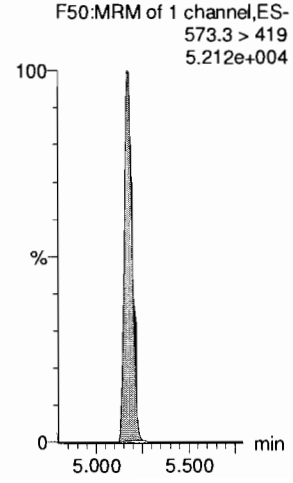

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

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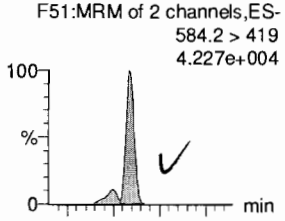
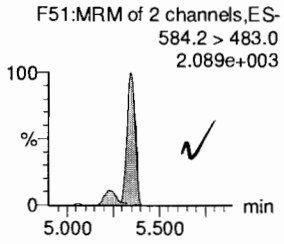
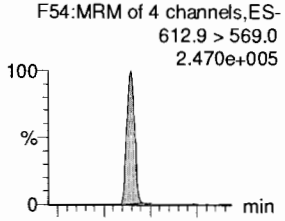
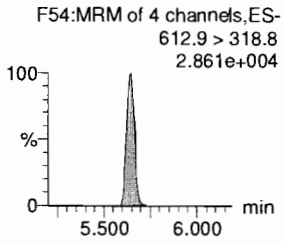


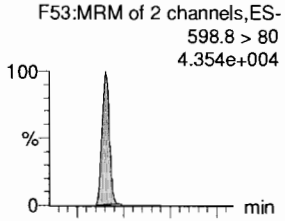


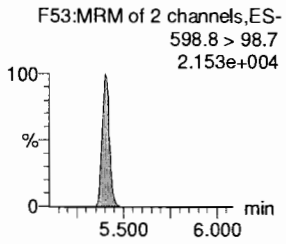
PFDoA



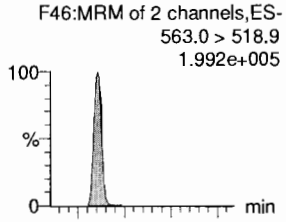


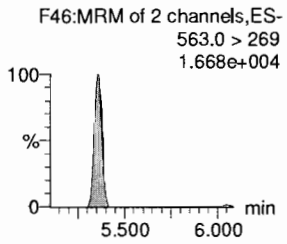
PFDS



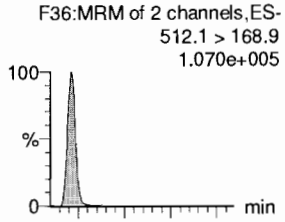


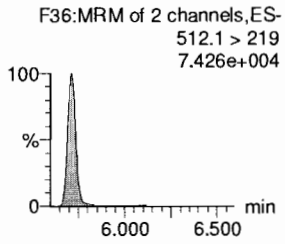
PFUdA





N-MeFOSA





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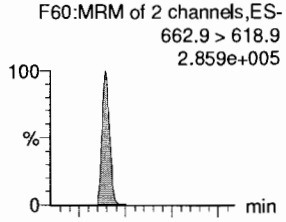
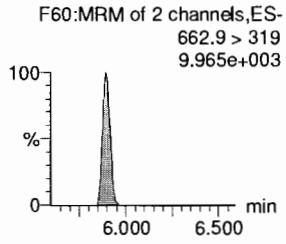
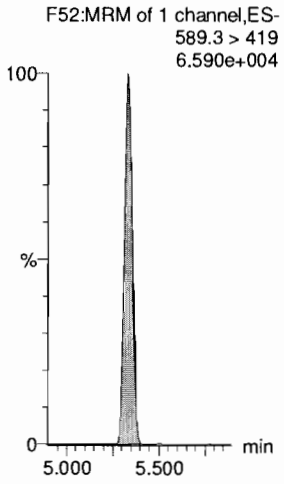
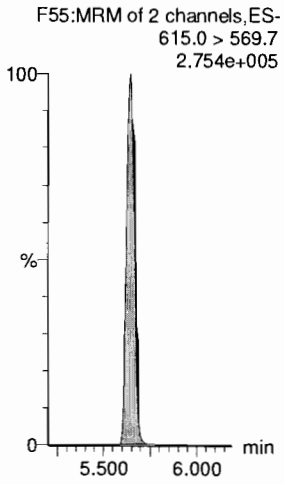




d5-N-EtFOSAA



13C2-PFDoA



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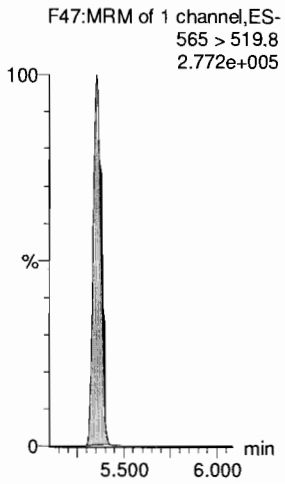
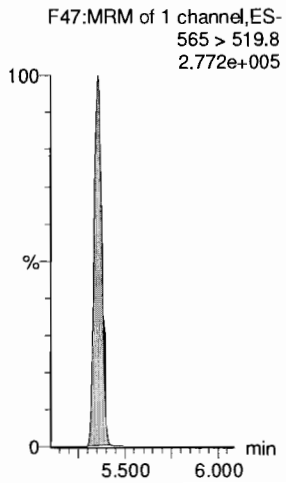
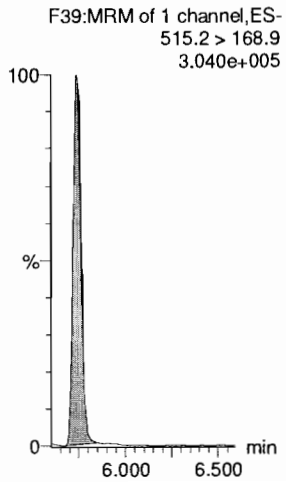


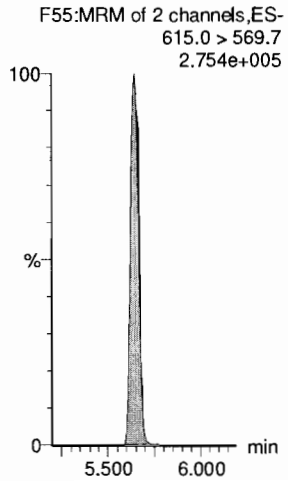
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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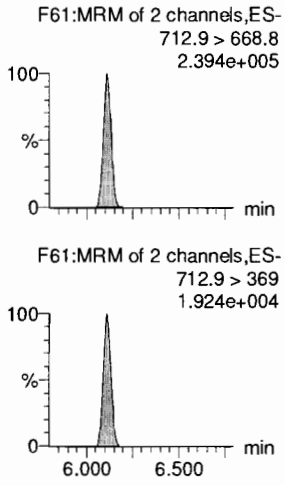
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

PFTeDA



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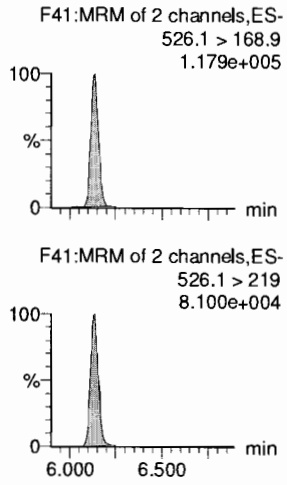
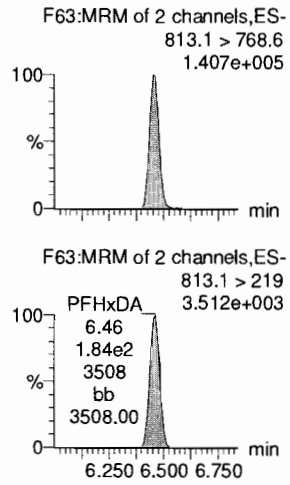
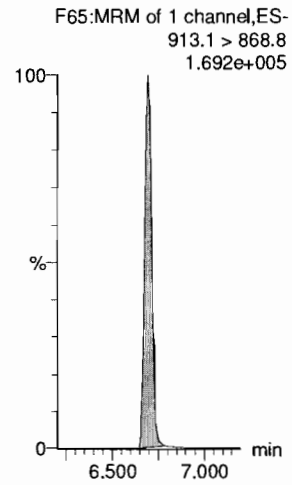


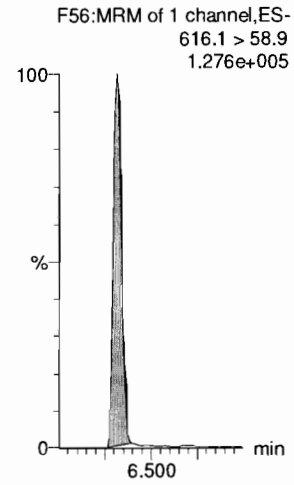
PFHxDA



PFODA



N-MeFOSE



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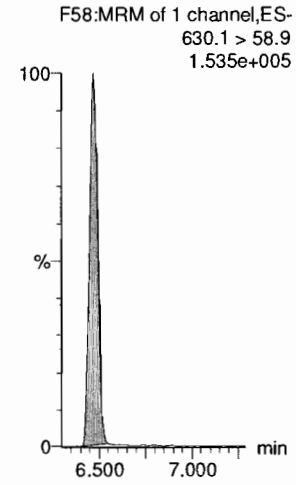

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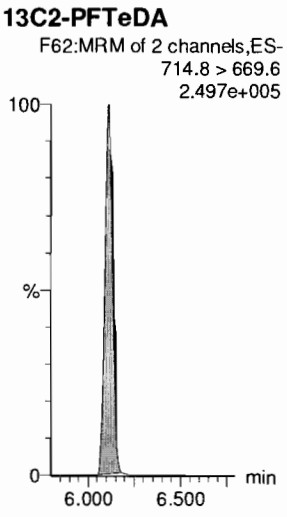
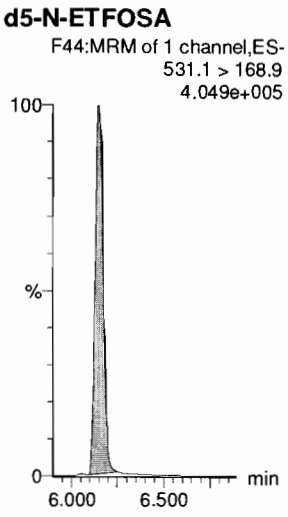


d5-N-ETFOSA



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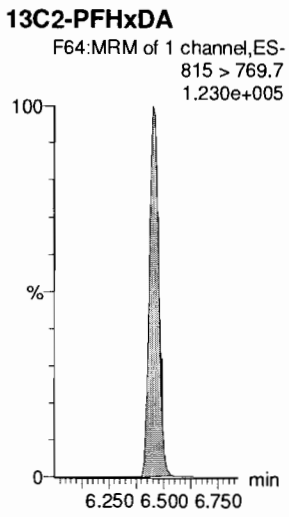

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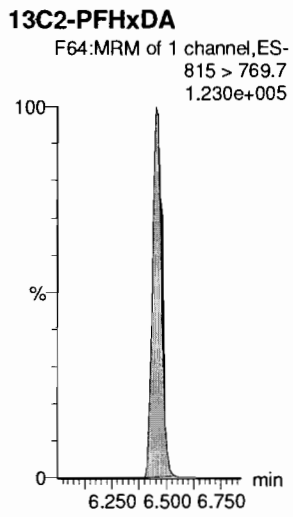
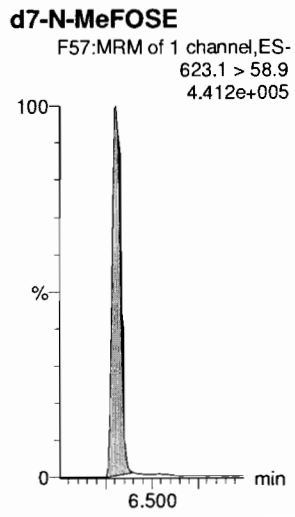
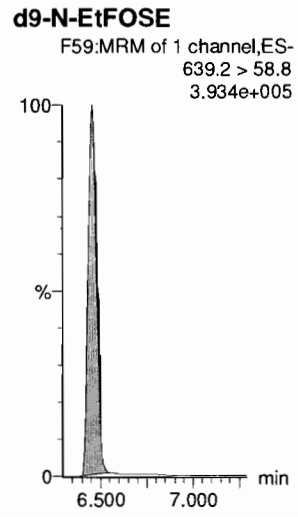


d7-N-MeFOSE



d9-N-EtFOSE



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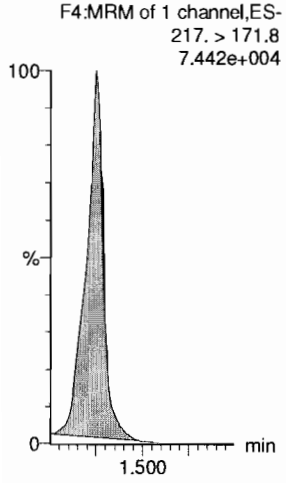
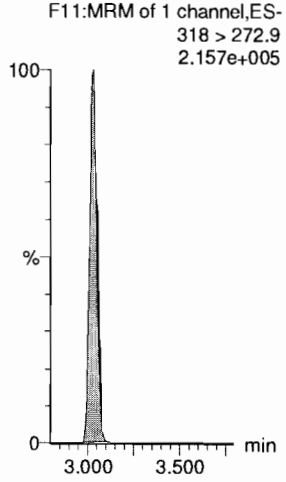
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_7, Date: 15-Jun-2018, Time: 19:13:08, ID: ST180615M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

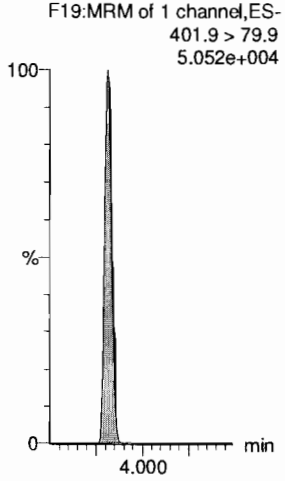
13C4-PFBA



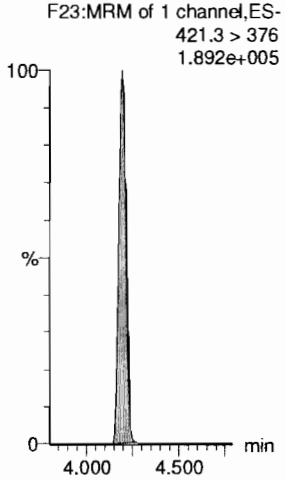
13C5-PFHxA



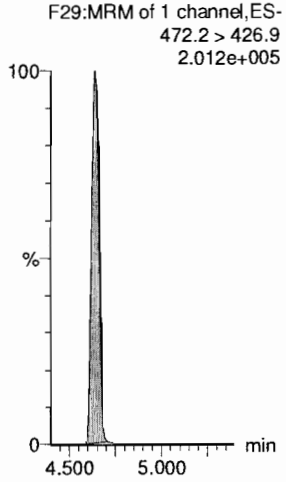
13C3-PFHxS



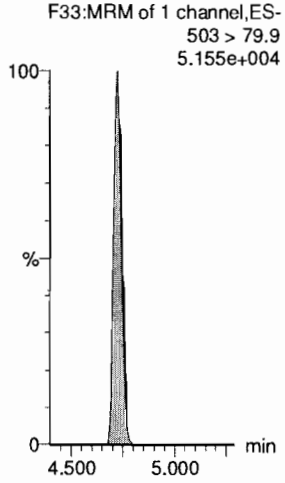
13C8-PFOA



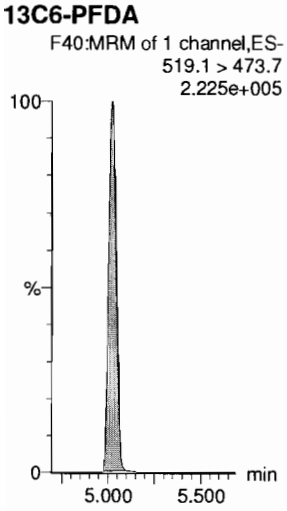
13C9-PFNA



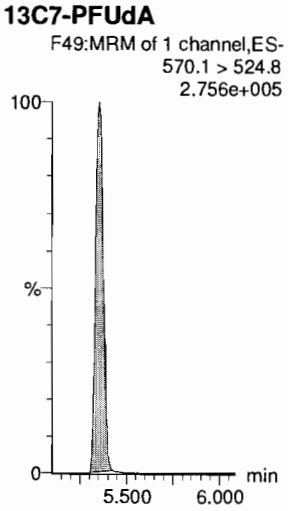
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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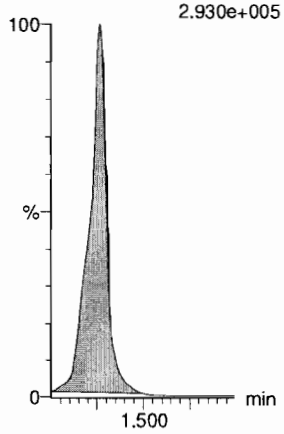
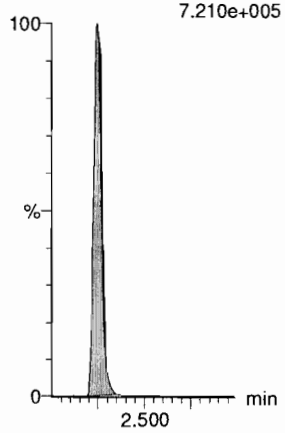
Name: 180615M1_8, Date: 15-Jun-2018, Time: 19:23:38, ID: ST180615M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

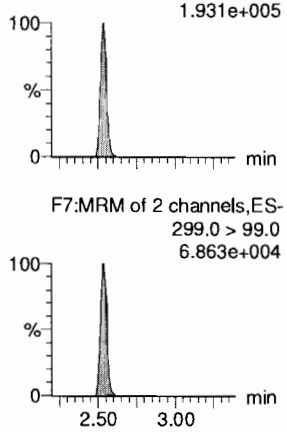
PFBA



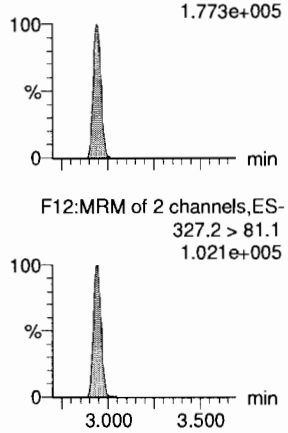
PFPeA



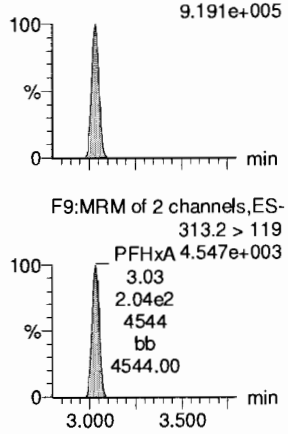
PFBS



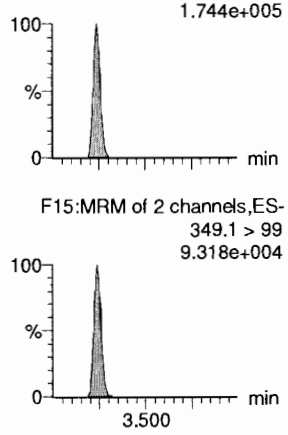
4:2 FTS



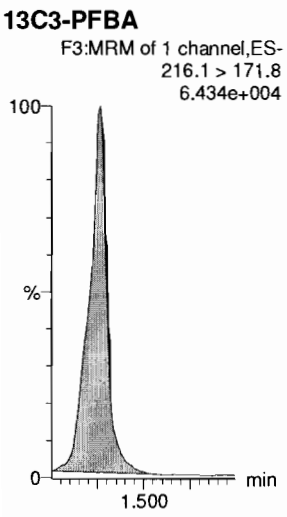
PFHxA



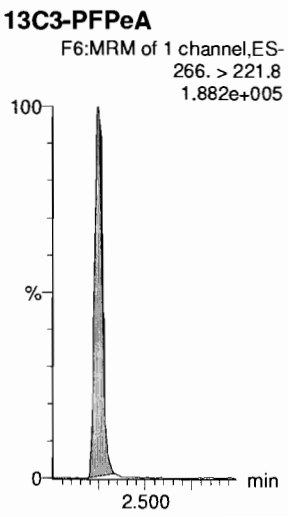
PFPeS



13C3-PFBA



13C3-PFPeA



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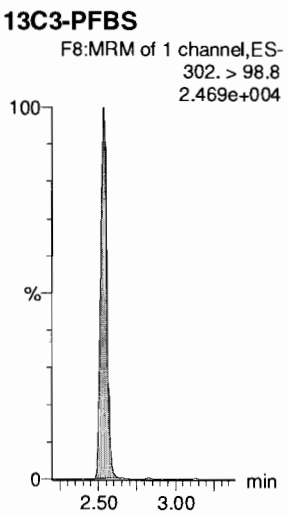
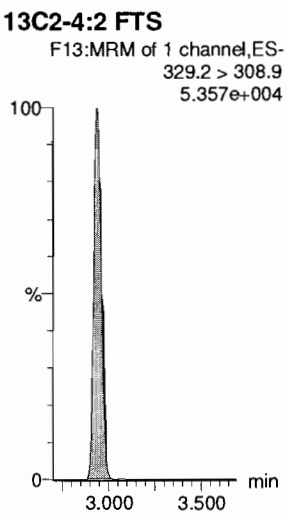
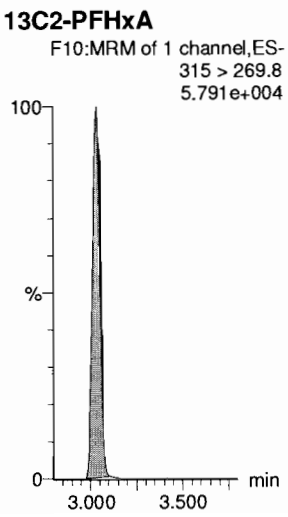


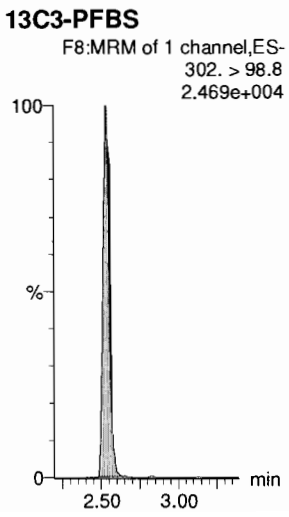
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

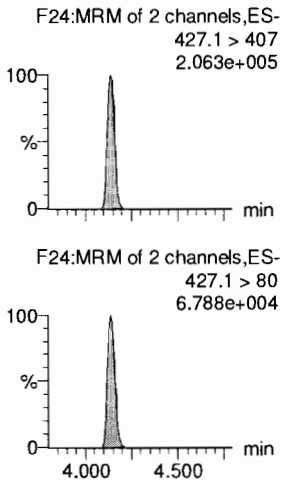


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

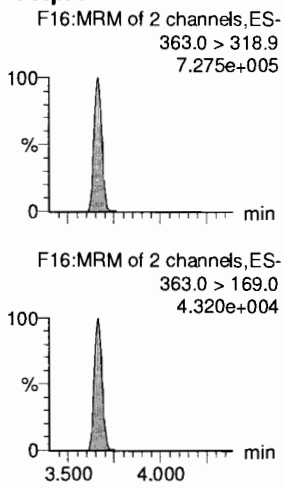
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_8, Date: 15-Jun-2018, Time: 19:23:38, ID: ST180615M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

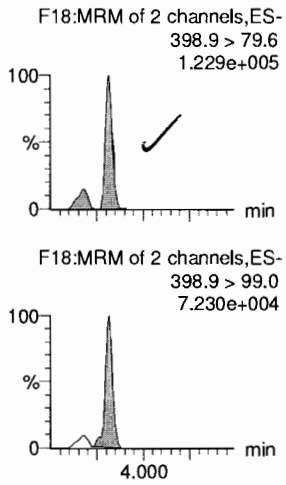
6:2 FTS



PFHpA



L-PFHxS



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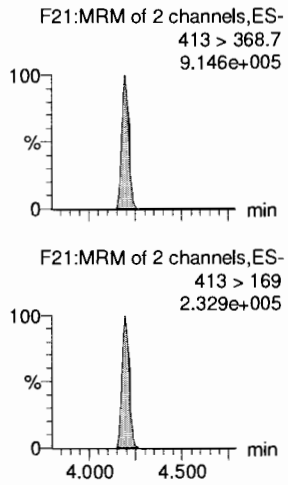

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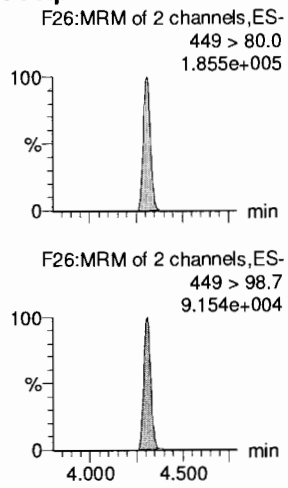

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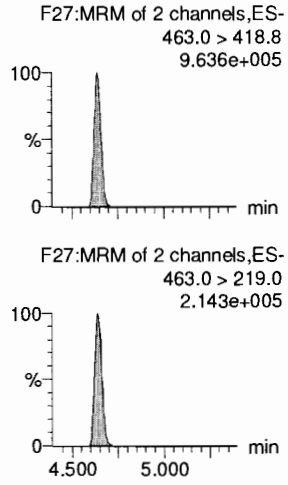
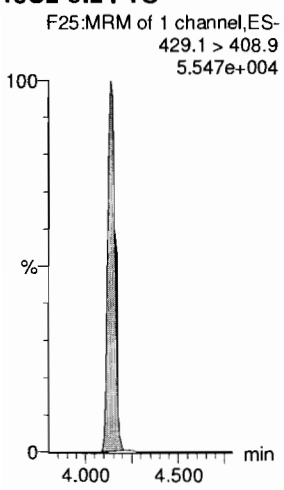


13C2-6:2 FTS



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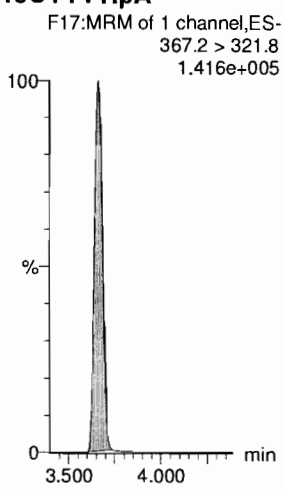

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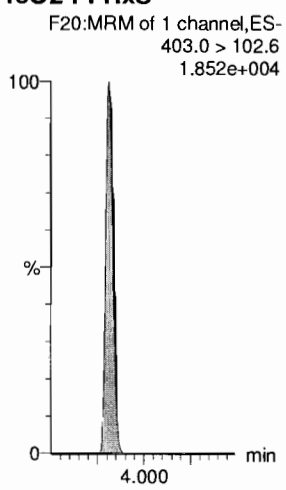

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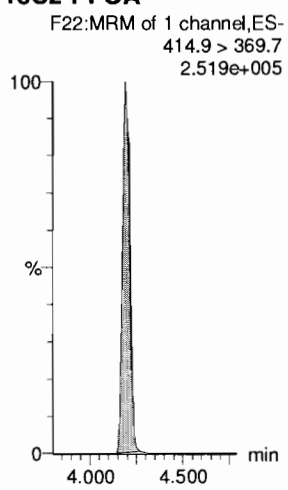

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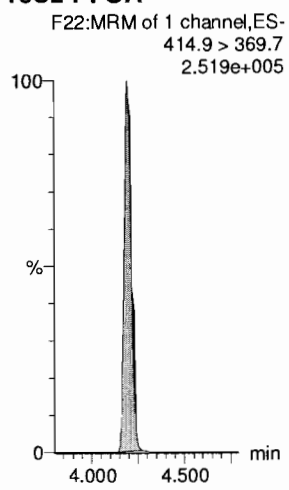

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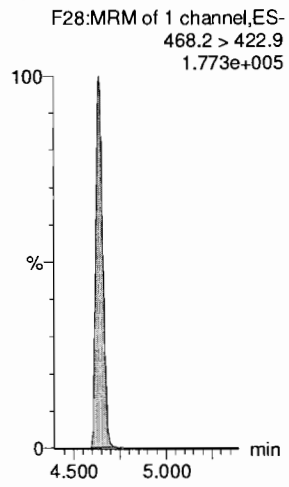

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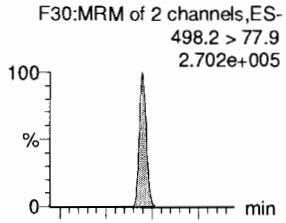
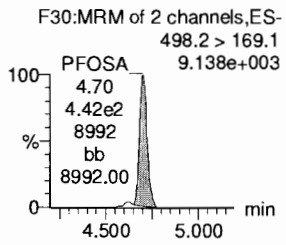
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

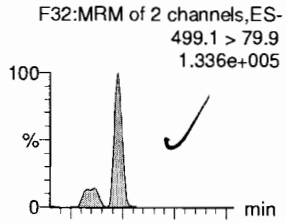
Name: 180615M1_8, Date: 15-Jun-2018, Time: 19:23:38, ID: ST180615M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

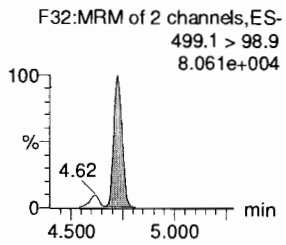
PFOSA





L-PFOS





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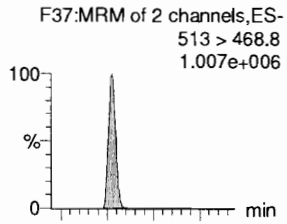
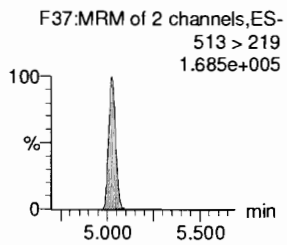
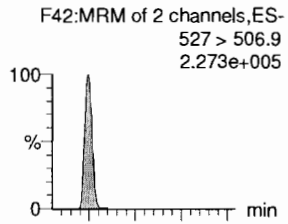
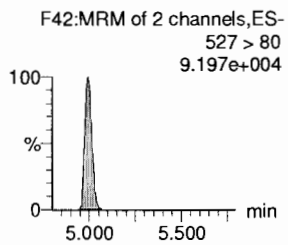




8:2 FTS





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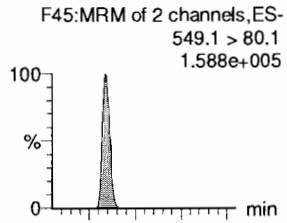

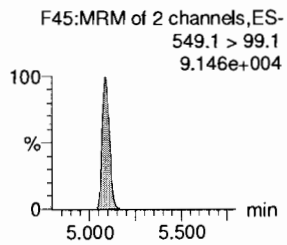

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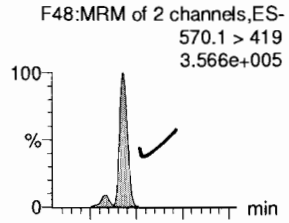

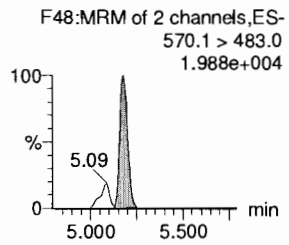

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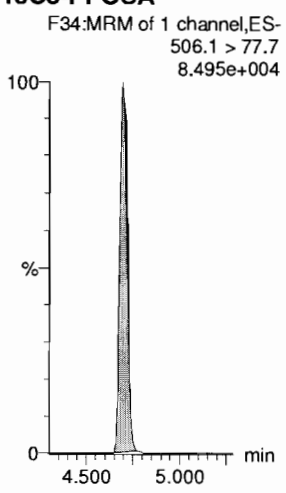

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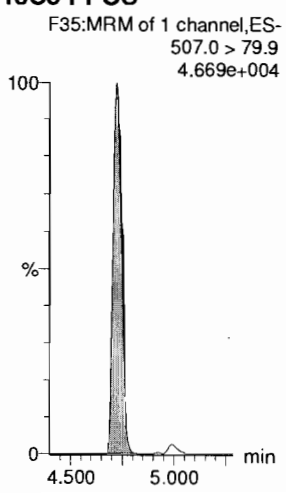

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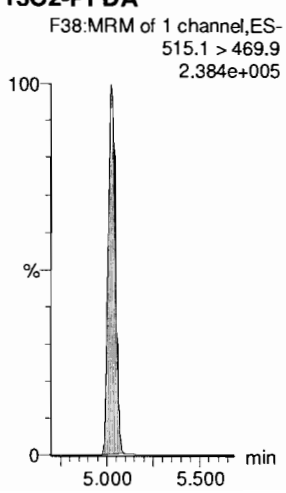
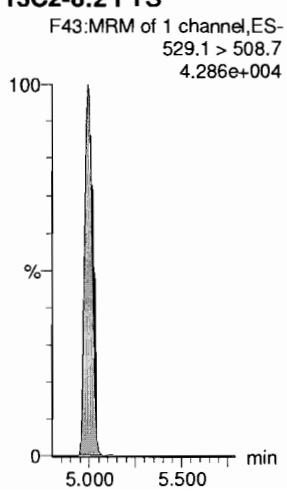


13C2-8:2 FTS



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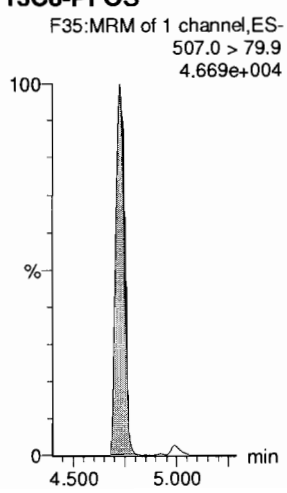
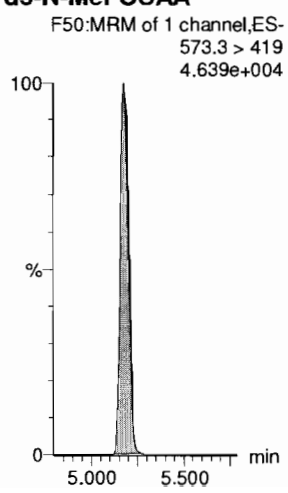


d3-N-MeFOSAA



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Name: 180615M1_8, Date: 15-Jun-2018, Time: 19:23:38, ID: ST180615M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

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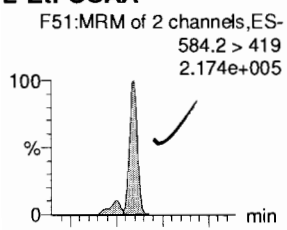
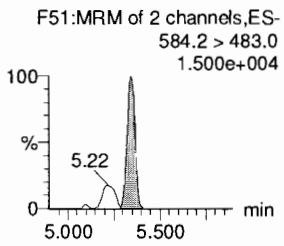
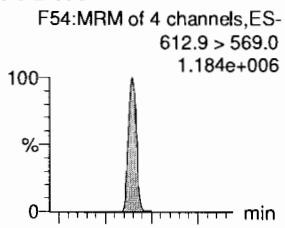
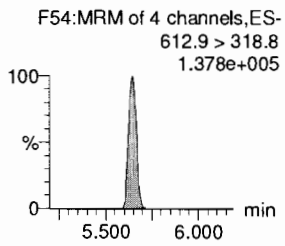




PFDoA





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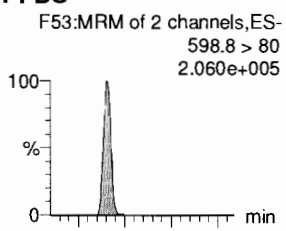

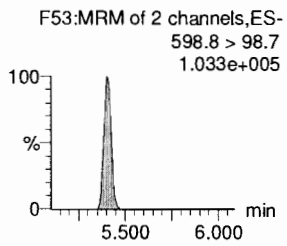

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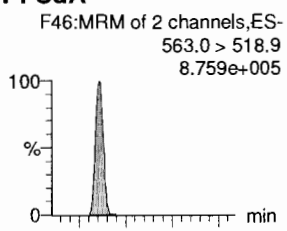

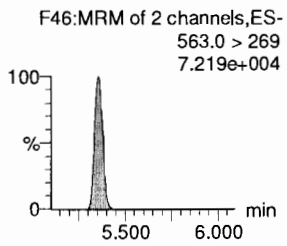

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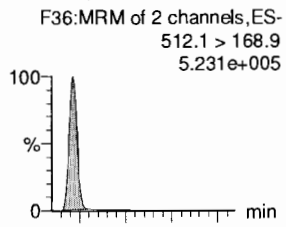

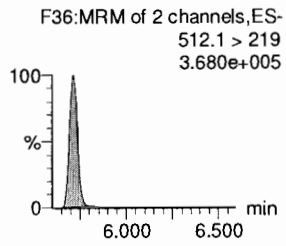

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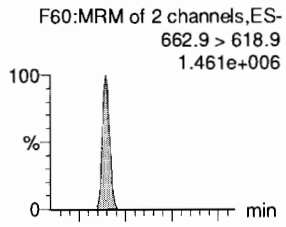
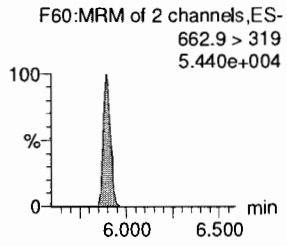
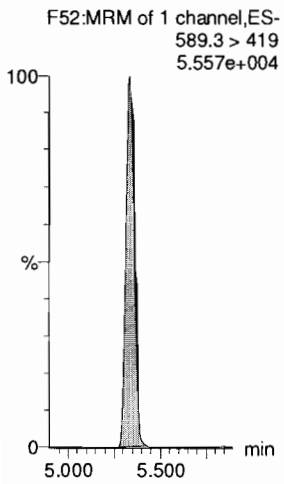




d5-N-EtFOSAA



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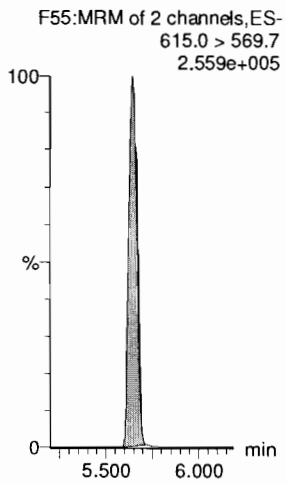

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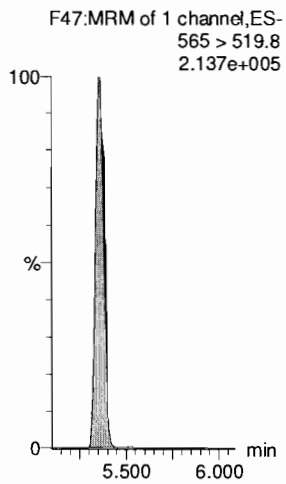

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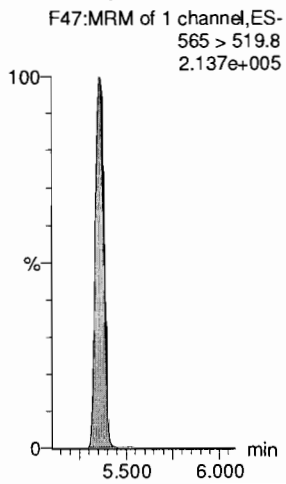

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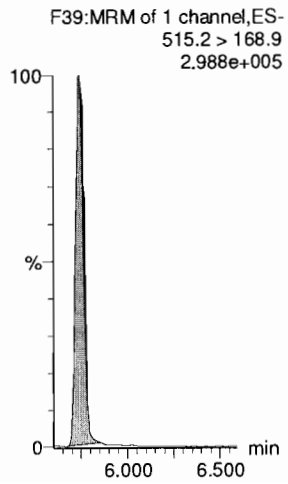

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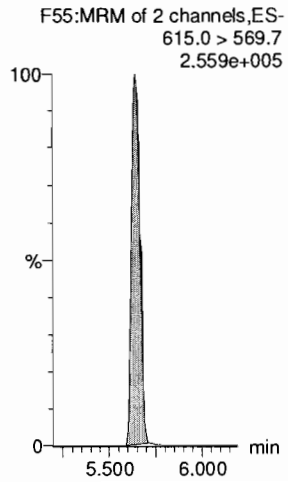

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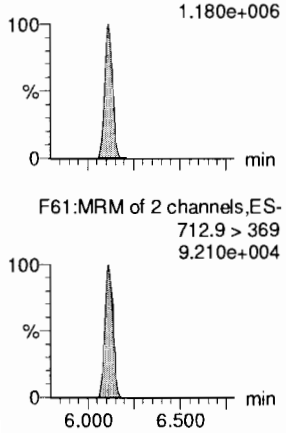

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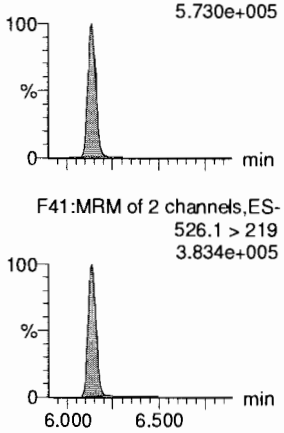

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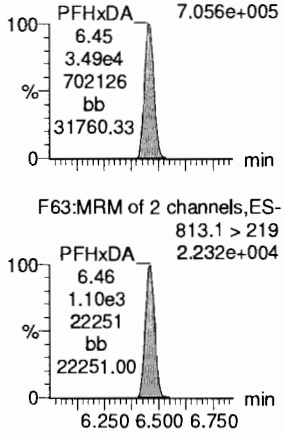

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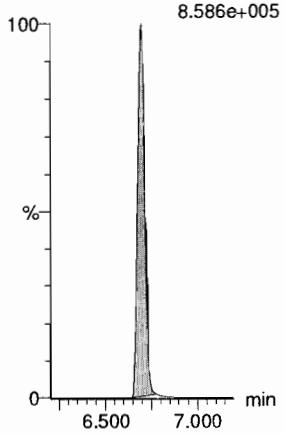
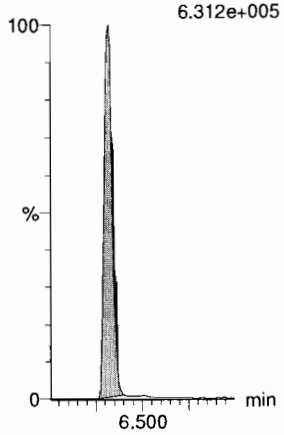


N-MeFOSE



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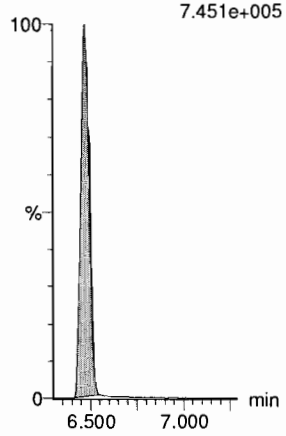

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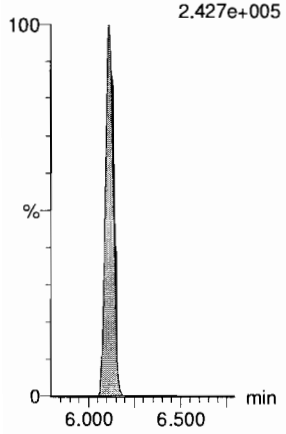
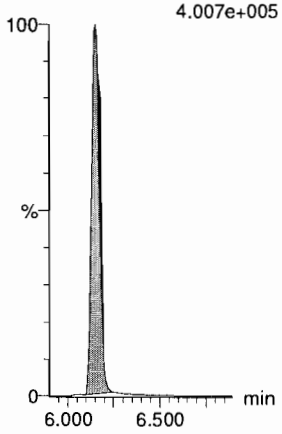
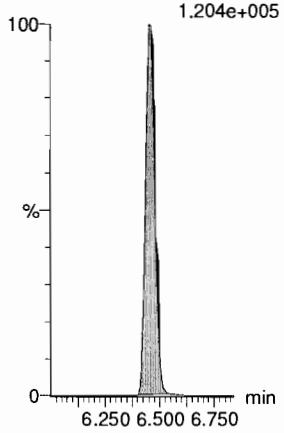


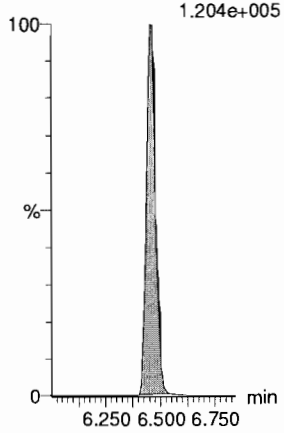
d5-N-ETFOSA



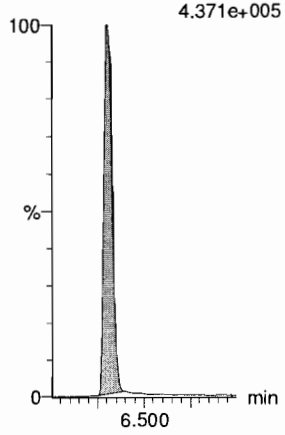
13C2-PFHxDA



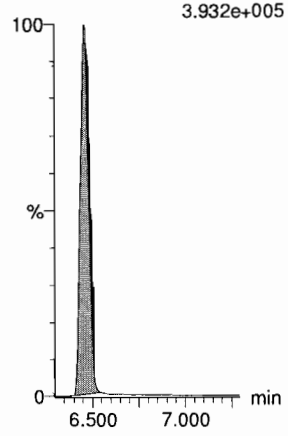
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

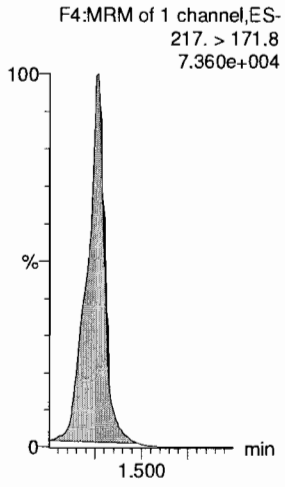


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

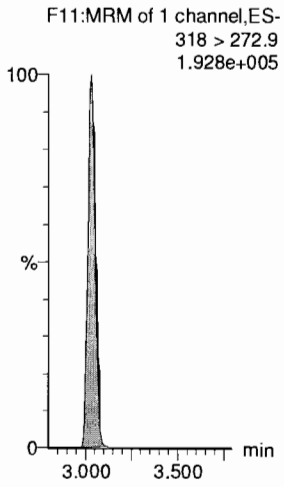
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_8, Date: 15-Jun-2018, Time: 19:23:38, ID: ST180615M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

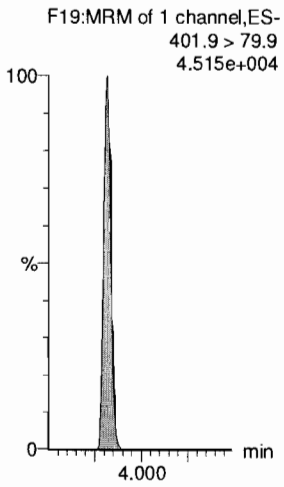
13C4-PFBA



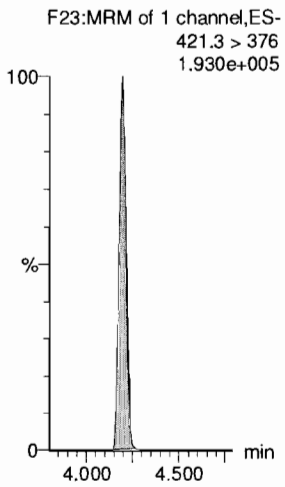
13C5-PFHxA



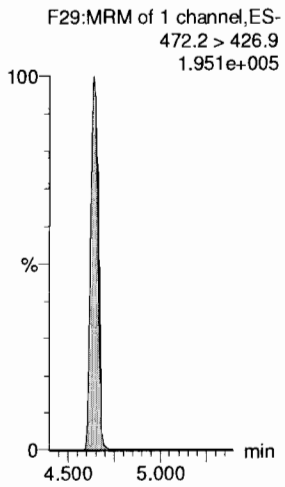
13C3-PFHxS



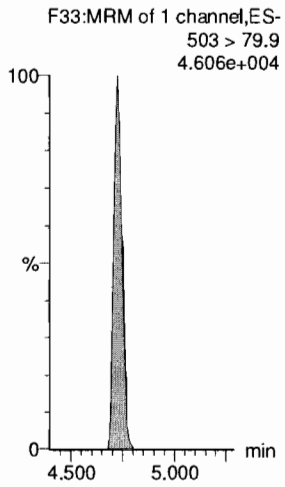
13C8-PFOA



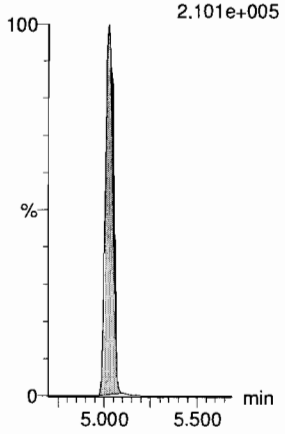
13C9-PFNA



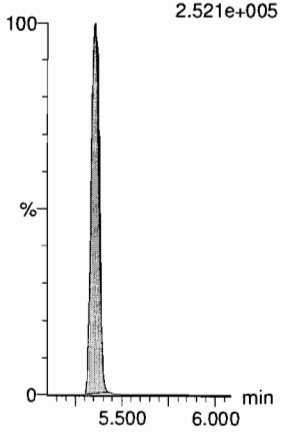
13C4-PFOS



13C6-PFDA



13C7-PFUdA

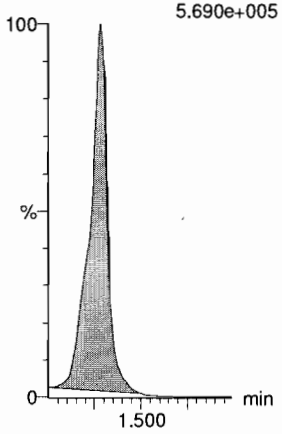


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

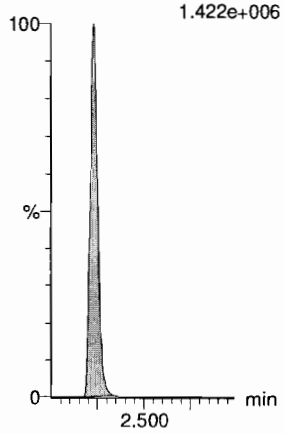
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_9, Date: 15-Jun-2018, Time: 19:38:37, ID: ST180615M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

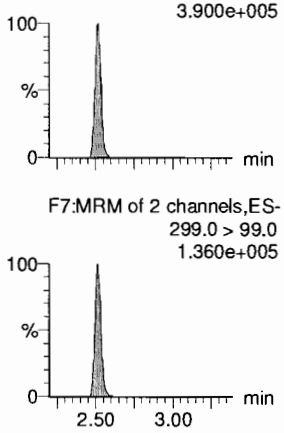
PFBA



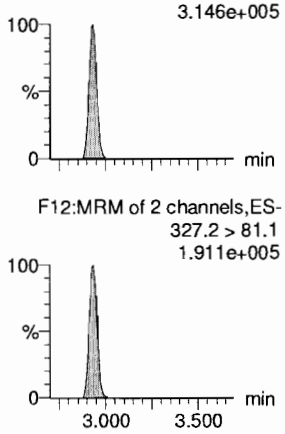
PFPeA



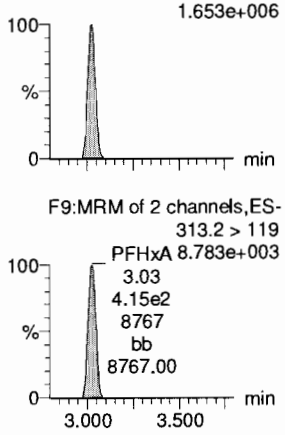
PFBS



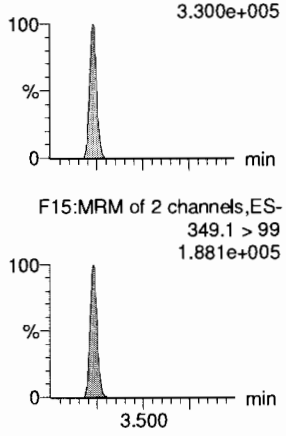
4:2 FTS



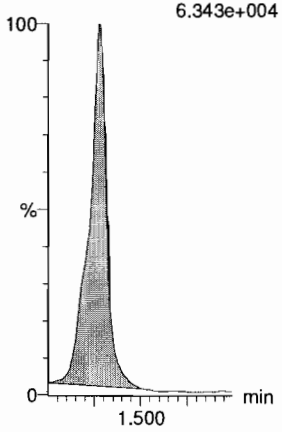
PFHxA



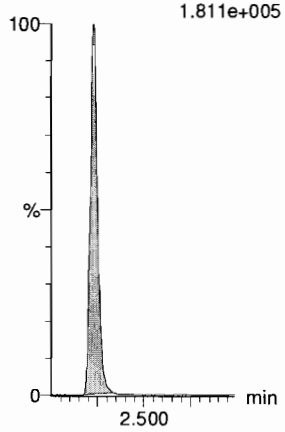
PFPeS



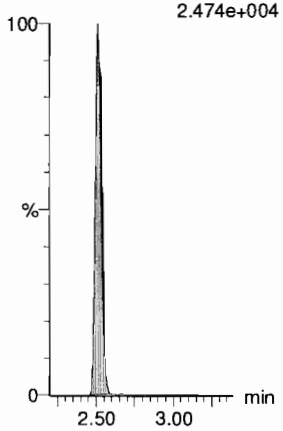
13C3-PFBA



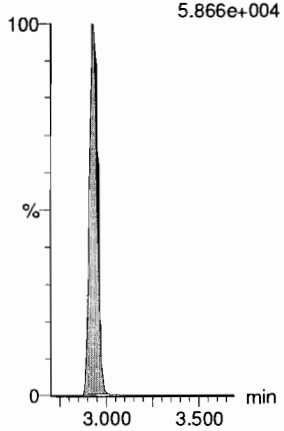
13C3-PFPeA



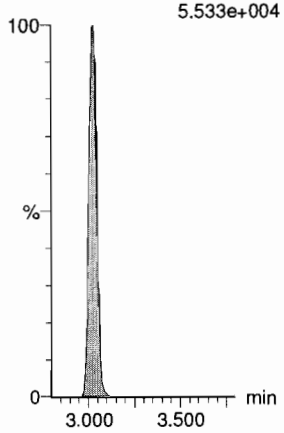
13C3-PFBS



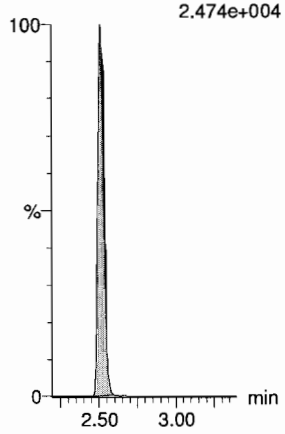
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

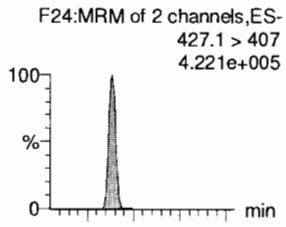


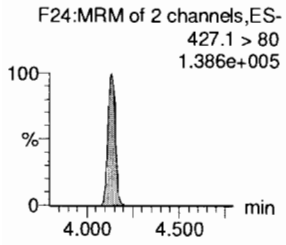
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

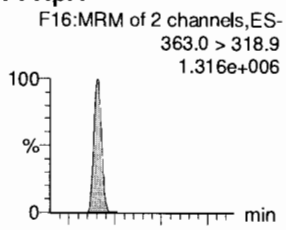
Name: 180615M1_9, Date: 15-Jun-2018, Time: 19:38:37, ID: ST180615M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

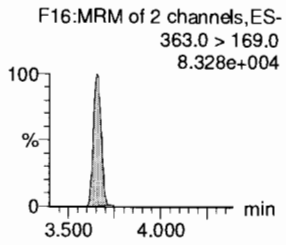
6:2 FTS



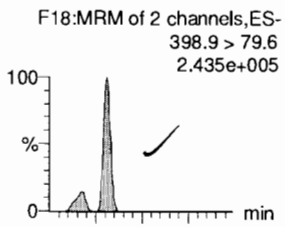


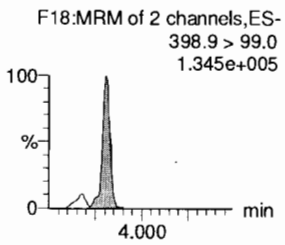
PFHpA



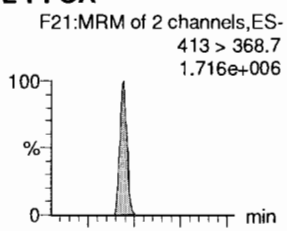


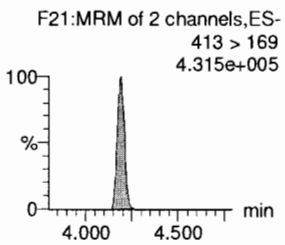
L-PFHxS



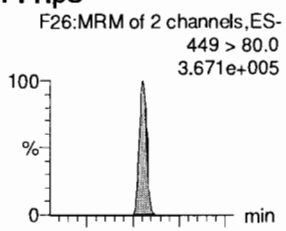


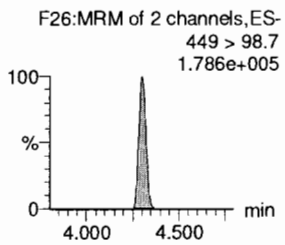
L-PFOA



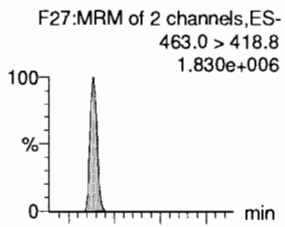


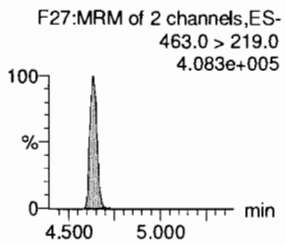
PFHpS



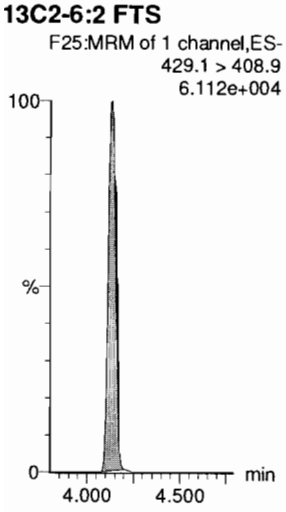


PFNA

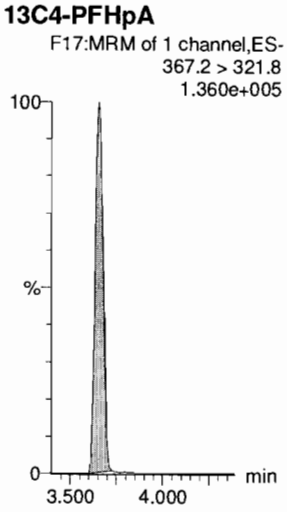




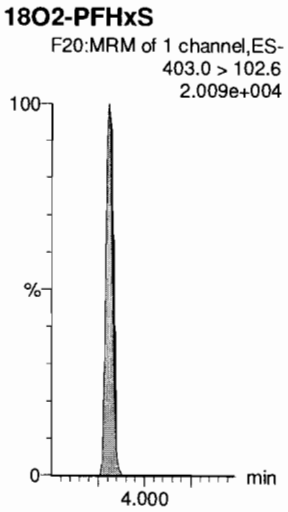
13C2-6:2 FTS



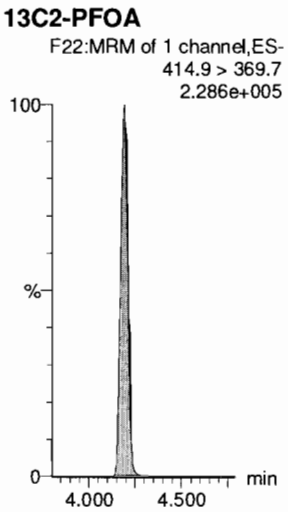
13C4-PFHpA



18O2-PFHxS



13C2-PFOA



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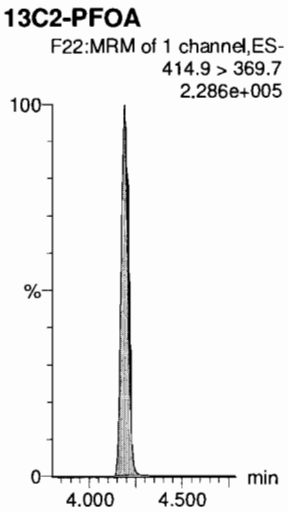
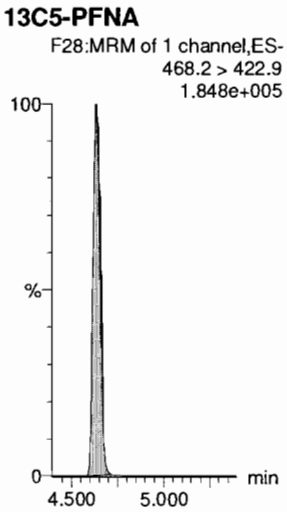


13C5-PFNA

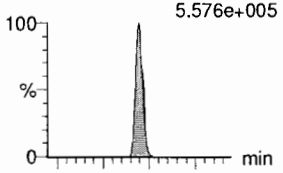


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

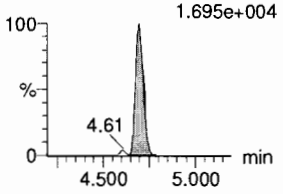
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_9, Date: 15-Jun-2018, Time: 19:38:37, ID: ST180615M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

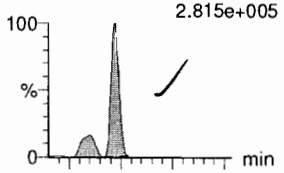
PFOSA
F30:MRM of 2 channels,ES-
498.2 > 77.9
5.576e+005



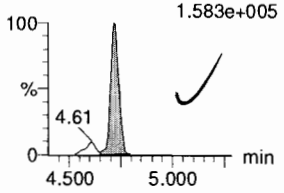
F30:MRM of 2 channels,ES-
498.2 > 169.1
1.695e+004



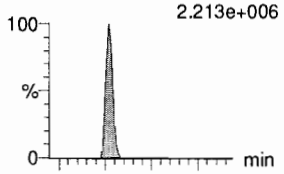
L-PFOS
F32:MRM of 2 channels,ES-
499.1 > 79.9
2.815e+005



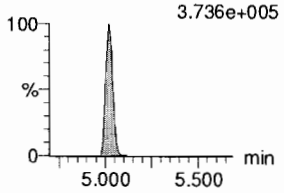
F32:MRM of 2 channels,ES-
499.1 > 98.9
1.583e+005



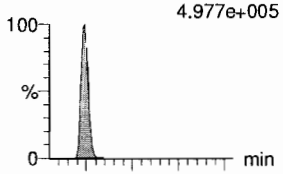
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
2.213e+006



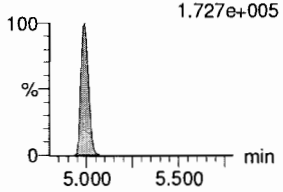
F37:MRM of 2 channels,ES-
513 > 219
3.736e+005



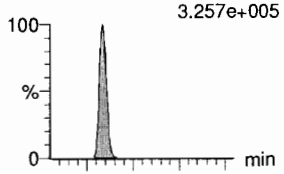
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
4.977e+005



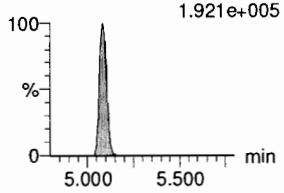
F42:MRM of 2 channels,ES-
527 > 80
1.727e+005



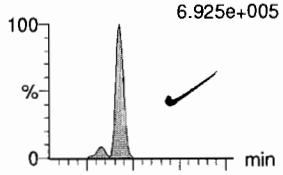
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
3.257e+005



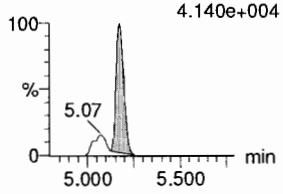
F45:MRM of 2 channels,ES-
549.1 > 99.1
1.921e+005



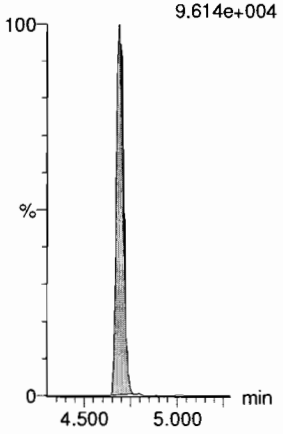
L-MeFOSAA
F48:MRM of 2 channels,ES-
570.1 > 419
6.925e+005



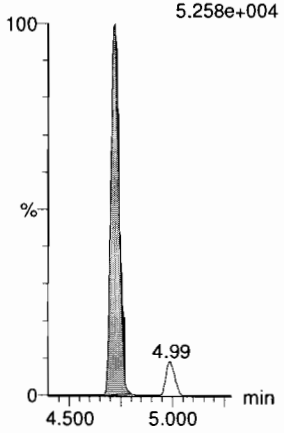
F48:MRM of 2 channels,ES-
570.1 > 483.0
4.140e+004



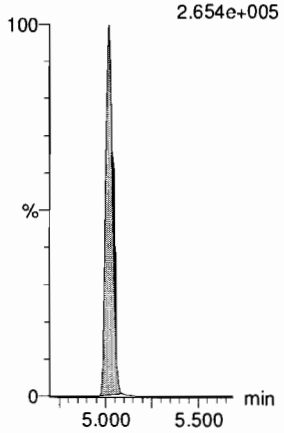
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
9.614e+004



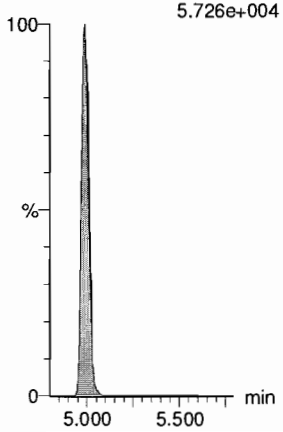
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
5.258e+004



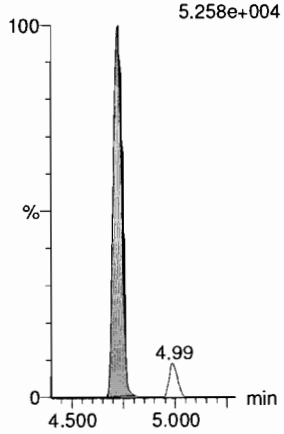
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
2.654e+005



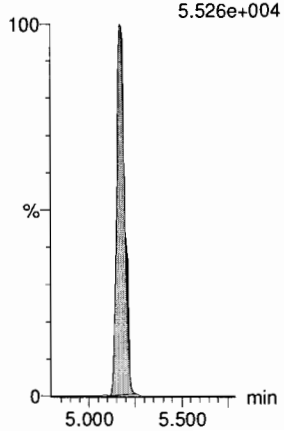
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
5.726e+004



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
5.258e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
5.526e+004

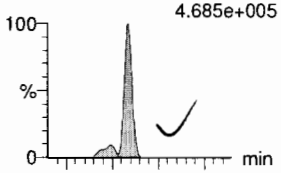


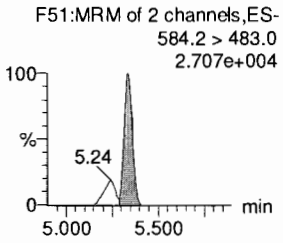
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

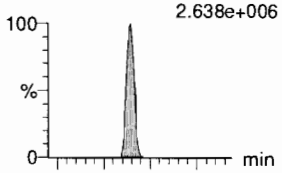
Name: 180615M1_9, Date: 15-Jun-2018, Time: 19:38:37, ID: ST180615M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

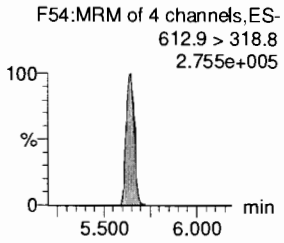
L-EtFOSAA



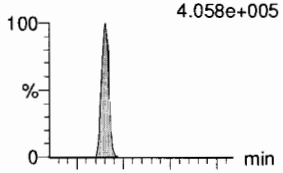


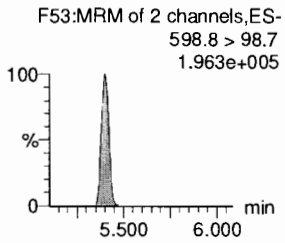
PFDoA



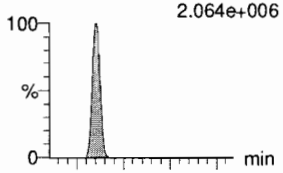


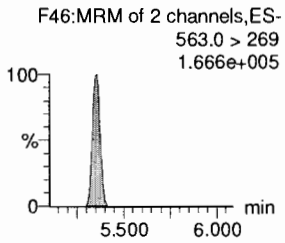
PFDS



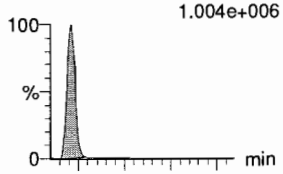


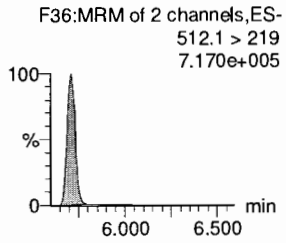
PFUdA



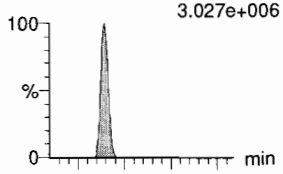


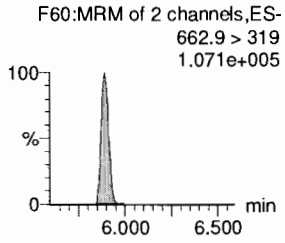
N-MeFOSA



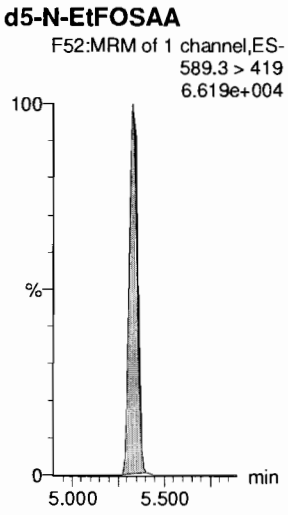


PFTrDA

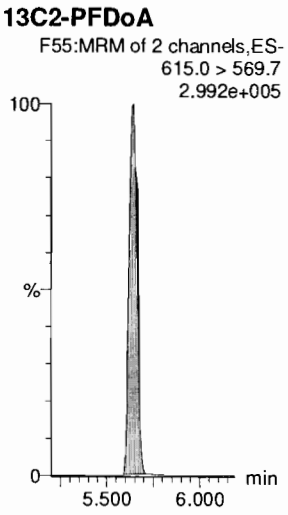




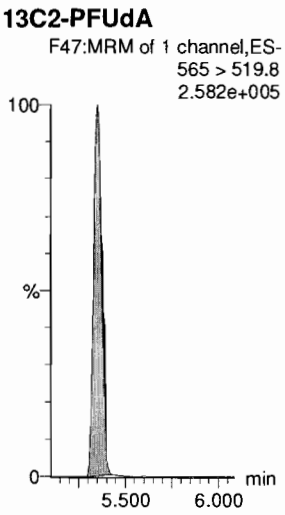
d5-N-EtFOSAA



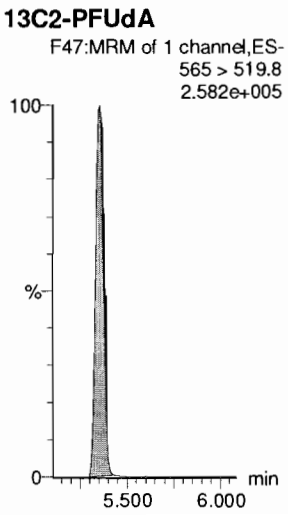
13C2-PFDoA



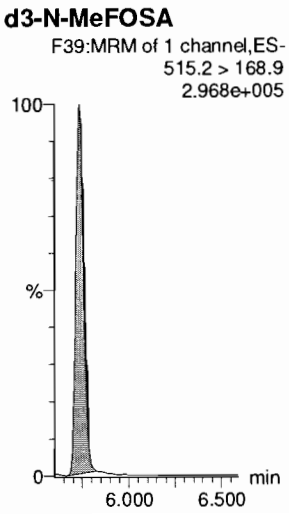
13C2-PFUdA



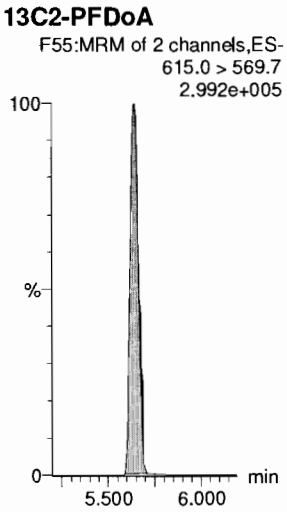
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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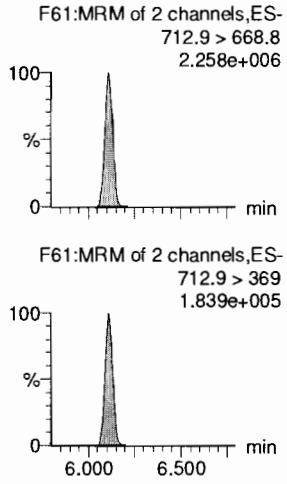
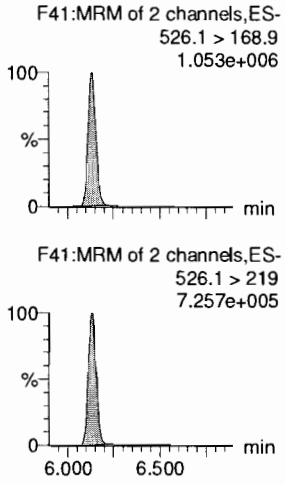
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_9, Date: 15-Jun-2018, Time: 19:38:37, ID: ST180615M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

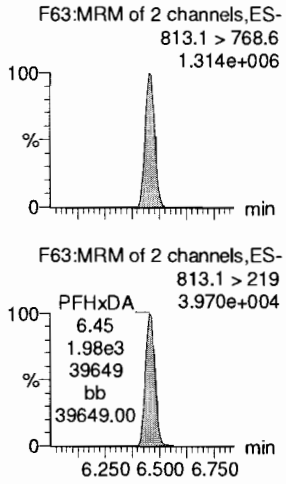
PFTeDA



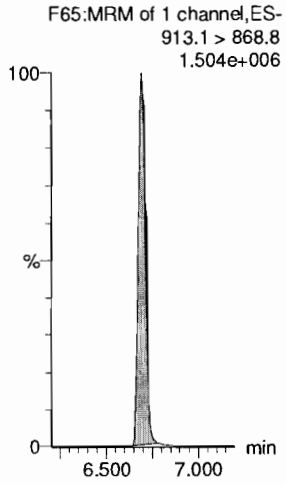
N-EtFOSA



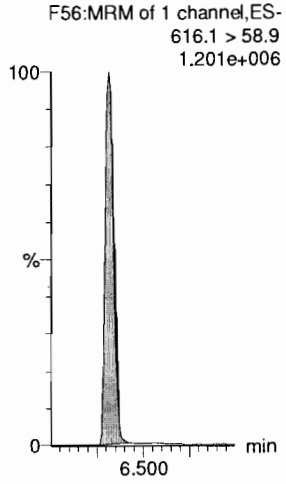
PFHxDA



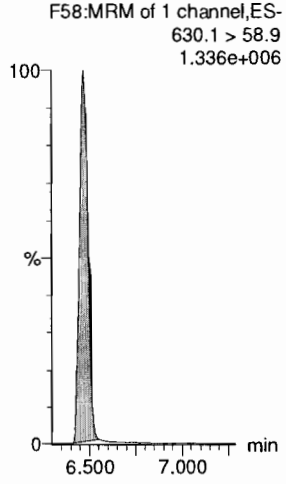
PFODA



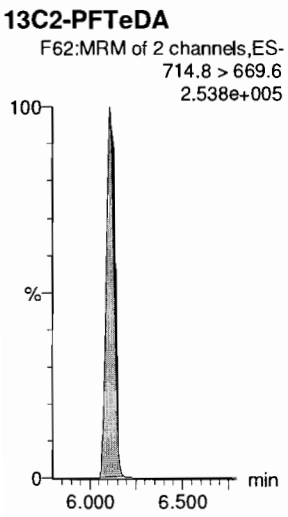
N-MeFOSE



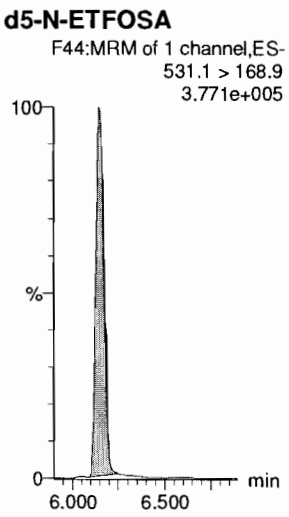
N-EtFOSE



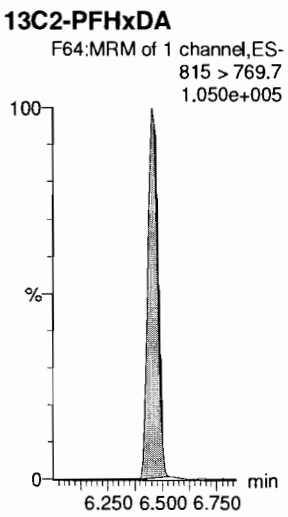
13C2-PFTeDA



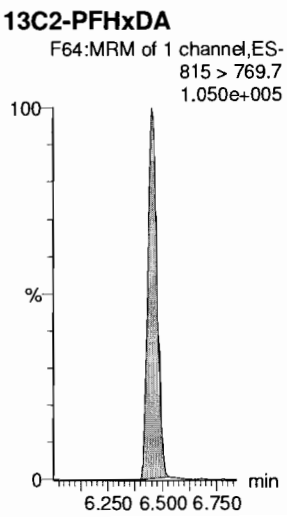
d5-N-ETFOSA



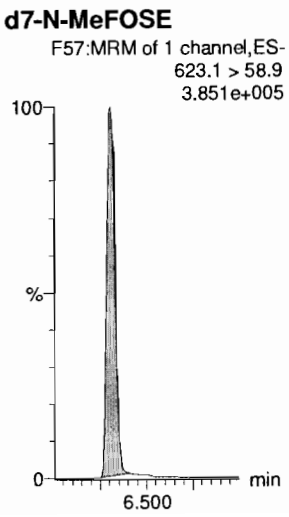
13C2-PFHxDA



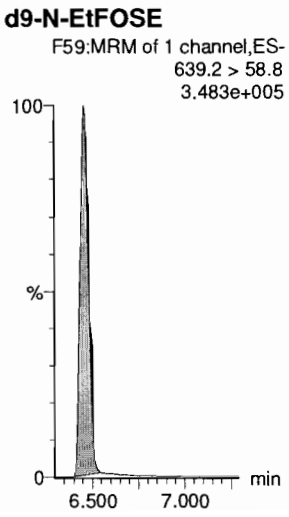
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

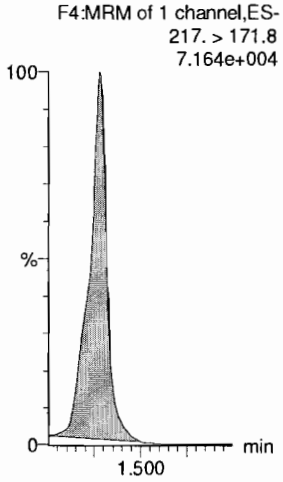


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

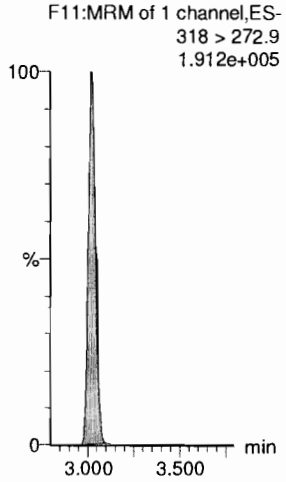
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_9, Date: 15-Jun-2018, Time: 19:38:37, ID: ST180615M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

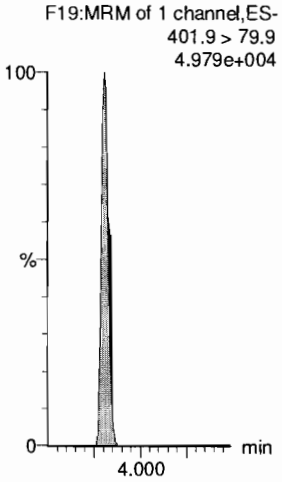
13C4-PFBA



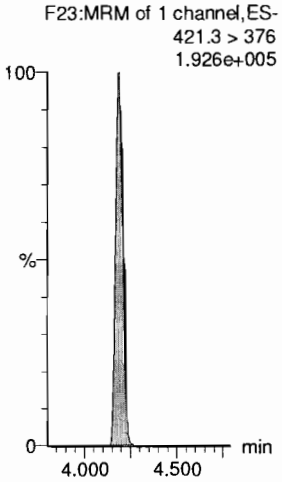
13C5-PFHxA



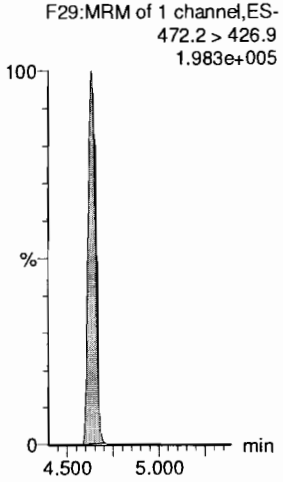
13C3-PFHxS



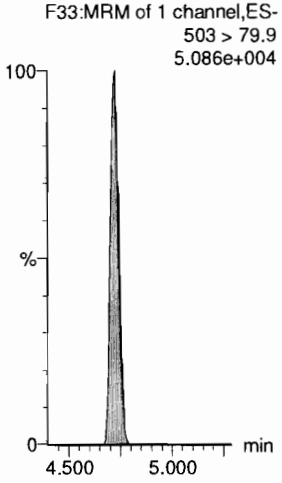
13C8-PFOA



13C9-PFNA



13C4-PFOS



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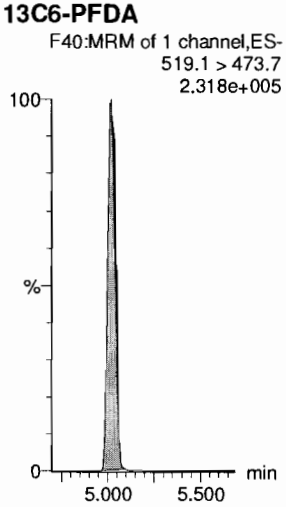
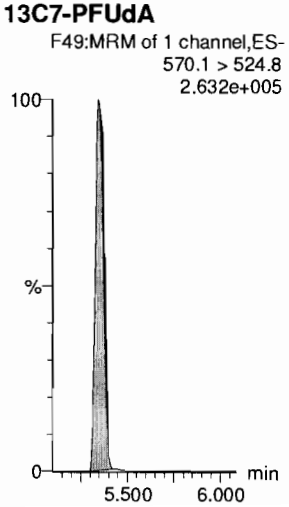


13C7-PFUdA



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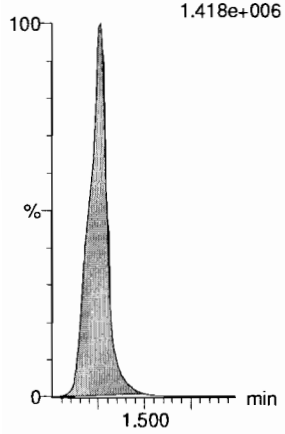
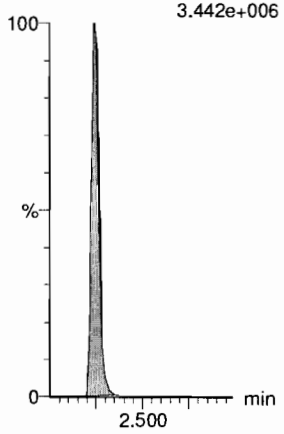
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_10, Date: 15-Jun-2018, Time: 19:49:05, ID: ST180615M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

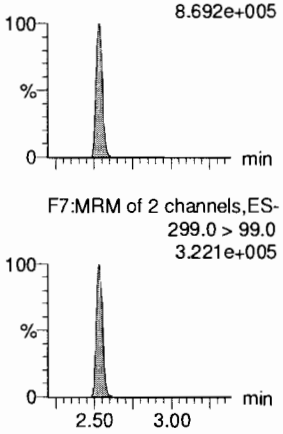
PFBA



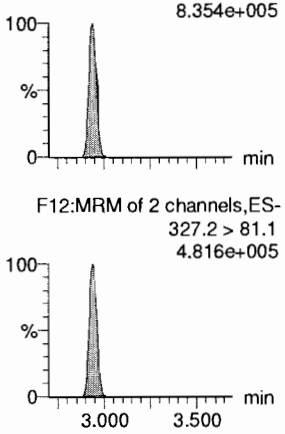
PFPeA



PFBS



4:2 FTS



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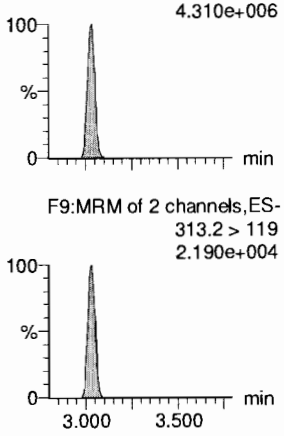

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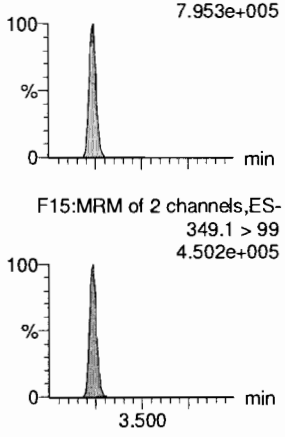
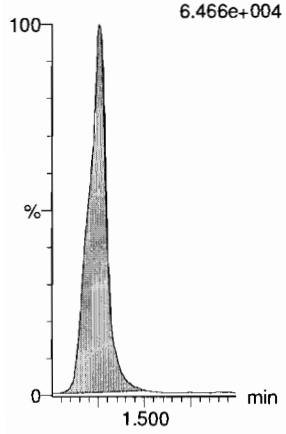


13C3-PFBA



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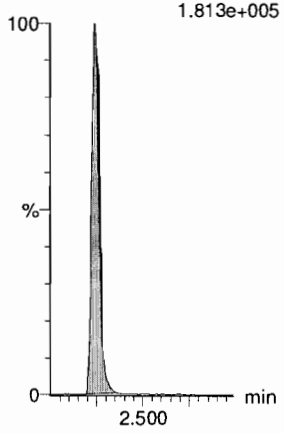

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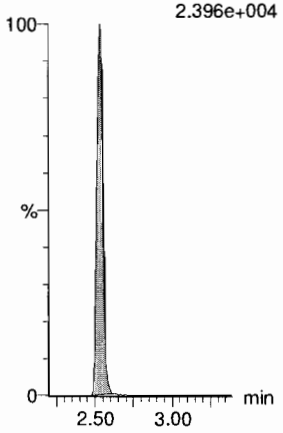
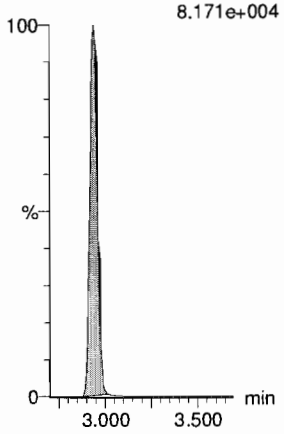


13C2-4:2 FTS



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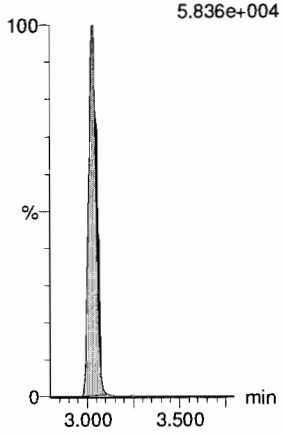

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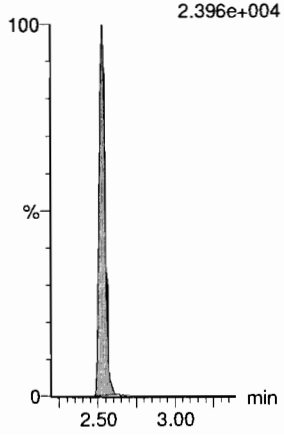
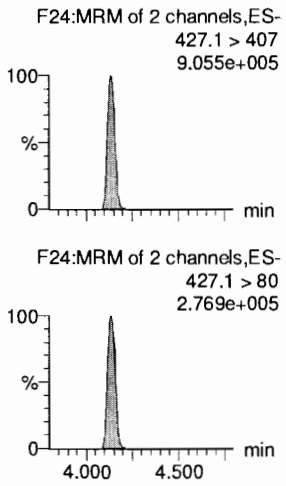


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_10, Date: 15-Jun-2018, Time: 19:49:05, ID: ST180615M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

6:2 FTS



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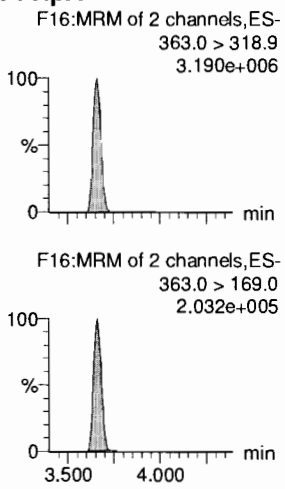

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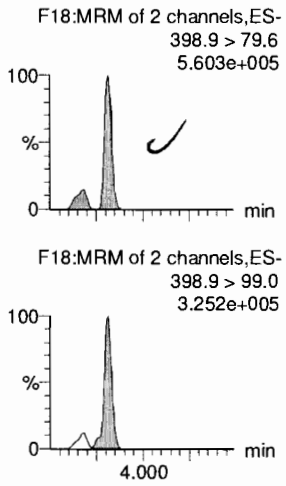

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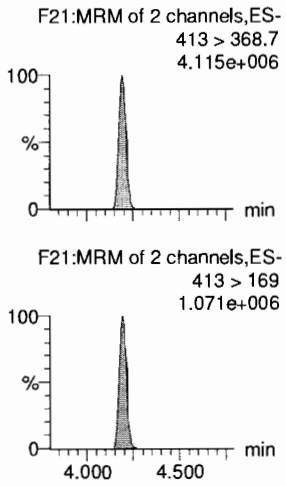

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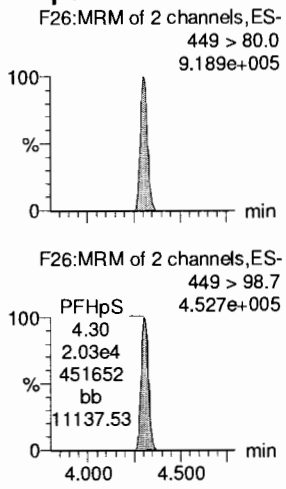

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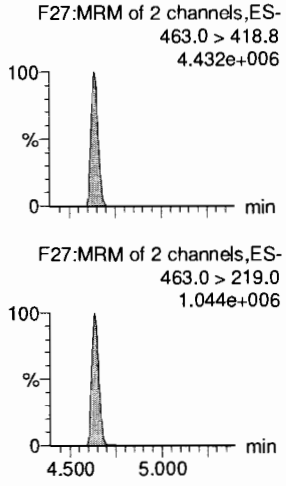
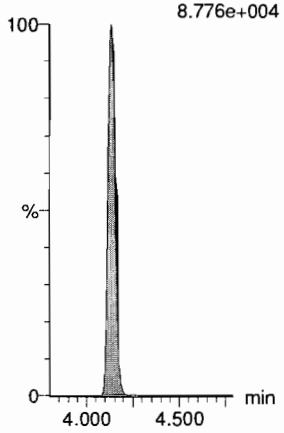
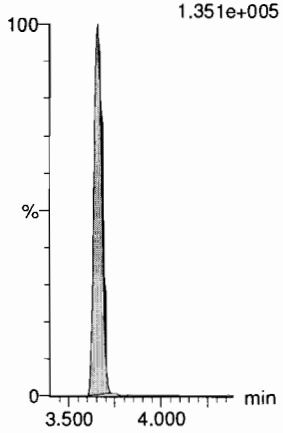


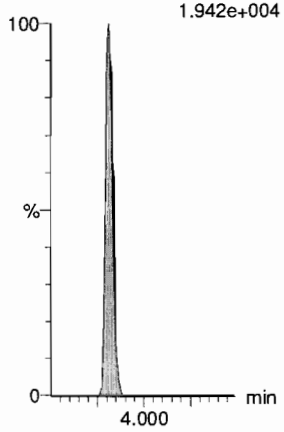
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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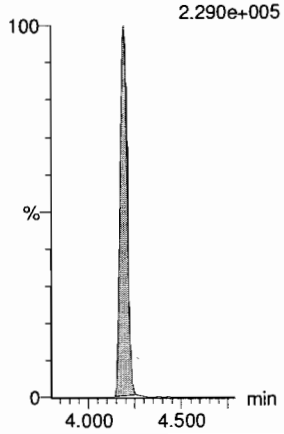

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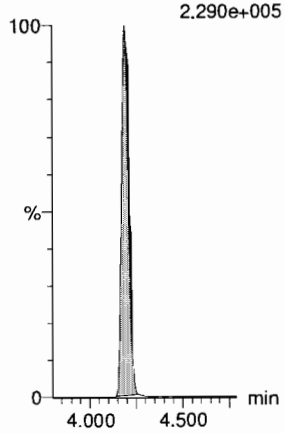

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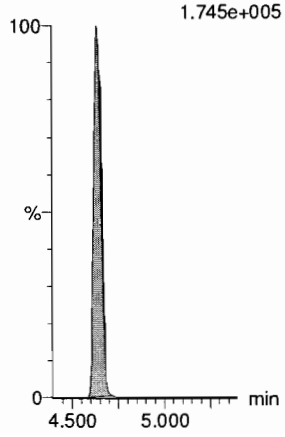

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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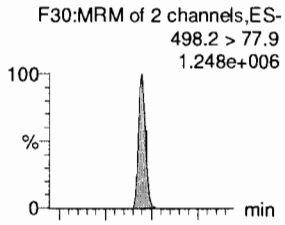
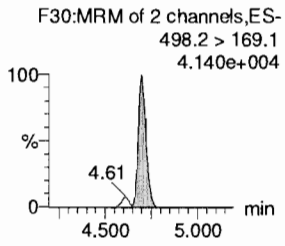
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

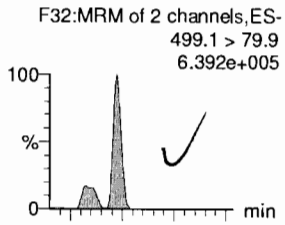
Name: 180615M1_10, Date: 15-Jun-2018, Time: 19:49:05, ID: ST180615M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

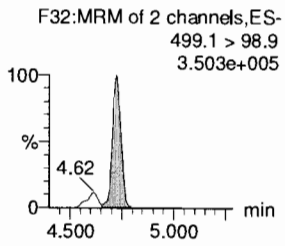
PFOSA





L-PFOS





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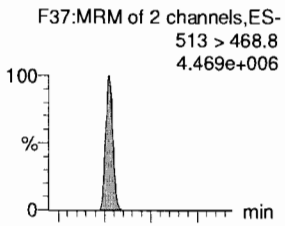
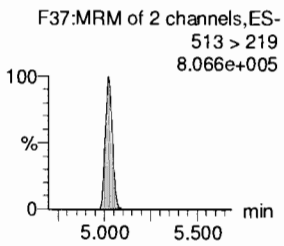
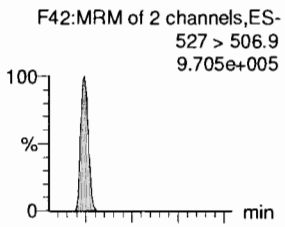
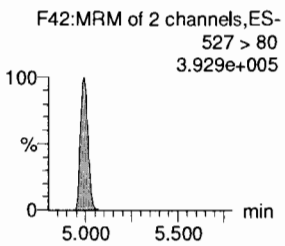


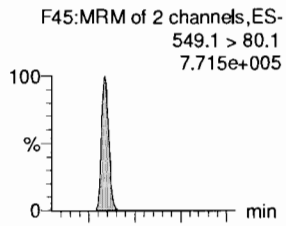


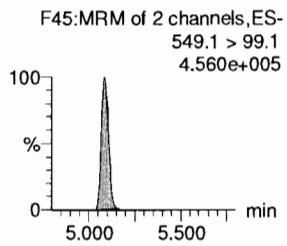
8:2 FTS



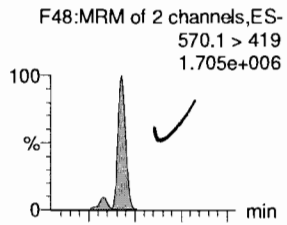


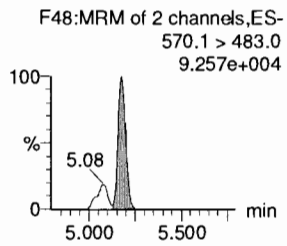
PFNS



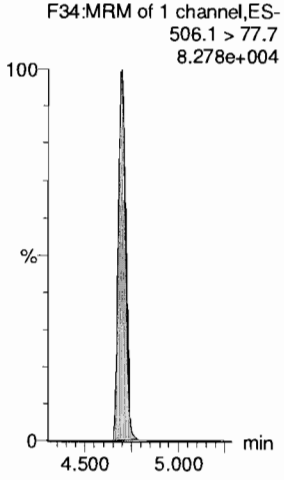


L-MeFOSAA

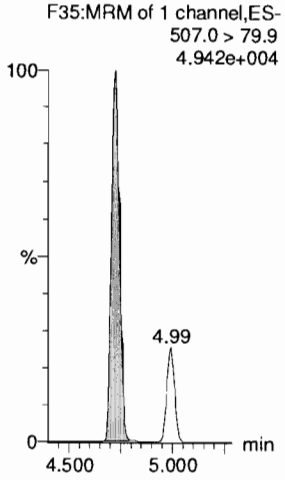




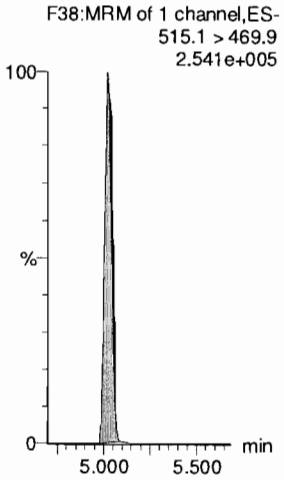
13C8-PFOSA



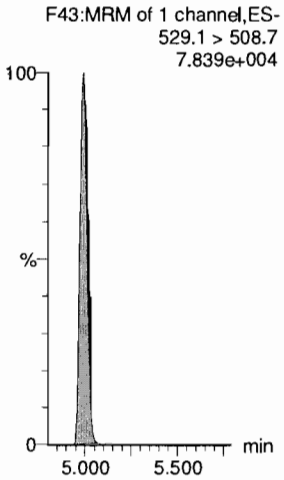
13C8-PFOS



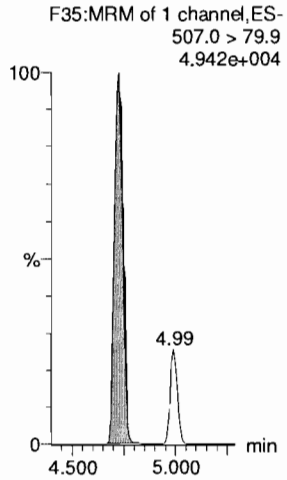
13C2-PFDA



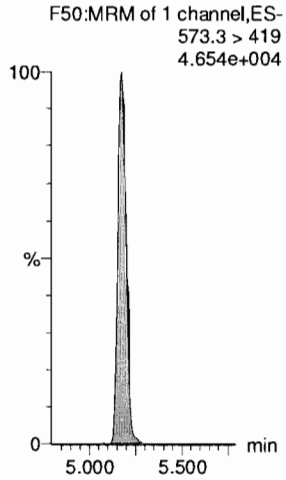
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

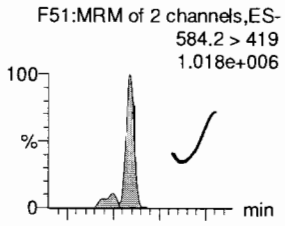


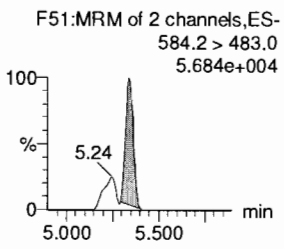
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

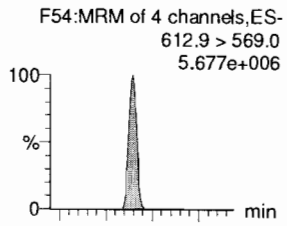
Name: 180615M1_10, Date: 15-Jun-2018, Time: 19:49:05, ID: ST180615M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

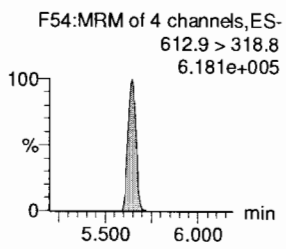
L-EtFOSAA





PFDoA





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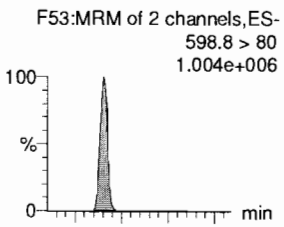

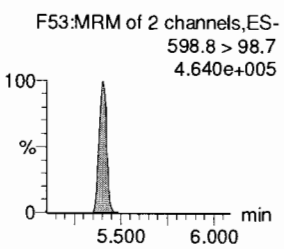

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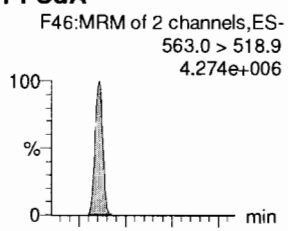
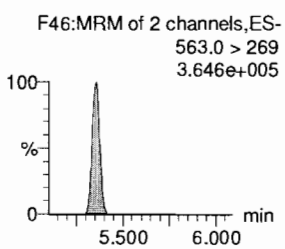
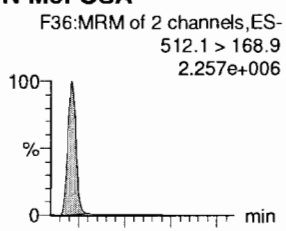
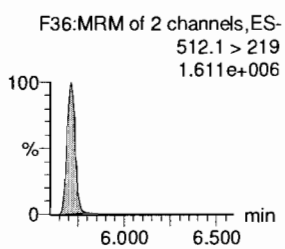




N-MeFOSA





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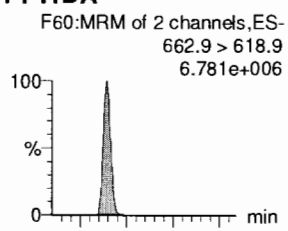
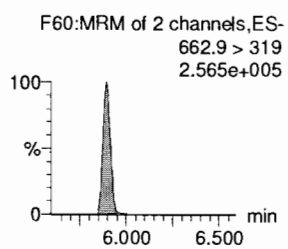
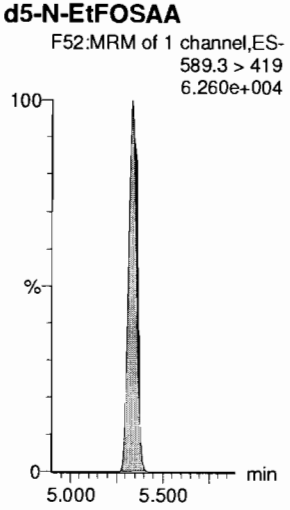
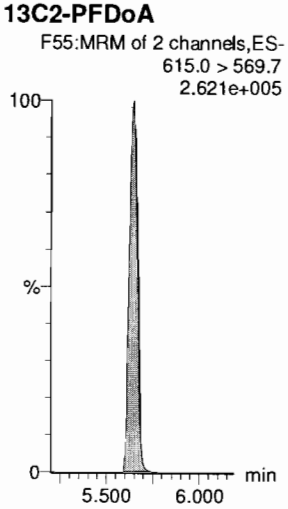




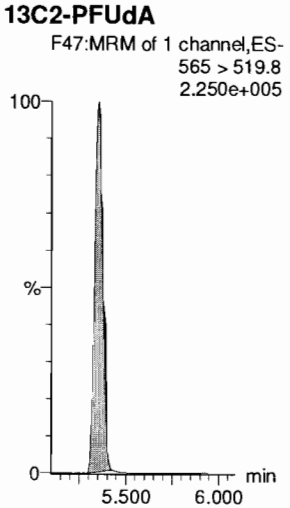
d5-N-EtFOSAA



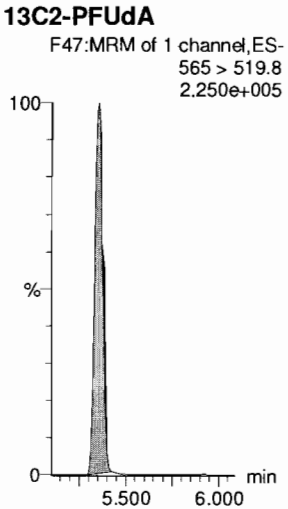
13C2-PFDoA



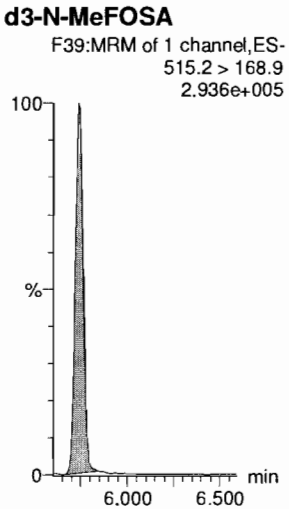
13C2-PFUdA



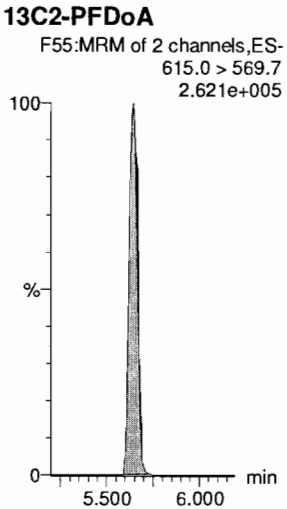
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

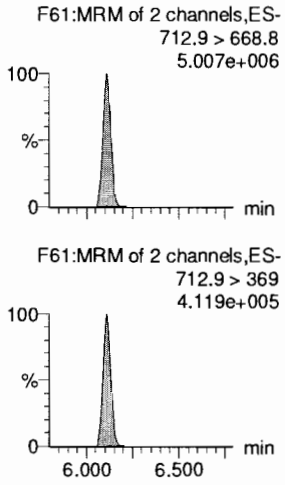


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

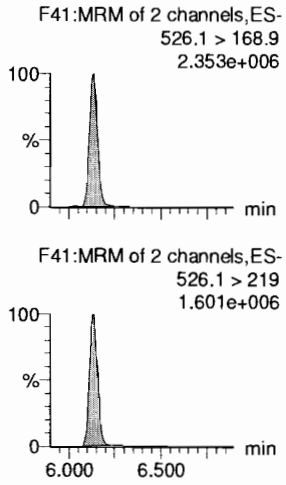
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_10, Date: 15-Jun-2018, Time: 19:49:05, ID: ST180615M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

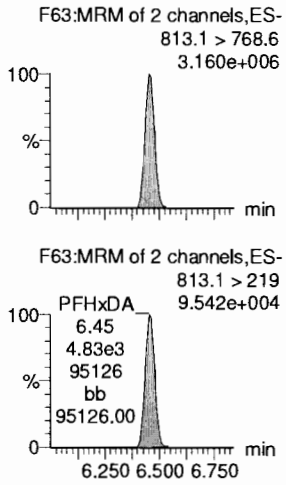
PFTeDA



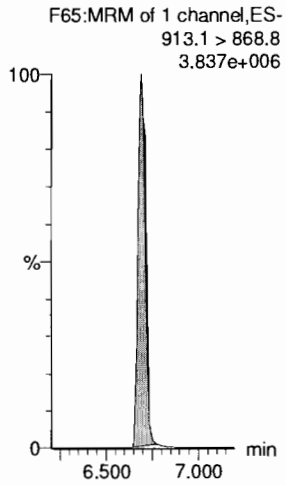
N-EtFOSA



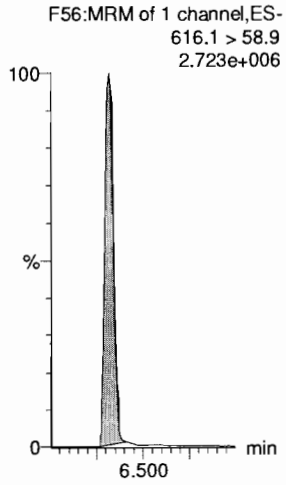
PFHxDA



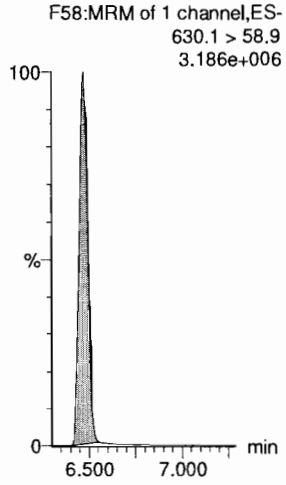
PFODA



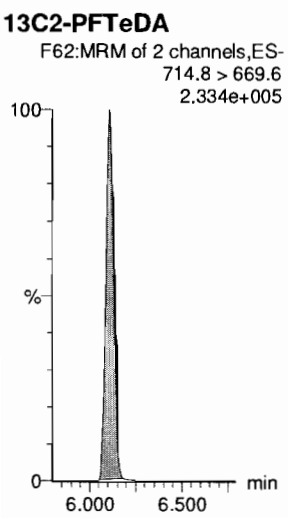
N-MeFOSE



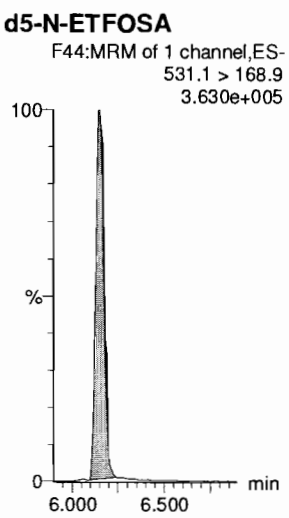
N-EtFOSE



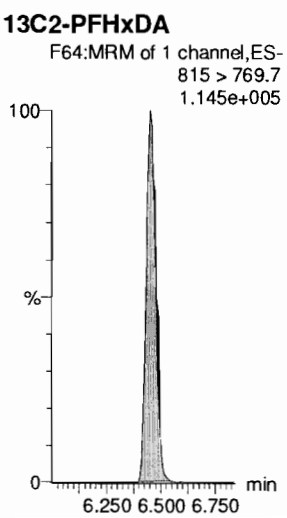
13C2-PFTeDA



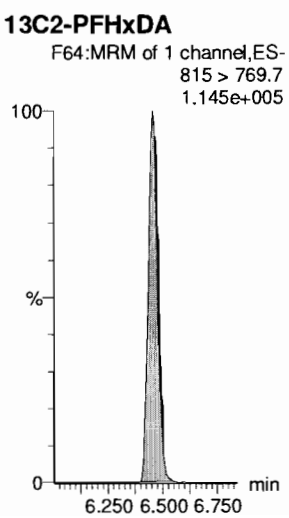
d5-N-ETFOSA



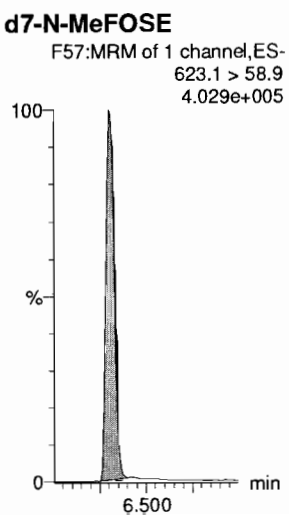
13C2-PFHxDA



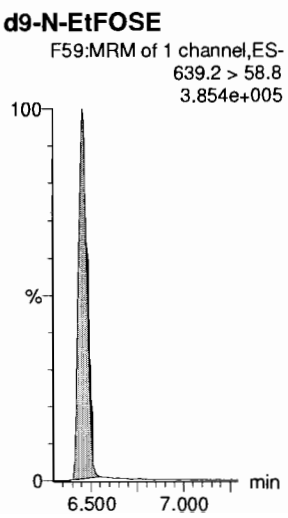
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

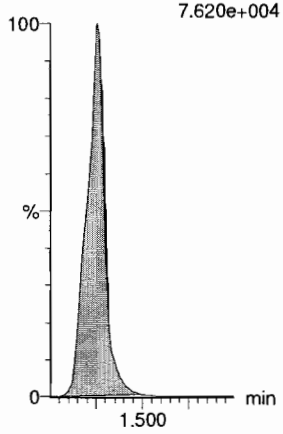


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

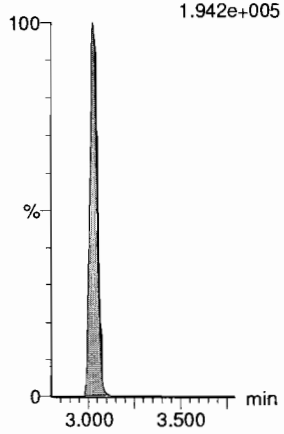
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_10, Date: 15-Jun-2018, Time: 19:49:05, ID: ST180615M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

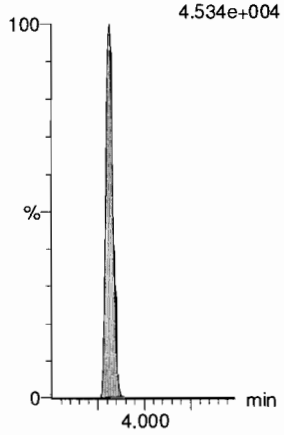
13C4-PFBA



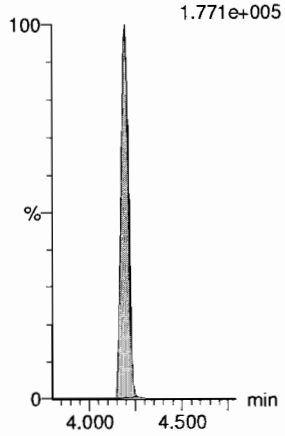
13C5-PFHxA



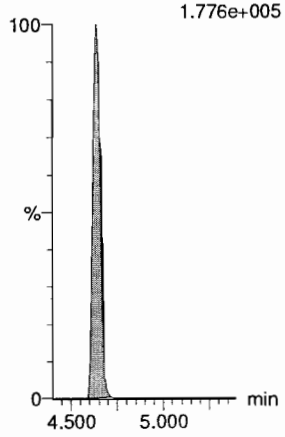
13C3-PFHxS



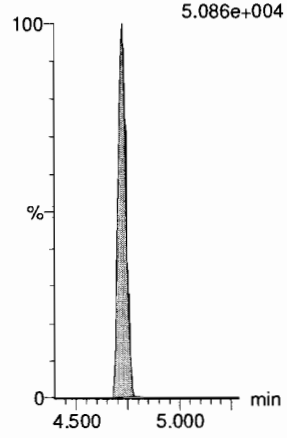
13C8-PFOA



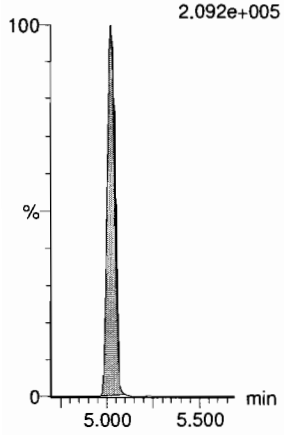
13C9-PFNA



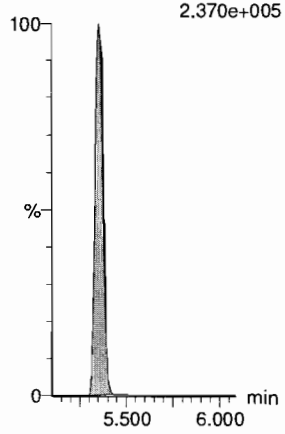
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
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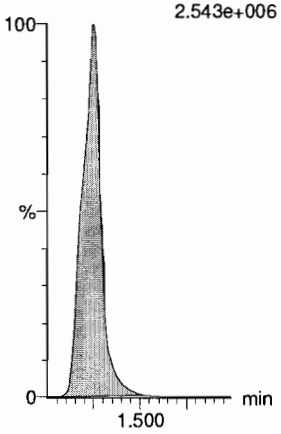
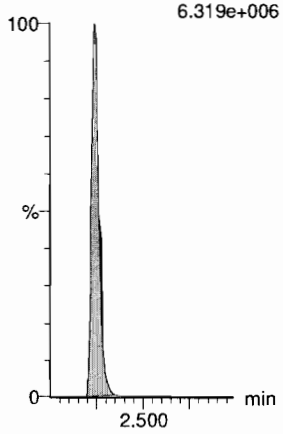
Name: 180615M1_11, Date: 15-Jun-2018, Time: 19:59:31, ID: ST180615M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

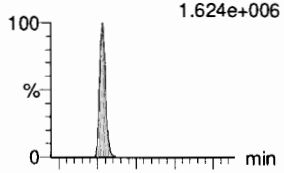
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
2.543e+006



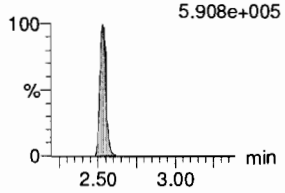
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
6.319e+006



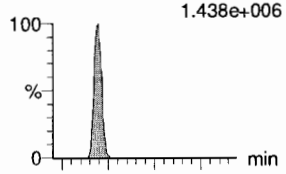
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
1.624e+006



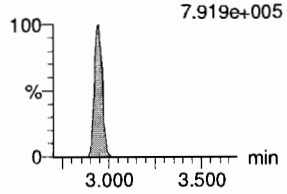
F7:MRM of 2 channels,ES-
299.0 > 99.0
5.908e+005



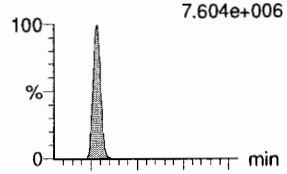
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
1.438e+006



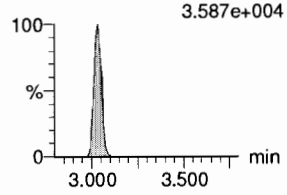
F12:MRM of 2 channels,ES-
327.2 > 81.1
7.919e+005



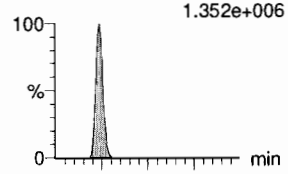
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
7.604e+006



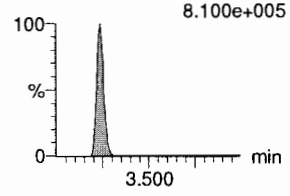
F9:MRM of 2 channels,ES-
313.2 > 119
3.587e+004



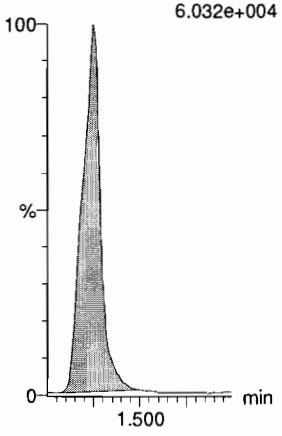
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
1.352e+006



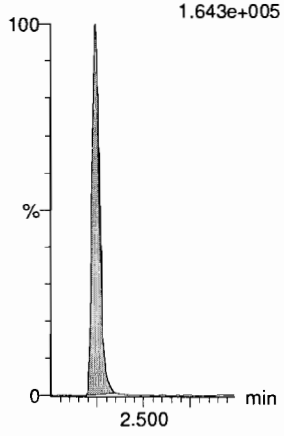
F15:MRM of 2 channels,ES-
349.1 > 99
8.100e+005



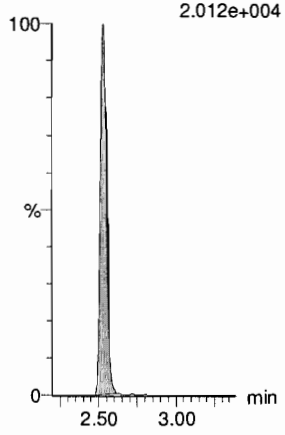
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
6.032e+004



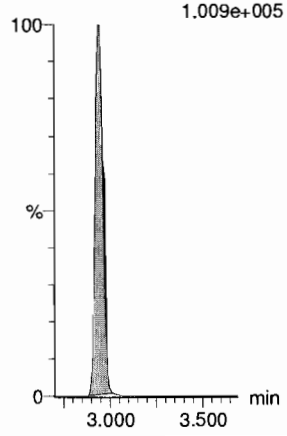
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
1.643e+005



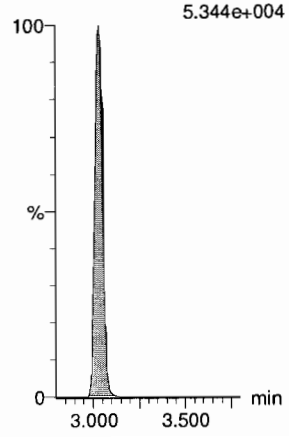
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.012e+004



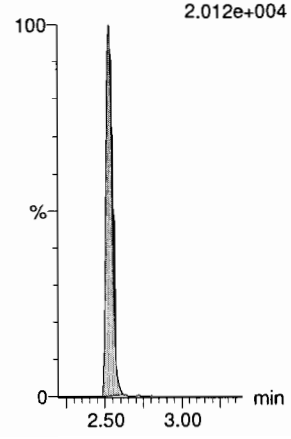
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.009e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
5.344e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.012e+004



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

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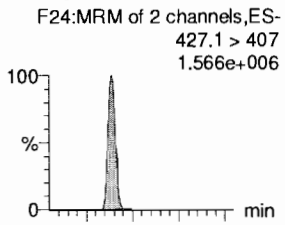
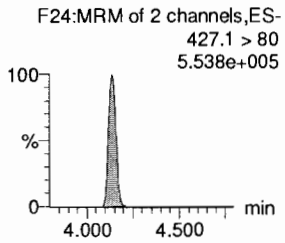
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

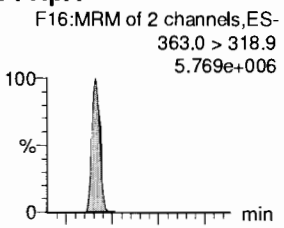
Name: 180615M1_11, Date: 15-Jun-2018, Time: 19:59:31, ID: ST180615M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

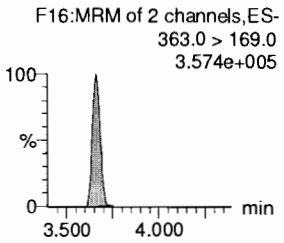
6:2 FTS



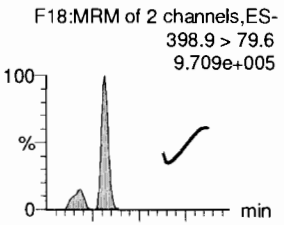


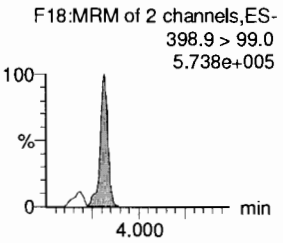
PFHpA



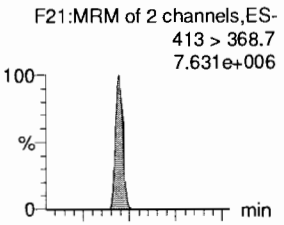


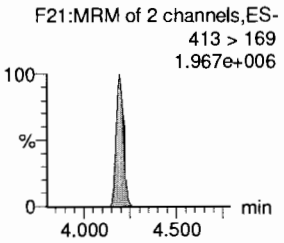
L-PFHxS





L-PFOA





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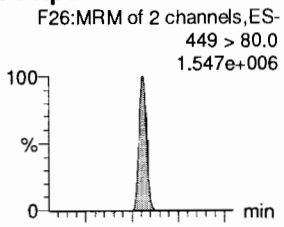

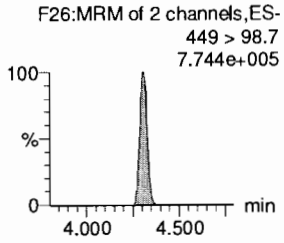

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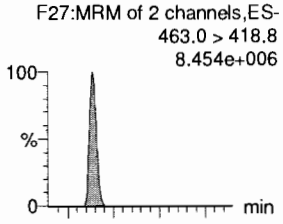
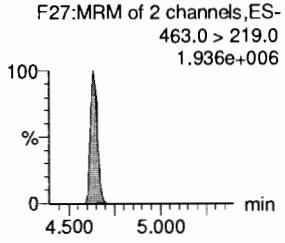
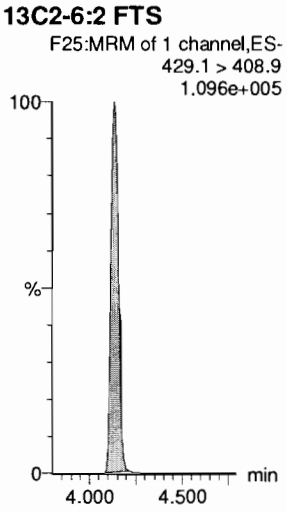
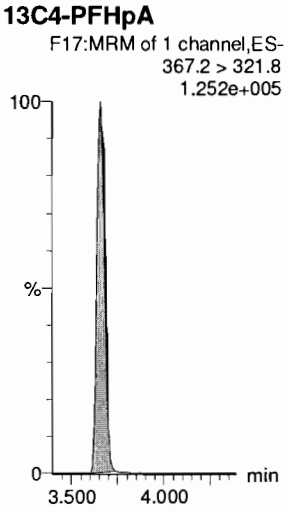




13C2-6:2 FTS



13C4-PFHpA



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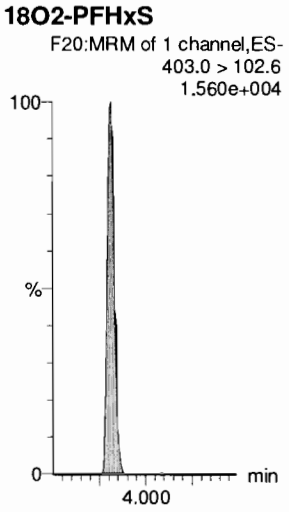

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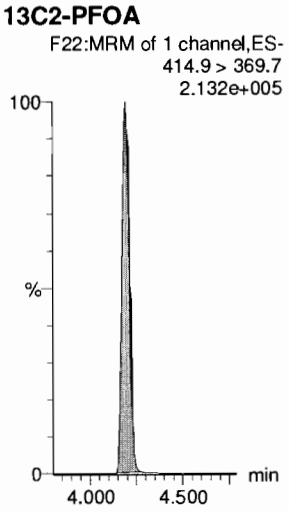

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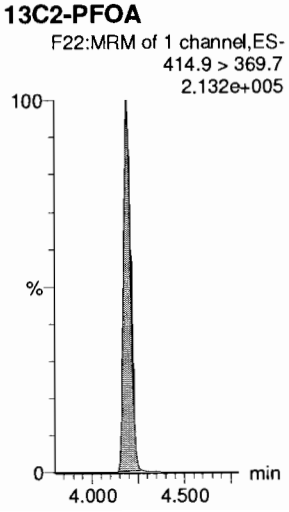

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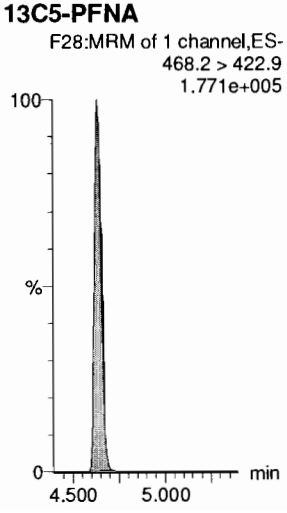

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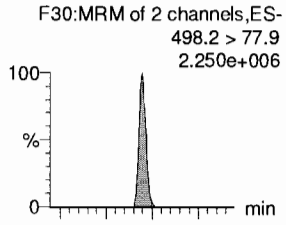
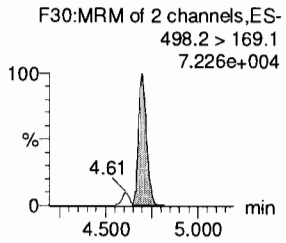
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_11, Date: 15-Jun-2018, Time: 19:59:31, ID: ST180615M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

PFOSA





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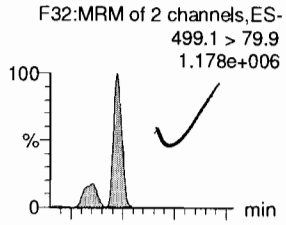

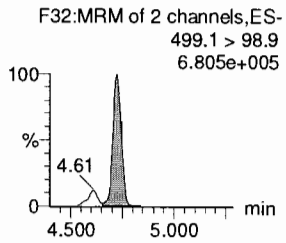

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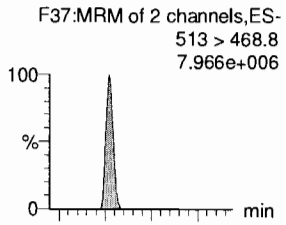
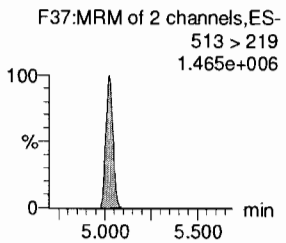
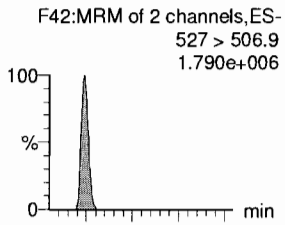
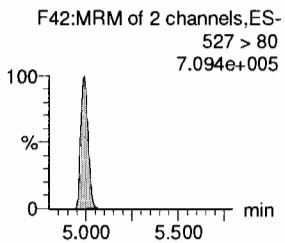




8:2 FTS





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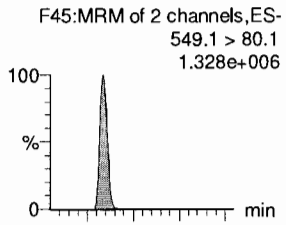

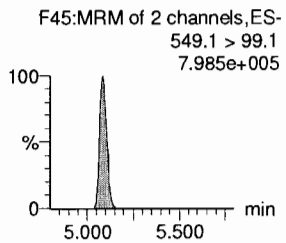

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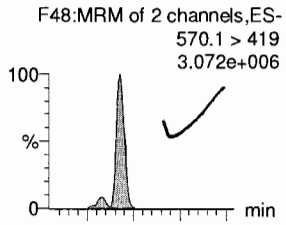

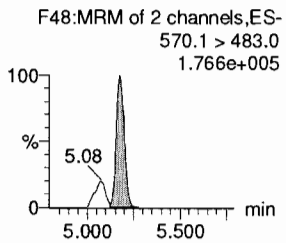

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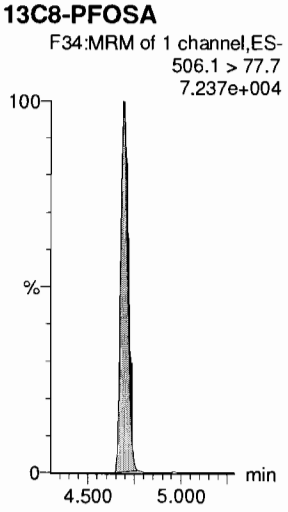
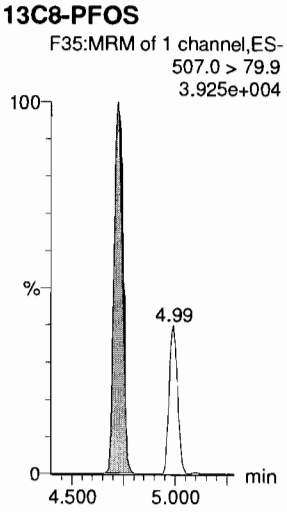


13C8-PFOS



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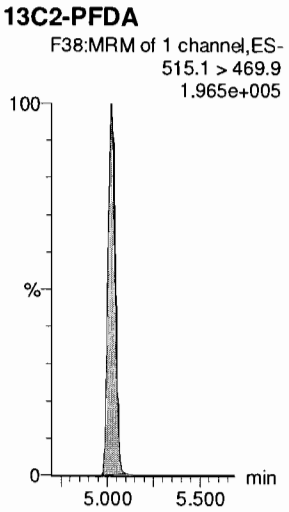

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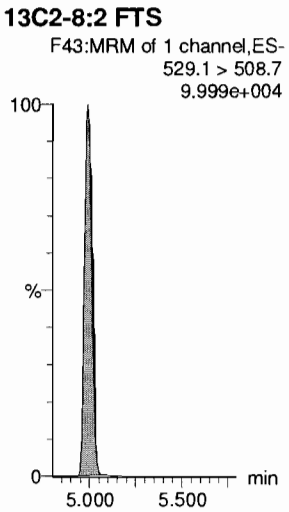

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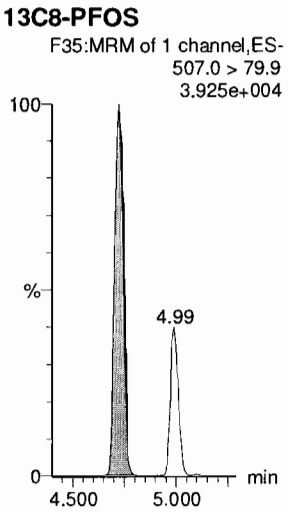

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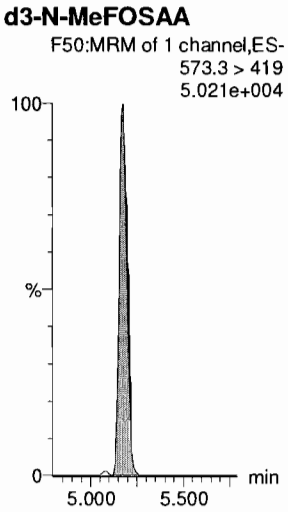

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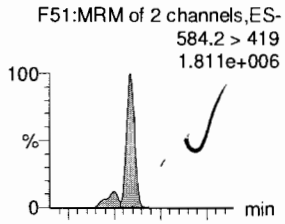
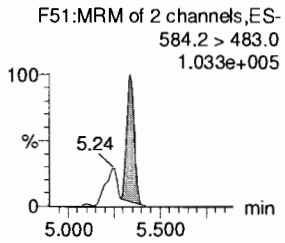
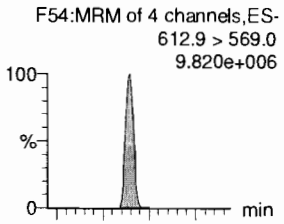
Name: 180615M1_11, Date: 15-Jun-2018, Time: 19:59:31, ID: ST180615M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

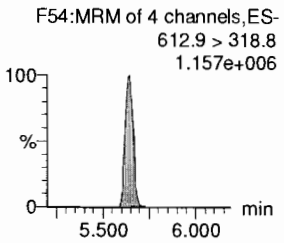
L-EtFOSAA





PFDoA





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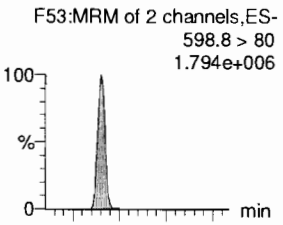

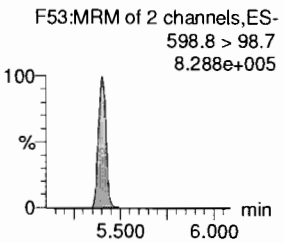

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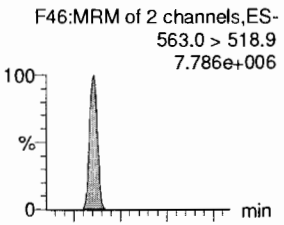

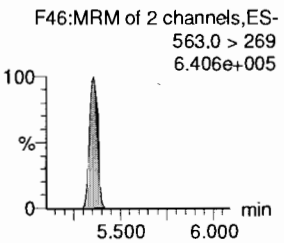

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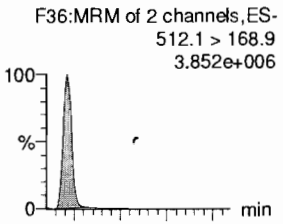

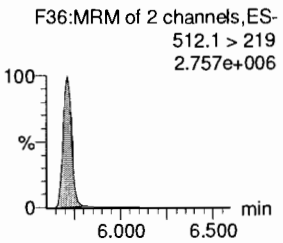

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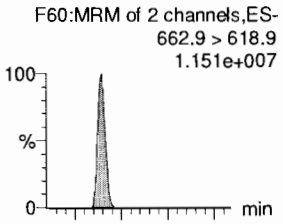
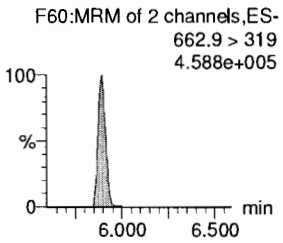
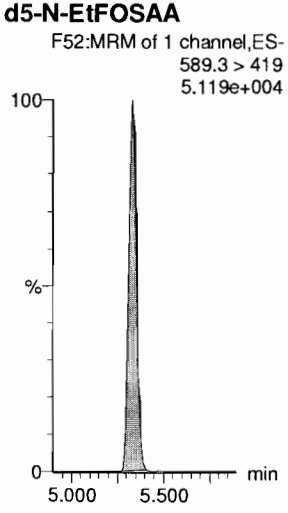




d5-N-EtFOSAA



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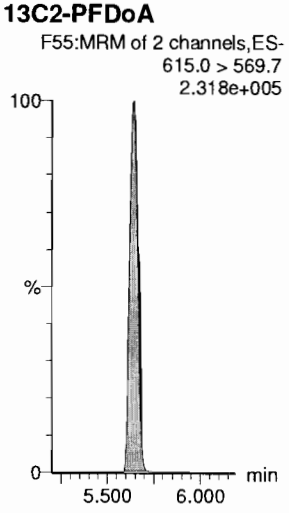

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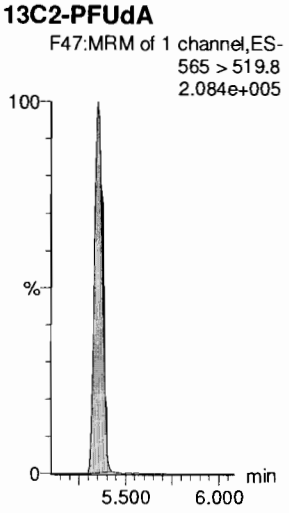

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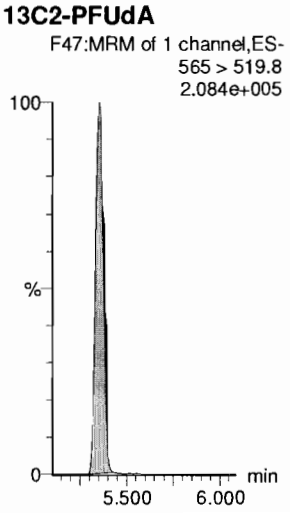

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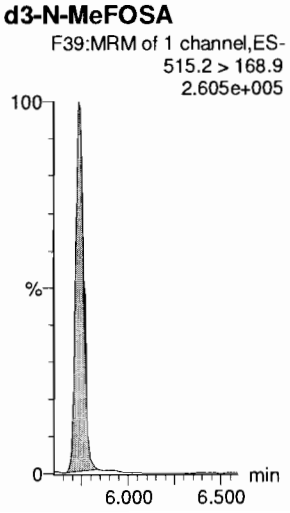

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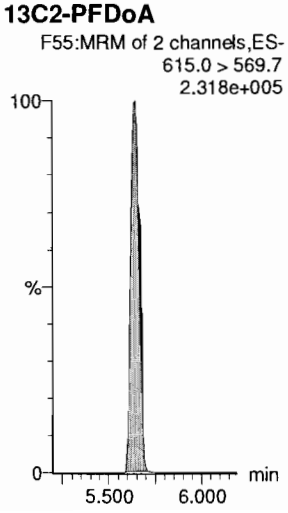

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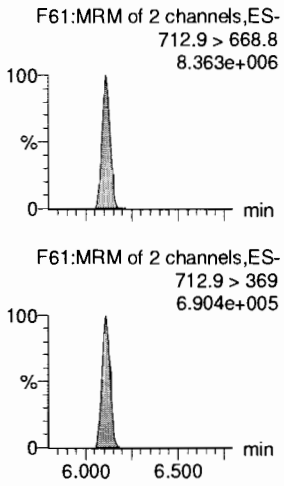

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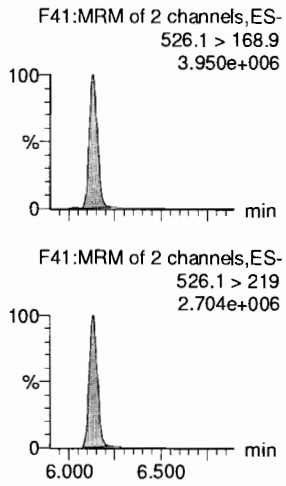

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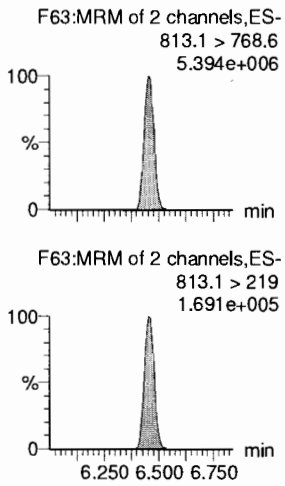

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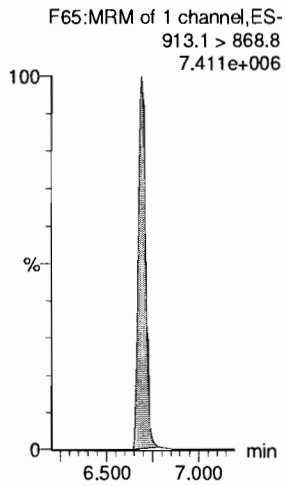

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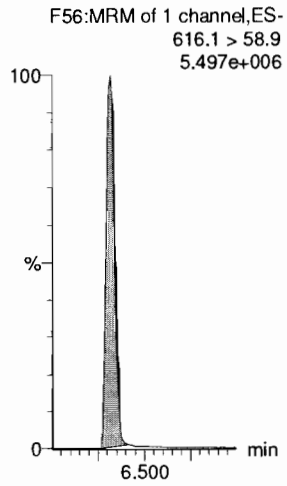
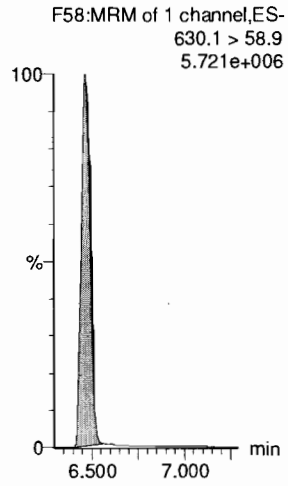
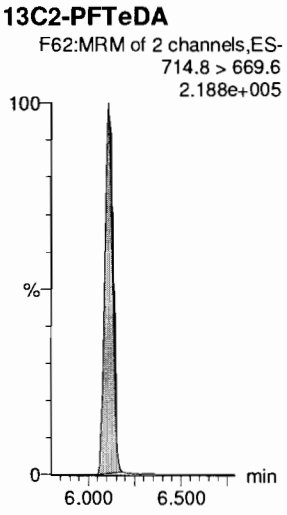


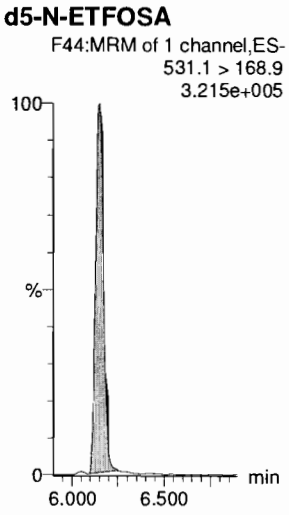
N-EtFOSE



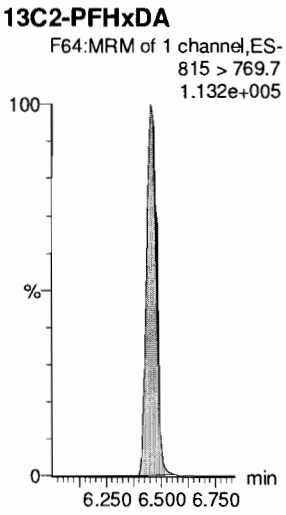
13C2-PFTeDA



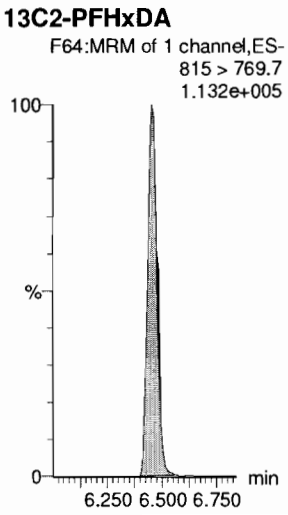
d5-N-ETFOSA



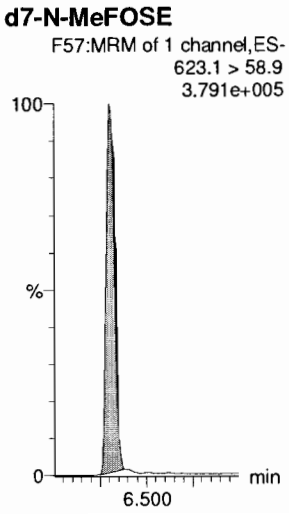
13C2-PFHxDA



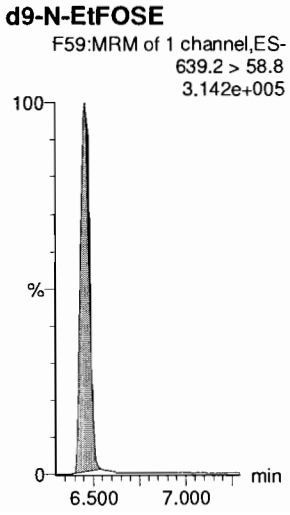
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

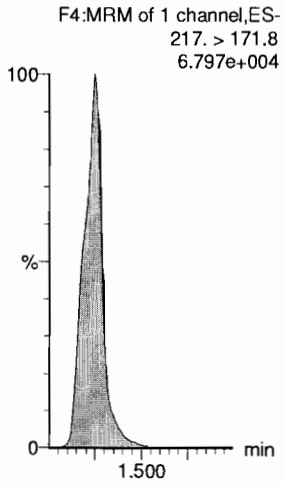


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-CRV.qld

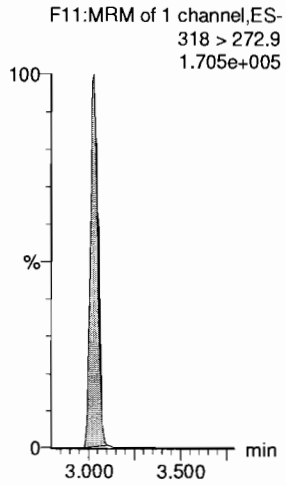
Last Altered: Saturday, June 16, 2018 10:52:52 Pacific Daylight Time
Printed: Saturday, June 16, 2018 14:32:25 Pacific Daylight Time

Name: 180615M1_11, Date: 15-Jun-2018, Time: 19:59:31, ID: ST180615M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

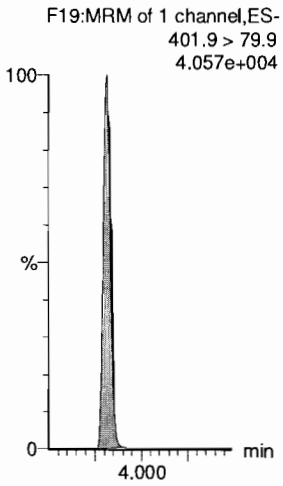
13C4-PFBA



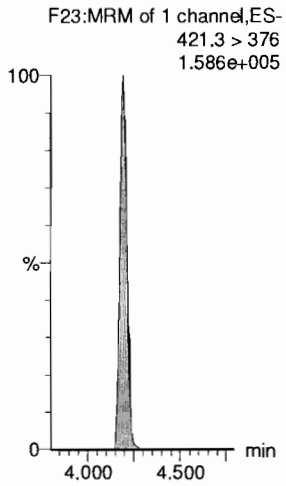
13C5-PFHxA



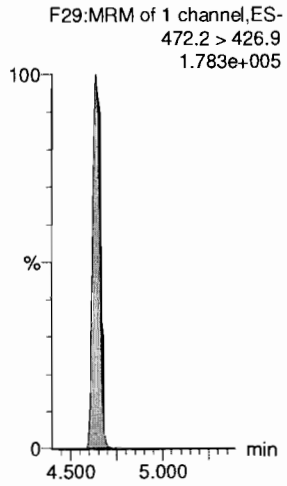
13C3-PFHxS



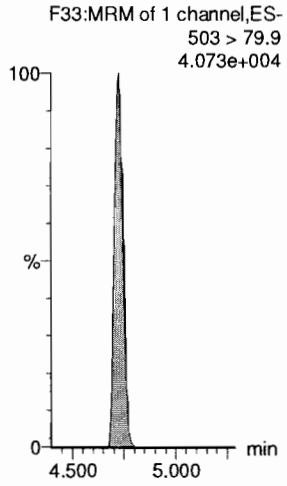
13C8-PFOA



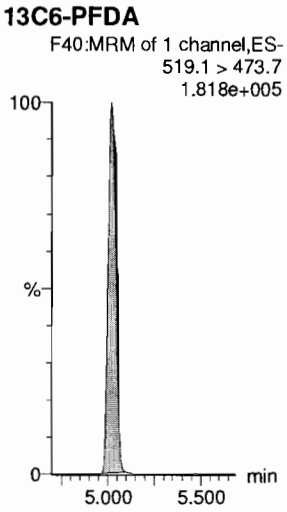
13C9-PFNA



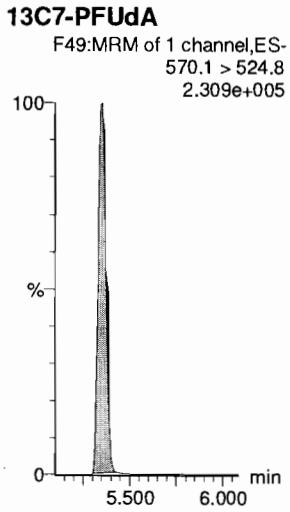
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

JJT 6/17/18

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	6166.369	7393.274	1.00	1.26	10.426	9.5	95.2	NO		
2	2	PFPeA	263.1 > 218.9	6698.579	9075.707	1.00	2.24	9.226	9.5	95.2	NO		
3	3	PFBS	299.0 > 79.7	1485.113	1104.502	1.00	2.53	16.807	8.7	87.0	NO	2.742	NO
4	4	4:2 FTS	327.2>307.2	1537.941	2176.481	1.00	2.94	8.833	8.6	86.4	NO	1.739	NO
5	5	PFHxA	313.2 > 268.9	7913.413	2670.919	1.00	3.03	14.814	9.7	96.5	NO	206.557	NO
6	6	PFPeS	349.1>80.1	1463.034	1104.502	1.00	3.23	16.558	9.5	94.5	NO	1.756	NO
7	36	13C3-PFBA	216.1 > 171.8	7393.274	8240.897	1.00	1.26	11.214	12.8	102.3	NO		
8	37	13C3-PFPeA	266. > 221.8	9075.707	9719.029	1.00	2.25	11.673	12.2	97.8	NO		
9	38	13C3-PFBS	302. > 98.8	1104.502	9719.029	1.00	2.53	1.421	12.1	96.5	NO		
10	39	13C2-4:2 FTS	329.2>308.9	2176.481	9719.029	1.00	2.94	2.799	11.7	93.8	NO		
11	40	13C2-PFHxA	315 > 269.8	2670.919	9719.029	1.00	3.03	3.435	4.7	93.3	NO		
12	38	13C3-PFBS	302. > 98.8	1104.502	9719.029	1.00	2.53	1.421	12.1	96.5	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	1596.840	2094.651	1.00	4.13	9.529	8.9	89.3	NO	2.740	NO
15	7	PFHpA	363.0 > 318.9	6655.973	7278.261	1.00	3.66	11.431	9.6	95.6	NO	15.269	NO
16	8	L-PFHxS	398.9 > 79.6	1190.736	916.226	1.00	3.81	16.245	8.5	85.0	NO	2.223	NO
17	11	L-PFOA	413 > 368.7	8532.040	11328.068	1.00	4.19	9.415	10.0	100.4	NO	4.082	NO
18	13	PFHpS	449 > 80.0	1572.029	11328.068	1.00	4.31	1.735	8.4	84.2	NO	2.053	NO
19	14	PFNA	463.0 > 418.8	8639.478	8766.636	1.00	4.64	12.319	9.6	96.1	NO	4.912	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	2094.651	8361.336	1.00	4.13	3.131	12.3	98.0	NO		
21	41	13C4-PFHpA	367.2 > 321.8	7278.261	9719.029	1.00	3.66	9.361	12.7	101.2	NO		
22	42	18O2-PFHxS	403.0 > 102.6	916.226	1950.365	1.00	3.81	5.872	14.7	117.7	NO		
23	44	13C2-PFOA	414.9 > 369.7	11328.068	8361.336	1.00	4.19	16.935	13.1	105.0	NO		
24	44	13C2-PFOA	414.9 > 369.7	11328.068	8361.336	1.00	4.19	16.935	13.1	105.0	NO		
25	45	13C5-PFNA	468.2 > 422.9	8766.636	8835.257	1.00	4.64	12.403	13.4	107.6	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	2549.036	3951.719	1.00	4.70	8.063	10.2	102.3	NO	32.577	NO
28	16	L-PFOS	499.1 > 79.9	1501.249	2463.421	1.00	4.73	7.618	8.8	87.7	NO	2.031	NO
29	18	PFDA	513 > 468.8	8953.126	11756.594	1.00	5.02	9.519	8.5	85.3	NO	6.272	NO
30	19	8:2 FTS	527 > 506.9	2107.743	1873.633	1.00	4.99	14.062	9.4	94.0	NO	2.536	NO
31	20	PFNS	549.1>80.1	1451.338	2463.421	1.00	5.09	7.364	9.5	94.9	NO	1.844	NO
32	21	L-MeFOSAA	570.1 > 419	4587.630	2575.347	1.00	5.18	22.267	11.5	114.9	NO	19.610	NO
33	46	13C8-PFOSA	506.1 > 77.7	3951.719	12267.074	1.00	4.70	4.027	13.1	104.8	NO		
34	47	13C8-PFOS	507.0 > 79.9	2463.421	2181.454	1.00	4.72	14.116	14.2	113.4	NO		
35	48	13C2-PFDA	515.1 > 469.9	11756.594	10078.429	1.00	5.02	14.581	13.2	105.3	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	1873.633	9719.029	1.00	5.00	2.410	11.9	95.6	NO		

VBF 6/16/18

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
37	47	13C8-PFOS	507.0 > 79.9	2463.421	2181.454	1.00	4.72	14.116	14.2	113.4	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	2575.347	12267.074	1.00	5.18	2.624	13.0	104.3	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	2900.199	3386.472	1.00	5.34	10.705	10.8	108.0	NO	16.697	NO
41	27	PFDoA	612.9 > 569.0	12265.604	12985.456	1.00	5.64	11.807	10.7	107.0	NO	9.434	NO
42	26	PFDS	598.8 > 80	2054.350	12347.274	1.00	5.40	2.080	10.2	102.1	NO	2.215	NO
43	25	PFUdA	563.0 > 518.9	8238.784	12347.274	1.00	5.35	8.341	8.8	87.7	NO	11.846	NO
44	28	N-MeFOSA	512.1 > 168.9		15418.472	1.00					NO		
45	29	PFTrDA	662.9 > 618.9	12712.348	12985.456	1.00	5.89	12.237	9.9	98.6	NO	29.274	NO
46	51	d5-N-EtFOSAA	589.3 > 419	3386.472	12267.074	1.00	5.33	3.451	14.3	114.2	NO		
47	53	13C2-PFDoA	615.0 > 569.7	12985.456	10078.429	1.00	5.64	16.106	12.2	97.3	NO		
48	52	13C2-PFUdA	565 > 519.8	12347.274	12267.074	1.00	5.36	12.582	13.4	107.1	NO		
49	52	13C2-PFUdA	565 > 519.8	12347.274	12267.074	1.00	5.36	12.582	13.4	107.1	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	15418.472	12267.074	1.00	5.74	15.711	155.8	103.9	NO		
51	53	13C2-PFDoA	615.0 > 569.7	12985.456	10078.429	1.00	5.64	16.106	12.2	97.3	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	11106.966	11640.161	1.00	6.12	11.927	10.1	100.7	NO	11.545	NO
54	31	N-EtFOSA	526.1 > 168.9		20636.734	1.00					NO		
55	32	PFHxDA	813.1 > 768.6		6436.952	1.00					NO		
56	33	PFODA	913.1 > 868.8		6436.952	1.00					NO		
57	34	N-MeFOSE	616.1 > 58.9		21394.674	1.00					NO		
58	35	N-EtFOSE	630.1 > 58.9		20236.563	1.00					NO		
59	55	13C2-PFTeDA	714.8 > 669.6	11640.161	12267.074	1.00	6.12	11.861	12.5	100.4	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	20636.734	12267.074	1.00	6.15	21.029	160.7	107.1	NO		
61	57	13C2-PFHxDA	815 > 769.7	6436.952	12267.074	1.00	6.45	6.559	5.6	111.5	NO		
62	57	13C2-PFHxDA	815 > 769.7	6436.952	12267.074	1.00	6.45	6.559	5.6	111.5	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	21394.674	12267.074	1.00	6.31	21.801	155.7	103.8	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	20236.563	12267.074	1.00	6.46	20.621	161.5	107.7	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	8240.897	8240.897	1.00	1.25	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	9719.029	9719.029	1.00	3.03	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	1950.365	1950.365	1.00	3.81	12.500	12.5	100.0	NO		
69	63	13C8-PFOA	421.3 > 376	8361.336	8361.336	1.00	4.19	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	8835.257	8835.257	1.00	4.64	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	2181.454	2181.454	1.00	4.72	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	10078.429	10078.429	1.00	5.02	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
73	67	13C7-PFUdA	570.1 > 524.8	12267.074	12267.074	1.00	5.36	12.500	12.5	100.0	NO		

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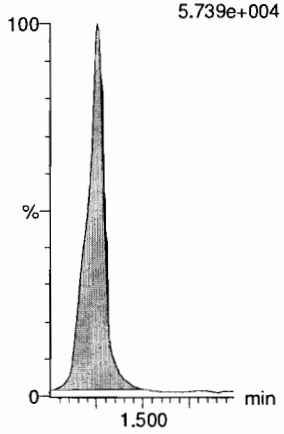
Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

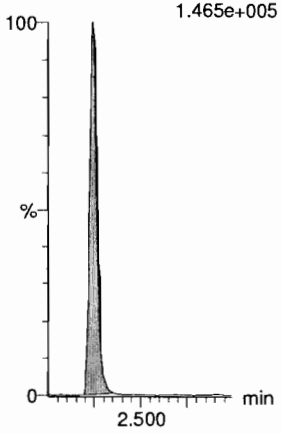
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061518.mdb 16 Jun 2018 10:35:15
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

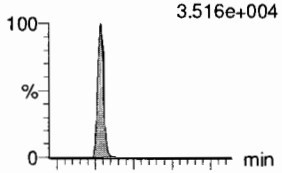
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
5.739e+004



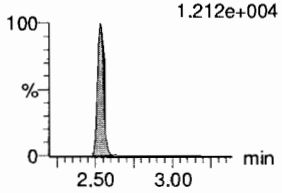
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
1.465e+005



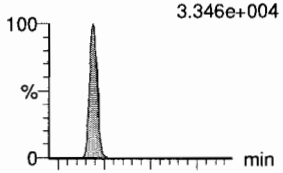
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
3.516e+004



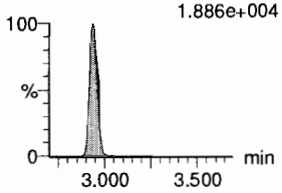
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.212e+004



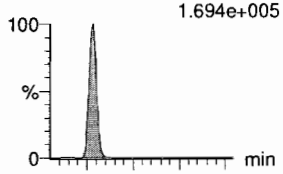
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
3.346e+004



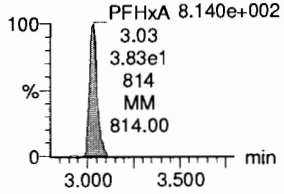
F12:MRM of 2 channels,ES-
327.2 > 81.1
1.886e+004



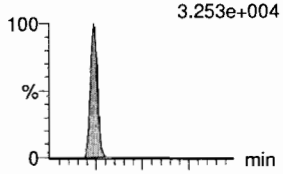
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
1.694e+005



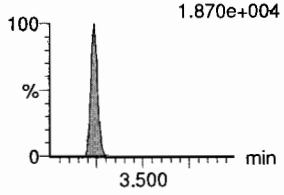
F9:MRM of 2 channels,ES-
313.2 > 119
PFHxA 8.140e+002
3.03
3.83e1
814
MM
814.00



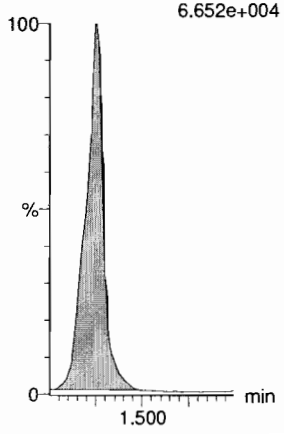
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
3.253e+004



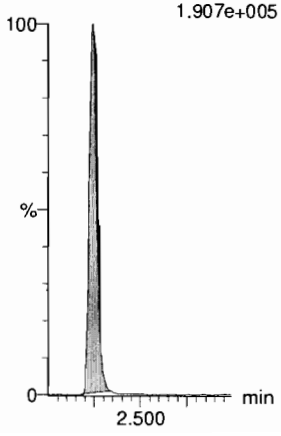
F15:MRM of 2 channels,ES-
349.1 > 99
1.870e+004



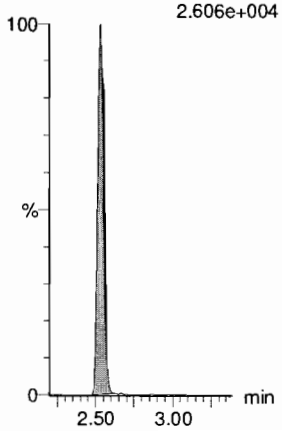
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
6.652e+004



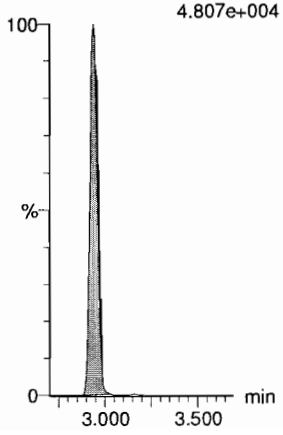
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
1.907e+005



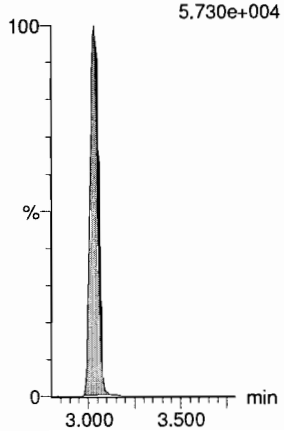
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.606e+004



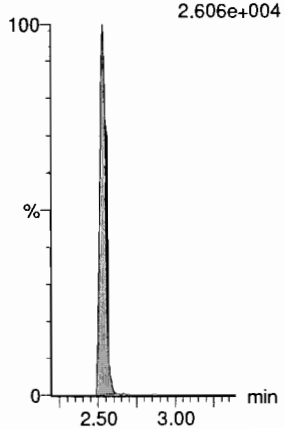
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
4.807e+004



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
5.730e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.606e+004



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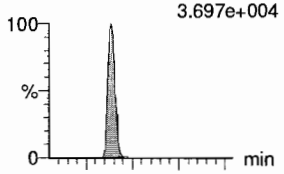
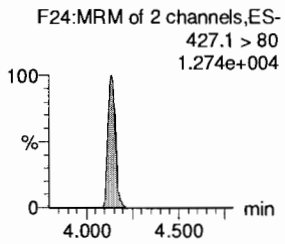
Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

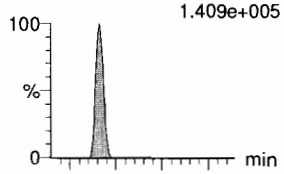
Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

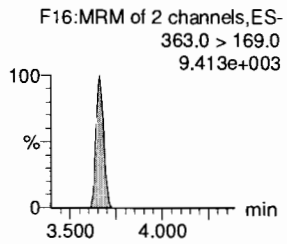
6:2 FTS



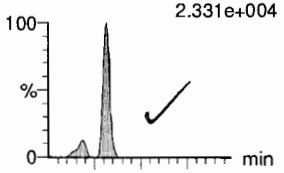


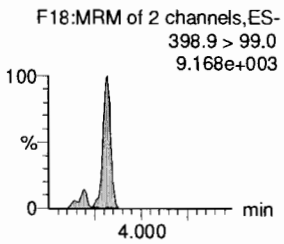
PFHpA



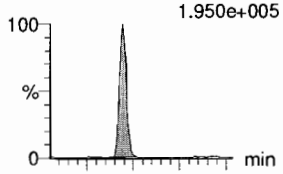


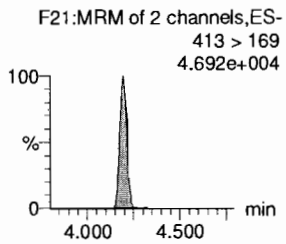
L-PFHxS



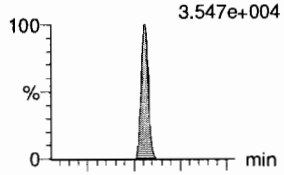


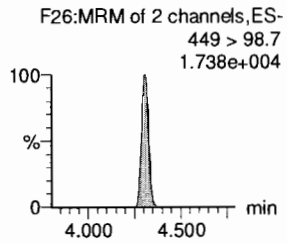
L-PFOA





PFHpS





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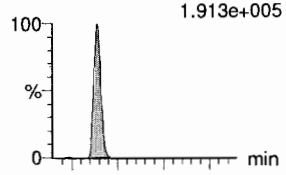
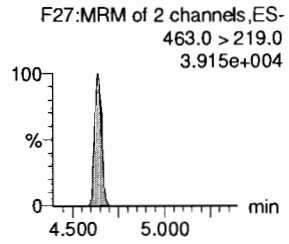
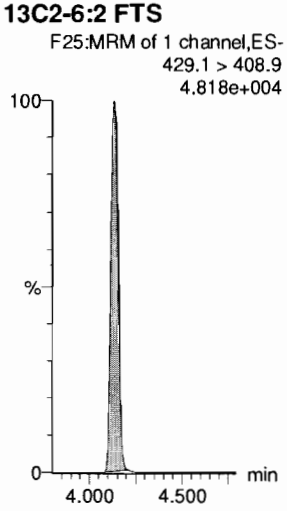
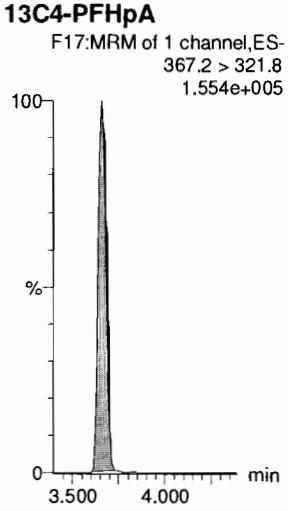




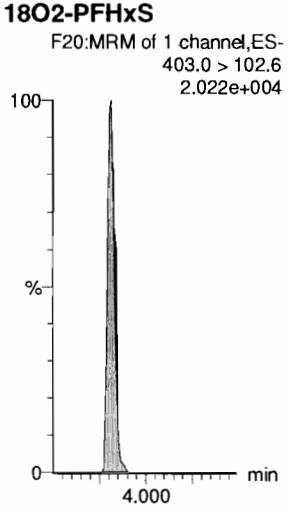
13C2-6:2 FTS



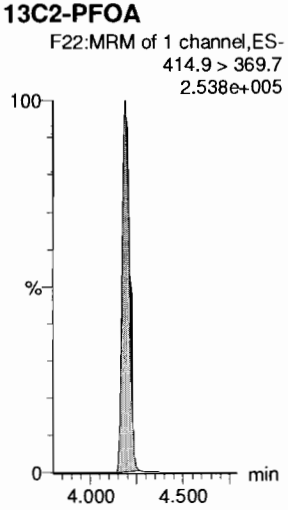
13C4-PFHpA



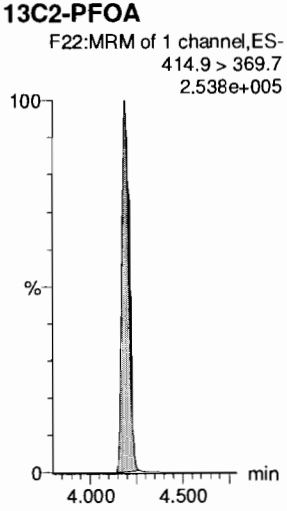
18O2-PFHxS



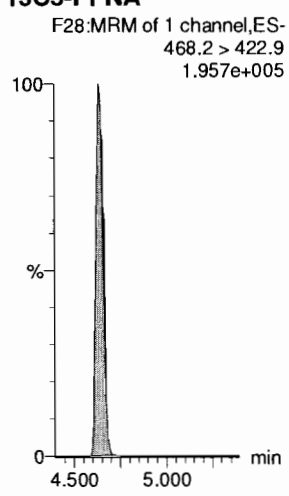
13C2-PFOA



13C2-PFOA



13C5-PFNA



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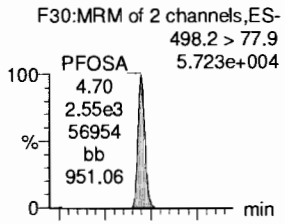
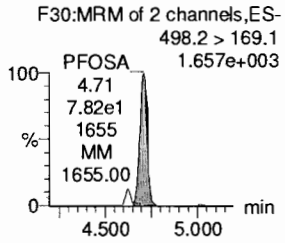
Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

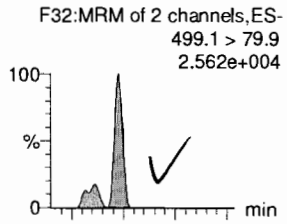
Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

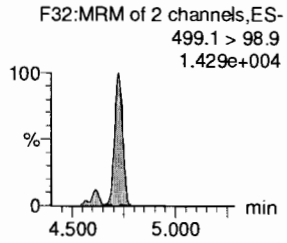
PFOSA





L-PFOS





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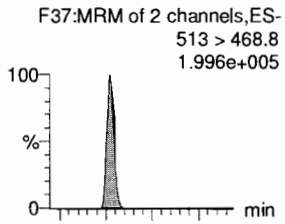
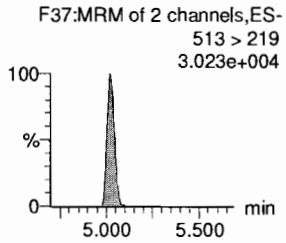
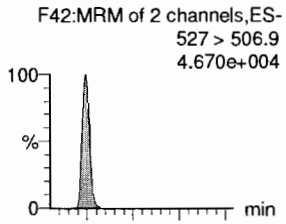
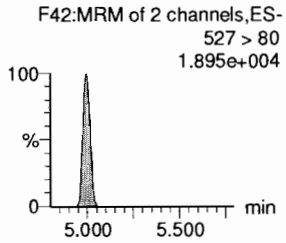


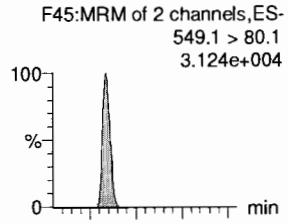


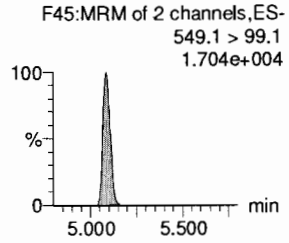
8:2 FTS



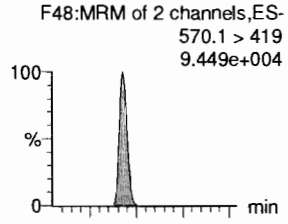


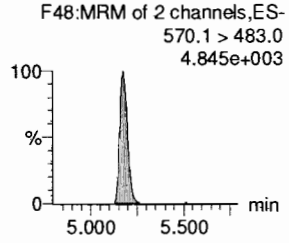
PFNS



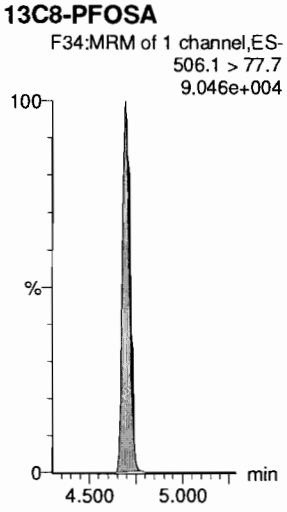


L-MeFOSAA

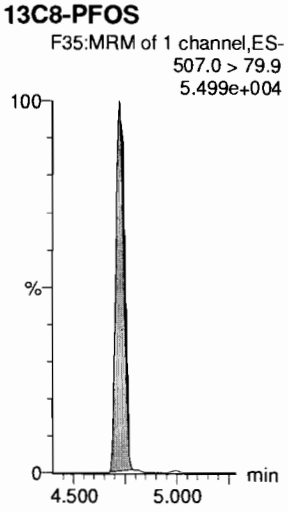




13C8-PFOSA



13C8-PFOS



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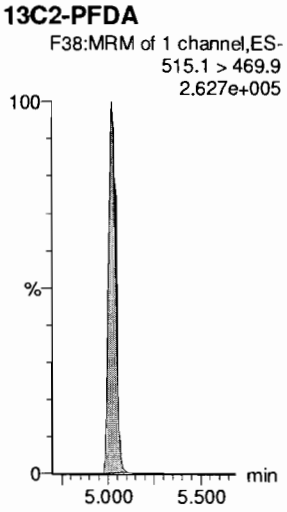
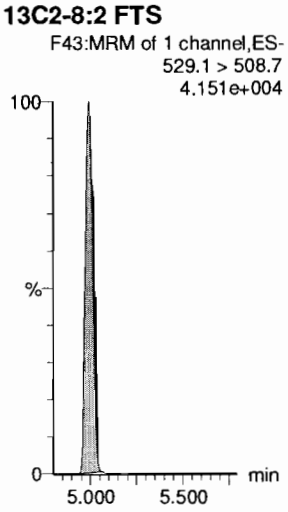
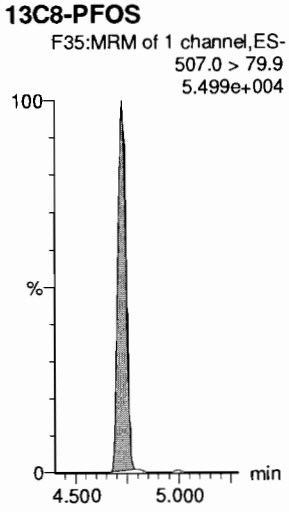


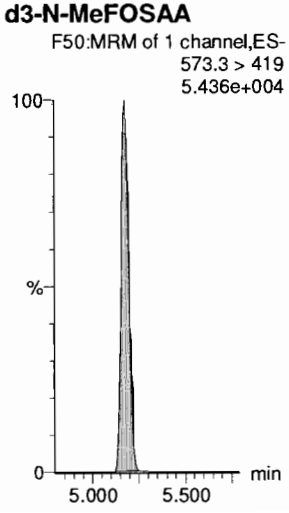
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

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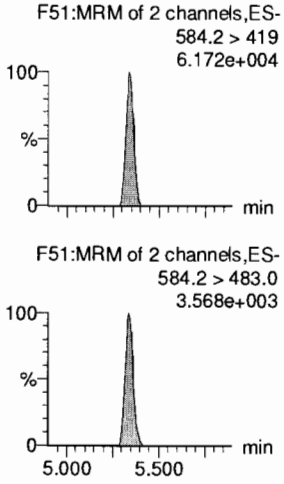
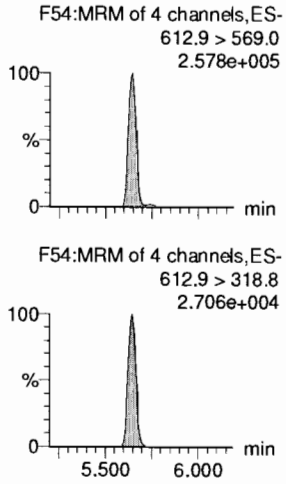
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

L-EtFOSAA



PFDoA



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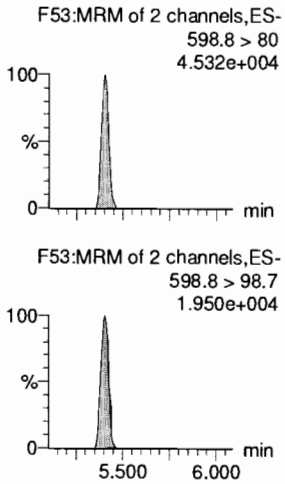
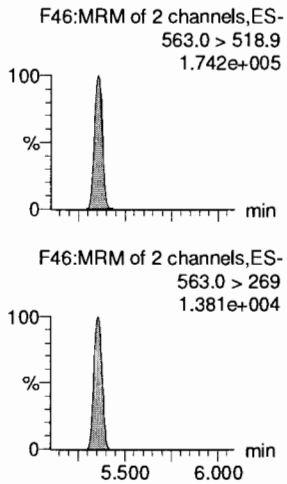
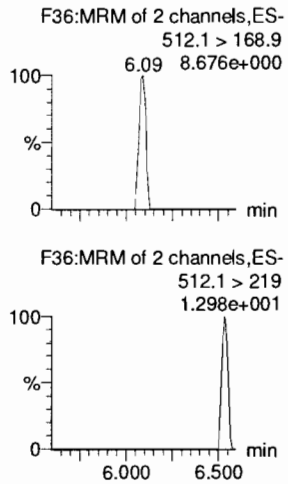


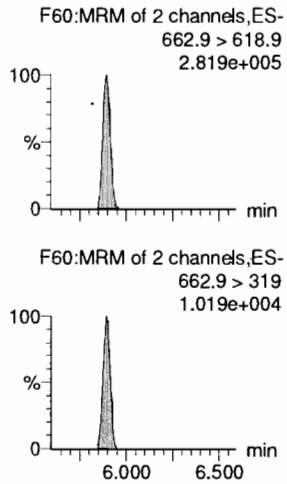
PFUdA



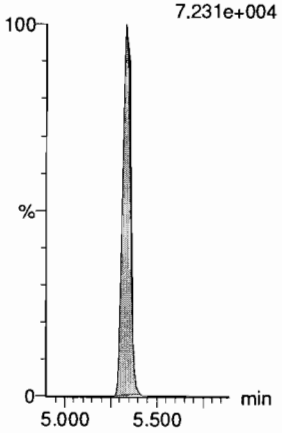
N-MeFOSA



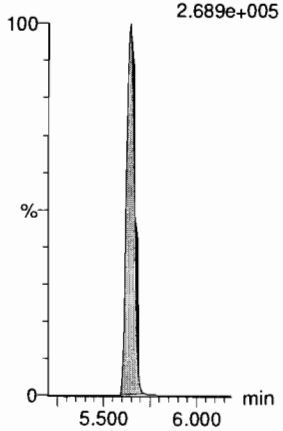
PFTrDA



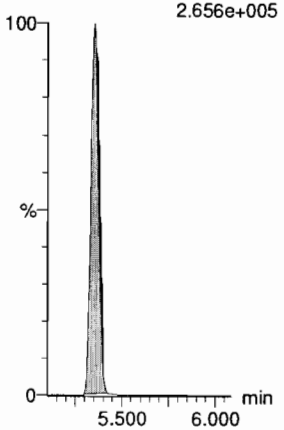
d5-N-EtFOSAA



13C2-PFDoA



13C2-PFUdA



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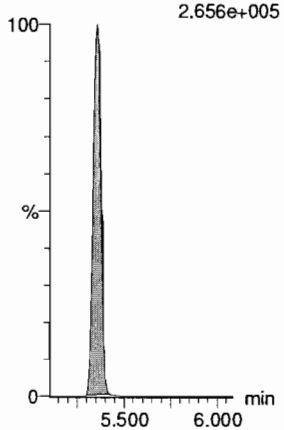
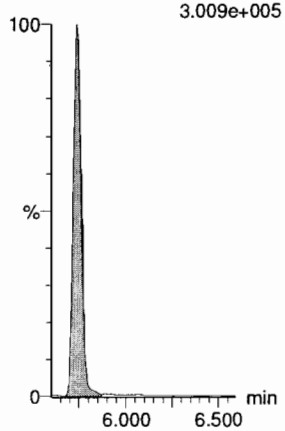


d3-N-MeFOSA



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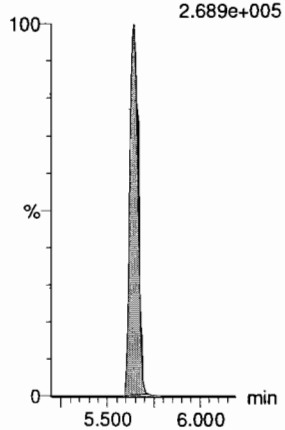
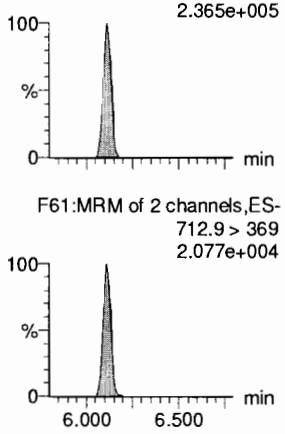


Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

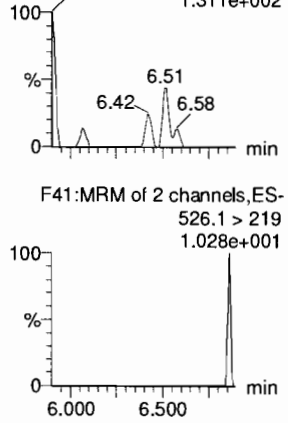
Last Altered: Saturday, June 16, 2018 15:08:26 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

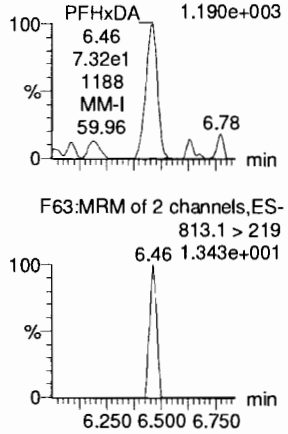
PFTeDA



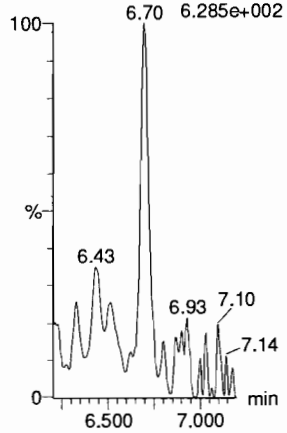
N-EtFOSA



PFHxDA



PFODA



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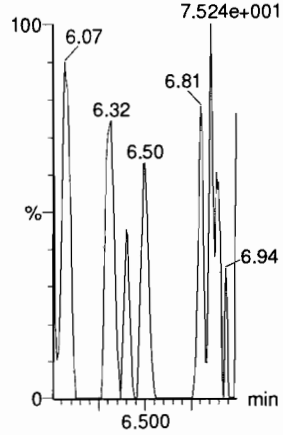

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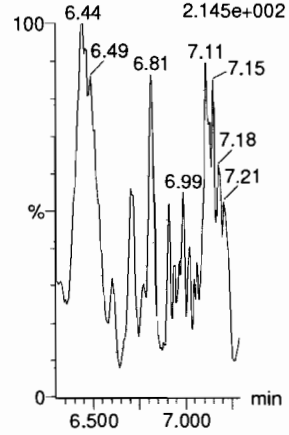

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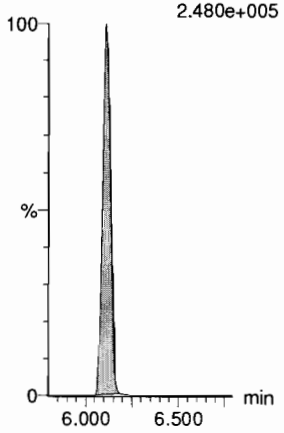
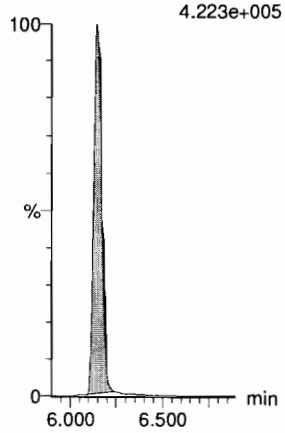


d5-N-ETFOSA



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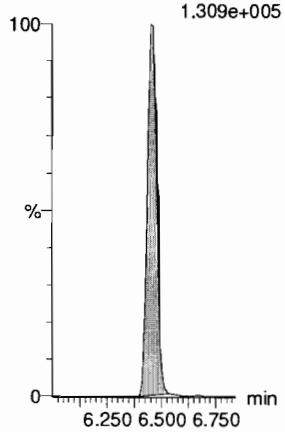
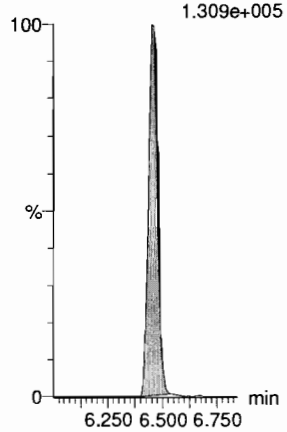
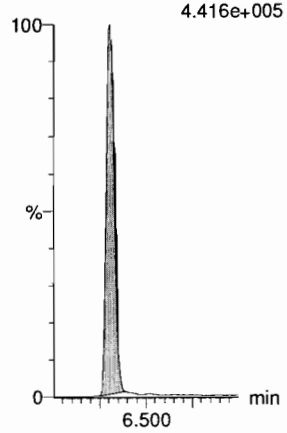


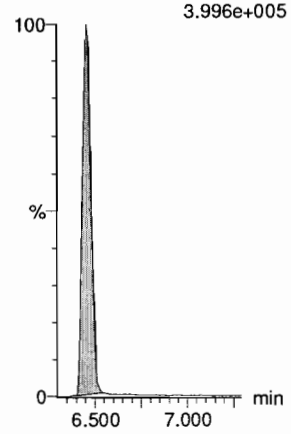
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\180615M1\180615M1-ICV.qld

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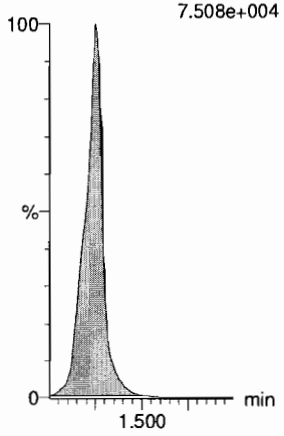
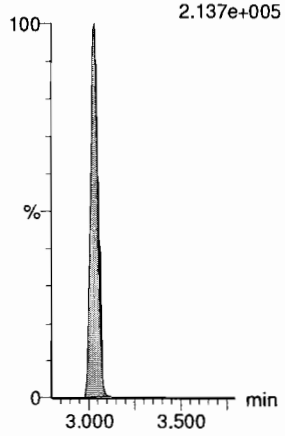
Printed: Saturday, June 16, 2018 15:18:29 Pacific Daylight Time

Name: 180615M1_13, Date: 15-Jun-2018, Time: 20:20:23, ID: ICV180615M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

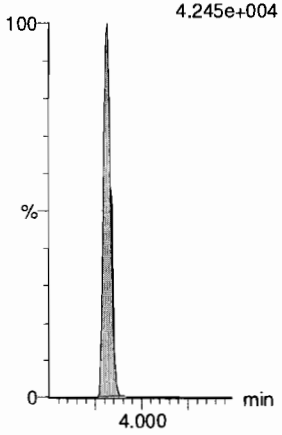
13C4-PFBA



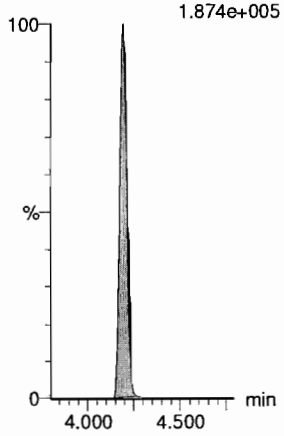
13C5-PFHxA



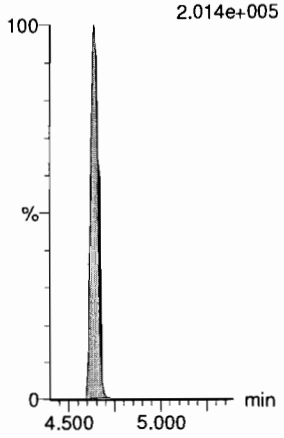
13C3-PFHxS



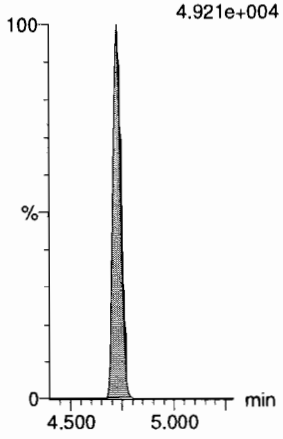
13C8-PFOA



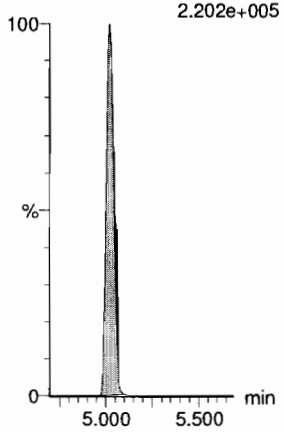
13C9-PFNA



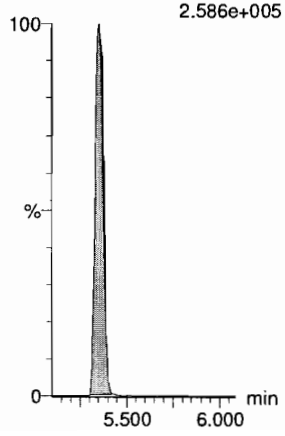
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

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Printed: Saturday, June 16, 2018 15:24:58 Pacific Daylight Time

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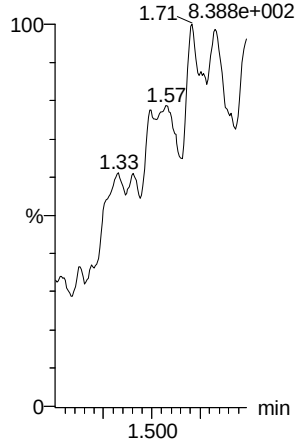
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-15-18.cdb 16 Jun 2018 10:52:52

Name: 180615M1_12, Date: 15-Jun-2018, Time: 20:09:53, ID: IPA, Description: IPA

PFBA



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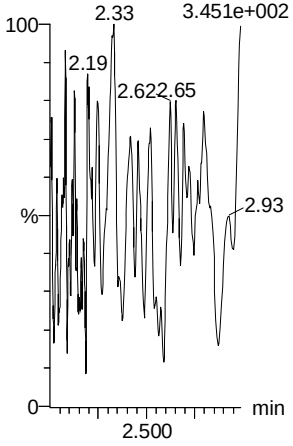

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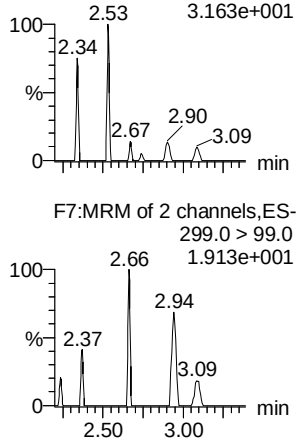
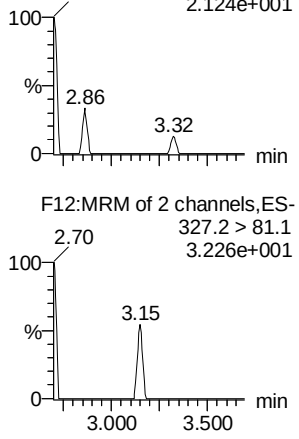


4:2 FTS



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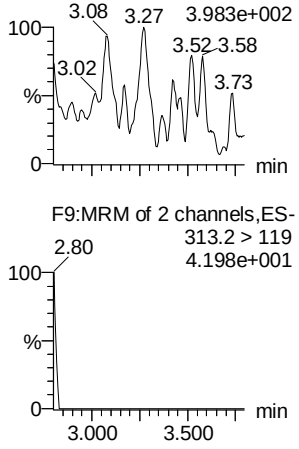
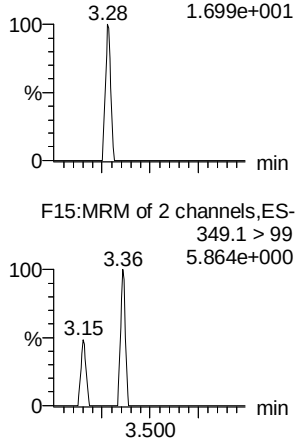
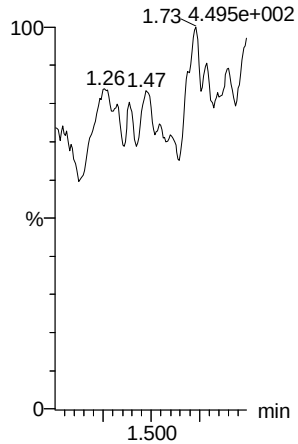


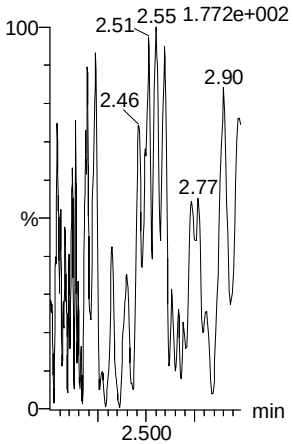
PFPeS



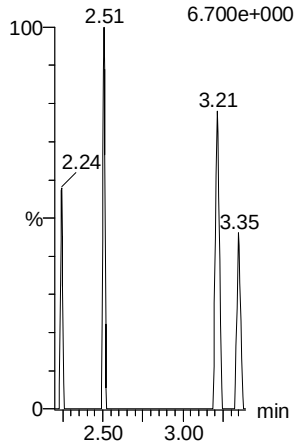
13C3-PFBA



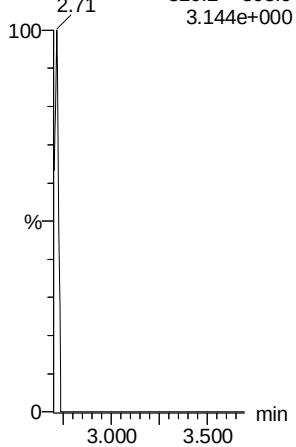
13C3-PFPeA



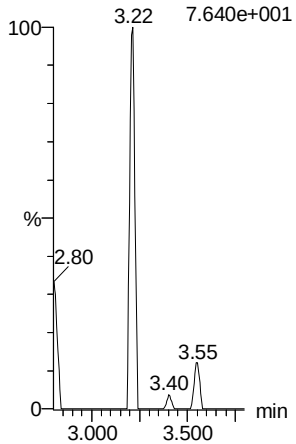
13C3-PFBS



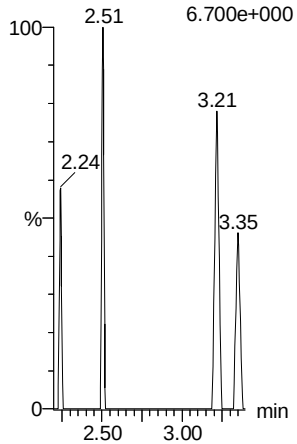
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS



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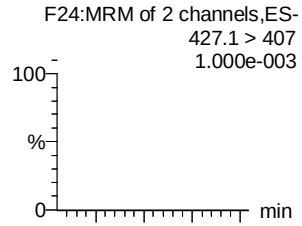
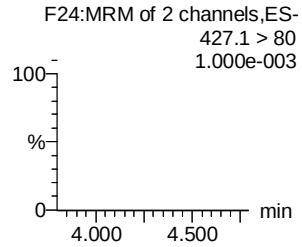
Last Altered: Saturday, June 16, 2018 15:24:39 Pacific Daylight Time
Printed: Saturday, June 16, 2018 15:24:58 Pacific Daylight Time

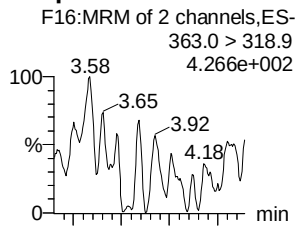
Name: 180615M1_12, Date: 15-Jun-2018, Time: 20:09:53, ID: IPA, Description: IPA

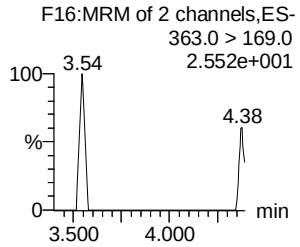
6:2 FTS



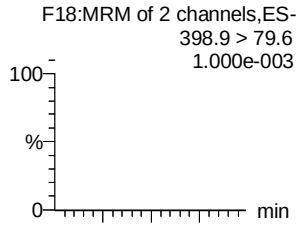


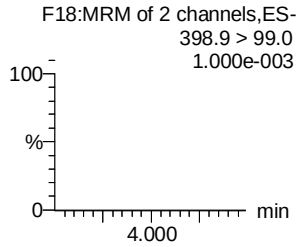
PFHpA



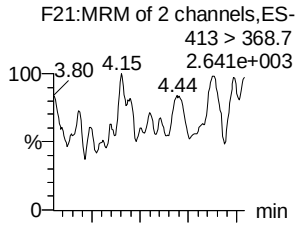


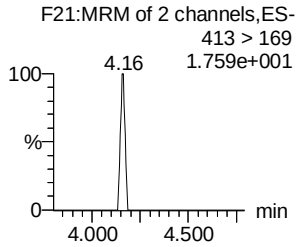
L-PFHxS





L-PFOA





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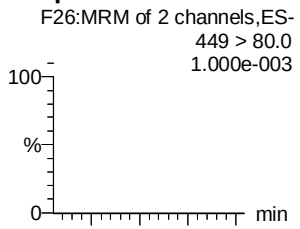

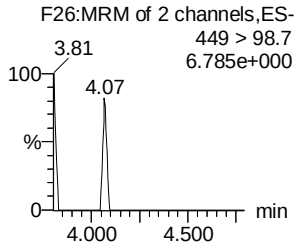

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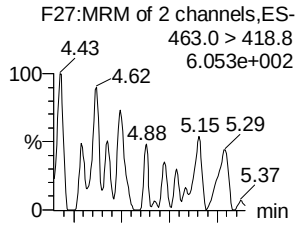

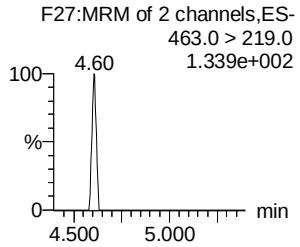

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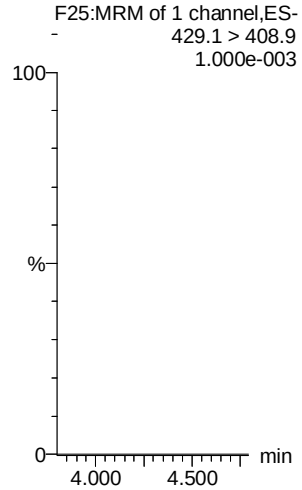
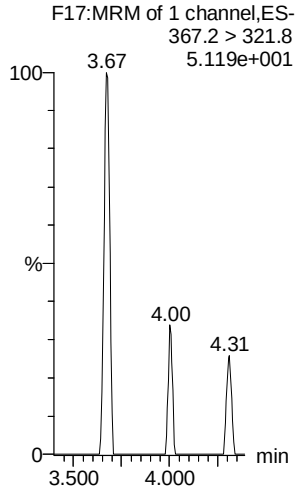
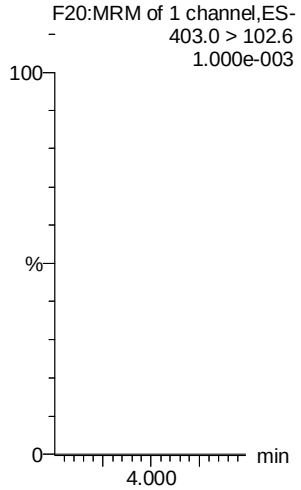


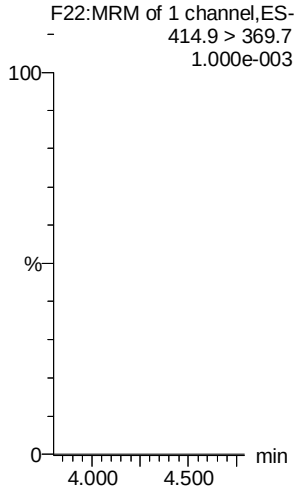
13C4-PFHpA



18O2-PFHxS



13C2-PFOA



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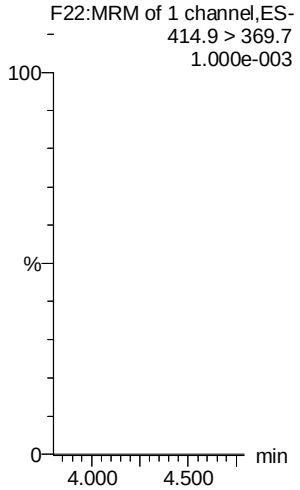

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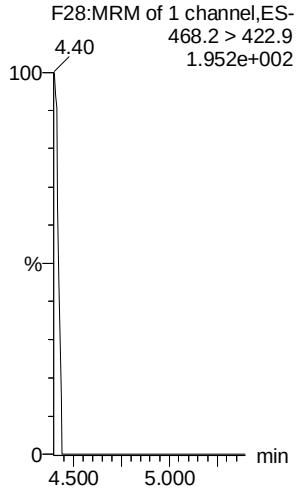

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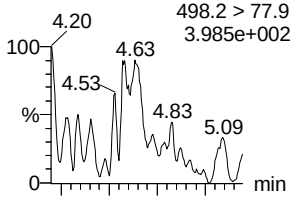

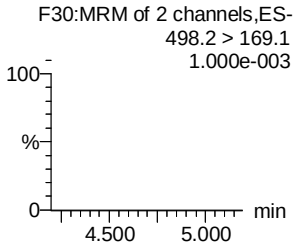

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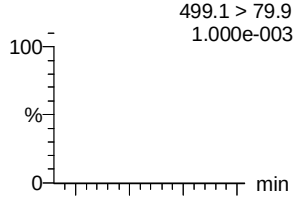

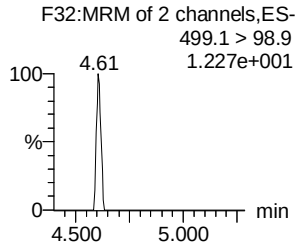

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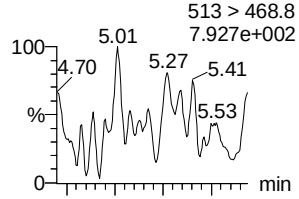

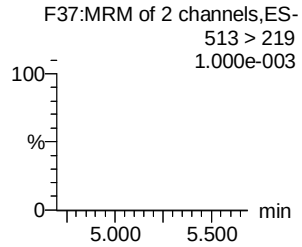

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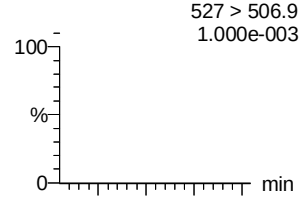

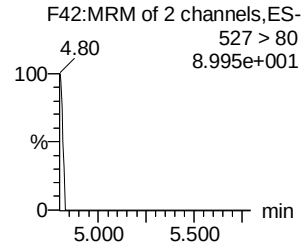

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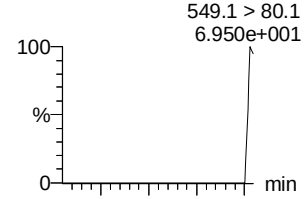

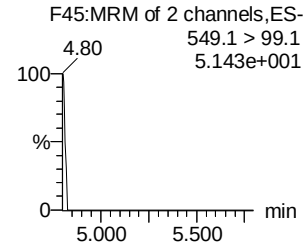

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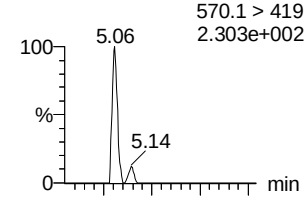

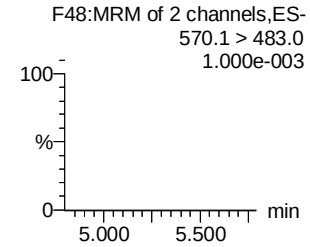

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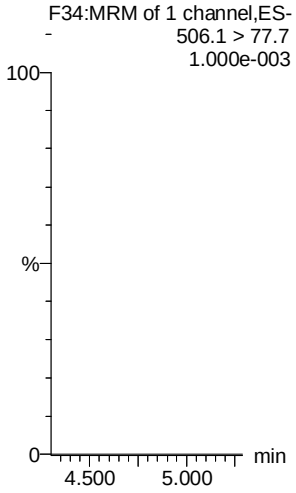

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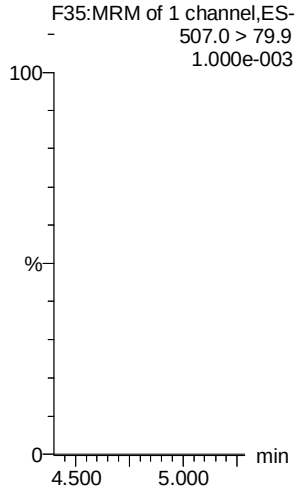

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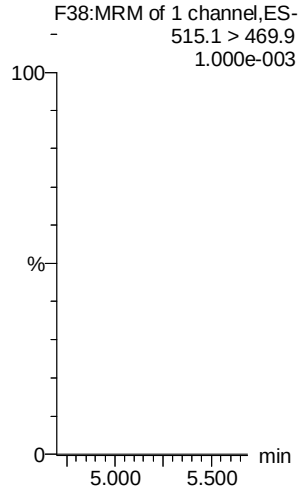

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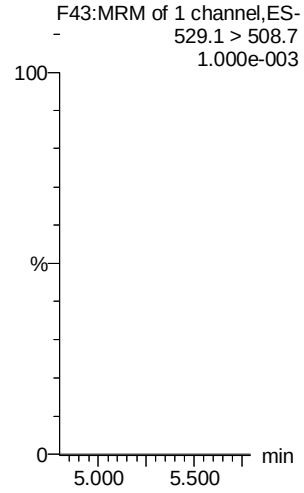

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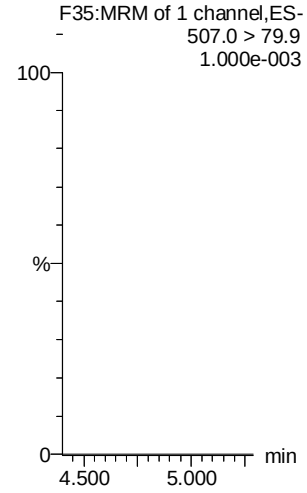

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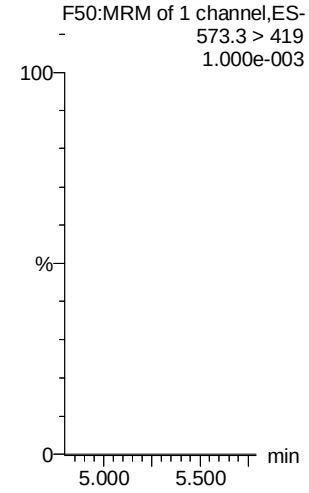

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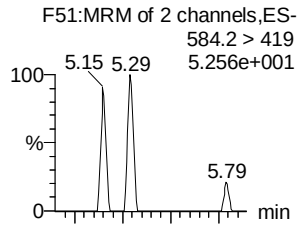

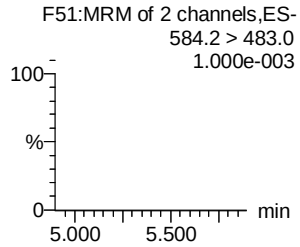

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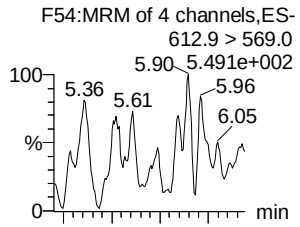

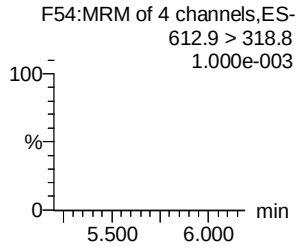

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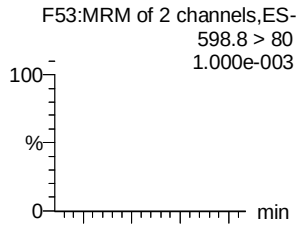

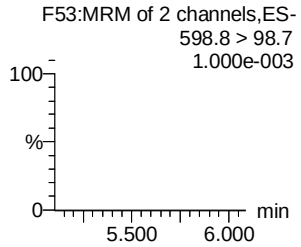

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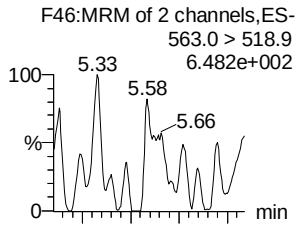

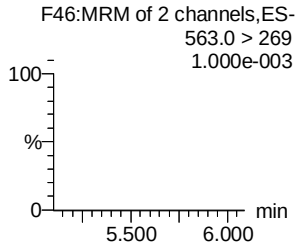

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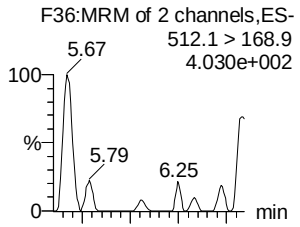

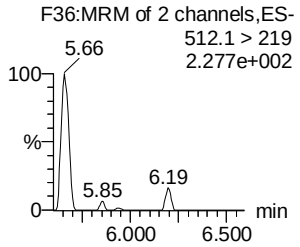

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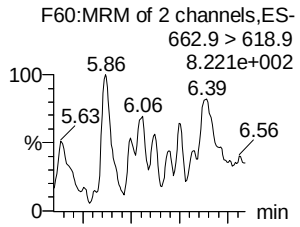

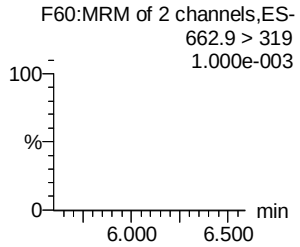

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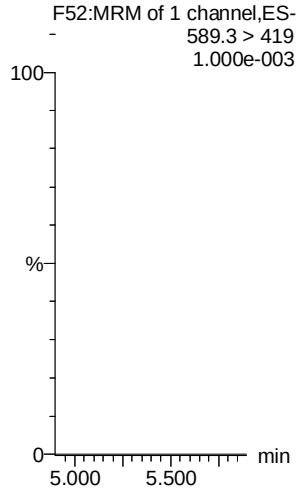

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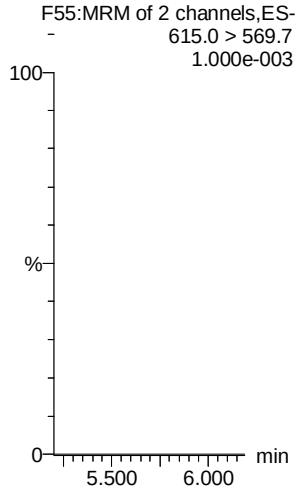

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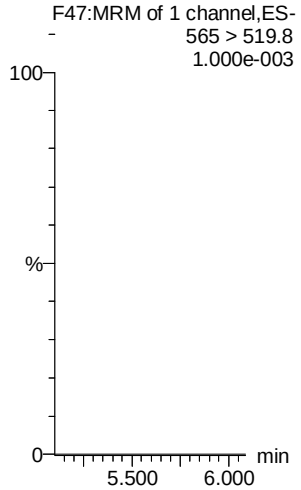

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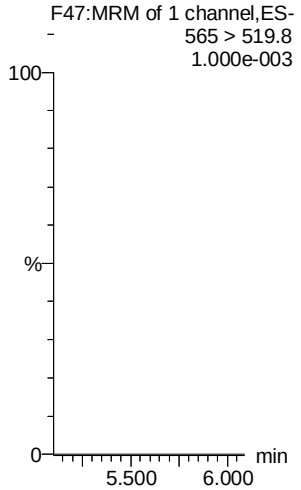

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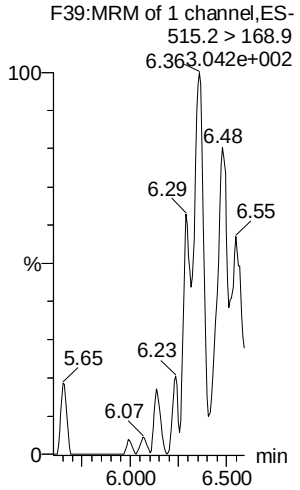

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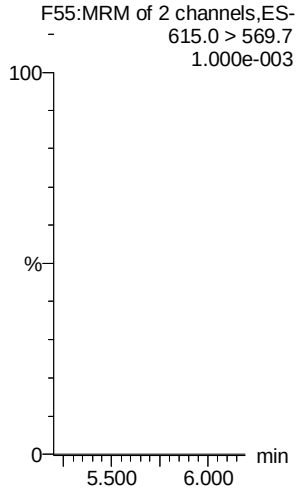

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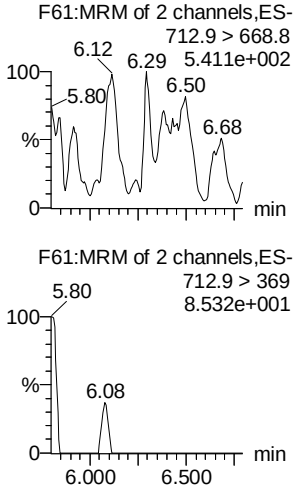

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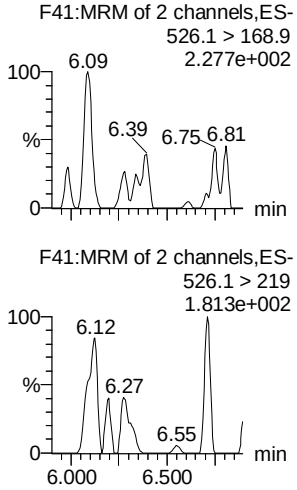

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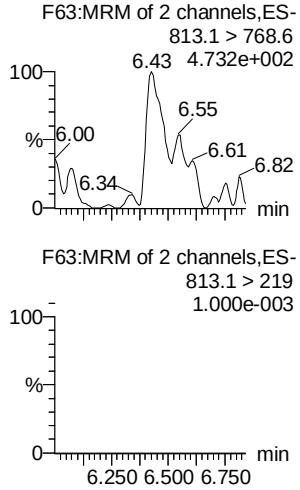

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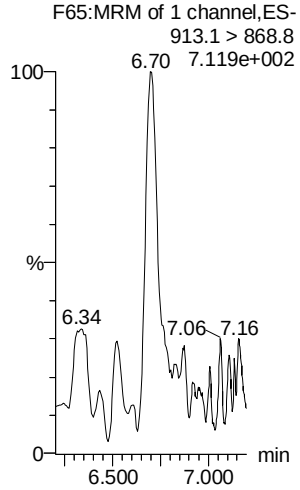

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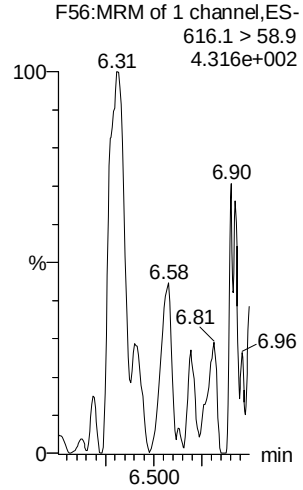

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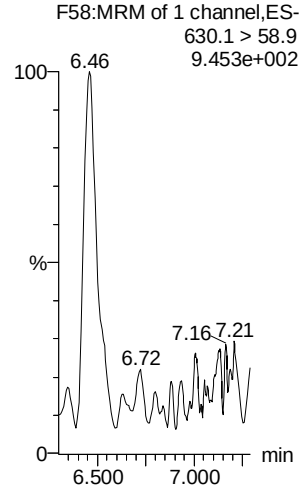

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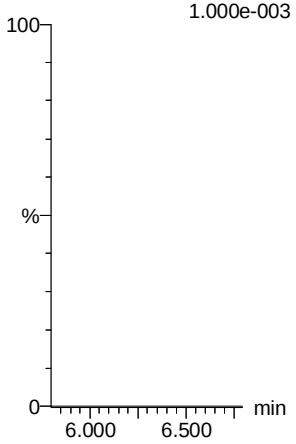
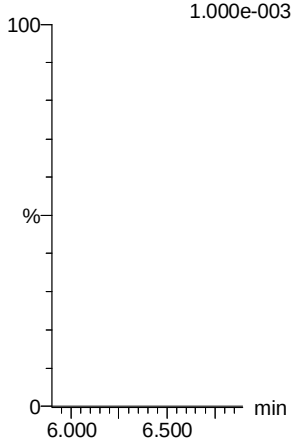


d5-N-ETFOSA



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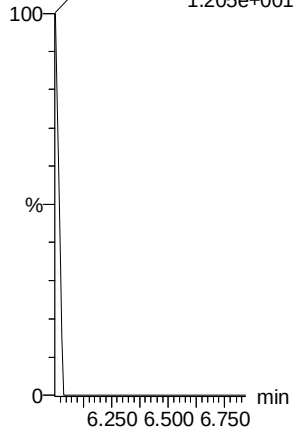

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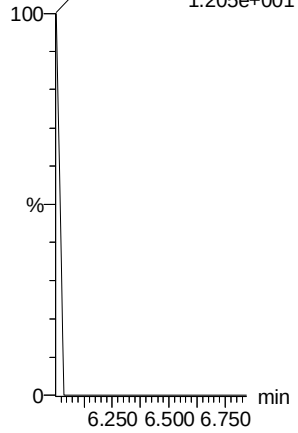

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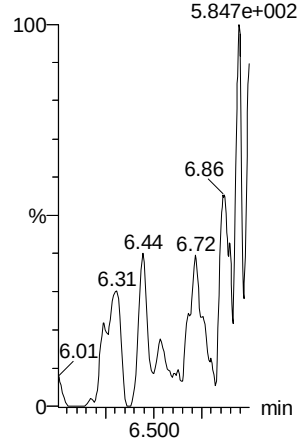

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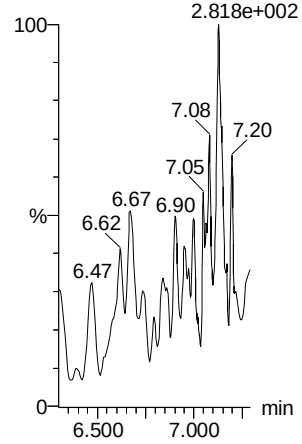

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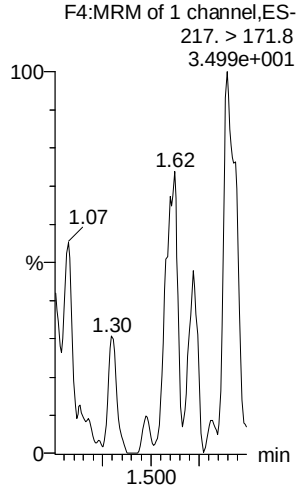
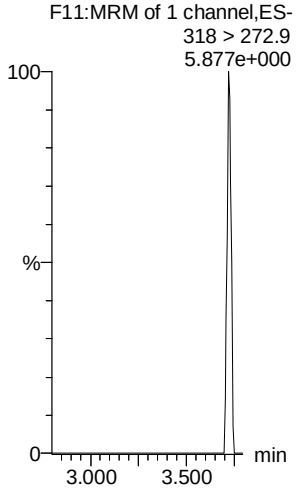
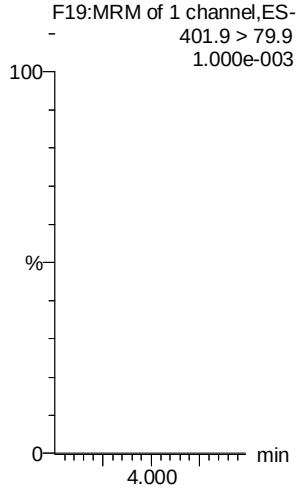


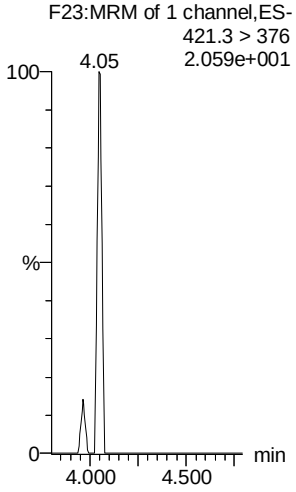
13C5-PFHxA



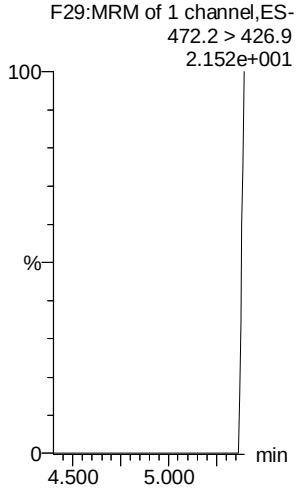
13C3-PFHxS



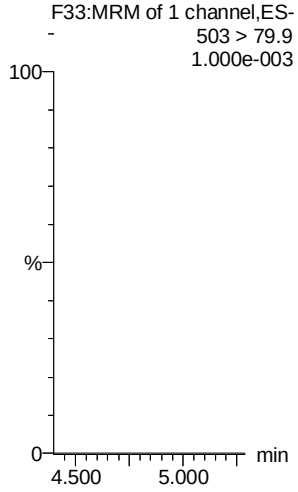
13C8-PFOA



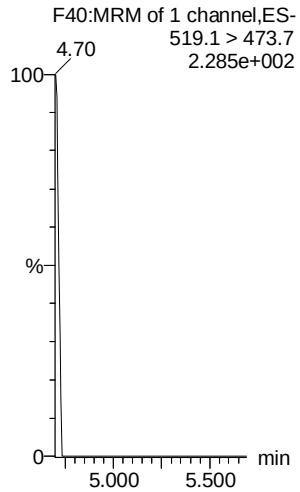
13C9-PFNA



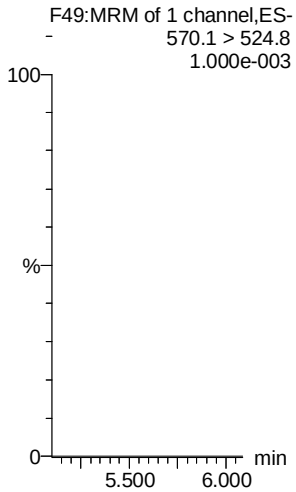
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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high pt
4:2FTS = 100
6:2FTS
8:2FTS
PFHxDA

low pt
PFOS = 0.5

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

VKF 6/19/18
DM 6/19/18

Compound name: PFBA
Correlation coefficient: r = 0.999898, r^2 = 0.999796
Calibration curve: 1.09823 * x + 0.0567088
Response type: Internal Std (Ref 36), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	1.18	219.711	8716.508	0.315	0.2	-5.9	NO	1.000	NO	MM
2	2	180618M1_17	Standard	0.500	1.19	470.804	8711.915	0.676	0.6	12.7	NO	1.000	NO	MM
3	3	180618M1_18	Standard	1.000	1.23	919.091	9786.747	1.174	1.0	1.7	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	1.19	1771.459	8935.389	2.478	2.2	10.2	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	1.19	3872.889	8730.246	5.545	5.0	-0.0	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	1.19	7774.071	8690.488	11.182	10.1	1.3	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	1.19	37926.598	8568.303	55.330	50.3	0.7	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	1.19	73715.688	8473.662	108.742	99.0	-1.0	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	1.19	183835.703	8211.710	279.838	254.8	1.9	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	1.19	356464.813	8186.535	544.285	495.6	-0.9	NO	1.000	NO	bb

Compound name: PFPeA
Correlation coefficient: r = 0.999964, r^2 = 0.999928
Calibration curve: 0.957575 * x + 0.0682453
Response type: Internal Std (Ref 37), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	2.20	240.081	11023.699	0.272	0.2	-14.8	NO	1.000	NO	bb
2	2	180618M1_17	Standard	0.500	2.20	498.316	11080.870	0.562	0.5	3.2	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	2.21	1102.659	12953.595	1.064	1.0	4.0	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	2.20	1963.935	11397.977	2.154	2.2	8.9	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	2.20	4251.414	11279.604	4.711	4.8	-3.0	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	2.20	8690.326	11253.922	9.653	10.0	0.1	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	2.20	42219.559	10737.064	49.152	51.3	2.5	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	2.20	79683.586	10448.953	95.325	99.5	-0.5	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	2.20	194281.406	10173.479	238.711	249.2	-0.3	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	2.20	370081.313	9660.657	478.851	500.0	-0.0	NO	1.000	NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: PFBS
Coefficient of Determination: R^2 = 0.999834
Calibration curve: -0.000104612 * x^2 + 2.0984 * x + -0.0152867
Response type: Internal Std (Ref 38), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	2.50	49.877	1225.755	0.509	0.2	-0.1	NO	1.000	NO	MM
2	2	180618M1_17	Standard	0.500	2.50	111.272	1275.788	1.090	0.5	5.4	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	2.50	258.203	1480.544	2.180	1.0	4.6	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	2.50	450.147	1309.982	4.295	2.1	2.7	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	2.50	1016.432	1276.885	9.950	4.8	-5.0	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	2.50	2011.322	1286.687	19.540	9.3	-6.8	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	2.50	9870.144	1214.707	101.569	48.5	-2.9	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	2.50	19209.529	1131.102	212.288	101.7	1.7	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	2.50	45736.109	1096.793	521.248	251.6	0.6	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	2.50	87936.836	1076.531	1021.067	499.0	-0.2	NO	1.000	NO	bb

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999002
Calibration curve: -0.00290673 * x^2 + 1.01765 * x + 0.000704627
Response type: Internal Std (Ref 39), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	2.93	55.507	2735.290	0.254	0.2	-0.5	NO	0.999	NO	MM
2	2	180618M1_17	Standard	0.500	2.93	96.216	2607.418	0.461	0.5	-9.4	NO	0.999	NO	bb
3	3	180618M1_18	Standard	1.000	2.92	296.372	3090.385	1.199	1.2	18.1	NO	0.999	NO	bb
4	4	180618M1_19	Standard	2.000	2.94	432.356	2633.848	2.052	2.0	1.4	NO	0.999	NO	bb
5	5	180618M1_20	Standard	5.000	2.94	1005.921	2769.044	4.541	4.5	-9.6	NO	0.999	NO	bb
6	6	180618M1_21	Standard	10.000	2.94	2020.282	2593.616	9.737	9.8	-1.6	NO	0.999	NO	bb
7	7	180618M1_22	Standard	50.000	2.94	10034.565	2820.621	44.470	51.2	2.4	NO	0.999	NO	bb
8	8	180618M1_23	Standard	100.000	2.94	19435.527	3359.806	72.309	99.1	-0.9	NO	0.999	NO	bb
9	9	180618M1_24	Standard	250.000	2.94	44494.207	4280.528	129.932			NO	0.999	NO	bbXI
10	10	180618M1_25	Standard	500.000	2.94	78411.789	5719.270	171.376			NO	0.999	NO	bbXI

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999917
Calibration curve: -0.000185331 * x^2 + 1.51828 * x + 0.0664567
Response type: Internal Std (Ref 40), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	3.02	276.137	3571.657	0.387	0.2	-15.7	NO	1.000	NO	MM
2	2	180618M1_17	Standard	0.500	3.02	644.192	3424.946	0.940	0.6	15.1	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	3.01	1297.658	3969.060	1.635	1.0	3.3	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	3.02	2403.031	3531.760	3.402	2.2	9.9	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	3.02	5501.396	3420.680	8.041	5.3	5.1	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	3.02	10851.436	3571.239	15.193	10.0	-0.3	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	3.02	52366.707	3437.732	76.165	50.4	0.9	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	3.02	98106.219	3291.445	149.032	99.3	-0.7	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	3.02	238909.500	3254.890	367.001	249.3	-0.3	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	3.02	452700.813	3172.246	713.534	500.5	0.1	NO	1.000	NO	bb

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999273
Calibration curve: -0.000263086 * x^2 + 1.56074 * x + 0.00694103
Response type: Internal Std (Ref 38), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	3.22	36.638	1225.755	0.374	0.2	-6.0	NO	0.999	NO	MM
2	2	180618M1_17	Standard	0.500	3.22	82.593	1275.788	0.809	0.5	2.8	NO	0.999	NO	MM
3	3	180618M1_18	Standard	1.000	3.21	200.491	1480.544	1.693	1.1	8.0	NO	0.999	NO	bb
4	4	180618M1_19	Standard	2.000	3.22	351.638	1309.982	3.355	2.1	7.3	NO	0.999	NO	bb
5	5	180618M1_20	Standard	5.000	3.22	750.915	1276.885	7.351	4.7	-5.8	NO	0.999	NO	bb
6	6	180618M1_21	Standard	10.000	3.22	1544.624	1286.687	15.006	9.6	-3.7	NO	0.999	NO	bb
7	7	180618M1_22	Standard	50.000	3.22	7441.798	1214.707	76.580	49.5	-1.1	NO	0.999	NO	bb
8	8	180618M1_23	Standard	100.000	3.22	13264.678	1131.102	146.590	95.5	-4.5	NO	0.999	NO	bb
9	9	180618M1_24	Standard	250.000	3.22	34001.867	1096.793	387.515	259.6	3.9	NO	0.999	NO	bb
10	10	180618M1_25	Standard	500.000	3.22	61077.430	1076.531	709.193	495.8	-0.8	NO	0.999	NO	bb

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Compound name: PFHpA
Correlation coefficient: r = 0.999888, r^2 = 0.999776
Calibration curve: 1.17652 * x + 0.0903044
Response type: Internal Std (Ref 41), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	3.64	248.134	9083.725	0.341	0.2	-14.6	NO	1.000	NO	bb
2	2	180618M1_17	Standard	0.500	3.64	497.260	8852.083	0.702	0.5	4.0	NO	1.000	NO	MM
3	3	180618M1_18	Standard	1.000	3.63	1106.876	10310.412	1.342	1.1	6.4	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	3.64	1869.289	8912.366	2.622	2.2	7.6	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	3.64	4136.249	8889.713	5.816	4.9	-2.7	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	3.64	8634.926	9332.727	11.565	9.8	-2.5	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	3.64	41500.063	8475.460	61.206	51.9	3.9	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	3.64	76061.820	8303.100	114.508	97.3	-2.7	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	3.64	193844.563	8166.386	296.711	252.1	0.8	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	3.64	353547.563	7528.476	587.017	498.9	-0.2	NO	1.000	NO	bb

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999634
Calibration curve: 0.000384353 * x^2 + 1.87153 * x + -0.00362072
Response type: Internal Std (Ref 42), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	3.80	45.495	1131.019	0.503	0.3	8.2	NO	1.000	NO	MM
2	2	180618M1_17	Standard	0.500	3.80	87.621	1227.726	0.892	0.5	-4.3	NO	1.000	NO	MM
3	3	180618M1_18	Standard	1.000	3.79	202.766	1311.425	1.933	1.0	3.4	NO	1.000	NO	MM
4	4	180618M1_19	Standard	2.000	3.80	394.729	1177.330	4.191	2.2	12.0	NO	1.000	NO	MM
5	5	180618M1_20	Standard	5.000	3.79	814.942	1272.976	8.002	4.3	-14.5	NO	1.000	NO	MM
6	6	180618M1_21	Standard	10.000	3.79	1649.610	1210.839	17.030	9.1	-9.2	NO	1.000	NO	MM
7	7	180618M1_22	Standard	50.000	3.79	8352.938	1047.875	99.641	52.7	5.3	NO	1.000	NO	MM
8	8	180618M1_23	Standard	100.000	3.79	16120.497	1063.937	189.397	99.2	-0.8	NO	1.000	NO	MM
9	9	180618M1_24	Standard	250.000	3.79	39643.410	1010.677	490.308	249.2	-0.3	NO	1.000	NO	MM
10	10	180618M1_25	Standard	500.000	3.79	73221.055	886.452	1032.502	500.3	0.1	NO	1.000	NO	MM

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.998185
Calibration curve: -0.00256871 * x^2 + 1.01262 * x + 0.082263
Response type: Internal Std (Ref 43), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	0.250	4.12	58.653	2724.339	0.269	0.2	-26.2	NO	0.998	NO	MM
2	2 180618M1_17	Standard	0.500	4.12	125.784	2437.743	0.645	0.6	11.3	NO	0.998	NO	bb
3	3 180618M1_18	Standard	1.000	4.11	287.854	3121.837	1.153	1.1	6.0	NO	0.998	NO	bb
4	4 180618M1_19	Standard	2.000	4.12	461.199	2621.373	2.199	2.1	5.1	NO	0.998	NO	bb
5	5 180618M1_20	Standard	5.000	4.12	1175.732	2978.058	4.935	4.9	-3.0	NO	0.998	NO	bb
6	6 180618M1_21	Standard	10.000	4.12	2440.791	2797.474	10.906	11.0	10.0	NO	0.998	NO	bb
7	7 180618M1_22	Standard	50.000	4.12	10652.454	3129.390	42.550	47.7	-4.6	NO	0.998	NO	bb
8	8 180618M1_23	Standard	100.000	4.12	19298.264	3155.912	76.437	101.6	1.6	NO	0.998	NO	bb
9	9 180618M1_24	Standard	250.000	4.12	47601.336	4682.597	127.070			NO	0.998	YES	bbXI
10	10 180618M1_25	Standard	500.000	4.12	91958.914	6309.843	182.174			NO	0.998	NO	bbXI

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999894
Calibration curve: -7.62028e-005 * x^2 + 0.924598 * x + 0.109864
Response type: Internal Std (Ref 44), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	0.250	4.18	350.407	13759.683	0.318	0.2	-9.8	NO	1.000	NO	MM
2	2 180618M1_17	Standard	0.500	4.18	595.974	12929.028	0.576	0.5	0.9	NO	1.000	NO	bb
3	3 180618M1_18	Standard	1.000	4.17	1220.958	14834.367	1.029	1.0	-0.6	NO	1.000	NO	bb
4	4 180618M1_19	Standard	2.000	4.18	2333.244	13690.397	2.130	2.2	9.3	NO	1.000	NO	bb
5	5 180618M1_20	Standard	5.000	4.17	4918.477	13315.114	4.617	4.9	-2.5	NO	1.000	NO	bb
6	6 180618M1_21	Standard	10.000	4.17	10316.952	13669.474	9.434	10.1	0.9	NO	1.000	NO	bb
7	7 180618M1_22	Standard	50.000	4.17	47147.734	12395.510	47.545	51.5	3.0	NO	1.000	NO	bb
8	8 180618M1_23	Standard	100.000	4.17	89654.938	12288.034	91.201	99.3	-0.7	NO	1.000	NO	bb
9	9 180618M1_24	Standard	250.000	4.17	225464.281	12541.596	224.716	248.0	-0.8	NO	1.000	NO	bb
10	10 180618M1_25	Standard	500.000	4.18	432170.688	12160.707	444.229	501.0	0.2	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999789
Calibration curve: -4.91732e-005 * x^2 + 0.177358 * x + 0.00932101
Response type: Internal Std (Ref 44), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	0.250	4.29	58.254	13759.683	0.053	0.2	-1.7	NO	1.000	NO	MM
2	2 180618M1_17	Standard	0.500	4.29	105.788	12929.028	0.102	0.5	4.8	NO	1.000	NO	bb
3	3 180618M1_18	Standard	1.000	4.28	240.192	14834.367	0.202	1.1	8.9	NO	1.000	NO	bb
4	4 180618M1_19	Standard	2.000	4.29	380.695	13690.397	0.348	1.9	-4.6	NO	1.000	NO	bb
5	5 180618M1_20	Standard	5.000	4.29	916.130	13315.114	0.860	4.8	-3.9	NO	1.000	NO	bb
6	6 180618M1_21	Standard	10.000	4.29	1812.939	13669.474	1.658	9.3	-6.8	NO	1.000	NO	bb
7	7 180618M1_22	Standard	50.000	4.29	8955.461	12395.510	9.031	51.6	3.2	NO	1.000	NO	bb
8	8 180618M1_23	Standard	100.000	4.29	17128.635	12288.034	17.424	101.0	1.0	NO	1.000	NO	bb
9	9 180618M1_24	Standard	250.000	4.29	40938.176	12541.596	40.802	246.9	-1.2	NO	1.000	NO	bb
10	10 180618M1_25	Standard	500.000	4.29	74493.828	12160.707	76.572	501.4	0.3	NO	1.000	NO	bb

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999862
Calibration curve: -8.00672e-005 * x^2 + 1.25857 * x + 0.126709
Response type: Internal Std (Ref 45), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	0.250	4.62	342.394	10069.999	0.425	0.2	-5.2	NO	1.000	NO	bb
2	2 180618M1_17	Standard	0.500	4.62	618.635	9891.565	0.782	0.5	4.1	NO	1.000	NO	bb
3	3 180618M1_18	Standard	1.000	4.62	1314.643	12183.063	1.349	1.0	-2.9	NO	1.000	NO	bb
4	4 180618M1_19	Standard	2.000	4.62	2349.581	9863.224	2.978	2.3	13.3	NO	1.000	NO	bb
5	5 180618M1_20	Standard	5.000	4.62	5154.303	10610.607	6.072	4.7	-5.5	NO	1.000	NO	bb
6	6 180618M1_21	Standard	10.000	4.62	10230.157	10321.920	12.389	9.7	-2.5	NO	1.000	NO	bb
7	7 180618M1_22	Standard	50.000	4.62	48635.051	9952.715	61.083	48.6	-2.8	NO	1.000	NO	bb
8	8 180618M1_23	Standard	100.000	4.62	96819.383	9555.276	126.657	101.2	1.2	NO	1.000	NO	bb
9	9 180618M1_24	Standard	250.000	4.62	231024.594	9276.970	311.288	251.2	0.5	NO	1.000	NO	bb
10	10 180618M1_25	Standard	500.000	4.62	454126.375	9328.427	608.525	499.3	-0.1	NO	1.000	NO	bb

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Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999482
Calibration curve: 0.000175879 * x^2 + 0.752508 * x + 0.038589
Response type: Internal Std (Ref 46), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	4.69	62.921	4302.178	0.183	0.2	-23.3	NO	0.999	NO	bb
2	2	180618M1_17	Standard	0.500	4.68	146.103	4467.883	0.409	0.5	-1.6	NO	0.999	NO	bb
3	3	180618M1_18	Standard	1.000	4.68	388.884	5241.728	0.927	1.2	18.1	NO	0.999	NO	bb
4	4	180618M1_19	Standard	2.000	4.69	571.764	4531.604	1.577	2.0	2.2	NO	0.999	NO	bb
5	5	180618M1_20	Standard	5.000	4.68	1332.182	4389.862	3.793	5.0	-0.3	NO	0.999	NO	bb
6	6	180618M1_21	Standard	10.000	4.68	2602.798	4289.006	7.586	10.0	0.1	NO	0.999	NO	bb
7	7	180618M1_22	Standard	50.000	4.68	13323.223	4029.681	41.328	54.2	8.4	NO	0.999	NO	bb
8	8	180618M1_23	Standard	100.000	4.68	24239.234	4023.996	75.296	97.8	-2.2	NO	0.999	NO	bb
9	9	180618M1_24	Standard	250.000	4.68	58050.582	3703.427	195.935	246.2	-1.5	NO	0.999	NO	bb
10	10	180618M1_25	Standard	500.000	4.68	111002.414	3288.757	421.901	501.8	0.4	NO	0.999	NO	bb

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999297
Calibration curve: 0.000142901 * x^2 + 0.887606 * x + -0.0864255
Response type: Internal Std (Ref 47), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	4.71	66.579	2433.912	0.342	0.5	93.0	YES	0.999	NO	MMX
2	2	180618M1_17	Standard	0.500	4.71	81.529	2619.988	0.389	0.5	7.1	NO	0.999	NO	MM
3	3	180618M1_18	Standard	1.000	4.70	223.827	2950.088	0.948	1.2	16.6	NO	0.999	NO	MM
4	4	180618M1_19	Standard	2.000	4.71	325.017	2674.811	1.519	1.8	-9.6	NO	0.999	NO	MM
5	5	180618M1_20	Standard	5.000	4.71	781.547	2603.185	3.753	4.3	-13.6	NO	0.999	NO	MM
6	6	180618M1_21	Standard	10.000	4.71	1773.615	2514.681	8.816	10.0	0.1	NO	0.999	NO	MM
7	7	180618M1_22	Standard	50.000	4.71	9026.984	2475.860	45.575	51.0	2.0	NO	0.999	NO	MM
8	8	180618M1_23	Standard	100.000	4.71	16086.009	2354.053	85.417	94.9	-5.1	NO	0.999	NO	MM
9	9	180618M1_24	Standard	250.000	4.71	41808.461	2198.287	237.733	257.3	2.9	NO	0.999	NO	MM
10	10	180618M1_25	Standard	500.000	4.71	80394.828	2107.670	476.799	497.4	-0.5	NO	0.999	NO	MM

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999839
Calibration curve: -6.04613e-005 * x^2 + 0.98717 * x + 0.0812872
Response type: Internal Std (Ref 48), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	0.250	5.01	337.187	13539.500	0.311	0.2	-6.8	NO	1.000	NO	MM
2	2 180618M1_17	Standard	0.500	5.01	602.485	13902.350	0.542	0.5	-6.7	NO	1.000	NO	bb
3	3 180618M1_18	Standard	1.000	5.00	1531.439	17142.135	1.117	1.0	4.9	NO	1.000	NO	bb
4	4 180618M1_19	Standard	2.000	5.01	2599.304	14249.915	2.280	2.2	11.4	NO	1.000	NO	bb
5	5 180618M1_20	Standard	5.000	5.01	5214.808	13505.971	4.826	4.8	-3.8	NO	1.000	NO	bb
6	6 180618M1_21	Standard	10.000	5.01	10563.735	13235.743	9.977	10.0	0.3	NO	1.000	NO	bb
7	7 180618M1_22	Standard	50.000	5.01	51707.676	12766.311	50.629	51.4	2.7	NO	1.000	NO	bb
8	8 180618M1_23	Standard	100.000	5.01	97477.695	12714.210	95.835	97.6	-2.4	NO	1.000	NO	bb
9	9 180618M1_24	Standard	250.000	5.01	241430.266	12351.765	244.328	251.3	0.5	NO	1.000	NO	bb
10	10 180618M1_25	Standard	500.000	5.01	460655.781	12039.578	478.272	499.7	-0.1	NO	1.000	NO	bb

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.992159
Calibration curve: -0.00639542 * x^2 + 1.64268 * x + -0.047243
Response type: Internal Std (Ref 49), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	0.250	4.97	64.533	2100.762	0.384	0.3	5.1	NO	0.992	NO	bb
2	2 180618M1_17	Standard	0.500	4.98	149.078	1926.179	0.967	0.6	23.8	NO	0.992	NO	bb
3	3 180618M1_18	Standard	1.000	4.97	314.754	2420.365	1.626	1.0	2.2	NO	0.992	NO	bb
4	4 180618M1_19	Standard	2.000	4.98	493.857	2126.968	2.902	1.8	-9.6	NO	0.992	NO	bb
5	5 180618M1_20	Standard	5.000	4.97	1207.829	2213.172	6.822	4.3	-15.0	NO	0.992	NO	bb
6	6 180618M1_21	Standard	10.000	4.97	2326.278	2138.463	13.598	8.6	-14.1	NO	0.992	NO	bb
7	7 180618M1_22	Standard	50.000	4.97	12874.005	2225.470	72.311	56.5	12.9	NO	0.992	NO	bb
8	8 180618M1_23	Standard	100.000	4.98	23063.732	2958.747	97.439	93.1	-6.9	NO	0.992	NO	bb
9	9 180618M1_24	Standard	250.000	4.97	54727.258	3913.607	174.798			NO	0.992	YES	bbXl
10	10 180618M1_25	Standard	500.000	4.97	98029.320	5614.075	218.267			NO	0.992	YES	bbXl

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Compound name: PFNS
Coefficient of Determination: R^2 = 0.999929
Calibration curve: -7.67825e-005 * x^2 + 0.712909 * x + 0.0362063
Response type: Internal Std (Ref 47), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.07	40.477	2433.912	0.208	0.2	-3.7	NO	1.000	NO	MM
2	2	180618M1_17	Standard	0.500	5.07	83.007	2619.988	0.396	0.5	1.0	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	5.06	186.875	2950.088	0.792	1.1	6.0	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	5.07	315.712	2674.811	1.475	2.0	1.0	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	5.07	742.936	2603.185	3.567	5.0	-0.9	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	5.07	1365.696	2514.681	6.789	9.5	-5.2	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	5.07	7153.274	2475.860	36.115	50.9	1.8	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	5.07	13363.330	2354.053	70.959	100.6	0.6	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	5.07	30314.881	2198.287	172.378	248.4	-0.6	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	5.07	56941.344	2107.670	337.703	500.6	0.1	NO	1.000	NO	bb

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999328
Calibration curve: -7.57237e-005 * x^2 + 1.76516 * x + -0.0793413
Response type: Internal Std (Ref 50), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.16	98.062	3114.652	0.394	0.3	7.2	NO	0.999	NO	MM
2	2	180618M1_17	Standard	0.500	5.17	225.135	3289.351	0.856	0.5	5.9	NO	0.999	NO	MM
3	3	180618M1_18	Standard	1.000	5.16	434.135	3765.118	1.441	0.9	-13.8	NO	0.999	NO	MM
4	4	180618M1_19	Standard	2.000	5.16	989.274	3296.276	3.751	2.2	8.5	NO	0.999	NO	MM
5	5	180618M1_20	Standard	5.000	5.16	2016.118	3590.881	7.018	4.0	-19.6	NO	0.999	NO	MM
6	6	180618M1_21	Standard	10.000	5.16	4262.971	3338.449	15.962	9.1	-9.1	NO	0.999	NO	MM
7	7	180618M1_22	Standard	50.000	5.16	23167.121	3311.836	87.441	49.7	-0.6	NO	0.999	NO	MM
8	8	180618M1_23	Standard	100.000	5.16	45961.629	3121.811	184.034	104.8	4.8	NO	0.999	NO	MM
9	9	180618M1_24	Standard	250.000	5.16	106989.406	3107.433	430.377	246.5	-1.4	NO	0.999	NO	MM
10	10	180618M1_25	Standard	500.000	5.16	202559.750	2926.994	865.050	500.9	0.2	NO	0.999	NO	MM

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Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999370
Calibration curve: -6.00237e-005 * x^2 + 1.03913 * x + -0.0171895
Response type: Internal Std (Ref 51), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.33	65.583	3965.882	0.207	0.2	-13.8	NO	0.999	NO	MM
2	2	180618M1_17	Standard	0.500	5.33	166.057	4263.677	0.487	0.5	-3.0	NO	0.999	NO	MM
3	3	180618M1_18	Standard	1.000	5.32	365.609	4446.426	1.028	1.0	0.6	NO	0.999	NO	MM
4	4	180618M1_19	Standard	2.000	5.32	815.629	4122.811	2.473	2.4	19.8	NO	0.999	NO	MM
5	5	180618M1_20	Standard	5.000	5.32	1779.730	3962.204	5.615	5.4	8.4	NO	0.999	NO	MM
6	6	180618M1_21	Standard	10.000	5.32	3127.979	4687.595	8.341	8.0	-19.5	NO	0.999	NO	MM
7	7	180618M1_22	Standard	50.000	5.32	15582.377	3804.364	51.199	49.4	-1.1	NO	0.999	NO	MM
8	8	180618M1_23	Standard	100.000	5.32	31890.994	3780.802	105.437	102.1	2.1	NO	0.999	NO	MM
9	9	180618M1_24	Standard	250.000	5.32	74893.875	3656.560	256.026	250.0	0.0	NO	0.999	NO	MM
10	10	180618M1_25	Standard	500.000	5.32	129647.383	3214.178	504.201	499.7	-0.1	NO	0.999	NO	MM

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999716
Calibration curve: -0.00018609 * x^2 + 1.01141 * x + 0.0817415
Response type: Internal Std (Ref 52), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.34	269.563	12471.447	0.270	0.2	-25.5	NO	1.000	NO	bb
2	2	180618M1_17	Standard	0.500	5.34	636.513	12652.560	0.629	0.5	8.2	NO	1.000	NO	MM
3	3	180618M1_18	Standard	1.000	5.33	1464.266	15515.589	1.180	1.1	8.6	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	5.34	2525.832	13152.667	2.400	2.3	14.7	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	5.34	5255.124	13873.682	4.735	4.6	-7.9	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	5.34	10601.528	12599.091	10.518	10.3	3.4	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	5.34	50600.910	12615.325	50.138	50.0	-0.1	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	5.34	92814.313	11978.490	96.855	97.4	-2.6	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	5.34	237753.047	12139.823	244.807	253.8	1.5	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	5.34	435471.469	11884.740	458.015	498.5	-0.3	NO	1.000	NO	bb

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999607
Calibration curve: -6.32605e-005 * x^2 + 0.205277 * x + -0.00466484
Response type: Internal Std (Ref 52), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.39	54.329	12471.447	0.054	0.3	15.2	NO	1.000	NO	MM
2	2	180618M1_17	Standard	0.500	5.39	83.925	12652.560	0.083	0.4	-14.7	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	5.38	271.331	15515.589	0.219	1.1	8.8	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	5.39	442.635	13152.667	0.421	2.1	3.7	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	5.39	1015.523	13873.682	0.915	4.5	-10.3	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	5.39	2039.080	12599.091	2.023	9.9	-0.9	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	5.39	9690.948	12615.325	9.602	47.5	-5.0	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	5.39	19622.814	11978.490	20.477	103.0	3.0	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	5.39	46143.883	12139.823	47.513	250.9	0.4	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	5.39	82409.984	11884.740	86.676	499.0	-0.2	NO	1.000	NO	bb

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Compound name: PFDoA
Correlation coefficient: r = 0.999602, r^2 = 0.999204
Calibration curve: 1.21308 * x + 0.101943
Response type: Internal Std (Ref 53), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.63	416.017	13582.799	0.383	0.2	-7.4	NO	0.999	NO	bb
2	2	180618M1_17	Standard	0.500	5.63	799.416	13701.021	0.729	0.5	3.4	NO	0.999	NO	bb
3	3	180618M1_18	Standard	1.000	5.62	1787.963	16958.729	1.318	1.0	0.2	NO	0.999	NO	bb
4	4	180618M1_19	Standard	2.000	5.63	3016.854	13809.396	2.731	2.2	8.4	NO	0.999	NO	bb
5	5	180618M1_20	Standard	5.000	5.63	6839.931	13759.669	6.214	5.0	0.8	NO	0.999	NO	bb
6	6	180618M1_21	Standard	10.000	5.63	11814.913	13225.257	11.167	9.1	-8.8	NO	0.999	NO	bb
7	7	180618M1_22	Standard	50.000	5.63	63069.555	12829.111	61.452	50.6	1.1	NO	0.999	NO	bb
8	8	180618M1_23	Standard	100.000	5.63	124351.672	12190.338	127.510	105.0	5.0	NO	0.999	NO	bb
9	9	180618M1_24	Standard	250.000	5.63	282672.125	12088.551	292.293	240.9	-3.7	NO	0.999	NO	bb
10	10	180618M1_25	Standard	500.000	5.63	539752.313	11029.087	611.737	504.2	0.8	NO	0.999	NO	bb

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999893
Calibration curve: -9.43484e-005 * x^2 + 1.07027 * x + 0.192913
Response type: Internal Std (Ref 54), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	1.250	5.76	178.271	18442.639	1.450	1.2	-6.0	NO	1.000	NO	bb
2	2	180618M1_17	Standard	2.500	5.77	358.376	18515.676	2.903	2.5	1.3	NO	1.000	NO	bb
3	3	180618M1_18	Standard	5.000	5.76	886.884	21996.352	6.048	5.5	9.5	NO	1.000	NO	bb
4	4	180618M1_19	Standard	10.000	5.76	1474.727	18505.596	11.954	11.0	10.0	NO	1.000	NO	bb
5	5	180618M1_20	Standard	25.000	5.76	3220.344	18682.092	25.856	24.0	-3.9	NO	1.000	NO	bb
6	6	180618M1_21	Standard	50.000	5.76	6989.930	18763.863	55.878	52.3	4.5	NO	1.000	NO	MM
7	7	180618M1_22	Standard	250.000	5.76	31845.678	18305.086	260.958	249.1	-0.4	NO	1.000	NO	bb
8	8	180618M1_23	Standard	500.000	5.76	60134.750	17769.139	507.634	495.8	-0.8	NO	1.000	NO	bb
9	9	180618M1_24	Standard	1250.000	5.76	140859.047	17709.334	1193.092	1253.0	0.2	NO	1.000	NO	bb
10	10	180618M1_25	Standard	2500.000	5.76	241038.625	17334.152	2085.813	2499.4	-0.0	NO	1.000	NO	bb

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999866
Calibration curve: 7.85616e-005 * x^2 + 1.31631 * x + 0.0547122
Response type: Internal Std (Ref 53), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	5.88	348.576	13582.799	0.321	0.2	-19.1	NO	1.000	NO	bb
2	2	180618M1_17	Standard	0.500	5.88	848.241	13701.021	0.774	0.5	9.3	NO	1.000	NO	MM
3	3	180618M1_18	Standard	1.000	5.88	1920.118	16958.729	1.415	1.0	3.4	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	5.88	3268.863	13809.396	2.959	2.2	10.3	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	5.88	7027.104	13759.669	6.384	4.8	-3.9	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	5.88	14057.002	13225.257	13.286	10.0	0.5	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	5.88	66513.234	12829.111	64.807	49.0	-1.9	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	5.88	132020.172	12190.338	135.374	102.2	2.2	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	5.88	320519.094	12088.551	331.428	248.1	-0.8	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	5.88	598839.563	11029.087	678.705	500.6	0.1	NO	1.000	NO	bb

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999244
Calibration curve: -0.000580728 * x^2 + 1.56499 * x + -0.0318777
Response type: Internal Std (Ref 55), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	6.10	401.342	11212.317	0.447	0.3	22.5	NO	0.999	NO	bb
2	2	180618M1_17	Standard	0.500	6.10	705.703	10947.410	0.806	0.5	7.1	NO	0.999	NO	bb
3	3	180618M1_18	Standard	1.000	6.09	1412.682	12466.849	1.416	0.9	-7.4	NO	0.999	NO	bb
4	4	180618M1_19	Standard	2.000	6.10	2489.676	11123.244	2.798	1.8	-9.5	NO	0.999	NO	bb
5	5	180618M1_20	Standard	5.000	6.10	5525.255	10113.354	6.829	4.4	-12.2	NO	0.999	NO	bb
6	6	180618M1_21	Standard	10.000	6.10	11546.521	9260.983	15.585	10.0	0.2	NO	0.999	NO	bb
7	7	180618M1_22	Standard	50.000	6.10	56726.449	9731.366	72.865	47.4	-5.2	NO	0.999	NO	bb
8	8	180618M1_23	Standard	100.000	6.10	109279.422	8608.862	158.673	105.5	5.5	NO	0.999	NO	bb
9	9	180618M1_24	Standard	250.000	6.10	264588.750	9409.539	351.490	247.3	-1.1	NO	0.999	NO	bb
10	10	180618M1_25	Standard	500.000	6.10	515990.594	10112.788	637.795	500.5	0.1	NO	0.999	NO	bb

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Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999935
Calibration curve: -3.03911e-005 * x^2 + 0.875012 * x + 0.245196
Response type: Internal Std (Ref 56), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	1.250	6.18	181.965	24392.641	1.119	1.0	-20.1	NO	1.000	NO	bb
2	2	180618M1_17	Standard	2.500	6.18	412.009	24950.152	2.477	2.6	2.0	NO	1.000	NO	bb
3	3	180618M1_18	Standard	5.000	6.18	918.974	27946.889	4.932	5.4	7.2	NO	1.000	NO	bb
4	4	180618M1_19	Standard	10.000	6.18	1678.383	25072.295	10.041	11.2	12.0	NO	1.000	NO	bb
5	5	180618M1_20	Standard	25.000	6.18	3665.615	24763.275	22.204	25.1	0.5	NO	1.000	NO	bb
6	6	180618M1_21	Standard	50.000	6.18	7211.879	25092.768	43.111	49.1	-1.9	NO	1.000	NO	bb
7	7	180618M1_22	Standard	250.000	6.18	34926.664	23955.510	218.697	251.9	0.7	NO	1.000	NO	bb
8	8	180618M1_23	Standard	500.000	6.18	65498.863	22910.551	428.834	498.4	-0.3	NO	1.000	NO	bb
9	9	180618M1_24	Standard	1250.000	6.18	149035.563	21397.271	1044.775	1247.8	-0.2	NO	1.000	NO	bb
10	10	180618M1_25	Standard	2500.000	6.18	258549.953	19402.711	1998.818	2501.4	0.1	NO	1.000	NO	bb

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999635
Calibration curve: -0.000489574 * x^2 + 0.567517 * x + 0.0808065
Response type: Internal Std (Ref 57), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	6.44	259.637	6911.622	0.188	0.2	-24.6	NO	1.000	NO	bb
2	2	180618M1_17	Standard	0.500	6.44	506.501	6570.797	0.385	0.5	7.4	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	6.44	1046.687	7246.747	0.722	1.1	13.1	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	6.44	1654.756	6530.510	1.267	2.1	4.7	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	6.44	3903.724	6819.899	2.862	4.9	-1.6	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	6.44	7121.902	6129.107	5.810	10.2	1.8	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	6.44	33460.586	6217.608	26.908	49.4	-1.3	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	6.44	65544.898	6291.598	52.089	100.3	0.3	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	6.44	163866.406	6371.591	128.591	308.6	23.4	NO	1.000	NO	bbX
10	10	180618M1_25	Standard	500.000	6.44	297208.969	6185.169	240.259			NO	1.000	NO	bbXI

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Compound name: PFODA
Coefficient of Determination: R^2 = 0.999674
Calibration curve: -9.46142e-005 * x^2 + 0.702612 * x + 0.0335735
Response type: Internal Std (Ref 57), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	0.250	6.68	270.170	6911.622	0.195	0.2	-7.8	NO	1.000	NO	bb
2	2	180618M1_17	Standard	0.500	6.68	548.610	6570.797	0.417	0.5	9.3	NO	1.000	NO	bb
3	3	180618M1_18	Standard	1.000	6.68	1112.963	7246.747	0.768	1.0	4.5	NO	1.000	NO	bb
4	4	180618M1_19	Standard	2.000	6.68	2076.540	6530.510	1.590	2.2	10.8	NO	1.000	NO	bb
5	5	180618M1_20	Standard	5.000	6.68	4526.070	6819.899	3.318	4.7	-6.4	NO	1.000	NO	bb
6	6	180618M1_21	Standard	10.000	6.68	9234.501	6129.107	7.533	10.7	6.9	NO	1.000	NO	bb
7	7	180618M1_22	Standard	50.000	6.68	45393.059	6217.608	36.504	52.3	4.5	NO	1.000	NO	bb
8	8	180618M1_23	Standard	100.000	6.68	85572.688	6291.598	68.006	98.0	-2.0	NO	1.000	NO	bb
9	9	180618M1_24	Standard	250.000	6.68	214318.563	6371.591	168.183	247.6	-1.0	NO	1.000	NO	bb
10	10	180618M1_25	Standard	500.000	6.68	406469.281	6185.169	328.584	501.5	0.3	NO	1.000	NO	bb

Compound name: N-MeFOSE
Correlation coefficient: r = 0.999700, r^2 = 0.999401
Calibration curve: 0.853259 * x + 0.526454
Response type: Internal Std (Ref 58), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	1.250	6.36	244.833	24601.184	1.493	1.1	-9.4	NO	0.999	NO	bb
2	2	180618M1_17	Standard	2.500	6.36	359.690	21600.199	2.498	2.3	-7.6	NO	0.999	NO	bb
3	3	180618M1_18	Standard	5.000	6.36	772.703	23444.412	4.944	5.2	3.5	NO	0.999	NO	bb
4	4	180618M1_19	Standard	10.000	6.36	1494.305	21913.348	10.229	11.4	13.7	NO	0.999	NO	bb
5	5	180618M1_20	Standard	25.000	6.36	3835.903	25404.109	22.649	25.9	3.7	NO	0.999	NO	bb
6	6	180618M1_21	Standard	50.000	6.35	6339.689	23801.002	39.954	46.2	-7.6	NO	0.999	NO	bb
7	7	180618M1_22	Standard	250.000	6.35	32152.719	22257.004	216.692	253.3	1.3	NO	0.999	NO	bb
8	8	180618M1_23	Standard	500.000	6.36	61415.652	21364.227	431.204	504.7	0.9	NO	0.999	NO	bb
9	9	180618M1_24	Standard	1250.000	6.35	167807.594	22867.645	1100.732	1289.4	3.2	NO	0.999	NO	bb
10	10	180618M1_25	Standard	2500.000	6.35	327118.313	23426.609	2094.530	2454.1	-1.8	NO	0.999	NO	bb

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Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.998903
Calibration curve: -1.99266e-005 * x^2 + 1.11219 * x + -0.0345678
Response type: Internal Std (Ref 59), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	1.250	6.51	223.578	21016.252	1.596	1.5	17.3	NO	0.999	NO	bb
2	2 180618M1_17	Standard	2.500	6.51	428.473	23620.416	2.721	2.5	-0.9	NO	0.999	NO	bb
3	3 180618M1_18	Standard	5.000	6.51	977.442	26779.564	5.475	5.0	-0.9	NO	0.999	NO	bb
4	4 180618M1_19	Standard	10.000	6.50	1769.505	22424.391	11.836	10.7	6.8	NO	0.999	NO	bb
5	5 180618M1_20	Standard	25.000	6.51	3897.739	24147.875	24.212	21.8	-12.8	NO	0.999	NO	bb
6	6 180618M1_21	Standard	50.000	6.50	7972.354	22543.930	53.045	47.8	-4.5	NO	0.999	NO	bb
7	7 180618M1_22	Standard	250.000	6.51	39503.766	22768.260	260.256	235.0	-6.0	NO	0.999	NO	bb
8	8 180618M1_23	Standard	500.000	6.51	74241.641	20765.176	536.294	486.5	-2.7	NO	0.999	NO	bb
9	9 180618M1_24	Standard	1250.000	6.50	185851.766	19597.818	1422.493	1309.8	4.8	NO	0.999	NO	bb
10	10 180618M1_25	Standard	2500.000	6.51	353495.563	20170.029	2628.868	2473.3	-1.1	NO	0.999	NO	bb

Compound name: 13C3-PFBA
Response Factor: 0.87266
RRF SD: 0.00993786, Relative SD: 1.1388
Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	1.17	8716.508	9905.578	10.999	12.6	0.8	NO		NO	bb
2	2 180618M1_17	Standard	12.500	1.19	8711.915	10125.053	10.755	12.3	-1.4	NO		NO	bb
3	3 180618M1_18	Standard	12.500	1.23	9786.747	11346.817	10.781	12.4	-1.2	NO		NO	bb
4	4 180618M1_19	Standard	12.500	1.19	8935.389	10193.986	10.957	12.6	0.4	NO		NO	bb
5	5 180618M1_20	Standard	12.500	1.19	8730.246	10071.345	10.836	12.4	-0.7	NO		NO	bb
6	6 180618M1_21	Standard	12.500	1.19	8690.488	9983.595	10.881	12.5	-0.3	NO		NO	bb
7	7 180618M1_22	Standard	12.500	1.19	8568.303	9850.669	10.873	12.5	-0.3	NO		NO	bb
8	8 180618M1_23	Standard	12.500	1.19	8473.662	9469.133	11.186	12.8	2.5	NO		NO	bb
9	9 180618M1_24	Standard	12.500	1.19	8211.710	9451.323	10.861	12.4	-0.4	NO		NO	bb
10	10 180618M1_25	Standard	12.500	1.19	8186.535	9342.023	10.954	12.6	0.4	NO		NO	bb

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Compound name: 13C3-PFPeA
Response Factor: 0.949015
RRF SD: 0.016795, Relative SD: 1.76973
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	2.20	11023.699	11966.989	11.515	12.1	-2.9	NO		NO	bb
2	2 180618M1_17	Standard	12.500	2.20	11080.870	11940.620	11.600	12.2	-2.2	NO		NO	bb
3	3 180618M1_18	Standard	12.500	2.21	12953.595	13441.776	12.046	12.7	1.5	NO		NO	bb
4	4 180618M1_19	Standard	12.500	2.20	11397.977	12288.626	11.594	12.2	-2.3	NO		NO	bb
5	5 180618M1_20	Standard	12.500	2.20	11279.604	11748.368	12.001	12.6	1.2	NO		NO	bb
6	6 180618M1_21	Standard	12.500	2.20	11253.922	11841.306	11.880	12.5	0.1	NO		NO	bb
7	7 180618M1_22	Standard	12.500	2.20	10737.064	11139.370	12.049	12.7	1.6	NO		NO	bb
8	8 180618M1_23	Standard	12.500	2.20	10448.953	10892.674	11.991	12.6	1.1	NO		NO	bb
9	9 180618M1_24	Standard	12.500	2.20	10173.479	10575.909	12.024	12.7	1.4	NO		NO	bb
10	10 180618M1_25	Standard	12.500	2.20	9660.657	10124.584	11.927	12.6	0.5	NO		NO	bb

Compound name: 13C3-PFBS
Response Factor: 0.106629
RRF SD: 0.00259629, Relative SD: 2.43488
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	2.50	1225.755	11966.989	1.280	12.0	-3.9	NO		NO	bb
2	2 180618M1_17	Standard	12.500	2.50	1275.788	11940.620	1.336	12.5	0.2	NO		NO	bb
3	3 180618M1_18	Standard	12.500	2.50	1480.544	13441.776	1.377	12.9	3.3	NO		NO	bb
4	4 180618M1_19	Standard	12.500	2.50	1309.982	12288.626	1.333	12.5	-0.0	NO		NO	bb
5	5 180618M1_20	Standard	12.500	2.50	1276.885	11748.368	1.359	12.7	1.9	NO		NO	bb
6	6 180618M1_21	Standard	12.500	2.50	1286.687	11841.306	1.358	12.7	1.9	NO		NO	bb
7	7 180618M1_22	Standard	12.500	2.50	1214.707	11139.370	1.363	12.8	2.3	NO		NO	bb
8	8 180618M1_23	Standard	12.500	2.50	1131.102	10892.674	1.298	12.2	-2.6	NO		NO	bb
9	9 180618M1_24	Standard	12.500	2.50	1096.793	10575.909	1.296	12.2	-2.7	NO		NO	bb
10	10 180618M1_25	Standard	12.500	2.50	1076.531	10124.584	1.329	12.5	-0.3	NO		NO	bb

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Compound name: 13C2-4:2 FTS
Response Factor: 0.238445
RRF SD: 0.0308399, Relative SD: 12.9338
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	2.93	2735.290	11966.989	2.857	12.0	-4.1	NO		NO	bb
2	2	180618M1_17	Standard	12.500	2.93	2607.418	11940.620	2.730	11.4	-8.4	NO		NO	bb
3	3	180618M1_18	Standard	12.500	2.91	3090.385	13441.776	2.874	12.1	-3.6	NO		NO	bb
4	4	180618M1_19	Standard	12.500	2.94	2633.848	12288.626	2.679	11.2	-10.1	NO		NO	bb
5	5	180618M1_20	Standard	12.500	2.94	2769.044	11748.368	2.946	12.4	-1.2	NO		NO	bb
6	6	180618M1_21	Standard	12.500	2.94	2593.616	11841.306	2.738	11.5	-8.1	NO		NO	bb
7	7	180618M1_22	Standard	12.500	2.94	2820.621	11139.370	3.165	13.3	6.2	NO		NO	bb
8	8	180618M1_23	Standard	12.500	2.94	3359.806	10892.674	3.856	16.2	29.4	NO		NO	bb
9	9	180618M1_24	Standard	12.500	2.94	4280.528	10575.909	5.059	21.2	69.7	NO		NO	bbX
10	10	180618M1_25	Standard	12.500	2.94	5719.270	10124.584	7.061	29.6	136.9	NO		NO	bbX

Compound name: 13C2-PFHxA
Response Factor: 0.748148
RRF SD: 0.0228001, Relative SD: 3.04754
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	5.000	3.02	3571.657	11966.989	3.731	5.0	-0.3	NO		NO	bb
2	2	180618M1_17	Standard	5.000	3.02	3424.946	11940.620	3.585	4.8	-4.2	NO		NO	bb
3	3	180618M1_18	Standard	5.000	3.01	3969.060	13441.776	3.691	4.9	-1.3	NO		NO	bb
4	4	180618M1_19	Standard	5.000	3.02	3531.760	12288.626	3.593	4.8	-4.0	NO		NO	bb
5	5	180618M1_20	Standard	5.000	3.02	3420.680	11748.368	3.640	4.9	-2.7	NO		NO	bb
6	6	180618M1_21	Standard	5.000	3.02	3571.239	11841.306	3.770	5.0	0.8	NO		NO	bb
7	7	180618M1_22	Standard	5.000	3.02	3437.732	11139.370	3.858	5.2	3.1	NO		NO	bb
8	8	180618M1_23	Standard	5.000	3.02	3291.445	10892.674	3.777	5.0	1.0	NO		NO	bb
9	9	180618M1_24	Standard	5.000	3.02	3254.890	10575.909	3.847	5.1	2.8	NO		NO	bb
10	10	180618M1_25	Standard	5.000	3.02	3172.246	10124.584	3.917	5.2	4.7	NO		NO	bb

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Compound name: 13C4-PFHpA
Response Factor: 0.75764
RRF SD: 0.0175662, Relative SD: 2.31855
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	3.64	9083.725	11966.989	9.488	12.5	0.2	NO		NO	bb
2	2 180618M1_17	Standard	12.500	3.64	8852.083	11940.620	9.267	12.2	-2.2	NO		NO	bb
3	3 180618M1_18	Standard	12.500	3.63	10310.412	13441.776	9.588	12.7	1.2	NO		NO	bb
4	4 180618M1_19	Standard	12.500	3.64	8912.366	12288.626	9.066	12.0	-4.3	NO		NO	bb
5	5 180618M1_20	Standard	12.500	3.64	8889.713	11748.368	9.458	12.5	-0.1	NO		NO	bb
6	6 180618M1_21	Standard	12.500	3.64	9332.727	11841.306	9.852	13.0	4.0	NO		NO	bb
7	7 180618M1_22	Standard	12.500	3.64	8475.460	11139.370	9.511	12.6	0.4	NO		NO	bb
8	8 180618M1_23	Standard	12.500	3.64	8303.100	10892.674	9.528	12.6	0.6	NO		NO	bb
9	9 180618M1_24	Standard	12.500	3.64	8166.386	10575.909	9.652	12.7	1.9	NO		NO	bb
10	10 180618M1_25	Standard	12.500	3.64	7528.476	10124.584	9.295	12.3	-1.9	NO		NO	bb

Compound name: 18O2-PFHxS
Response Factor: 0.471221
RRF SD: 0.0256285, Relative SD: 5.43874
Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	3.80	1131.019	2393.015	5.908	12.5	0.3	NO		NO	bb
2	2 180618M1_17	Standard	12.500	3.80	1227.726	2548.839	6.021	12.8	2.2	NO		NO	bb
3	3 180618M1_18	Standard	12.500	3.79	1311.425	2808.301	5.837	12.4	-0.9	NO		NO	bb
4	4 180618M1_19	Standard	12.500	3.80	1177.330	2519.055	5.842	12.4	-0.8	NO		NO	bb
5	5 180618M1_20	Standard	12.500	3.80	1272.976	2439.084	6.524	13.8	10.8	NO		NO	bb
6	6 180618M1_21	Standard	12.500	3.80	1210.839	2472.156	6.122	13.0	3.9	NO		NO	bb
7	7 180618M1_22	Standard	12.500	3.80	1047.875	2257.956	5.801	12.3	-1.5	NO		NO	bb
8	8 180618M1_23	Standard	12.500	3.80	1063.937	2335.984	5.693	12.1	-3.3	NO		NO	bb
9	9 180618M1_24	Standard	12.500	3.80	1010.677	2142.970	5.895	12.5	0.1	NO		NO	bb
10	10 180618M1_25	Standard	12.500	3.80	886.452	2107.146	5.259	11.2	-10.7	NO		NO	bb

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Compound name: 13C2-6:2 FTS
Response Factor: 0.286159
RRF SD: 0.0342834, Relative SD: 11.9805
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	4.12	2724.339	9644.452	3.531	12.3	-1.3	NO		NO	bb
2	2	180618M1_17	Standard	12.500	4.11	2437.743	10096.195	3.018	10.5	-15.6	NO		NO	bb
3	3	180618M1_18	Standard	12.500	4.11	3121.837	11479.362	3.399	11.9	-5.0	NO		NO	bb
4	4	180618M1_19	Standard	12.500	4.12	2621.373	10485.757	3.125	10.9	-12.6	NO		NO	bb
5	5	180618M1_20	Standard	12.500	4.12	2978.058	10151.836	3.667	12.8	2.5	NO		NO	bb
6	6	180618M1_21	Standard	12.500	4.12	2797.474	9801.410	3.568	12.5	-0.3	NO		NO	bb
7	7	180618M1_22	Standard	12.500	4.12	3129.390	9831.203	3.979	13.9	11.2	NO		NO	bb
8	8	180618M1_23	Standard	12.500	4.12	3155.912	9112.714	4.329	15.1	21.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	4.12	4682.597	8713.689	6.717	23.5	87.8	NO		NO	bbX
10	10	180618M1_25	Standard	12.500	4.12	6309.843	8350.115	9.446	33.0	164.1	NO		NO	bbX

Compound name: 13C2-PFOA
Response Factor: 1.35163
RRF SD: 0.0720207, Relative SD: 5.32842
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	4.18	13759.683	9644.452	17.834	13.2	5.6	NO		NO	bb
2	2	180618M1_17	Standard	12.500	4.18	12929.028	10096.195	16.007	11.8	-5.3	NO		NO	bb
3	3	180618M1_18	Standard	12.500	4.17	14834.367	11479.362	16.153	12.0	-4.4	NO		NO	bb
4	4	180618M1_19	Standard	12.500	4.17	13690.397	10485.757	16.320	12.1	-3.4	NO		NO	bb
5	5	180618M1_20	Standard	12.500	4.17	13315.114	10151.836	16.395	12.1	-3.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	4.17	13669.474	9801.410	17.433	12.9	3.2	NO		NO	bb
7	7	180618M1_22	Standard	12.500	4.17	12395.510	9831.203	15.760	11.7	-6.7	NO		NO	bb
8	8	180618M1_23	Standard	12.500	4.17	12288.034	9112.714	16.856	12.5	-0.2	NO		NO	bb
9	9	180618M1_24	Standard	12.500	4.17	12541.596	8713.689	17.991	13.3	6.5	NO		NO	bb
10	10	180618M1_25	Standard	12.500	4.18	12160.707	8350.115	18.204	13.5	7.7	NO		NO	bb

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Compound name: 13C5-PFNA
Response Factor: 0.931003
RRF SD: 0.0401365, Relative SD: 4.31111
Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	4.62	10069.999	10387.255	12.118	13.0	4.1	NO		NO	bb
2	2 180618M1_17	Standard	12.500	4.62	9891.565	11149.711	11.089	11.9	-4.7	NO		NO	bb
3	3 180618M1_18	Standard	12.500	4.61	12183.063	13474.918	11.302	12.1	-2.9	NO		NO	bb
4	4 180618M1_19	Standard	12.500	4.62	9863.224	10788.134	11.428	12.3	-1.8	NO		NO	bb
5	5 180618M1_20	Standard	12.500	4.62	10610.607	11994.751	11.058	11.9	-5.0	NO		NO	bb
6	6 180618M1_21	Standard	12.500	4.62	10321.920	11013.181	11.715	12.6	0.7	NO		NO	bb
7	7 180618M1_22	Standard	12.500	4.62	9952.715	10593.517	11.744	12.6	0.9	NO		NO	bb
8	8 180618M1_23	Standard	12.500	4.62	9555.276	10177.789	11.735	12.6	0.8	NO		NO	bb
9	9 180618M1_24	Standard	12.500	4.62	9276.970	10118.491	11.460	12.3	-1.5	NO		NO	bb
10	10 180618M1_25	Standard	12.500	4.62	9328.427	9163.461	12.725	13.7	9.3	NO		NO	bb

Compound name: 13C8-PFOSA
Response Factor: 0.334936
RRF SD: 0.0198095, Relative SD: 5.9144
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	4.69	4302.178	11696.773	4.598	13.7	9.8	NO		NO	bb
2	2 180618M1_17	Standard	12.500	4.68	4467.883	13053.816	4.278	12.8	2.2	NO		NO	bb
3	3 180618M1_18	Standard	12.500	4.68	5241.728	15731.198	4.165	12.4	-0.5	NO		NO	bb
4	4 180618M1_19	Standard	12.500	4.68	4531.604	13537.935	4.184	12.5	-0.1	NO		NO	bb
5	5 180618M1_20	Standard	12.500	4.68	4389.862	12714.653	4.316	12.9	3.1	NO		NO	bb
6	6 180618M1_21	Standard	12.500	4.68	4289.006	12664.945	4.233	12.6	1.1	NO		NO	bb
7	7 180618M1_22	Standard	12.500	4.68	4029.681	12588.694	4.001	11.9	-4.4	NO		NO	bb
8	8 180618M1_23	Standard	12.500	4.68	4023.996	11338.703	4.436	13.2	6.0	NO		NO	bb
9	9 180618M1_24	Standard	12.500	4.68	3703.427	12022.007	3.851	11.5	-8.0	NO		NO	bb
10	10 180618M1_25	Standard	12.500	4.68	3288.757	10804.449	3.805	11.4	-9.1	NO		NO	bb

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Compound name: 13C8-PFOS
Response Factor: 1.00799
RRF SD: 0.0684271, Relative SD: 6.78848
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	4.71	2433.912	2534.063	12.006	11.9	-4.7	NO		NO	bb
2	2	180618M1_17	Standard	12.500	4.71	2619.988	2377.036	13.778	13.7	9.3	NO		NO	bb
3	3	180618M1_18	Standard	12.500	4.70	2950.088	2856.722	12.909	12.8	2.4	NO		NO	bb
4	4	180618M1_19	Standard	12.500	4.71	2674.811	2512.954	13.305	13.2	5.6	NO		NO	bb
5	5	180618M1_20	Standard	12.500	4.71	2603.185	2406.409	13.522	13.4	7.3	NO		NO	bb
6	6	180618M1_21	Standard	12.500	4.71	2514.681	2622.385	11.987	11.9	-4.9	NO		NO	bb
7	7	180618M1_22	Standard	12.500	4.71	2475.860	2321.174	13.333	13.2	5.8	NO		NO	bb
8	8	180618M1_23	Standard	12.500	4.71	2354.053	2514.443	11.703	11.6	-7.1	NO		NO	bb
9	9	180618M1_24	Standard	12.500	4.71	2198.287	2401.563	11.442	11.4	-9.2	NO		NO	bb
10	10	180618M1_25	Standard	12.500	4.71	2107.670	2192.754	12.015	11.9	-4.6	NO		NO	bb

Compound name: 13C2-PFDA
Response Factor: 1.2401
RRF SD: 0.042771, Relative SD: 3.44899
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	5.01	13539.500	11293.800	14.986	12.1	-3.3	NO		NO	bb
2	2	180618M1_17	Standard	12.500	5.01	13902.350	10540.102	16.487	13.3	6.4	NO		NO	bb
3	3	180618M1_18	Standard	12.500	5.00	17142.135	13612.456	15.741	12.7	1.5	NO		NO	bb
4	4	180618M1_19	Standard	12.500	5.01	14249.915	11837.340	15.048	12.1	-2.9	NO		NO	bb
5	5	180618M1_20	Standard	12.500	5.01	13505.971	11007.143	15.338	12.4	-1.1	NO		NO	bb
6	6	180618M1_21	Standard	12.500	5.01	13235.743	11014.816	15.020	12.1	-3.1	NO		NO	bb
7	7	180618M1_22	Standard	12.500	5.01	12766.311	9757.196	16.355	13.2	5.5	NO		NO	bb
8	8	180618M1_23	Standard	12.500	5.01	12714.210	10298.703	15.432	12.4	-0.4	NO		NO	bb
9	9	180618M1_24	Standard	12.500	5.01	12351.765	10098.937	15.288	12.3	-1.4	NO		NO	bb
10	10	180618M1_25	Standard	12.500	5.01	12039.578	9824.887	15.318	12.4	-1.2	NO		NO	bb

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Compound name: 13C2-8:2 FTS
Response Factor: 0.191299
RRF SD: 0.0343367, Relative SD: 17.9492
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	4.98	2100.762	11966.989	2.194	11.5	-8.2	NO		NO	bb
2	2	180618M1_17	Standard	12.500	4.98	1926.179	11940.620	2.016	10.5	-15.7	NO		NO	bb
3	3	180618M1_18	Standard	12.500	4.97	2420.365	13441.776	2.251	11.8	-5.9	NO		NO	bb
4	4	180618M1_19	Standard	12.500	4.97	2126.968	12288.626	2.164	11.3	-9.5	NO		NO	bb
5	5	180618M1_20	Standard	12.500	4.98	2213.172	11748.368	2.355	12.3	-1.5	NO		NO	bb
6	6	180618M1_21	Standard	12.500	4.97	2138.463	11841.306	2.257	11.8	-5.6	NO		NO	bb
7	7	180618M1_22	Standard	12.500	4.97	2225.470	11139.370	2.497	13.1	4.4	NO		NO	bb
8	8	180618M1_23	Standard	12.500	4.98	2958.747	10892.674	3.395	17.7	42.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	4.97	3913.607	10575.909	4.626	24.2	93.4	NO		NO	bbX
10	10	180618M1_25	Standard	12.500	4.97	5614.075	10124.584	6.931	36.2	189.9	NO		NO	bbX

Compound name: d3-N-MeFOSAA
Response Factor: 0.26149
RRF SD: 0.0135904, Relative SD: 5.1973
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	5.16	3114.652	11696.773	3.329	12.7	1.8	NO		NO	bb
2	2	180618M1_17	Standard	12.500	5.16	3289.351	13053.816	3.150	12.0	-3.6	NO		NO	bb
3	3	180618M1_18	Standard	12.500	5.15	3765.118	15731.198	2.992	11.4	-8.5	NO		NO	bb
4	4	180618M1_19	Standard	12.500	5.16	3296.276	13537.935	3.044	11.6	-6.9	NO		NO	bb
5	5	180618M1_20	Standard	12.500	5.16	3590.881	12714.653	3.530	13.5	8.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	5.16	3338.449	12664.945	3.295	12.6	0.8	NO		NO	bb
7	7	180618M1_22	Standard	12.500	5.16	3311.836	12588.694	3.289	12.6	0.6	NO		NO	bb
8	8	180618M1_23	Standard	12.500	5.15	3121.811	11338.703	3.442	13.2	5.3	NO		NO	bb
9	9	180618M1_24	Standard	12.500	5.16	3107.433	12022.007	3.231	12.4	-1.2	NO		NO	bb
10	10	180618M1_25	Standard	12.500	5.16	2926.994	10804.449	3.386	13.0	3.6	NO		NO	bb

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Compound name: d5-N-EtFOSAA
Response Factor: 0.317191
RRF SD: 0.0253859, Relative SD: 8.00337
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	5.32	3965.882	11696.773	4.238	13.4	6.9	NO		NO	bb
2	2 180618M1_17	Standard	12.500	5.32	4263.677	13053.816	4.083	12.9	3.0	NO		NO	bb
3	3 180618M1_18	Standard	12.500	5.31	4446.426	15731.198	3.533	11.1	-10.9	NO		NO	bb
4	4 180618M1_19	Standard	12.500	5.32	4122.811	13537.935	3.807	12.0	-4.0	NO		NO	bb
5	5 180618M1_20	Standard	12.500	5.32	3962.204	12714.653	3.895	12.3	-1.8	NO		NO	bb
6	6 180618M1_21	Standard	12.500	5.32	4687.595	12664.945	4.627	14.6	16.7	NO		NO	bb
7	7 180618M1_22	Standard	12.500	5.32	3804.364	12588.694	3.778	11.9	-4.7	NO		NO	bb
8	8 180618M1_23	Standard	12.500	5.32	3780.802	11338.703	4.168	13.1	5.1	NO		NO	bb
9	9 180618M1_24	Standard	12.500	5.32	3656.560	12022.007	3.802	12.0	-4.1	NO		NO	bb
10	10 180618M1_25	Standard	12.500	5.32	3214.178	10804.449	3.719	11.7	-6.2	NO		NO	bb

Compound name: 13C2-PFUdA
Response Factor: 1.02476
RRF SD: 0.0492341, Relative SD: 4.80445
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	5.34	12471.447	11696.773	13.328	13.0	4.0	NO		NO	bb
2	2 180618M1_17	Standard	12.500	5.34	12652.560	13053.816	12.116	11.8	-5.4	NO		NO	bb
3	3 180618M1_18	Standard	12.500	5.33	15515.589	15731.198	12.329	12.0	-3.8	NO		NO	bb
4	4 180618M1_19	Standard	12.500	5.34	13152.667	13537.935	12.144	11.9	-5.2	NO		NO	bb
5	5 180618M1_20	Standard	12.500	5.34	13873.682	12714.653	13.639	13.3	6.5	NO		NO	bb
6	6 180618M1_21	Standard	12.500	5.34	12599.091	12664.945	12.435	12.1	-2.9	NO		NO	bb
7	7 180618M1_22	Standard	12.500	5.34	12615.325	12588.694	12.526	12.2	-2.2	NO		NO	bb
8	8 180618M1_23	Standard	12.500	5.34	11978.490	11338.703	13.205	12.9	3.1	NO		NO	bb
9	9 180618M1_24	Standard	12.500	5.34	12139.823	12022.007	12.623	12.3	-1.5	NO		NO	bb
10	10 180618M1_25	Standard	12.500	5.34	11884.740	10804.449	13.750	13.4	7.3	NO		NO	bb

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Compound name: 13C2-PFDoA
Response Factor: 1.21838
RRF SD: 0.0594308, Relative SD: 4.87785
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	5.63	13582.799	11293.800	15.033	12.3	-1.3	NO		NO	bb
2	2 180618M1_17	Standard	12.500	5.63	13701.021	10540.102	16.249	13.3	6.7	NO		NO	bb
3	3 180618M1_18	Standard	12.500	5.62	16958.729	13612.456	15.573	12.8	2.3	NO		NO	bb
4	4 180618M1_19	Standard	12.500	5.63	13809.396	11837.340	14.582	12.0	-4.3	NO		NO	bb
5	5 180618M1_20	Standard	12.500	5.63	13759.669	11007.143	15.626	12.8	2.6	NO		NO	bb
6	6 180618M1_21	Standard	12.500	5.63	13225.257	11014.816	15.008	12.3	-1.5	NO		NO	bb
7	7 180618M1_22	Standard	12.500	5.63	12829.111	9757.196	16.435	13.5	7.9	NO		NO	bb
8	8 180618M1_23	Standard	12.500	5.63	12190.338	10298.703	14.796	12.1	-2.8	NO		NO	bb
9	9 180618M1_24	Standard	12.500	5.63	12088.551	10098.937	14.963	12.3	-1.8	NO		NO	bb
10	10 180618M1_25	Standard	12.500	5.63	11029.087	9824.887	14.032	11.5	-7.9	NO		NO	bb

Compound name: d3-N-MeFOSA
Response Factor: 0.123416
RRF SD: 0.00660224, Relative SD: 5.3496
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	150.000	5.79	18442.639	11696.773	19.709	159.7	6.5	NO		NO	bb
2	2 180618M1_17	Standard	150.000	5.79	18515.676	13053.816	17.730	143.7	-4.2	NO		NO	bb
3	3 180618M1_18	Standard	150.000	5.78	21996.352	15731.198	17.478	141.6	-5.6	NO		NO	MM
4	4 180618M1_19	Standard	150.000	5.79	18505.596	13537.935	17.087	138.4	-7.7	NO		NO	bb
5	5 180618M1_20	Standard	150.000	5.79	18682.092	12714.653	18.367	148.8	-0.8	NO		NO	bb
6	6 180618M1_21	Standard	150.000	5.79	18763.863	12664.945	18.519	150.1	0.0	NO		NO	bb
7	7 180618M1_22	Standard	150.000	5.79	18305.086	12588.694	18.176	147.3	-1.8	NO		NO	bb
8	8 180618M1_23	Standard	150.000	5.79	17769.139	11338.703	19.589	158.7	5.8	NO		NO	bb
9	9 180618M1_24	Standard	150.000	5.79	17709.334	12022.007	18.413	149.2	-0.5	NO		NO	bb
10	10 180618M1_25	Standard	150.000	5.79	17334.152	10804.449	20.054	162.5	8.3	NO		NO	bb

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Compound name: 13C2-PFTeDA
Response Factor: 0.818893
RRF SD: 0.0741816, Relative SD: 9.05876
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	6.10	11212.317	11696.773	11.982	14.6	17.1	NO		NO	bb
2	2	180618M1_17	Standard	12.500	6.10	10947.410	13053.816	10.483	12.8	2.4	NO		NO	bb
3	3	180618M1_18	Standard	12.500	6.09	12466.849	15731.198	9.906	12.1	-3.2	NO		NO	bb
4	4	180618M1_19	Standard	12.500	6.10	11123.244	13537.935	10.270	12.5	0.3	NO		NO	bb
5	5	180618M1_20	Standard	12.500	6.10	10113.354	12714.653	9.943	12.1	-2.9	NO		NO	bb
6	6	180618M1_21	Standard	12.500	6.10	9260.983	12664.945	9.140	11.2	-10.7	NO		NO	bb
7	7	180618M1_22	Standard	12.500	6.10	9731.366	12588.694	9.663	11.8	-5.6	NO		NO	bb
8	8	180618M1_23	Standard	12.500	6.10	8608.862	11338.703	9.491	11.6	-7.3	NO		NO	bb
9	9	180618M1_24	Standard	12.500	6.10	9409.539	12022.007	9.784	11.9	-4.4	NO		NO	bb
10	10	180618M1_25	Standard	12.500	6.10	10112.788	10804.449	11.700	14.3	14.3	NO		NO	bb

Compound name: d5-N-ETFOSA
Response Factor: 0.158778
RRF SD: 0.00880533, Relative SD: 5.5457
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	150.000	6.20	24392.641	11696.773	26.068	164.2	9.5	NO		NO	bb
2	2	180618M1_17	Standard	150.000	6.20	24950.152	13053.816	23.892	150.5	0.3	NO		NO	bb
3	3	180618M1_18	Standard	150.000	6.20	27946.889	15731.198	22.207	139.9	-6.8	NO		NO	bb
4	4	180618M1_19	Standard	150.000	6.20	25072.295	13537.935	23.150	145.8	-2.8	NO		NO	bb
5	5	180618M1_20	Standard	150.000	6.20	24763.275	12714.653	24.345	153.3	2.2	NO		NO	bb
6	6	180618M1_21	Standard	150.000	6.20	25092.768	12664.945	24.766	156.0	4.0	NO		NO	bb
7	7	180618M1_22	Standard	150.000	6.20	23955.510	12588.694	23.787	149.8	-0.1	NO		NO	bb
8	8	180618M1_23	Standard	150.000	6.20	22910.551	11338.703	25.257	159.1	6.0	NO		NO	bb
9	9	180618M1_24	Standard	150.000	6.20	21397.271	12022.007	22.248	140.1	-6.6	NO		NO	bb
10	10	180618M1_25	Standard	150.000	6.20	19402.711	10804.449	22.448	141.4	-5.7	NO		NO	bb

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Compound name: 13C2-PFHxDA
Response Factor: 1.30222
RRF SD: 0.107206, Relative SD: 8.23256
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	5.000	6.44	6911.622	11696.773	7.386	5.7	13.4	NO		NO	bb
2	2 180618M1_17	Standard	5.000	6.44	6570.797	13053.816	6.292	4.8	-3.4	NO		NO	bb
3	3 180618M1_18	Standard	5.000	6.44	7246.747	15731.198	5.758	4.4	-11.6	NO		NO	bb
4	4 180618M1_19	Standard	5.000	6.44	6530.510	13537.935	6.030	4.6	-7.4	NO		NO	bb
5	5 180618M1_20	Standard	5.000	6.44	6819.899	12714.653	6.705	5.1	3.0	NO		NO	bb
6	6 180618M1_21	Standard	5.000	6.44	6129.107	12664.945	6.049	4.6	-7.1	NO		NO	bb
7	7 180618M1_22	Standard	5.000	6.44	6217.608	12588.694	6.174	4.7	-5.2	NO		NO	bb
8	8 180618M1_23	Standard	5.000	6.44	6291.598	11338.703	6.936	5.3	6.5	NO		NO	bb
9	9 180618M1_24	Standard	5.000	6.44	6371.591	12022.007	6.625	5.1	1.7	NO		NO	bb
10	10 180618M1_25	Standard	5.000	6.44	6185.169	10804.449	7.156	5.5	9.9	NO		NO	bb

Compound name: d7-N-MeFOSE
Response Factor: 0.15389
RRF SD: 0.0179958, Relative SD: 11.6939
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	150.000	6.35	24601.184	11696.773	26.291	170.8	13.9	NO		NO	bb
2	2 180618M1_17	Standard	150.000	6.35	21600.199	13053.816	20.684	134.4	-10.4	NO		NO	bb
3	3 180618M1_18	Standard	150.000	6.35	23444.412	15731.198	18.629	121.1	-19.3	NO		NO	bb
4	4 180618M1_19	Standard	150.000	6.35	21913.348	13537.935	20.233	131.5	-12.3	NO		NO	MM
5	5 180618M1_20	Standard	150.000	6.35	25404.109	12714.653	24.975	162.3	8.2	NO		NO	bb
6	6 180618M1_21	Standard	150.000	6.35	23801.002	12664.945	23.491	152.6	1.8	NO		NO	bb
7	7 180618M1_22	Standard	150.000	6.35	22257.004	12588.694	22.100	143.6	-4.3	NO		NO	bb
8	8 180618M1_23	Standard	150.000	6.35	21364.227	11338.703	23.552	153.0	2.0	NO		NO	MM
9	9 180618M1_24	Standard	150.000	6.35	22867.645	12022.007	23.777	154.5	3.0	NO		NO	bb
10	10 180618M1_25	Standard	150.000	6.35	23426.609	10804.449	27.103	176.1	17.4	NO		NO	MM

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Compound name: d9-N-EtFOSE
Response Factor: 0.148176
RRF SD: 0.00735356, Relative SD: 4.96271
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	150.000	6.49	21016.252	11696.773	22.459	151.6	1.0	NO		NO	bb
2	2 180618M1_17	Standard	150.000	6.49	23620.416	13053.816	22.618	152.6	1.8	NO		NO	bb
3	3 180618M1_18	Standard	150.000	6.49	26779.564	15731.198	21.279	143.6	-4.3	NO		NO	bb
4	4 180618M1_19	Standard	150.000	6.49	22424.391	13537.935	20.705	139.7	-6.8	NO		NO	bb
5	5 180618M1_20	Standard	150.000	6.49	24147.875	12714.653	23.740	160.2	6.8	NO		NO	bb
6	6 180618M1_21	Standard	150.000	6.49	22543.930	12664.945	22.250	150.2	0.1	NO		NO	bb
7	7 180618M1_22	Standard	150.000	6.49	22768.260	12588.694	22.608	152.6	1.7	NO		NO	bb
8	8 180618M1_23	Standard	150.000	6.49	20765.176	11338.703	22.892	154.5	3.0	NO		NO	bb
9	9 180618M1_24	Standard	150.000	6.49	19597.818	12022.007	20.377	137.5	-8.3	NO		NO	bb
10	10 180618M1_25	Standard	150.000	6.49	20170.029	10804.449	23.335	157.5	5.0	NO		NO	bb

Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	1.18	9905.578	9905.578	12.500	12.5	0.0	NO		NO	bb
2	2 180618M1_17	Standard	12.500	1.19	10125.053	10125.053	12.500	12.5	0.0	NO		NO	bb
3	3 180618M1_18	Standard	12.500	1.23	11346.817	11346.817	12.500	12.5	0.0	NO		NO	bb
4	4 180618M1_19	Standard	12.500	1.18	10193.986	10193.986	12.500	12.5	0.0	NO		NO	bb
5	5 180618M1_20	Standard	12.500	1.19	10071.345	10071.345	12.500	12.5	0.0	NO		NO	bb
6	6 180618M1_21	Standard	12.500	1.19	9983.595	9983.595	12.500	12.5	0.0	NO		NO	bb
7	7 180618M1_22	Standard	12.500	1.19	9850.669	9850.669	12.500	12.5	0.0	NO		NO	bb
8	8 180618M1_23	Standard	12.500	1.19	9469.133	9469.133	12.500	12.5	0.0	NO		NO	bb
9	9 180618M1_24	Standard	12.500	1.19	9451.323	9451.323	12.500	12.5	0.0	NO		NO	bb
10	10 180618M1_25	Standard	12.500	1.18	9342.023	9342.023	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 7.40149e-017, Relative SD: 7.40149e-015
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	3.02	11966.989	11966.989	12.500	12.5	0.0	NO		NO	bb
2	2	180618M1_17	Standard	12.500	3.02	11940.620	11940.620	12.500	12.5	0.0	NO		NO	bb
3	3	180618M1_18	Standard	12.500	3.01	13441.776	13441.776	12.500	12.5	0.0	NO		NO	bb
4	4	180618M1_19	Standard	12.500	3.02	12288.626	12288.626	12.500	12.5	0.0	NO		NO	bb
5	5	180618M1_20	Standard	12.500	3.02	11748.368	11748.368	12.500	12.5	0.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	3.02	11841.306	11841.306	12.500	12.5	0.0	NO		NO	bb
7	7	180618M1_22	Standard	12.500	3.02	11139.370	11139.370	12.500	12.5	0.0	NO		NO	bb
8	8	180618M1_23	Standard	12.500	3.02	10892.674	10892.674	12.500	12.5	0.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	3.02	10575.909	10575.909	12.500	12.5	0.0	NO		NO	bb
10	10	180618M1_25	Standard	12.500	3.02	10124.584	10124.584	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	3.80	2393.015	2393.015	12.500	12.5	0.0	NO		NO	bb
2	2	180618M1_17	Standard	12.500	3.79	2548.839	2548.839	12.500	12.5	0.0	NO		NO	bb
3	3	180618M1_18	Standard	12.500	3.79	2808.301	2808.301	12.500	12.5	0.0	NO		NO	bb
4	4	180618M1_19	Standard	12.500	3.80	2519.055	2519.055	12.500	12.5	0.0	NO		NO	bb
5	5	180618M1_20	Standard	12.500	3.79	2439.084	2439.084	12.500	12.5	0.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	3.79	2472.156	2472.156	12.500	12.5	0.0	NO		NO	bb
7	7	180618M1_22	Standard	12.500	3.79	2257.956	2257.956	12.500	12.5	0.0	NO		NO	bb
8	8	180618M1_23	Standard	12.500	3.80	2335.984	2335.984	12.500	12.5	0.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	3.80	2142.970	2142.970	12.500	12.5	0.0	NO		NO	bb
10	10	180618M1_25	Standard	12.500	3.80	2107.146	2107.146	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	4.17	9644.452	9644.452	12.500	12.5	0.0	NO		NO	bb
2	2	180618M1_17	Standard	12.500	4.17	10096.195	10096.195	12.500	12.5	0.0	NO		NO	bb
3	3	180618M1_18	Standard	12.500	4.17	11479.362	11479.362	12.500	12.5	0.0	NO		NO	bb
4	4	180618M1_19	Standard	12.500	4.17	10485.757	10485.757	12.500	12.5	0.0	NO		NO	bb
5	5	180618M1_20	Standard	12.500	4.17	10151.836	10151.836	12.500	12.5	0.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	4.17	9801.410	9801.410	12.500	12.5	0.0	NO		NO	bb
7	7	180618M1_22	Standard	12.500	4.17	9831.203	9831.203	12.500	12.5	0.0	NO		NO	bb
8	8	180618M1_23	Standard	12.500	4.17	9112.714	9112.714	12.500	12.5	0.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	4.17	8713.689	8713.689	12.500	12.5	0.0	NO		NO	bb
10	10	180618M1_25	Standard	12.500	4.17	8350.115	8350.115	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	4.62	10387.255	10387.255	12.500	12.5	0.0	NO		NO	bb
2	2	180618M1_17	Standard	12.500	4.62	11149.711	11149.711	12.500	12.5	0.0	NO		NO	bb
3	3	180618M1_18	Standard	12.500	4.61	13474.918	13474.918	12.500	12.5	0.0	NO		NO	bb
4	4	180618M1_19	Standard	12.500	4.62	10788.134	10788.134	12.500	12.5	0.0	NO		NO	bb
5	5	180618M1_20	Standard	12.500	4.62	11994.751	11994.751	12.500	12.5	0.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	4.62	11013.181	11013.181	12.500	12.5	0.0	NO		NO	bb
7	7	180618M1_22	Standard	12.500	4.62	10593.517	10593.517	12.500	12.5	0.0	NO		NO	bb
8	8	180618M1_23	Standard	12.500	4.62	10177.789	10177.789	12.500	12.5	0.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	4.62	10118.491	10118.491	12.500	12.5	0.0	NO		NO	bb
10	10	180618M1_25	Standard	12.500	4.62	9163.461	9163.461	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	4.71	2534.063	2534.063	12.500	12.5	0.0	NO		NO	bb
2	2 180618M1_17	Standard	12.500	4.71	2377.036	2377.036	12.500	12.5	0.0	NO		NO	bb
3	3 180618M1_18	Standard	12.500	4.70	2856.722	2856.722	12.500	12.5	0.0	NO		NO	bb
4	4 180618M1_19	Standard	12.500	4.71	2512.954	2512.954	12.500	12.5	0.0	NO		NO	bb
5	5 180618M1_20	Standard	12.500	4.71	2406.409	2406.409	12.500	12.5	0.0	NO		NO	bb
6	6 180618M1_21	Standard	12.500	4.71	2622.385	2622.385	12.500	12.5	0.0	NO		NO	bb
7	7 180618M1_22	Standard	12.500	4.71	2321.174	2321.174	12.500	12.5	0.0	NO		NO	bb
8	8 180618M1_23	Standard	12.500	4.71	2514.443	2514.443	12.500	12.5	0.0	NO		NO	bb
9	9 180618M1_24	Standard	12.500	4.71	2401.563	2401.563	12.500	12.5	0.0	NO		NO	bb
10	10 180618M1_25	Standard	12.500	4.71	2192.754	2192.754	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180618M1_16	Standard	12.500	5.01	11293.800	11293.800	12.500	12.5	0.0	NO		NO	bb
2	2 180618M1_17	Standard	12.500	5.01	10540.102	10540.102	12.500	12.5	0.0	NO		NO	bb
3	3 180618M1_18	Standard	12.500	5.00	13612.456	13612.456	12.500	12.5	0.0	NO		NO	bb
4	4 180618M1_19	Standard	12.500	5.01	11837.340	11837.340	12.500	12.5	0.0	NO		NO	bb
5	5 180618M1_20	Standard	12.500	5.01	11007.143	11007.143	12.500	12.5	0.0	NO		NO	bb
6	6 180618M1_21	Standard	12.500	5.01	11014.816	11014.816	12.500	12.5	0.0	NO		NO	bb
7	7 180618M1_22	Standard	12.500	5.01	9757.196	9757.196	12.500	12.5	0.0	NO		NO	bb
8	8 180618M1_23	Standard	12.500	5.01	10298.703	10298.703	12.500	12.5	0.0	NO		NO	bb
9	9 180618M1_24	Standard	12.500	5.01	10098.937	10098.937	12.500	12.5	0.0	NO		NO	bb
10	10 180618M1_25	Standard	12.500	5.01	9824.887	9824.887	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C7-PFUdA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180618M1_16	Standard	12.500	5.34	11696.773	11696.773	12.500	12.5	0.0	NO		NO	bb
2	2	180618M1_17	Standard	12.500	5.34	13053.816	13053.816	12.500	12.5	0.0	NO		NO	bb
3	3	180618M1_18	Standard	12.500	5.33	15731.198	15731.198	12.500	12.5	0.0	NO		NO	bb
4	4	180618M1_19	Standard	12.500	5.34	13537.935	13537.935	12.500	12.5	0.0	NO		NO	bb
5	5	180618M1_20	Standard	12.500	5.34	12714.653	12714.653	12.500	12.5	0.0	NO		NO	bb
6	6	180618M1_21	Standard	12.500	5.33	12664.945	12664.945	12.500	12.5	0.0	NO		NO	bb
7	7	180618M1_22	Standard	12.500	5.34	12588.694	12588.694	12.500	12.5	0.0	NO		NO	bb
8	8	180618M1_23	Standard	12.500	5.34	11338.703	11338.703	12.500	12.5	0.0	NO		NO	bb
9	9	180618M1_24	Standard	12.500	5.34	12022.007	12022.007	12.500	12.5	0.0	NO		NO	bb
10	10	180618M1_25	Standard	12.500	5.34	10804.449	10804.449	12.500	12.5	0.0	NO		NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBA	36	0.9998	NO	
2	2	PFPeA	37	0.9999	NO	
3	3	PFBS	38	0.9998	NO	
4	4	4:2 FTS	39	0.9990	NO	
5	5	PFHxA	40	0.9999	NO	
6	6	PFPeS	38	0.9993	NO	
7	7	PFHpA	41	0.9998	NO	
8	8	L-PFHxS	42	0.9996	NO	
9	10	6:2 FTS	43	0.9982	NO	
10	11	L-PFOA	44	0.9999	NO	
11	13	PFHpS	44	0.9998	NO	
12	14	PFNA	45	0.9999	NO	
13	15	PFOSA	46	0.9995	NO	
14	16	L-PFOS	47	0.9993	NO	
15	18	PFDA	48	0.9998	NO	
16	19	8:2 FTS	49	0.9922	NO	
17	20	PFNS	47	0.9999	NO	
18	21	L-MeFOSAA	50	0.9993	NO	
19	23	L-EtFOSAA	51	0.9994	NO	

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Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

	#	Name	IS#	CoD	CoD Flag	%RSD
1	25	PFUdA	52	0.9997	NO	
2	26	PFDS	52	0.9996	NO	
3	27	PFDoA	53	0.9992	NO	
4	28	N-MeFOSA	54	0.9999	NO	
5	29	PFTrDA	53	0.9999	NO	
6	30	PFTeDA	55	0.9992	NO	
7	31	N-EtFOSA	56	0.9999	NO	
8	32	PFHxDA	57	0.9996	NO	
9	33	PFODA	57	0.9997	NO	
10	34	N-MeFOSE	58	0.9994	NO	
11	35	N-EtFOSE	59	0.9989	NO	
12	36	13C3-PFBA	60		NO	1.139
13	37	13C3-PFPeA	61		NO	1.770
14	38	13C3-PFBS	61		NO	2.435
15	39	13C2-4:2 FTS	61		NO	12.934
16	40	13C2-PFHxA	61		NO	3.048
17	41	13C4-PFHpA	61		NO	2.319
18	42	18O2-PFHxS	62		NO	5.439
19	43	13C2-6:2 FTS	63		NO	11.981
20	44	13C2-PFOA	63		NO	5.328
21	45	13C5-PFNA	64		NO	4.311
22	46	13C8-PFOSA	67		NO	5.914
23	47	13C8-PFOS	65		NO	6.788
24	48	13C2-PFDA	66		NO	3.449
25	49	13C2-8:2 FTS	61		NO	17.949
26	50	d3-N-MeFOSAA	67		NO	5.197
27	51	d5-N-EtFOSAA	67		NO	8.003
28	52	13C2-PFUdA	67		NO	4.804
29	53	13C2-PFDoA	66		NO	4.878
30	54	d3-N-MeFOSA	67		NO	5.350
31	55	13C2-PFTeDA	67		NO	9.059
32	56	d5-N-ETFOSA	67		NO	5.546

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

	#	Name	IS#	CoD	CoD Flag	%RSD
33	57	13C2-PFHxDA	67		NO	8.233
34	58	d7-N-MeFOSE	67		NO	11.694
35	59	d9-N-EtFOSE	67		NO	4.963
36	60	13C4-PFBA	60		NO	0.000
37	61	13C5-PFHxA	61		NO	0.000
38	62	13C3-PFHxS	62		NO	0.000
39	63	13C8-PFOA	63		NO	0.000
40	64	13C9-PFNA	64		NO	0.000
41	65	13C4-PFOS	65		NO	0.000
42	66	13C6-PFDA	66		NO	0.000
43	67	13C7-PFUdA	67		NO	0.000

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Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	Name	Ion Ratio	Ratio out?
1	PFBA		
2	PFPeA		
3	PFBS	2.955	NO
4	4:2 FTS	2.048	NO
5	PFHxA	273.398	NO
6	PFPeS	1.572	NO
7	PFHpA	21.118	NO
8	L-PFHxS	1.990	NO
9	6:2 FTS	3.231	NO
10	L-PFOA	4.587	NO
11	PFHpS	1.853	NO
12	PFNA	4.956	NO
13	PFOSA	35.038	NO
14	L-PFOS	1.896	NO
15	PFDA	6.666	NO
16	8:2 FTS	2.629	NO
17	PFNS	1.760	NO
18	L-MeFOSAA	12.595	NO
19	L-EtFOSAA	13.292	NO

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Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	Name	Ion Ratio	Ratio out?
1	PFUdA	15.568	NO
2	PFDS	1.891	NO
3	PFDoA	8.464	NO
4	N-MeFOSA	1.336	NO
5	PFTrDA	30.438	NO
6	PFTeDA	12.202	NO
7	N-EtFOSA	1.472	NO
8	PFHxDA	27.160	NO
9	PFODA		
10	N-MeFOSE		
11	N-EtFOSE		
12	13C3-PFBA		
13	13C3-PFPeA		
14	13C3-PFBS		
15	13C2-4:2 FTS		
16	13C2-PFHxA		
17	13C4-PFHpA		
18	18O2-PFHxS		
19	13C2-6:2 FTS		
20	13C2-PFOA		
21	13C5-PFNA		
22	13C8-PFOSA		
23	13C8-PFOS		
24	13C2-PFDA		
25	13C2-8:2 FTS		
26	d3-N-MeFOSAA		
27	d5-N-EtFOSAA		
28	13C2-PFUdA		
29	13C2-PFDoA		
30	d3-N-MeFOSA		
31	13C2-PFTeDA		
32	d5-N-ETFOSA		

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, June 19, 2018 10:40:23 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:40:26 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	180618M1_15	IPA	18-Jun-18	19:12:26
2	2	180618M1_16	ST180618M1-1 PFC CS-2 18F1104	18-Jun-18	19:22:59
3	3	180618M1_17	ST180618M1-2 PFC CS-1 18F1105	18-Jun-18	19:33:27
4	4	180618M1_18	ST180618M1-3 PFC CS0 18F1106	18-Jun-18	19:46:40
5	5	180618M1_19	ST180618M1-4 PFC CS1 18F1107	18-Jun-18	19:57:06
6	6	180618M1_20	ST180618M1-5 PFC CS2 18F1108	18-Jun-18	20:07:36
7	7	180618M1_21	ST180618M1-6 PFC CS3 18F1109	18-Jun-18	20:18:01
8	8	180618M1_22	ST180618M1-7 PFC CS4 18F1110	18-Jun-18	20:28:31
9	9	180618M1_23	ST180618M1-8 PFC CS5 18F1111	18-Jun-18	20:38:55
10	10	180618M1_24	ST180618M1-9 PFC CS6 18F1112	18-Jun-18	20:49:18
11	11	180618M1_25	ST180618M1-10 PFC CS7 18F1113	18-Jun-18	20:59:48
12	12	180618M1_26	IPA	18-Jun-18	21:10:13
13	13	180618M1_27	ICV180618M1-1 PFC 537 ICV 18F1103	18-Jun-18	21:20:43

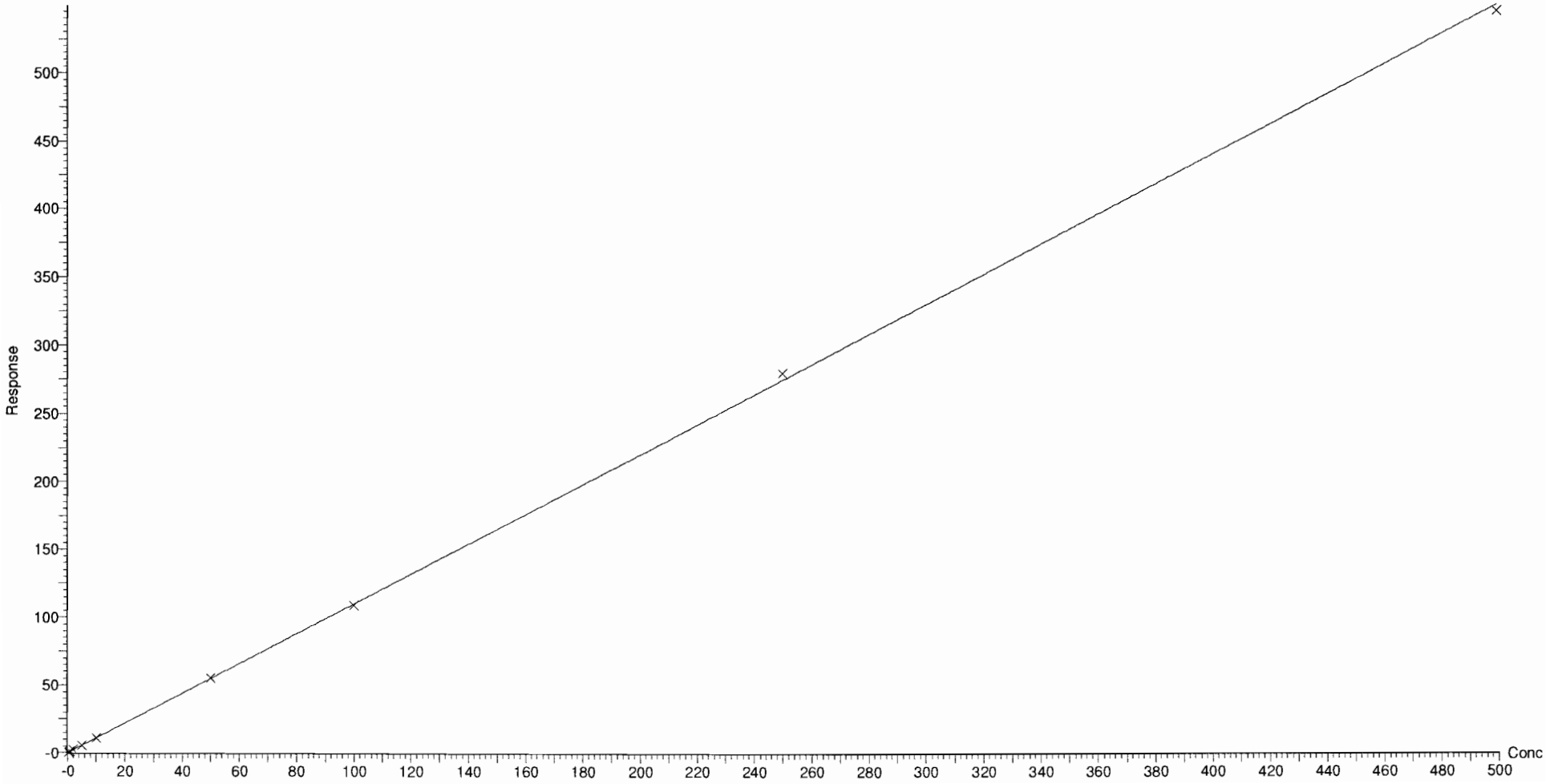
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

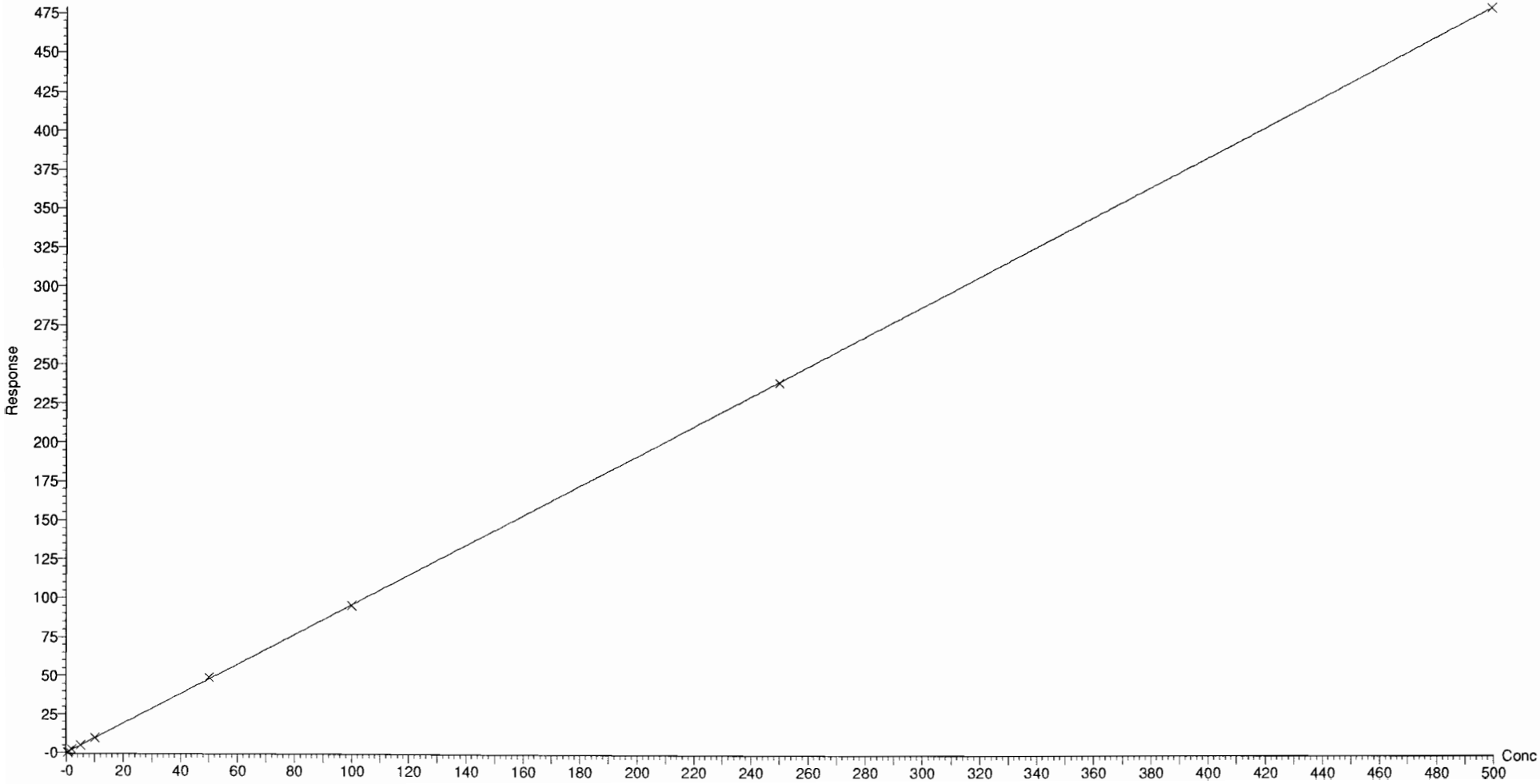
Compound name: PFBA
Correlation coefficient: r = 0.999898, r^2 = 0.999796
Calibration curve: 1.09823 * x + 0.0567088
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

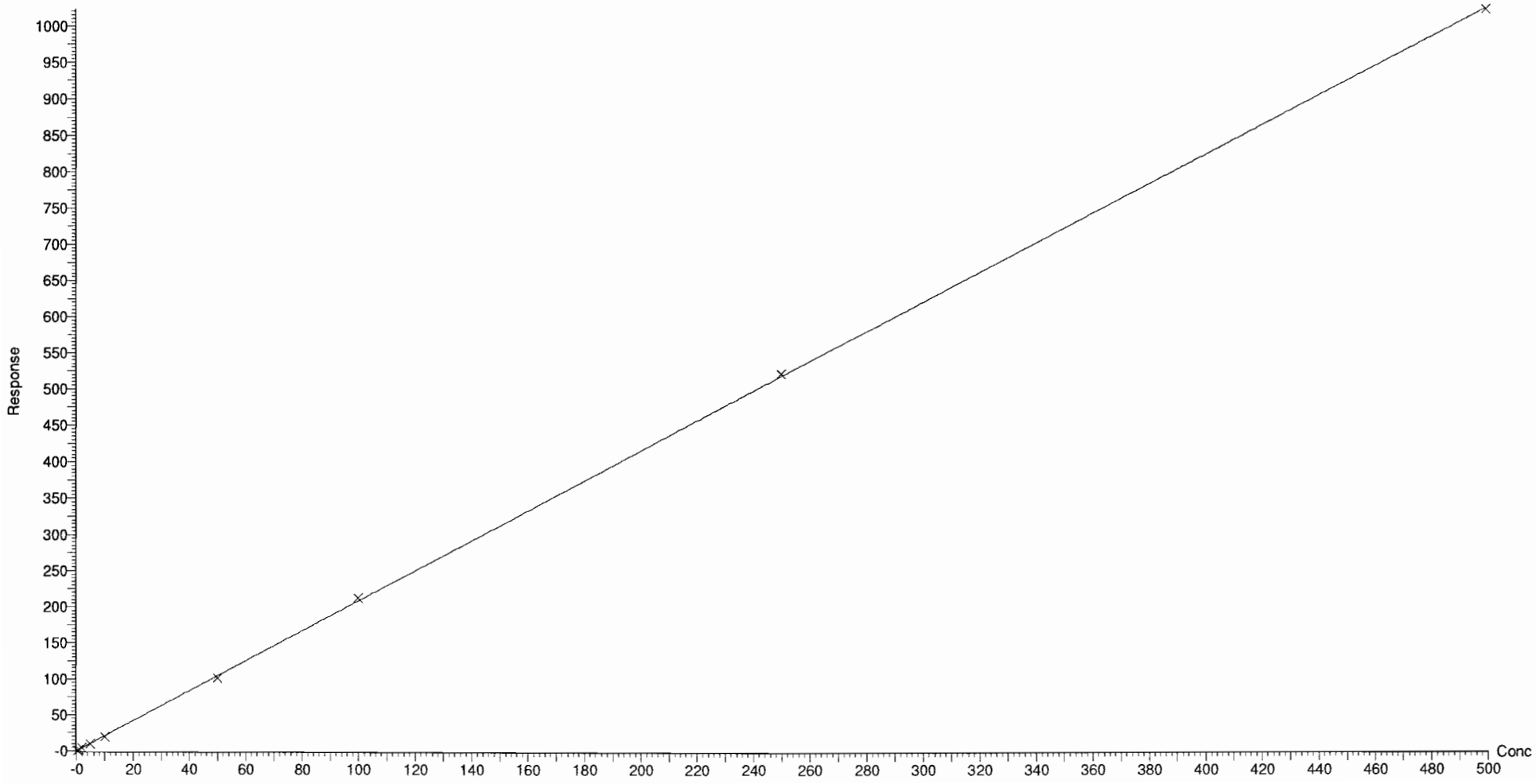
Compound name: PFPeA
Correlation coefficient: r = 0.999964, r^2 = 0.999928
Calibration curve: 0.957575 * x + 0.0682453
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

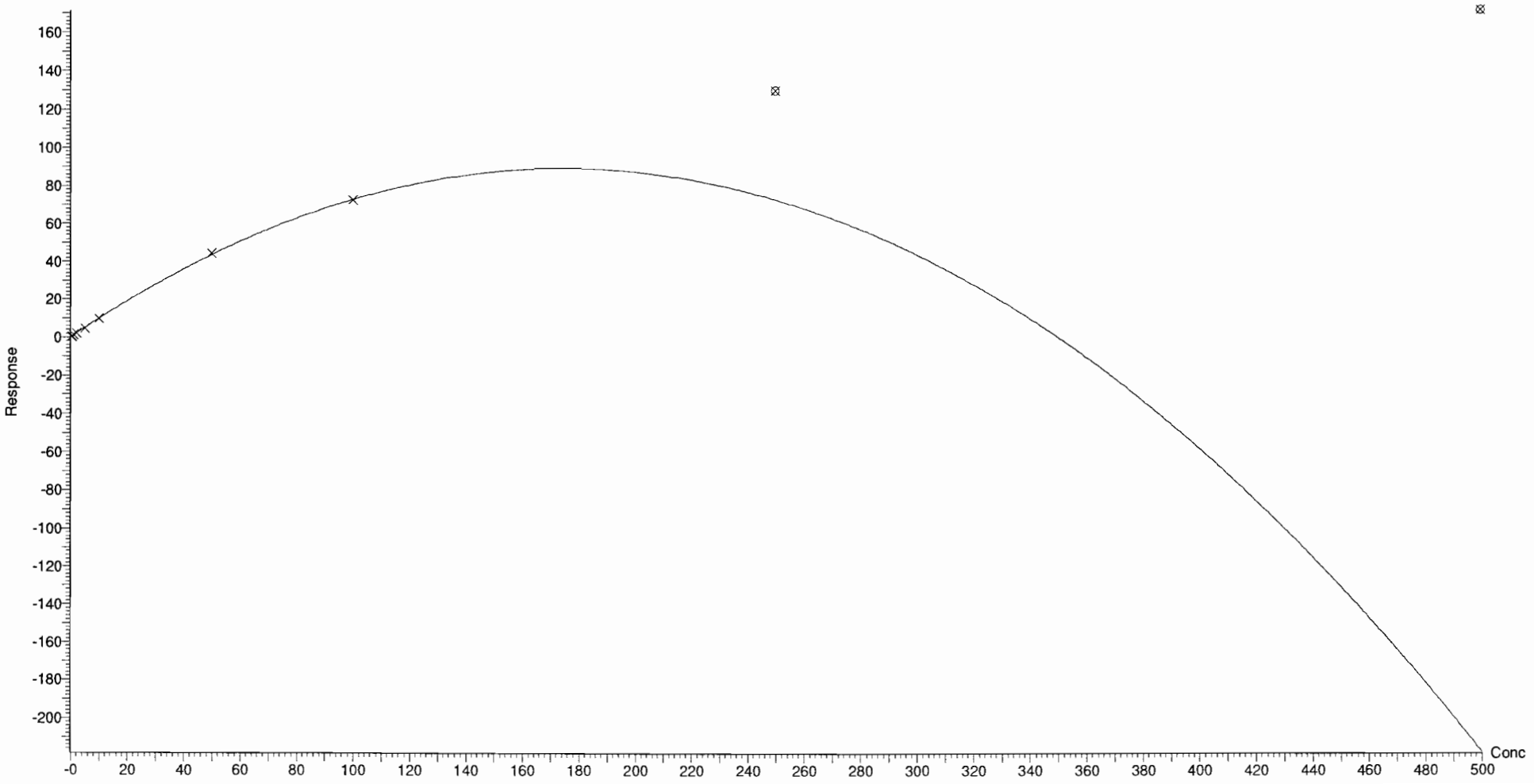
Compound name: PFBS
Coefficient of Determination: R^2 = 0.999834
Calibration curve: -0.000104612 * x^2 + 2.0984 * x + -0.0152867
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999002
Calibration curve: -0.00290673 * x^2 + 1.01765 * x + 0.000704627
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

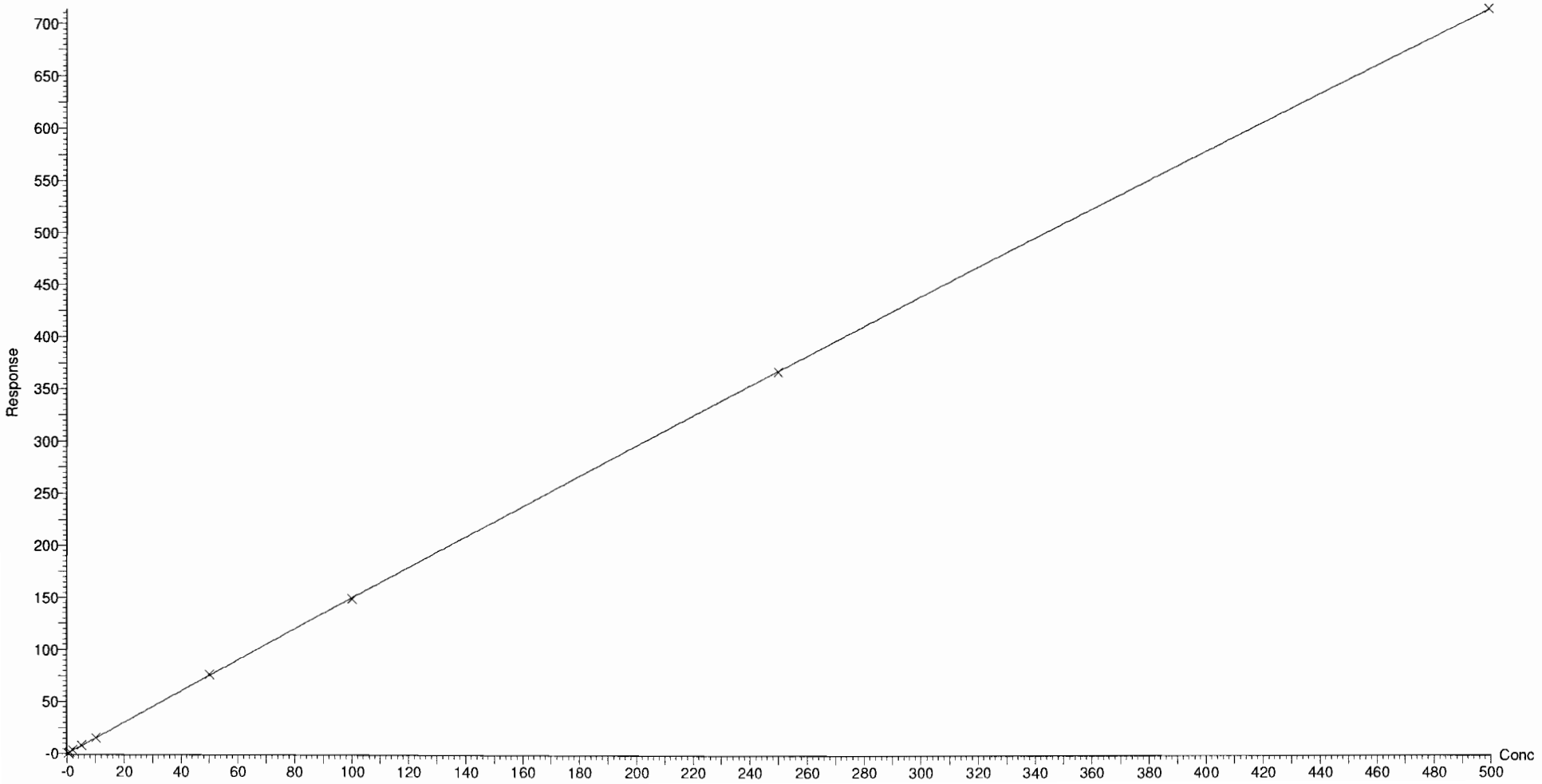


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999917
Calibration curve: -0.000185331 * x^2 + 1.51828 * x + 0.0664567
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

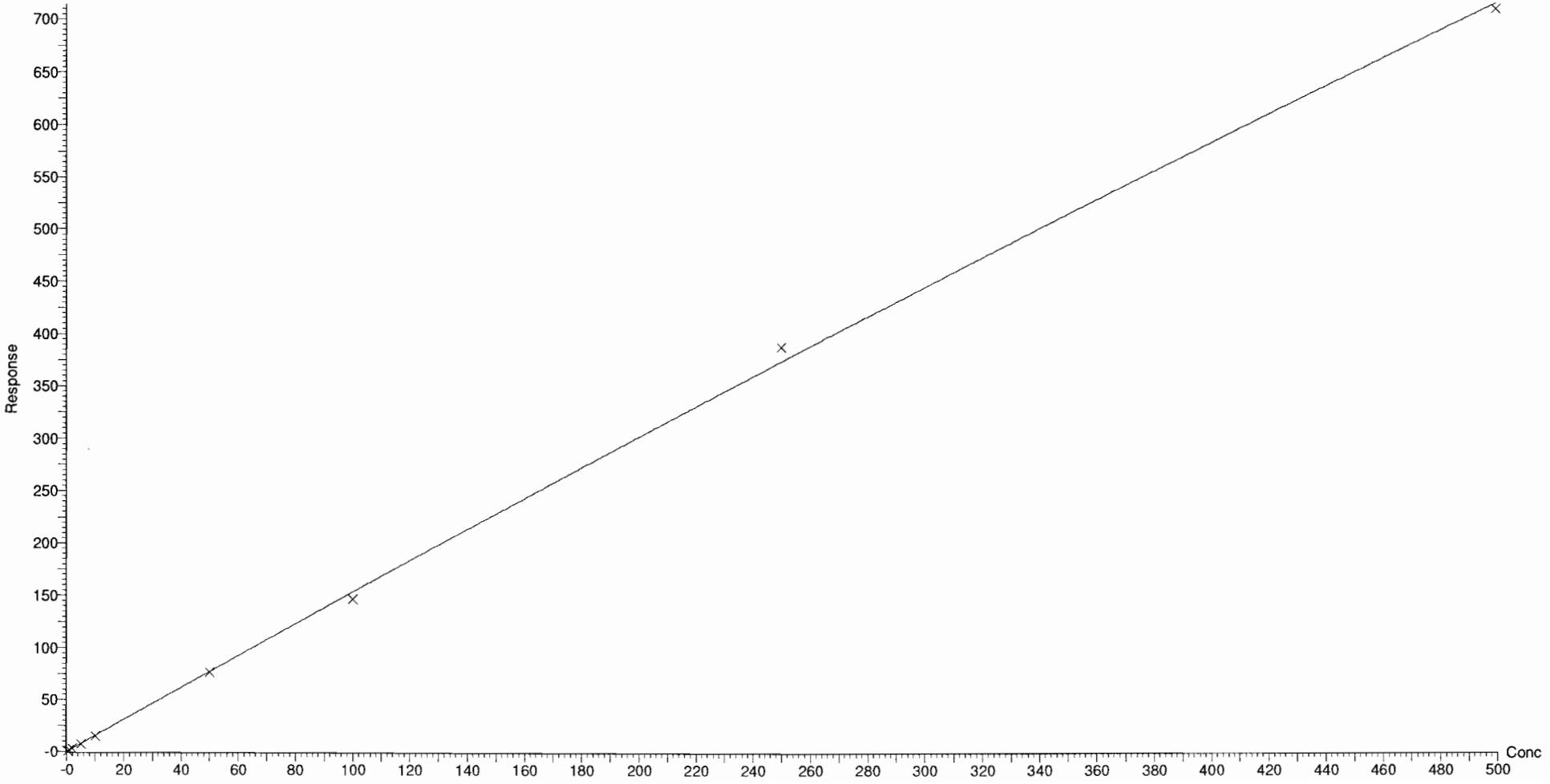


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

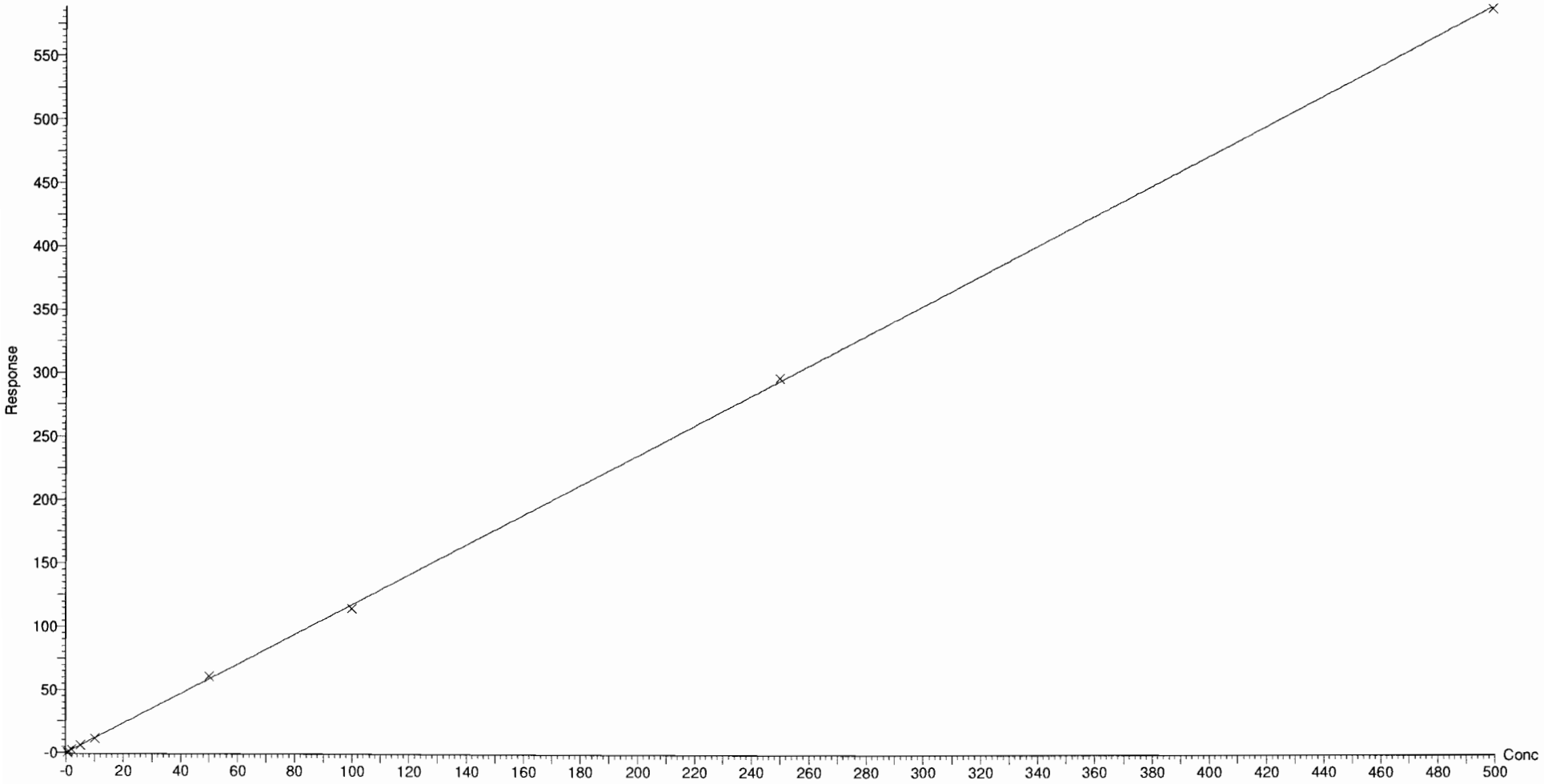
Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999273
Calibration curve: -0.000263086 * x^2 + 1.56074 * x + 0.00694103
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

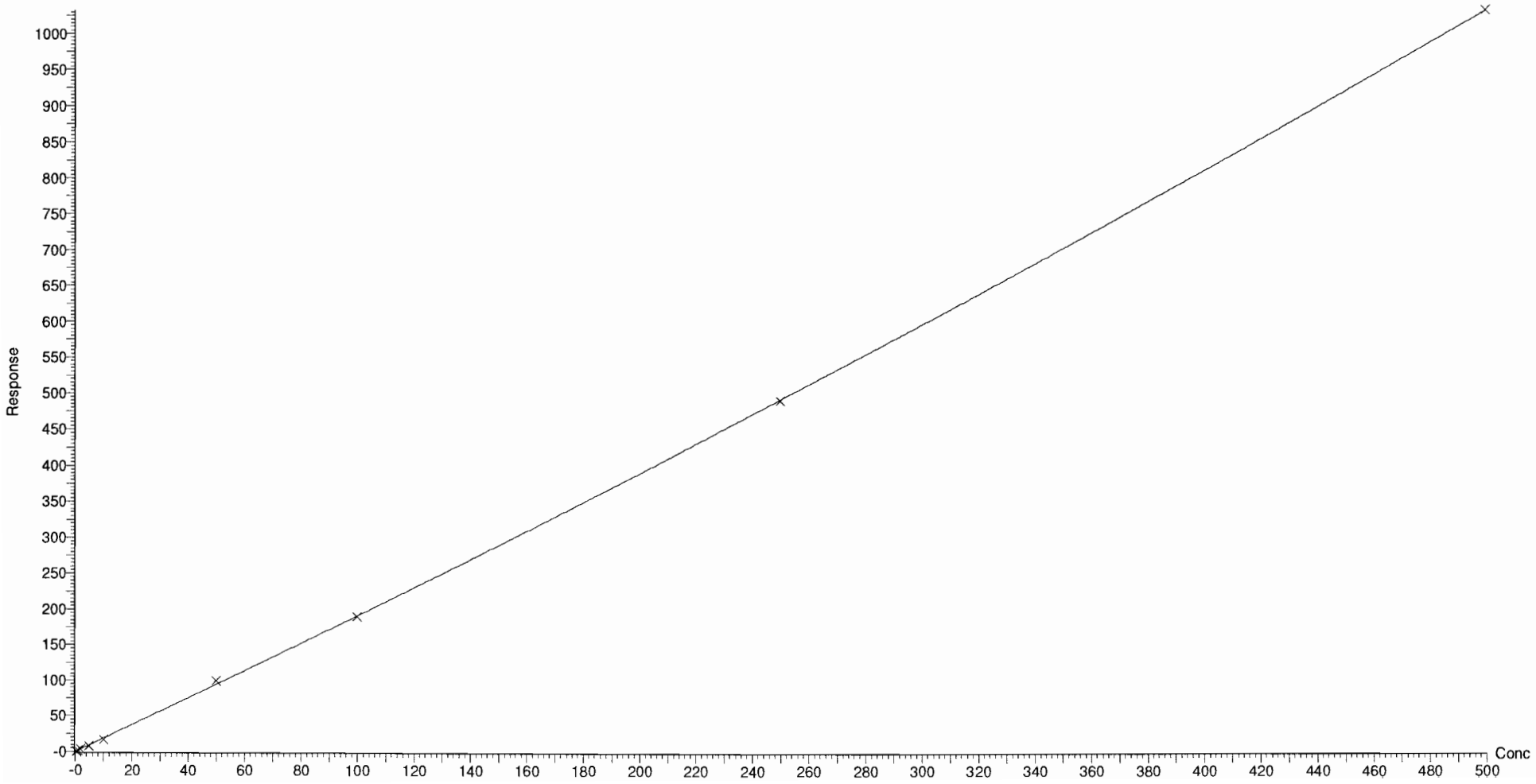
Compound name: PFHpA
Correlation coefficient: r = 0.999888, r^2 = 0.999776
Calibration curve: 1.17652 * x + 0.0903044
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

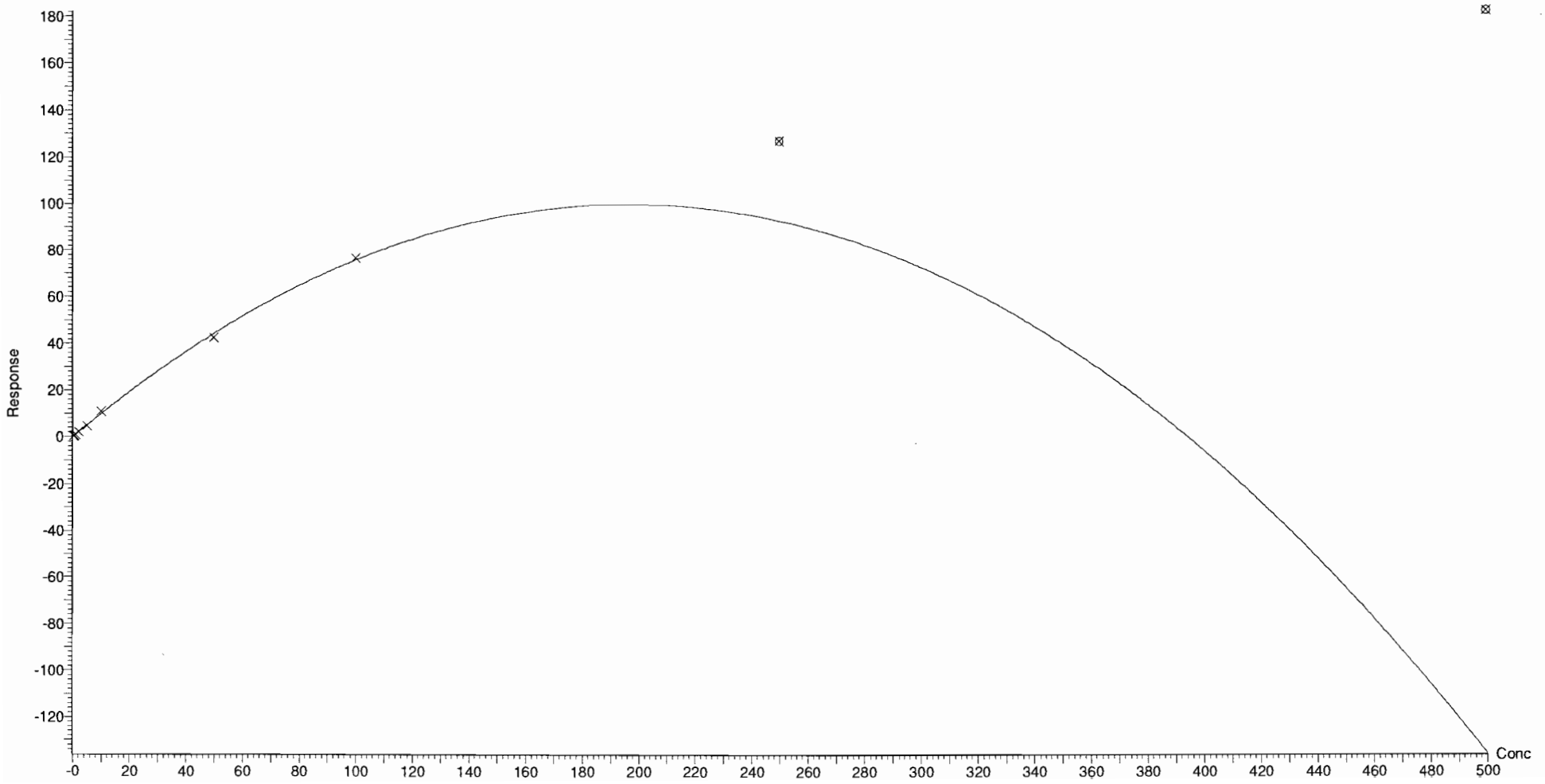
Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999634
Calibration curve: 0.000384353 * x^2 + 1.87153 * x + -0.00362072
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

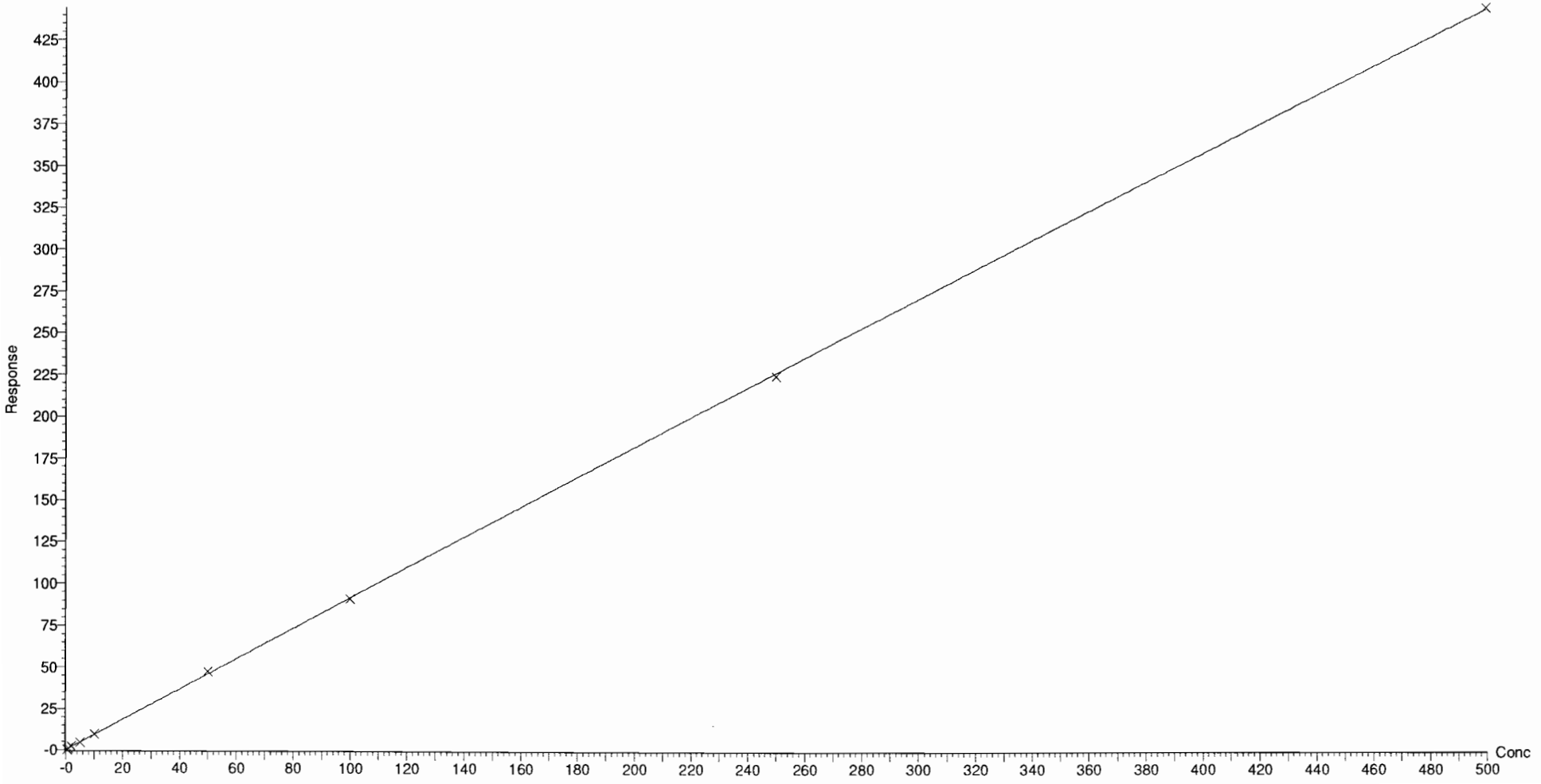
Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.998185
Calibration curve: -0.00256871 * x^2 + 1.01262 * x + 0.082263
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

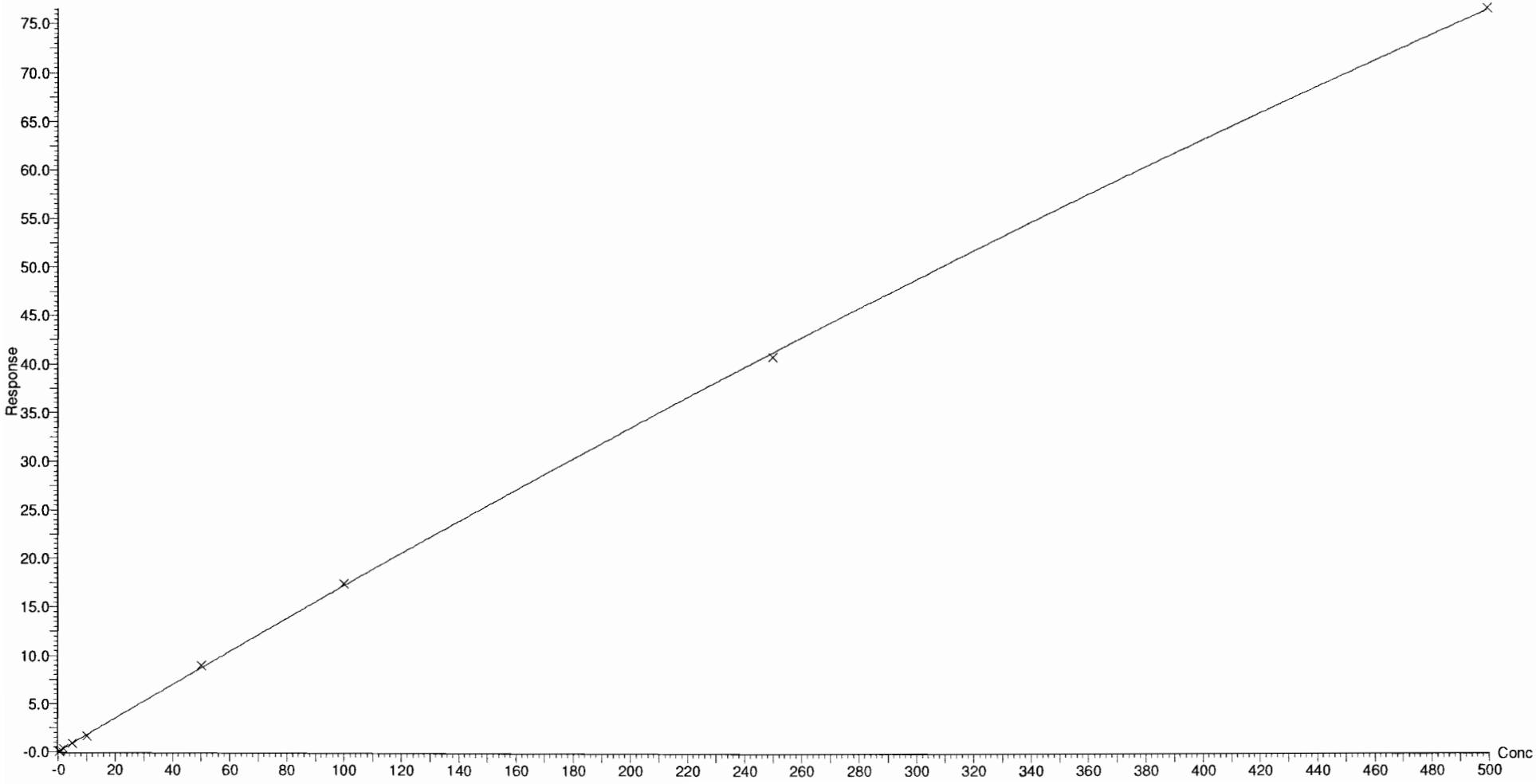
Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999894
Calibration curve: -7.62028e-005 * x^2 + 0.924598 * x + 0.109864
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

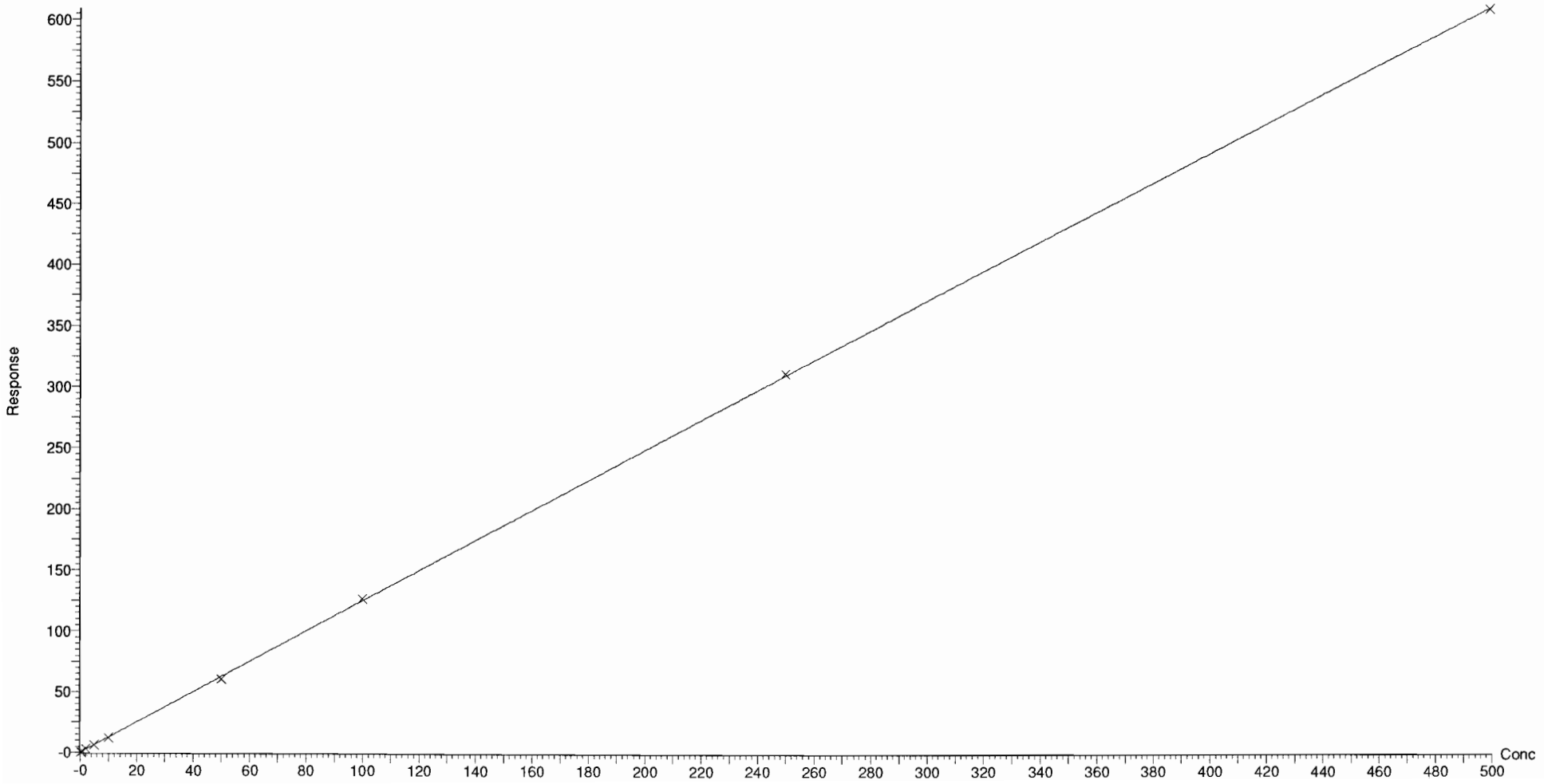
Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999789
Calibration curve: -4.91732e-005 * x^2 + 0.177358 * x + 0.00932101
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

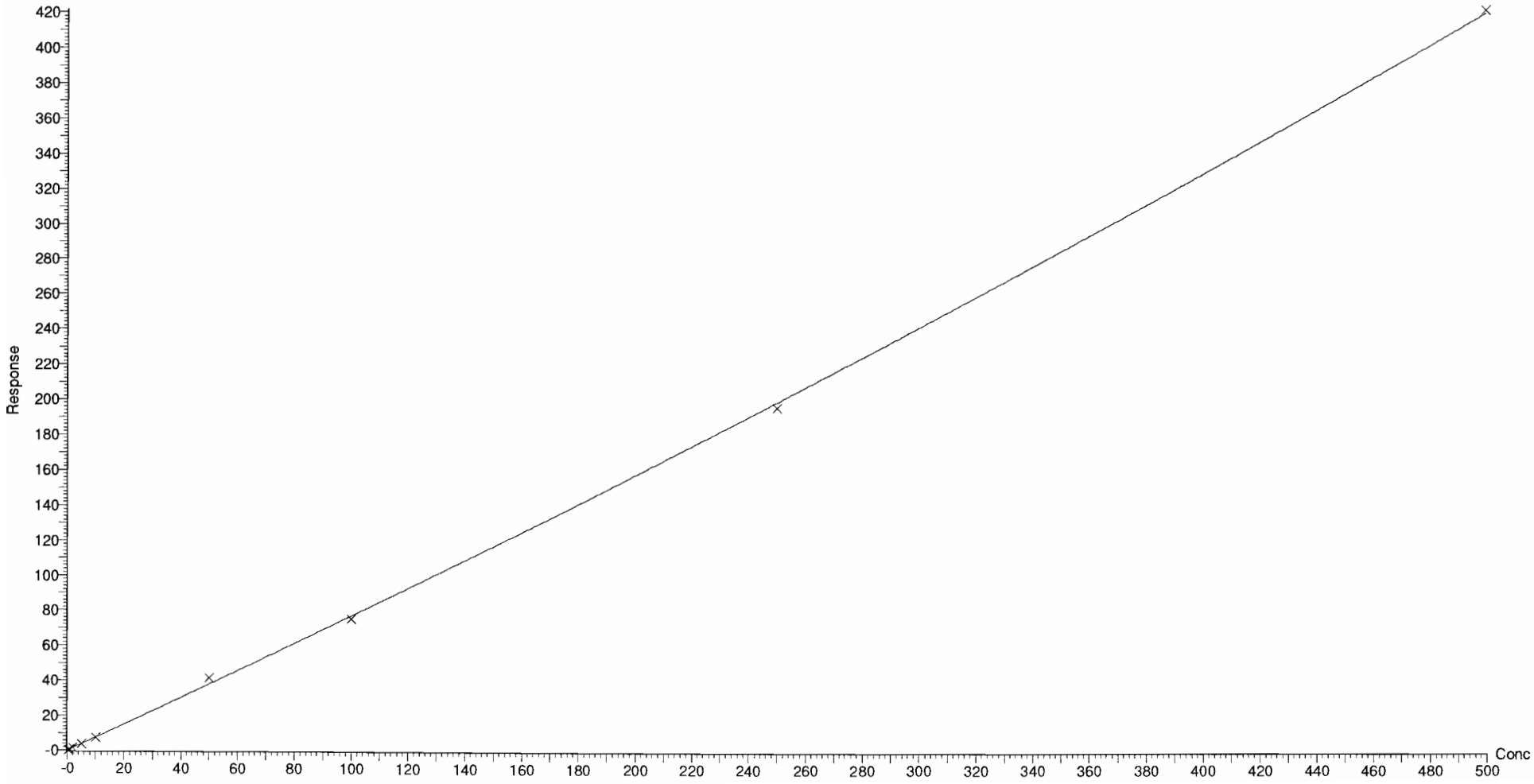
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999862
Calibration curve: -8.00672e-005 * x^2 + 1.25857 * x + 0.126709
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

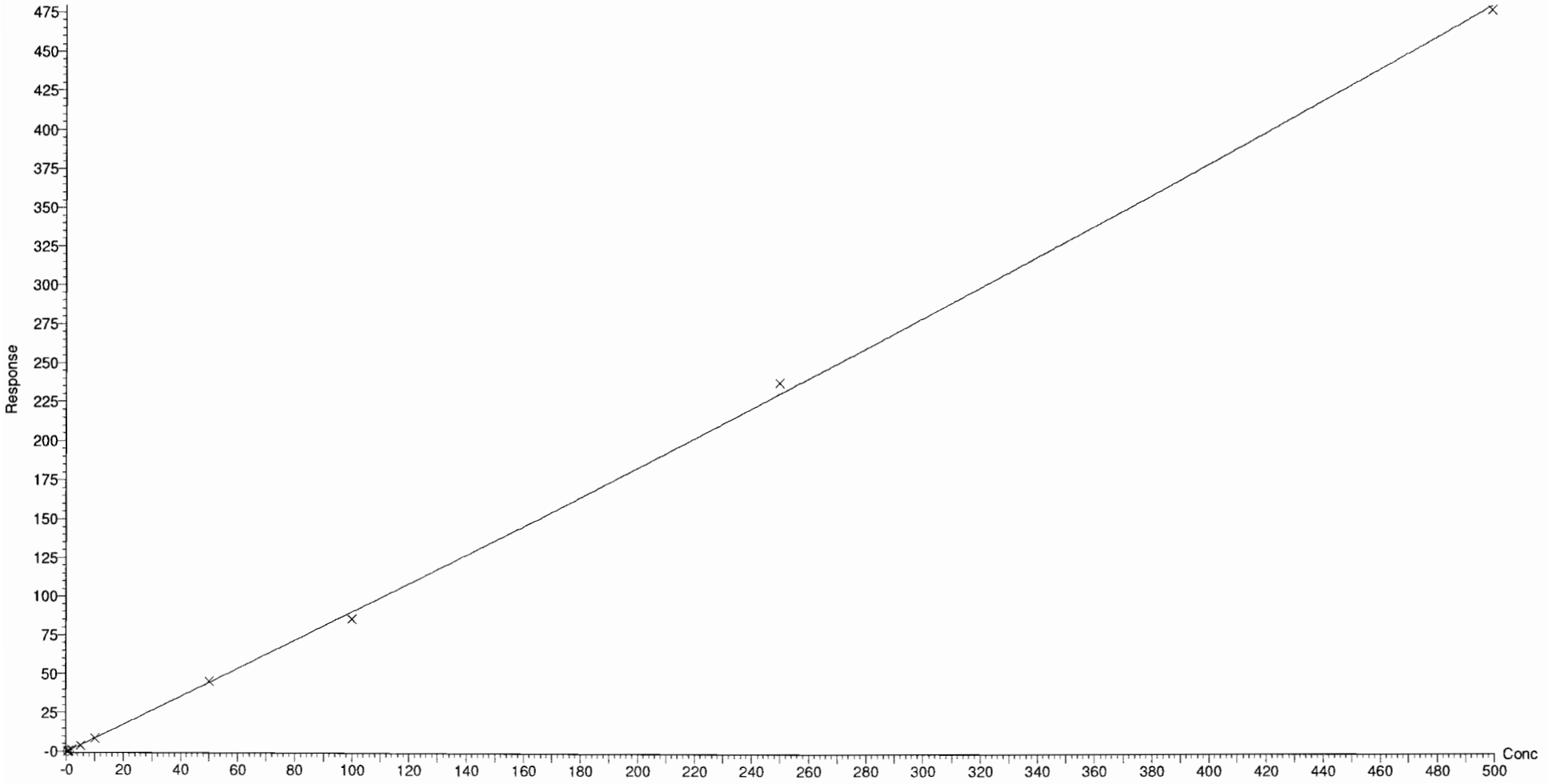
Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999482
Calibration curve: 0.000175879 * x^2 + 0.752508 * x + 0.038589
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999297
Calibration curve: 0.000142901 * x^2 + 0.887606 * x + -0.0864255
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999839
Calibration curve: -6.04613e-005 * x^2 + 0.98717 * x + 0.0812872
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
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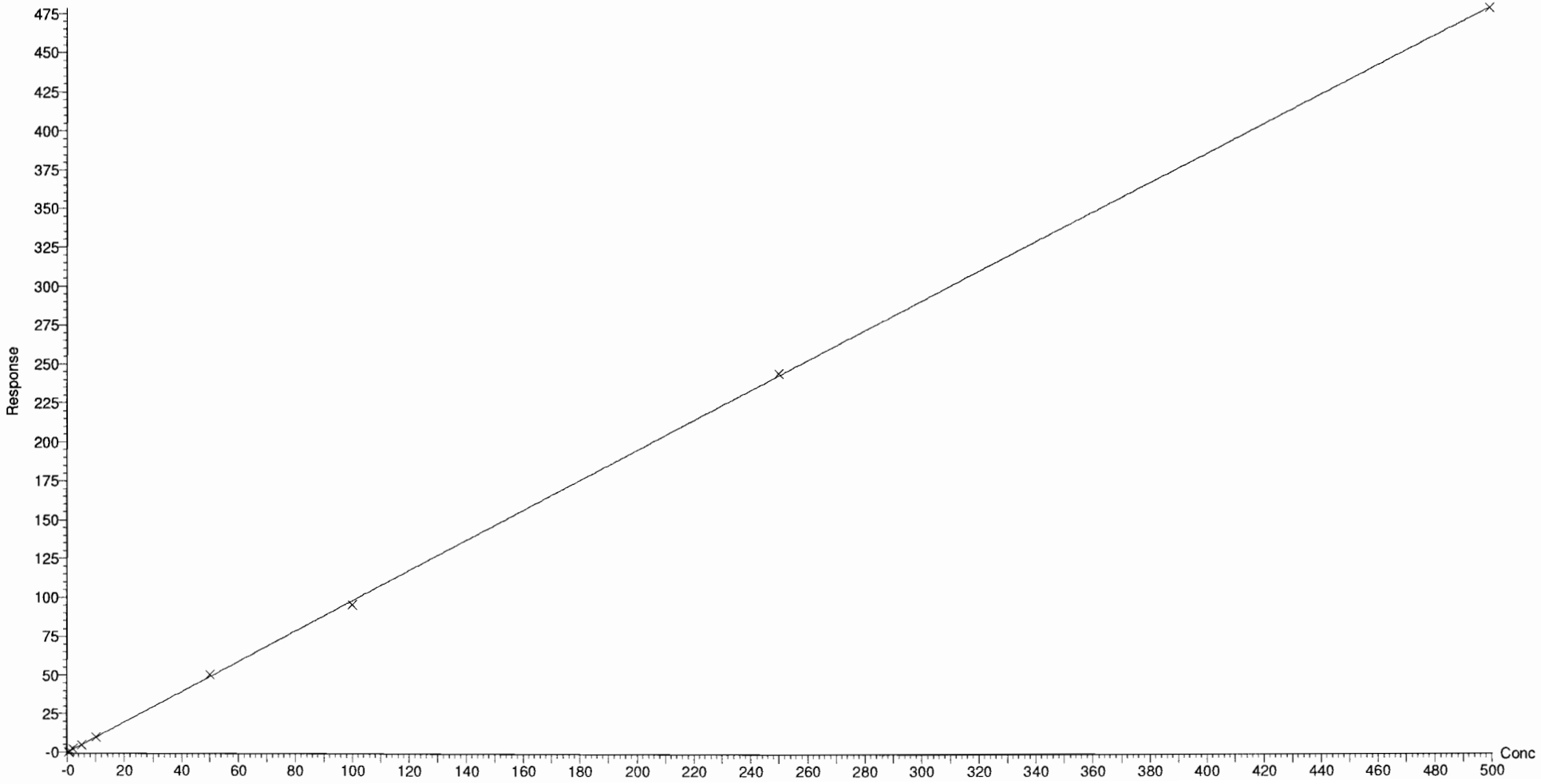
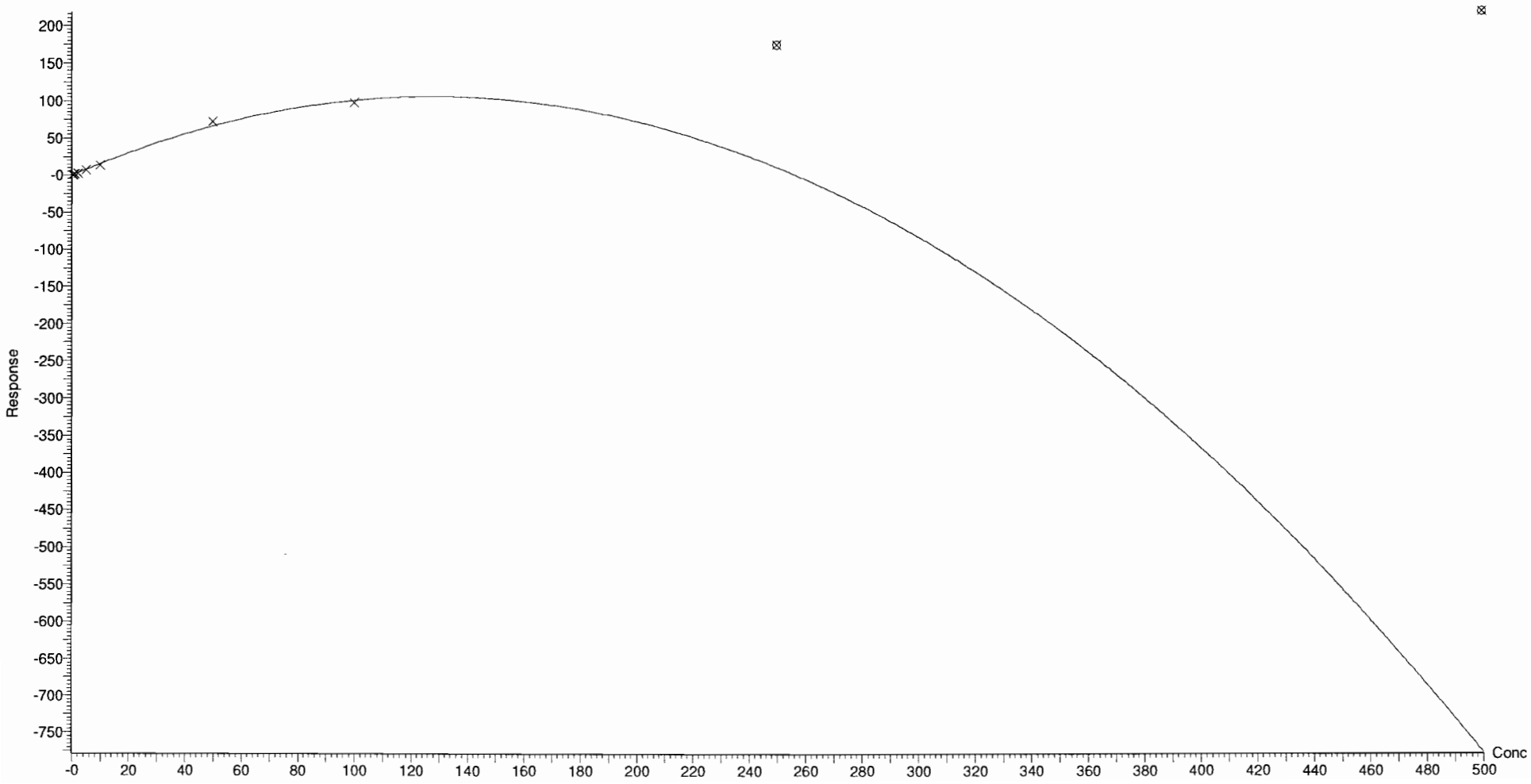


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

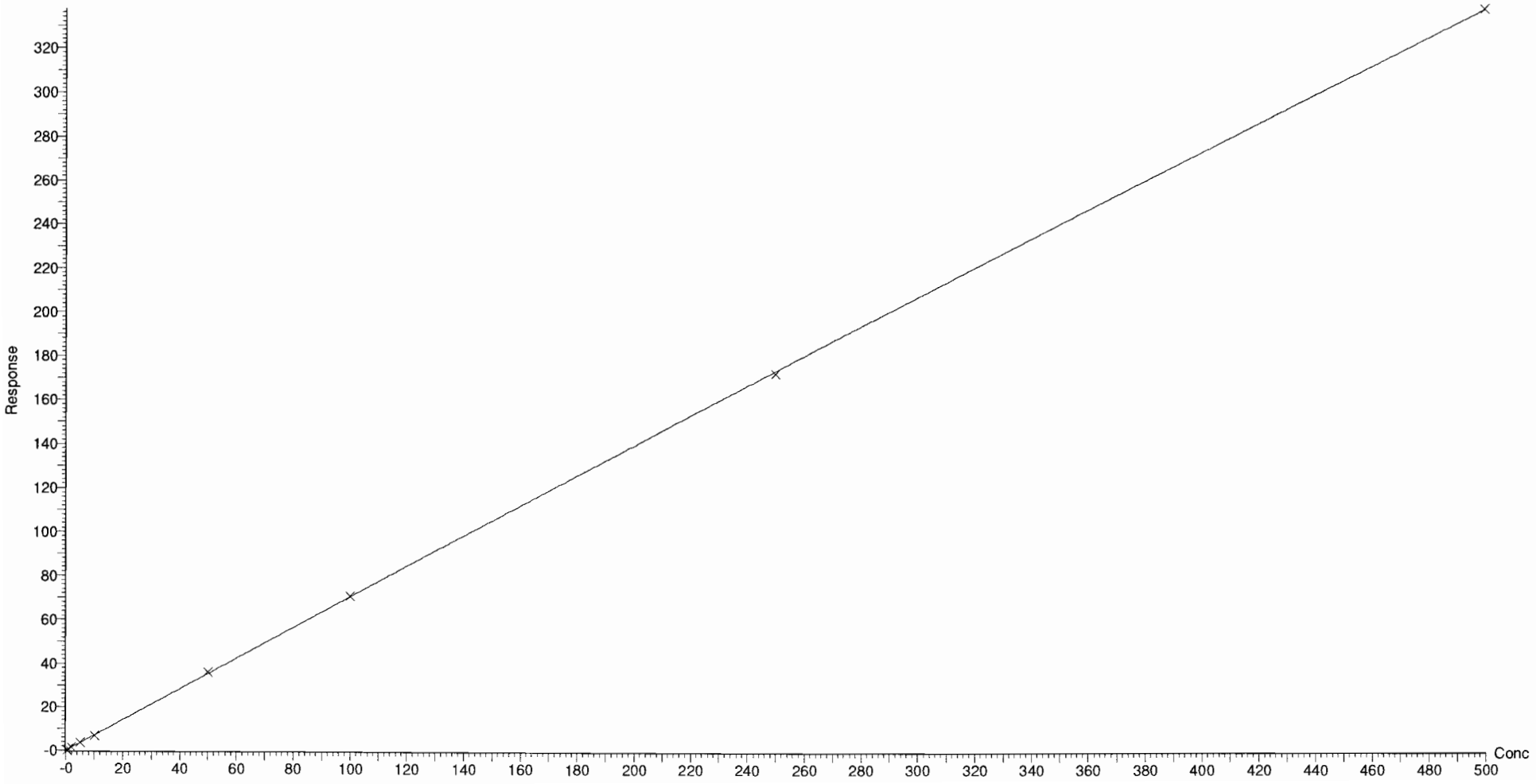
Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.992159
Calibration curve: -0.00639542 * x^2 + 1.64268 * x + -0.047243
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: PFNS
Coefficient of Determination: R^2 = 0.999929
Calibration curve: -7.67825e-005 * x^2 + 0.712909 * x + 0.0362063
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

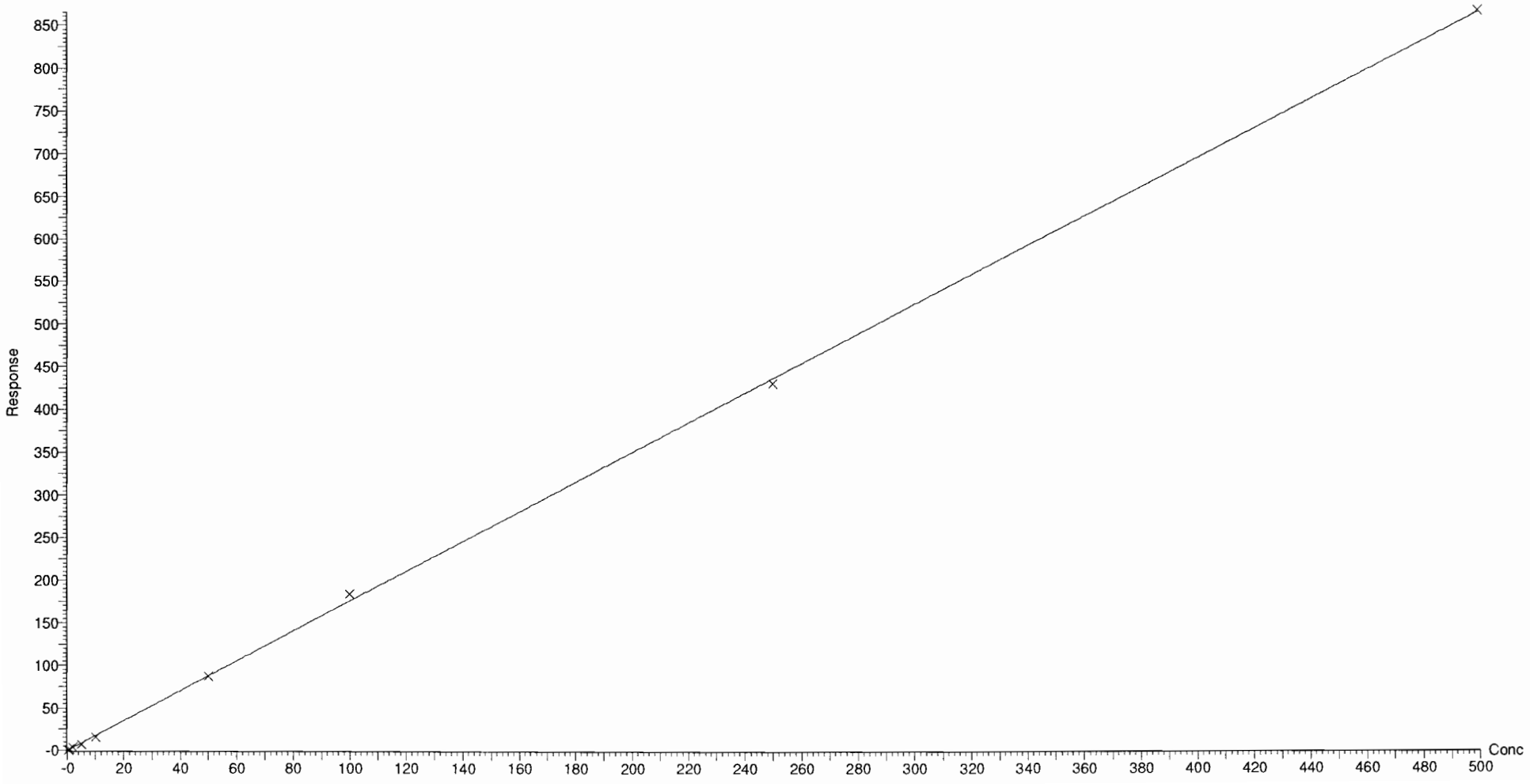


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999328
Calibration curve: -7.57237e-005 * x^2 + 1.76516 * x + -0.0793413
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

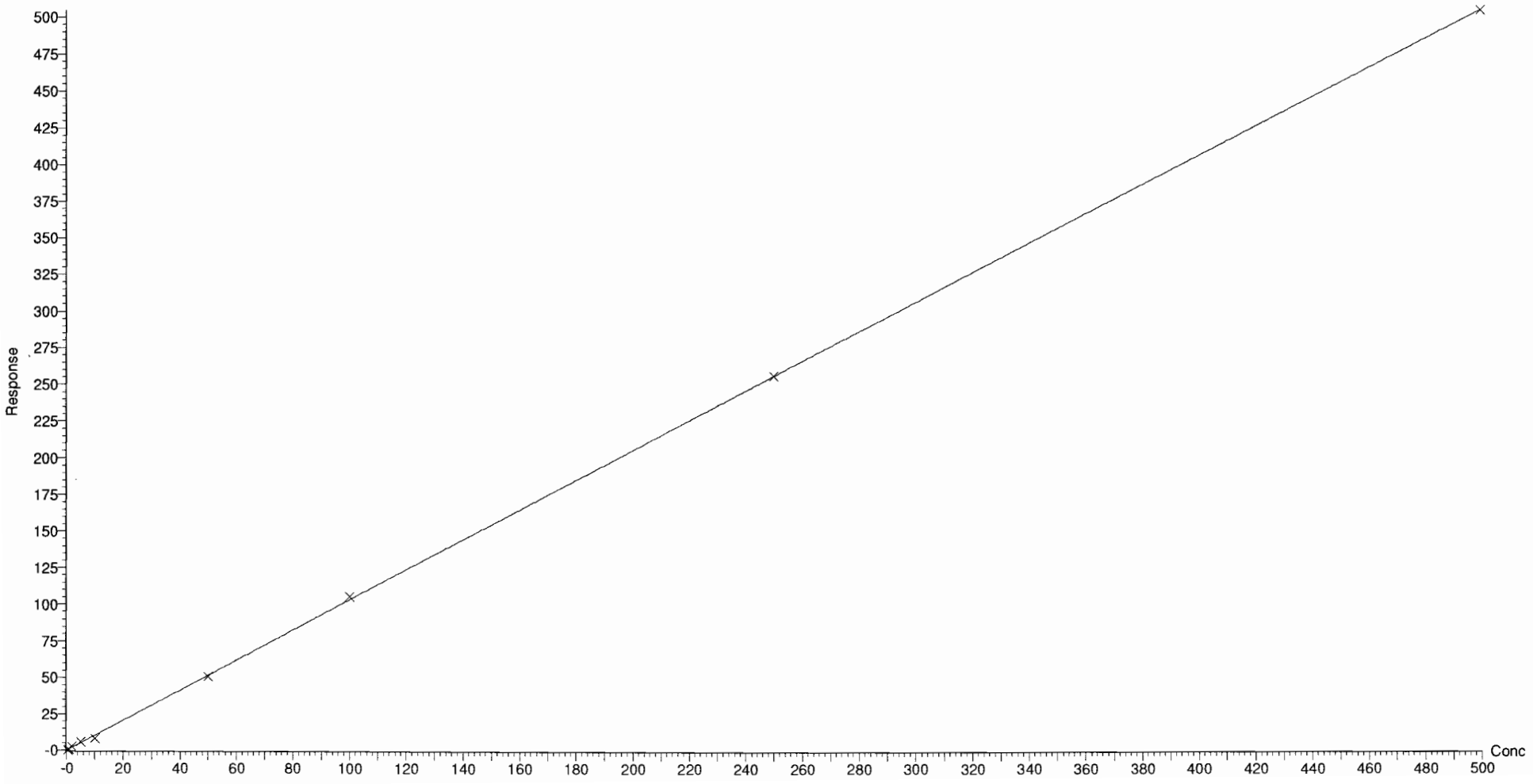


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:23 Pacific Daylight Time

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999370
Calibration curve: -6.00237e-005 * x^2 + 1.03913 * x + -0.0171895
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



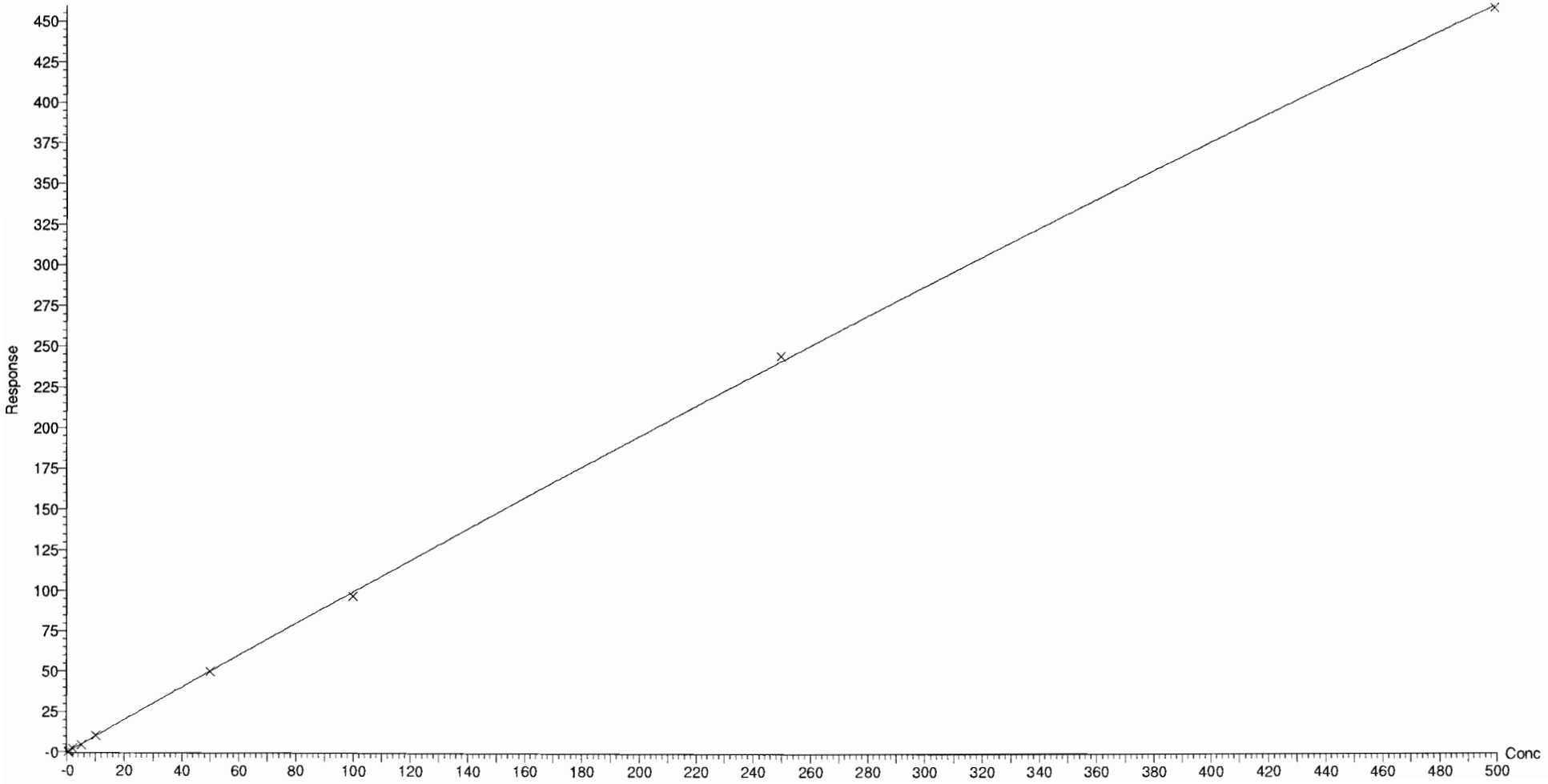
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999716
Calibration curve: -0.00018609 * x^2 + 1.01141 * x + 0.0817415
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

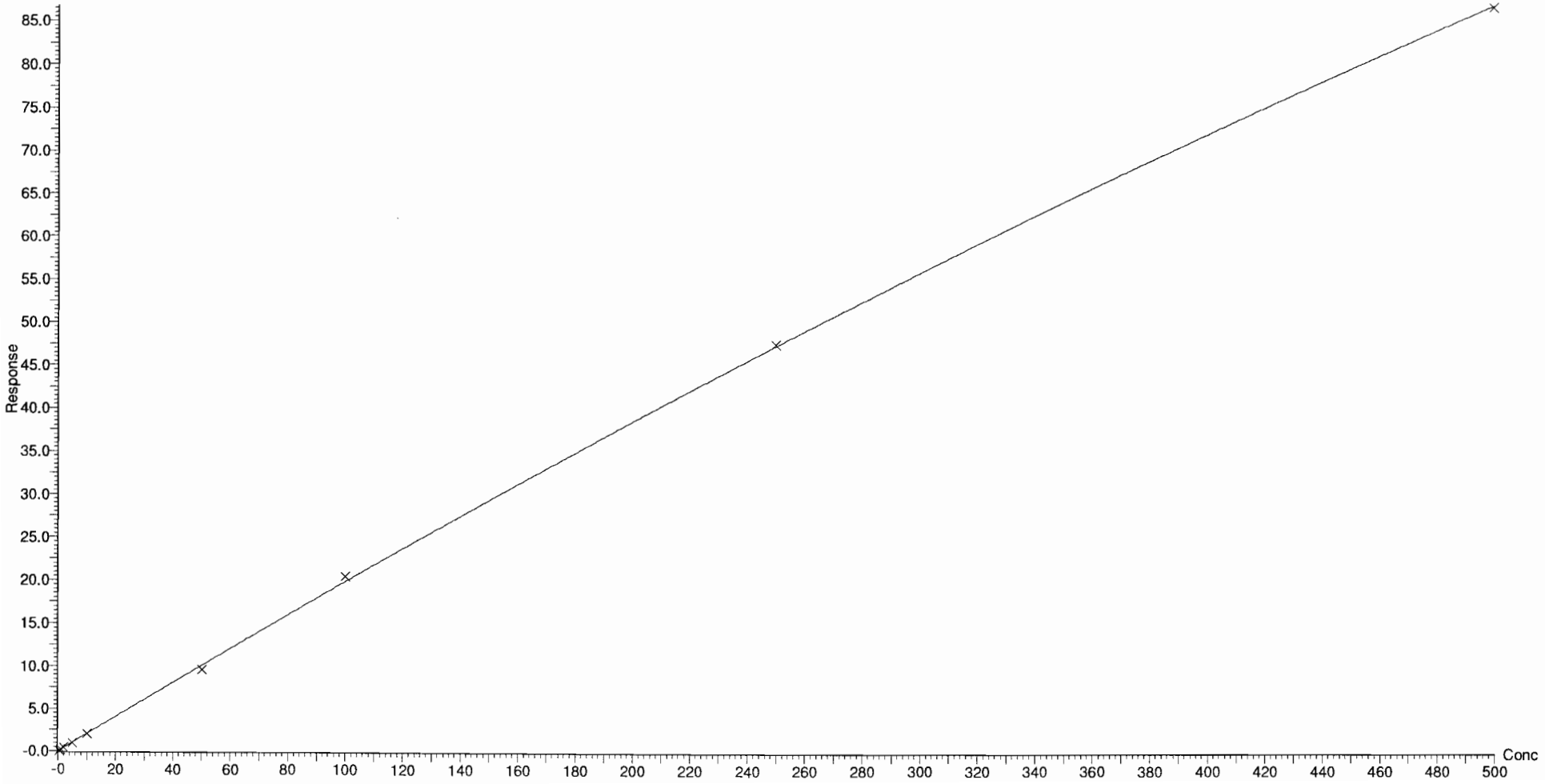


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999607
Calibration curve: -6.32605e-005 * x^2 + 0.205277 * x + -0.00466484
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

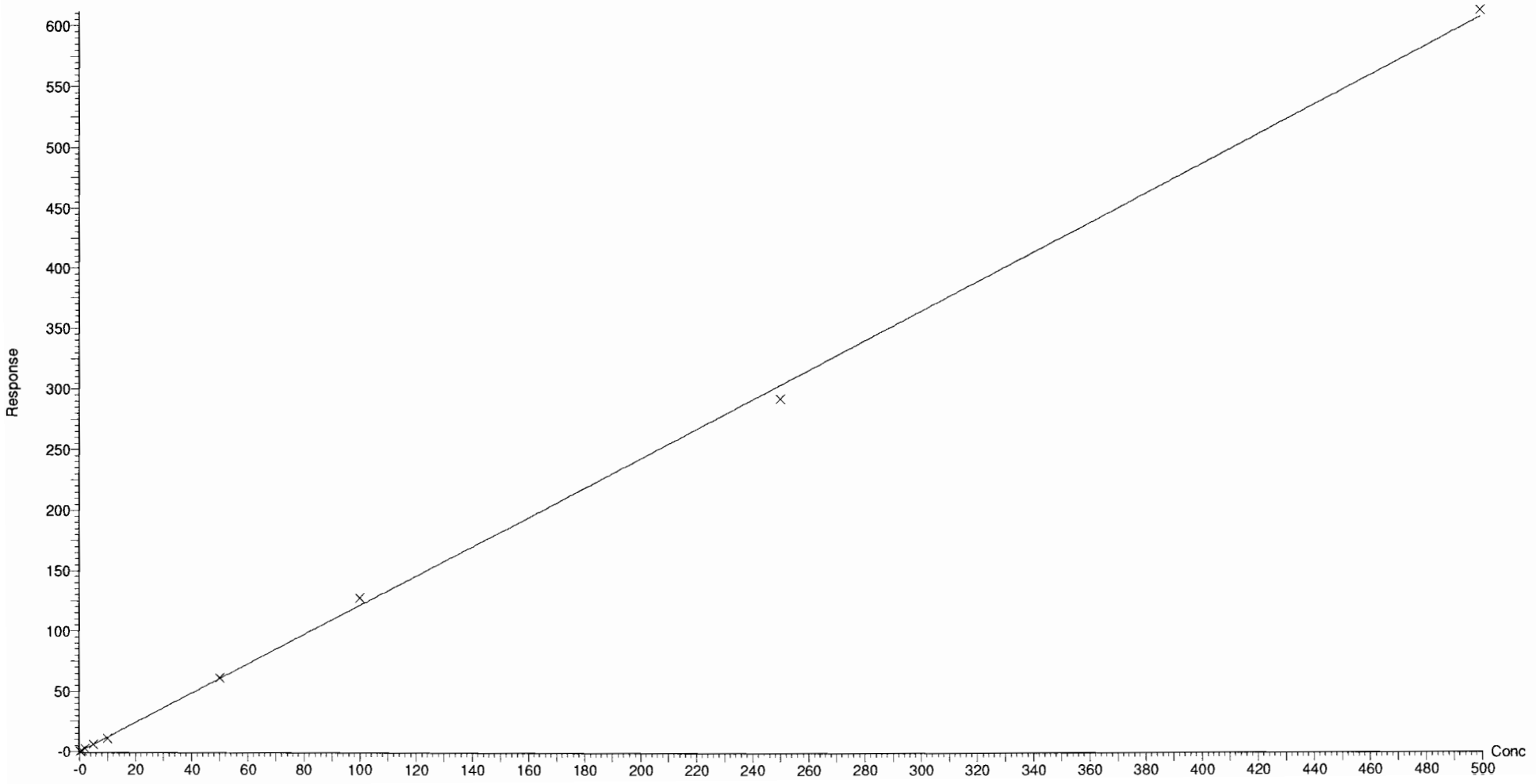


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

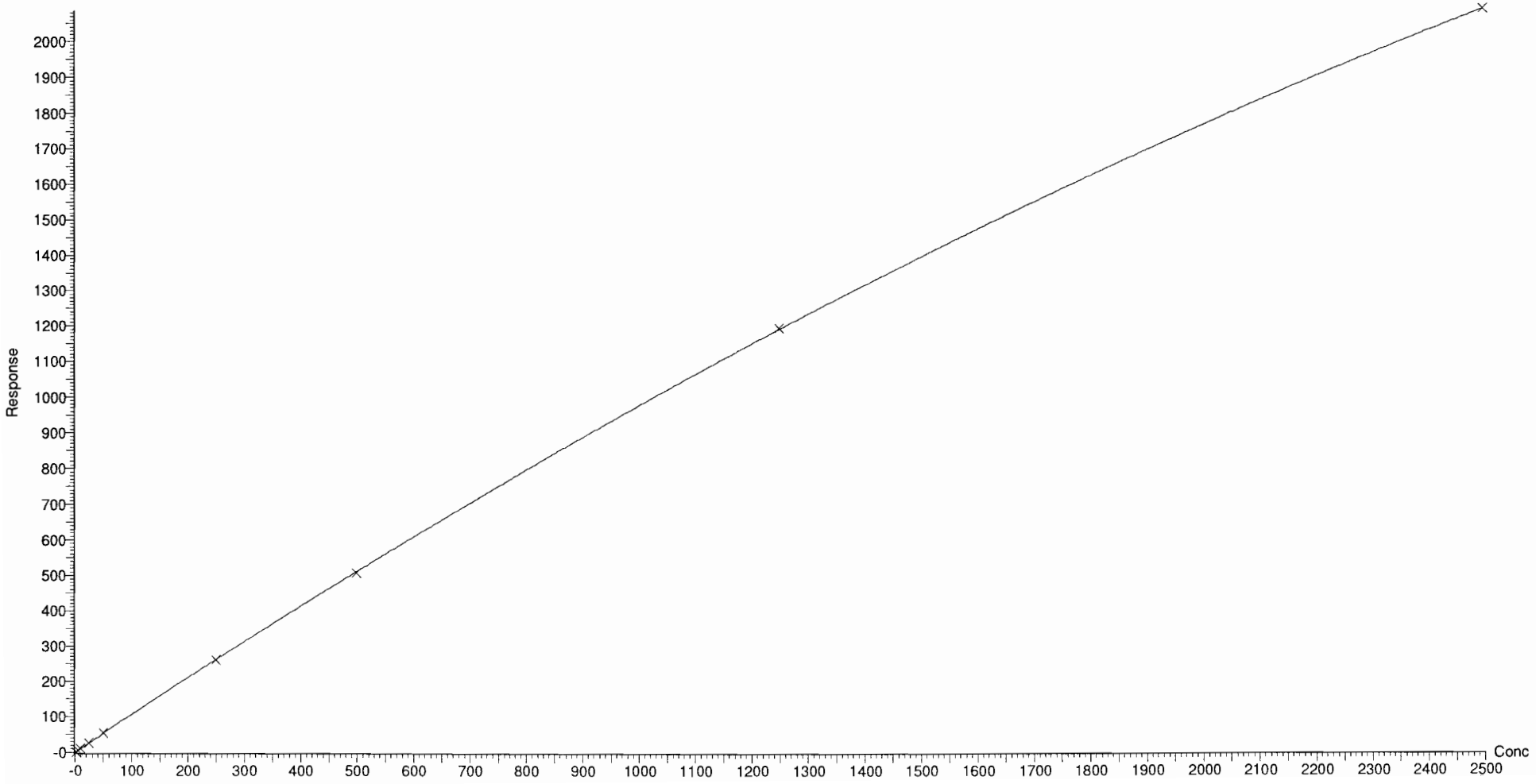
Compound name: PFDoA
Correlation coefficient: r = 0.999602, r^2 = 0.999204
Calibration curve: 1.21308 * x + 0.101943
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

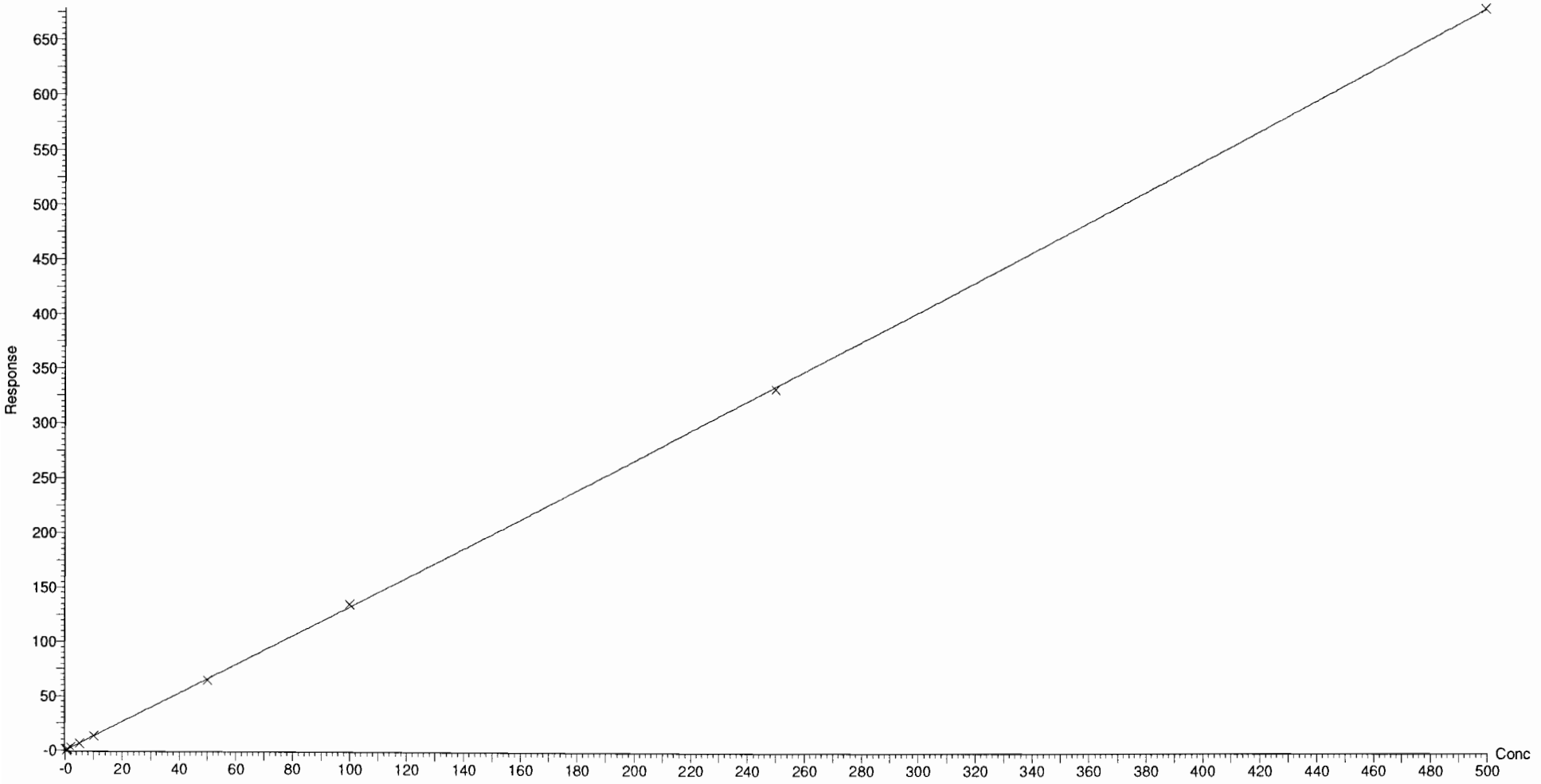
Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999893
Calibration curve: -9.43484e-005 * x^2 + 1.07027 * x + 0.192913
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999866
Calibration curve: 7.85616e-005 * x^2 + 1.31631 * x + 0.0547122
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

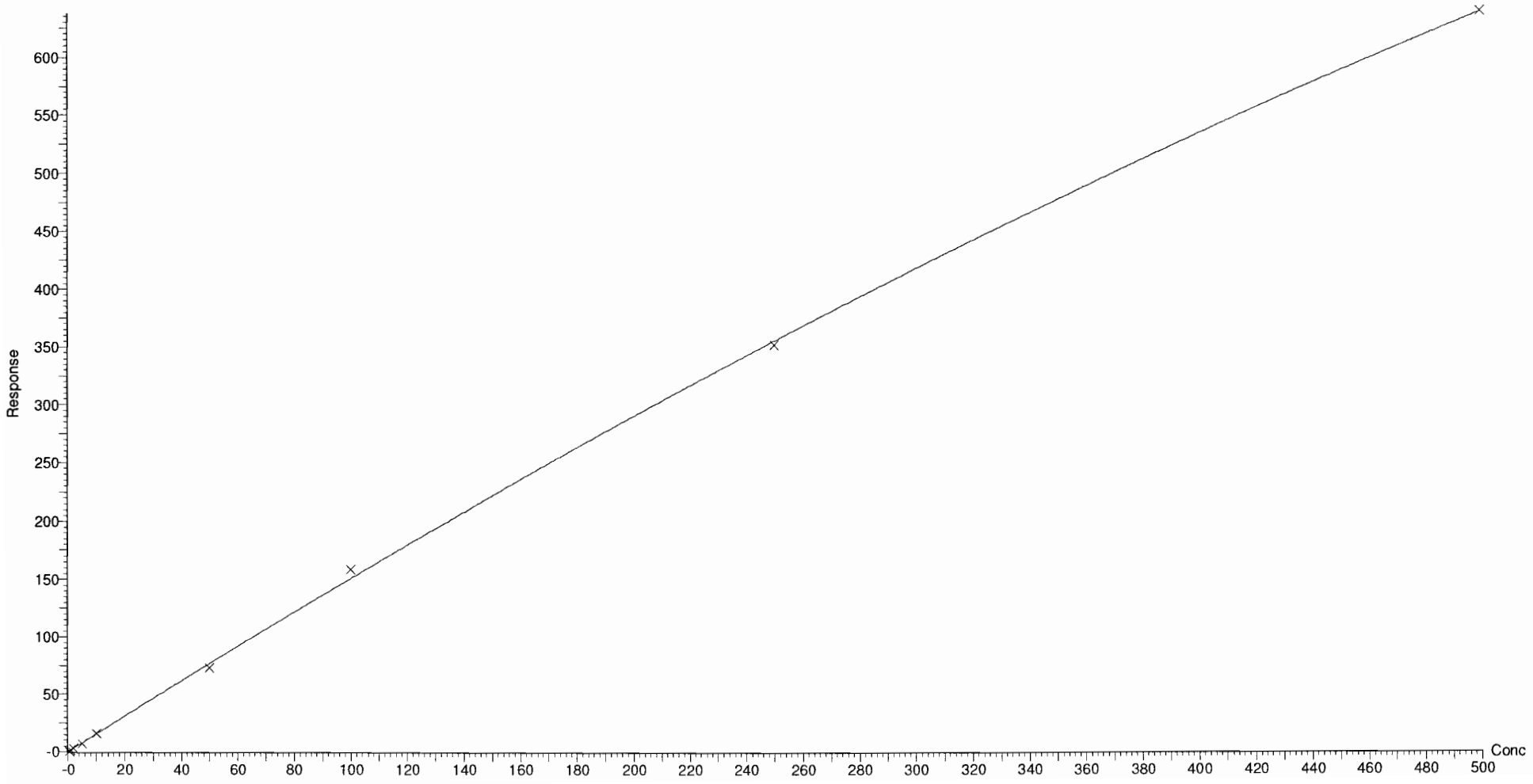


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

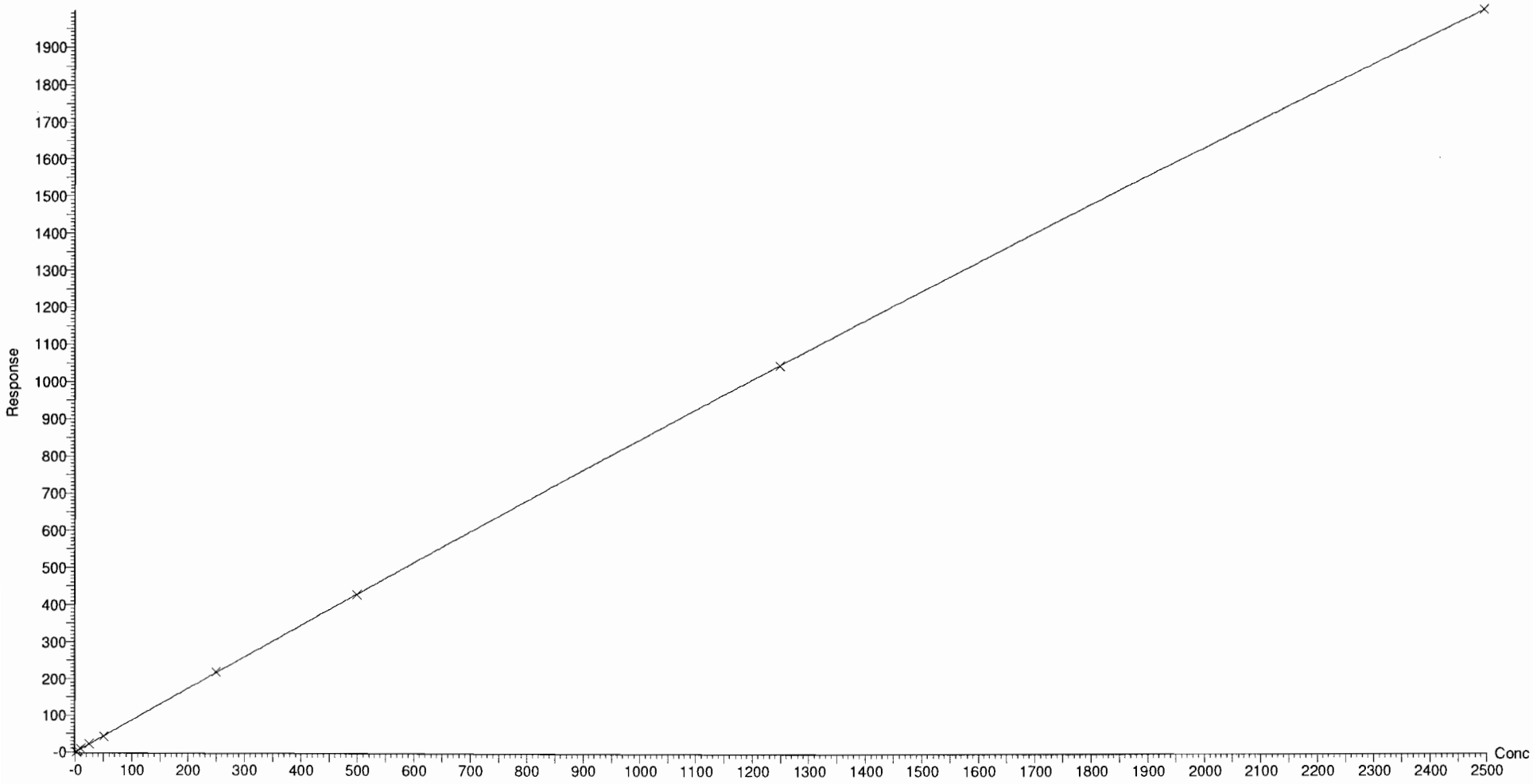
Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999244
Calibration curve: -0.000580728 * x^2 + 1.56499 * x + -0.0318777
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

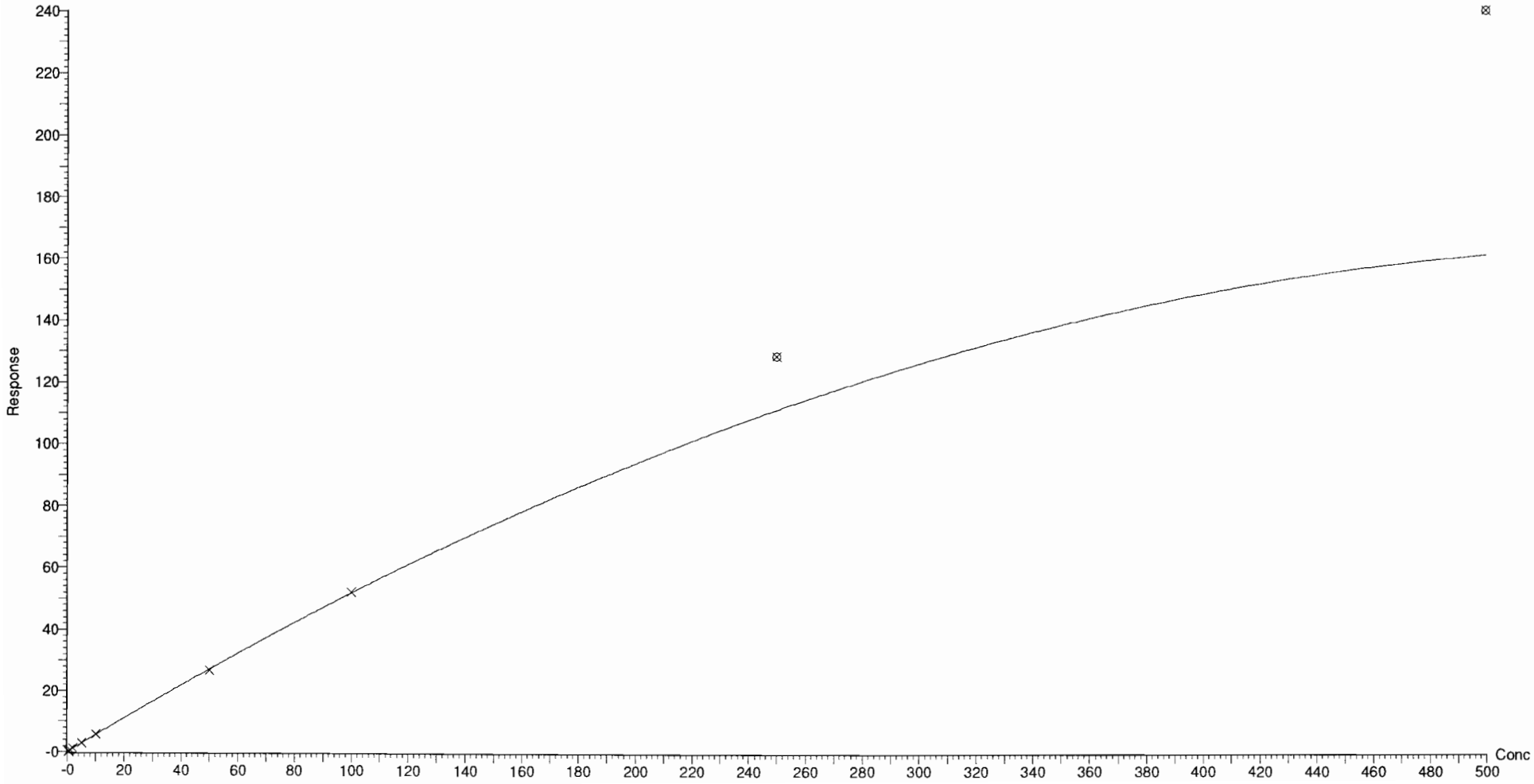
Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999935
Calibration curve: -3.03911e-005 * x^2 + 0.875012 * x + 0.245196
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999635
Calibration curve: -0.000489574 * x^2 + 0.567517 * x + 0.0808065
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

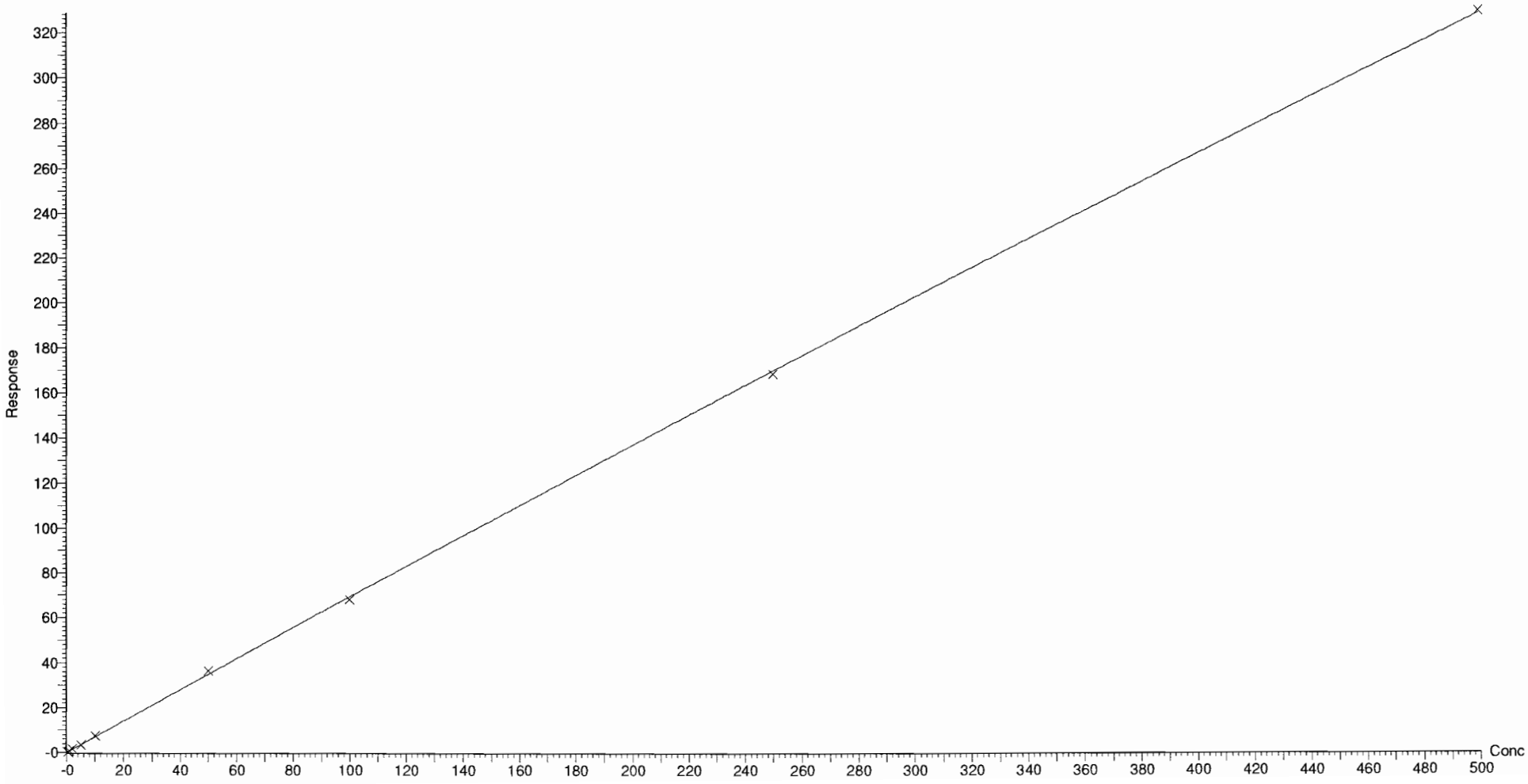


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

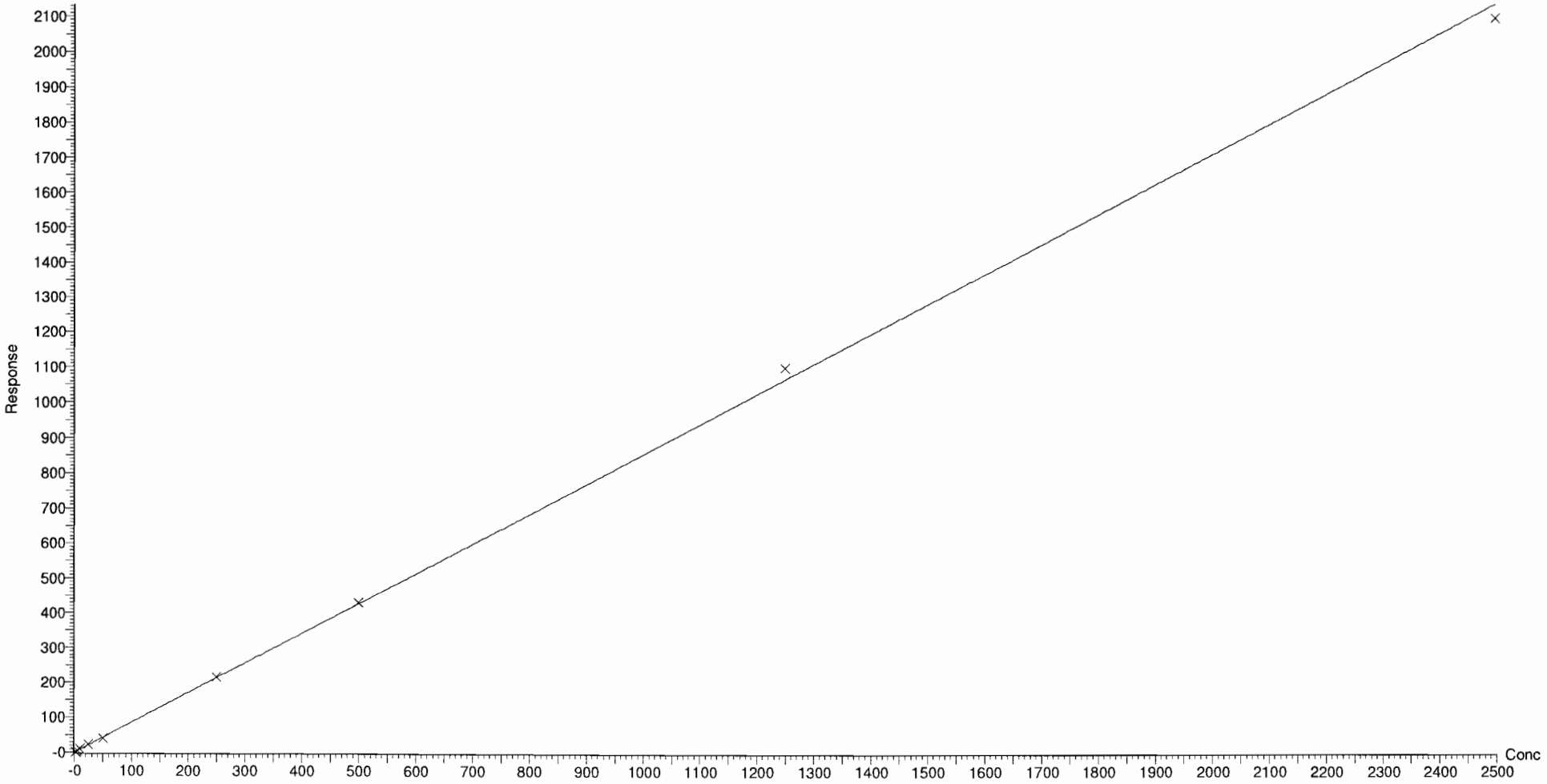
Compound name: PFODA
Coefficient of Determination: R^2 = 0.999674
Calibration curve: -9.46142e-005 * x^2 + 0.702612 * x + 0.0335735
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

Compound name: N-MeFOSE
Correlation coefficient: r = 0.999700, r^2 = 0.999401
Calibration curve: 0.853259 * x + 0.526454
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

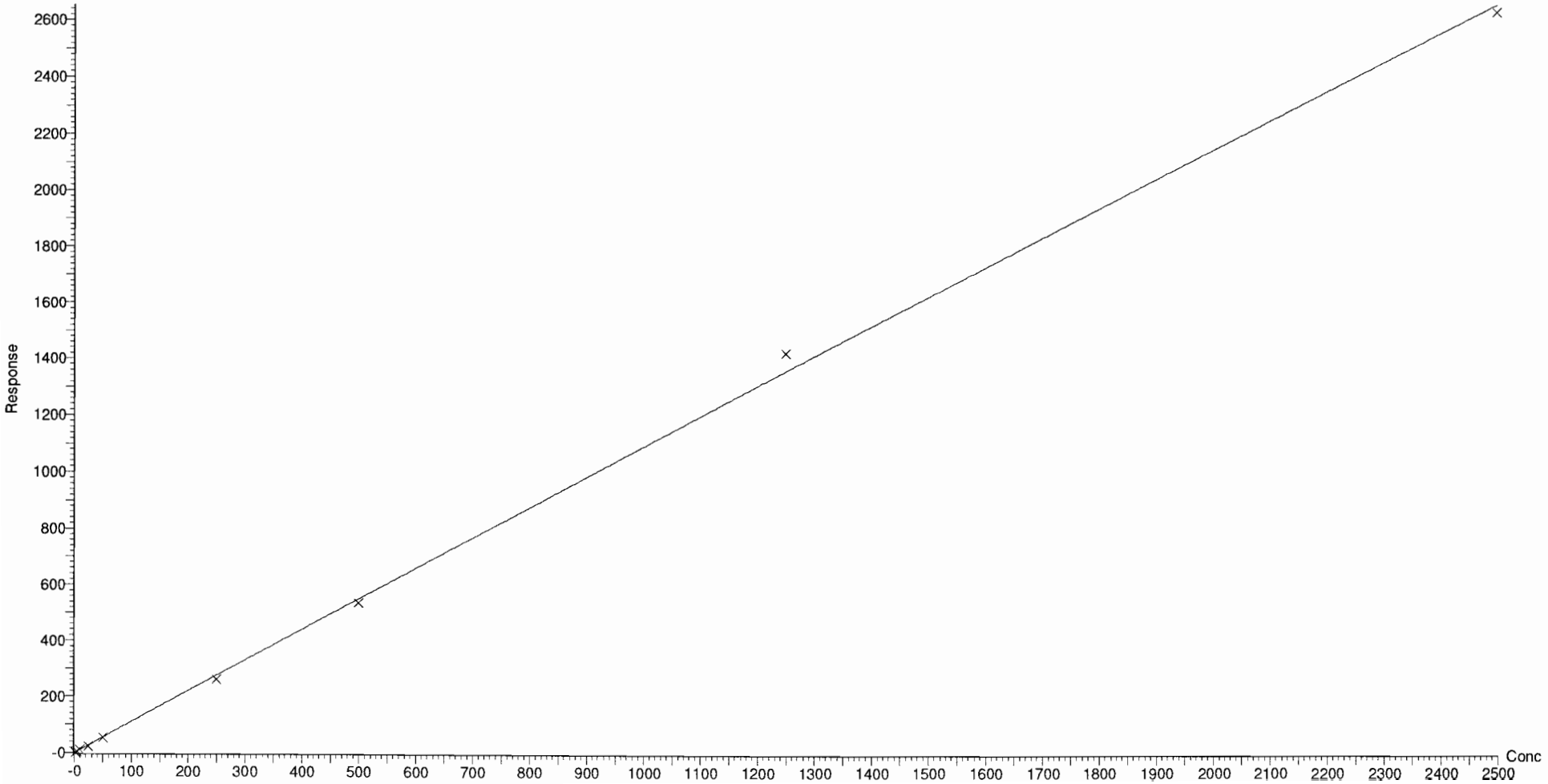


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:27:42 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:31:29 Pacific Daylight Time

Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.998903
Calibration curve: -1.99266e-005 * x^2 + 1.11219 * x + -0.0345678
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory

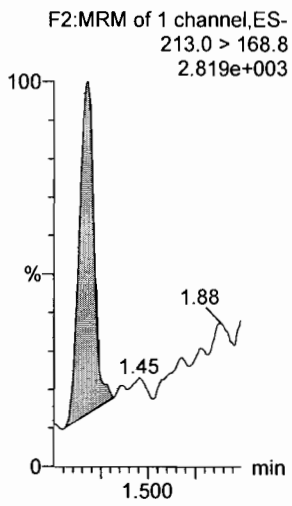
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:23:34 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:23:39 Pacific Daylight Time

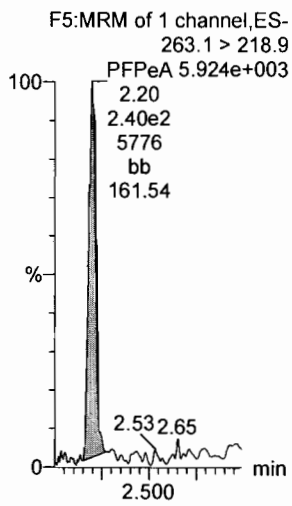
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: 19 Jun 2018 10:23:34

Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

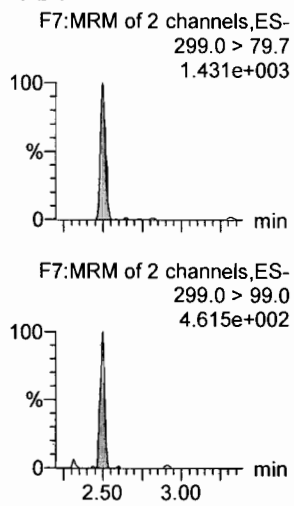
PFBA



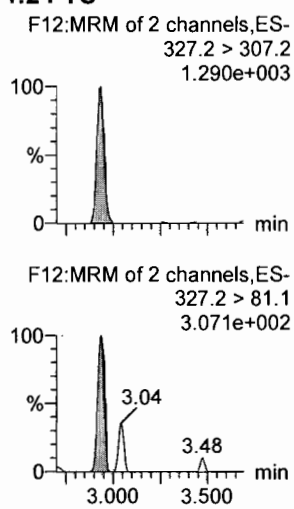
PFPeA



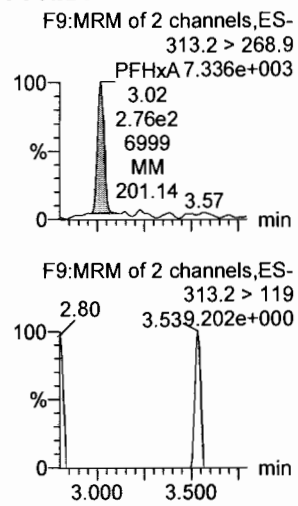
PFBS



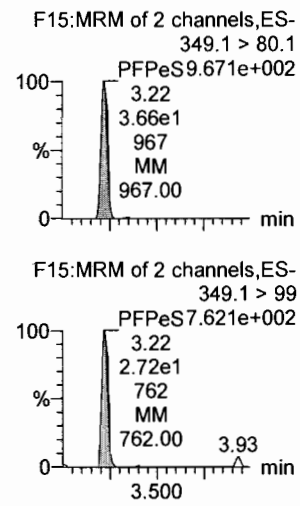
4:2 FTS



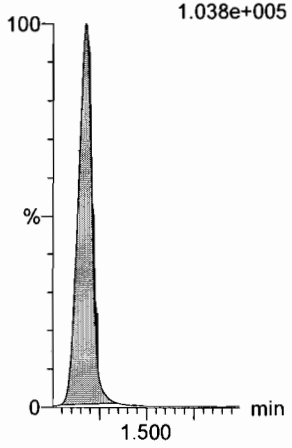
PFHxA



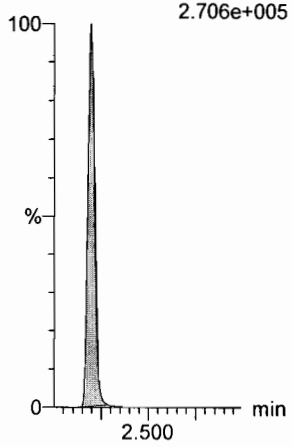
PFPeS



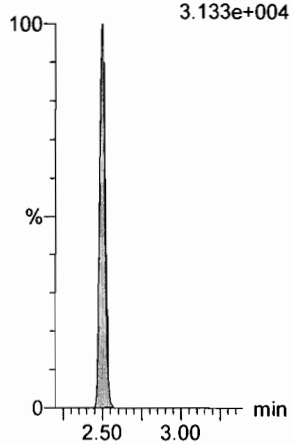
13C3-PFBA



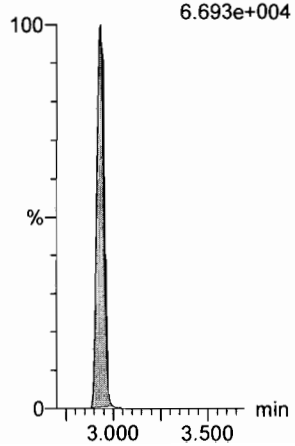
13C3-PFPeA



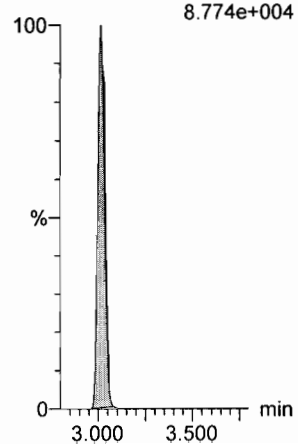
13C3-PFBS



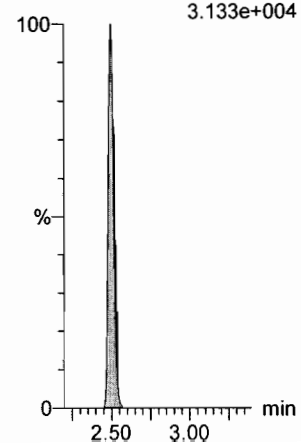
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

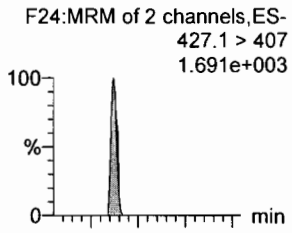


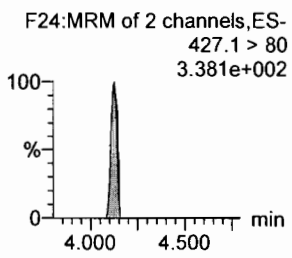
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:23:34 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:23:39 Pacific Daylight Time

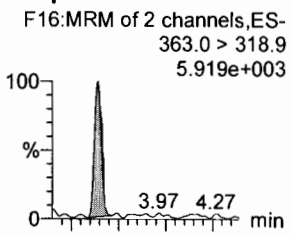
Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

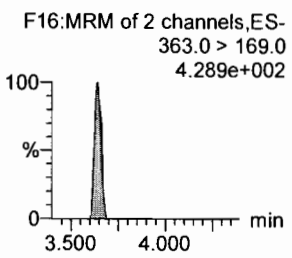
6:2 FTS



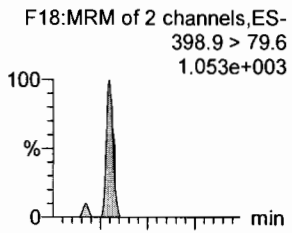


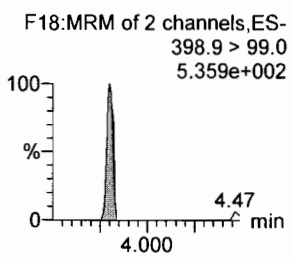
PFHpA



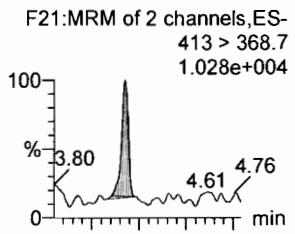


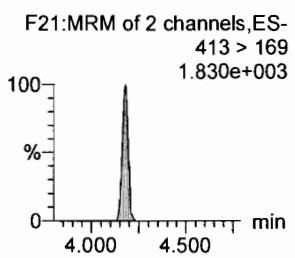
L-PFHxS



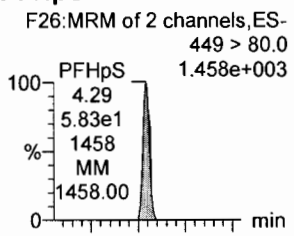


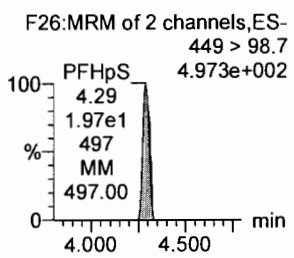
L-PFOA



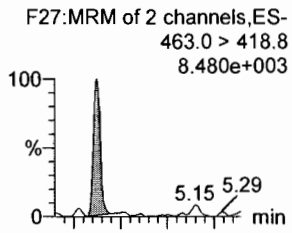


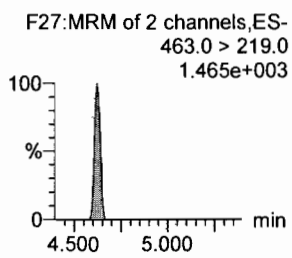
PFHpS



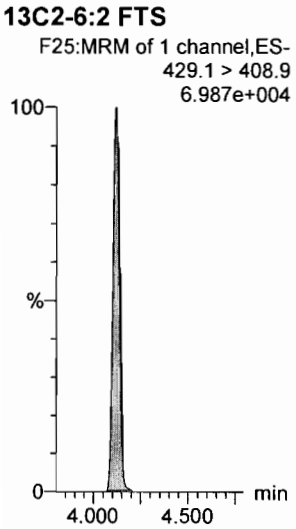


PFNA

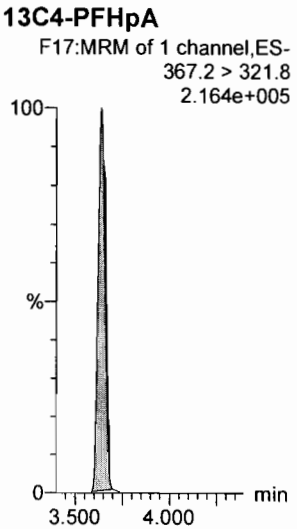




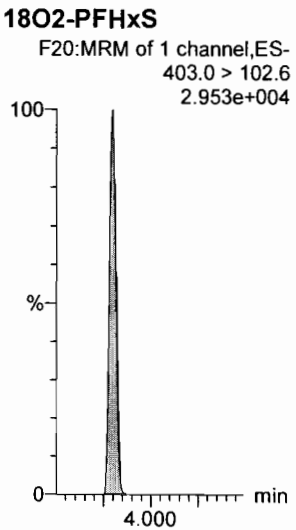
13C2-6:2 FTS



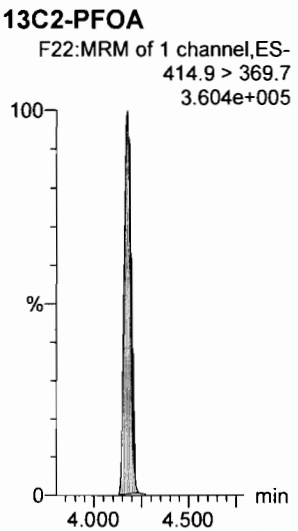
13C4-PFHpA



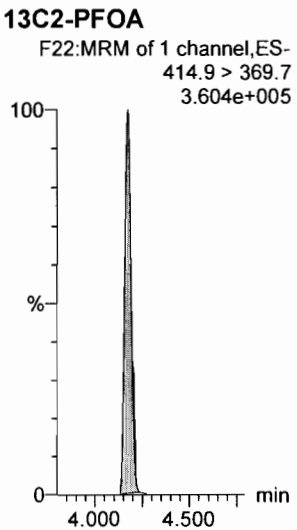
18O2-PFHxS



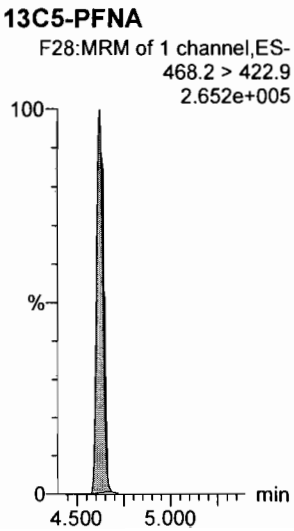
13C2-PFOA



13C2-PFOA



13C5-PFNA

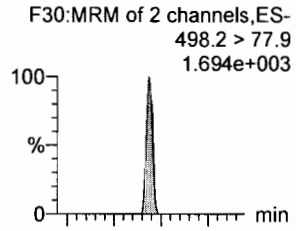


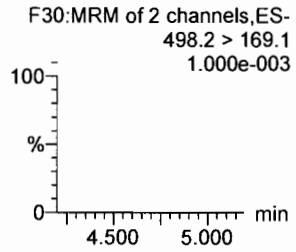
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:23:34 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:23:39 Pacific Daylight Time

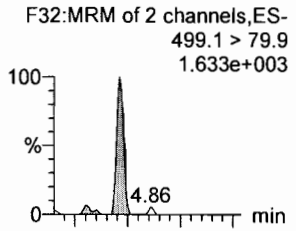
Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

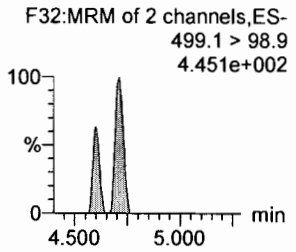
PFOSA



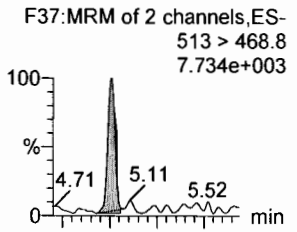


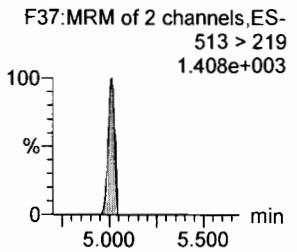
L-PFOS



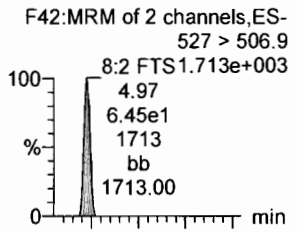


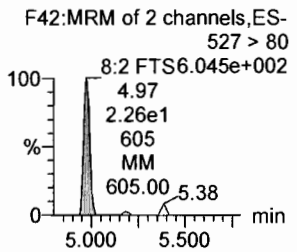
PFDA



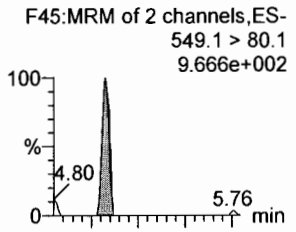


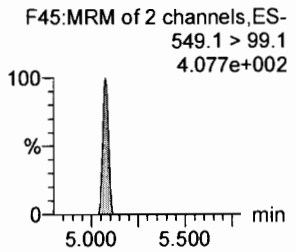
8:2 FTS



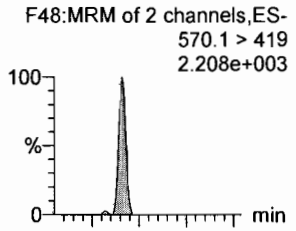


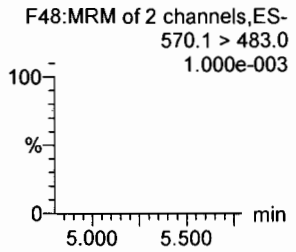
PFNS



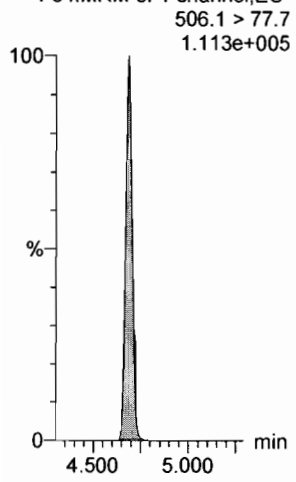


L-MeFOSAA

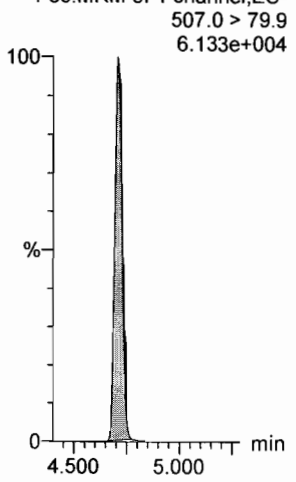




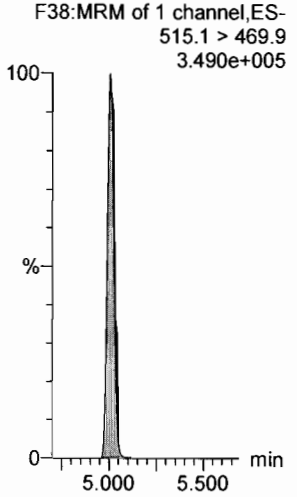
13C8-PFOSA



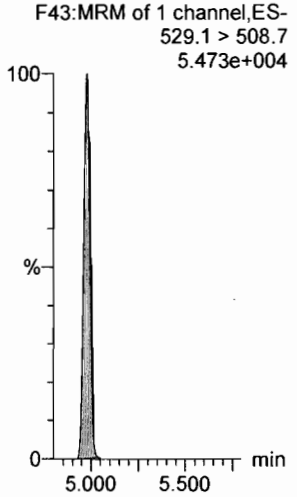
13C8-PFOS



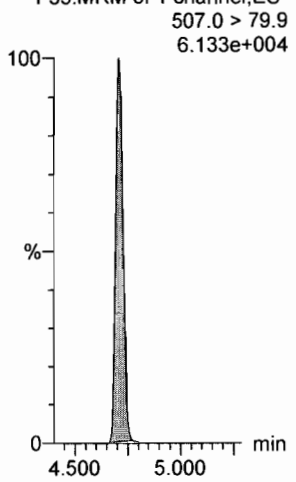
13C2-PFDA



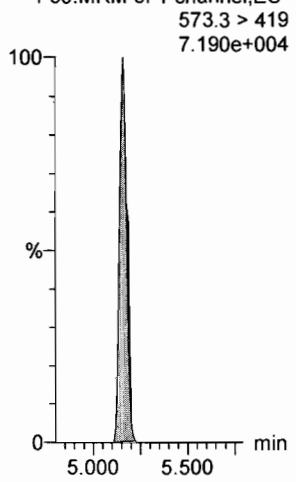
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

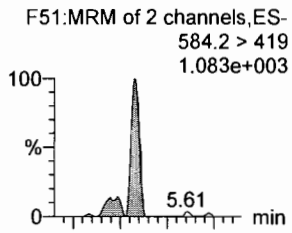


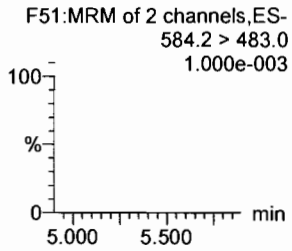
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:23:34 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:23:39 Pacific Daylight Time

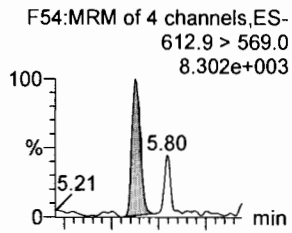
Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

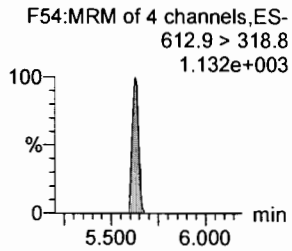
L-EtFOSAA





PFDoA





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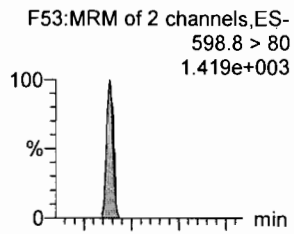
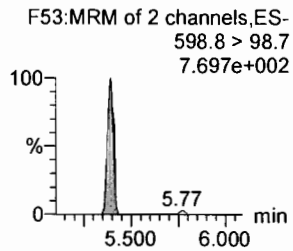
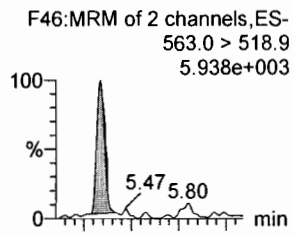
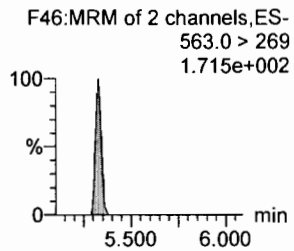


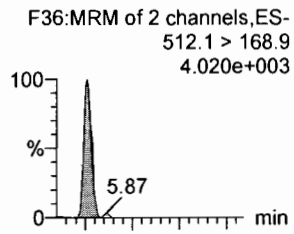


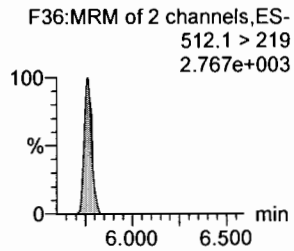
PFUdA





N-MeFOSA





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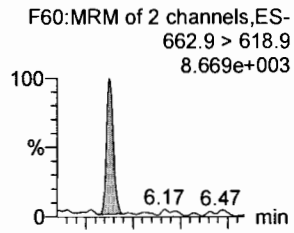
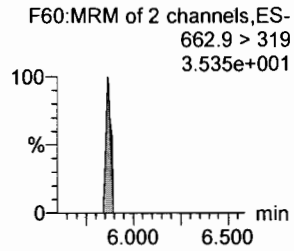
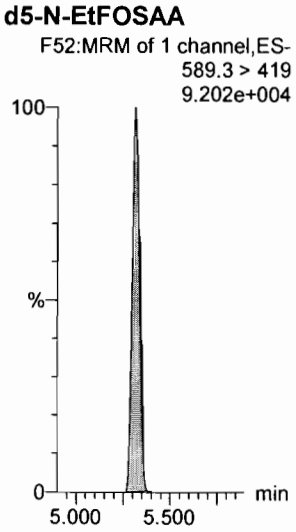
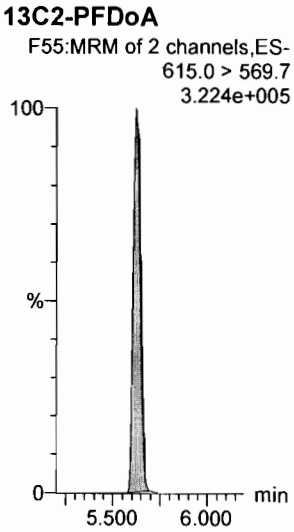




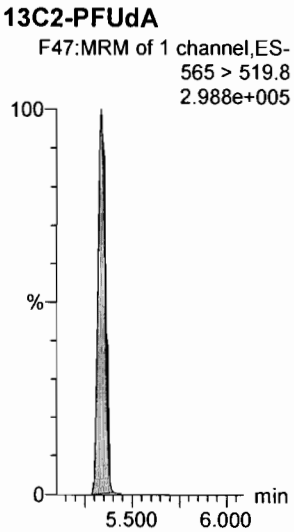
d5-N-EtFOSAA



13C2-PFDoA



13C2-PFUdA



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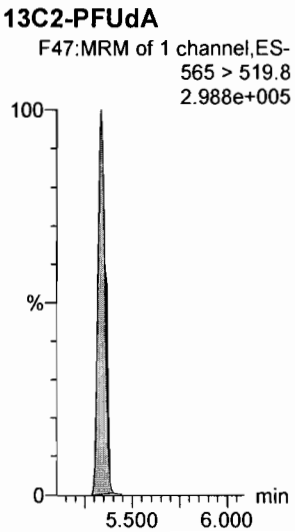

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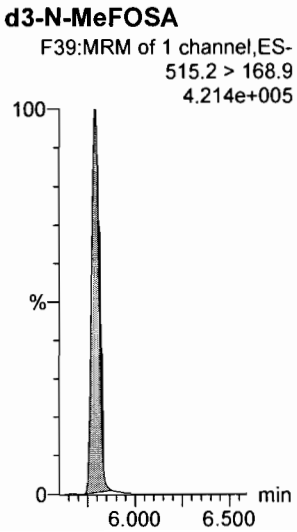

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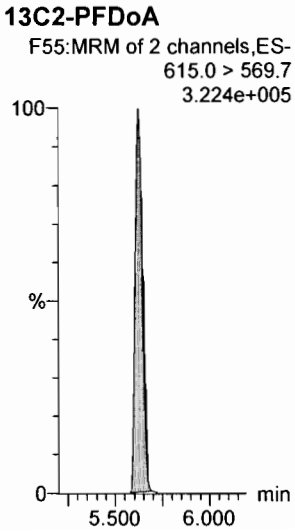
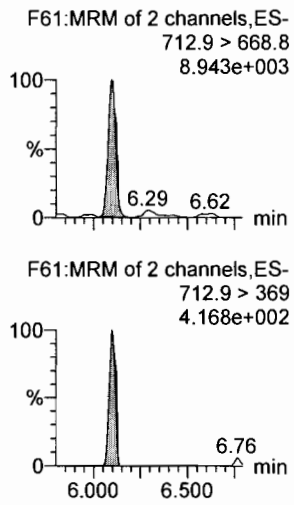


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

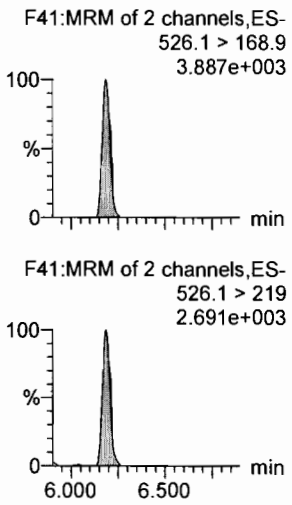
Last Altered: Tuesday, June 19, 2018 10:23:34 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:23:39 Pacific Daylight Time

Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

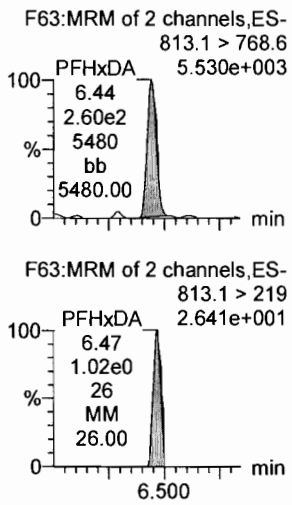
PFTeDA



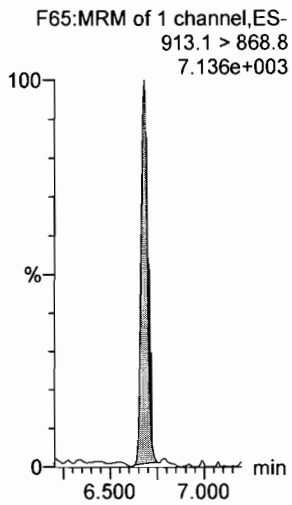
N-EtFOSA



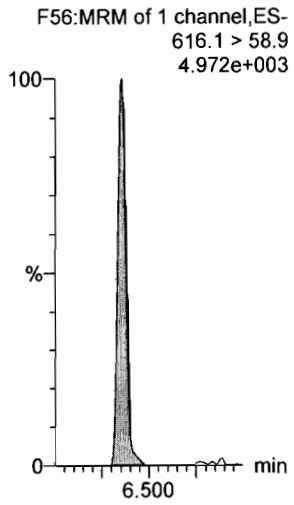
PFHxDA



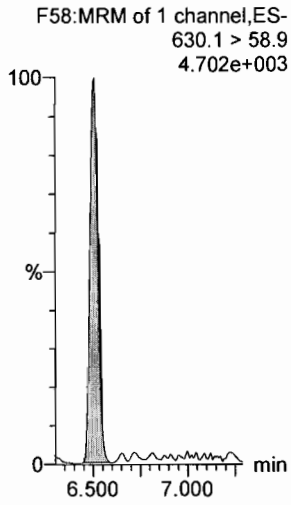
PFODA



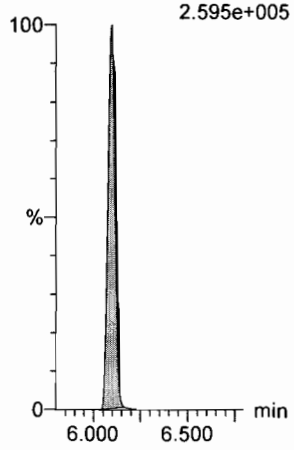
N-MeFOSE



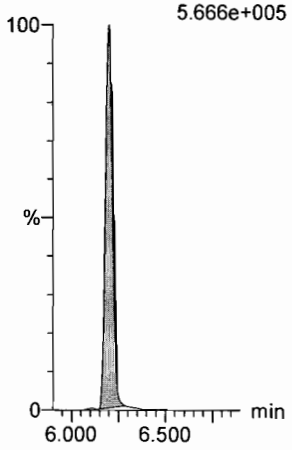
N-EtFOSE



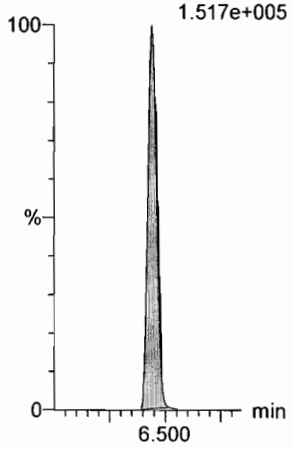
13C2-PFTeDA



d5-N-ETFOSA



13C2-PFHxDA



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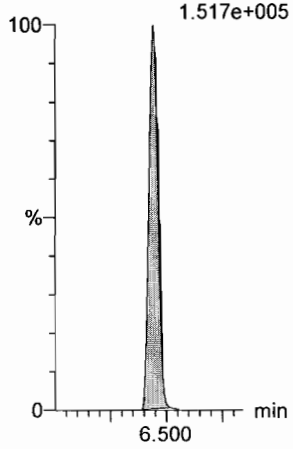
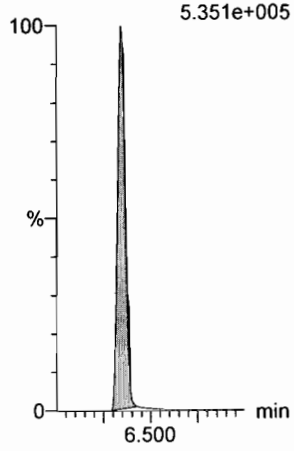
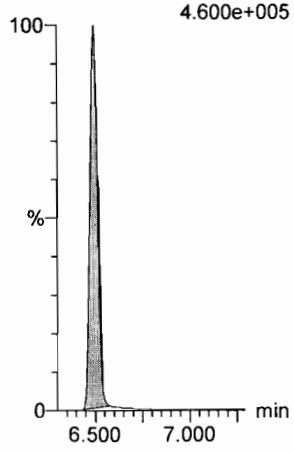


d7-N-MeFOSE



d9-N-EtFOSE

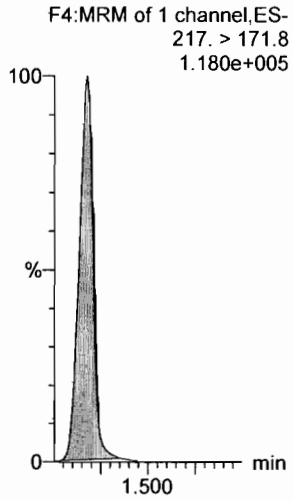


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

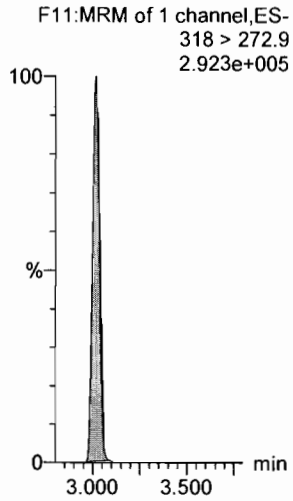
Last Altered: Tuesday, June 19, 2018 10:23:34 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:23:39 Pacific Daylight Time

Name: 180618M1_16, Date: 18-Jun-2018, Time: 19:22:59, ID: ST180618M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

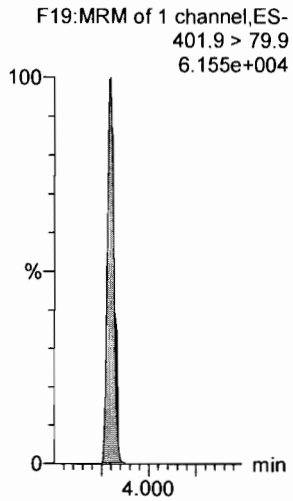
13C4-PFBA



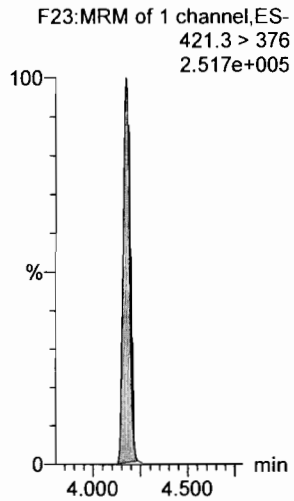
13C5-PFHxA



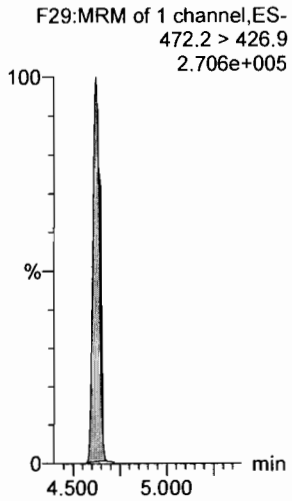
13C3-PFHxS



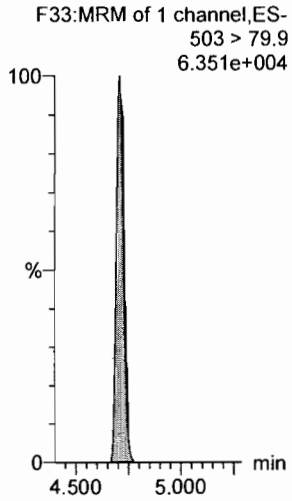
13C8-PFOA



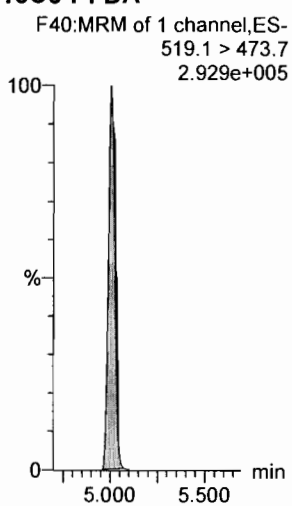
13C9-PFNA



13C4-PFOS



13C6-PFDA



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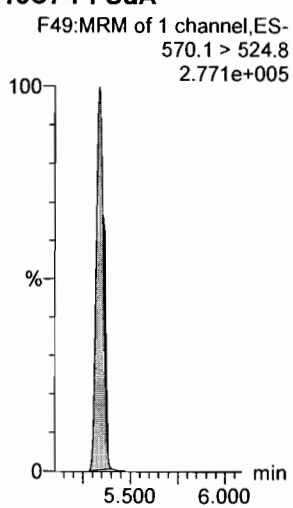
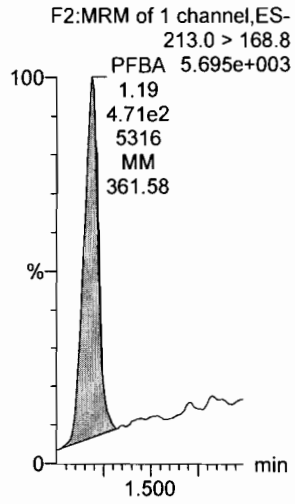


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

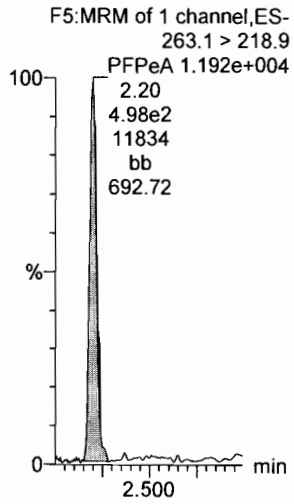
Last Altered: Tuesday, June 19, 2018 10:19:56 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:20:03 Pacific Daylight Time

Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

PFBA



PFPeA



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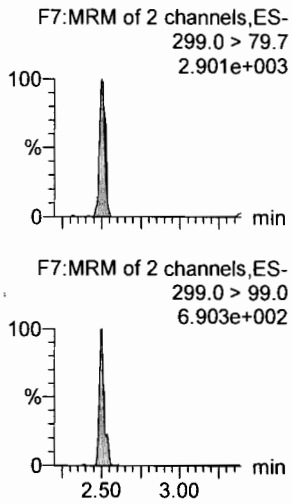

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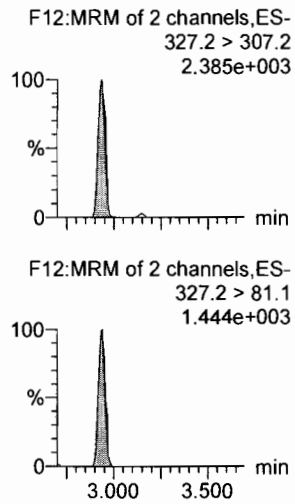

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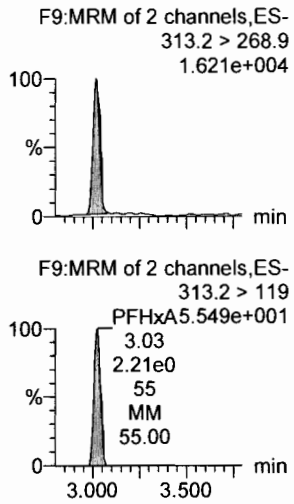

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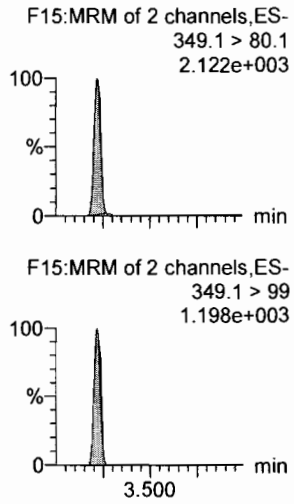
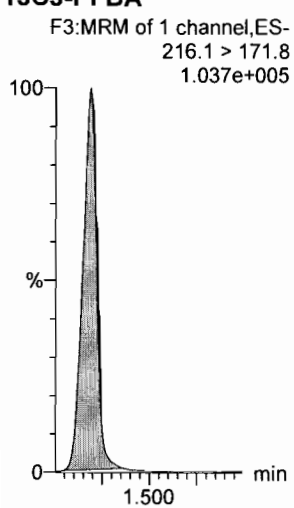


13C3-PFBA



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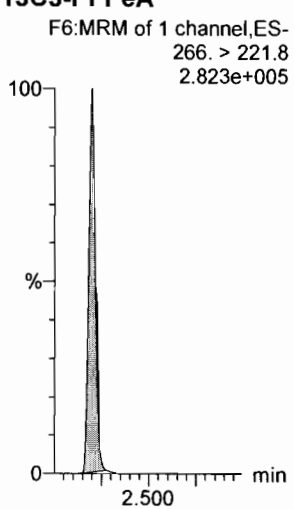

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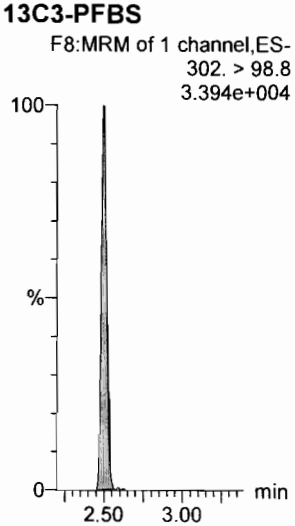
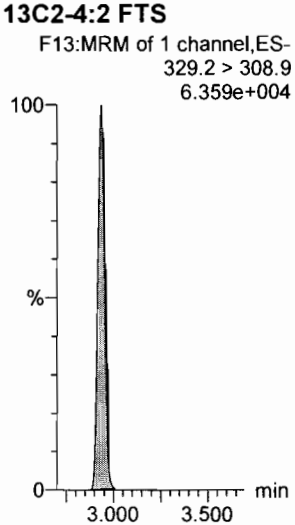


13C2-4:2 FTS



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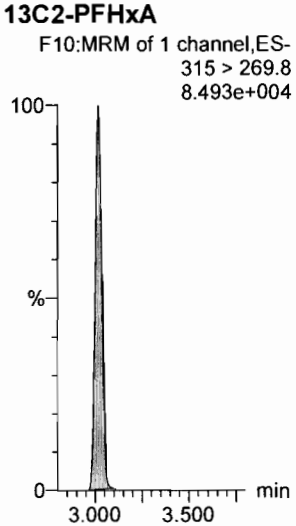

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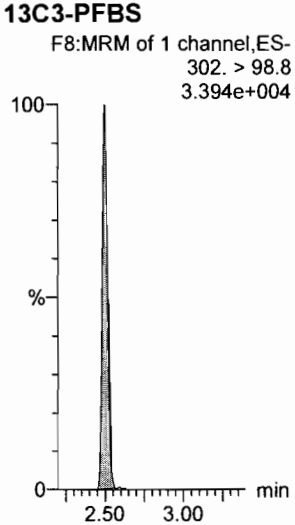
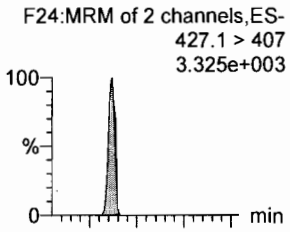


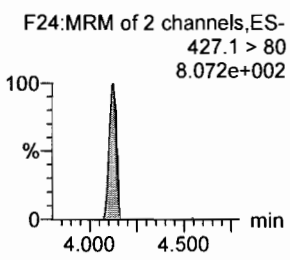
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:19:56 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:20:03 Pacific Daylight Time

Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

6:2 FTS





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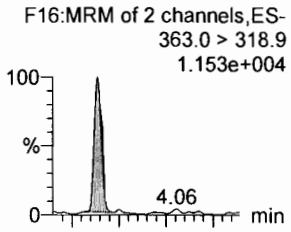
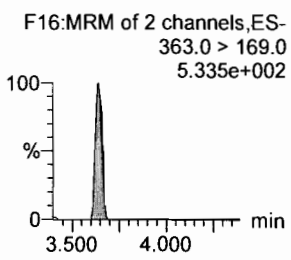
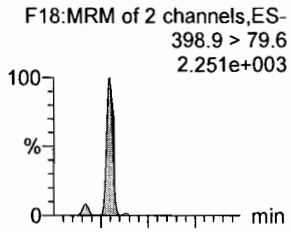
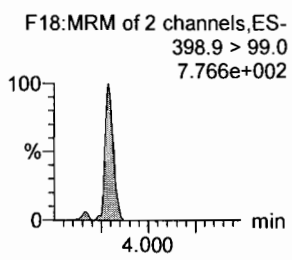


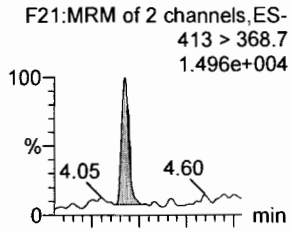


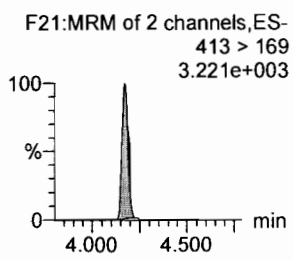
L-PFHxS





L-PFOA





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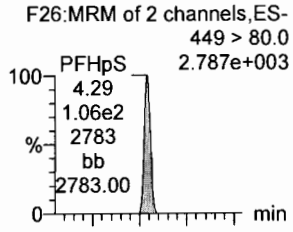

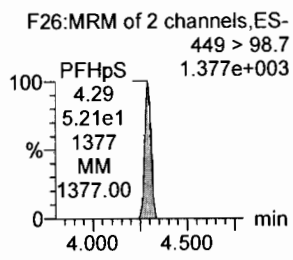

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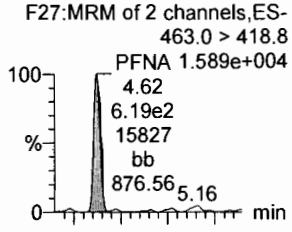
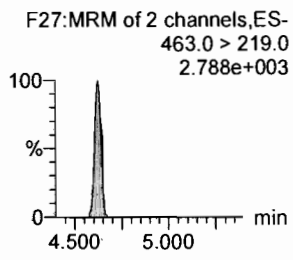
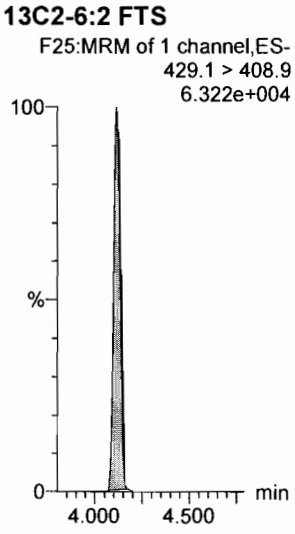
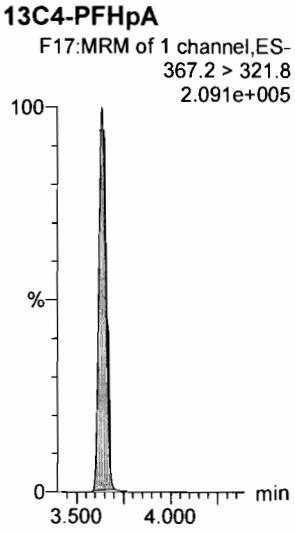




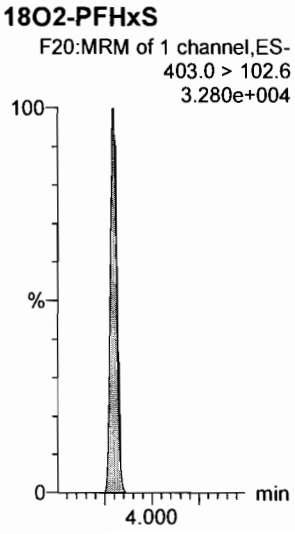
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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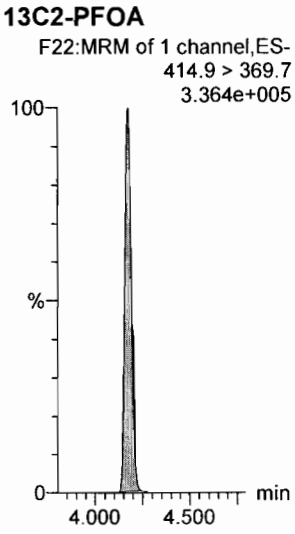

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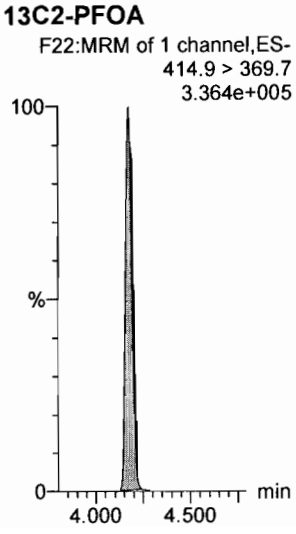

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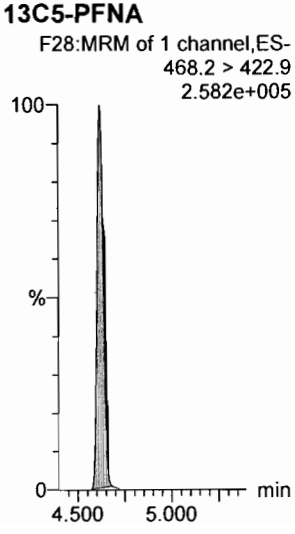
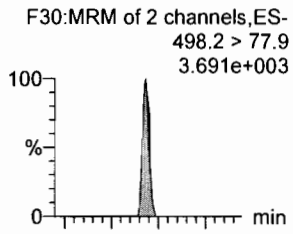


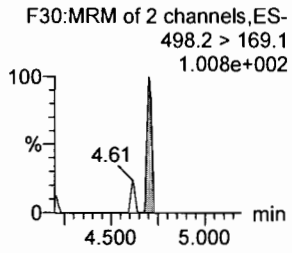
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:19:56 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:20:03 Pacific Daylight Time

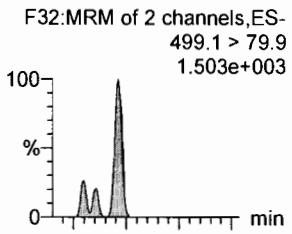
Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

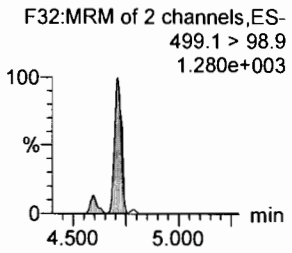
PFOSA





L-PFOS





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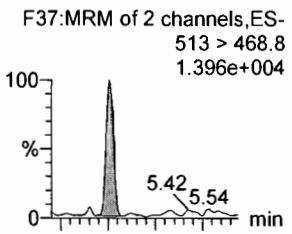
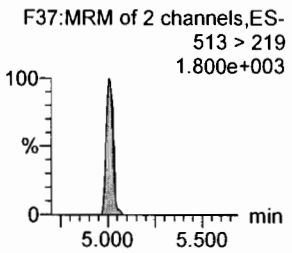
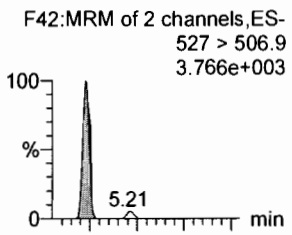
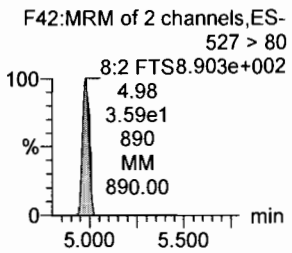




8:2 FTS





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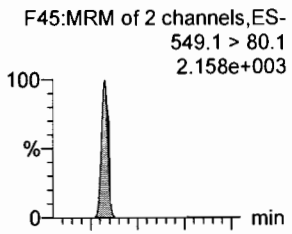

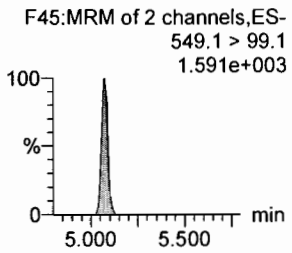

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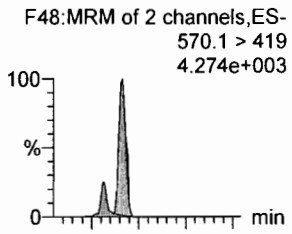
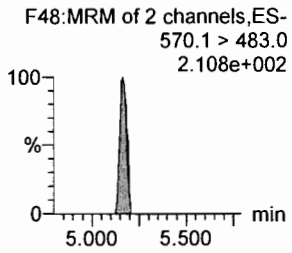
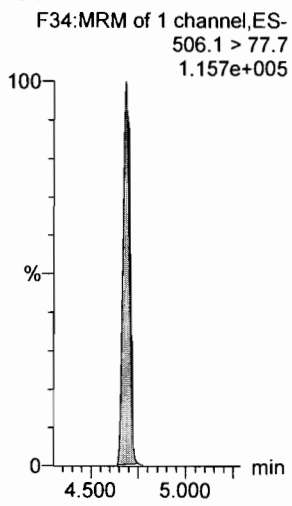




13C8-PFOSA



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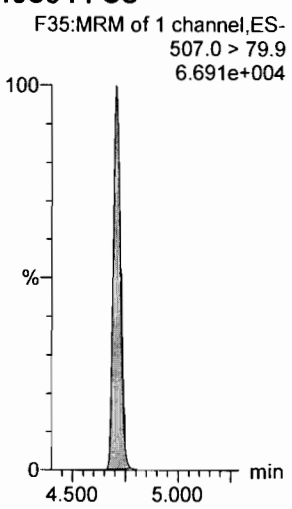

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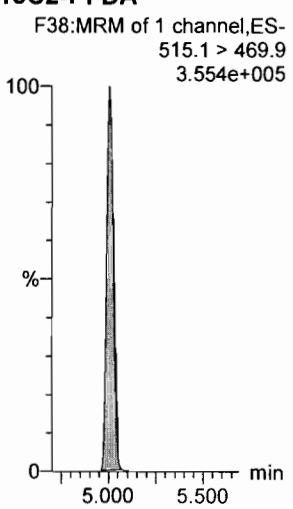
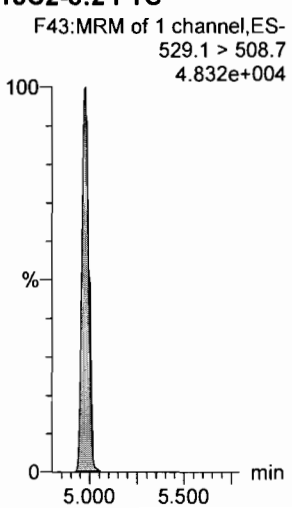


13C2-8:2 FTS



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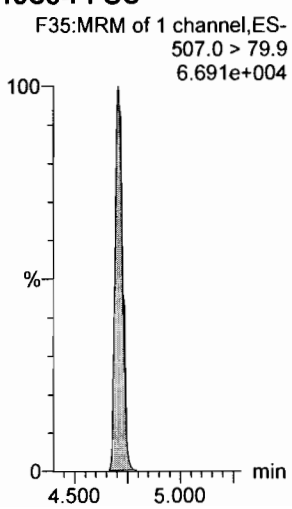

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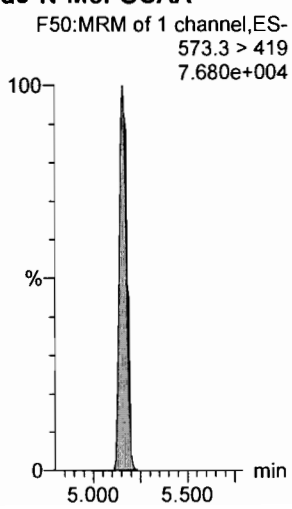
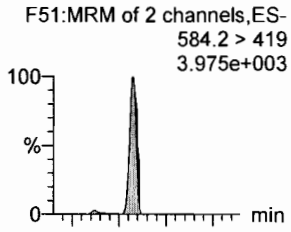


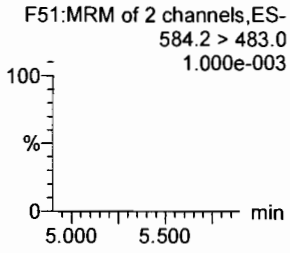
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:19:56 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:20:03 Pacific Daylight Time

Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

L-EtFOSAA





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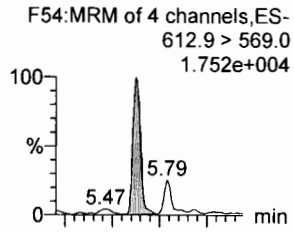

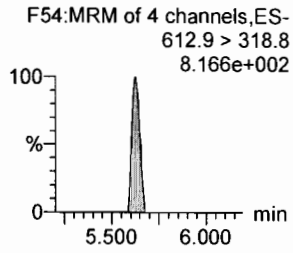

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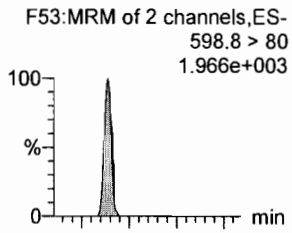
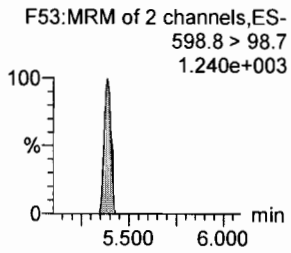
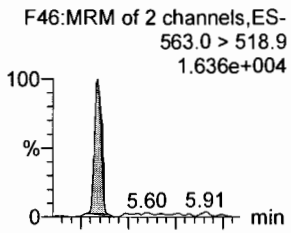
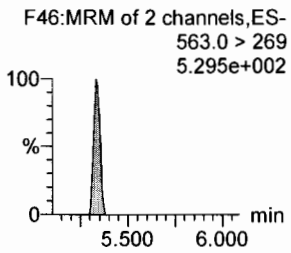


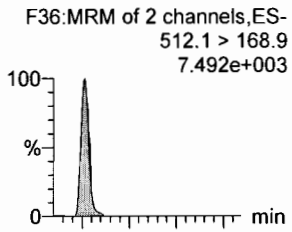


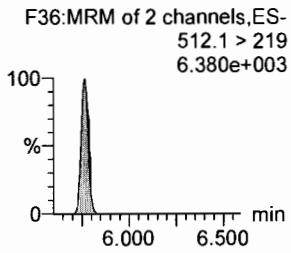
PFUdA



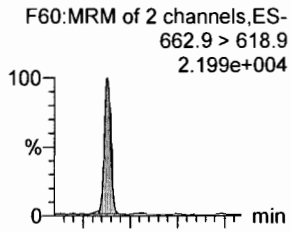


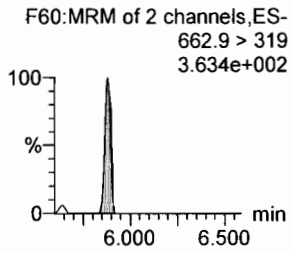
N-MeFOSA



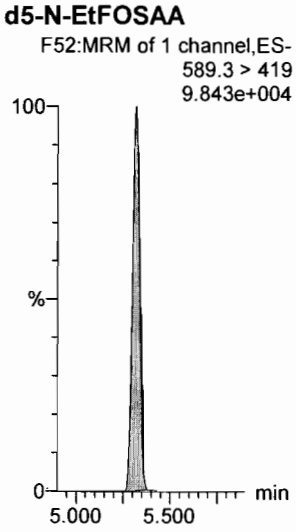


PFTrDA

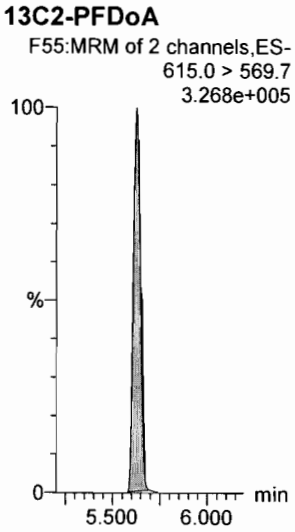




d5-N-EtFOSAA



13C2-PFDoA



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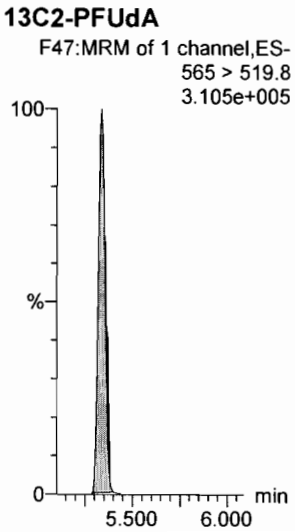
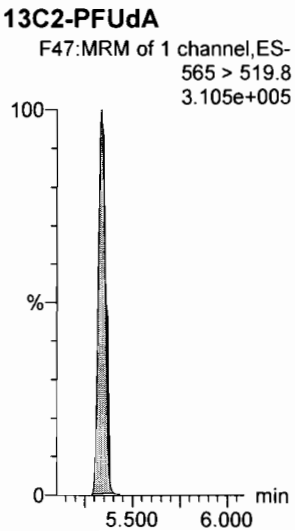


13C2-PFUdA



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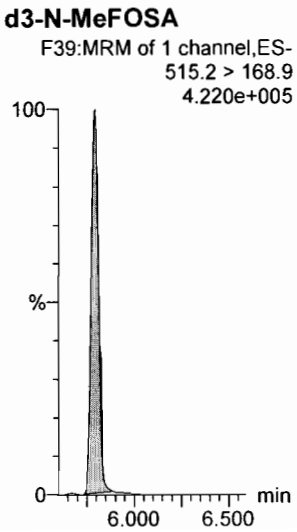

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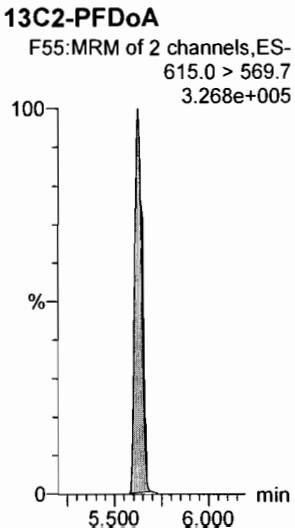
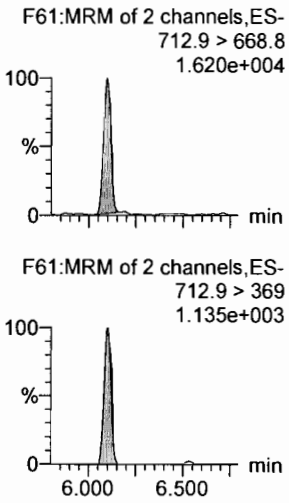


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 10:19:56 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:20:03 Pacific Daylight Time

Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

PFTeDA



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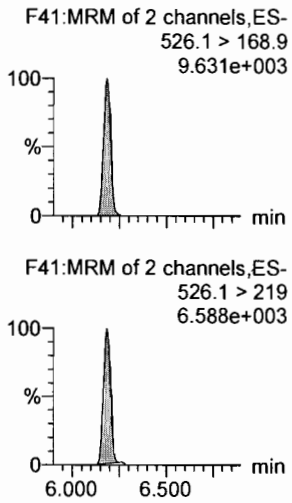
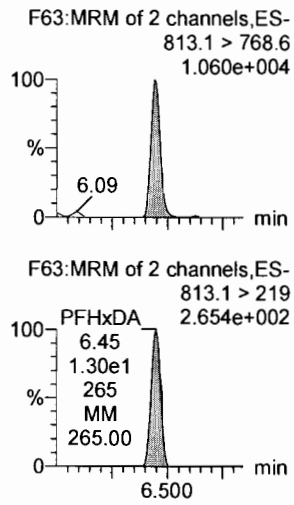
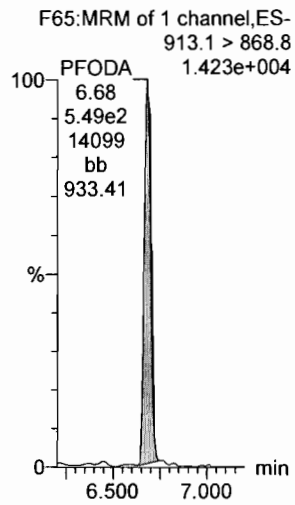


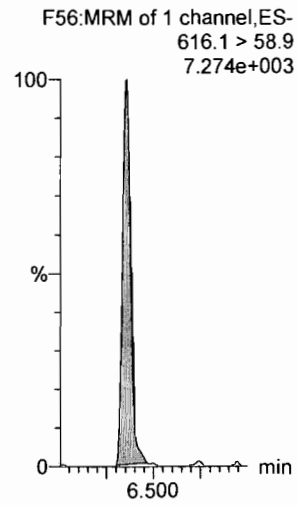
PFHxDA



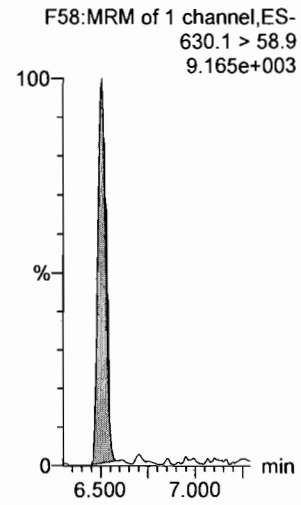
PFODA



N-MeFOSE



N-EtFOSE



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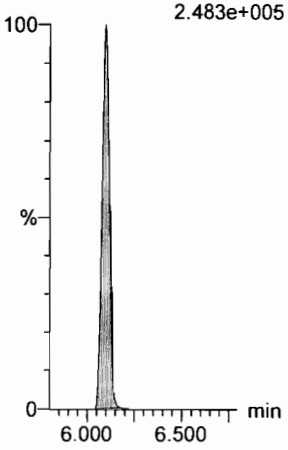
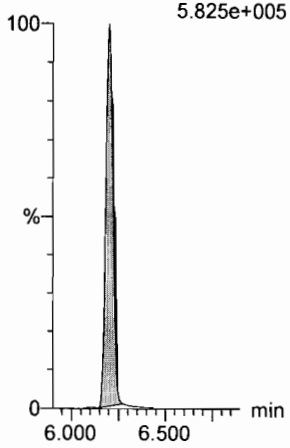


d5-N-ETFOSA



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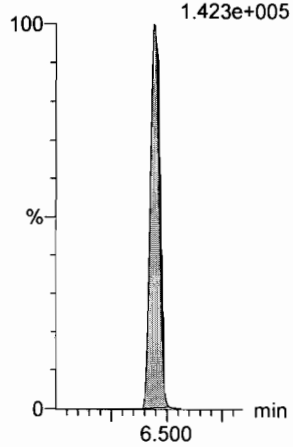

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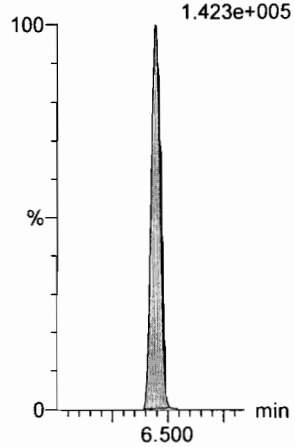
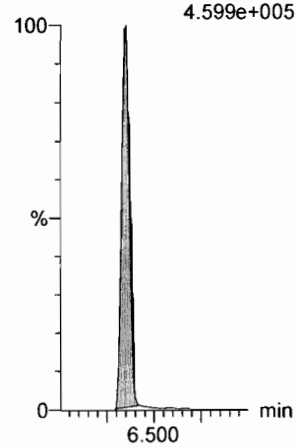


d7-N-MeFOSE



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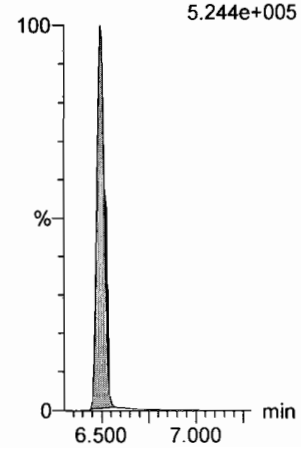
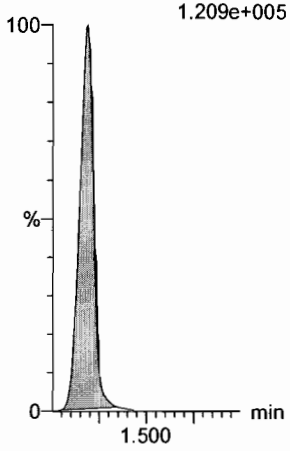


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

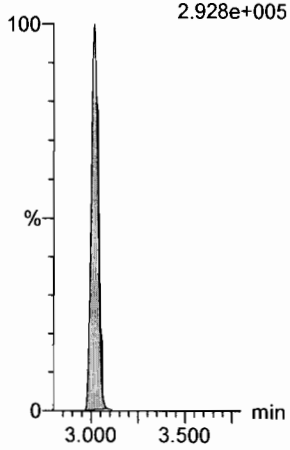
Last Altered: Tuesday, June 19, 2018 10:19:56 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:20:03 Pacific Daylight Time

Name: 180618M1_17, Date: 18-Jun-2018, Time: 19:33:27, ID: ST180618M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

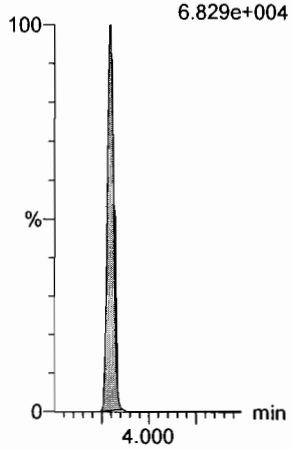
13C4-PFBA



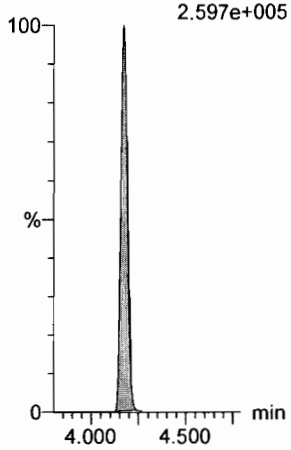
13C5-PFHxA



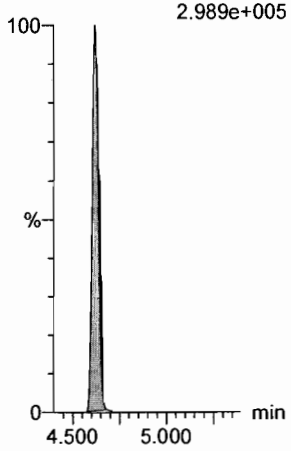
13C3-PFHxS



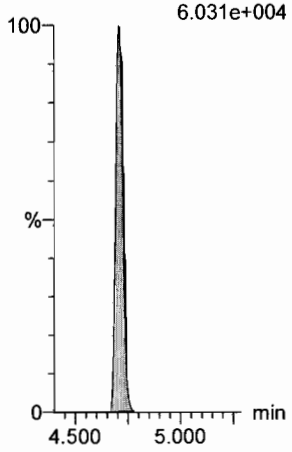
13C8-PFOA



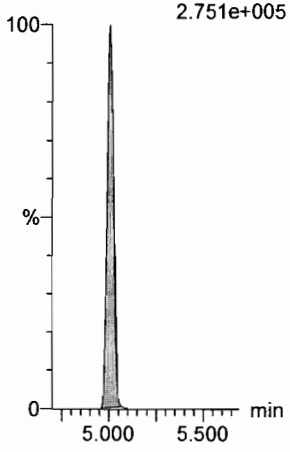
13C9-PFNA



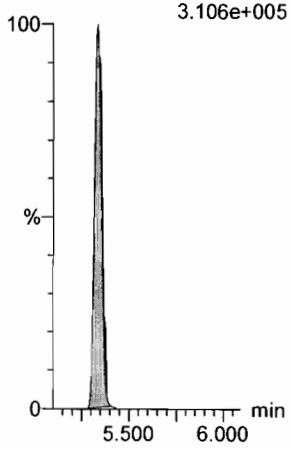
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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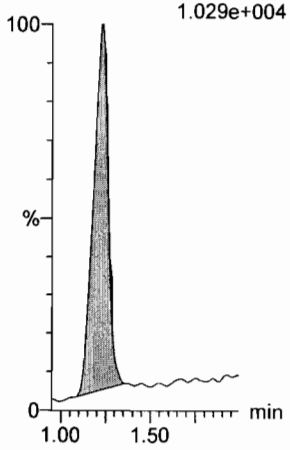
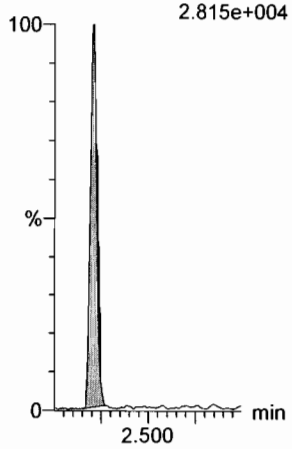
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_18, Date: 18-Jun-2018, Time: 19:46:40, ID: ST180618M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

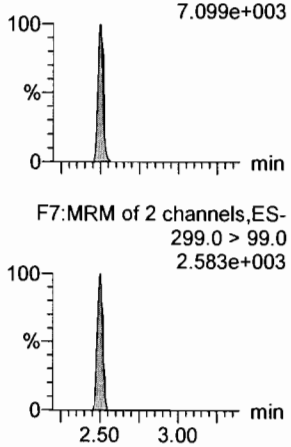
PFBA



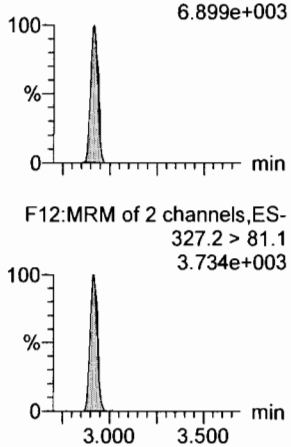
PFPeA



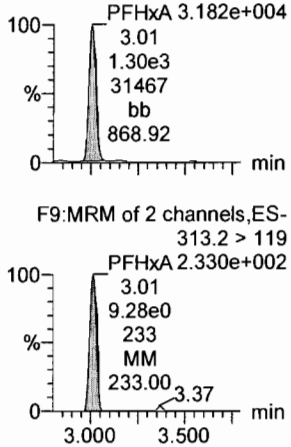
PFBS



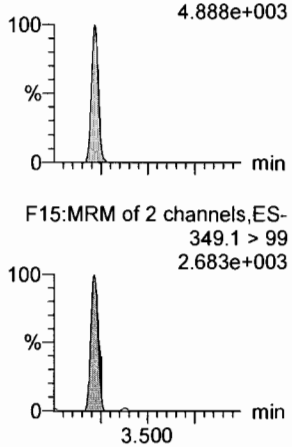
4:2 FTS



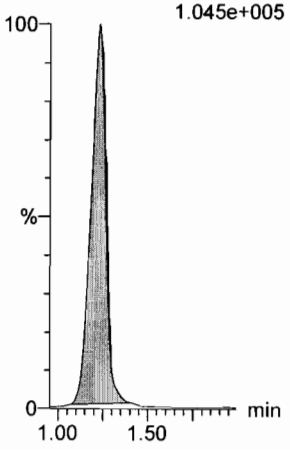
PFHxA



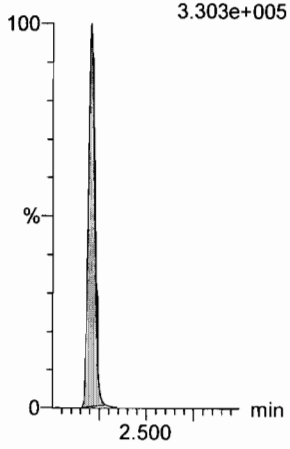
PFPeS



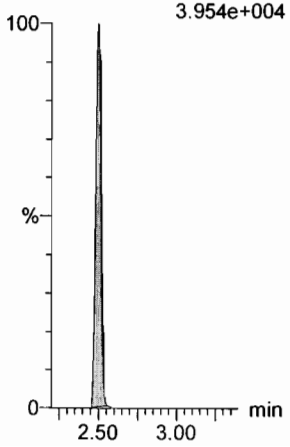
13C3-PFBA



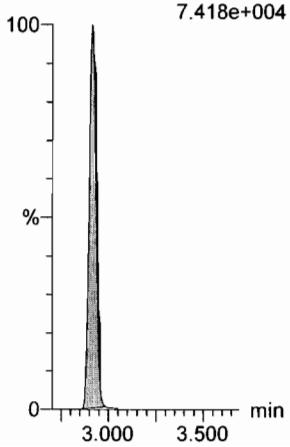
13C3-PFPeA



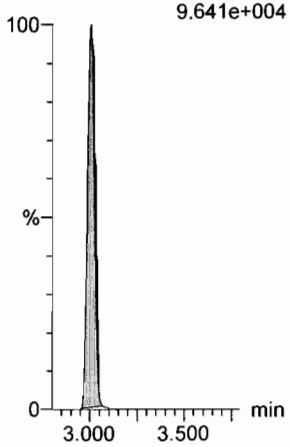
13C3-PFBS



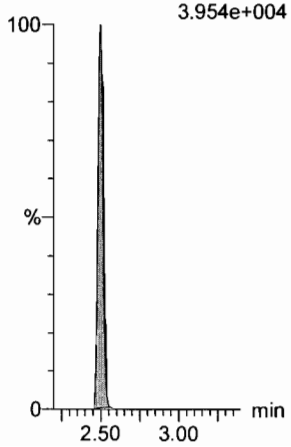
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

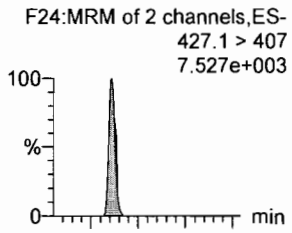


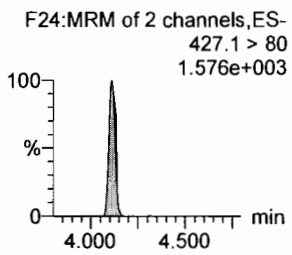
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

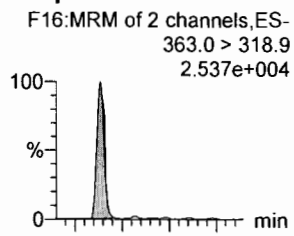
Name: 180618M1_18, Date: 18-Jun-2018, Time: 19:46:40, ID: ST180618M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

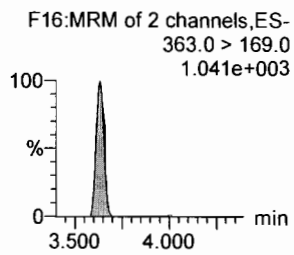
6:2 FTS



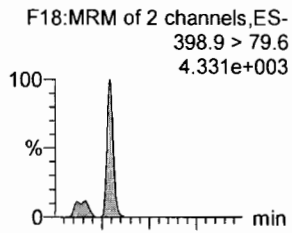


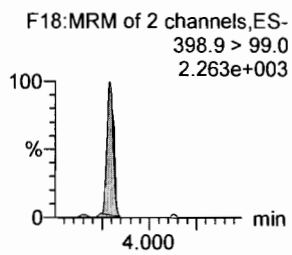
PFHpA



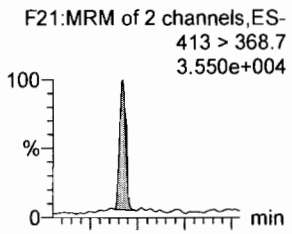


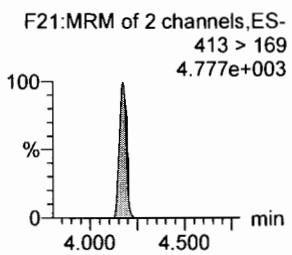
L-PFHxS



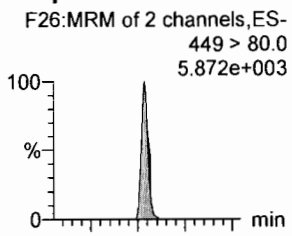


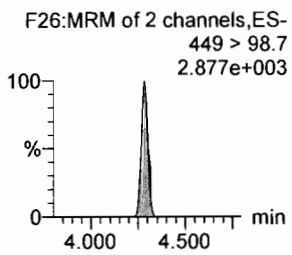
L-PFOA



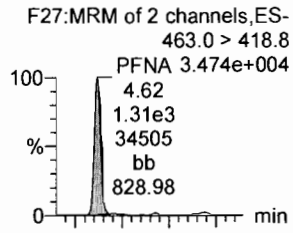


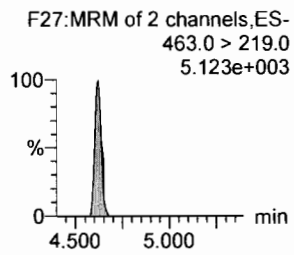
PFHpS



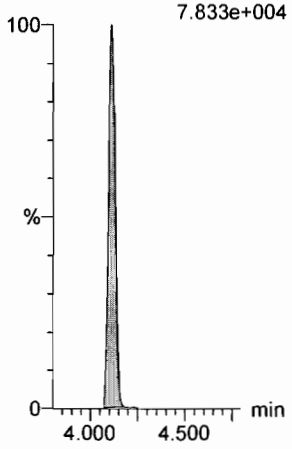


PFNA

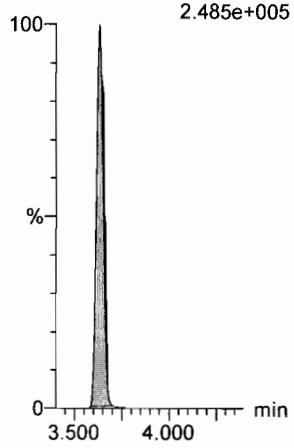




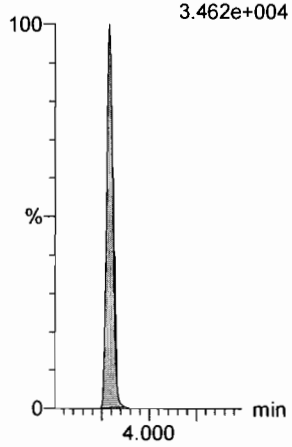
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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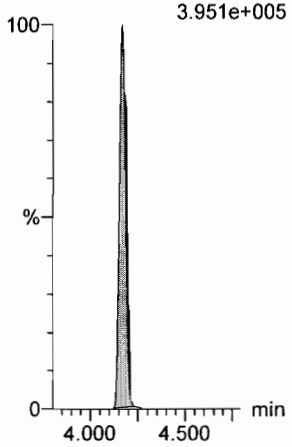

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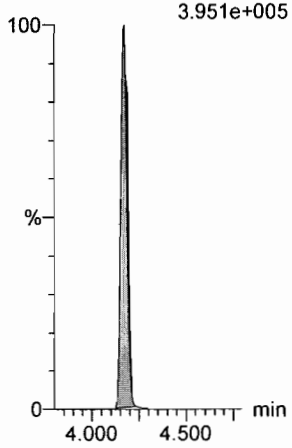

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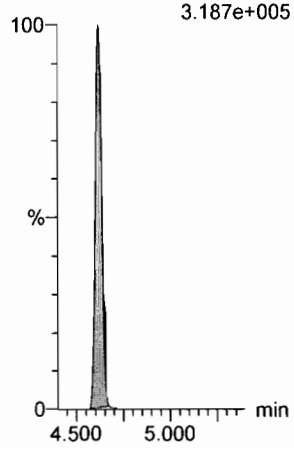
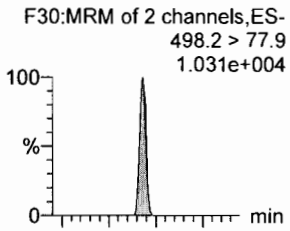


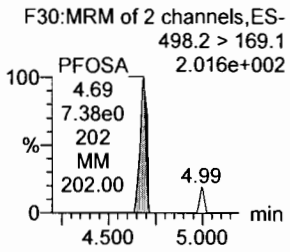
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_18, Date: 18-Jun-2018, Time: 19:46:40, ID: ST180618M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

PFOSA





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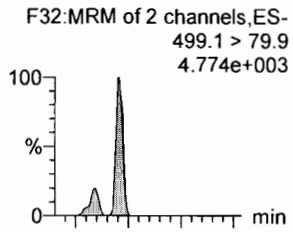

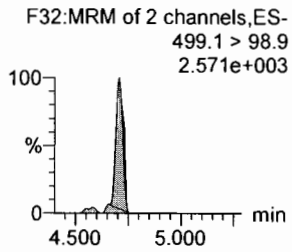

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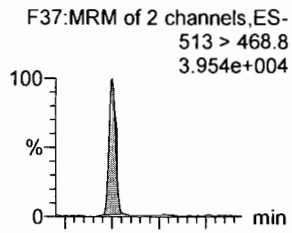
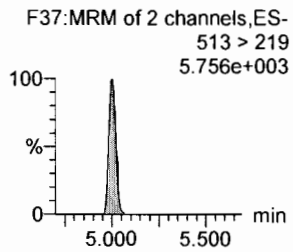
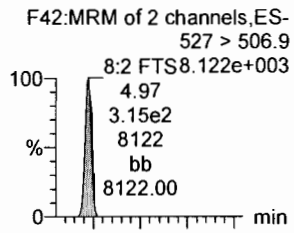
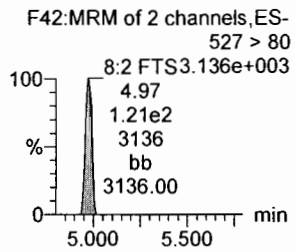




8:2 FTS





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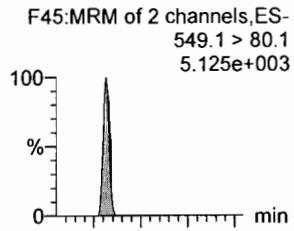

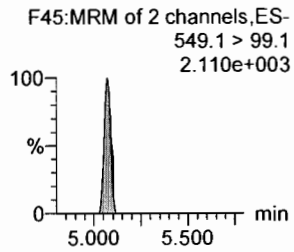

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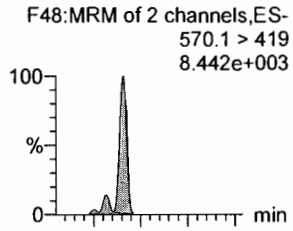
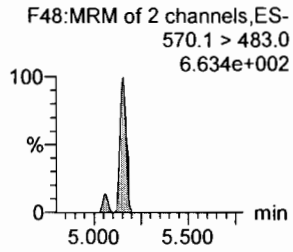
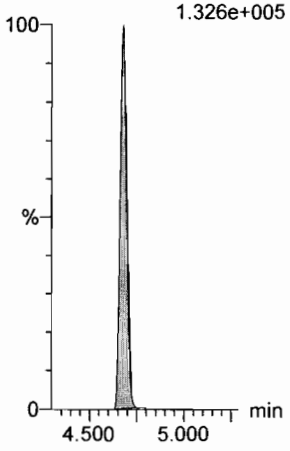
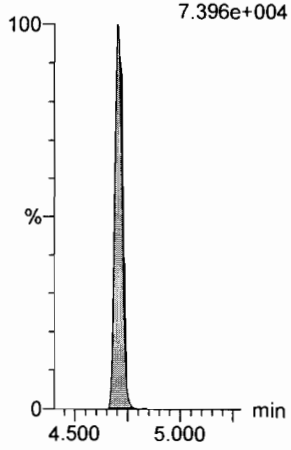




13C8-PFOSA



13C8-PFOS



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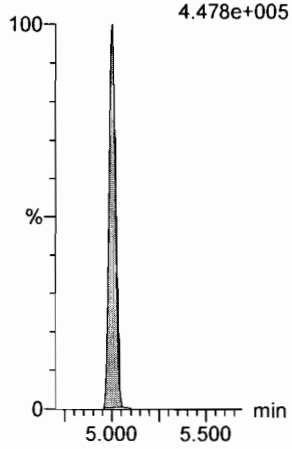
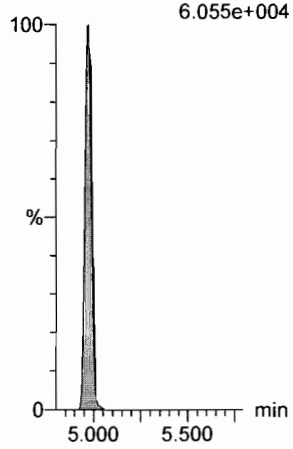


13C2-8:2 FTS



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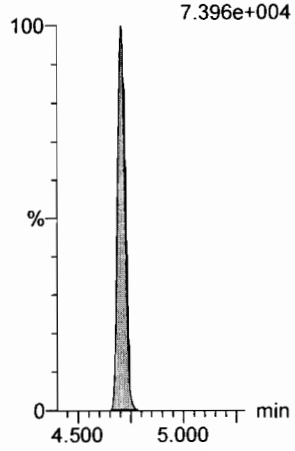
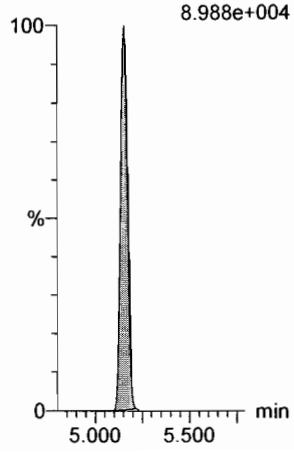


d3-N-MeFOSAA



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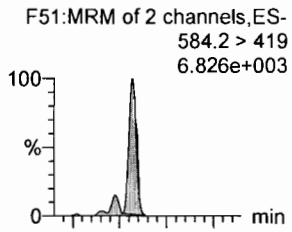
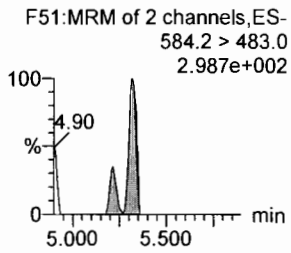
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

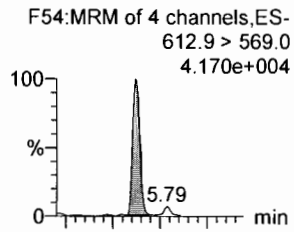
Name: 180618M1_18, Date: 18-Jun-2018, Time: 19:46:40, ID: ST180618M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

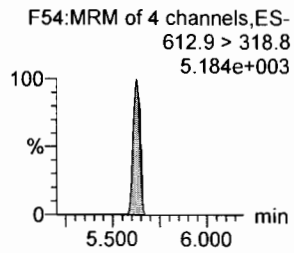
L-EtFOSAA





PFDoA





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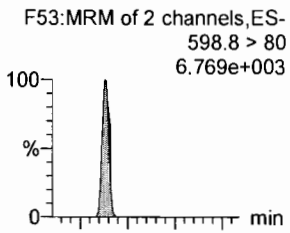

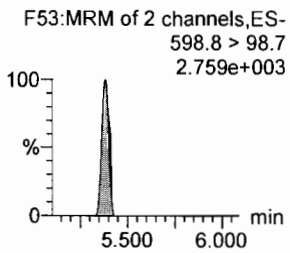

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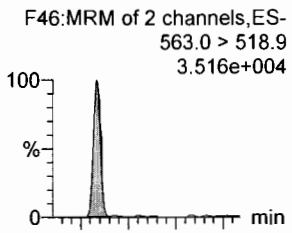
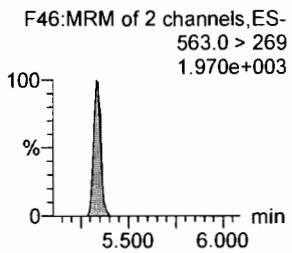
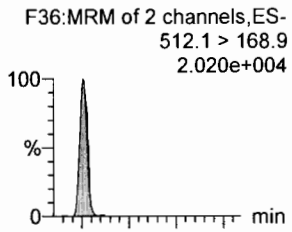
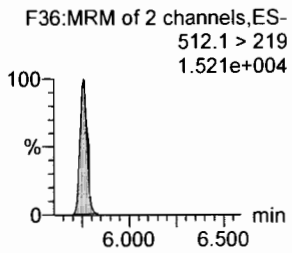




N-MeFOSA





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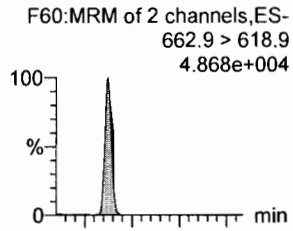
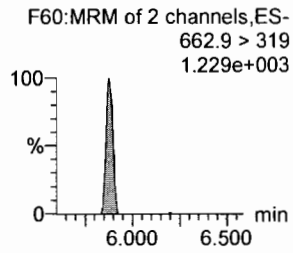
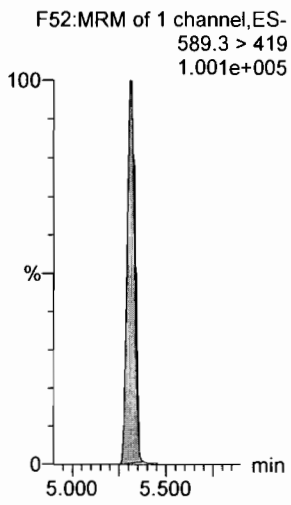
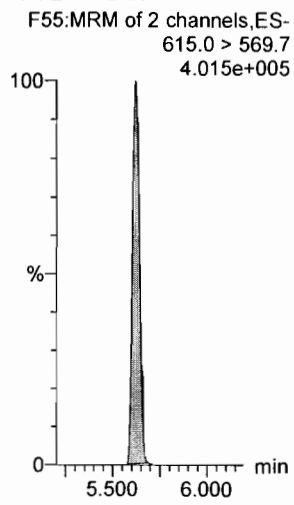




d5-N-EtFOSAA



13C2-PFDoA



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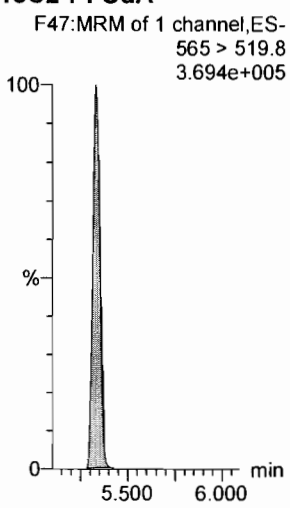

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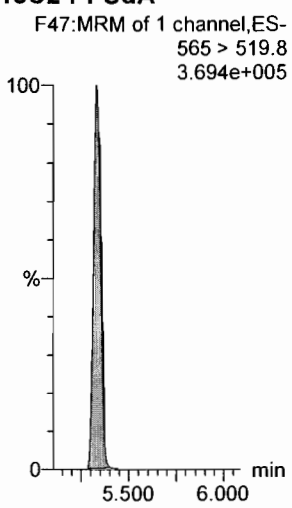

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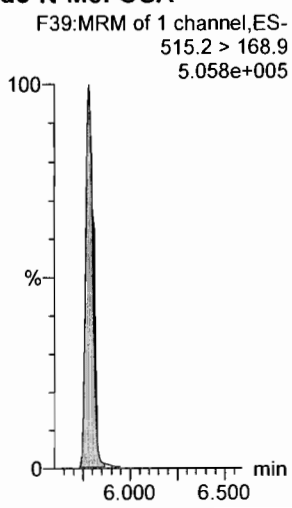

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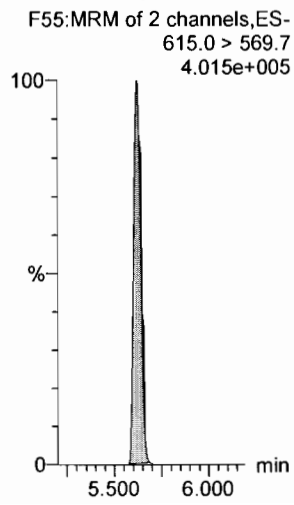

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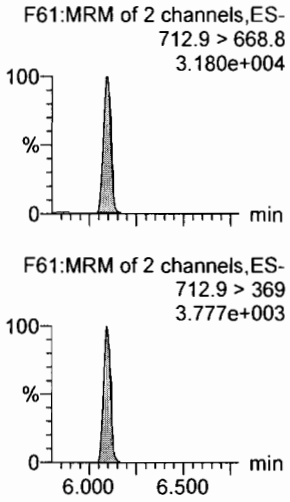
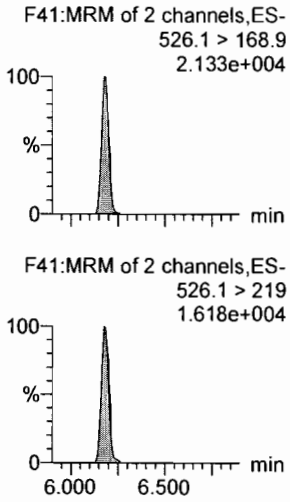
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_18, Date: 18-Jun-2018, Time: 19:46:40, ID: ST180618M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

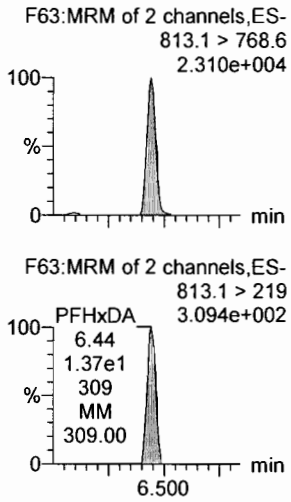
PFTeDA



N-EtFOSA



PFHxDA



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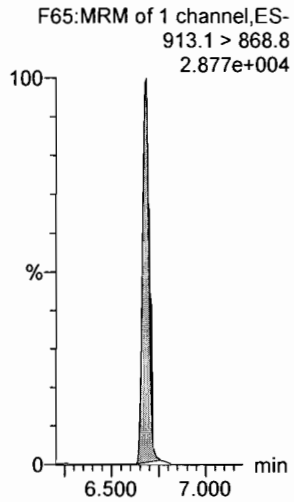
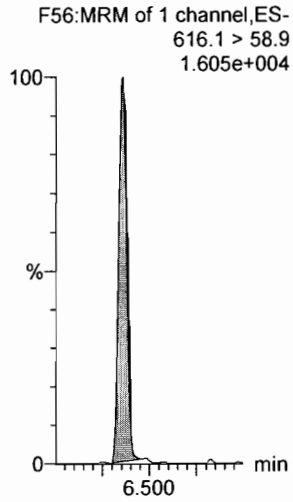
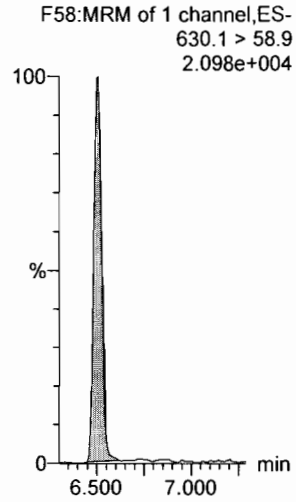


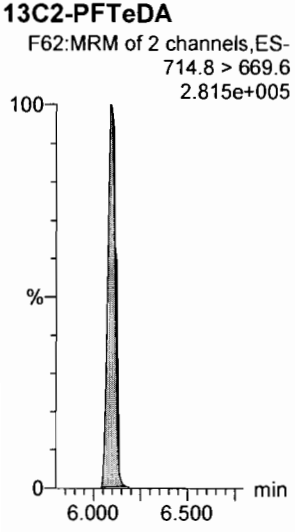
N-MeFOSE



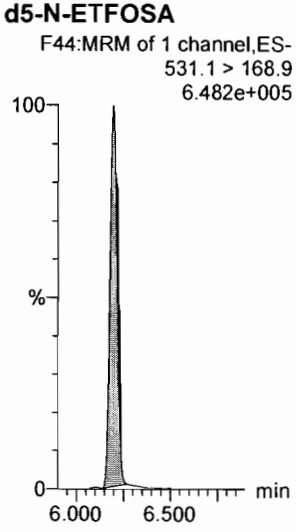
N-EtFOSE



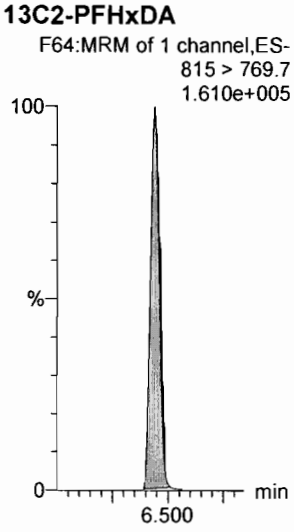
13C2-PFTeDA



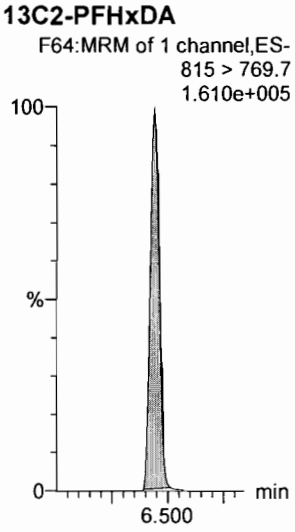
d5-N-ETFOSA



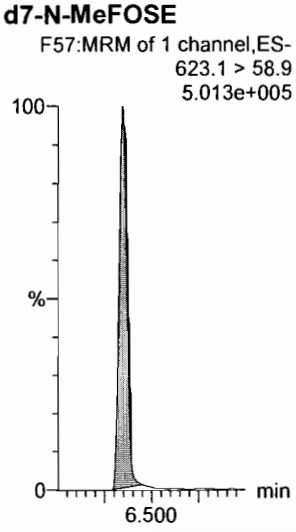
13C2-PFHxDA



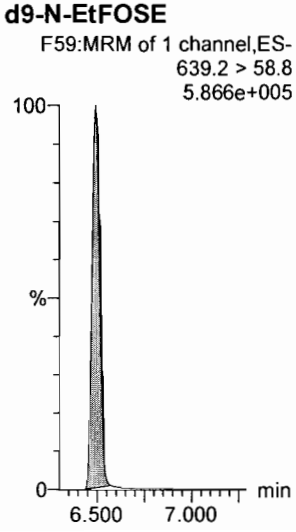
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

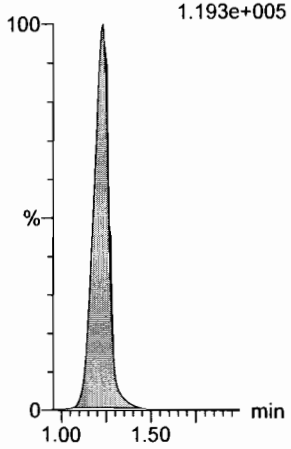


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

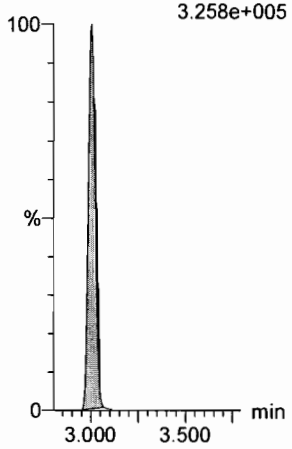
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_18, Date: 18-Jun-2018, Time: 19:46:40, ID: ST180618M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

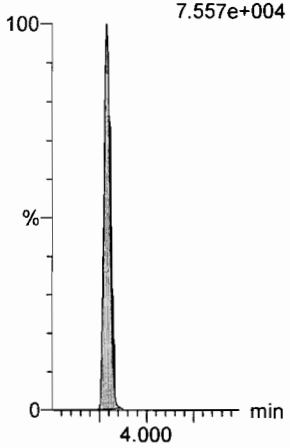
13C4-PFBA



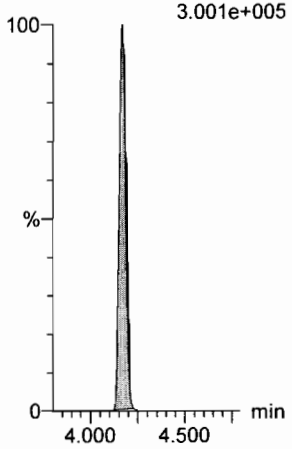
13C5-PFHxA



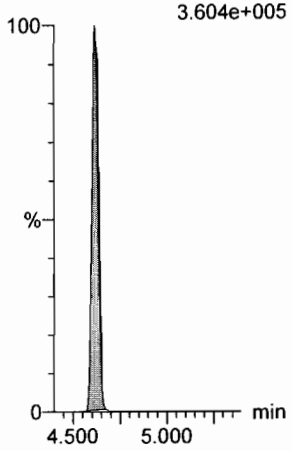
13C3-PFHxS



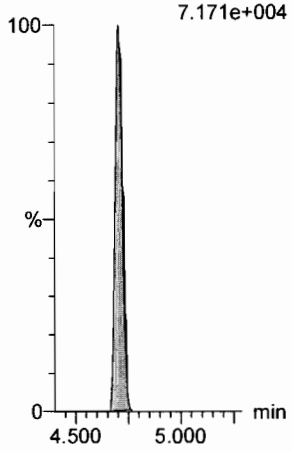
13C8-PFOA



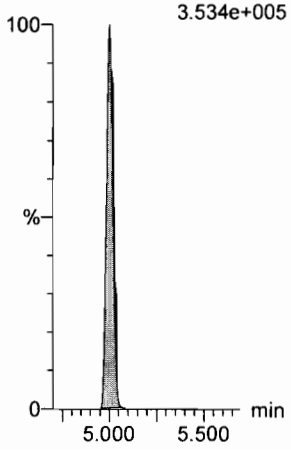
13C9-PFNA



13C4-PFOS



13C6-PFDA



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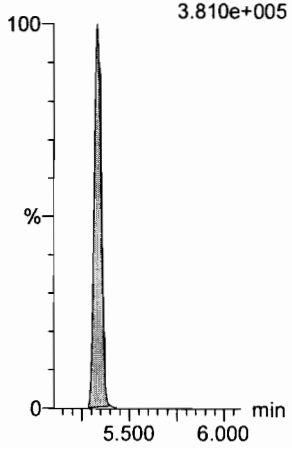

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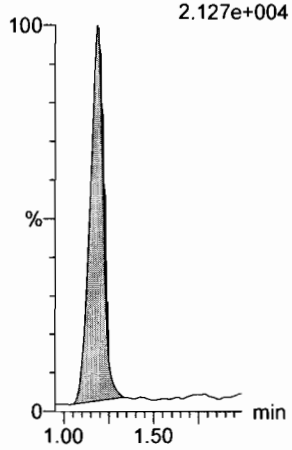
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_19, Date: 18-Jun-2018, Time: 19:57:06, ID: ST180618M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

PFBA



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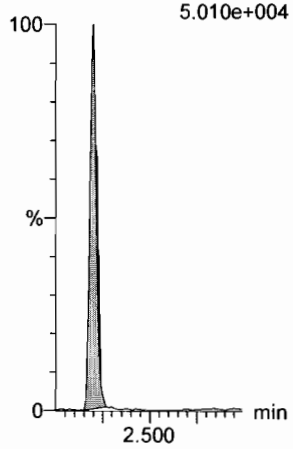
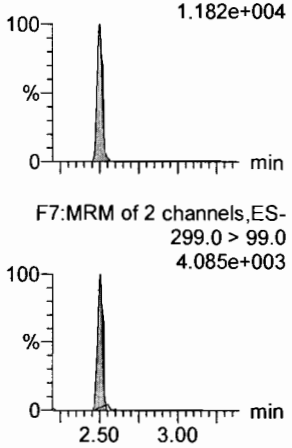
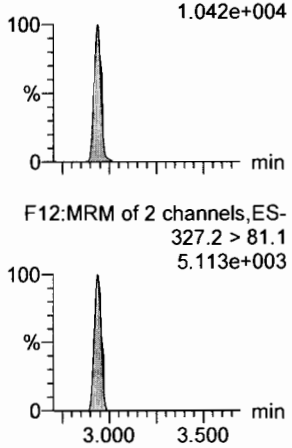


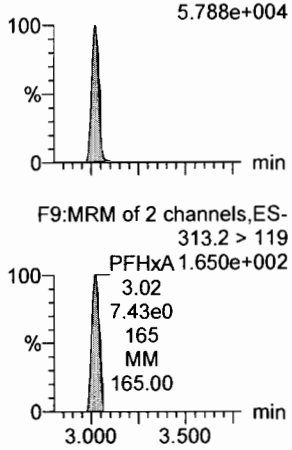
PFBS



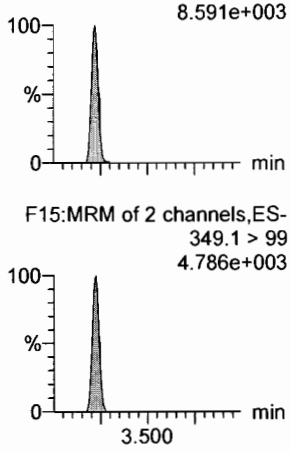
4:2 FTS



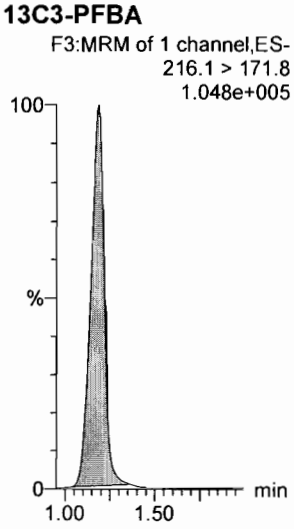
PFHxA



PFPeS



13C3-PFBA



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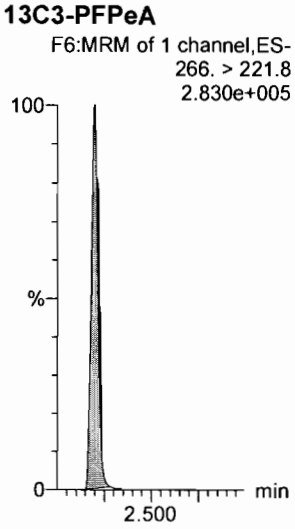
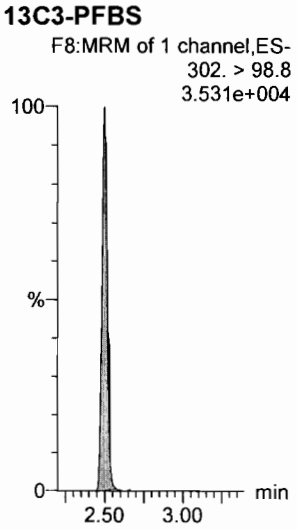
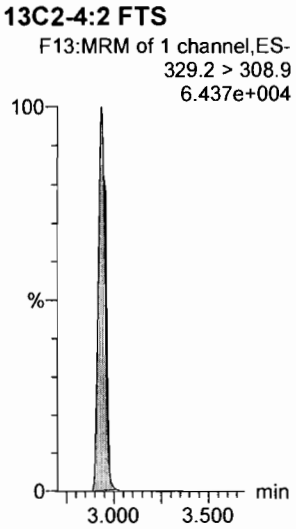


13C3-PFBS



13C2-4:2 FTS



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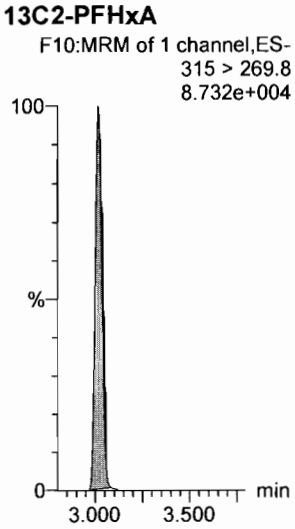
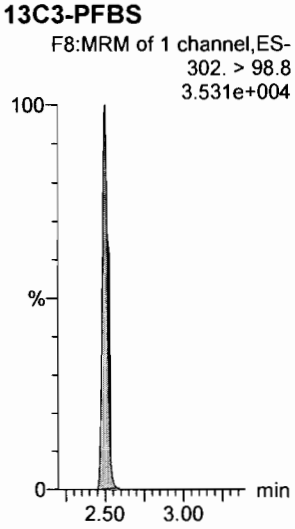


13C3-PFBS

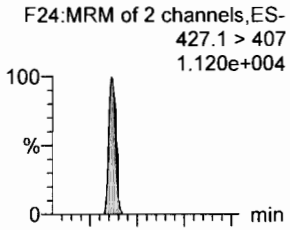


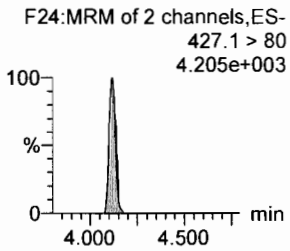
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

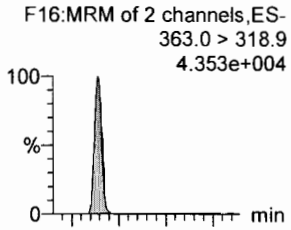
Name: 180618M1_19, Date: 18-Jun-2018, Time: 19:57:06, ID: ST180618M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

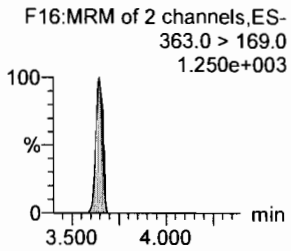
6:2 FTS



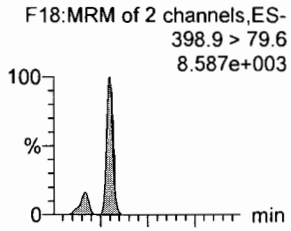


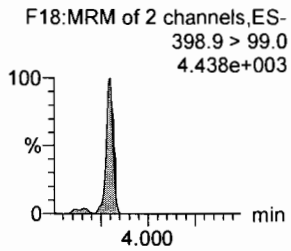
PFHpA



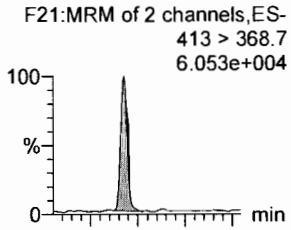


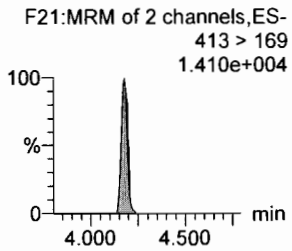
L-PFHxS



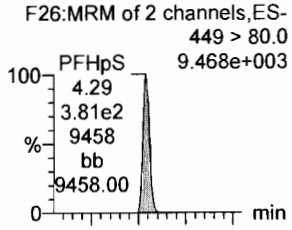


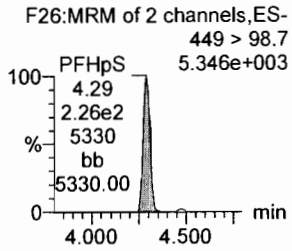
L-PFOA



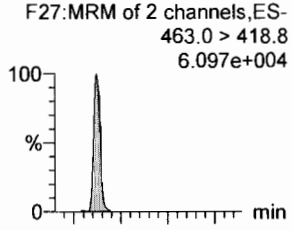


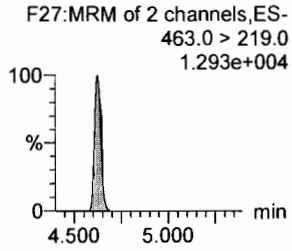
PFHpS



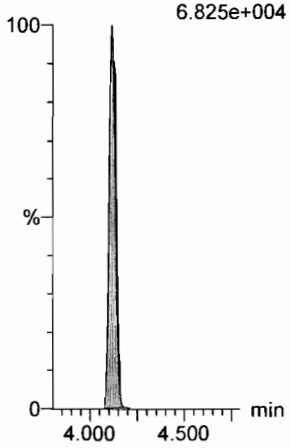


PFNA

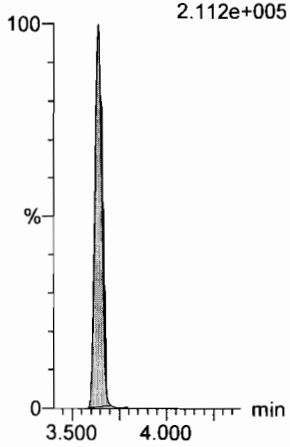




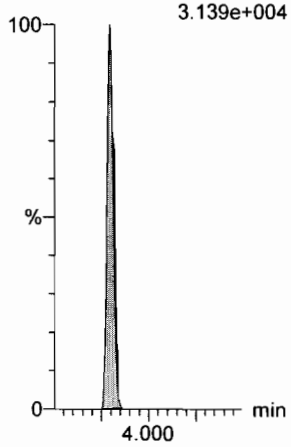
13C2-6:2 FTS



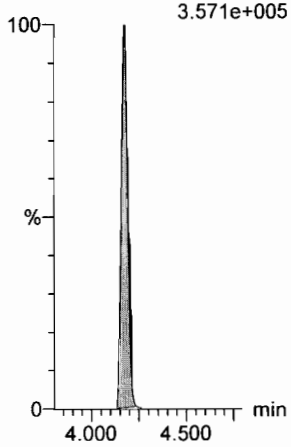
13C4-PFHpA



18O2-PFHxS



13C2-PFOA



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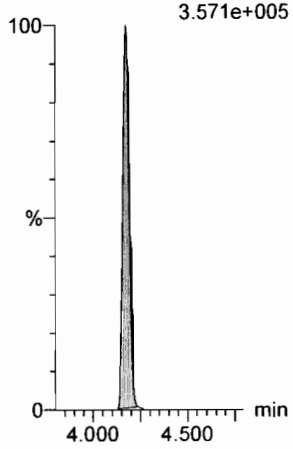
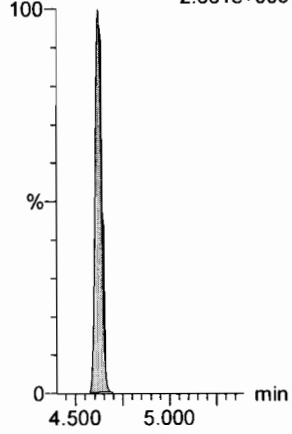


13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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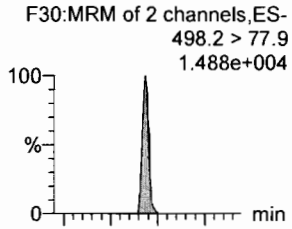
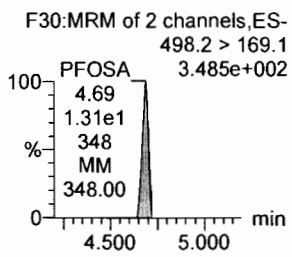
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

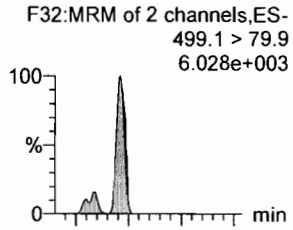
Name: 180618M1_19, Date: 18-Jun-2018, Time: 19:57:06, ID: ST180618M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

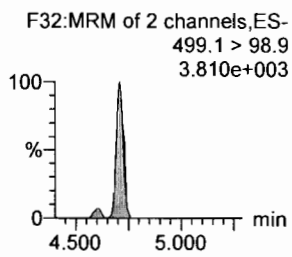
PFOSA





L-PFOS





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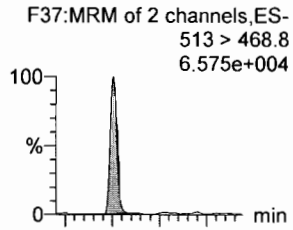
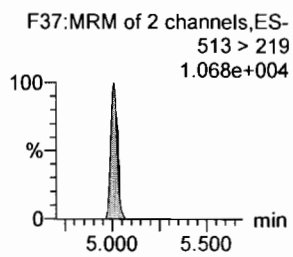
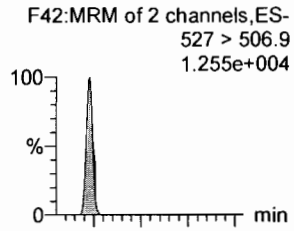
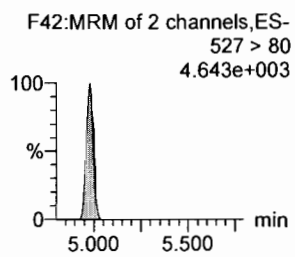


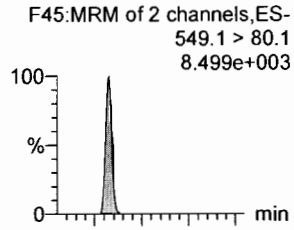


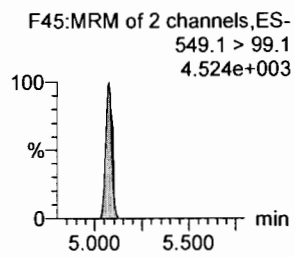
8:2 FTS



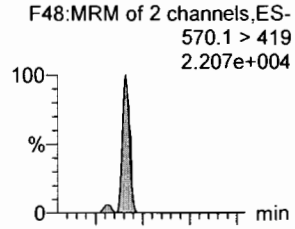


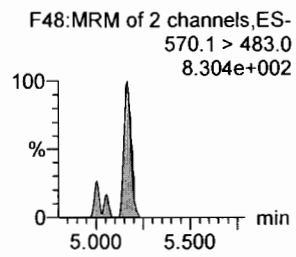
PFNS



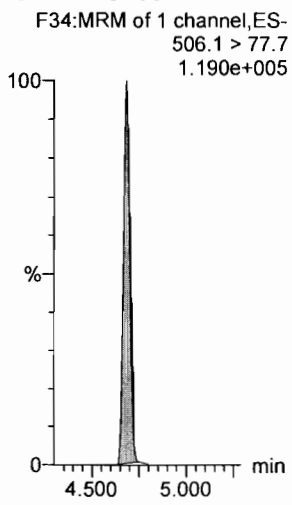


L-MeFOSAA





13C8-PFOSA



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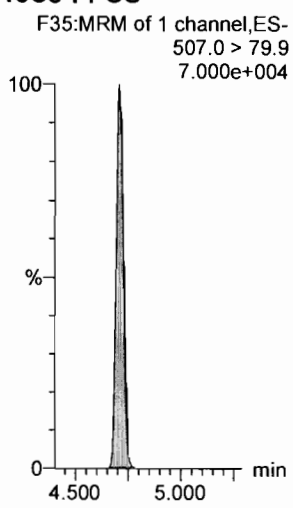

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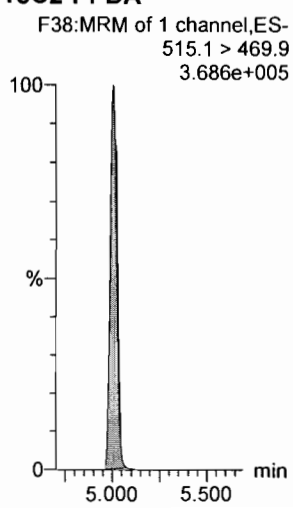
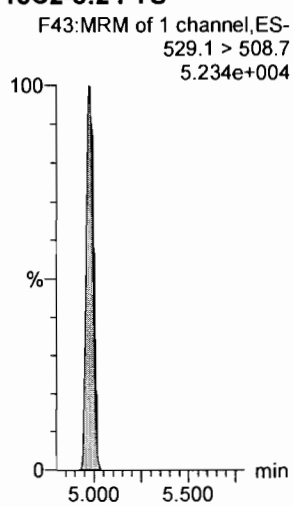
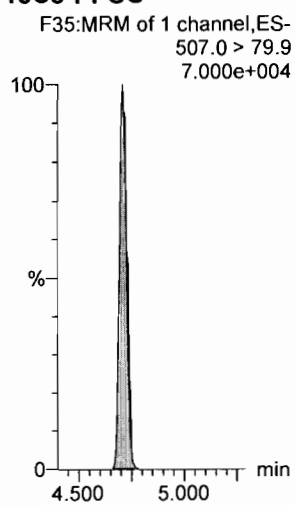


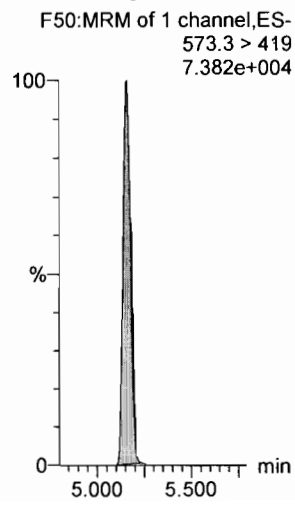
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

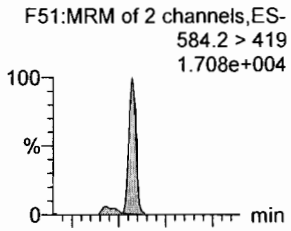


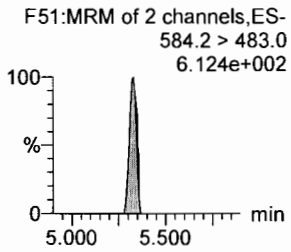
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

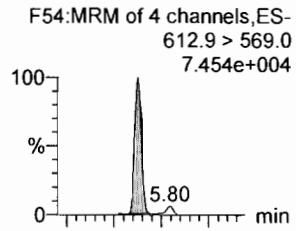
Name: 180618M1_19, Date: 18-Jun-2018, Time: 19:57:06, ID: ST180618M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

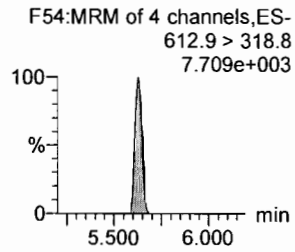
L-EtFOSAA





PFDoA





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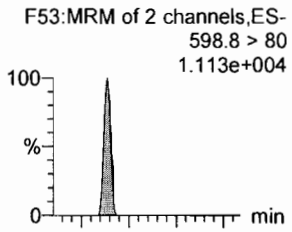

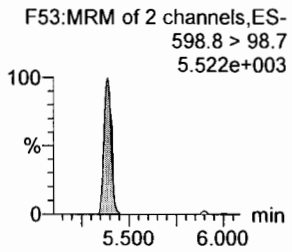

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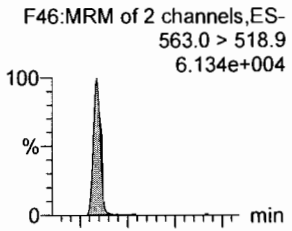

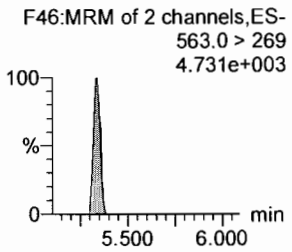

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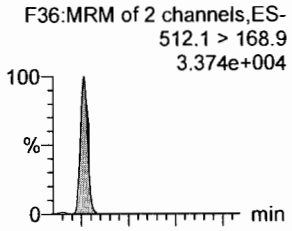
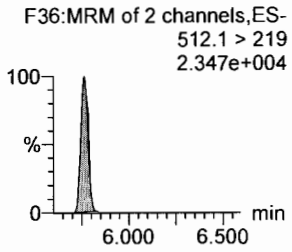
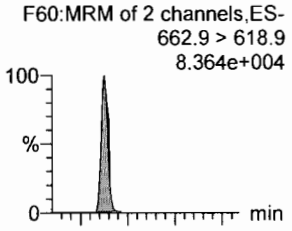
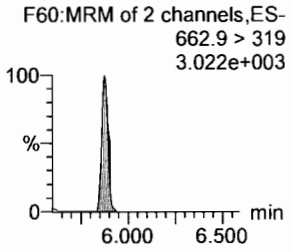


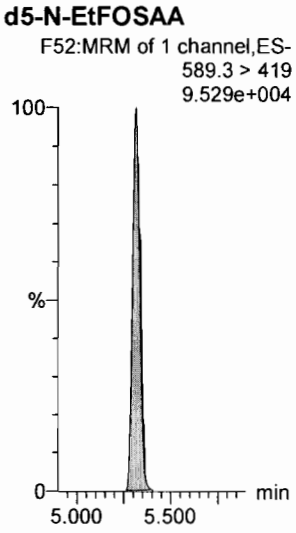


PFTrDA

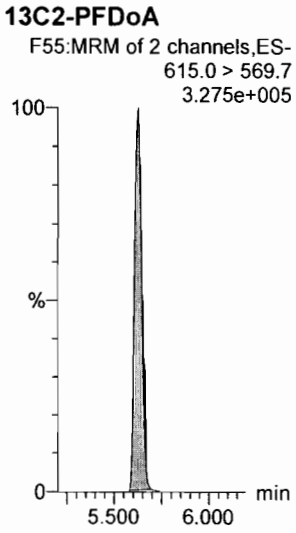




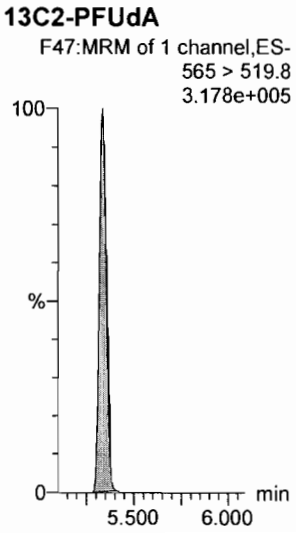
d5-N-EtFOSAA



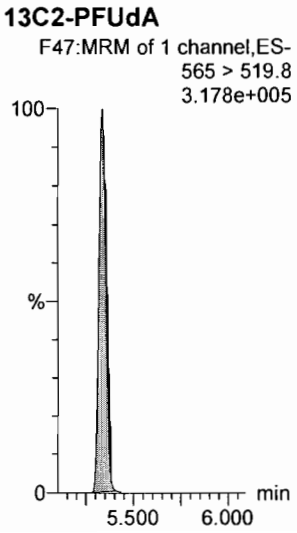
13C2-PFDoA



13C2-PFUdA



13C2-PFUdA



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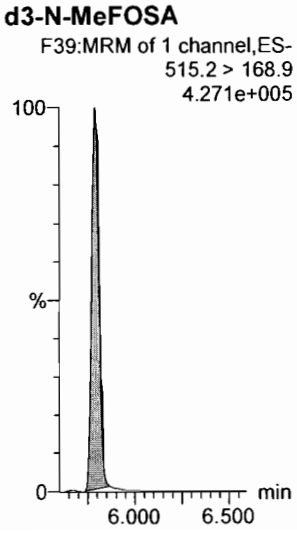

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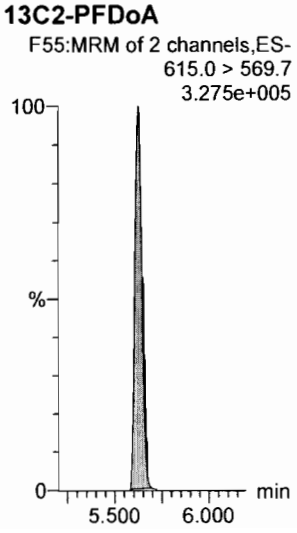
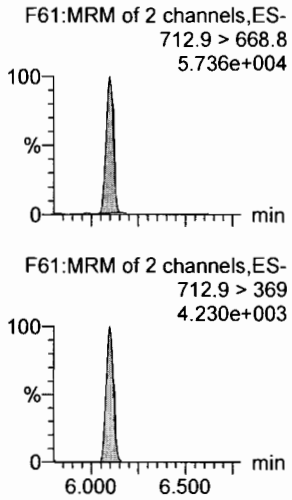


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

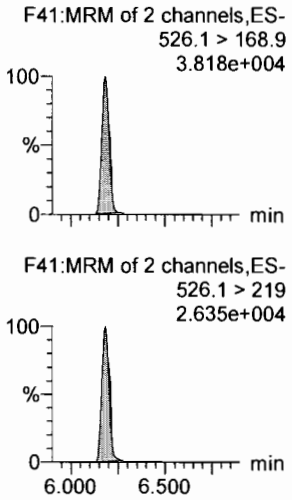
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_19, Date: 18-Jun-2018, Time: 19:57:06, ID: ST180618M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

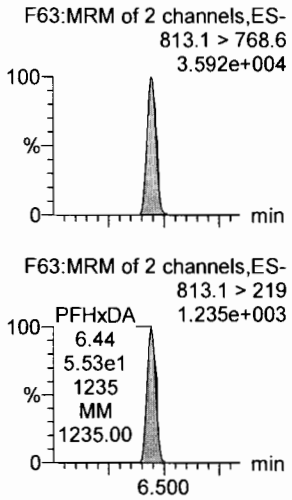
PFTeDA



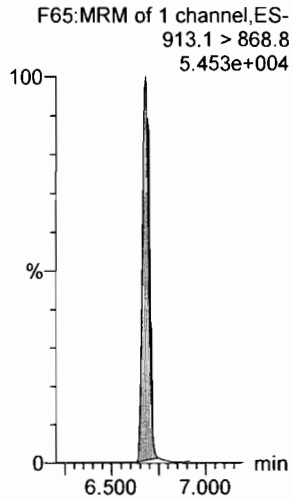
N-EtFOSA



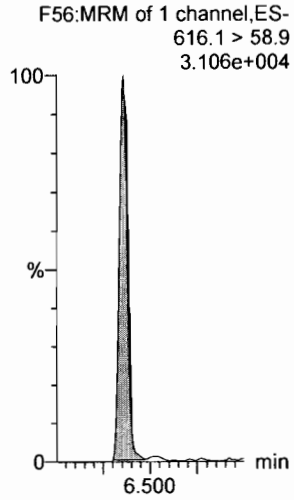
PFHxDA



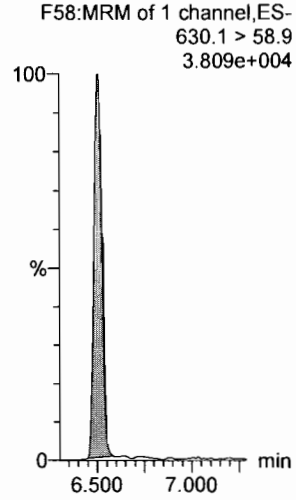
PFODA



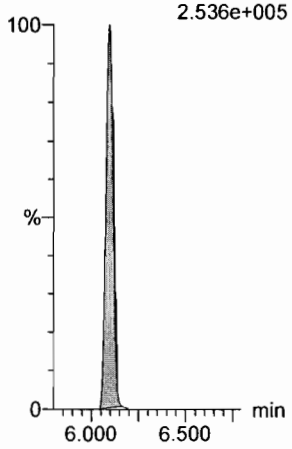
N-MeFOSE



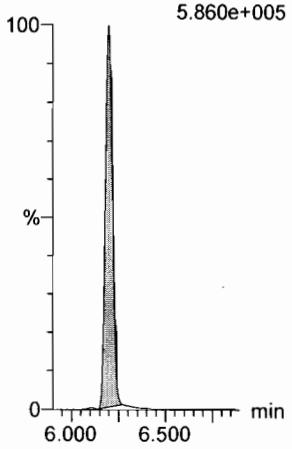
N-EtFOSE



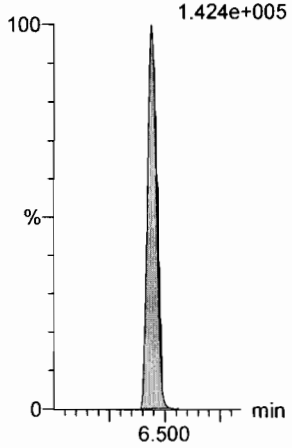
13C2-PFTeDA



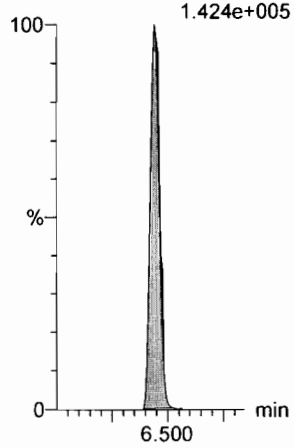
d5-N-ETFOSA



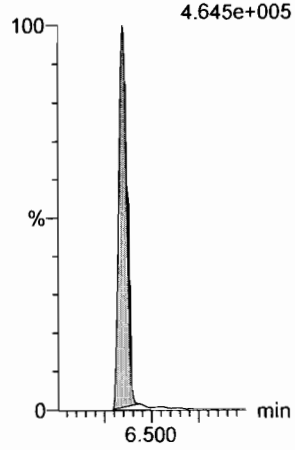
13C2-PFHxDA



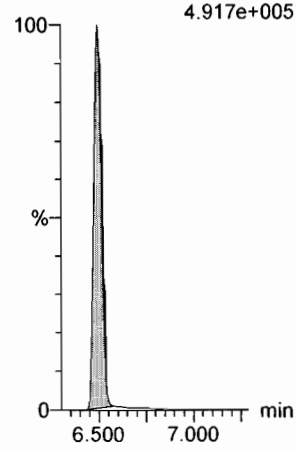
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

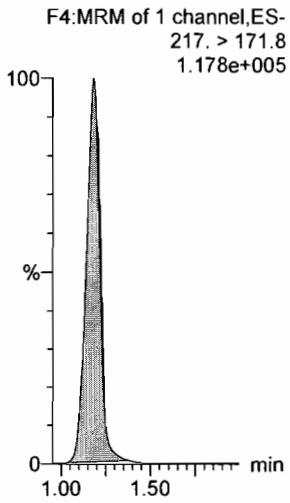


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_19, Date: 18-Jun-2018, Time: 19:57:06, ID: ST180618M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

13C4-PFBA



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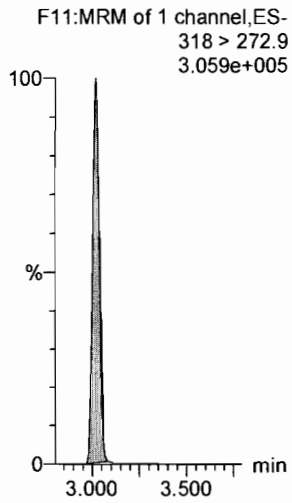
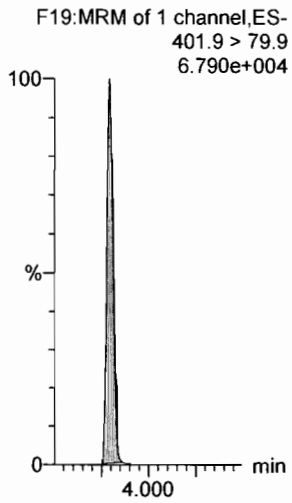


13C3-PFHxS



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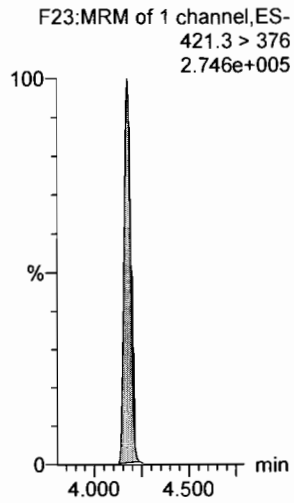

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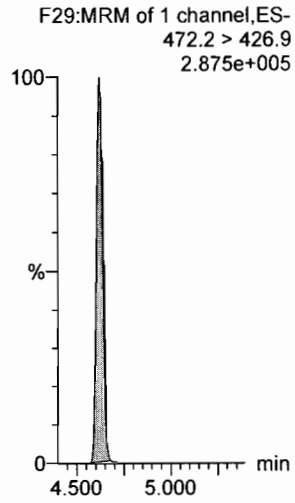
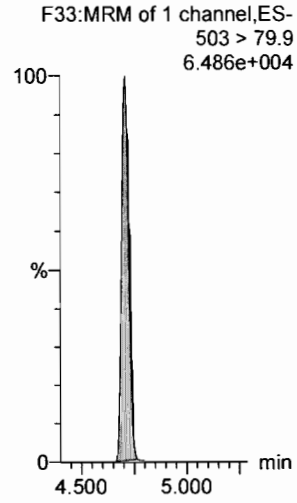
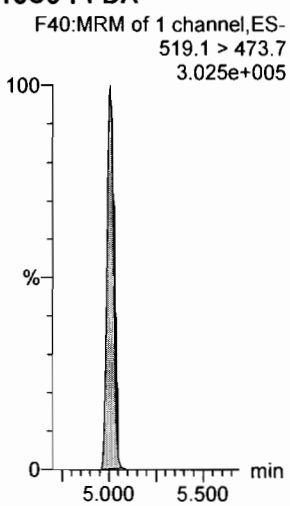


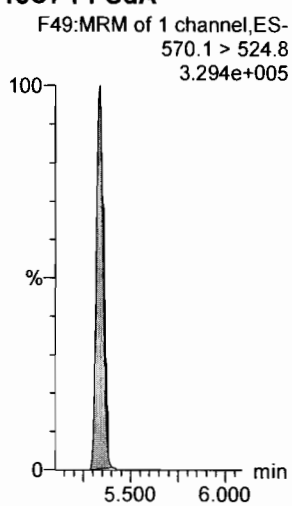
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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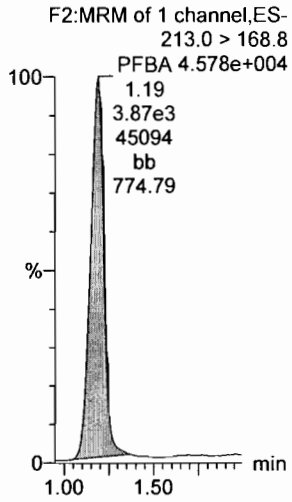
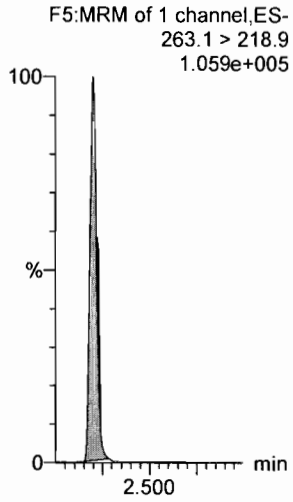
Name: 180618M1_20, Date: 18-Jun-2018, Time: 20:07:36, ID: ST180618M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

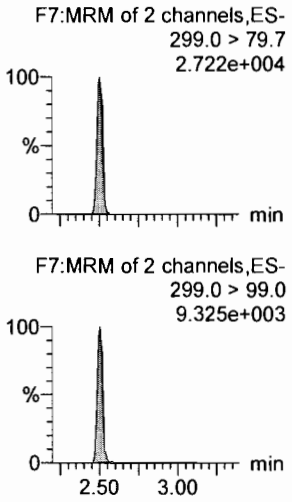
PFBA



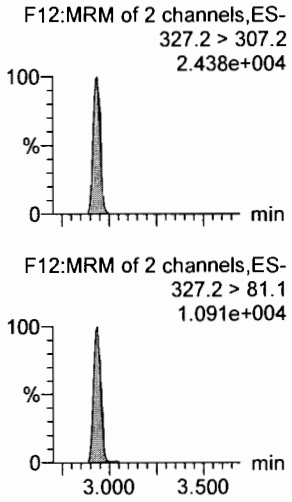
PFPeA



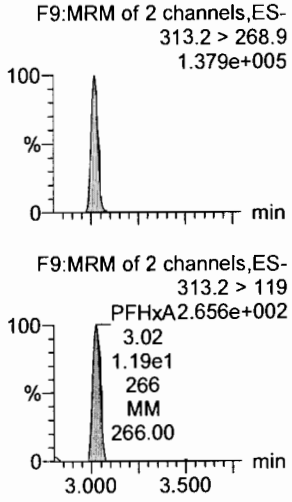
PFBS



4:2 FTS



PFHxA



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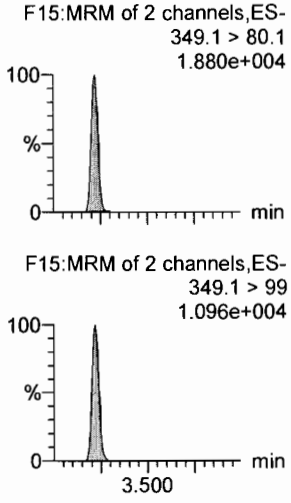
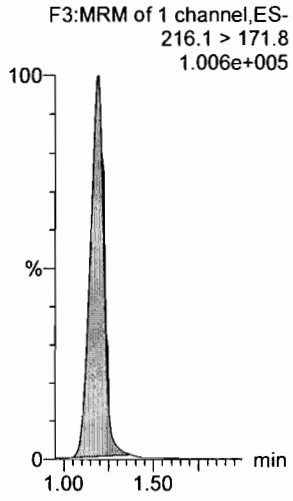


13C3-PFBA



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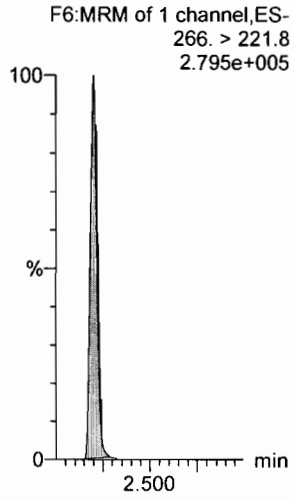

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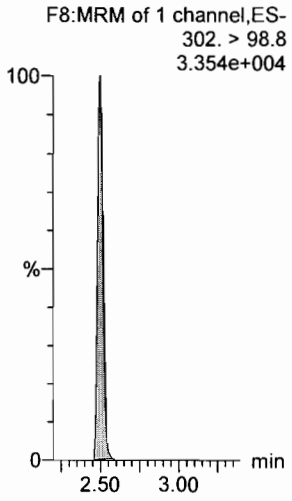
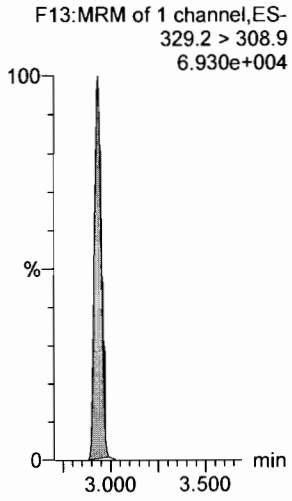


13C2-4:2 FTS



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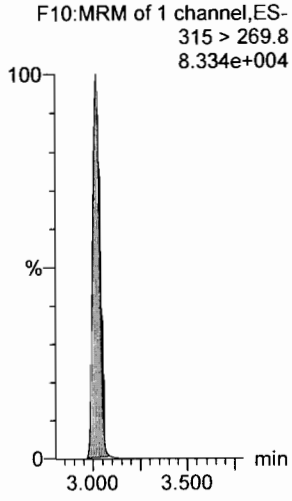

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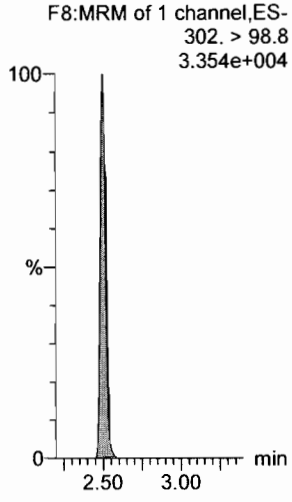
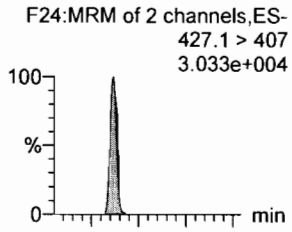


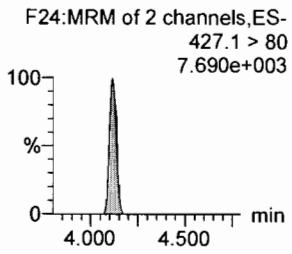
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_20, Date: 18-Jun-2018, Time: 20:07:36, ID: ST180618M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

6:2 FTS





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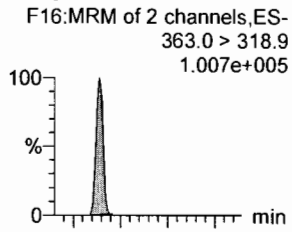

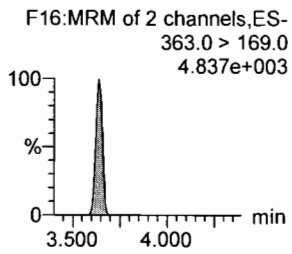

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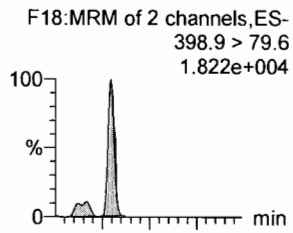

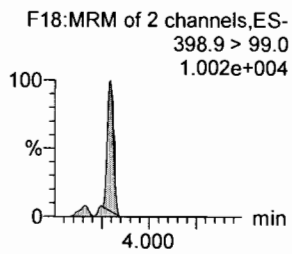

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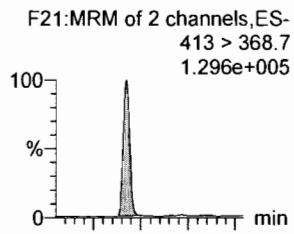

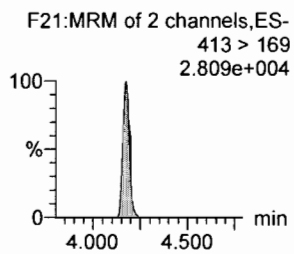

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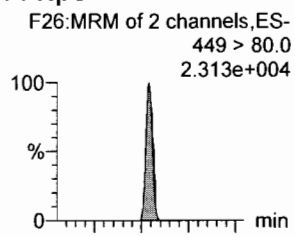

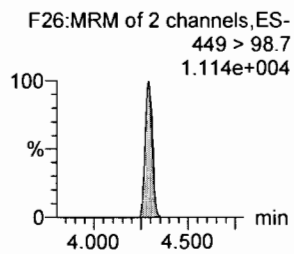

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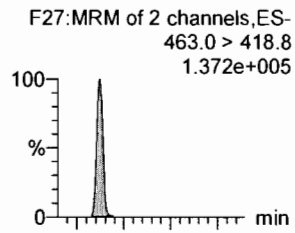
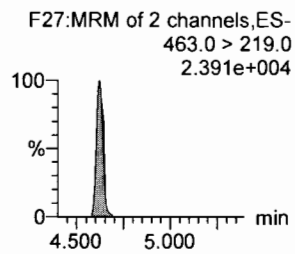
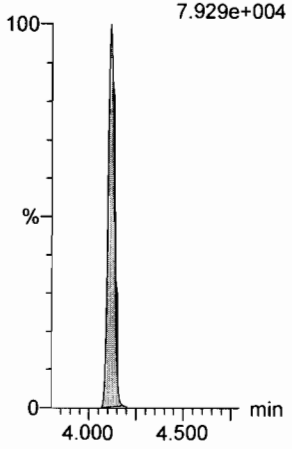
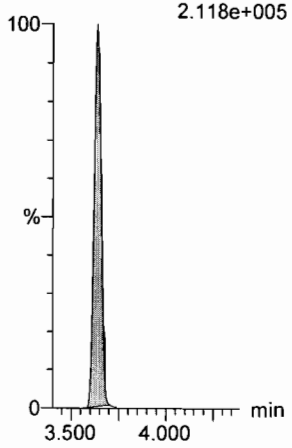




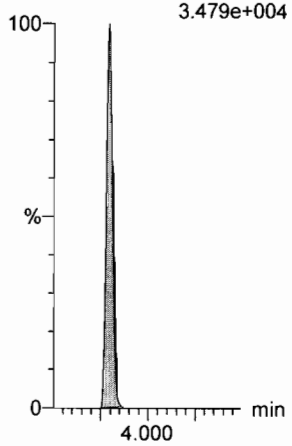
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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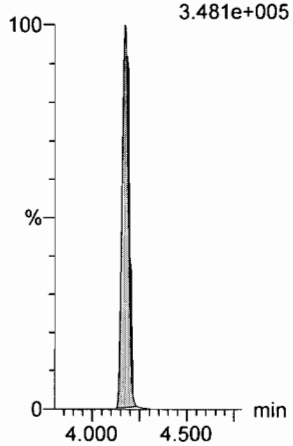

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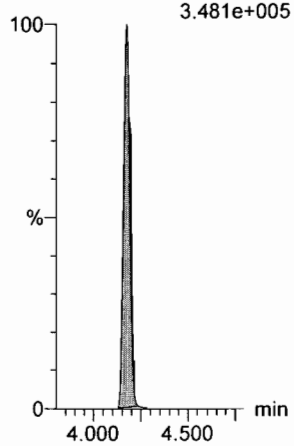

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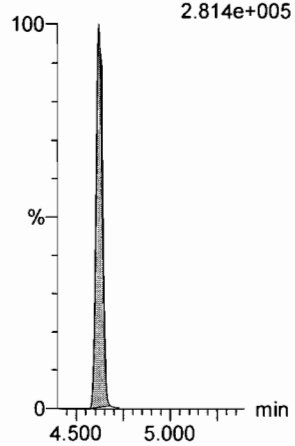

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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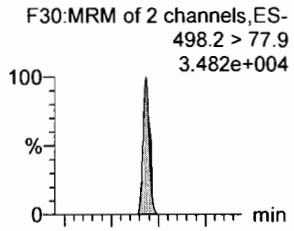
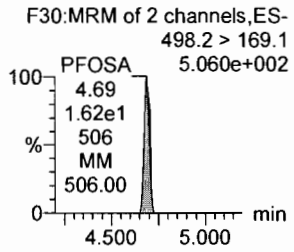
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_20, Date: 18-Jun-2018, Time: 20:07:36, ID: ST180618M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

PFOSA





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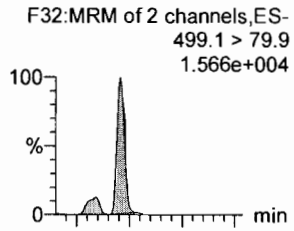

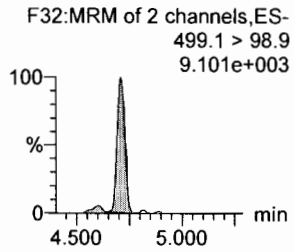

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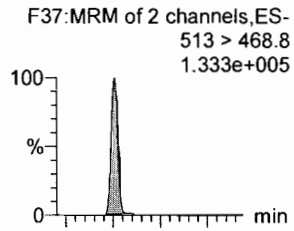
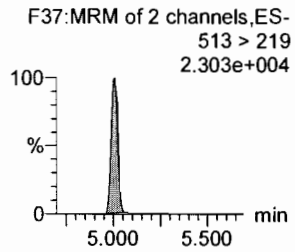
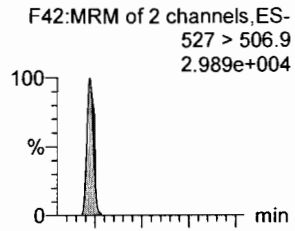
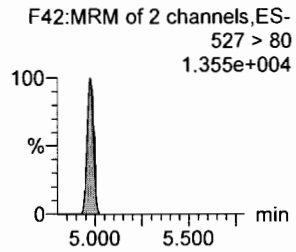




8:2 FTS





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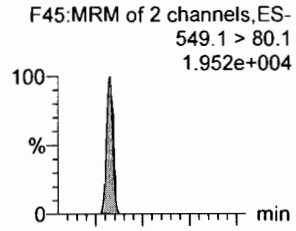

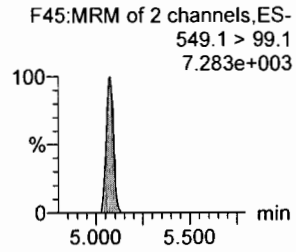

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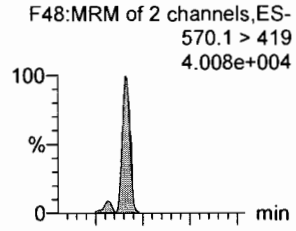

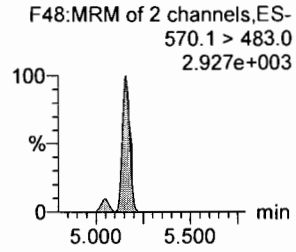

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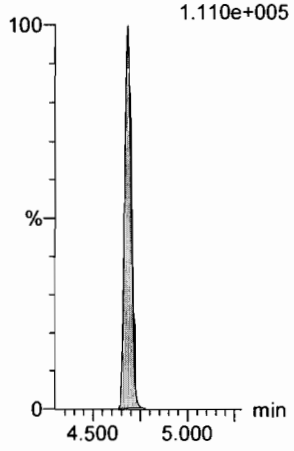
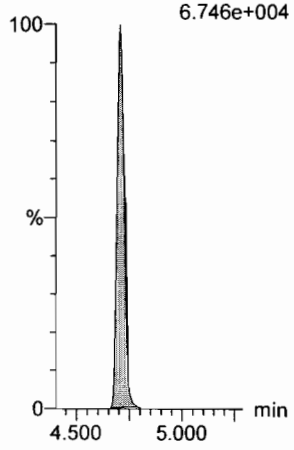


13C8-PFOS



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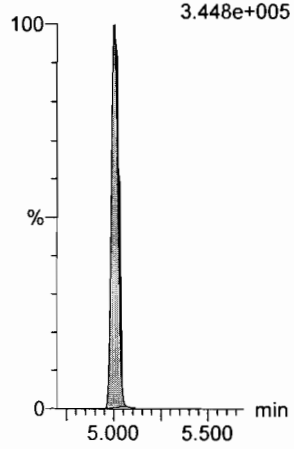
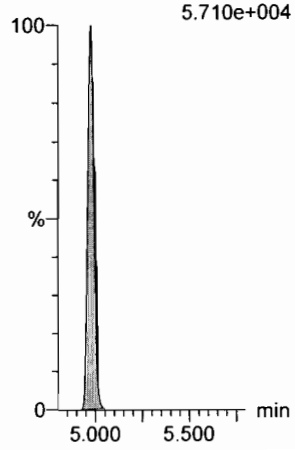


13C2-8:2 FTS



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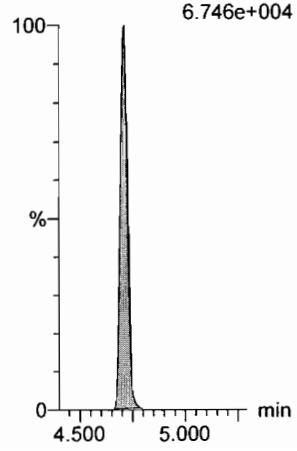
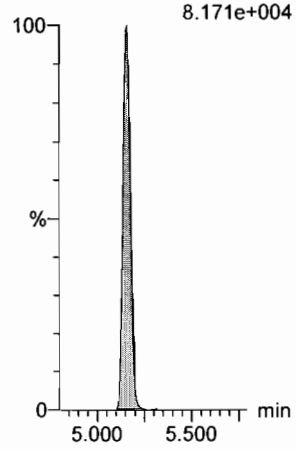


d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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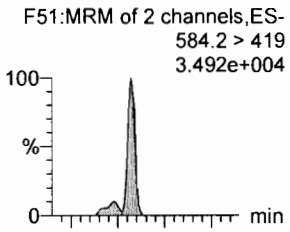
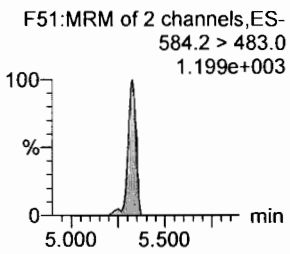
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

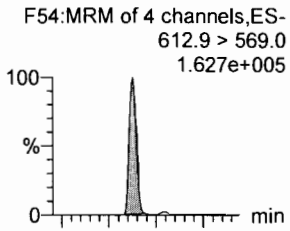
Name: 180618M1_20, Date: 18-Jun-2018, Time: 20:07:36, ID: ST180618M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

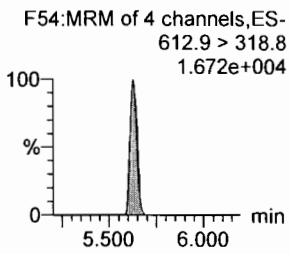
L-EtFOSAA



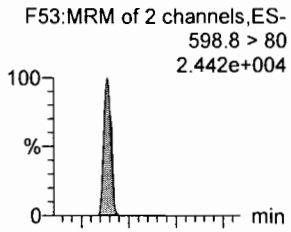


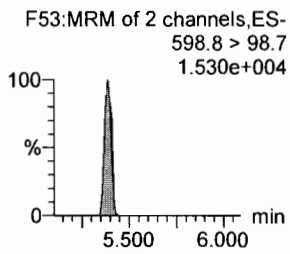
PFDoA





PFDS





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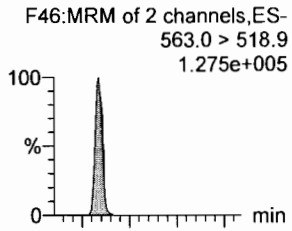

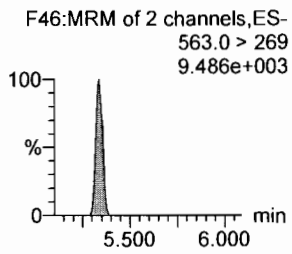

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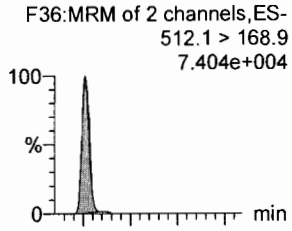
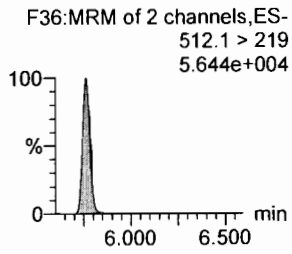
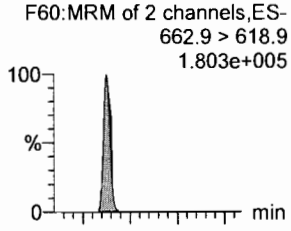
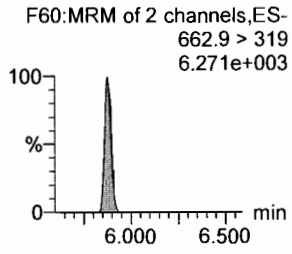


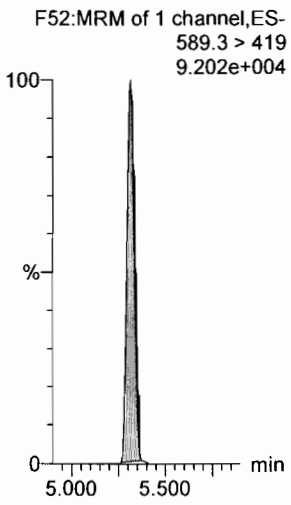


PFTrDA

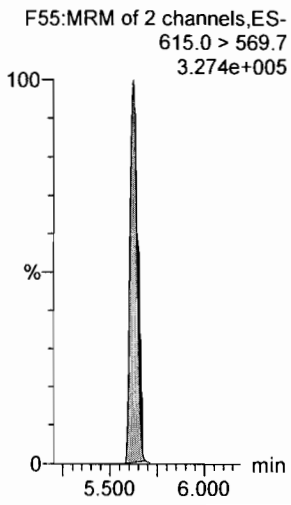




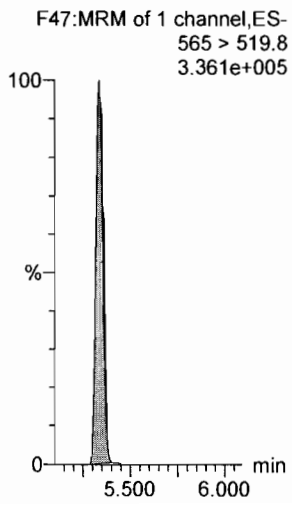
d5-N-EtFOSAA



13C2-PFDoA



13C2-PFUdA



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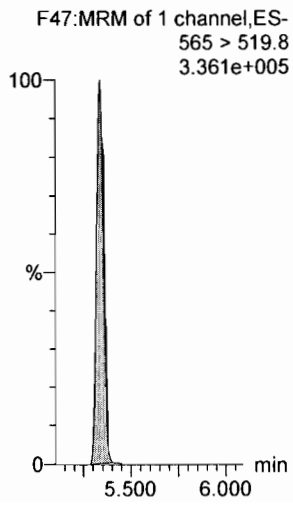

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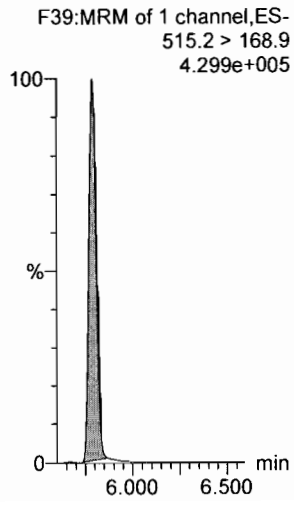

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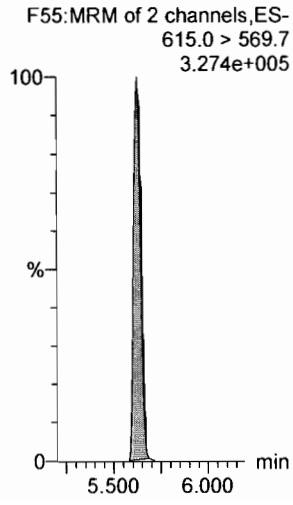

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_20, Date: 18-Jun-2018, Time: 20:07:36, ID: ST180618M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

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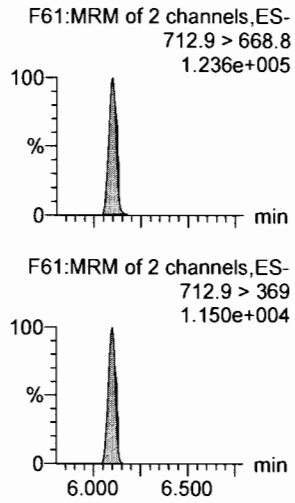
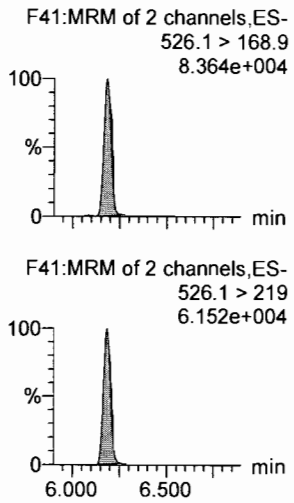
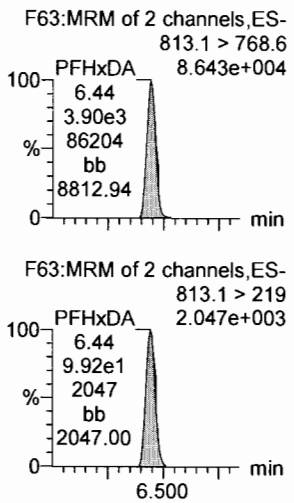


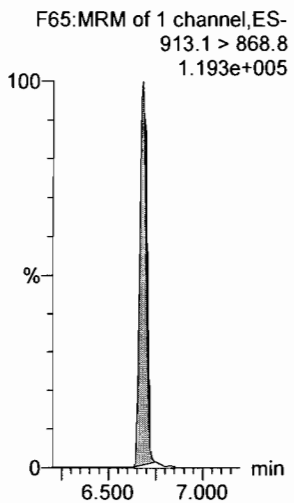
N-EtFOSA



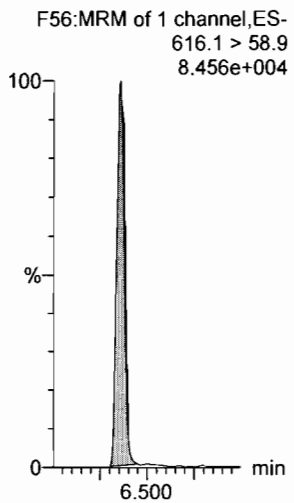
PFHxDA



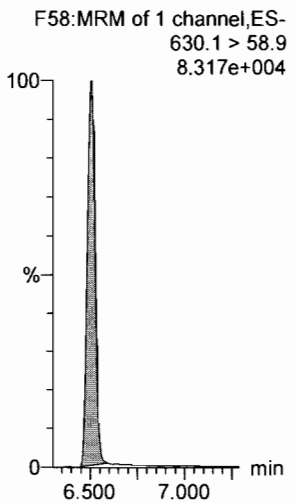
PFODA



N-MeFOSE



N-EtFOSE



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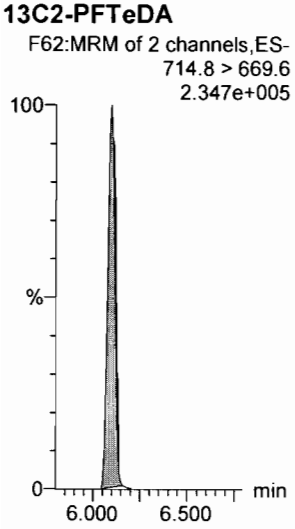
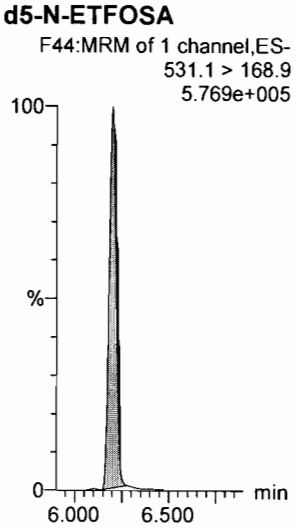


d5-N-ETFOSA



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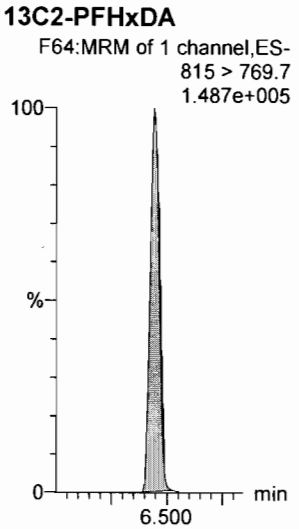

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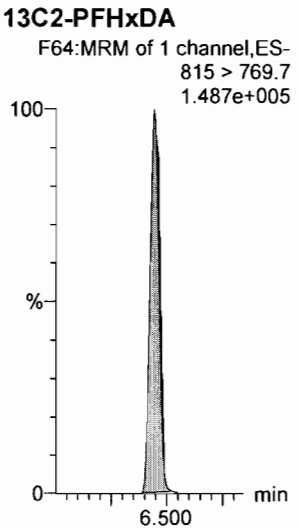
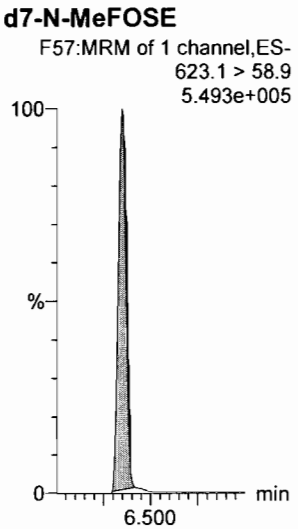
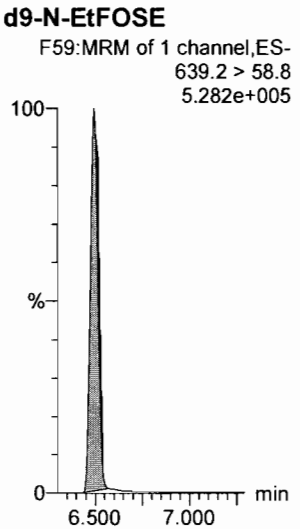


d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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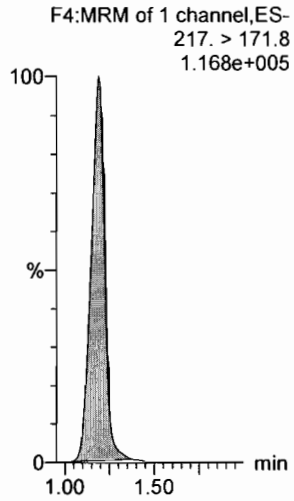
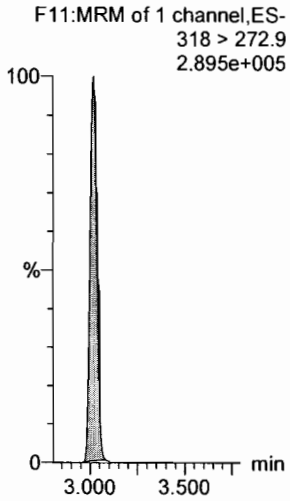
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_20, Date: 18-Jun-2018, Time: 20:07:36, ID: ST180618M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

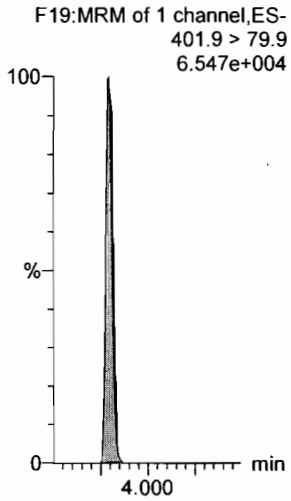
13C4-PFBA



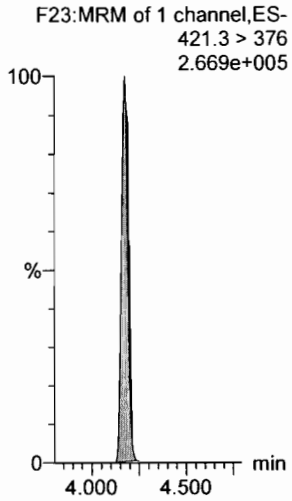
13C5-PFHxA



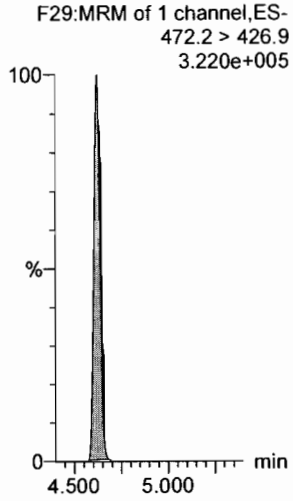
13C3-PFHxS



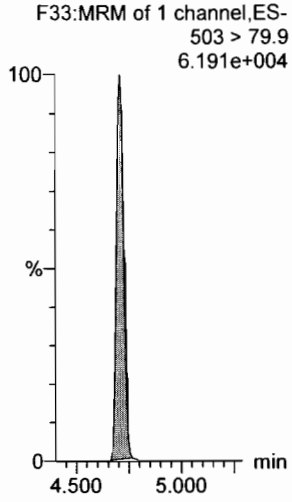
13C8-PFOA



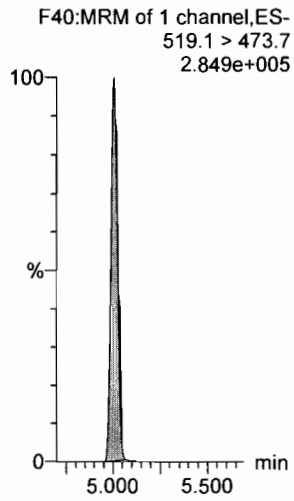
13C9-PFNA



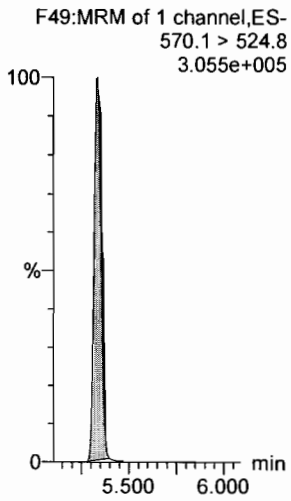
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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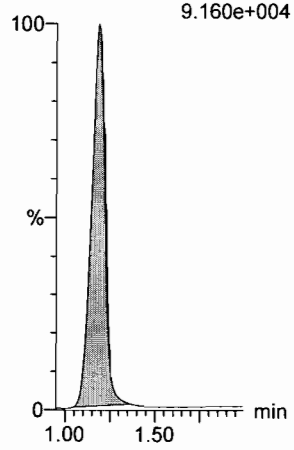
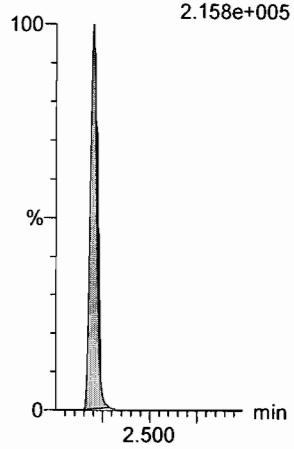
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

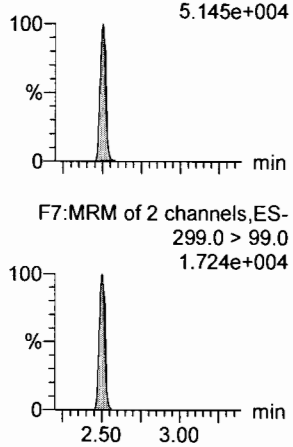
PFBA



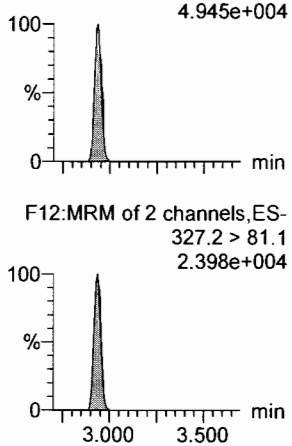
PFPeA



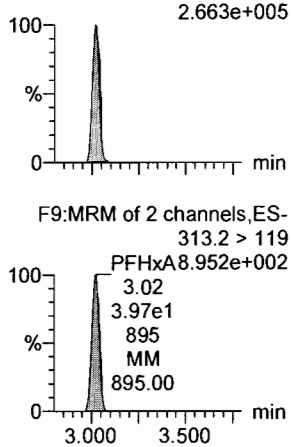
PFBS



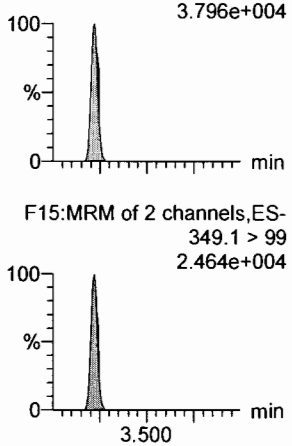
4:2 FTS



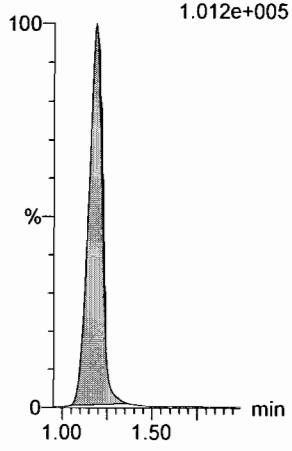
PFHxA



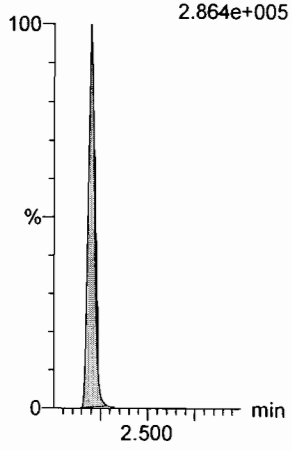
PFPeS



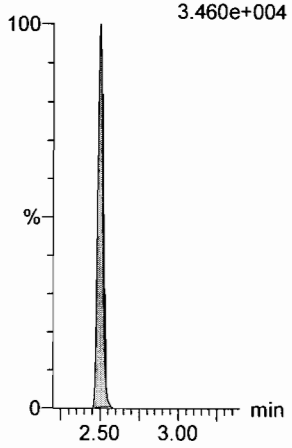
13C3-PFBA



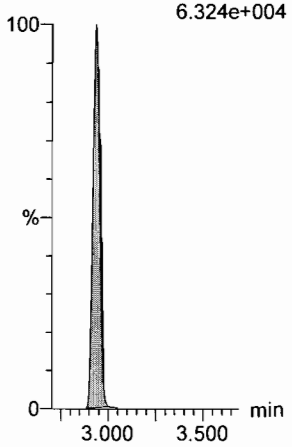
13C3-PFPeA



13C3-PFBS



13C2-4:2 FTS



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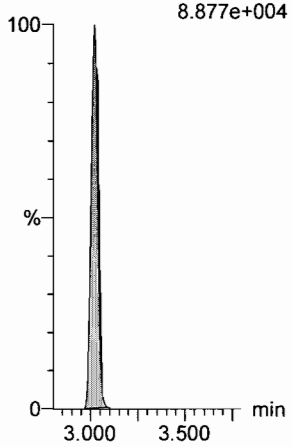
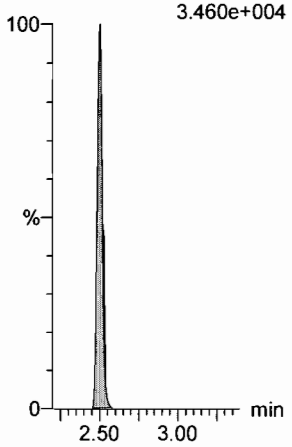


13C3-PFBS

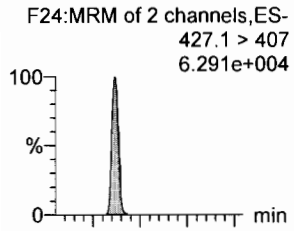


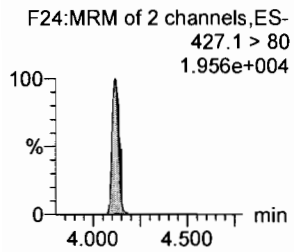
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

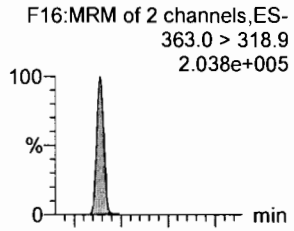
Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

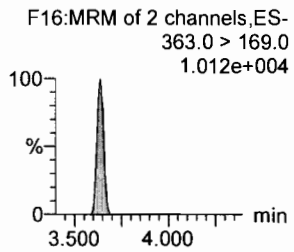
6:2 FTS



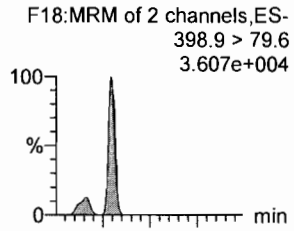


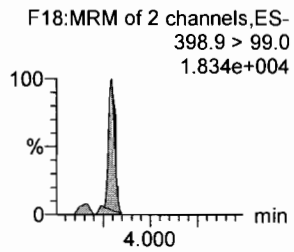
PFHpA



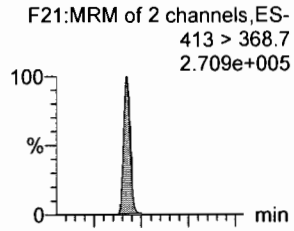


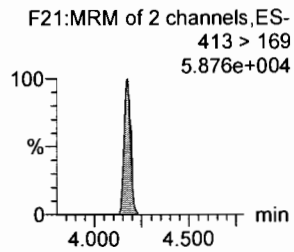
L-PFHxS





L-PFOA





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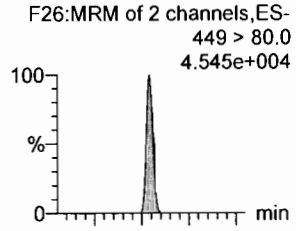
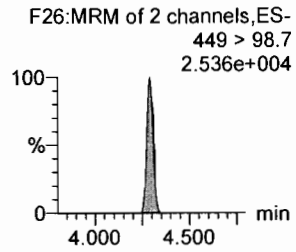
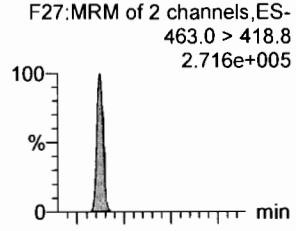
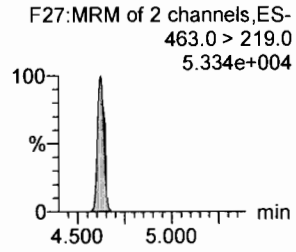


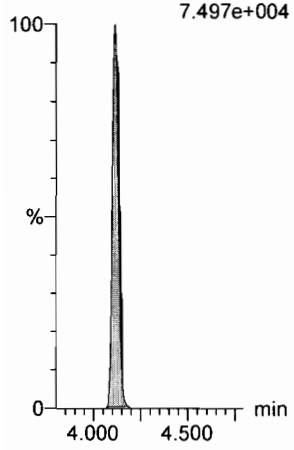


PFNA

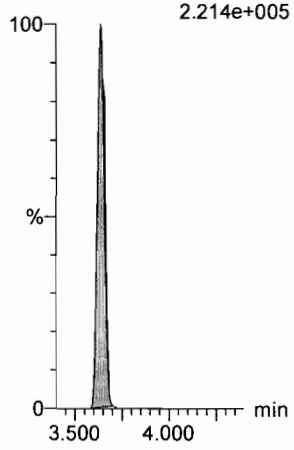




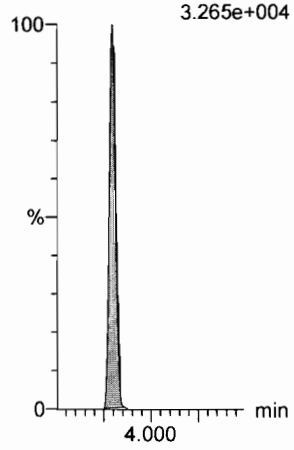
13C2-6:2 FTS



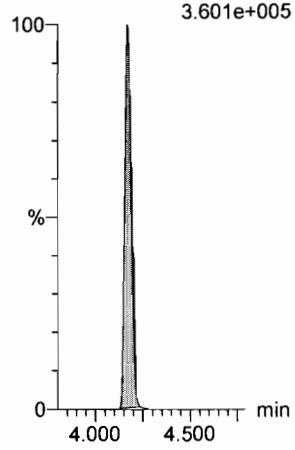
13C4-PFHpA



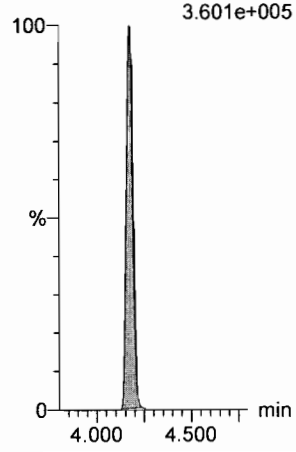
18O2-PFHxS



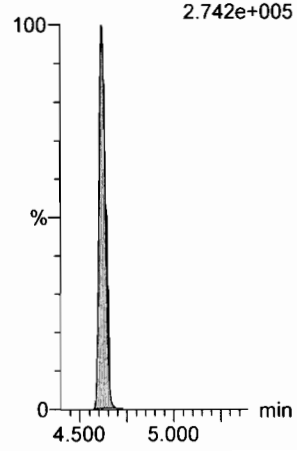
13C2-PFOA



13C2-PFOA



13C5-PFNA

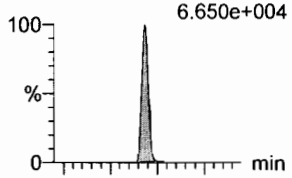


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

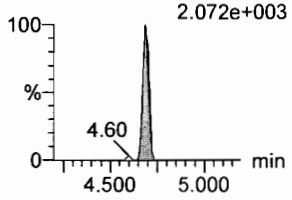
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

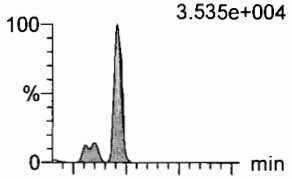
PFOSA
F30:MRM of 2 channels,ES-
498.2 > 77.9
6.650e+004



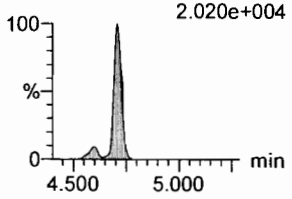
F30:MRM of 2 channels,ES-
498.2 > 169.1
2.072e+003



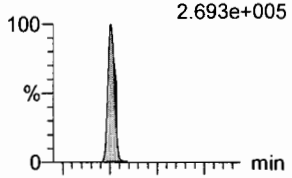
L-PFOS
F32:MRM of 2 channels,ES-
499.1 > 79.9
3.535e+004



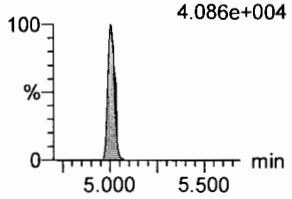
F32:MRM of 2 channels,ES-
499.1 > 98.9
2.020e+004



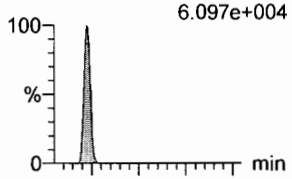
PFDA
F37:MRM of 2 channels,ES-
513 > 468.8
2.693e+005



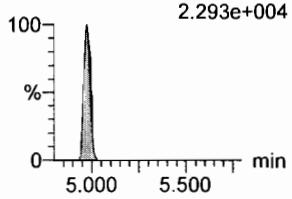
F37:MRM of 2 channels,ES-
513 > 219
4.086e+004



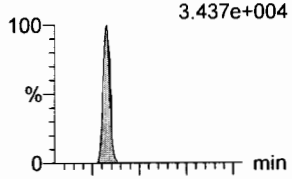
8:2 FTS
F42:MRM of 2 channels,ES-
527 > 506.9
6.097e+004



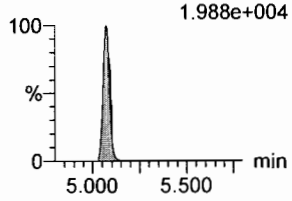
F42:MRM of 2 channels,ES-
527 > 80
2.293e+004



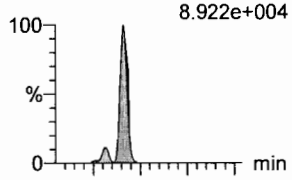
PFNS
F45:MRM of 2 channels,ES-
549.1 > 80.1
3.437e+004



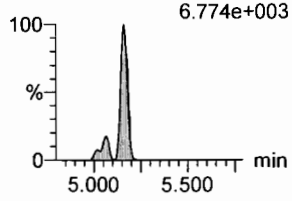
F45:MRM of 2 channels,ES-
549.1 > 99.1
1.988e+004



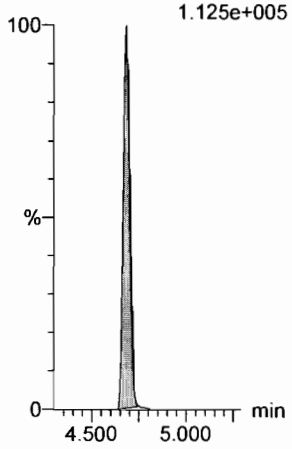
L-MeFOSAA
F48:MRM of 2 channels,ES-
570.1 > 419
8.922e+004



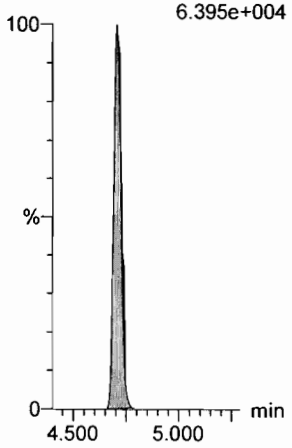
F48:MRM of 2 channels,ES-
570.1 > 483.0
6.774e+003



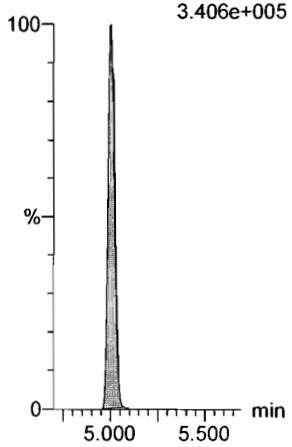
13C8-PFOSA
F34:MRM of 1 channel,ES-
506.1 > 77.7
1.125e+005



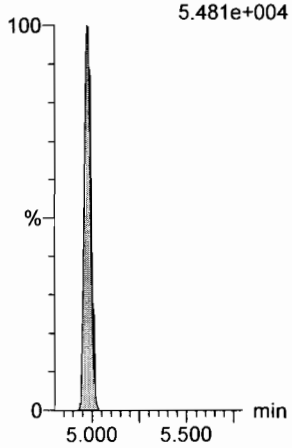
13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
6.395e+004



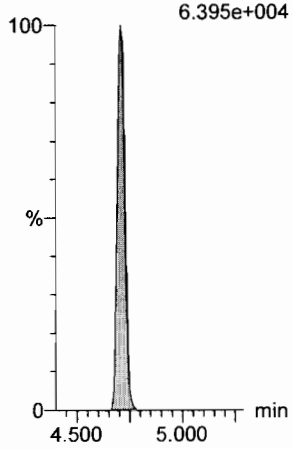
13C2-PFDA
F38:MRM of 1 channel,ES-
515.1 > 469.9
3.406e+005



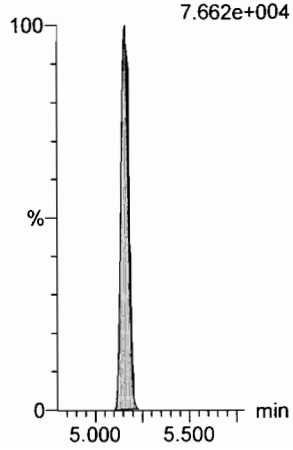
13C2-8:2 FTS
F43:MRM of 1 channel,ES-
529.1 > 508.7
5.481e+004



13C8-PFOS
F35:MRM of 1 channel,ES-
507.0 > 79.9
6.395e+004



d3-N-MeFOSAA
F50:MRM of 1 channel,ES-
573.3 > 419
7.662e+004

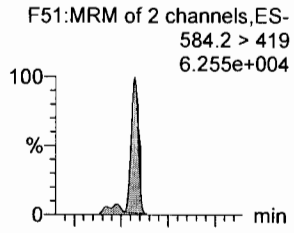


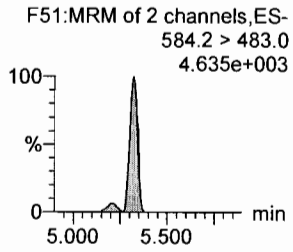
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

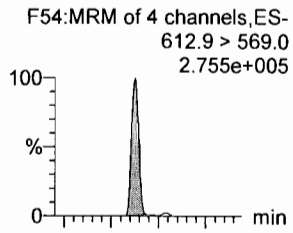
Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

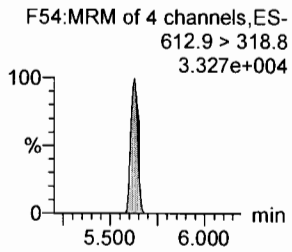
L-EtFOSAA



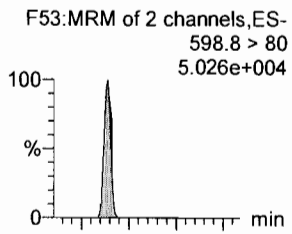


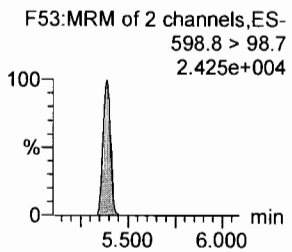
PFDoA



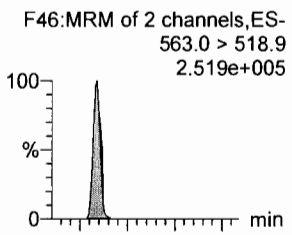


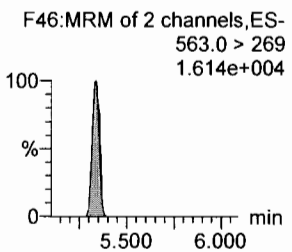
PFDS



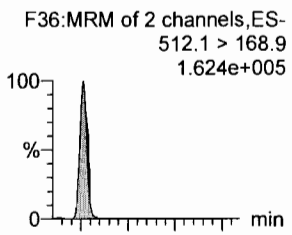


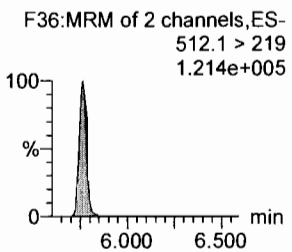
PFUdA



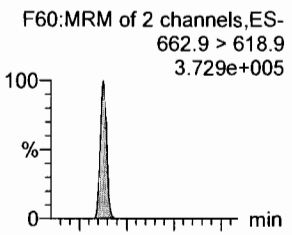


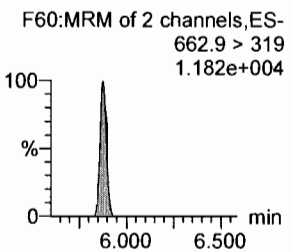
N-MeFOSA



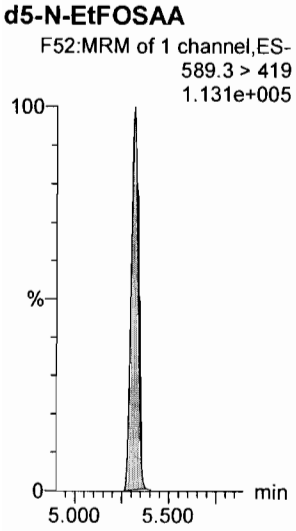


PFTrDA

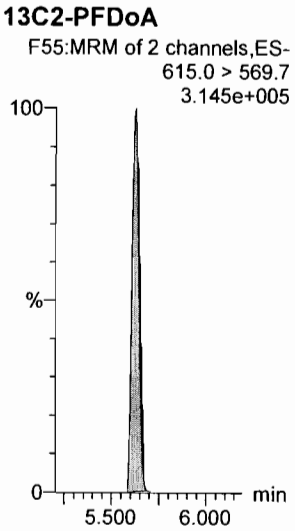




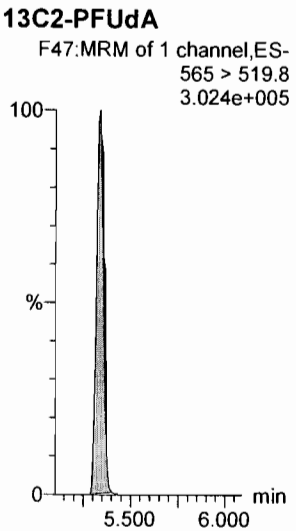
d5-N-EtFOSAA



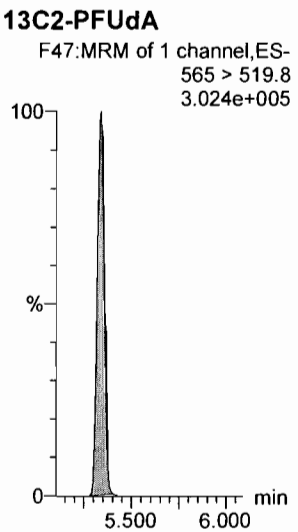
13C2-PFDoA



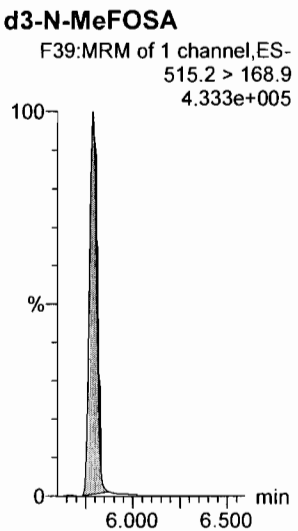
13C2-PFUdA



13C2-PFUdA



d3-N-MeFOSA



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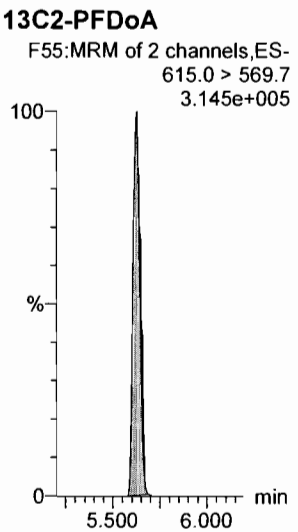
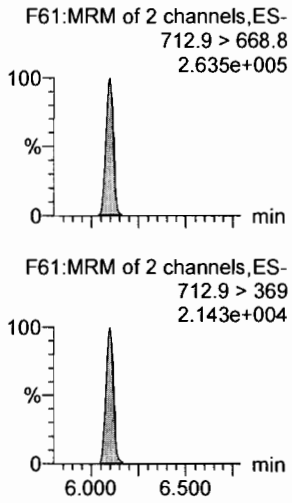


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

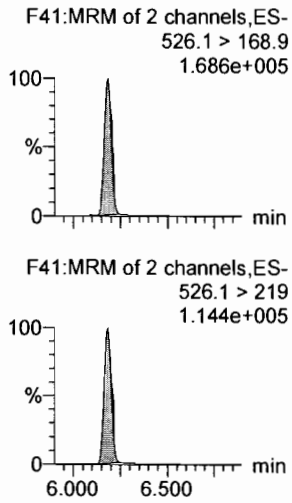
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

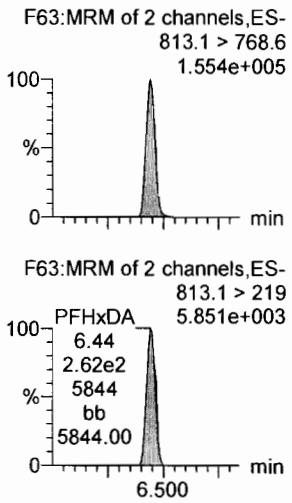
PFTeDA



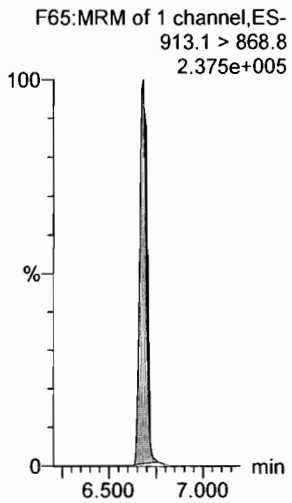
N-EtFOSA



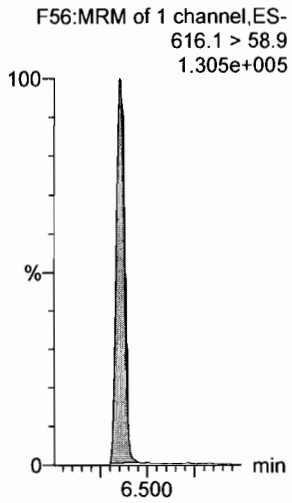
PFHxDA



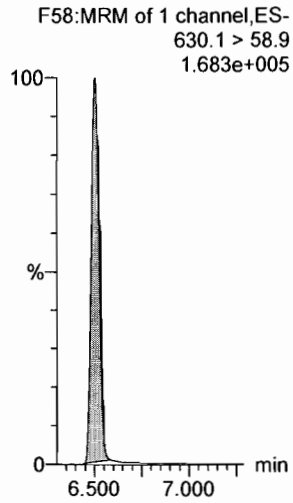
PFODA



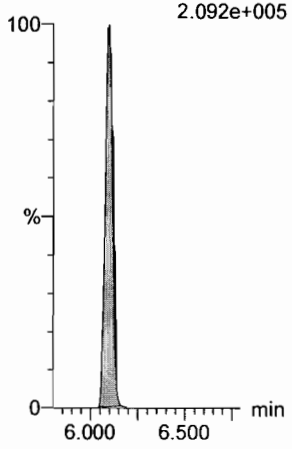
N-MeFOSE



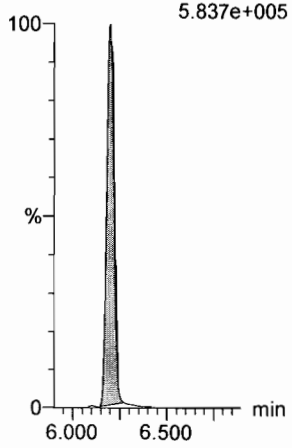
N-EtFOSE



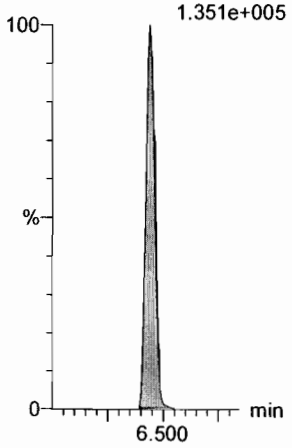
13C2-PFTeDA



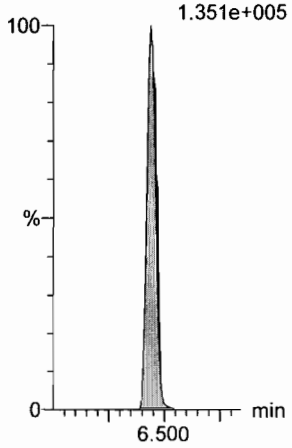
d5-N-ETFOSA



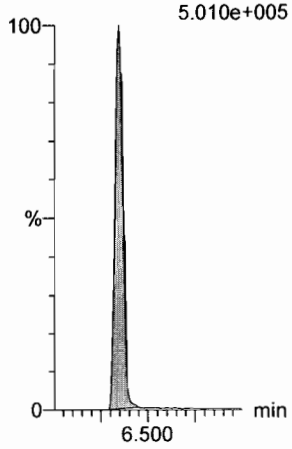
13C2-PFHxDA



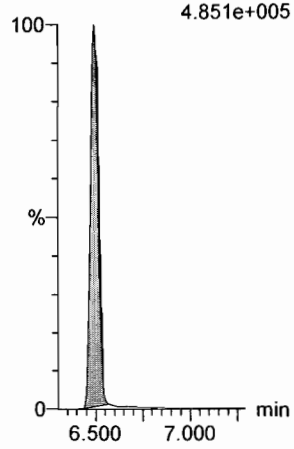
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

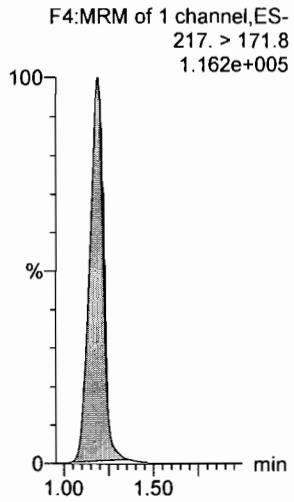


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

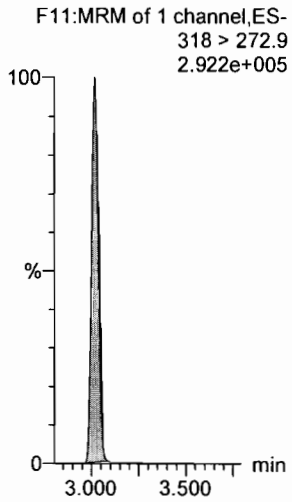
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_21, Date: 18-Jun-2018, Time: 20:18:01, ID: ST180618M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

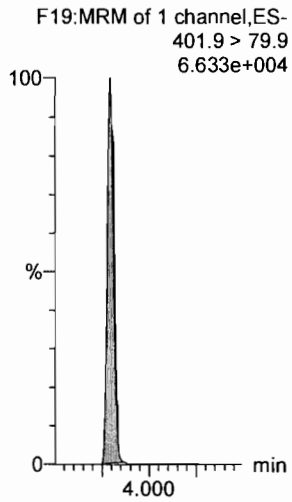
13C4-PFBA



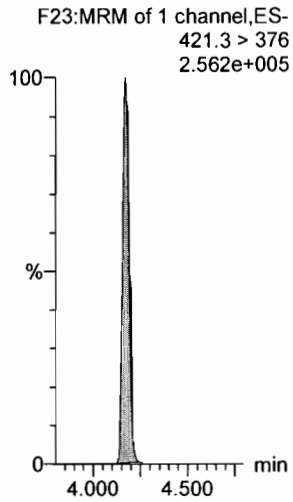
13C5-PFHxA



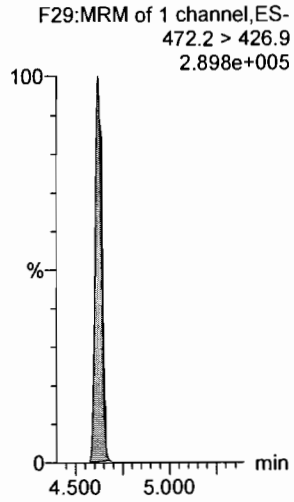
13C3-PFHxS



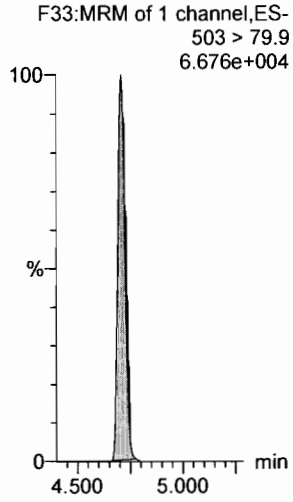
13C8-PFOA



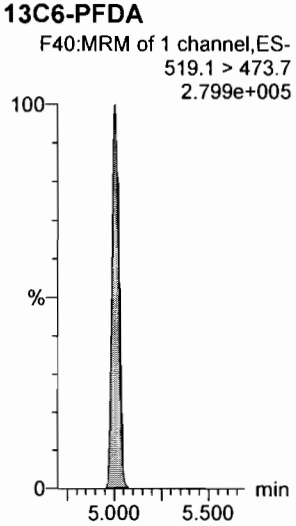
13C9-PFNA



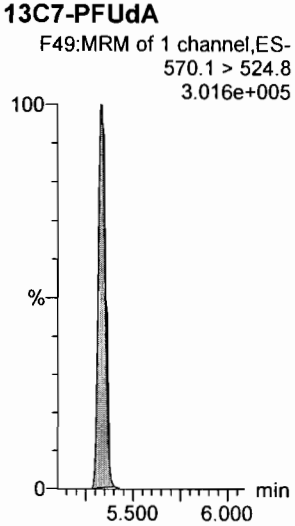
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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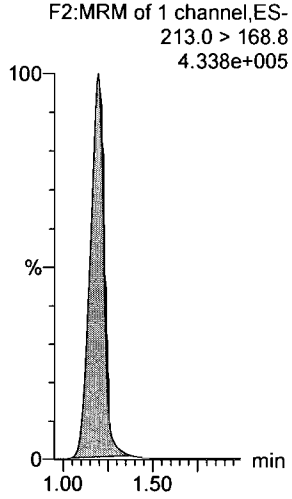
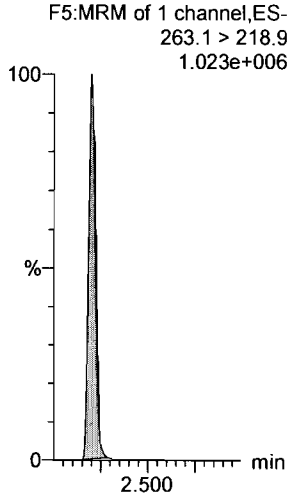
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

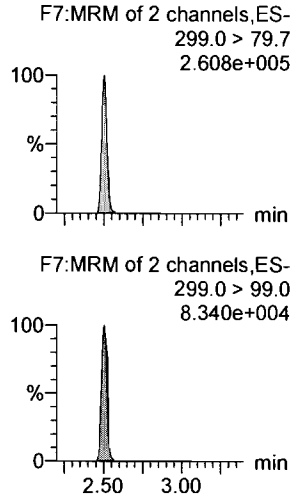
PFBA



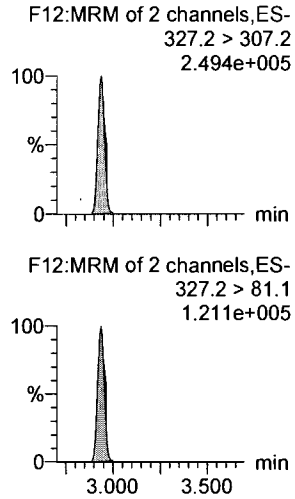
PFPeA



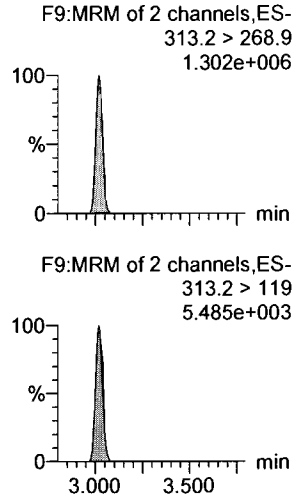
PFBS



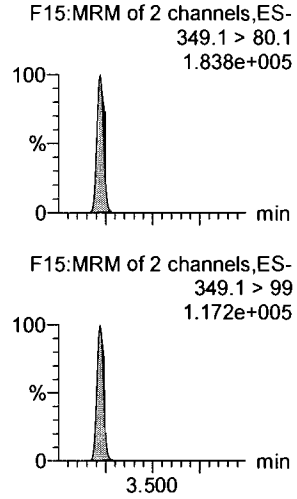
4:2 FTS



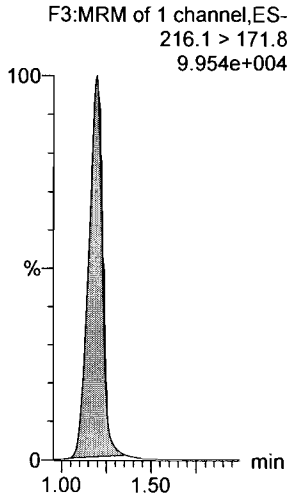
PFHxA



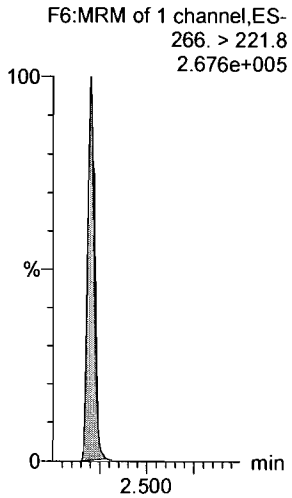
PFPeS



13C3-PFBA



13C3-PFPeA



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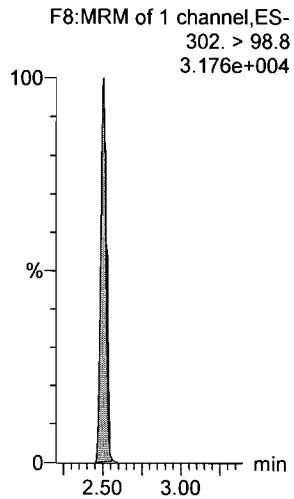
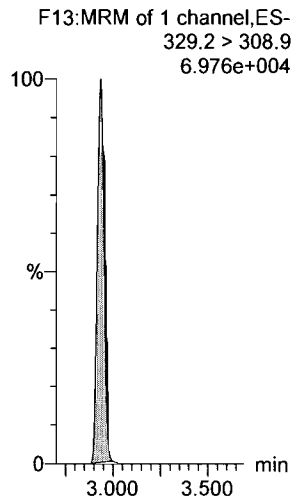


13C2-4:2 FTS



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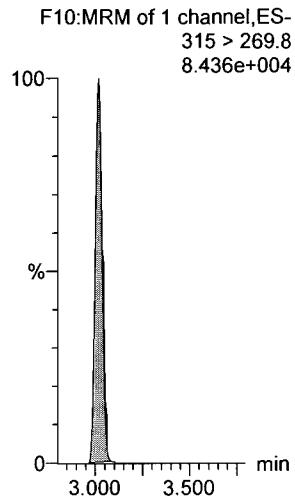
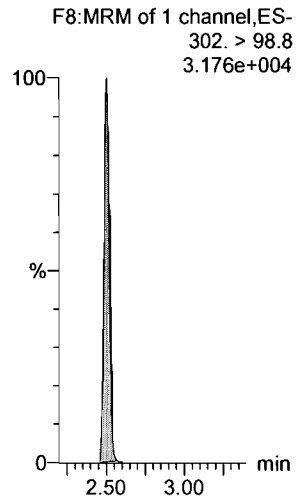


13C3-PFBS

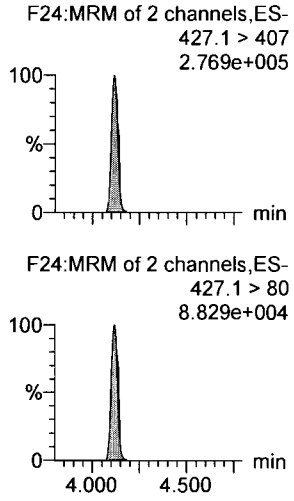


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

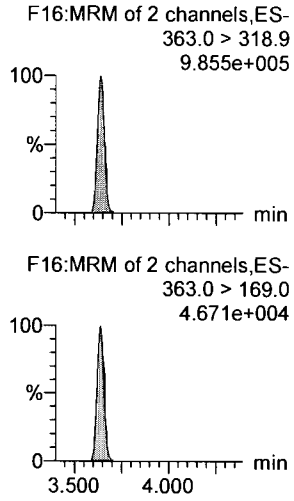
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

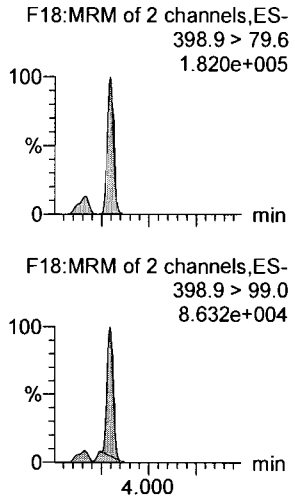
6:2 FTS



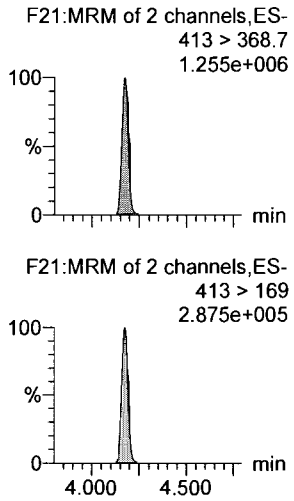
PFHpA



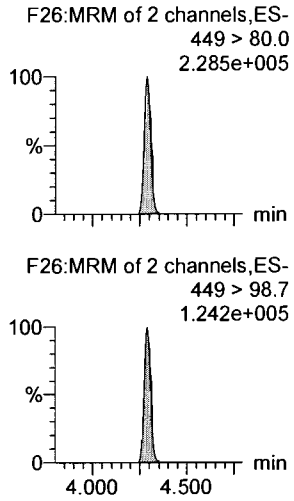
L-PFHxS



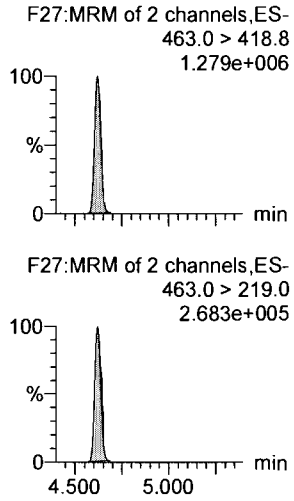
L-PFOA



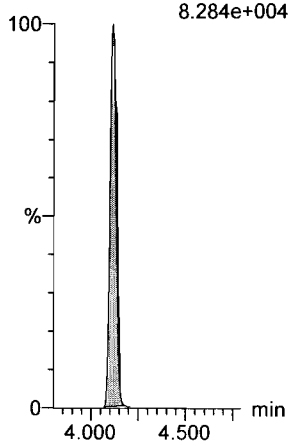
PFHpS



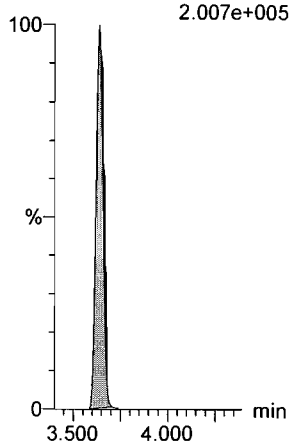
PFNA



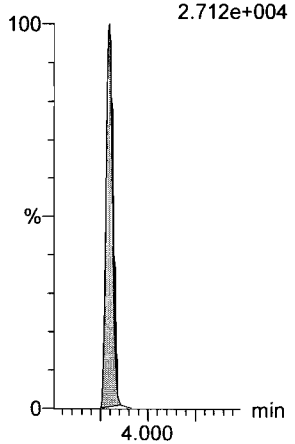
13C2-6:2 FTS



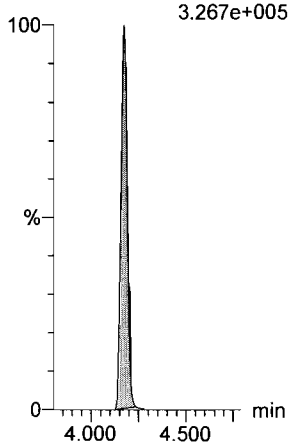
13C4-PFHpA



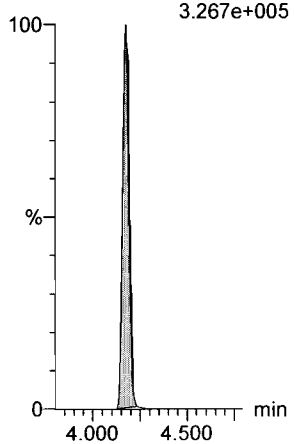
18O2-PFHxS



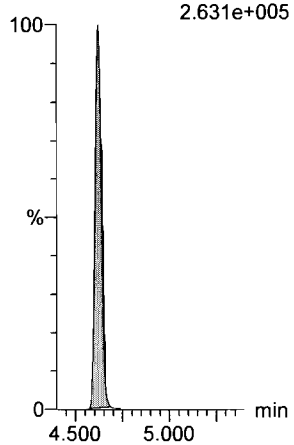
13C2-PFOA



13C2-PFOA



13C5-PFNA

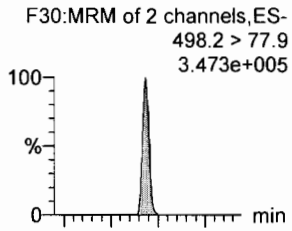


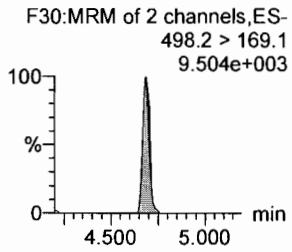
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

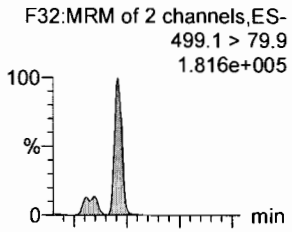
Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

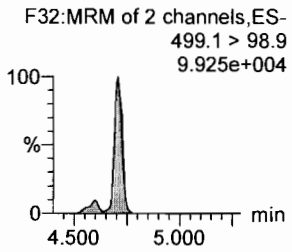
PFOSA



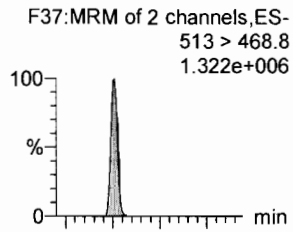


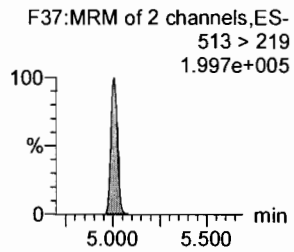
L-PFOS



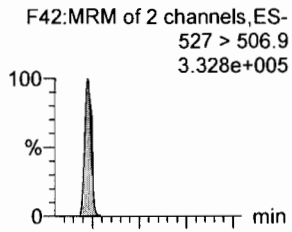


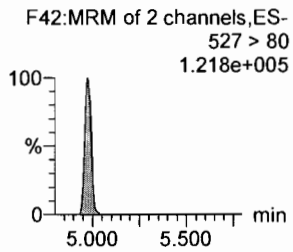
PFDA



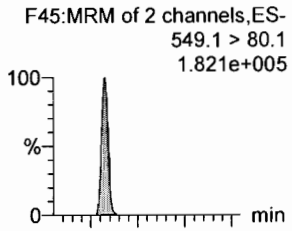


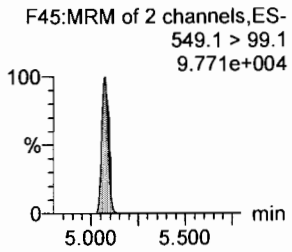
8:2 FTS



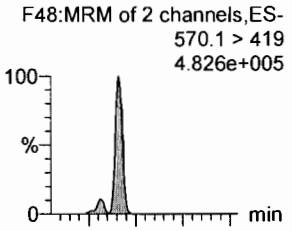


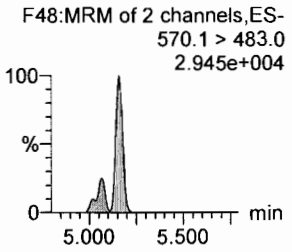
PFNS



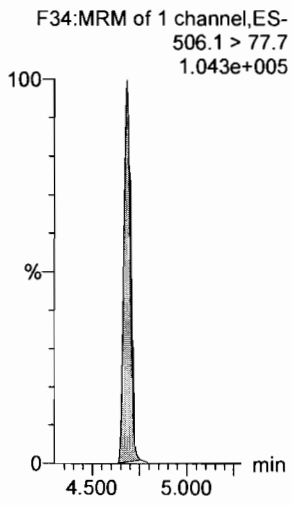


L-MeFOSAA

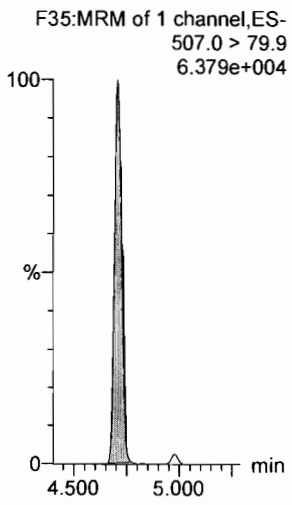




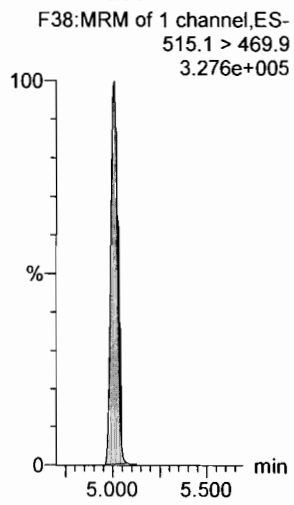
13C8-PFOSA



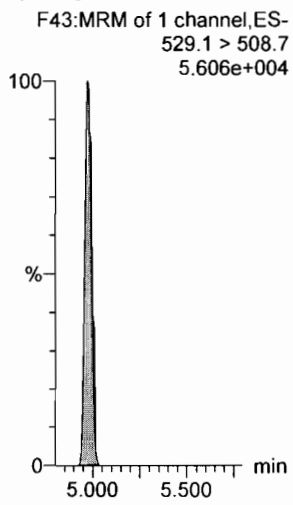
13C8-PFOS



13C2-PFDA



13C2-8:2 FTS



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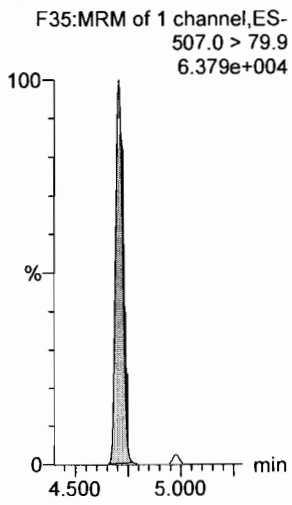
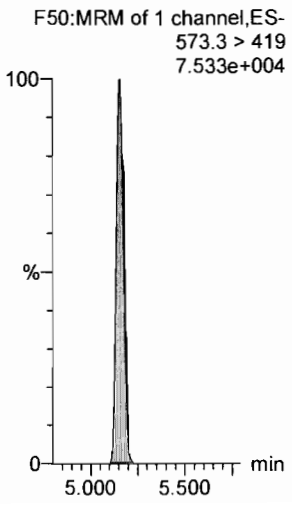


d3-N-MeFOSAA

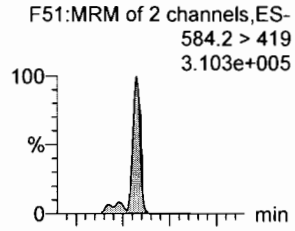


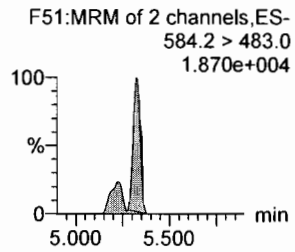
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

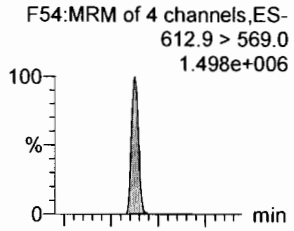
Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

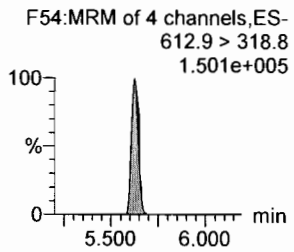
L-EtFOSAA





PFDoA





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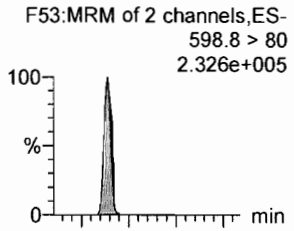

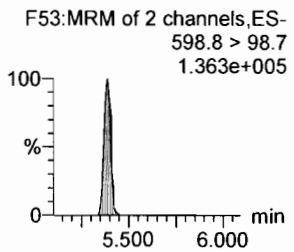

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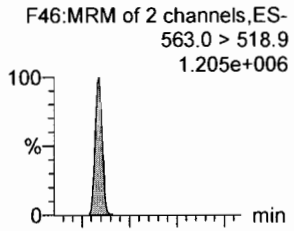

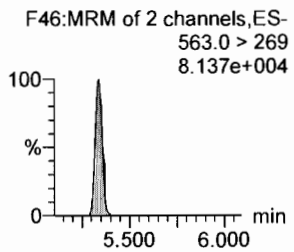

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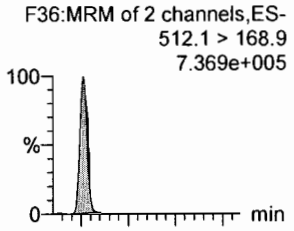

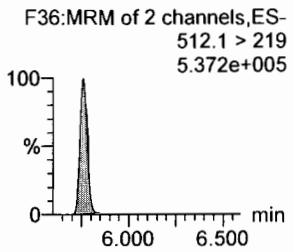

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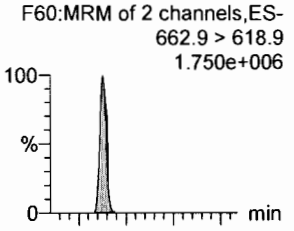
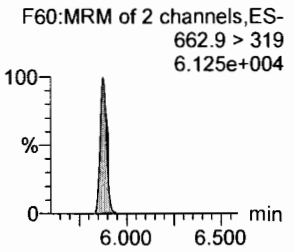
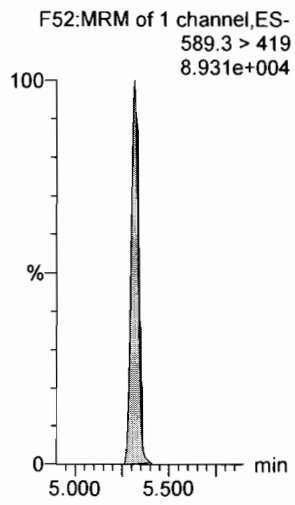
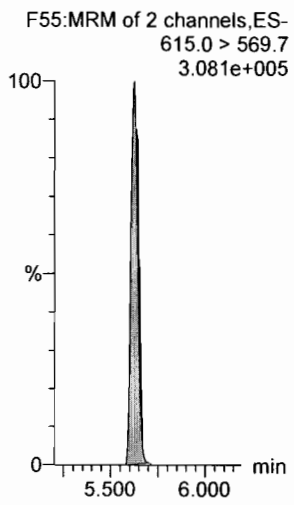




d5-N-EtFOSAA



13C2-PFDoA



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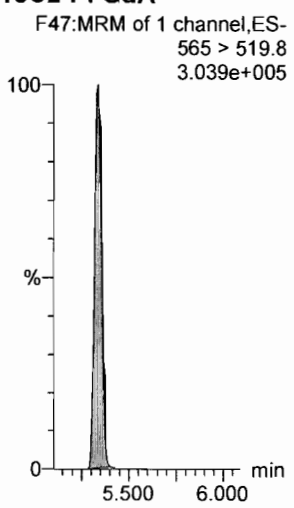

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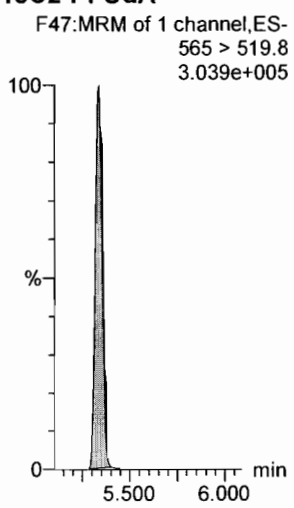

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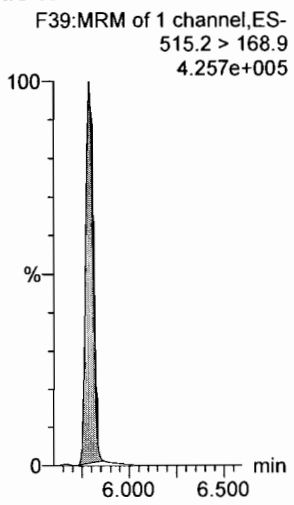

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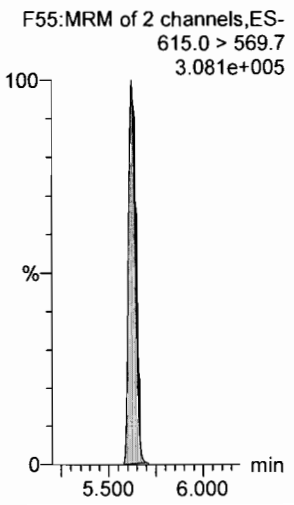

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

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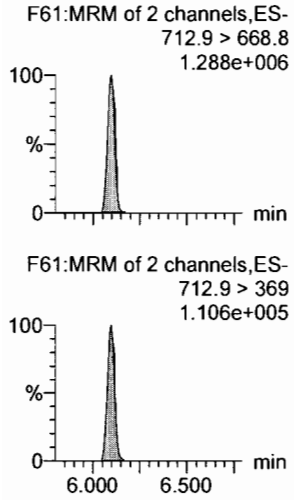

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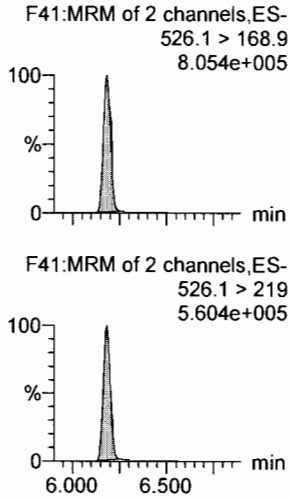

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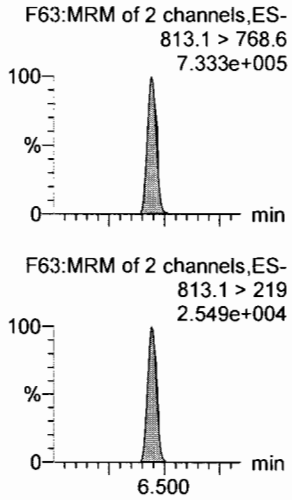

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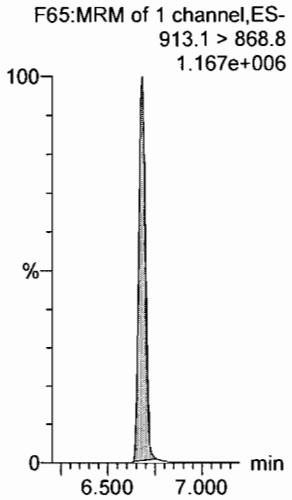

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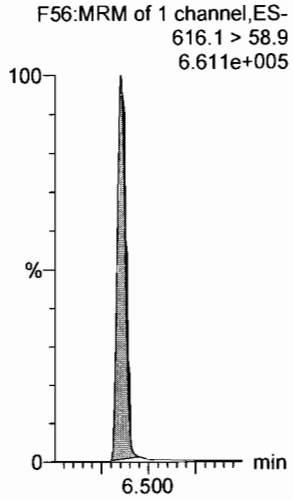

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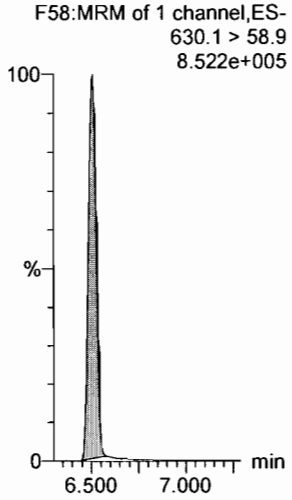

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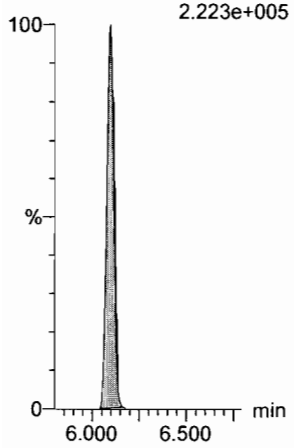
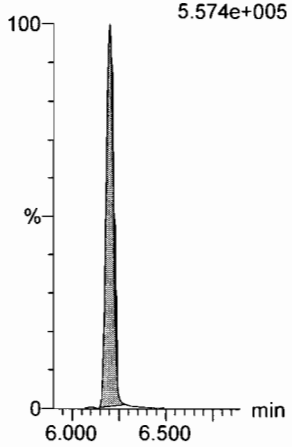


d5-N-ETFOSA



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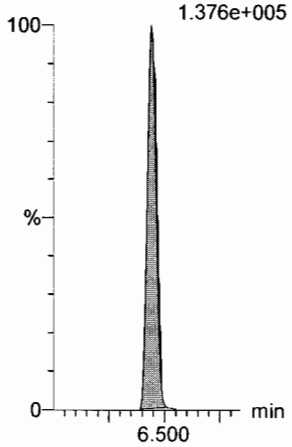

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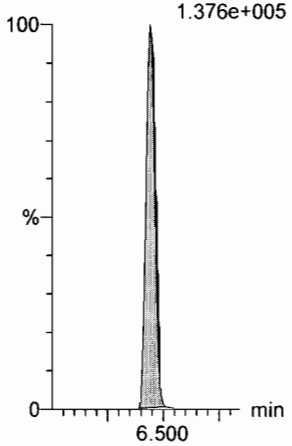

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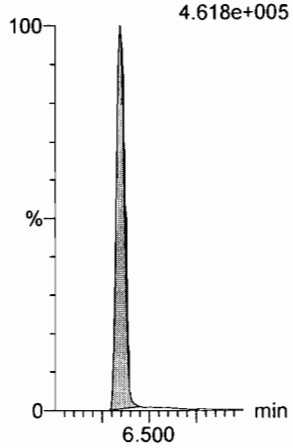
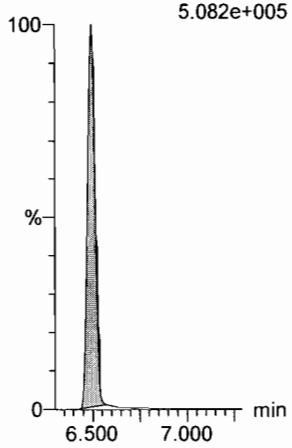


d9-N-EtFOSE



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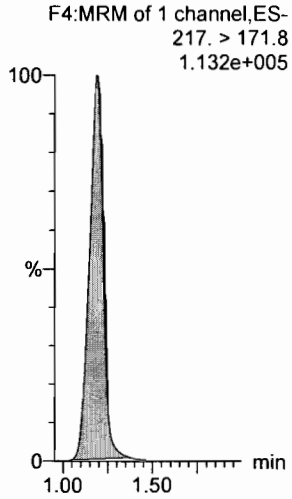
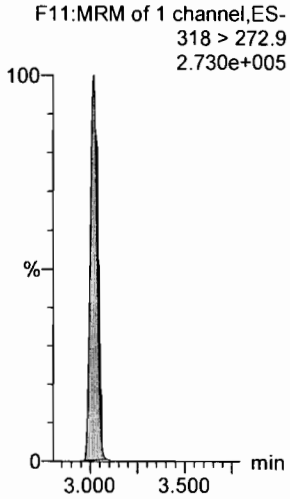
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_22, Date: 18-Jun-2018, Time: 20:28:31, ID: ST180618M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

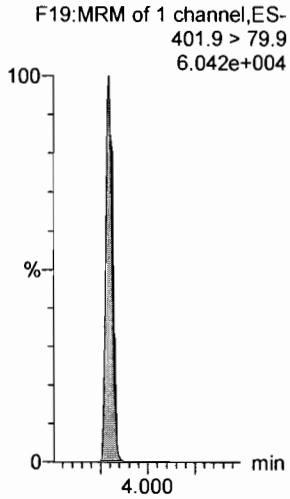
13C4-PFBA



13C5-PFHxA



13C3-PFHxS



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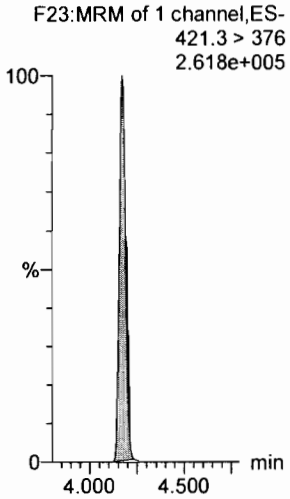

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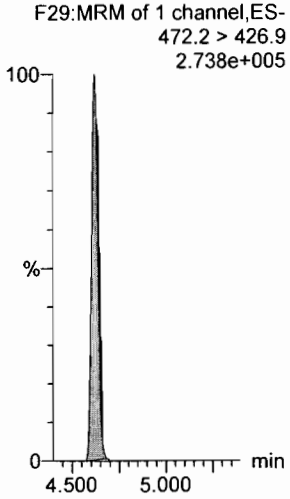
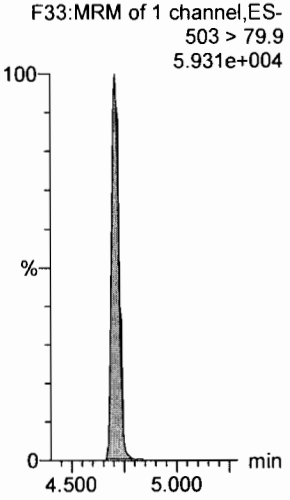


13C4-PFOS



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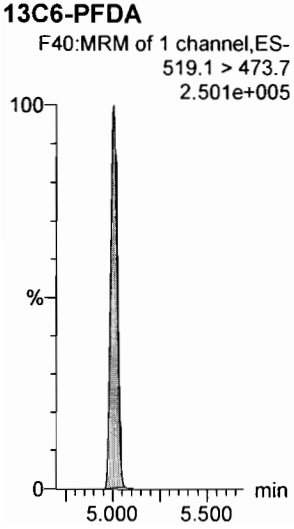

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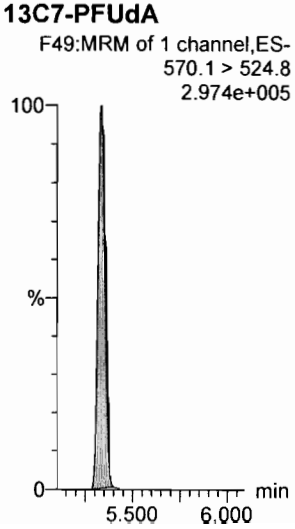

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

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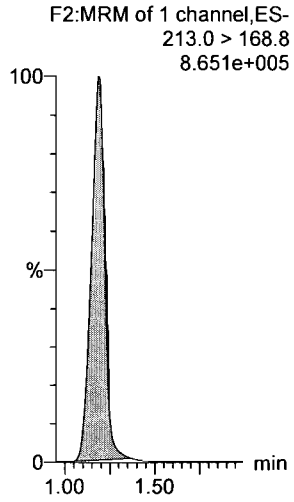
PFBA



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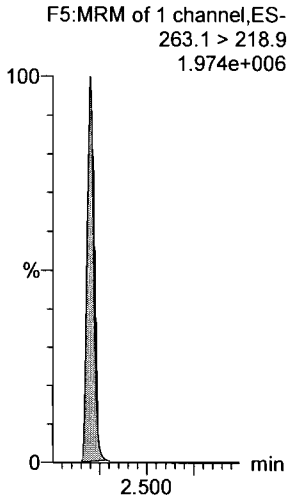

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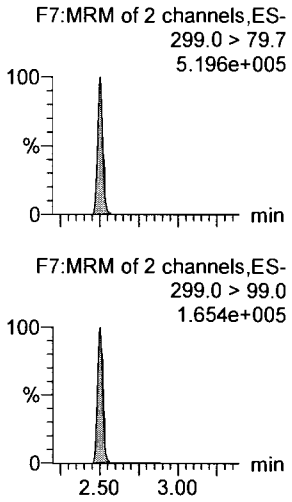
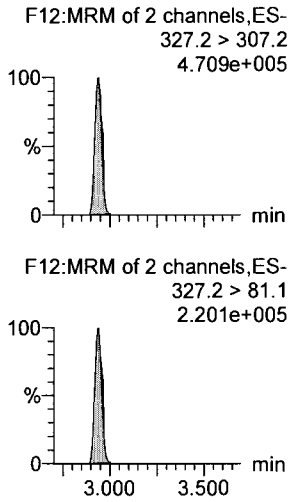
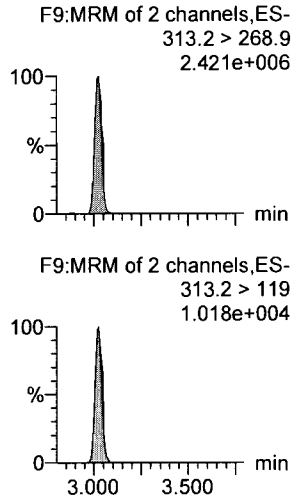


4:2 FTS



PFHxA



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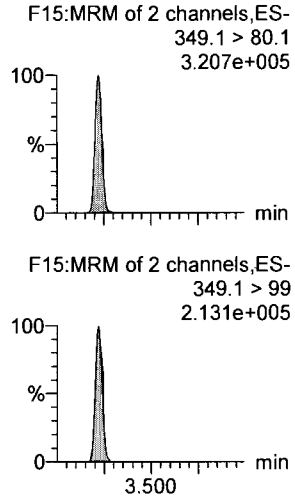

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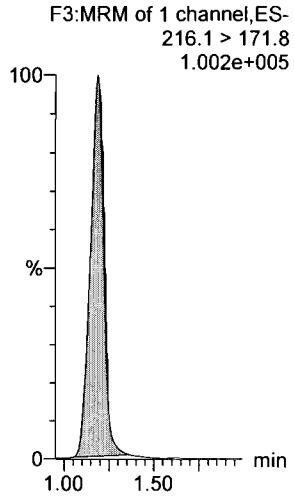

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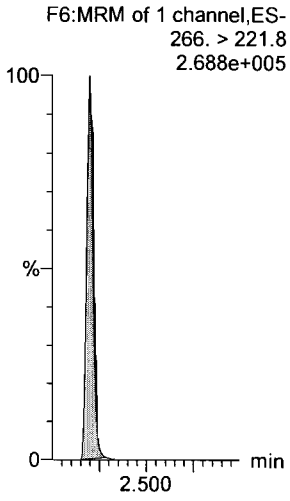
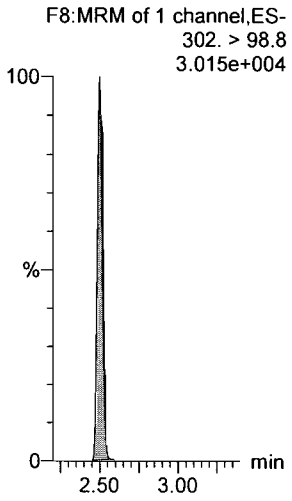
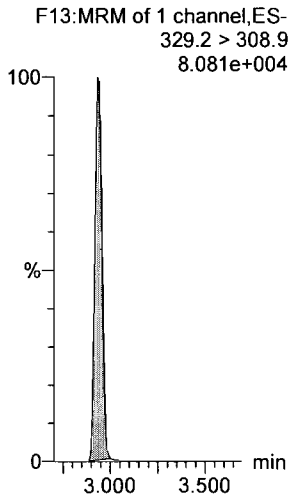


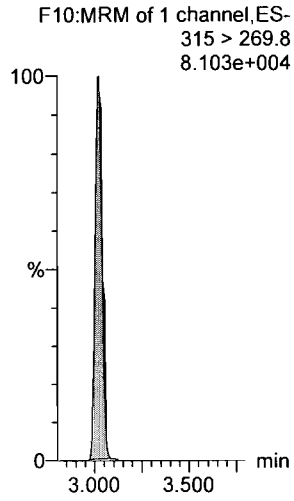
13C3-PFBS



13C2-4:2 FTS



13C2-PFHxA



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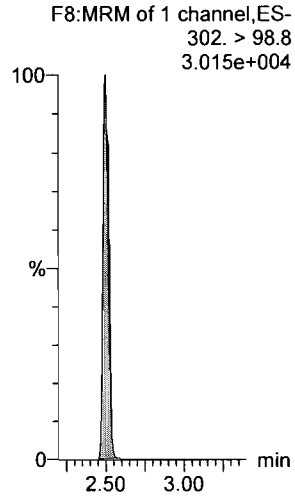
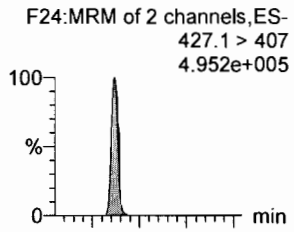


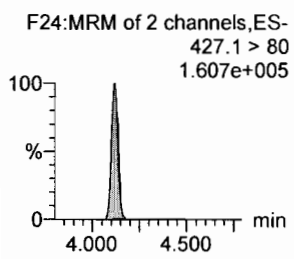
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_23, Date: 18-Jun-2018, Time: 20:38:55, ID: ST180618M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

6:2 FTS





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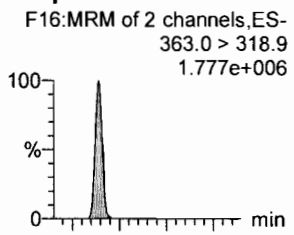
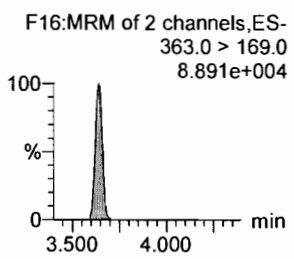
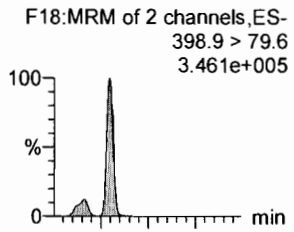
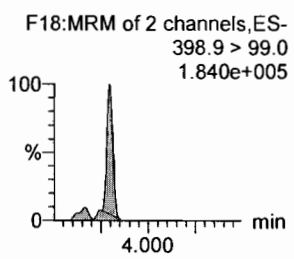


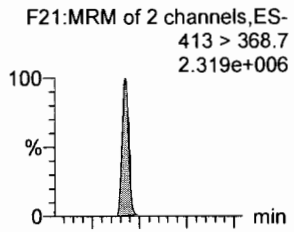


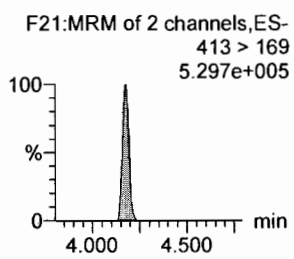
L-PFHxS





L-PFOA





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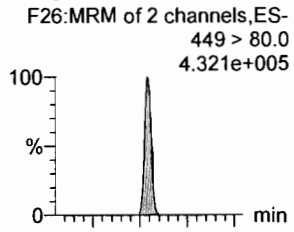

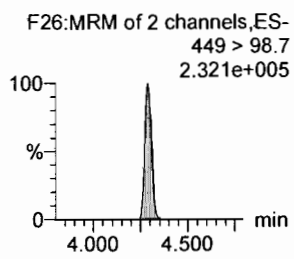

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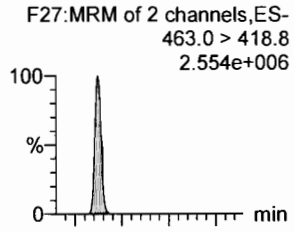
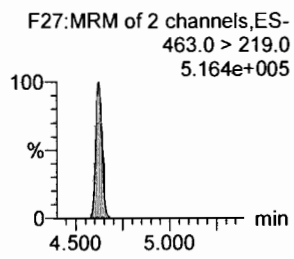
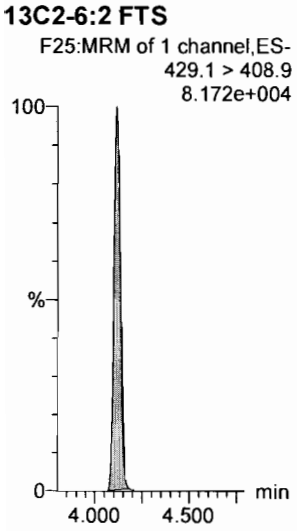
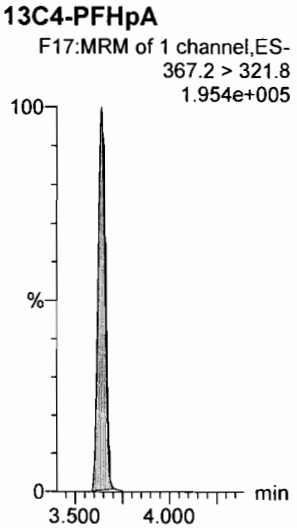




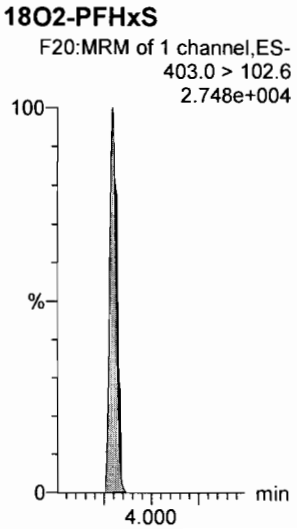
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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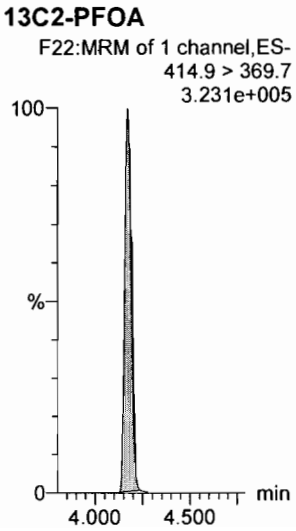

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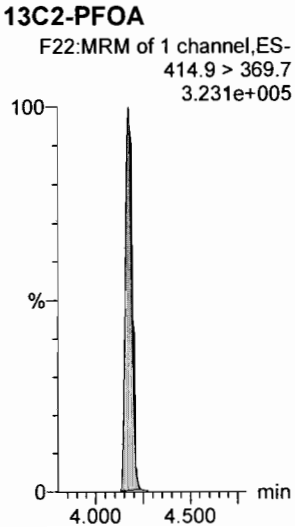
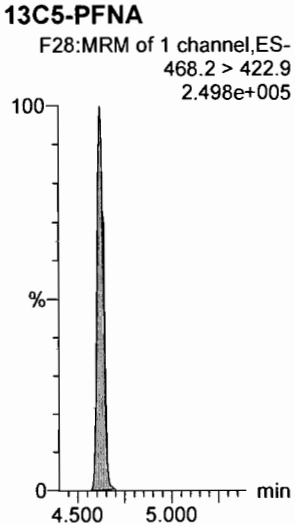


13C5-PFNA



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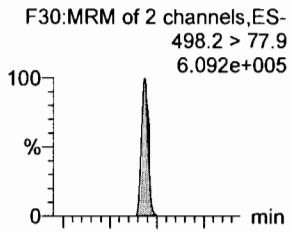
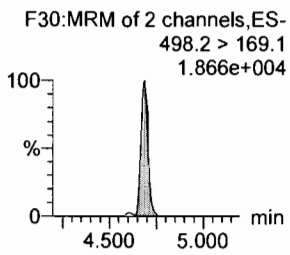
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_23, Date: 18-Jun-2018, Time: 20:38:55, ID: ST180618M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

PFOSA





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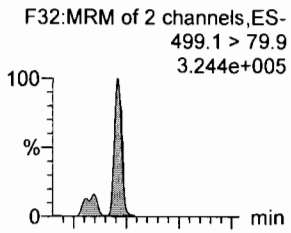

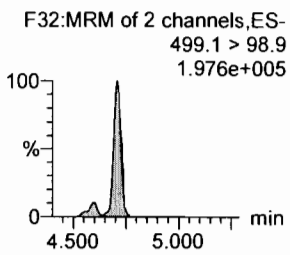

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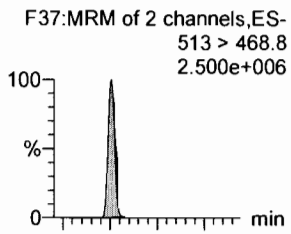
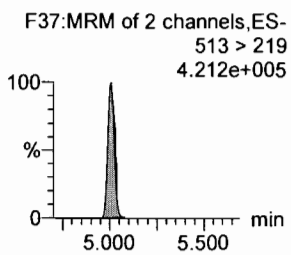
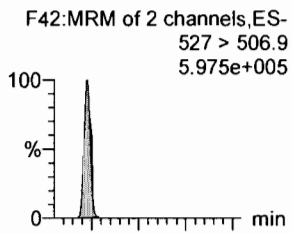
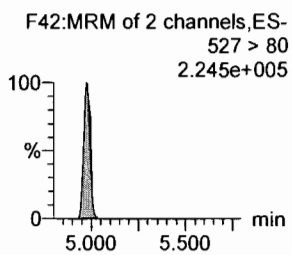




8:2 FTS





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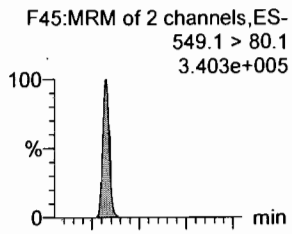

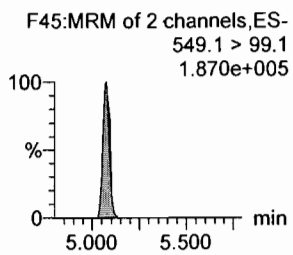

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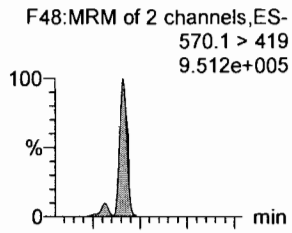

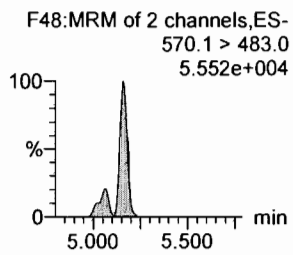

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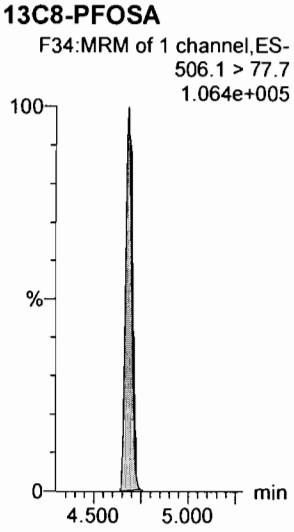
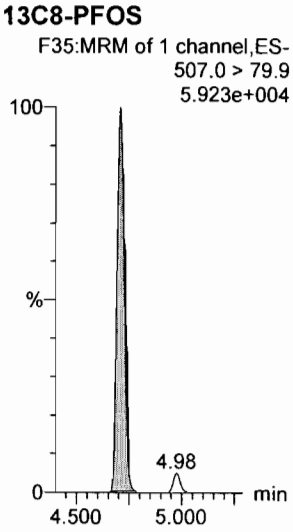


13C8-PFOS



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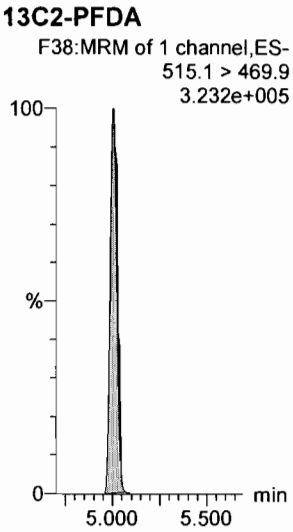
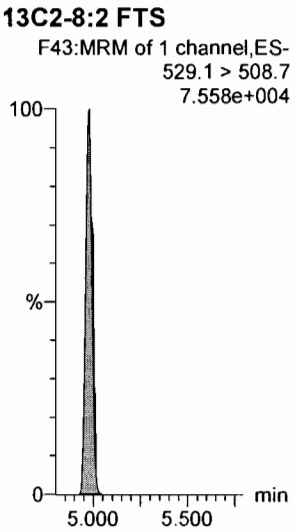


13C2-8:2 FTS



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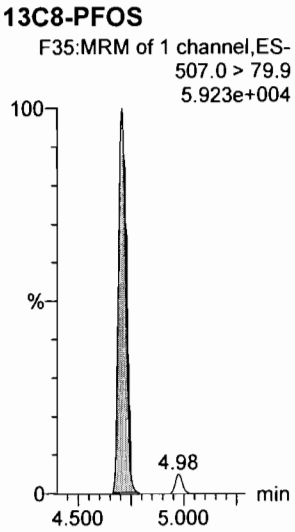
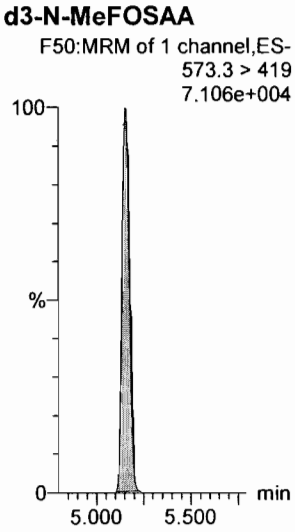


d3-N-MeFOSAA



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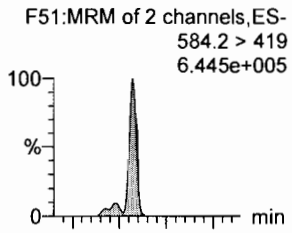
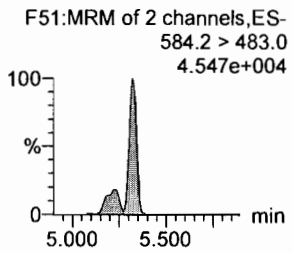
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

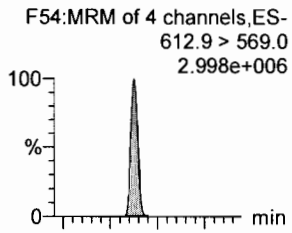
Name: 180618M1_23, Date: 18-Jun-2018, Time: 20:38:55, ID: ST180618M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

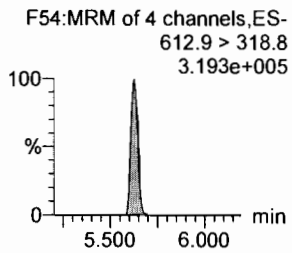
L-EtFOSAA





PFDoA





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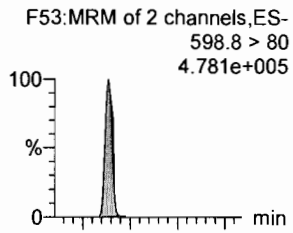

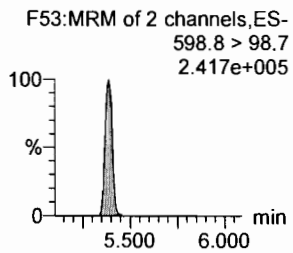

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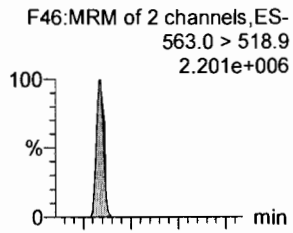
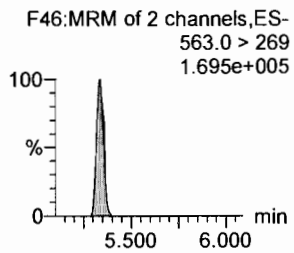
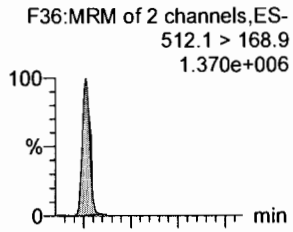
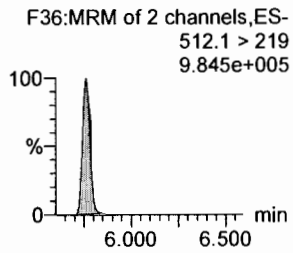




N-MeFOSA





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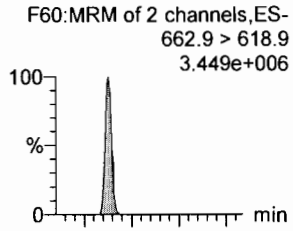
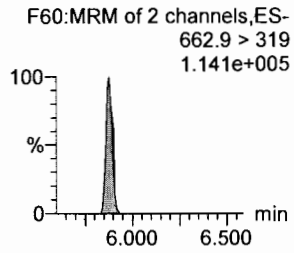
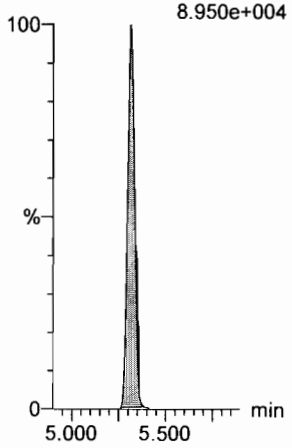
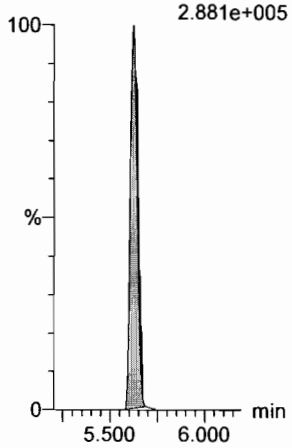




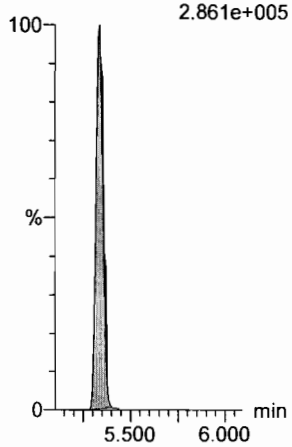
d5-N-EtFOSAA



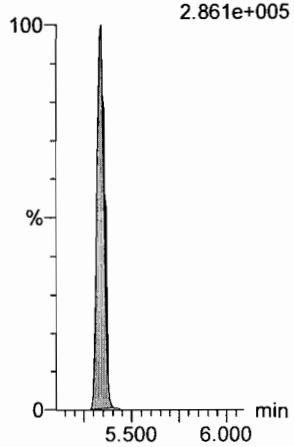
13C2-PFDoA



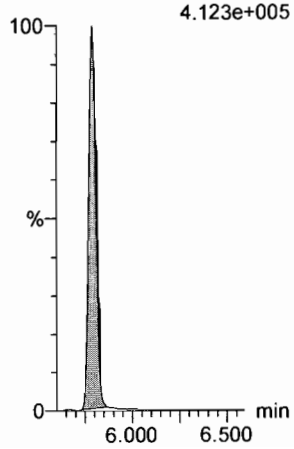
13C2-PFUdA



13C2-PFUdA



d3-N-MeFOSA



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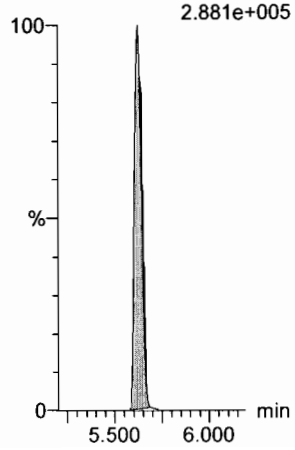
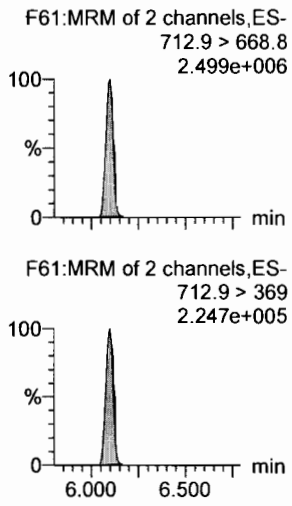


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_23, Date: 18-Jun-2018, Time: 20:38:55, ID: ST180618M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

PFTeDA



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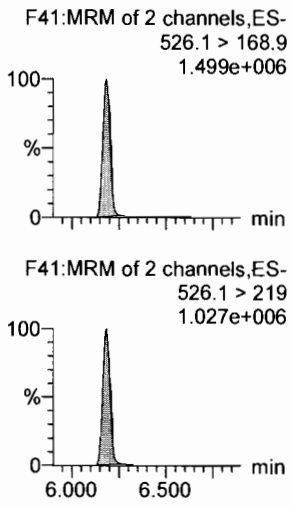
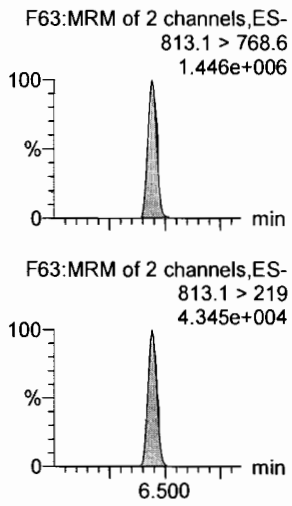
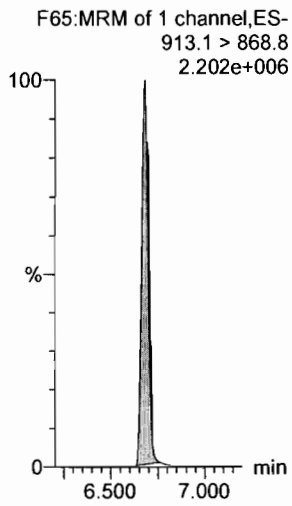


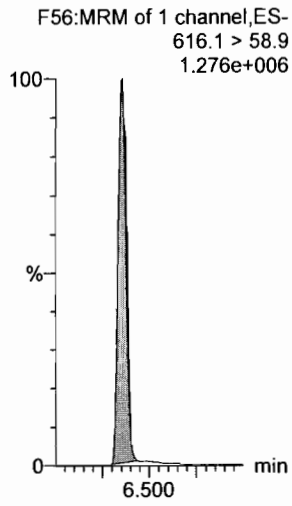
PFHxDA



PFODA



N-MeFOSE



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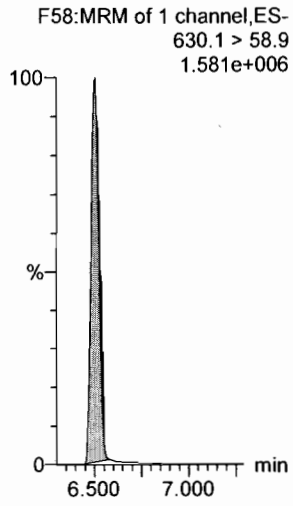
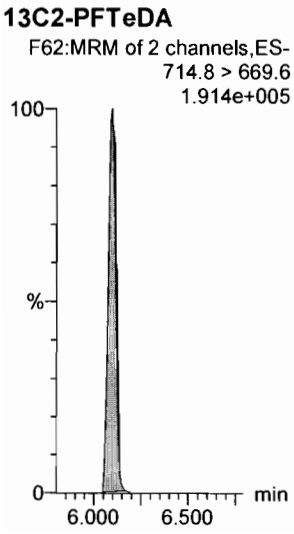
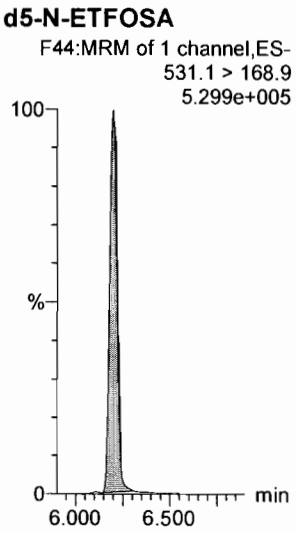


13C2-PFTeDA



d5-N-ETFOSA



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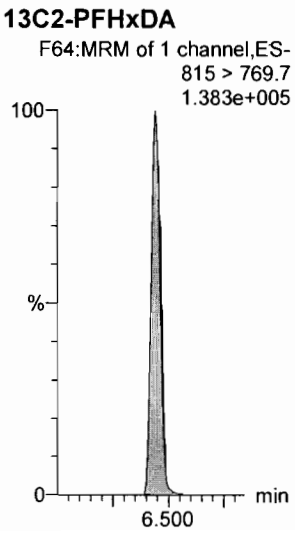

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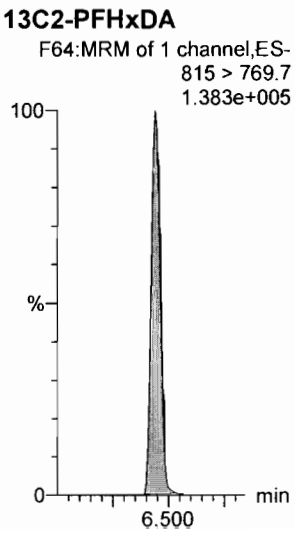
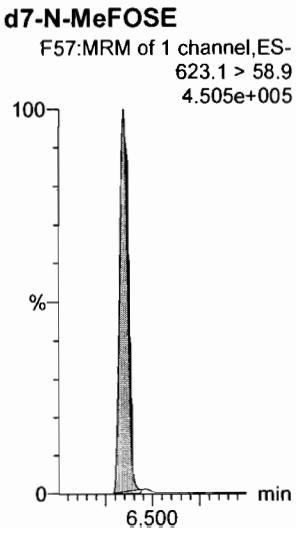
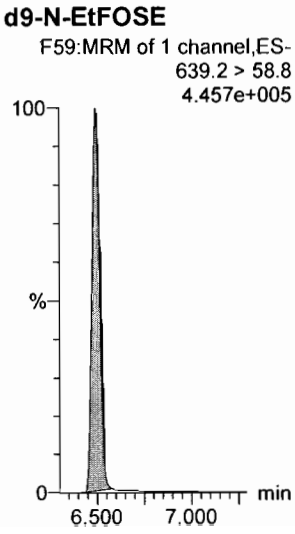


d7-N-MeFOSE



d9-N-EtFOSE

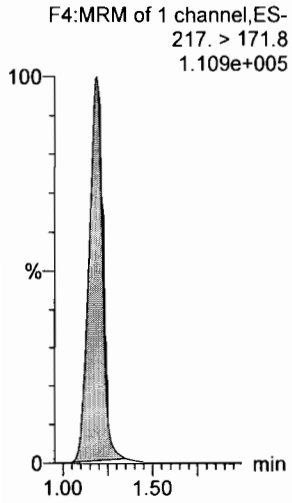


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

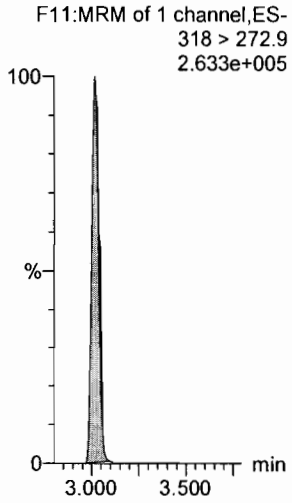
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_23, Date: 18-Jun-2018, Time: 20:38:55, ID: ST180618M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

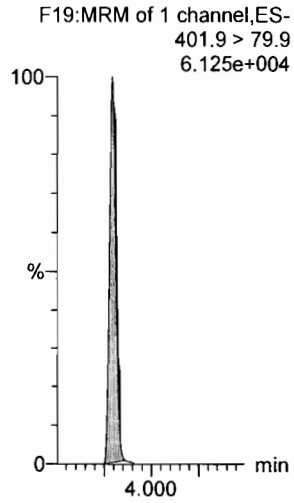
13C4-PFBA



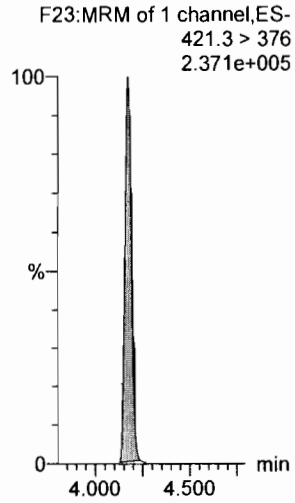
13C5-PFHxA



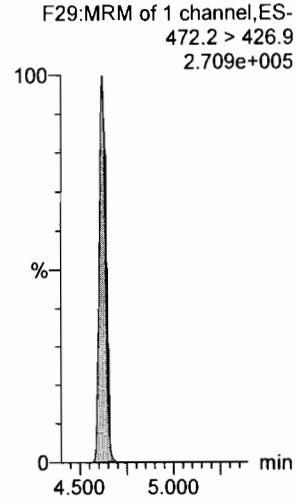
13C3-PFHxS



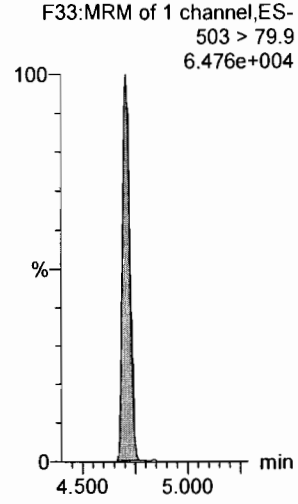
13C8-PFOA



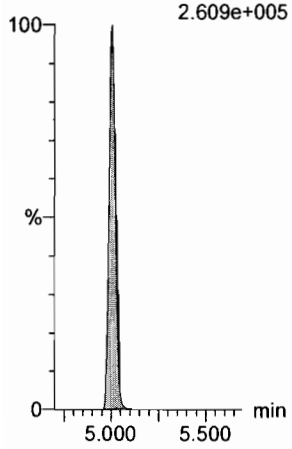
13C9-PFNA



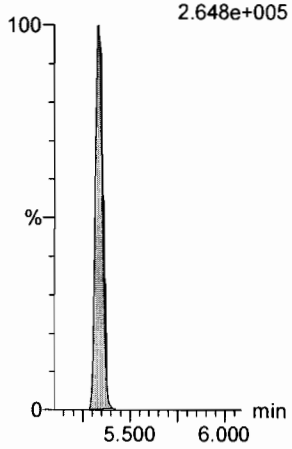
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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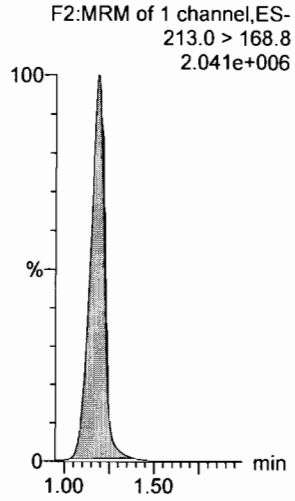
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

PFBA



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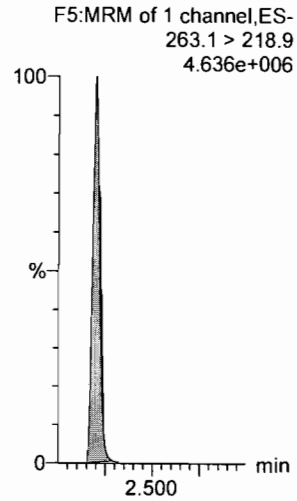
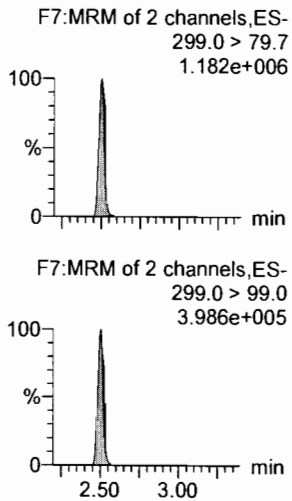
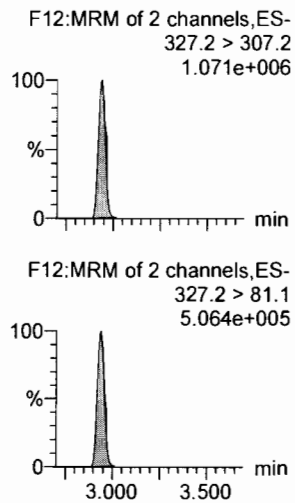


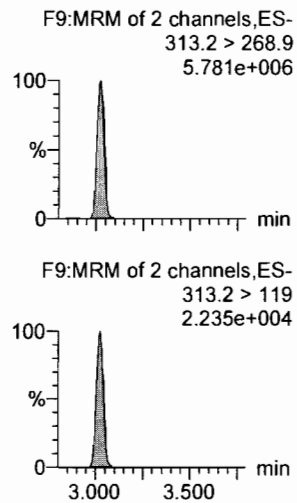
PFBS



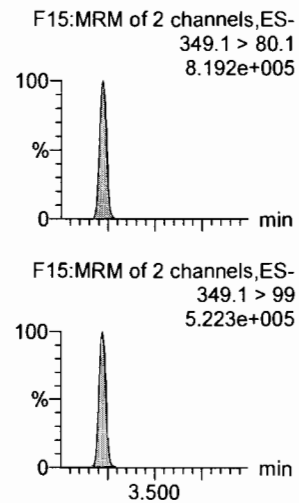
4:2 FTS



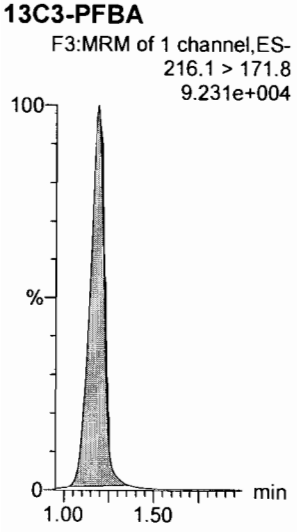
PFHxA



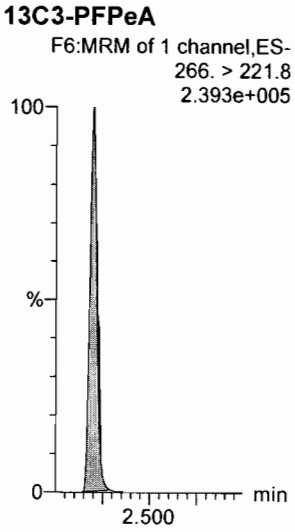
PFPeS



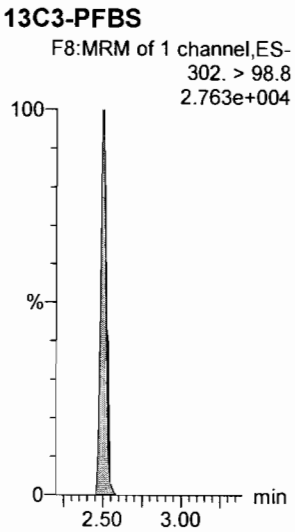
13C3-PFBA



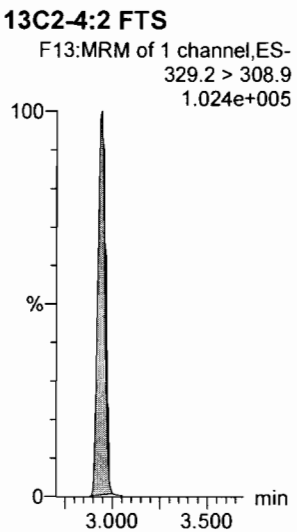
13C3-PFPeA



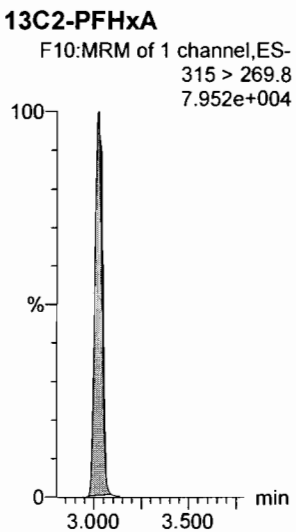
13C3-PFBS



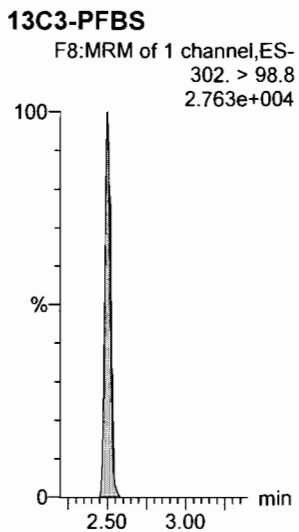
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

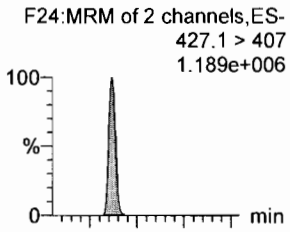


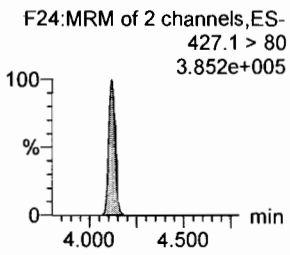
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

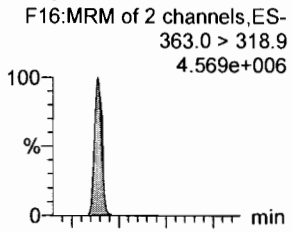
Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

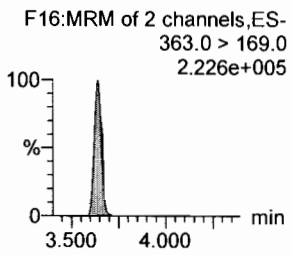
6:2 FTS



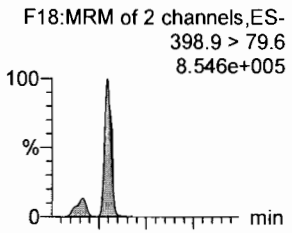


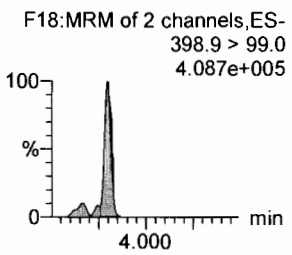
PFHpA



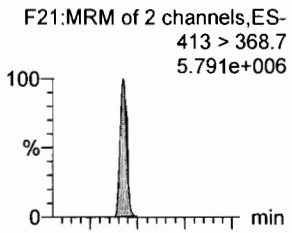


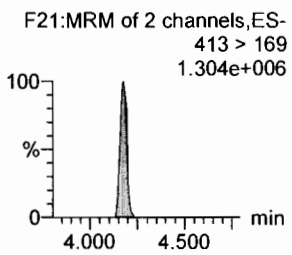
L-PFHxS





L-PFOA





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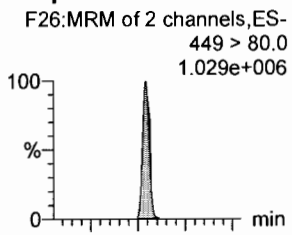
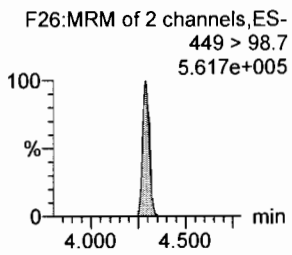
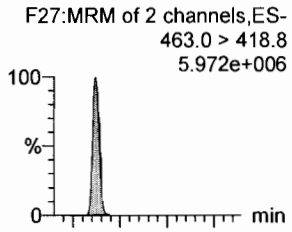
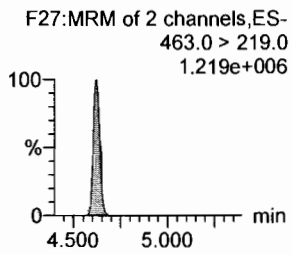


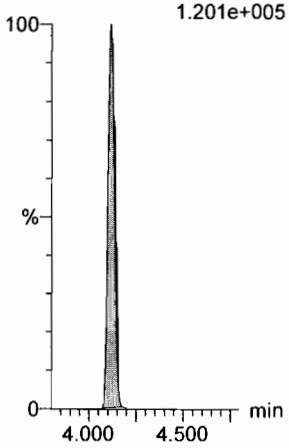


PFNA

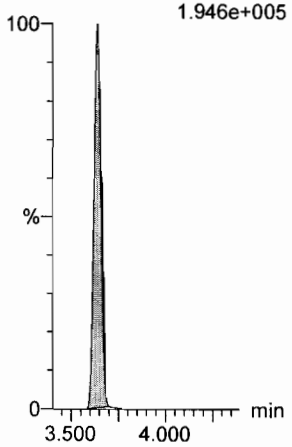




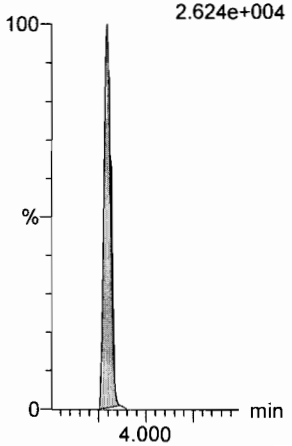
13C2-6:2 FTS



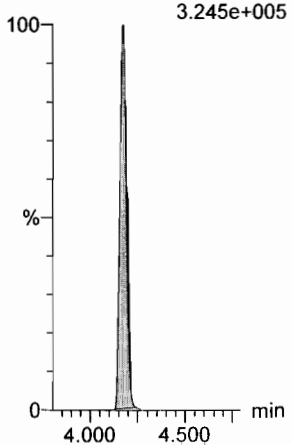
13C4-PFHpA



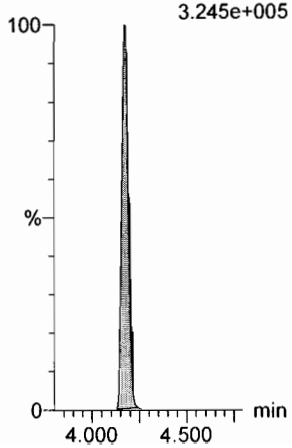
18O2-PFHxS



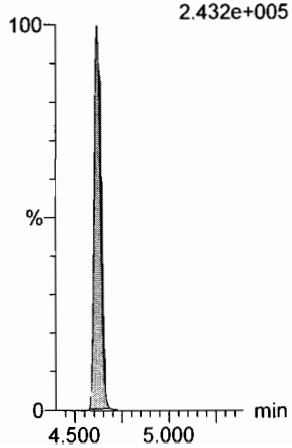
13C2-PFOA



13C2-PFOA



13C5-PFNA

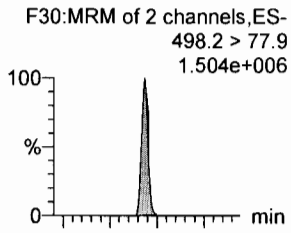


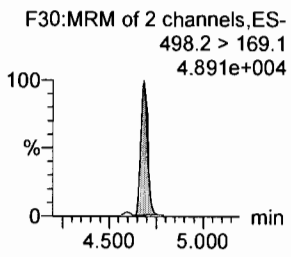
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

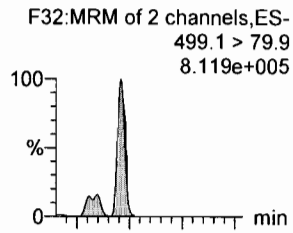
Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

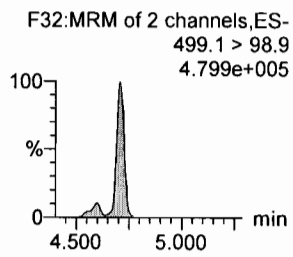
PFOSA



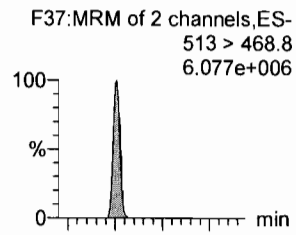


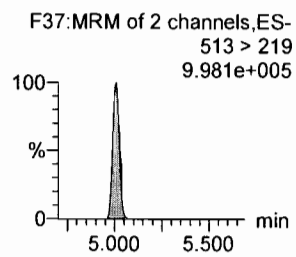
L-PFOS



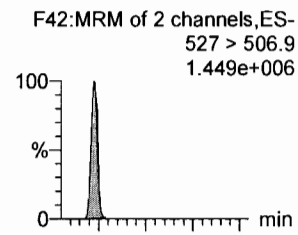


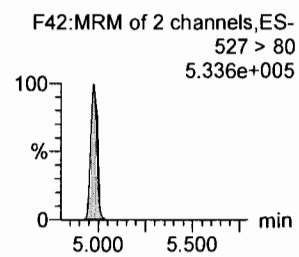
PFDA



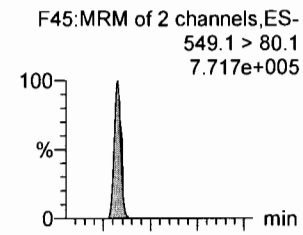


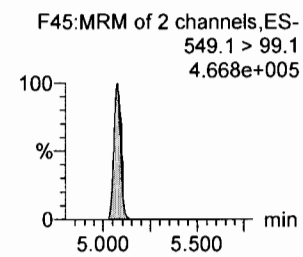
8:2 FTS



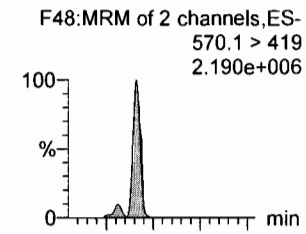


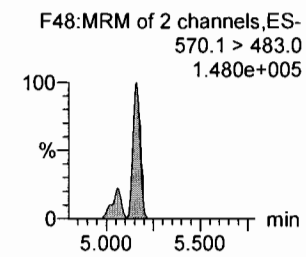
PFNS



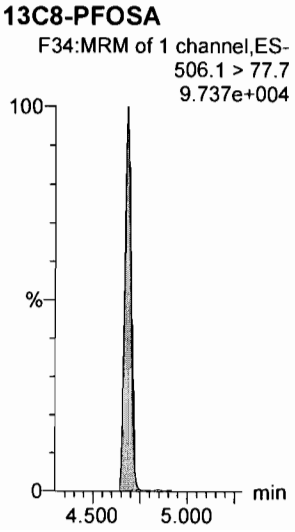


L-MeFOSAA

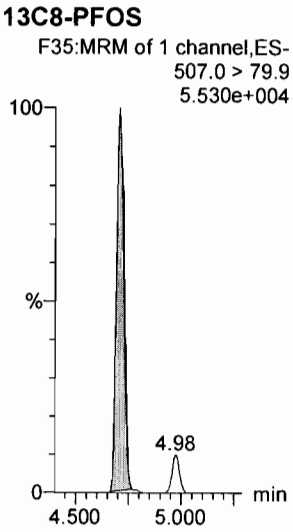




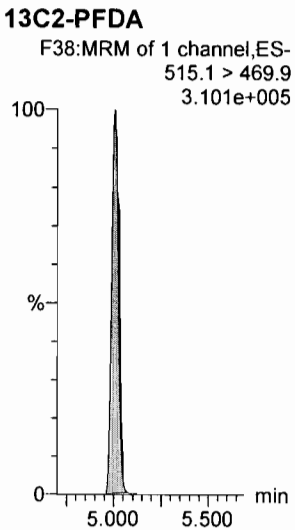
13C8-PFOSA



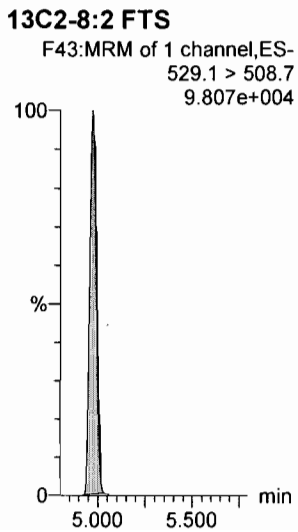
13C8-PFOS



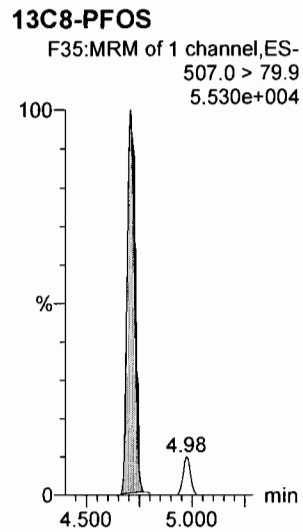
13C2-PFDA



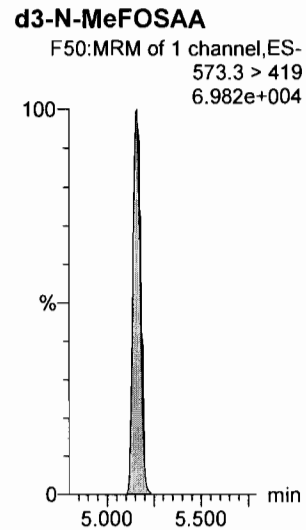
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

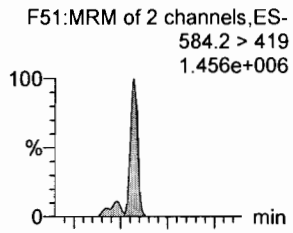


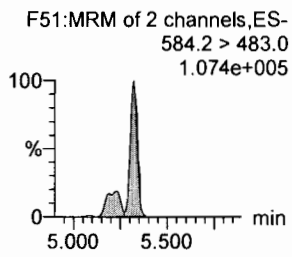
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

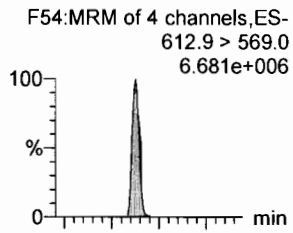
Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

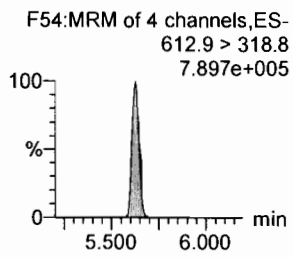
L-EtFOSAA



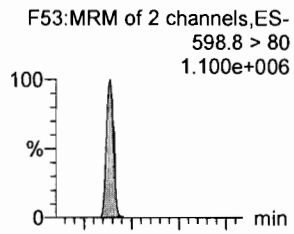


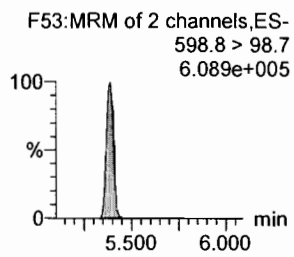
PFDoA



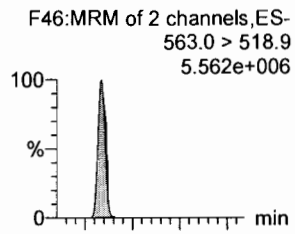


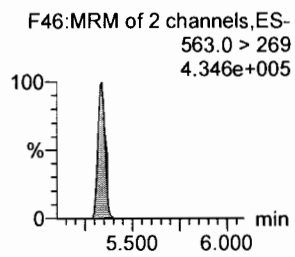
PFDS



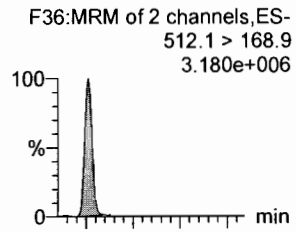


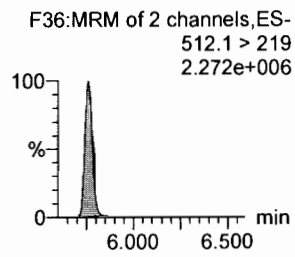
PFUdA



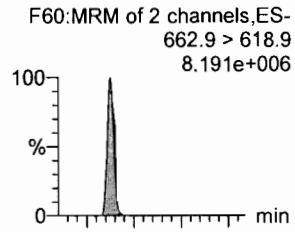


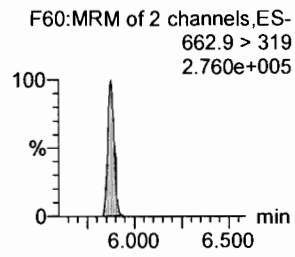
N-MeFOSA



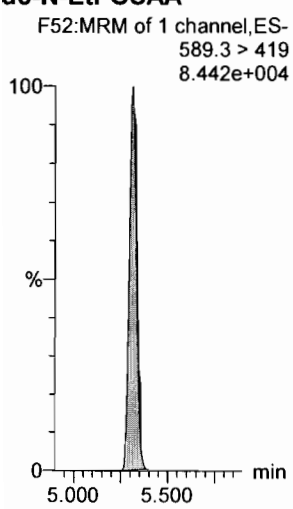


PFTrDA

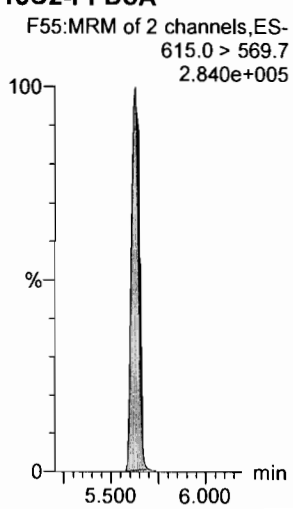




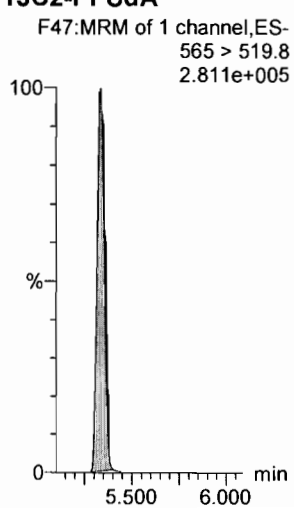
d5-N-EtFOSAA



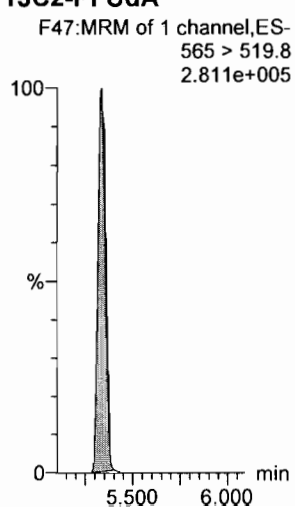
13C2-PFDoA



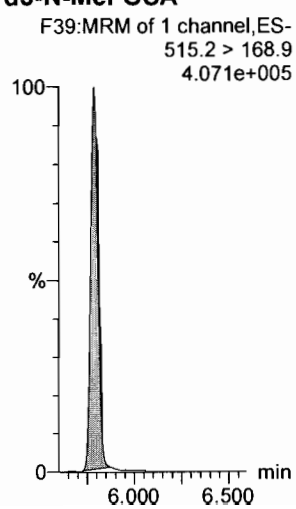
13C2-PFUdA



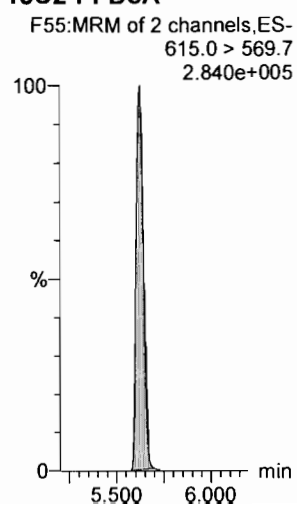
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

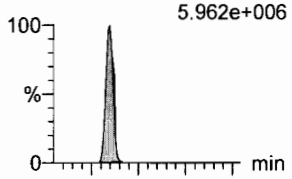


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

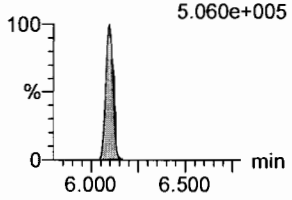
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

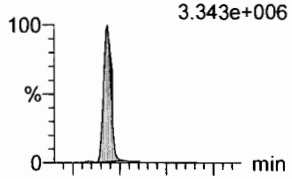
PFTeDA
F61:MRM of 2 channels,ES-
712.9 > 668.8
5.962e+006



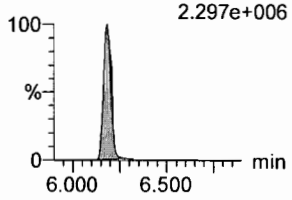
F61:MRM of 2 channels,ES-
712.9 > 369
5.060e+005



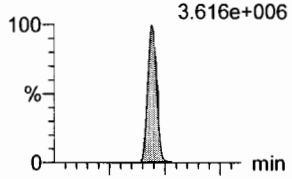
N-EtFOSA
F41:MRM of 2 channels,ES-
526.1 > 168.9
3.343e+006



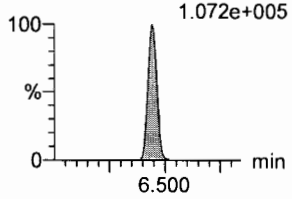
F41:MRM of 2 channels,ES-
526.1 > 219
2.297e+006



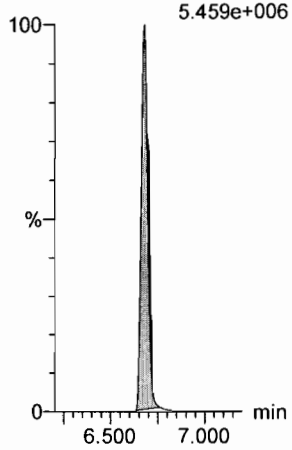
PFHxDA
F63:MRM of 2 channels,ES-
813.1 > 768.6
3.616e+006



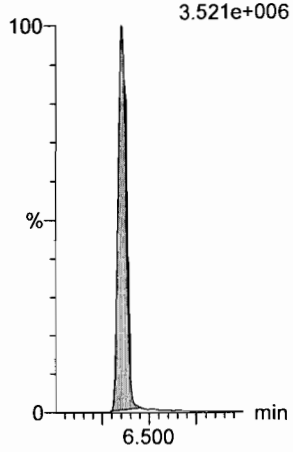
F63:MRM of 2 channels,ES-
813.1 > 219
1.072e+005



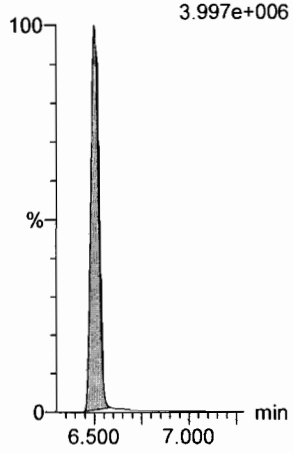
PFODA
F65:MRM of 1 channel,ES-
913.1 > 868.8
5.459e+006



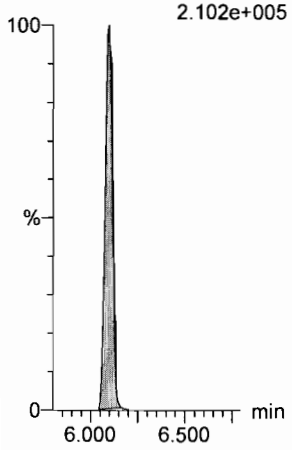
N-MeFOSE
F56:MRM of 1 channel,ES-
616.1 > 58.9
3.521e+006



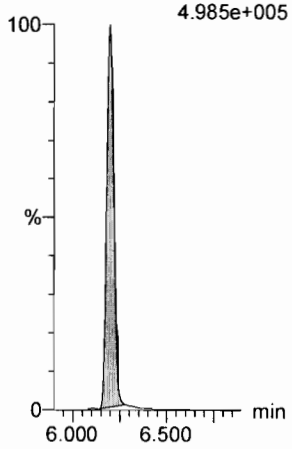
N-EtFOSE
F58:MRM of 1 channel,ES-
630.1 > 58.9
3.997e+006



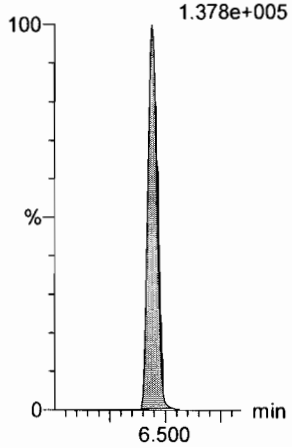
13C2-PFTeDA
F62:MRM of 2 channels,ES-
714.8 > 669.6
2.102e+005



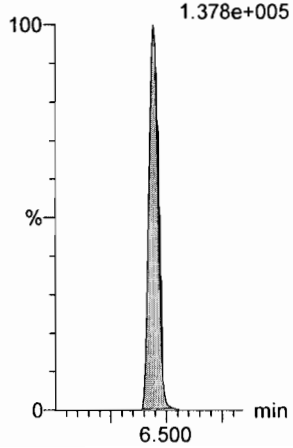
d5-N-ETFOSA
F44:MRM of 1 channel,ES-
531.1 > 168.9
4.985e+005



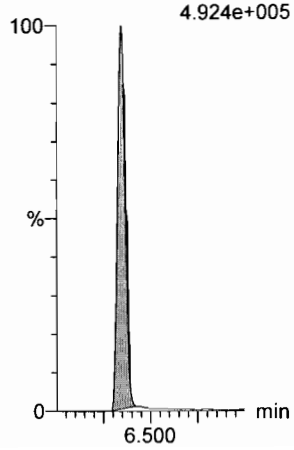
13C2-PFHxDA
F64:MRM of 1 channel,ES-
815 > 769.7
1.378e+005



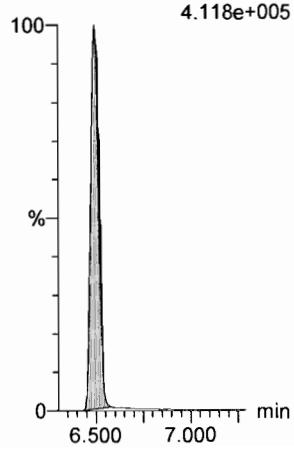
13C2-PFHxDA
F64:MRM of 1 channel,ES-
815 > 769.7
1.378e+005



d7-N-MeFOSE
F57:MRM of 1 channel,ES-
623.1 > 58.9
4.924e+005



d9-N-EtFOSE
F59:MRM of 1 channel,ES-
639.2 > 58.8
4.118e+005

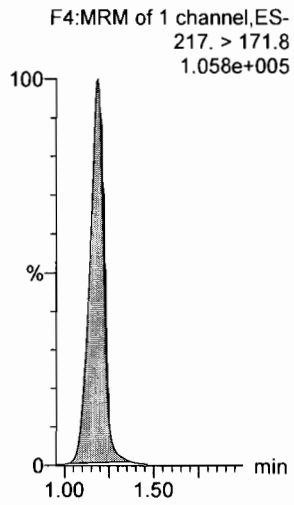


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

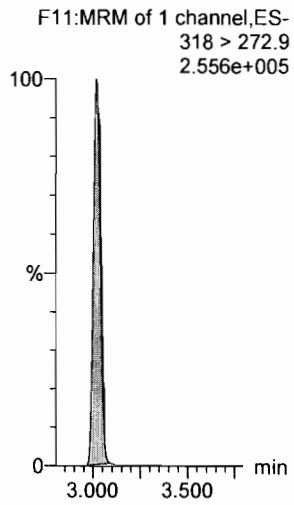
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_24, Date: 18-Jun-2018, Time: 20:49:18, ID: ST180618M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

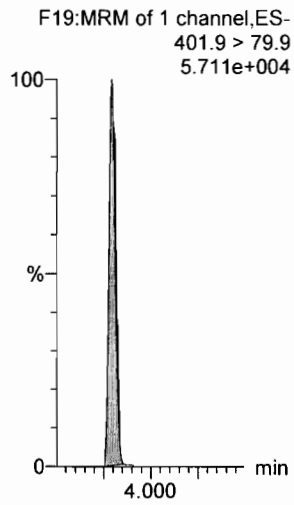
13C4-PFBA



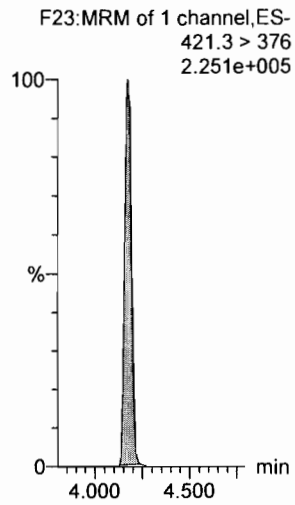
13C5-PFHxA



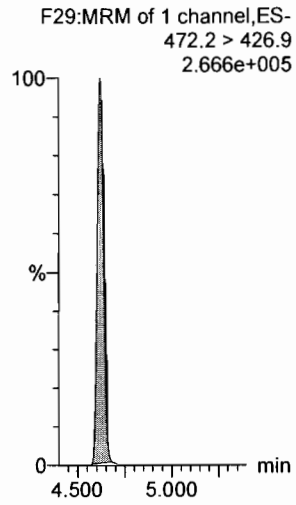
13C3-PFHxS



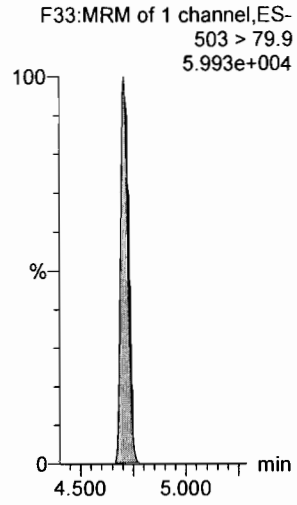
13C8-PFOA



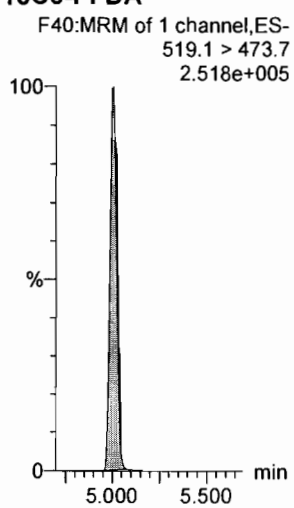
13C9-PFNA



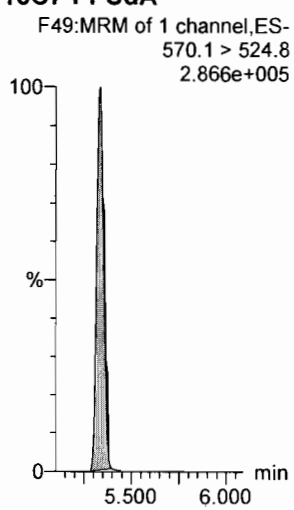
13C4-PFOS



13C6-PFDA



13C7-PFUdA

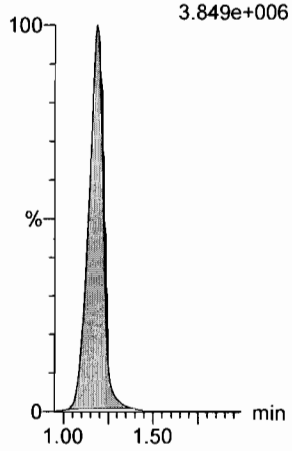


Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

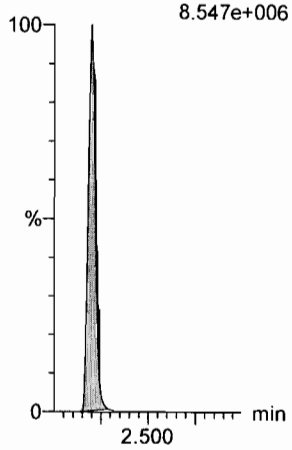
Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

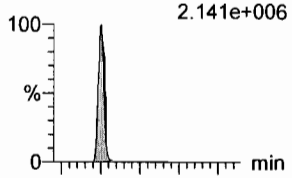
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
3.849e+006



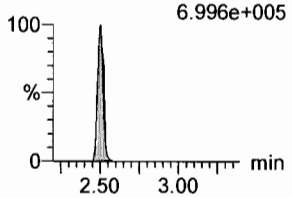
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
8.547e+006



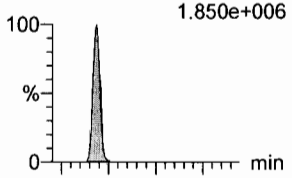
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
2.141e+006



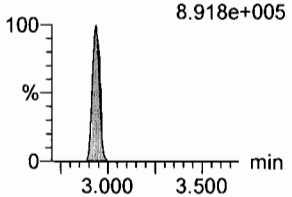
F7:MRM of 2 channels,ES-
299.0 > 99.0
6.996e+005



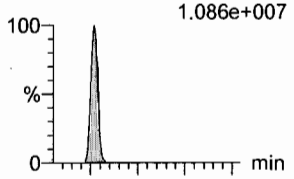
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
1.850e+006



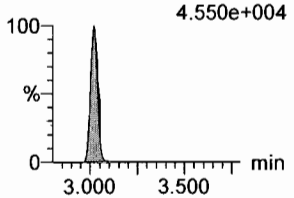
F12:MRM of 2 channels,ES-
327.2 > 81.1
8.918e+005



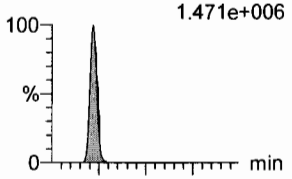
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
1.086e+007



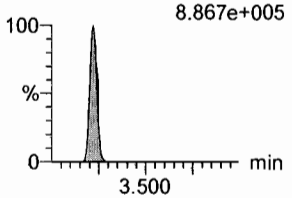
F9:MRM of 2 channels,ES-
313.2 > 119
4.550e+004



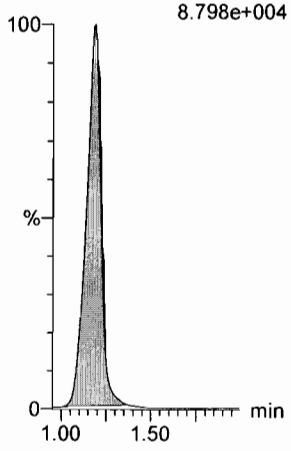
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
1.471e+006



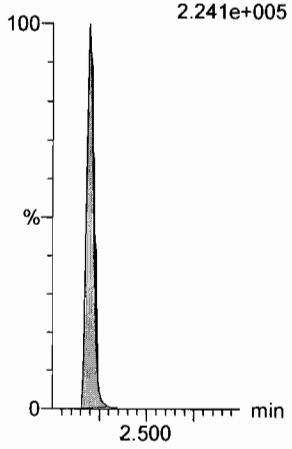
F15:MRM of 2 channels,ES-
349.1 > 99
8.867e+005



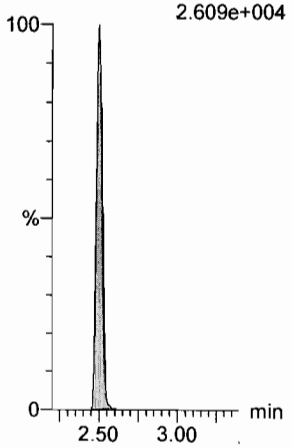
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
8.798e+004



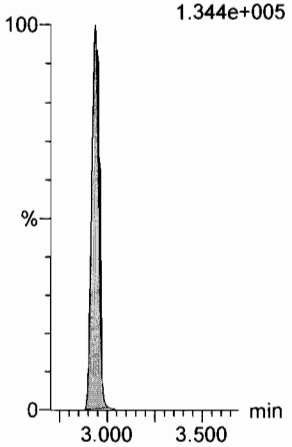
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.241e+005



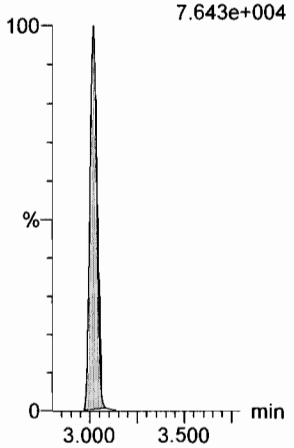
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.609e+004



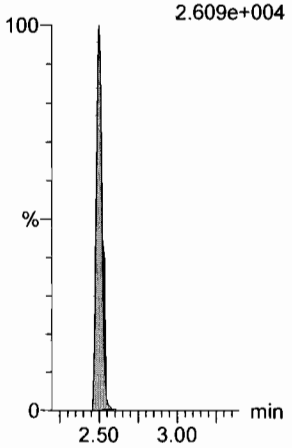
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.344e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
7.643e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
2.609e+004

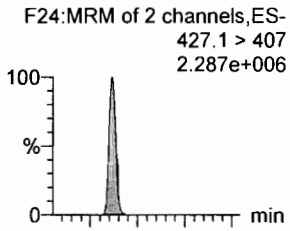


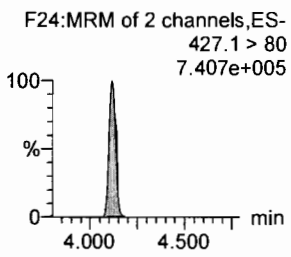
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

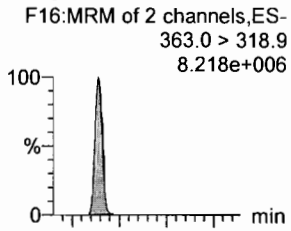
Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

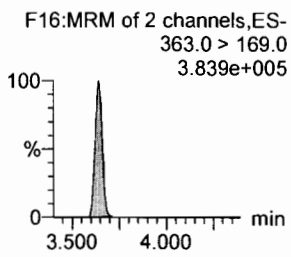
6:2 FTS



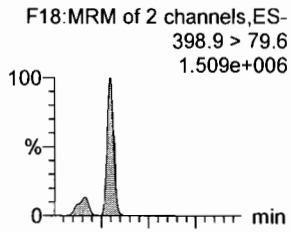


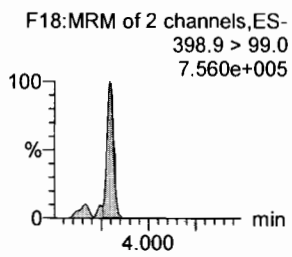
PFHpA



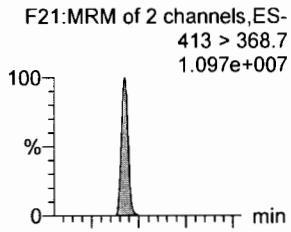


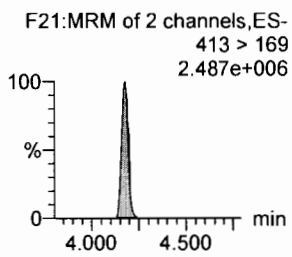
L-PFHxS



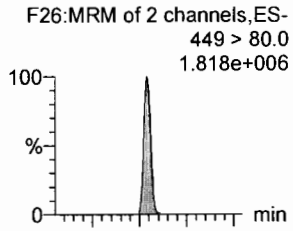


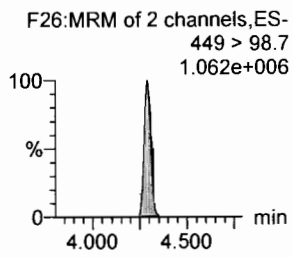
L-PFOA



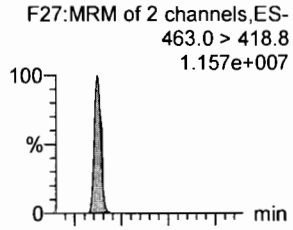


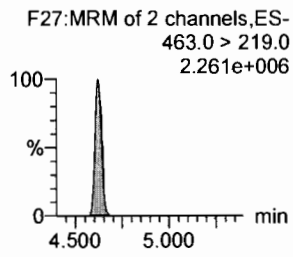
PFHpS



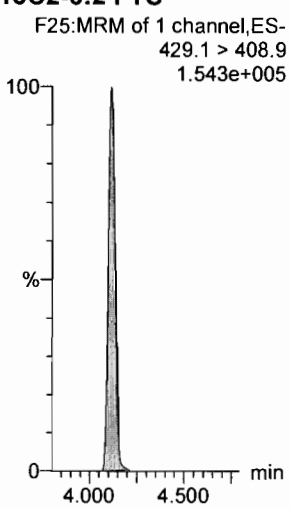


PFNA

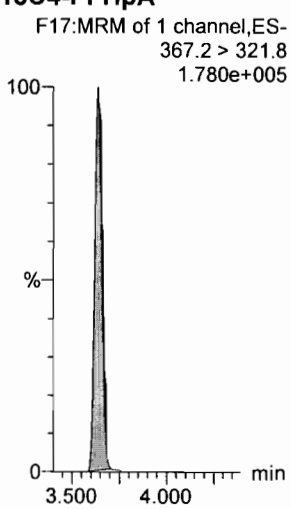




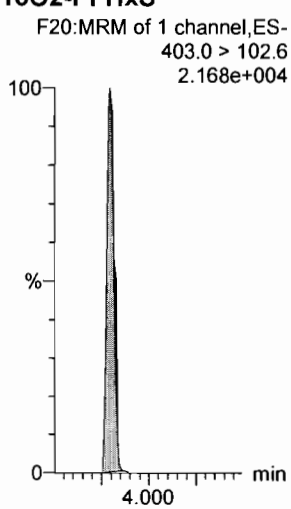
13C2-6:2 FTS



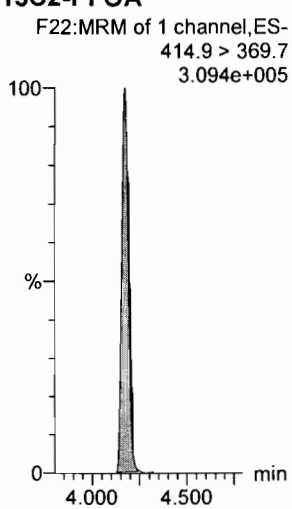
13C4-PFHpA



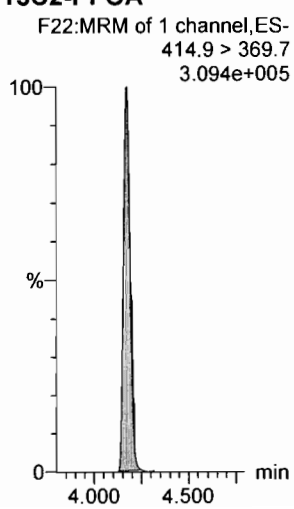
18O2-PFHxS



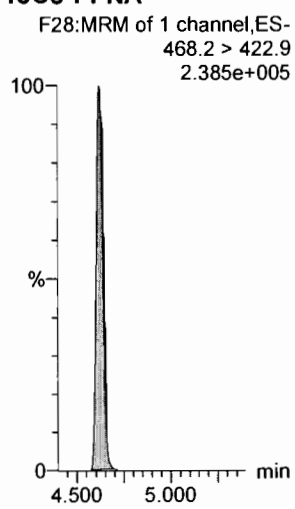
13C2-PFOA



13C2-PFOA



13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
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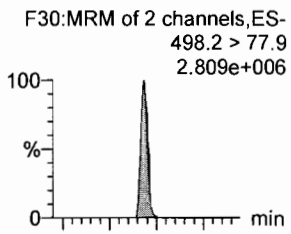
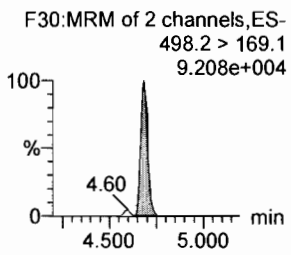
Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

PFOSA





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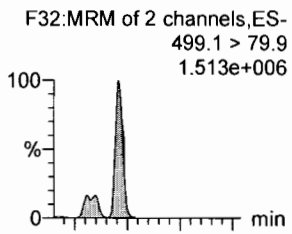

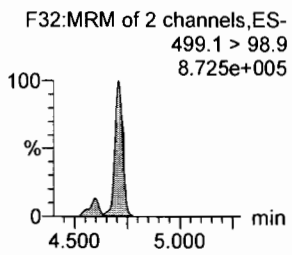

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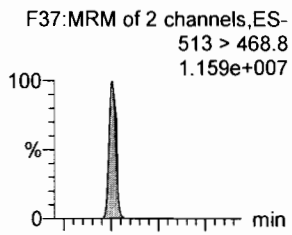

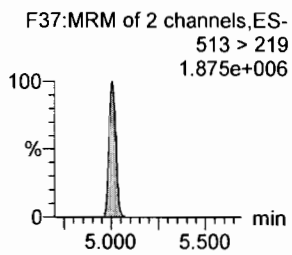

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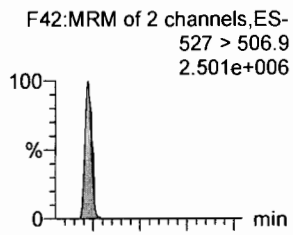

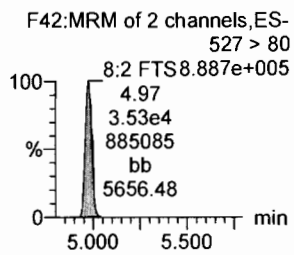

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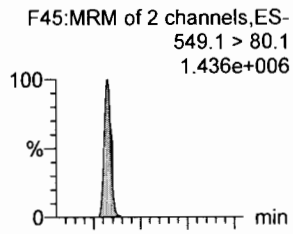

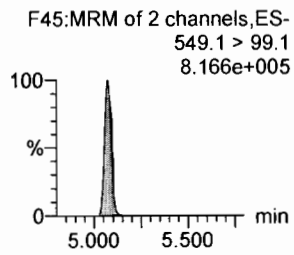

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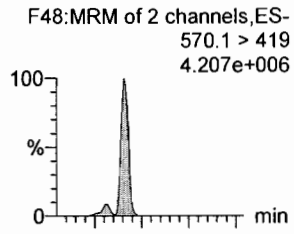
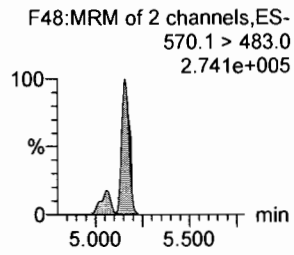
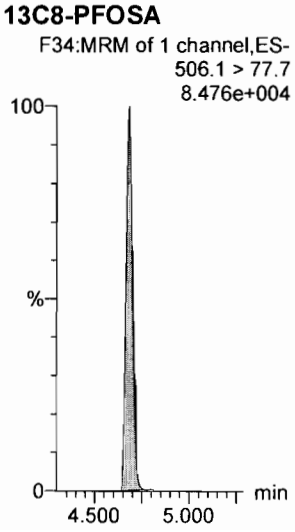
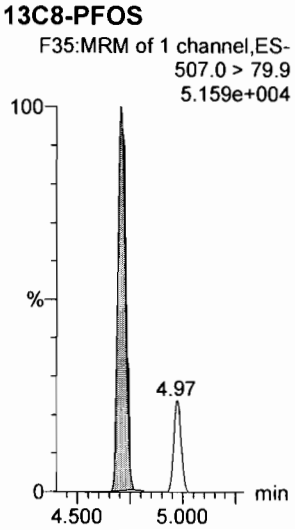




13C8-PFOSA



13C8-PFOS



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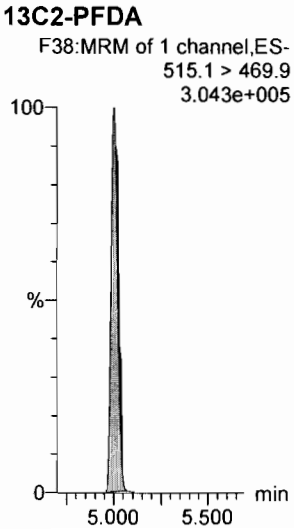
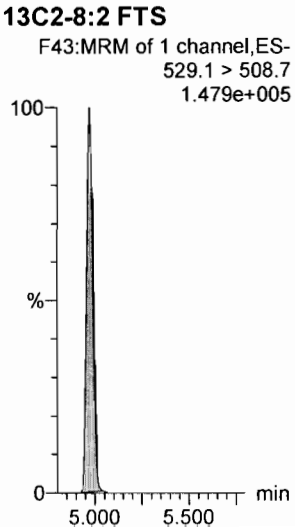


13C2-8:2 FTS



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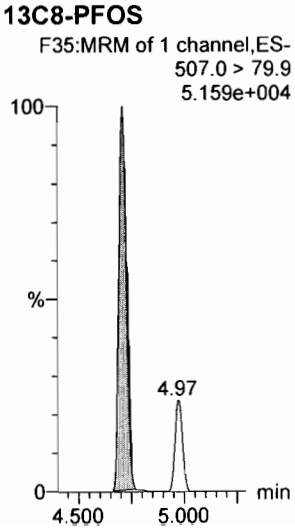
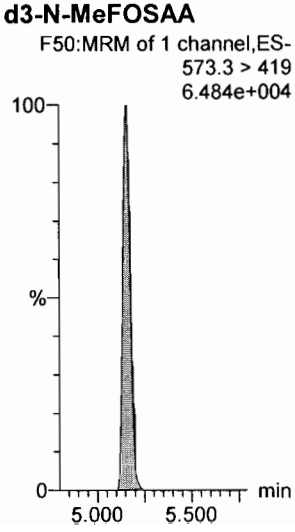


d3-N-MeFOSAA

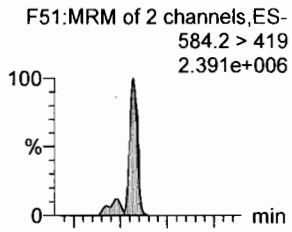


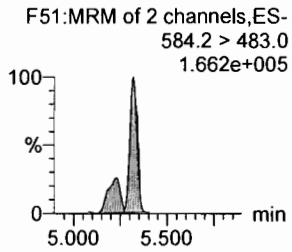
Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-CRV.qld

Last Altered: Tuesday, June 19, 2018 09:51:58 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

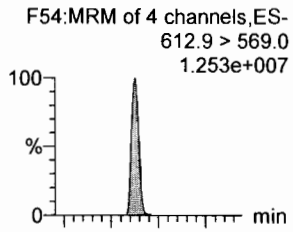
Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

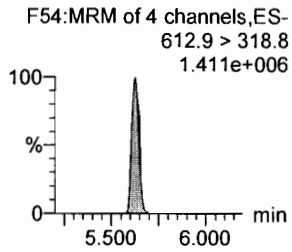
L-EtFOSAA





PFDoA





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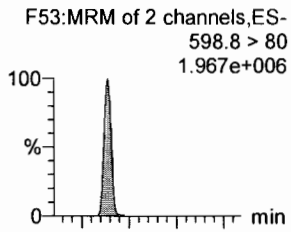

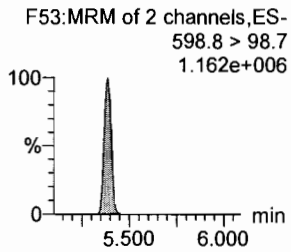

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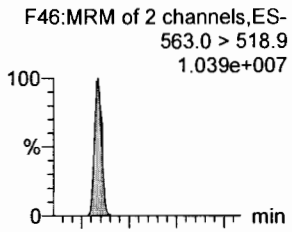
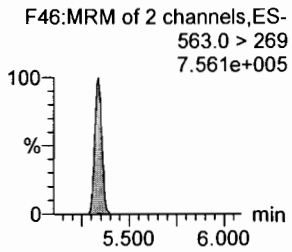
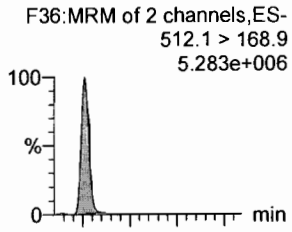
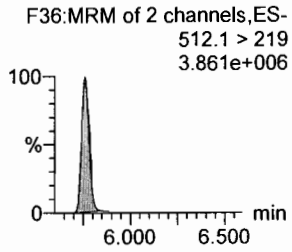




N-MeFOSA





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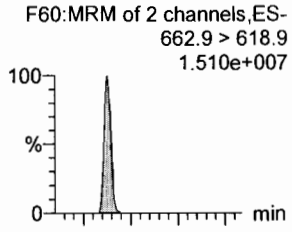
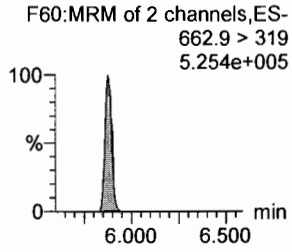
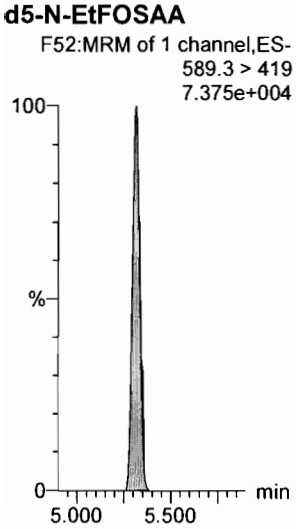




d5-N-EtFOSAA



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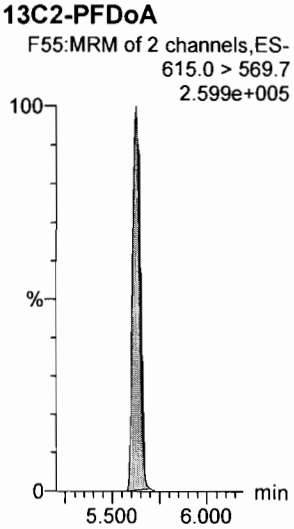

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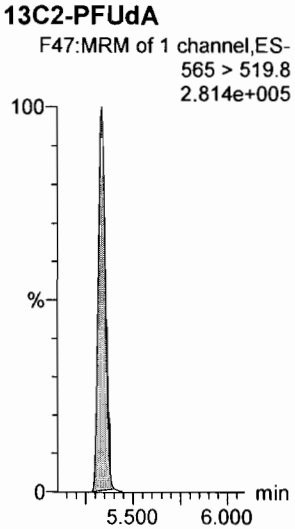
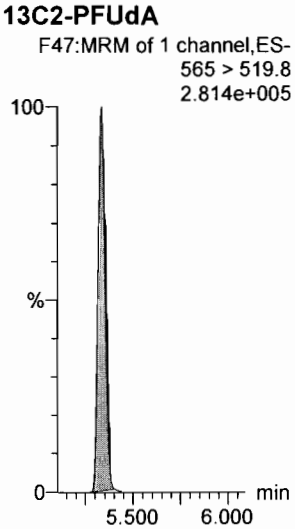
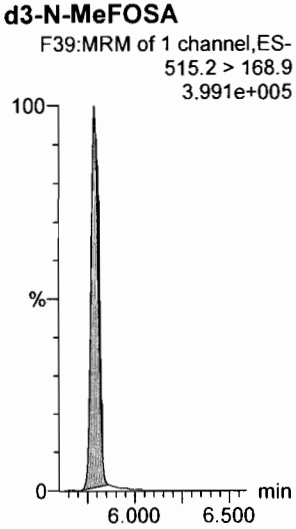


13C2-PFUdA



d3-N-MeFOSA



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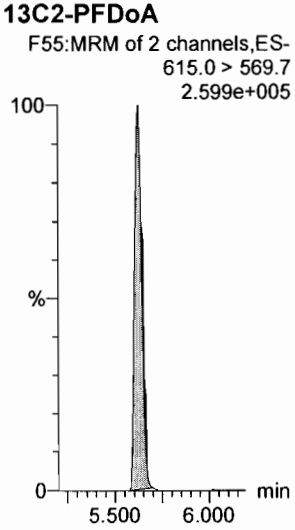

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Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

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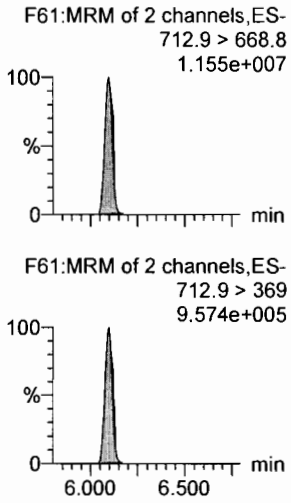

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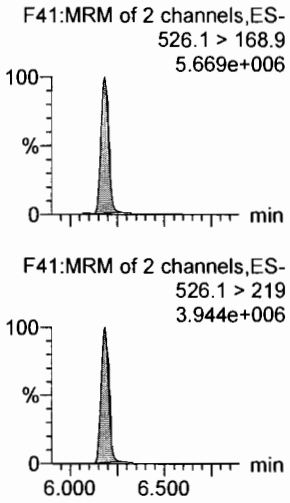

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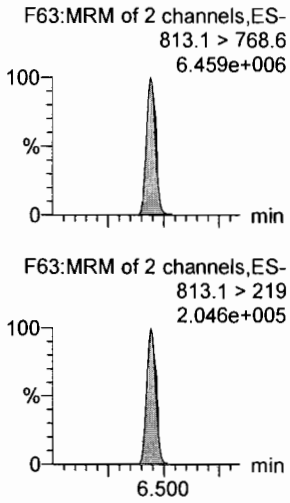

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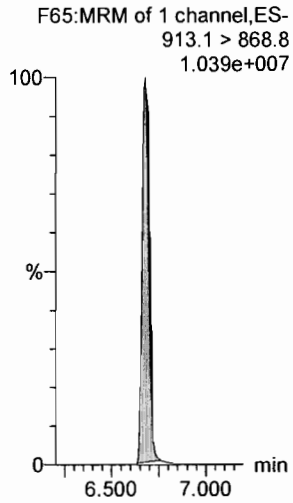
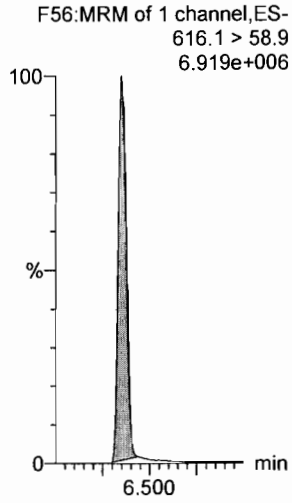
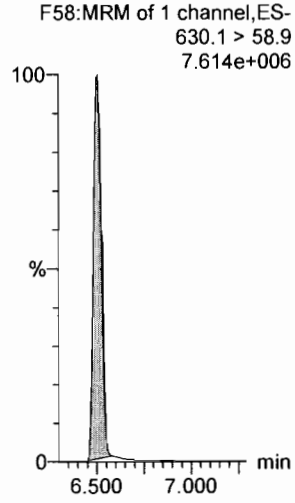


N-MeFOSE



N-EtFOSE



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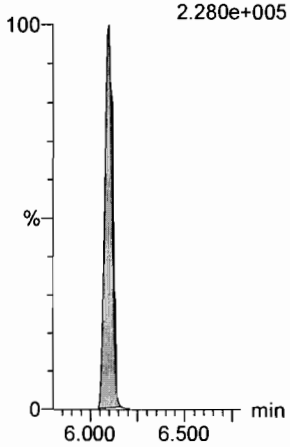
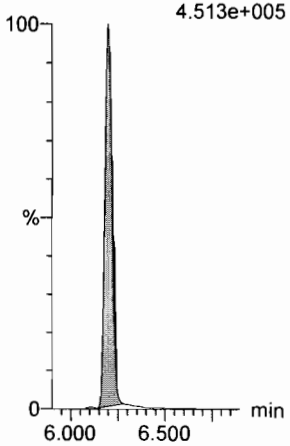


d5-N-ETFOSA



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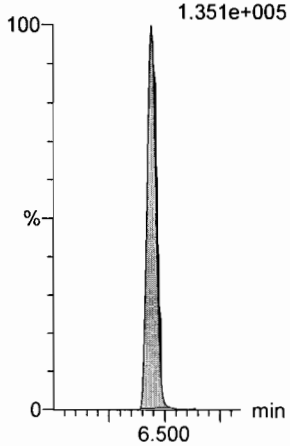

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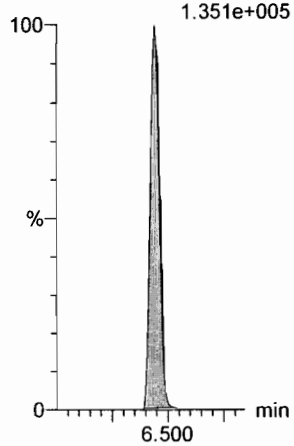
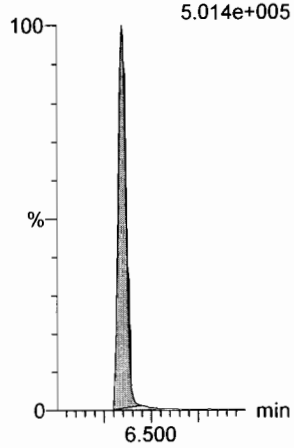
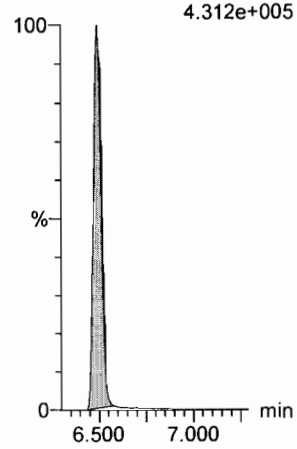


d7-N-MeFOSE



d9-N-EtFOSE



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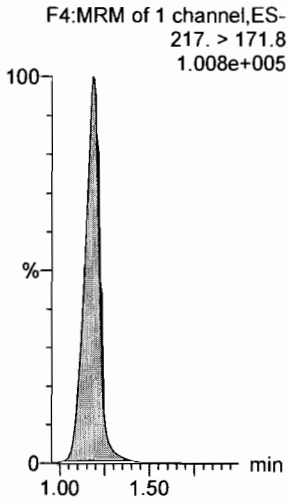
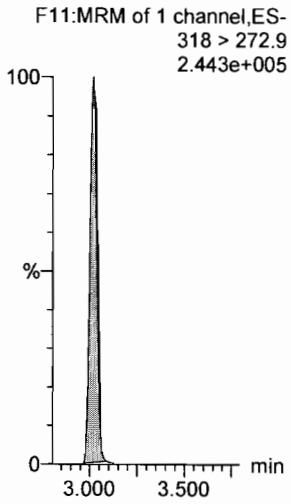
Printed: Tuesday, June 19, 2018 09:52:53 Pacific Daylight Time

Name: 180618M1_25, Date: 18-Jun-2018, Time: 20:59:48, ID: ST180618M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

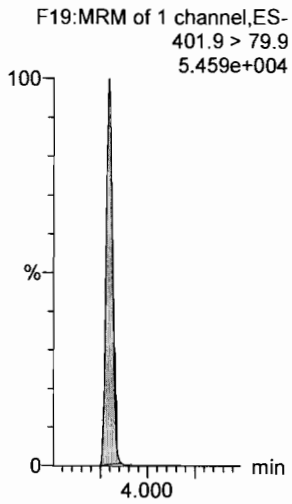
13C4-PFBA



13C5-PFHxA



13C3-PFHxS



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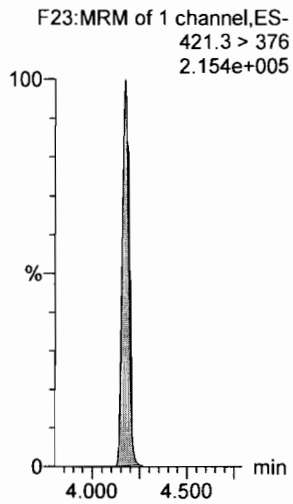

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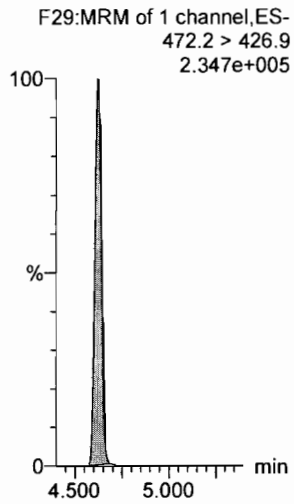
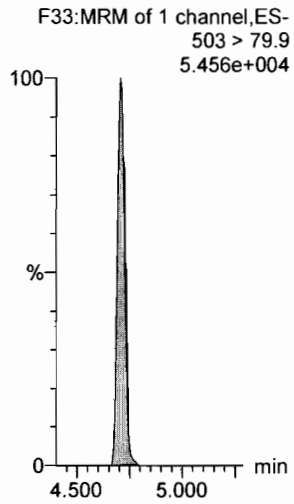
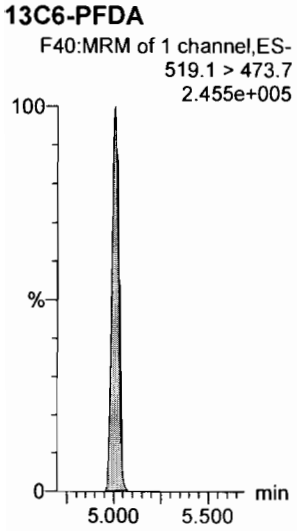


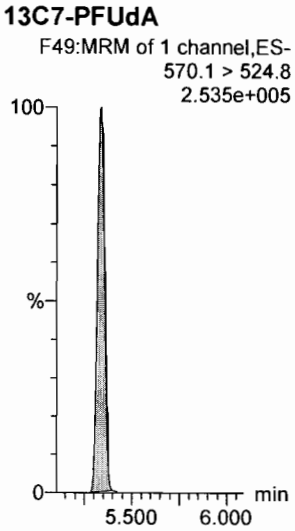
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-ICV.qld

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Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	7255.620	8605.658	1.00	1.19	10.539	9.5	95.4	NO		
2	2	PFPeA	263.1 > 218.9	8659.082	11984.907	1.00	2.20	9.031	9.4	93.6	NO		
3	3	PFBS	299.0 > 79.7	1849.824	1384.708	1.00	2.50	16.699	8.0	79.7	NO	3.025	NO
4	4	4:2 FTS	327.2>307.2	2019.186	3090.550	1.00	2.94	8.167	8.2	82.2	NO	2.003	NO
5	5	PFHxA	313.2 > 268.9	11208.740	3773.402	1.00	3.02	14.852	9.8	97.5	NO	269.570	NO
6	6	PFPeS	349.1>80.1	1513.368	1384.708	1.00	3.22	13.661	8.8	87.6	NO	1.552	NO
7	36	13C3-PFBA	216.1 > 171.8	8605.658	9645.436	1.00	1.19	11.153	12.8	102.2	NO		
8	37	13C3-PFPeA	266. > 221.8	11984.907	12857.629	1.00	2.20	11.652	12.3	98.2	NO		
9	38	13C3-PFBS	302. > 98.8	1384.708	12857.629	1.00	2.50	1.346	12.6	101.0	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3090.550	12857.629	1.00	2.94	3.005	12.6	100.8	NO		
11	40	13C2-PFHxA	315 > 269.8	3773.402	12857.629	1.00	3.02	3.668	4.9	98.1	NO		
12	38	13C3-PFBS	302. > 98.8	1384.708	12857.629	1.00	2.50	1.346	12.6	101.0	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	2648.470	3025.389	1.00	4.12	10.943	11.0	110.3	NO	3.360	NO
15	7	PFHpA	363.0 > 318.9	9303.104	10064.925	1.00	3.64	11.554	9.7	97.4	NO	20.967	NO
16	8	L-PFHxS	398.9 > 79.6	1597.025	1219.694	1.00	3.79	16.367	8.7	87.3	NO	2.154	NO
17	11	L-PFOA	413 > 368.7	10478.547	15030.800	1.00	4.18	8.714	9.3	93.1	NO	4.429	NO
18	13	PFHpS	449 > 80.0	1771.285	15030.800	1.00	4.29	1.473	8.3	82.7	NO	1.695	NO
19	14	PFNA	463.0 > 418.8	10530.753	11172.926	1.00	4.62	11.782	9.3	92.7	NO	5.008	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	3025.389	10504.850	1.00	4.12	3.600	12.6	100.6	NO		
21	41	13C4-PFHpA	367.2 > 321.8	10064.925	12857.629	1.00	3.64	9.785	12.9	103.3	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1219.694	2399.817	1.00	3.80	6.353	13.5	107.9	NO		
23	44	13C2-PFOA	414.9 > 369.7	15030.800	10504.850	1.00	4.18	17.886	13.2	105.9	NO		
24	44	13C2-PFOA	414.9 > 369.7	15030.800	10504.850	1.00	4.18	17.886	13.2	105.9	NO		
25	45	13C5-PFNA	468.2 > 422.9	11172.926	11904.060	1.00	4.62	11.732	12.6	100.8	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	2798.860	4888.667	1.00	4.68	7.157	9.4	94.4	NO	24.980	NO
28	16	L-PFOS	499.1 > 79.9	1471.949	2810.360	1.00	4.71	6.547	7.5	74.6	NO	1.617	NO
29	18	PFDA	513 > 468.8	11575.865	14290.082	1.00	5.01	10.126	10.2	101.8	NO	7.317	NO
30	19	8:2 FTS	527 > 506.9	2632.442	2486.783	1.00	4.97	13.232	8.4	83.6	NO	3.175	NO
31	20	PFNS	549.1>80.1	1383.091	2810.360	1.00	5.07	6.152	8.6	85.9	NO	1.688	NO
32	21	L-MeFOSAA	570.1 > 419	5099.309	3840.358	1.00	5.16	16.598	9.5	94.5	NO	16.056	NO
33	46	13C8-PFOSA	506.1 > 77.7	4888.667	13734.004	1.00	4.68	4.449	13.3	106.3	NO		
34	47	13C8-PFOS	507.0 > 79.9	2810.360	2604.643	1.00	4.71	13.487	13.4	107.0	NO		

VMF 6/19/18

DM 6/19/18

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(A) Not in ICV.

Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	14290.082	12048.670	1.00	5.01	14.825	12.0	95.6	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	2486.783	12857.629	1.00	4.97	2.418	12.6	101.1	NO		
37	47	13C8-PFOS	507.0 > 79.9	2810.360	2604.643	1.00	4.71	13.487	13.4	107.0	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	3840.358	13734.004	1.00	5.15	3.495	13.4	106.9	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	3956.016	4104.227	1.00	5.32	12.049	11.6	116.2	NO	14.843	NO
41	27	PFDoA	612.9 > 569.0	14002.406	14260.930	1.00	5.63	12.273	10.0	100.3	NO	9.273	NO
42	26	PFDS	598.8 > 80	2102.611	14941.395	1.00	5.39	1.759	8.6	86.1	NO	1.840	NO
43	25	PFUdA	563.0 > 518.9	10929.837	14941.395	1.00	5.34	9.144	9.0	89.7	NO	12.805	NO
44	28	N-MeFOSA	512.1 > 168.9		19751.949	1.00				(A)	NO		
45	29	PFTrDA	662.9 > 618.9	14507.651	14260.930	1.00	5.88	12.716	9.6	96.1	NO	27.613	NO
46	51	d5-N-EtFOSAA	589.3 > 419	4104.227	13734.004	1.00	5.32	3.735	11.8	94.2	NO		
47	53	13C2-PFDoA	615.0 > 569.7	14260.930	12048.670	1.00	5.63	14.795	12.1	97.1	NO		
48	52	13C2-PFUdA	565 > 519.8	14941.395	13734.004	1.00	5.34	13.599	13.3	106.2	NO		
49	52	13C2-PFUdA	565 > 519.8	14941.395	13734.004	1.00	5.34	13.599	13.3	106.2	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	19751.949	13734.004	1.00	5.79	17.977	145.7	97.1	NO		
51	53	13C2-PFDoA	615.0 > 569.7	14260.930	12048.670	1.00	5.63	14.795	12.1	97.1	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	12631.464	11146.906	1.00	6.10	14.165	9.1	91.0	NO	12.455	NO
54	31	N-EtFOSA	526.1 > 168.9		26947.010	1.00				(A)	NO		
55	32	PFHxDA	813.1 > 768.6		7331.935	1.00					NO		
56	33	PFODA	913.1 > 868.8		7331.935	1.00					NO		
57	34	N-MeFOSE	616.1 > 58.9		26590.285	1.00					NO		
58	35	N-EtFOSE	630.1 > 58.9		24507.172	1.00					NO		
59	55	13C2-PFTeDA	714.8 > 669.6	11146.906	13734.004	1.00	6.10	10.145	12.4	99.1	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	26947.010	13734.004	1.00	6.20	24.526	154.5	103.0	NO		
61	57	13C2-PFHxDA	815 > 769.7	7331.935	13734.004	1.00	6.44	6.673	5.1	102.5	NO		
62	57	13C2-PFHxDA	815 > 769.7	7331.935	13734.004	1.00	6.44	6.673	5.1	102.5	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	26590.285	13734.004	1.00	6.35	24.201	157.3	104.8	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	24507.172	13734.004	1.00	6.49	22.305	150.5	100.4	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	9645.436	9645.436	1.00	1.19	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	12857.629	12857.629	1.00	3.02	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	2399.817	2399.817	1.00	3.80	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180618M1\180618M1-ICV.qld

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Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	10504.850	10504.850	1.00	4.17	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	11904.060	11904.060	1.00	4.62	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	2604.643	2604.643	1.00	4.71	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	12048.670	12048.670	1.00	5.01	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	13734.004	13734.004	1.00	5.34	12.500	12.5	100.0	NO		

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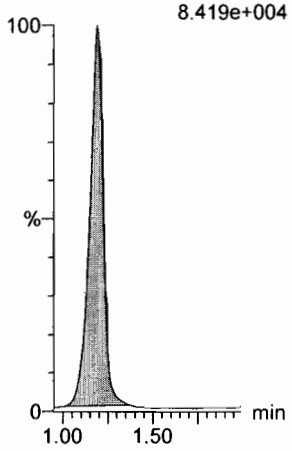
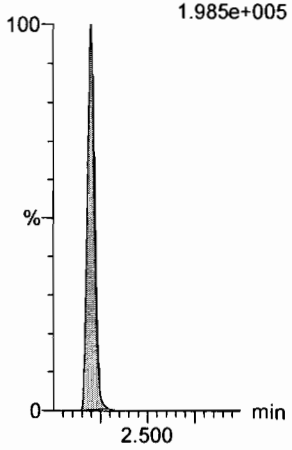
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-18-18.cdb 19 Jun 2018 10:27:42

Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

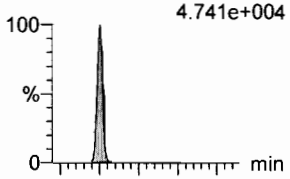
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
8.419e+004



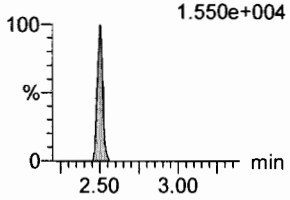
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
1.985e+005



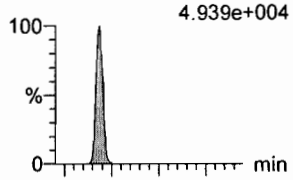
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
4.741e+004



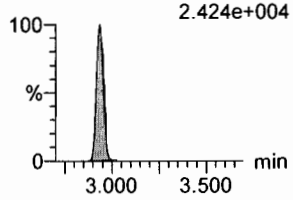
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.550e+004



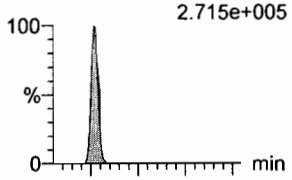
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
4.939e+004



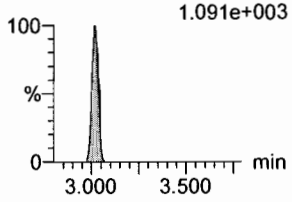
F12:MRM of 2 channels,ES-
327.2 > 81.1
2.424e+004



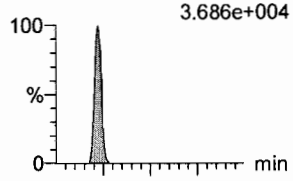
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
2.715e+005



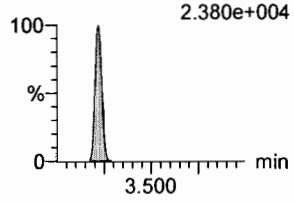
F9:MRM of 2 channels,ES-
313.2 > 119
1.091e+003



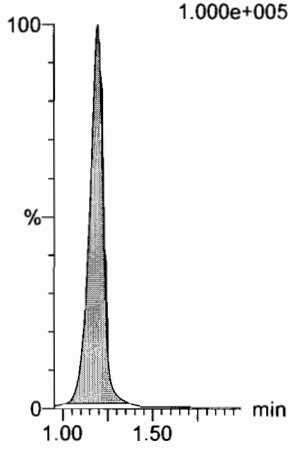
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
3.686e+004



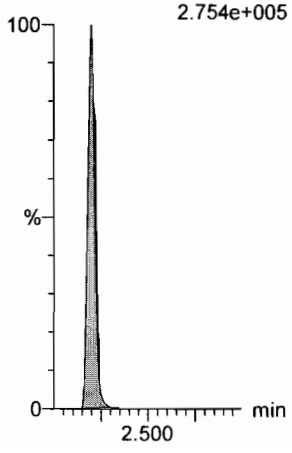
F15:MRM of 2 channels,ES-
349.1 > 99
2.380e+004



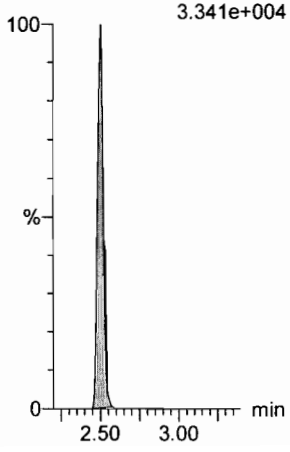
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
1.000e+005



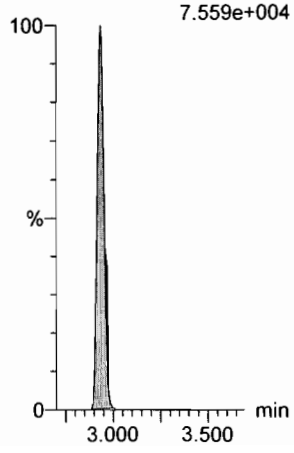
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.754e+005



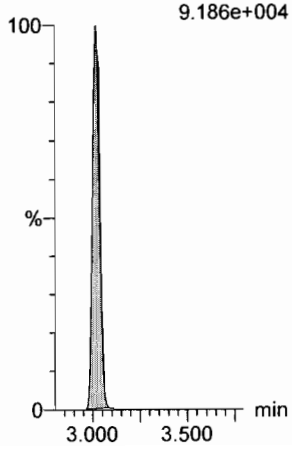
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.341e+004



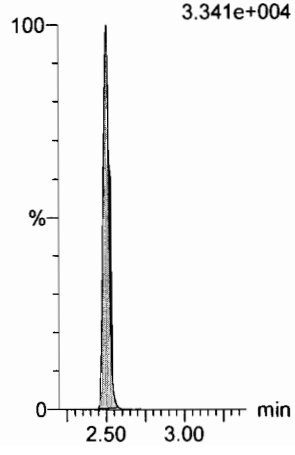
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
7.559e+004



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
9.186e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.341e+004



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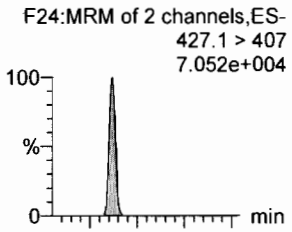
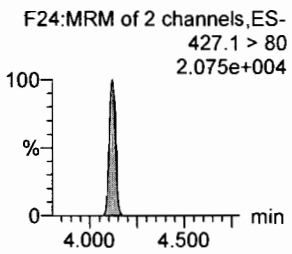
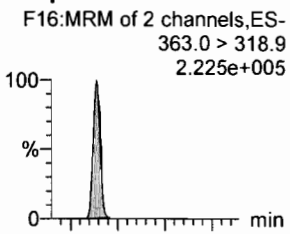
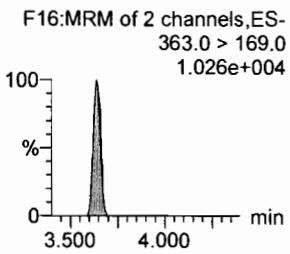
6:2 FTS





PFHpA





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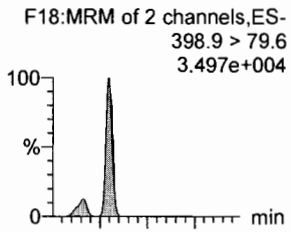

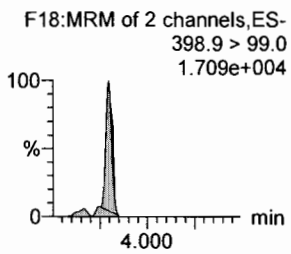

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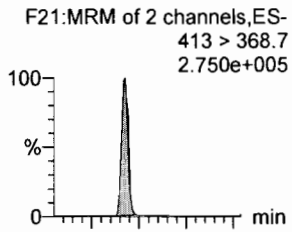

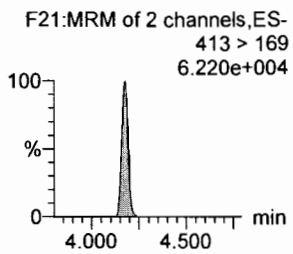

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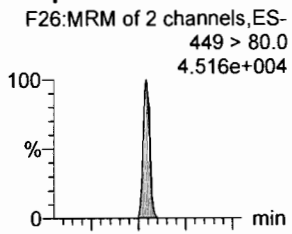

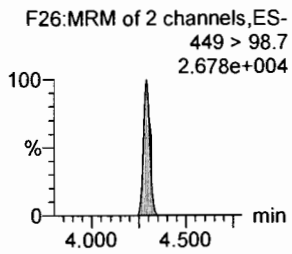

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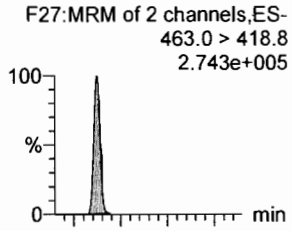
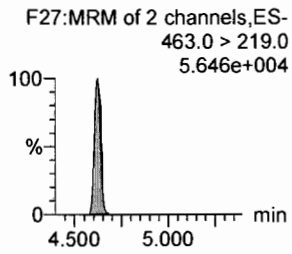
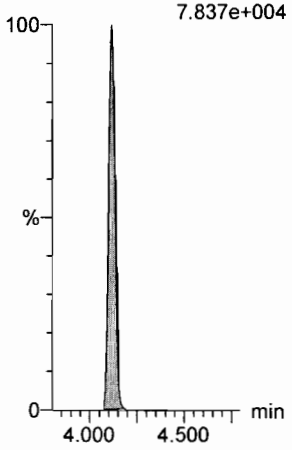




13C2-6:2 FTS



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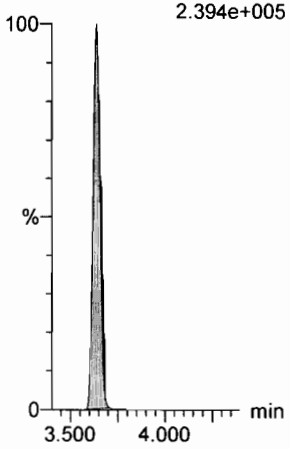

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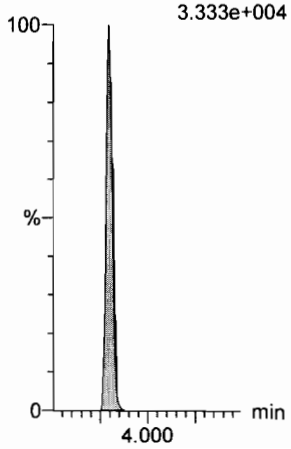

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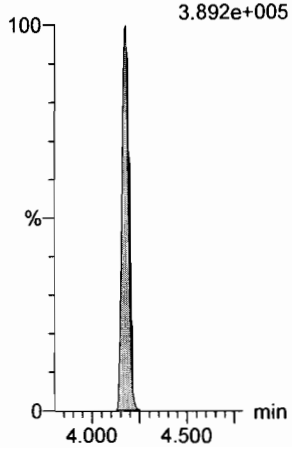

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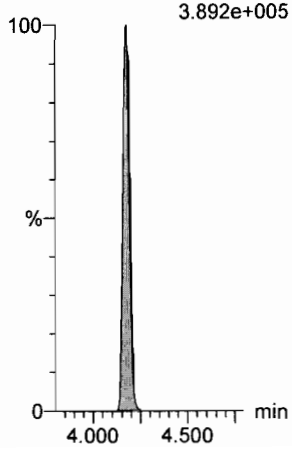

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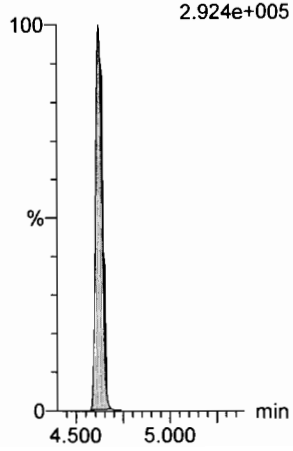

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Printed: Tuesday, June 19, 2018 10:37:49 Pacific Daylight Time

Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

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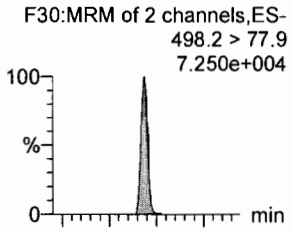

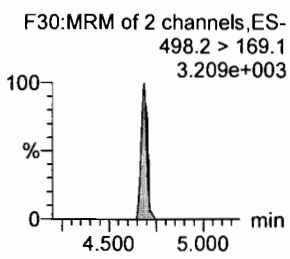

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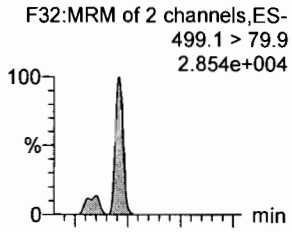

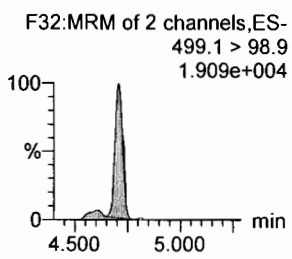

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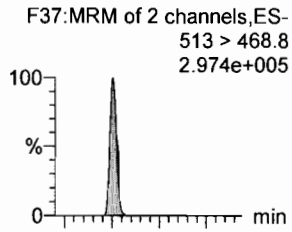
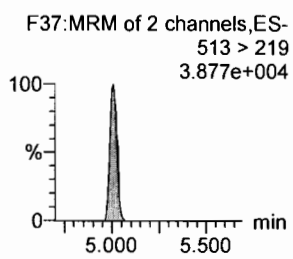
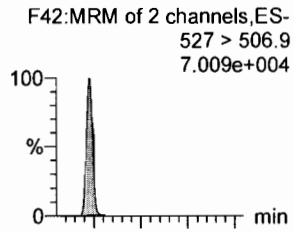
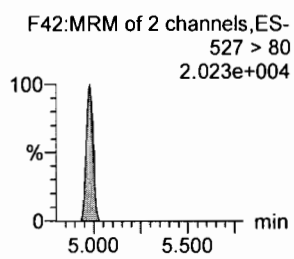




8:2 FTS





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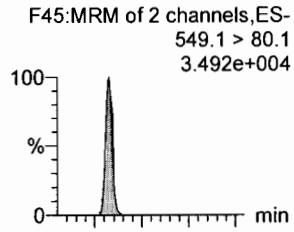

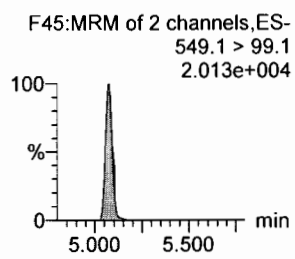

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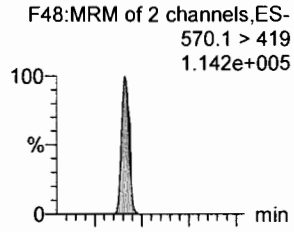

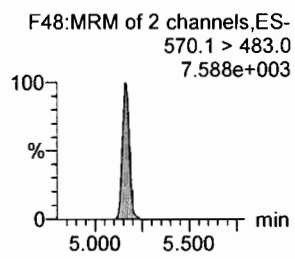

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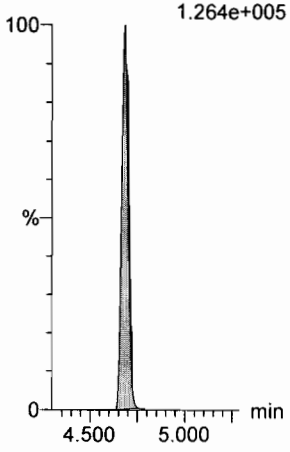

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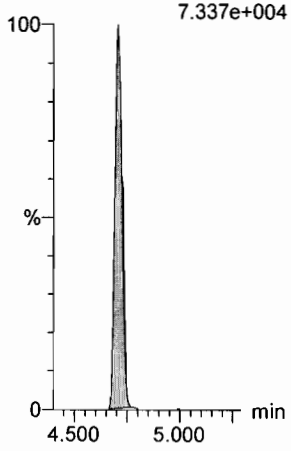

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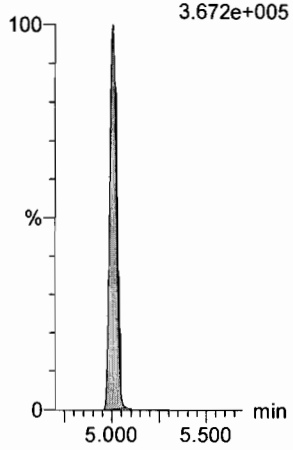
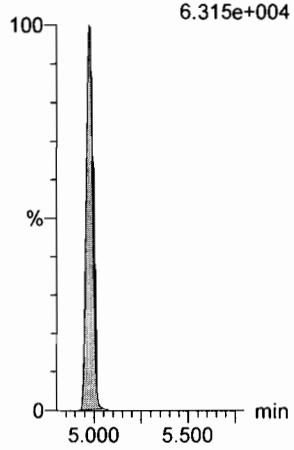


13C2-8:2 FTS



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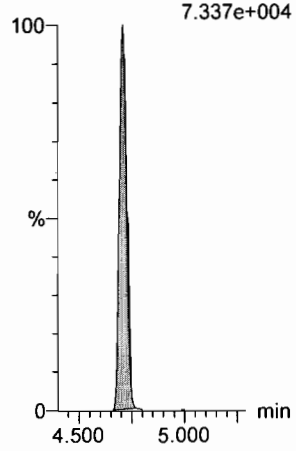

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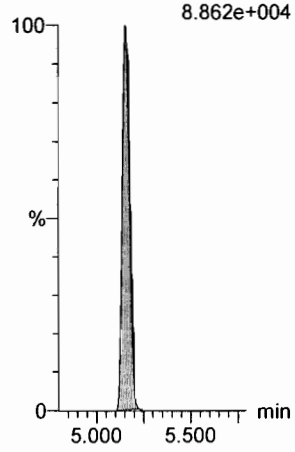

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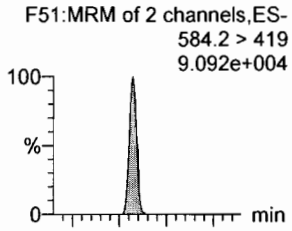
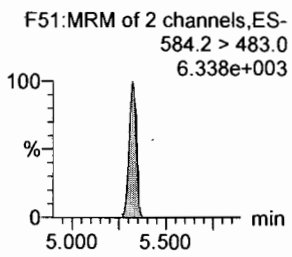
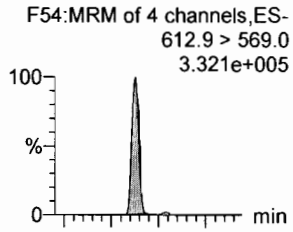
Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

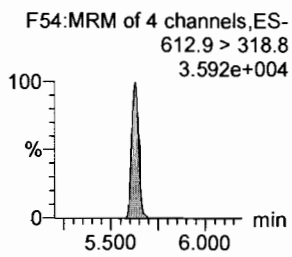
L-EtFOSAA





PFDoA





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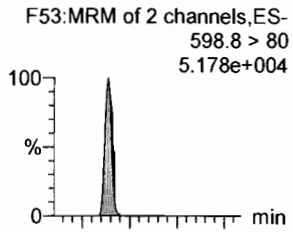

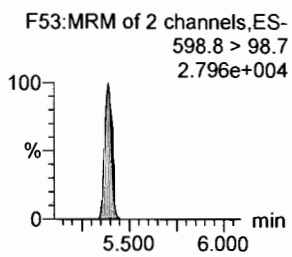

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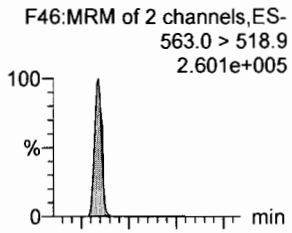

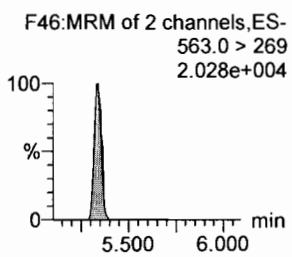

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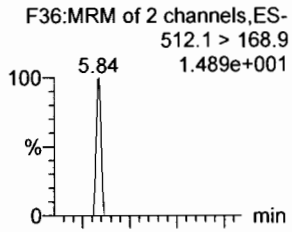

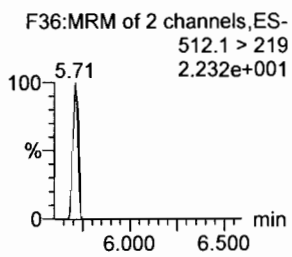

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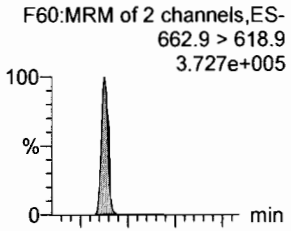
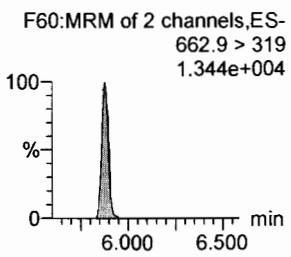
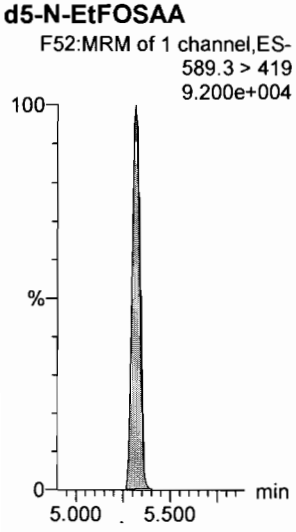




d5-N-EtFOSAA



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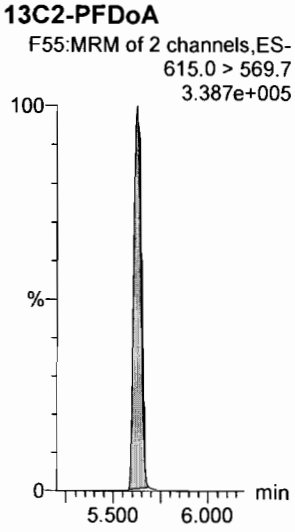

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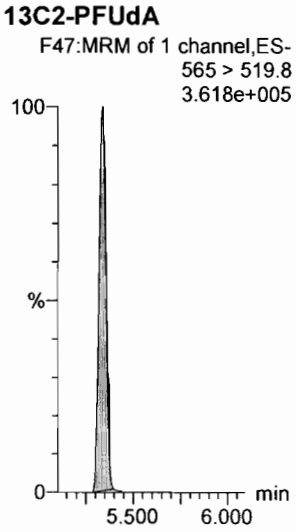

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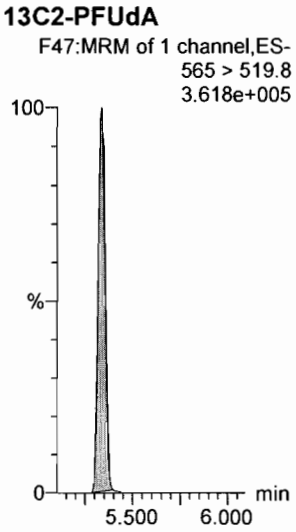

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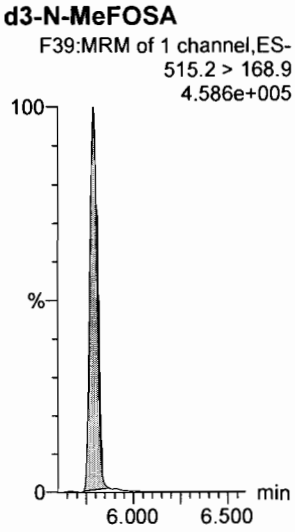

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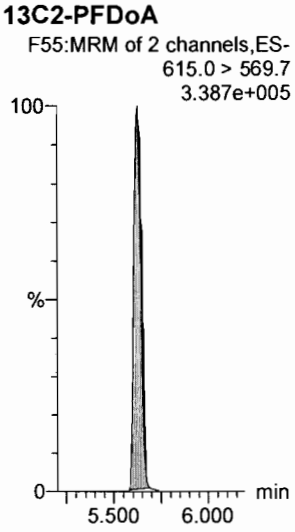

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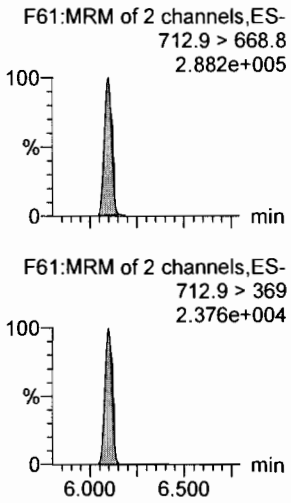
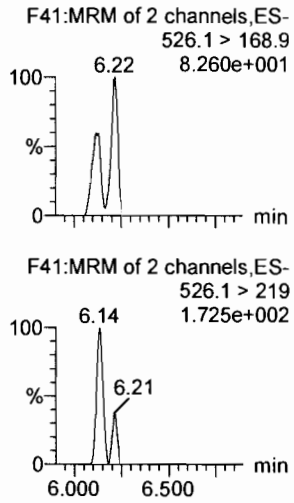


N-EtFOSA



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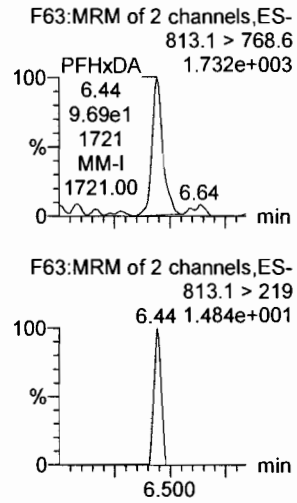

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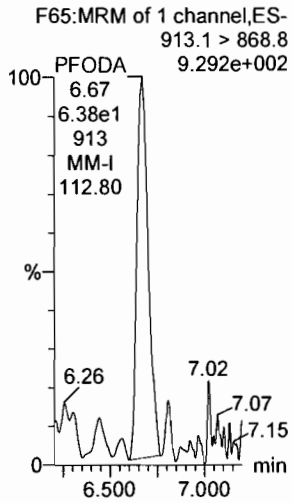
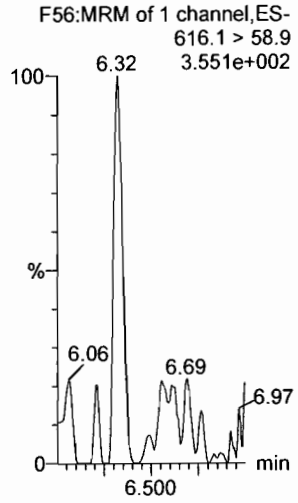


N-MeFOSE



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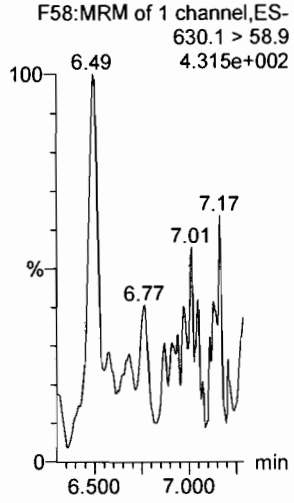
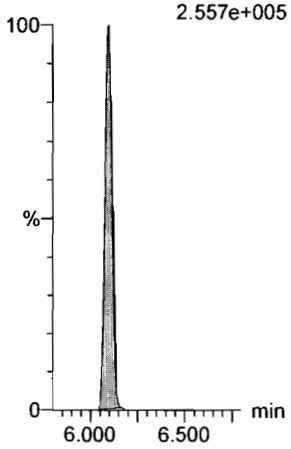
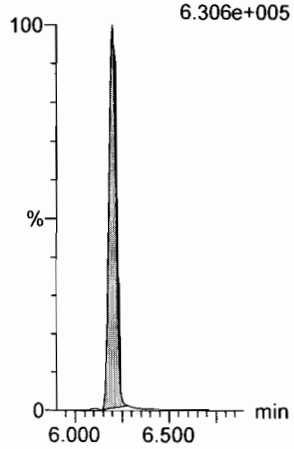


13C2-PFTeDA



d5-N-ETFOSA



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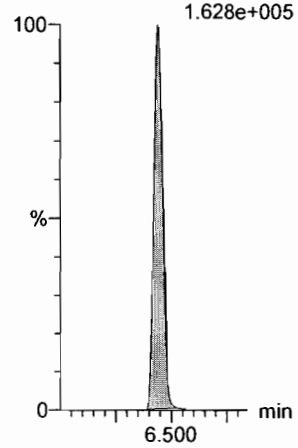

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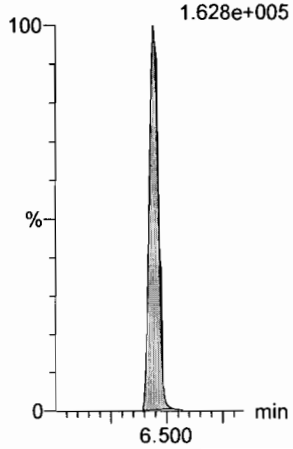

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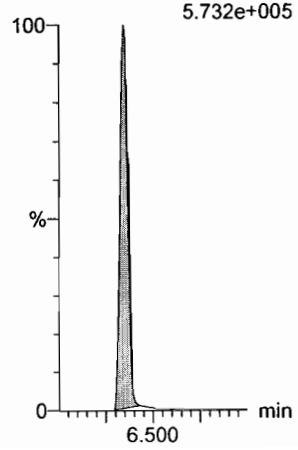
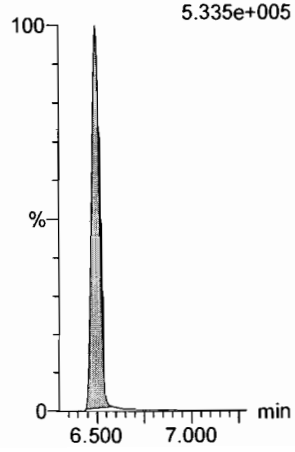


d9-N-EtFOSE



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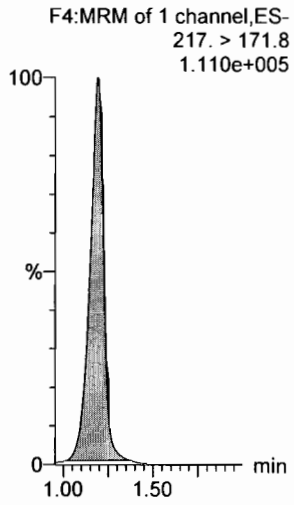
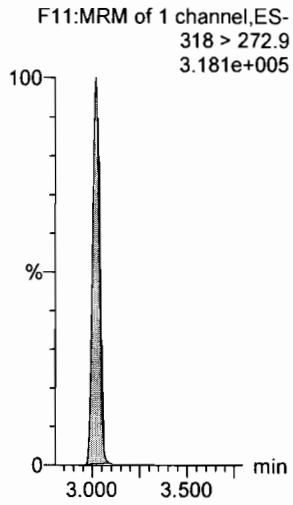
Printed: Tuesday, June 19, 2018 10:37:49 Pacific Daylight Time

Name: 180618M1_27, Date: 18-Jun-2018, Time: 21:20:43, ID: ICV180618M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

13C4-PFBA



13C5-PFHxA



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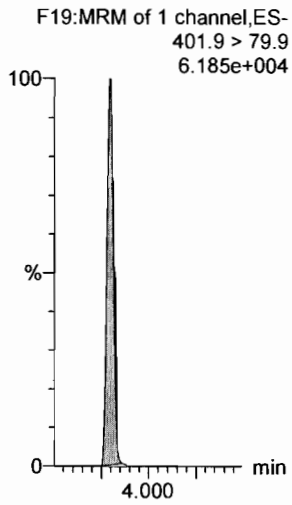
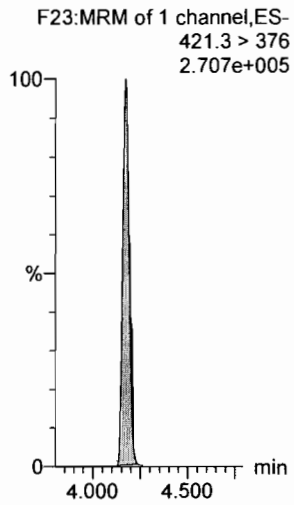


13C8-PFOA



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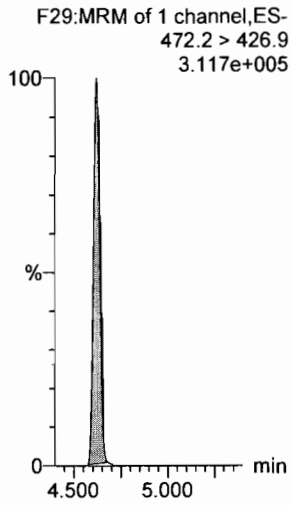
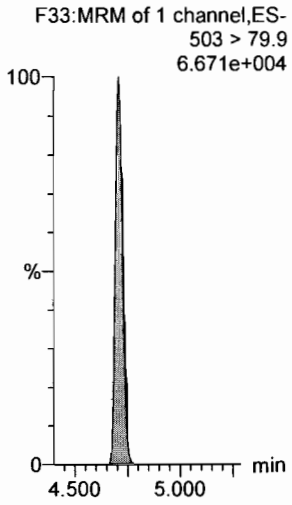
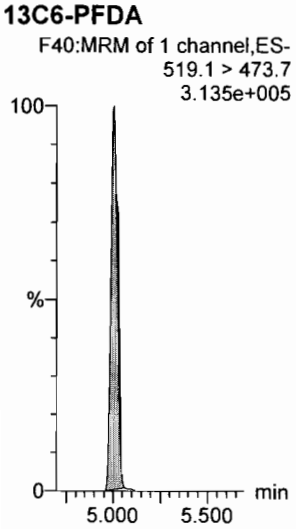


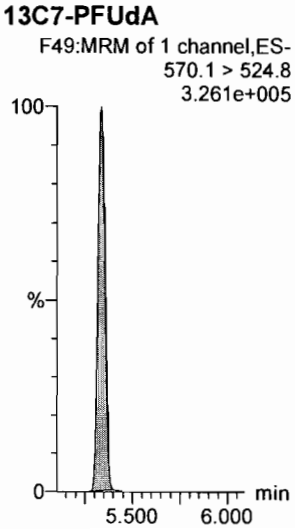
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

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Last Altered: Tuesday, June 19, 2018 10:39:30 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

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Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

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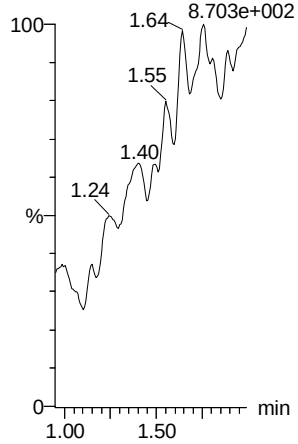

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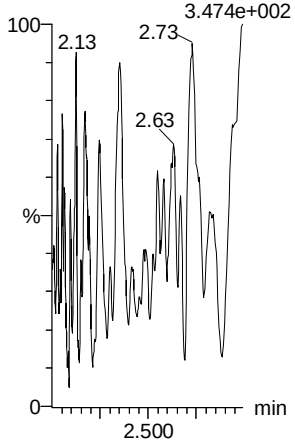

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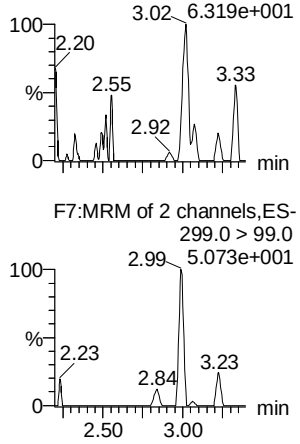
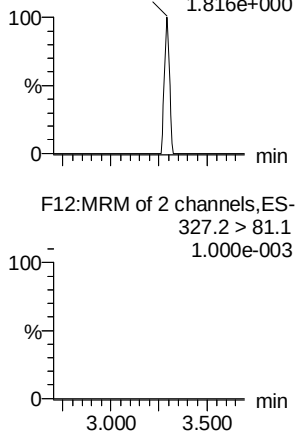


4:2 FTS



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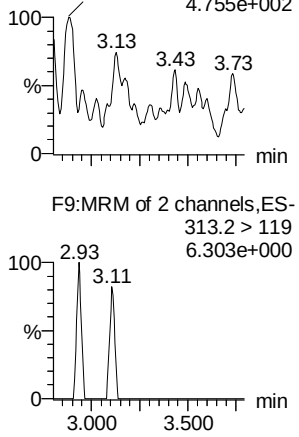

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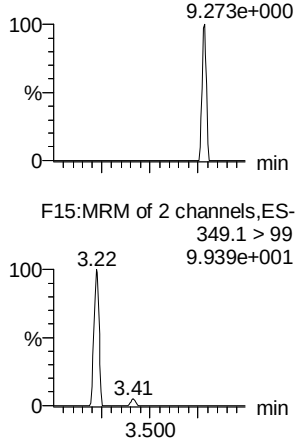

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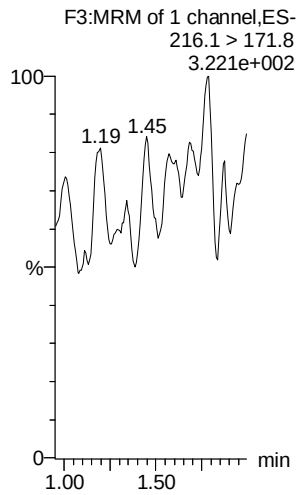
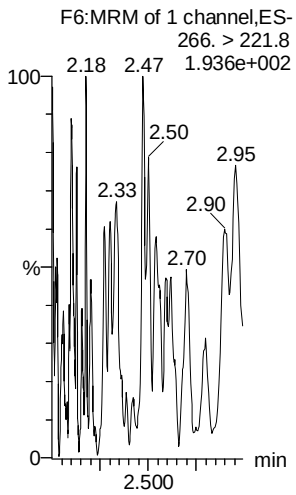


13C3-PFPeA



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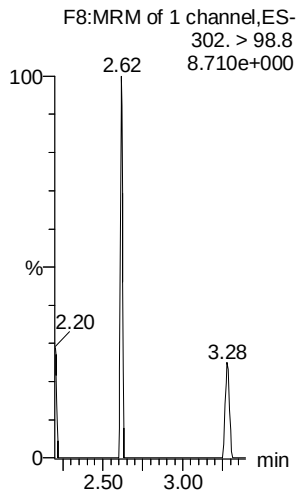
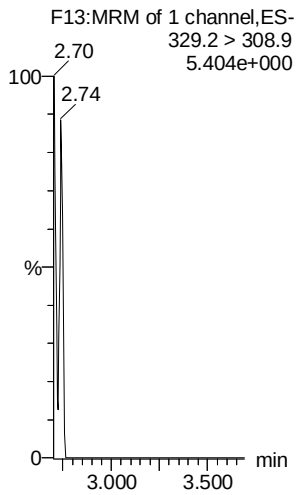


13C2-4:2 FTS



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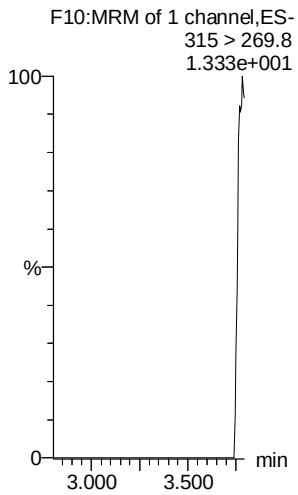

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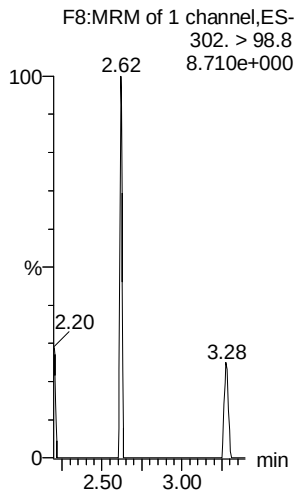

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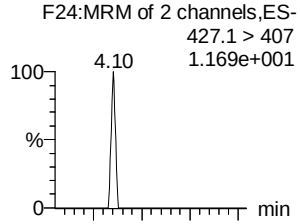
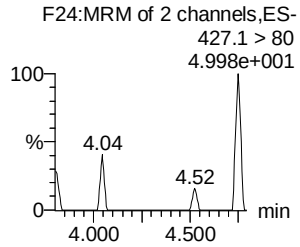
Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

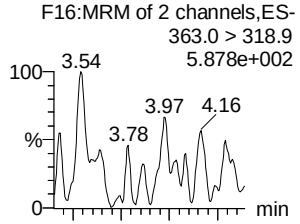
Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

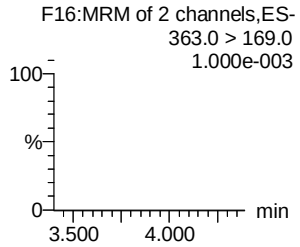
6:2 FTS



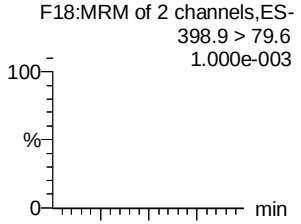


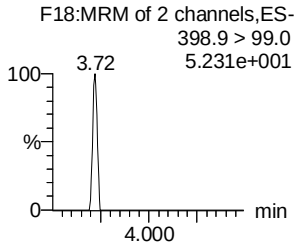
PFHpA



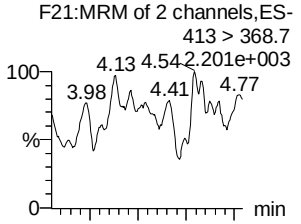


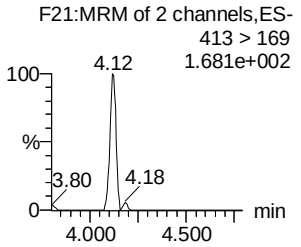
L-PFHxS





L-PFOA





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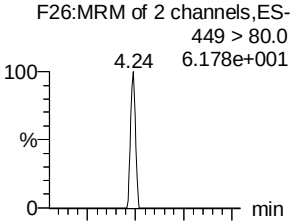
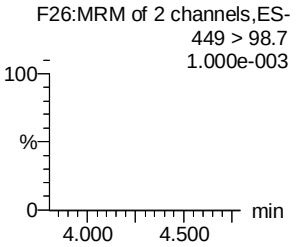
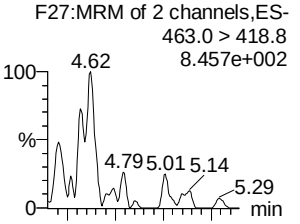
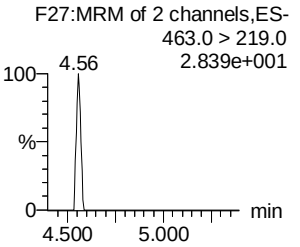




PFNA





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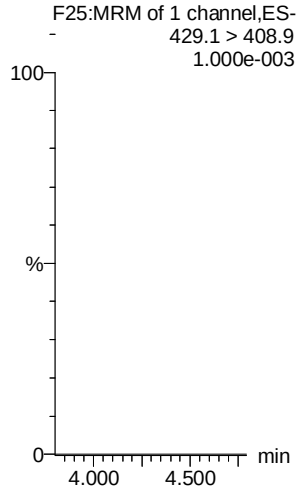
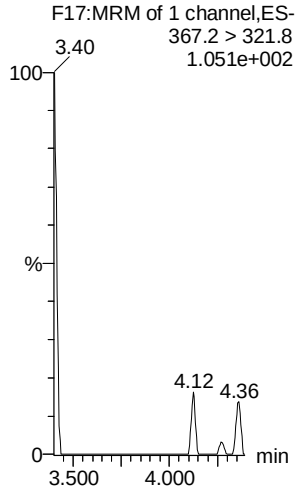
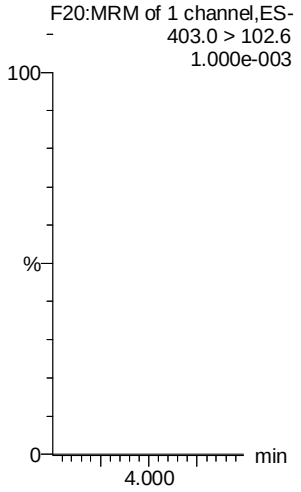


13C4-PFHpA



18O2-PFHxS



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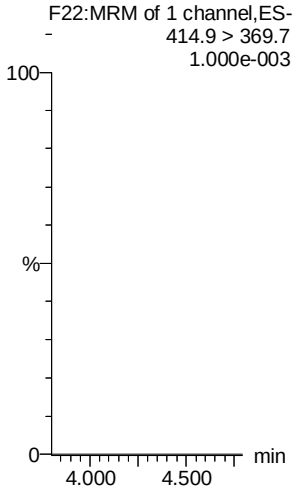

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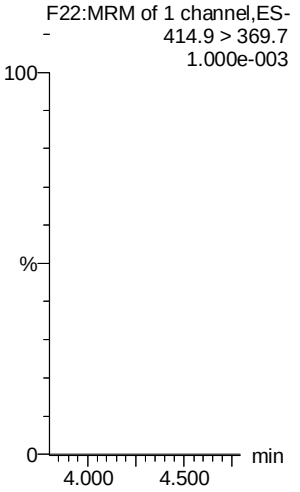

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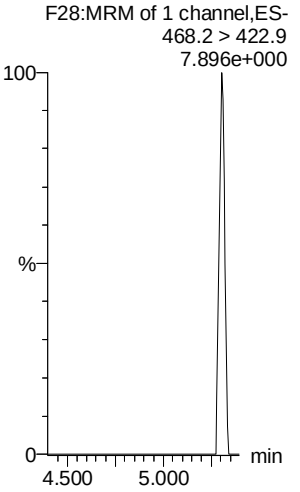

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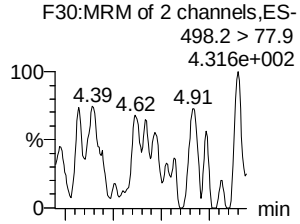
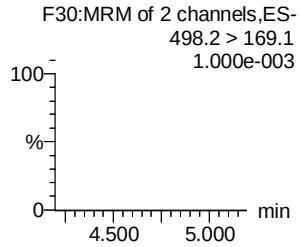
Last Altered: Tuesday, June 19, 2018 10:39:30 Pacific Daylight Time
Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

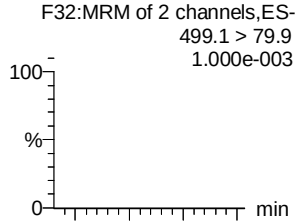
Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

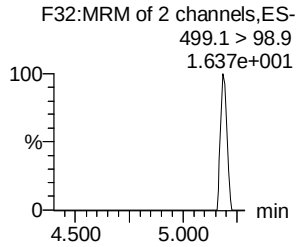
PFOSA





L-PFOS





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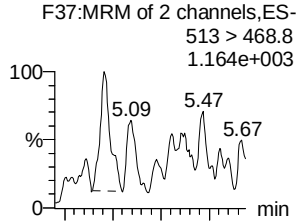

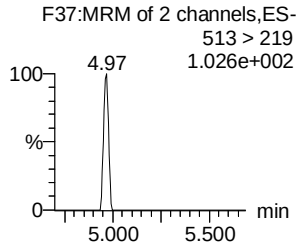

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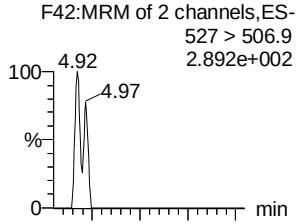

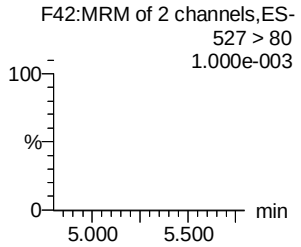

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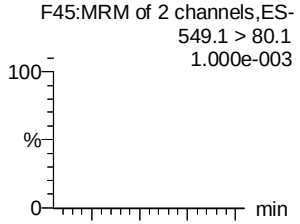

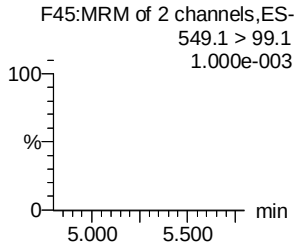

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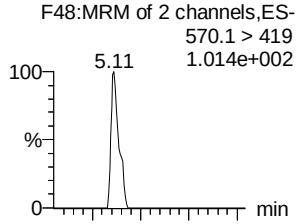

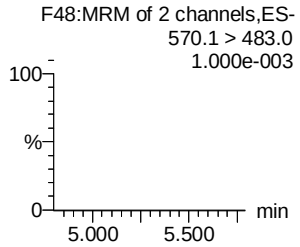

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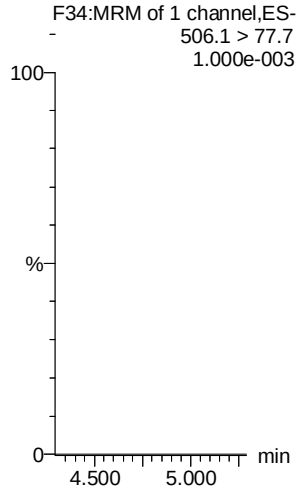

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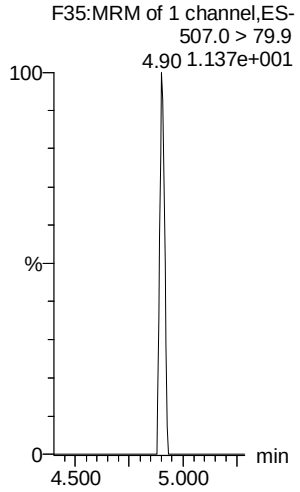

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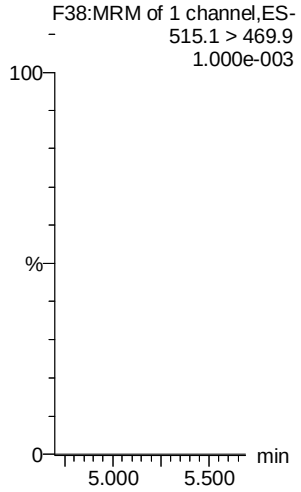

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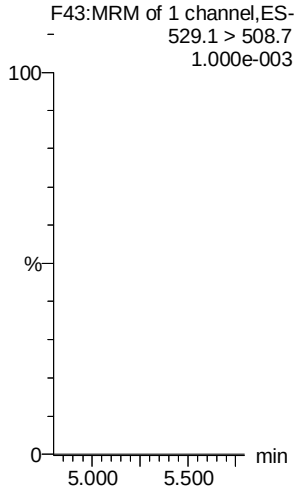

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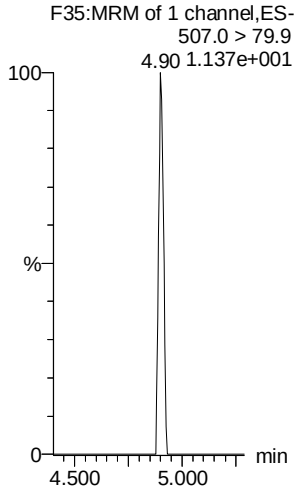
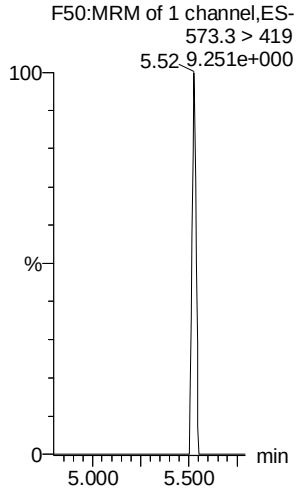


d3-N-MeFOSAA



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Printed: Tuesday, June 19, 2018 10:39:35 Pacific Daylight Time

Name: 180618M1_26, Date: 18-Jun-2018, Time: 21:10:13, ID: IPA, Description: IPA

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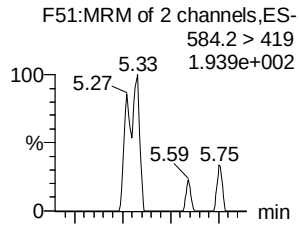

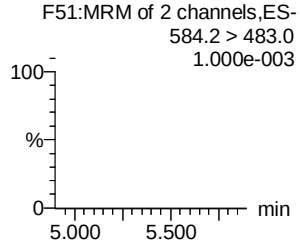

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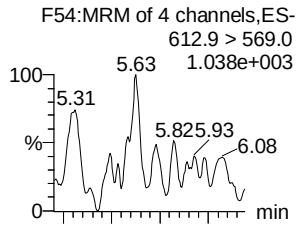

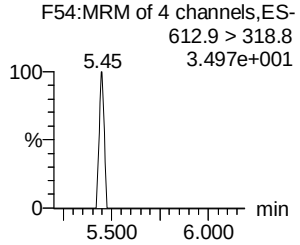

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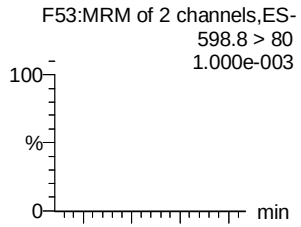

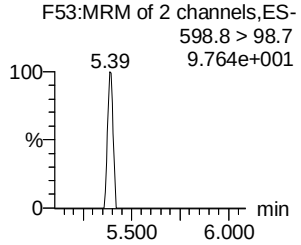

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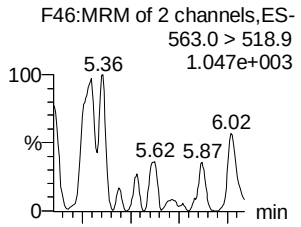

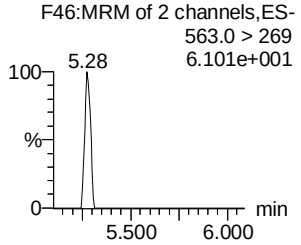

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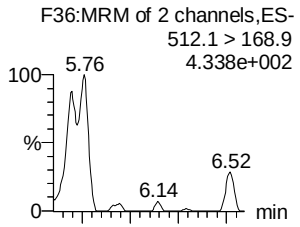

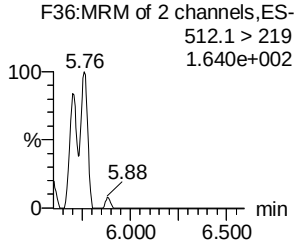

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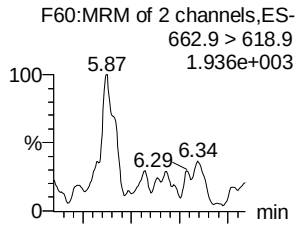

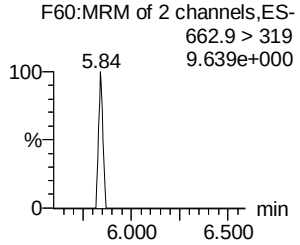

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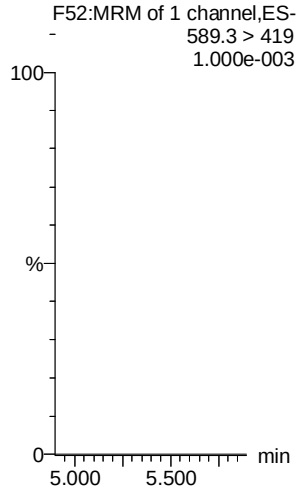

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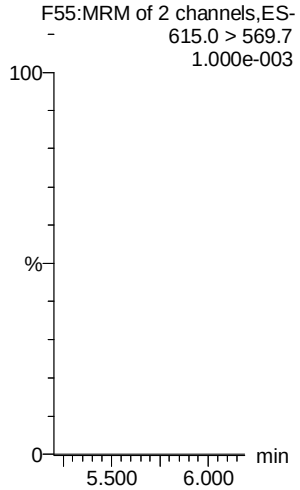

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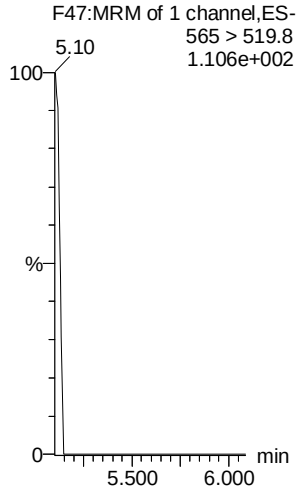

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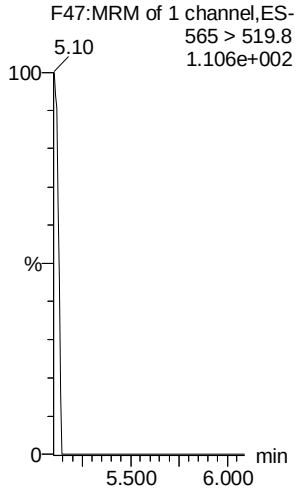

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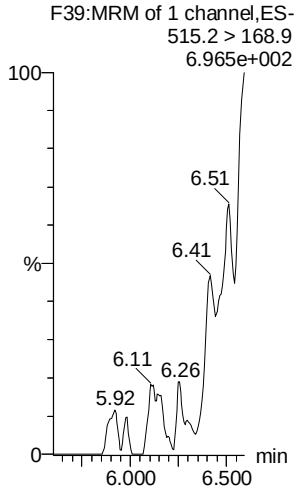

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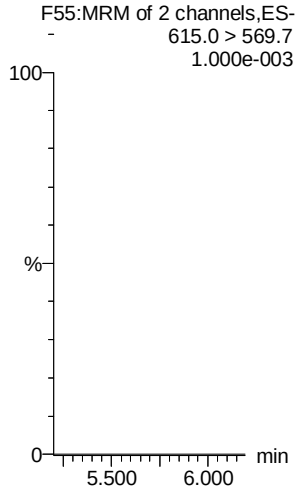

Vista Analytical Laboratory

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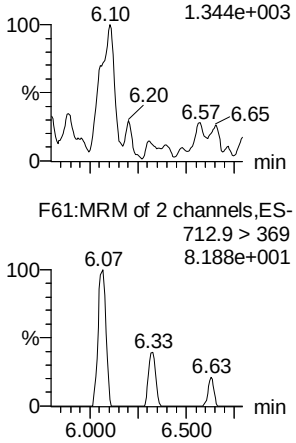

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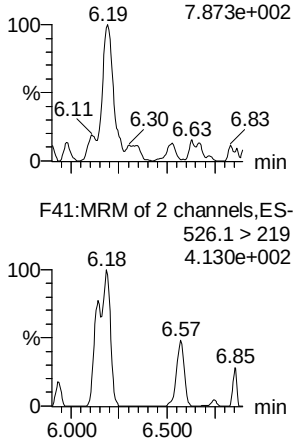

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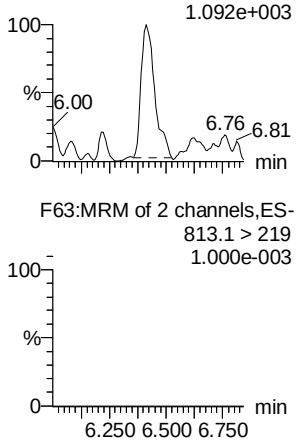

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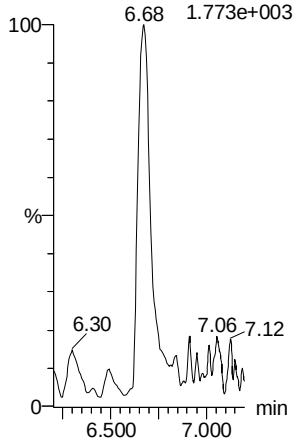
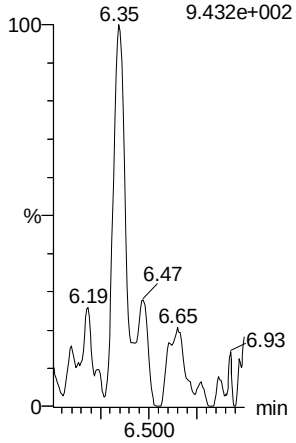
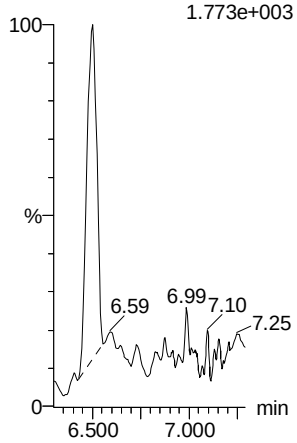


N-MeFOSE



N-EtFOSE



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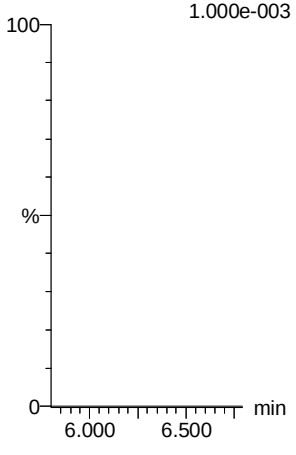
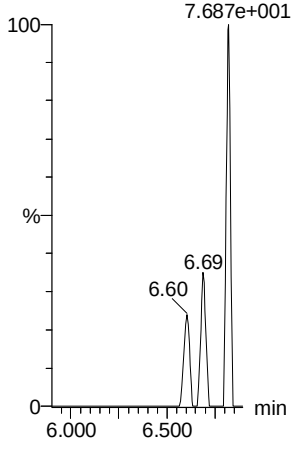


d5-N-ETFOSA



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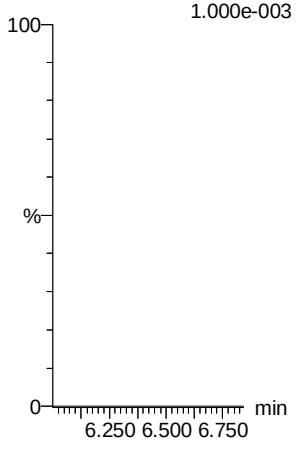

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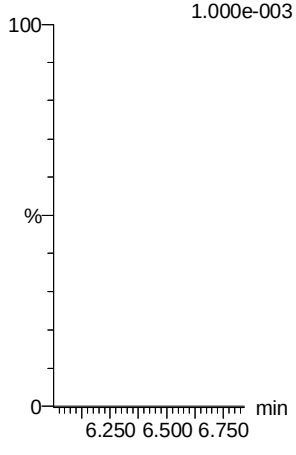

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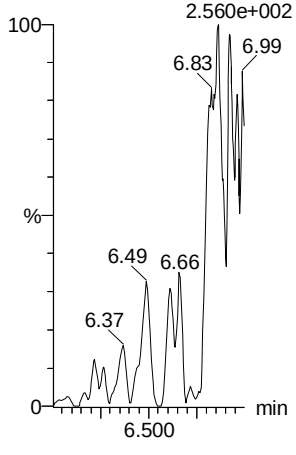

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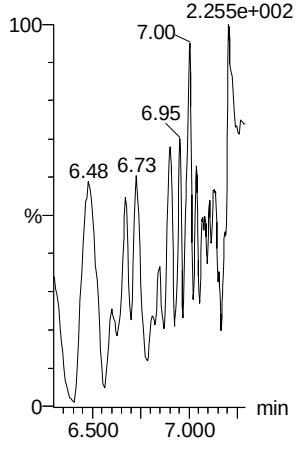

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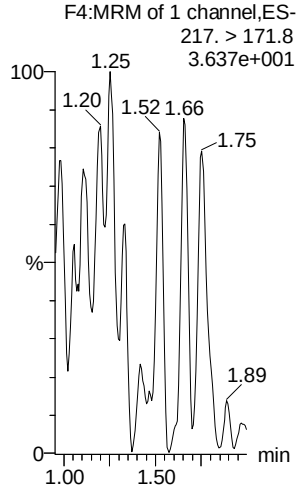

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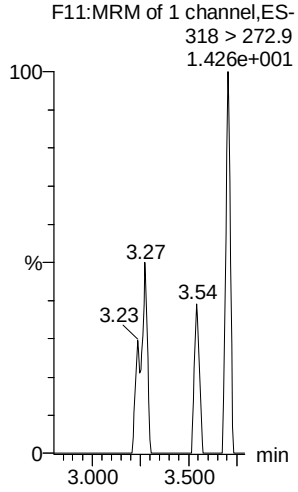

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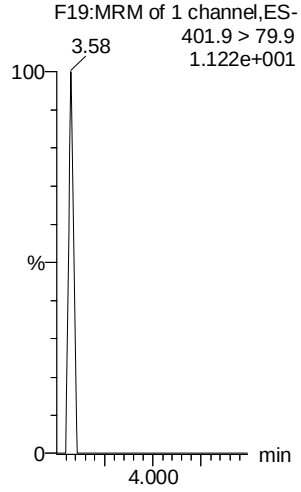

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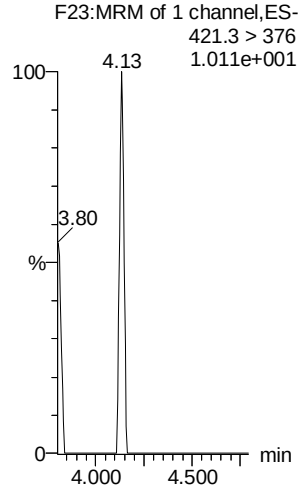

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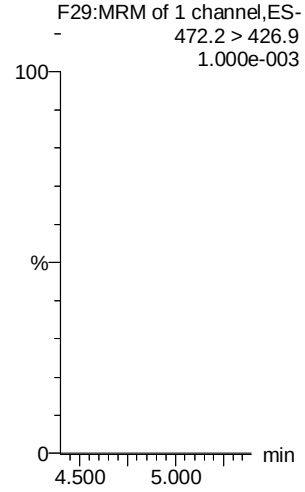

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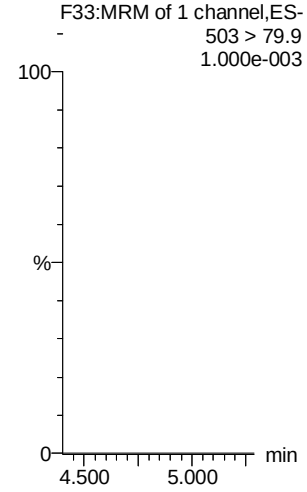

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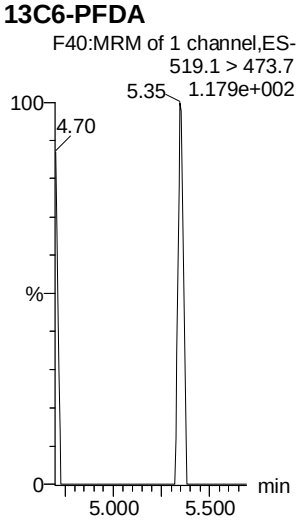

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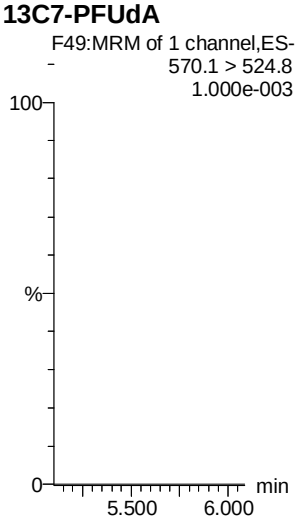

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Printed: Wednesday, June 20, 2018 10:53:53 Pacific Daylight Time

high pt
4:2 FTS = 100
6:2 FTS
8:2 FTS = 50

low pt
PFBS = 0.5

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

6/20/18
6/20/18

Compound name: PFBA
Correlation coefficient: r = 0.999937, r^2 = 0.999875
Calibration curve: 1.08008 * x + 0.0585061
Response type: Internal Std (Ref 36), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	1.17	207.601	8224.849	0.316	0.2	-4.8	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	1.15	449.798	8547.563	0.658	0.6	11.0	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	1.15	933.674	9504.233	1.228	1.1	8.3	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	1.15	1595.066	8337.812	2.391	2.2	8.0	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	1.19	3413.266	7983.950	5.344	4.9	-2.1	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	1.19	6752.613	7896.962	10.689	9.8	-1.6	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	1.15	34161.598	7774.647	54.925	50.8	1.6	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	1.16	69101.391	7868.027	109.782	101.6	1.6	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	1.15	172245.891	7931.743	271.450	251.3	0.5	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	1.16	331609.594	7731.642	536.124	496.3	-0.7	NO	1.000	NO	bb

Compound name: PFPeA
Correlation coefficient: r = 0.999895, r^2 = 0.999789
Calibration curve: 0.988345 * x + 0.0565028
Response type: Internal Std (Ref 37), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	2.18	303.249	13627.476	0.278	0.2	-10.3	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	2.16	627.482	13879.935	0.565	0.5	2.9	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	2.17	1361.933	16154.324	1.054	1.0	0.9	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	2.17	2438.800	14007.350	2.176	2.1	7.2	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	2.18	5373.133	13866.011	4.844	4.8	-3.1	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	2.19	10929.693	13766.979	9.924	10.0	-0.2	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	2.17	52254.719	13103.035	49.850	50.4	0.8	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	2.17	104765.984	13094.664	100.008	101.1	1.1	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	2.17	244753.031	12157.109	251.656	254.6	1.8	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	2.17	456428.656	11685.278	488.252	494.0	-1.2	NO	1.000	NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
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Compound name: PFBS
Coefficient of Determination: R^2 = 0.999687
Calibration curve: 5.30844e-005 * x^2 + 1.95014 * x + 0.0113783
Response type: Internal Std (Ref 38), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	2.47	52.525	1581.352	0.415	0.2	-17.2	NO	1.000	NO	MM
2	2	180619M1_3	Standard	0.500	2.47	128.641	1554.013	1.035	0.5	5.0	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	2.48	307.738	1884.937	2.041	1.0	4.1	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	2.47	572.666	1668.438	4.290	2.2	9.7	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	2.47	1221.283	1655.375	9.222	4.7	-5.5	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	2.49	2585.669	1649.944	19.589	10.0	0.4	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	2.48	12376.887	1519.875	101.792	52.1	4.2	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	2.48	24693.014	1559.962	197.866	101.2	1.2	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	2.48	57019.293	1485.479	479.806	244.4	-2.2	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	2.48	102985.008	1296.379	993.006	502.3	0.5	NO	1.000	NO	bb

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.998311
Calibration curve: -0.0014042 * x^2 + 0.829796 * x + 0.0982342
Response type: Internal Std (Ref 39), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	2.92	66.164	3395.421	0.244	0.2	-29.9	NO	0.998	NO	bb
2	2	180619M1_3	Standard	0.500	2.92	137.557	3634.000	0.473	0.5	-9.6	NO	0.998	NO	MM
3	3	180619M1_4	Standard	1.000	2.92	339.433	3949.372	1.074	1.2	17.9	NO	0.998	NO	bb
4	4	180619M1_5	Standard	2.000	2.93	603.297	3686.383	2.046	2.4	17.8	NO	0.998	NO	bb
5	5	180619M1_6	Standard	5.000	2.90	1350.054	3891.168	4.337	5.2	3.1	NO	0.998	NO	bb
6	6	180619M1_7	Standard	10.000	2.91	2607.756	3810.110	8.555	10.4	3.7	NO	0.998	NO	bb
7	7	180619M1_8	Standard	50.000	2.93	12427.178	4240.089	36.636	47.9	-4.2	NO	0.998	NO	bb
8	8	180619M1_9	Standard	100.000	2.93	24838.826	4453.742	69.713	101.2	1.2	NO	0.998	NO	MM
9	9	180619M1_10	Standard	250.000	2.93	54197.652	5787.611	117.055	232.1	-7.1	NO	0.998	NO	bbX
10	10	180619M1_11	Standard	500.000	2.93	96973.656	8073.666	150.139			NO	0.998	NO	bbXl

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Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999626
Calibration curve: 2.95512e-005 * x^2 + 1.40681 * x + 0.0478359
Response type: Internal Std (Ref 40), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	3.01	305.350	4799.755	0.318	0.2	-23.2	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	3.00	768.870	4836.915	0.795	0.5	6.2	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	3.01	1806.692	5482.905	1.648	1.1	13.7	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	3.01	3005.922	4543.097	3.308	2.3	15.9	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	2.99	6675.034	4728.506	7.058	5.0	-0.3	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	3.00	13064.944	4558.922	14.329	10.1	1.5	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	3.01	61561.594	4464.189	68.950	48.9	-2.1	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	3.02	123049.195	4212.348	146.058	103.6	3.6	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	3.01	288368.750	4158.737	346.702	245.1	-1.9	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	3.01	548248.000	3842.359	713.426	501.8	0.4	NO	1.000	NO	bb

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999534
Calibration curve: -5.28854e-005 * x^2 + 1.64313 * x + 0.0479232
Response type: Internal Std (Ref 38), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	3.21	43.165	1581.352	0.341	0.2	-28.6	NO	1.000	NO	MM
2	2	180619M1_3	Standard	0.500	3.20	124.112	1554.013	0.998	0.6	15.7	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	3.21	267.540	1884.937	1.774	1.1	5.1	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	3.22	455.676	1668.438	3.414	2.0	2.4	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	3.20	1067.851	1655.375	8.064	4.9	-2.4	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	3.21	2252.510	1649.944	17.065	10.4	3.6	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	3.22	10630.252	1519.875	87.427	53.3	6.5	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	3.22	20342.225	1559.962	163.003	99.5	-0.5	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	3.22	47309.652	1485.479	398.101	244.2	-2.3	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	3.22	84287.875	1296.379	812.724	502.7	0.5	NO	1.000	NO	bb

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Compound name: PFHpA
Correlation coefficient: r = 0.999658, r^2 = 0.999316
Calibration curve: 1.11876 * x + 0.127634
Response type: Internal Std (Ref 41), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	3.62	374.857	12466.750	0.376	0.2	-11.3	NO	0.999	NO	bb
2	2	180619M1_3	Standard	0.500	3.62	644.192	12076.039	0.667	0.5	-3.6	NO	0.999	NO	bb
3	3	180619M1_4	Standard	1.000	3.64	1486.452	14468.833	1.284	1.0	3.4	NO	0.999	NO	bb
4	4	180619M1_5	Standard	2.000	3.64	2569.759	12341.172	2.603	2.2	10.6	NO	0.999	NO	bb
5	5	180619M1_6	Standard	5.000	3.63	5577.028	12837.063	5.431	4.7	-5.2	NO	0.999	NO	bb
6	6	180619M1_7	Standard	10.000	3.64	11689.510	12587.163	11.609	10.3	2.6	NO	0.999	NO	bb
7	7	180619M1_8	Standard	50.000	3.64	55346.516	12569.586	55.040	49.1	-1.8	NO	0.999	NO	bb
8	8	180619M1_9	Standard	100.000	3.64	107139.508	11377.365	117.711	105.1	5.1	NO	0.999	NO	bb
9	9	180619M1_10	Standard	250.000	3.64	243322.625	10646.521	285.683	255.2	2.1	NO	0.999	NO	bb
10	10	180619M1_11	Standard	500.000	3.64	461940.906	10522.897	548.733	490.4	-1.9	NO	0.999	NO	bb

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.998300
Calibration curve: -0.000243721 * x^2 + 1.90765 * x + -0.00804657
Response type: Internal Std (Ref 42), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	3.78	48.175	1344.220	0.448	0.2	-4.4	NO	0.998	NO	MM
2	2	180619M1_3	Standard	0.500	3.78	113.357	1372.315	1.033	0.5	9.1	NO	0.998	NO	MM
3	3	180619M1_4	Standard	1.000	3.79	259.053	1503.970	2.153	1.1	13.3	NO	0.998	NO	MM
4	4	180619M1_5	Standard	2.000	3.80	396.702	1341.365	3.697	1.9	-2.9	NO	0.998	NO	MM
5	5	180619M1_6	Standard	5.000	3.78	998.409	1403.670	8.891	4.7	-6.6	NO	0.998	NO	MM
6	6	180619M1_7	Standard	10.000	3.79	2040.419	1334.857	19.107	10.0	0.3	NO	0.998	NO	MM
7	7	180619M1_8	Standard	50.000	3.80	9191.688	1390.663	82.620	43.6	-12.9	NO	0.998	NO	MM
8	8	180619M1_9	Standard	100.000	3.80	19246.613	1272.008	189.136	100.4	0.4	NO	0.998	NO	MM
9	9	180619M1_10	Standard	250.000	3.80	45715.047	1183.255	482.937	261.9	4.8	NO	0.998	NO	MM
10	10	180619M1_11	Standard	500.000	3.80	80351.188	1137.075	883.310	494.2	-1.2	NO	0.998	NO	MM

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Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.998799
Calibration curve: -0.00308106 * x^2 + 0.984302 * x + -0.0304267
Response type: Internal Std (Ref 43), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.10	49.303	3456.820	0.178	0.2	-15.1	NO	0.999	NO	MM
2	2	180619M1_3	Standard	0.500	4.10	109.385	3534.626	0.387	0.4	-15.1	NO	0.999	NO	bb
3	3	180619M1_4	Standard	1.000	4.12	350.558	3991.063	1.098	1.2	15.1	NO	0.999	NO	bb
4	4	180619M1_5	Standard	2.000	4.12	610.064	3461.595	2.203	2.3	14.3	NO	0.999	NO	bb
5	5	180619M1_6	Standard	5.000	4.11	1709.296	4203.301	5.083	5.3	5.7	NO	0.999	NO	bb
6	6	180619M1_7	Standard	10.000	4.12	3040.257	4153.437	9.150	9.6	-3.8	NO	0.999	NO	bb
7	7	180619M1_8	Standard	50.000	4.12	13419.315	4091.630	40.996	49.3	-1.4	NO	0.999	NO	bb
8	8	180619M1_9	Standard	100.000	4.12	26818.547	4940.954	67.848	100.7	0.7	NO	0.999	NO	bb
9	9	180619M1_10	Standard	250.000	4.12	60140.270	6245.348	120.370			NO	0.999	NO	bbXI
10	10	180619M1_11	Standard	500.000	4.12	105881.805	7994.663	165.551			NO	0.999	NO	bbXI

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999804
Calibration curve: -0.000102707 * x^2 + 0.954902 * x + 0.117144
Response type: Internal Std (Ref 44), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.16	413.923	16125.618	0.321	0.2	-14.7	NO	1.000	NO	MM
2	2	180619M1_3	Standard	0.500	4.16	769.633	16365.352	0.588	0.5	-1.4	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	4.18	1767.991	20416.596	1.082	1.0	1.1	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	4.18	3149.981	16003.481	2.460	2.5	22.7	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	4.17	7083.026	18291.533	4.840	4.9	-1.0	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	4.17	13268.430	18404.930	9.011	9.3	-6.8	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	4.18	64318.836	16870.688	47.656	50.1	0.1	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	4.18	122415.359	16257.954	94.120	99.5	-0.5	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	4.18	303934.938	16261.711	233.628	251.3	0.5	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	4.18	534319.188	14796.563	451.388	499.4	-0.1	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999638
Calibration curve: -2.76792e-005 * x^2 + 0.179398 * x + -0.00482123
Response type: Internal Std (Ref 44), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.28	37.284	16125.618	0.029	0.2	-24.8	NO	1.000	NO	MM
2	2	180619M1_3	Standard	0.500	4.27	108.535	16365.352	0.083	0.5	-2.2	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	4.29	330.985	20416.596	0.203	1.2	15.7	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	4.29	491.970	16003.481	0.384	2.2	8.5	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	4.28	1355.603	18291.533	0.926	5.2	3.9	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	4.29	2631.009	18404.930	1.787	10.0	0.0	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	4.29	11591.897	16870.688	8.589	48.3	-3.5	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	4.30	23784.311	16257.954	18.287	103.6	3.6	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	4.30	55291.418	16261.711	42.501	246.3	-1.5	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	4.29	98231.977	14796.563	82.985	501.4	0.3	NO	1.000	NO	bb

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999305
Calibration curve: -8.87699e-005 * x^2 + 1.1852 * x + 0.0413501
Response type: Internal Std (Ref 45), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.61	419.108	14655.311	0.357	0.3	6.7	NO	0.999	NO	bb
2	2	180619M1_3	Standard	0.500	4.60	727.432	14942.845	0.609	0.5	-4.3	NO	0.999	NO	bb
3	3	180619M1_4	Standard	1.000	4.62	1799.347	17266.045	1.303	1.1	6.4	NO	0.999	NO	bb
4	4	180619M1_5	Standard	2.000	4.63	3193.709	14930.204	2.674	2.2	11.1	NO	0.999	NO	bb
5	5	180619M1_6	Standard	5.000	4.62	7493.354	16818.348	5.569	4.7	-6.7	NO	0.999	NO	bb
6	6	180619M1_7	Standard	10.000	4.63	13440.308	16293.483	10.311	8.7	-13.3	NO	0.999	NO	bb
7	7	180619M1_8	Standard	50.000	4.63	68399.594	14280.169	59.873	50.7	1.3	NO	0.999	NO	bb
8	8	180619M1_9	Standard	100.000	4.63	137036.344	15105.229	113.401	96.3	-3.7	NO	0.999	NO	bb
9	9	180619M1_10	Standard	250.000	4.63	306132.781	12780.869	299.405	257.6	3.0	NO	0.999	NO	bb
10	10	180619M1_11	Standard	500.000	4.63	584183.625	12879.886	566.953	496.8	-0.6	NO	0.999	NO	bb

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Compound name: PFOSA
Correlation coefficient: r = 0.999940, r^2 = 0.999880
Calibration curve: 0.816148 * x + 0.0101423
Response type: Internal Std (Ref 46), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.67	73.775	4948.205	0.186	0.2	-13.6	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	4.67	176.122	4722.324	0.466	0.6	11.8	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	4.69	417.731	6121.058	0.853	1.0	3.3	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	4.70	713.726	5045.944	1.768	2.2	7.7	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	4.68	2073.283	6370.981	4.068	5.0	-0.6	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	4.69	3499.968	5695.267	7.682	9.4	-6.0	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	4.69	15684.606	4914.160	39.896	48.9	-2.3	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	4.69	30583.889	4734.640	80.745	98.9	-1.1	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	4.69	70378.492	4287.902	205.166	251.4	0.5	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	4.69	127963.320	3909.839	409.107	501.3	0.3	NO	1.000	NO	bb

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999003
Calibration curve: -8.73659e-005 * x^2 + 0.937373 * x + -0.0862269
Response type: Internal Std (Ref 47), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.70	86.358	3083.859	0.350	0.5	86.2	YES	0.999	NO	MMX
2	2	180619M1_3	Standard	0.500	4.70	112.370	3242.069	0.433	0.6	10.8	NO	0.999	NO	MM
3	3	180619M1_4	Standard	1.000	4.72	250.692	3818.975	0.821	1.0	-3.3	NO	0.999	NO	MM
4	4	180619M1_5	Standard	2.000	4.72	468.561	3654.258	1.603	1.8	-9.9	NO	0.999	NO	MM
5	5	180619M1_6	Standard	5.000	4.71	1354.800	3485.204	4.859	5.3	5.6	NO	0.999	NO	MM
6	6	180619M1_7	Standard	10.000	4.71	2550.595	3392.523	9.398	10.1	1.3	NO	0.999	NO	MM
7	7	180619M1_8	Standard	50.000	4.72	11653.030	3208.908	45.393	48.7	-2.5	NO	0.999	NO	MM
8	8	180619M1_9	Standard	100.000	4.72	23150.754	3299.412	87.708	94.5	-5.5	NO	0.999	NO	MM
9	9	180619M1_10	Standard	250.000	4.72	55960.668	2931.789	238.594	261.0	4.4	NO	0.999	NO	MM
10	10	180619M1_11	Standard	500.000	4.72	101689.227	2869.421	442.987	495.6	-0.9	NO	0.999	NO	MM

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999572
Calibration curve: -7.03715e-005 * x^2 + 0.894045 * x + 0.0549645
Response type: Internal Std (Ref 48), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.99	325.764	18434.990	0.221	0.2	-25.8	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	4.99	670.253	17001.539	0.493	0.5	-2.1	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	5.01	1795.145	20952.826	1.071	1.1	13.6	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	5.02	3252.791	19651.145	2.069	2.3	12.7	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	5.01	9046.810	23996.232	4.713	5.2	4.2	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	5.01	15021.806	20488.793	9.165	10.2	2.0	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	5.02	65520.238	19275.467	42.489	47.6	-4.7	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	5.02	127856.594	18349.256	87.099	98.1	-1.9	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	5.02	325715.438	18151.570	224.303	256.0	2.4	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	5.02	556237.125	16266.107	427.451	497.5	-0.5	NO	1.000	NO	bb

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.993265
Calibration curve: -0.00444981 * x^2 + 1.45235 * x + -0.0884808
Response type: Internal Std (Ref 49), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	4.96	70.404	2537.501	0.347	0.3	20.0	NO	0.993	NO	bb
2	2	180619M1_3	Standard	0.500	4.96	88.909	2336.643	0.476	0.4	-22.2	NO	0.993	NO	bb
3	3	180619M1_4	Standard	1.000	4.99	294.075	3322.253	1.106	0.8	-17.5	NO	0.993	NO	bb
4	4	180619M1_5	Standard	2.000	4.99	865.600	2964.368	3.650	2.6	29.7	NO	0.993	NO	MM
5	5	180619M1_6	Standard	5.000	4.98	2039.045	4146.934	6.146	4.4	-13.0	NO	0.993	NO	MM
6	6	180619M1_7	Standard	10.000	4.98	3680.916	3191.395	14.417	10.3	3.1	NO	0.993	NO	MM
7	7	180619M1_8	Standard	50.000	4.98	16393.186	3338.297	61.383	50.0	-0.0	NO	0.993	NO	MM
8	8	180619M1_9	Standard	100.000	4.99	31388.418	3894.400	100.749	100.2	0.2	NO	0.993	NO	MMX
9	9	180619M1_10	Standard	250.000	4.99	70826.969	5557.888	159.294			NO	0.993	NO	bbXI
10	10	180619M1_11	Standard	500.000	4.98	125532.156	6943.605	225.985			NO	0.993	NO	bbXI

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Compound name: PFNS
Coefficient of Determination: R^2 = 0.999311
Calibration curve: -0.000200334 * x^2 + 0.799693 * x + -0.0164137
Response type: Internal Std (Ref 47), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	5.06	35.027	3083.859	0.142	0.2	-20.8	NO	0.999	NO	MM
2	2	180619M1_3	Standard	0.500	5.06	109.482	3242.069	0.422	0.5	9.7	NO	0.999	NO	bb
3	3	180619M1_4	Standard	1.000	5.08	250.267	3818.975	0.819	1.0	4.5	NO	0.999	NO	bb
4	4	180619M1_5	Standard	2.000	5.09	522.414	3654.258	1.787	2.3	12.8	NO	0.999	NO	bb
5	5	180619M1_6	Standard	5.000	5.07	1134.366	3485.204	4.069	5.1	2.3	NO	0.999	NO	bb
6	6	180619M1_7	Standard	10.000	5.08	2012.241	3392.523	7.414	9.3	-6.9	NO	0.999	NO	bb
7	7	180619M1_8	Standard	50.000	5.08	10169.176	3208.908	39.613	50.2	0.4	NO	0.999	NO	bb
8	8	180619M1_9	Standard	100.000	5.09	19645.320	3299.412	74.427	95.4	-4.6	NO	0.999	NO	bb
9	9	180619M1_10	Standard	250.000	5.08	45307.762	2931.789	193.175	258.3	3.3	NO	0.999	NO	bb
10	10	180619M1_11	Standard	500.000	5.08	79781.719	2869.421	347.551	496.3	-0.7	NO	0.999	NO	bb

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999572
Calibration curve: 7.30837e-005 * x^2 + 1.38168 * x + 0.0378795
Response type: Internal Std (Ref 50), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	5.15	110.860	4583.732	0.302	0.2	-23.4	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	5.15	321.993	4487.779	0.897	0.6	24.3	NO	1.000	NO	MM
3	3	180619M1_4	Standard	1.000	5.17	570.941	5652.046	1.263	0.9	-11.4	NO	1.000	NO	MM
4	4	180619M1_5	Standard	2.000	5.17	1319.051	5463.137	3.018	2.2	7.8	NO	1.000	NO	MM
5	5	180619M1_6	Standard	5.000	5.17	2944.741	5176.610	7.111	5.1	2.4	NO	1.000	NO	MM
6	6	180619M1_7	Standard	10.000	5.17	6049.954	5017.156	15.073	10.9	8.8	NO	1.000	NO	MM
7	7	180619M1_8	Standard	50.000	5.17	30879.426	5298.119	72.855	52.6	5.1	NO	1.000	NO	MM
8	8	180619M1_9	Standard	100.000	5.17	56142.930	5111.546	137.294	98.8	-1.2	NO	1.000	NO	MM
9	9	180619M1_10	Standard	250.000	5.17	134156.438	4885.198	343.273	245.2	-1.9	NO	1.000	NO	MM
10	10	180619M1_11	Standard	500.000	5.17	246686.875	4328.027	712.469	502.3	0.5	NO	1.000	NO	MM

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Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999684
Calibration curve: 0.000176338 * x^2 + 1.09624 * x + 0.00360828
Response type: Internal Std (Ref 51), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	5.30	91.020	4670.391	0.244	0.2	-12.4	NO	1.000	NO	MM
2	2	180619M1_3	Standard	0.500	5.31	201.268	4934.851	0.510	0.5	-7.7	NO	1.000	NO	MM
3	3	180619M1_4	Standard	1.000	5.33	417.423	5784.009	0.902	0.8	-18.0	NO	1.000	NO	MM
4	4	180619M1_5	Standard	2.000	5.34	1034.307	4978.683	2.597	2.4	18.2	NO	1.000	NO	MM
5	5	180619M1_6	Standard	5.000	5.33	2281.524	4412.783	6.463	5.9	17.7	NO	1.000	NO	MM
6	6	180619M1_7	Standard	10.000	5.33	4455.679	4835.367	11.518	10.5	4.9	NO	1.000	NO	MM
7	7	180619M1_8	Standard	50.000	5.34	21956.986	4945.097	55.502	50.2	0.4	NO	1.000	NO	MM
8	8	180619M1_9	Standard	100.000	5.34	44447.102	5077.532	109.421	98.3	-1.7	NO	1.000	NO	MM
9	9	180619M1_10	Standard	250.000	5.34	99457.938	4368.760	284.571	249.6	-0.2	NO	1.000	NO	MM
10	10	180619M1_11	Standard	500.000	5.33	173492.047	3658.221	592.816	500.5	0.1	NO	1.000	NO	MM

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Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Compound name: PFUdA
Correlation coefficient: r = 0.999749, r^2 = 0.999498
Calibration curve: 0.977686 * x + 0.0920429
Response type: Internal Std (Ref 52), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	5.33	383.362	17570.797	0.273	0.2	-26.1	NO	0.999	NO	bb
2	2	180619M1_3	Standard	0.500	5.33	836.902	18328.586	0.571	0.5	-2.1	NO	0.999	NO	bb
3	3	180619M1_4	Standard	1.000	5.35	1955.368	22038.863	1.109	1.0	4.0	NO	0.999	NO	MM
4	4	180619M1_5	Standard	2.000	5.36	3352.324	18863.662	2.221	2.2	8.9	NO	0.999	NO	bb
5	5	180619M1_6	Standard	5.000	5.34	9676.602	23146.059	5.226	5.3	5.0	NO	0.999	NO	bb
6	6	180619M1_7	Standard	10.000	5.35	15485.600	18358.119	10.544	10.7	6.9	NO	0.999	NO	bb
7	7	180619M1_8	Standard	50.000	5.35	68280.703	17257.969	49.456	50.5	1.0	NO	0.999	NO	bb
8	8	180619M1_9	Standard	100.000	5.35	137367.219	17239.510	99.602	101.8	1.8	NO	0.999	NO	bb
9	9	180619M1_10	Standard	250.000	5.35	329563.250	16449.533	250.435	256.1	2.4	NO	0.999	NO	bb
10	10	180619M1_11	Standard	500.000	5.35	575003.688	14982.403	479.733	490.6	-1.9	NO	0.999	NO	bb

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999569
Calibration curve: -2.10802e-005 * x^2 + 0.177234 * x + -0.0015965
Response type: Internal Std (Ref 52), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	5.37	78.169	17570.797	0.056	0.3	29.1	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	5.37	110.734	18328.586	0.076	0.4	-13.0	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	5.40	294.887	22038.863	0.167	1.0	-4.7	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	5.40	555.221	18863.662	0.368	2.1	4.3	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	5.40	1366.880	23146.059	0.738	4.2	-16.5	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	5.40	2594.113	18358.119	1.766	10.0	-0.1	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	5.40	12472.720	17257.969	9.034	51.3	2.6	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	5.41	23430.549	17239.510	16.989	97.0	-3.0	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	5.41	57499.098	16449.533	43.694	254.2	1.7	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	5.40	99574.547	14982.403	83.076	498.3	-0.3	NO	1.000	NO	bb

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Compound name: PFDoA
Correlation coefficient: r = 0.999808, r^2 = 0.999616
Calibration curve: 1.16427 * x + 0.0510958
Response type: Internal Std (Ref 53), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	0.250	5.61	406.752	19131.615	0.266	0.2	-26.2	NO	1.000	NO	bb
2	2 180619M1_3	Standard	0.500	5.61	883.898	18554.543	0.595	0.5	-6.5	NO	1.000	NO	bb
3	3 180619M1_4	Standard	1.000	5.64	2078.418	20562.627	1.263	1.0	4.1	NO	1.000	NO	bb
4	4 180619M1_5	Standard	2.000	5.64	4004.472	18934.471	2.644	2.2	11.3	NO	1.000	NO	bb
5	5 180619M1_6	Standard	5.000	5.63	11832.850	24674.740	5.994	5.1	2.1	NO	1.000	NO	bb
6	6 180619M1_7	Standard	10.000	5.64	20321.313	19544.256	12.997	11.1	11.2	NO	1.000	NO	bb
7	7 180619M1_8	Standard	50.000	5.64	82971.656	17120.320	60.580	52.0	4.0	NO	1.000	NO	bb
8	8 180619M1_9	Standard	100.000	5.65	160633.641	16932.953	118.581	101.8	1.8	NO	1.000	NO	bb
9	9 180619M1_10	Standard	250.000	5.65	375971.000	16394.809	286.654	246.2	-1.5	NO	1.000	NO	bb
10	10 180619M1_11	Standard	500.000	5.65	694246.188	14946.480	580.610	498.6	-0.3	NO	1.000	NO	bb

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999515
Calibration curve: -9.99567e-005 * x^2 + 1.0749 * x + 0.274549
Response type: Internal Std (Ref 54), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	1.250	5.77	206.743	22400.238	1.384	1.0	-17.4	NO	1.000	NO	bb
2	2 180619M1_3	Standard	2.500	5.77	532.272	23695.061	3.370	2.9	15.2	NO	1.000	NO	bb
3	3 180619M1_4	Standard	5.000	5.79	1049.729	28288.938	5.566	4.9	-1.5	NO	1.000	NO	bb
4	4 180619M1_5	Standard	10.000	5.80	1918.311	24620.854	11.687	10.6	6.3	NO	1.000	NO	bb
5	5 180619M1_6	Standard	25.000	5.78	4893.132	24649.129	29.777	27.5	10.1	NO	1.000	NO	bb
6	6 180619M1_7	Standard	50.000	5.79	9620.625	25290.549	57.061	53.1	6.2	NO	1.000	NO	bb
7	7 180619M1_8	Standard	250.000	5.80	42903.598	23542.430	273.359	260.4	4.1	NO	1.000	NO	bb
8	8 180619M1_9	Standard	500.000	5.80	81144.328	23940.223	508.418	495.6	-0.9	NO	1.000	NO	bb
9	9 180619M1_10	Standard	1250.000	5.80	182575.297	23563.961	1162.211	1219.2	-2.5	NO	1.000	NO	bb
10	10 180619M1_11	Standard	2500.000	5.80	314179.156	22709.088	2075.243	2521.7	0.9	NO	1.000	NO	bb

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999755
Calibration curve: -9.86458e-005 * x^2 + 1.25097 * x + 0.0745025
Response type: Internal Std (Ref 53), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	5.87	548.242	19131.615	0.358	0.2	-9.3	NO	1.000	NO	MM
2	2	180619M1_3	Standard	0.500	5.87	1068.419	18554.543	0.720	0.5	3.2	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	5.90	2267.531	20562.627	1.378	1.0	4.2	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	5.90	4124.147	18934.471	2.723	2.1	5.9	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	5.89	11324.621	24674.740	5.737	4.5	-9.4	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	5.89	20247.926	19544.256	12.950	10.3	3.0	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	5.90	89361.836	17120.320	65.245	52.3	4.6	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	5.90	165154.469	16932.953	121.918	98.2	-1.8	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	5.90	400254.563	16394.809	305.169	248.8	-0.5	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	5.90	719590.375	14946.480	601.806	500.8	0.2	NO	1.000	NO	bb

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999495
Calibration curve: 9.10956e-005 * x^2 + 1.29106 * x + 0.0568453
Response type: Internal Std (Ref 55), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	6.08	502.667	17395.465	0.361	0.2	-5.7	NO	0.999	NO	bb
2	2	180619M1_3	Standard	0.500	6.09	950.628	16144.471	0.736	0.5	5.2	NO	0.999	NO	bb
3	3	180619M1_4	Standard	1.000	6.12	1987.019	18084.154	1.373	1.0	2.0	NO	0.999	NO	bb
4	4	180619M1_5	Standard	2.000	6.12	3653.530	16469.906	2.773	2.1	5.2	NO	0.999	NO	bb
5	5	180619M1_6	Standard	5.000	6.11	9066.466	18988.551	5.968	4.6	-8.5	NO	0.999	NO	bb
6	6	180619M1_7	Standard	10.000	6.12	17340.461	17310.607	12.522	9.6	-3.5	NO	0.999	NO	bb
7	7	180619M1_8	Standard	50.000	6.12	80432.156	14323.378	70.193	54.1	8.2	NO	0.999	NO	bb
8	8	180619M1_9	Standard	100.000	6.12	148663.625	14594.135	127.332	97.9	-2.1	NO	0.999	NO	bb
9	9	180619M1_10	Standard	250.000	6.12	350268.625	13476.450	324.890	247.3	-1.1	NO	0.999	NO	bb
10	10	180619M1_11	Standard	500.000	6.12	637431.813	11888.807	670.202	501.3	0.3	NO	0.999	NO	bb

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Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999909
Calibration curve: -5.01492e-005 * x^2 + 0.916603 * x + 0.131252
Response type: Internal Std (Ref 56), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	1.250	6.19	209.336	29571.518	1.062	1.0	-18.8	NO	1.000	NO	bb
2	2	180619M1_3	Standard	2.500	6.20	515.247	31054.906	2.489	2.6	2.9	NO	1.000	NO	bb
3	3	180619M1_4	Standard	5.000	6.22	1261.039	37489.445	5.046	5.4	7.3	NO	1.000	NO	bb
4	4	180619M1_5	Standard	10.000	6.23	2286.250	33498.648	10.237	11.0	10.3	NO	1.000	NO	bb
5	5	180619M1_6	Standard	25.000	6.22	4442.977	29813.963	22.354	24.3	-2.9	NO	1.000	NO	bb
6	6	180619M1_7	Standard	50.000	6.23	10010.302	32647.350	45.993	50.2	0.3	NO	1.000	NO	bb
7	7	180619M1_8	Standard	250.000	6.23	48097.176	31300.164	230.496	254.9	2.0	NO	1.000	NO	bb
8	8	180619M1_9	Standard	500.000	6.23	91417.172	31036.871	441.816	495.3	-0.9	NO	1.000	NO	bb
9	9	180619M1_10	Standard	1250.000	6.23	200961.313	28304.902	1064.981	1246.8	-0.3	NO	1.000	NO	bb
10	10	180619M1_11	Standard	2500.000	6.23	343305.750	26009.840	1979.861	2502.5	0.1	NO	1.000	NO	bb

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999675
Calibration curve: -0.000289587 * x^2 + 0.541923 * x + 0.0123272
Response type: Internal Std (Ref 57), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	6.43	270.804	8286.087	0.163	0.3	11.5	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	6.44	542.037	8746.652	0.310	0.5	9.8	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	6.47	1015.104	10356.794	0.490	0.9	-11.8	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	6.47	1954.932	8737.604	1.119	2.0	2.2	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	6.47	4305.541	8464.490	2.543	4.7	-6.4	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	6.47	9557.974	9166.595	5.213	9.6	-3.5	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	6.47	45422.914	8878.395	25.581	48.4	-3.1	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	6.47	84007.156	8221.659	51.089	99.5	-0.5	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	6.47	202458.406	8442.903	119.899	256.3	2.5	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	6.47	325228.438	8235.526	197.455	495.6	-0.9	NO	1.000	NO	bb

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Compound name: PFODA
Coefficient of Determination: R^2 = 0.999589
Calibration curve: -0.000164856 * x^2 + 0.6966 * x + -0.00819501
Response type: Internal Std (Ref 57), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	0.250	6.67	285.649	8286.087	0.172	0.3	3.7	NO	1.000	NO	bb
2	2	180619M1_3	Standard	0.500	6.68	603.233	8746.652	0.345	0.5	1.4	NO	1.000	NO	bb
3	3	180619M1_4	Standard	1.000	6.70	1503.030	10356.794	0.726	1.1	5.4	NO	1.000	NO	bb
4	4	180619M1_5	Standard	2.000	6.71	2511.010	8737.604	1.437	2.1	3.8	NO	1.000	NO	bb
5	5	180619M1_6	Standard	5.000	6.70	5220.317	8464.490	3.084	4.4	-11.1	NO	1.000	NO	bb
6	6	180619M1_7	Standard	10.000	6.71	11776.521	9166.595	6.424	9.3	-7.5	NO	1.000	NO	bb
7	7	180619M1_8	Standard	50.000	6.71	58777.438	8878.395	33.101	48.1	-3.8	NO	1.000	NO	bb
8	8	180619M1_9	Standard	100.000	6.71	115785.188	8221.659	70.415	103.6	3.6	NO	1.000	NO	bb
9	9	180619M1_10	Standard	250.000	6.71	276782.344	8442.903	163.914	250.1	0.0	NO	1.000	NO	bb
10	10	180619M1_11	Standard	500.000	6.71	505171.125	8235.526	306.702	499.3	-0.1	NO	1.000	NO	bb

Compound name: N-MeFOSE
Correlation coefficient: r = 0.997571, r^2 = 0.995148
Calibration curve: 0.953764 * x + 0.25406
Response type: Internal Std (Ref 58), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	1.250	6.37	267.679	26463.336	1.517	1.3	6.0	NO	0.995	NO	bb
2	2	180619M1_3	Standard	2.500	6.37	529.592	31231.361	2.544	2.4	-4.0	NO	0.995	NO	bb
3	3	180619M1_4	Standard	5.000	6.41	1223.819	38074.695	4.821	4.8	-4.2	NO	0.995	NO	bb
4	4	180619M1_5	Standard	10.000	6.41	1871.219	30851.699	9.098	9.3	-7.3	NO	0.995	NO	bb
5	5	180619M1_6	Standard	25.000	6.41	3993.218	24849.490	24.104	25.0	0.0	NO	0.995	NO	bb
6	6	180619M1_7	Standard	50.000	6.41	10383.397	31739.389	49.072	51.2	2.4	NO	0.995	NO	bb
7	7	180619M1_8	Standard	250.000	6.41	54519.246	32539.656	251.321	263.2	5.3	NO	0.995	NO	bb
8	8	180619M1_9	Standard	500.000	6.41	95285.773	31094.623	459.657	481.7	-3.7	NO	0.995	NO	MM
9	9	180619M1_10	Standard	1250.000	6.41	237184.609	26973.418	1318.991	1382.7	10.6	NO	0.995	NO	bb
10	10	180619M1_11	Standard	2500.000	6.41	429238.156	28454.391	2262.769	2372.2	-5.1	NO	0.995	NO	bb

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Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.999794
Calibration curve: -8.59378e-006 * x^2 + 1.062 * x + 0.394799
Response type: Internal Std (Ref 59), 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	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	1.250	6.51	246.185	24653.217	1.498	1.0	-16.9	NO	1.000	NO	bb
2	2 180619M1_3	Standard	2.500	6.52	569.274	26977.471	3.165	2.6	4.4	NO	1.000	NO	bb
3	3 180619M1_4	Standard	5.000	6.55	1328.061	33709.727	5.910	5.2	3.9	NO	1.000	NO	bb
4	4 180619M1_5	Standard	10.000	6.56	2423.831	28460.479	12.775	11.7	16.6	NO	1.000	NO	bb
5	5 180619M1_6	Standard	25.000	6.55	4004.216	22984.010	26.133	24.2	-3.0	NO	1.000	NO	bb
6	6 180619M1_7	Standard	50.000	6.56	9890.547	28421.215	52.200	48.8	-2.4	NO	1.000	NO	MM
7	7 180619M1_8	Standard	250.000	6.56	52971.672	31136.027	255.195	240.4	-3.8	NO	1.000	NO	MM
8	8 180619M1_9	Standard	500.000	6.56	108399.773	30541.506	532.389	503.0	0.6	NO	1.000	NO	bb
9	9 180619M1_10	Standard	1250.000	6.56	237045.609	26772.057	1328.133	1263.1	1.1	NO	1.000	NO	bb
10	10 180619M1_11	Standard	2500.000	6.56	454408.375	26263.627	2595.272	2493.7	-0.3	NO	1.000	NO	bb

Compound name: 13C3-PFBA
Response Factor: 0.883217
RRF SD: 0.0121002, Relative SD: 1.37001
Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	1.16	8224.849	9127.194	11.264	12.8	2.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	1.15	8547.563	9713.274	11.000	12.5	-0.4	NO		NO	bb
3	3 180619M1_4	Standard	12.500	1.15	9504.233	11010.742	10.790	12.2	-2.3	NO		NO	bb
4	4 180619M1_5	Standard	12.500	1.15	8337.812	9356.371	11.139	12.6	0.9	NO		NO	bb
5	5 180619M1_6	Standard	12.500	1.19	7983.950	8971.290	11.124	12.6	0.8	NO		NO	bb
6	6 180619M1_7	Standard	12.500	1.19	7896.962	8840.133	11.166	12.6	1.1	NO		NO	bb
7	7 180619M1_8	Standard	12.500	1.15	7774.647	8902.588	10.916	12.4	-1.1	NO		NO	bb
8	8 180619M1_9	Standard	12.500	1.15	7868.027	9054.416	10.862	12.3	-1.6	NO		NO	bb
9	9 180619M1_10	Standard	12.500	1.14	7931.743	8900.284	11.140	12.6	0.9	NO		NO	bb
10	10 180619M1_11	Standard	12.500	1.16	7731.642	8785.694	11.000	12.5	-0.4	NO		NO	MM

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Compound name: 13C3-PFPeA
Response Factor: 0.898804
RRF SD: 0.0252596, Relative SD: 2.81036
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	2.17	13627.476	14849.836	11.471	12.8	2.1	NO		NO	bb
2	2	180619M1_3	Standard	12.500	2.16	13879.935	15664.327	11.076	12.3	-1.4	NO		NO	bb
3	3	180619M1_4	Standard	12.500	2.17	16154.324	18031.877	11.198	12.5	-0.3	NO		NO	bb
4	4	180619M1_5	Standard	12.500	2.17	14007.350	15171.990	11.540	12.8	2.7	NO		NO	bb
5	5	180619M1_6	Standard	12.500	2.18	13866.011	16021.355	10.818	12.0	-3.7	NO		NO	bb
6	6	180619M1_7	Standard	12.500	2.19	13766.979	15965.848	10.778	12.0	-4.1	NO		NO	bb
7	7	180619M1_8	Standard	12.500	2.17	13103.035	14620.055	11.203	12.5	-0.3	NO		NO	bb
8	8	180619M1_9	Standard	12.500	2.17	13094.664	14126.302	11.587	12.9	3.1	NO		NO	bb
9	9	180619M1_10	Standard	12.500	2.17	12157.109	13779.710	11.028	12.3	-1.8	NO		NO	bb
10	10	180619M1_11	Standard	12.500	2.17	11685.278	12538.418	11.649	13.0	3.7	NO		NO	bb

Compound name: 13C3-PFBS
Response Factor: 0.105245
RRF SD: 0.00344223, Relative SD: 3.2707
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	2.48	1581.352	14849.836	1.331	12.6	1.2	NO		NO	bb
2	2	180619M1_3	Standard	12.500	2.47	1554.013	15664.327	1.240	11.8	-5.7	NO		NO	bb
3	3	180619M1_4	Standard	12.500	2.48	1884.937	18031.877	1.307	12.4	-0.7	NO		NO	bb
4	4	180619M1_5	Standard	12.500	2.48	1668.438	15171.990	1.375	13.1	4.5	NO		NO	bb
5	5	180619M1_6	Standard	12.500	2.47	1655.375	16021.355	1.292	12.3	-1.8	NO		NO	bb
6	6	180619M1_7	Standard	12.500	2.48	1649.944	15965.848	1.292	12.3	-1.8	NO		NO	bb
7	7	180619M1_8	Standard	12.500	2.48	1519.875	14620.055	1.299	12.3	-1.2	NO		NO	bb
8	8	180619M1_9	Standard	12.500	2.48	1559.962	14126.302	1.380	13.1	4.9	NO		NO	bb
9	9	180619M1_10	Standard	12.500	2.48	1485.479	13779.710	1.348	12.8	2.4	NO		NO	bb
10	10	180619M1_11	Standard	12.500	2.48	1296.379	12538.418	1.292	12.3	-1.8	NO		NO	bb

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Compound name: 13C2-4:2 FTS
Response Factor: 0.251181
RRF SD: 0.0334253, Relative SD: 13.3072
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	2.92	3395.421	14849.836	2.858	11.4	-9.0	NO		NO	MM
2	2 180619M1_3	Standard	12.500	2.91	3634.000	15664.327	2.900	11.5	-7.6	NO		NO	bb
3	3 180619M1_4	Standard	12.500	2.92	3949.372	18031.877	2.738	10.9	-12.8	NO		NO	MM
4	4 180619M1_5	Standard	12.500	2.93	3686.383	15171.990	3.037	12.1	-3.3	NO		NO	bb
5	5 180619M1_6	Standard	12.500	2.90	3891.168	16021.355	3.036	12.1	-3.3	NO		NO	bb
6	6 180619M1_7	Standard	12.500	2.91	3810.110	15965.848	2.983	11.9	-5.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	2.93	4240.089	14620.055	3.625	14.4	15.5	NO		NO	bb
8	8 180619M1_9	Standard	12.500	2.93	4453.742	14126.302	3.941	15.7	25.5	NO		NO	bb
9	9 180619M1_10	Standard	12.500	2.93	5787.611	13779.710	5.250	20.9	67.2	NO		NO	bbX
10	10 180619M1_11	Standard	12.500	2.93	8073.666	12538.418	8.049	32.0	156.4	NO		NO	bbX

Compound name: 13C2-PFHxA
Response Factor: 0.756995
RRF SD: 0.0244983, Relative SD: 3.23625
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	5.000	3.01	4799.755	14849.836	4.040	5.3	6.7	NO		NO	bb
2	2 180619M1_3	Standard	5.000	3.00	4836.915	15664.327	3.860	5.1	2.0	NO		NO	bb
3	3 180619M1_4	Standard	5.000	3.01	5482.905	18031.877	3.801	5.0	0.4	NO		NO	bb
4	4 180619M1_5	Standard	5.000	3.01	4543.097	15171.990	3.743	4.9	-1.1	NO		NO	bb
5	5 180619M1_6	Standard	5.000	2.99	4728.506	16021.355	3.689	4.9	-2.5	NO		NO	bb
6	6 180619M1_7	Standard	5.000	3.00	4558.922	15965.848	3.569	4.7	-5.7	NO		NO	bb
7	7 180619M1_8	Standard	5.000	3.01	4464.189	14620.055	3.817	5.0	0.8	NO		NO	bb
8	8 180619M1_9	Standard	5.000	3.01	4212.348	14126.302	3.727	4.9	-1.5	NO		NO	bb
9	9 180619M1_10	Standard	5.000	3.01	4158.737	13779.710	3.773	5.0	-0.3	NO		NO	bb
10	10 180619M1_11	Standard	5.000	3.01	3842.359	12538.418	3.831	5.1	1.2	NO		NO	bb

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Compound name: 13C4-PFHpA
Response Factor: 0.809292
RRF SD: 0.0293552, Relative SD: 3.62727
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	3.62	12466.750	14849.836	10.494	13.0	3.7	NO		NO	bb
2	2 180619M1_3	Standard	12.500	3.62	12076.039	15664.327	9.637	11.9	-4.7	NO		NO	bb
3	3 180619M1_4	Standard	12.500	3.64	14468.833	18031.877	10.030	12.4	-0.9	NO		NO	bb
4	4 180619M1_5	Standard	12.500	3.64	12341.172	15171.990	10.168	12.6	0.5	NO		NO	bb
5	5 180619M1_6	Standard	12.500	3.63	12837.063	16021.355	10.016	12.4	-1.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	3.64	12587.163	15965.848	9.855	12.2	-2.6	NO		NO	bb
7	7 180619M1_8	Standard	12.500	3.64	12569.586	14620.055	10.747	13.3	6.2	NO		NO	bb
8	8 180619M1_9	Standard	12.500	3.64	11377.365	14126.302	10.068	12.4	-0.5	NO		NO	bb
9	9 180619M1_10	Standard	12.500	3.64	10646.521	13779.710	9.658	11.9	-4.5	NO		NO	bb
10	10 180619M1_11	Standard	12.500	3.64	10522.897	12538.418	10.491	13.0	3.7	NO		NO	bb

Compound name: 18O2-PFHxS
Response Factor: 0.433802
RRF SD: 0.0209556, Relative SD: 4.83069
Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	3.78	1344.220	2841.030	5.914	13.6	9.1	NO		NO	bb
2	2 180619M1_3	Standard	12.500	3.78	1372.315	3127.085	5.486	12.6	1.2	NO		NO	bb
3	3 180619M1_4	Standard	12.500	3.79	1503.970	3750.699	5.012	11.6	-7.6	NO		NO	bb
4	4 180619M1_5	Standard	12.500	3.80	1341.365	3227.284	5.195	12.0	-4.2	NO		NO	bb
5	5 180619M1_6	Standard	12.500	3.78	1403.670	3150.524	5.569	12.8	2.7	NO		NO	bb
6	6 180619M1_7	Standard	12.500	3.79	1334.857	3243.331	5.145	11.9	-5.1	NO		NO	bb
7	7 180619M1_8	Standard	12.500	3.80	1390.663	3128.268	5.557	12.8	2.5	NO		NO	bb
8	8 180619M1_9	Standard	12.500	3.80	1272.008	2990.674	5.317	12.3	-2.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	3.80	1183.255	2710.126	5.458	12.6	0.6	NO		NO	bb
10	10 180619M1_11	Standard	12.500	3.80	1137.075	2550.480	5.573	12.8	2.8	NO		NO	bb

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Compound name: 13C2-6:2 FTS
Response Factor: 0.272167
RRF SD: 0.0433403, Relative SD: 15.9241
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.10	3456.820	13745.186	3.144	11.6	-7.6	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.10	3534.626	14404.560	3.067	11.3	-9.8	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.12	3991.063	17510.418	2.849	10.5	-16.3	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.12	3461.595	14488.364	2.987	11.0	-12.2	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.10	4203.301	15011.586	3.500	12.9	2.9	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.11	4153.437	15141.489	3.429	12.6	0.8	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.12	4091.630	13823.542	3.700	13.6	8.8	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.12	4940.954	13599.677	4.541	16.7	33.5	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.12	6245.348	13255.652	5.889	21.6	73.1	NO		NO	bbX
10	10 180619M1_11	Standard	12.500	4.12	7994.663	12047.115	8.295	30.5	143.8	NO		NO	bbX

Compound name: 13C2-PFOA
Response Factor: 1.18848
RRF SD: 0.0425187, Relative SD: 3.57758
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.16	16125.618	13745.186	14.665	12.3	-1.3	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.16	16365.352	14404.560	14.202	11.9	-4.4	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.17	20416.596	17510.418	14.575	12.3	-1.9	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.18	16003.481	14488.364	13.807	11.6	-7.1	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.17	18291.533	15011.586	15.231	12.8	2.5	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.17	18404.930	15141.489	15.194	12.8	2.3	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.17	16870.688	13823.542	15.255	12.8	2.7	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.18	16257.954	13599.677	14.943	12.6	0.6	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.18	16261.711	13255.652	15.335	12.9	3.2	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.17	14796.563	12047.115	15.353	12.9	3.3	NO		NO	bb

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Compound name: 13C5-PFNA
Response Factor: 0.943265
RRF SD: 0.0526223, Relative SD: 5.57874
Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.60	14655.311	13923.999	13.157	13.9	11.6	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.60	14942.845	15023.238	12.433	13.2	5.4	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.63	17266.045	19671.549	10.971	11.6	-6.9	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.63	14930.204	15658.636	11.919	12.6	1.1	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.62	16818.348	18446.928	11.396	12.1	-3.3	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.63	16293.483	16807.438	12.118	12.8	2.8	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.63	14280.169	15606.288	11.438	12.1	-3.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.63	15105.229	16062.724	11.755	12.5	-0.3	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.63	12780.869	14433.479	11.069	11.7	-6.1	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.63	12879.886	13816.273	11.653	12.4	-1.2	NO		NO	bb

Compound name: 13C8-PFOSA
Response Factor: 0.284952
RRF SD: 0.0144225, Relative SD: 5.06139
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.67	4948.205	16845.000	3.672	12.9	3.1	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.67	4722.324	17582.117	3.357	11.8	-5.7	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.69	6121.058	20132.197	3.801	13.3	6.7	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.69	5045.944	17490.051	3.606	12.7	1.2	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.68	6370.981	24227.680	3.287	11.5	-7.7	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.69	5695.267	18475.270	3.853	13.5	8.2	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.69	4914.160	17264.377	3.558	12.5	-0.1	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.69	4734.640	17147.576	3.451	12.1	-3.1	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.69	4287.902	15079.747	3.554	12.5	-0.2	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.69	3909.839	14048.728	3.479	12.2	-2.3	NO		NO	bb

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Compound name: 13C8-PFOS
Response Factor: 1.00152
RRF SD: 0.0530563, Relative SD: 5.29758
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.69	3083.859	3249.296	11.864	11.8	-5.2	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.69	3242.069	3211.866	12.618	12.6	0.8	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.72	3818.975	3721.797	12.826	12.8	2.5	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.72	3654.258	3373.469	13.540	13.5	8.2	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.71	3485.204	3516.041	12.390	12.4	-1.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.71	3392.523	3563.457	11.900	11.9	-4.9	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.72	3208.908	3350.249	11.973	12.0	-4.4	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.72	3299.412	3031.063	13.607	13.6	8.7	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.72	2931.789	3099.578	11.823	11.8	-5.6	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.72	2869.421	2835.736	12.648	12.6	1.0	NO		NO	bb

Compound name: 13C2-PFDA
Response Factor: 1.31078
RRF SD: 0.0481242, Relative SD: 3.67141
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.99	18434.990	13586.365	16.961	12.9	3.5	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.99	17001.539	13702.220	15.510	11.8	-5.3	NO		NO	bb
3	3 180619M1_4	Standard	12.500	5.01	20952.826	16635.254	15.744	12.0	-3.9	NO		NO	bb
4	4 180619M1_5	Standard	12.500	5.02	19651.145	14432.273	17.020	13.0	3.9	NO		NO	bb
5	5 180619M1_6	Standard	12.500	5.01	23996.232	18213.467	16.469	12.6	0.5	NO		NO	bb
6	6 180619M1_7	Standard	12.500	5.01	20488.793	16384.385	15.631	11.9	-4.6	NO		NO	bb
7	7 180619M1_8	Standard	12.500	5.02	19275.467	14758.235	16.326	12.5	-0.4	NO		NO	bb
8	8 180619M1_9	Standard	12.500	5.02	18349.256	13926.819	16.469	12.6	0.5	NO		NO	bb
9	9 180619M1_10	Standard	12.500	5.02	18151.570	13151.043	17.253	13.2	5.3	NO		NO	bb
10	10 180619M1_11	Standard	12.500	5.02	16266.107	12349.528	16.464	12.6	0.5	NO		NO	bb

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Compound name: 13C2-8:2 FTS
Response Factor: 0.198105
RRF SD: 0.0363804, Relative SD: 18.3641
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	4.96	2537.501	14849.836	2.136	10.8	-13.7	NO		NO	MM
2	2	180619M1_3	Standard	12.500	4.96	2336.643	15664.327	1.865	9.4	-24.7	NO		NO	MM
3	3	180619M1_4	Standard	12.500	4.98	3322.253	18031.877	2.303	11.6	-7.0	NO		NO	bb
4	4	180619M1_5	Standard	12.500	4.99	2964.368	15171.990	2.442	12.3	-1.4	NO		NO	MM
5	5	180619M1_6	Standard	12.500	4.98	4146.934	16021.355	3.235	16.3	30.7	NO		NO	bb
6	6	180619M1_7	Standard	12.500	4.98	3191.395	15965.848	2.499	12.6	0.9	NO		NO	bb
7	7	180619M1_8	Standard	12.500	4.98	3338.297	14620.055	2.854	14.4	15.3	NO		NO	bb
8	8	180619M1_9	Standard	12.500	4.98	3894.400	14126.302	3.446	17.4	39.2	NO		NO	bbX
9	9	180619M1_10	Standard	12.500	4.99	5557.888	13779.710	5.042	25.4	103.6	NO		NO	bbX
10	10	180619M1_11	Standard	12.500	4.98	6943.605	12538.418	6.922	34.9	179.5	NO		NO	bbX

Compound name: d3-N-MeFOSAA
Response Factor: 0.284269
RRF SD: 0.032968, Relative SD: 11.5975
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	5.14	4583.732	16845.000	3.401	12.0	-4.3	NO		NO	bb
2	2	180619M1_3	Standard	12.500	5.14	4487.779	17582.117	3.191	11.2	-10.2	NO		NO	bb
3	3	180619M1_4	Standard	12.500	5.17	5652.046	20132.197	3.509	12.3	-1.2	NO		NO	bb
4	4	180619M1_5	Standard	12.500	5.17	5463.137	17490.051	3.904	13.7	9.9	NO		NO	bb
5	5	180619M1_6	Standard	12.500	5.16	5176.610	24227.680	2.671	9.4	-24.8	NO		NO	bb
6	6	180619M1_7	Standard	12.500	5.17	5017.156	18475.270	3.395	11.9	-4.5	NO		NO	bb
7	7	180619M1_8	Standard	12.500	5.17	5298.119	17264.377	3.836	13.5	8.0	NO		NO	bb
8	8	180619M1_9	Standard	12.500	5.17	5111.546	17147.576	3.726	13.1	4.9	NO		NO	bb
9	9	180619M1_10	Standard	12.500	5.17	4885.198	15079.747	4.049	14.2	14.0	NO		NO	bb
10	10	180619M1_11	Standard	12.500	5.17	4328.027	14048.728	3.851	13.5	8.4	NO		NO	bb

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Compound name: d5-N-EtFOSAA
Response Factor: 0.27064
RRF SD: 0.0331619, Relative SD: 12.2532
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	5.30	4670.391	16845.000	3.466	12.8	2.4	NO		NO	bb
2	2	180619M1_3	Standard	12.500	5.30	4934.851	17582.117	3.508	13.0	3.7	NO		NO	bb
3	3	180619M1_4	Standard	12.500	5.33	5784.009	20132.197	3.591	13.3	6.2	NO		NO	bb
4	4	180619M1_5	Standard	12.500	5.33	4978.683	17490.051	3.558	13.1	5.2	NO		NO	bb
5	5	180619M1_6	Standard	12.500	5.33	4412.783	24227.680	2.277	8.4	-32.7	NO		NO	bb
6	6	180619M1_7	Standard	12.500	5.33	4835.367	18475.270	3.272	12.1	-3.3	NO		NO	bb
7	7	180619M1_8	Standard	12.500	5.33	4945.097	17264.377	3.580	13.2	5.8	NO		NO	bb
8	8	180619M1_9	Standard	12.500	5.33	5077.532	17147.576	3.701	13.7	9.4	NO		NO	bb
9	9	180619M1_10	Standard	12.500	5.33	4368.760	15079.747	3.621	13.4	7.0	NO		NO	bb
10	10	180619M1_11	Standard	12.500	5.33	3658.221	14048.728	3.255	12.0	-3.8	NO		NO	bb

Compound name: 13C2-PFUdA
Response Factor: 1.03701
RRF SD: 0.04694, Relative SD: 4.52648
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	5.33	17570.797	16845.000	13.039	12.6	0.6	NO		NO	bb
2	2	180619M1_3	Standard	12.500	5.33	18328.586	17582.117	13.031	12.6	0.5	NO		NO	bb
3	3	180619M1_4	Standard	12.500	5.35	22038.863	20132.197	13.684	13.2	5.6	NO		NO	bb
4	4	180619M1_5	Standard	12.500	5.36	18863.662	17490.051	13.482	13.0	4.0	NO		NO	bb
5	5	180619M1_6	Standard	12.500	5.34	23146.059	24227.680	11.942	11.5	-7.9	NO		NO	bb
6	6	180619M1_7	Standard	12.500	5.35	18358.119	18475.270	12.421	12.0	-4.2	NO		NO	bb
7	7	180619M1_8	Standard	12.500	5.35	17257.969	17264.377	12.495	12.0	-3.6	NO		NO	bb
8	8	180619M1_9	Standard	12.500	5.35	17239.510	17147.576	12.567	12.1	-3.1	NO		NO	bb
9	9	180619M1_10	Standard	12.500	5.35	16449.533	15079.747	13.635	13.1	5.2	NO		NO	bb
10	10	180619M1_11	Standard	12.500	5.35	14982.403	14048.728	13.331	12.9	2.8	NO		NO	bb

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Compound name: 13C2-PFDoA
Response Factor: 1.26908
RRF SD: 0.0825488, Relative SD: 6.50463
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	5.61	19131.615	13586.365	17.602	13.9	11.0	NO		NO	bb
2	2	180619M1_3	Standard	12.500	5.61	18554.543	13702.220	16.927	13.3	6.7	NO		NO	bb
3	3	180619M1_4	Standard	12.500	5.64	20562.627	16635.254	15.451	12.2	-2.6	NO		NO	bb
4	4	180619M1_5	Standard	12.500	5.64	18934.471	14432.273	16.399	12.9	3.4	NO		NO	bb
5	5	180619M1_6	Standard	12.500	5.64	24674.740	18213.467	16.934	13.3	6.8	NO		NO	bb
6	6	180619M1_7	Standard	12.500	5.64	19544.256	16384.385	14.911	11.7	-6.0	NO		NO	bb
7	7	180619M1_8	Standard	12.500	5.64	17120.320	14758.235	14.501	11.4	-8.6	NO		NO	bb
8	8	180619M1_9	Standard	12.500	5.65	16932.953	13926.819	15.198	12.0	-4.2	NO		NO	bb
9	9	180619M1_10	Standard	12.500	5.65	16394.809	13151.043	15.583	12.3	-1.8	NO		NO	bb
10	10	180619M1_11	Standard	12.500	5.64	14946.480	12349.528	15.129	11.9	-4.6	NO		NO	bb

Compound name: d3-N-MeFOSA
Response Factor: 0.115129
RRF SD: 0.0132152, Relative SD: 11.4787
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	150.000	5.79	22400.238	16845.000	16.622	144.4	-3.7	NO		NO	bb
2	2	180619M1_3	Standard	150.000	5.80	23695.061	17582.117	16.846	146.3	-2.5	NO		NO	bb
3	3	180619M1_4	Standard	150.000	5.83	28288.938	20132.197	17.564	152.6	1.7	NO		NO	bb
4	4	180619M1_5	Standard	150.000	5.83	24620.854	17490.051	17.596	152.8	1.9	NO		NO	bb
5	5	180619M1_6	Standard	150.000	5.81	24649.129	24227.680	12.717	110.5	-26.4	NO		NO	bb
6	6	180619M1_7	Standard	150.000	5.82	25290.549	18475.270	17.111	148.6	-0.9	NO		NO	bb
7	7	180619M1_8	Standard	150.000	5.82	23542.430	17264.377	17.046	148.1	-1.3	NO		NO	bb
8	8	180619M1_9	Standard	150.000	5.83	23940.223	17147.576	17.452	151.6	1.1	NO		NO	bb
9	9	180619M1_10	Standard	150.000	5.83	23563.961	15079.747	19.533	169.7	13.1	NO		NO	bb
10	10	180619M1_11	Standard	150.000	5.83	22709.088	14048.728	20.206	175.5	17.0	NO		NO	bb

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Compound name: 13C2-PFTeDA
Response Factor: 0.893224
RRF SD: 0.0702104, Relative SD: 7.86033
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	6.08	17395.465	16845.000	12.908	14.5	15.6	NO		NO	bb
2	2 180619M1_3	Standard	12.500	6.09	16144.471	17582.117	11.478	12.8	2.8	NO		NO	bb
3	3 180619M1_4	Standard	12.500	6.12	18084.154	20132.197	11.228	12.6	0.6	NO		NO	bb
4	4 180619M1_5	Standard	12.500	6.12	16469.906	17490.051	11.771	13.2	5.4	NO		NO	bb
5	5 180619M1_6	Standard	12.500	6.11	18988.551	24227.680	9.797	11.0	-12.3	NO		NO	bb
6	6 180619M1_7	Standard	12.500	6.12	17310.607	18475.270	11.712	13.1	4.9	NO		NO	bb
7	7 180619M1_8	Standard	12.500	6.12	14323.378	17264.377	10.371	11.6	-7.1	NO		NO	bb
8	8 180619M1_9	Standard	12.500	6.13	14594.135	17147.576	10.639	11.9	-4.7	NO		NO	bb
9	9 180619M1_10	Standard	12.500	6.12	13476.450	15079.747	11.171	12.5	0.1	NO		NO	bb
10	10 180619M1_11	Standard	12.500	6.12	11888.807	14048.728	10.578	11.8	-5.3	NO		NO	bb

Compound name: d5-N-ETFOSA
Response Factor: 0.147069
RRF SD: 0.0162465, Relative SD: 11.0468
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	150.000	6.21	29571.518	16845.000	21.944	149.2	-0.5	NO		NO	bb
2	2 180619M1_3	Standard	150.000	6.21	31054.906	17582.117	22.078	150.1	0.1	NO		NO	bb
3	3 180619M1_4	Standard	150.000	6.24	37489.445	20132.197	23.277	158.3	5.5	NO		NO	bb
4	4 180619M1_5	Standard	150.000	6.25	33498.648	17490.051	23.941	162.8	8.5	NO		NO	bb
5	5 180619M1_6	Standard	150.000	6.24	29813.963	24227.680	15.382	104.6	-30.3	NO		NO	bb
6	6 180619M1_7	Standard	150.000	6.25	32647.350	18475.270	22.089	150.2	0.1	NO		NO	bb
7	7 180619M1_8	Standard	150.000	6.24	31300.164	17264.377	22.662	154.1	2.7	NO		NO	bb
8	8 180619M1_9	Standard	150.000	6.24	31036.871	17147.576	22.625	153.8	2.6	NO		NO	bb
9	9 180619M1_10	Standard	150.000	6.25	28304.902	15079.747	23.463	159.5	6.4	NO		NO	bb
10	10 180619M1_11	Standard	150.000	6.24	26009.840	14048.728	23.143	157.4	4.9	NO		NO	bb

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Compound name: 13C2-PFHxDA
Response Factor: 1.24718
RRF SD: 0.155042, Relative SD: 12.4314
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	5.000	6.43	8286.087	16845.000	6.149	4.9	-1.4	NO		NO	bb
2	2 180619M1_3	Standard	5.000	6.44	8746.652	17582.117	6.218	5.0	-0.3	NO		NO	bb
3	3 180619M1_4	Standard	5.000	6.47	10356.794	20132.197	6.430	5.2	3.1	NO		NO	bb
4	4 180619M1_5	Standard	5.000	6.47	8737.604	17490.051	6.245	5.0	0.1	NO		NO	bb
5	5 180619M1_6	Standard	5.000	6.47	8464.490	24227.680	4.367	3.5	-30.0	NO		NO	MM
6	6 180619M1_7	Standard	5.000	6.47	9166.595	18475.270	6.202	5.0	-0.5	NO		NO	bb
7	7 180619M1_8	Standard	5.000	6.47	8878.395	17264.377	6.428	5.2	3.1	NO		NO	bb
8	8 180619M1_9	Standard	5.000	6.47	8221.659	17147.576	5.993	4.8	-3.9	NO		NO	bb
9	9 180619M1_10	Standard	5.000	6.47	8442.903	15079.747	6.999	5.6	12.2	NO		NO	bb
10	10 180619M1_11	Standard	5.000	6.47	8235.526	14048.728	7.328	5.9	17.5	NO		NO	bb

Compound name: d7-N-MeFOSE
Response Factor: 0.14382
RRF SD: 0.0227754, Relative SD: 15.8361
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	150.000	6.36	26463.336	16845.000	19.637	136.5	-9.0	NO		NO	bb
2	2 180619M1_3	Standard	150.000	6.37	31231.361	17582.117	22.204	154.4	2.9	NO		NO	bb
3	3 180619M1_4	Standard	150.000	6.39	38074.695	20132.197	23.640	164.4	9.6	NO		NO	MM
4	4 180619M1_5	Standard	150.000	6.40	30851.699	17490.051	22.049	153.3	2.2	NO		NO	bb
5	5 180619M1_6	Standard	150.000	6.40	24849.490	24227.680	12.821	89.1	-40.6	NO		NO	MM
6	6 180619M1_7	Standard	150.000	6.40	31739.389	18475.270	21.474	149.3	-0.5	NO		NO	bb
7	7 180619M1_8	Standard	150.000	6.40	32539.656	17264.377	23.560	163.8	9.2	NO		NO	bb
8	8 180619M1_9	Standard	150.000	6.40	31094.623	17147.576	22.667	157.6	5.1	NO		NO	bb
9	9 180619M1_10	Standard	150.000	6.40	26973.418	15079.747	22.359	155.5	3.6	NO		NO	bb
10	10 180619M1_11	Standard	150.000	6.39	28454.391	14048.728	25.318	176.0	17.4	NO		NO	MM

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Compound name: d9-N-EtFOSE
Response Factor: 0.133466
RRF SD: 0.0221316, Relative SD: 16.5821
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	150.000	6.51	24653.217	16845.000	18.294	137.1	-8.6	NO		NO	bb
2	2 180619M1_3	Standard	150.000	6.52	26977.471	17582.117	19.180	143.7	-4.2	NO		NO	bb
3	3 180619M1_4	Standard	150.000	6.54	33709.727	20132.197	20.930	156.8	4.5	NO		NO	bb
4	4 180619M1_5	Standard	150.000	6.54	28460.479	17490.051	20.340	152.4	1.6	NO		NO	bb
5	5 180619M1_6	Standard	150.000	6.54	22984.010	24227.680	11.858	88.8	-40.8	NO		NO	bb
6	6 180619M1_7	Standard	150.000	6.54	28421.215	18475.270	19.229	144.1	-3.9	NO		NO	bb
7	7 180619M1_8	Standard	150.000	6.54	31136.027	17264.377	22.544	168.9	12.6	NO		NO	bb
8	8 180619M1_9	Standard	150.000	6.54	30541.506	17147.576	22.264	166.8	11.2	NO		NO	bb
9	9 180619M1_10	Standard	150.000	6.54	26772.057	15079.747	22.192	166.3	10.8	NO		NO	bb
10	10 180619M1_11	Standard	150.000	6.54	26263.627	14048.728	23.368	175.1	16.7	NO		NO	bb

Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	1.16	9127.194	9127.194	12.500	12.5	0.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	1.15	9713.274	9713.274	12.500	12.5	0.0	NO		NO	bb
3	3 180619M1_4	Standard	12.500	1.15	11010.742	11010.742	12.500	12.5	0.0	NO		NO	MM
4	4 180619M1_5	Standard	12.500	1.15	9356.371	9356.371	12.500	12.5	0.0	NO		NO	bb
5	5 180619M1_6	Standard	12.500	1.19	8971.290	8971.290	12.500	12.5	0.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	1.19	8840.133	8840.133	12.500	12.5	0.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	1.15	8902.588	8902.588	12.500	12.5	0.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	1.15	9054.416	9054.416	12.500	12.5	0.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	1.15	8900.284	8900.284	12.500	12.5	0.0	NO		NO	bb
10	10 180619M1_11	Standard	12.500	1.15	8785.694	8785.694	12.500	12.5	0.0	NO		NO	bb

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Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 7.40149e-017, Relative SD: 7.40149e-015
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	3.00	14849.836	14849.836	12.500	12.5	0.0	NO		NO	bb
2	2	180619M1_3	Standard	12.500	3.00	15664.327	15664.327	12.500	12.5	0.0	NO		NO	bb
3	3	180619M1_4	Standard	12.500	3.01	18031.877	18031.877	12.500	12.5	0.0	NO		NO	bb
4	4	180619M1_5	Standard	12.500	3.01	15171.990	15171.990	12.500	12.5	0.0	NO		NO	bb
5	5	180619M1_6	Standard	12.500	2.99	16021.355	16021.355	12.500	12.5	0.0	NO		NO	bb
6	6	180619M1_7	Standard	12.500	3.00	15965.848	15965.848	12.500	12.5	0.0	NO		NO	bb
7	7	180619M1_8	Standard	12.500	3.01	14620.055	14620.055	12.500	12.5	0.0	NO		NO	bb
8	8	180619M1_9	Standard	12.500	3.01	14126.302	14126.302	12.500	12.5	0.0	NO		NO	bb
9	9	180619M1_10	Standard	12.500	3.01	13779.710	13779.710	12.500	12.5	0.0	NO		NO	bb
10	10	180619M1_11	Standard	12.500	3.01	12538.418	12538.418	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 7.40149e-017, Relative SD: 7.40149e-015
Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	180619M1_2	Standard	12.500	3.78	2841.030	2841.030	12.500	12.5	0.0	NO		NO	bb
2	2	180619M1_3	Standard	12.500	3.78	3127.085	3127.085	12.500	12.5	0.0	NO		NO	bb
3	3	180619M1_4	Standard	12.500	3.79	3750.699	3750.699	12.500	12.5	0.0	NO		NO	bb
4	4	180619M1_5	Standard	12.500	3.80	3227.284	3227.284	12.500	12.5	0.0	NO		NO	bb
5	5	180619M1_6	Standard	12.500	3.78	3150.524	3150.524	12.500	12.5	0.0	NO		NO	bb
6	6	180619M1_7	Standard	12.500	3.79	3243.331	3243.331	12.500	12.5	0.0	NO		NO	bb
7	7	180619M1_8	Standard	12.500	3.80	3128.268	3128.268	12.500	12.5	0.0	NO		NO	bb
8	8	180619M1_9	Standard	12.500	3.80	2990.674	2990.674	12.500	12.5	0.0	NO		NO	bb
9	9	180619M1_10	Standard	12.500	3.80	2710.126	2710.126	12.500	12.5	0.0	NO		NO	bb
10	10	180619M1_11	Standard	12.500	3.80	2550.480	2550.480	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:54:00 Pacific Daylight Time

Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 6.40988e-017, Relative SD: 6.40988e-015
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.16	13745.186	13745.186	12.500	12.5	0.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.15	14404.560	14404.560	12.500	12.5	0.0	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.17	17510.418	17510.418	12.500	12.5	0.0	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.18	14488.364	14488.364	12.500	12.5	0.0	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.17	15011.586	15011.586	12.500	12.5	0.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.17	15141.489	15141.489	12.500	12.5	0.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.17	13823.542	13823.542	12.500	12.5	0.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.18	13599.677	13599.677	12.500	12.5	0.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.18	13255.652	13255.652	12.500	12.5	0.0	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.17	12047.115	12047.115	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 8.27511e-017, Relative SD: 8.27511e-015
Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.61	13923.999	13923.999	12.500	12.5	0.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.60	15023.238	15023.238	12.500	12.5	0.0	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.62	19671.549	19671.549	12.500	12.5	0.0	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.63	15658.636	15658.636	12.500	12.5	0.0	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.62	18446.928	18446.928	12.500	12.5	0.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.63	16807.438	16807.438	12.500	12.5	0.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.63	15606.288	15606.288	12.500	12.5	0.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.63	16062.724	16062.724	12.500	12.5	0.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.63	14433.479	14433.479	12.500	12.5	0.0	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.63	13816.273	13816.273	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:54:00 Pacific Daylight Time

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 1.04673e-016, Relative SD: 1.04673e-014
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.69	3249.296	3249.296	12.500	12.5	0.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.69	3211.866	3211.866	12.500	12.5	0.0	NO		NO	bb
3	3 180619M1_4	Standard	12.500	4.72	3721.797	3721.797	12.500	12.5	0.0	NO		NO	bb
4	4 180619M1_5	Standard	12.500	4.72	3373.469	3373.469	12.500	12.5	0.0	NO		NO	bb
5	5 180619M1_6	Standard	12.500	4.71	3516.041	3516.041	12.500	12.5	0.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	4.71	3563.457	3563.457	12.500	12.5	0.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	4.72	3350.249	3350.249	12.500	12.5	0.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	4.72	3031.063	3031.063	12.500	12.5	0.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	4.72	3099.578	3099.578	12.500	12.5	0.0	NO		NO	bb
10	10 180619M1_11	Standard	12.500	4.72	2835.736	2835.736	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 1.11022e-016, Relative SD: 1.11022e-014
Response type: Internal Std (Ref 66), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	4.99	13586.365	13586.365	12.500	12.5	0.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	4.99	13702.220	13702.220	12.500	12.5	0.0	NO		NO	bb
3	3 180619M1_4	Standard	12.500	5.01	16635.254	16635.254	12.500	12.5	0.0	NO		NO	bb
4	4 180619M1_5	Standard	12.500	5.02	14432.273	14432.273	12.500	12.5	0.0	NO		NO	bb
5	5 180619M1_6	Standard	12.500	5.01	18213.467	18213.467	12.500	12.5	0.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	5.01	16384.385	16384.385	12.500	12.5	0.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	5.01	14758.235	14758.235	12.500	12.5	0.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	5.02	13926.819	13926.819	12.500	12.5	0.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	5.02	13151.043	13151.043	12.500	12.5	0.0	NO		NO	bb
10	10 180619M1_11	Standard	12.500	5.02	12349.528	12349.528	12.500	12.5	0.0	NO		NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:54:00 Pacific Daylight Time

Compound name: 13C7-PFUdA
Response Factor: 1
RRF SD: 3.70074e-017, Relative SD: 3.70074e-015
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180619M1_2	Standard	12.500	5.32	16845.000	16845.000	12.500	12.5	0.0	NO		NO	bb
2	2 180619M1_3	Standard	12.500	5.32	17582.117	17582.117	12.500	12.5	0.0	NO		NO	bb
3	3 180619M1_4	Standard	12.500	5.35	20132.197	20132.197	12.500	12.5	0.0	NO		NO	bb
4	4 180619M1_5	Standard	12.500	5.36	17490.051	17490.051	12.500	12.5	0.0	NO		NO	bb
5	5 180619M1_6	Standard	12.500	5.34	24227.680	24227.680	12.500	12.5	0.0	NO		NO	bb
6	6 180619M1_7	Standard	12.500	5.35	18475.270	18475.270	12.500	12.5	0.0	NO		NO	bb
7	7 180619M1_8	Standard	12.500	5.35	17264.377	17264.377	12.500	12.5	0.0	NO		NO	bb
8	8 180619M1_9	Standard	12.500	5.35	17147.576	17147.576	12.500	12.5	0.0	NO		NO	bb
9	9 180619M1_10	Standard	12.500	5.35	15079.747	15079.747	12.500	12.5	0.0	NO		NO	bb
10	10 180619M1_11	Standard	12.500	5.35	14048.728	14048.728	12.500	12.5	0.0	NO		NO	bb

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:58:24 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBA	36	0.9999	NO	
2	2	PFPeA	37	0.9998	NO	
3	3	PFBS	38	0.9997	NO	
4	4	4:2 FTS	39	0.9983	NO	
5	5	PFHxA	40	0.9996	NO	
6	6	PFPeS	38	0.9995	NO	
7	7	PFHpA	41	0.9993	NO	
8	8	L-PFHxS	42	0.9983	NO	
9	10	6:2 FTS	43	0.9988	NO	
10	11	L-PFOA	44	0.9998	NO	
11	13	PFHpS	44	0.9996	NO	
12	14	PFNA	45	0.9993	NO	
13	15	PFOSA	46	0.9999	NO	
14	16	L-PFOS	47	0.9990	NO	
15	18	PFDA	48	0.9996	NO	
16	19	8:2 FTS	49	0.9933	NO	
17	20	PFNS	47	0.9993	NO	
18	21	L-MeFOSAA	50	0.9996	NO	
19	23	L-EtFOSAA	51	0.9997	NO	

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:58:30 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	# Name	IS#	CoD	CoD Flag	%RSD
1	25 PFUdA	52	0.9995	NO	
2	26 PFDS	52	0.9996	NO	
3	27 PFDoA	53	0.9996	NO	
4	28 N-MeFOSA	54	0.9995	NO	
5	29 PFTrDA	53	0.9998	NO	
6	30 PFTeDA	55	0.9995	NO	
7	31 N-EtFOSA	56	0.9999	NO	
8	32 PFHxDA	57	0.9997	NO	
9	33 PFODA	57	0.9996	NO	
10	34 N-MeFOSE	58	0.9951	NO	
11	35 N-EtFOSE	59	0.9998	NO	
12	36 13C3-PFBA	60		NO	1.370
13	37 13C3-PFPeA	61		NO	2.810
14	38 13C3-PFBS	61		NO	3.271
15	39 13C2-4:2 FTS	61		NO	13.307
16	40 13C2-PFHxA	61		NO	3.236
17	41 13C4-PFHpA	61		NO	3.627
18	42 18O2-PFHxS	62		NO	4.831
19	43 13C2-6:2 FTS	63		NO	15.924
20	44 13C2-PFOA	63		NO	3.578
21	45 13C5-PFNA	64		NO	5.579
22	46 13C8-PFOSA	67		NO	5.061
23	47 13C8-PFOS	65		NO	5.298
24	48 13C2-PFDA	66		NO	3.671
25	49 13C2-8:2 FTS	61		NO	18.364
26	50 d3-N-MeFOSAA	67		NO	11.597
27	51 d5-N-EtFOSAA	67		NO	12.253
28	52 13C2-PFUdA	67		NO	4.526
29	53 13C2-PFDoA	66		NO	6.505
30	54 d3-N-MeFOSA	67		NO	11.479
31	55 13C2-PFTeDA	67		NO	7.860
32	56 d5-N-ETFOSA	67		NO	11.047

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:58:30 Pacific Daylight Time

Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

	#	Name	IS#	CoD	CoD Flag	%RSD
33	57	13C2-PFHxDA	67		NO	12.431
34	58	d7-N-MeFOSE	67		NO	15.836
35	59	d9-N-EtFOSE	67		NO	16.582
36	60	13C4-PFBA	60		NO	0.000
37	61	13C5-PFHxA	61		NO	0.000
38	62	13C3-PFHxS	62		NO	0.000
39	63	13C8-PFOA	63		NO	0.000
40	64	13C9-PFNA	64		NO	0.000
41	65	13C4-PFOS	65		NO	0.000
42	66	13C6-PFDA	66		NO	0.000
43	67	13C7-PFUdA	67		NO	0.000

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:01:55 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	Name	Ion Ratio	Ratio out?
1	PFBA		
2	PFPeA		
3	PFBS	2.862	NO
4	4:2 FTS	1.802	NO
5	PFHxA	276.098	NO
6	PFPeS	1.614	NO
7	PFHpA	33.102	NO
8	L-PFHxS	1.718	NO
9	6:2 FTS	2.966	NO
10	L-PFOA	5.099	NO
11	PFHpS	2.004	NO
12	PFNA	5.682	NO
13	PFOSA	25.979	NO
14	L-PFOS	1.926	NO
15	PFDA	7.384	NO
16	8:2 FTS	2.543	NO
17	PFNS	1.622	NO
18	L-MeFOSAA	13.728	NO
19	L-EtFOSAA	10.843	NO

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Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:01:59 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

	Name	Ion Ratio	Ratio out?
1	PFUdA	15.102	NO
2	PFDS	1.646	NO
3	PFDoA	8.965	NO
4	N-MeFOSA	1.349	NO
5	PFTrDA	38.343	NO
6	PFTeDA	11.785	NO
7	N-EtFOSA	1.342	NO
8	PFHxDA	37.619	NO
9	PFODA		
10	N-MeFOSE		
11	N-EtFOSE		
12	13C3-PFBA		
13	13C3-PFPeA		
14	13C3-PFBS		
15	13C2-4:2 FTS		
16	13C2-PFHxA		
17	13C4-PFHpA		
18	18O2-PFHxS		
19	13C2-6:2 FTS		
20	13C2-PFOA		
21	13C5-PFNA		
22	13C8-PFOSA		
23	13C8-PFOS		
24	13C2-PFDA		
25	13C2-8:2 FTS		
26	d3-N-MeFOSAA		
27	d5-N-EtFOSAA		
28	13C2-PFUdA		
29	13C2-PFDoA		
30	d3-N-MeFOSA		
31	13C2-PFTeDA		
32	d5-N-ETFOSA		

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Wednesday, June 20, 2018 11:06:35 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:06:56 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	180619M1_1	IPA	19-Jun-18	17:11:07
2	2	180619M1_2	ST180619M1-1 PFC CS-2 18F1104	19-Jun-18	17:21:34
3	3	180619M1_3	ST180619M1-2 PFC CS-1 18F1105	19-Jun-18	17:31:58
4	4	180619M1_4	ST180619M1-3 PFC CS0 18F1106	19-Jun-18	17:42:28
5	5	180619M1_5	ST180619M1-4 PFC CS1 18F1107	19-Jun-18	17:52:54
6	6	180619M1_6	ST180619M1-5 PFC CS2 18F1108	19-Jun-18	18:26:46
7	7	180619M1_7	ST180619M1-6 PFC CS3 18F1109	19-Jun-18	18:39:53
8	8	180619M1_8	ST180619M1-7 PFC CS4 18F1110	19-Jun-18	18:50:19
9	9	180619M1_9	ST180619M1-8 PFC CS5 18F1111	19-Jun-18	19:00:49
10	10	180619M1_10	ST180619M1-9 PFC CS6 18F1112	19-Jun-18	19:11:14
11	11	180619M1_11	ST180619M1-10 PFC CS7 18F1113	19-Jun-18	19:21:44
12	12	180619M1_12	IPA	19-Jun-18	19:32:09
13	13	180619M1_13	ICV180619M1-1 PFC 537 ICV 18F1103	19-Jun-18	19:42:40
14	14	180619M1_14	IPA	19-Jun-18	19:53:04

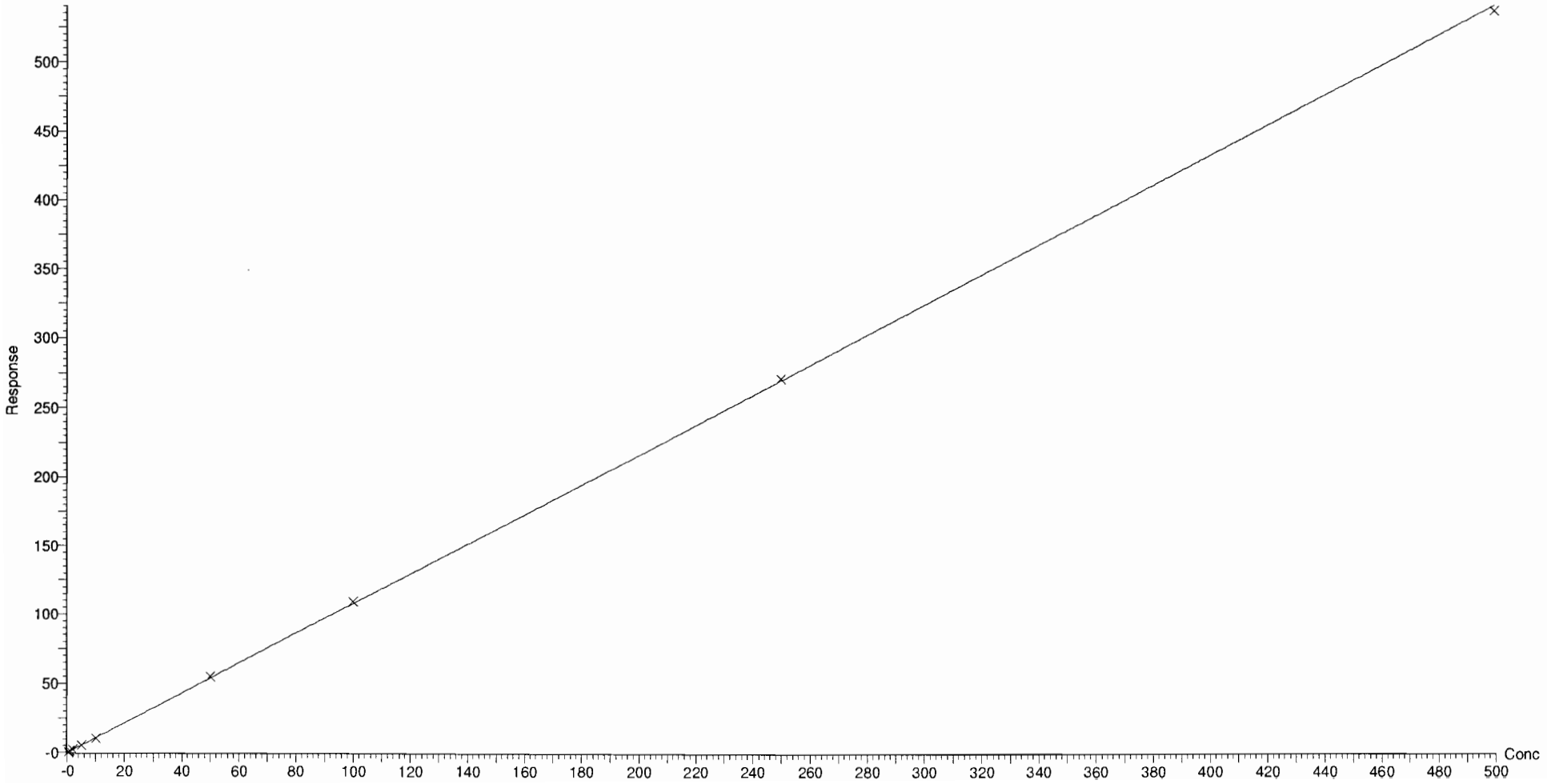
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

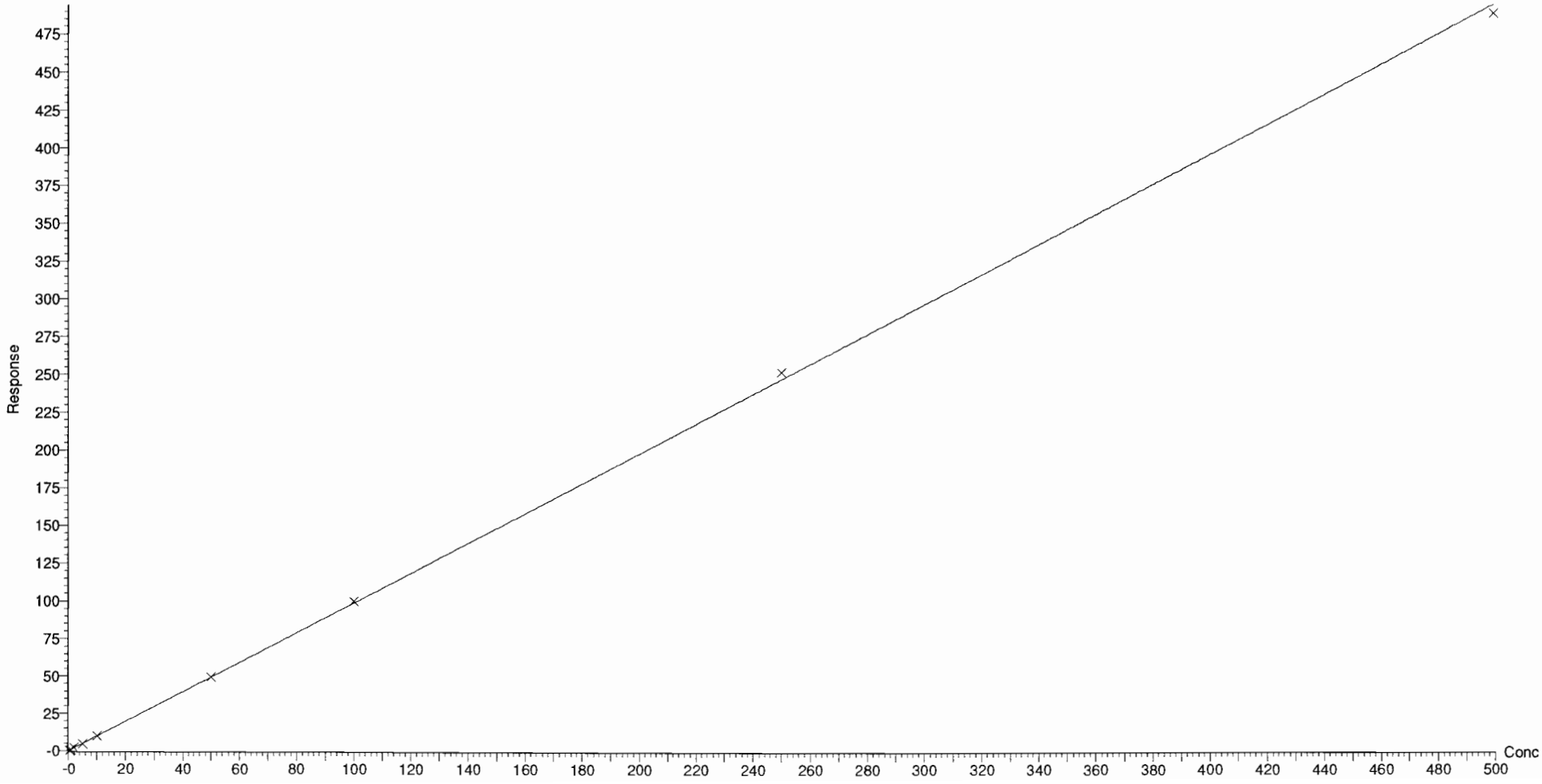
Compound name: PFBA
Correlation coefficient: r = 0.999937, r^2 = 0.999875
Calibration curve: 1.08008 * x + 0.0585061
Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

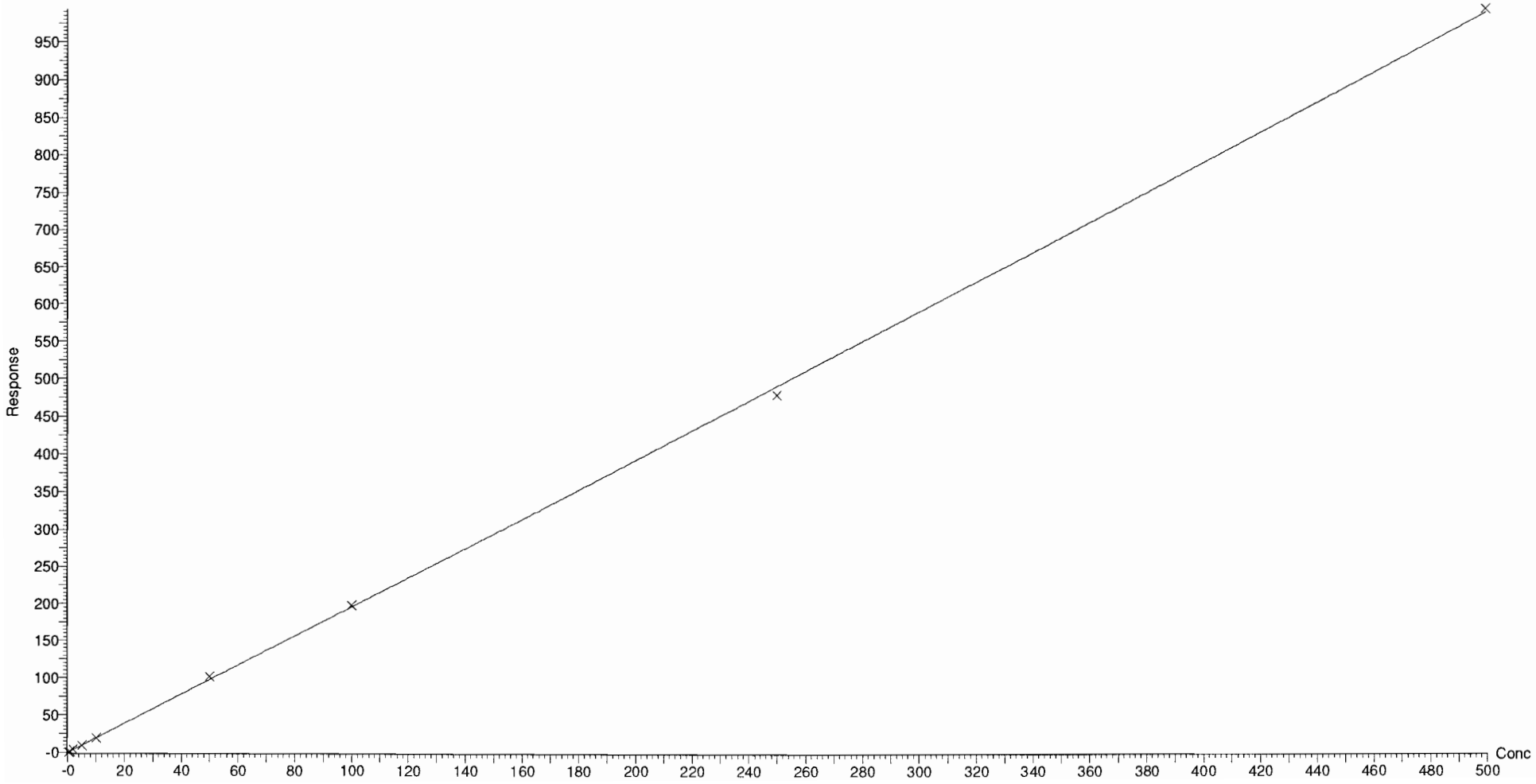
Compound name: PFPeA
Correlation coefficient: r = 0.999895, r^2 = 0.999789
Calibration curve: 0.988345 * x + 0.0565028
Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

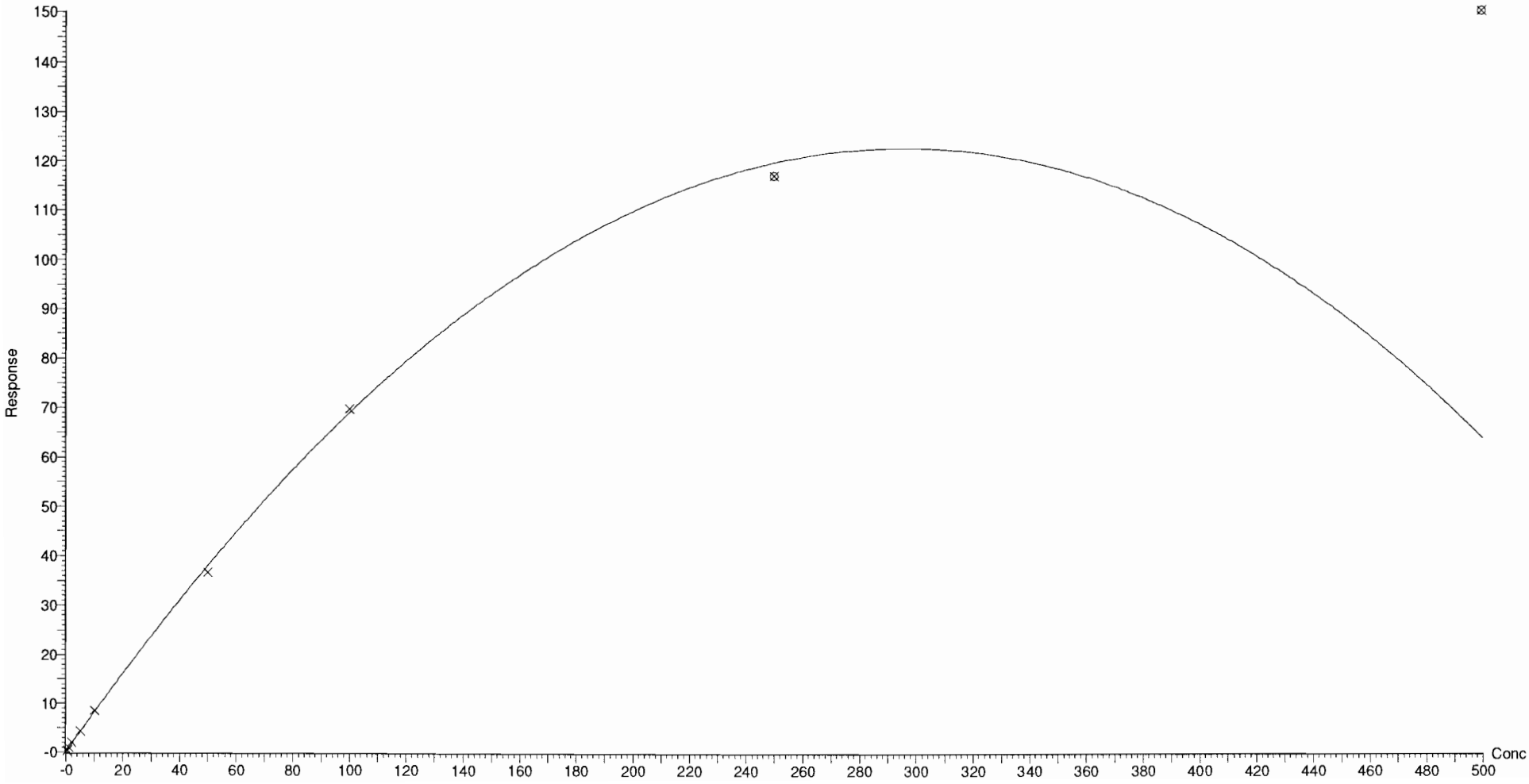
Compound name: PFBS
Coefficient of Determination: R^2 = 0.999687
Calibration curve: 5.30844e-005 * x^2 + 1.95014 * x + 0.0113783
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.998311
Calibration curve: -0.0014042 * x^2 + 0.829796 * x + 0.0982342
Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

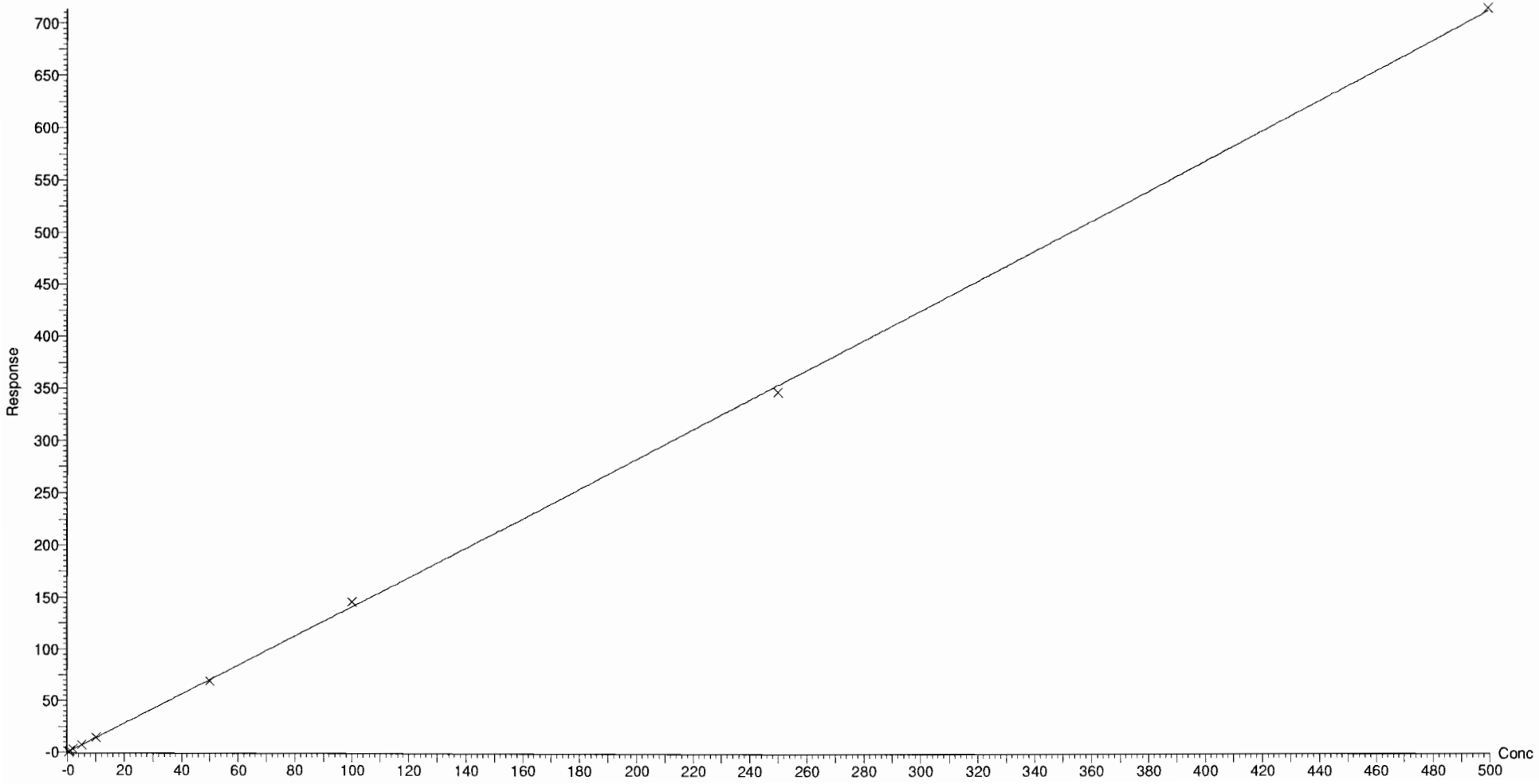


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

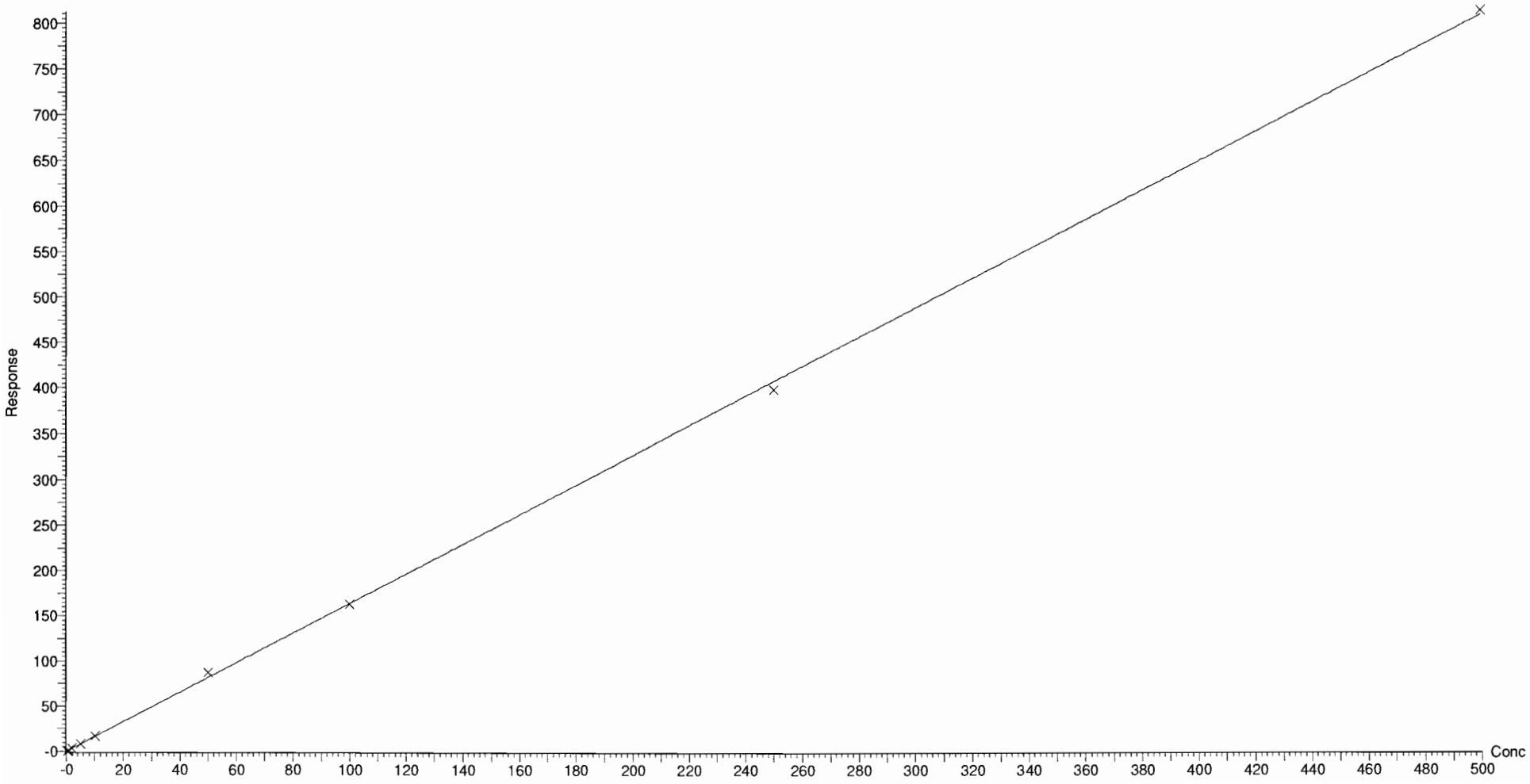
Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999626
Calibration curve: 2.95512e-005 * x^2 + 1.40681 * x + 0.0478359
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999534
Calibration curve: -5.28854e-005 * x^2 + 1.64313 * x + 0.0479232
Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

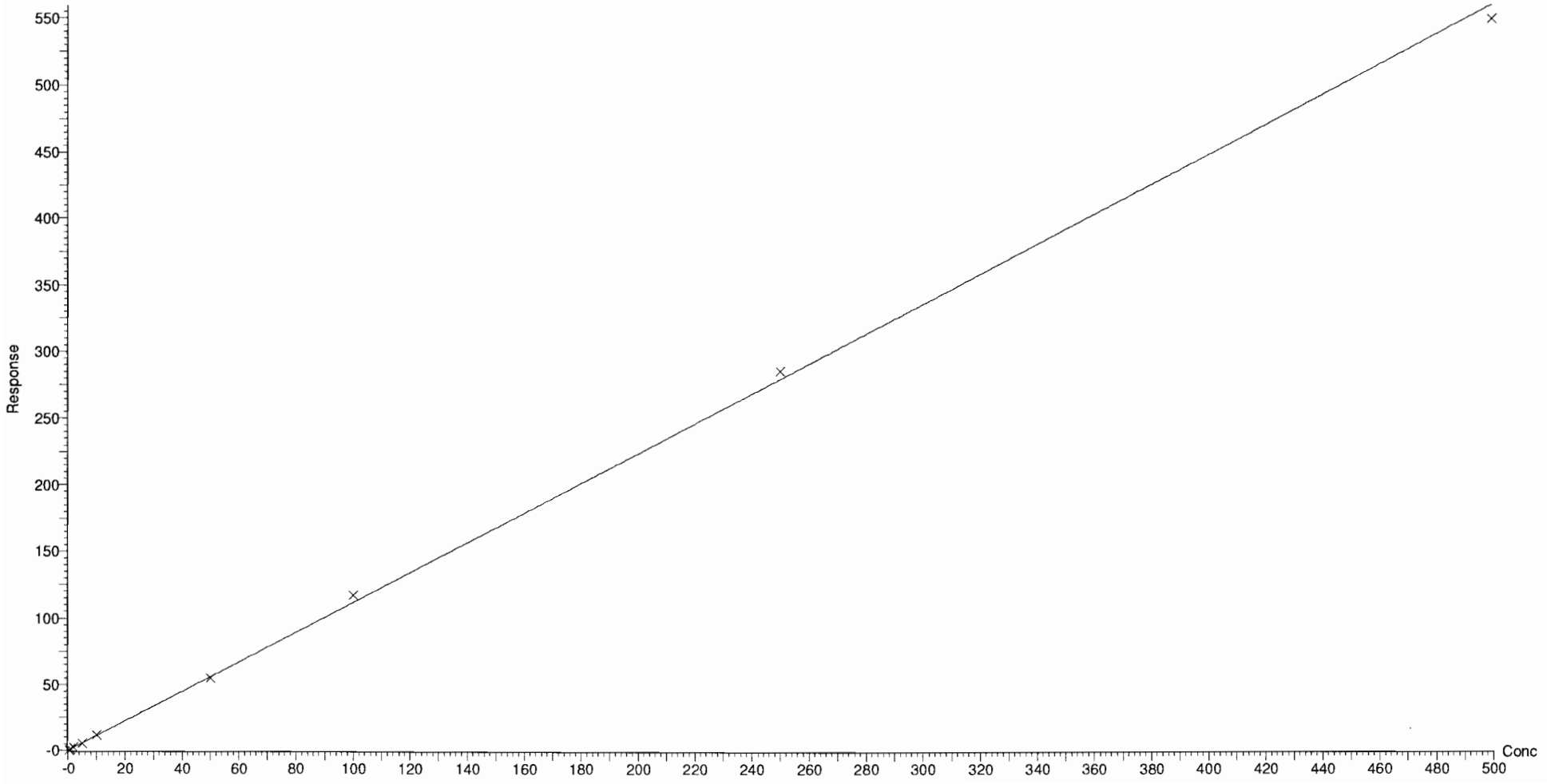


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

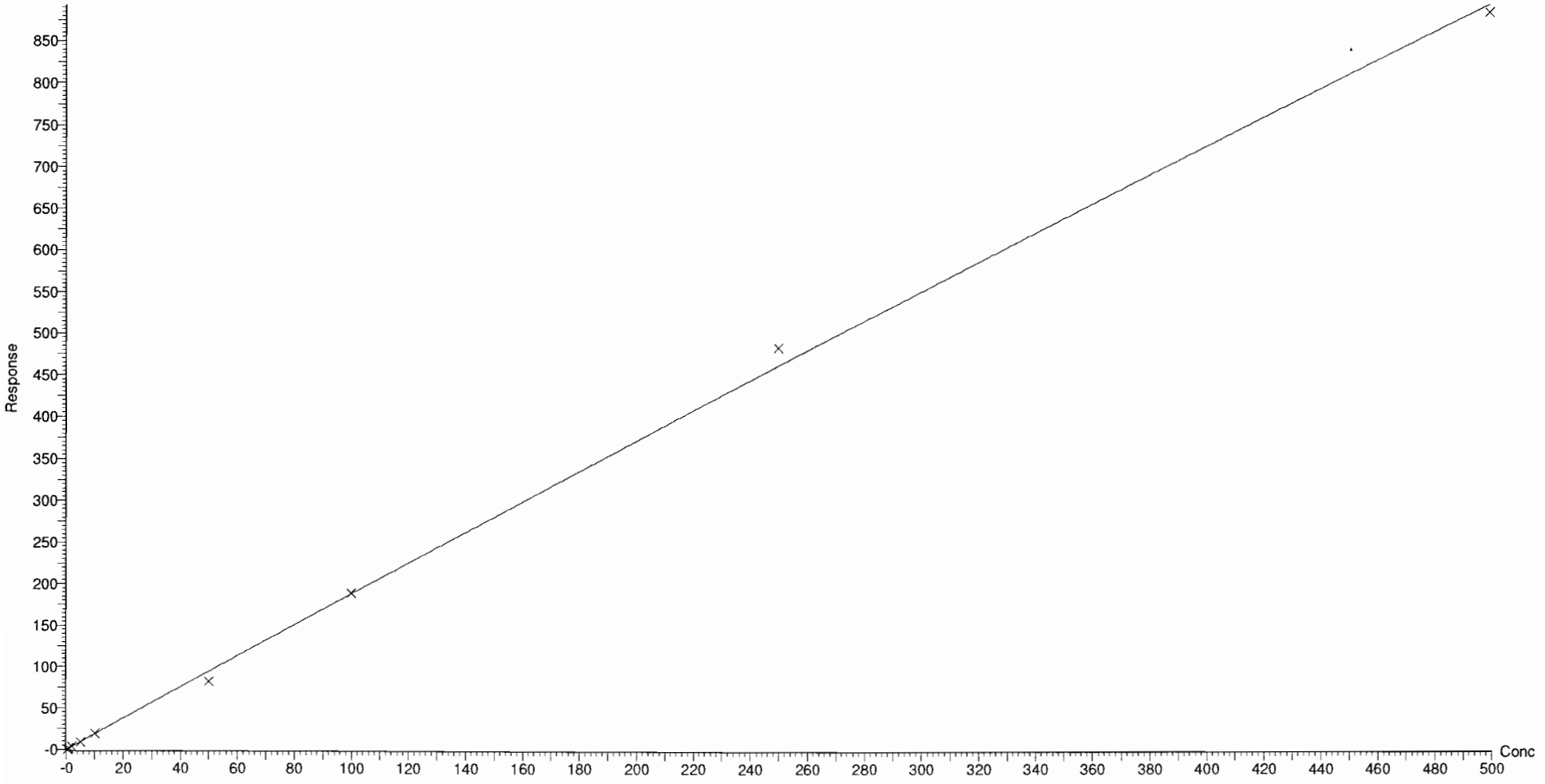
Compound name: PFHpA
Correlation coefficient: r = 0.999658, r^2 = 0.999316
Calibration curve: 1.11876 * x + 0.127634
Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

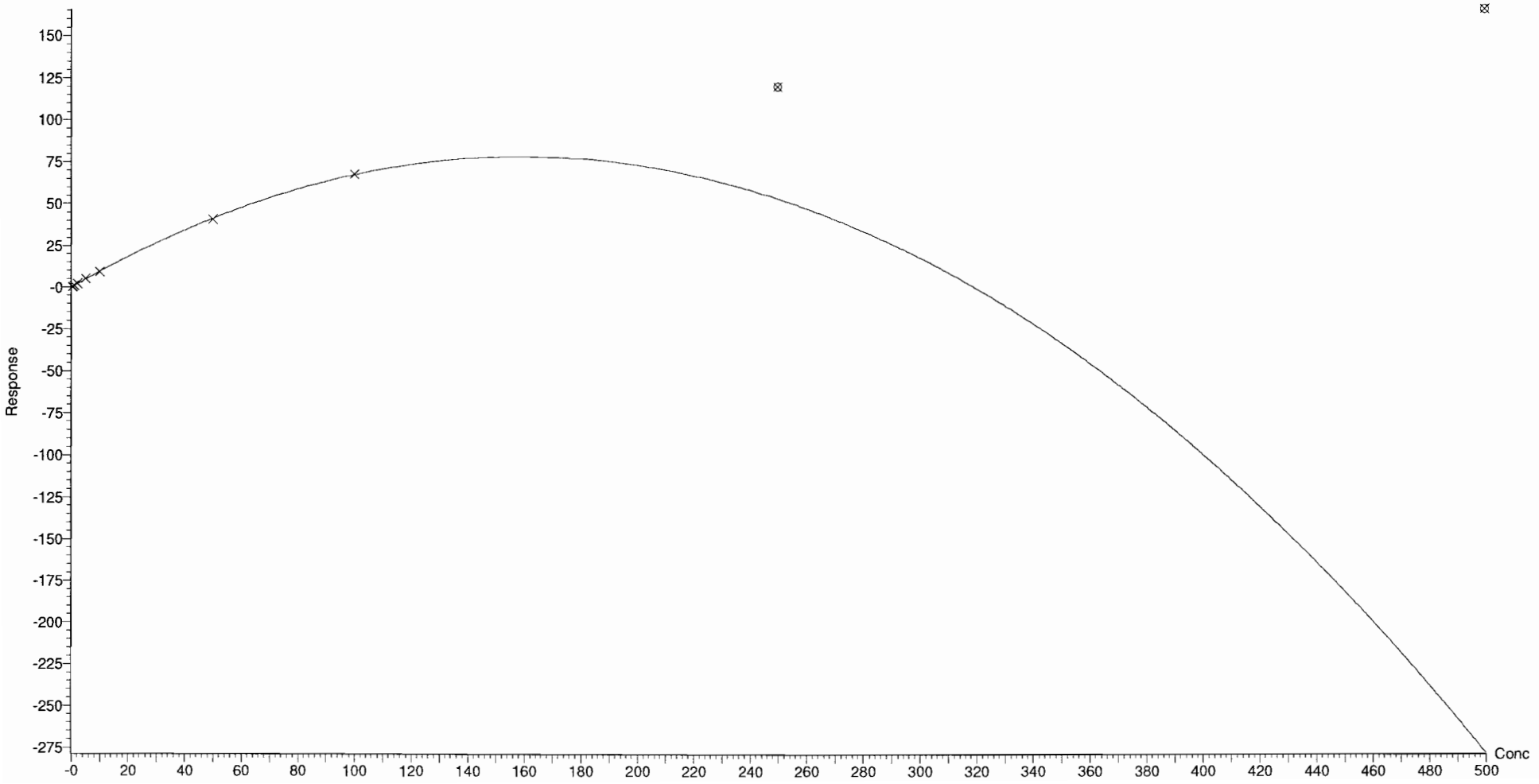
Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.998300
Calibration curve: -0.000243721 * x^2 + 1.90765 * x + -0.00804657
Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

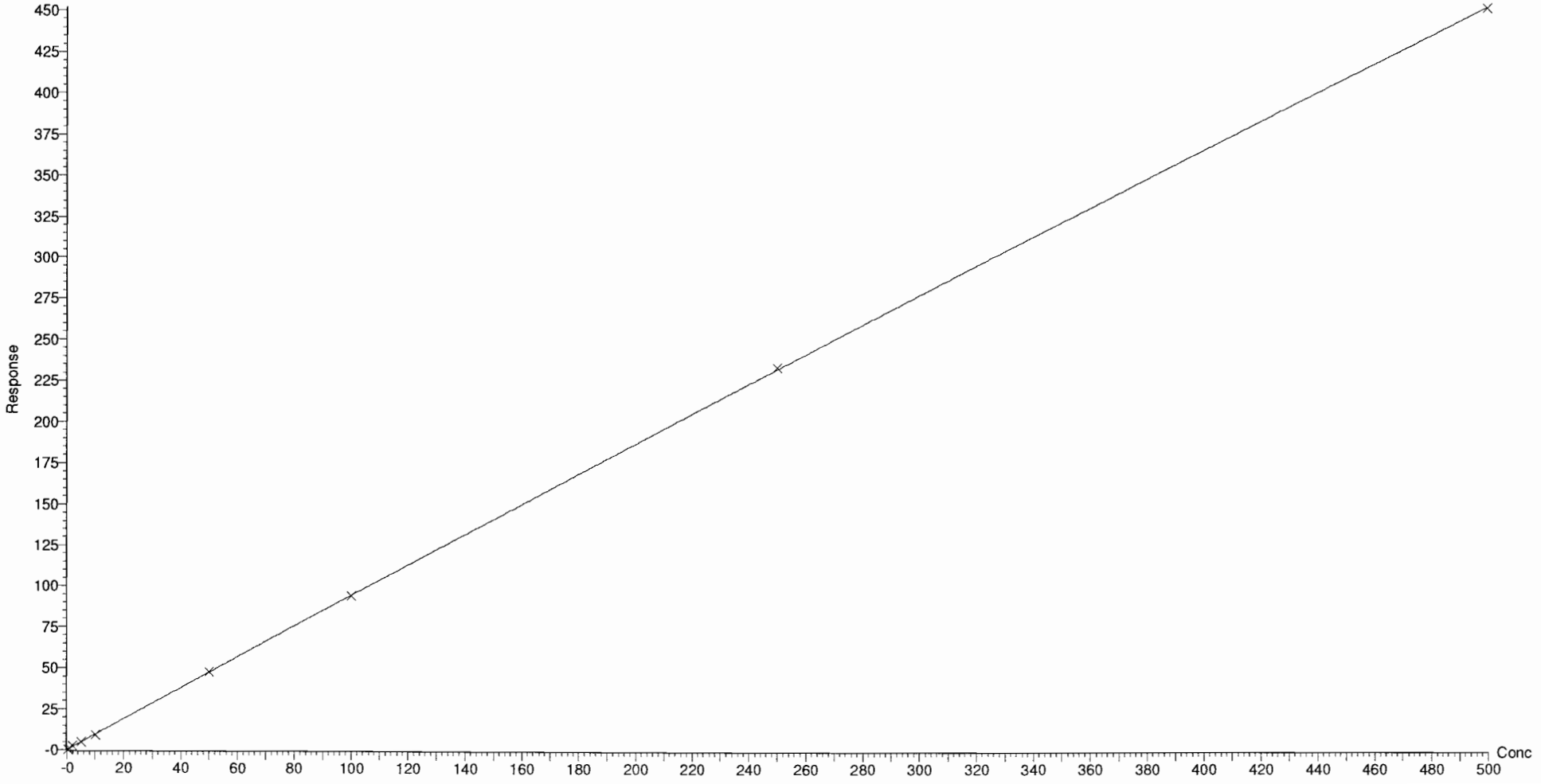
Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.998799
Calibration curve: -0.00308106 * x^2 + 0.984302 * x + -0.0304267
Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

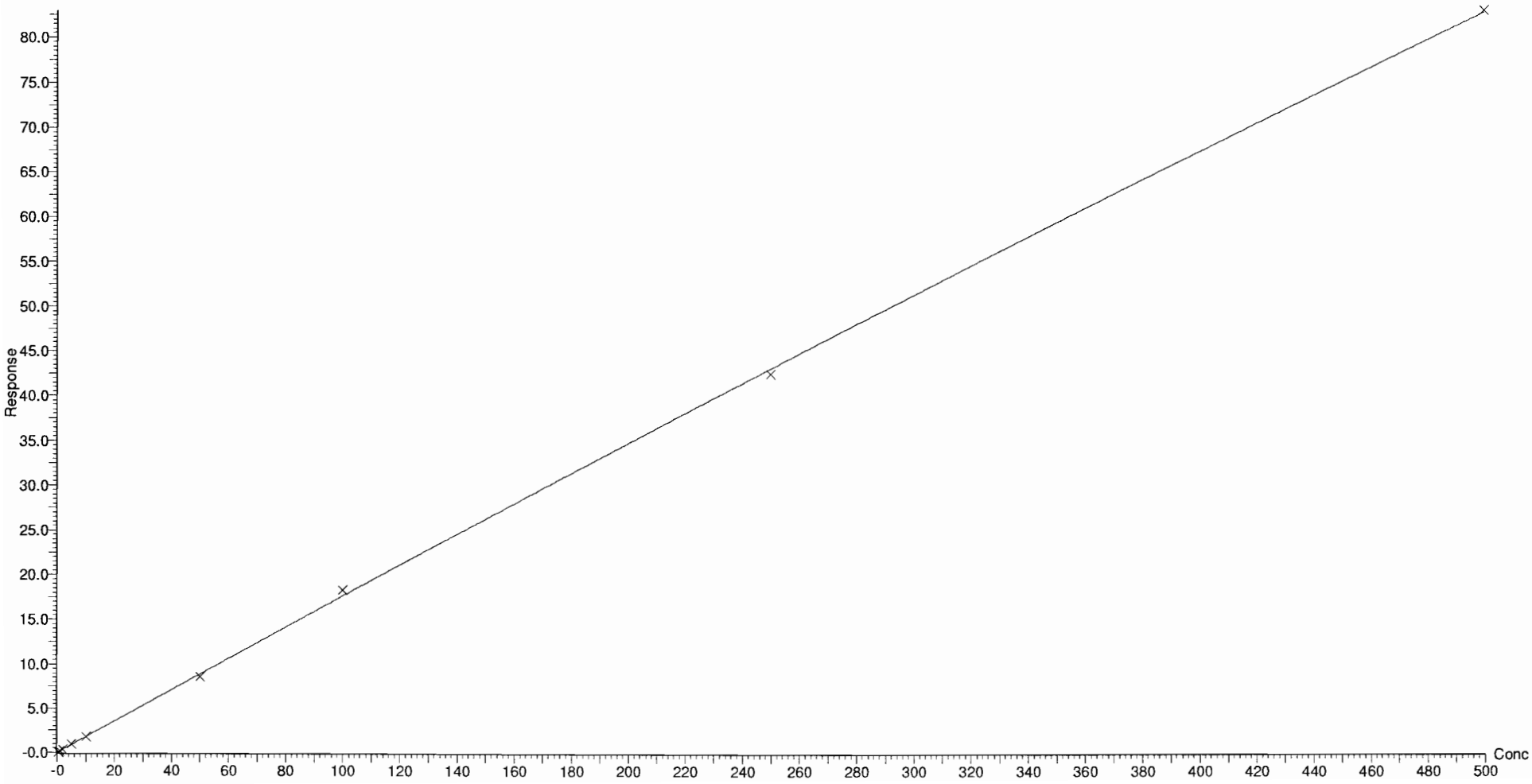
Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999804
Calibration curve: -0.000102707 * x^2 + 0.954902 * x + 0.117144
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

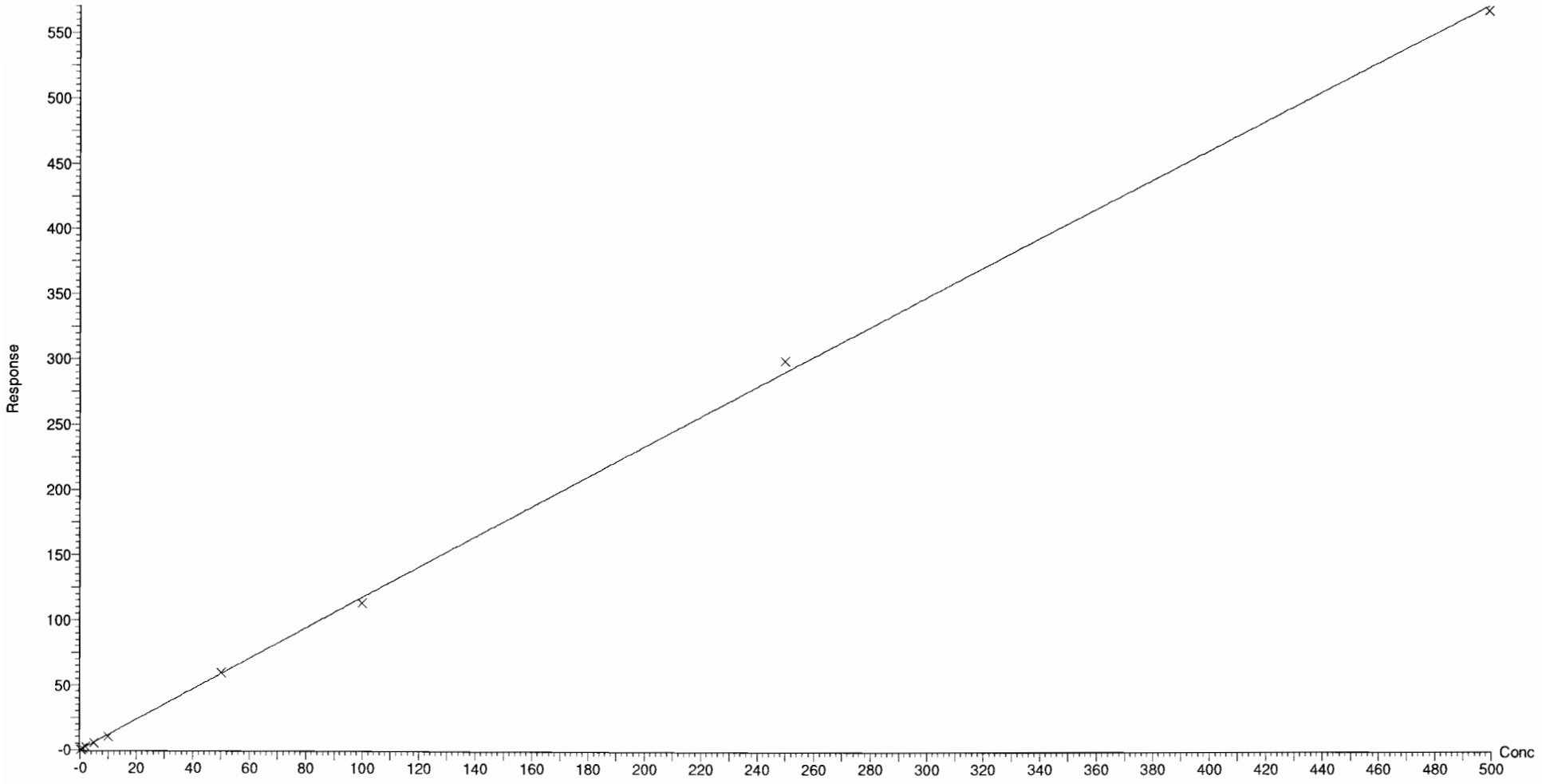
Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999638
Calibration curve: -2.76792e-005 * x^2 + 0.179398 * x + -0.00482123
Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

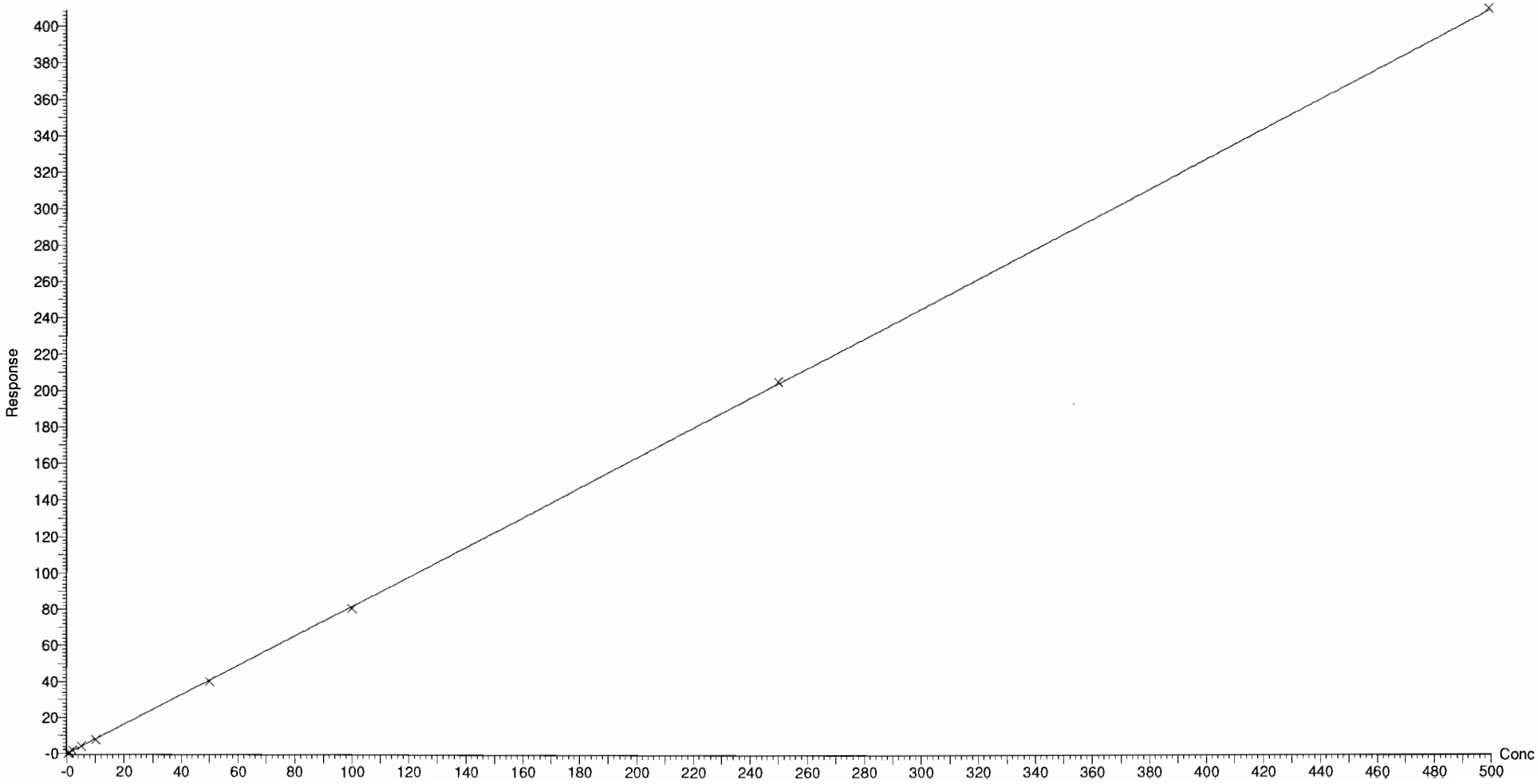
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999305
Calibration curve: -8.87699e-005 * x^2 + 1.1852 * x + 0.0413501
Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

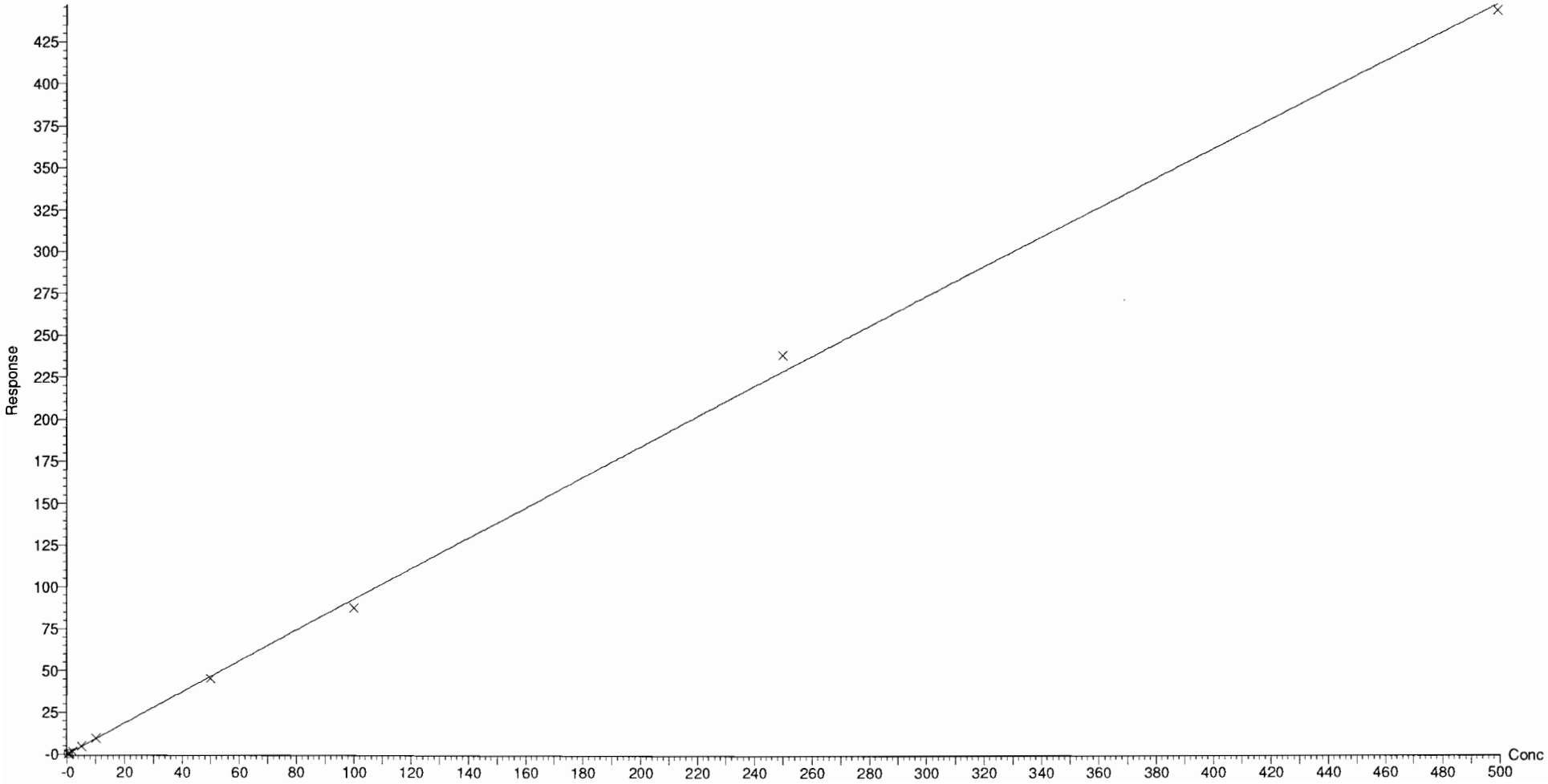
Compound name: PFOSA
Correlation coefficient: r = 0.999940, r^2 = 0.999880
Calibration curve: 0.816148 * x + 0.0101423
Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

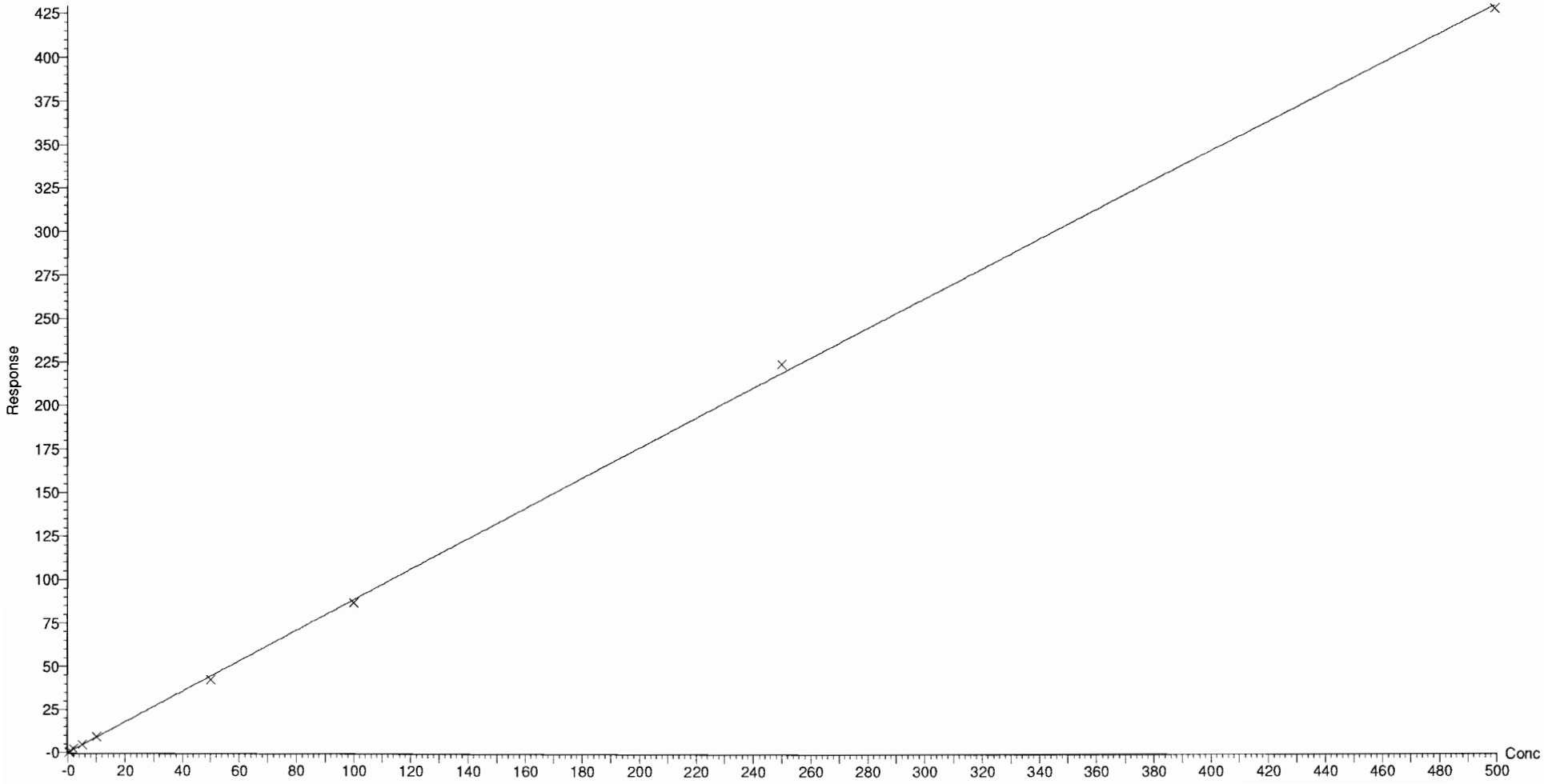
Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999003
Calibration curve: -8.73659e-005 * x^2 + 0.937373 * x + -0.0862269
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

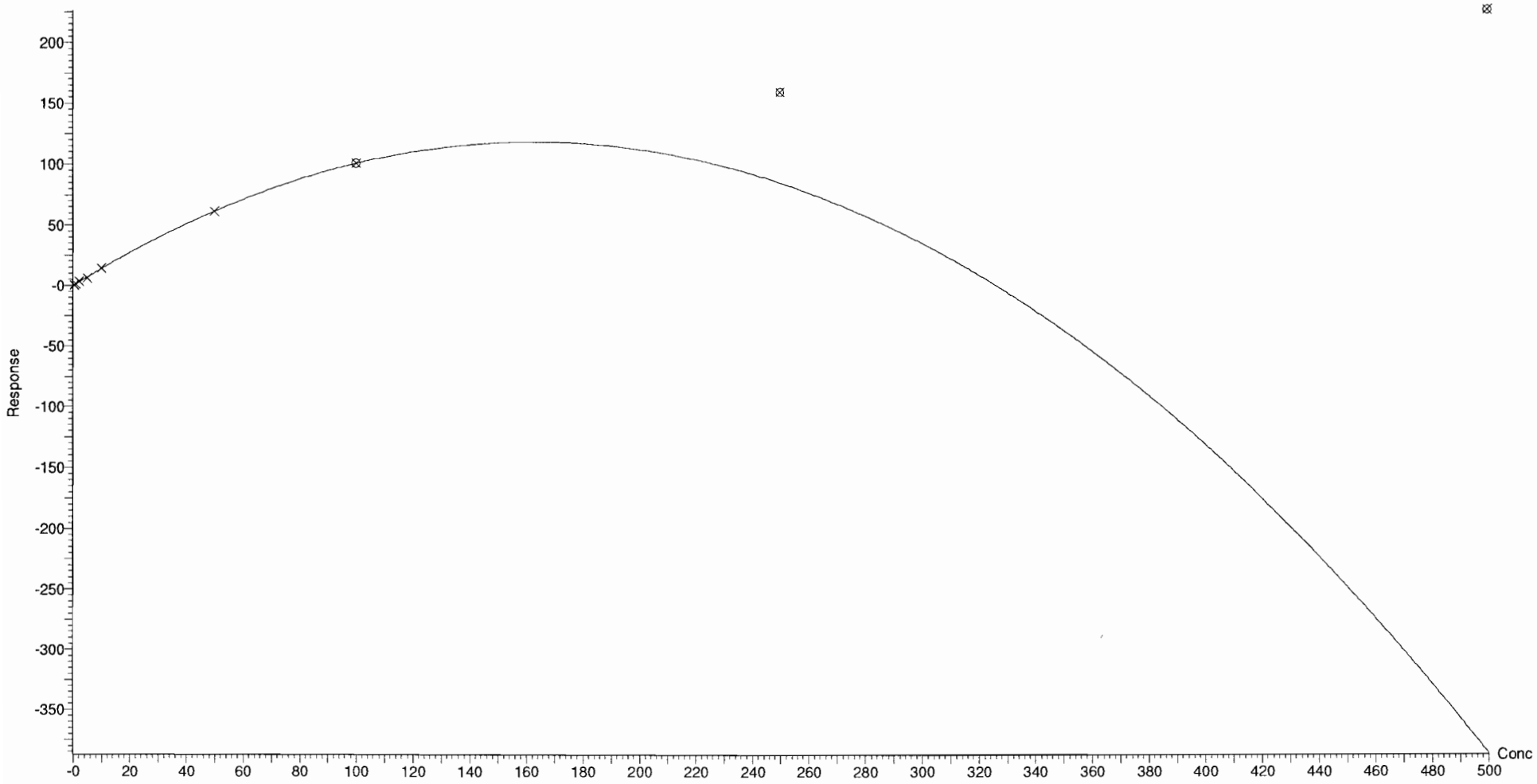
Compound name: PFDA
Coefficient of Determination: R^2 = 0.999572
Calibration curve: -7.03715e-005 * x^2 + 0.894045 * x + 0.0549645
Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

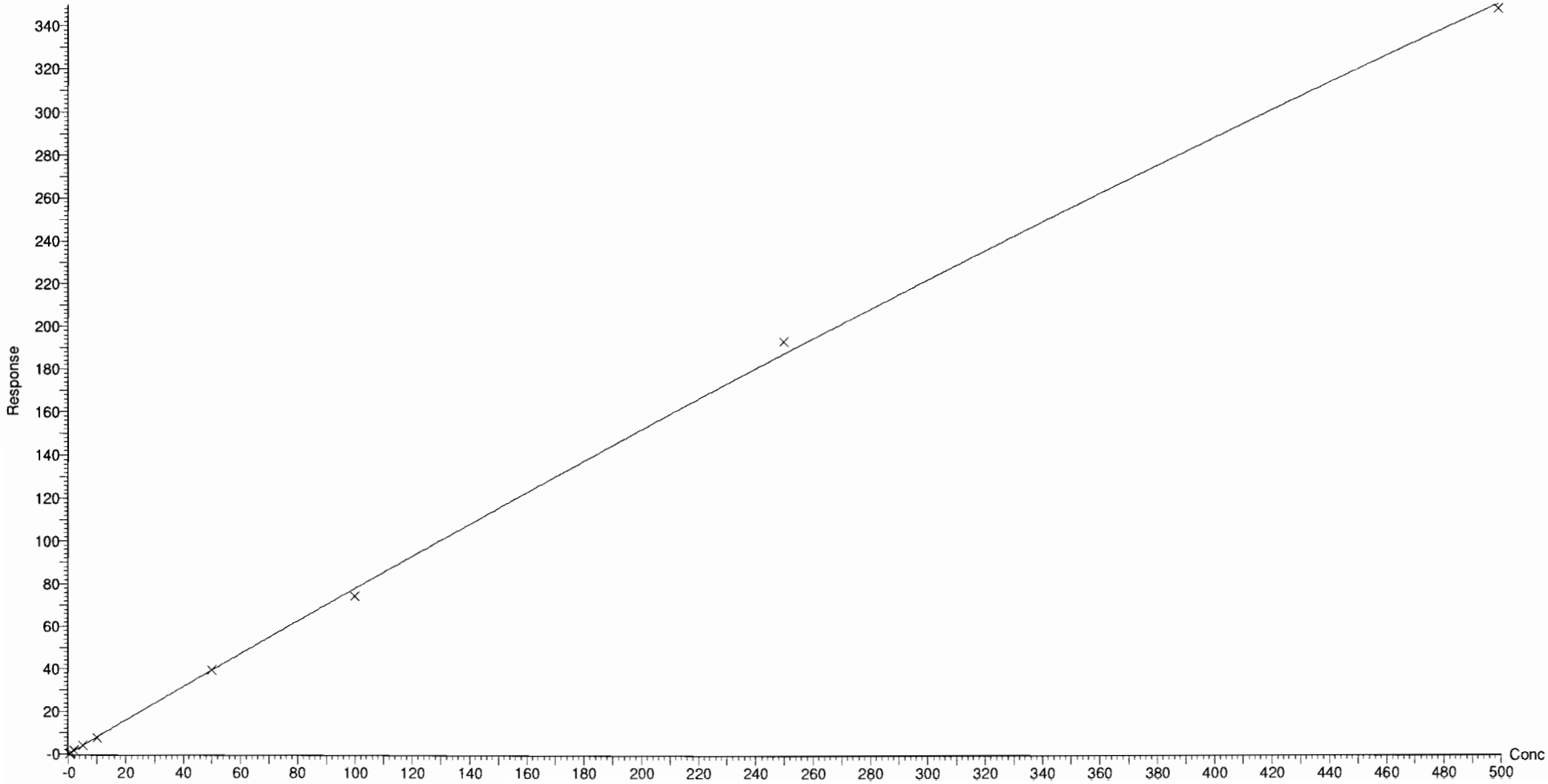
Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.993265
Calibration curve: -0.00444981 * x^2 + 1.45235 * x + -0.0884808
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

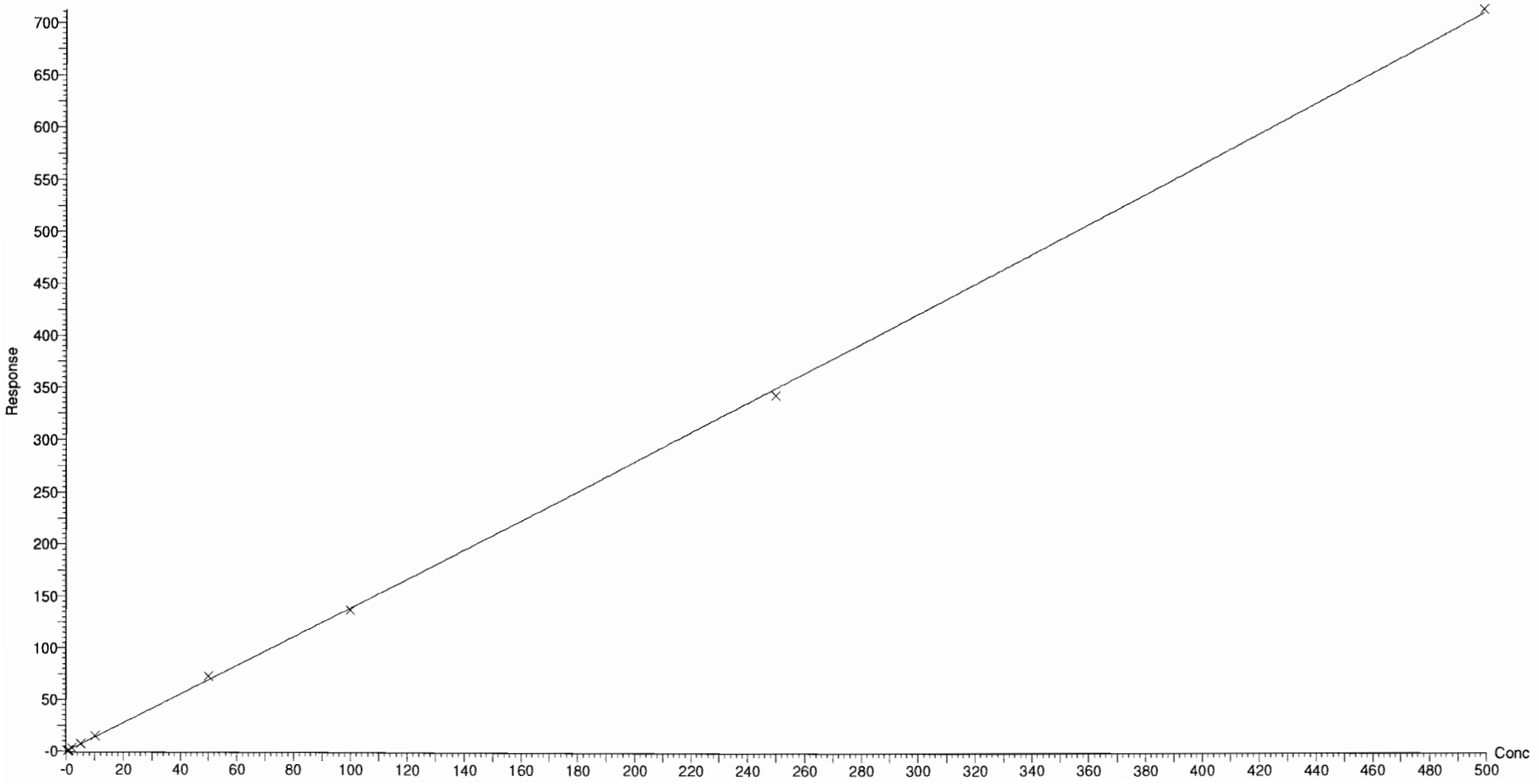
Compound name: PFNS
Coefficient of Determination: R^2 = 0.999311
Calibration curve: -0.000200334 * x^2 + 0.799693 * x + -0.0164137
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

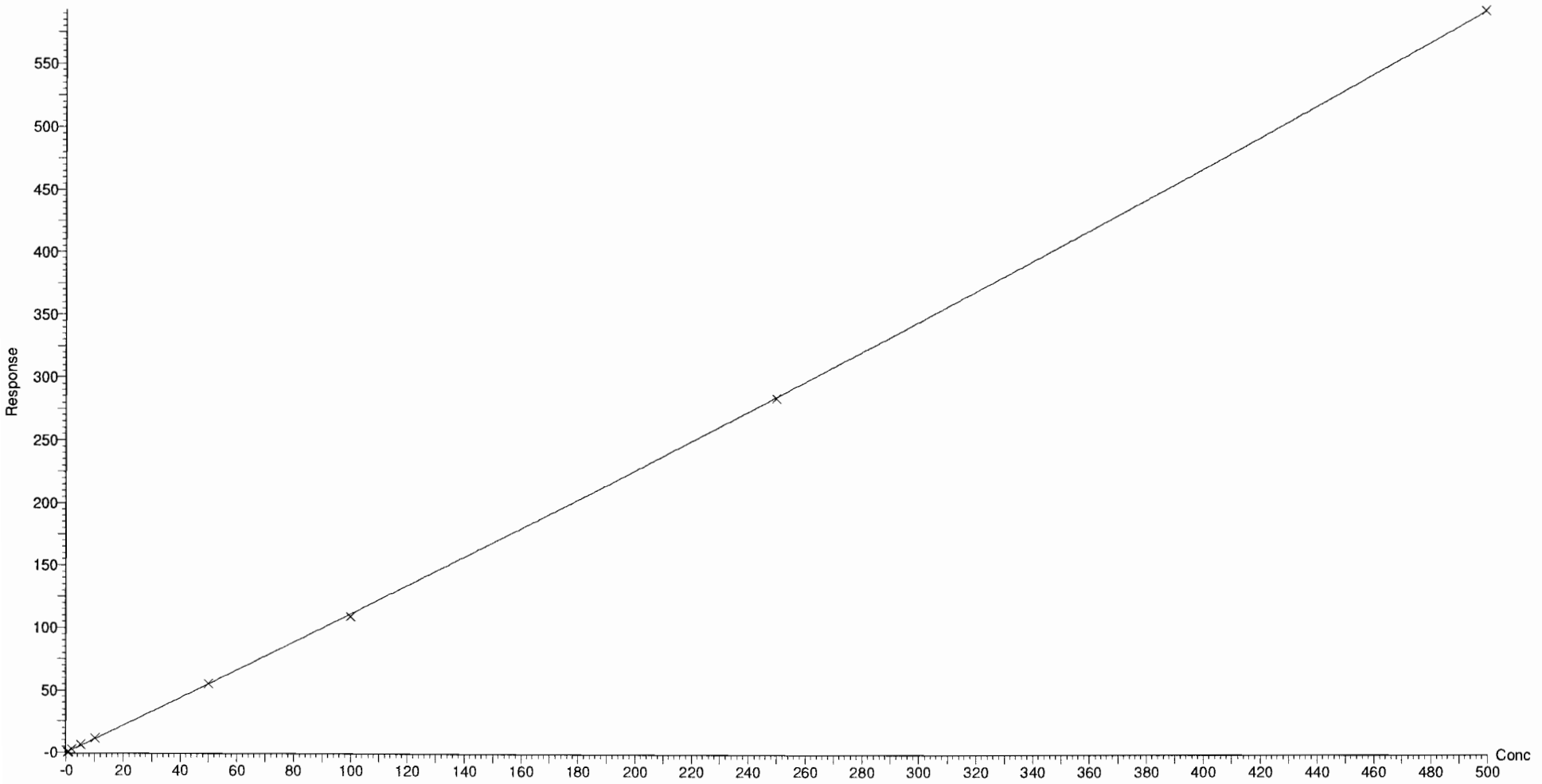
Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999572
Calibration curve: 7.30837e-005 * x^2 + 1.38168 * x + 0.0378795
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:13 Pacific Daylight Time

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999684
Calibration curve: 0.000176338 * x^2 + 1.09624 * x + 0.00360828
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



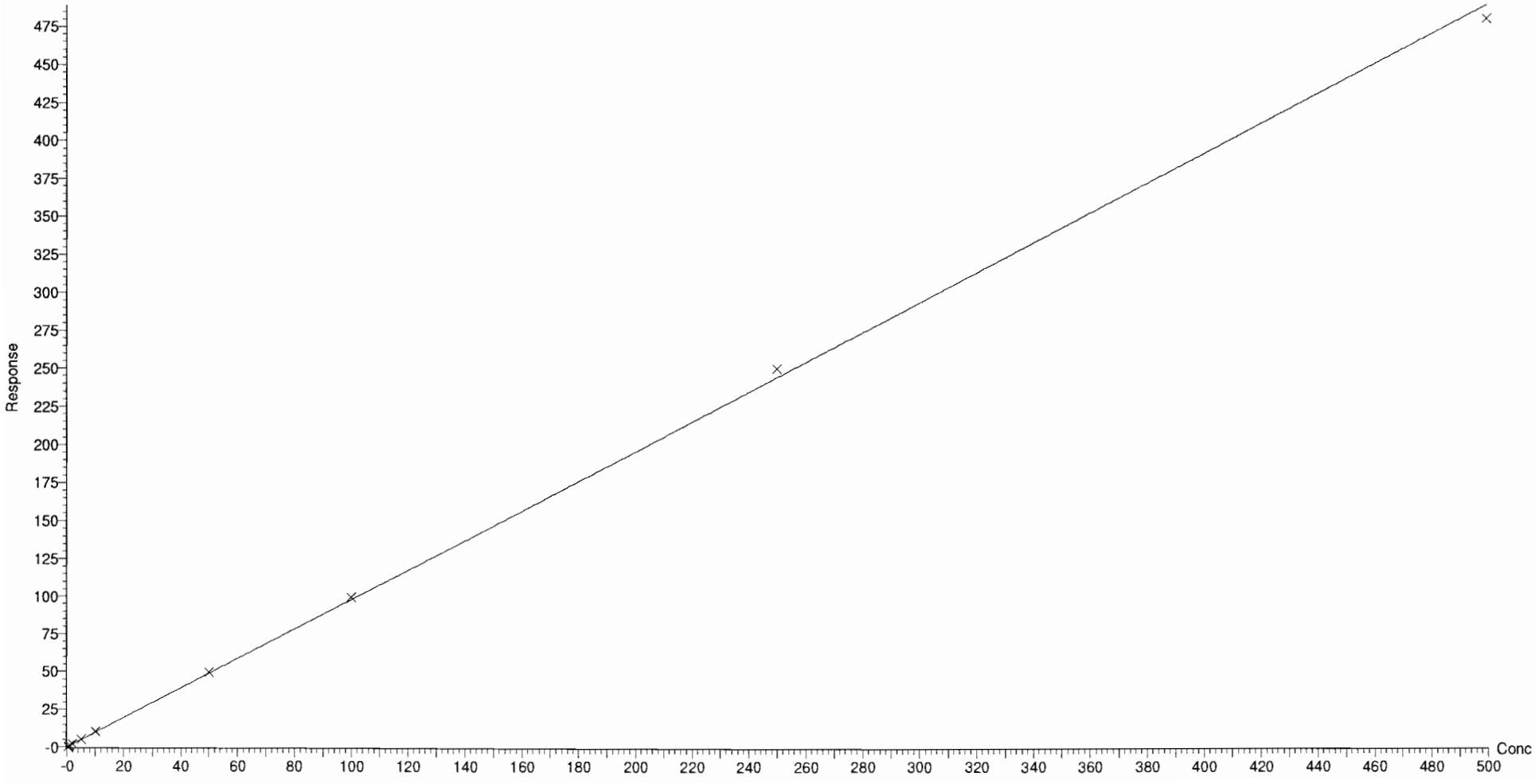
Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

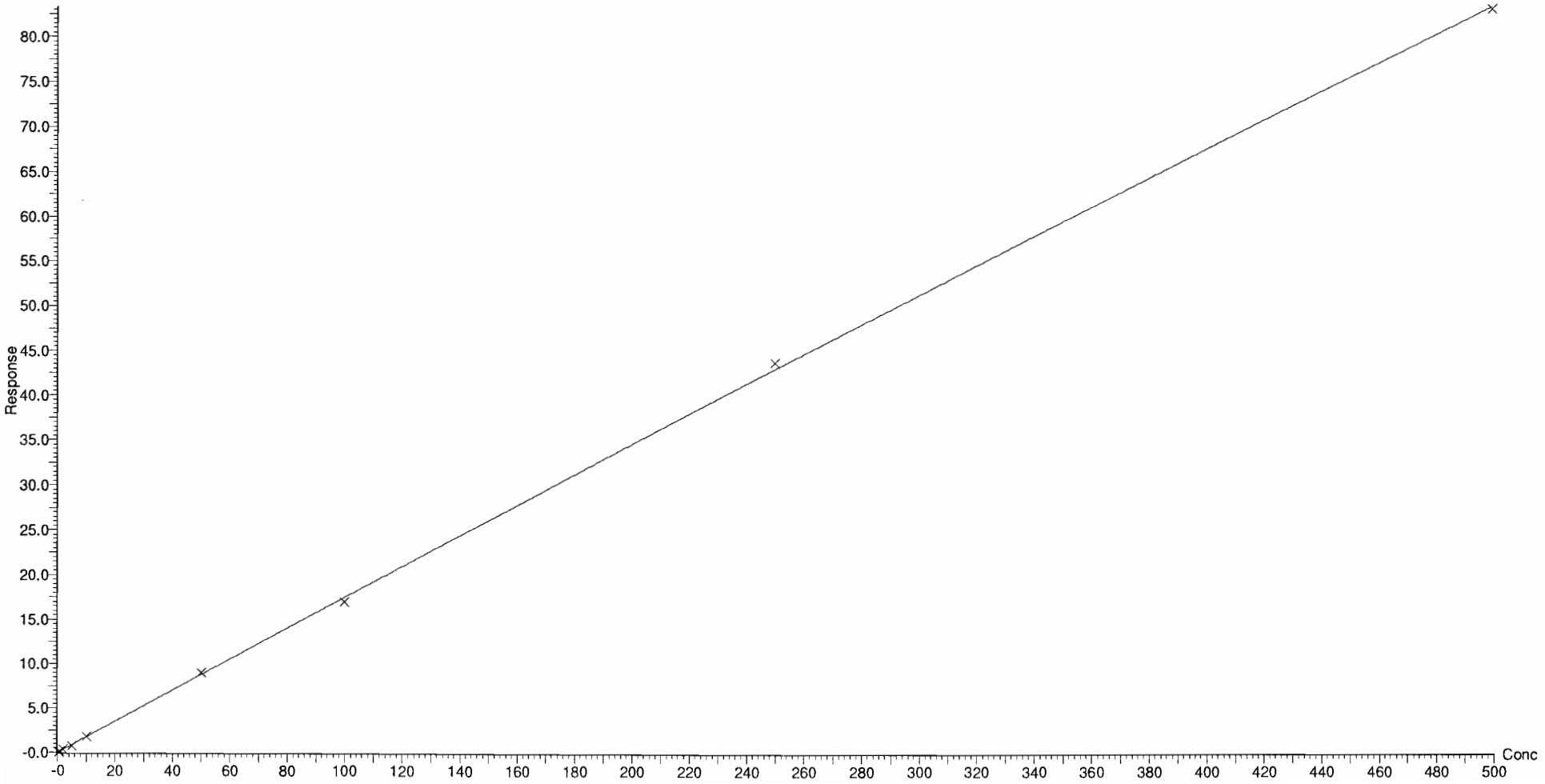
Compound name: PFUdA
Correlation coefficient: r = 0.999749, r^2 = 0.999498
Calibration curve: 0.977686 * x + 0.0920429
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

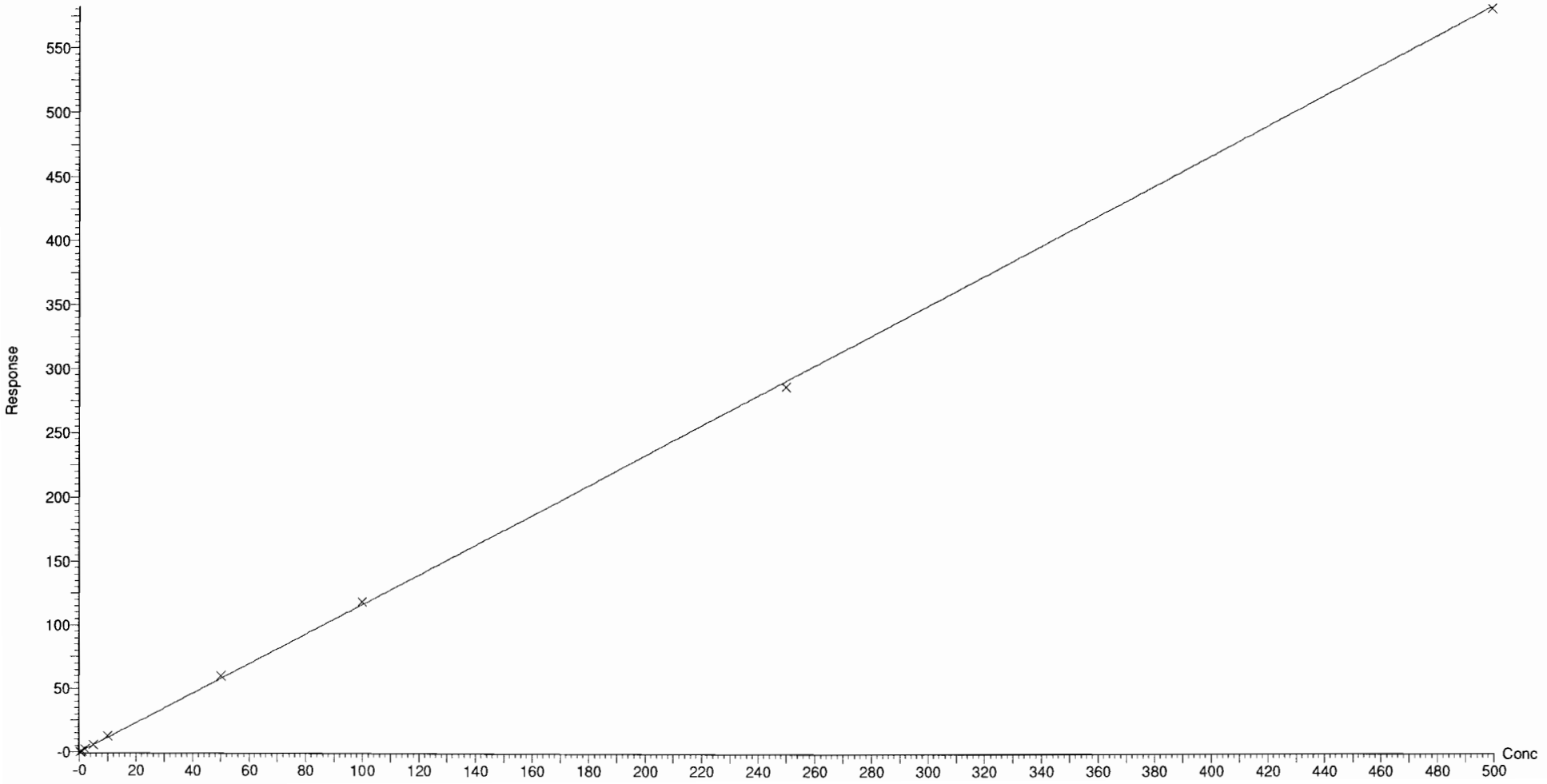
Compound name: PFDS
Coefficient of Determination: R^2 = 0.999569
Calibration curve: -2.10802e-005 * x^2 + 0.177234 * x + -0.0015965
Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

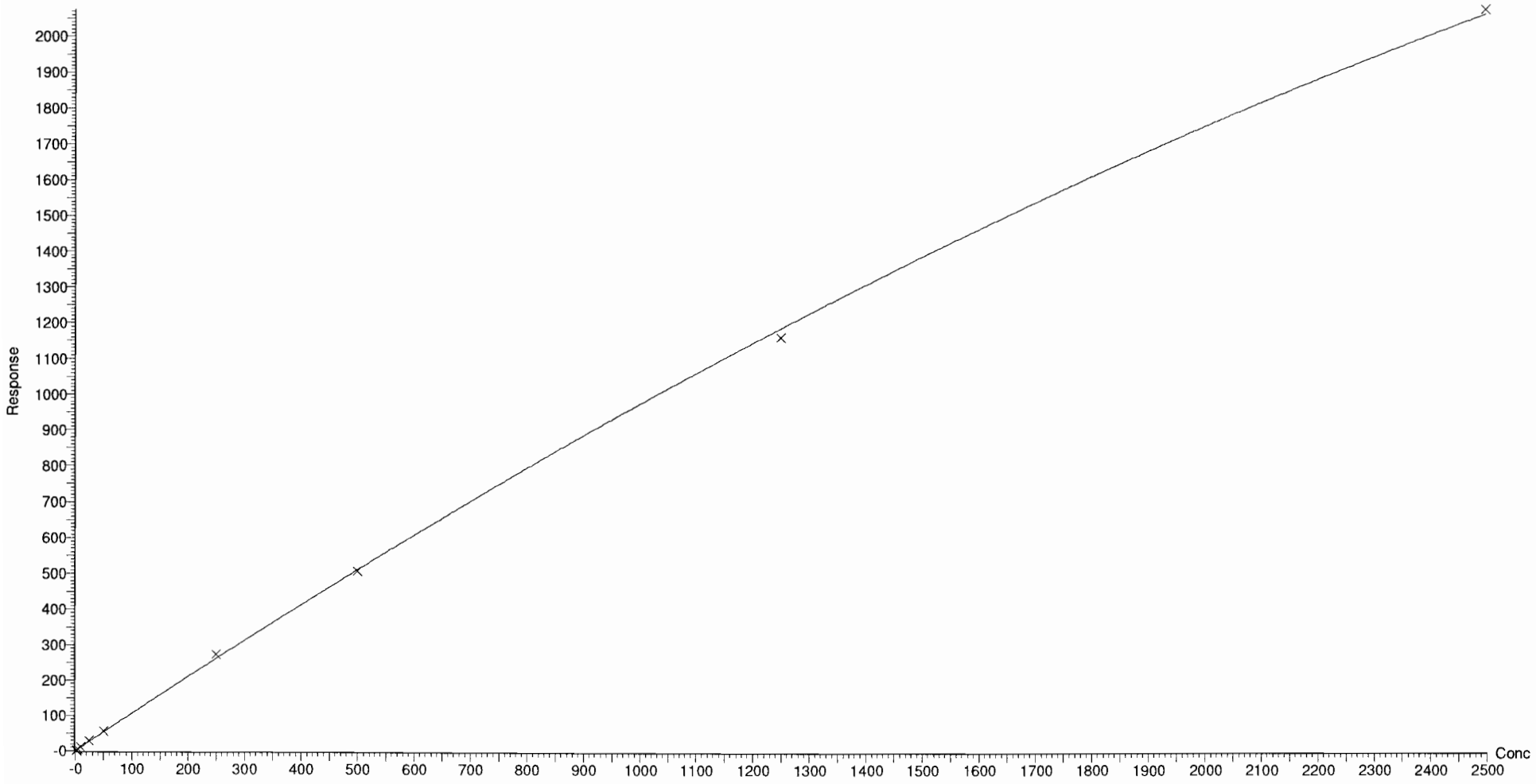
Compound name: PFDoA
Correlation coefficient: r = 0.999808, r^2 = 0.999616
Calibration curve: 1.16427 * x + 0.0510958
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

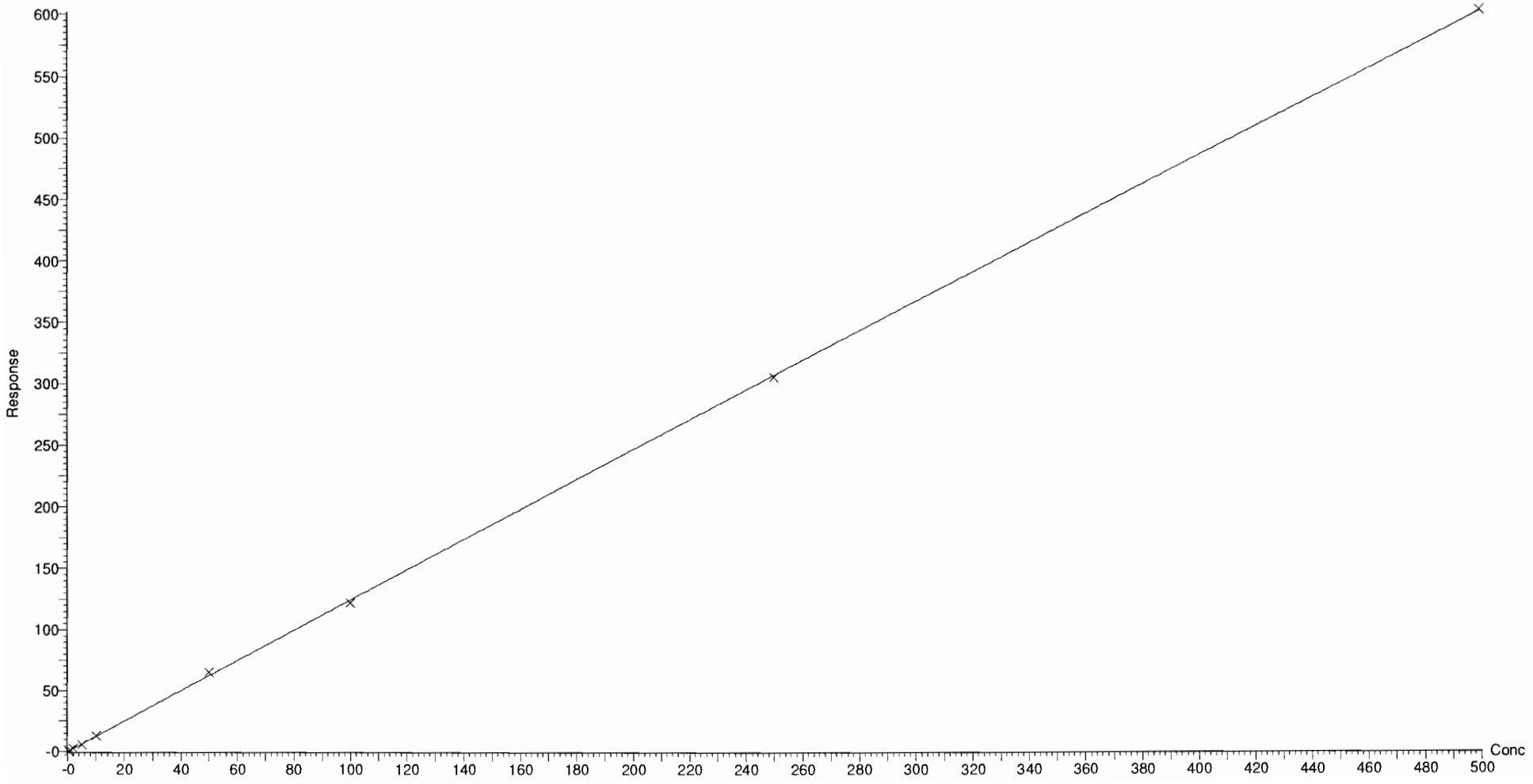
Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999515
Calibration curve: -9.99567e-005 * x^2 + 1.0749 * x + 0.274549
Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

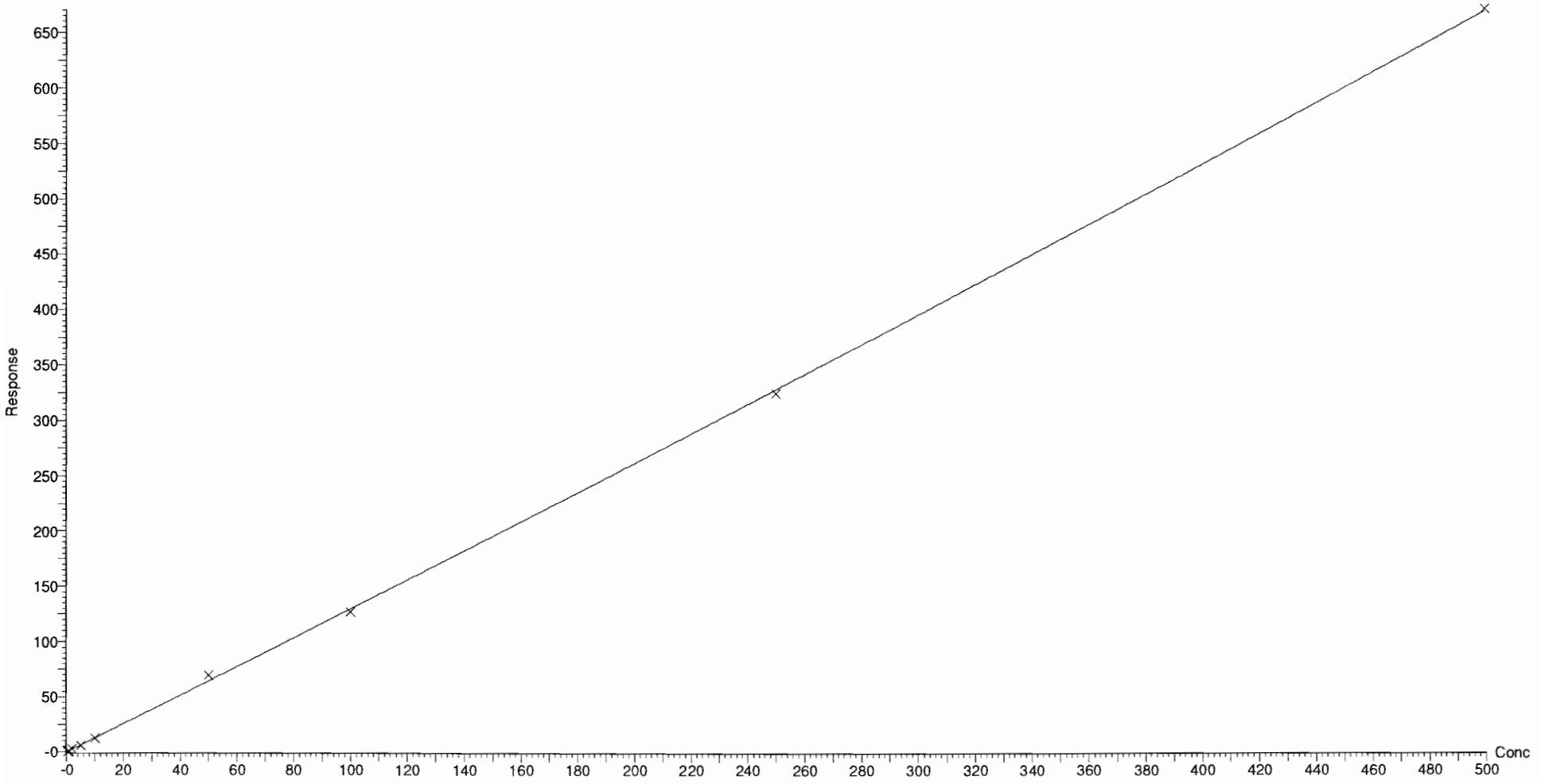
Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999755
Calibration curve: -9.86458e-005 * x^2 + 1.25097 * x + 0.0745025
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999495
Calibration curve: 9.10956e-005 * x^2 + 1.29106 * x + 0.0568453
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

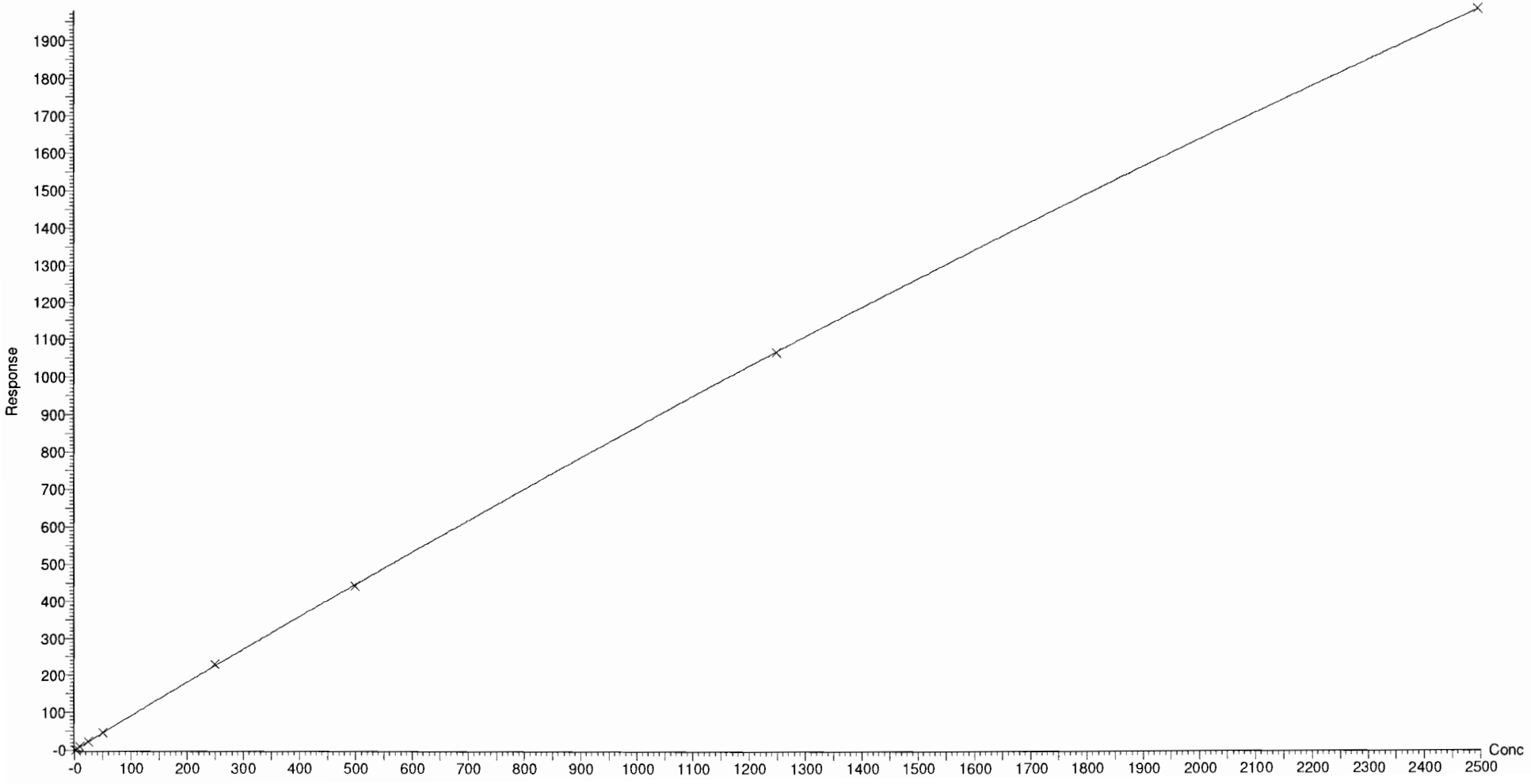


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

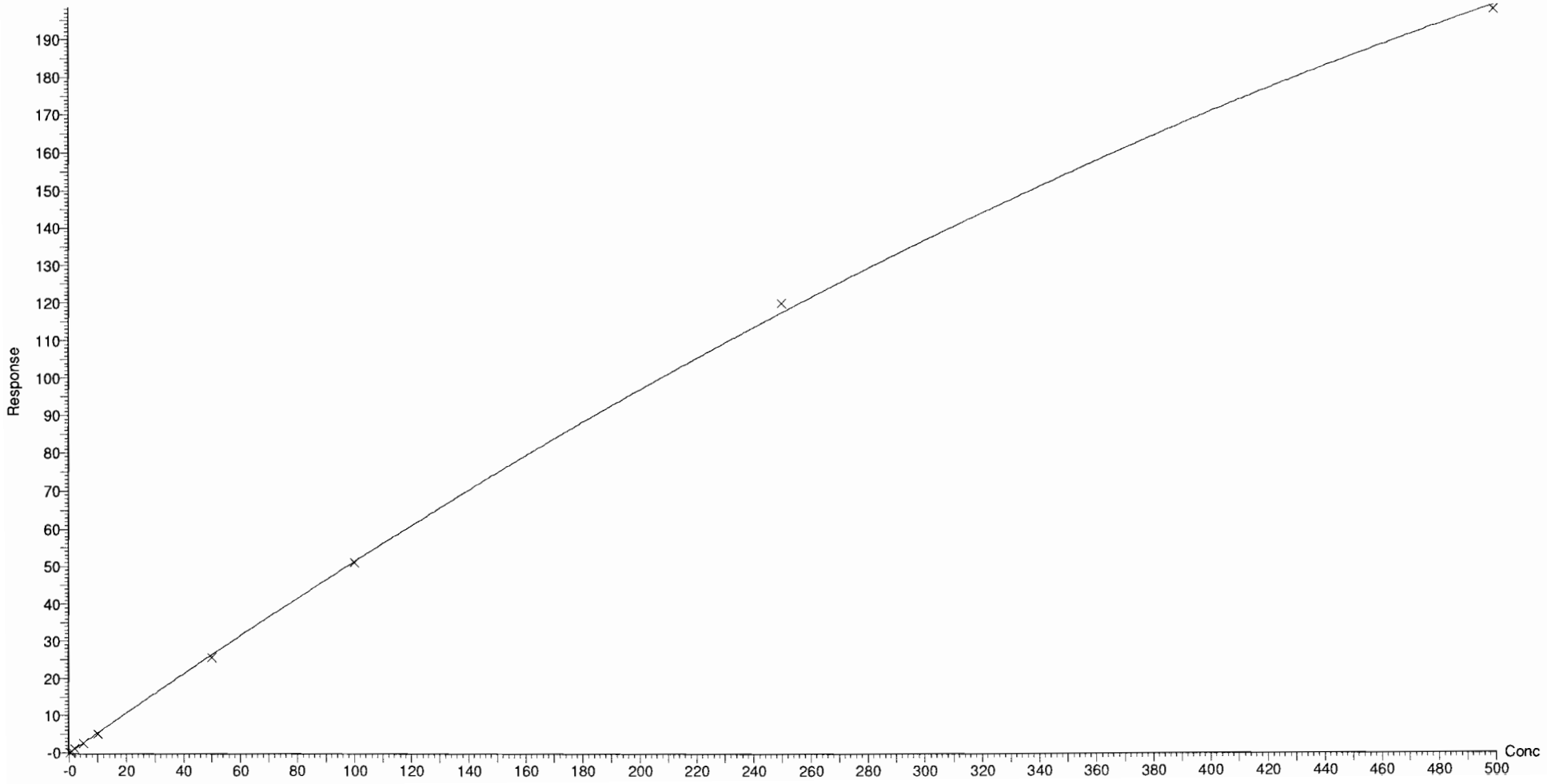
Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999909
Calibration curve: -5.01492e-005 * x^2 + 0.916603 * x + 0.131252
Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999675
Calibration curve: -0.000289587 * x^2 + 0.541923 * x + 0.0123272
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

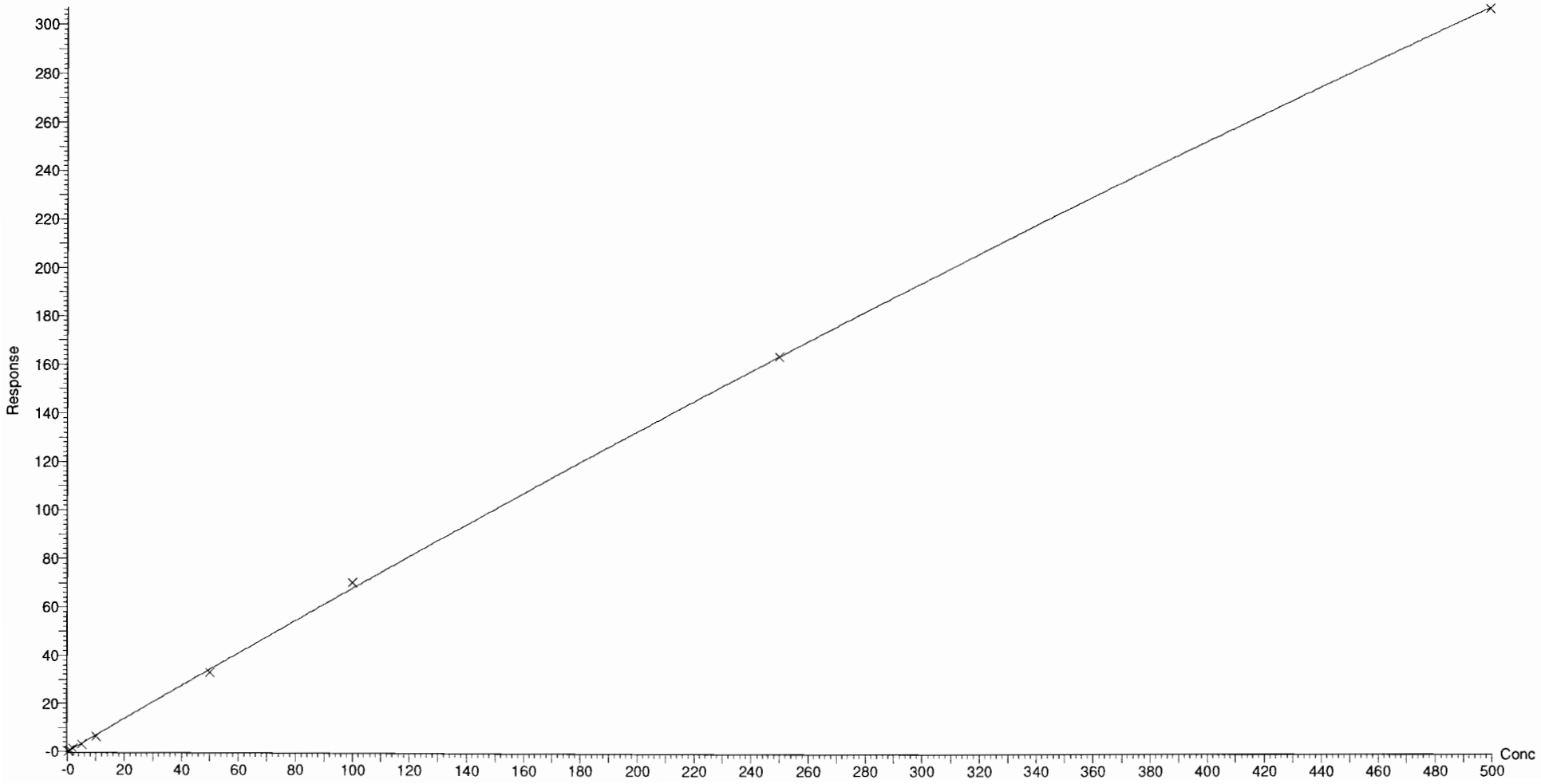


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

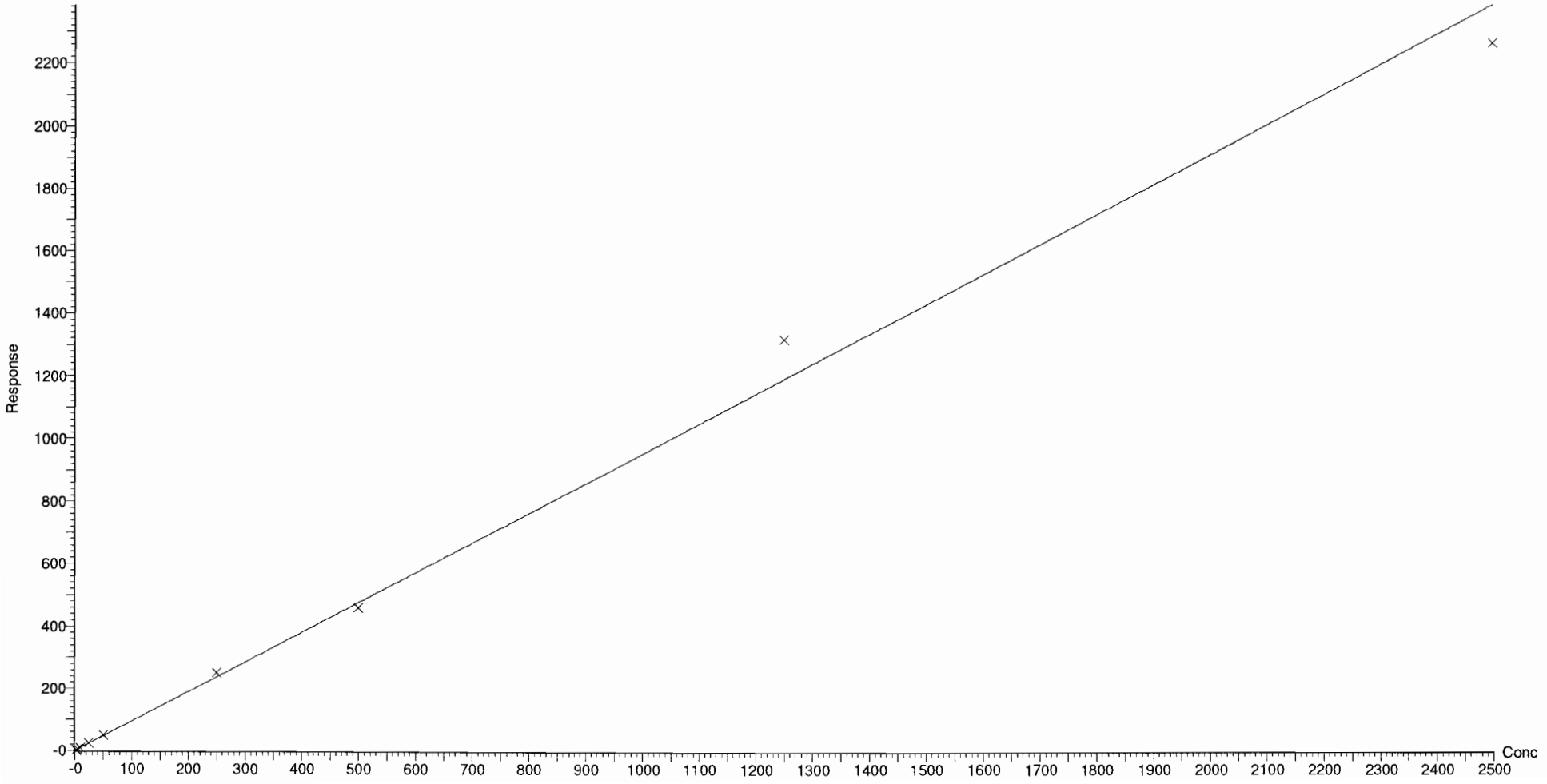
Compound name: PFODA
Coefficient of Determination: R^2 = 0.999589
Calibration curve: -0.000164856 * x^2 + 0.6966 * x + -0.00819501
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

Compound name: N-MeFOSE
Correlation coefficient: r = 0.997571, r^2 = 0.995148
Calibration curve: 0.953764 * x + 0.25406
Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

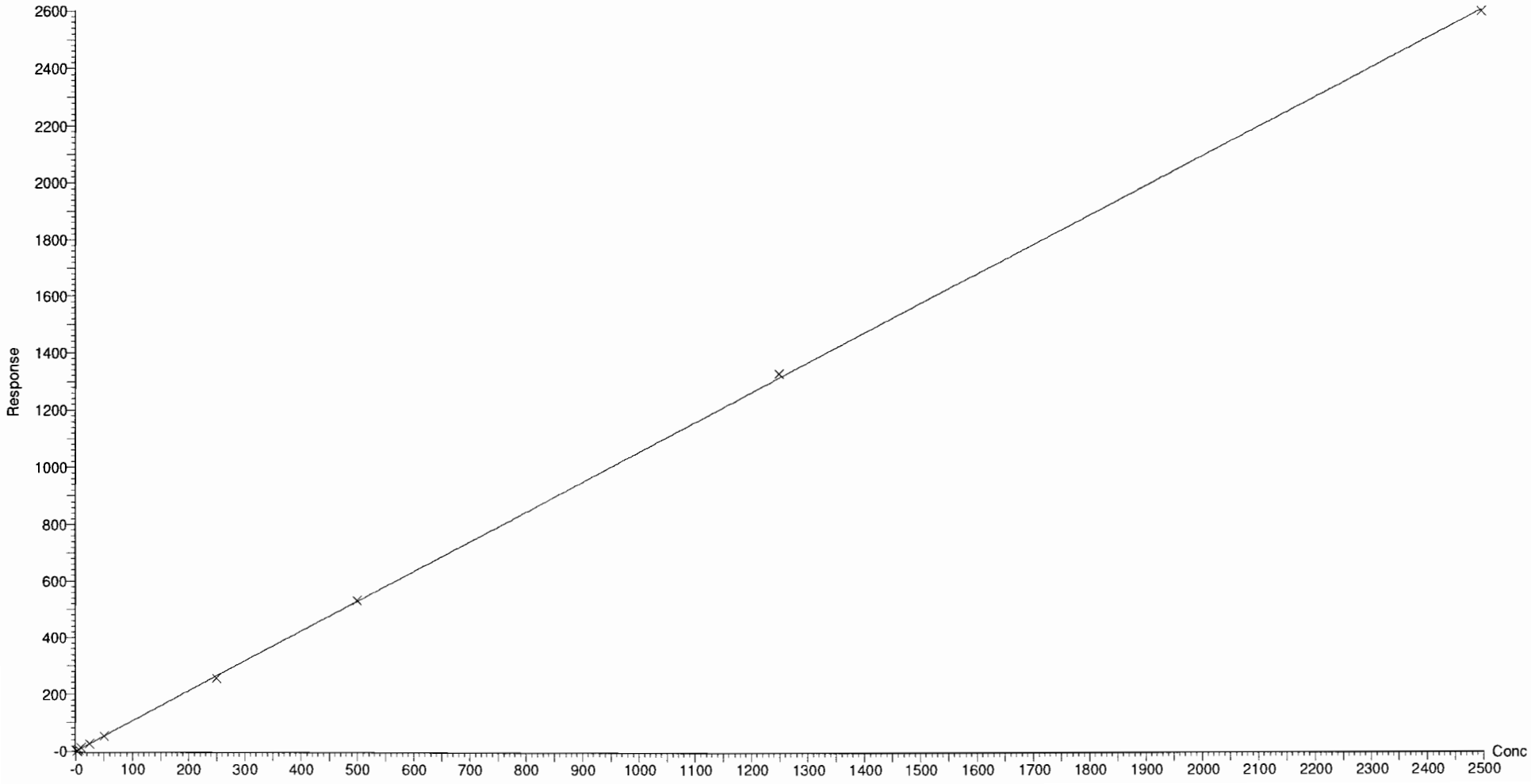


Vista Analytical Laboratory Q1

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:44:24 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:59:22 Pacific Daylight Time

Compound name: N-EtFOSE
Coefficient of Determination: R^2 = 0.999794
Calibration curve: -8.59378e-006 * x^2 + 1.062 * x + 0.394799
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



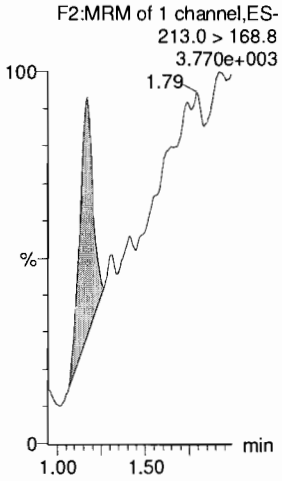
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

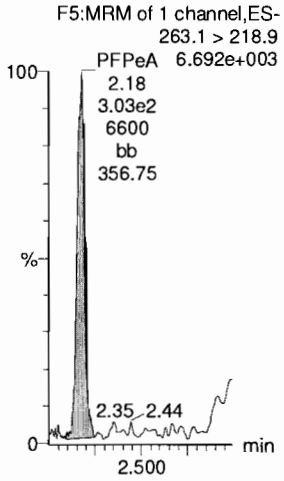
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061818.mdb 19 Jun 2018 09:34:33
Calibration: 20 Jun 2018 10:08:10

Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

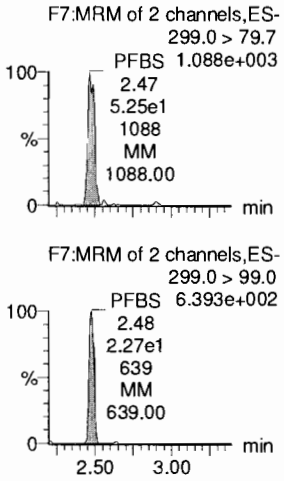
PFBA



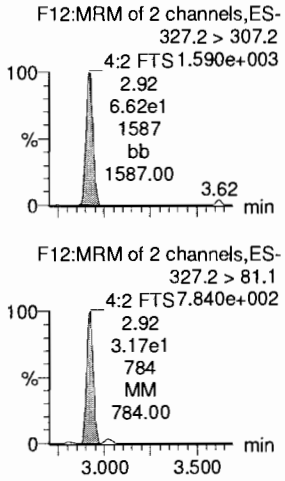
PFPeA



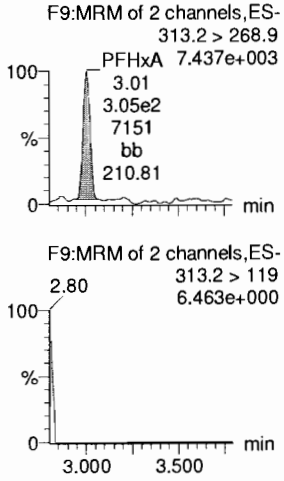
PFBS



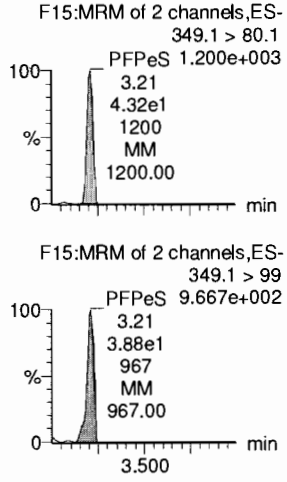
4:2 FTS



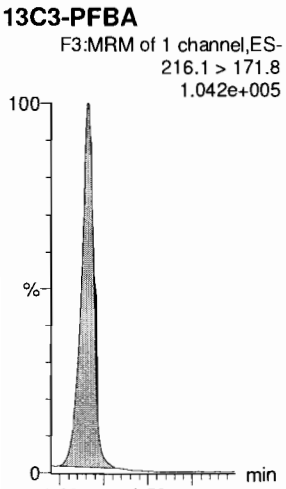
PFHxA



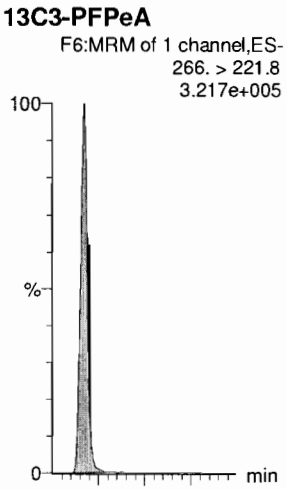
PFPeS



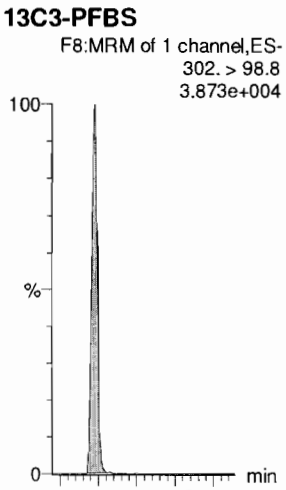
13C3-PFBA



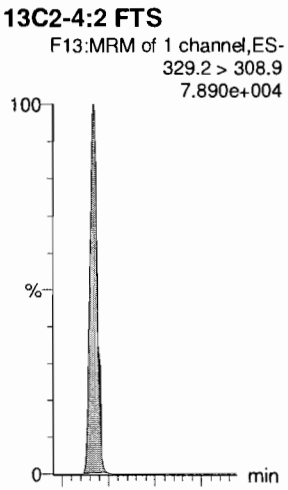
13C3-PFPeA



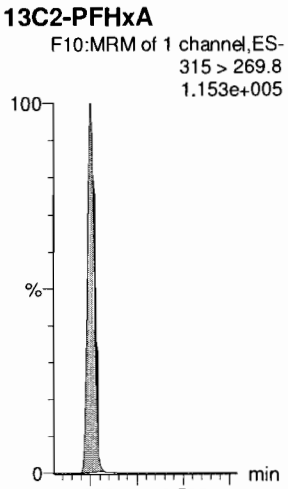
13C3-PFBS



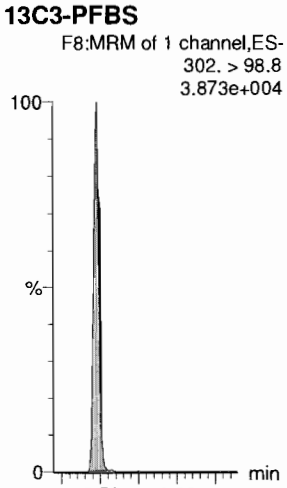
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

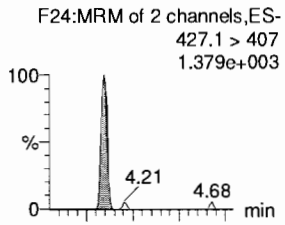


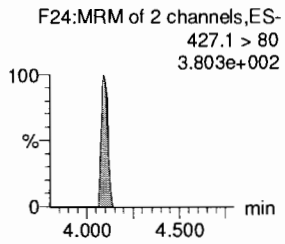
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

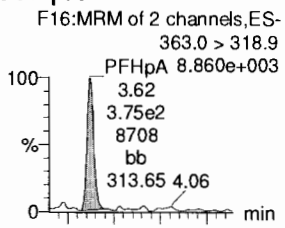
Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

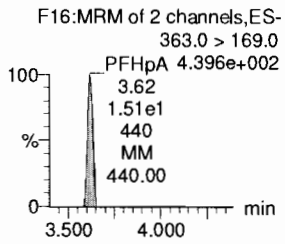
6:2 FTS



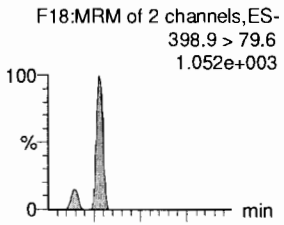


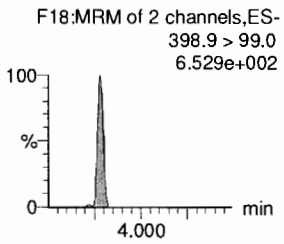
PFHpA



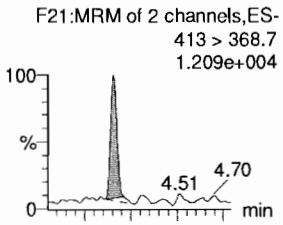


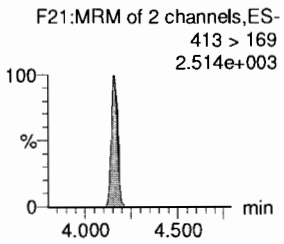
L-PFHxS



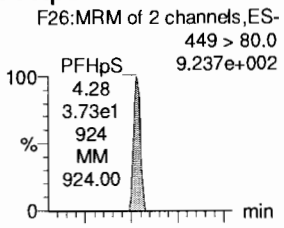


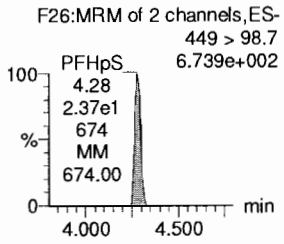
L-PFOA



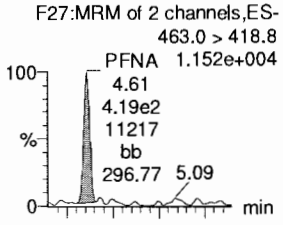


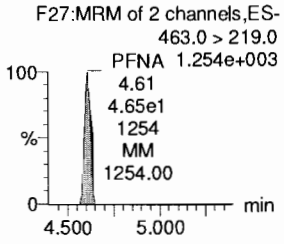
PFHpS



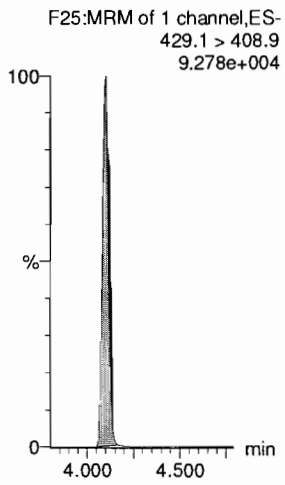


PFNA

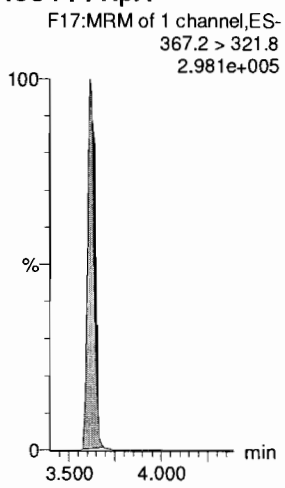




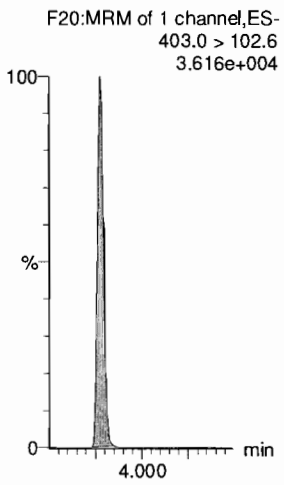
13C2-6:2 FTS



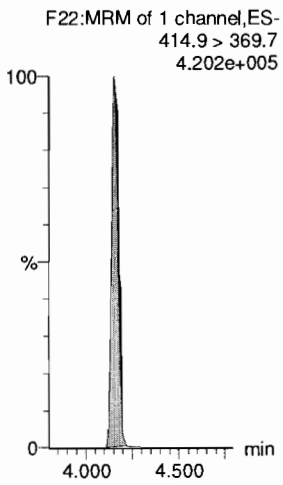
13C4-PFHpA



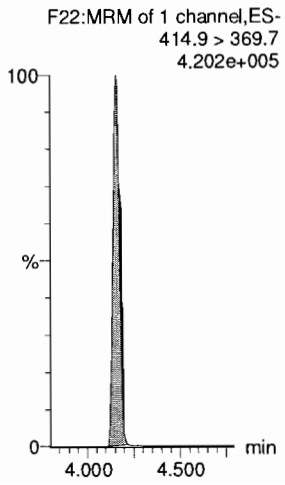
18O2-PFHxS



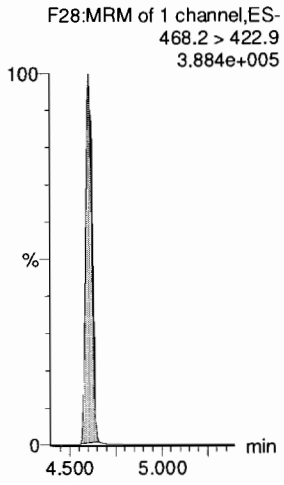
13C2-PFOA



13C2-PFOA



13C5-PFNA

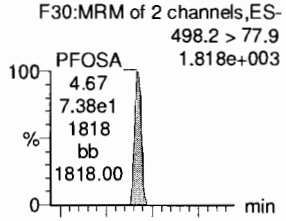


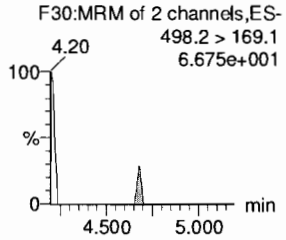
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

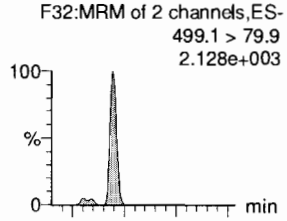
Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

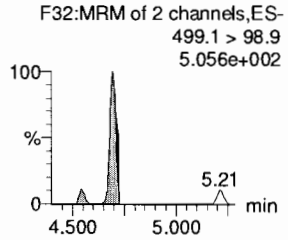
PFOSA



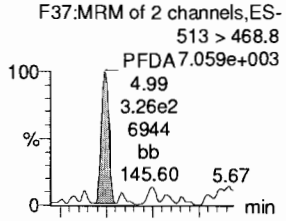


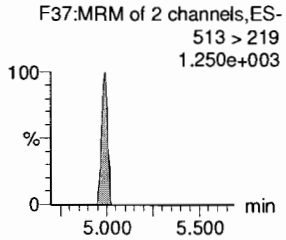
L-PFOS



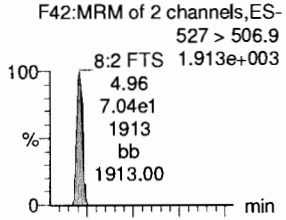


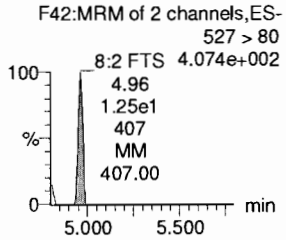
PFDA



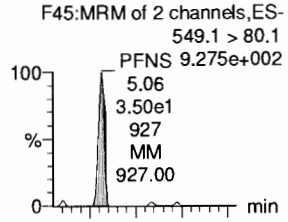


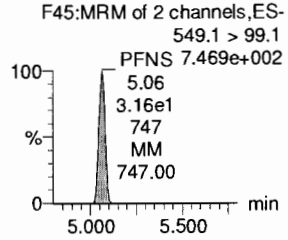
8:2 FTS



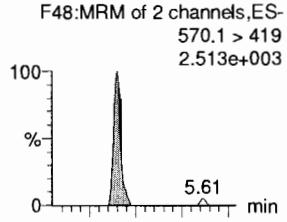


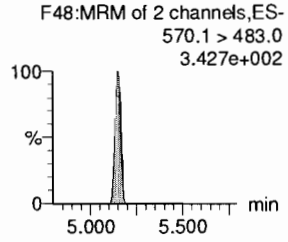
PFNS



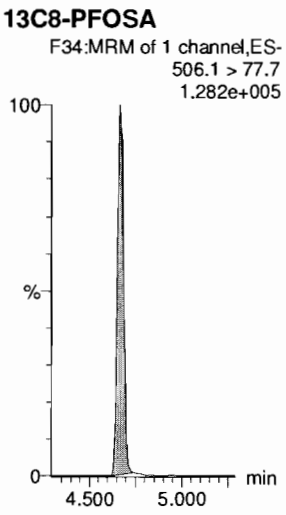


L-MeFOSAA

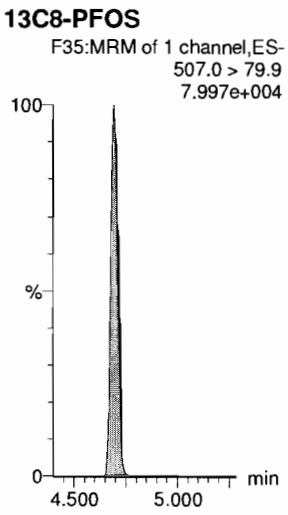




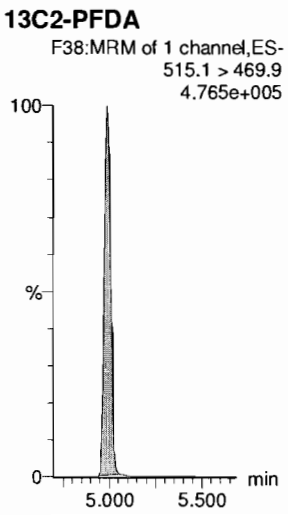
13C8-PFOSA



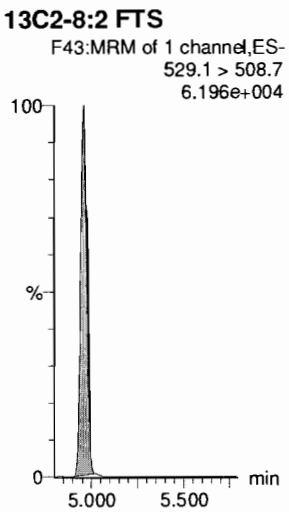
13C8-PFOS



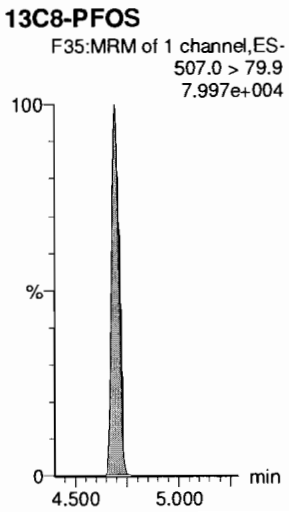
13C2-PFDA



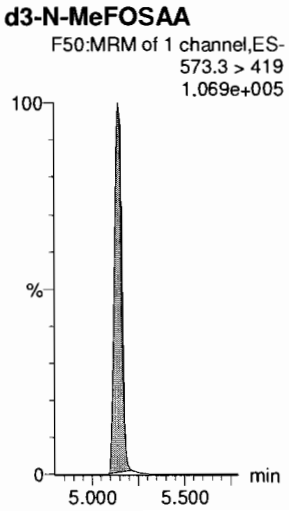
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

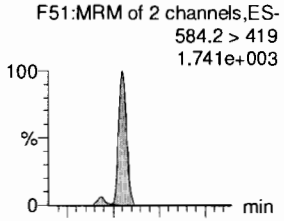


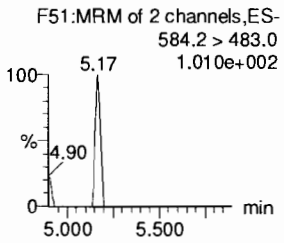
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

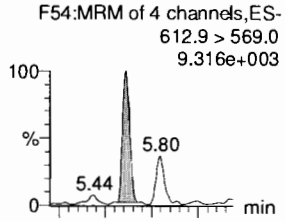
Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

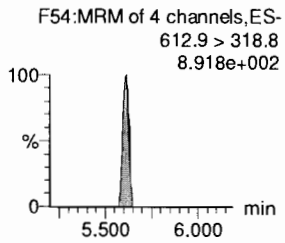
L-EtFOSAA





PFDoA





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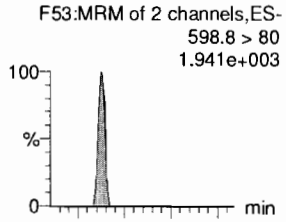
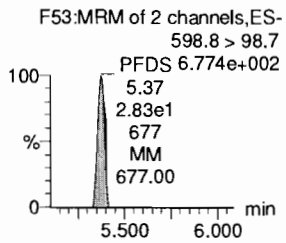
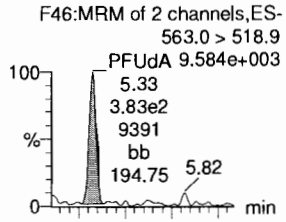
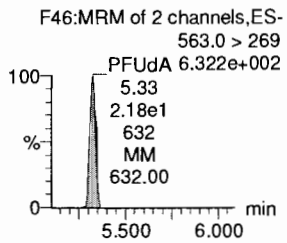


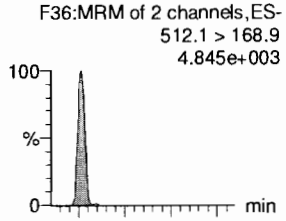


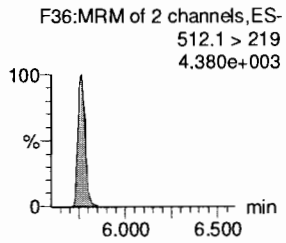
PFUdA



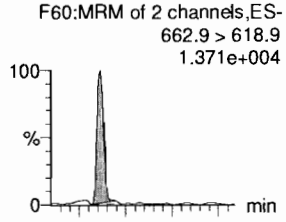


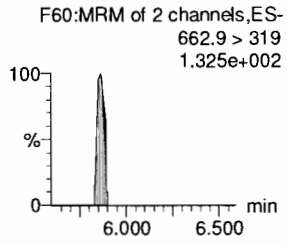
N-MeFOSA



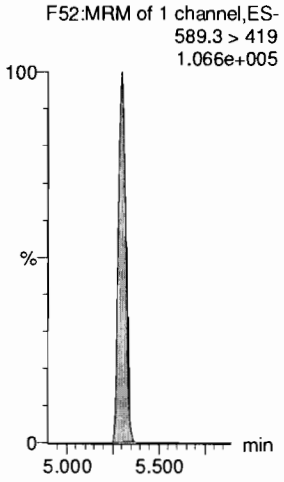


PFTrDA

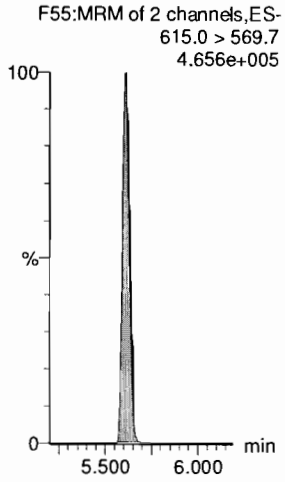




d5-N-EtFOSAA



13C2-PFDoA



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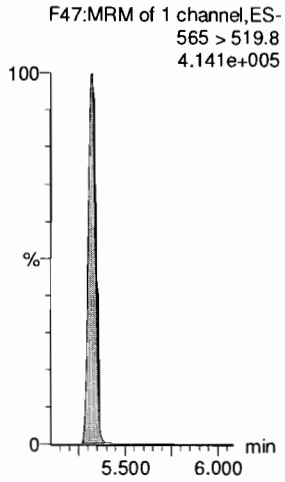
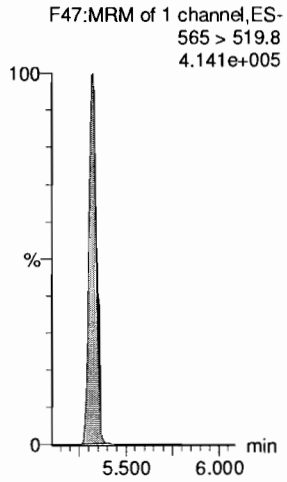


13C2-PFUdA



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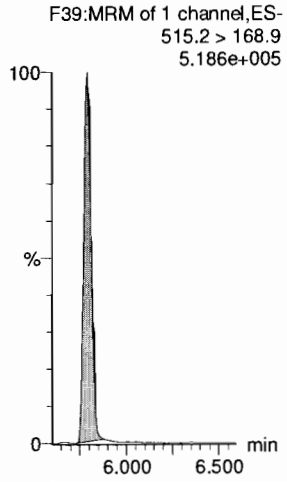

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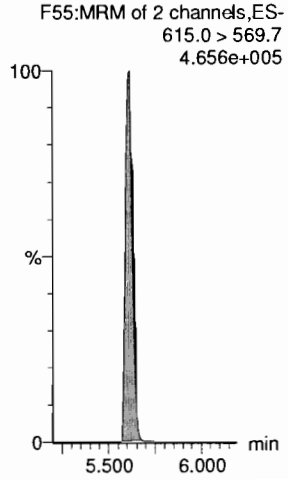
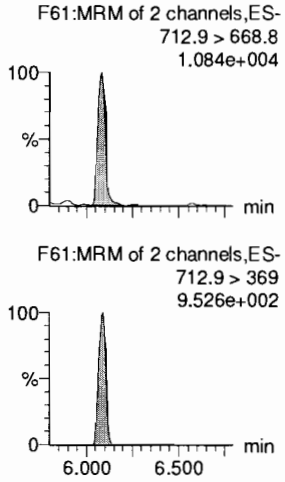


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

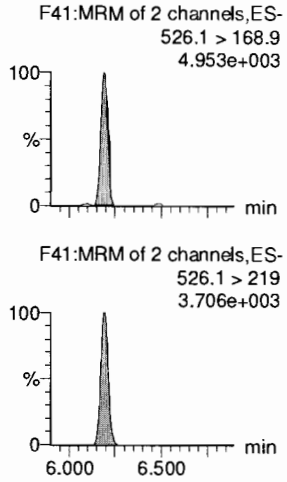
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

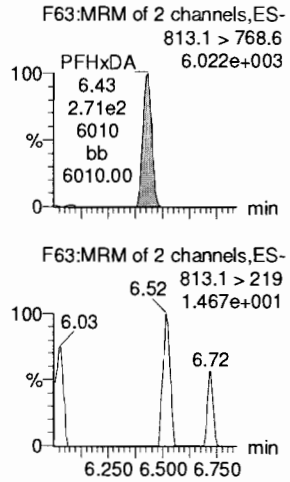
PFTeDA



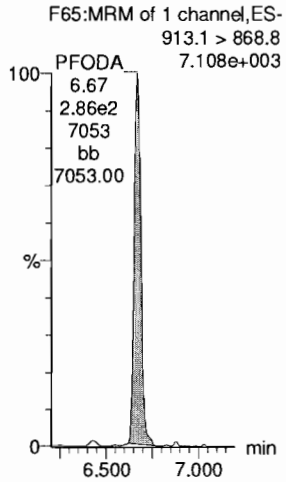
N-EtFOSA



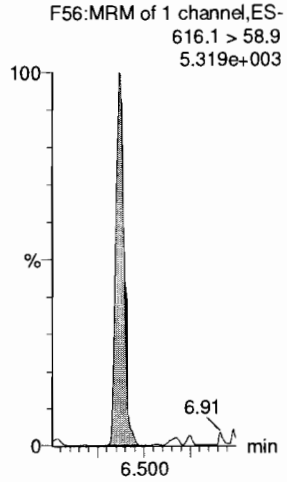
PFHxDA



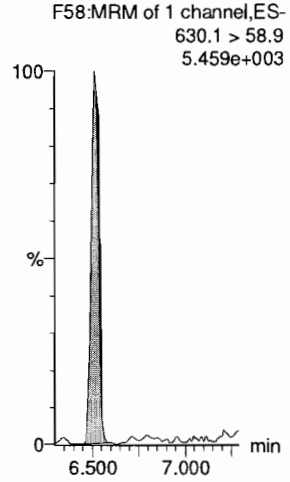
PFODA



N-MeFOSE



N-EtFOSE



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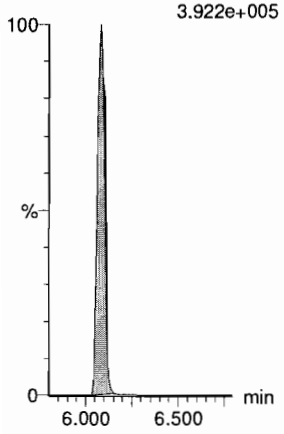
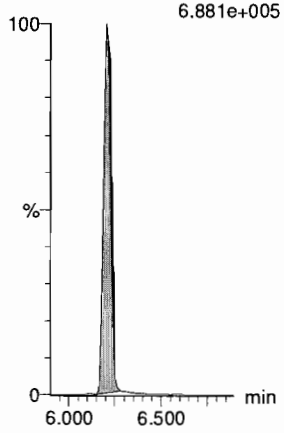


d5-N-ETFOSA



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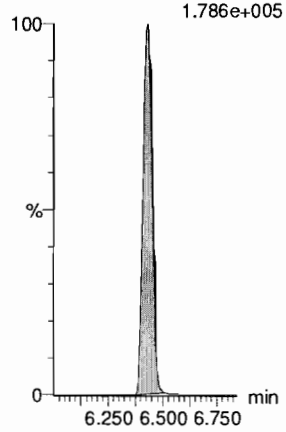
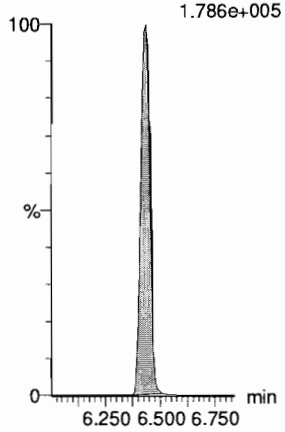
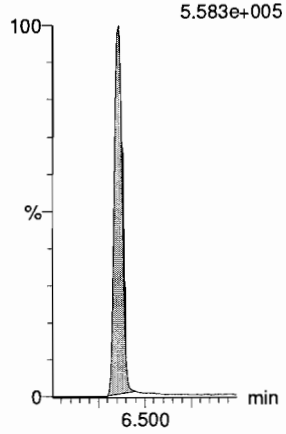


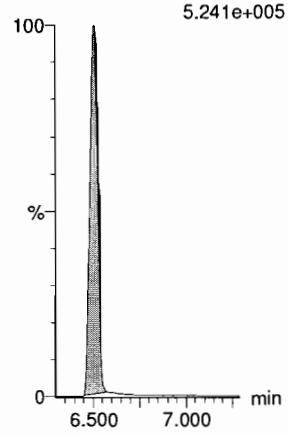
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

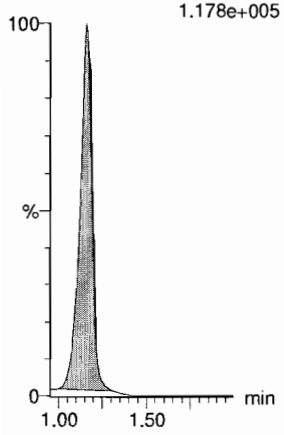


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

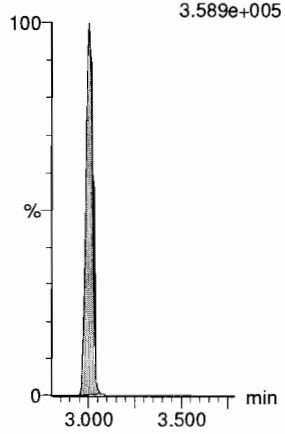
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_2, Date: 19-Jun-2018, Time: 17:21:34, ID: ST180619M1-1 PFC CS-2 18F1104, Description: PFC CS-2 18F1104

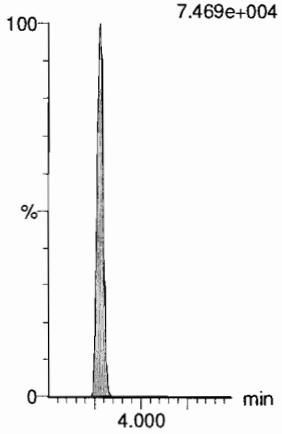
13C4-PFBA



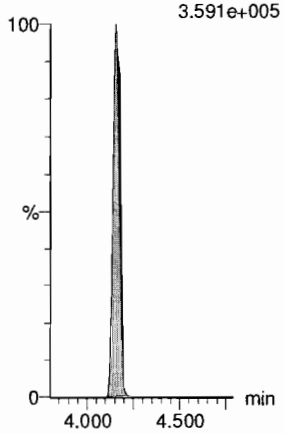
13C5-PFHxA



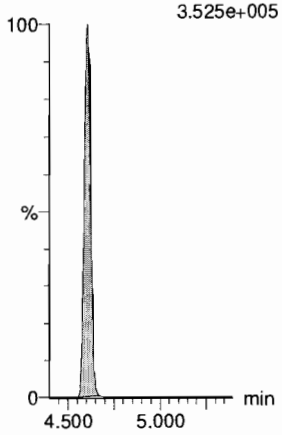
13C3-PFHxS



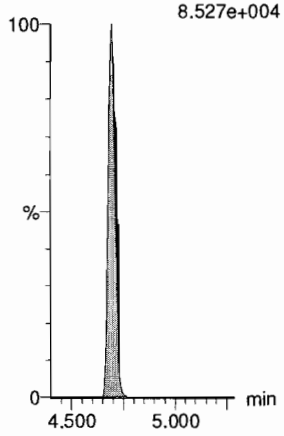
13C8-PFOA



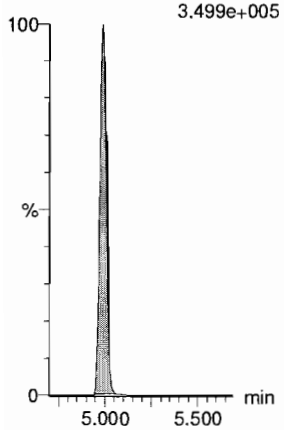
13C9-PFNA



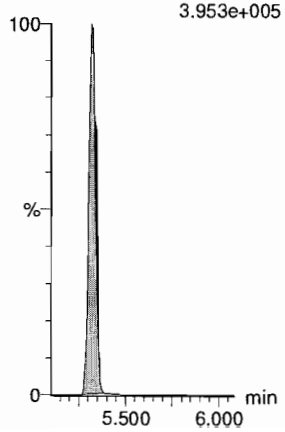
13C4-PFOS



13C6-PFDA



13C7-PFUdA

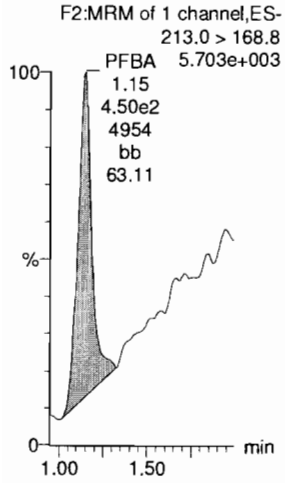


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

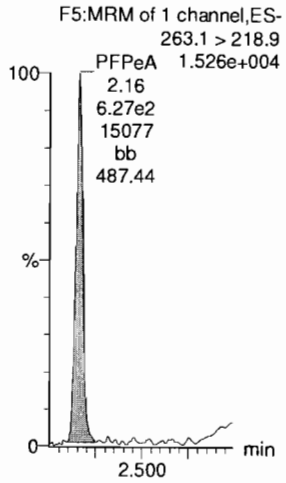
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_3, Date: 19-Jun-2018, Time: 17:31:58, ID: ST180619M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

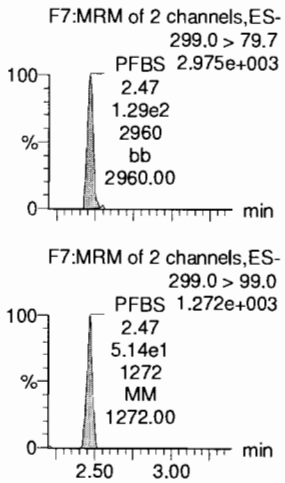
PFBA



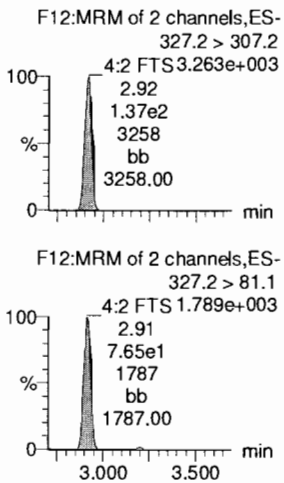
PFPeA



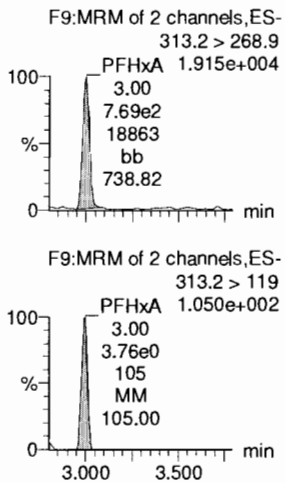
PFBS



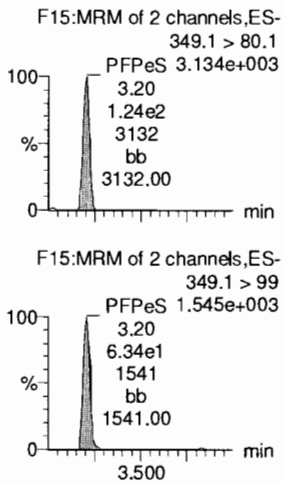
4:2 FTS



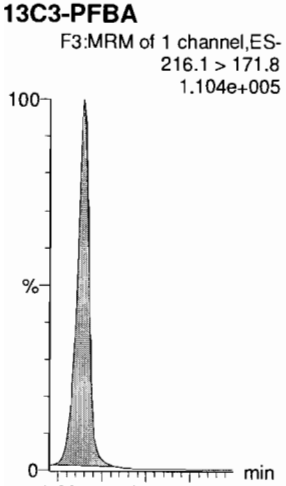
PFHxA



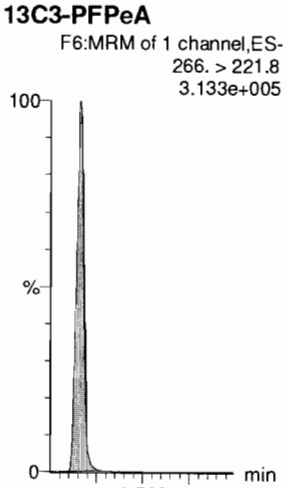
PFPeS



13C3-PFBA



13C3-PFPeA



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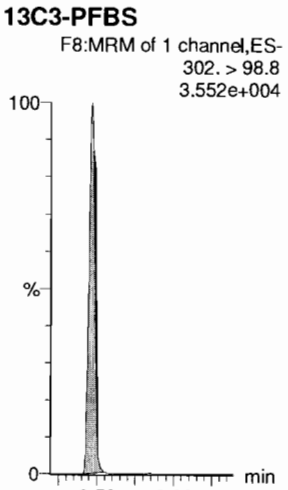
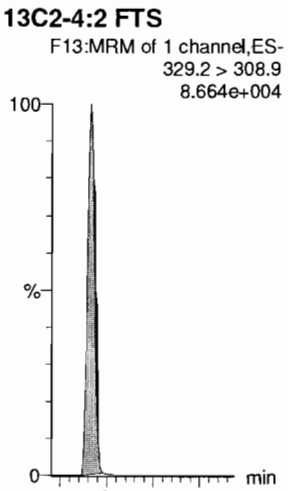
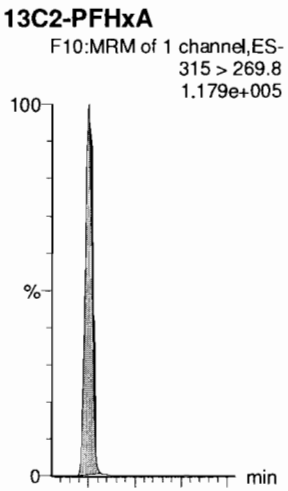


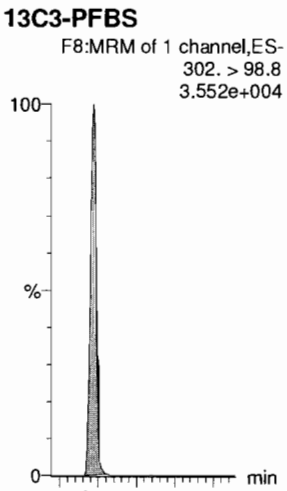
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

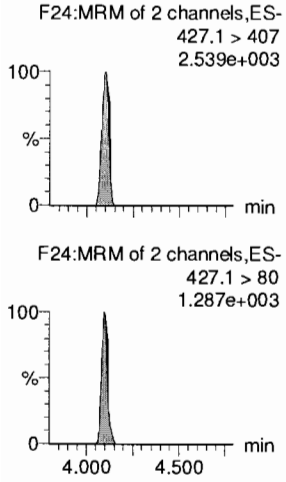


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

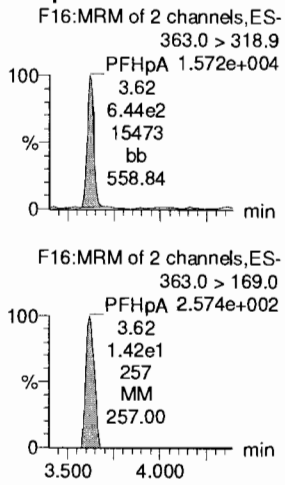
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_3, Date: 19-Jun-2018, Time: 17:31:58, ID: ST180619M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

6:2 FTS



PFHpA



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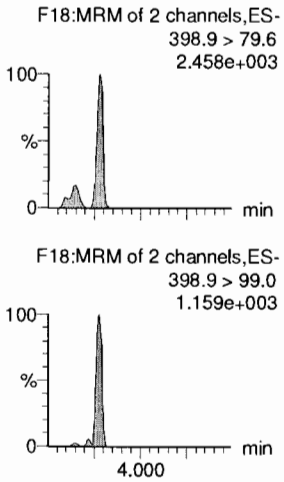

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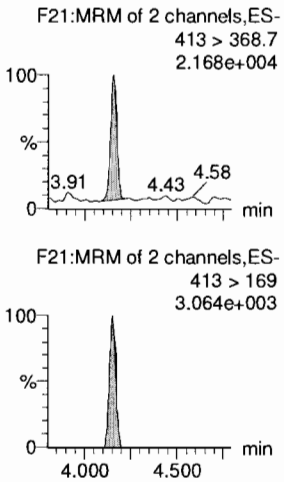

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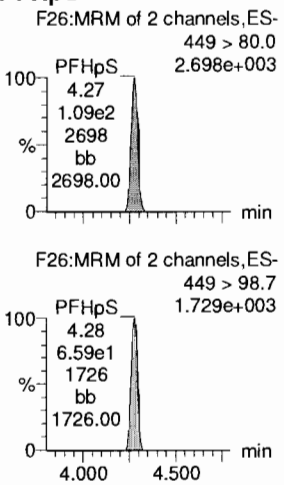

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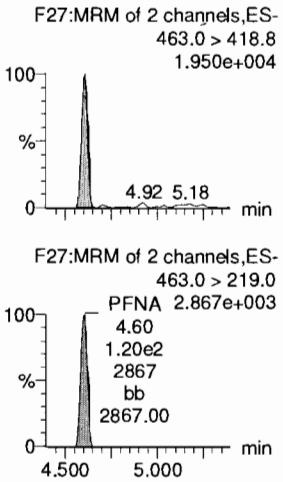

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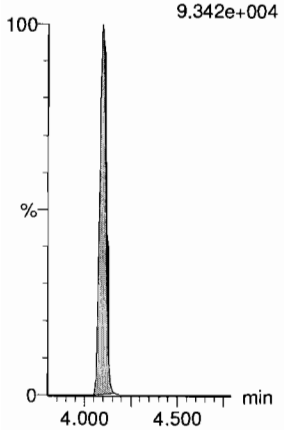

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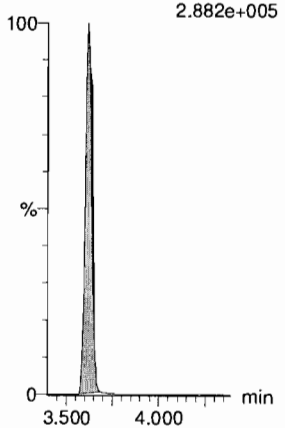

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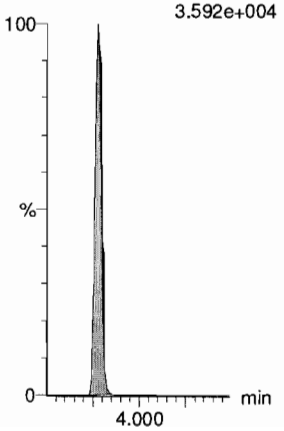

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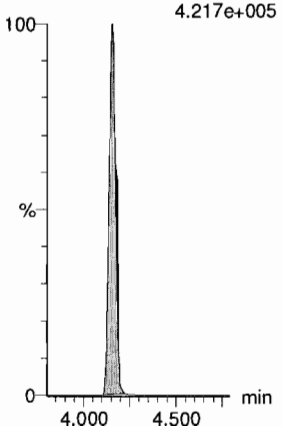

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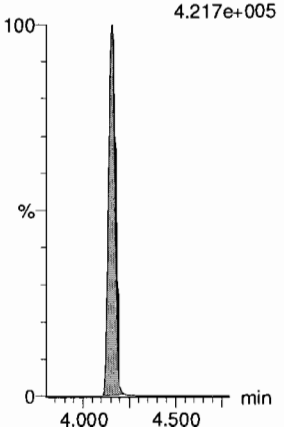

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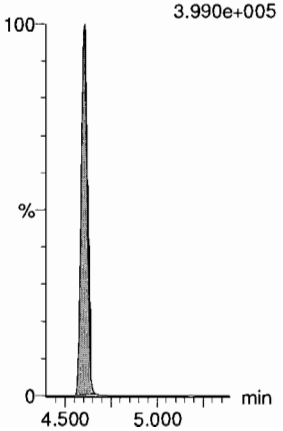
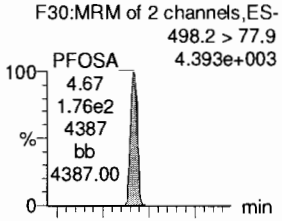


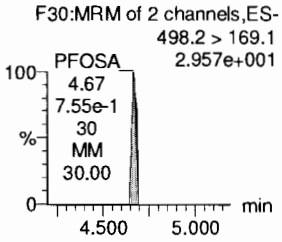
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

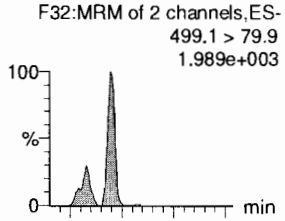
Name: 180619M1_3, Date: 19-Jun-2018, Time: 17:31:58, ID: ST180619M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

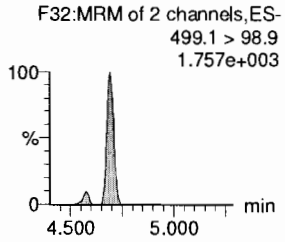
PFOSA





L-PFOS





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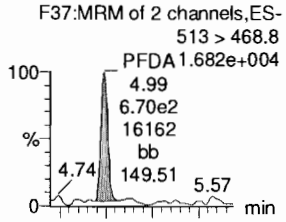
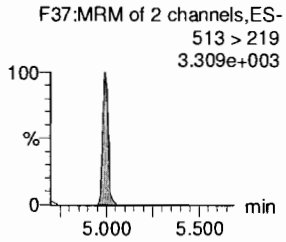
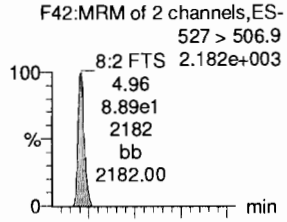
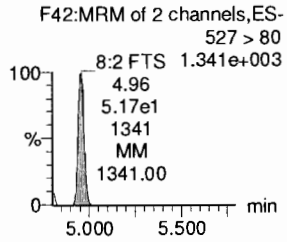




8:2 FTS





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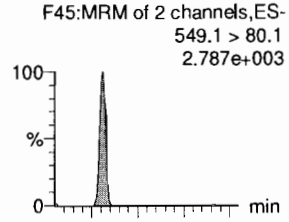
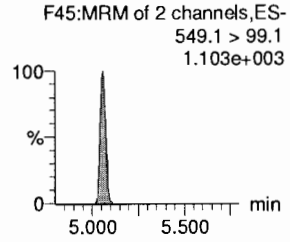
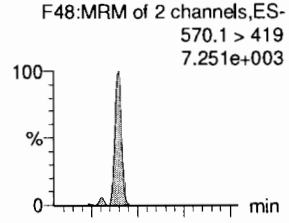
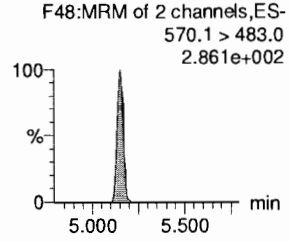




L-MeFOSAA





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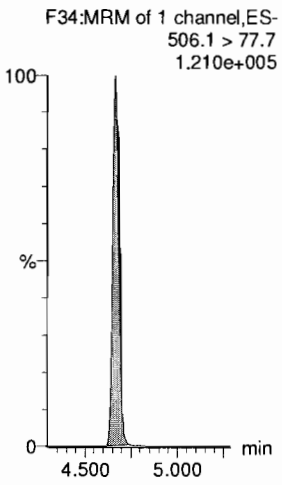

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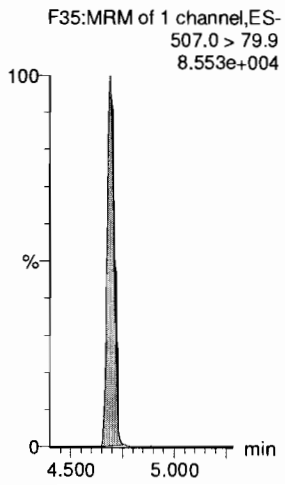

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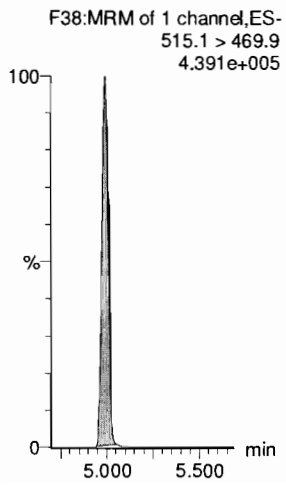
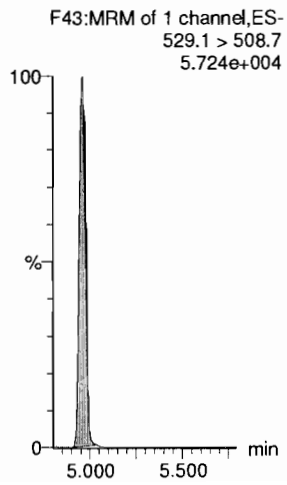


13C2-8:2 FTS



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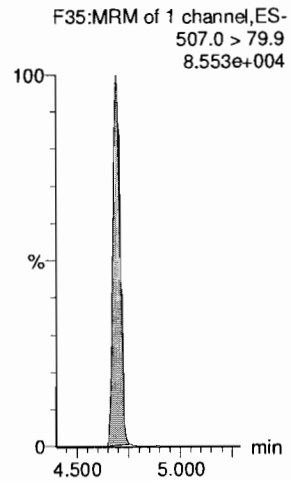
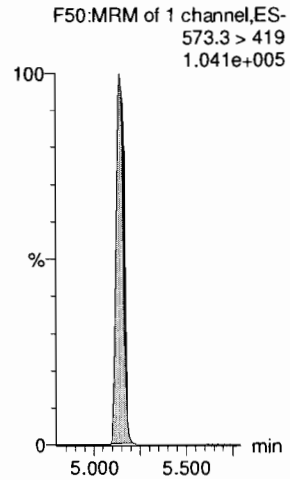


d3-N-MeFOSAA

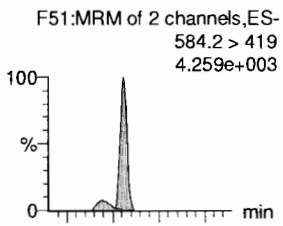


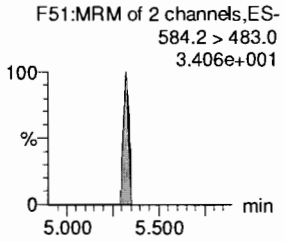
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

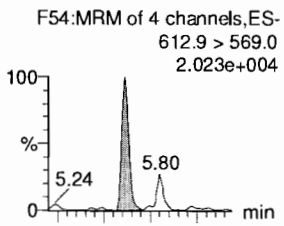
Name: 180619M1_3, Date: 19-Jun-2018, Time: 17:31:58, ID: ST180619M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

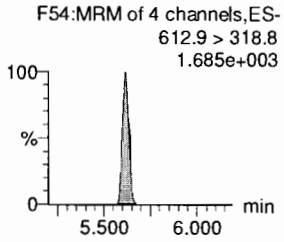
L-EtFOSAA





PFDoA





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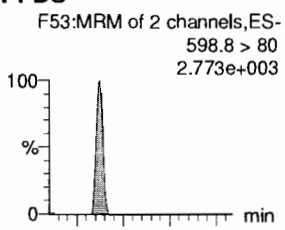

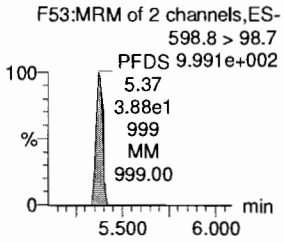

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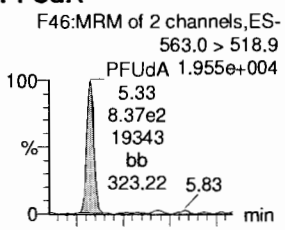

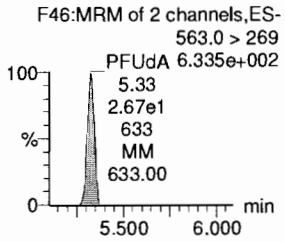

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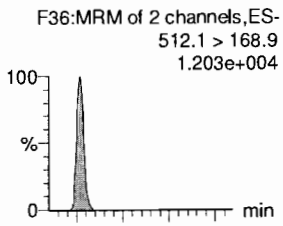

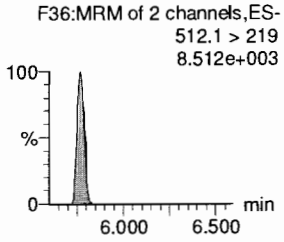

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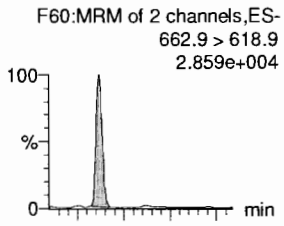
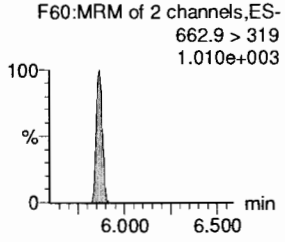
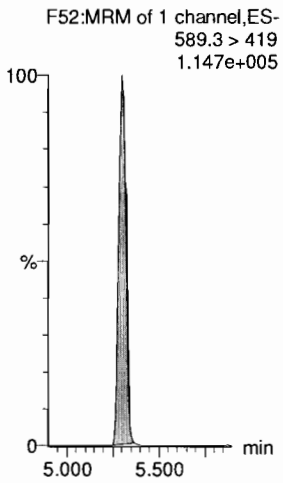




d5-N-EtFOSAA



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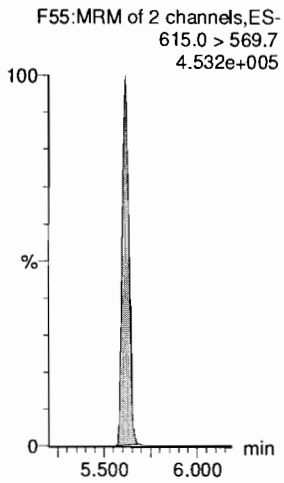

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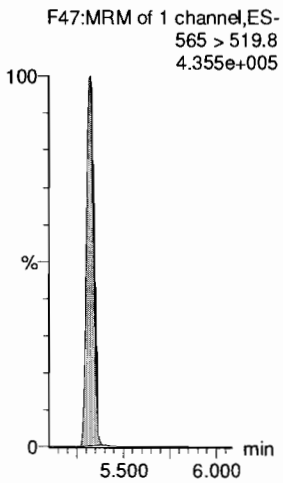

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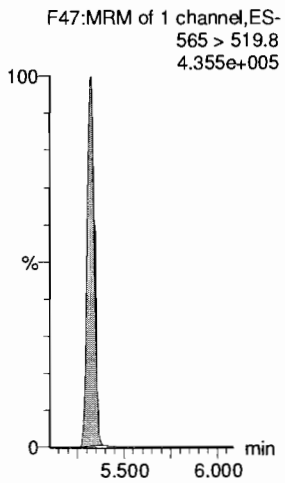
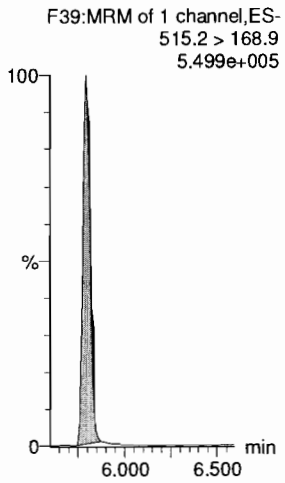


d3-N-MeFOSA



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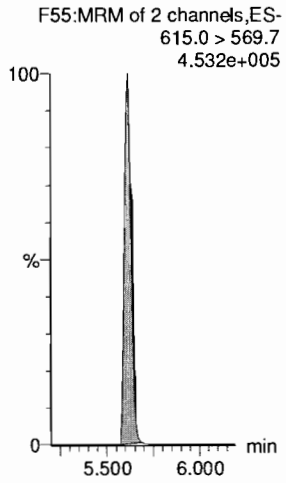

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Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
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Name: 180619M1_3, Date: 19-Jun-2018, Time: 17:31:58, ID: ST180619M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

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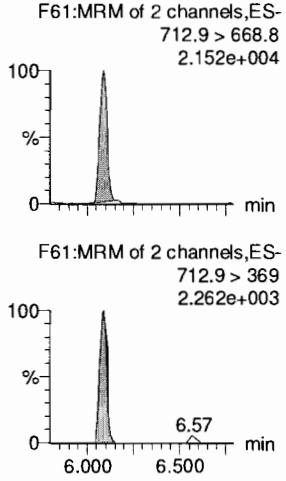
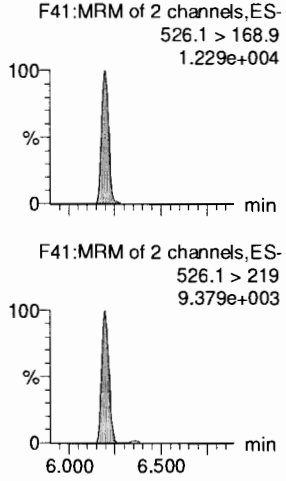
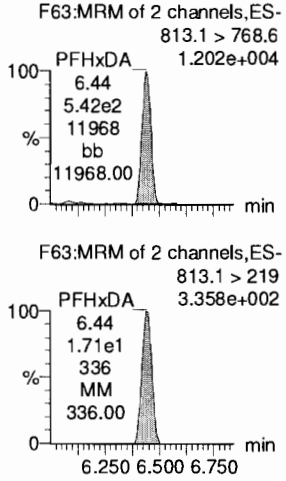


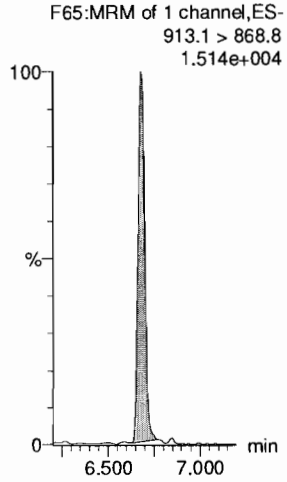
N-EtFOSA



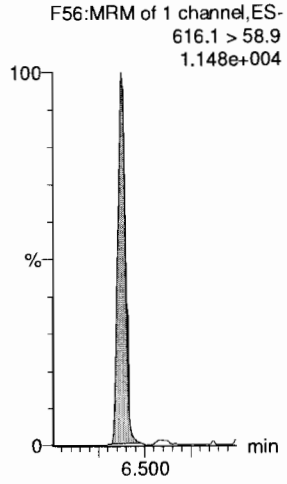
PFHxDA



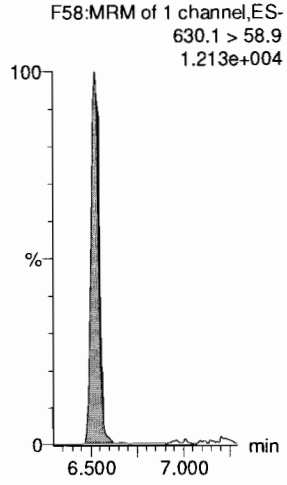
PFODA



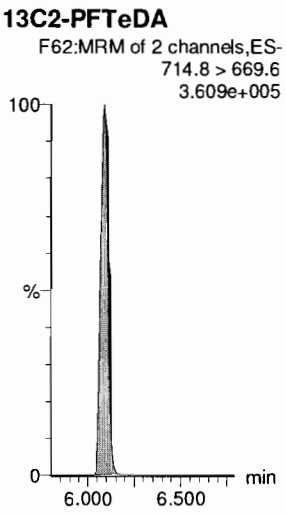
N-MeFOSE



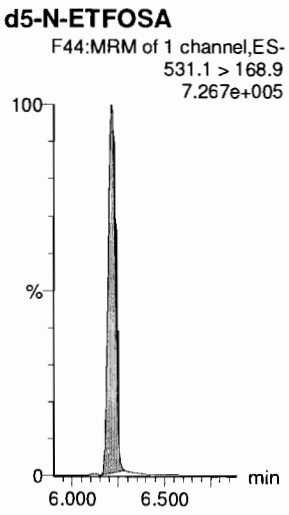
N-EtFOSE



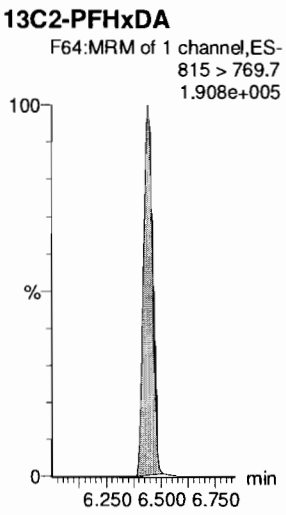
13C2-PFTeDA



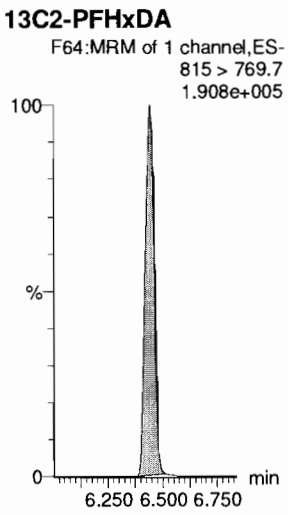
d5-N-ETFOSA



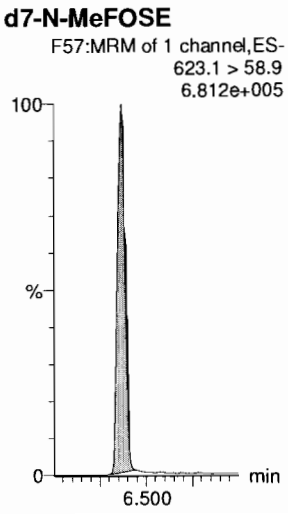
13C2-PFHxDA



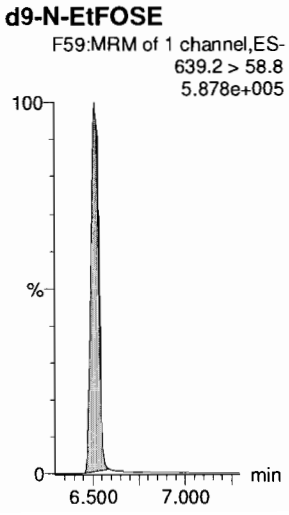
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

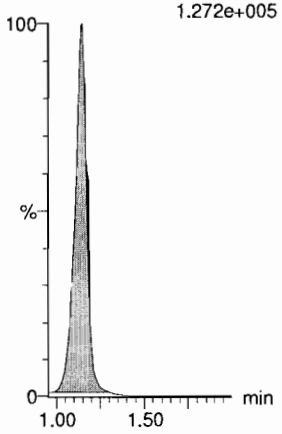


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

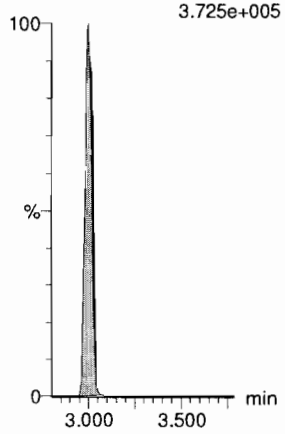
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_3, Date: 19-Jun-2018, Time: 17:31:58, ID: ST180619M1-2 PFC CS-1 18F1105, Description: PFC CS-1 18F1105

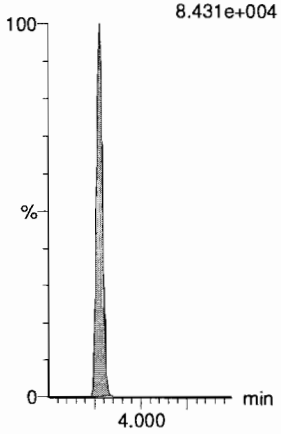
13C4-PFBA



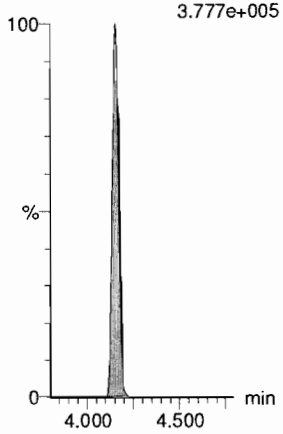
13C5-PFHxA



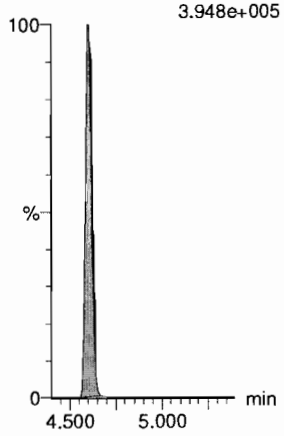
13C3-PFHxS



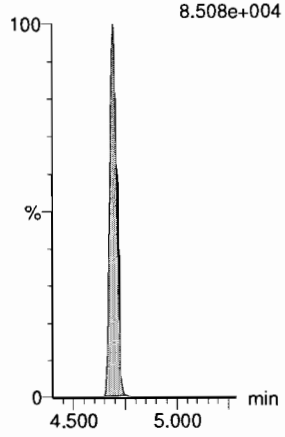
13C8-PFOA



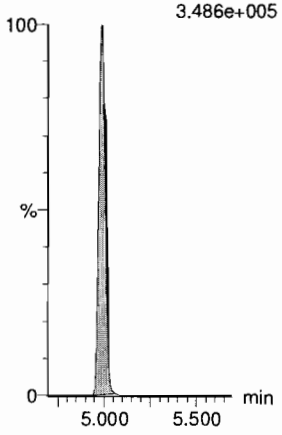
13C9-PFNA



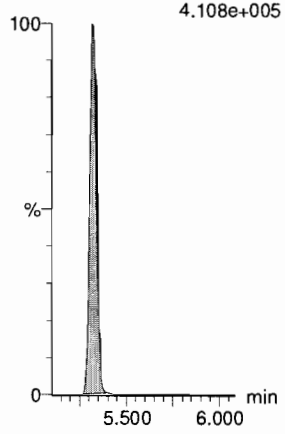
13C4-PFOS



13C6-PFDA



13C7-PFUdA

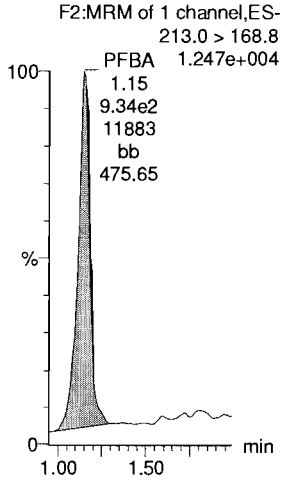


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

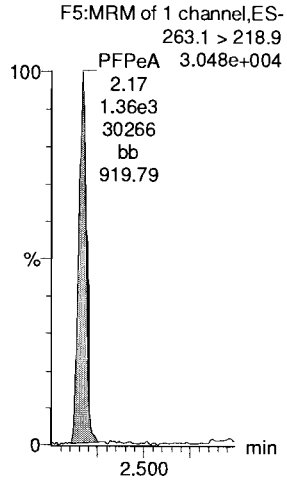
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_4, Date: 19-Jun-2018, Time: 17:42:28, ID: ST180619M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

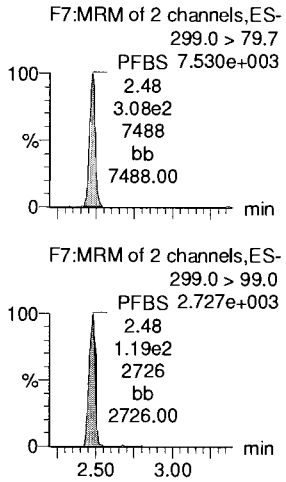
PFBA



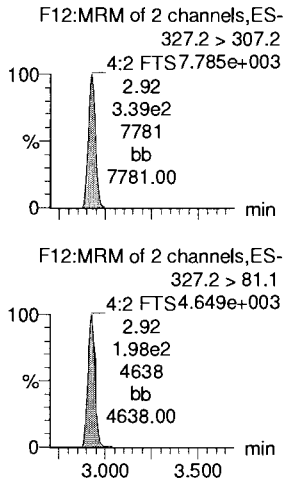
PFPeA



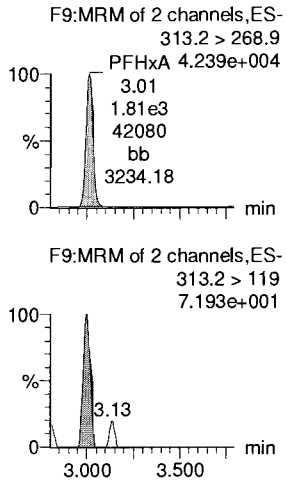
PFBS



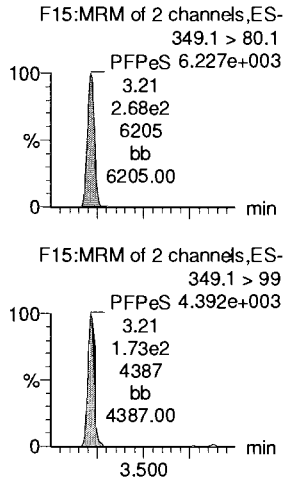
4:2 FTS



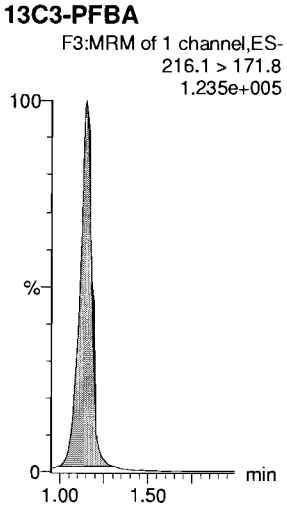
PFHxA



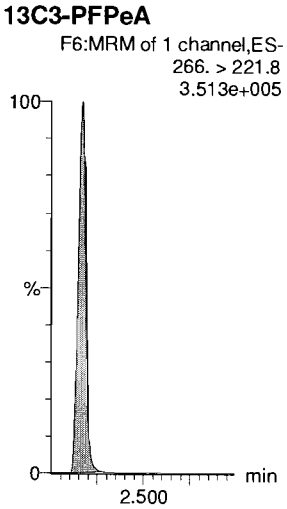
PFPeS



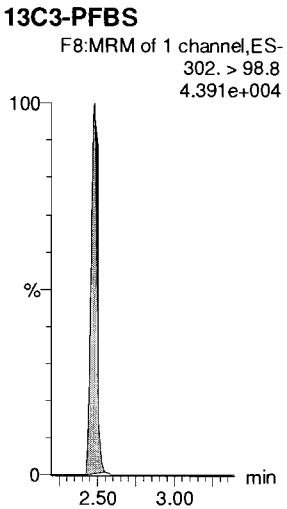
13C3-PFBA



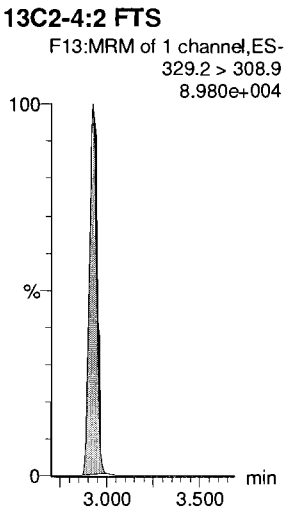
13C3-PFPeA



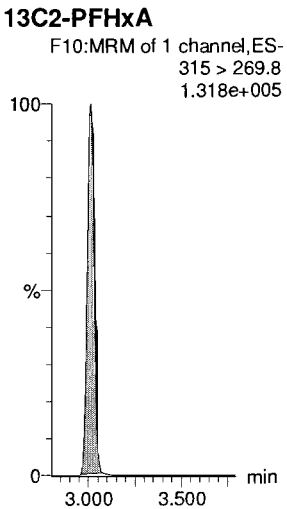
13C3-PFBS



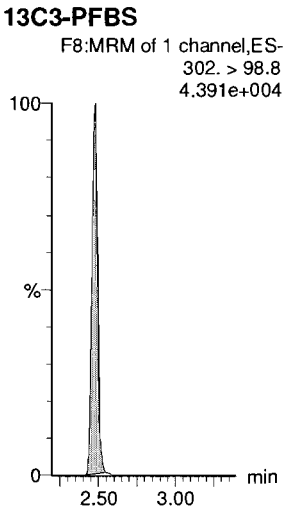
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

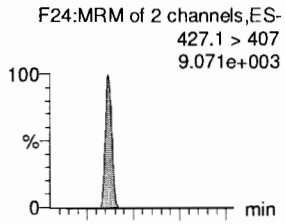


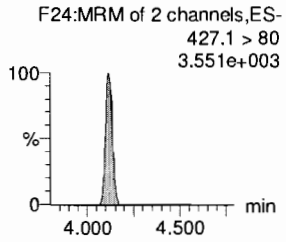
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

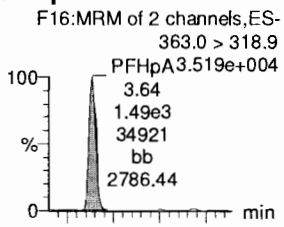
Name: 180619M1_4, Date: 19-Jun-2018, Time: 17:42:28, ID: ST180619M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

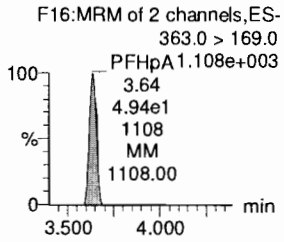
6:2 FTS



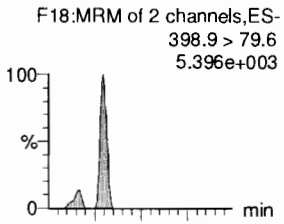


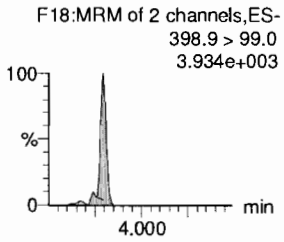
PFHpA



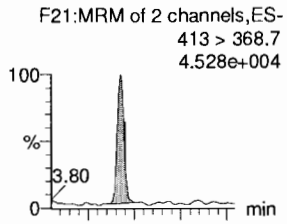


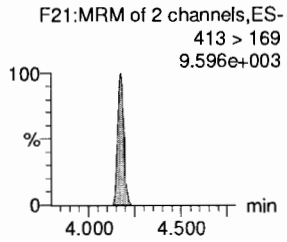
L-PFHxS



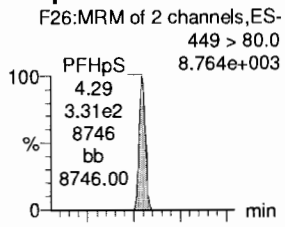


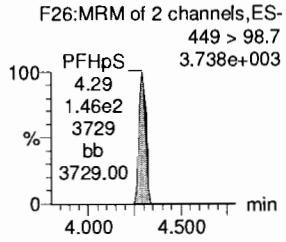
L-PFOA



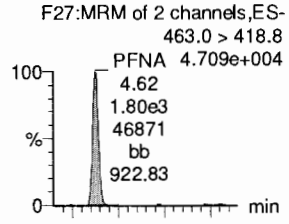


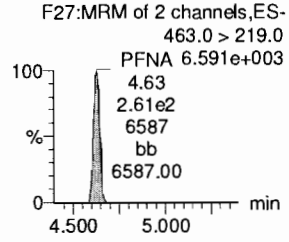
PFHpS



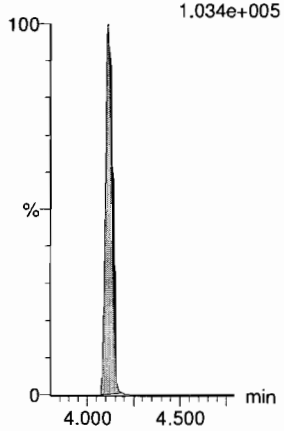


PFNA

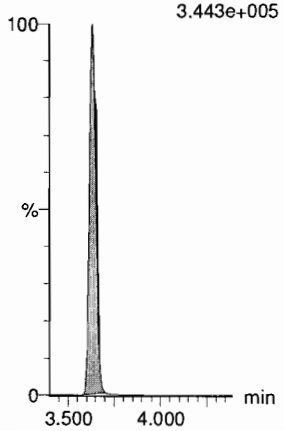




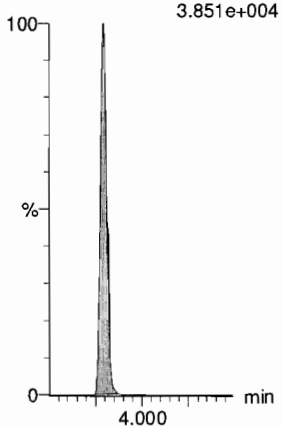
13C2-6:2 FTS



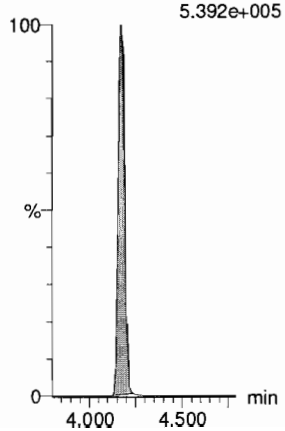
13C4-PFHpA



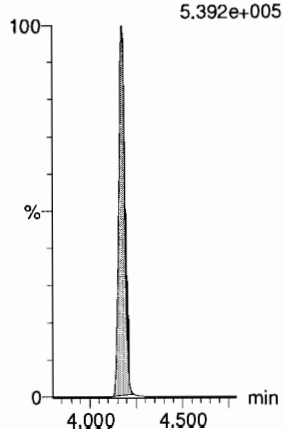
18O2-PFHxS



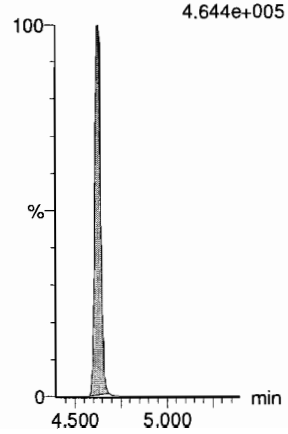
13C2-PFOA



13C2-PFOA



13C5-PFNA

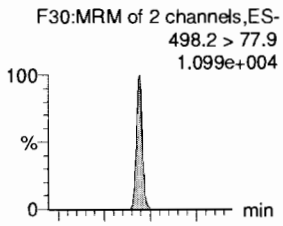


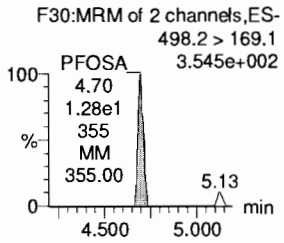
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

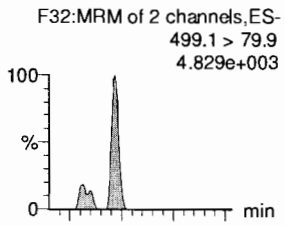
Name: 180619M1_4, Date: 19-Jun-2018, Time: 17:42:28, ID: ST180619M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

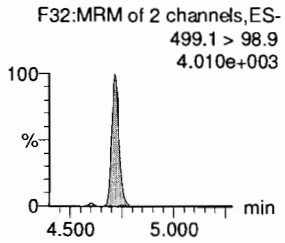
PFOSA



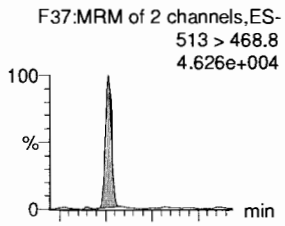


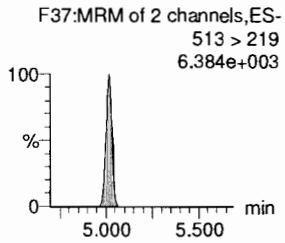
L-PFOS



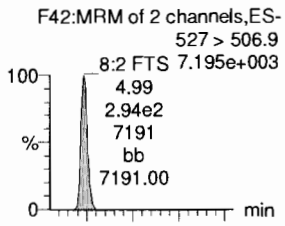


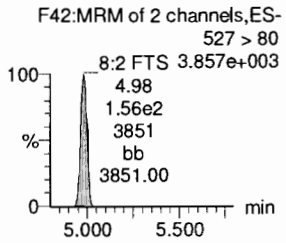
PFDA



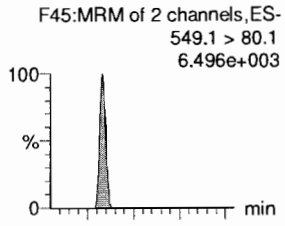


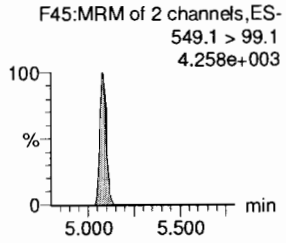
8:2 FTS



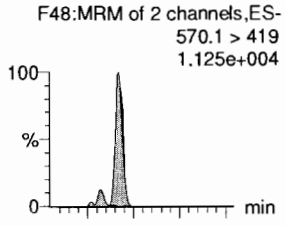


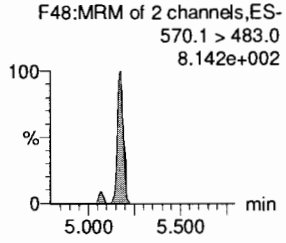
PFNS



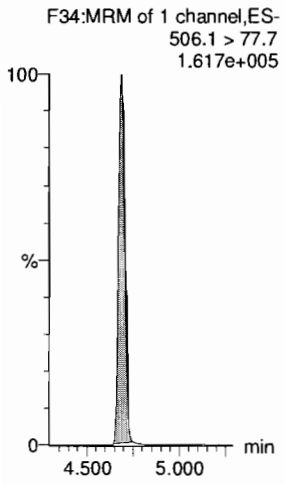


L-MeFOSAA

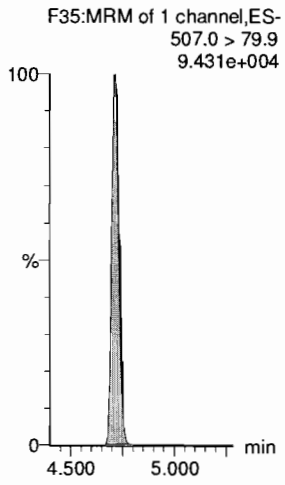




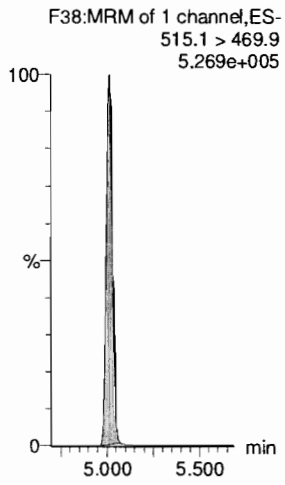
13C8-PFOSA



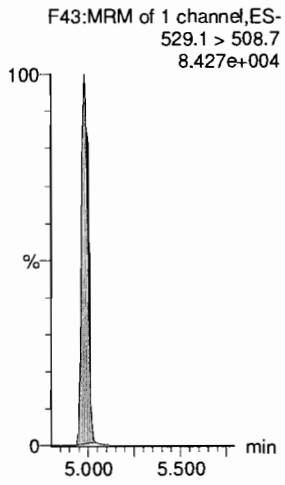
13C8-PFOS



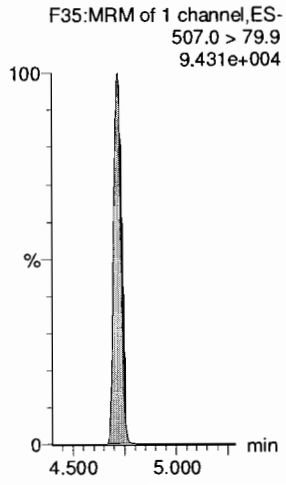
13C2-PFDA



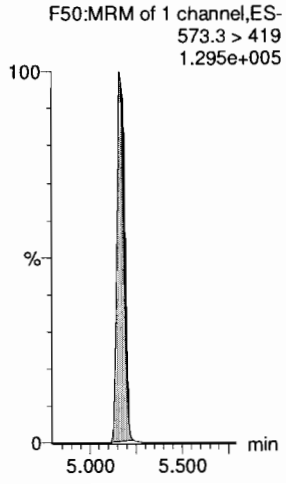
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

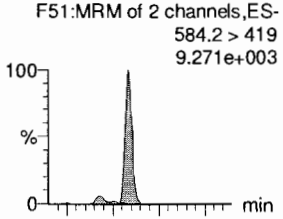


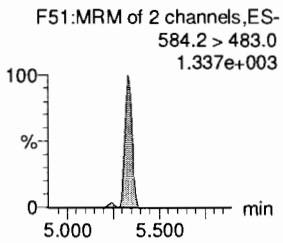
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

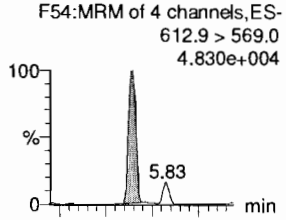
Name: 180619M1_4, Date: 19-Jun-2018, Time: 17:42:28, ID: ST180619M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

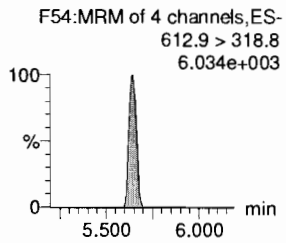
L-EtFOSAA





PFDoA





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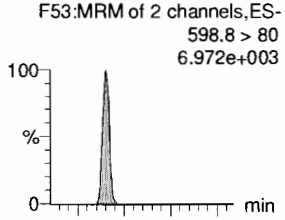
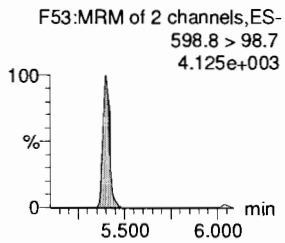
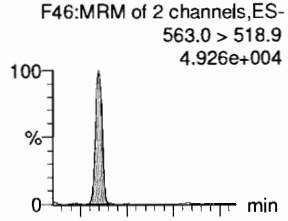
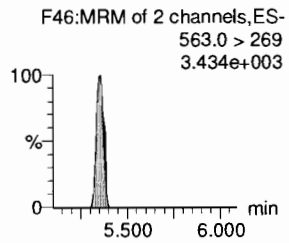


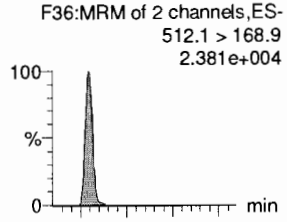


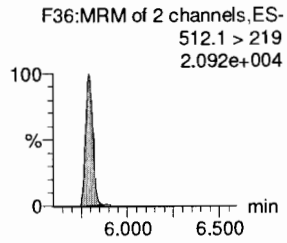
PFUdA





N-MeFOSA





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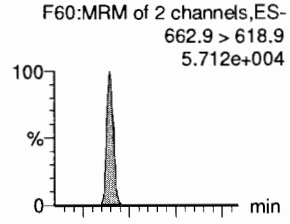
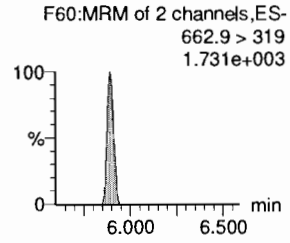
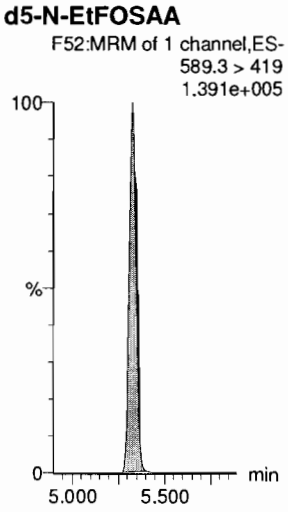
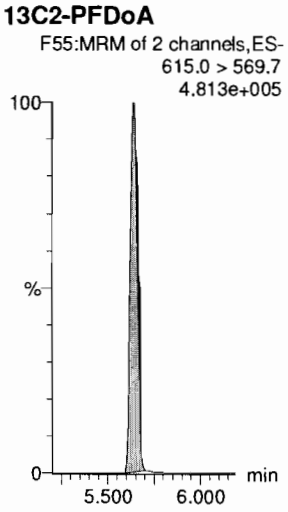




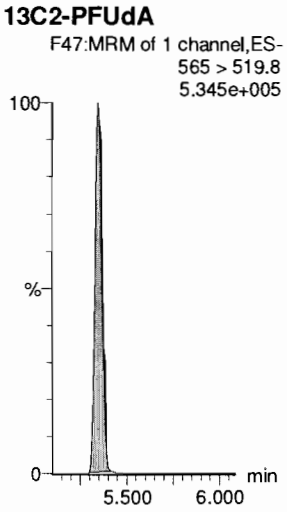
d5-N-EtFOSAA



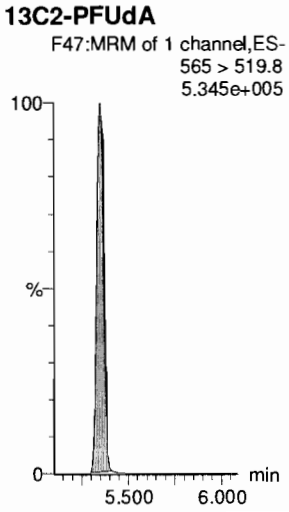
13C2-PFDoA



13C2-PFUdA



13C2-PFUdA



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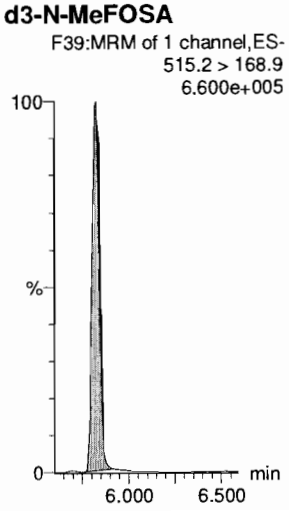
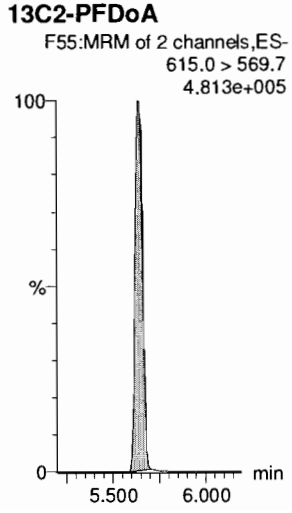


13C2-PFDoA

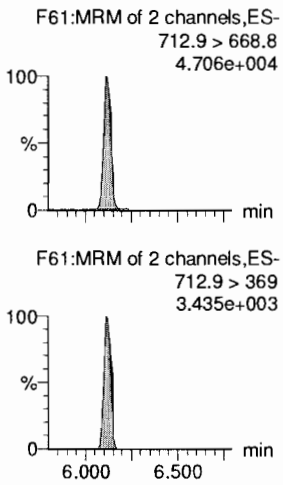


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

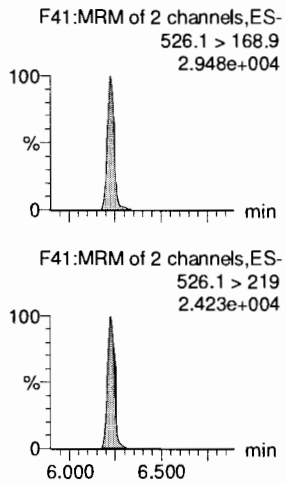
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_4, Date: 19-Jun-2018, Time: 17:42:28, ID: ST180619M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

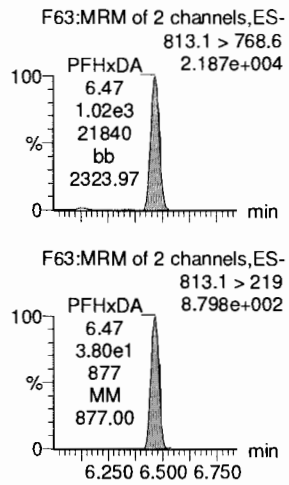
PFTeDA



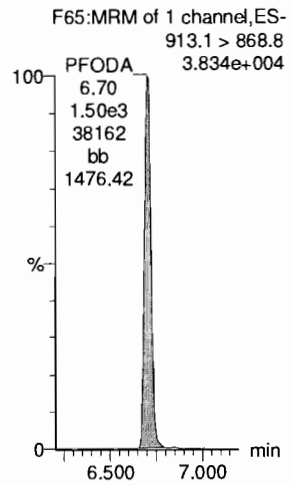
N-EtFOSA



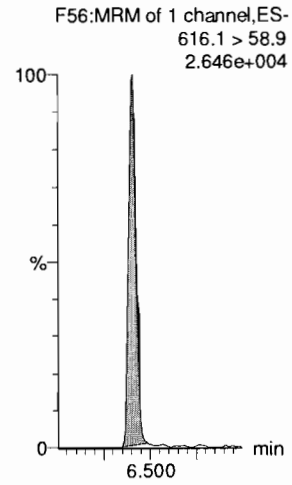
PFHxDA



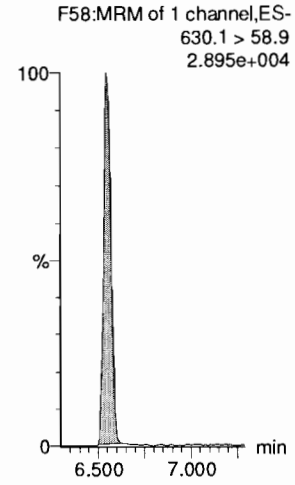
PFODA



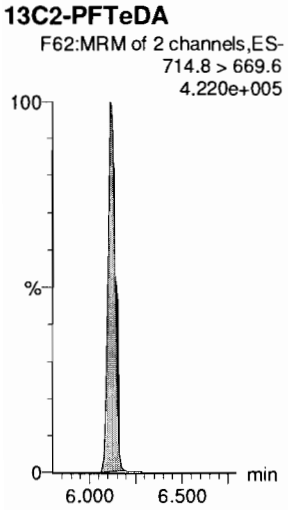
N-MeFOSE



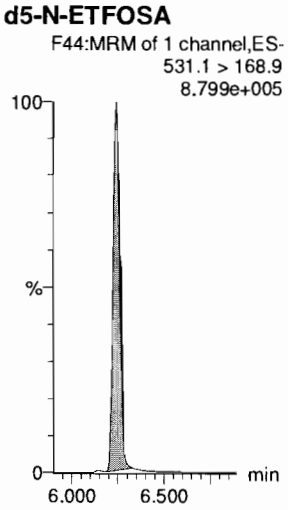
N-EtFOSE



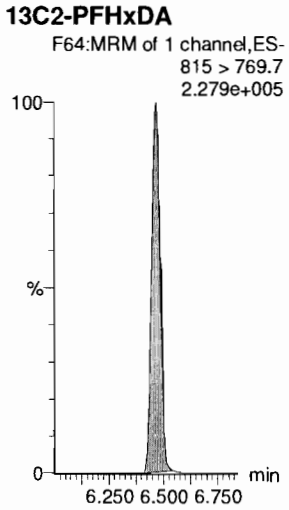
13C2-PFTeDA



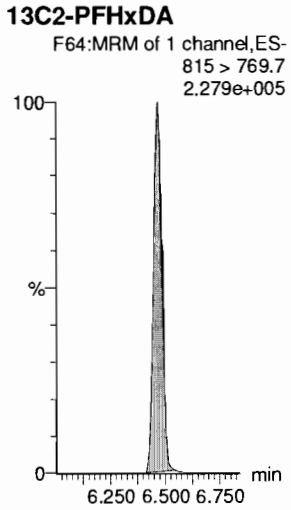
d5-N-ETFOSA



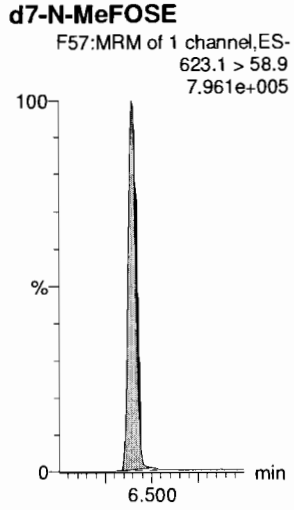
13C2-PFHxDA



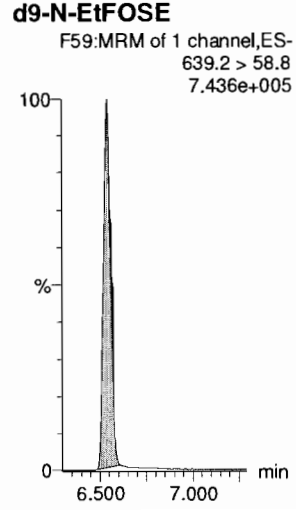
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

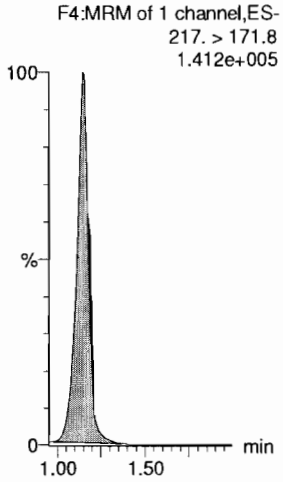


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

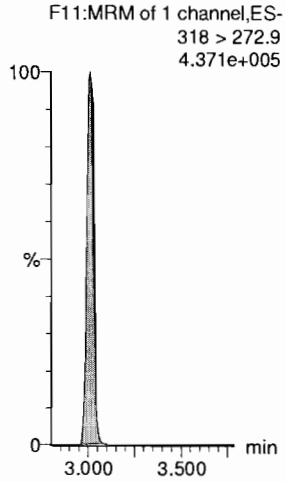
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_4, Date: 19-Jun-2018, Time: 17:42:28, ID: ST180619M1-3 PFC CS0 18F1106, Description: PFC CS0 18F1106

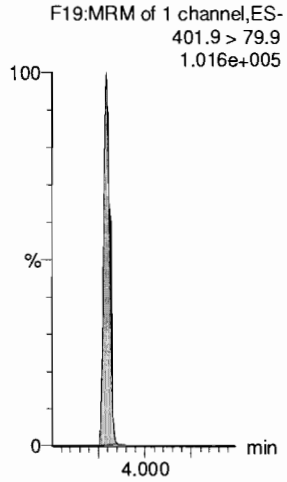
13C4-PFBA



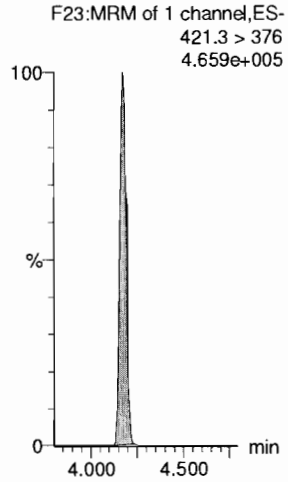
13C5-PFHxA



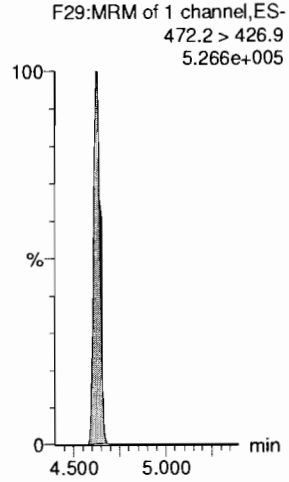
13C3-PFHxS



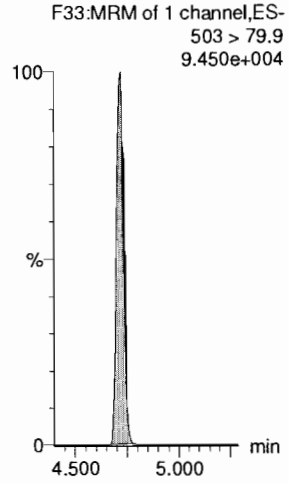
13C8-PFOA



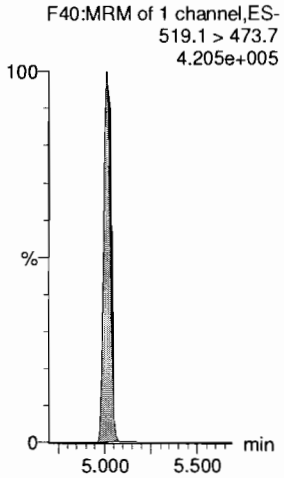
13C9-PFNA



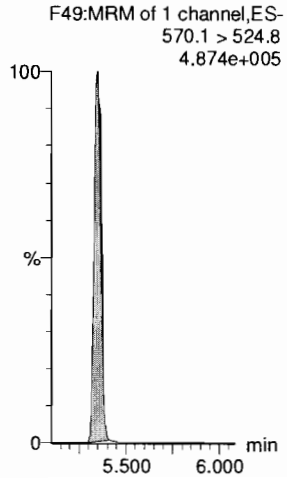
13C4-PFOS



13C6-PFDA



13C7-PFUdA

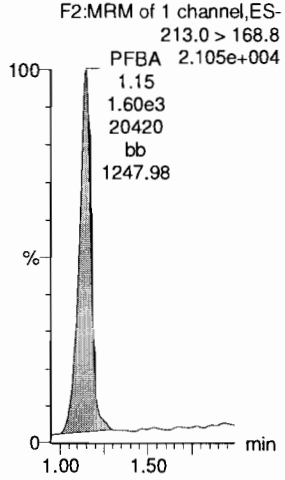


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

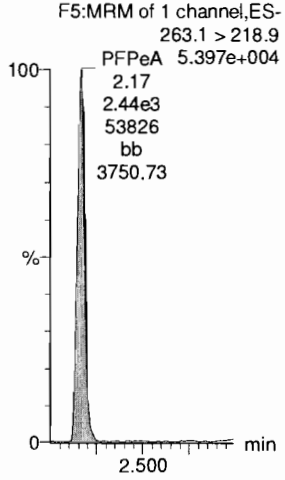
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_5, Date: 19-Jun-2018, Time: 17:52:54, ID: ST180619M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

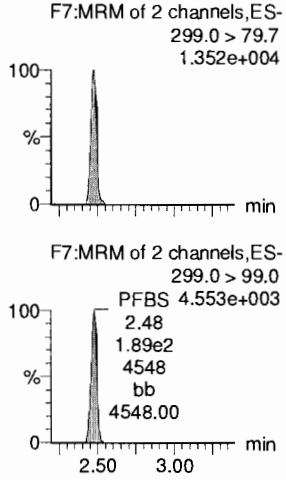
PFBA



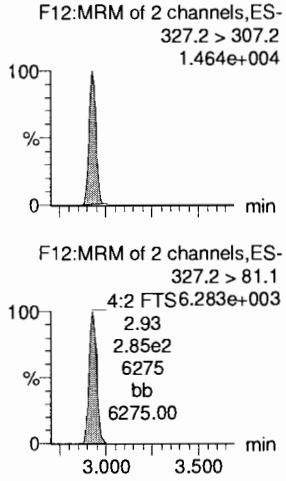
PFPeA



PFBS



4:2 FTS



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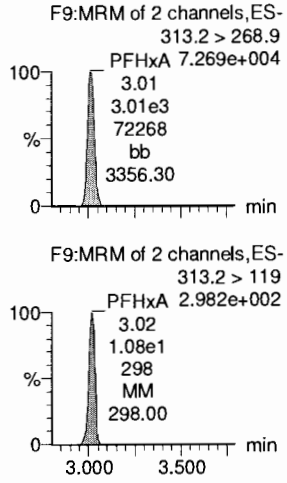

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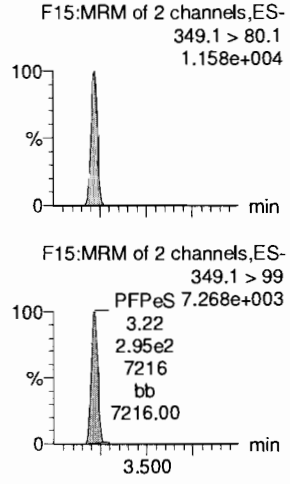
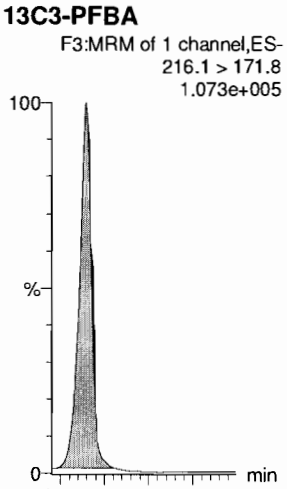


13C3-PFBA



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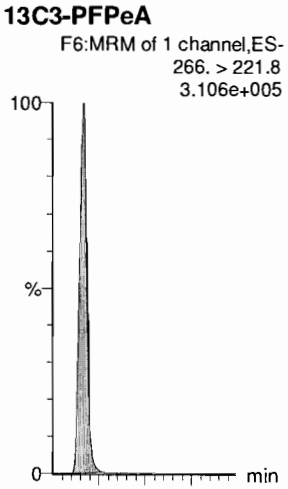

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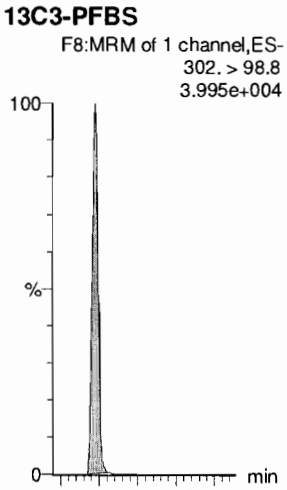
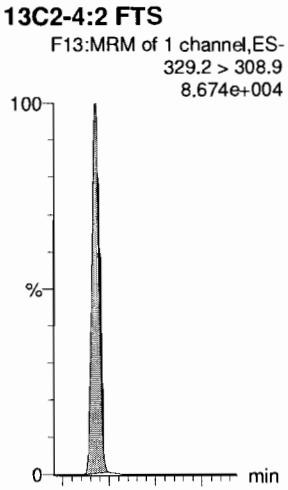
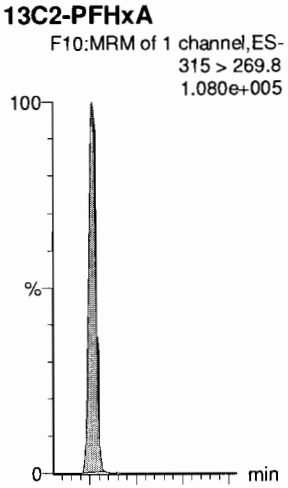


13C2-4:2 FTS



13C2-PFHxA



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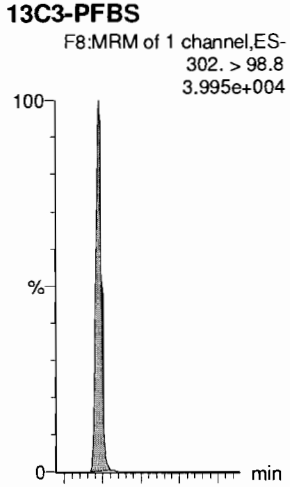

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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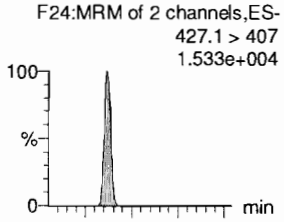
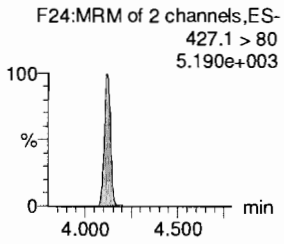
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

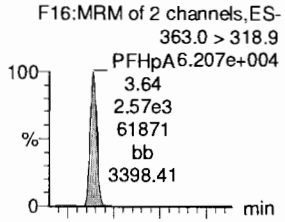
Name: 180619M1_5, Date: 19-Jun-2018, Time: 17:52:54, ID: ST180619M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

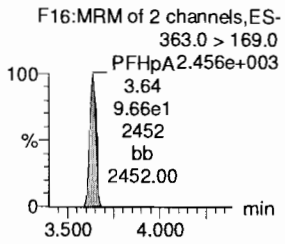
6:2 FTS



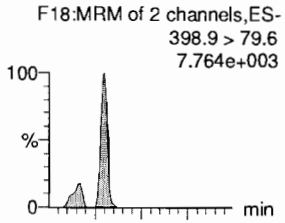


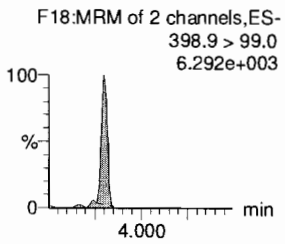
PFHpA



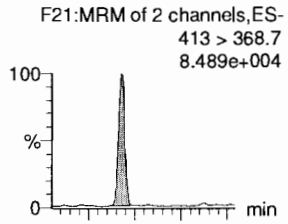


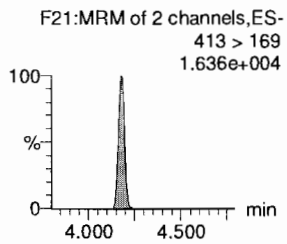
L-PFHxS





L-PFOA





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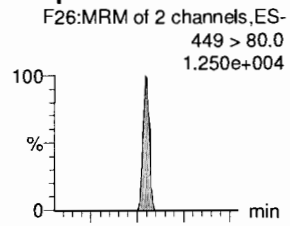

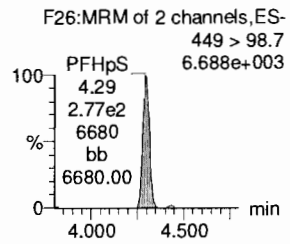

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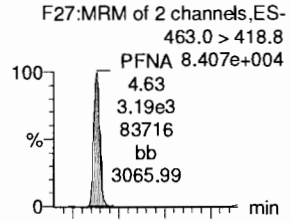
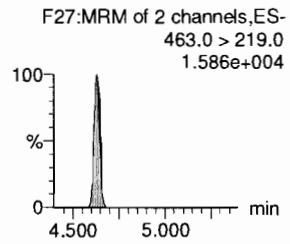
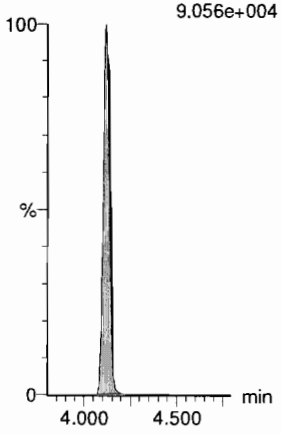
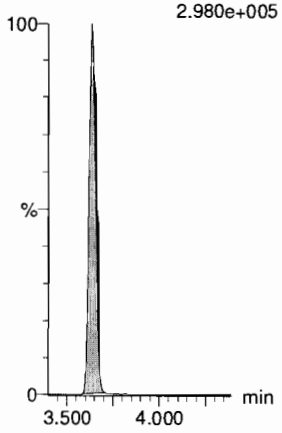




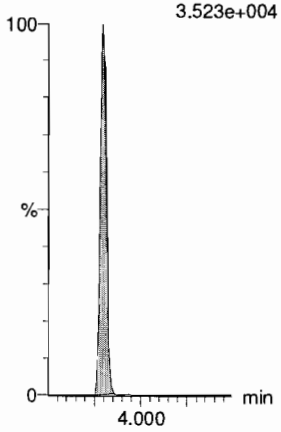
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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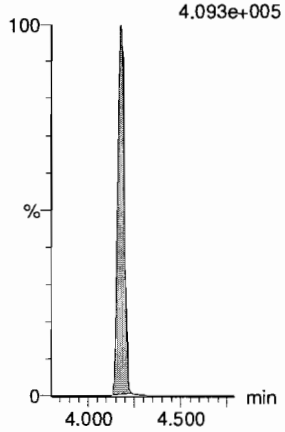

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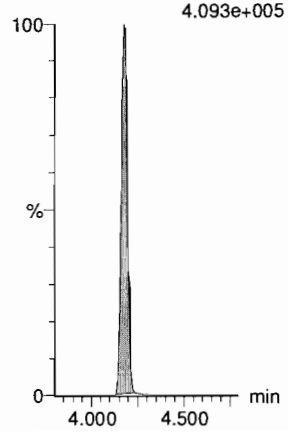

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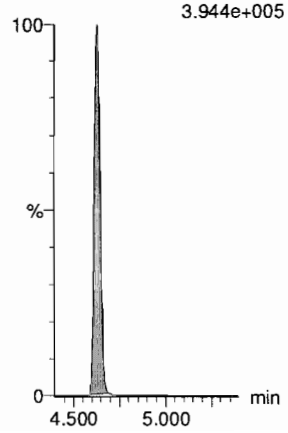

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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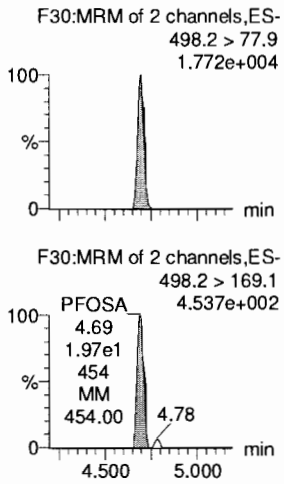
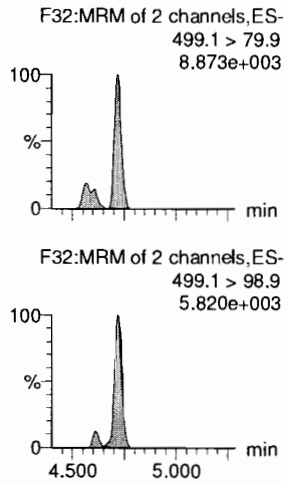
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_5, Date: 19-Jun-2018, Time: 17:52:54, ID: ST180619M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

PFOSA



L-PFOS



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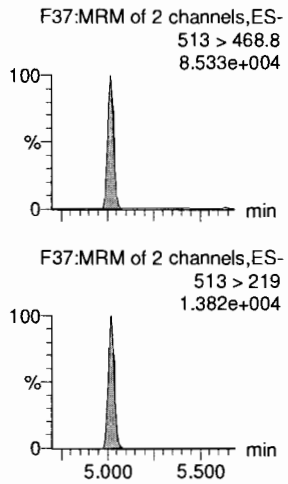
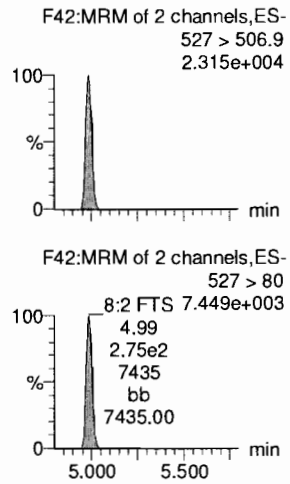


8:2 FTS



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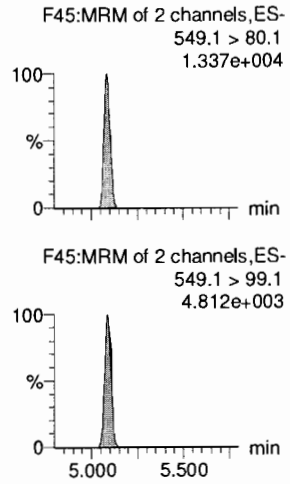
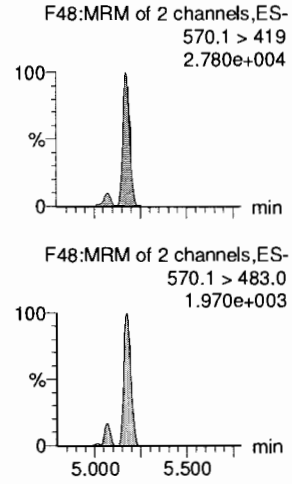
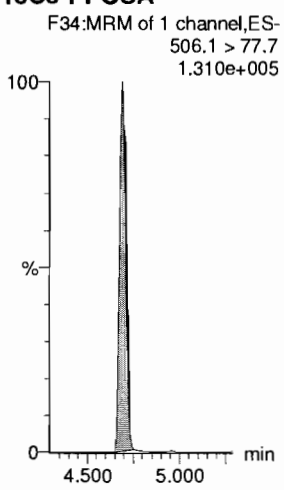


L-MeFOSAA



13C8-PFOSA



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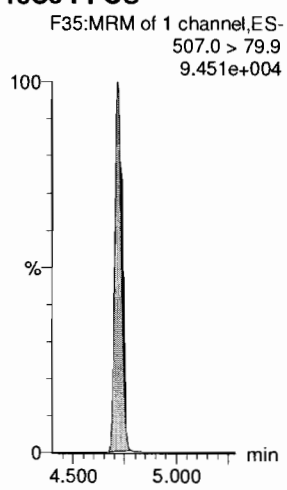
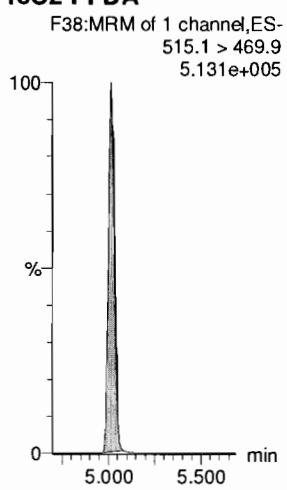
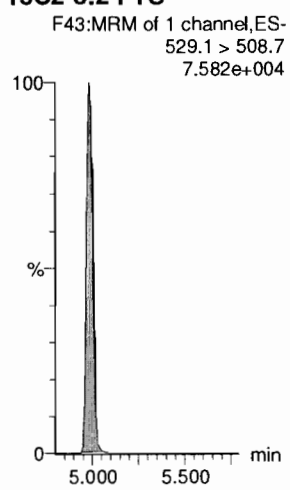


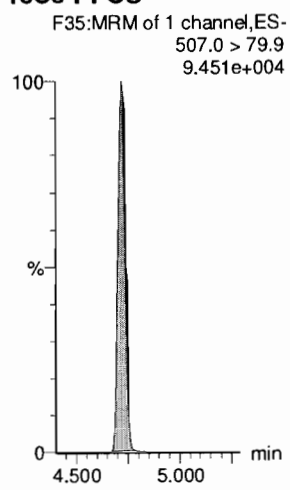
13C2-PFDA



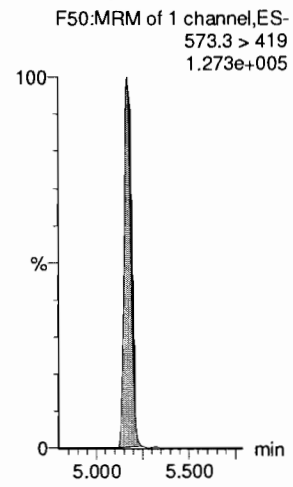
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



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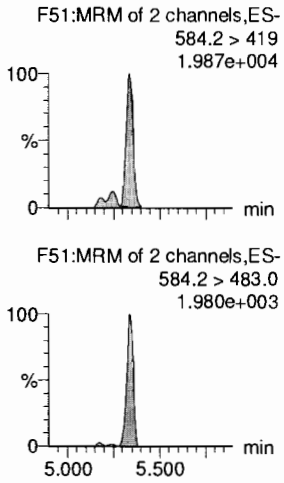
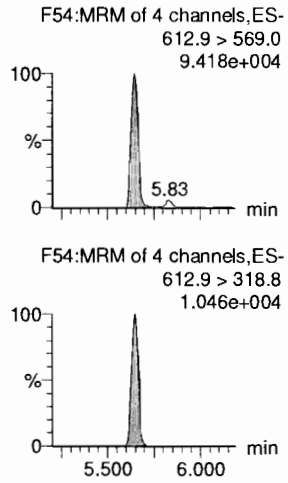
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_5, Date: 19-Jun-2018, Time: 17:52:54, ID: ST180619M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

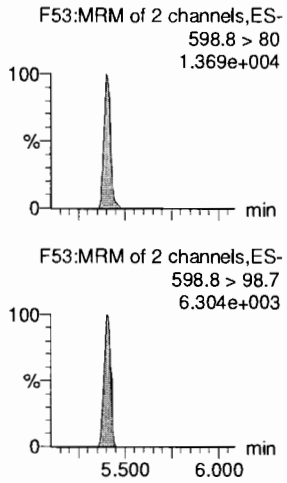
L-EtFOSAA



PFDoA



PFDS



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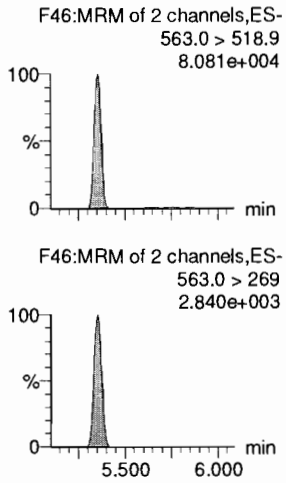
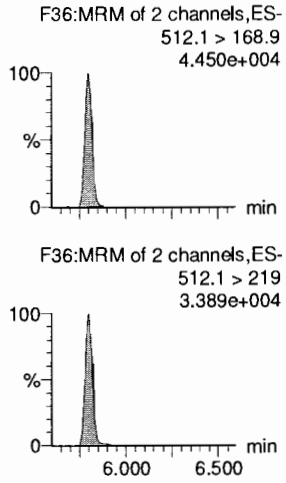


N-MeFOSA



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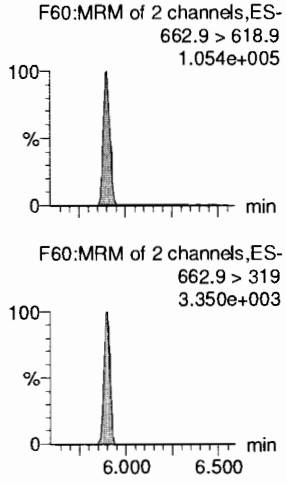

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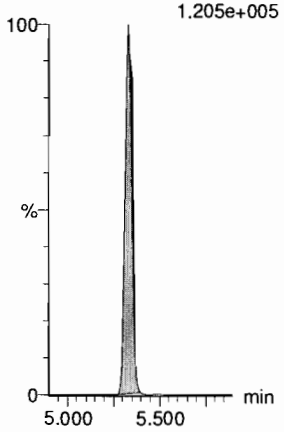
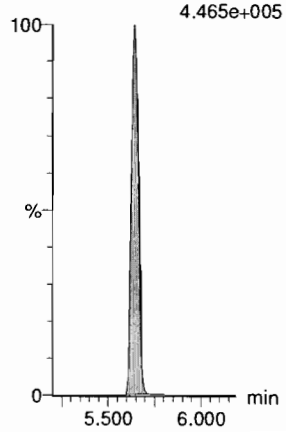
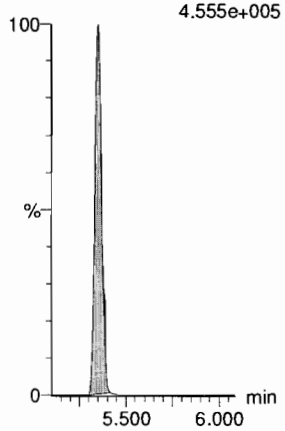


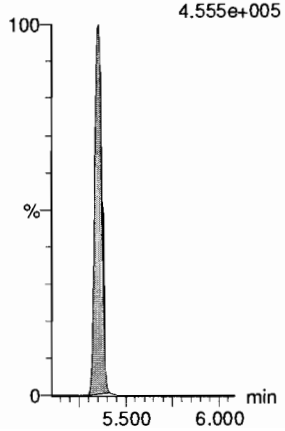
13C2-PFDoA



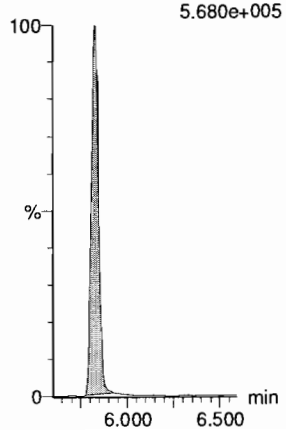
13C2-PFUdA



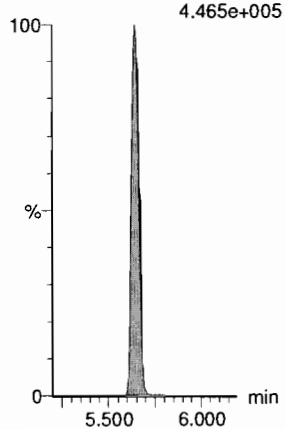
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

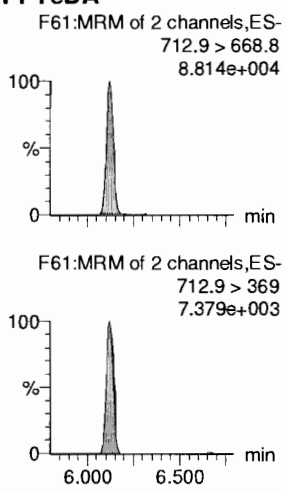


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

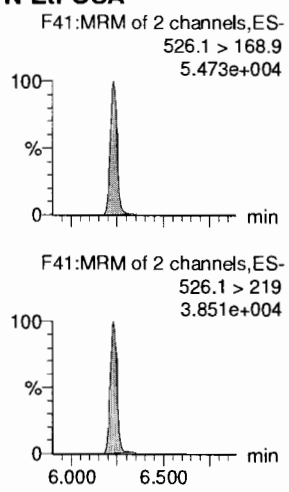
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_5, Date: 19-Jun-2018, Time: 17:52:54, ID: ST180619M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

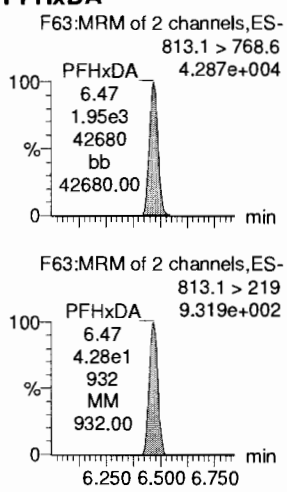
PFTeDA



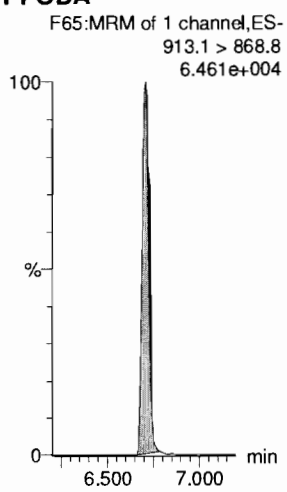
N-EtFOSA



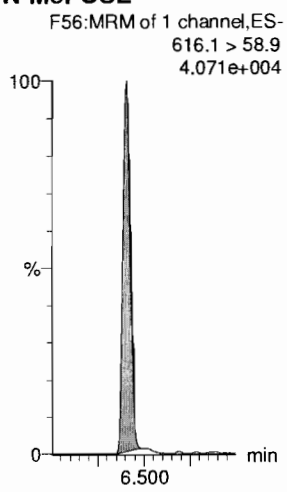
PFHxDA



PFODA



N-MeFOSE



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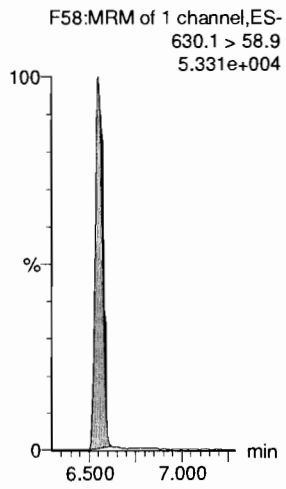

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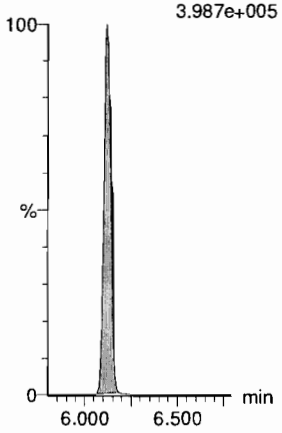
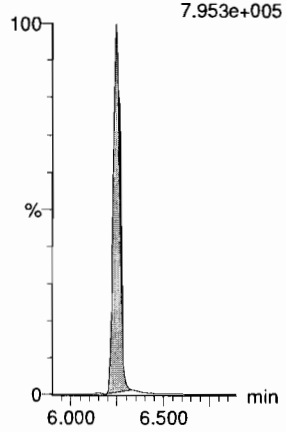


d5-N-ETFOSA



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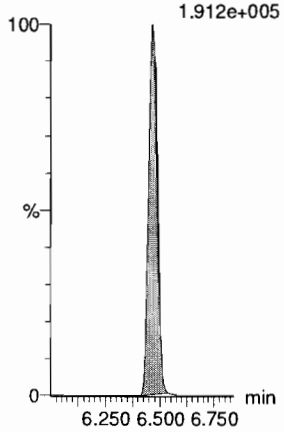
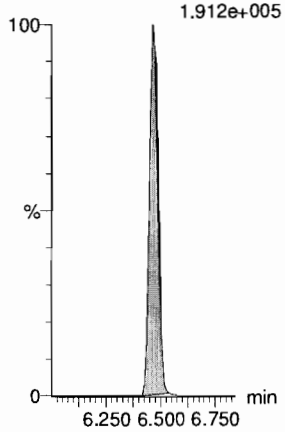


13C2-PFHxDA



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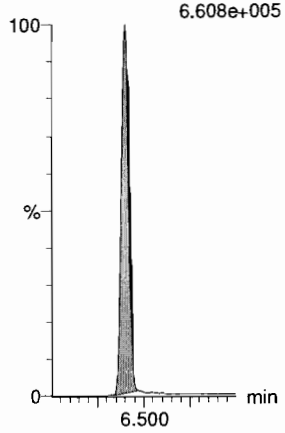

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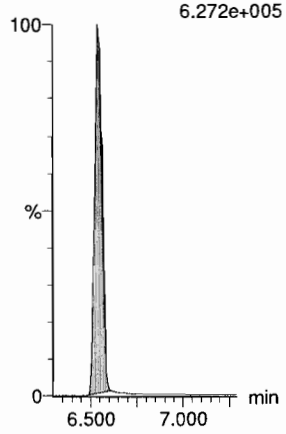
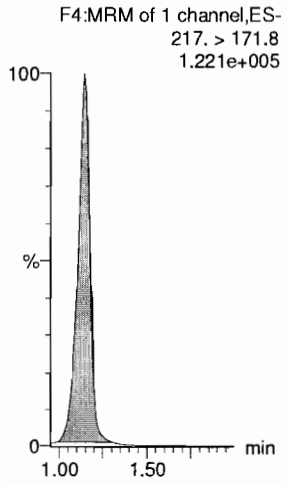


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

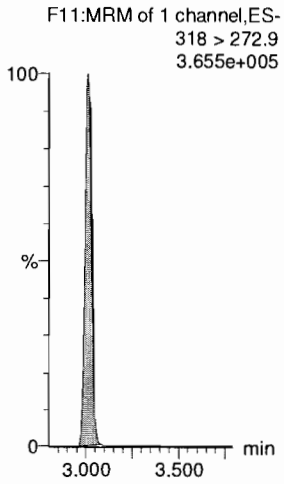
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_5, Date: 19-Jun-2018, Time: 17:52:54, ID: ST180619M1-4 PFC CS1 18F1107, Description: PFC CS1 18F1107

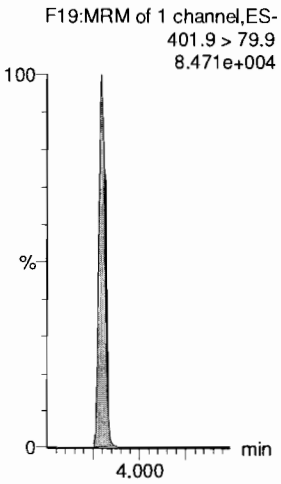
13C4-PFBA



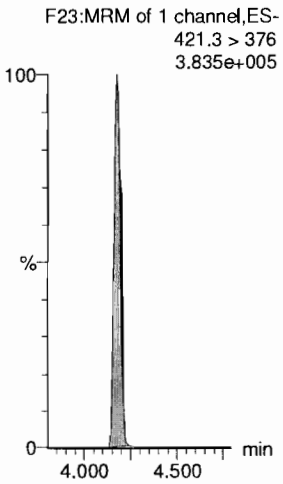
13C5-PFHxA



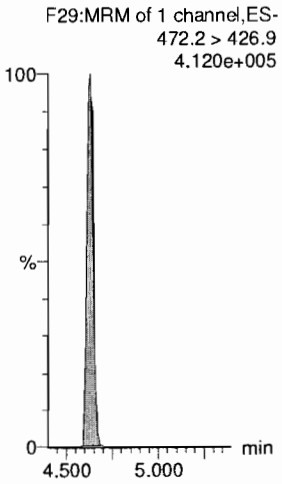
13C3-PFHxS



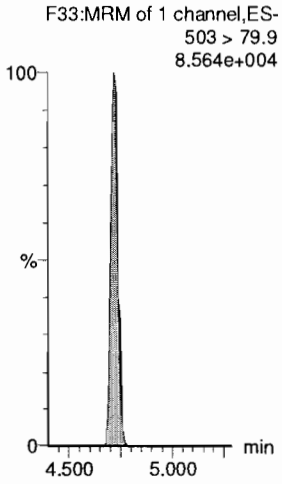
13C8-PFOA



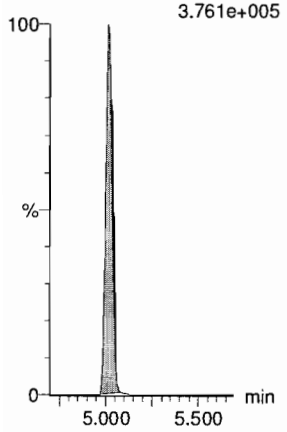
13C9-PFNA



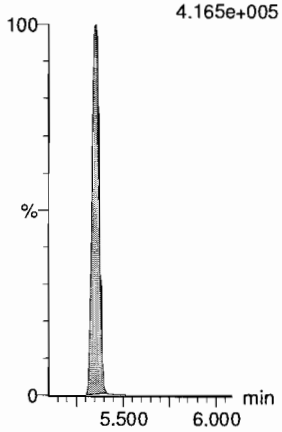
13C4-PFOS



13C6-PFDA



13C7-PFUdA

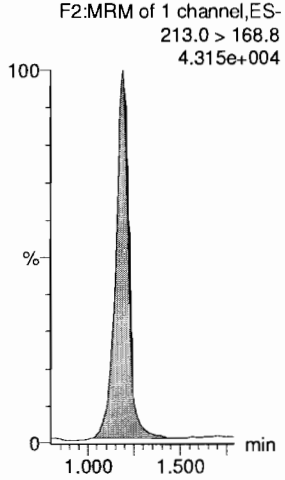


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_6, Date: 19-Jun-2018, Time: 18:26:46, ID: ST180619M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

PFBA



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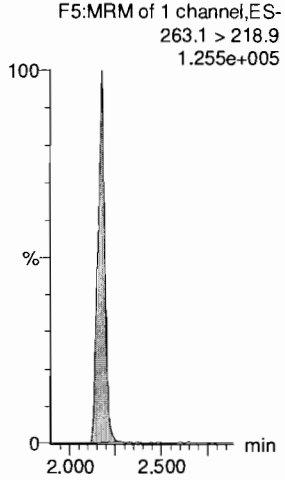
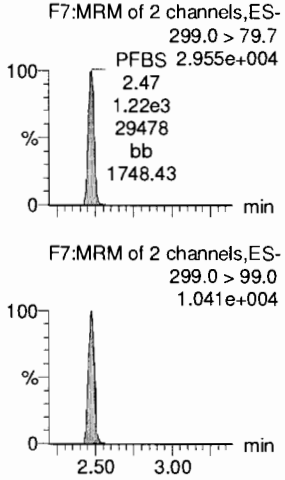
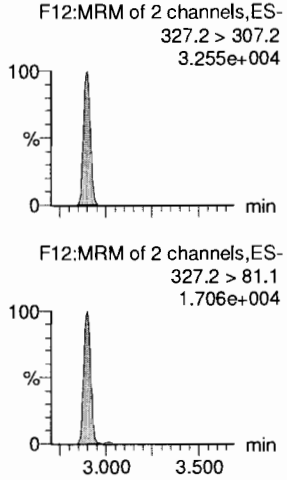


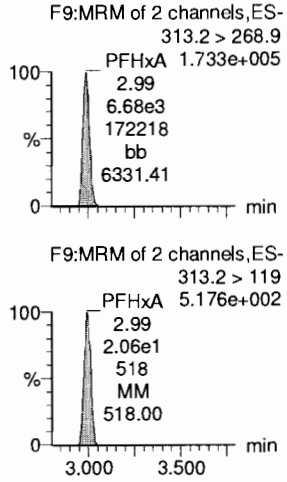
PFBS



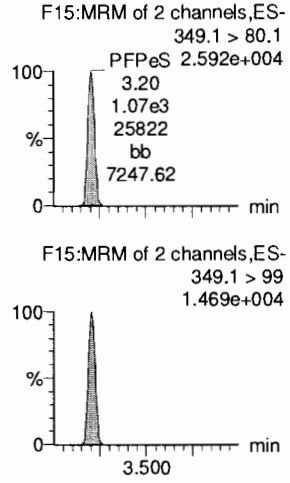
4:2 FTS



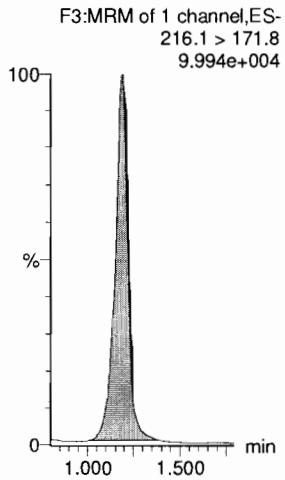
PFHxA



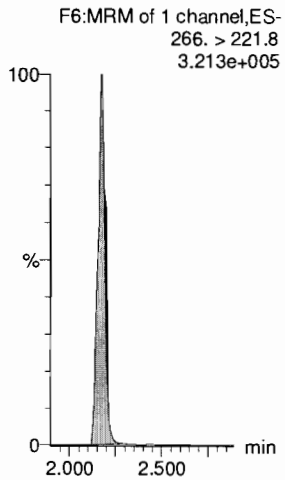
PFPeS



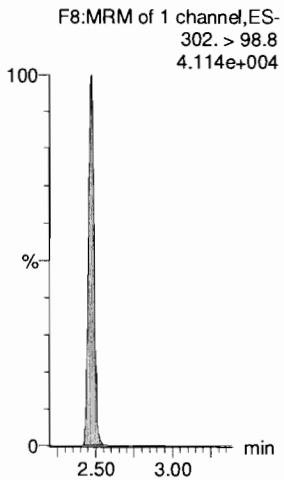
13C3-PFBA



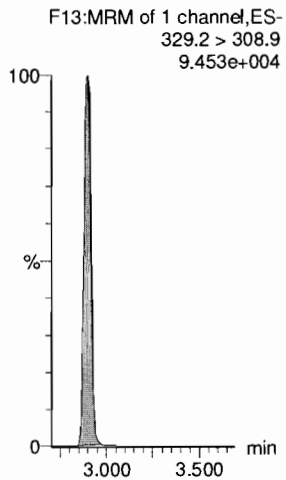
13C3-PFPeA



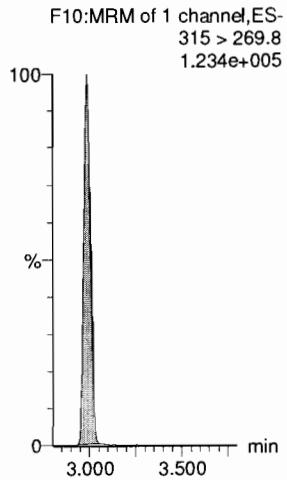
13C3-PFBS



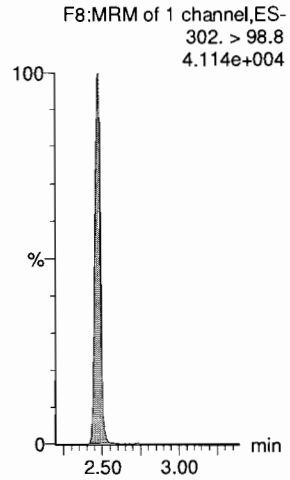
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

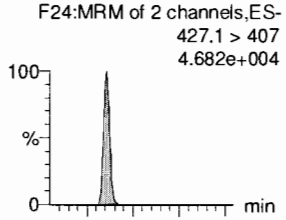


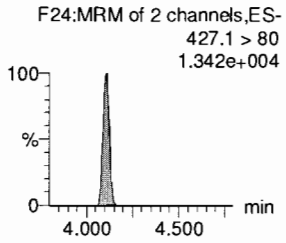
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

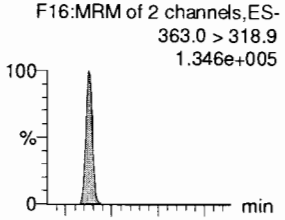
Name: 180619M1_6, Date: 19-Jun-2018, Time: 18:26:46, ID: ST180619M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

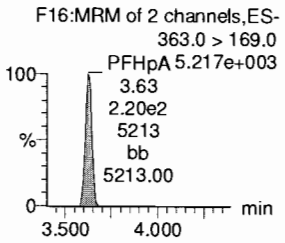
6:2 FTS



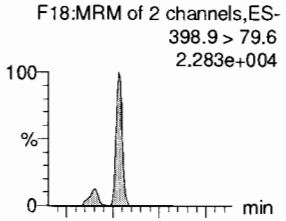


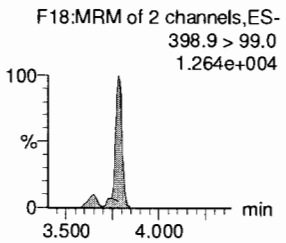
PFHpA



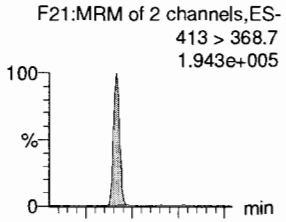


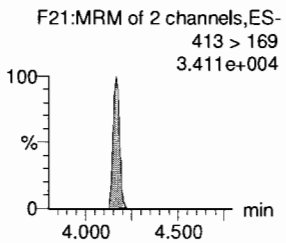
L-PFHxS



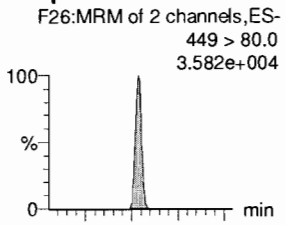


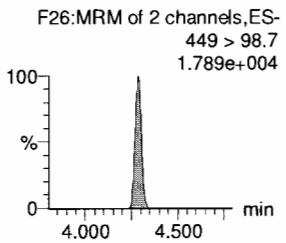
L-PFOA



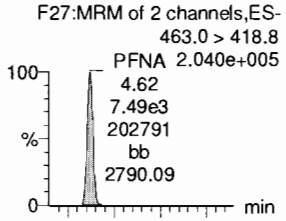


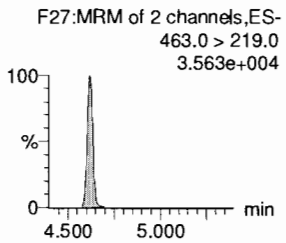
PFHpS



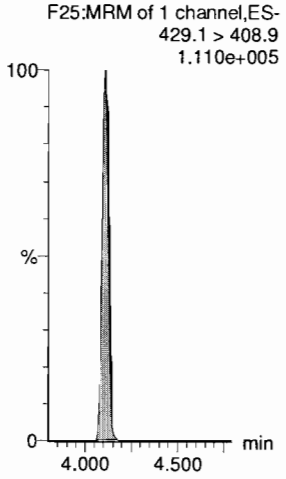


PFNA

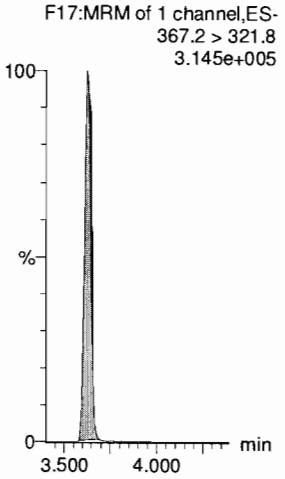




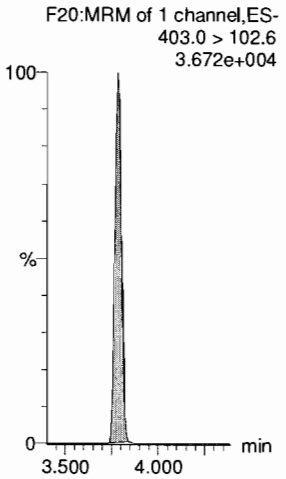
13C2-6:2 FTS



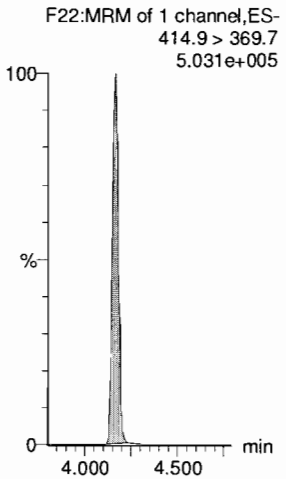
13C4-PFHpA



18O2-PFHxS



13C2-PFOA



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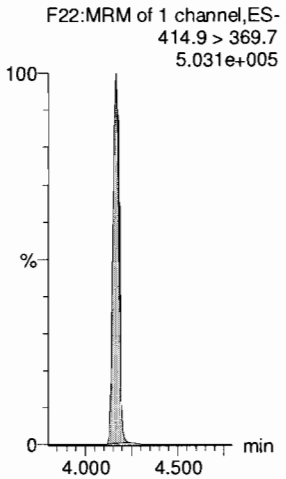
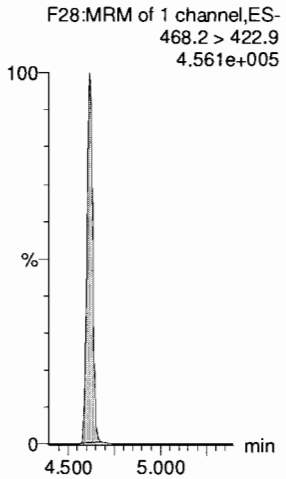


13C5-PFNA

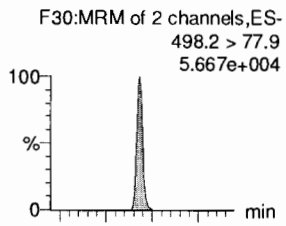


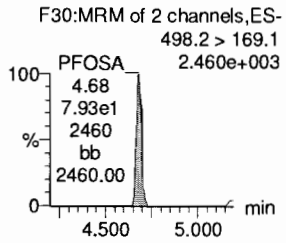
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

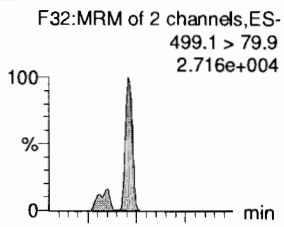
Name: 180619M1_6, Date: 19-Jun-2018, Time: 18:26:46, ID: ST180619M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

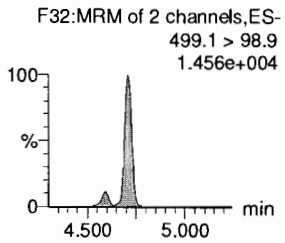
PFOSA



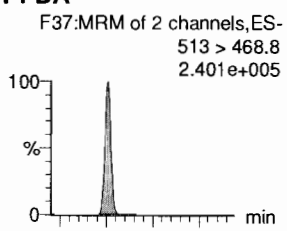


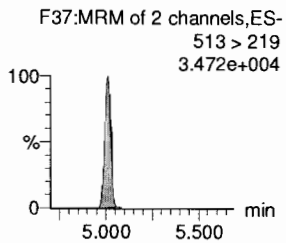
L-PFOS



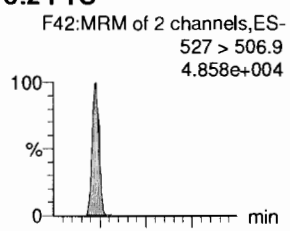


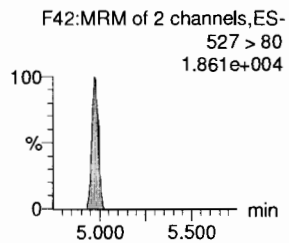
PFDA



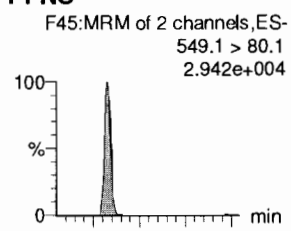


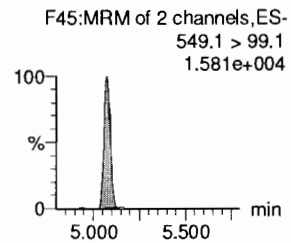
8:2 FTS





PFNS





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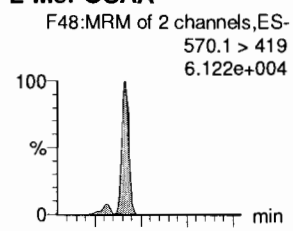
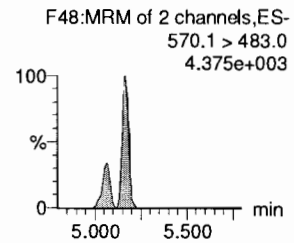
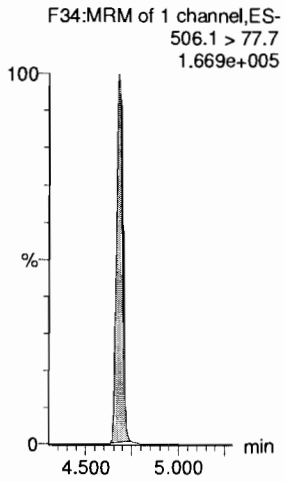
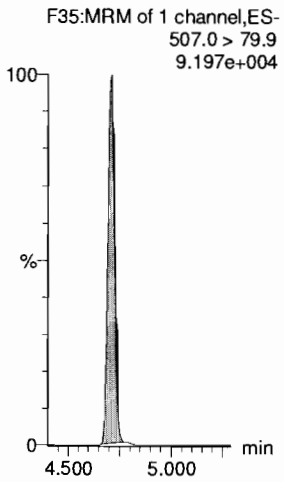




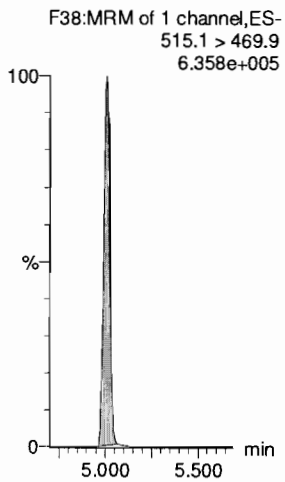
13C8-PFOSA



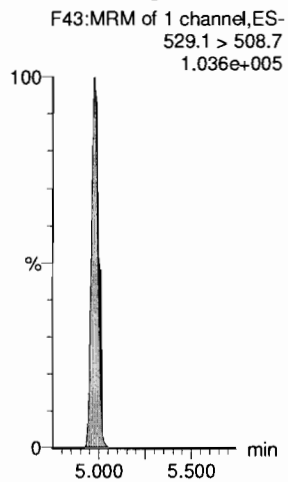
13C8-PFOS



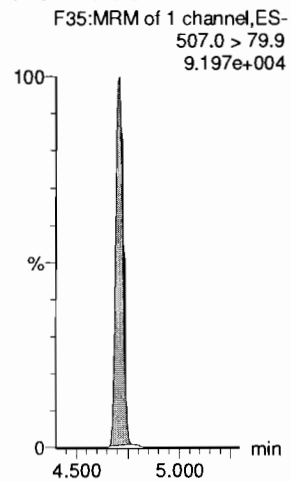
13C2-PFDA



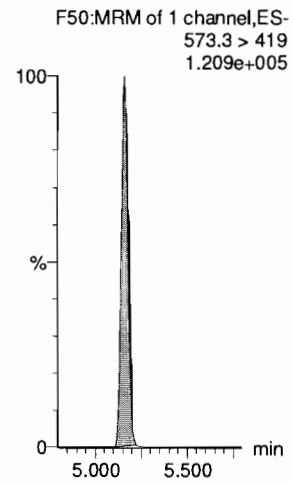
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

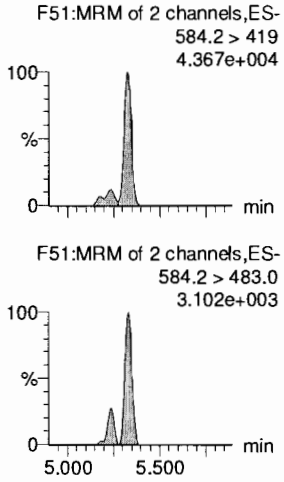


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

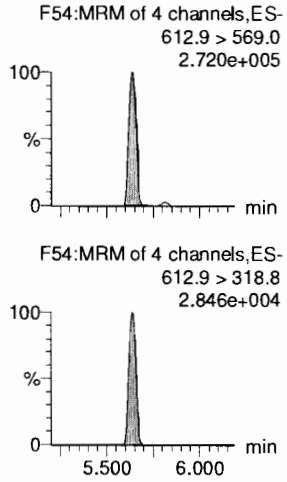
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_6, Date: 19-Jun-2018, Time: 18:26:46, ID: ST180619M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

L-EtFOSAA



PFDoA



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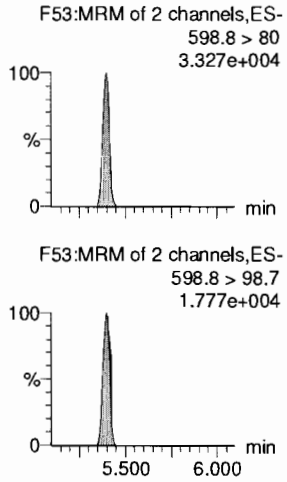

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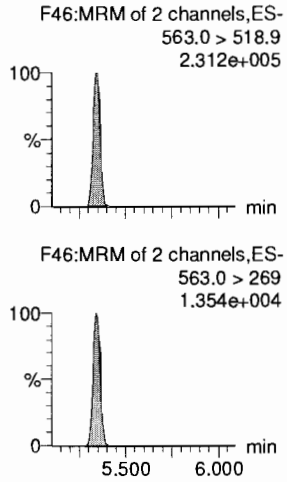
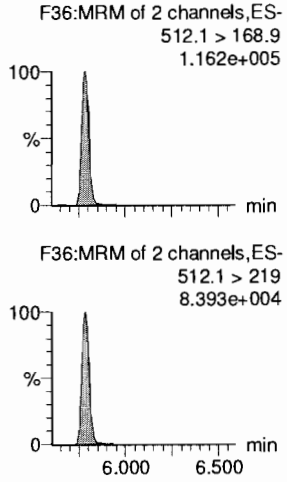
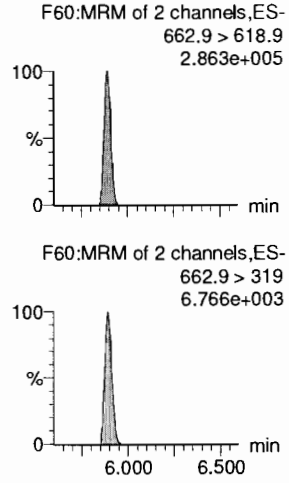


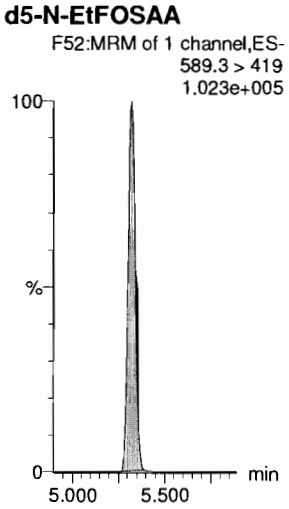
N-MeFOSA



PFTrDA



d5-N-EtFOSAA



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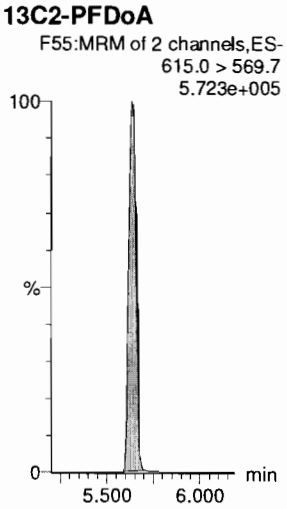
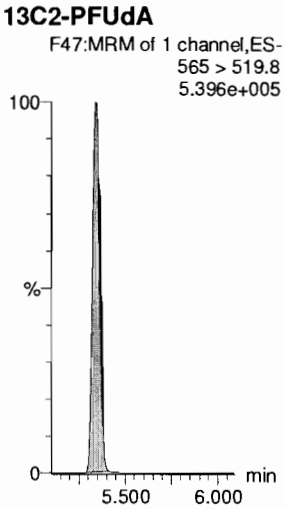
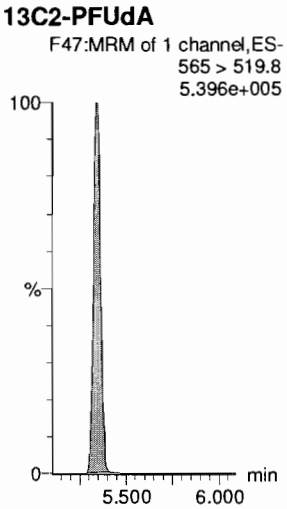


13C2-PFUdA



13C2-PFUdA



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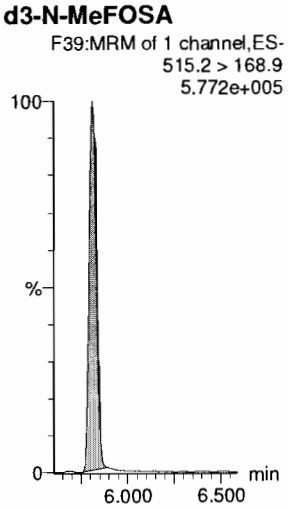

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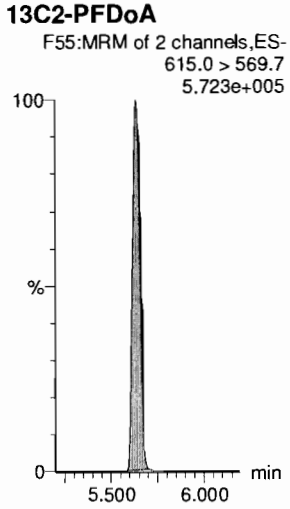

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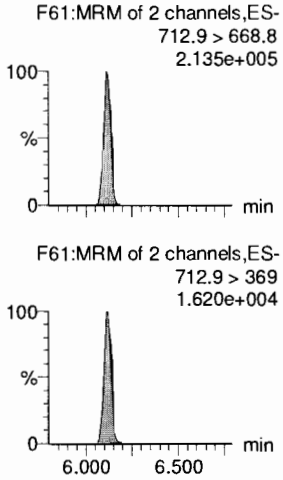
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_6, Date: 19-Jun-2018, Time: 18:26:46, ID: ST180619M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

PFTeDA



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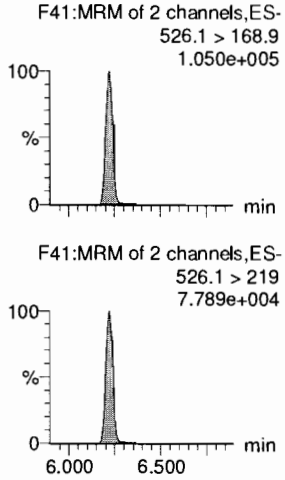

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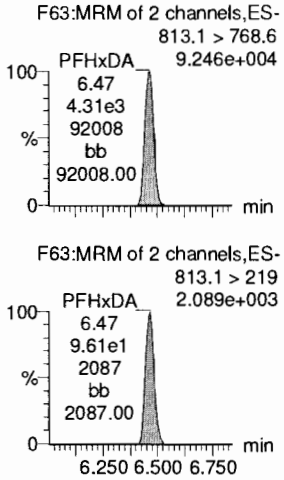

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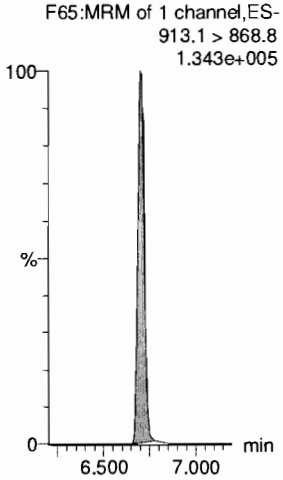
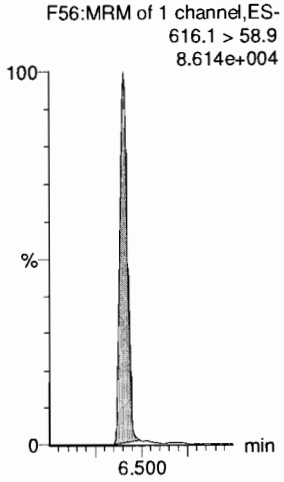


N-MeFOSE



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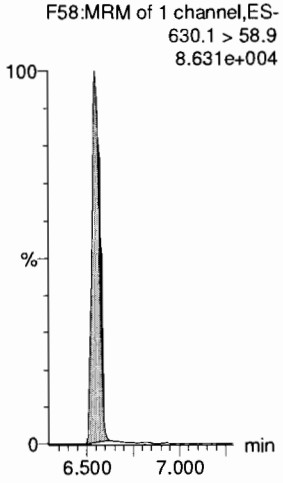

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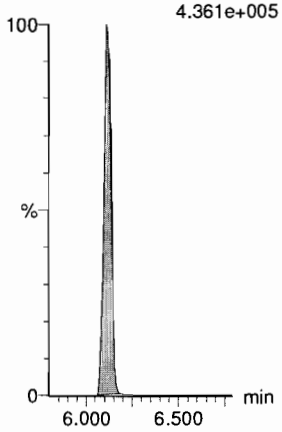
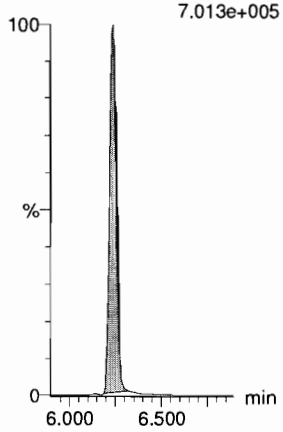


d5-N-ETFOSA



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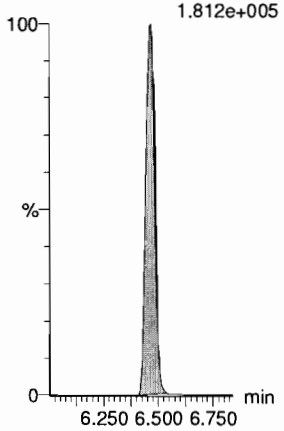

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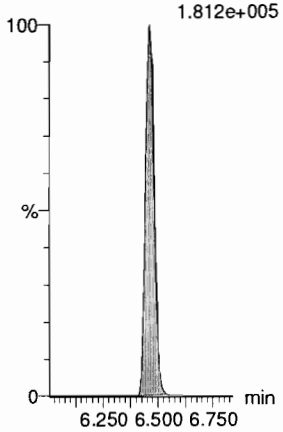
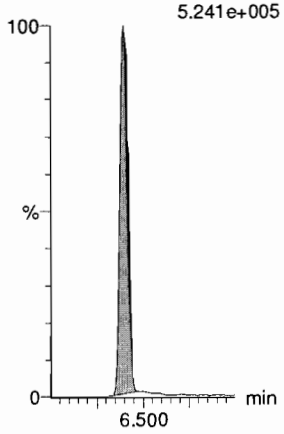
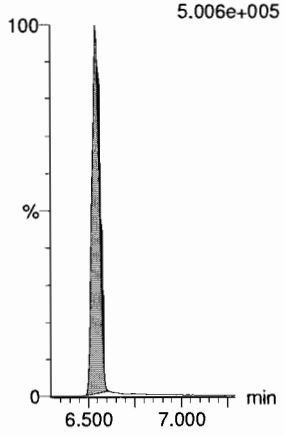


d7-N-MeFOSE



d9-N-EtFOSE



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Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_6, Date: 19-Jun-2018, Time: 18:26:46, ID: ST180619M1-5 PFC CS2 18F1108, Description: PFC CS2 18F1108

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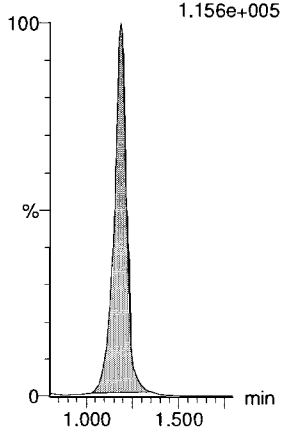
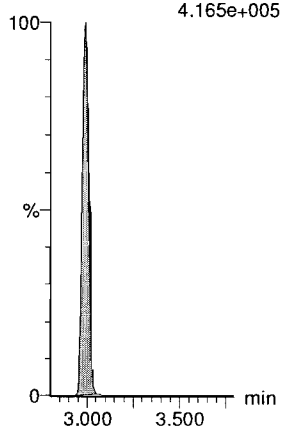
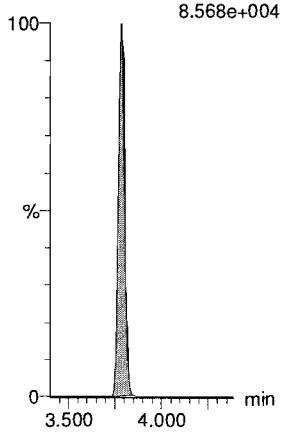


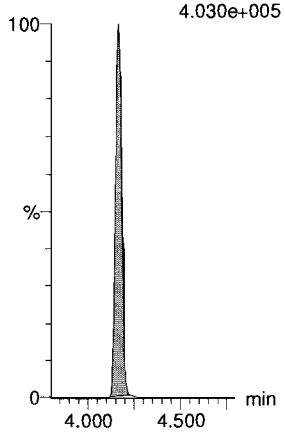
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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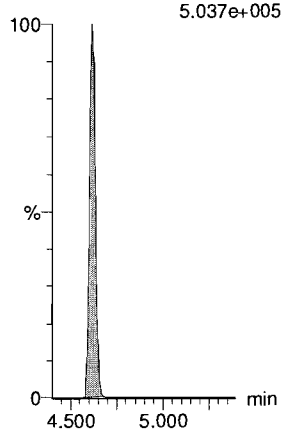
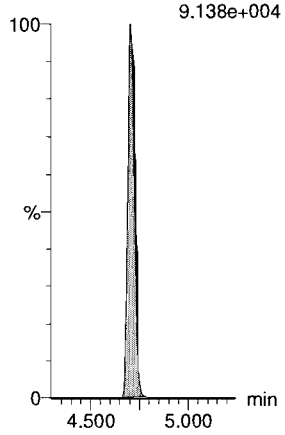
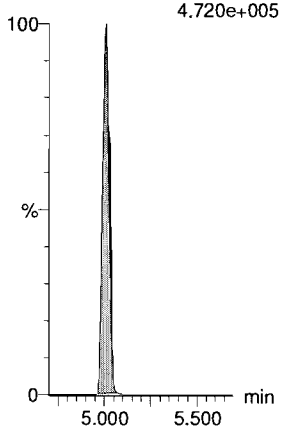


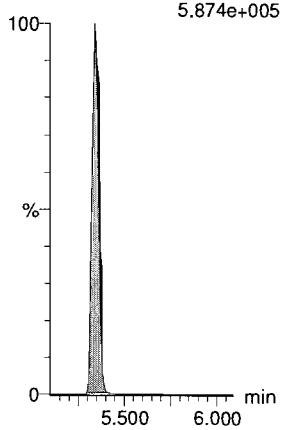
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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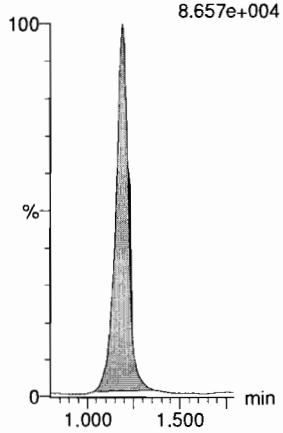
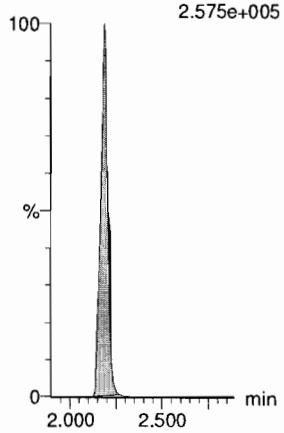
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

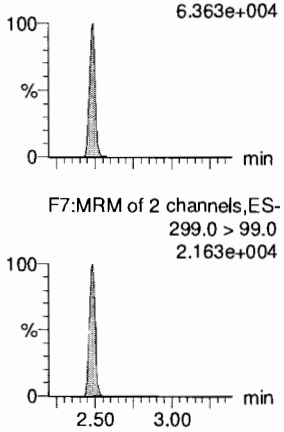
PFBA



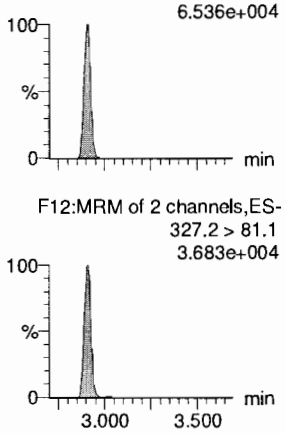
PFPeA



PFBS



4:2 FTS



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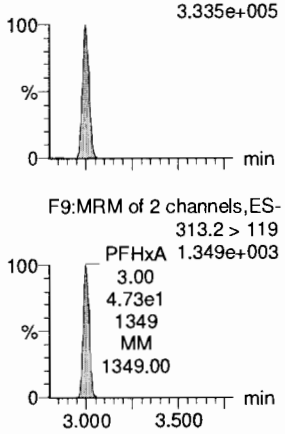

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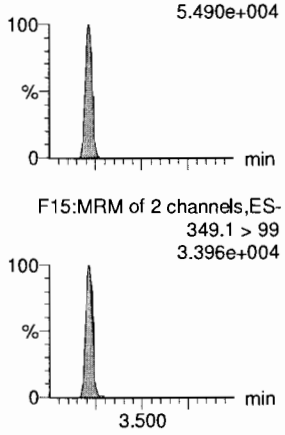
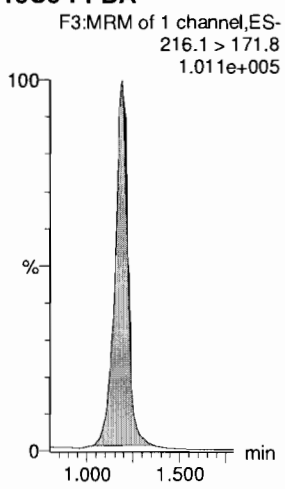


13C3-PFBA



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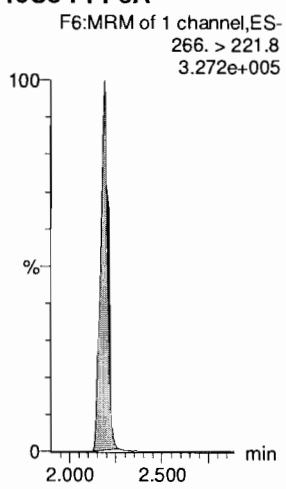

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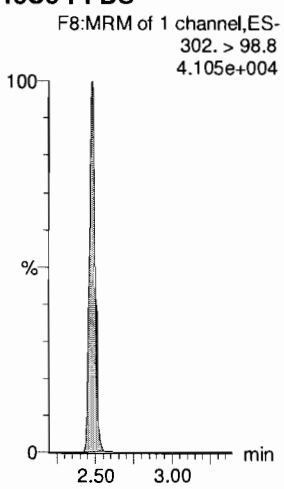
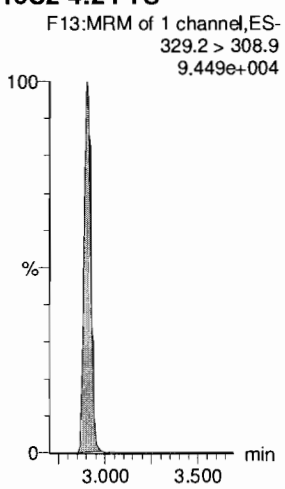


13C2-4:2 FTS



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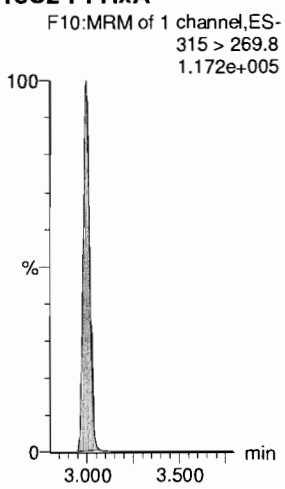

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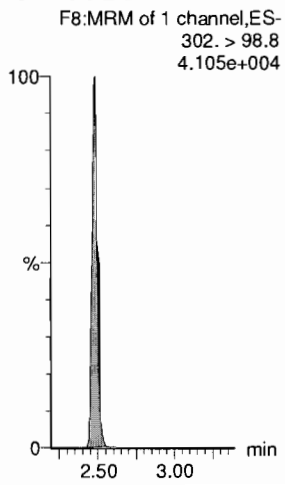
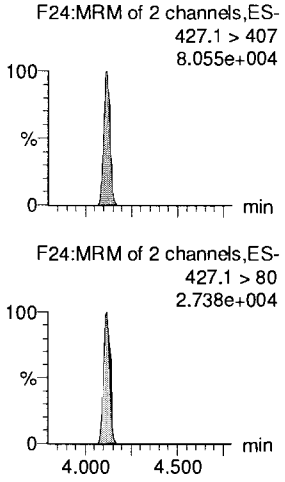


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

6:2 FTS



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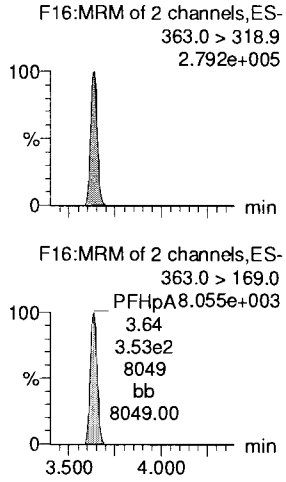
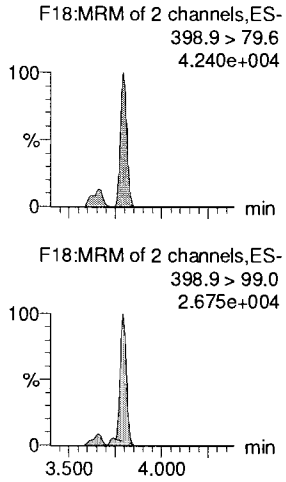


L-PFHxS



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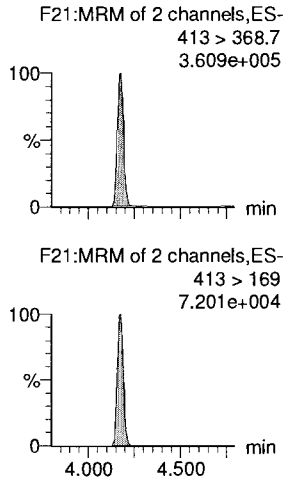

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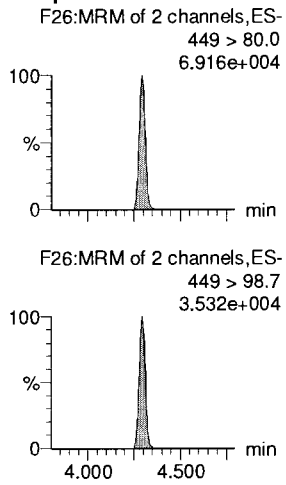

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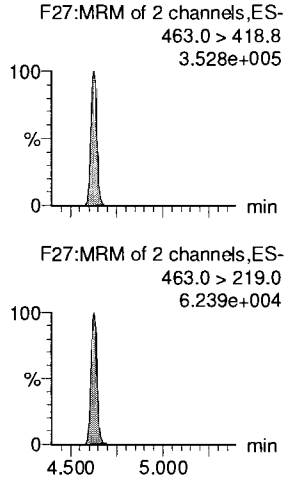
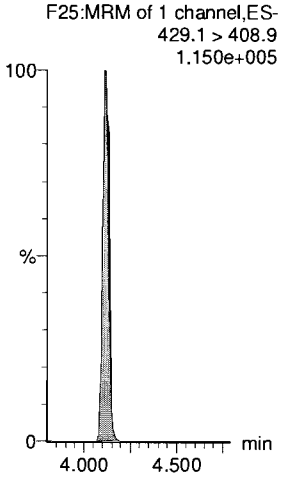
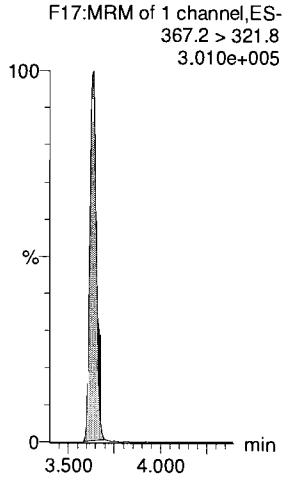


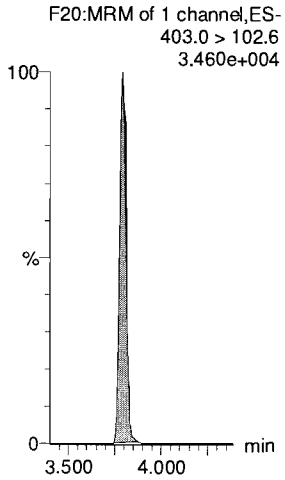
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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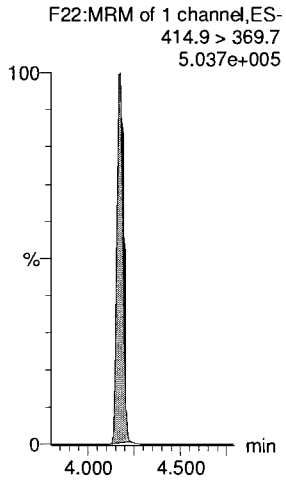

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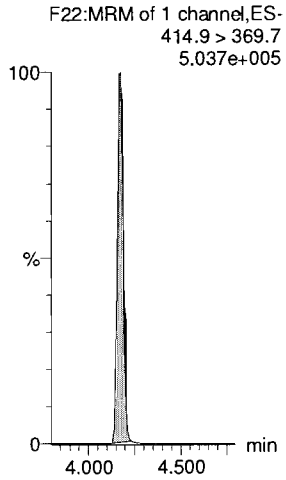
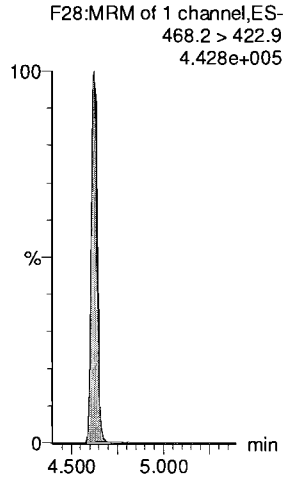


13C5-PFNA

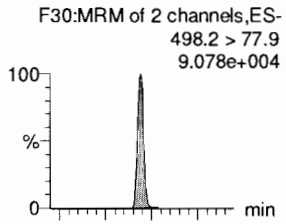


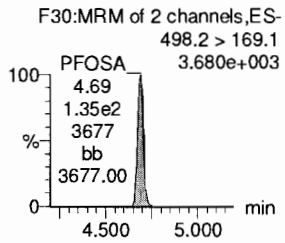
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

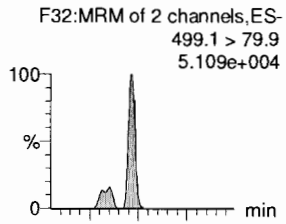
Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

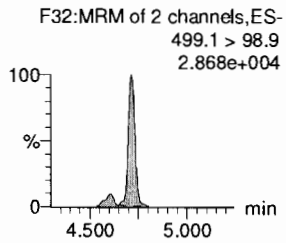
PFOSA





L-PFOS





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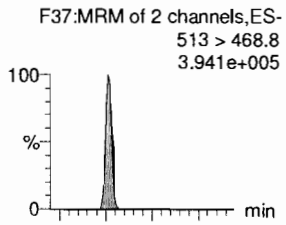
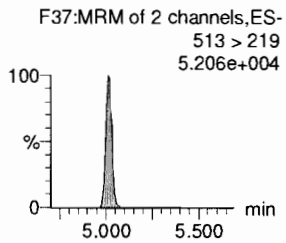
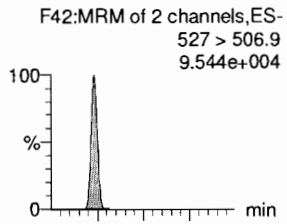
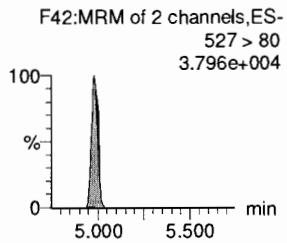


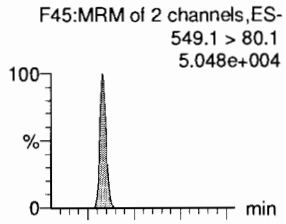


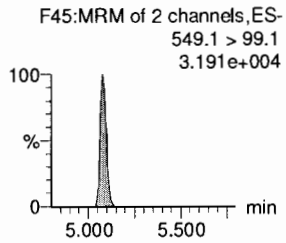
8:2 FTS



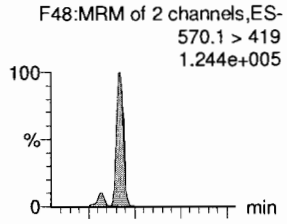


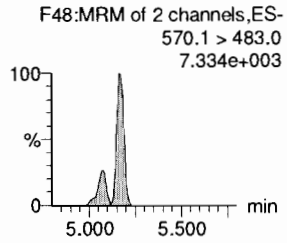
PFNS



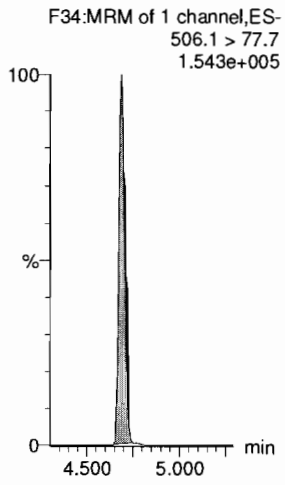


L-MeFOSAA

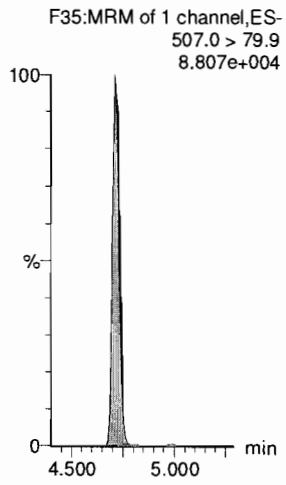




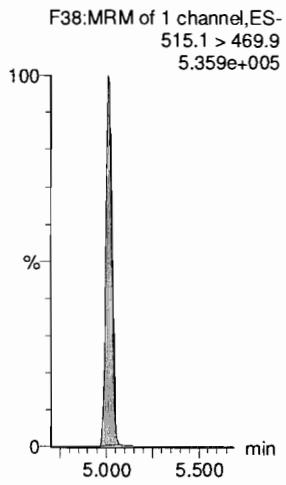
13C8-PFOSA



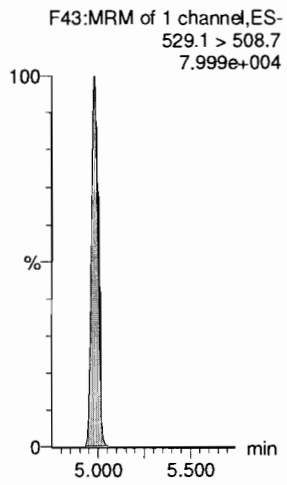
13C8-PFOS



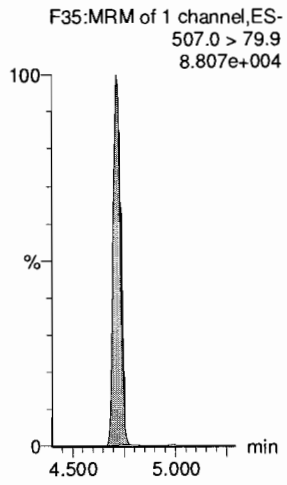
13C2-PFDA



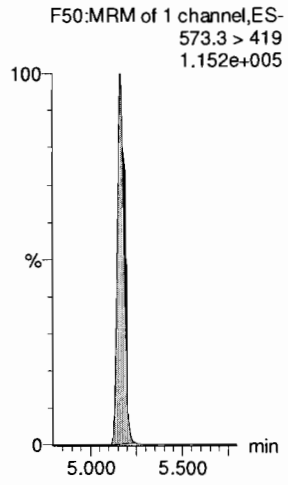
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

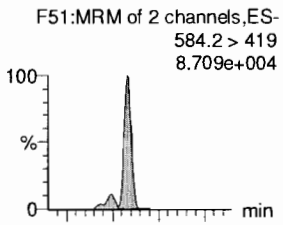


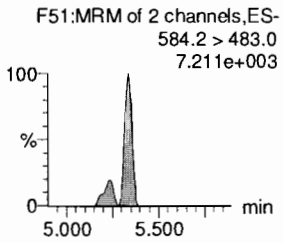
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

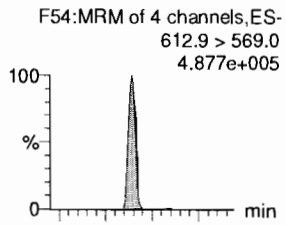
Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

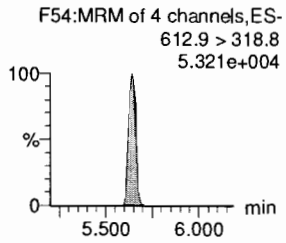
L-EtFOSAA



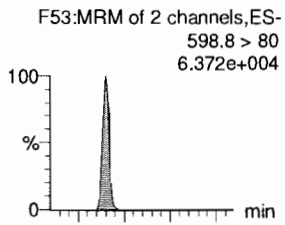


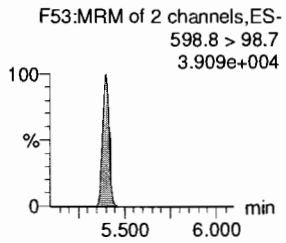
PFDoA





PFDS





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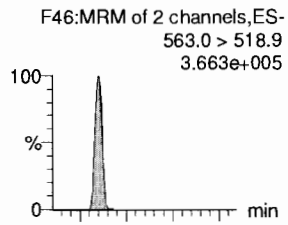
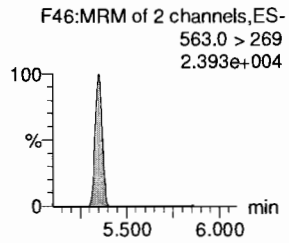
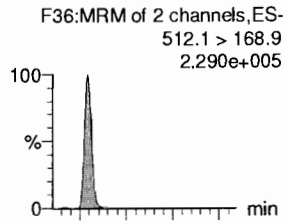
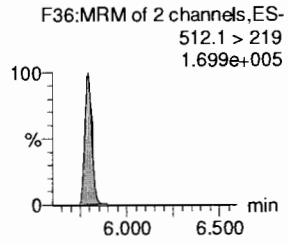




N-MeFOSA





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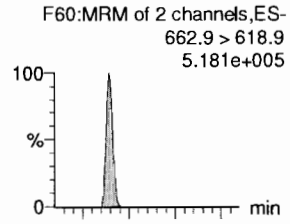
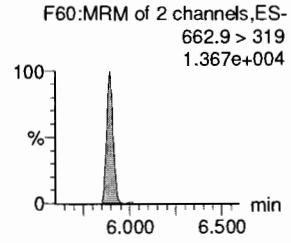
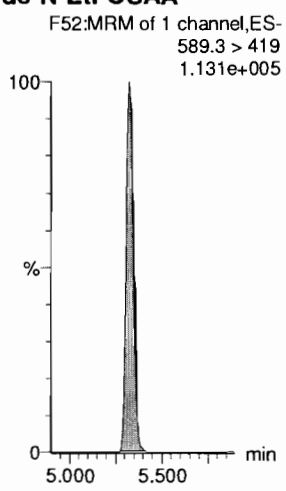
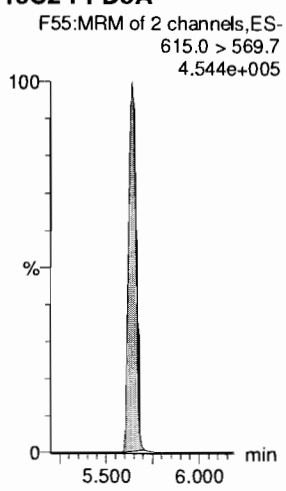




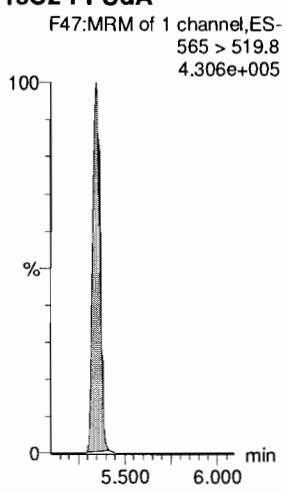
d5-N-EtFOSAA



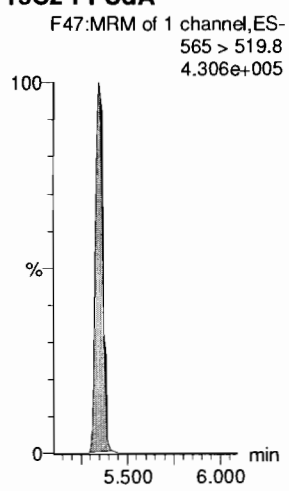
13C2-PFDoA



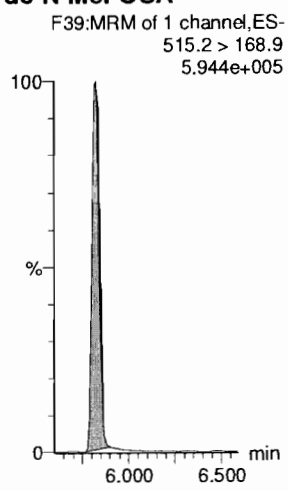
13C2-PFUdA



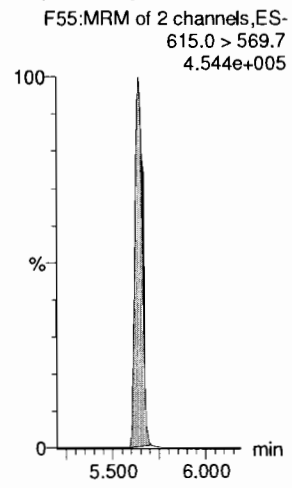
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

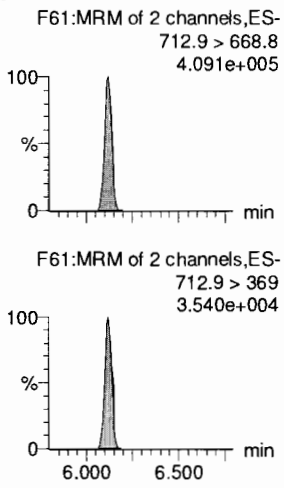


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

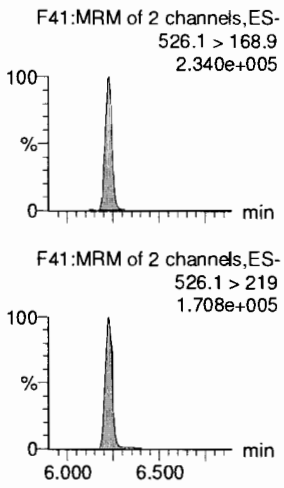
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

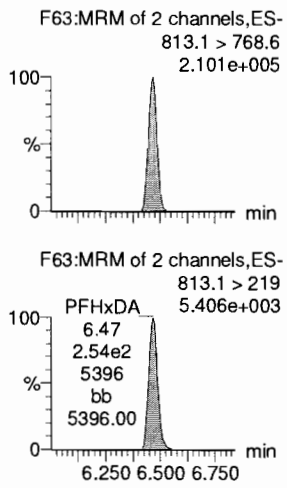
PFTeDA



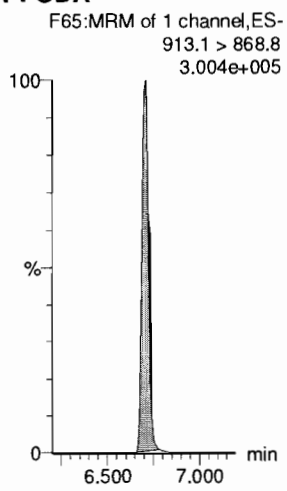
N-EtFOSA



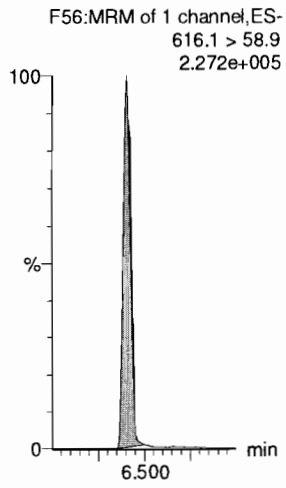
PFHxDA



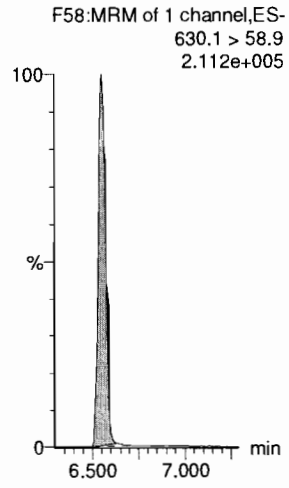
PFODA



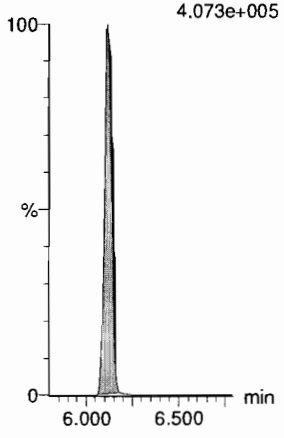
N-MeFOSE



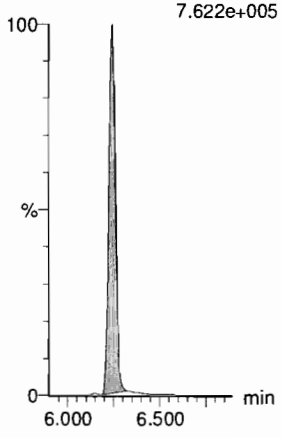
N-EtFOSE



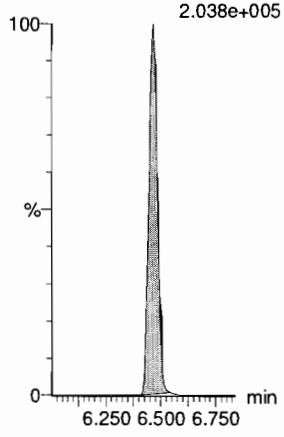
13C2-PFTeDA



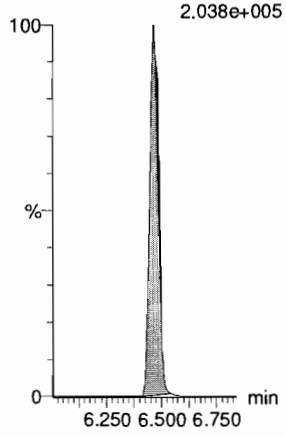
d5-N-ETFOSA



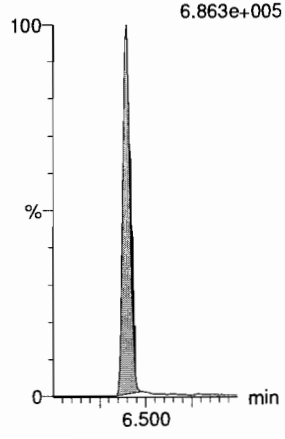
13C2-PFHxDA



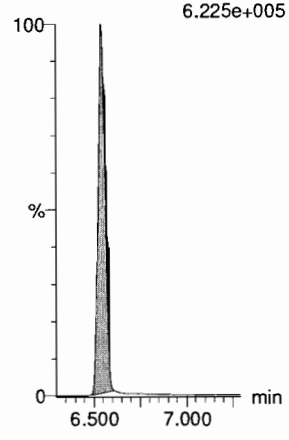
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

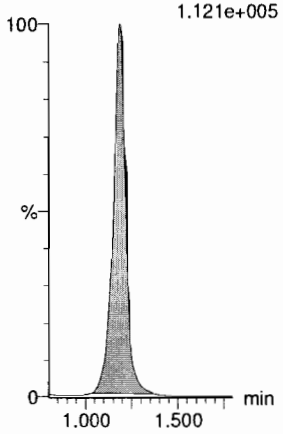


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

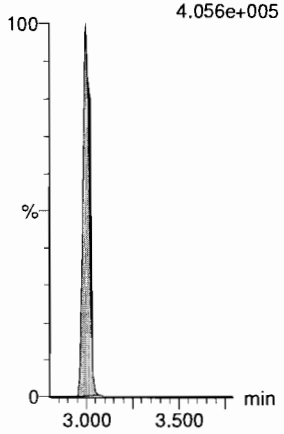
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_7, Date: 19-Jun-2018, Time: 18:39:53, ID: ST180619M1-6 PFC CS3 18F1109, Description: PFC CS3 18F1109

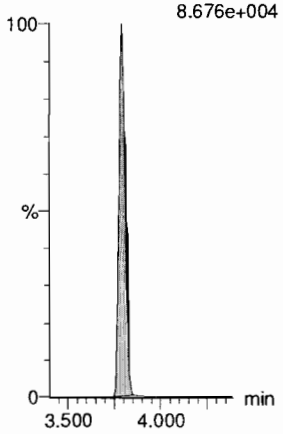
13C4-PFBA



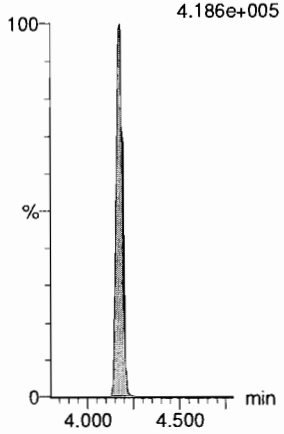
13C5-PFHxA



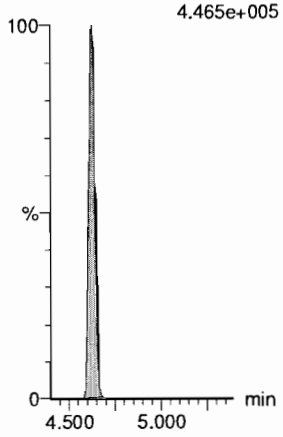
13C3-PFHxS



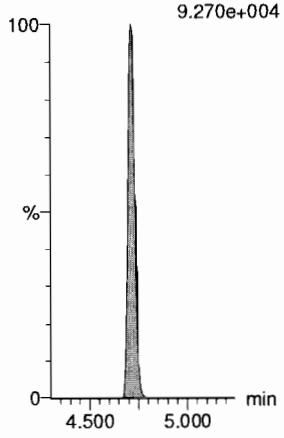
13C8-PFOA



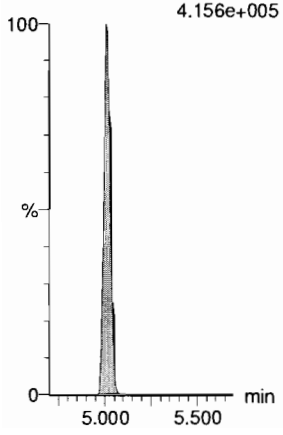
13C9-PFNA



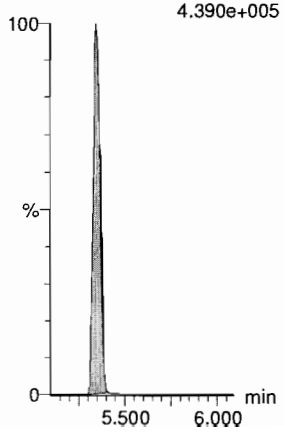
13C4-PFOS



13C6-PFDA



13C7-PFUdA

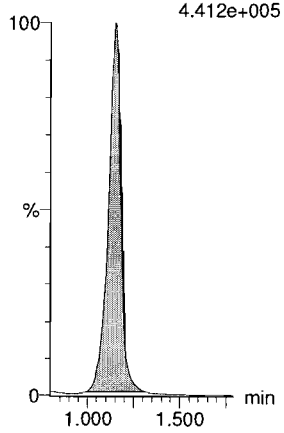


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

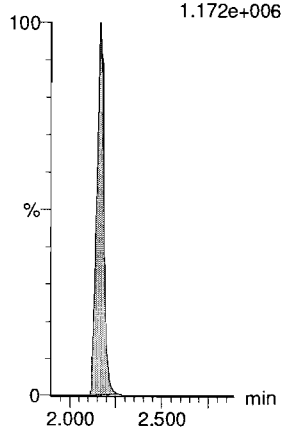
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

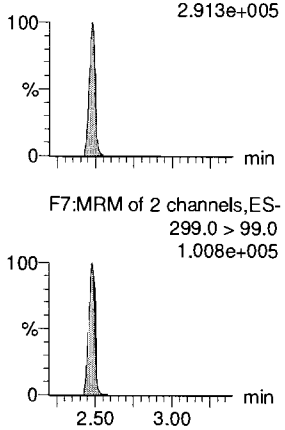
PFBA



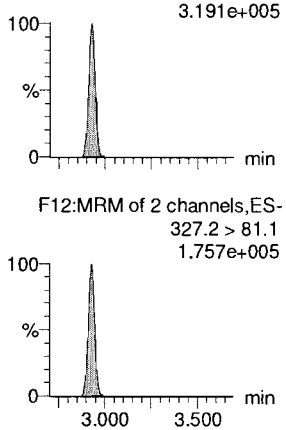
PFPeA



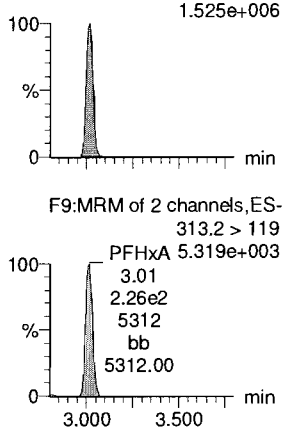
PFBS



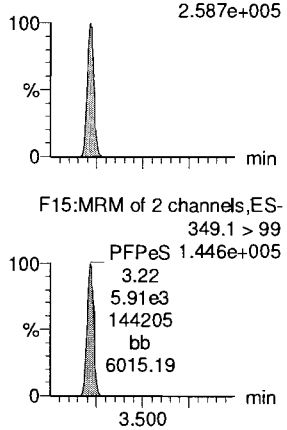
4:2 FTS



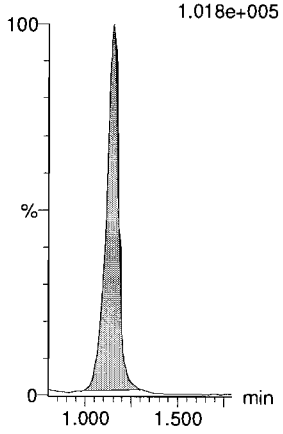
PFHxA



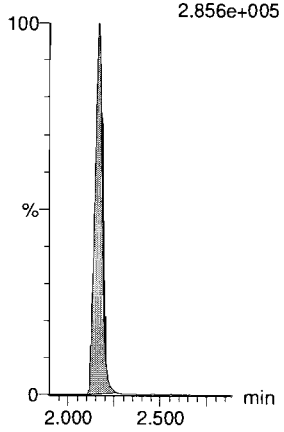
PFPeS



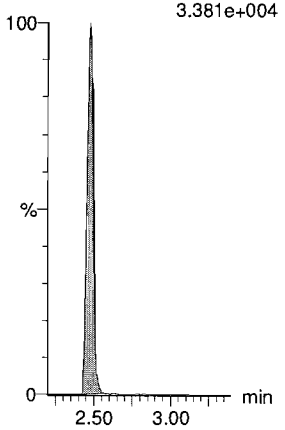
13C3-PFBA



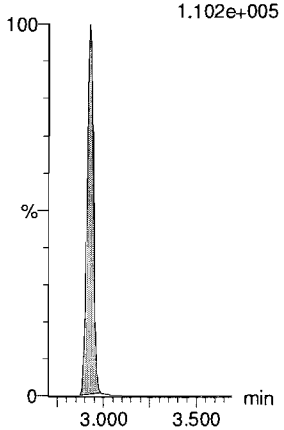
13C3-PFPeA



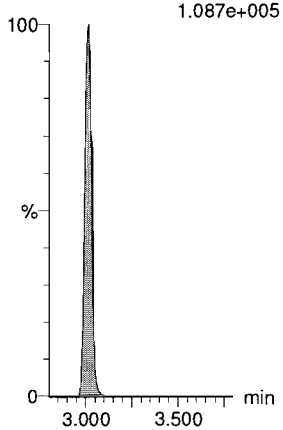
13C3-PFBS



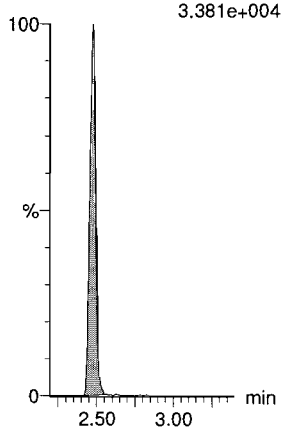
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

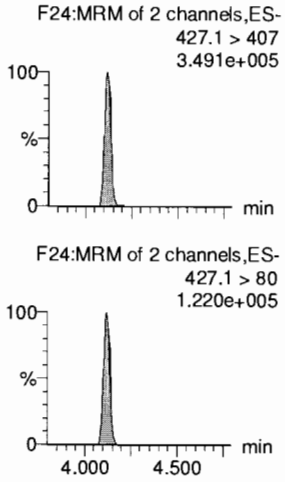


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

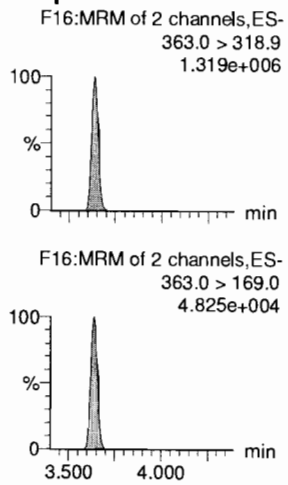
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

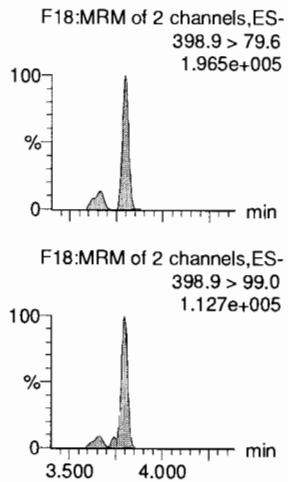
6:2 FTS



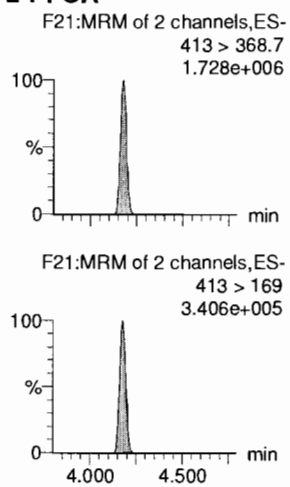
PFHpA



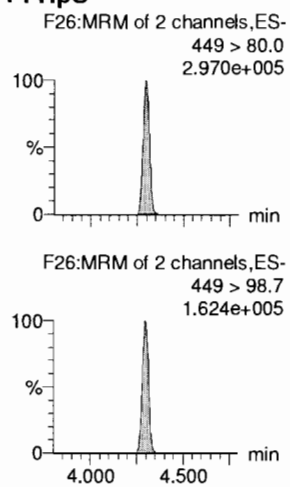
L-PFHxS



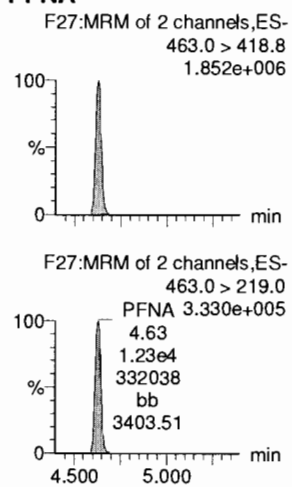
L-PFOA



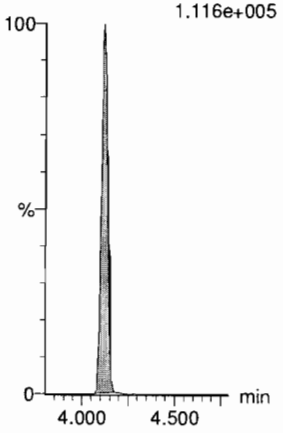
PFHpS



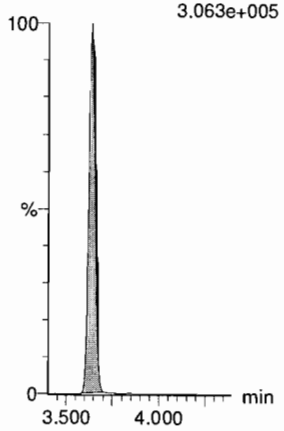
PFNA



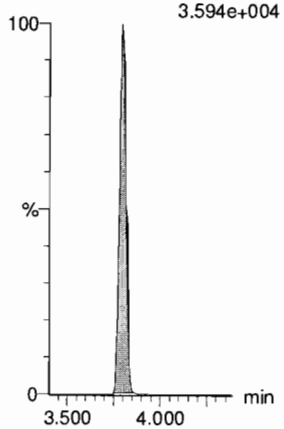
13C2-6:2 FTS



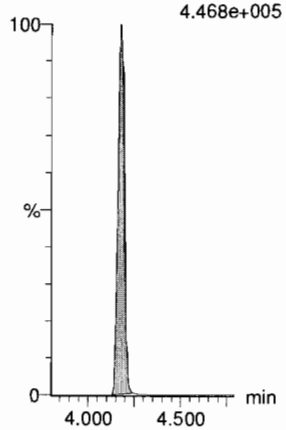
13C4-PFHpA



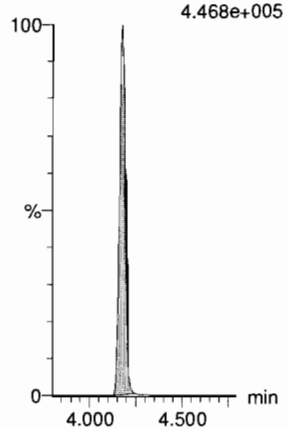
18O2-PFHxS



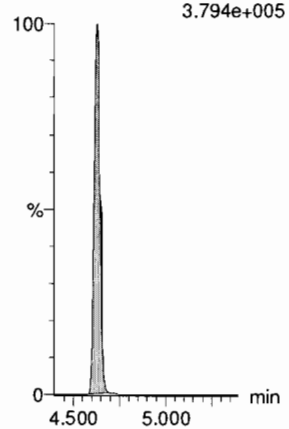
13C2-PFOA



13C2-PFOA



13C5-PFNA

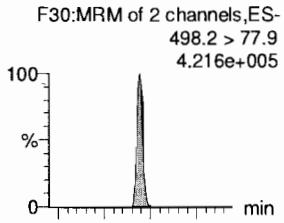


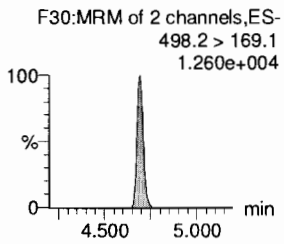
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

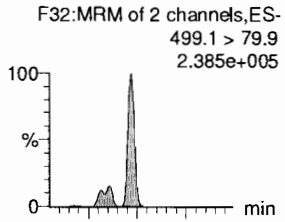
Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

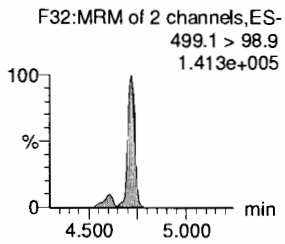
PFOSA



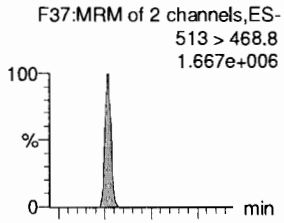


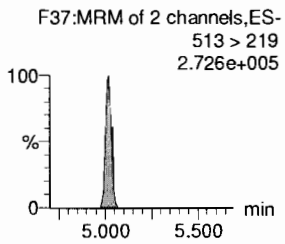
L-PFOS



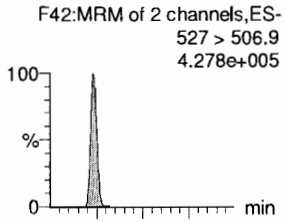


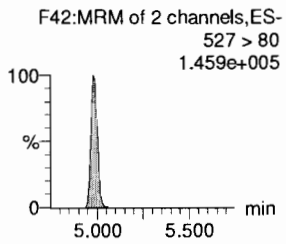
PFDA



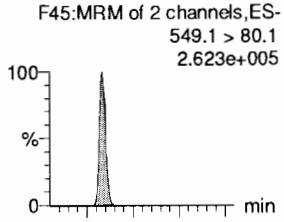


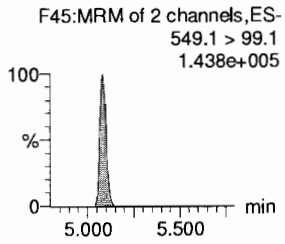
8:2 FTS



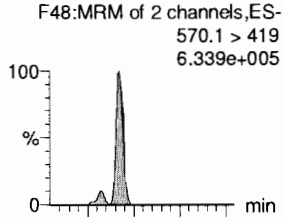


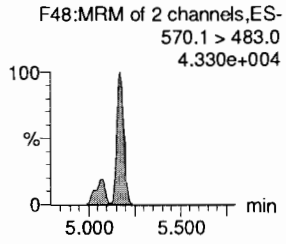
PFNS



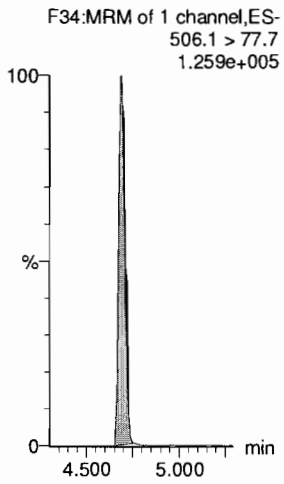


L-MeFOSAA

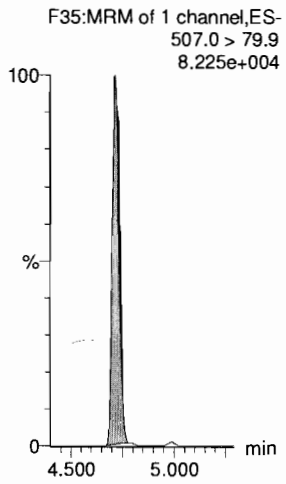




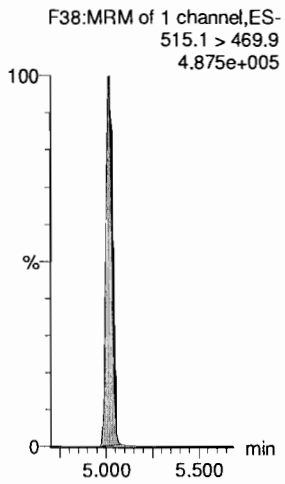
13C8-PFOSA



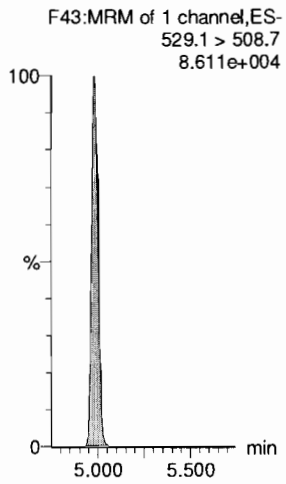
13C8-PFOS



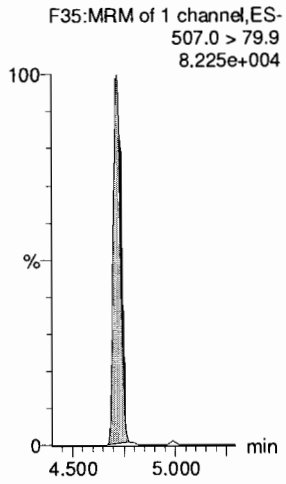
13C2-PFDA



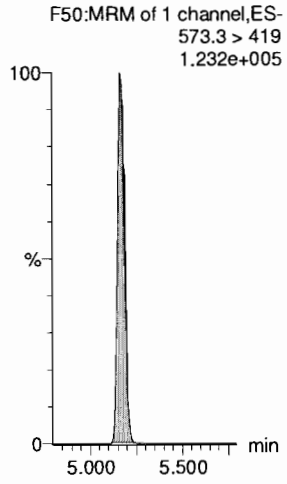
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

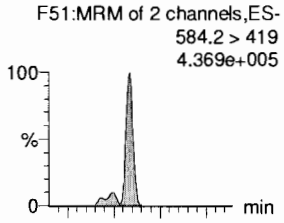


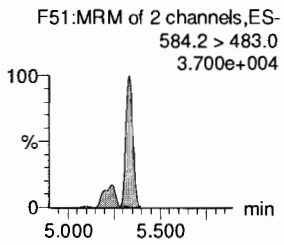
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

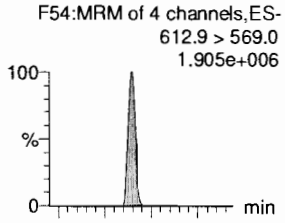
Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

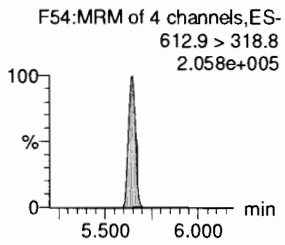
L-EtFOSAA





PFDoA





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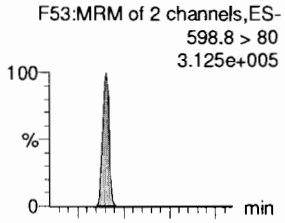

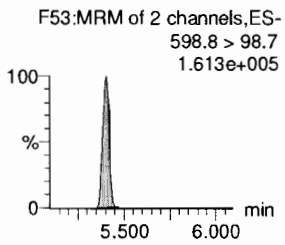

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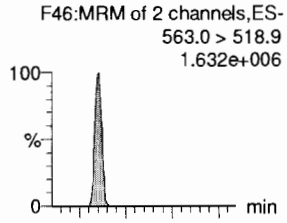
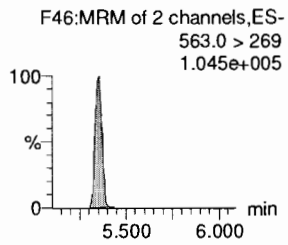
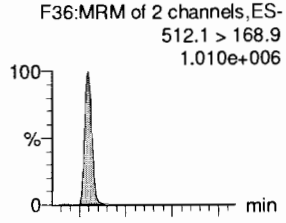
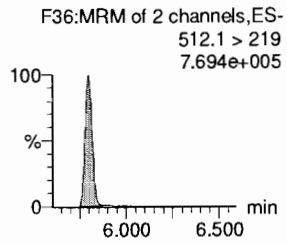




N-MeFOSA





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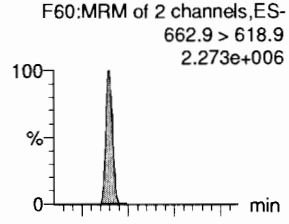
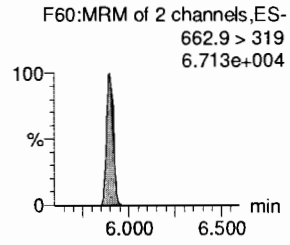
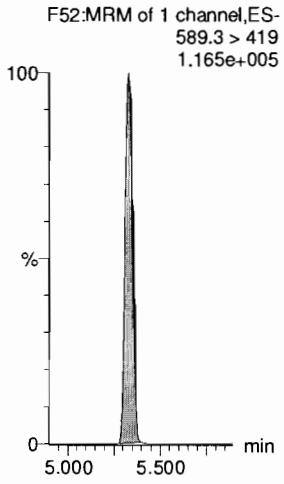
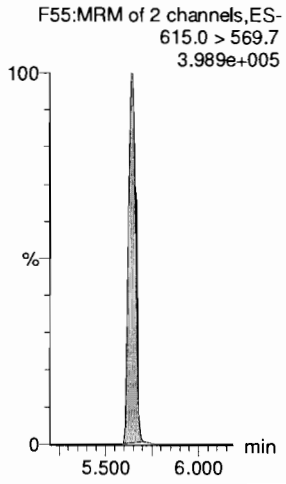




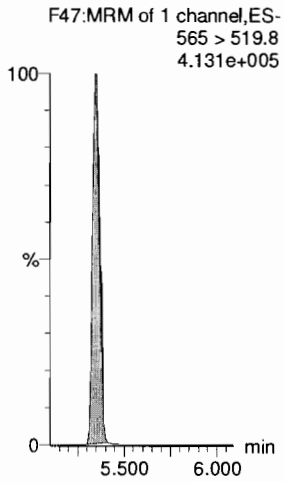
d5-N-EtFOSAA



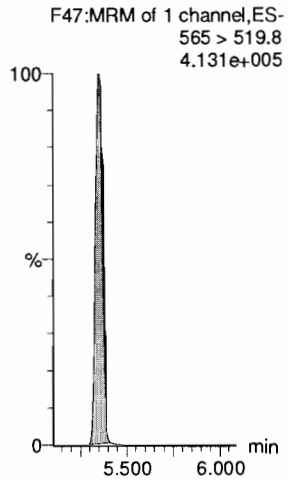
13C2-PFDoA



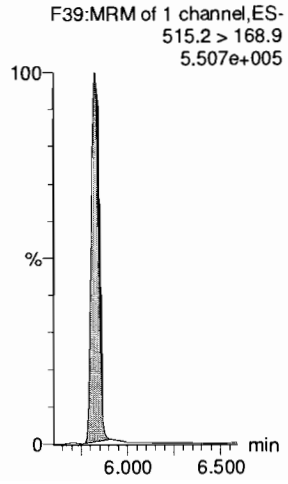
13C2-PFUdA



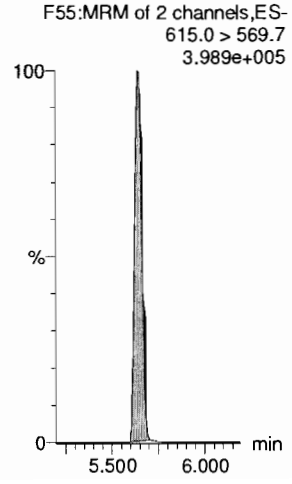
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

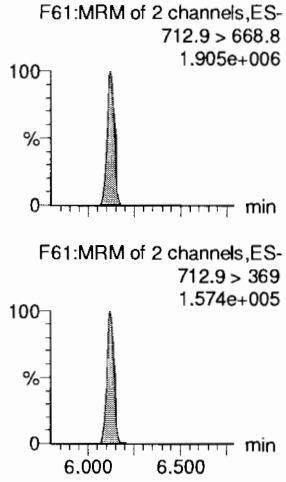


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

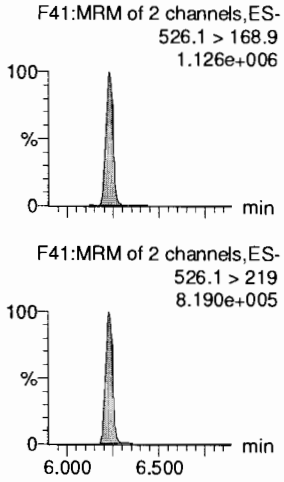
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

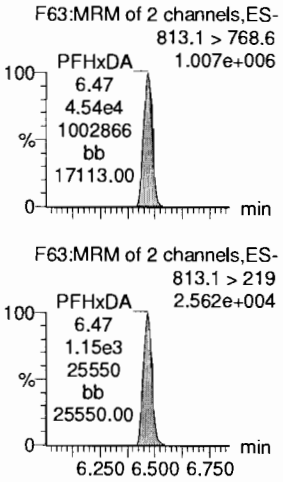
PFTeDA



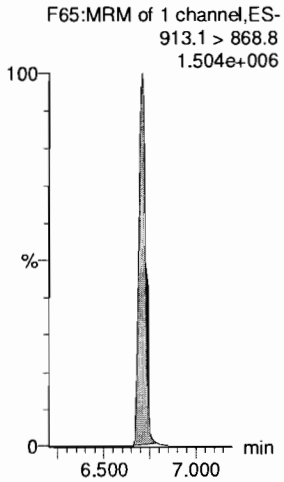
N-EtFOSA



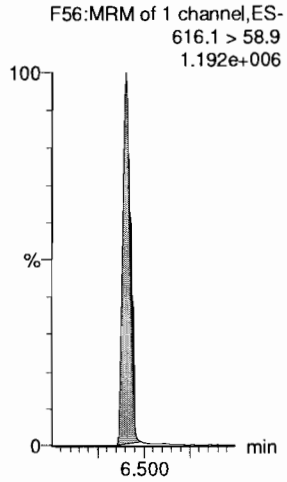
PFHxDA



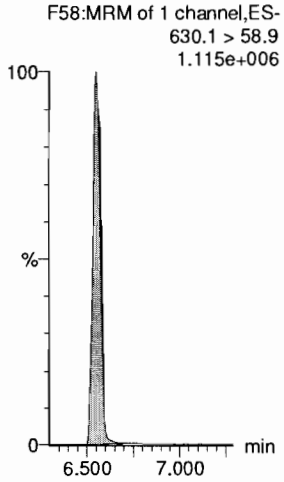
PFODA



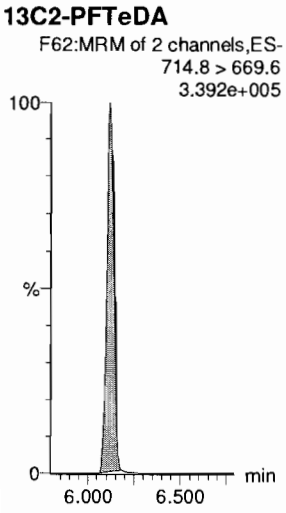
N-MeFOSE



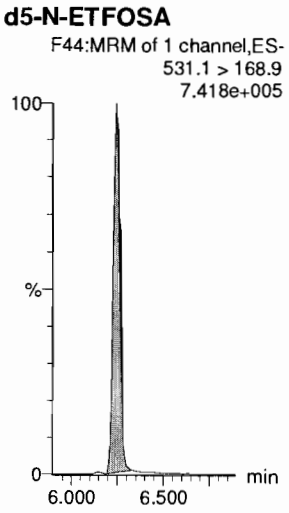
N-EtFOSE



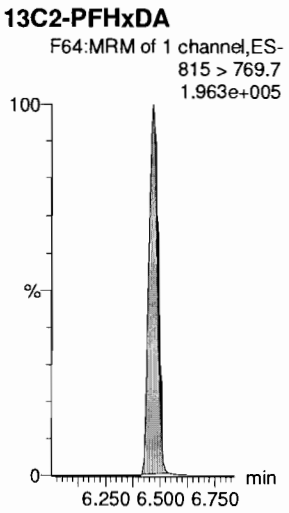
13C2-PFTeDA



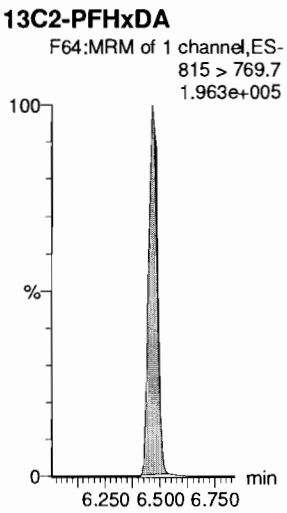
d5-N-ETFOSA



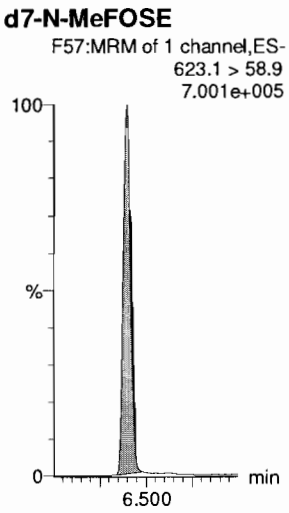
13C2-PFHxDA



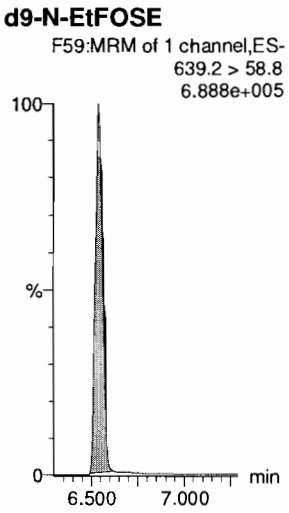
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

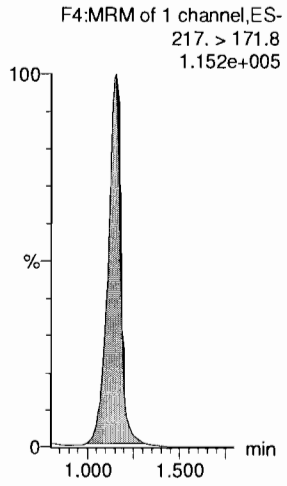


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

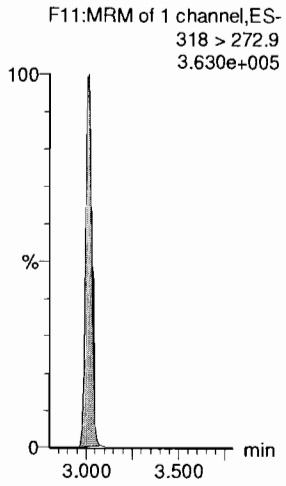
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_8, Date: 19-Jun-2018, Time: 18:50:19, ID: ST180619M1-7 PFC CS4 18F1110, Description: PFC CS4 18F1110

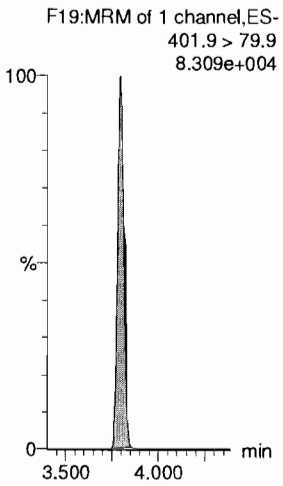
13C4-PFBA



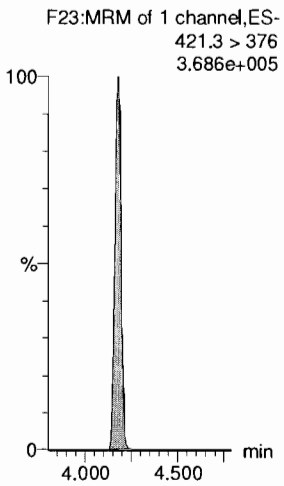
13C5-PFHxA



13C3-PFHxS



13C8-PFOA



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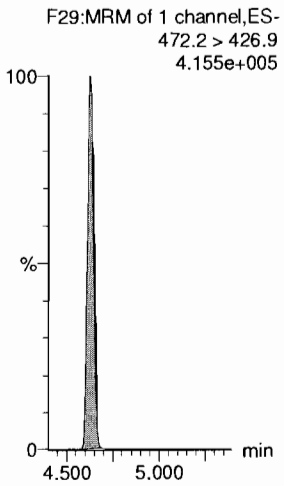
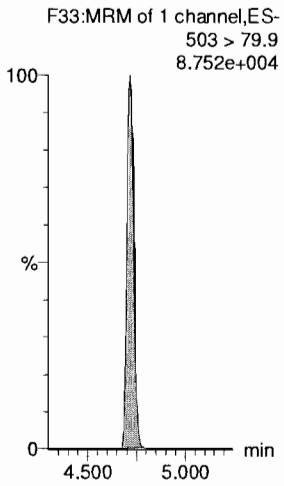
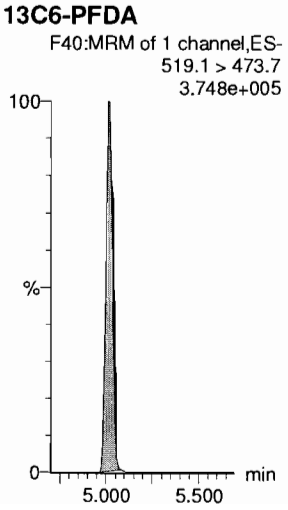


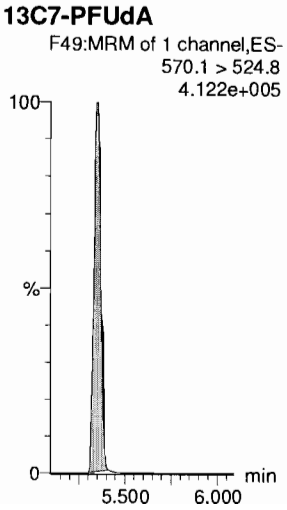
13C4-PFOS



13C6-PFDA



13C7-PFUdA

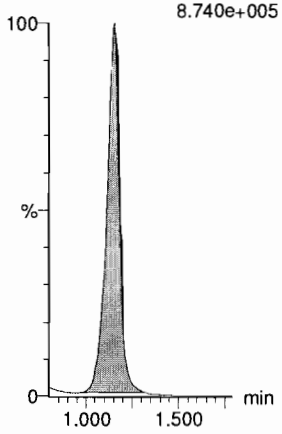


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

PFBA



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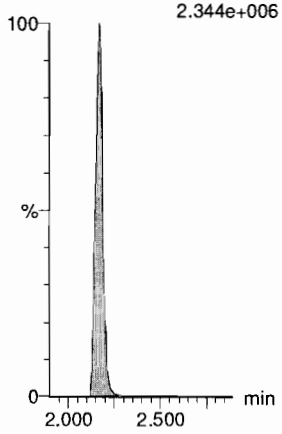

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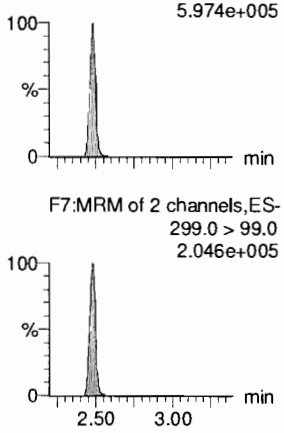

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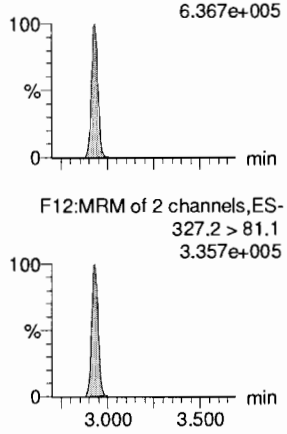

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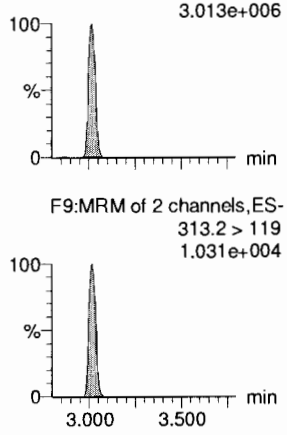

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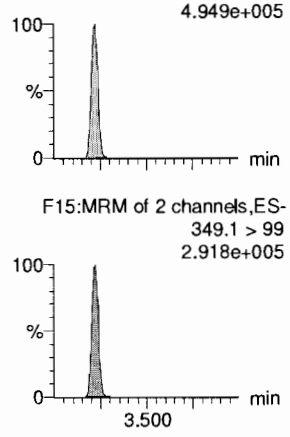

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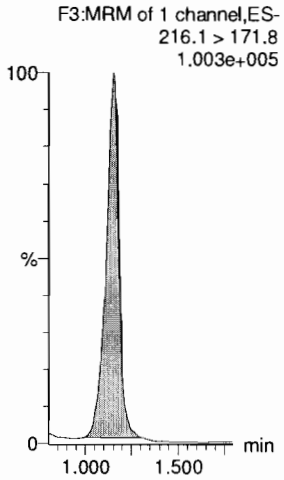

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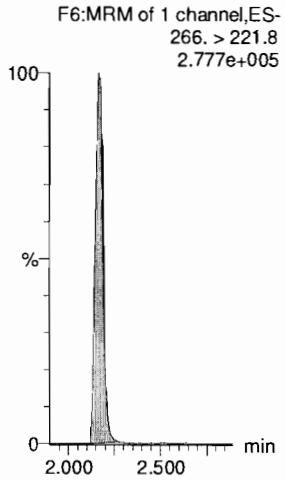

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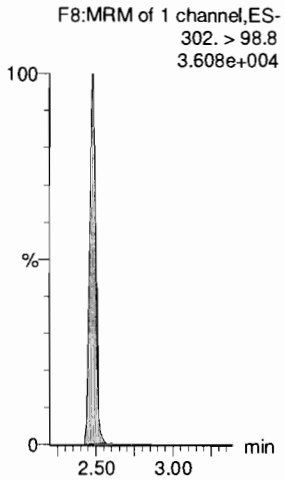
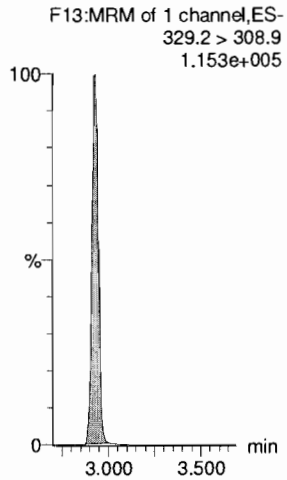


13C2-4:2 FTS



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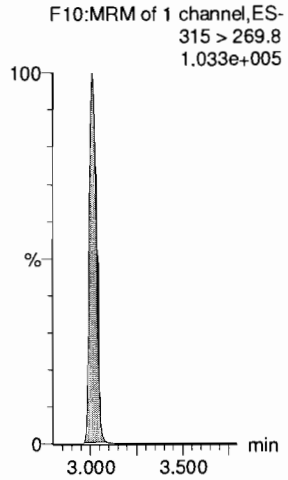

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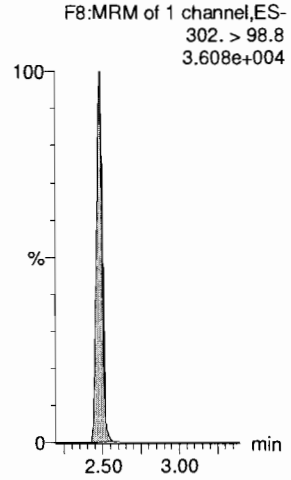

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
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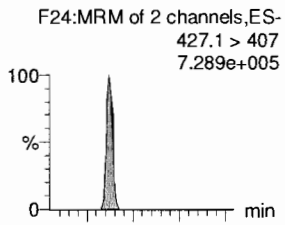
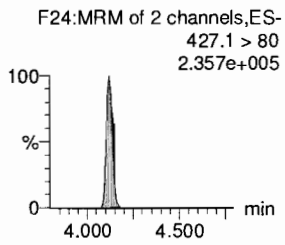
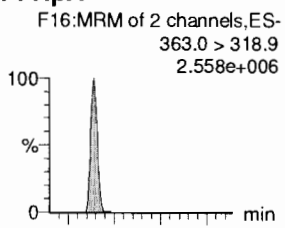
Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

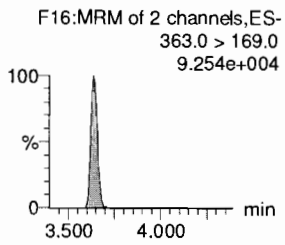
6:2 FTS



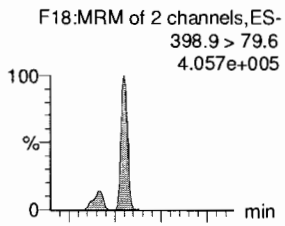


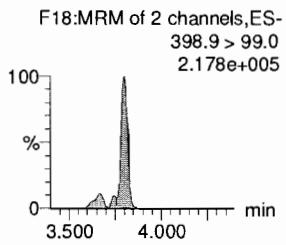
PFHpA



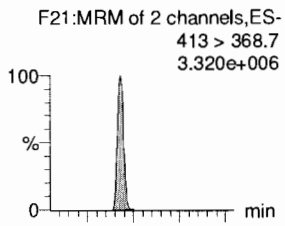


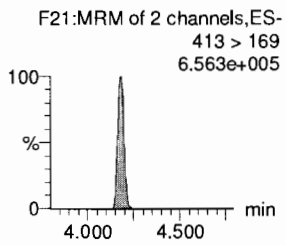
L-PFHxS





L-PFOA





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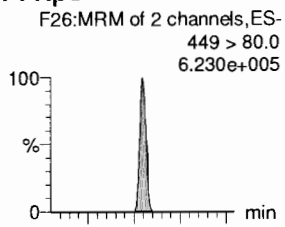

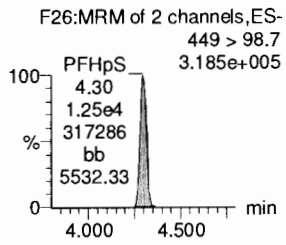

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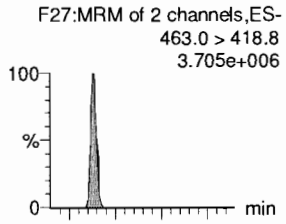
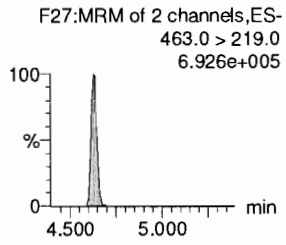
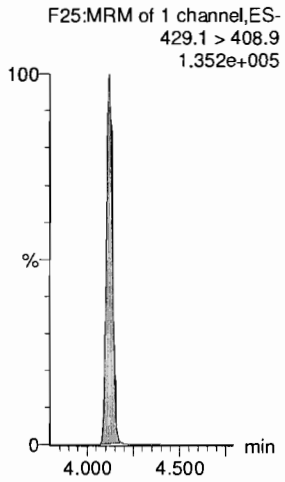
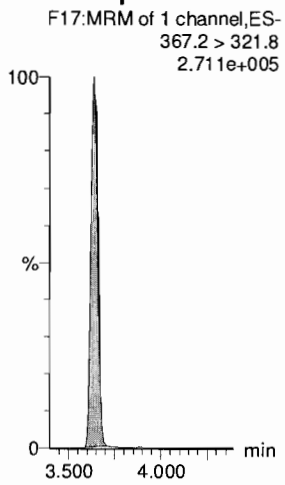




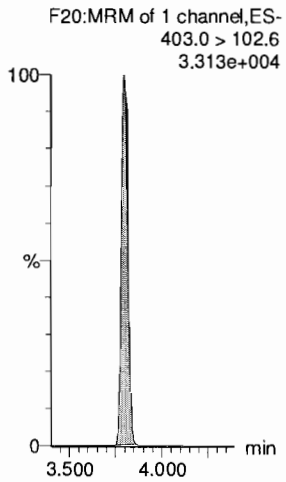
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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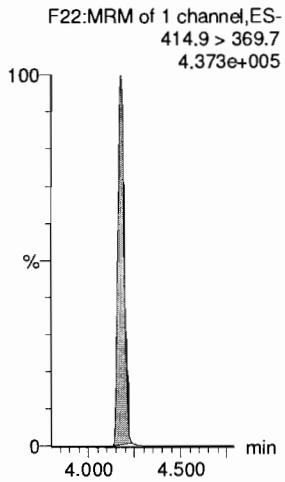

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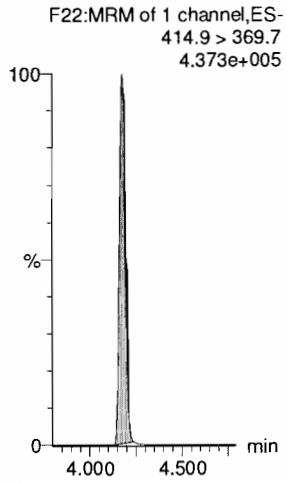
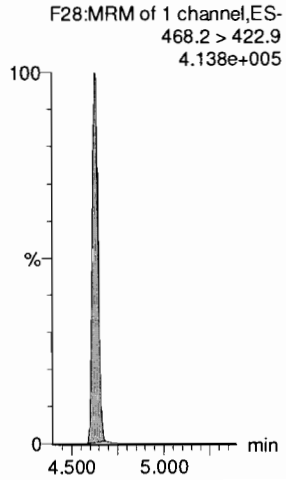


13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
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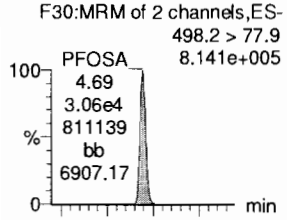
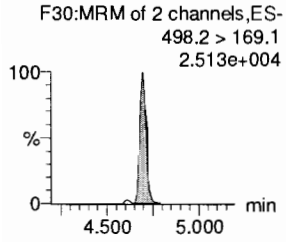
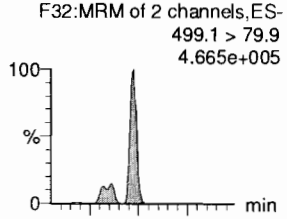
Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

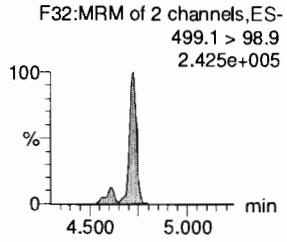
PFOSA





L-PFOS





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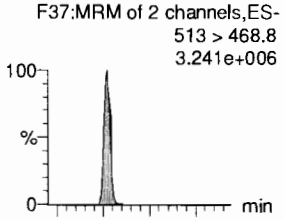
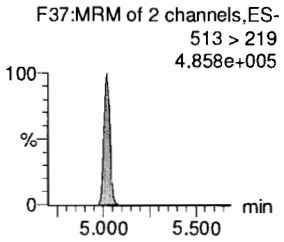
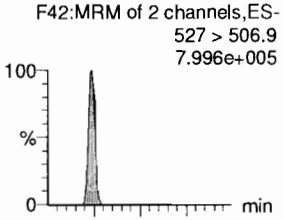
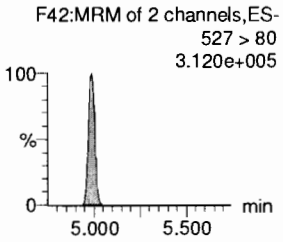




8:2 FTS





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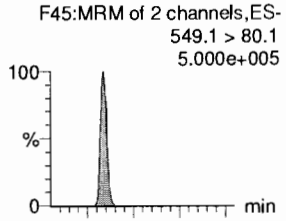
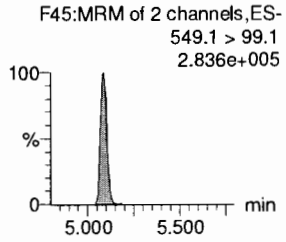
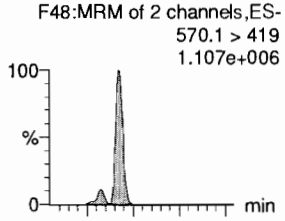
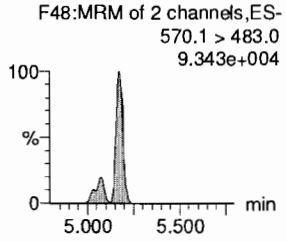


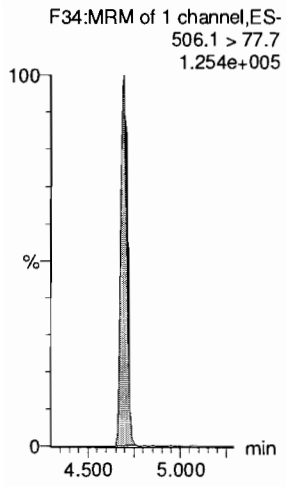


L-MeFOSAA

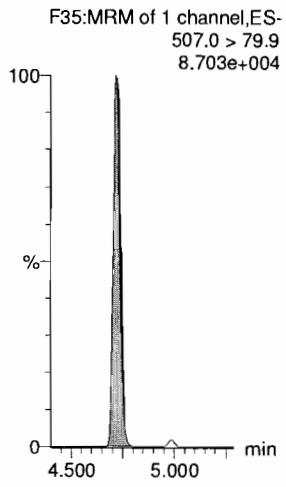




13C8-PFOSA



13C8-PFOS



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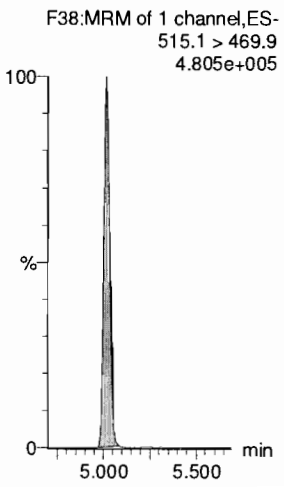
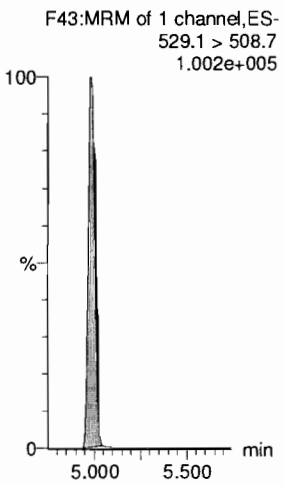


13C2-8:2 FTS



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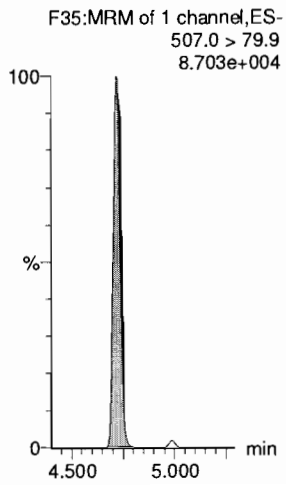

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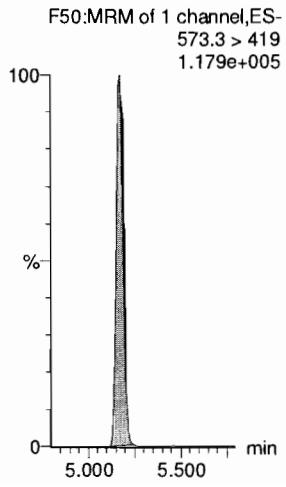

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
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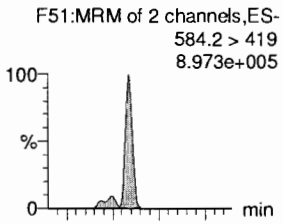
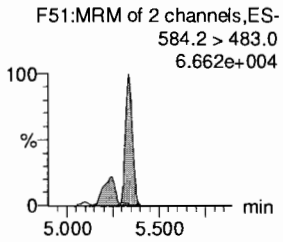
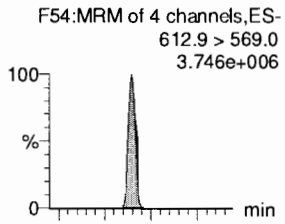
Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

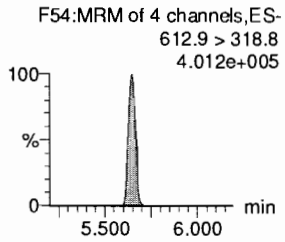
L-EtFOSAA



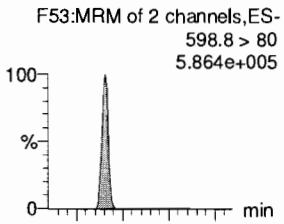


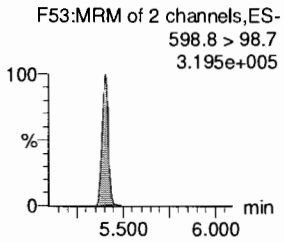
PFDoA



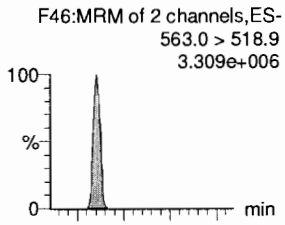


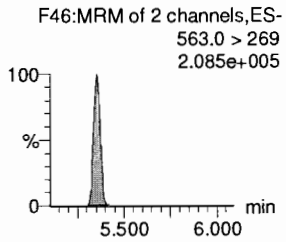
PFDS



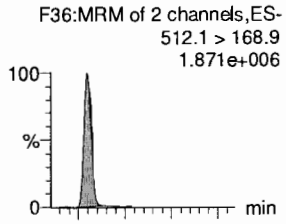


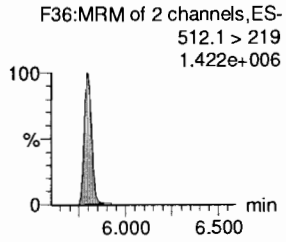
PFUdA



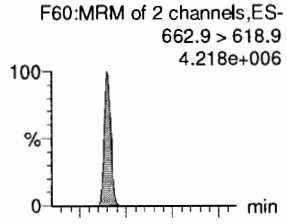


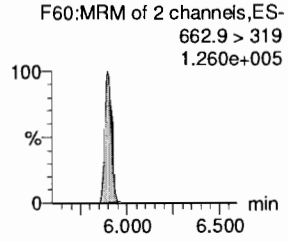
N-MeFOSA



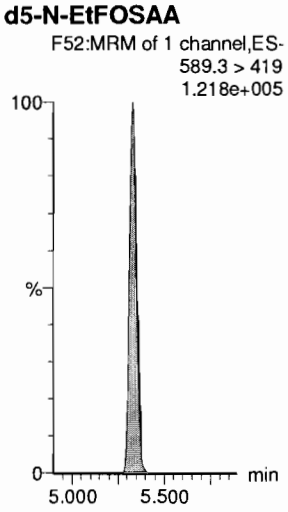


PFTrDA

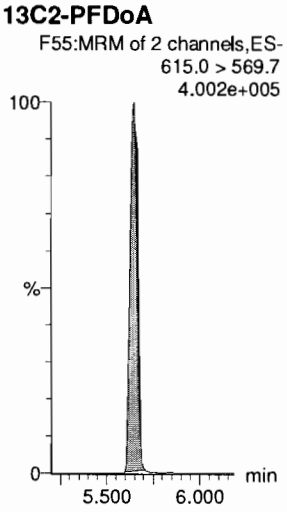




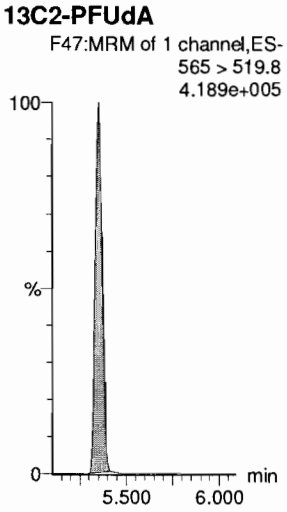
d5-N-EtFOSAA



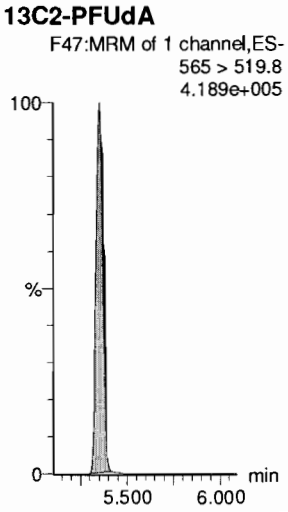
13C2-PFDoA



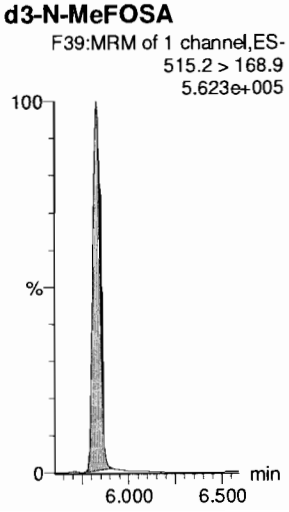
13C2-PFUdA



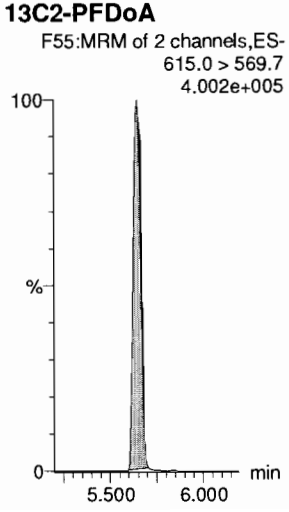
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

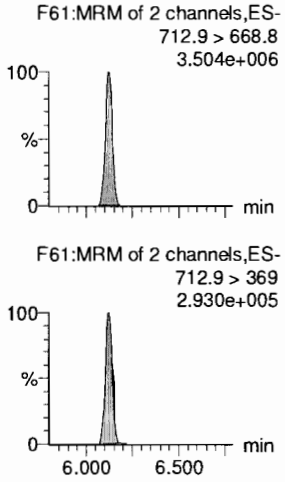


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

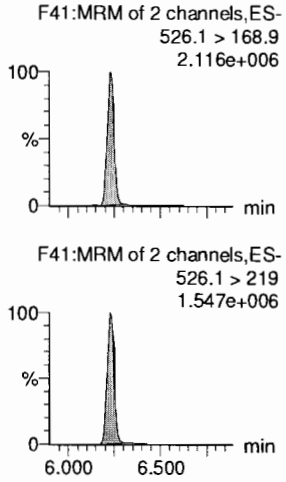
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

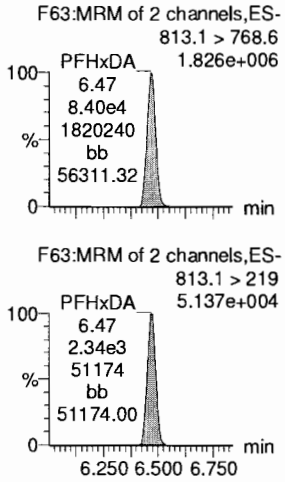
PFTeDA



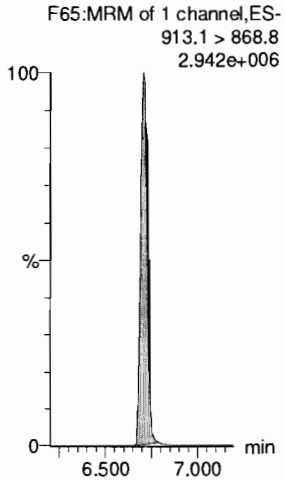
N-EtFOSA



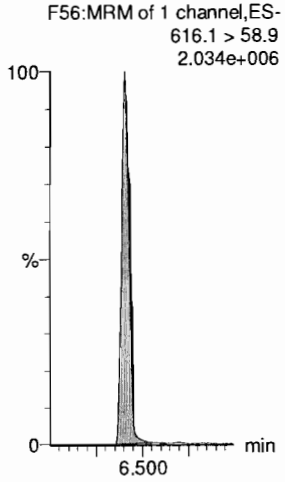
PFHxDA



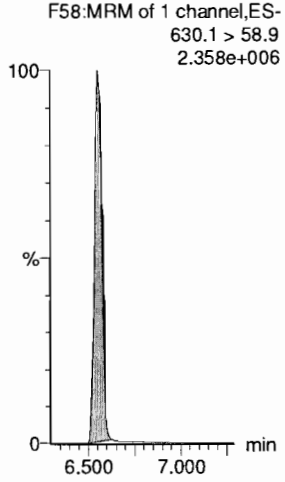
PFODA



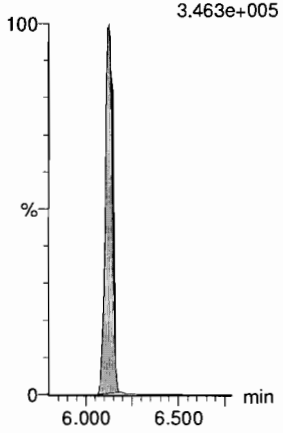
N-MeFOSE



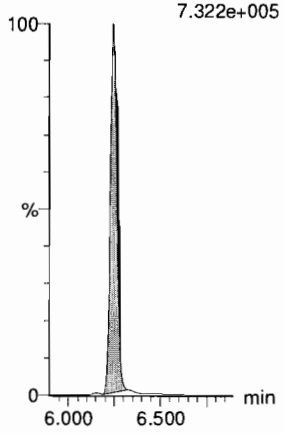
N-EtFOSE



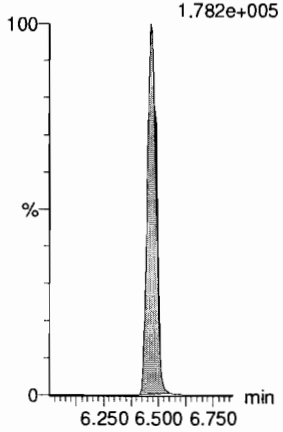
13C2-PFTeDA



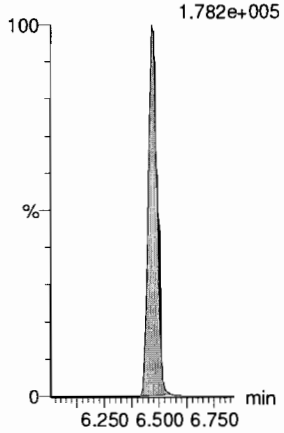
d5-N-ETFOSA



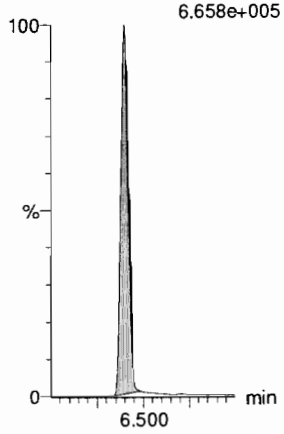
13C2-PFHxDA



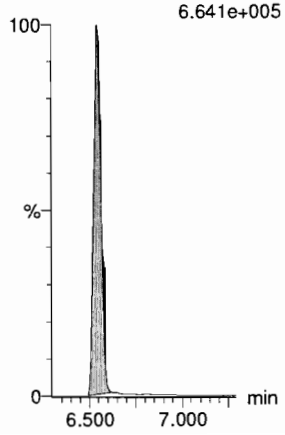
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

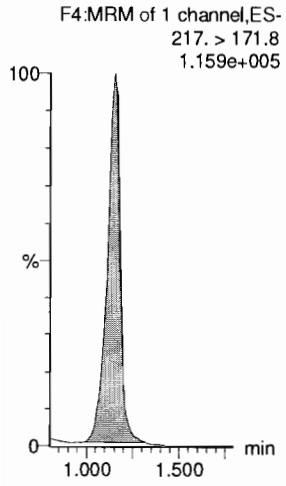


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

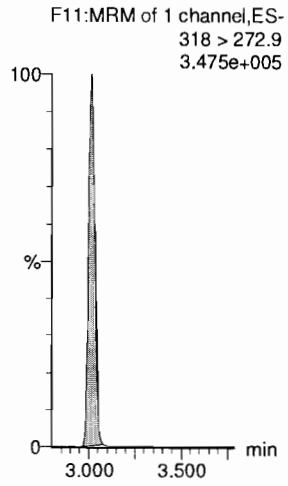
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_9, Date: 19-Jun-2018, Time: 19:00:49, ID: ST180619M1-8 PFC CS5 18F1111, Description: PFC CS5 18F1111

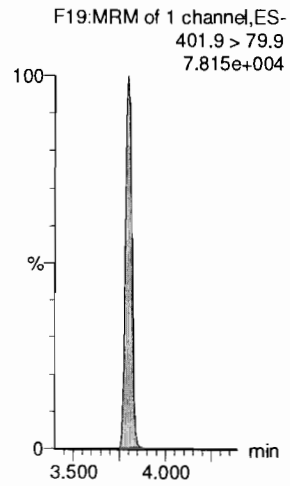
13C4-PFBA



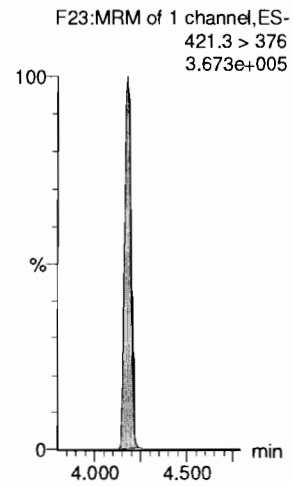
13C5-PFHxA



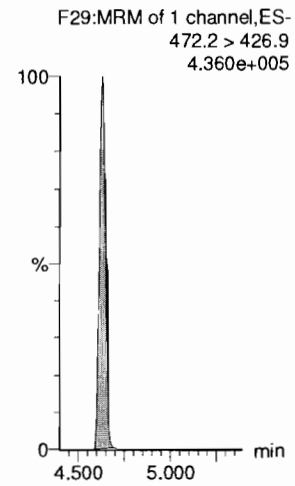
13C3-PFHxS



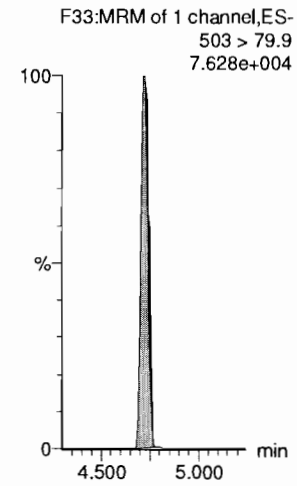
13C8-PFOA



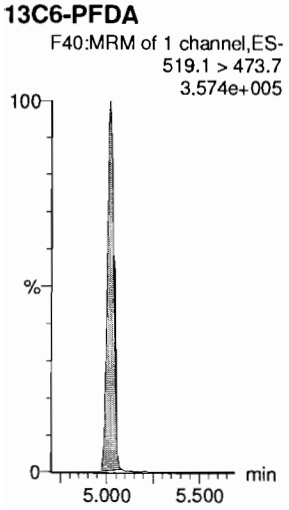
13C9-PFNA



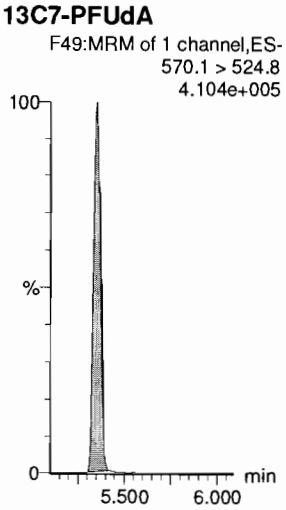
13C4-PFOS



13C6-PFDA



13C7-PFUdA

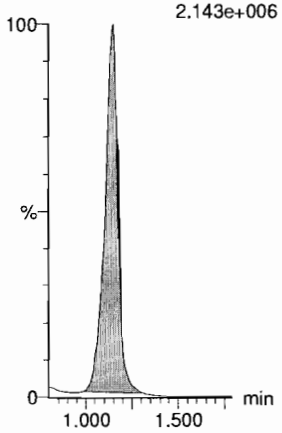


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

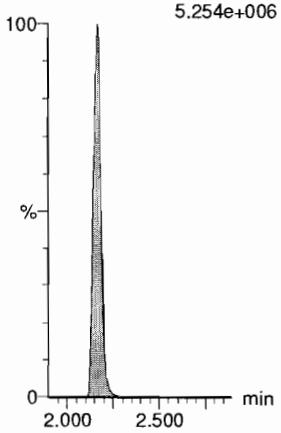
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_10, Date: 19-Jun-2018, Time: 19:11:14, ID: ST180619M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

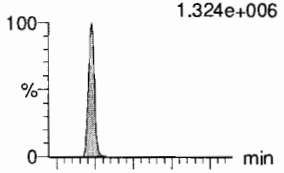
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
2.143e+006



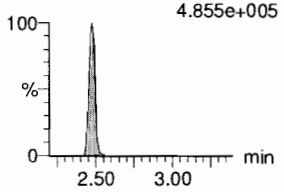
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
5.254e+006



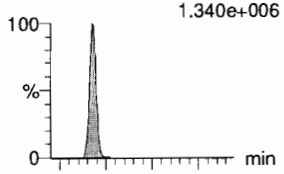
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
1.324e+006



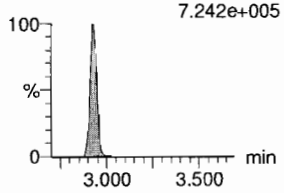
F7:MRM of 2 channels,ES-
299.0 > 99.0
4.855e+005



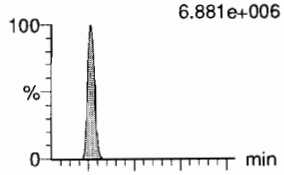
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
1.340e+006



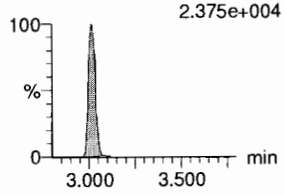
F12:MRM of 2 channels,ES-
327.2 > 81.1
7.242e+005



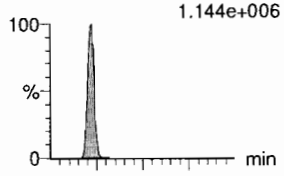
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
6.881e+006



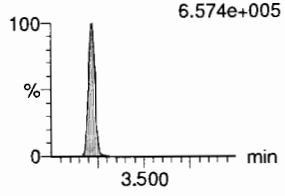
F9:MRM of 2 channels,ES-
313.2 > 119
2.375e+004



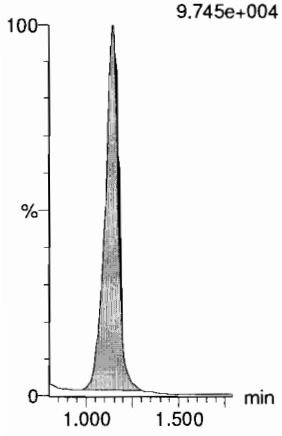
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
1.144e+006



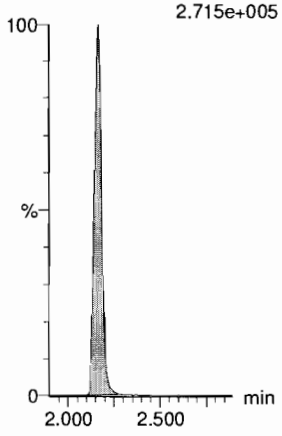
F15:MRM of 2 channels,ES-
349.1 > 99
6.574e+005



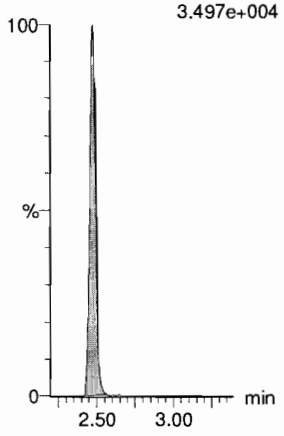
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
9.745e+004



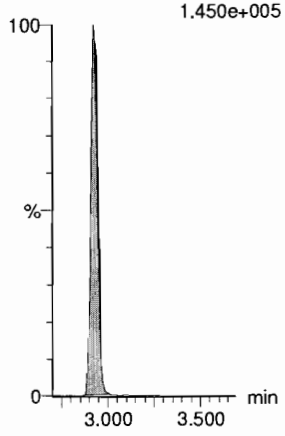
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
2.715e+005



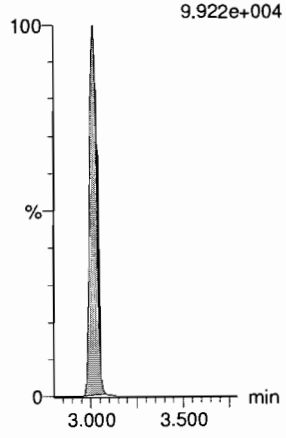
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.497e+004



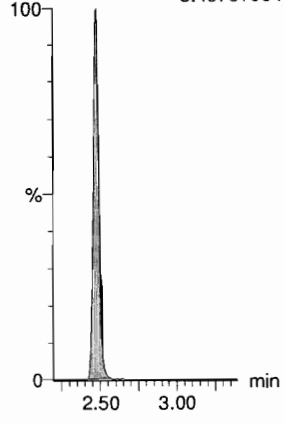
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.450e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
9.922e+004



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
3.497e+004

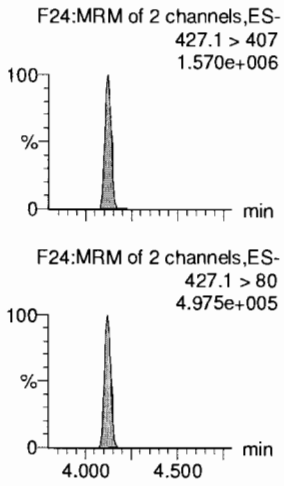


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_10, Date: 19-Jun-2018, Time: 19:11:14, ID: ST180619M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

6:2 FTS



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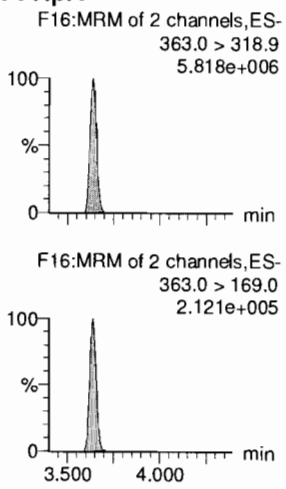
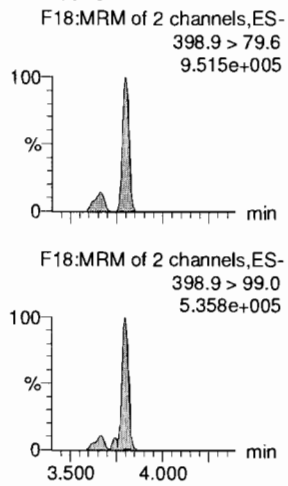


L-PFHxS



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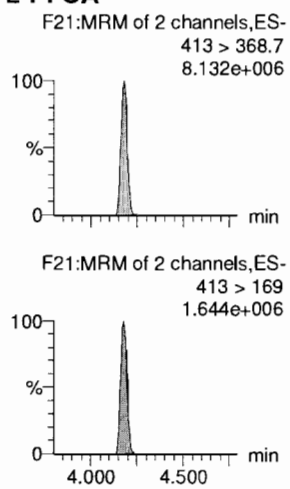

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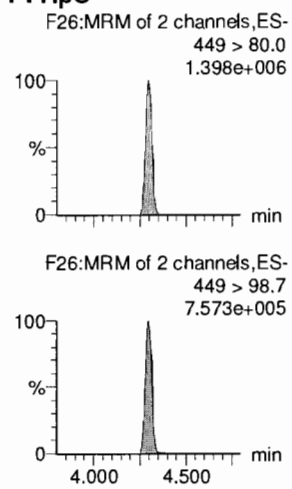
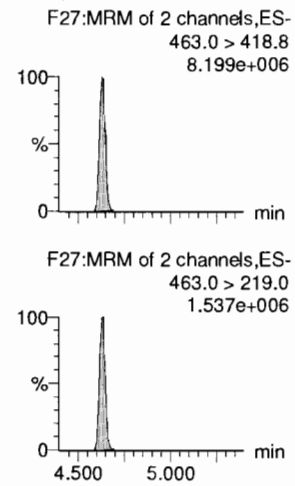
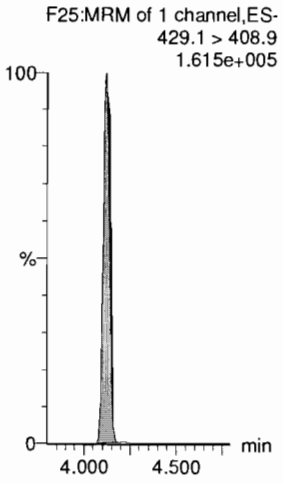


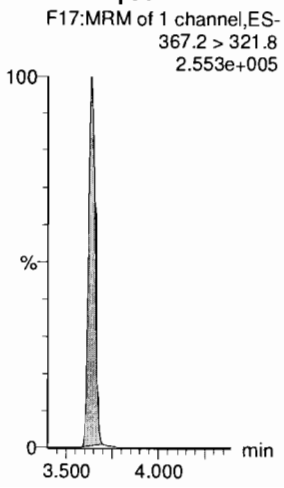
PFNA



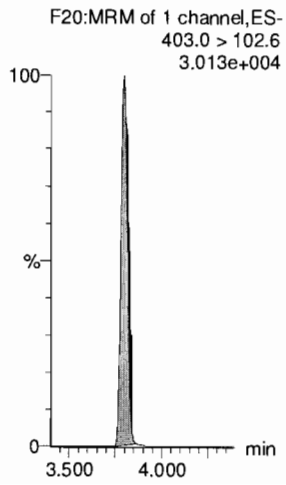
13C2-6:2 FTS



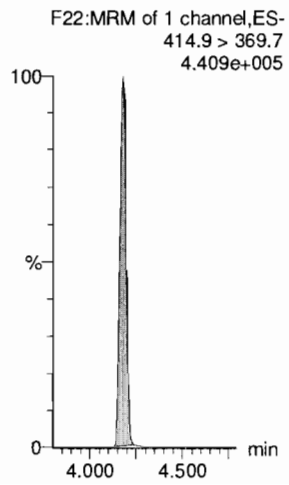
13C4-PFHpA



18O2-PFHxS



13C2-PFOA



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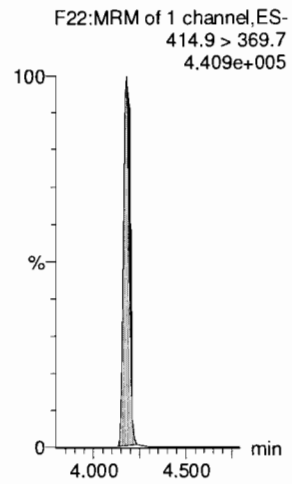

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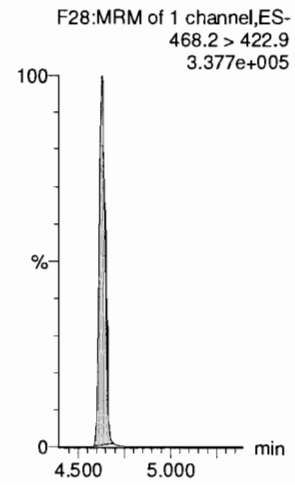

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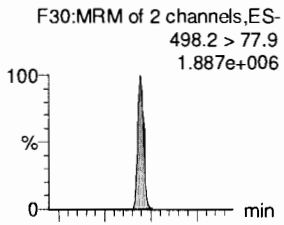
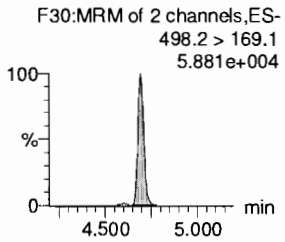
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

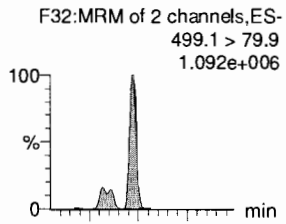
Name: 180619M1_10, Date: 19-Jun-2018, Time: 19:11:14, ID: ST180619M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

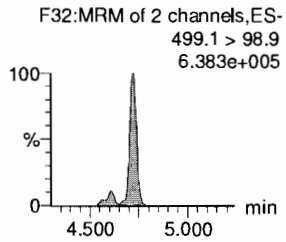
PFOSA





L-PFOS





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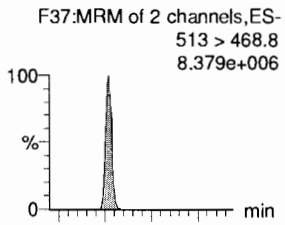
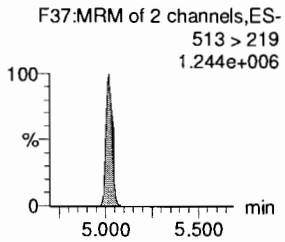
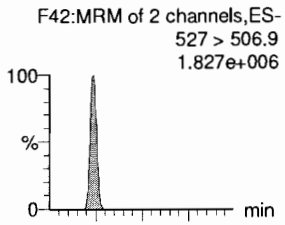
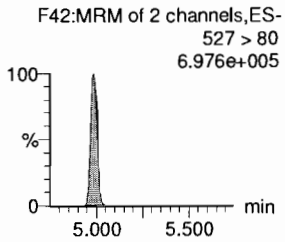




8:2 FTS





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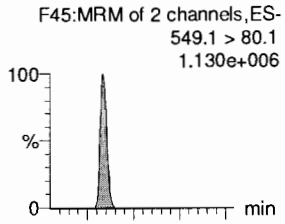
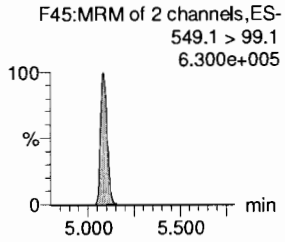
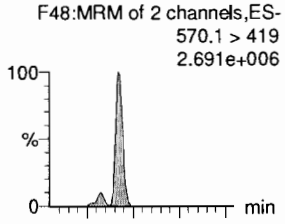
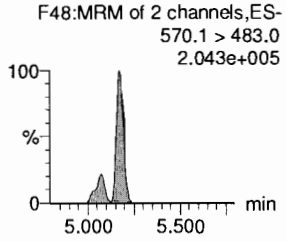


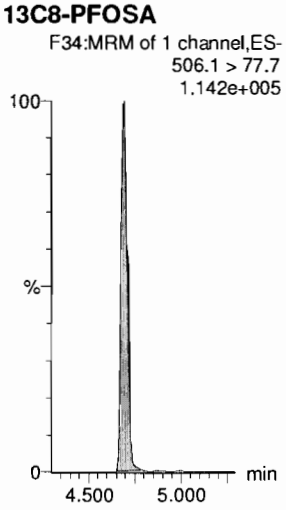


L-MeFOSAA

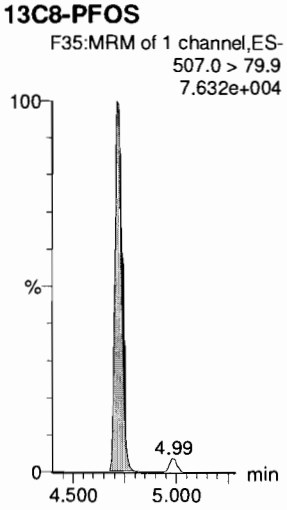




13C8-PFOSA



13C8-PFOS



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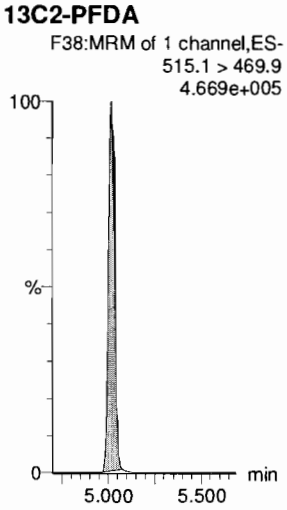
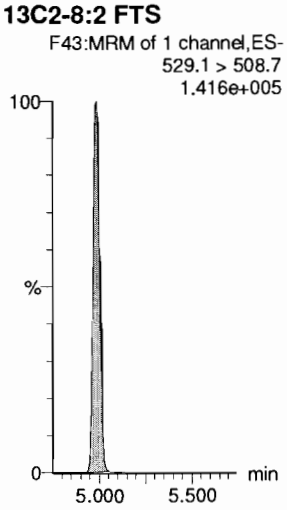


13C2-8:2 FTS



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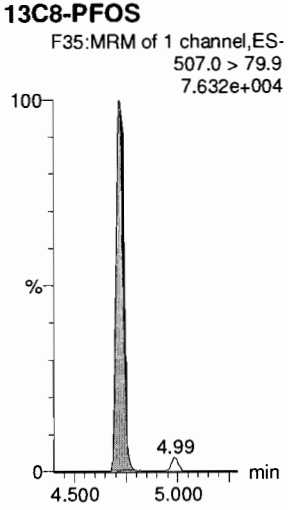
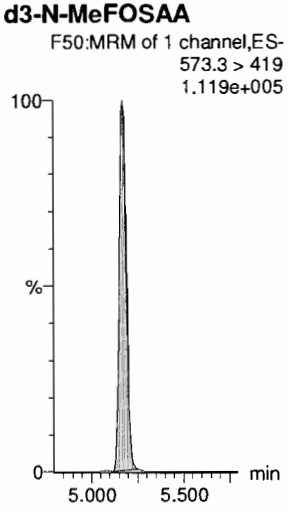


d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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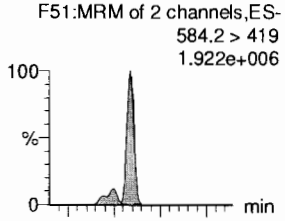
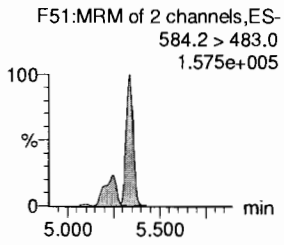
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

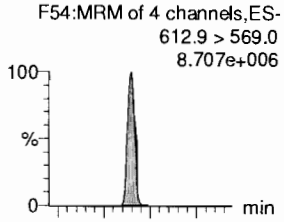
Name: 180619M1_10, Date: 19-Jun-2018, Time: 19:11:14, ID: ST180619M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

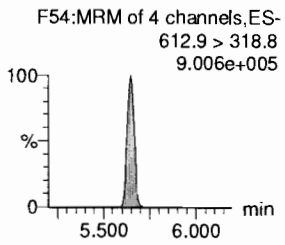
L-EtFOSAA





PFDoA





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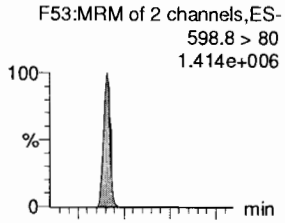

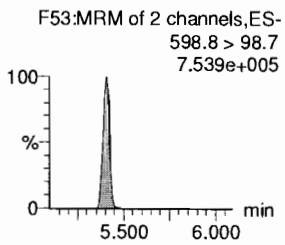

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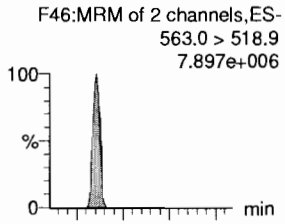

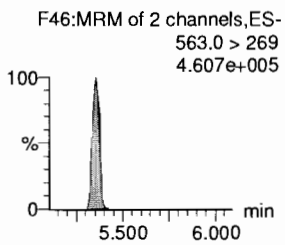

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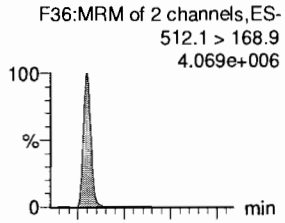

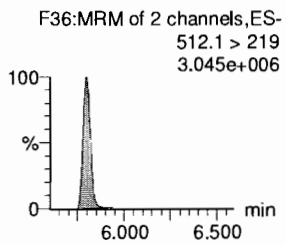

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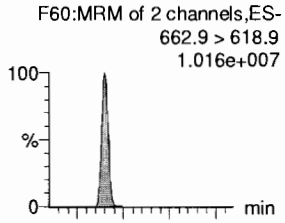
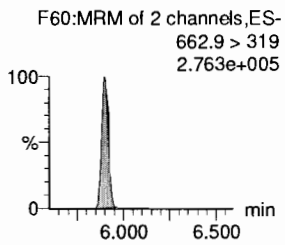
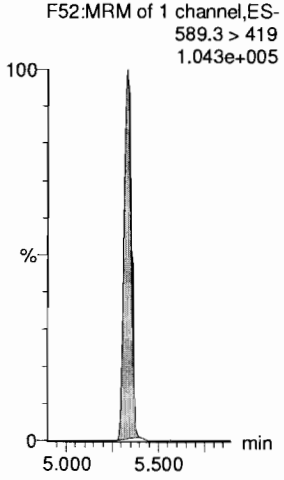




d5-N-EtFOSAA



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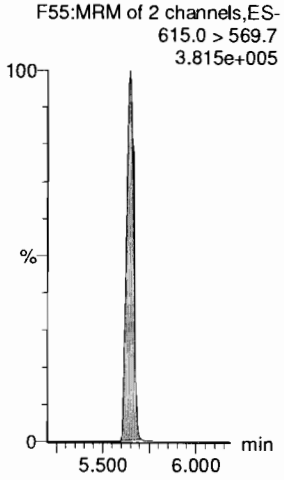
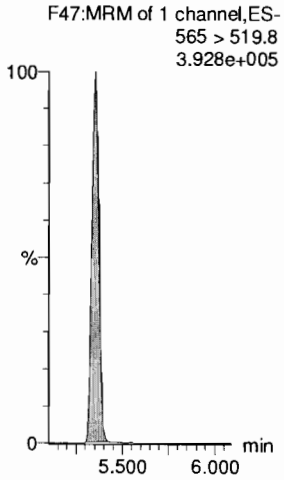


13C2-PFUdA



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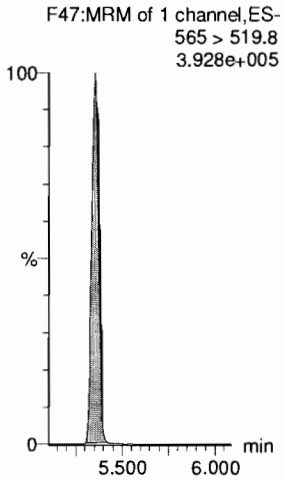

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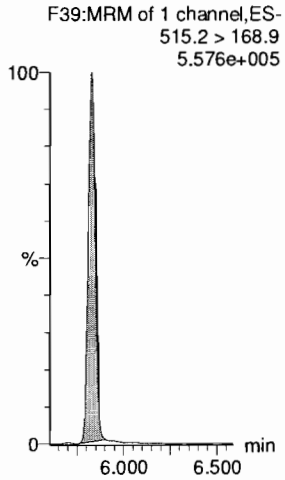

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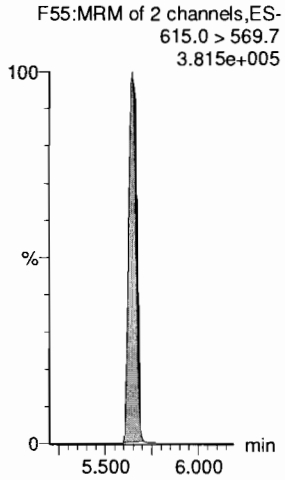

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Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

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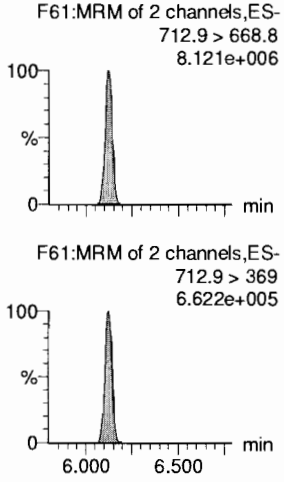
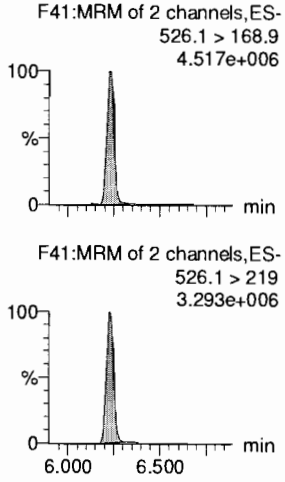
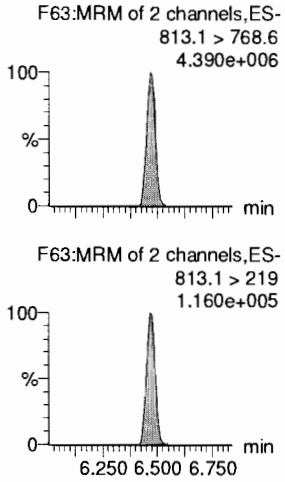
PFTeDA



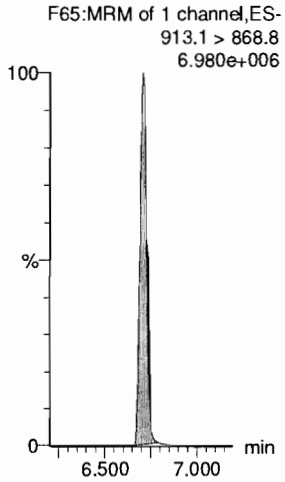
N-EtFOSA



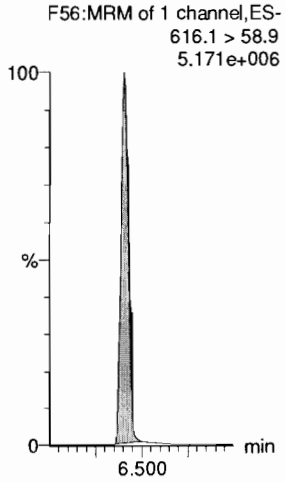
PFHxDA



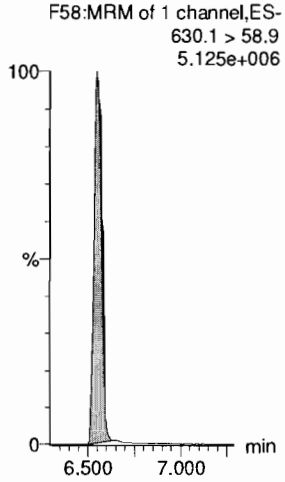
PFODA



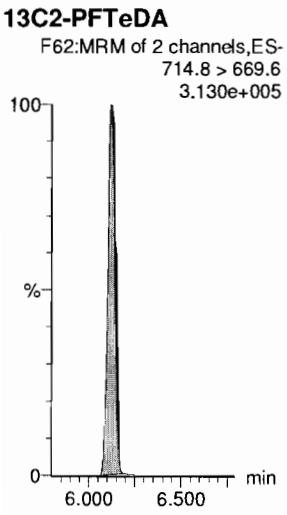
N-MeFOSE



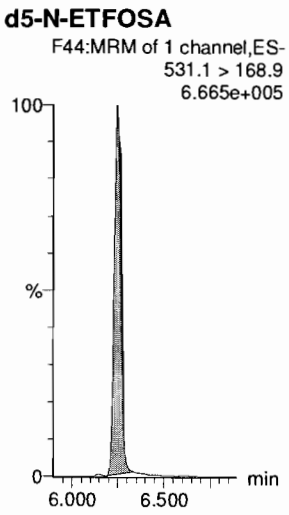
N-EtFOSE



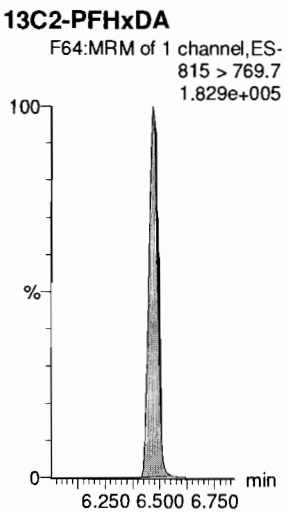
13C2-PFTeDA



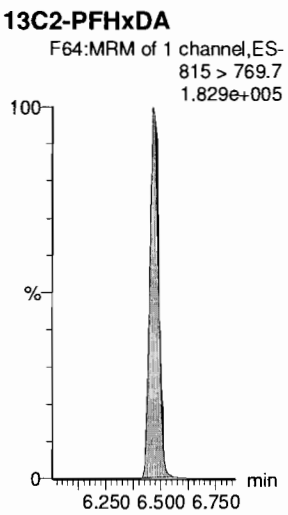
d5-N-ETFOSA



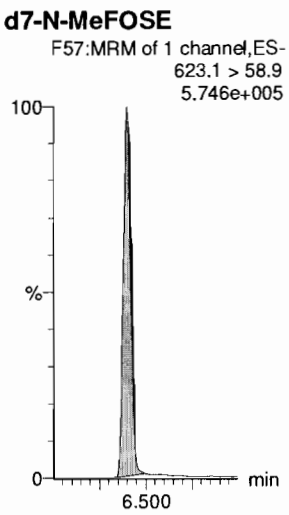
13C2-PFHxDA



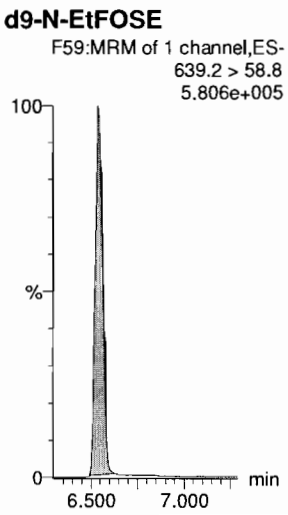
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

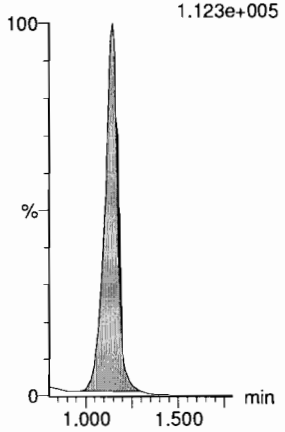


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

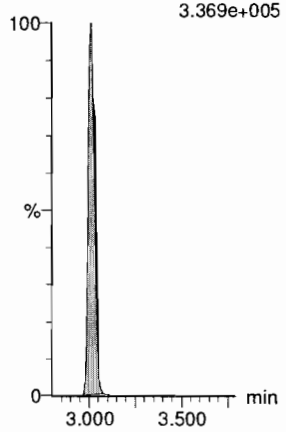
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_10, Date: 19-Jun-2018, Time: 19:11:14, ID: ST180619M1-9 PFC CS6 18F1112, Description: PFC CS6 18F1112

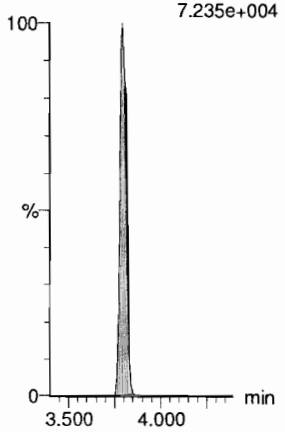
13C4-PFBA



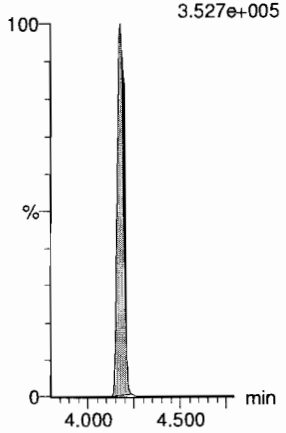
13C5-PFHxA



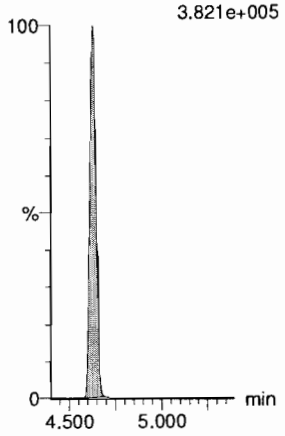
13C3-PFHxS



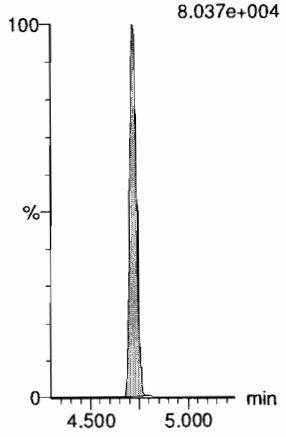
13C8-PFOA



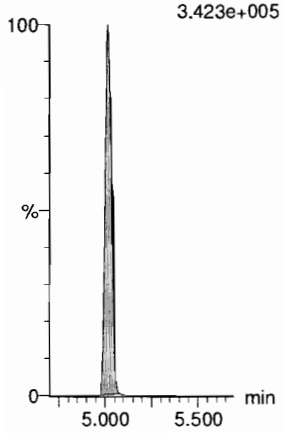
13C9-PFNA



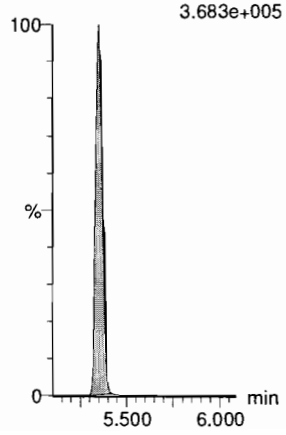
13C4-PFOS



13C6-PFDA



13C7-PFUdA

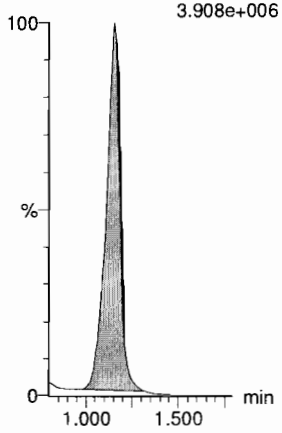


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

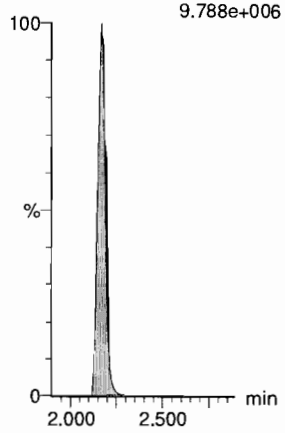
Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

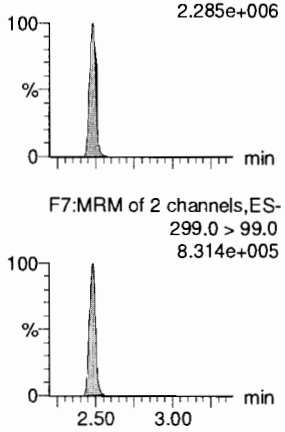
PFBA



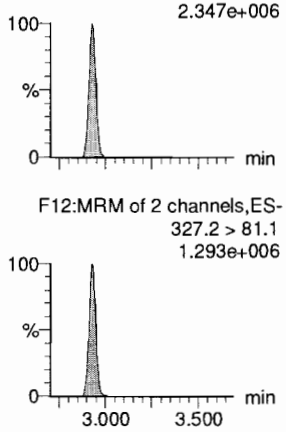
PFPeA



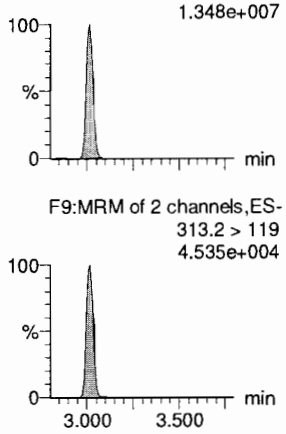
PFBS



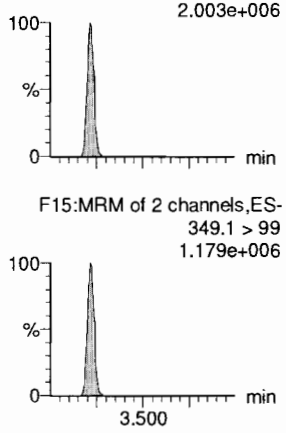
4:2 FTS



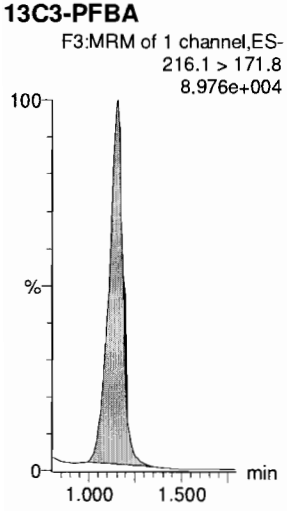
PFHxA



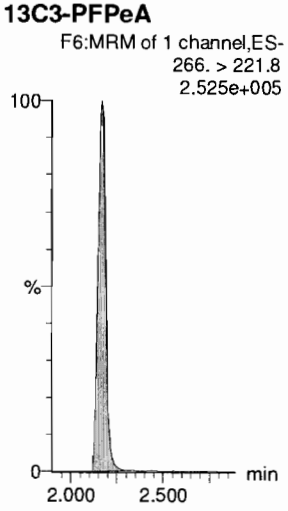
PFPeS



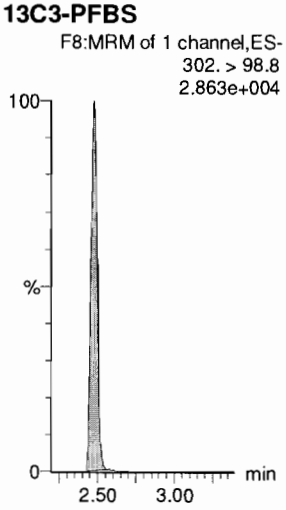
13C3-PFBA



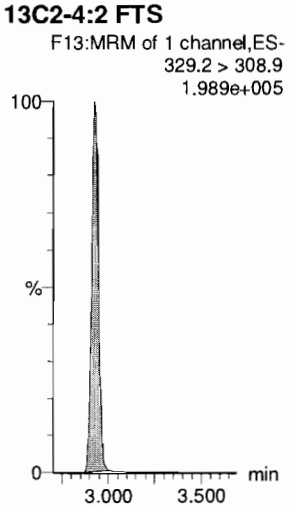
13C3-PFPeA



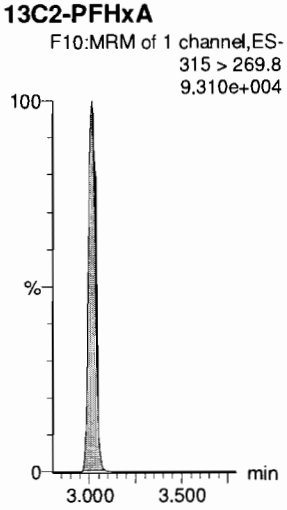
13C3-PFBS



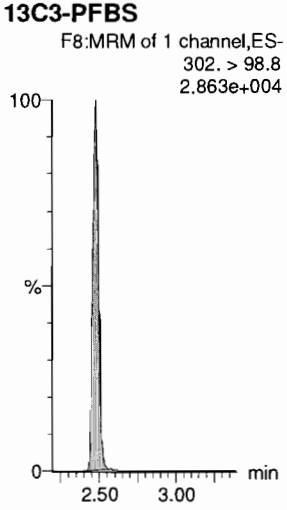
13C2-4:2 FTS



13C2-PFHxA



13C3-PFBS

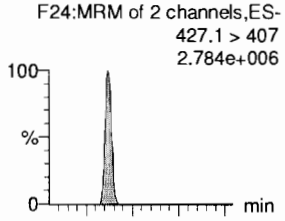


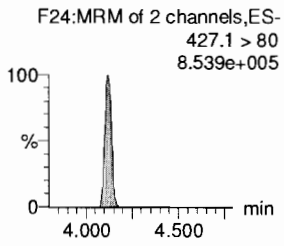
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

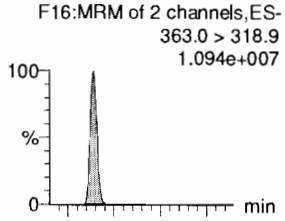
Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

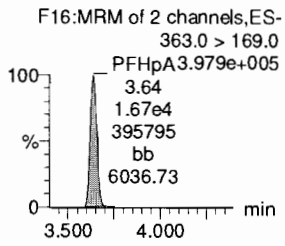
6:2 FTS



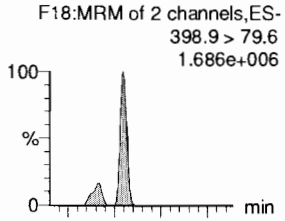


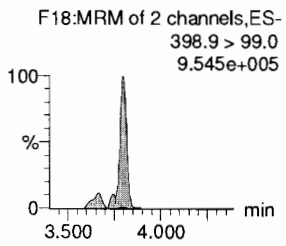
PFHpA



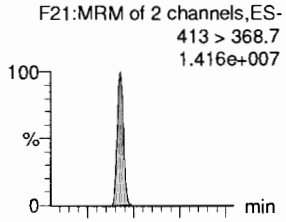


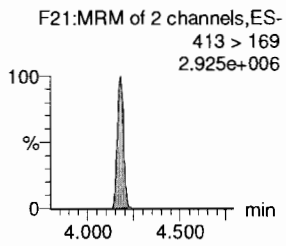
L-PFHxS



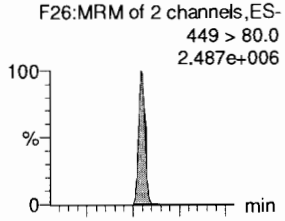


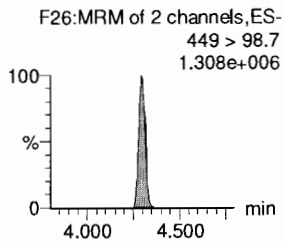
L-PFOA



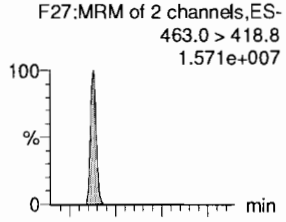


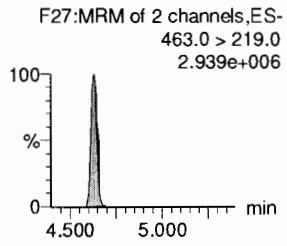
PFHpS



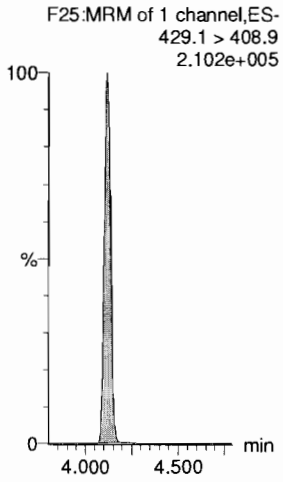


PFNA

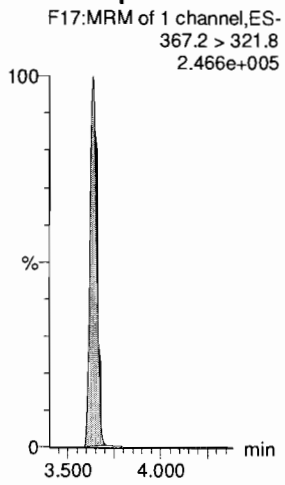




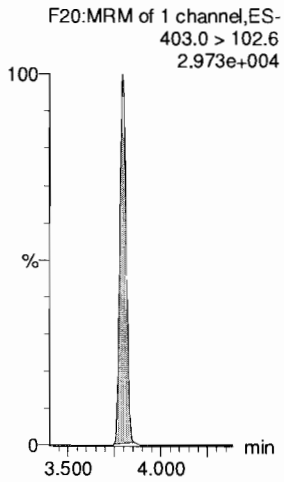
13C2-6:2 FTS



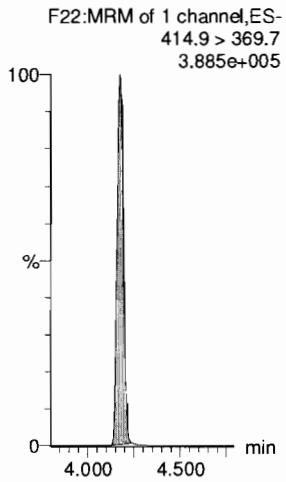
13C4-PFHpA



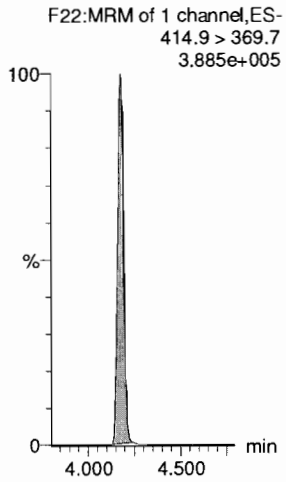
18O2-PFHxS



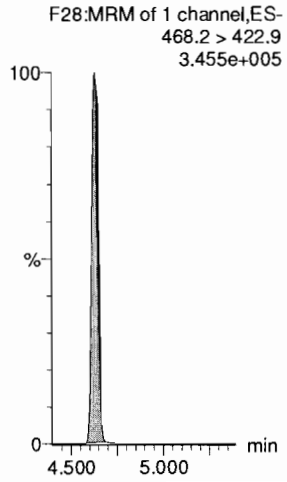
13C2-PFOA



13C2-PFOA



13C5-PFNA

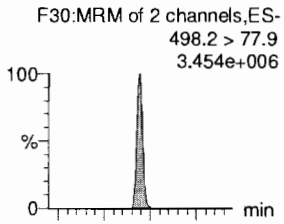


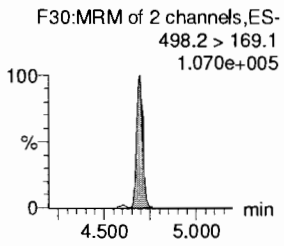
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

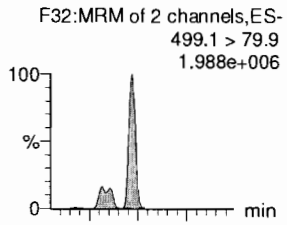
Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

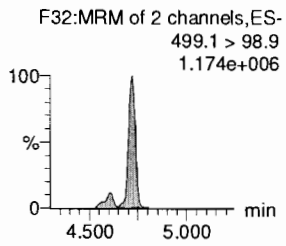
PFOSA



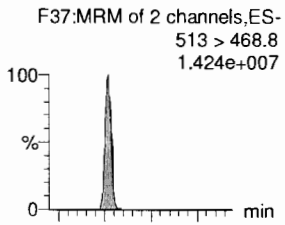


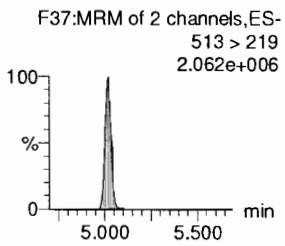
L-PFOS



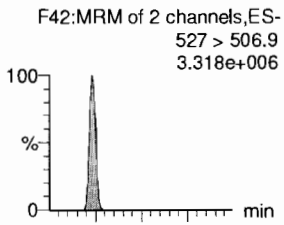


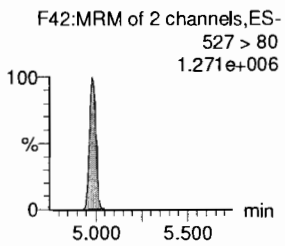
PFDA



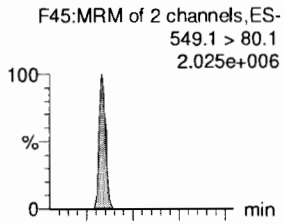


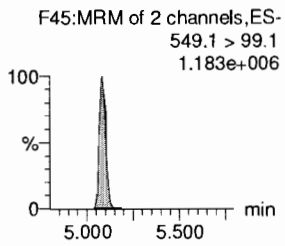
8:2 FTS



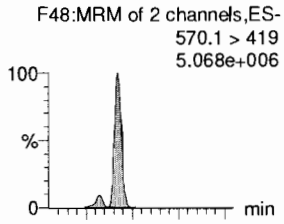


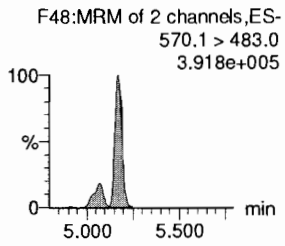
PFNS



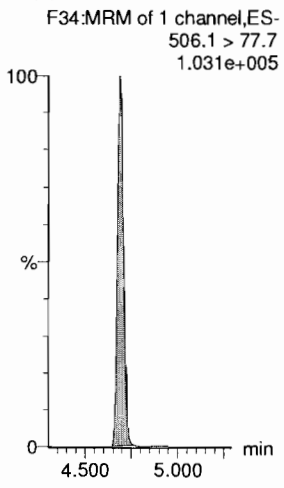


L-MeFOSAA

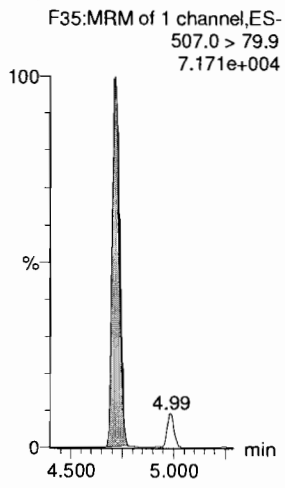




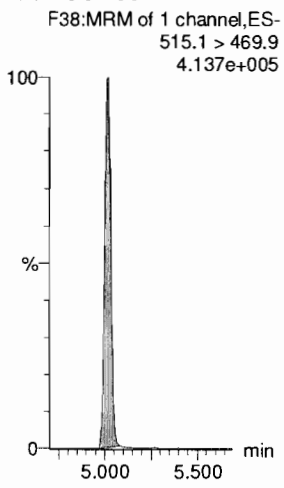
13C8-PFOSA



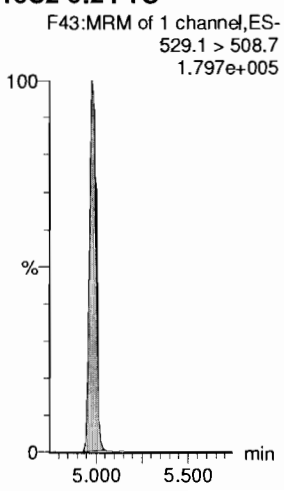
13C8-PFOS



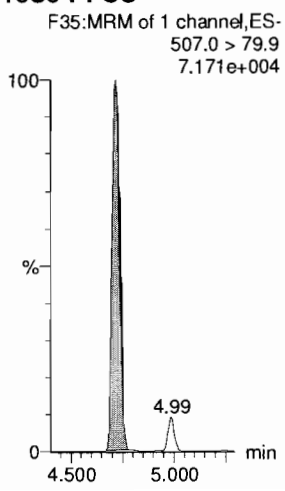
13C2-PFDA



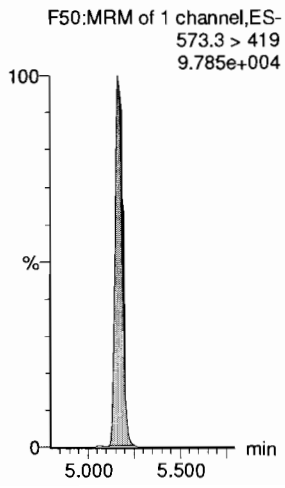
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

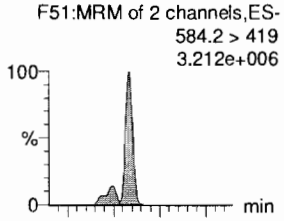


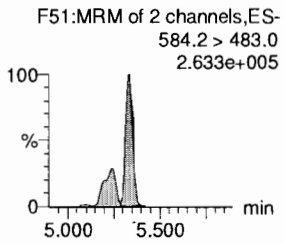
Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

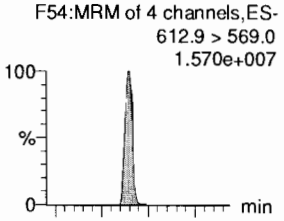
Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

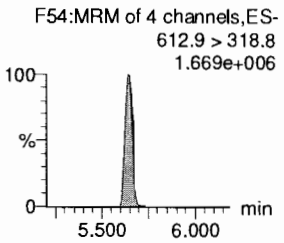
L-EtFOSAA





PFDoA





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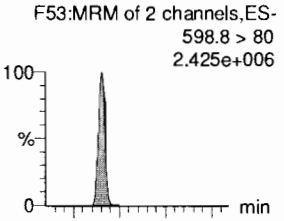
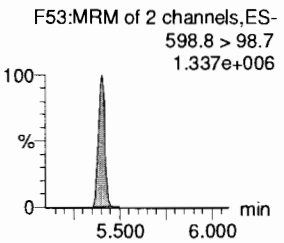
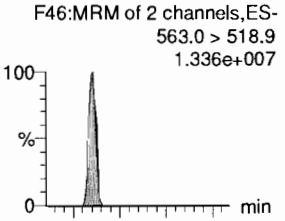
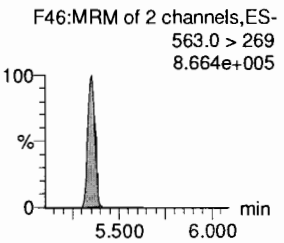


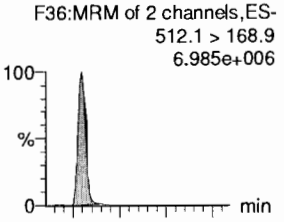


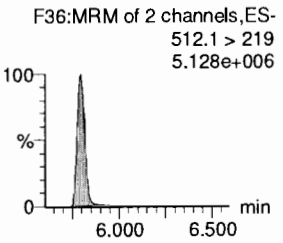
PFUdA



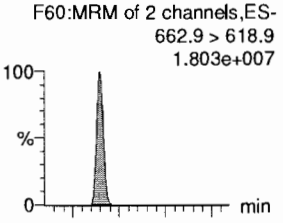


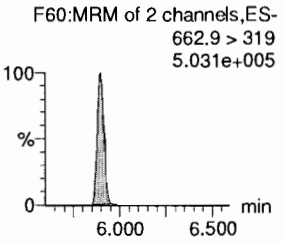
N-MeFOSA



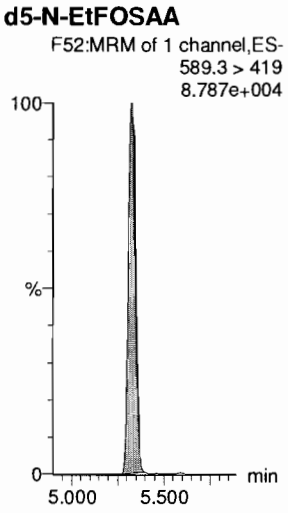


PFTrDA

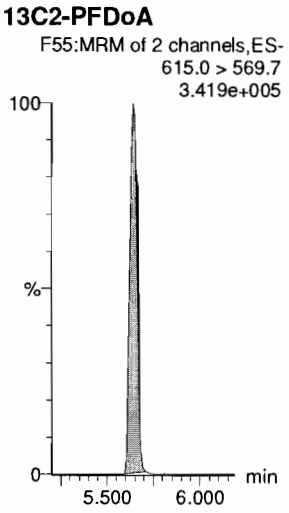




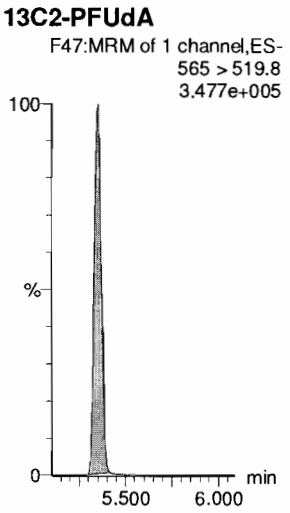
d5-N-EtFOSAA



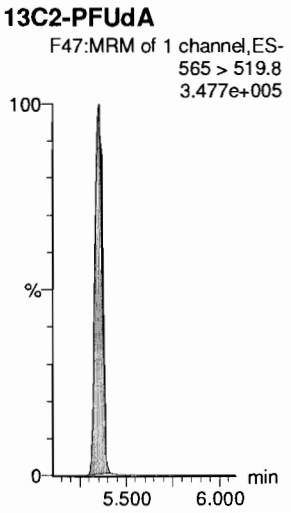
13C2-PFDoA



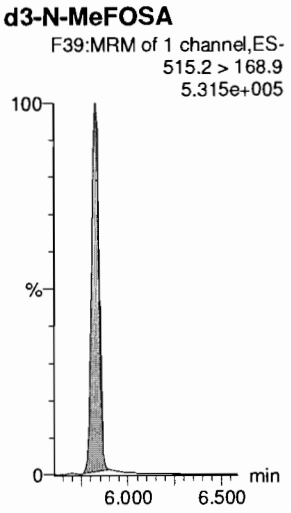
13C2-PFUdA



13C2-PFUdA



d3-N-MeFOSA



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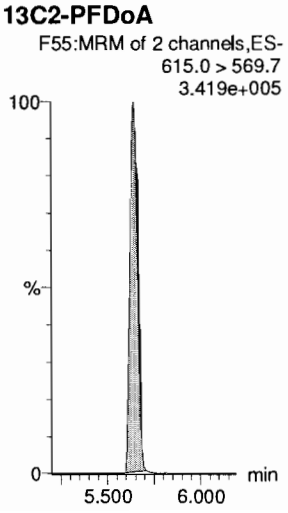
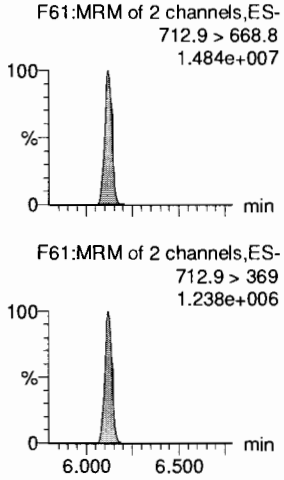


Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

Last Altered: Wednesday, June 20, 2018 10:08:10 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

PFTeDA



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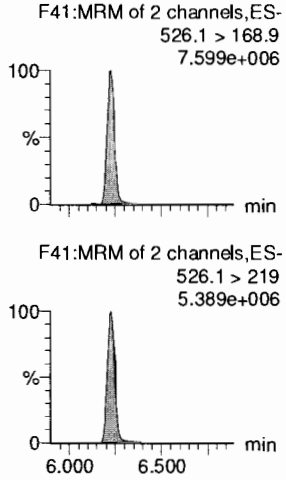
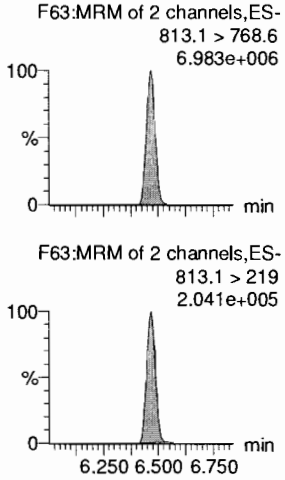
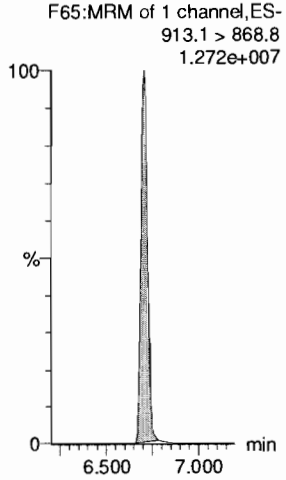


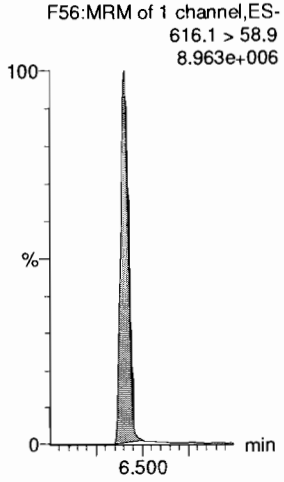
PFHxDA



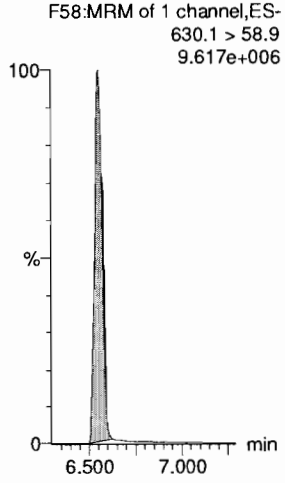
PFODA



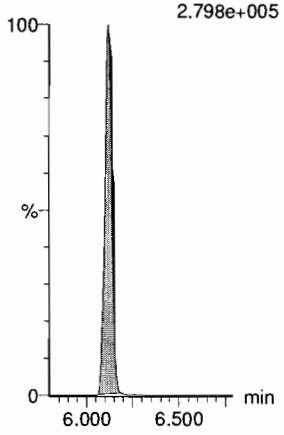
N-MeFOSE



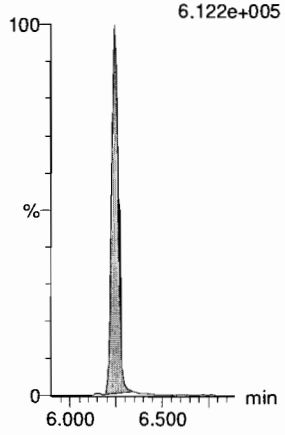
N-EtFOSE



13C2-PFTeDA



d5-N-ETFOSA



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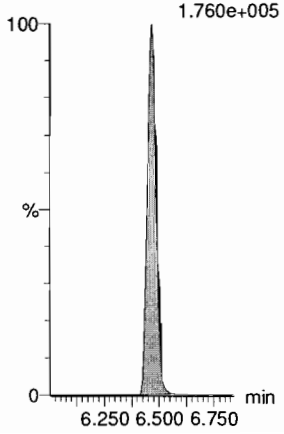

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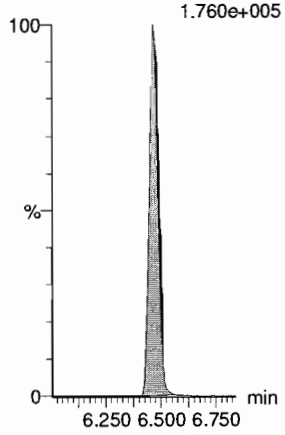
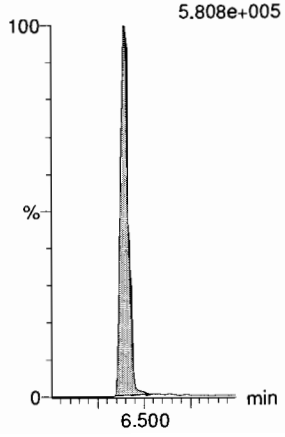
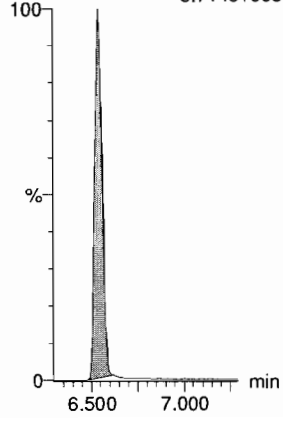


d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-CRV.qld

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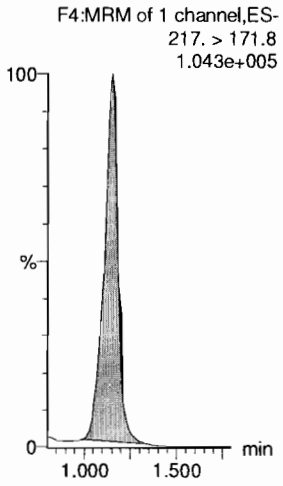
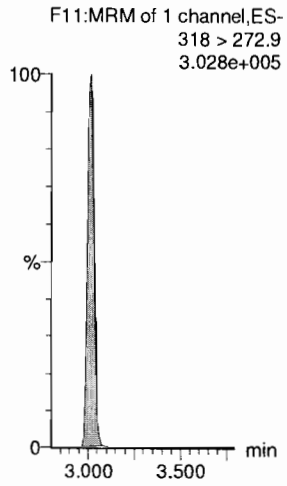
Printed: Wednesday, June 20, 2018 10:09:48 Pacific Daylight Time

Name: 180619M1_11, Date: 19-Jun-2018, Time: 19:21:44, ID: ST180619M1-10 PFC CS7 18F1113, Description: PFC CS7 18F1113

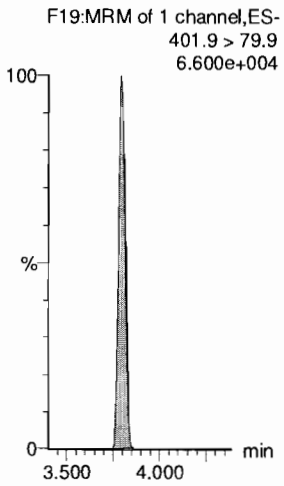
13C4-PFBA



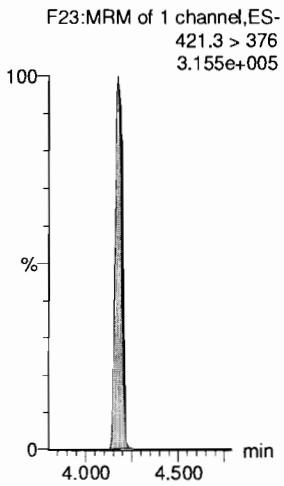
13C5-PFHxA



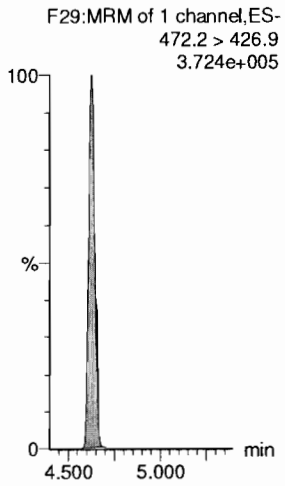
13C3-PFHxS



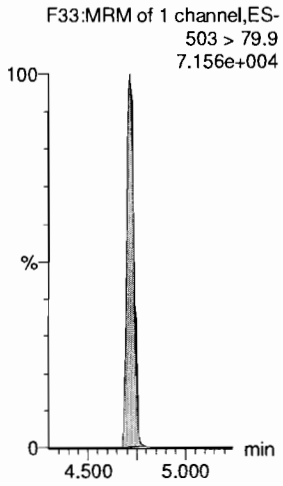
13C8-PFOA



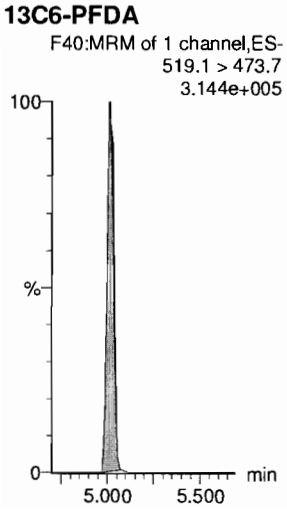
13C9-PFNA



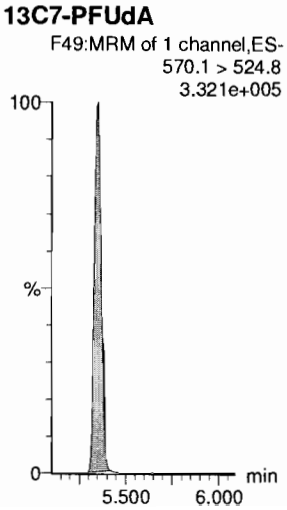
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-ICV.qld

Last Altered: Wednesday, June 20, 2018 11:03:16 Pacific Daylight Time
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VMF 6/20/18

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	213.0 > 168.8	6988.396	8218.805	1.00	1.15	10.629	9.8	97.9	NO		
2	2	PFPeA	263.1 > 218.9	10224.056	13893.394	1.00	2.17	9.199	9.2	92.5	NO		
3	3	PFBS	299.0 > 79.7	2151.491	1744.366	1.00	2.48	15.417	7.9	79.0	NO	2.719	NO
4	4	4:2 FTS	327.2>307.2	2332.490	3990.688	1.00	2.93	7.306	8.8	88.2	NO	1.752	NO
5	5	PFHxA	313.2 > 268.9	12906.929	4506.917	1.00	3.01	14.319	10.1	101.4	NO	310.696	NO
6	6	PFPeS	349.1>80.1	1941.068	1744.366	1.00	3.22	13.910	8.4	84.4	NO	1.728	NO
7	36	13C3-PFBA	216.1 > 171.8	8218.805	9365.781	1.00	1.15	10.969	12.4	99.4	NO		
8	37	13C3-PFPeA	266. > 221.8	13893.394	14692.197	1.00	2.17	11.820	13.2	105.2	NO		
9	38	13C3-PFBS	302. > 98.8	1744.366	14692.197	1.00	2.48	1.484	14.1	112.8	NO		
10	39	13C2-4:2 FTS	329.2>308.9	3990.688	14692.197	1.00	2.93	3.395	13.5	108.1	NO		
11	40	13C2-PFHxA	315 > 269.8	4506.917	14692.197	1.00	3.01	3.834	5.1	101.3	NO		
12	38	13C3-PFBS	302. > 98.8	1744.366	14692.197	1.00	2.48	1.484	14.1	112.8	NO		
13	-1												
14	10	6:2 FTS	427.1 > 407	2552.493	3474.645	1.00	4.12	9.183	9.7	96.5	NO	2.891	NO
15	7	PFHpA	363.0 > 318.9	11552.656	12717.611	1.00	3.64	11.355	10.0	100.4	NO	25.725	NO
16	8	L-PFHxS	398.9 > 79.6	1746.327	1252.772	1.00	3.80	17.425	9.1	91.5	NO	1.761	NO
17	11	L-PFOA	413 > 368.7	13321.923	18000.191	1.00	4.18	9.251	9.6	95.8	NO	5.005	NO
18	13	PFHpS	449 > 80.0	2287.703	18000.191	1.00	4.29	1.589	8.9	88.9	NO	1.757	NO
19	14	PFNA	463.0 > 418.8	12991.659	15029.375	1.00	4.63	10.805	9.1	90.9	NO	5.634	NO
20	43	13C2-6:2 FTS	429.1 > 408.9	3474.645	15146.299	1.00	4.12	2.868	10.5	84.3	NO		
21	41	13C4-PFHpA	367.2 > 321.8	12717.611	14692.197	1.00	3.64	10.820	13.4	107.0	NO		
22	42	18O2-PFHxS	403.0 > 102.6	1252.772	3156.467	1.00	3.80	4.961	11.4	91.5	NO		
23	44	13C2-PFOA	414.9 > 369.7	18000.191	15146.299	1.00	4.18	14.855	12.5	100.0	NO		
24	44	13C2-PFOA	414.9 > 369.7	18000.191	15146.299	1.00	4.18	14.855	12.5	100.0	NO		
25	45	13C5-PFNA	468.2 > 422.9	15029.375	15580.256	1.00	4.63	12.058	12.8	102.3	NO		
26	-1												
27	15	PFOSA	498.2 > 77.9	3174.489	5382.243	1.00	4.69	7.373	9.0	90.2	NO	28.366	NO
28	16	L-PFOS	499.1 > 79.9	2453.283	3405.052	1.00	4.72	9.006	9.7	97.1	NO	1.849	NO
29	18	PFDA	513 > 468.8	13548.015	21104.232	1.00	5.02	8.024	8.9	89.2	NO	6.476	NO
30	19	8:2 FTS	527 > 506.9	3183.742	2758.209	1.00	4.99	14.428	10.3	103.2	NO	2.790	NO
31	20	PFNS	549.1>80.1	1922.557	3405.052	1.00	5.08	7.058	8.9	88.7	NO	1.808	NO
32	21	L-MeFOSAA	570.1 > 419	6714.210	5419.458	1.00	5.17	15.486	11.2	111.7	NO	12.102	NO
33	46	13C8-PFOSA	506.1 > 77.7	5382.243	16980.959	1.00	4.69	3.962	13.9	111.2	NO		
34	47	13C8-PFOS	507.0 > 79.9	3405.052	3372.889	1.00	4.72	12.619	12.6	100.8	NO		

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Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	48	13C2-PFDA	515.1 > 469.9	21104.232	14859.409	1.00	5.02	17.753	13.5	108.4	NO		
36	49	13C2-8:2 FTS	529.1 > 508.7	2758.209	14692.197	1.00	4.98	2.347	11.8	94.8	NO		
37	47	13C8-PFOS	507.0 > 79.9	3405.052	3372.889	1.00	4.72	12.619	12.6	100.8	NO		
38	50	d3-N-MeFOSAA	573.3 > 419	5419.458	16980.959	1.00	5.17	3.989	14.0	112.3	NO		
39	-1												
40	23	L-EtFOSAA	584.2 > 419	5154.530	5136.038	1.00	5.34	12.545	11.4	114.2	NO	12.693	NO
41	27	PFDoA	612.9 > 569.0	16280.015	16174.362	1.00	5.64	12.582	10.8	107.6	NO	8.558	NO
42	26	PFDS	598.8 > 80	2614.421	16446.752	1.00	5.40	1.987	11.2	112.4	NO	2.129	NO
43	25	PFUdA	563.0 > 518.9	13691.308	16446.752	1.00	5.35	10.406	10.5	105.5	NO	16.923	NO
44	28	N-MeFOSA	512.1 > 168.9		25295.164	1.00					NO		
45	29	PFTrDA	662.9 > 618.9	18260.309	16174.362	1.00	5.89	14.112	11.2	112.3	NO	35.965	NO
46	51	d5-N-EtFOSAA	589.3 > 419	5136.038	16980.959	1.00	5.33	3.781	14.0	111.8	NO		
47	53	13C2-PFDoA	615.0 > 569.7	16174.362	14859.409	1.00	5.64	13.606	10.7	85.8	NO		
48	52	13C2-PFUdA	565 > 519.8	16446.752	16980.959	1.00	5.35	12.107	11.7	93.4	NO		
49	52	13C2-PFUdA	565 > 519.8	16446.752	16980.959	1.00	5.35	12.107	11.7	93.4	NO		
50	54	d3-N-MeFOSA	515.2 > 168.9	25295.164	16980.959	1.00	5.82	18.620	161.7	107.8	NO		
51	53	13C2-PFDoA	615.0 > 569.7	16174.362	14859.409	1.00	5.64	13.606	10.7	85.8	NO		
52	-1												
53	30	PFTeDA	712.9 > 668.8	15092.141	14086.995	1.00	6.12	13.392	10.3	103.2	NO	11.111	NO
54	31	N-EtFOSA	526.1 > 168.9		33037.395	1.00					NO		
55	32	PFHxDA	813.1 > 768.6		9285.691	1.00					NO		
56	33	PFODA	913.1 > 868.8		9285.691	1.00					NO		
57	34	N-MeFOSE	616.1 > 58.9		31576.422	1.00					NO		
58	35	N-EtFOSE	630.1 > 58.9		31570.580	1.00					NO		
59	55	13C2-PFTeDA	714.8 > 669.6	14086.995	16980.959	1.00	6.12	10.370	11.6	92.9	NO		
60	56	d5-N-ETFOSA	531.1 > 168.9	33037.395	16980.959	1.00	6.25	24.319	165.4	110.2	NO		
61	57	13C2-PFHxDA	815 > 769.7	9285.691	16980.959	1.00	6.47	6.835	5.5	109.6	NO		
62	57	13C2-PFHxDA	815 > 769.7	9285.691	16980.959	1.00	6.47	6.835	5.5	109.6	NO		
63	58	d7-N-MeFOSE	623.1 > 58.9	31576.422	16980.959	1.00	6.39	23.244	161.6	107.7	NO		
64	59	d9-N-EtFOSE	639.2 > 58.8	31570.580	16980.959	1.00	6.54	23.240	174.1	116.1	NO		
65	-1												
66	60	13C4-PFBA	217. > 171.8	9365.781	9365.781	1.00	1.15	12.500	12.5	100.0	NO		
67	61	13C5-PFHxA	318 > 272.9	14692.197	14692.197	1.00	3.01	12.500	12.5	100.0	NO		
68	62	13C3-PFHxS	401.9 > 79.9	3156.467	3156.467	1.00	3.80	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-ICV.qld

Last Altered: Wednesday, June 20, 2018 11:03:16 Pacific Daylight Time
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Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	63	13C8-PFOA	421.3 > 376	15146.299	15146.299	1.00	4.17	12.500	12.5	100.0	NO		
70	64	13C9-PFNA	472.2 > 426.9	15580.256	15580.256	1.00	4.63	12.500	12.5	100.0	NO		
71	65	13C4-PFOS	503 > 79.9	3372.889	3372.889	1.00	4.72	12.500	12.5	100.0	NO		
72	66	13C6-PFDA	519.1 > 473.7	14859.409	14859.409	1.00	5.02	12.500	12.5	100.0	NO		
73	67	13C7-PFUdA	570.1 > 524.8	16980.959	16980.959	1.00	5.35	12.500	12.5	100.0	NO		

Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-ICV.qld

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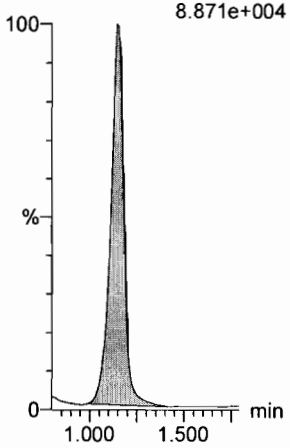
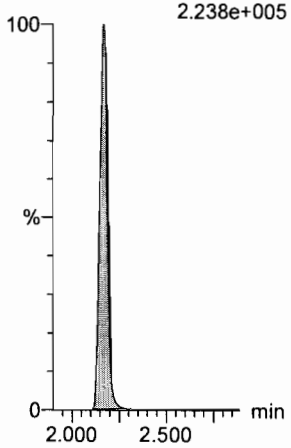
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_061918.mdb 20 Jun 2018 10:44:21
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_06-19-18.cdb 20 Jun 2018 10:44:23

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

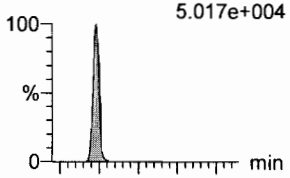
PFBA
F2:MRM of 1 channel,ES-
213.0 > 168.8
8.871e+004



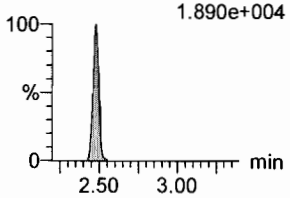
PFPeA
F5:MRM of 1 channel,ES-
263.1 > 218.9
2.238e+005



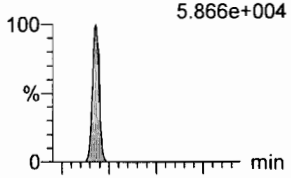
PFBS
F7:MRM of 2 channels,ES-
299.0 > 79.7
5.017e+004



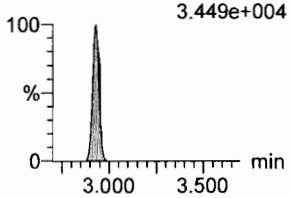
F7:MRM of 2 channels,ES-
299.0 > 99.0
1.890e+004



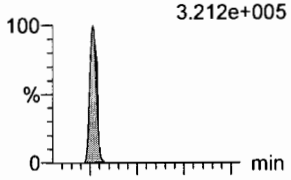
4:2 FTS
F12:MRM of 2 channels,ES-
327.2 > 307.2
5.866e+004



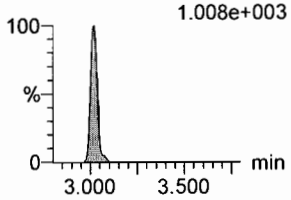
F12:MRM of 2 channels,ES-
327.2 > 81.1
3.449e+004



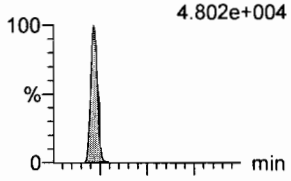
PFHxA
F9:MRM of 2 channels,ES-
313.2 > 268.9
3.212e+005



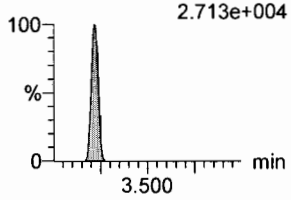
F9:MRM of 2 channels,ES-
313.2 > 119
1.008e+003



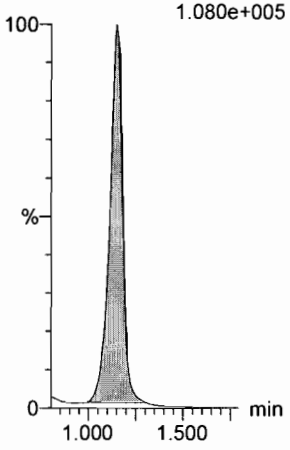
PFPeS
F15:MRM of 2 channels,ES-
349.1 > 80.1
4.802e+004



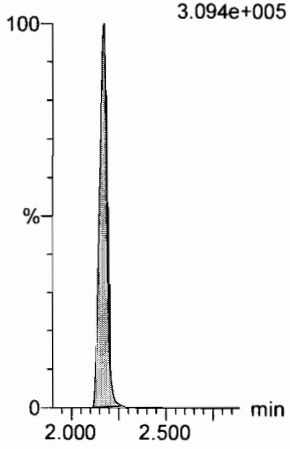
F15:MRM of 2 channels,ES-
349.1 > 99
2.713e+004



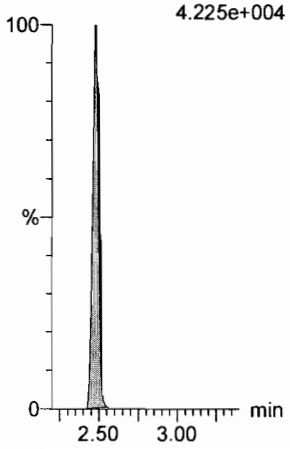
13C3-PFBA
F3:MRM of 1 channel,ES-
216.1 > 171.8
1.080e+005



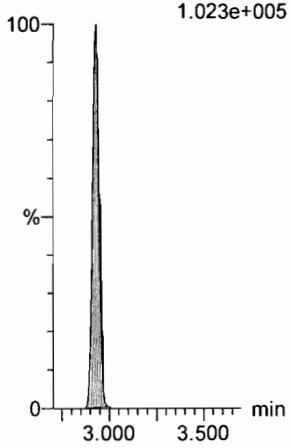
13C3-PFPeA
F6:MRM of 1 channel,ES-
266. > 221.8
3.094e+005



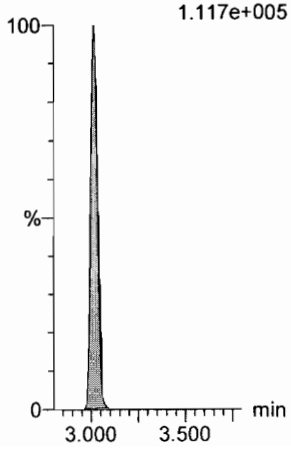
13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
4.225e+004



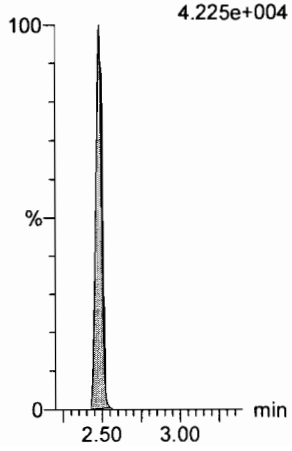
13C2-4:2 FTS
F13:MRM of 1 channel,ES-
329.2 > 308.9
1.023e+005



13C2-PFHxA
F10:MRM of 1 channel,ES-
315 > 269.8
1.117e+005



13C3-PFBS
F8:MRM of 1 channel,ES-
302. > 98.8
4.225e+004



Dataset: F:\Projects\PFAS.PRO\Results\180619M1\180619M1-ICV.qld

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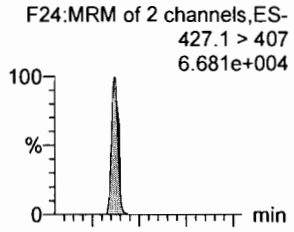
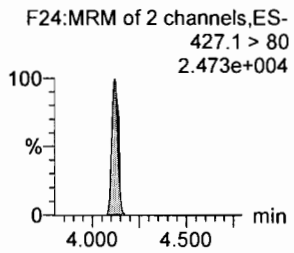
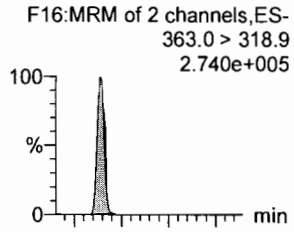
Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

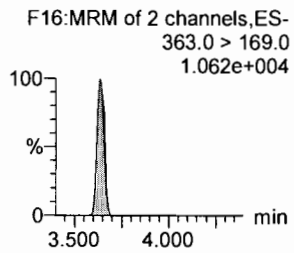
6:2 FTS



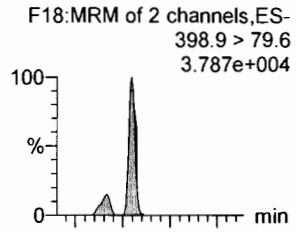


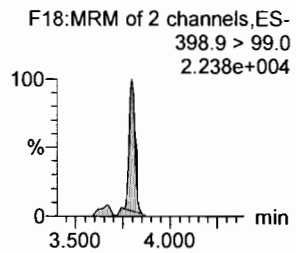
PFHpA





L-PFHxS





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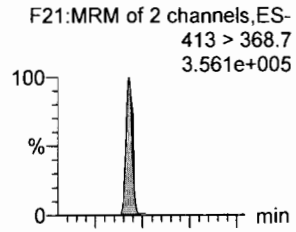

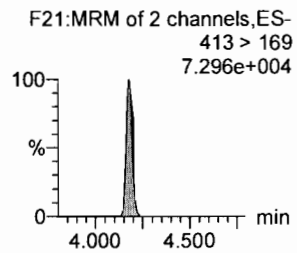

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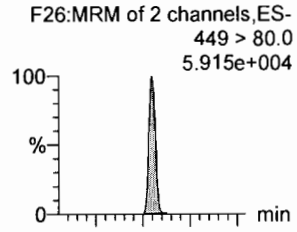

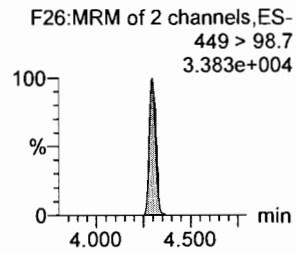

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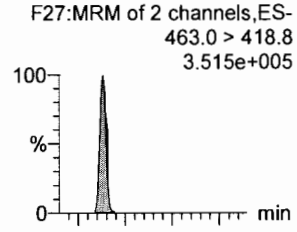
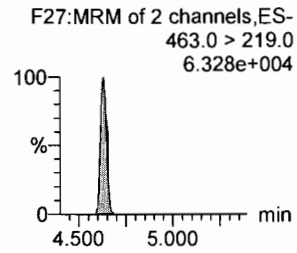
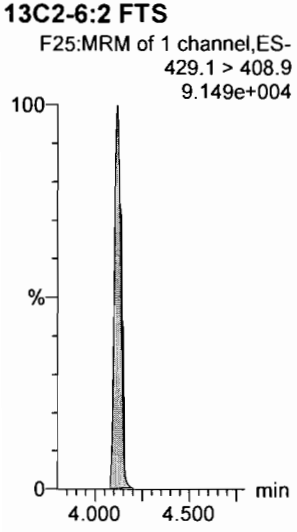
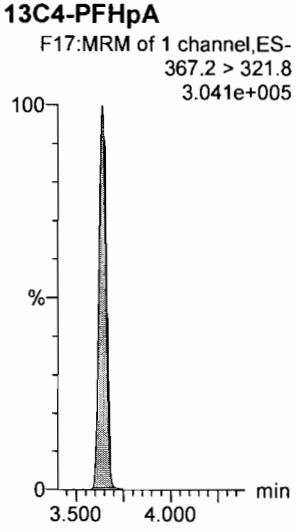




13C2-6:2 FTS



13C4-PFHpA



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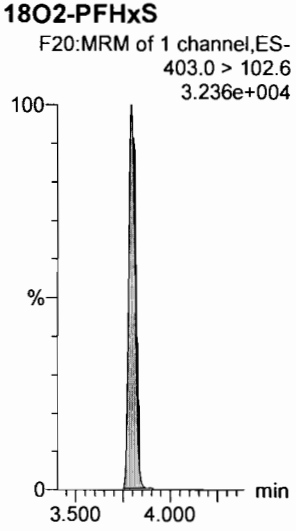

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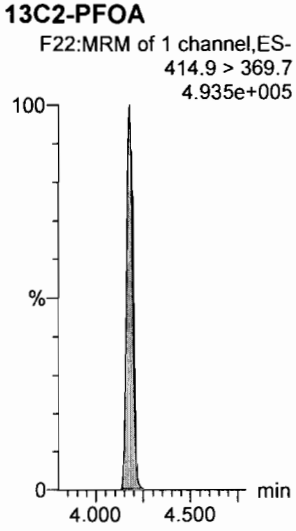

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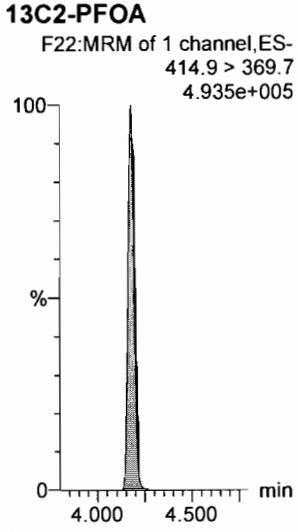

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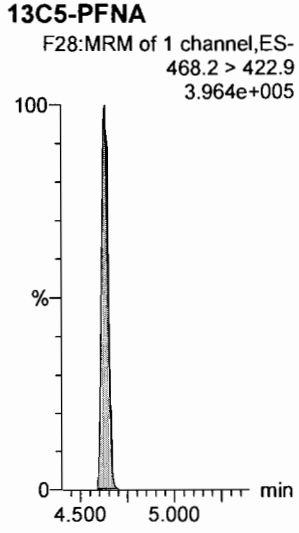

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Last Altered: Wednesday, June 20, 2018 11:03:16 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:03:40 Pacific Daylight Time

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

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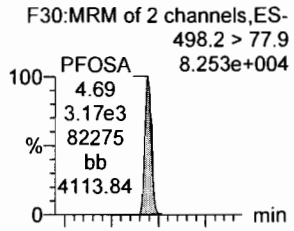

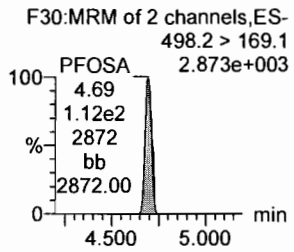

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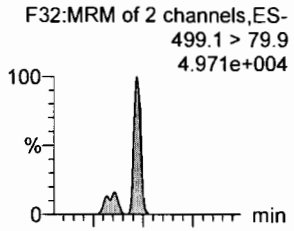

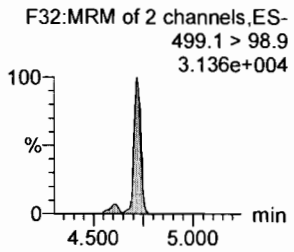

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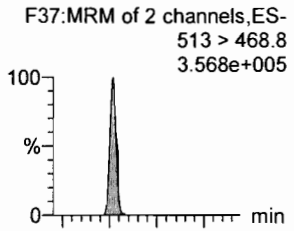
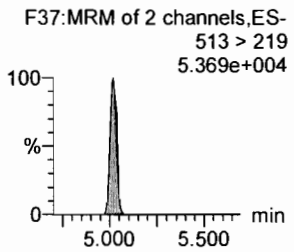
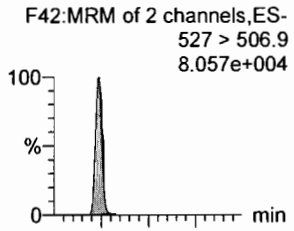
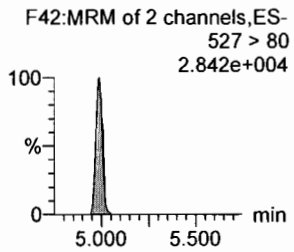




8:2 FTS





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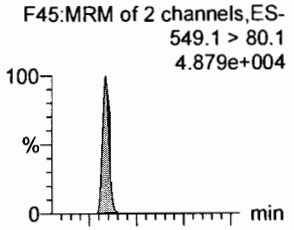

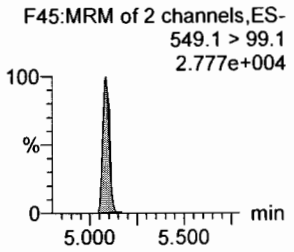

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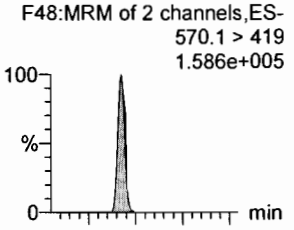

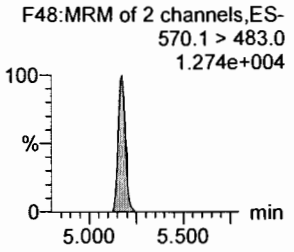

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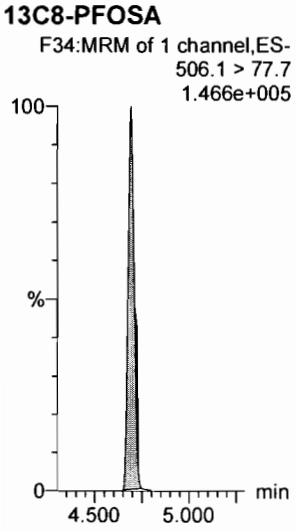

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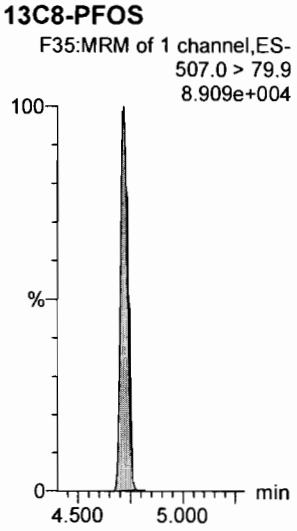

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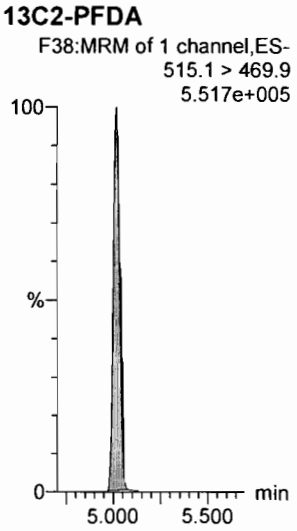
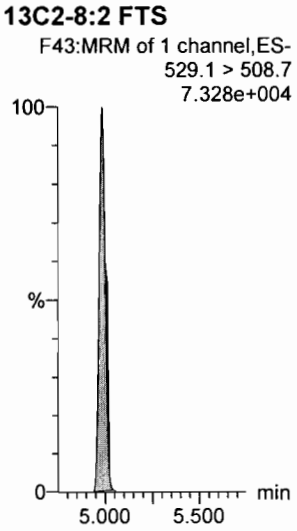


13C2-8:2 FTS



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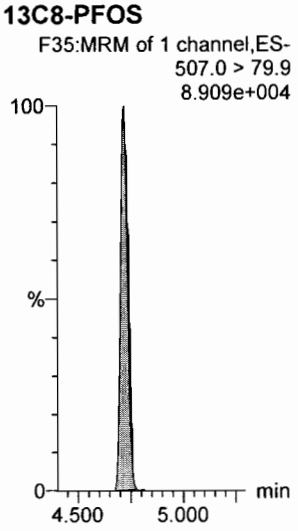

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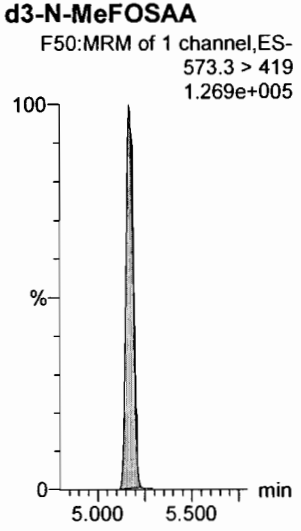

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Printed: Wednesday, June 20, 2018 11:03:40 Pacific Daylight Time

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

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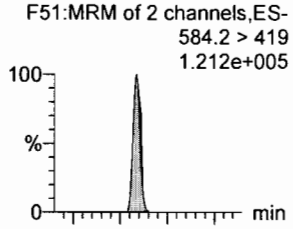
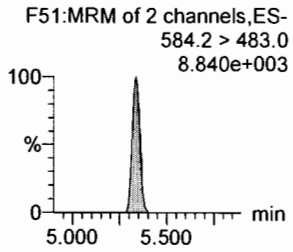
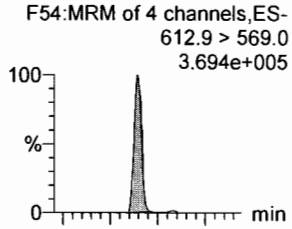
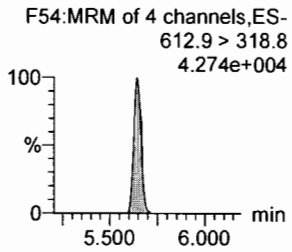




PFDoA





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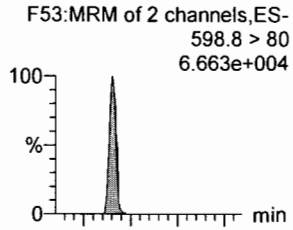

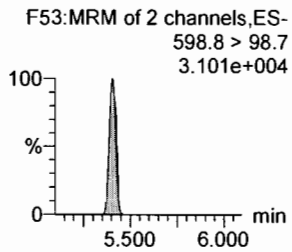

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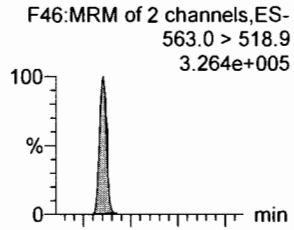

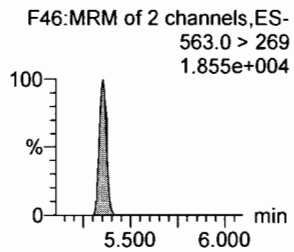

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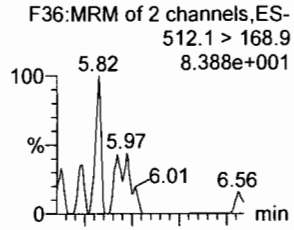

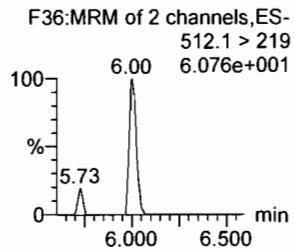

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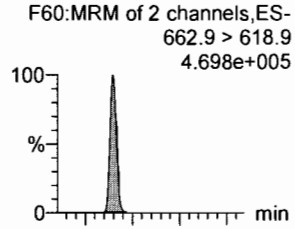

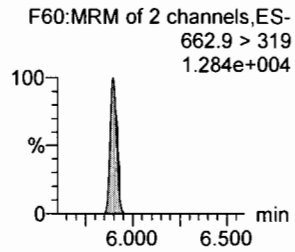

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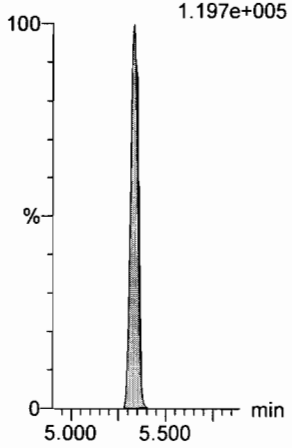

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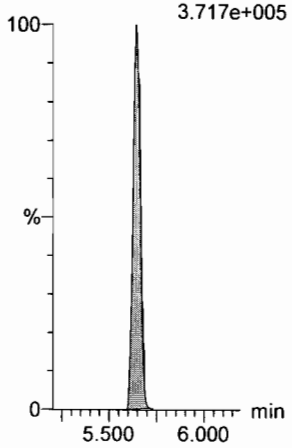

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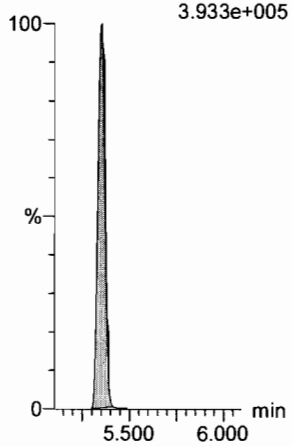

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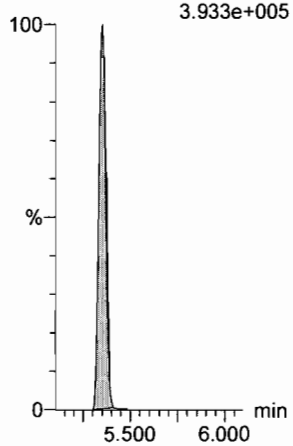

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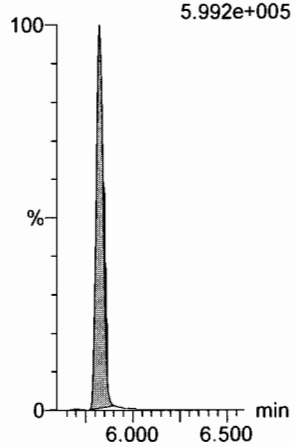

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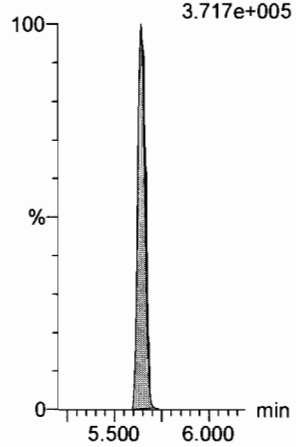

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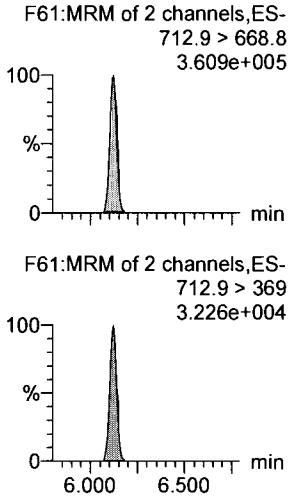
Printed: Wednesday, June 20, 2018 11:03:40 Pacific Daylight Time

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

PFTeDA



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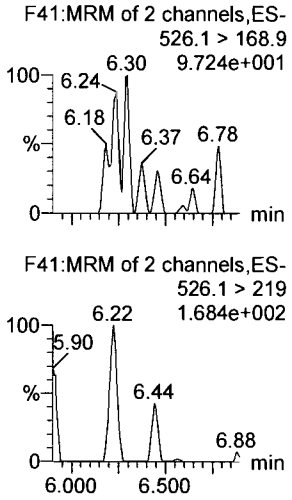

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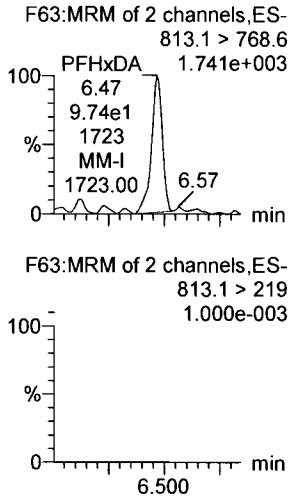
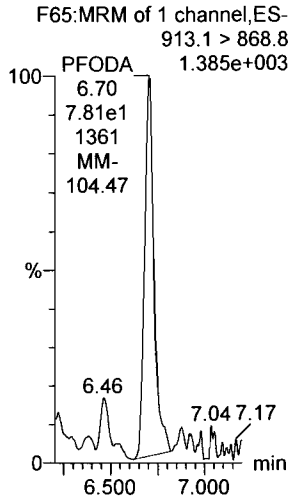
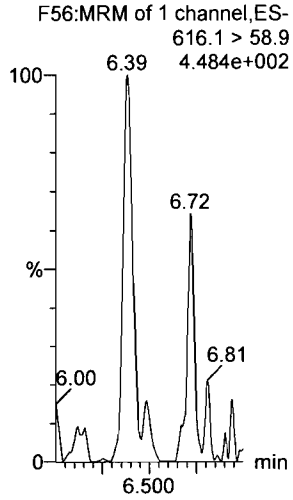


PFODA



N-MeFOSE



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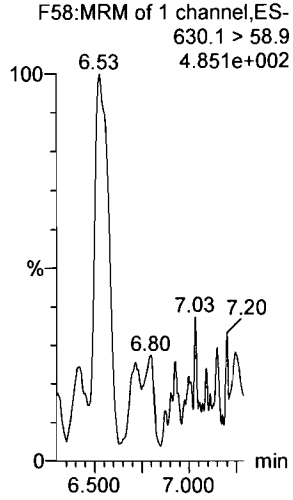
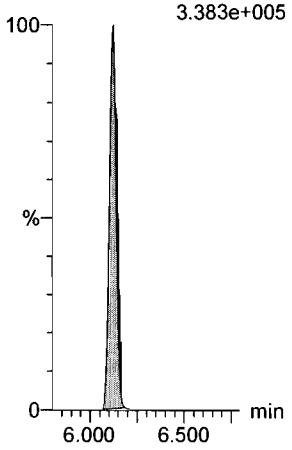
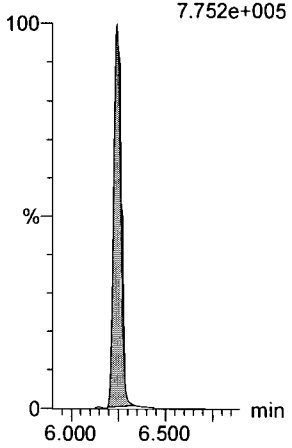


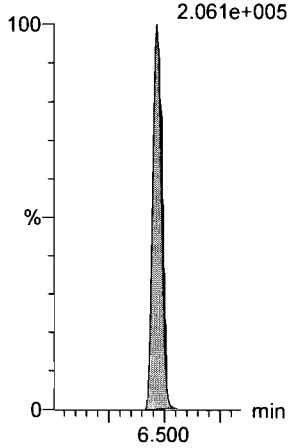
13C2-PFTeDA



d5-N-ETFOSA



13C2-PFHxDA



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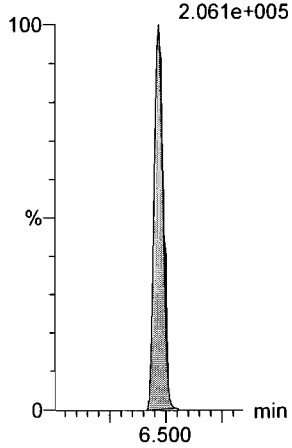

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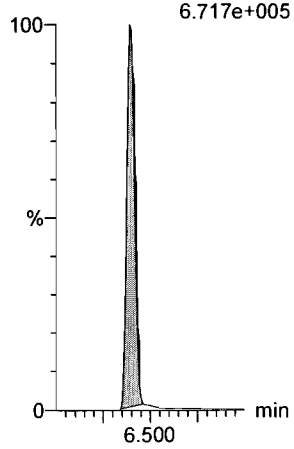
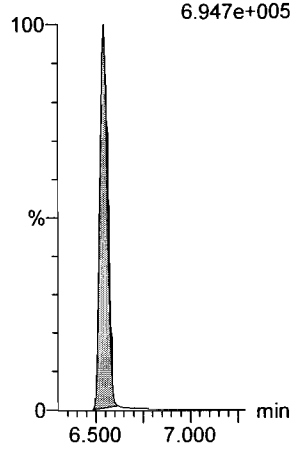


d9-N-EtFOSE



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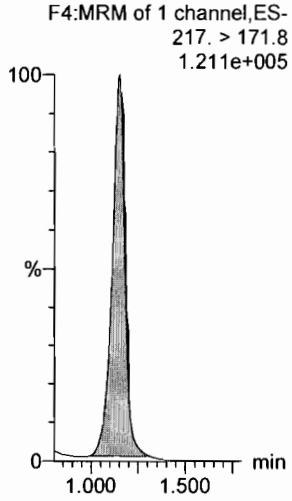
Printed: Wednesday, June 20, 2018 11:03:40 Pacific Daylight Time

Name: 180619M1_13, Date: 19-Jun-2018, Time: 19:42:40, ID: ICV180619M1-1 PFC 537 ICV 18F1103, Description: PFC ICV 18F1103

13C4-PFBA



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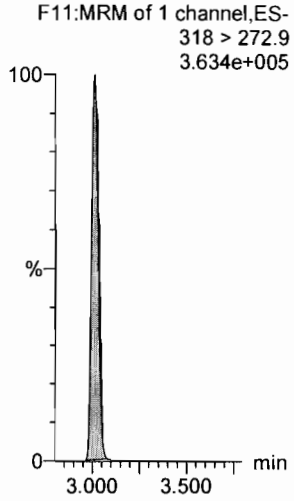
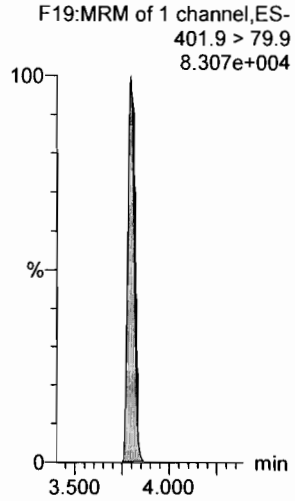


13C3-PFHxS



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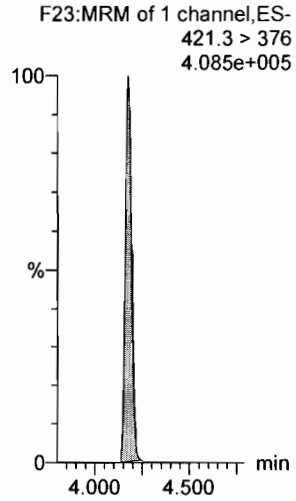
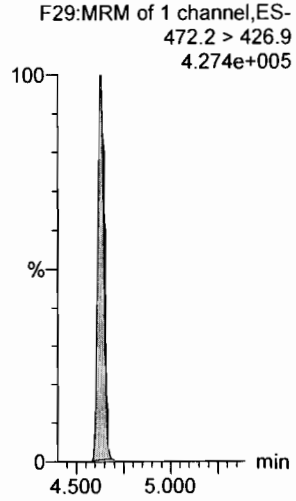
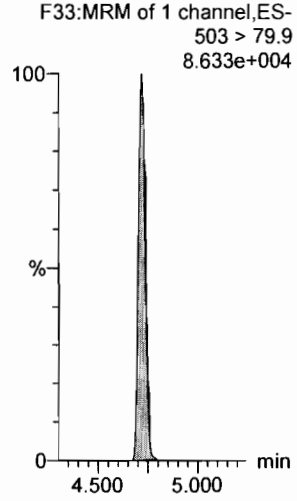


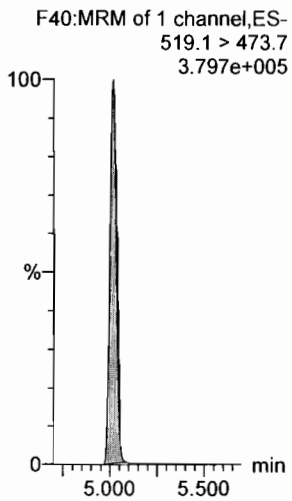
13C9-PFNA



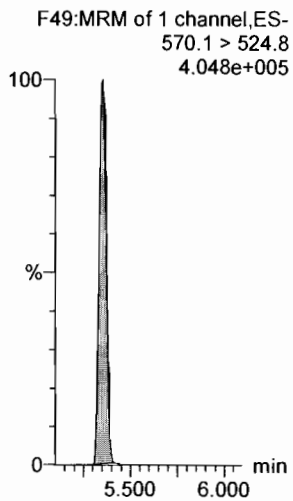
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Vista Analytical Laboratory

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Printed: Wednesday, June 20, 2018 11:04:18 Pacific Daylight Time

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Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

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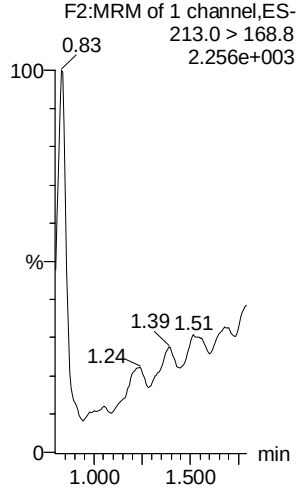

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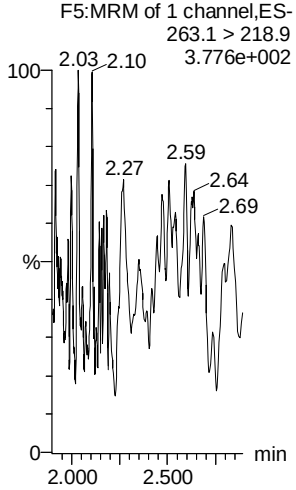
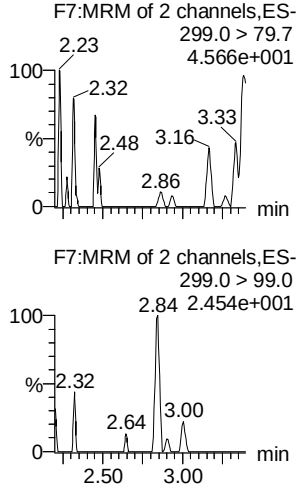
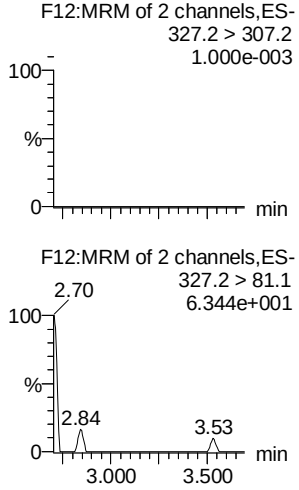


PFBS



4:2 FTS



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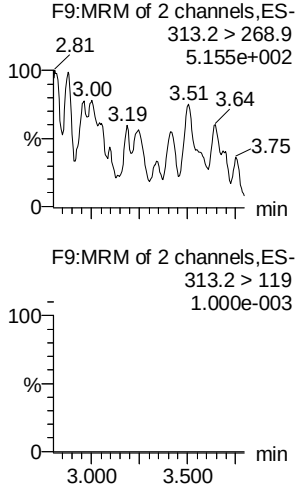
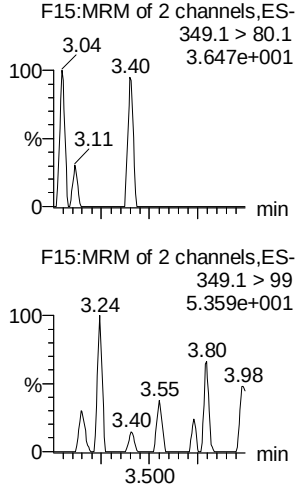
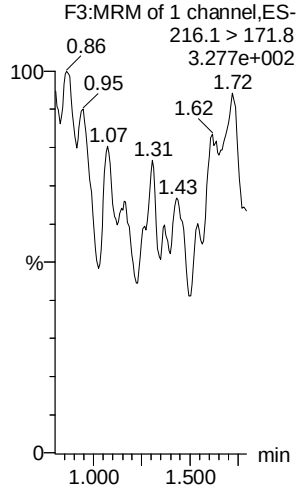


PFPeS



13C3-PFBA



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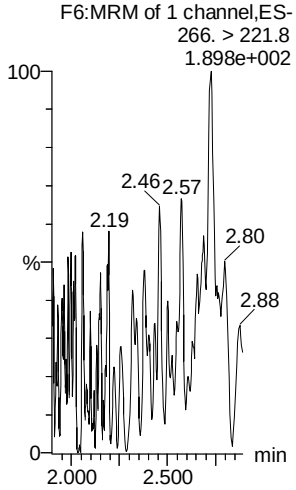

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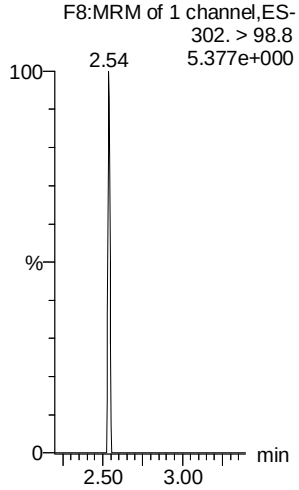
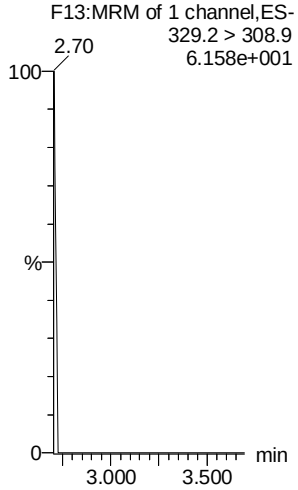


13C2-4:2 FTS



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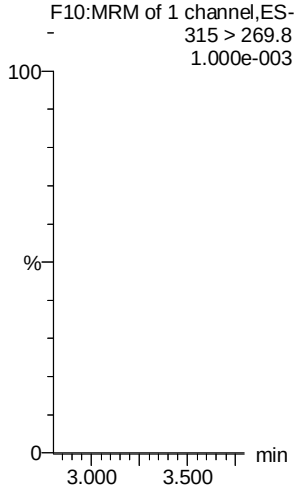
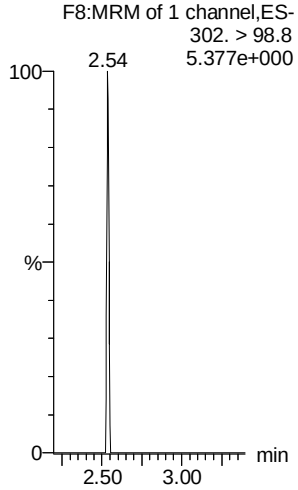


13C3-PFBS



Vista Analytical Laboratory

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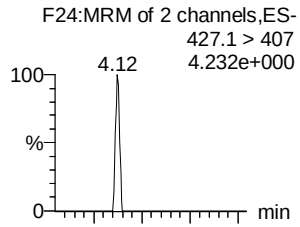
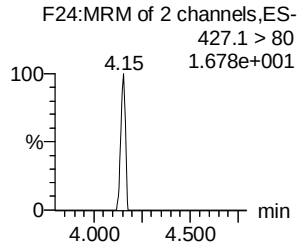
Printed: Wednesday, June 20, 2018 11:04:18 Pacific Daylight Time

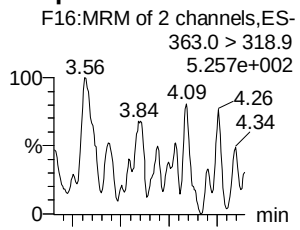
Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

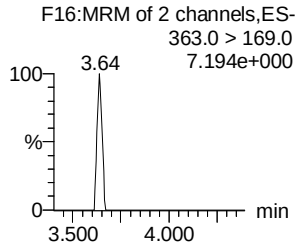
6:2 FTS



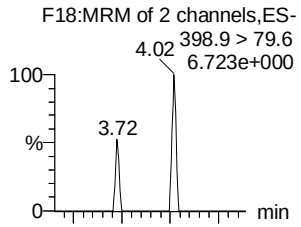


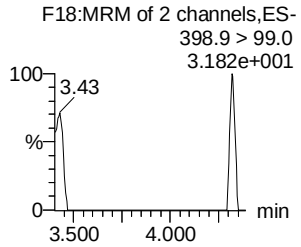
PFHpA



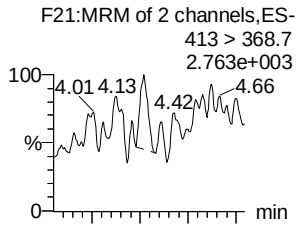


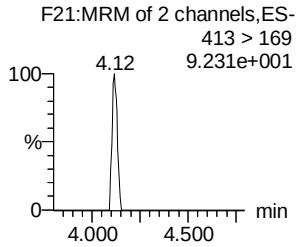
L-PFHxS



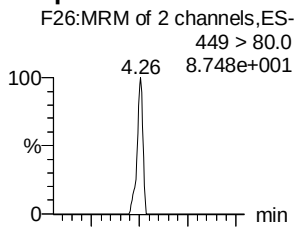


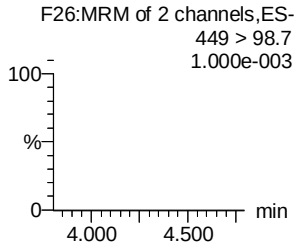
L-PFOA



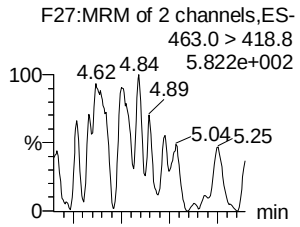


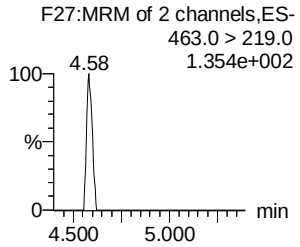
PFHpS



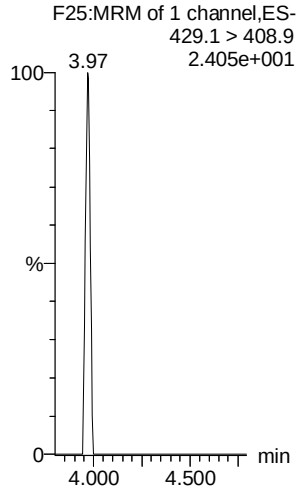


PFNA

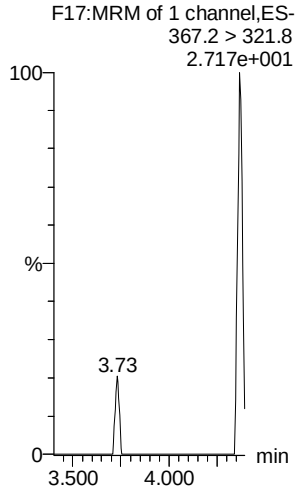




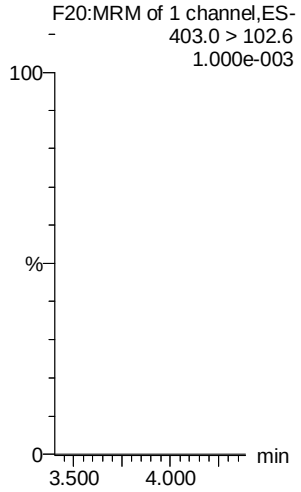
13C2-6:2 FTS



13C4-PFHpA



18O2-PFHxS



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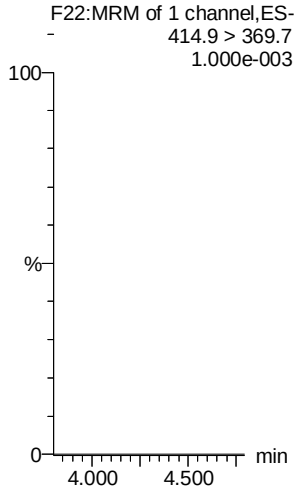

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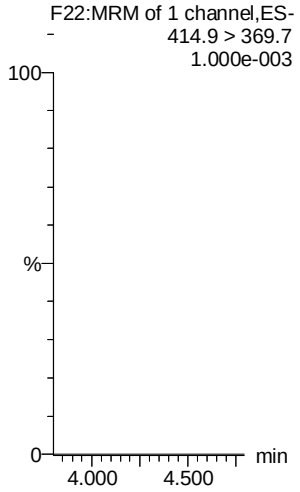
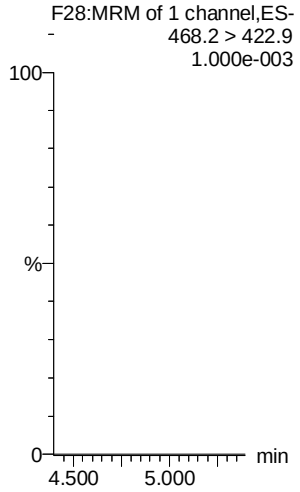


13C5-PFNA



Vista Analytical Laboratory

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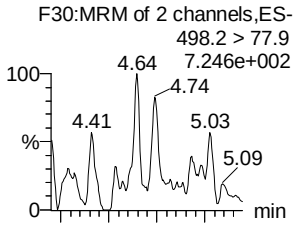
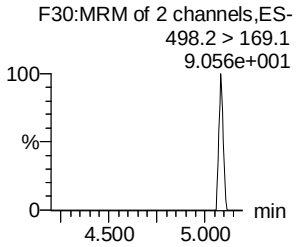
Last Altered: Wednesday, June 20, 2018 11:04:06 Pacific Daylight Time
Printed: Wednesday, June 20, 2018 11:04:18 Pacific Daylight Time

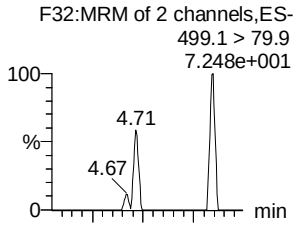
Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

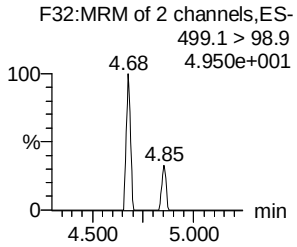
PFOSA





L-PFOS





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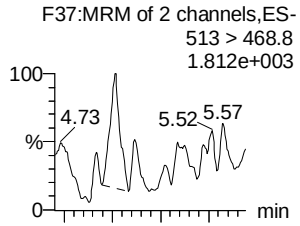
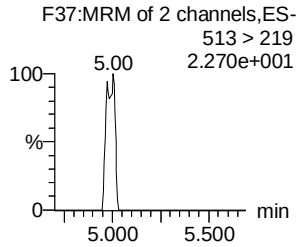
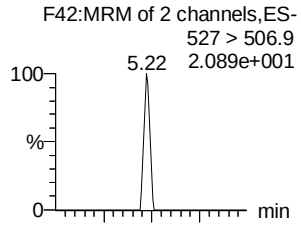
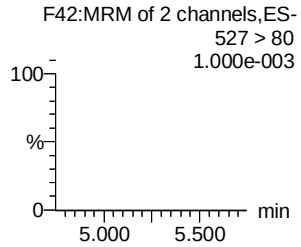




8:2 FTS





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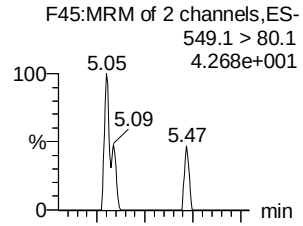

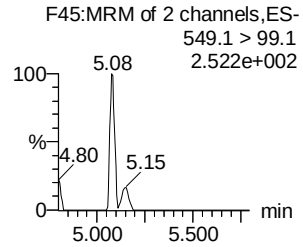

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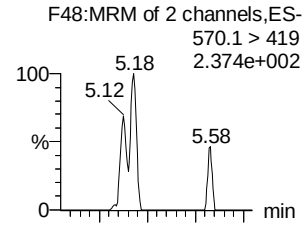

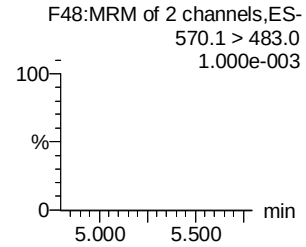

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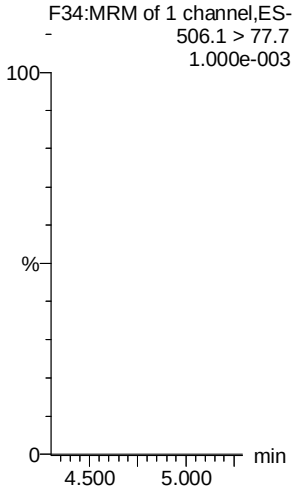

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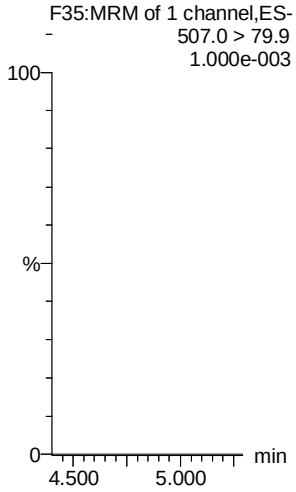

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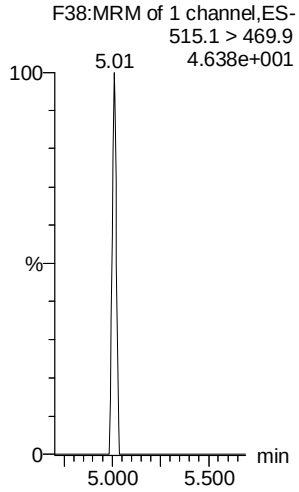

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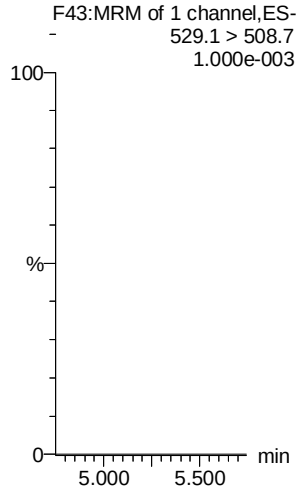

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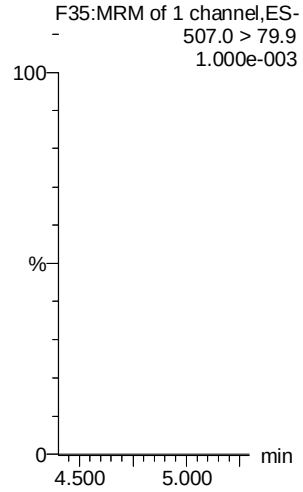

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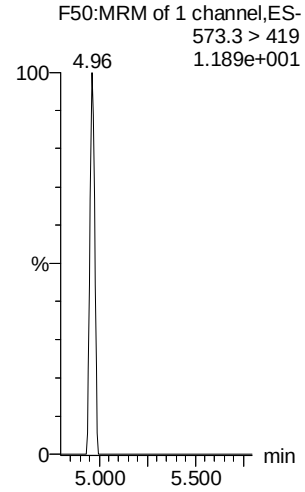

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Printed: Wednesday, June 20, 2018 11:04:18 Pacific Daylight Time

Name: 180619M1_12, Date: 19-Jun-2018, Time: 19:32:09, ID: IPA, Description: IPA

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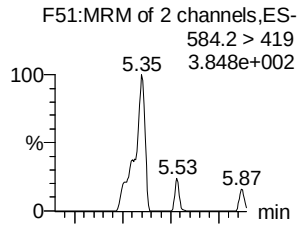

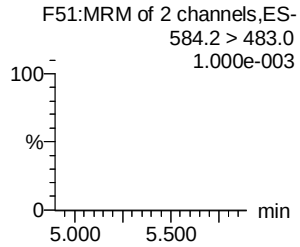

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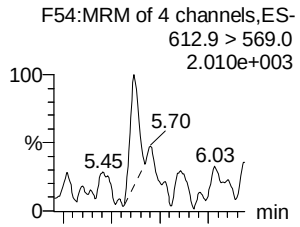

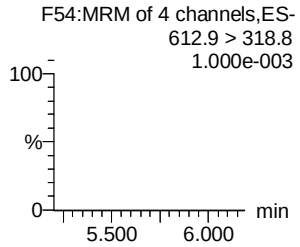

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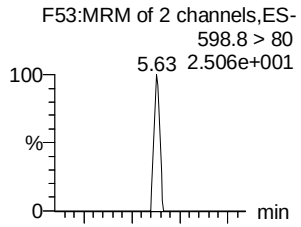

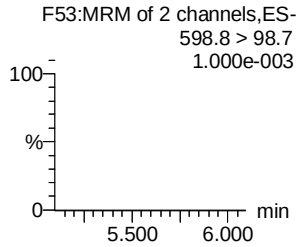

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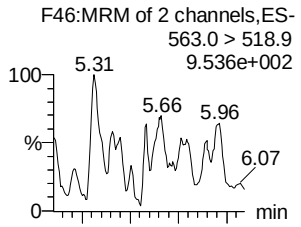

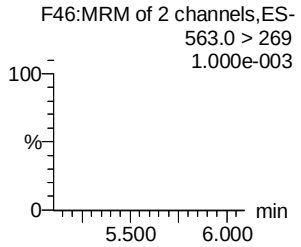

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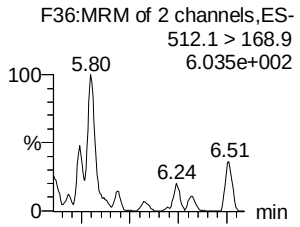

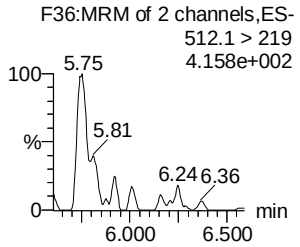

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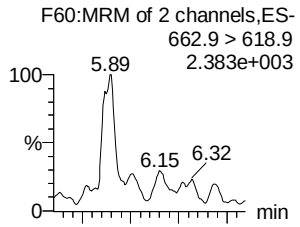

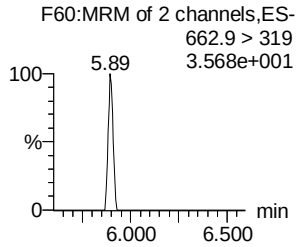

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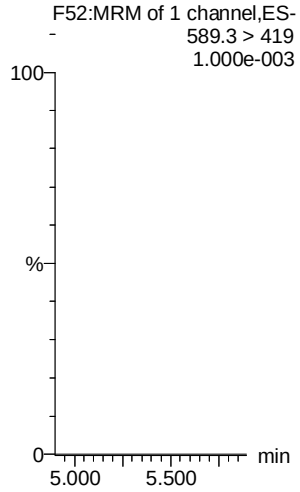

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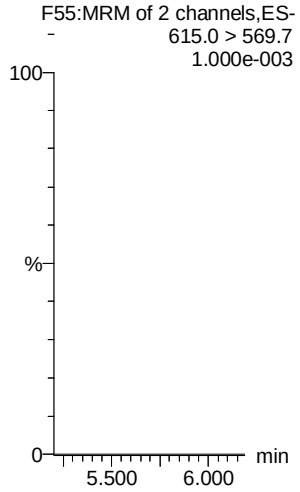

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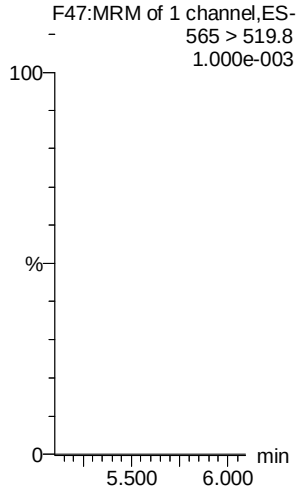

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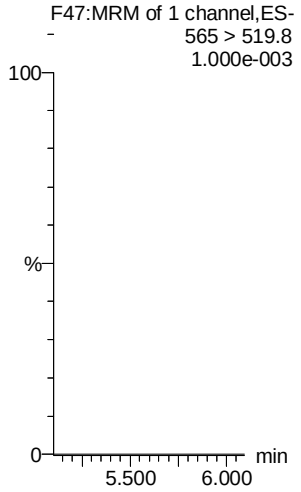

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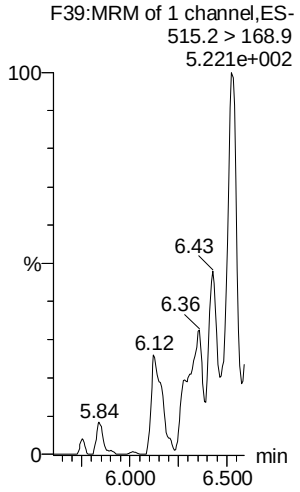

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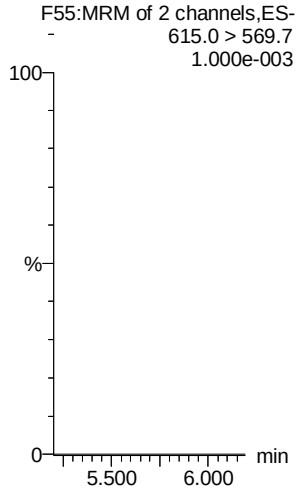

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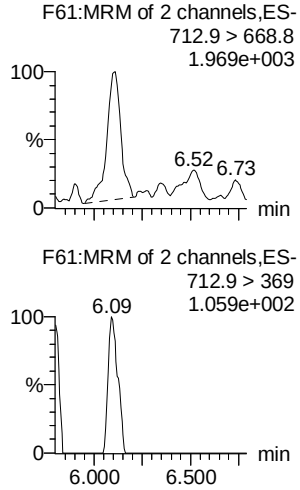

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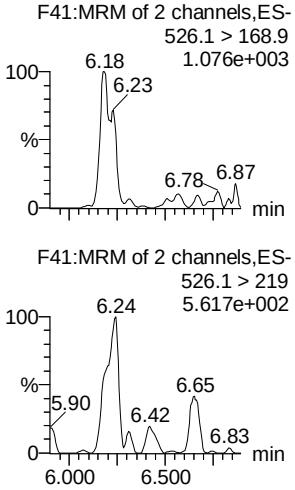

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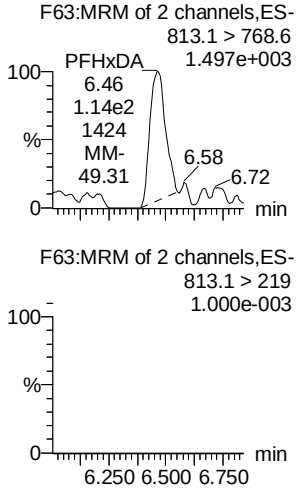

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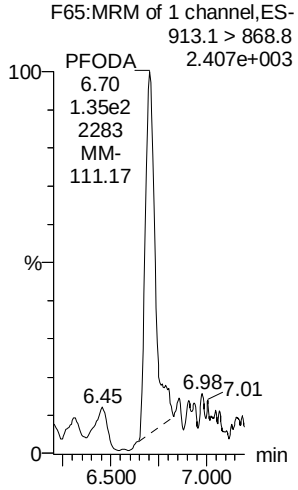

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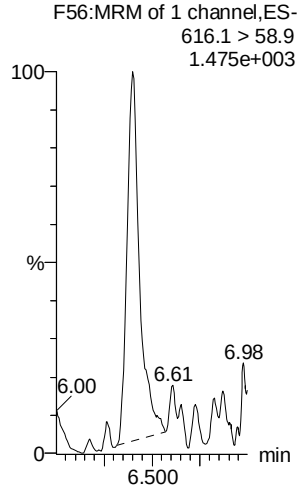

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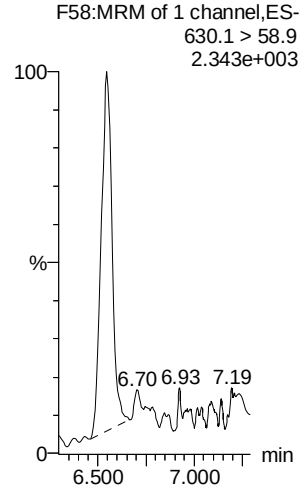

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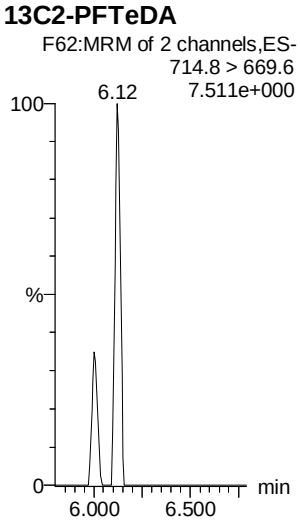

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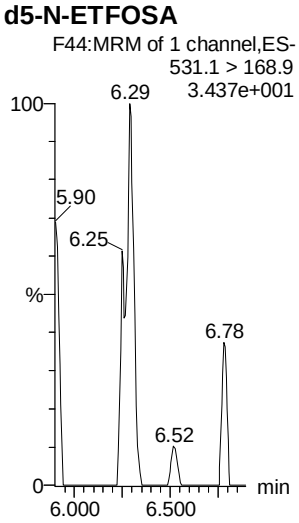

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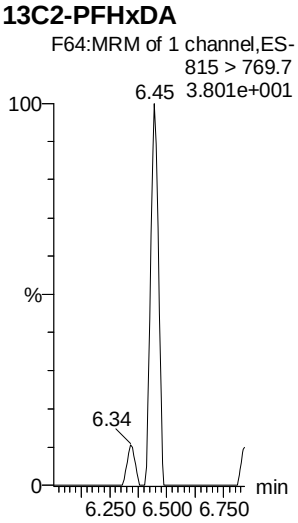

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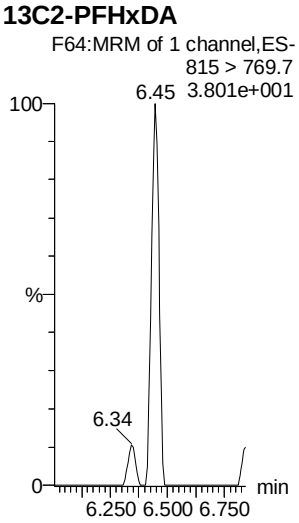

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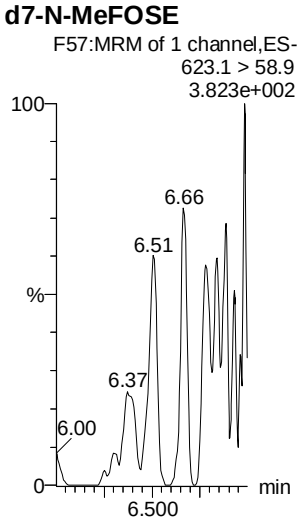

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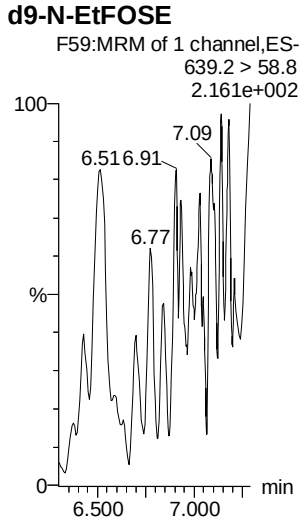

Vista Analytical Laboratory

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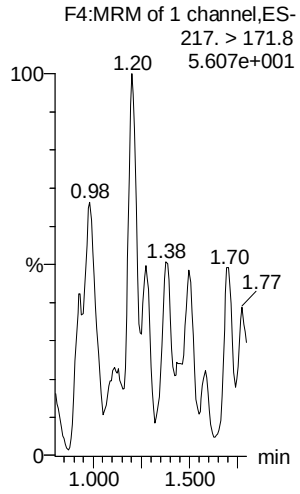

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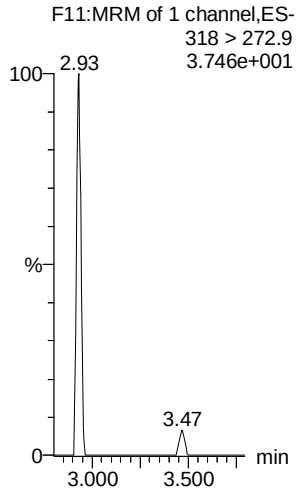

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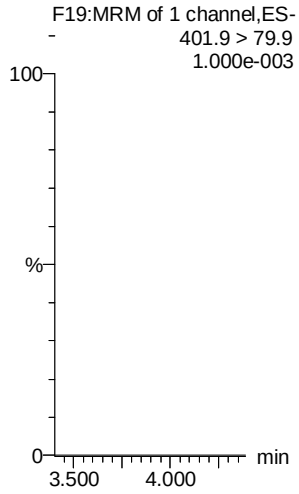

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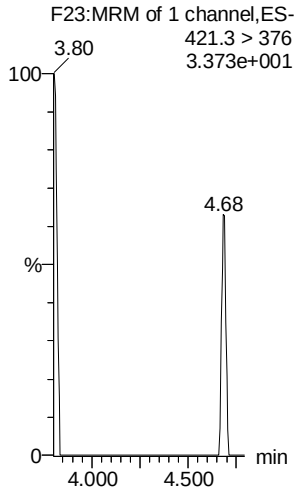

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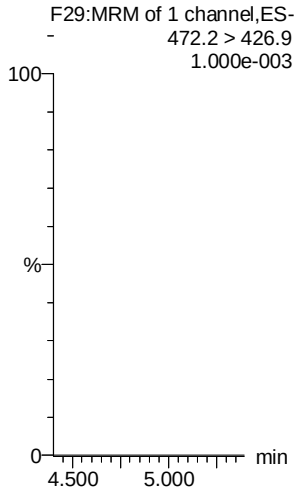

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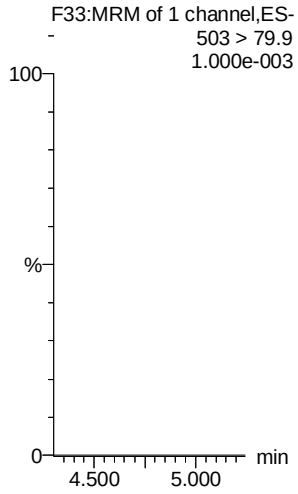

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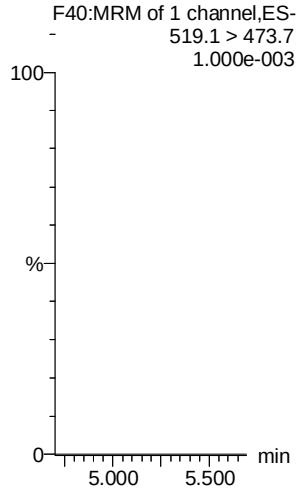

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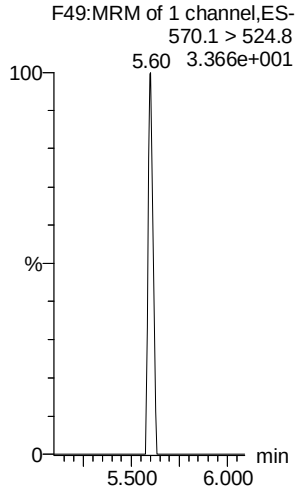


Tune Checks

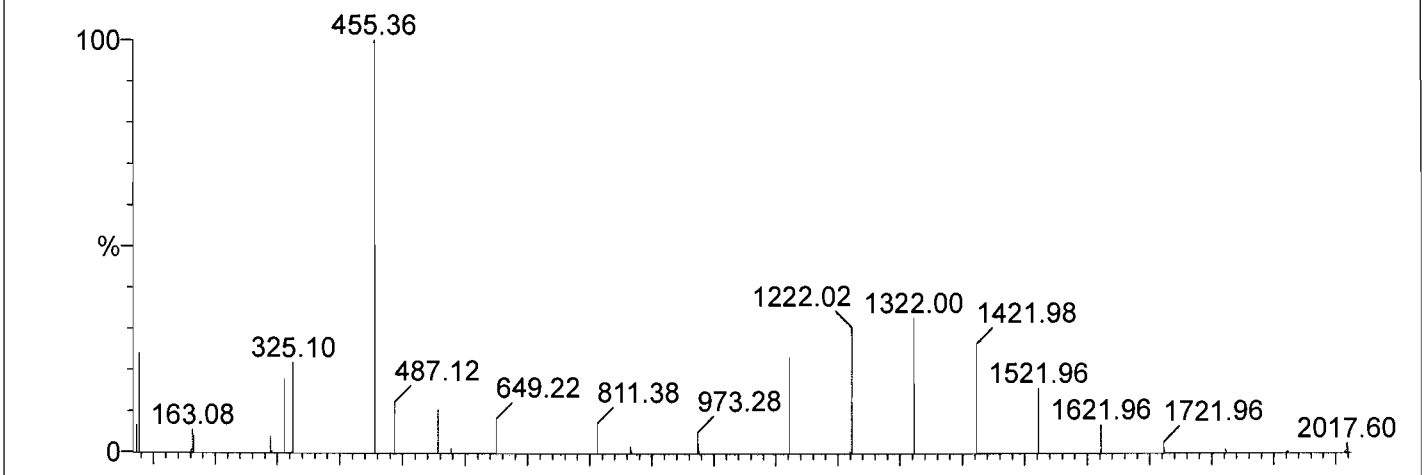
Tune Check Q4(M) 06-15-18

20180615

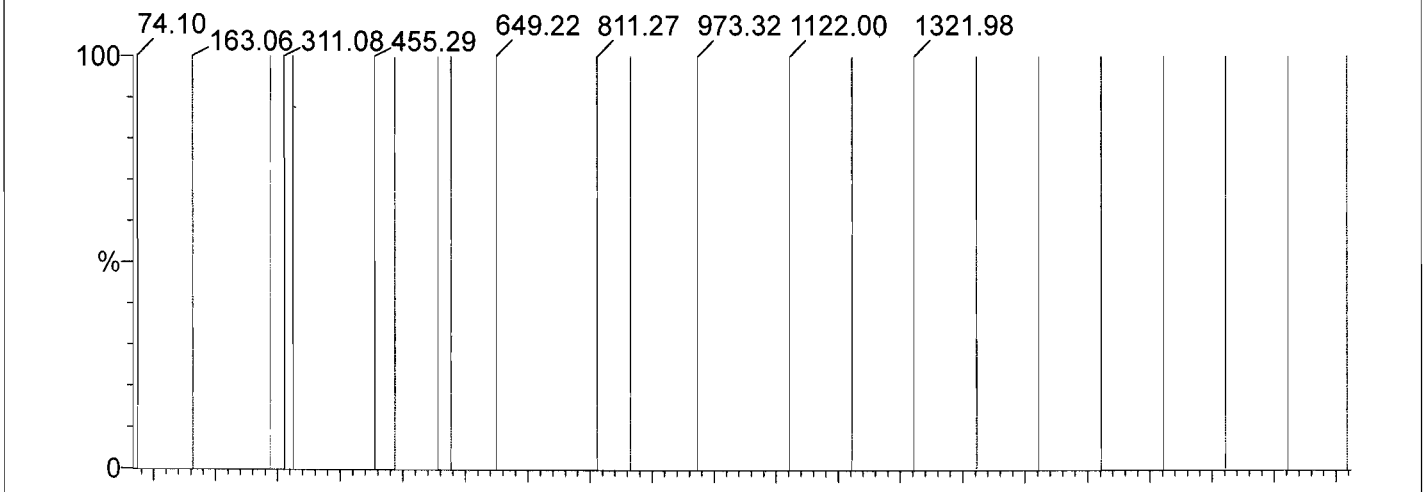
Calibration Report - MS1 Static

Printed: **Fri Jun 15 17:30:21 2018**

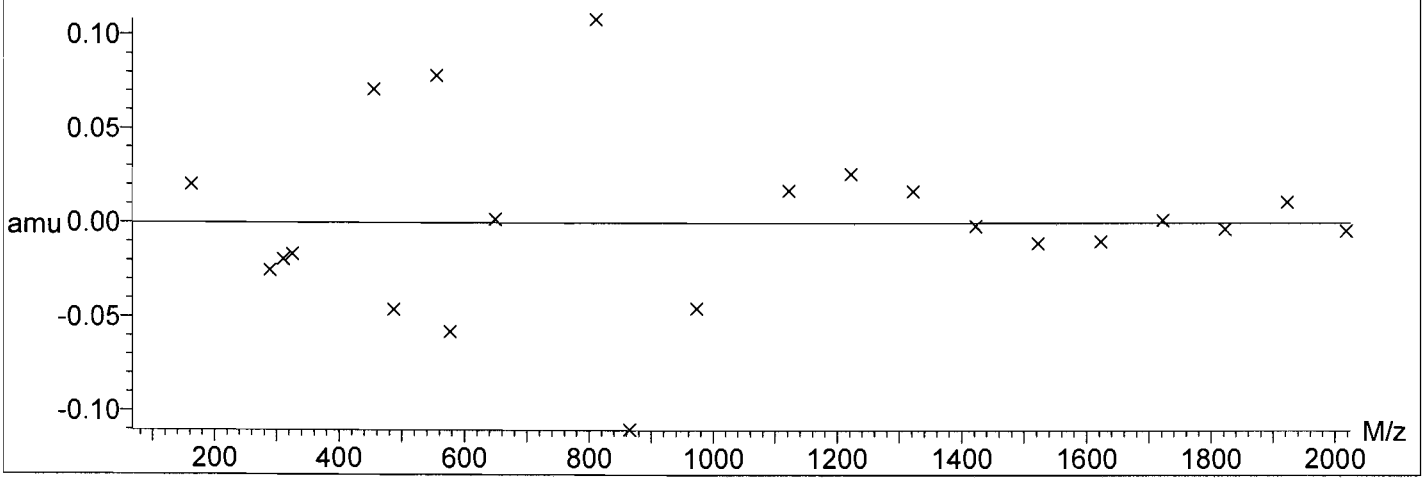
Data file: STATMS1 - Calibrated 22 matches of 23 tested references



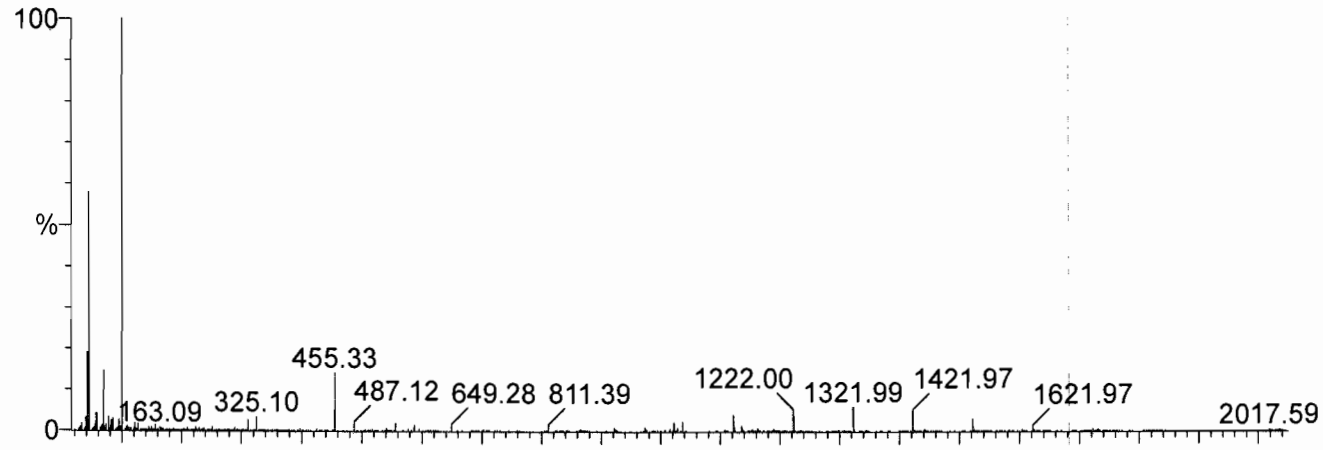
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0318 amu



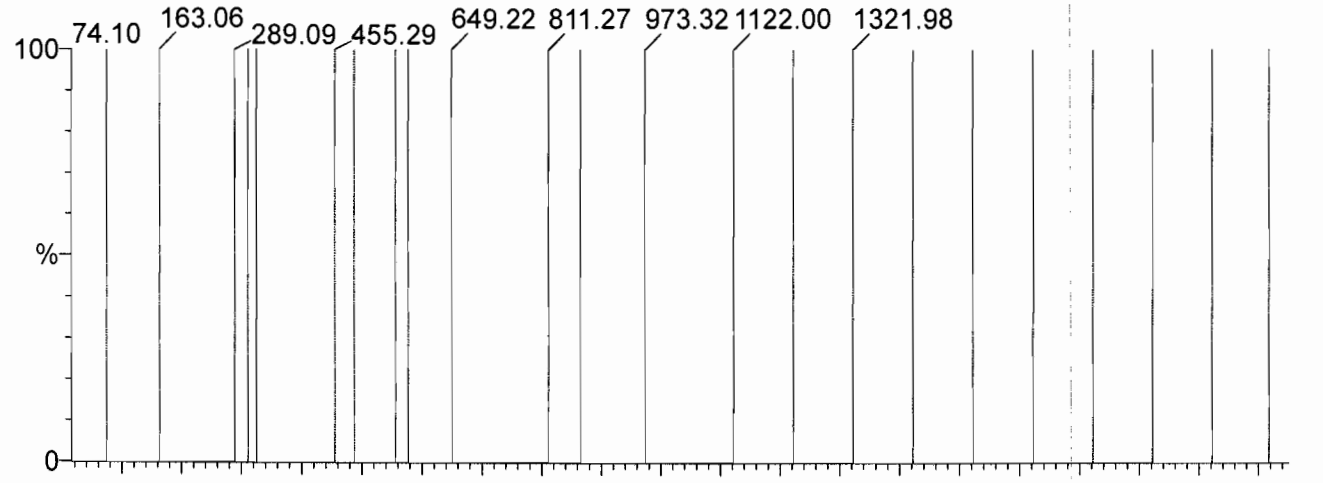
Residual Polynomial order = 4 RMS residual = 0.0456 amu



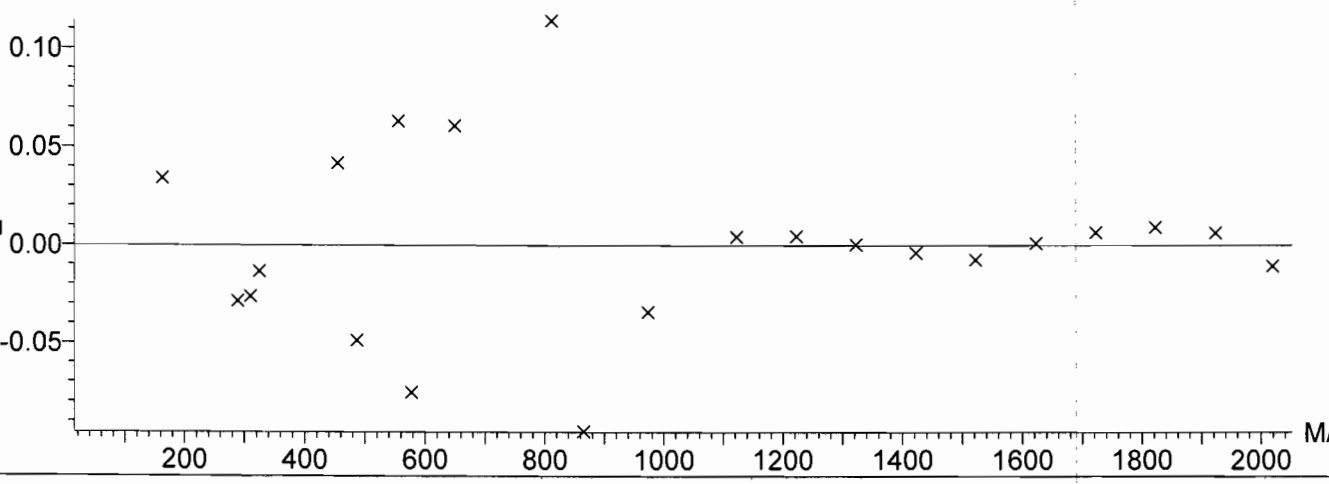
Data file: SCNMS1 - Calibrated 22 matches of 23 tested references



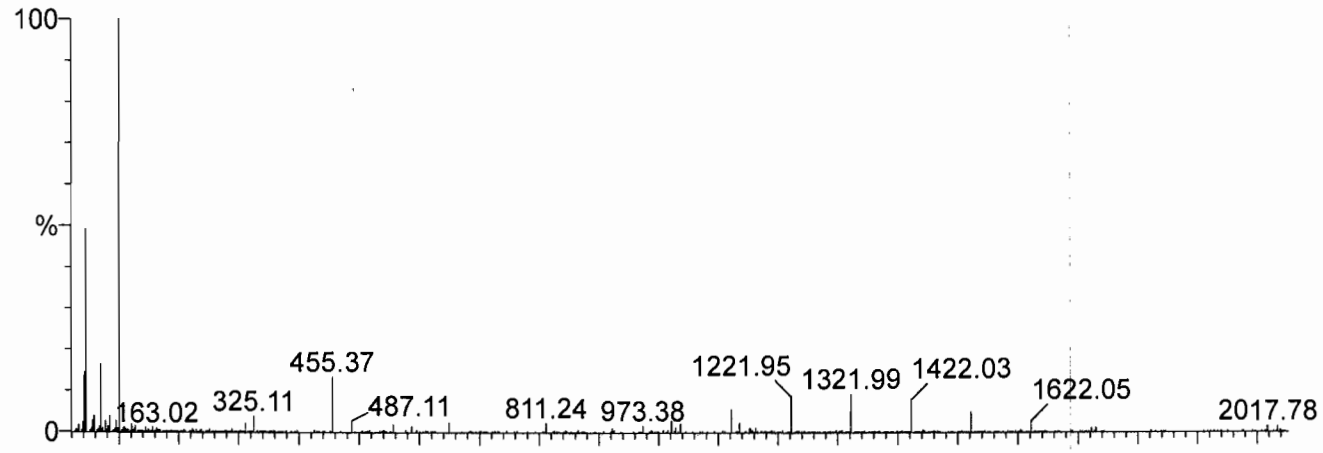
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0314 amu



Residual Polynomial order = 4 RMS residual = 0.0447 amu



Data file: FASTMS1 - Calibrated 22 matches of 23 tested references



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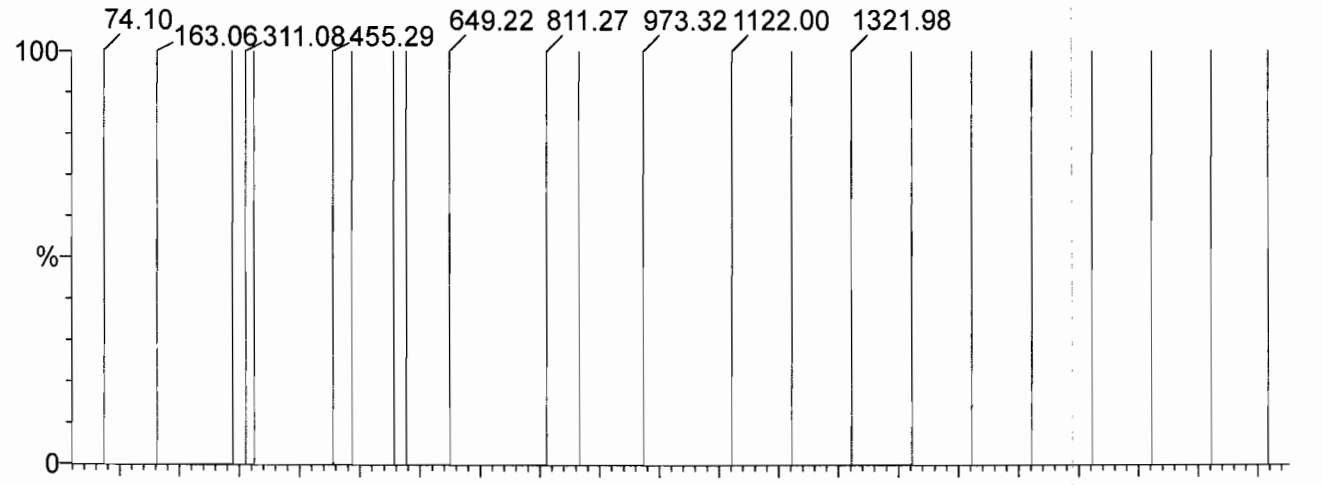
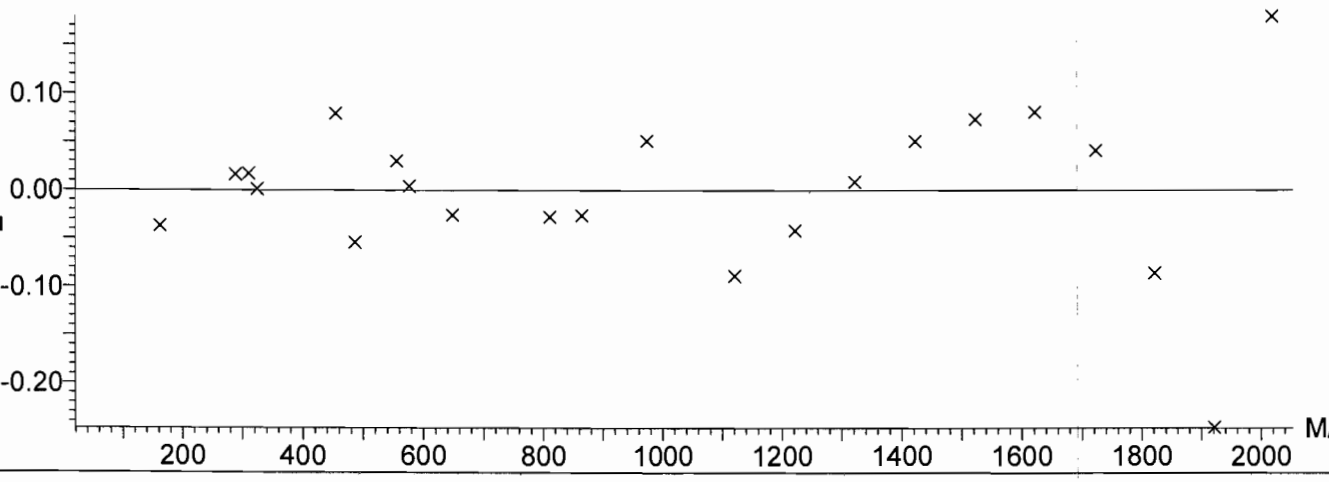
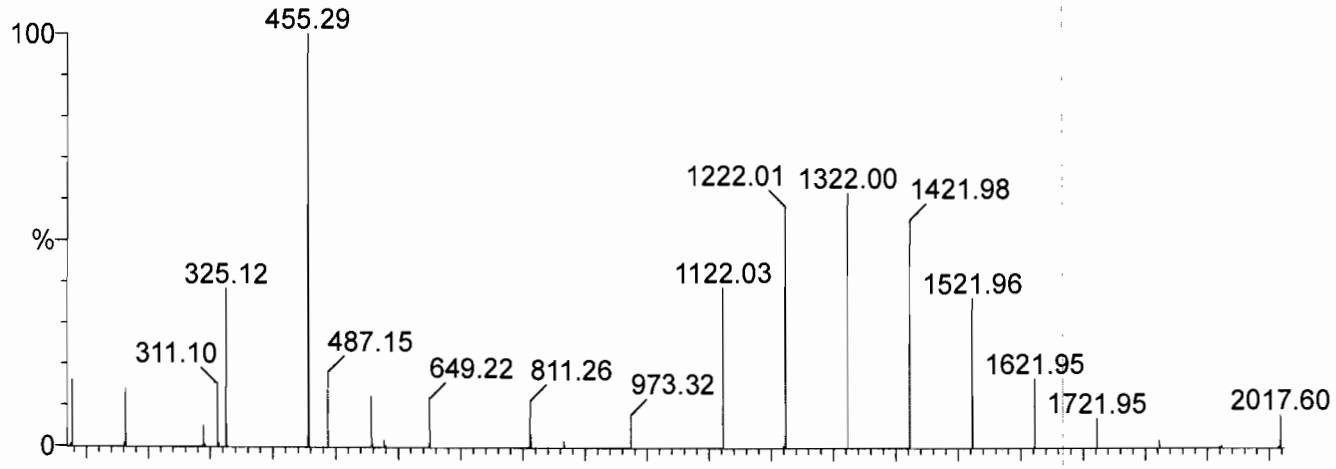


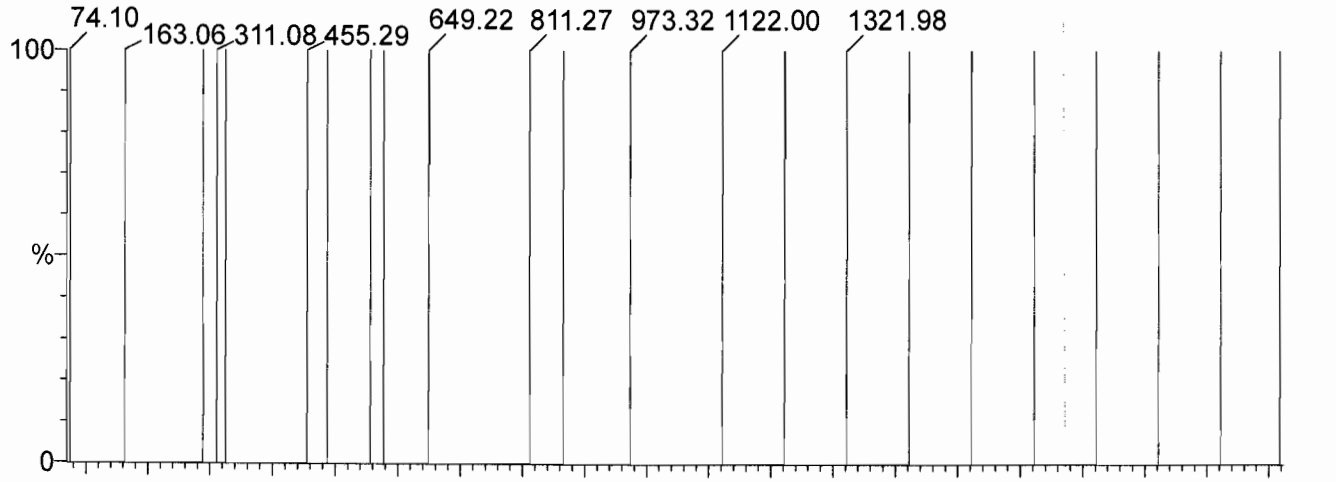
Residual Polynomial order = 4 RMS residual = 0.0806 amu



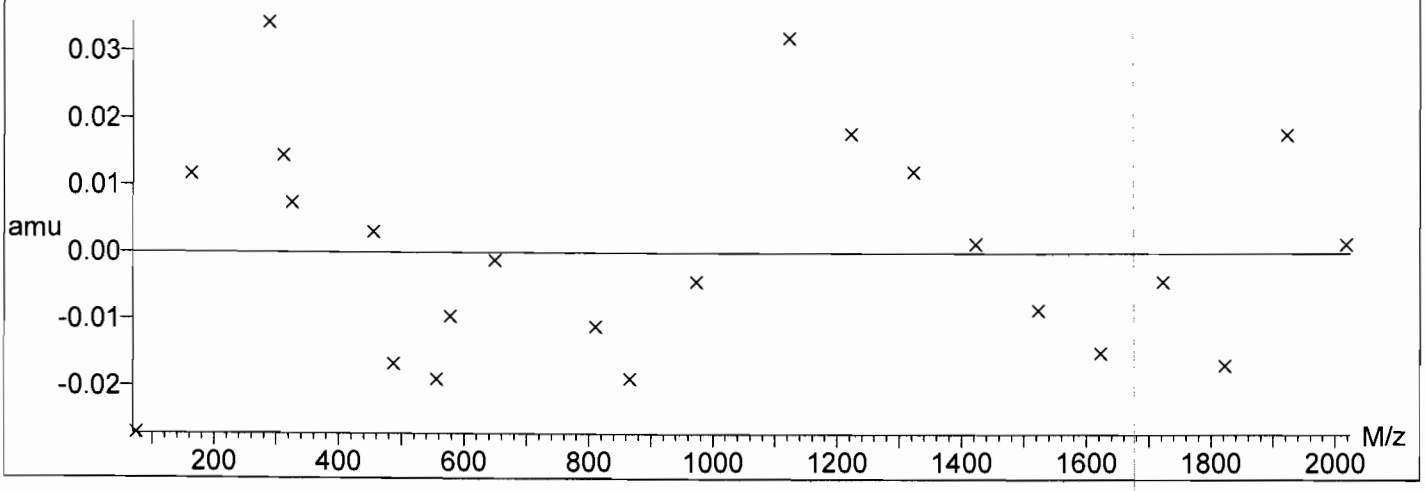
Data file: STATMS2 - Calibrated 23 matches of 23 tested references



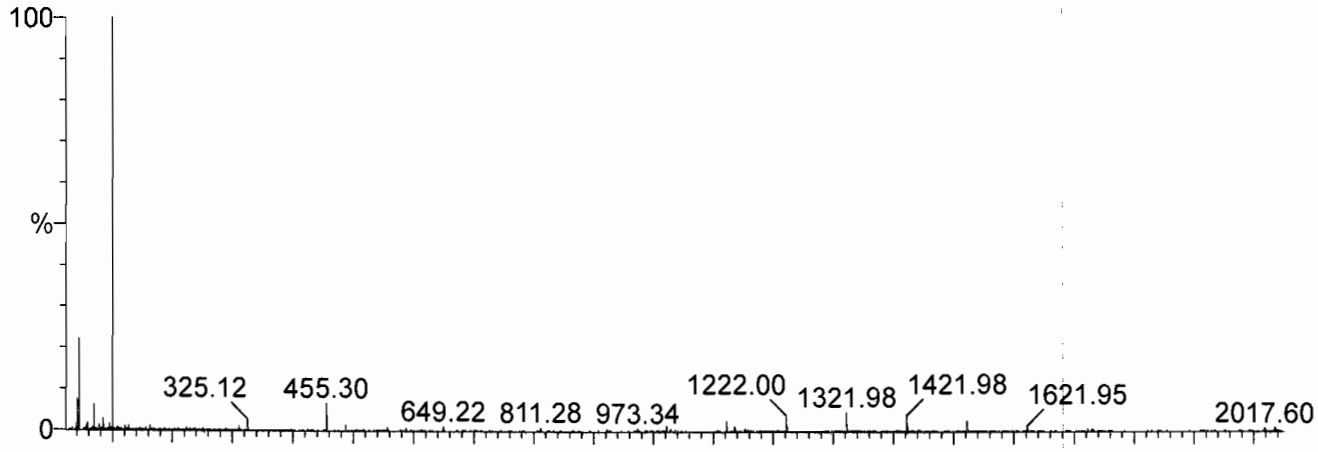
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0133 amu



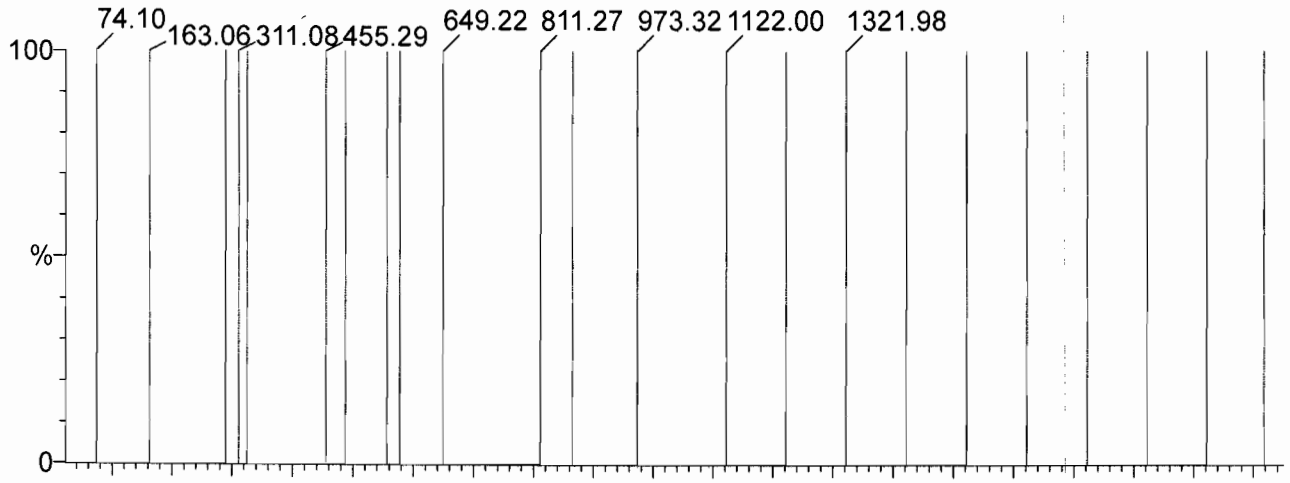
Residual Polynomial order = 4 RMS residual = 0.0161 amu



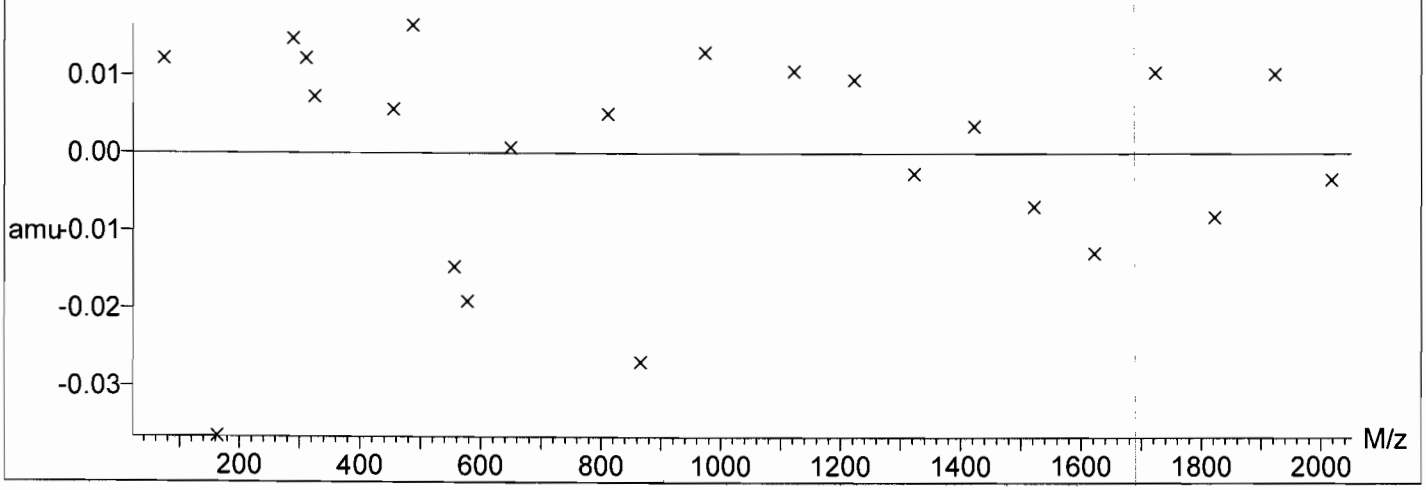
Data file: SCNMS2 - Calibrated 23 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0114 amu



Residual Polynomial order = 4 RMS residual = 0.0139 amu



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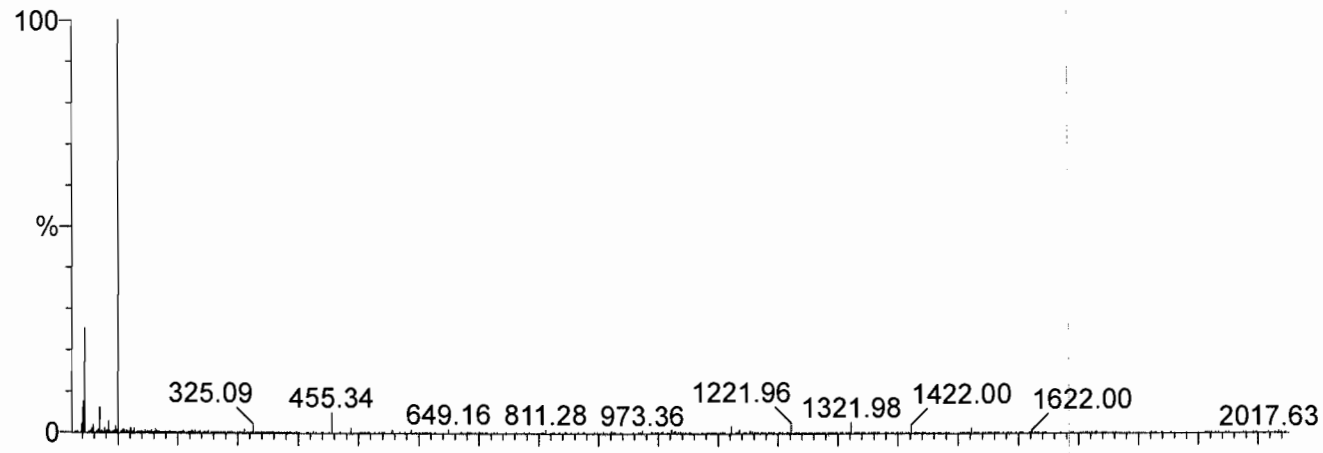
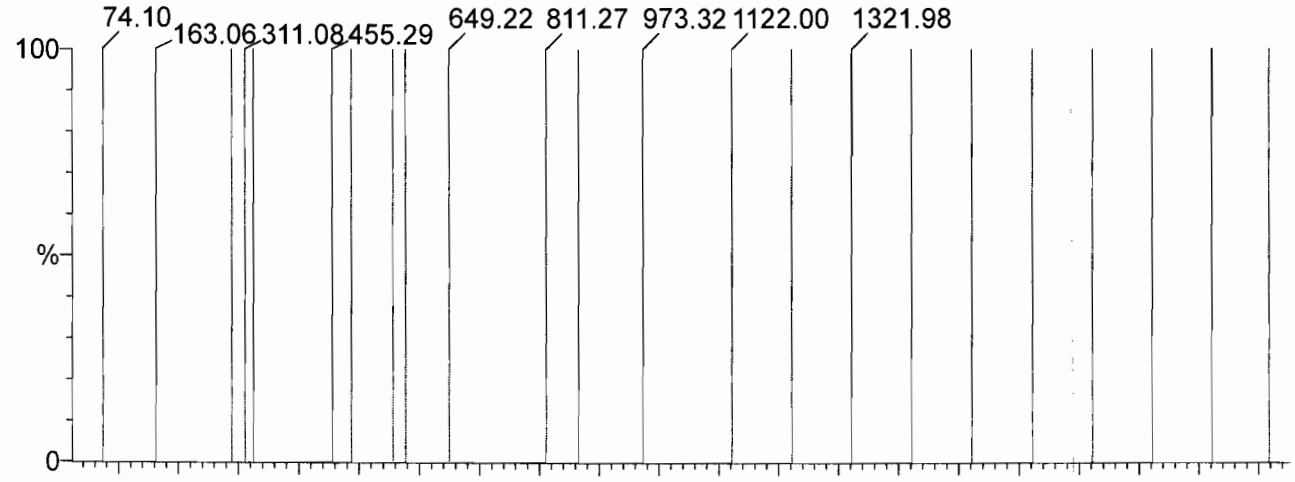
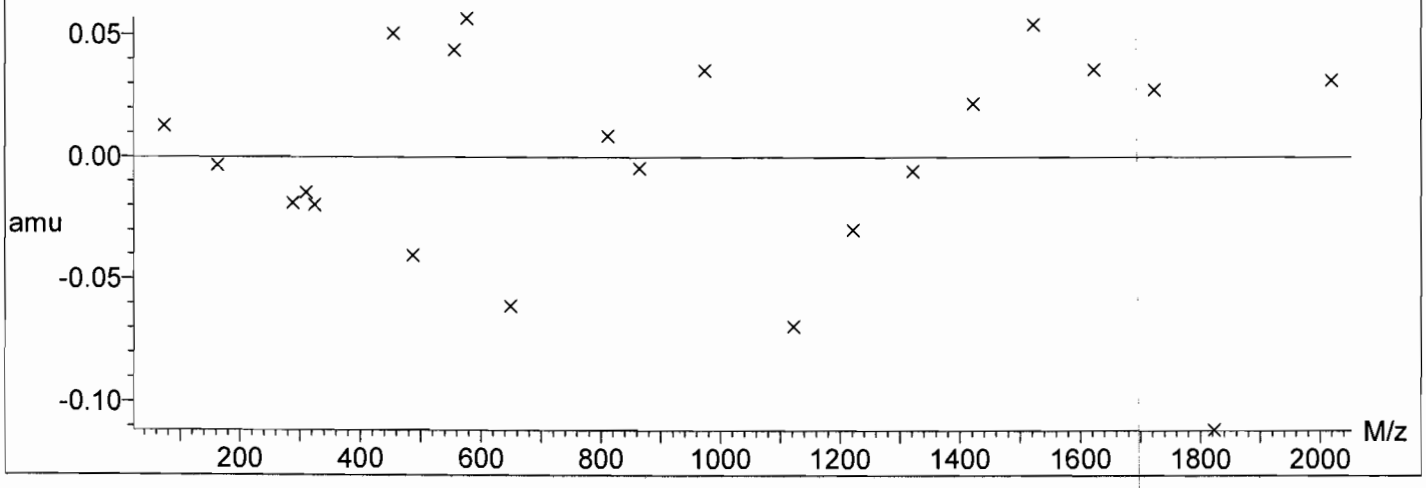
Data file: FASTMS2 - Calibrated 22 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0344 amu



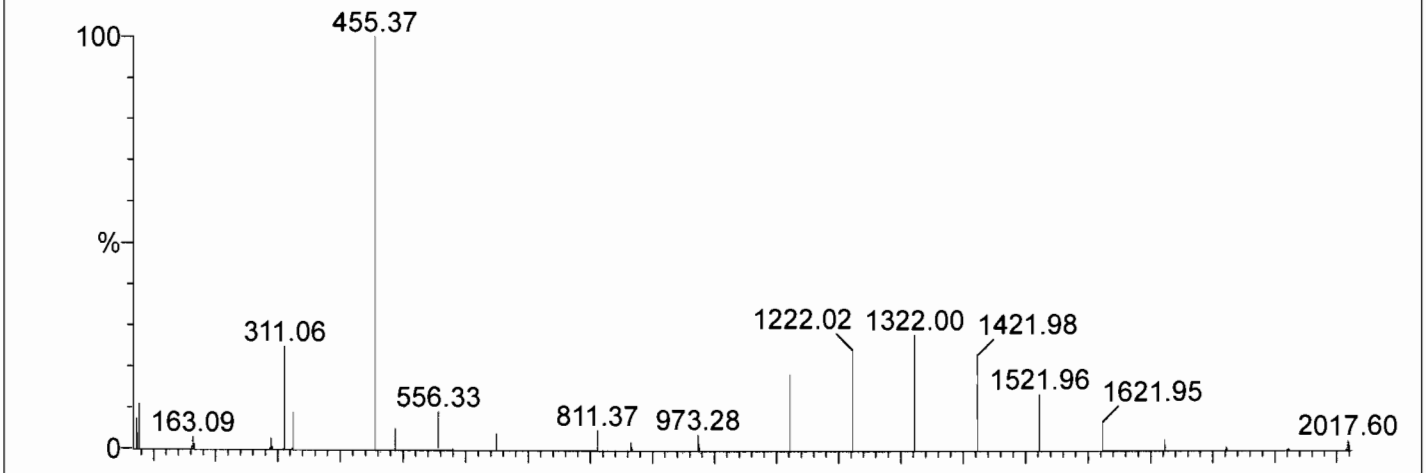
Residual Polynomial order = 4 RMS residual = 0.0427 amu



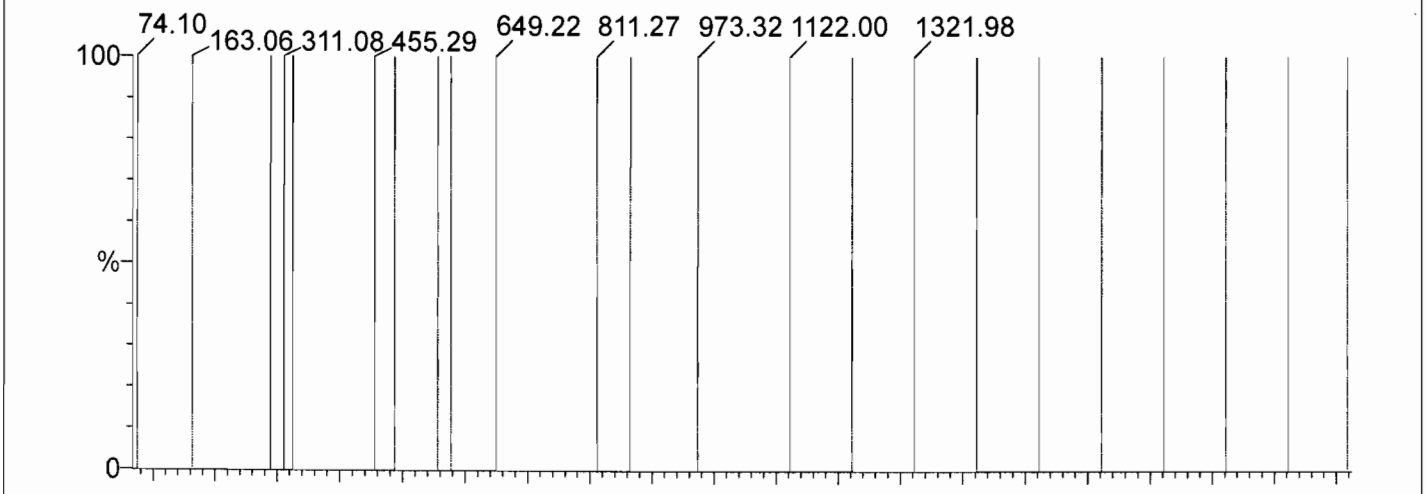
Calibration Report - MS1 Static TUNE CHECK Q4(M) 06-16-18 **Page 1 of 6**

Printed: **Sat Jun 16 17:03:23 2018** 20180616

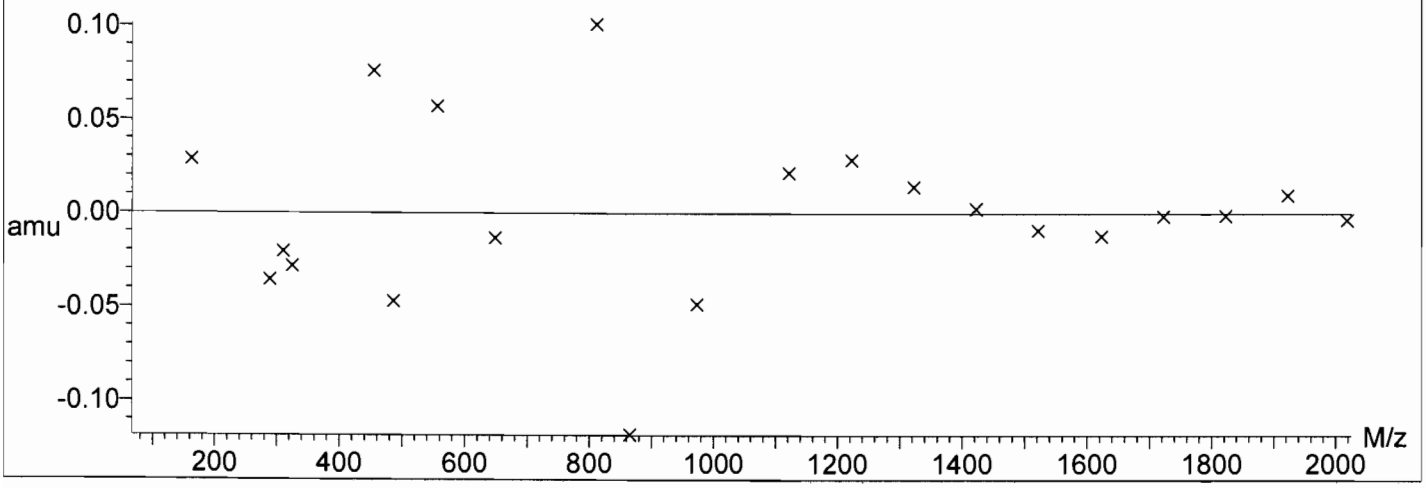
Data file: STATMS1 - Calibrated 21 matches of 23 tested references



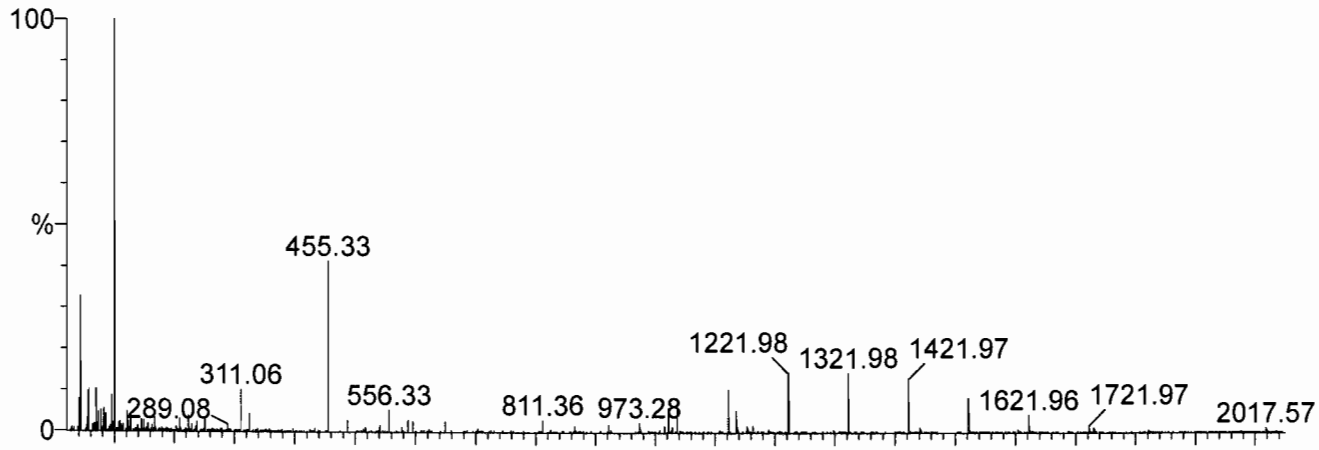
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0323 amu



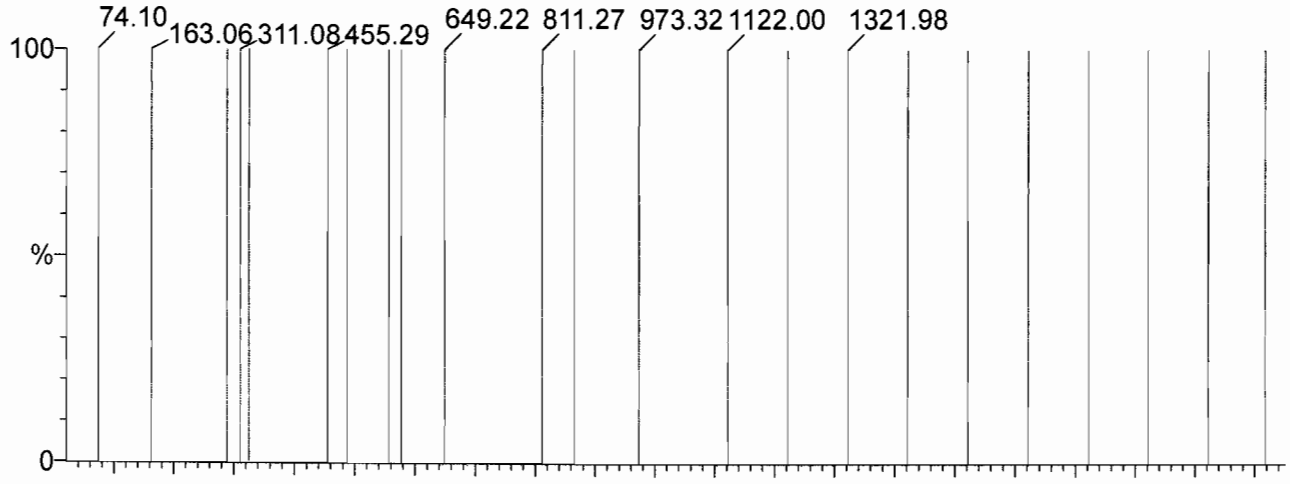
Residual Polynomial order = 4 RMS residual = 0.0453 amu



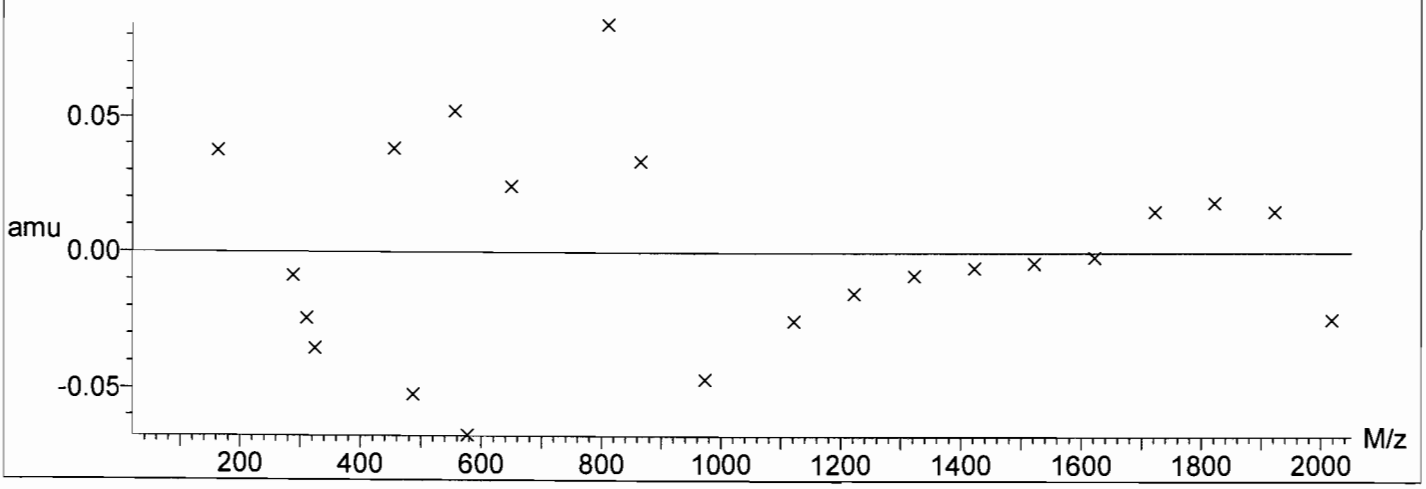
Data file: SCNMS1 - Calibrated 22 matches of 23 tested references



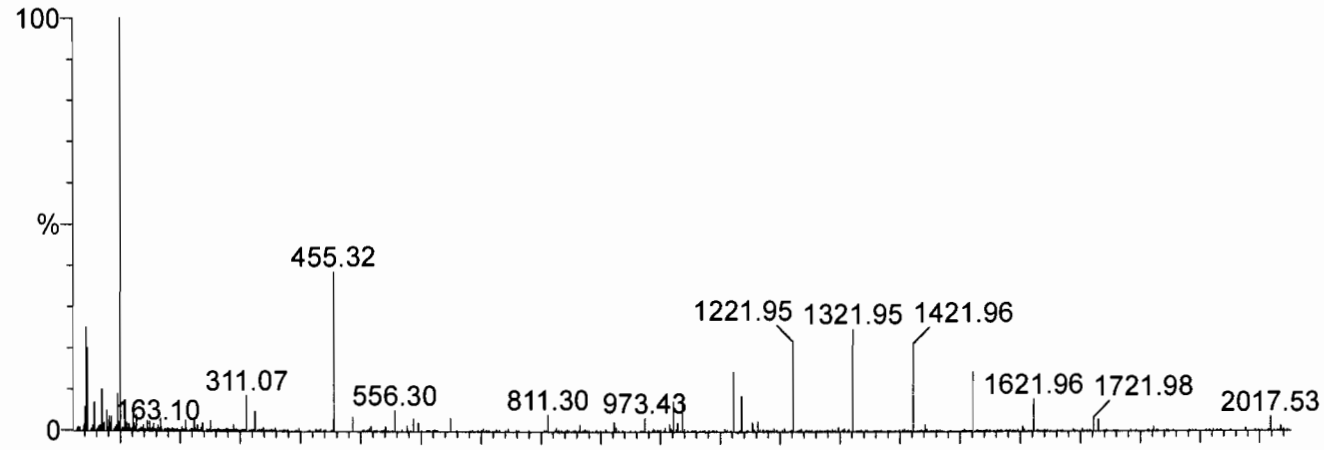
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.029 amu



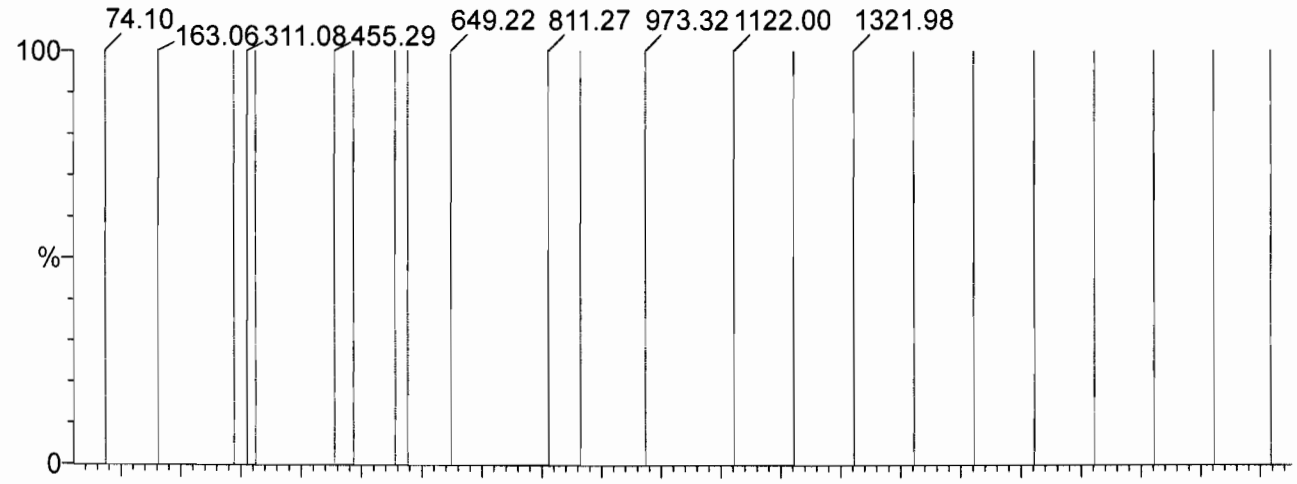
Residual Polynomial order = 4 RMS residual = 0.0358 amu



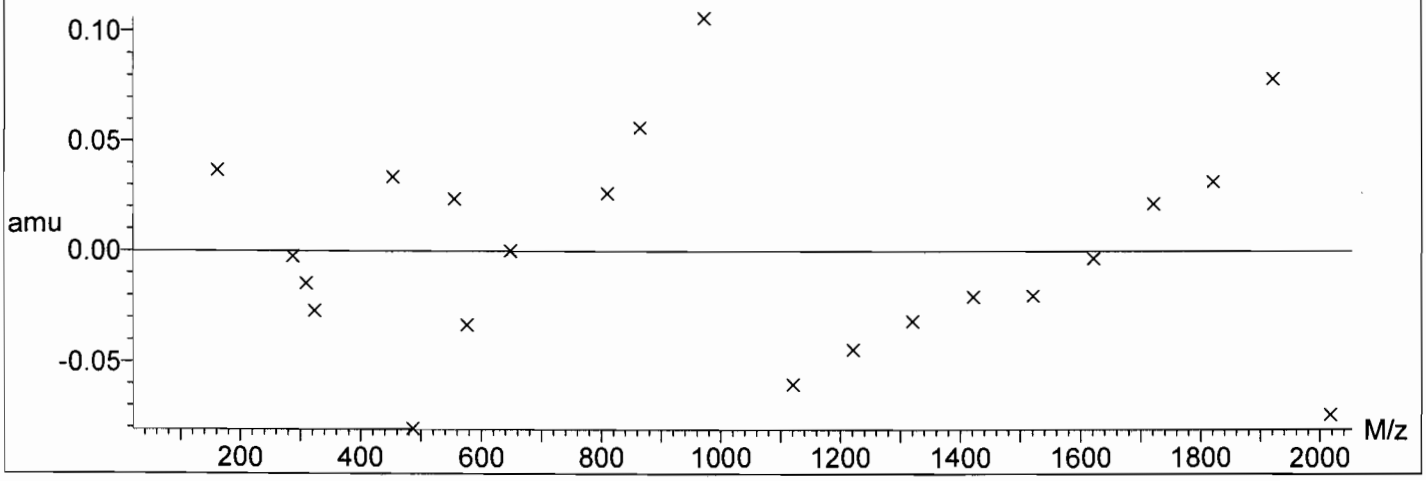
Data file: FASTMS1 - Calibrated 22 matches of 23 tested references



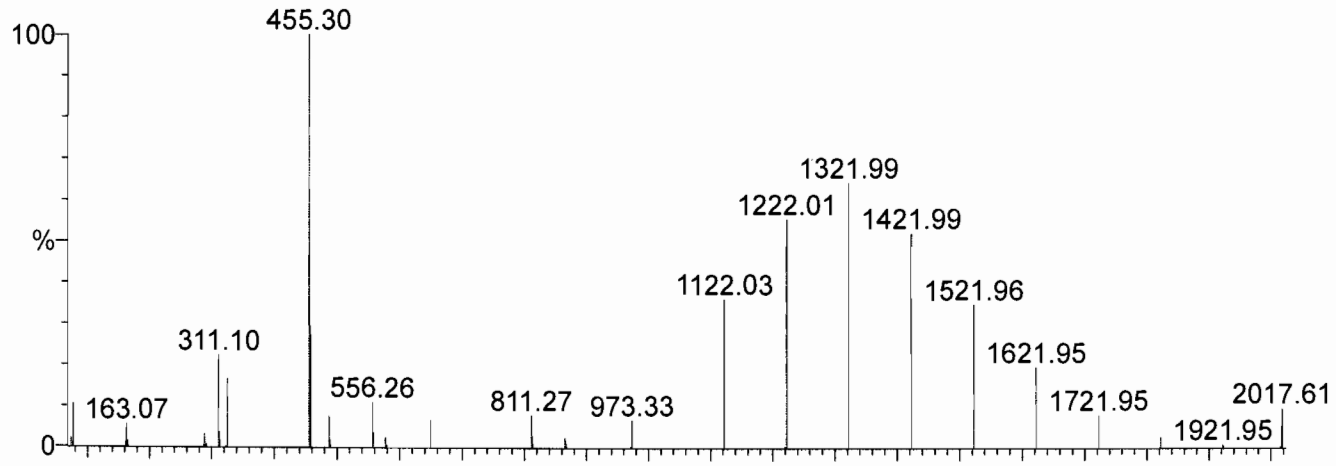
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0376 amu



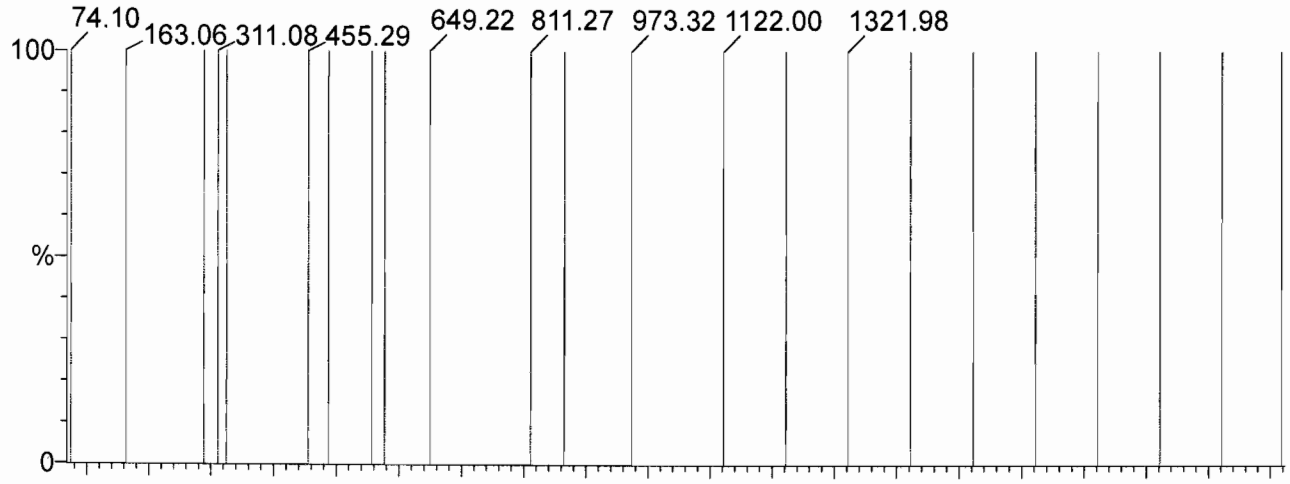
Residual Polynomial order = 4 RMS residual = 0.0464 amu



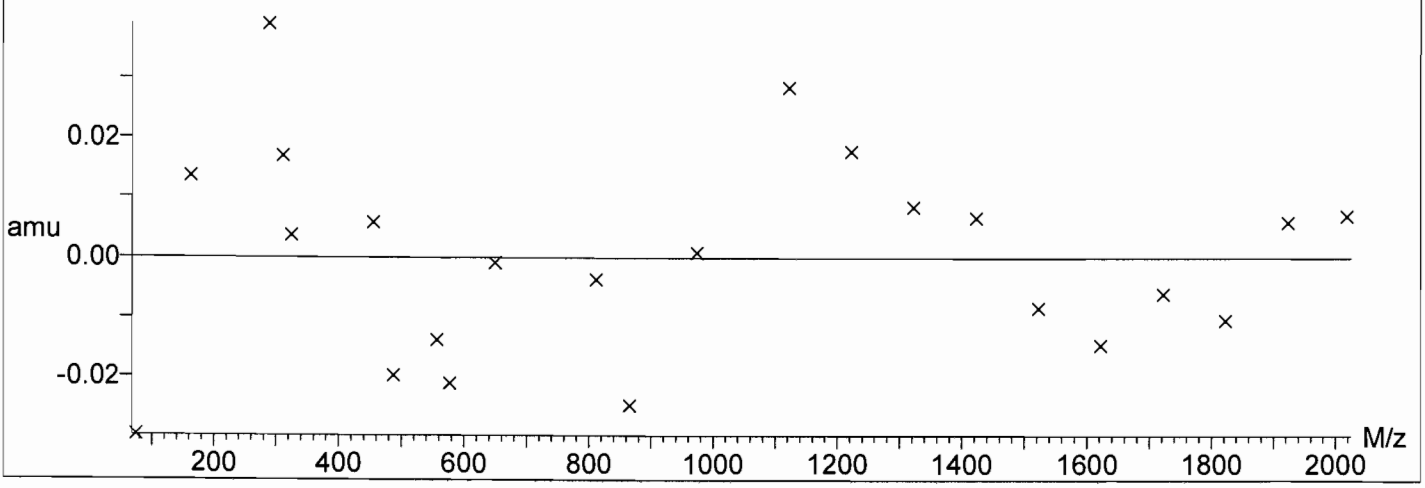
Data file: STATMS2 - Calibrated 23 matches of 23 tested references



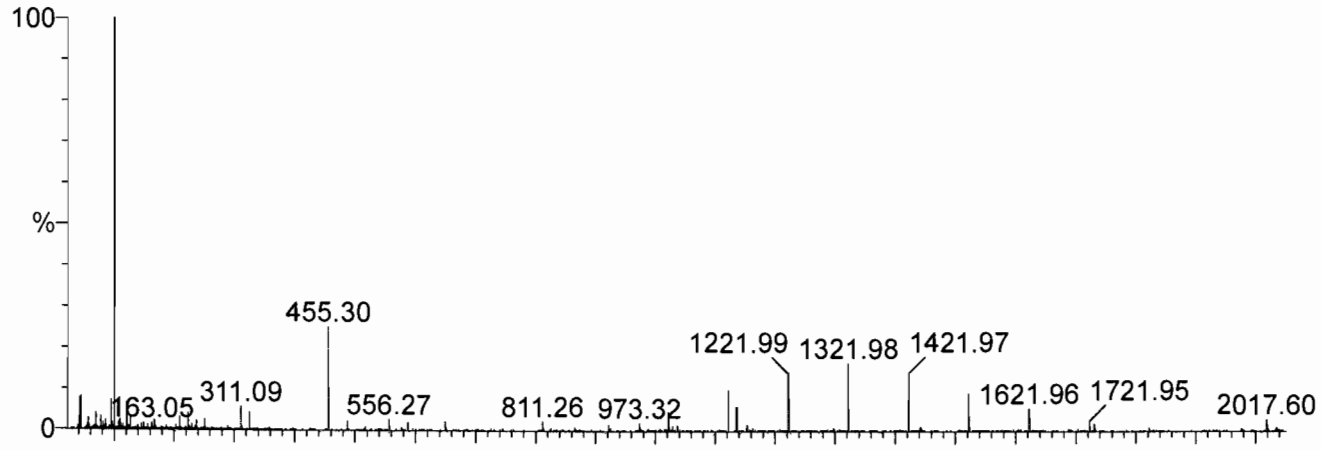
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0134 amu



Residual Polynomial order = 4 RMS residual = 0.0166 amu



Data file: SCNMS2 - Calibrated 23 matches of 23 tested references



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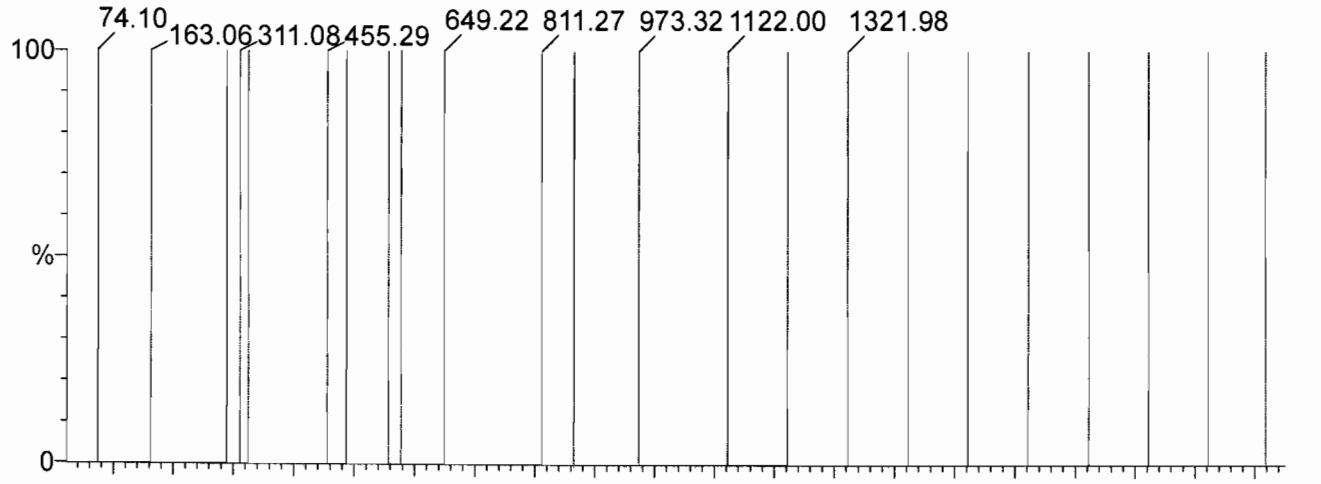
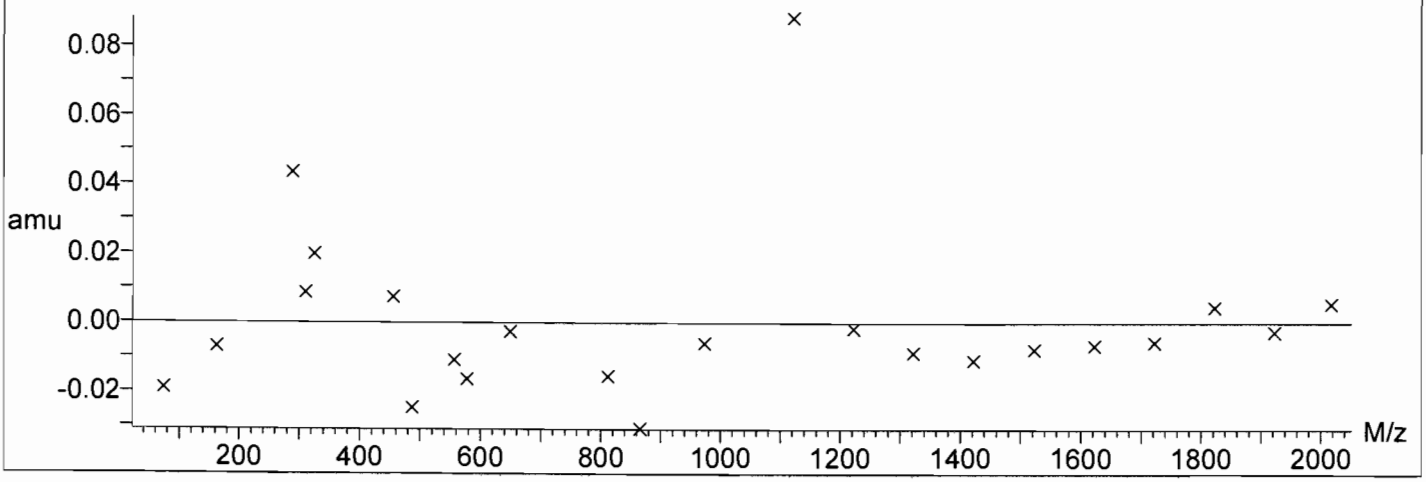
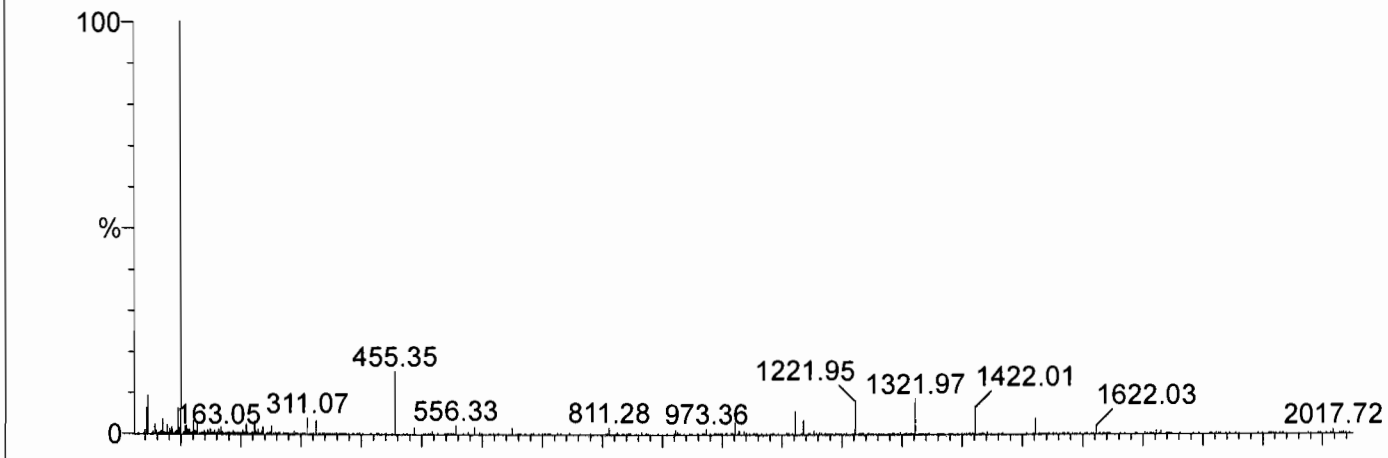


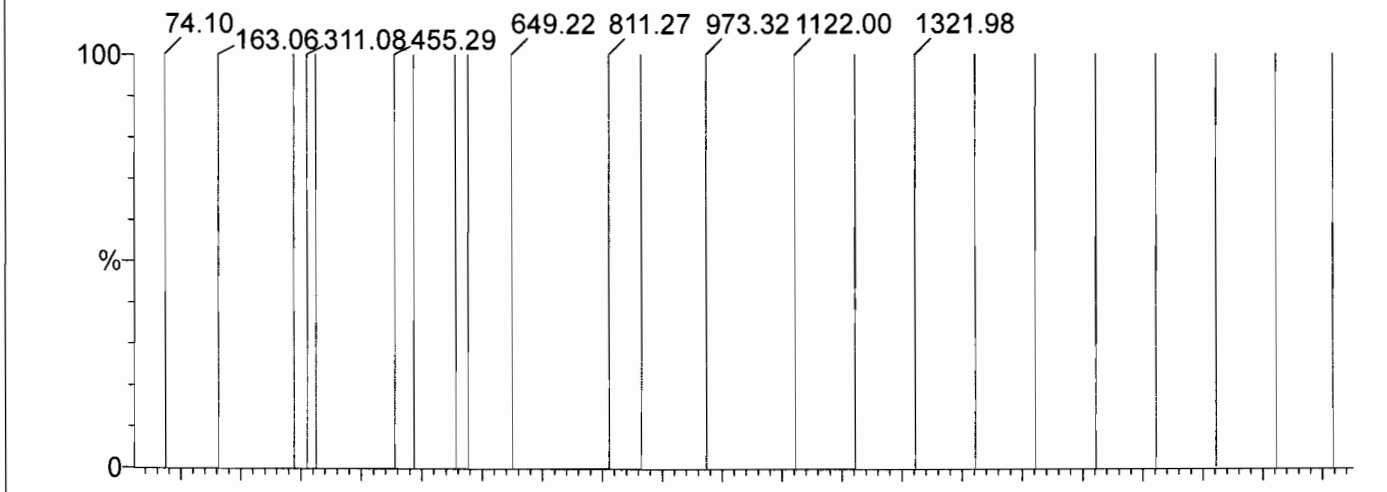
Residual Polynomial order = 4 RMS residual = 0.024 amu



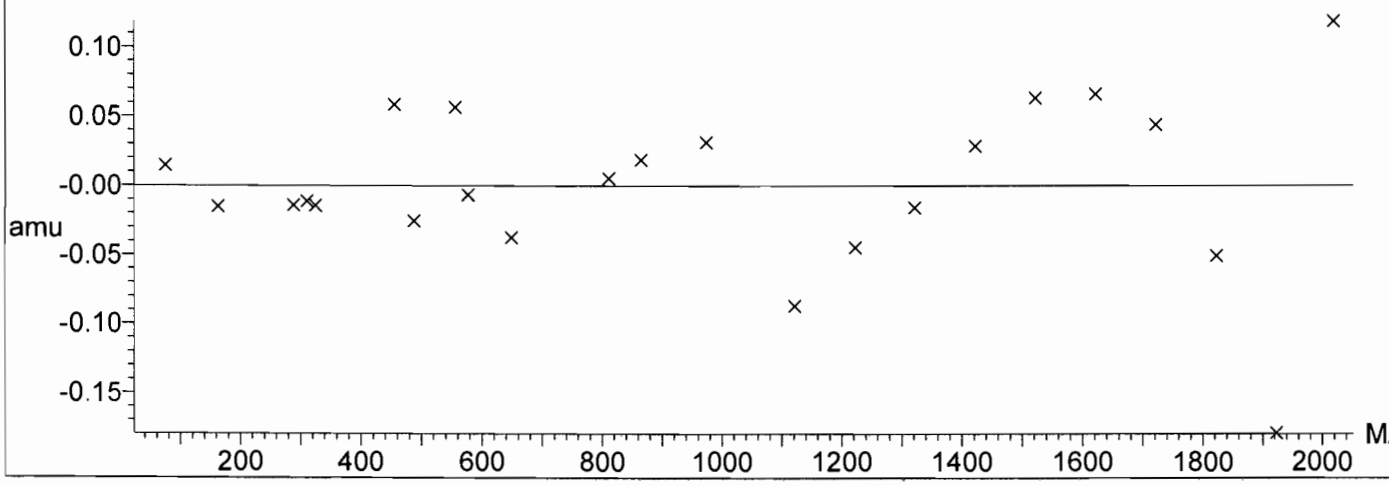
Data file: FASTMS2 - Calibrated 23 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0438 amu



Residual Polynomial order = 4 RMS residual = 0.0592 amu



Tune check G4 (M) 06-18-18 a
em 6/19/18

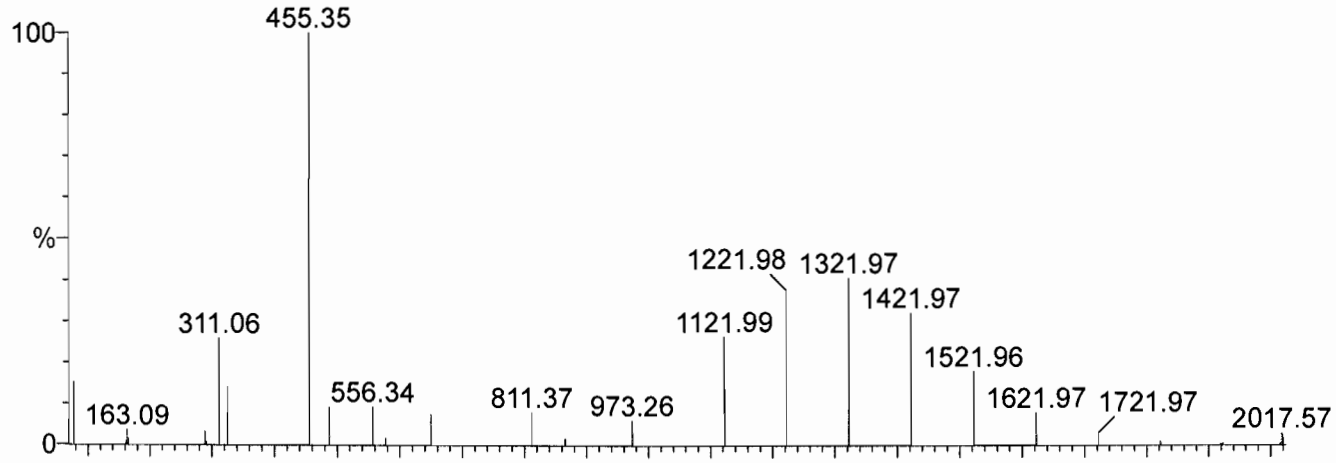
Calibration Report - MS1 Static

Printed: **Tue Jun 19 16:58:54 2018**

20180619_2

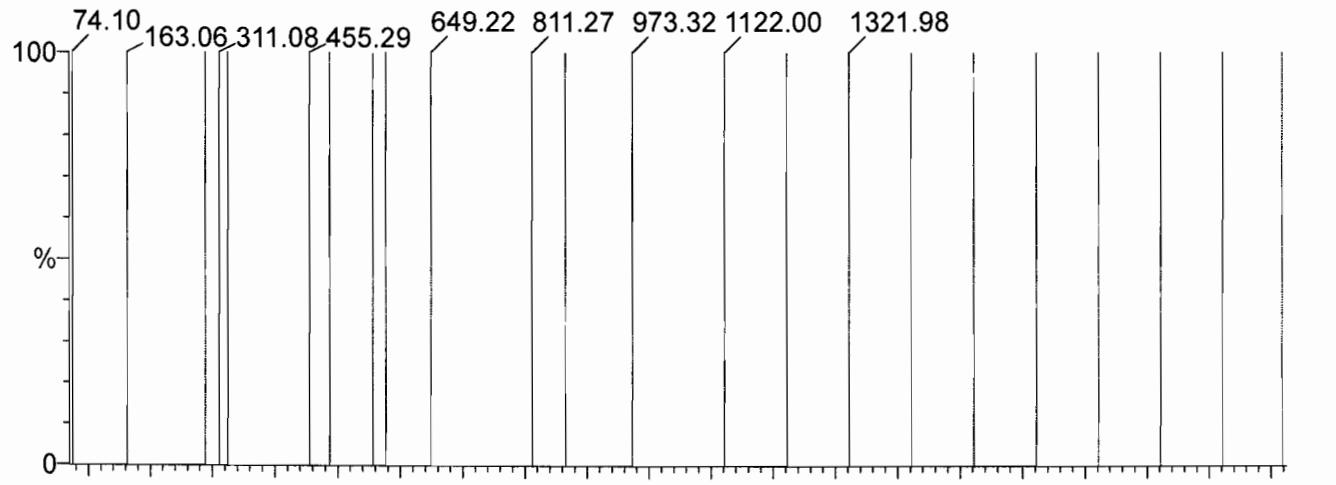
Data file: STATMS1 - Calibrated

22 matches of 23 tested references



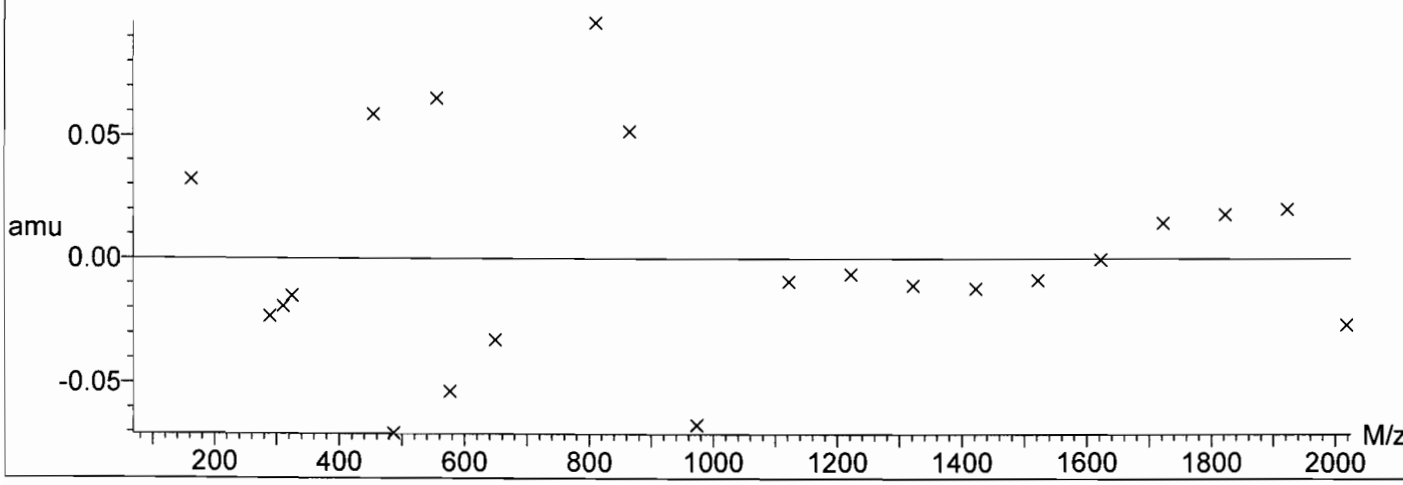
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref

Mean residual = 0.0324 amu

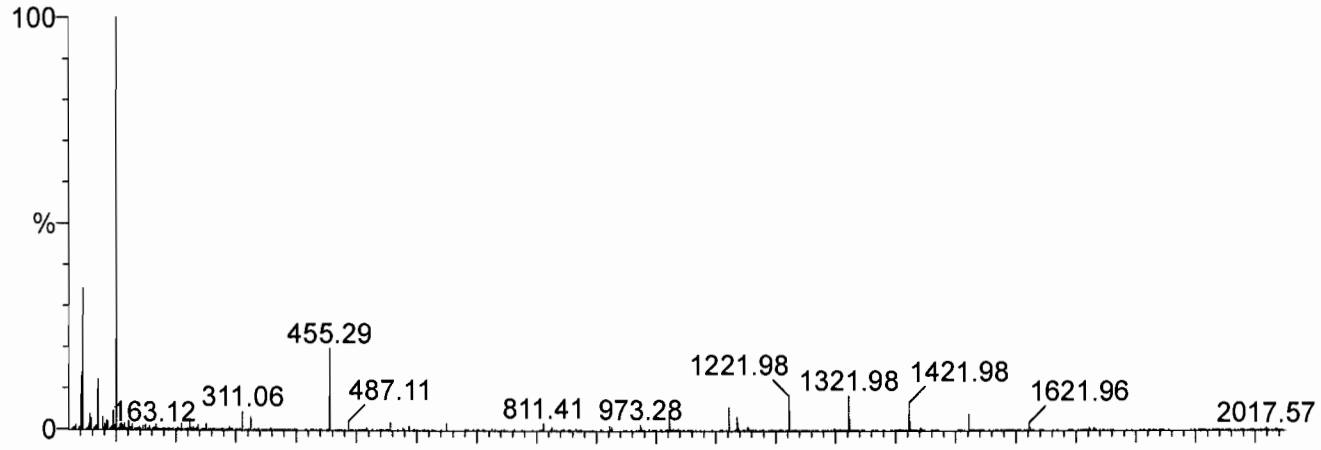


Residual Polynomial order = 4

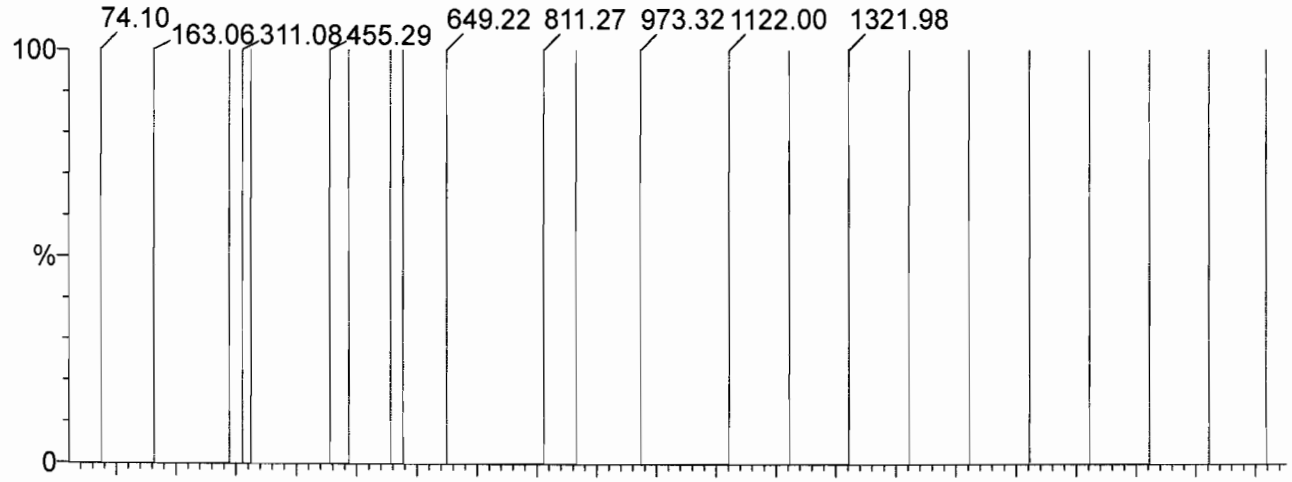
RMS residual = 0.0412 amu



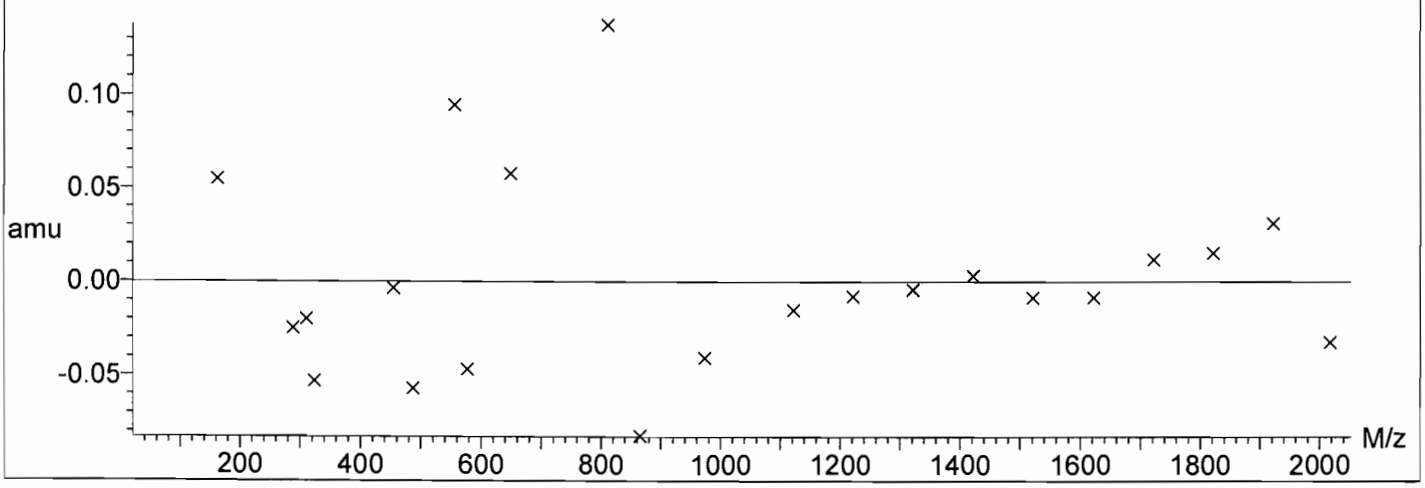
Data file: SCNMS1 - Calibrated 22 matches of 23 tested references



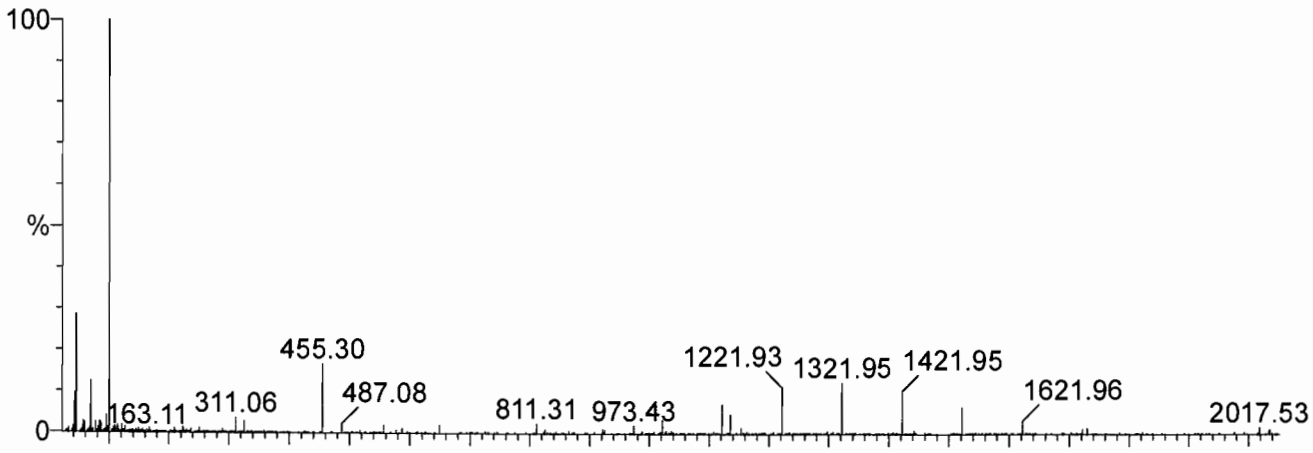
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0369 amu



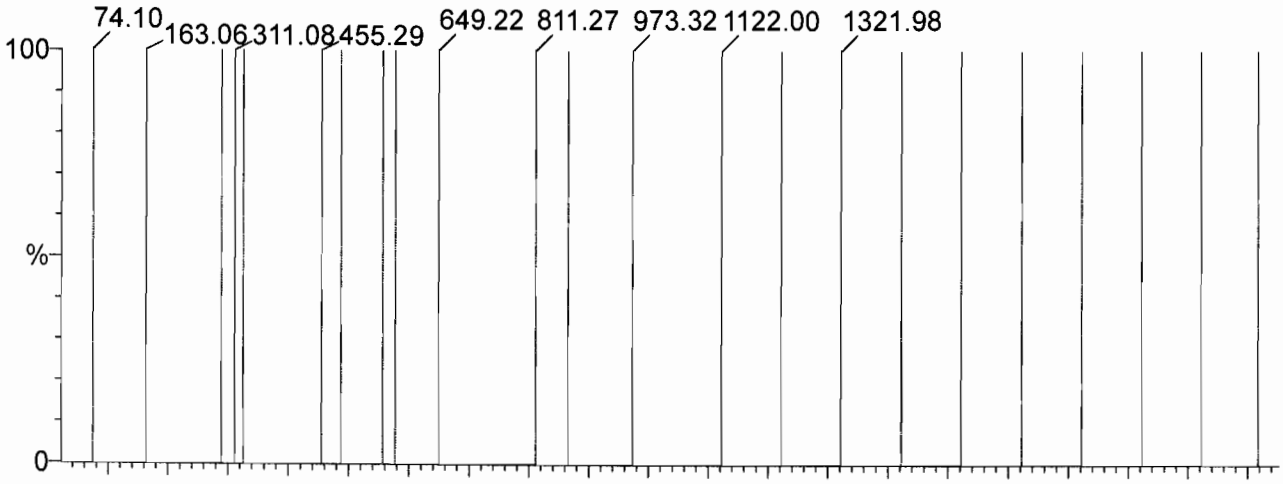
Residual Polynomial order = 4 RMS residual = 0.0499 amu



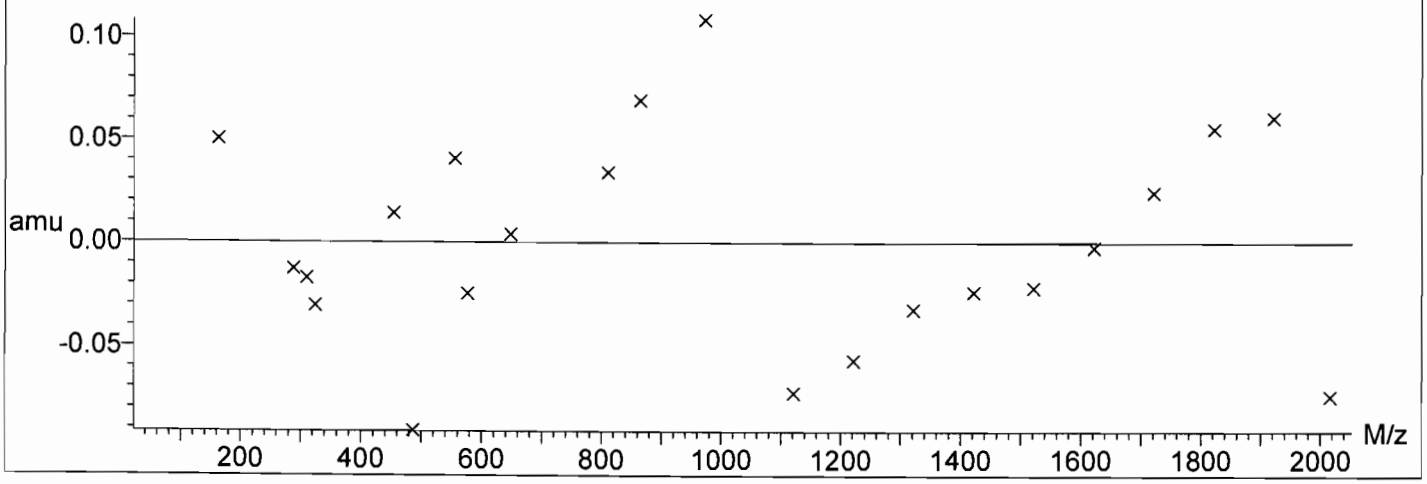
Data file: FASTMS1 - Calibrated 22 matches of 23 tested references



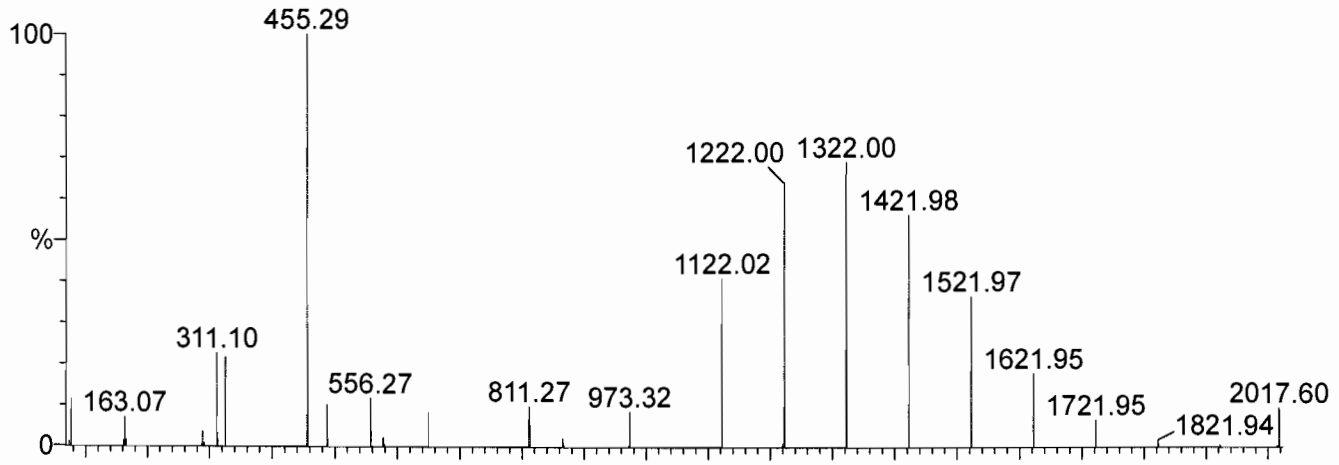
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0418 amu



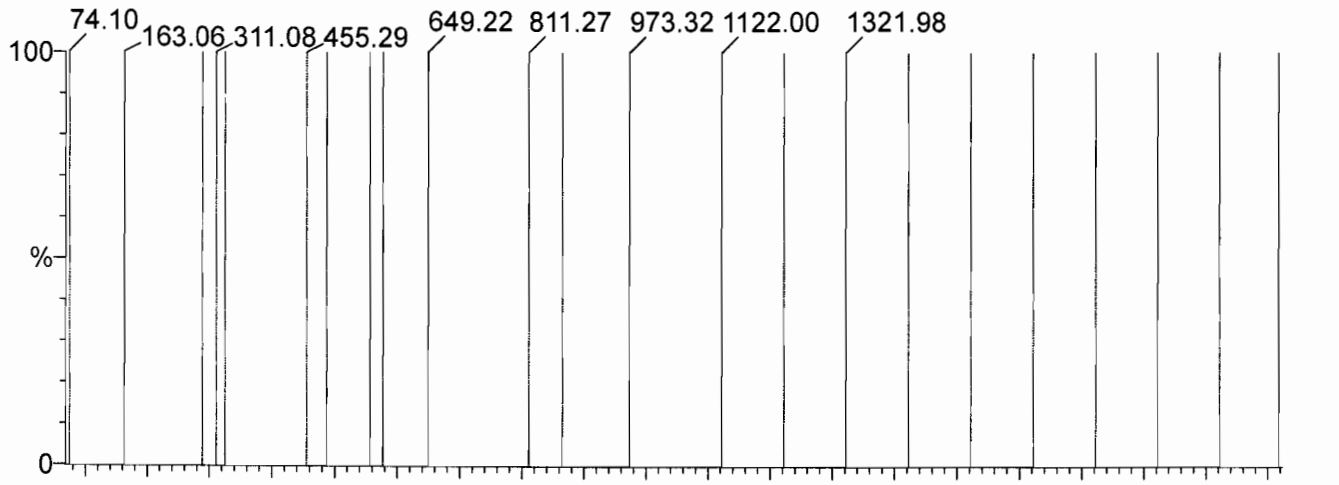
Residual Polynomial order = 4 RMS residual = 0.0504 amu



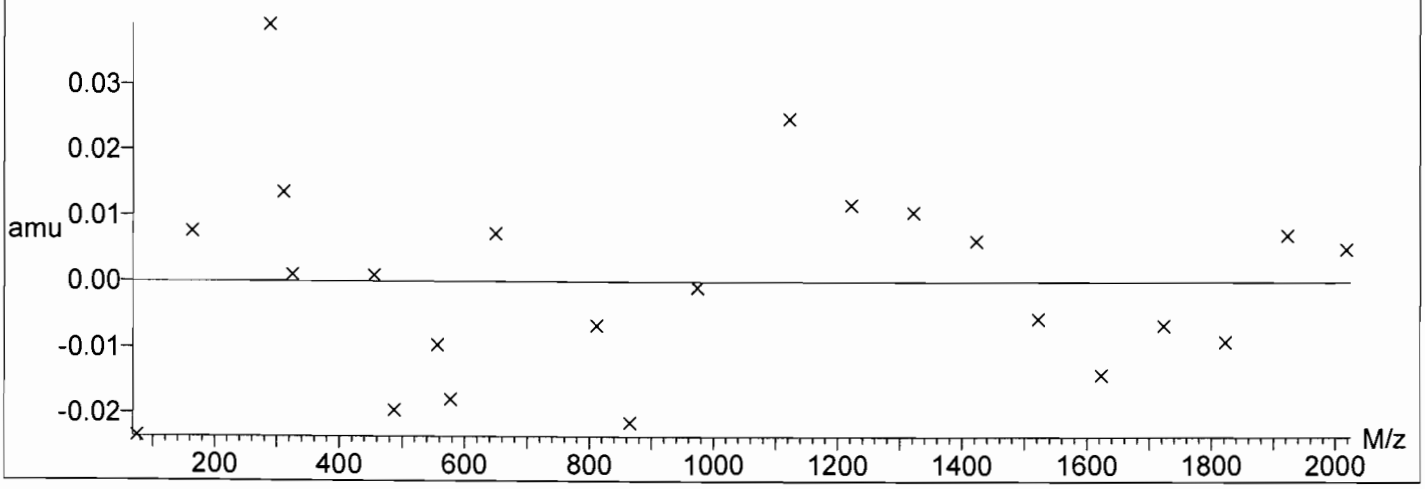
Data file: STATMS2 - Calibrated 23 matches of 23 tested references



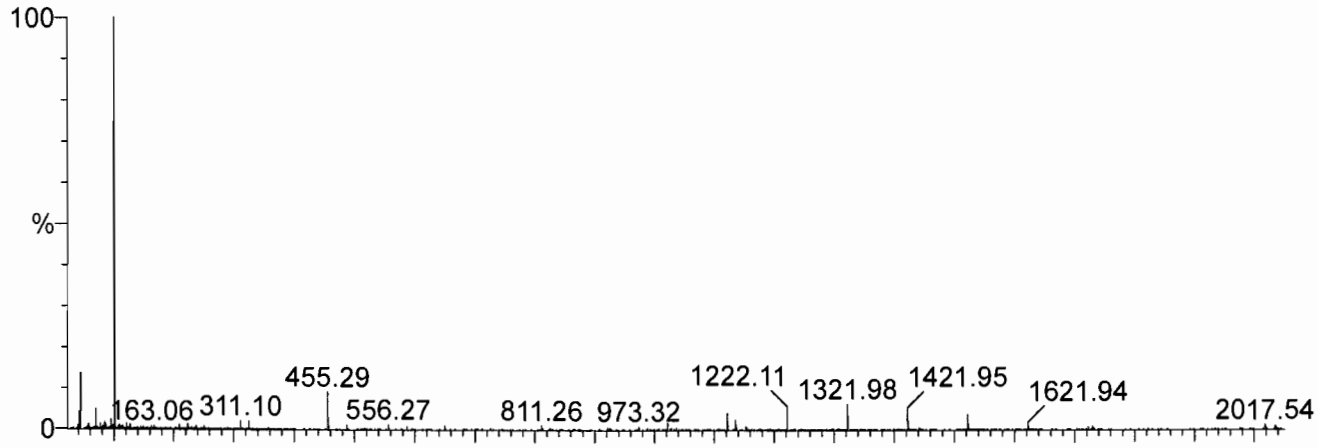
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0117 amu



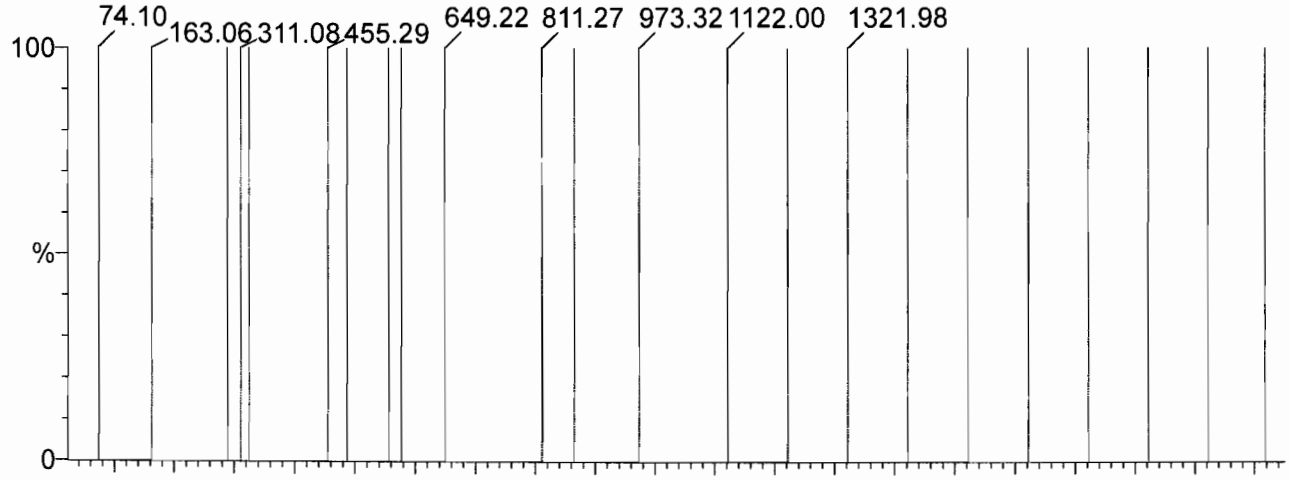
Residual Polynomial order = 4 RMS residual = 0.0148 amu



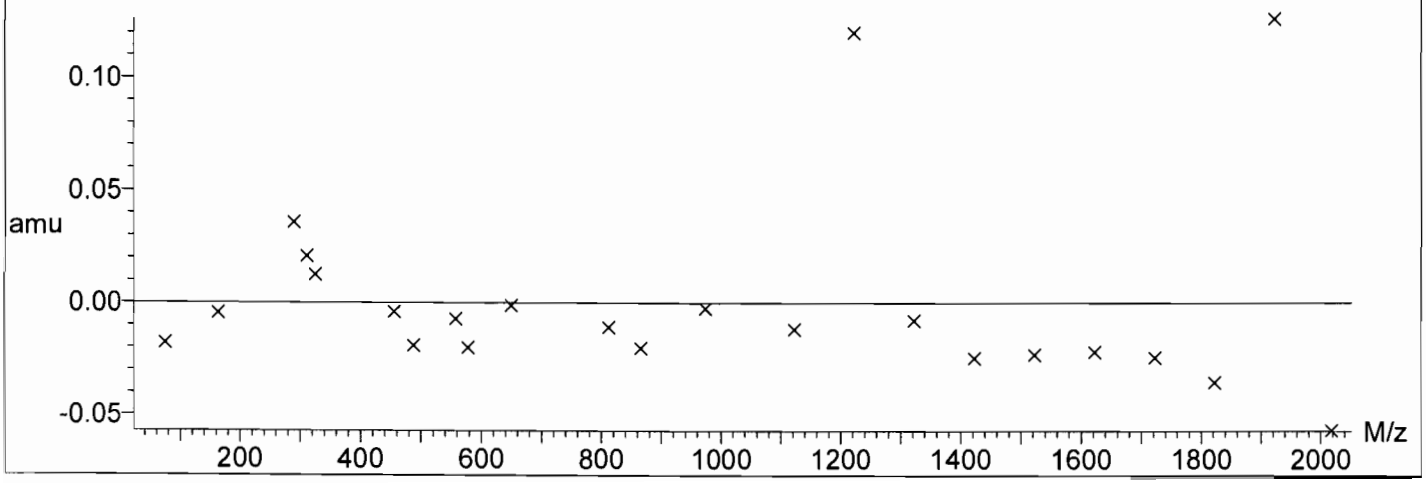
Data file: SCNMS2 - Calibrated 23 matches of 23 tested references



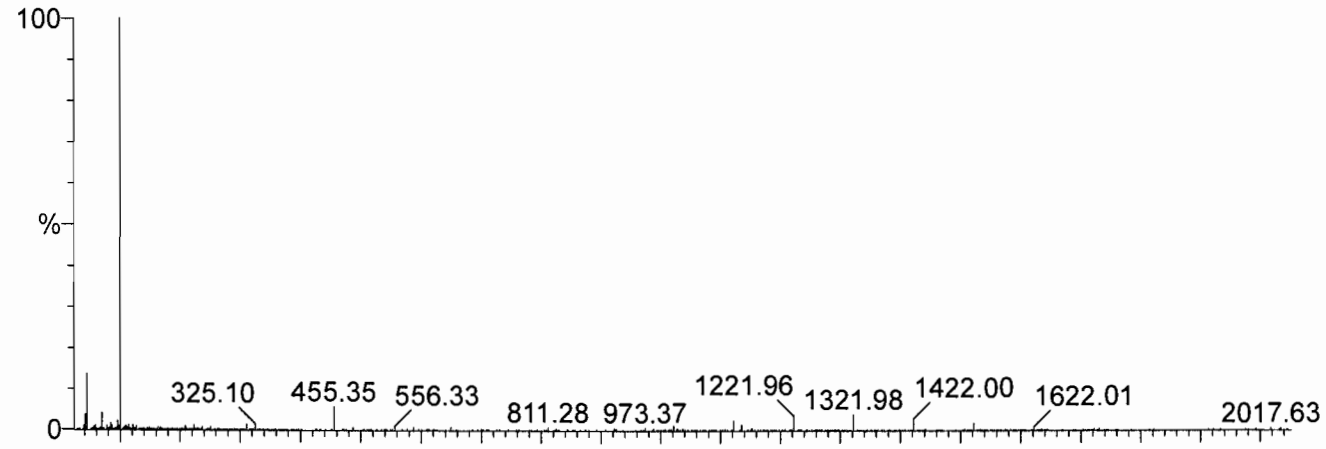
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0274 amu



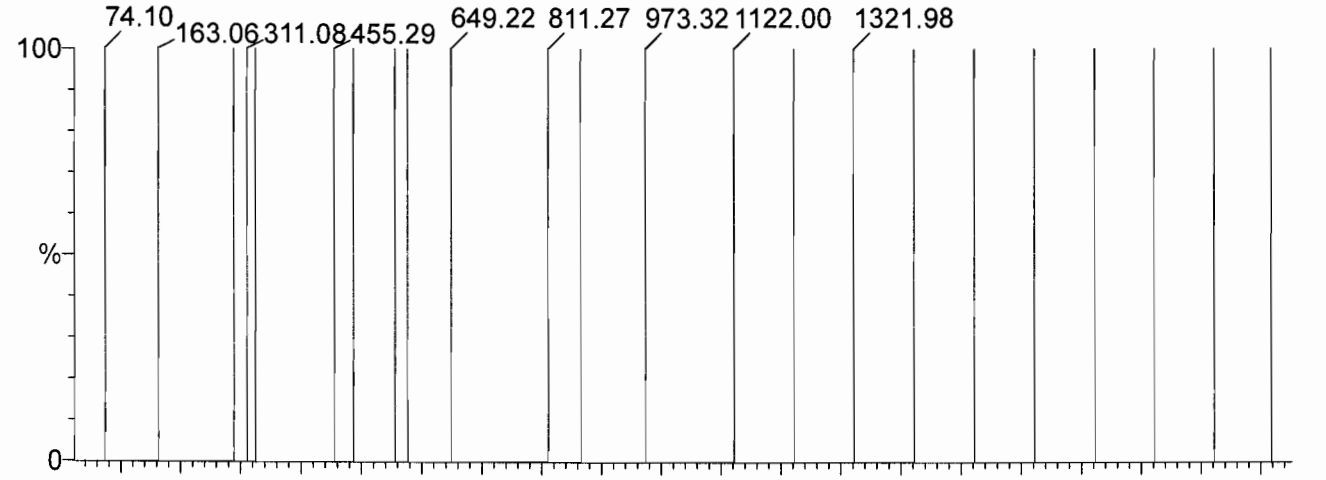
Residual Polynomial order = 4 RMS residual = 0.0422 amu



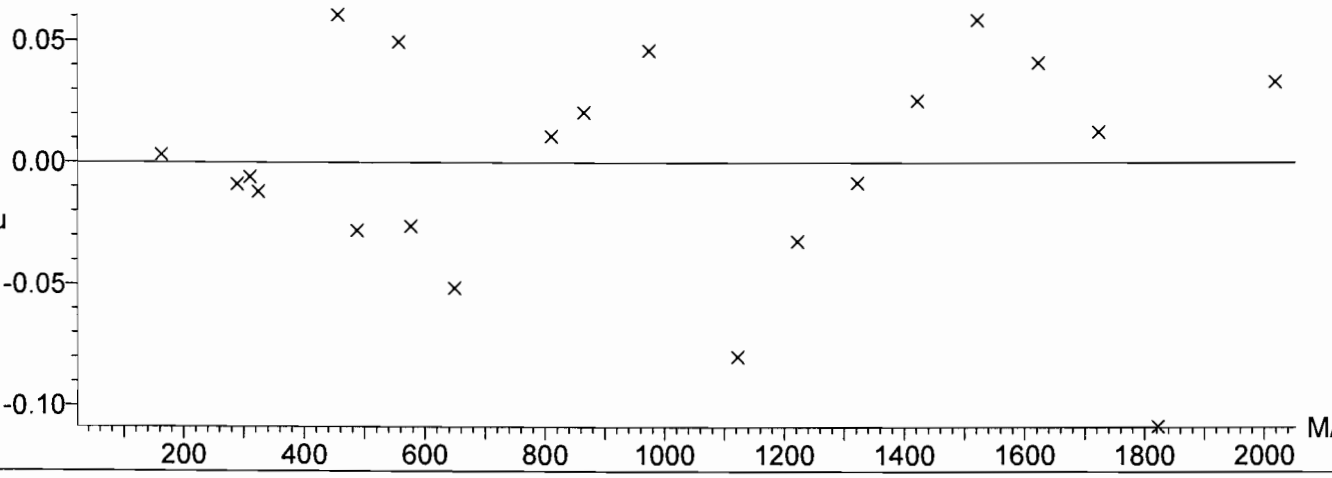
Data file: FASTMS2 - Calibrated 21 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0344 amu



Residual Polynomial order = 4 RMS residual = 0.0433 amu

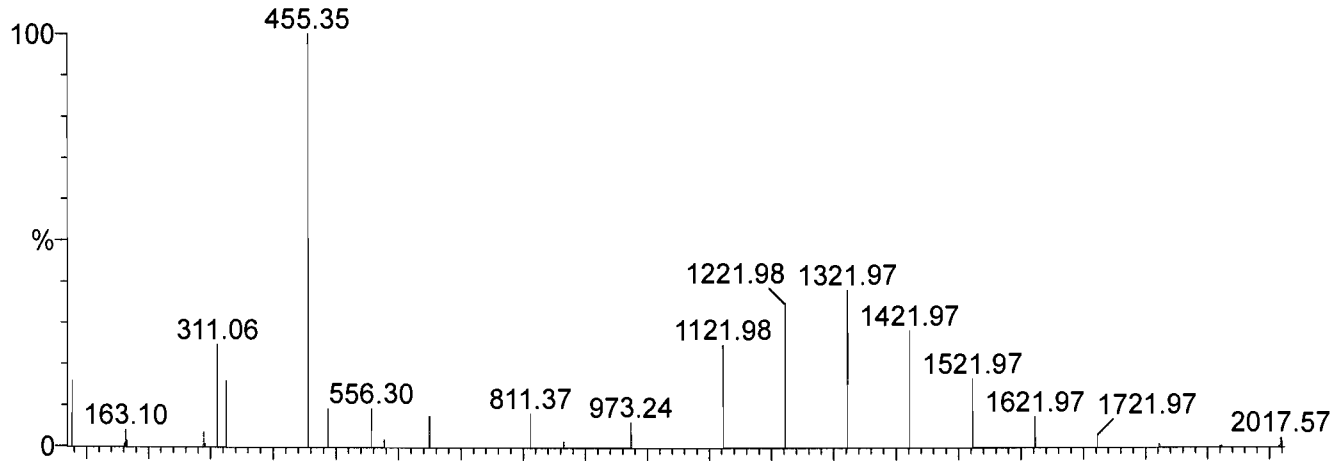


Tune check Q4(M) 06-20-18

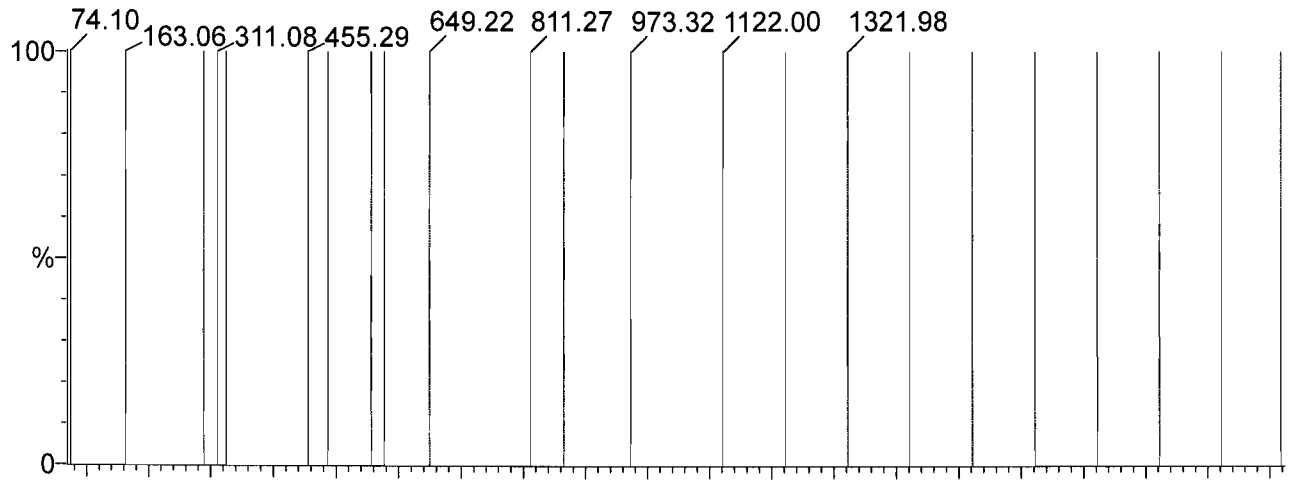
Calibration Report - MS1 Static

Printed: **Wed Jun 20 18:17:20 2018** 20180620-1

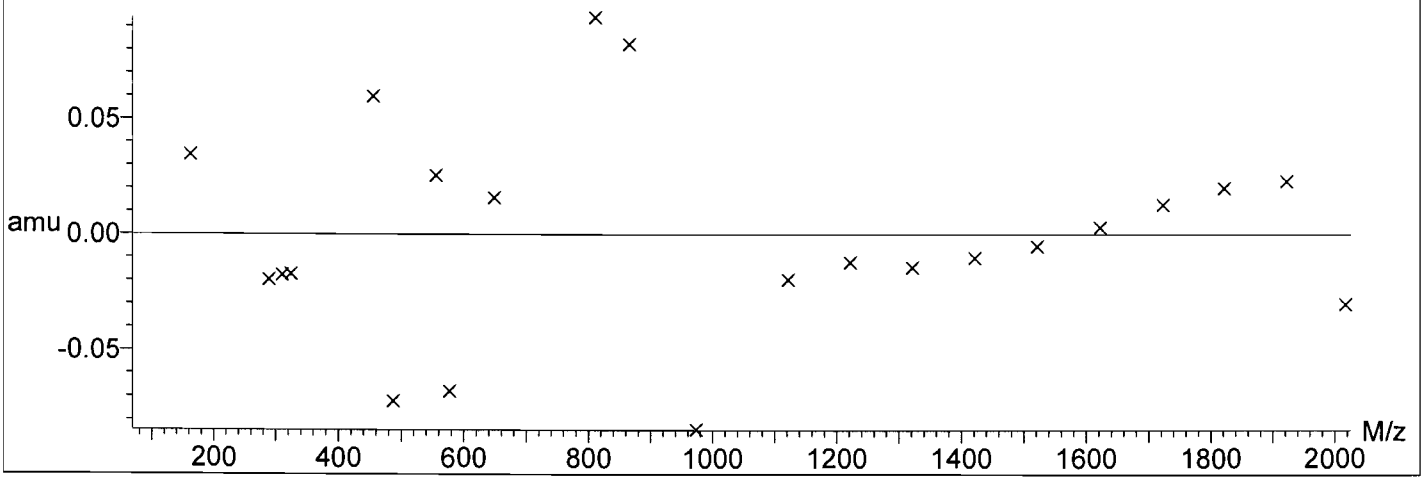
Data file: STATMS1 - Calibrated 22 matches of 23 tested references



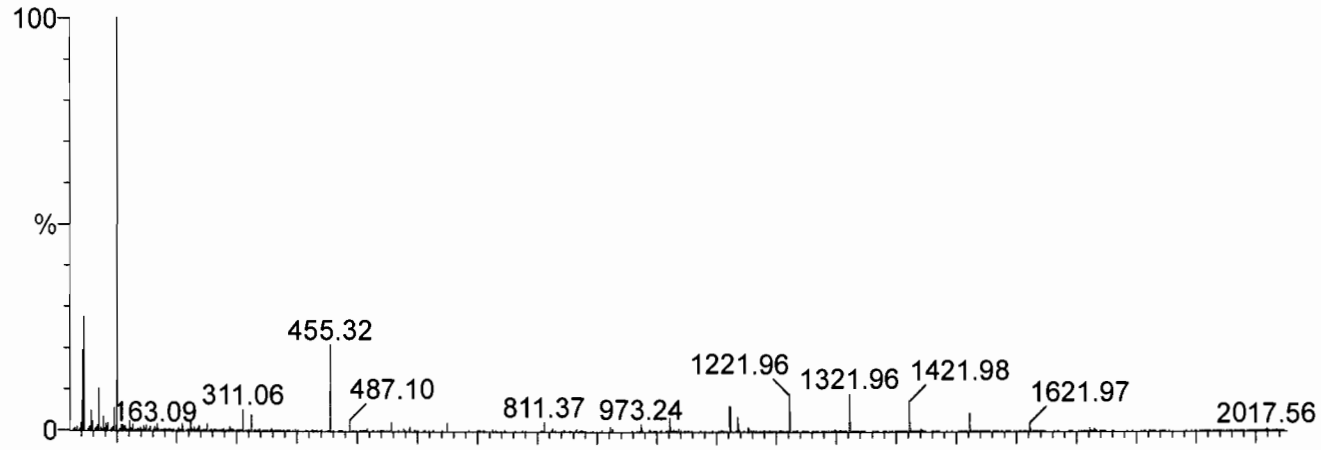
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0337 amu



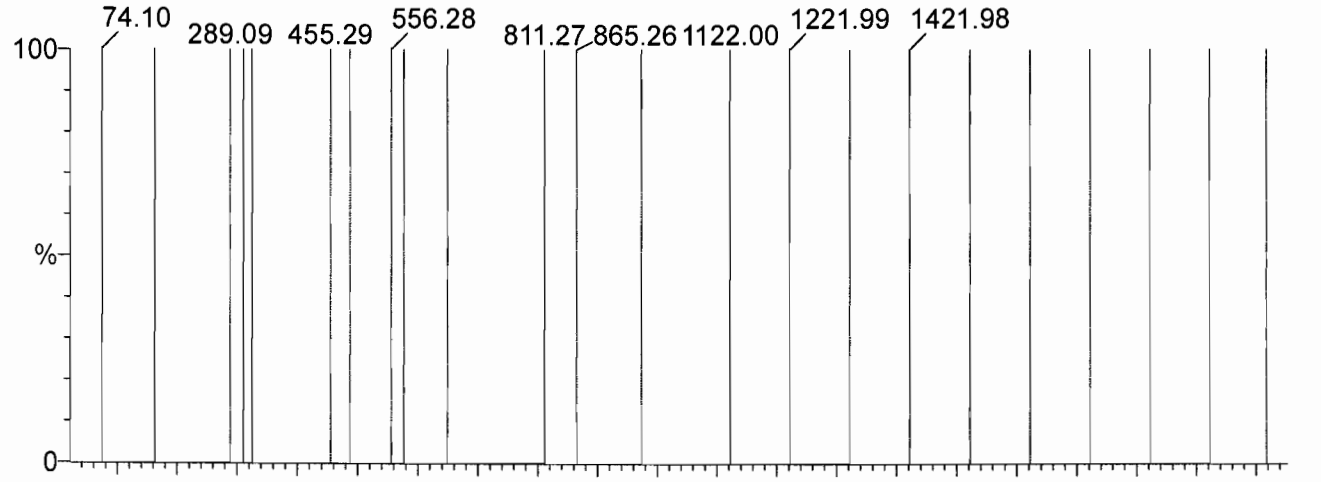
Residual Polynomial order = 4 RMS residual = 0.0437 amu



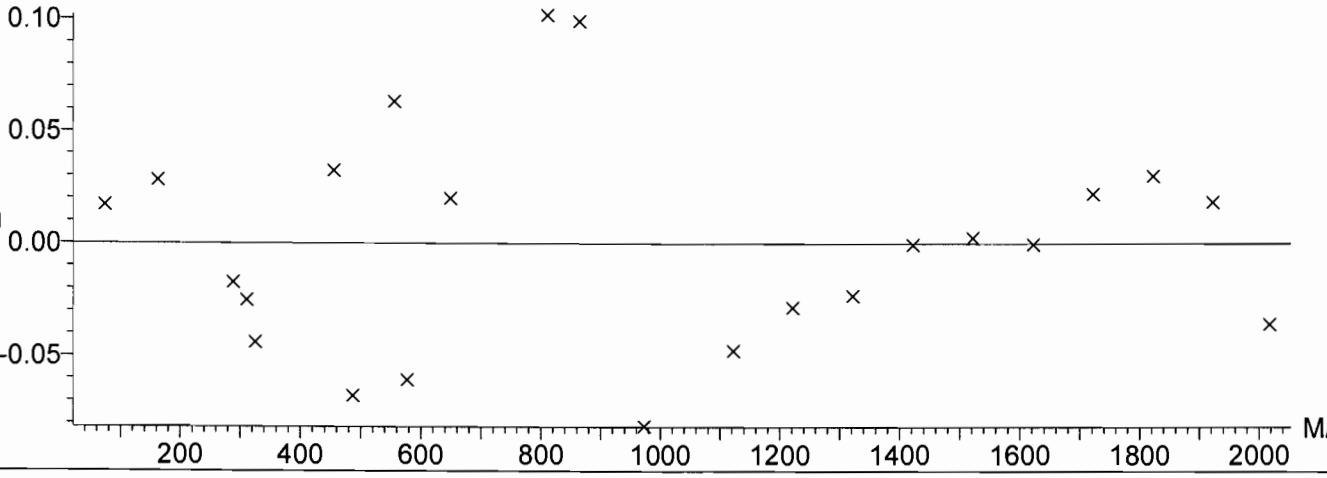
Data file: SCNMS1 - Calibrated 23 matches of 23 tested references



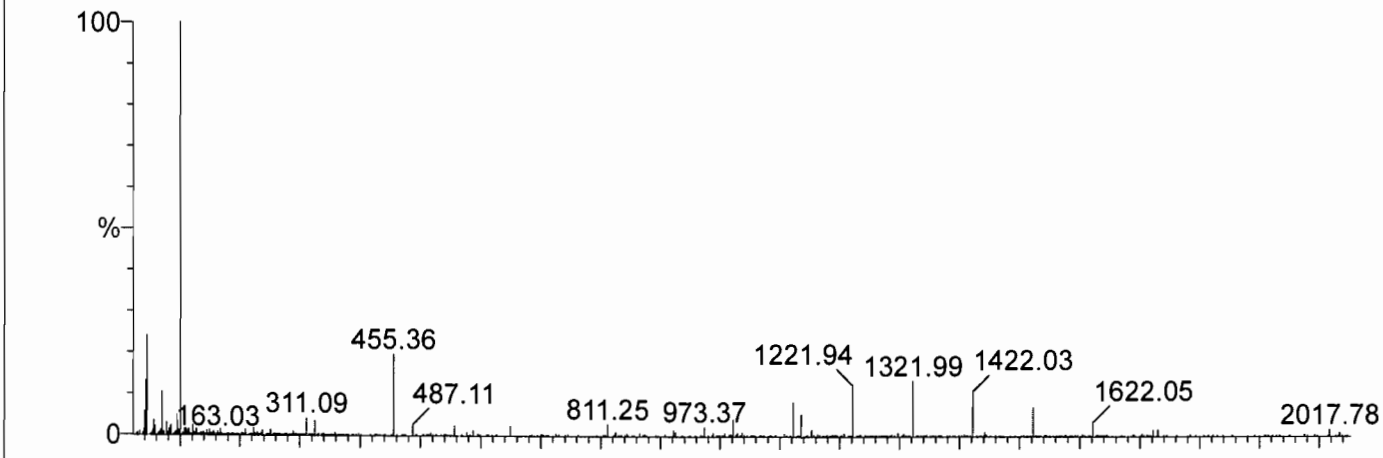
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0377 amu



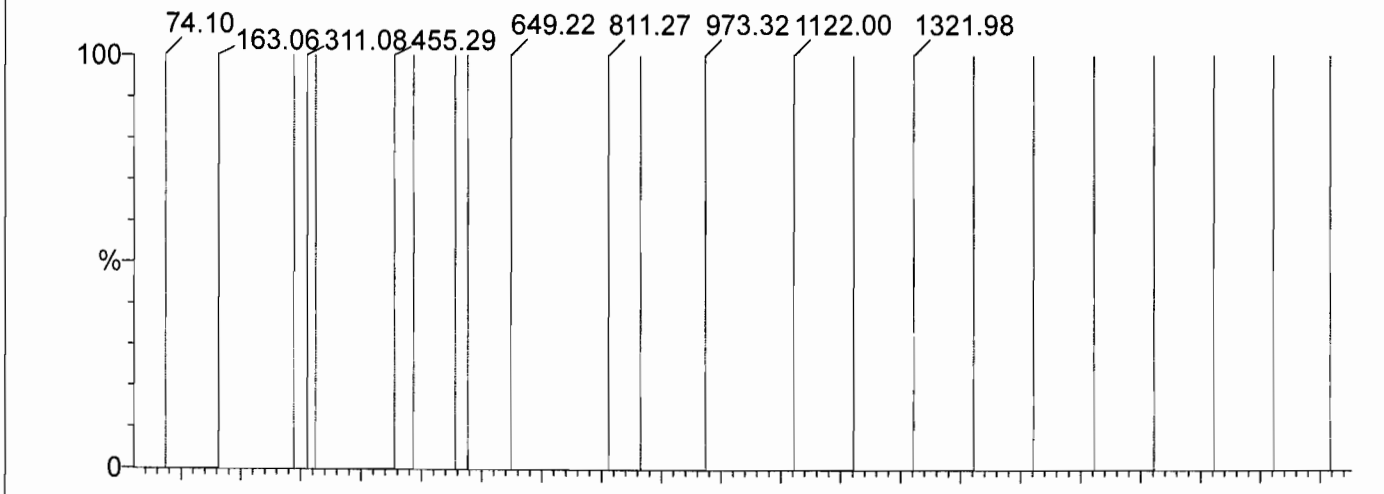
Residual Polynomial order = 4 RMS residual = 0.0472 amu



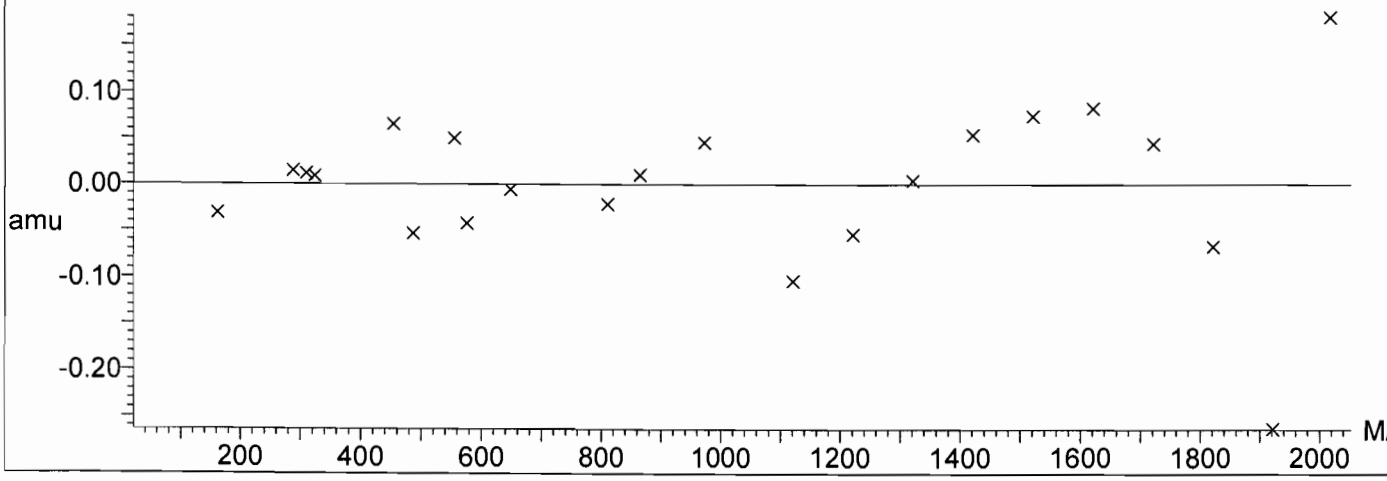
Data file: FASTMS1 - Calibrated 22 matches of 23 tested references



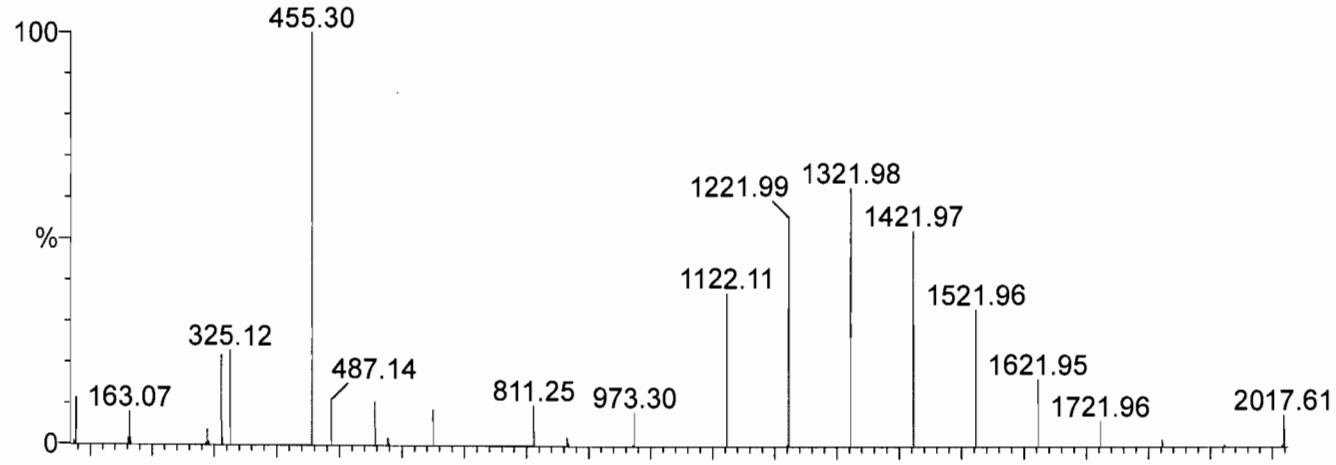
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0585 amu



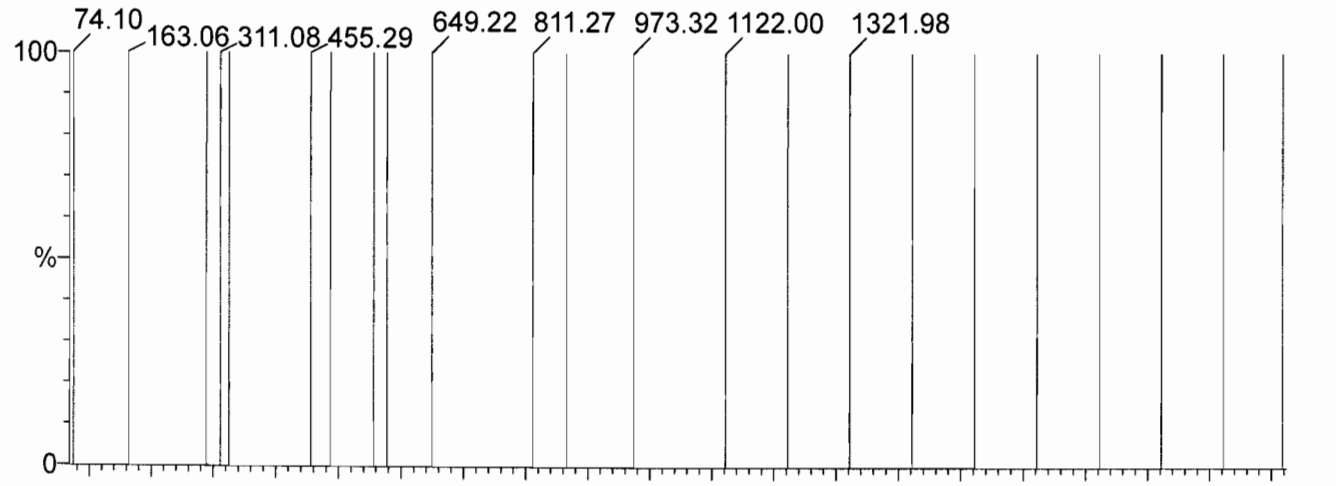
Residual Polynomial order = 4 RMS residual = 0.0833 amu



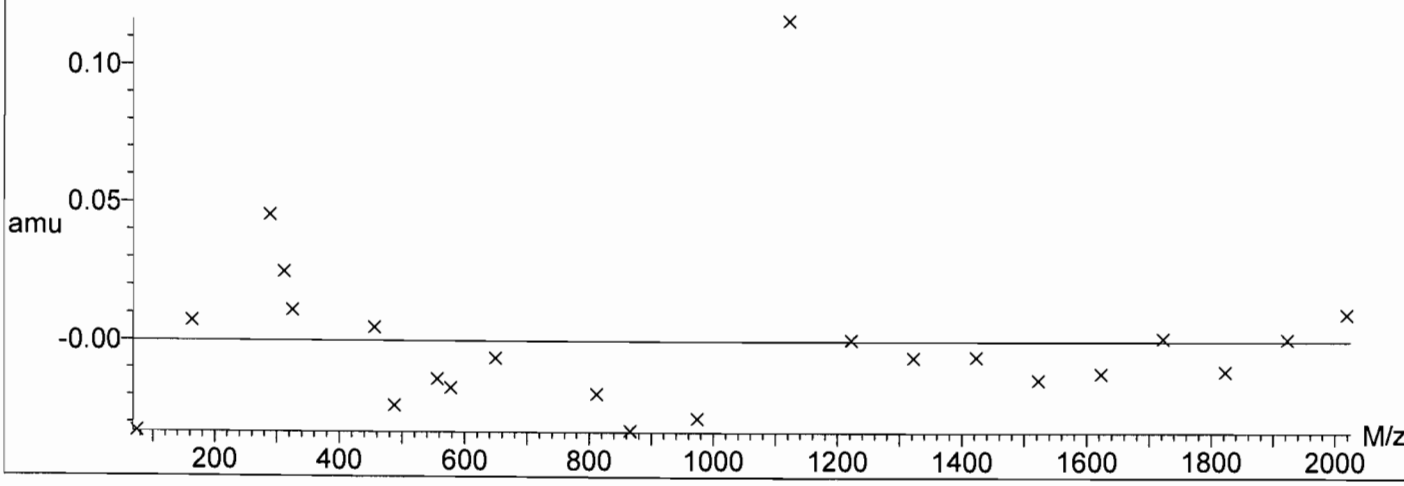
Data file: STATMS2 - Calibrated 23 matches of 23 tested references



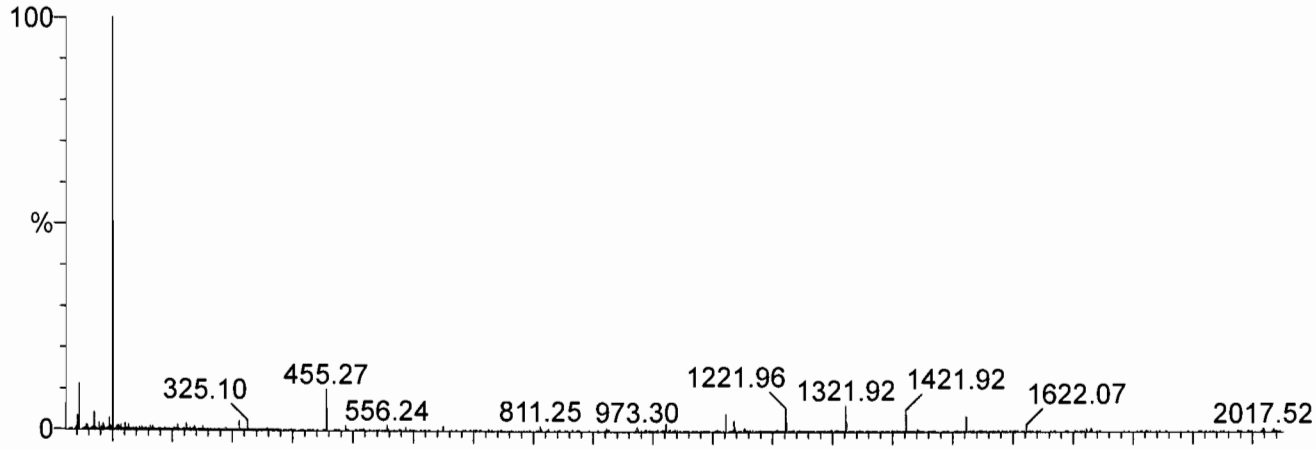
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0193 amu



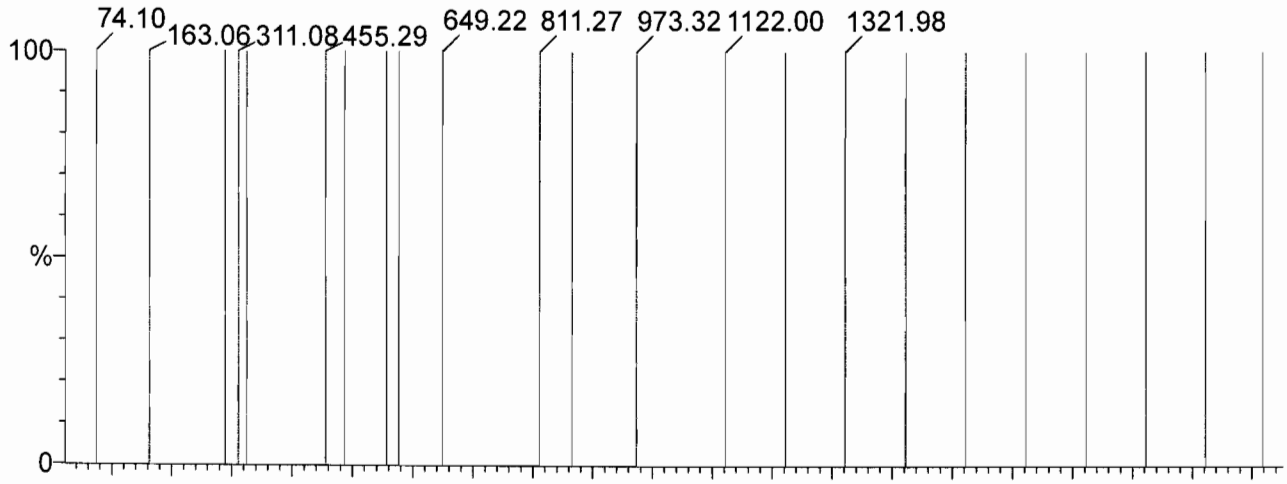
Residual Polynomial order = 4 RMS residual = 0.0305 amu



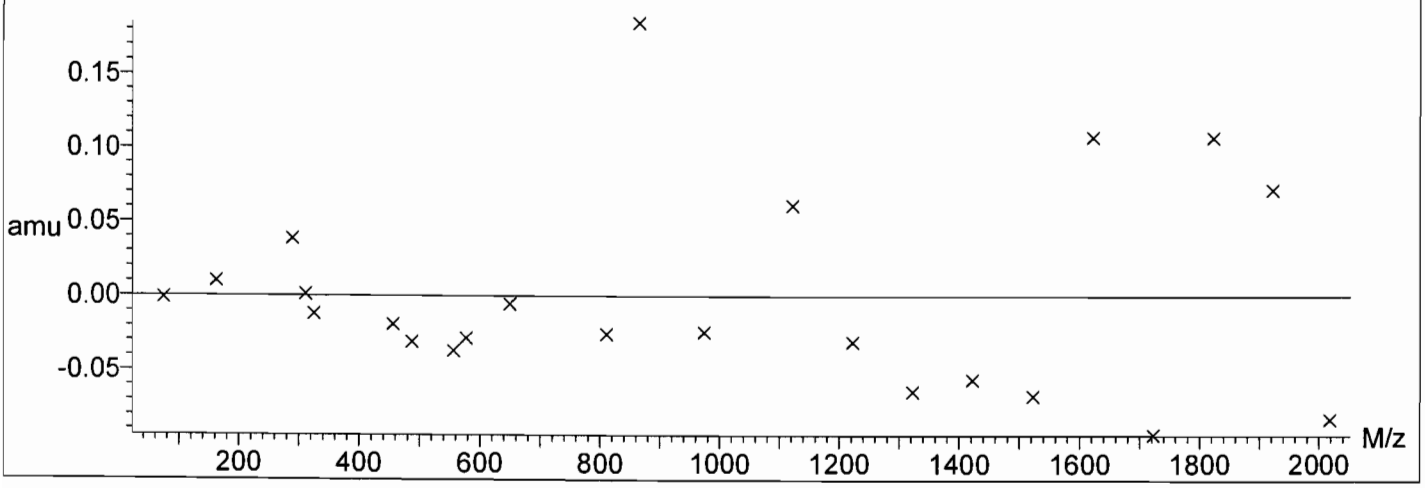
Data file: SCNMS2 - Calibrated 23 matches of 23 tested references



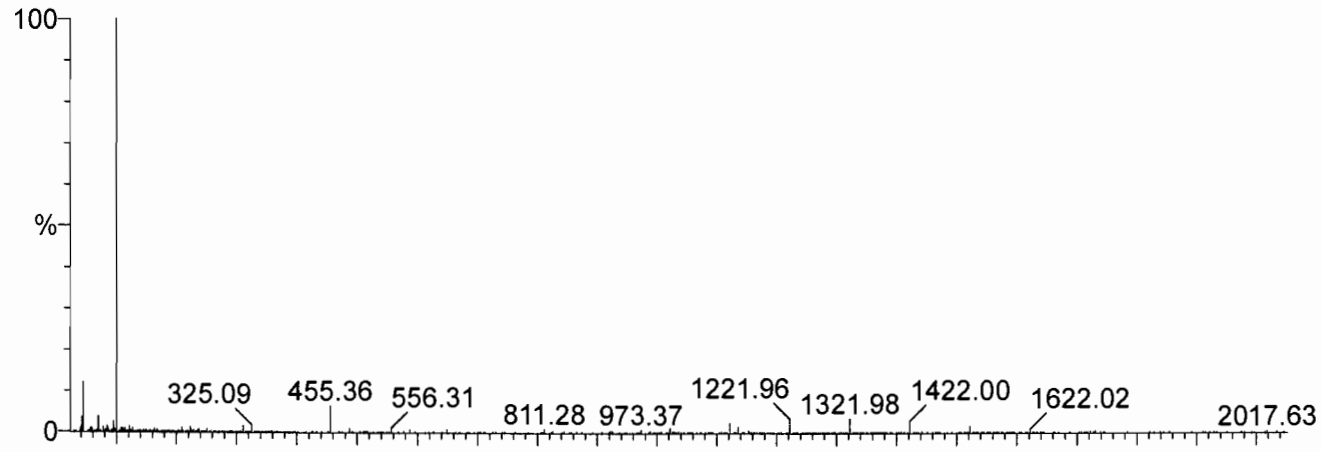
Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0505 amu



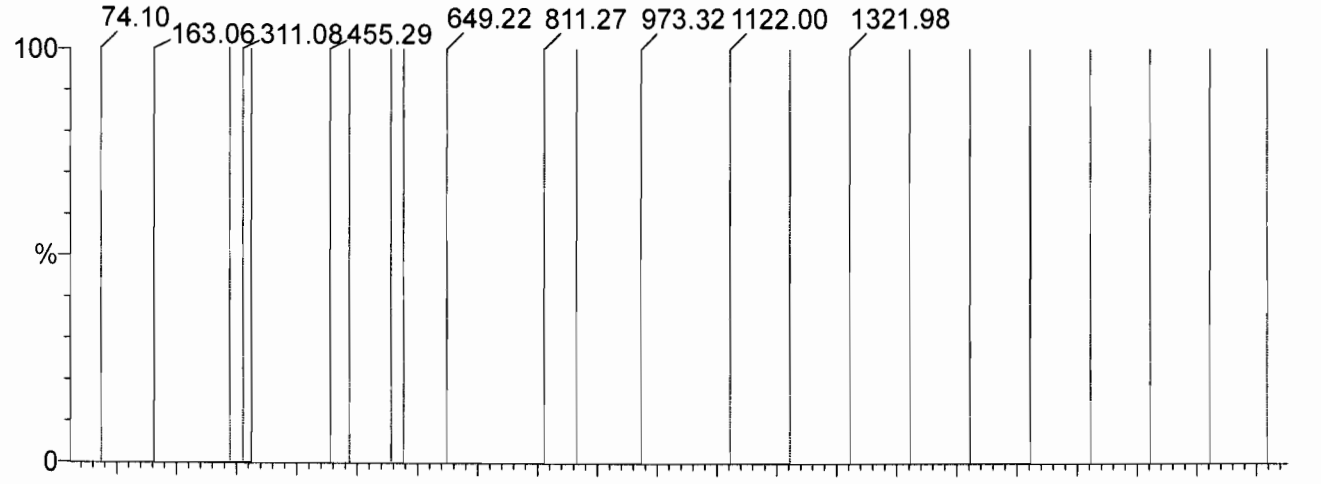
Residual Polynomial order = 4 RMS residual = 0.0662 amu



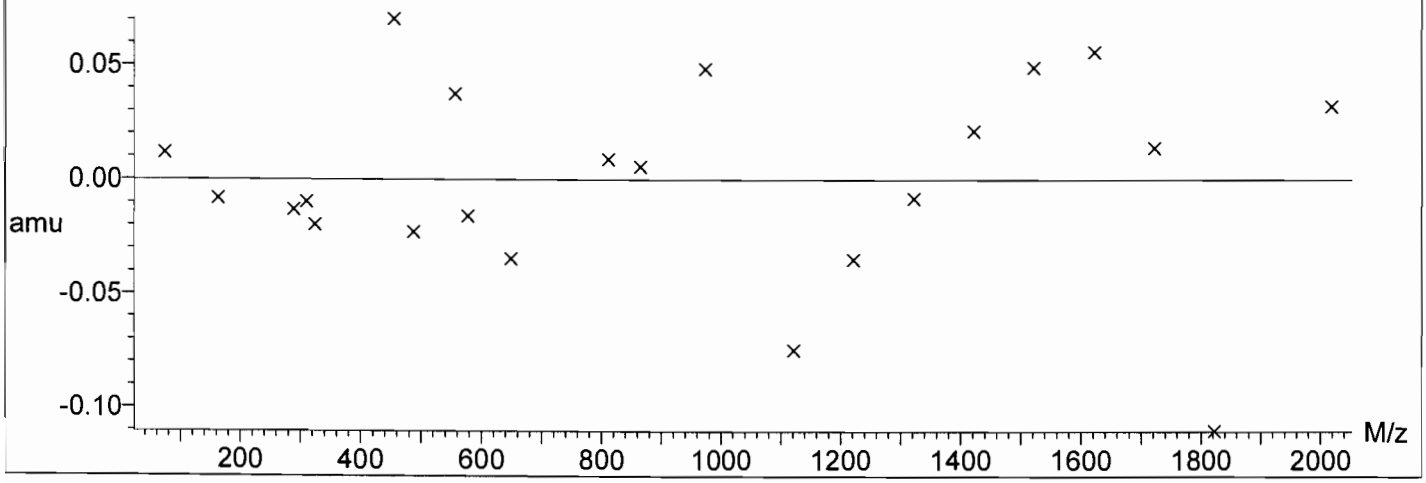
Data file: FASTMS2 - Calibrated 22 matches of 23 tested references



Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0322 amu



Residual Polynomial order = 4 RMS residual = 0.0415 amu



Standards

Analytical Standard Record

Vista Analytical Laboratory

18D2004

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
18A2908	13C2-PFHxA	29-Jan-18	** Vendor **	27-Sep-22	0.4
18B1503	13C2-6:2 FTS	15-Feb-18	** Vendor **	17-Feb-22	1.05
18B1504	13C2-8:2 FTS	15-Feb-18	** Vendor **	24-Jan-23	1.044
18B1505	13C3-PFBA	15-Feb-18	** Vendor **	27-May-21	1
18B1506	13C2-PFDA	15-Feb-18	** Vendor **	13-Jul-22	1
18B1507	13C2-PFUdA	15-Feb-18	** Vendor **	11-Nov-21	1
18B1508	13C2-PFTeDA	15-Feb-18	** Vendor **	30-Nov-22	1
18B1509	13C5-PFNA	15-Feb-18	** Vendor **	14-Dec-22	1
18B1510	13C2-PFDoA	15-Feb-18	** Vendor **	23-May-22	1
18B1511	13C4-PFHpA	15-Feb-18	** Vendor **	03-May-22	1
18B1512	13C2-PFOA	15-Feb-18	** Vendor **	26-Oct-22	1
18B1513	13C3-PFPeA	15-Feb-18	** Vendor **	20-Apr-22	1
18B1514	13C2-PFHxDA	15-Feb-18	** Vendor **	13-Jul-22	0.4
18B1515	d3-N-Me-FOSAA	15-Feb-18	** Vendor **	08-Nov-19	1
18B1516	d5-N-EtFOSAA	15-Feb-18	** Vendor **	08-Nov-22	1
18B1517	13C3-PFBS	15-Feb-18	** Vendor **	24-May-22	1.076
18B1518	18O2-PFHxS	15-Feb-18	** Vendor **	17-Feb-22	1.058
18B1520	13C8-PFOS	15-Feb-18	** Vendor **	08-Nov-22	1.05
18B1525	13C8-FOSA-I	15-Feb-18	** Vendor **	11-Oct-22	1
18C0910	13C2-4:2 FTS	09-Mar-18	** Vendor **	01-Sep-22	1.07

Description:	PFC - IS	Expires:	08-Nov-19
Standard Type:	Reagent	Prepared:	20-Apr-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	20-Apr-18 10:40 by GRB

Analyte	CAS Number	Concentration	Units
13C3-PFBA		1.25	ug/mL
13C2-6:2 FTS		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
13C2-4:2 FTS		1.25	ug/mL
13C2-PFUnA		1.25	ug/mL
d5-EtFOSAA		1.25	ug/mL
13C3-PFBS		1.25	ug/mL
13C3-PFPeA		1.25	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

18D2004

Description:	PFC - IS	Expires:	08-Nov-19
Standard Type:	Reagent	Prepared:	20-Apr-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	20-Apr-18 10:40 by GRB

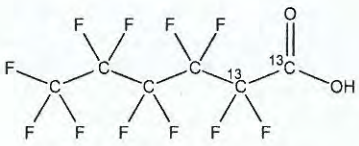
Analyte	CAS Number	Concentration	Units
13C4-PFHpA		1.25	ug/mL
13C5-PFNA		1.25	ug/mL
13C8-PFOS		1.25	ug/mL
13C8-PFOSA		1.25	ug/mL
18O2-PFHxS		1.25	ug/mL
d3-MeFOSAA		1.25	ug/mL
13C2-PFTeDA		1.25	ug/mL

18A2908

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA1017
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 ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/27/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/27/2022		
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.
- 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: _____ **Date:** 10/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18A2908

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

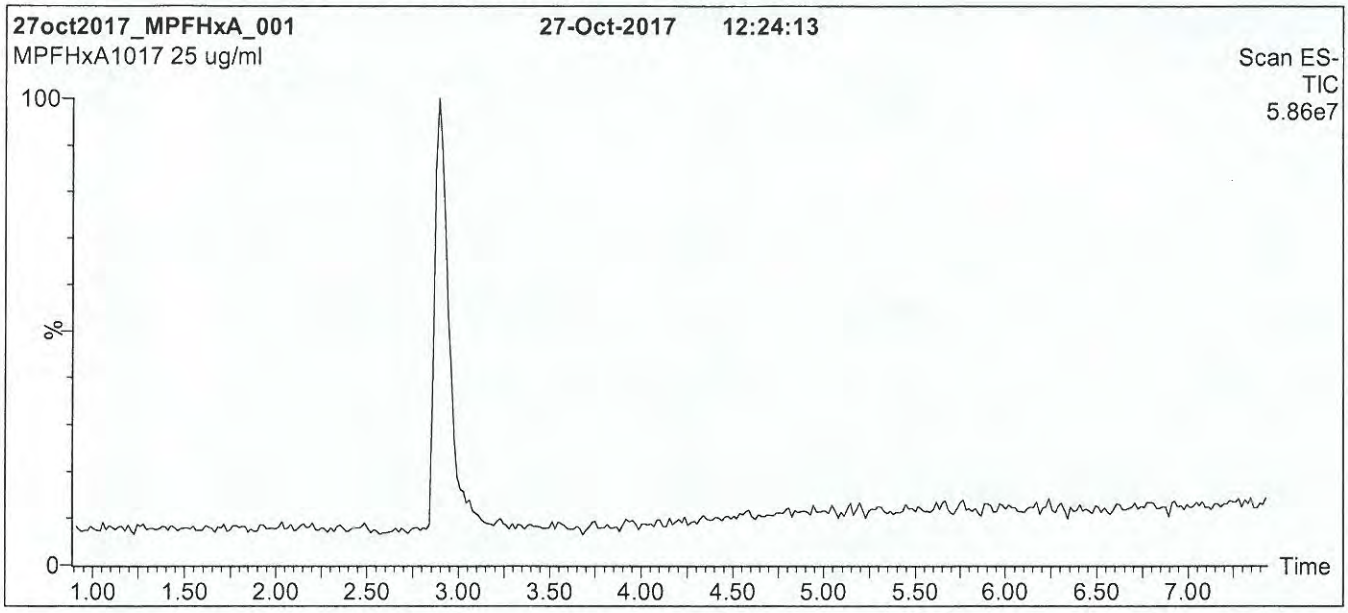
CALA Testing Accreditation No. A 1226

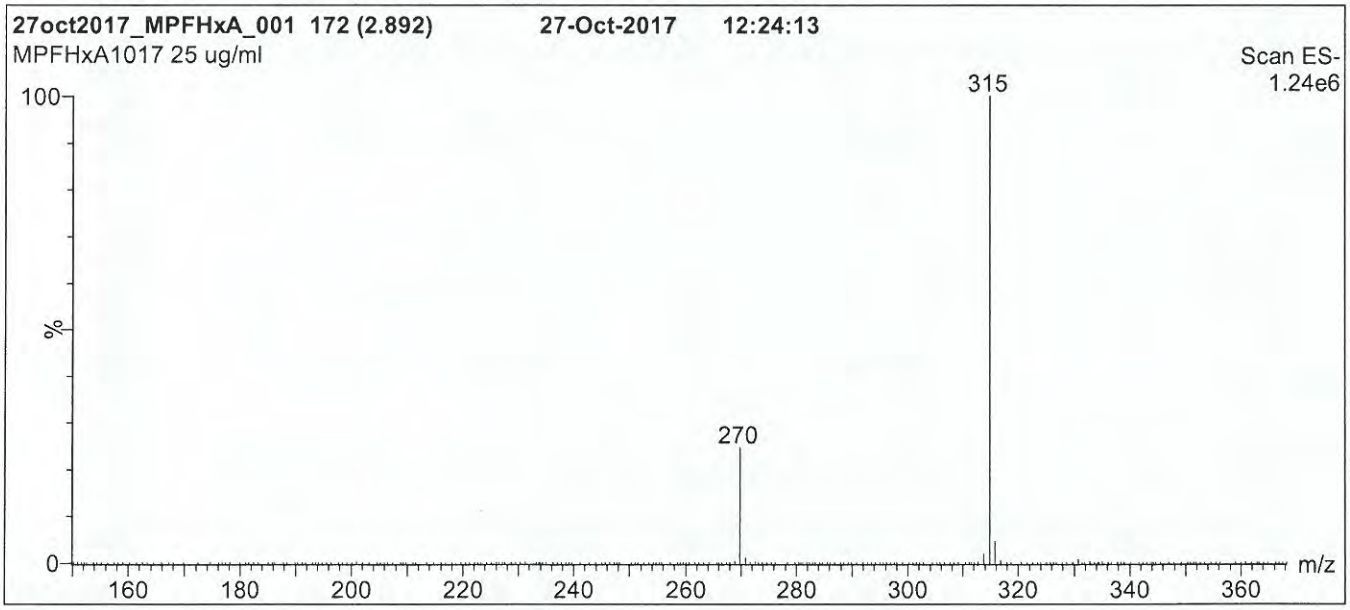
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

18A2908

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: 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 over 0.5 min.
Time: 10 min

Flow: 300 µl/min

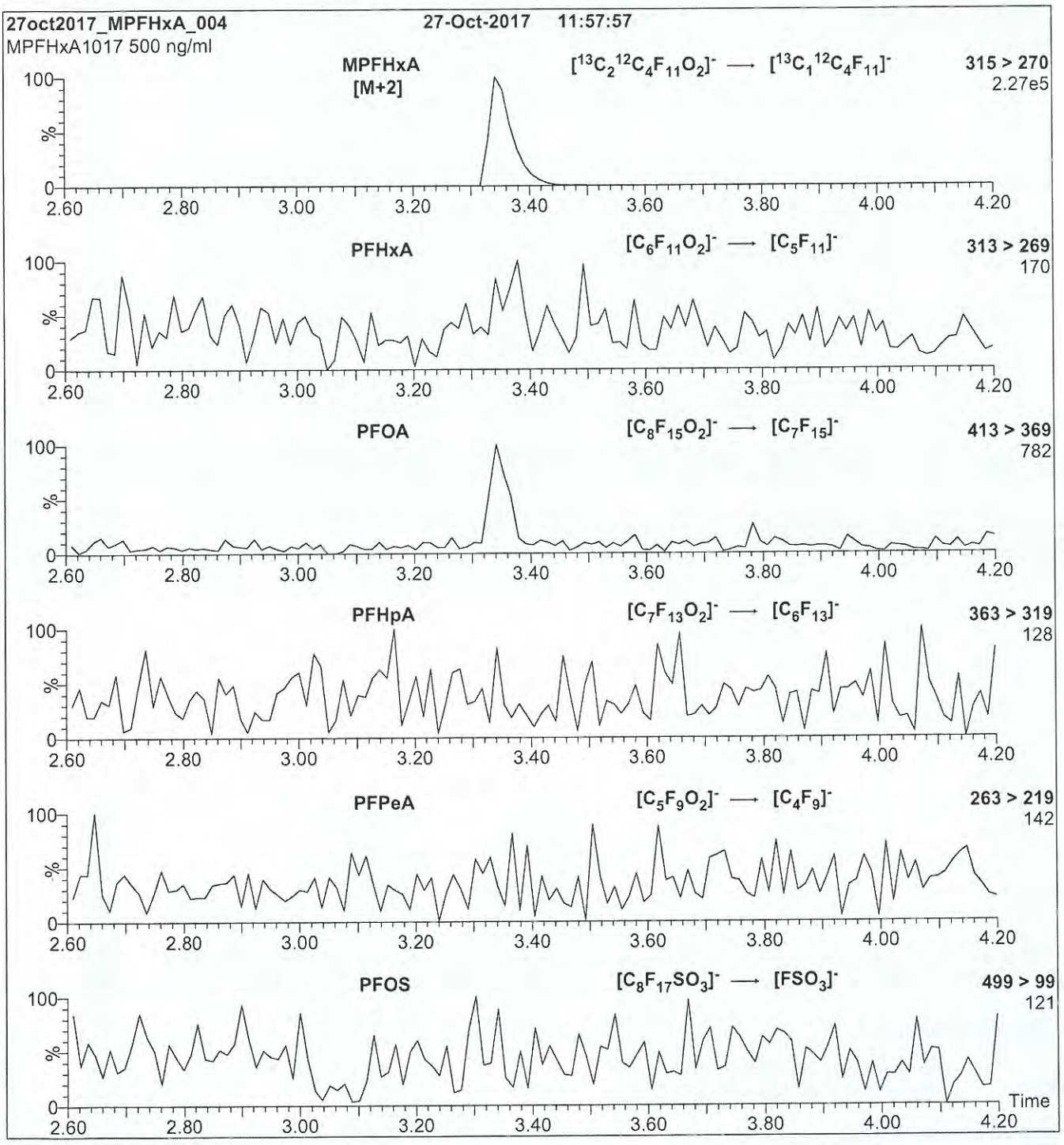
MS Parameters

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

18A2908

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) = 3.58e-3
Collision Energy (eV) = 10

1881503

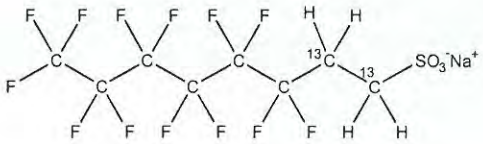
WELLINGTON LABORATORIES

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)	**SOLVENT(S):**	Methanol
	47.5 ± 2.4 µg/ml (M2-6:2FTS anion)		
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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2017 (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

18B1503

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).

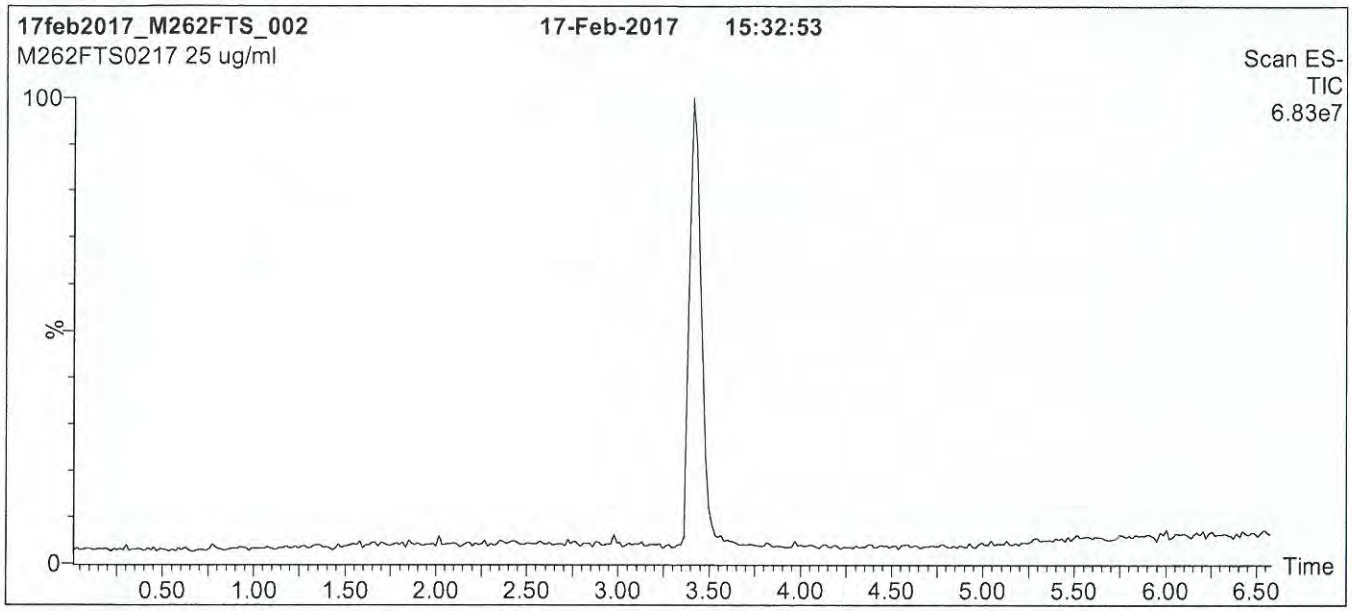
CALA

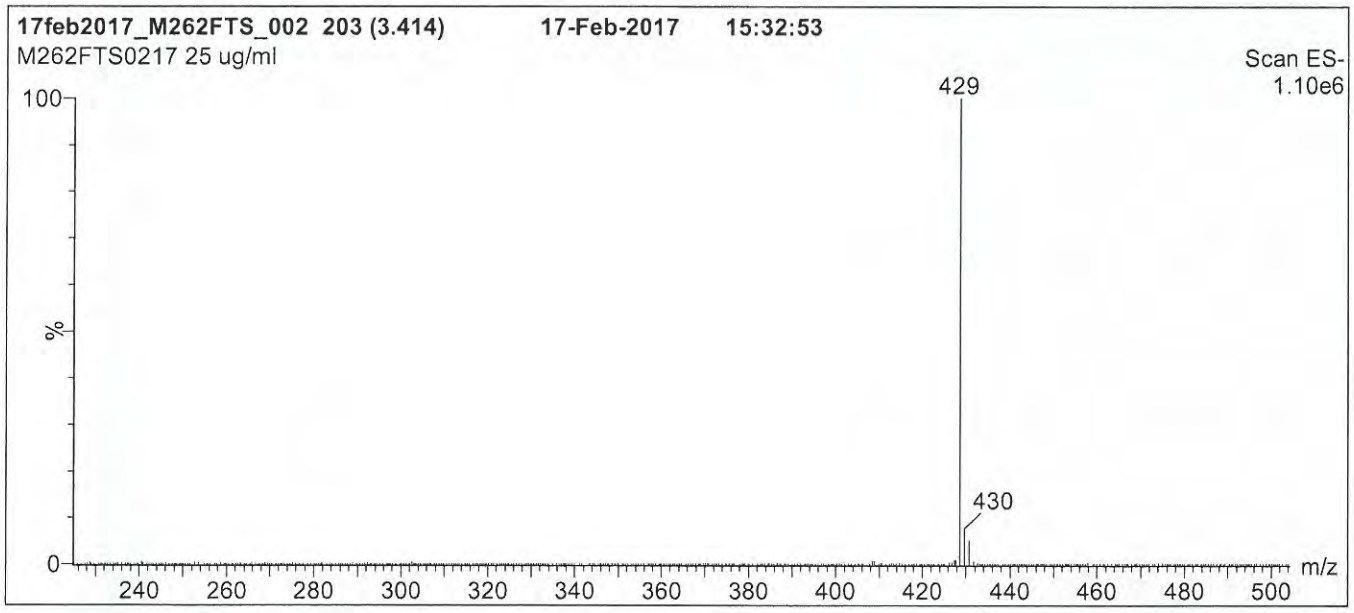
ANAB ACCREDITED

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

18B1503

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

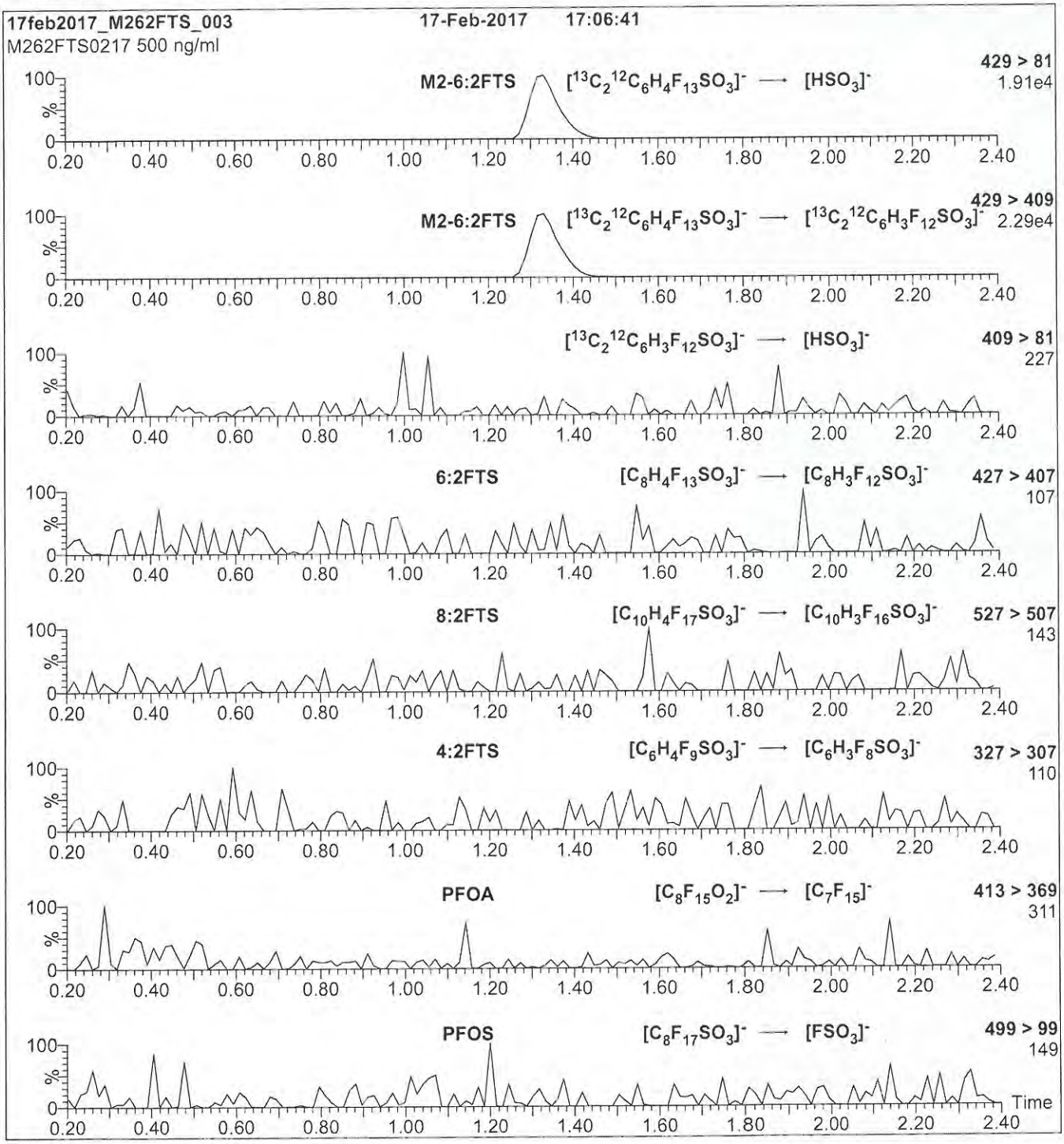
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1503

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

1801504

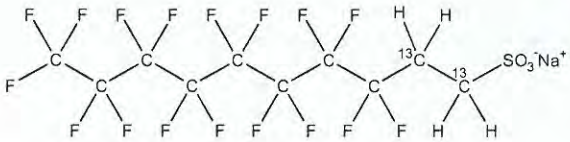
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0118

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)	01/24/2018		
EXPIRY DATE: (mm/dd/yyyy)	01/24/2023		
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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 01/26/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1504

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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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 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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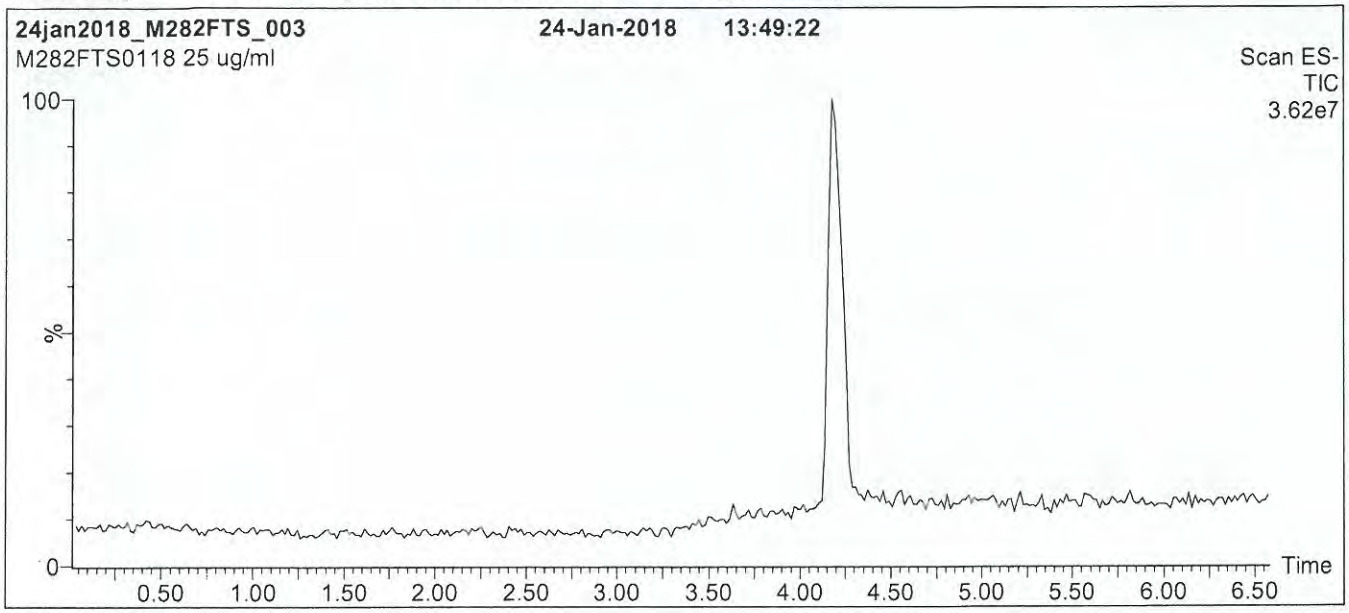
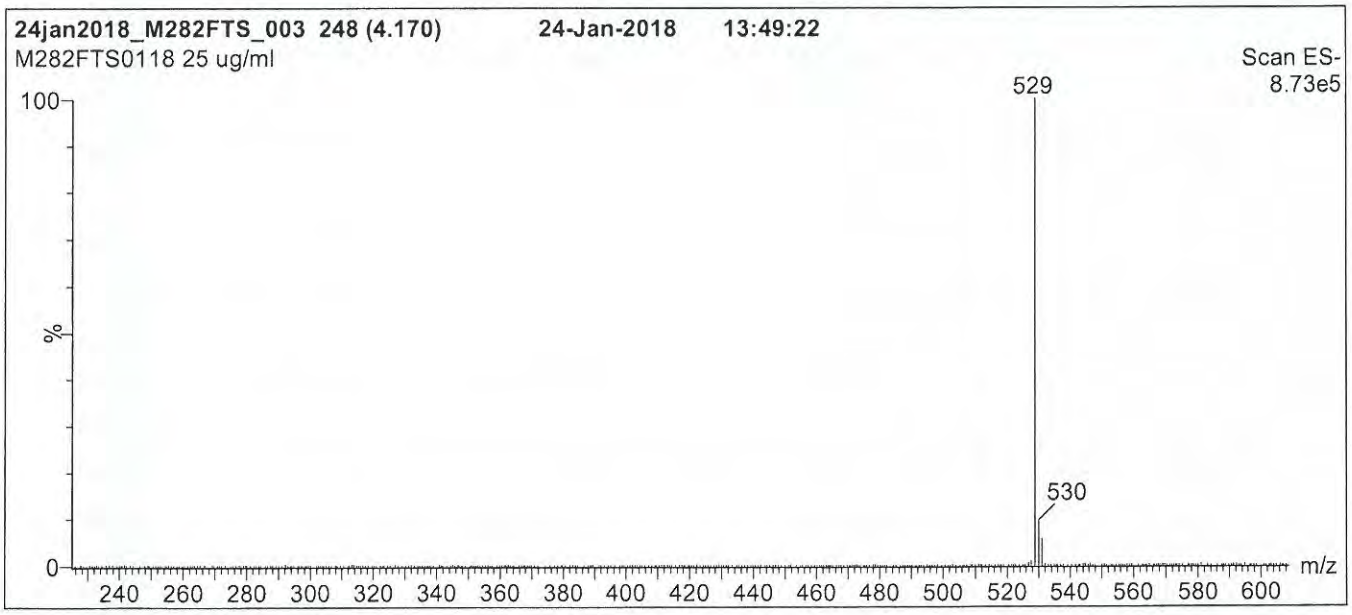
18B1504

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

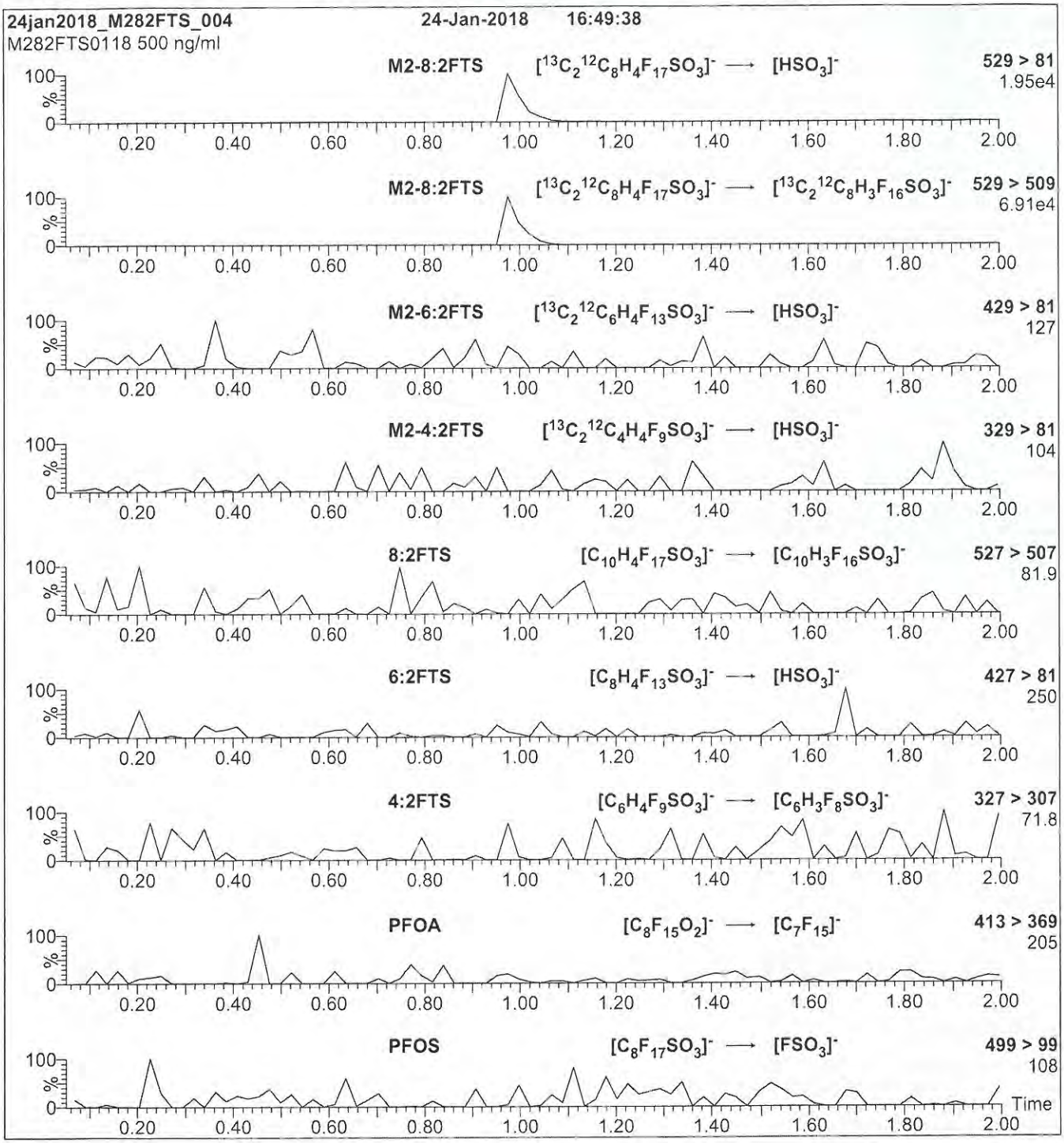
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1504

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

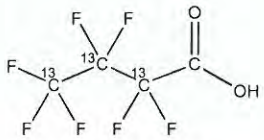
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

18B1505

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M3PFBA	**LOT NUMBER:**	M3PFBA0516
COMPOUND:	Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid		
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 ($2,3,4\text{-}^{13}C_3$)
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-[$1,2,3,4\text{-}^{13}C_4$]butanoic acid due to the naturally occurring isotopic abundance of ^{13}C in the unlabelled carbon atom.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ B.G. Chittim **Date:** 07/08/2016 (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

18B1505

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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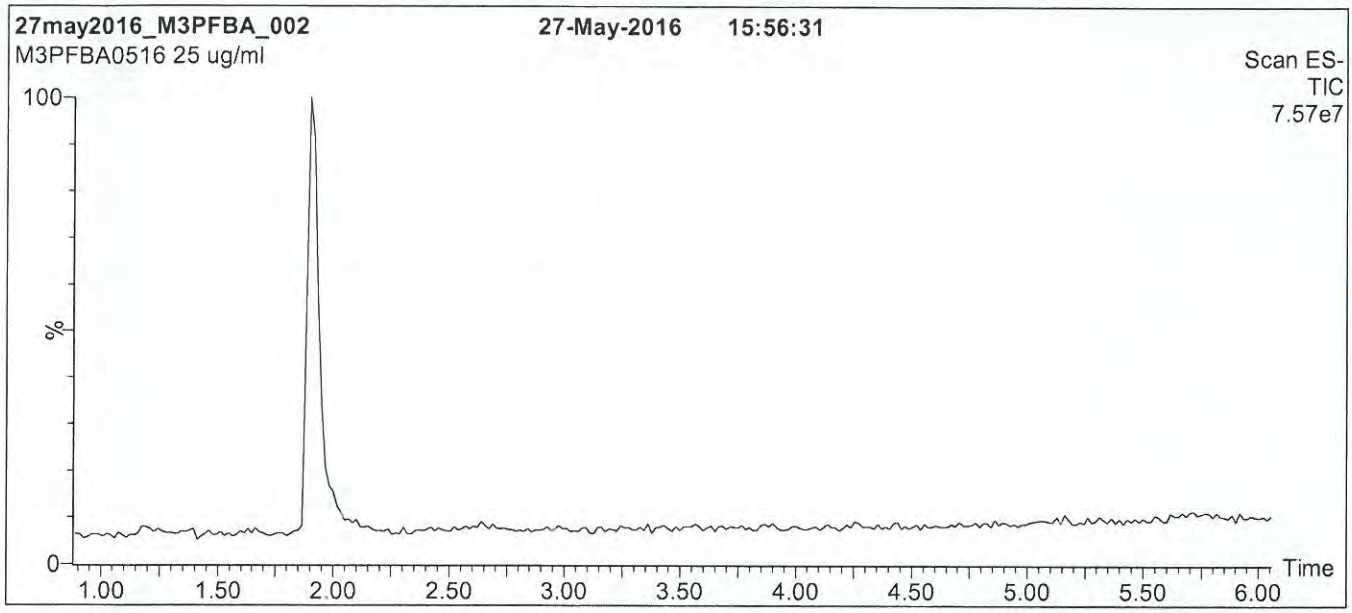
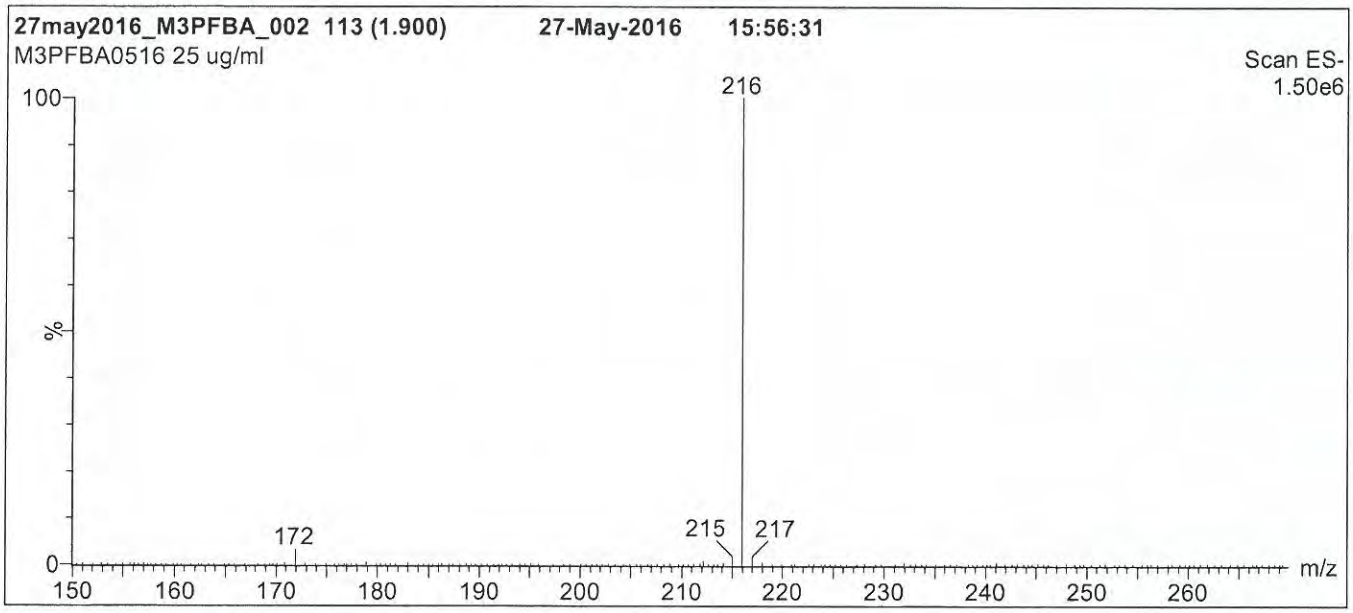
18B1505

Figure 1: **M3PFBA; 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: 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

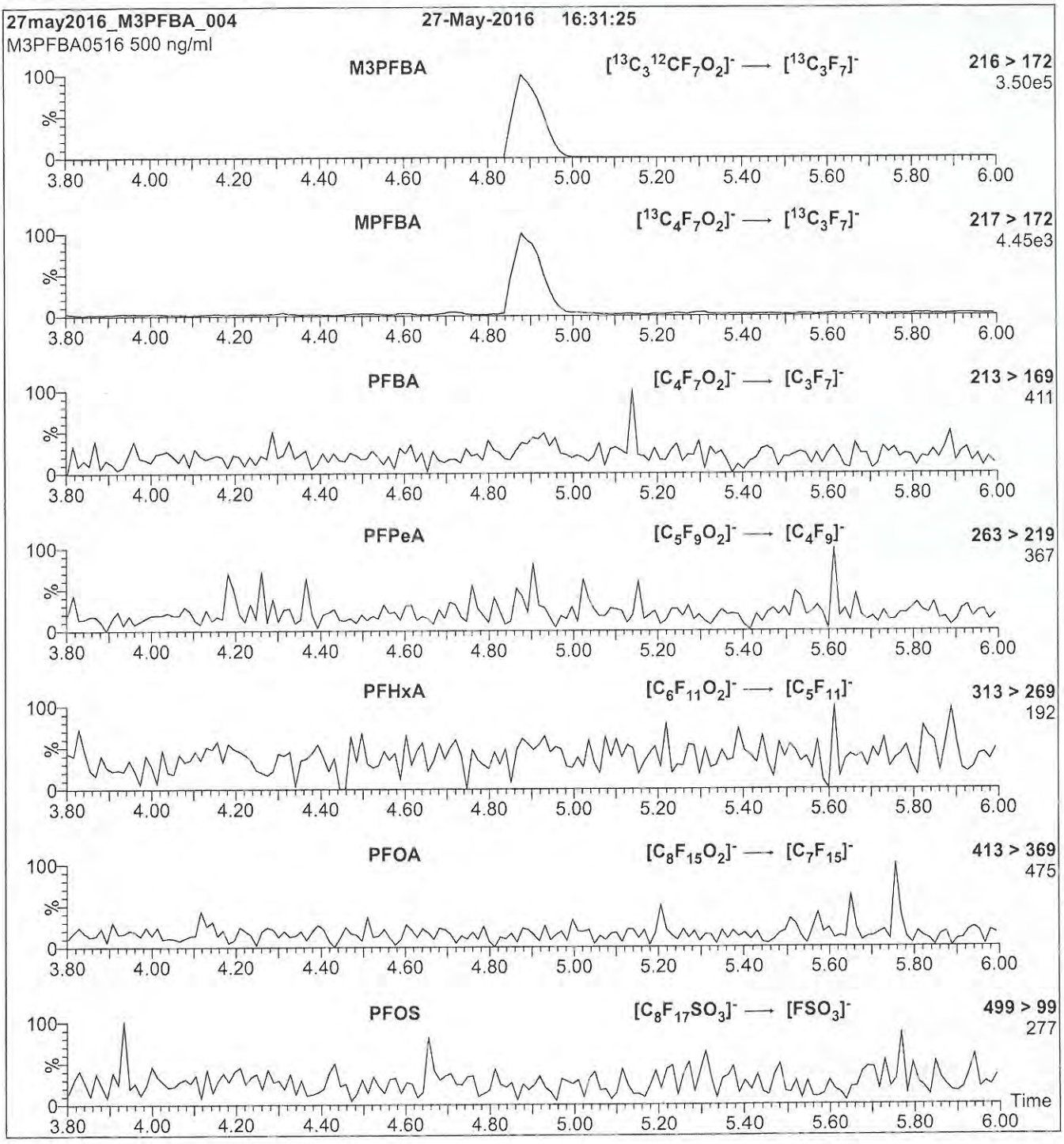
MS Parameters

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

18B1505

Figure 2: **M3PFBA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFBA)

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

18B1506

WELLINGTON LABORATORIES

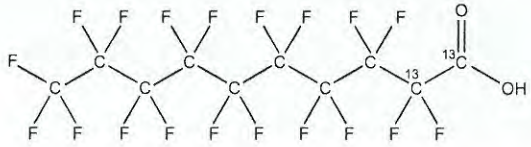
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

LOT NUMBER: MPFDA0717

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{19}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)

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: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1881506

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

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.

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

CALA

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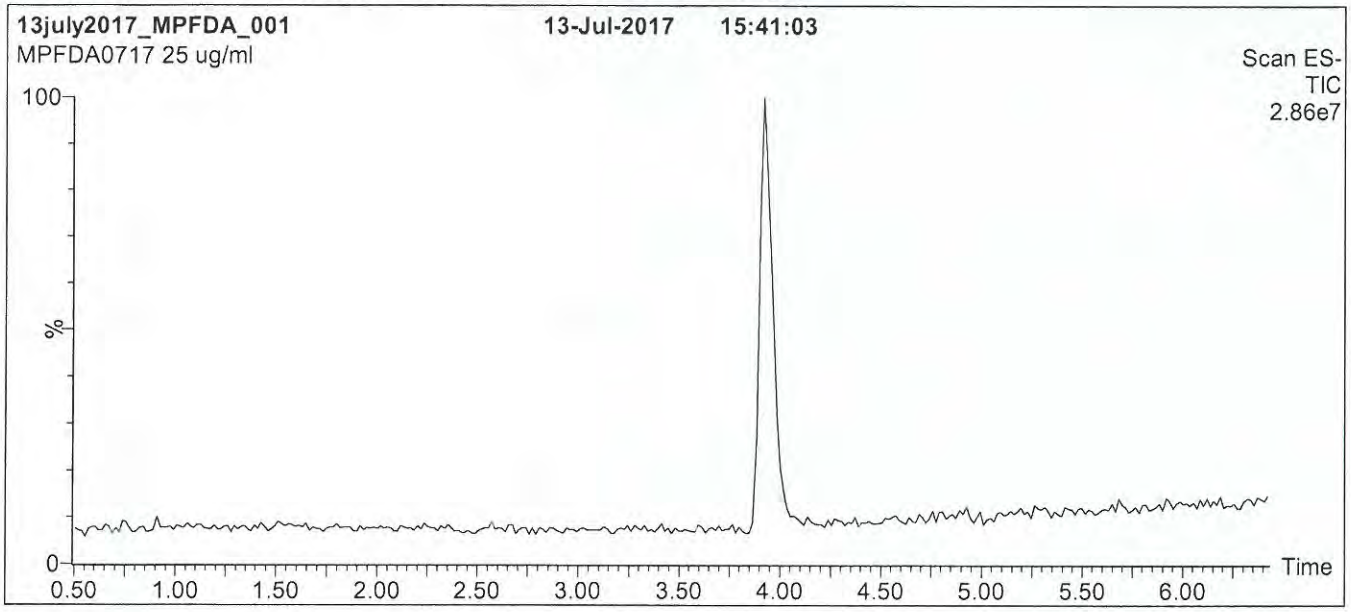
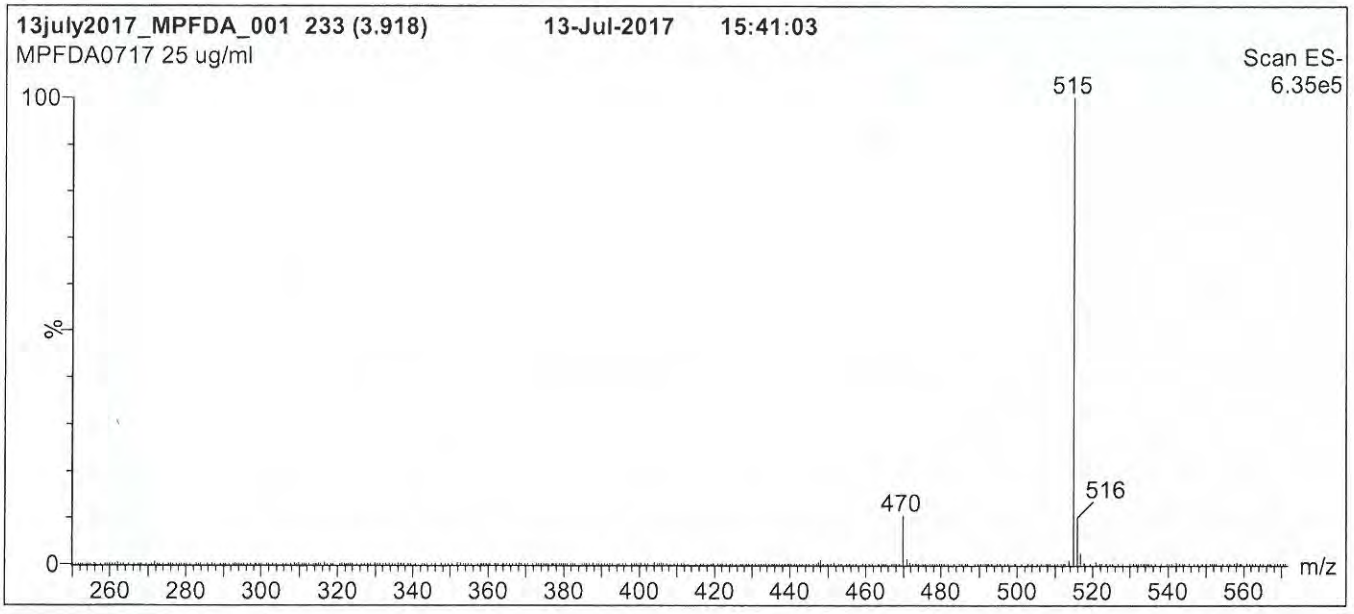
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

18B1506

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: 55% (80:20 MeOH:ACN) / 45% 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

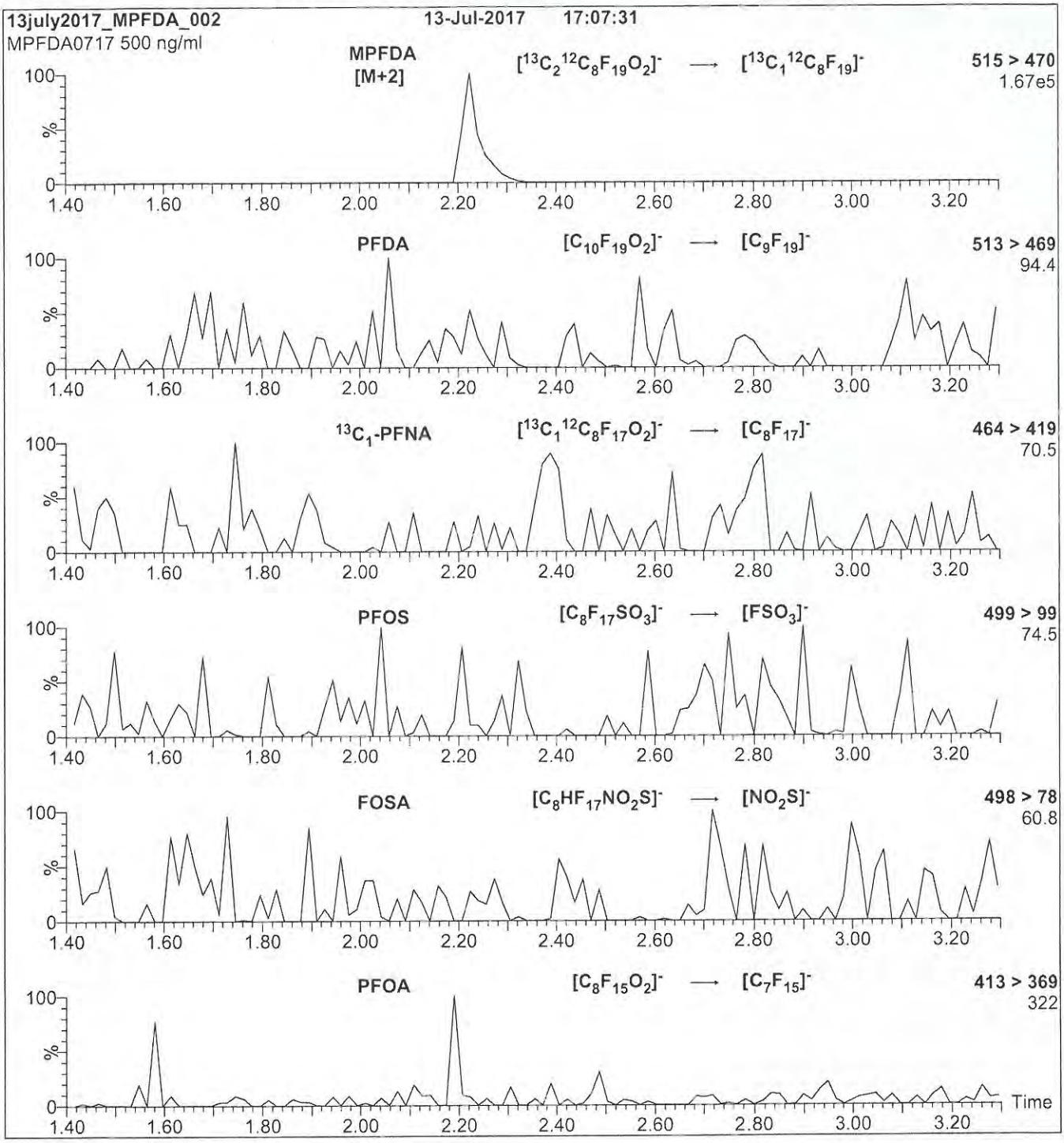
MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1506

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

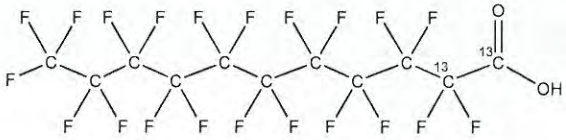
Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 13

18B1507

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-$^{13}C_2$)
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.

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

1881507

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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CALA

ANAB ACCREDITED

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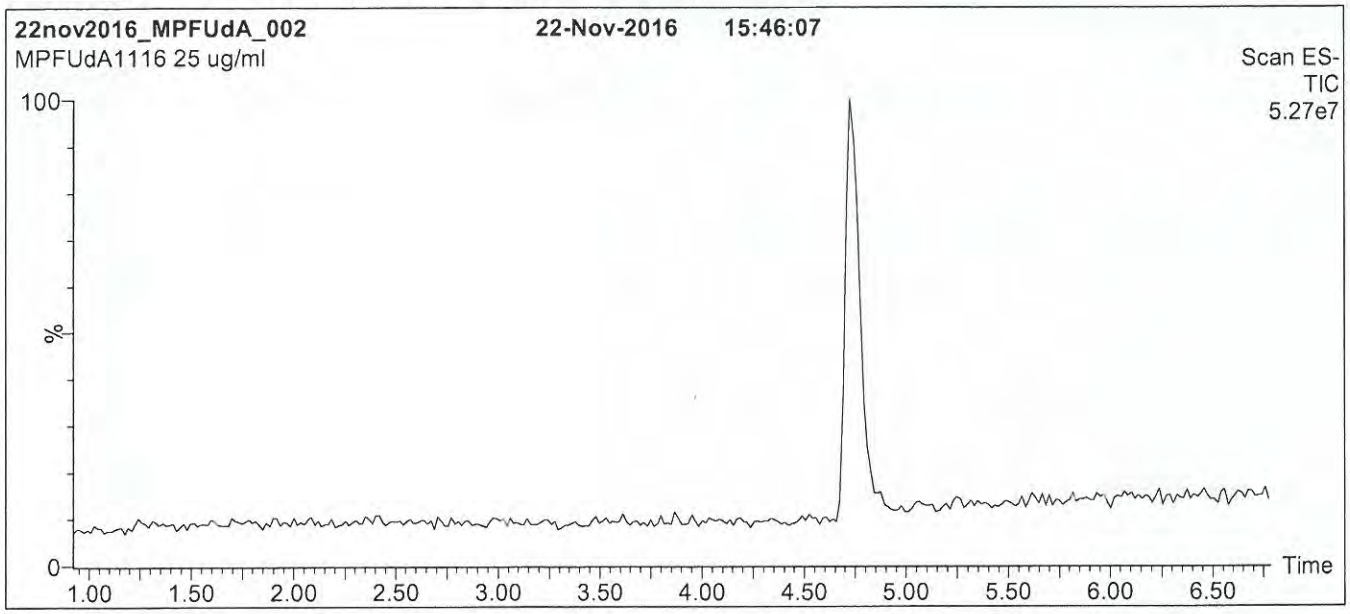
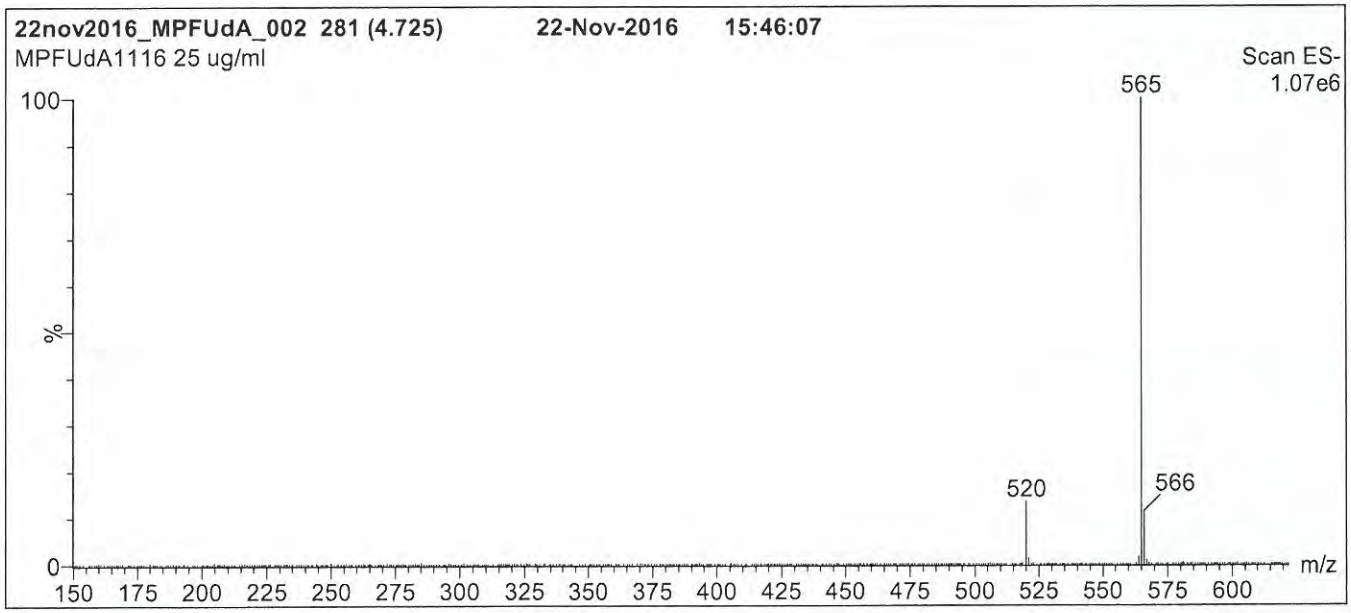
18B1507

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

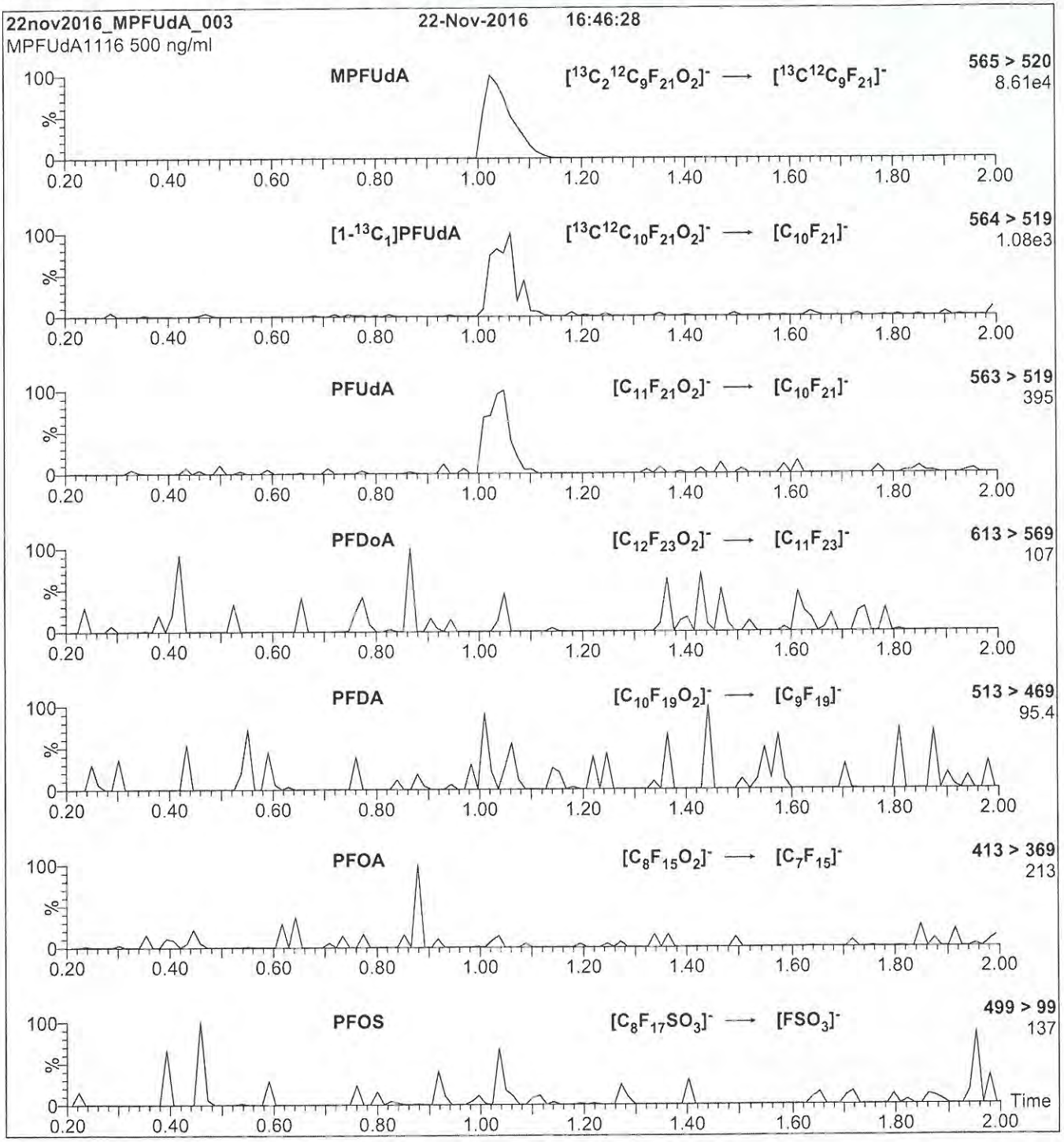
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

1881507

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

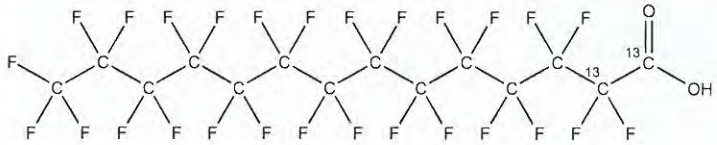
Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

18B1508

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA1117
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)	11/30/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/30/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1801508

INTENDED USE:

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HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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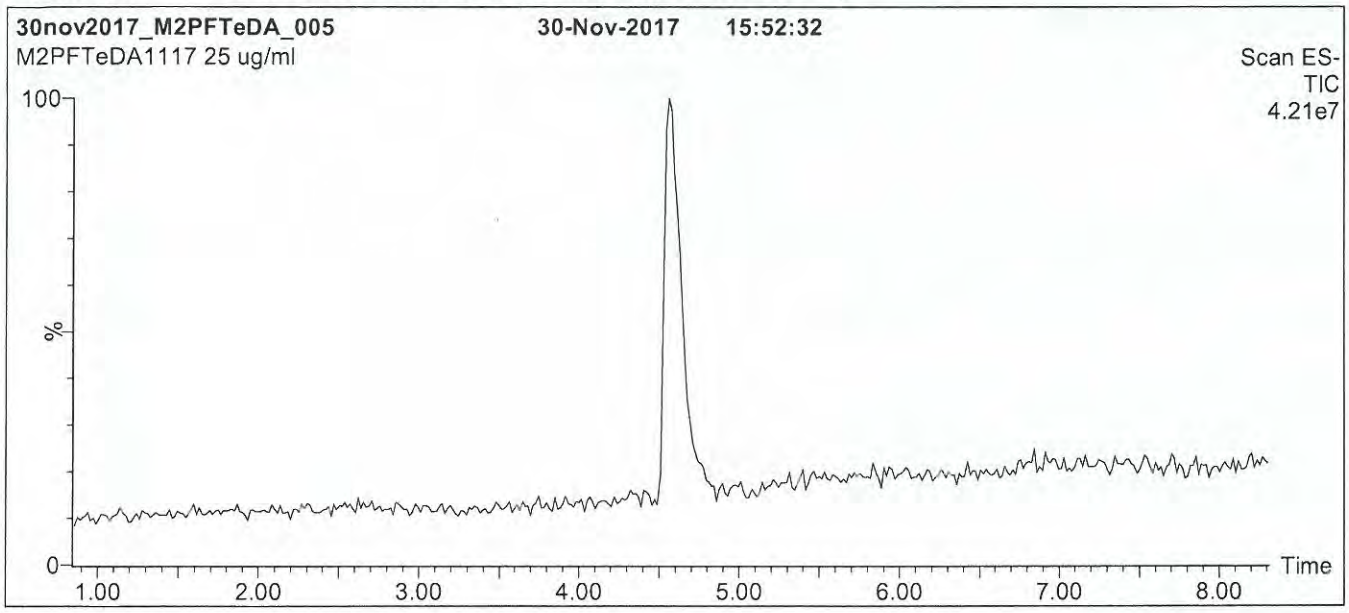
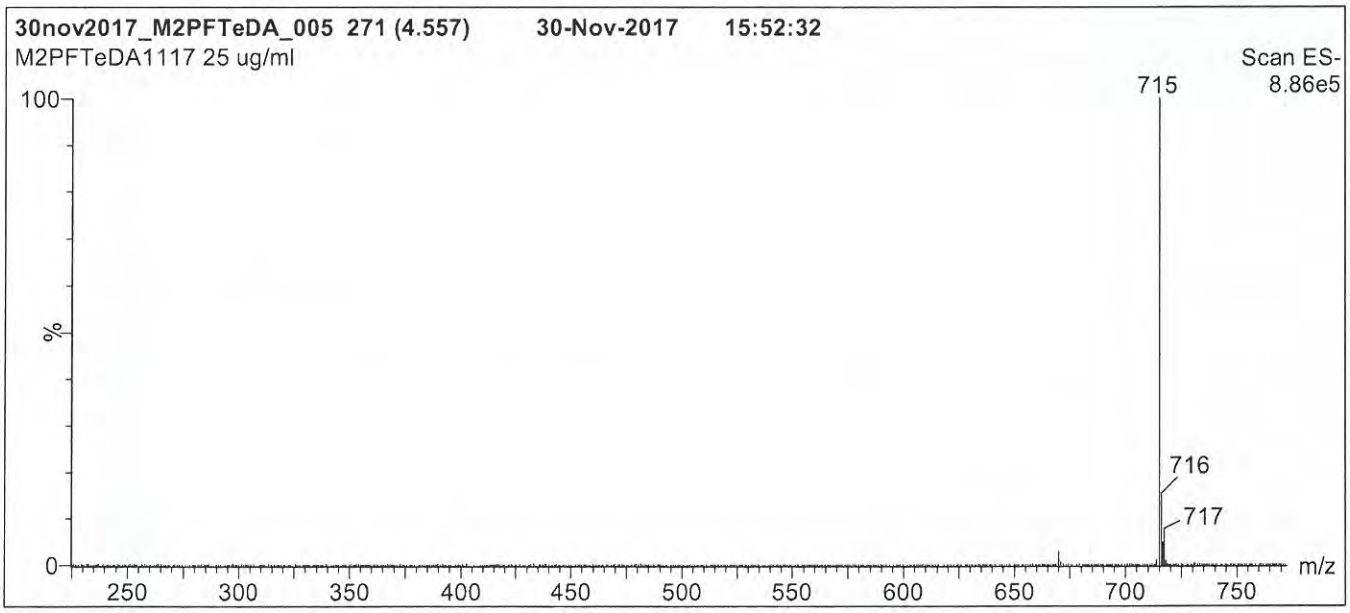
18B1508

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

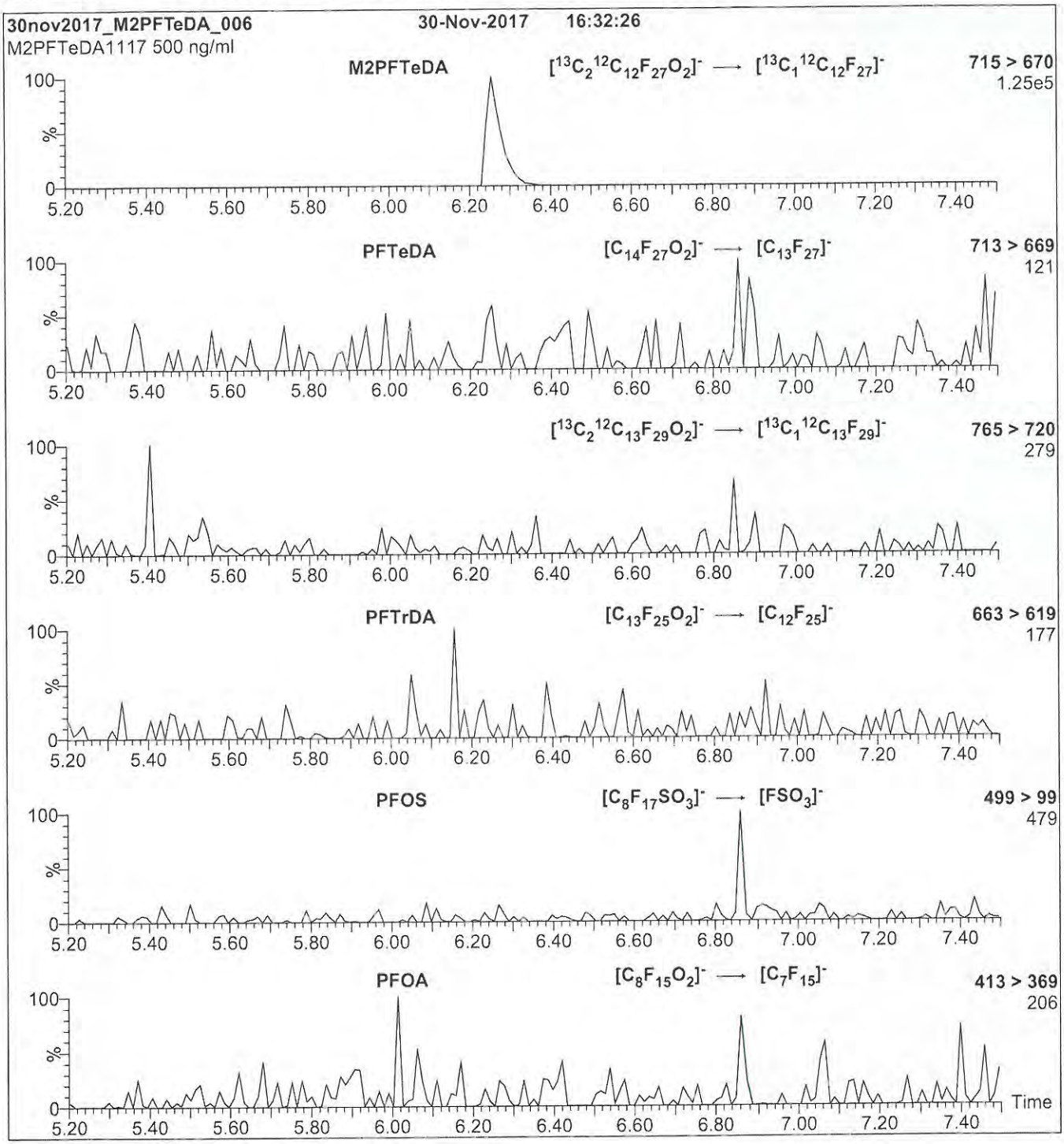
MS Parameters

Experiment: Full Scan (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

18B1508

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 14

18B1509

WELLINGTON LABORATORIES

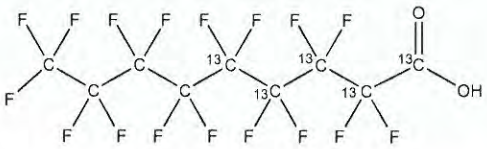
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid

LOT NUMBER: MPFNA1217

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)	12/14/2017		
EXPIRY DATE: (mm/dd/yyyy)	12/14/2022		
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:

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Certified By: _____ **Date:** 12/19/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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18B1509

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CALA

ANAB ACCREDITED

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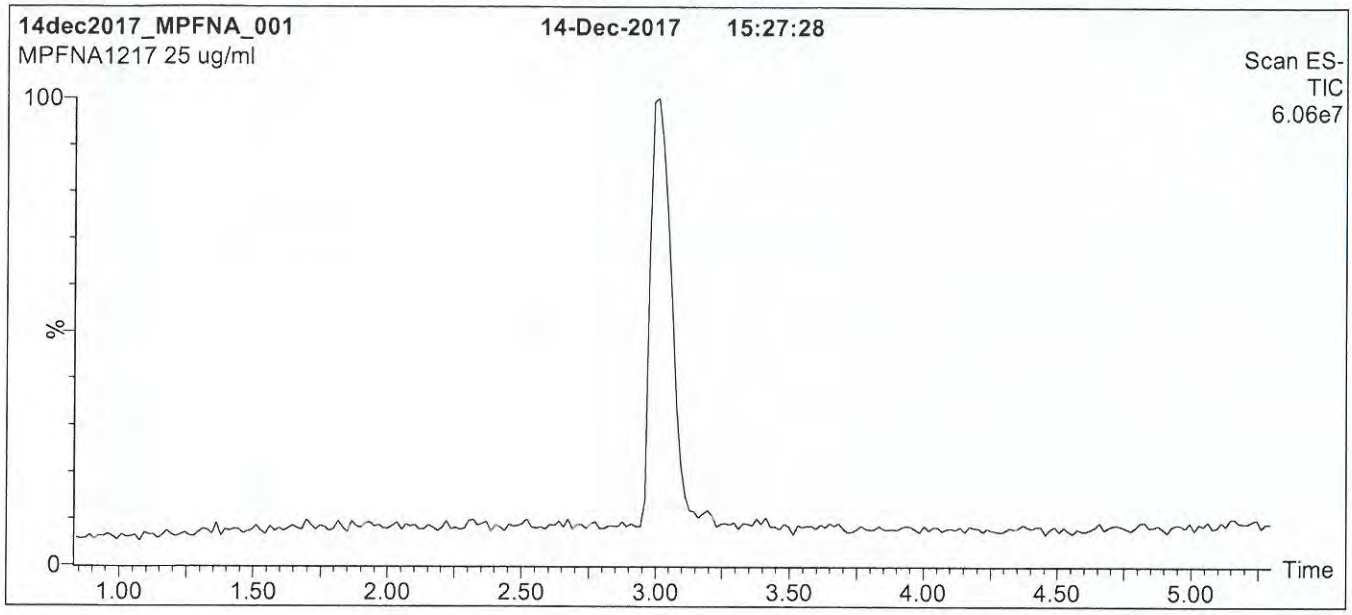
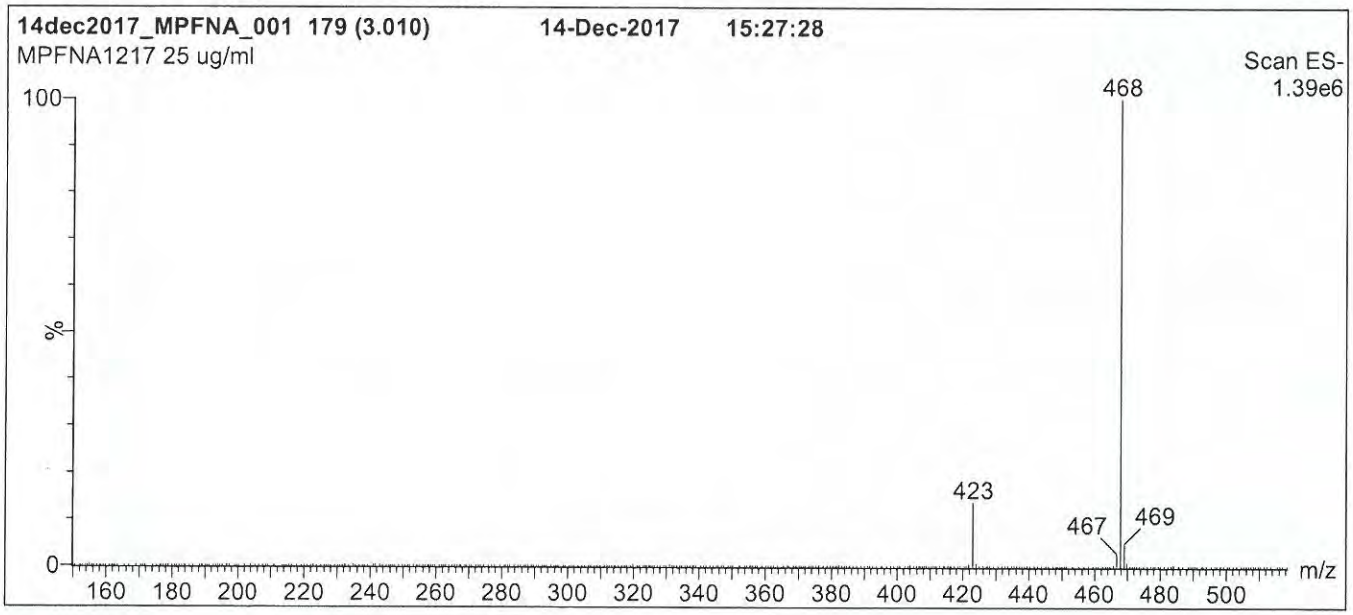
18B1509

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 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 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

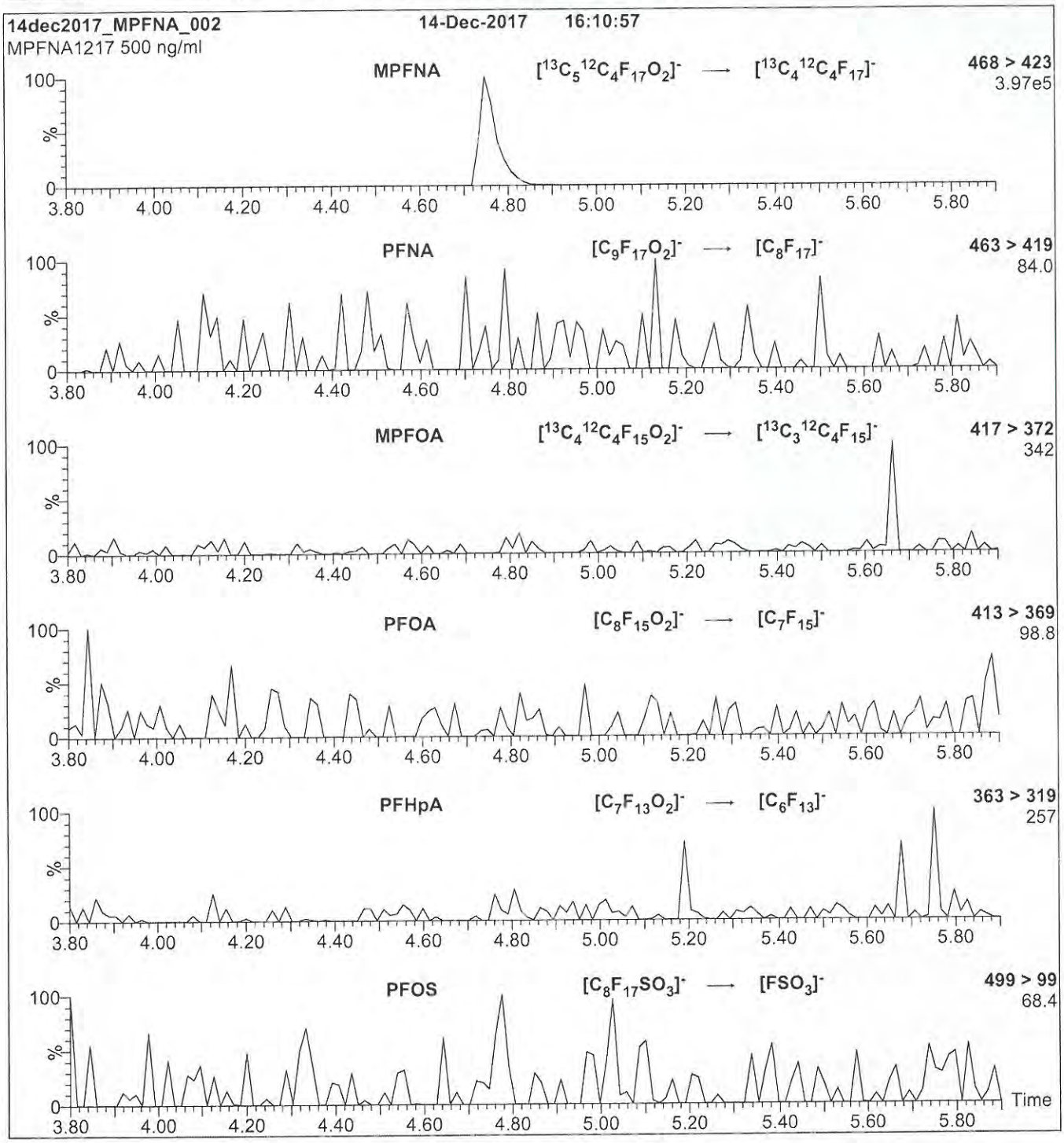
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1509

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

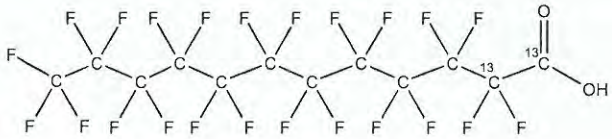
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 11

18B1510

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid
LOT NUMBER: MPFDoA0517
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)	05/23/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/23/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/26/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1570

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

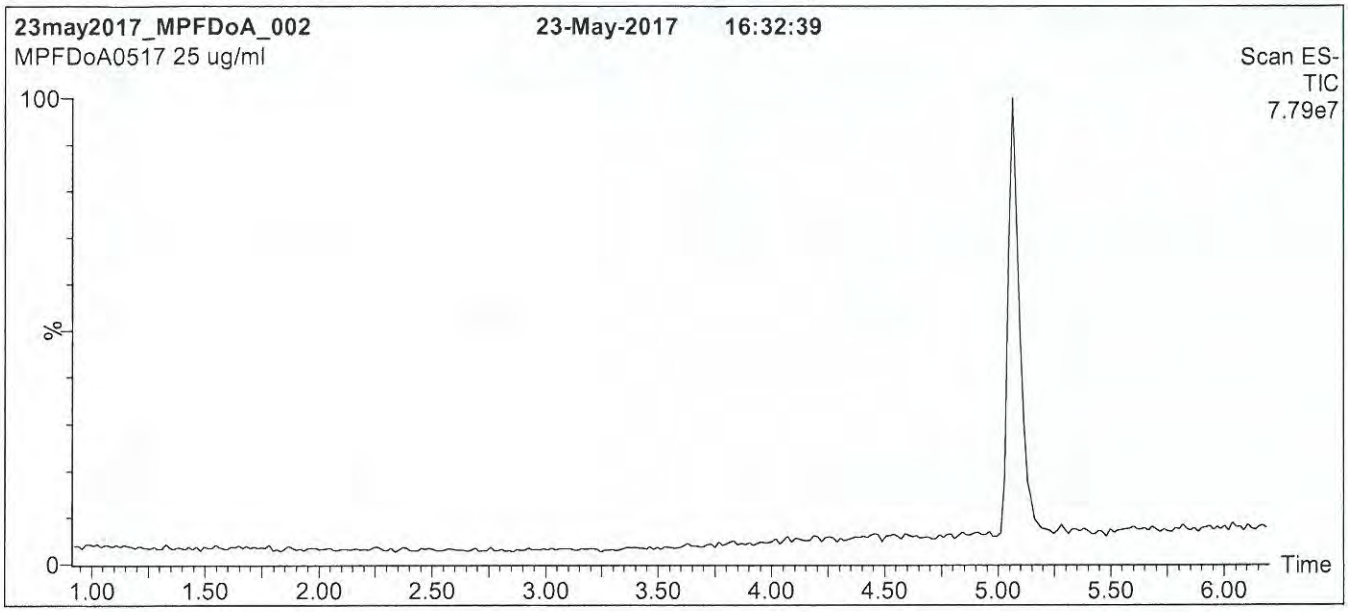
CALA

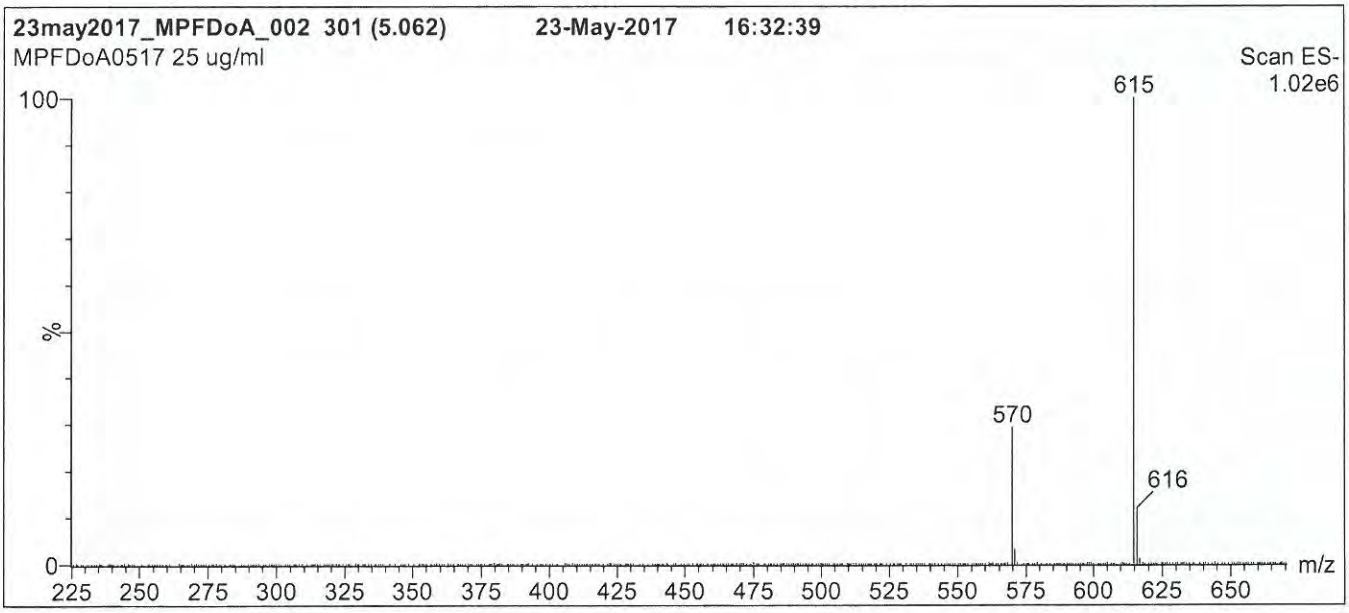
ANAB ACCREDITED

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

18B1510

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

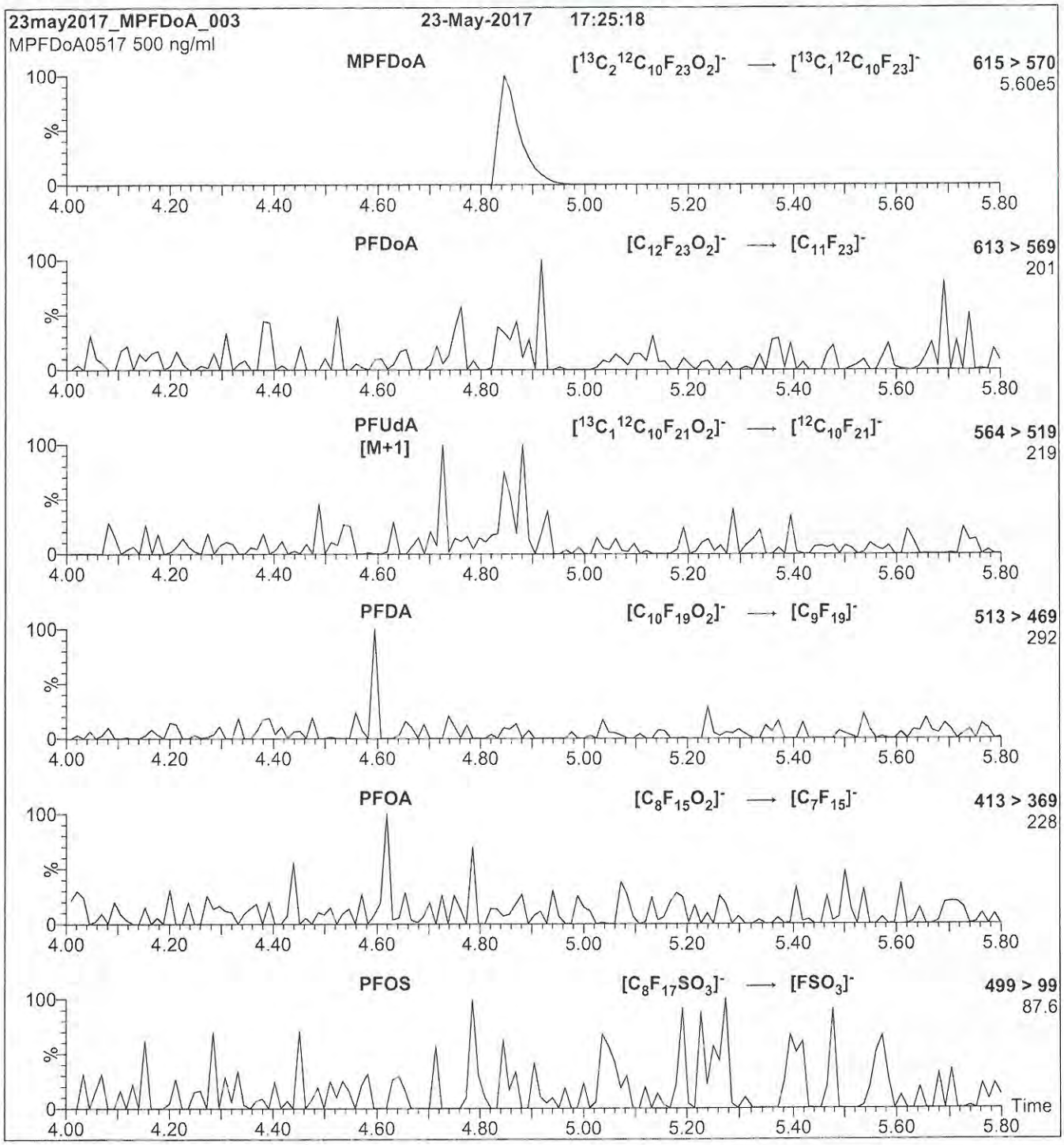
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1510

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

18B1511

WELLINGTON LABORATORIES

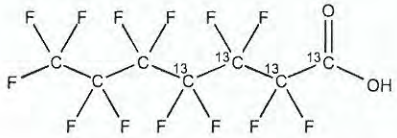
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

LOT NUMBER: M4PFHpA0517

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_3HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/03/2017
EXPIRY DATE: (mm/dd/yyyy) 05/03/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)

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:** 05/11/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1511

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HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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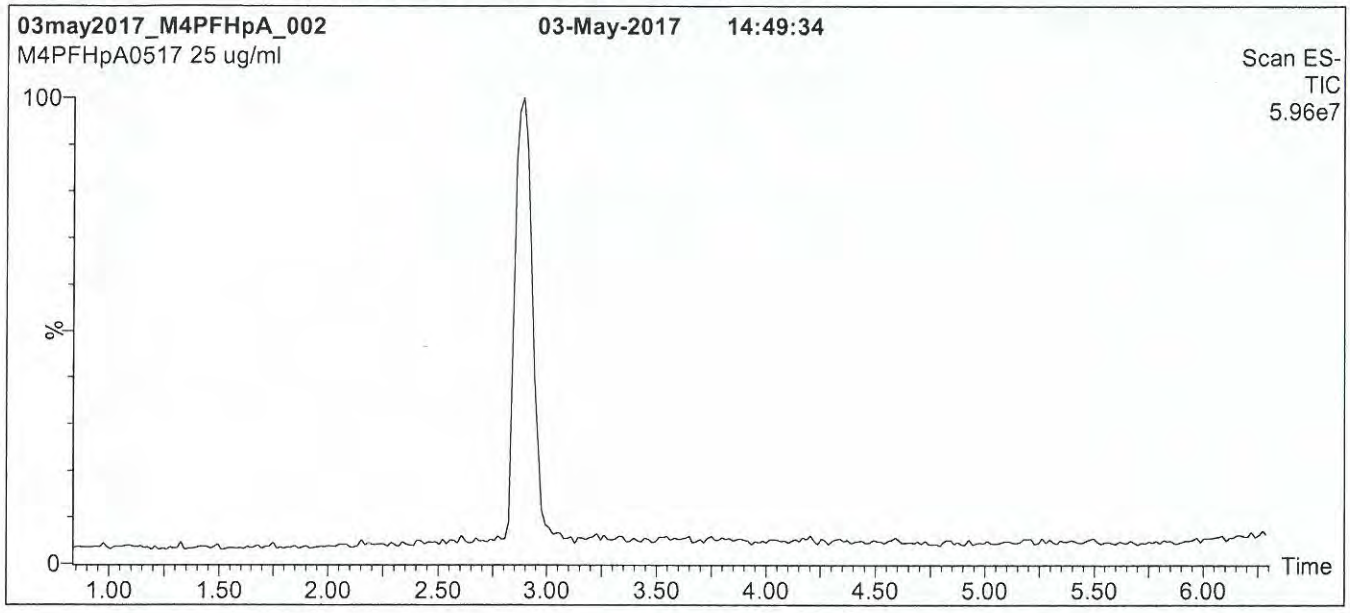
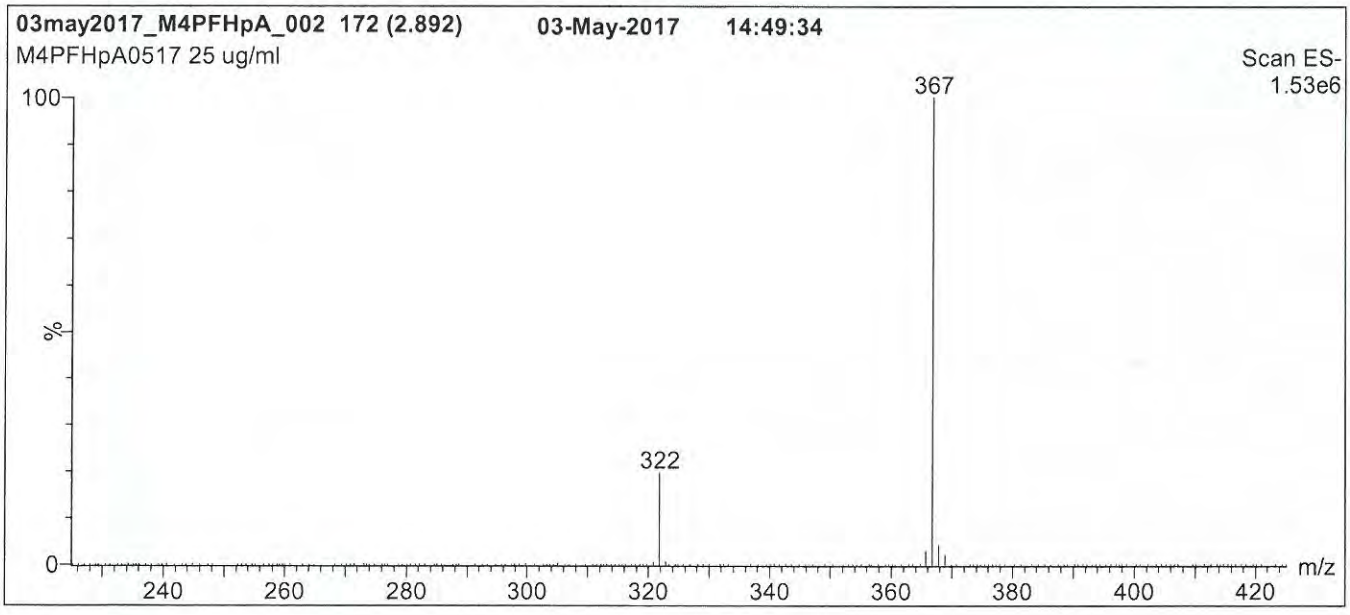
18B1511

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 8 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

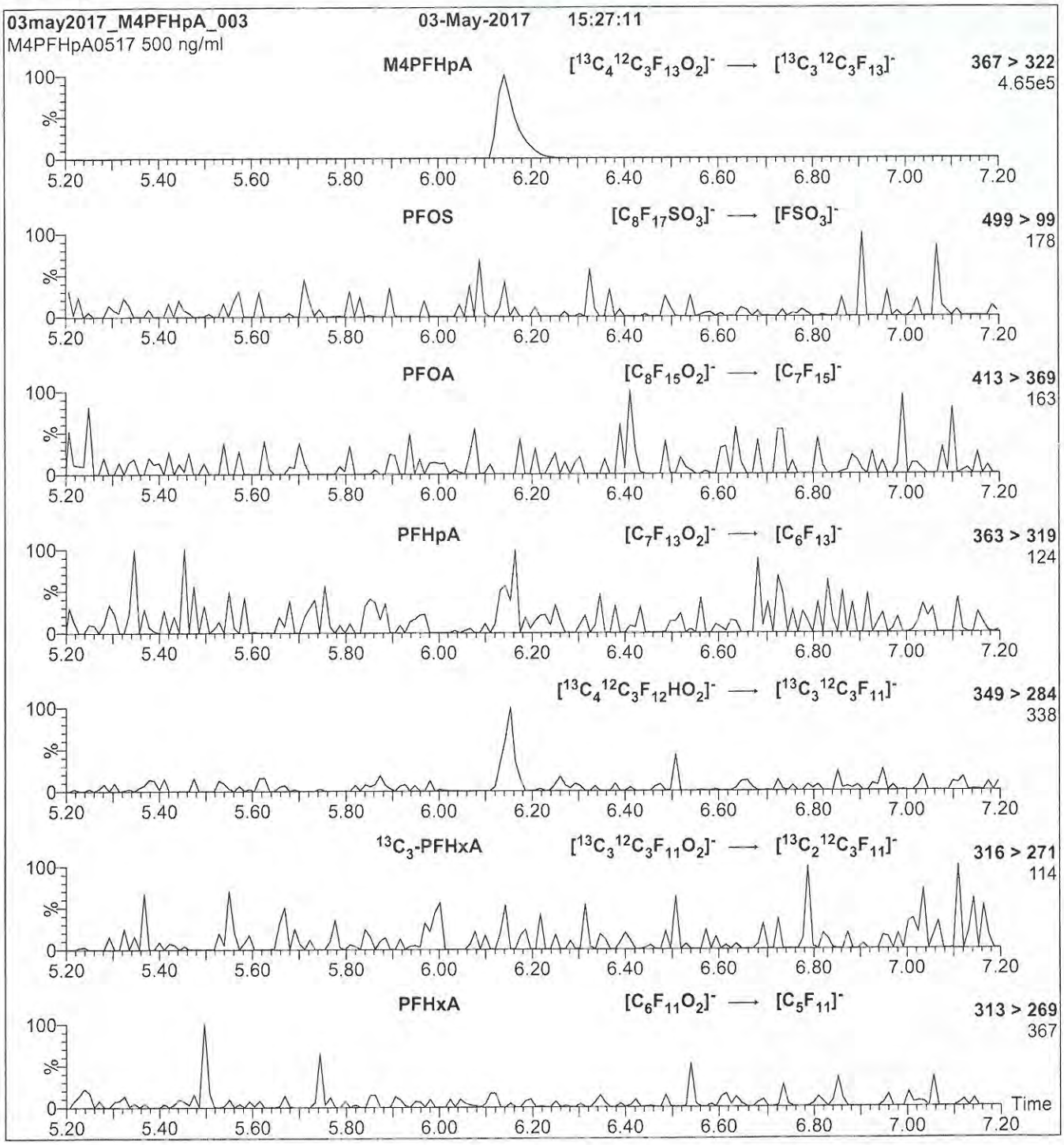
MS Parameters

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

18B1511

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 9

18B1512

WELLINGTON LABORATORIES

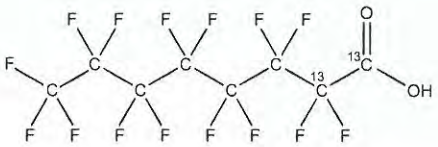
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid

LOT NUMBER: M2PFOA1017

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_6HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 416.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/26/2017
EXPIRY DATE: (mm/dd/yyyy) 10/26/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)

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:** 10/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

ANAB ACCREDITED

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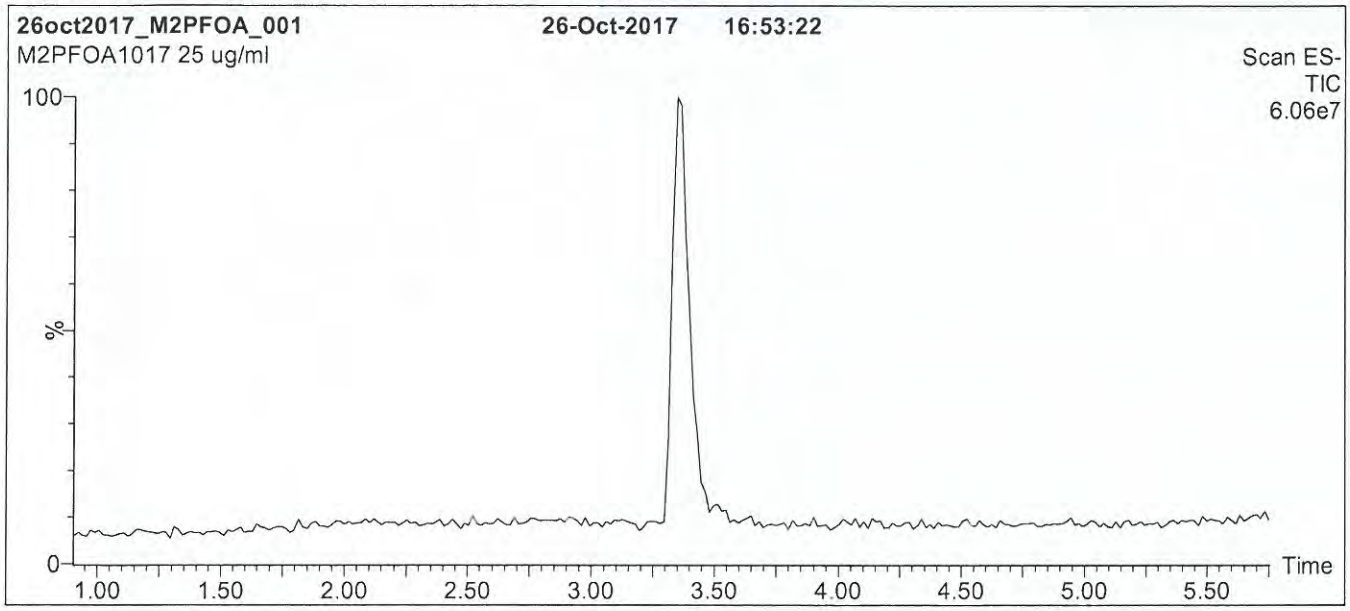
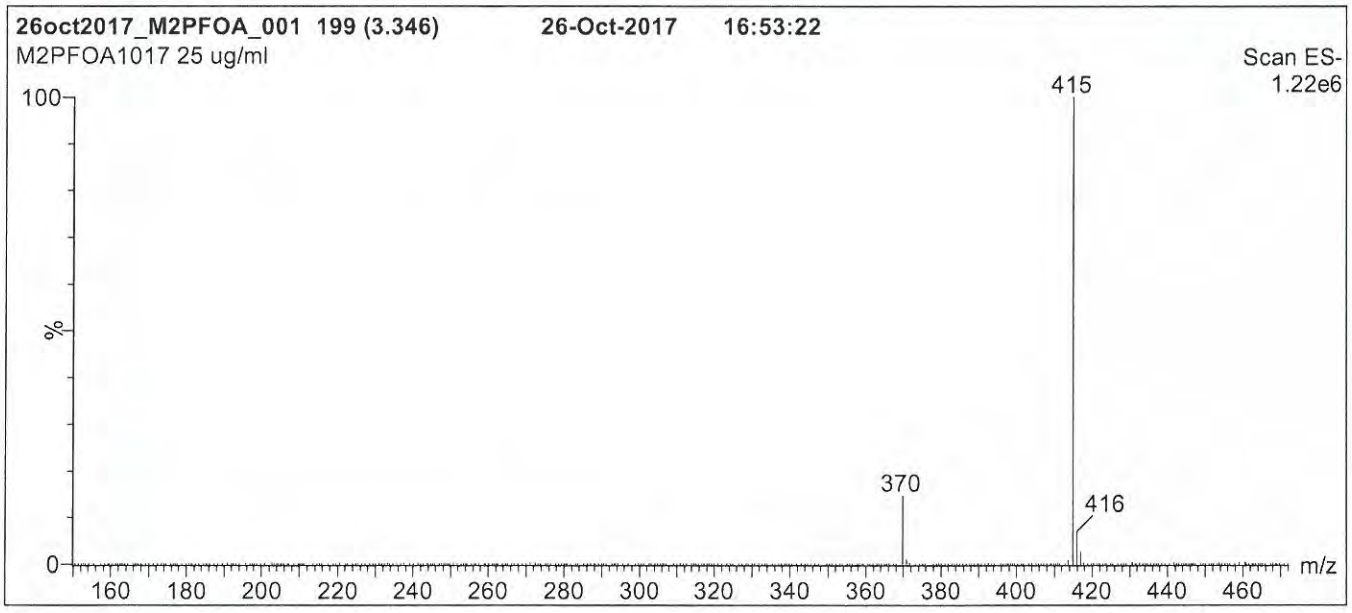
18B1512

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 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

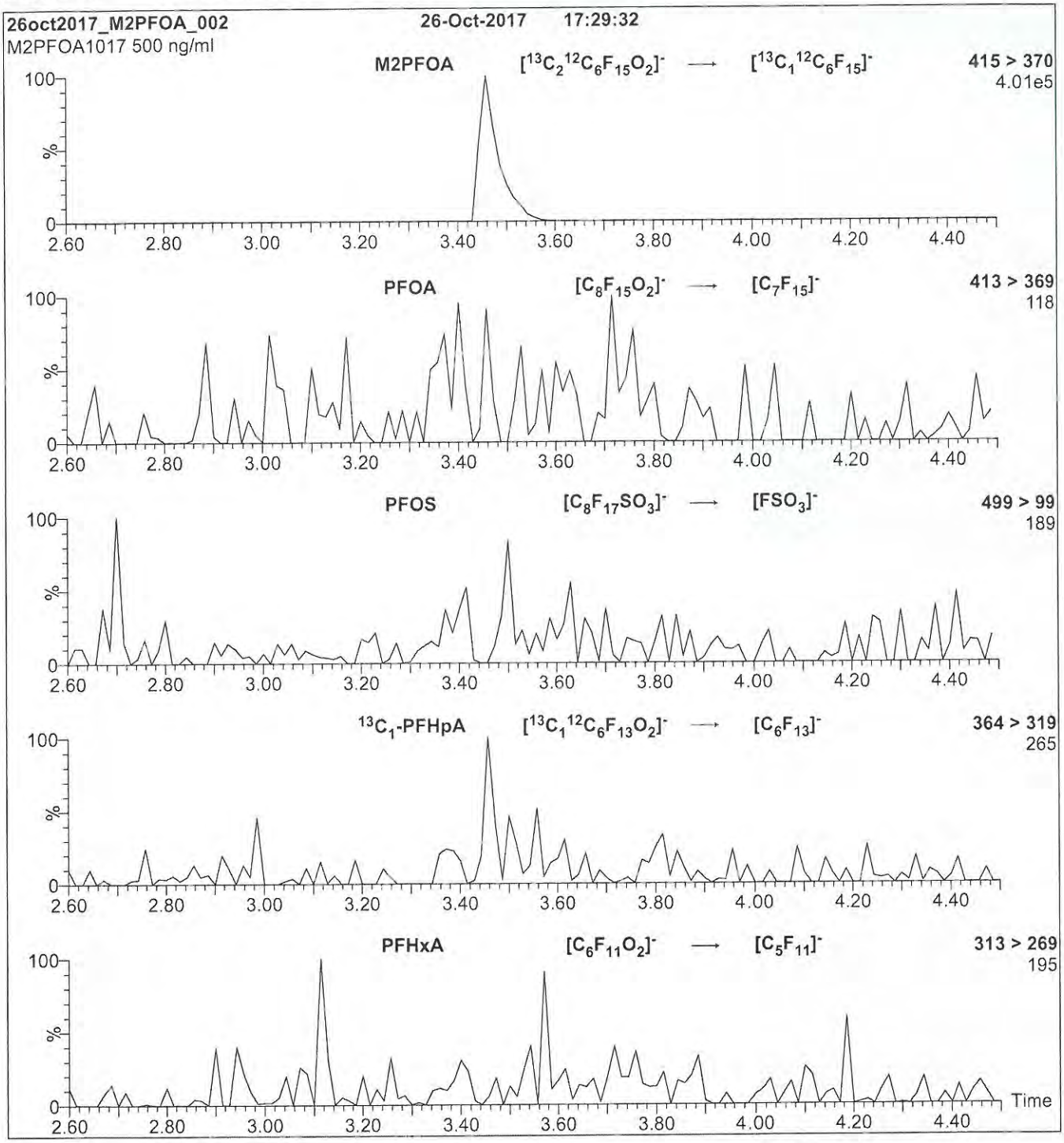
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

1801512

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

Flow: 300 µl/min

MS Parameters

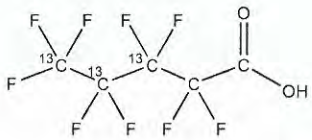
Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 10

18B1513

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M3PFPeA	**LOT NUMBER:**	M3PFPeA0417
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)	04/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/20/2022		
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.
- 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: _____ **Date:** 04/24/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1881513

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

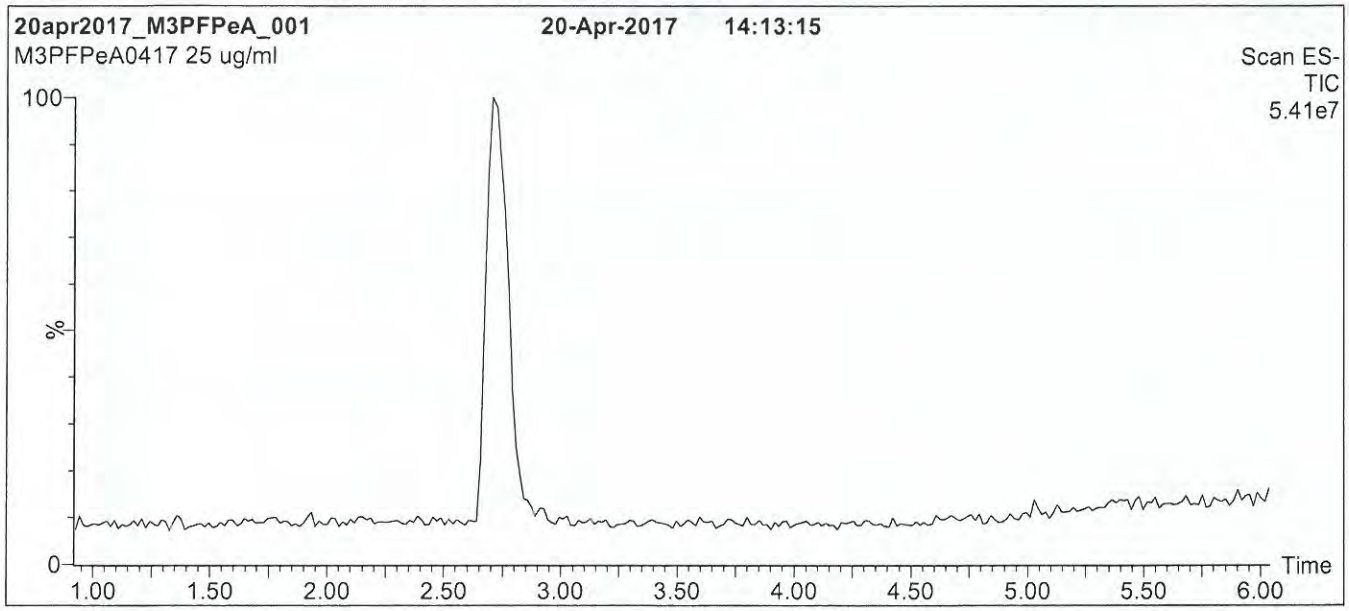
CALA

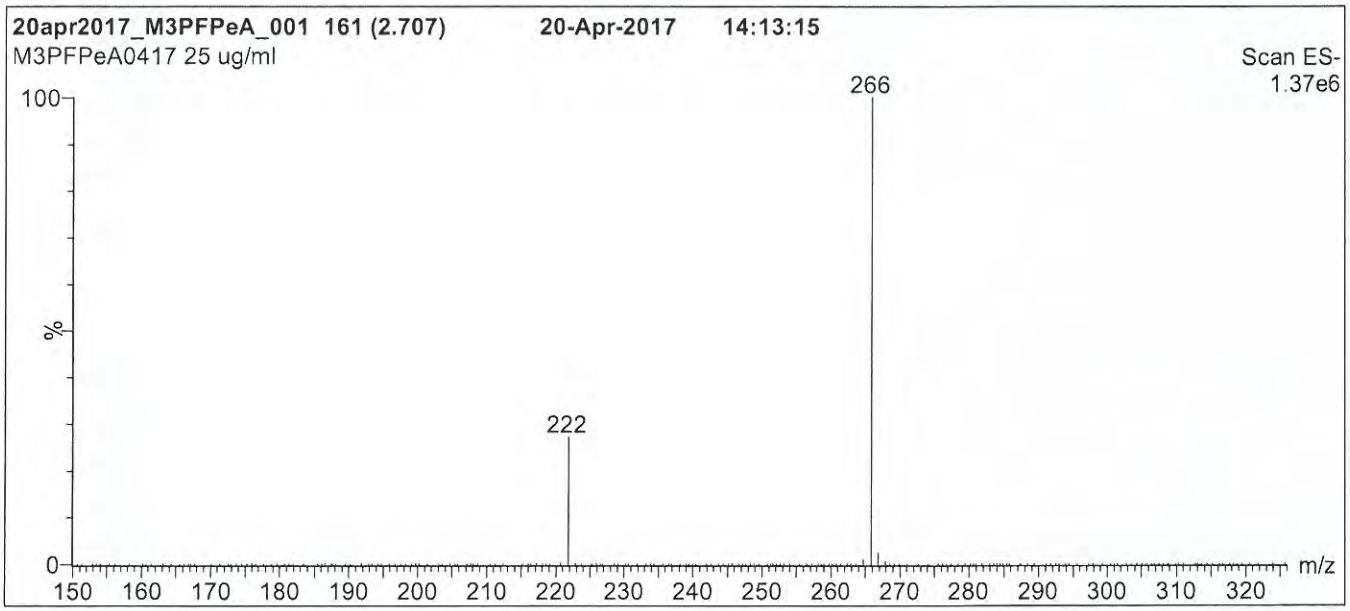
ANAB ACCREDITED

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

18B1513

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
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

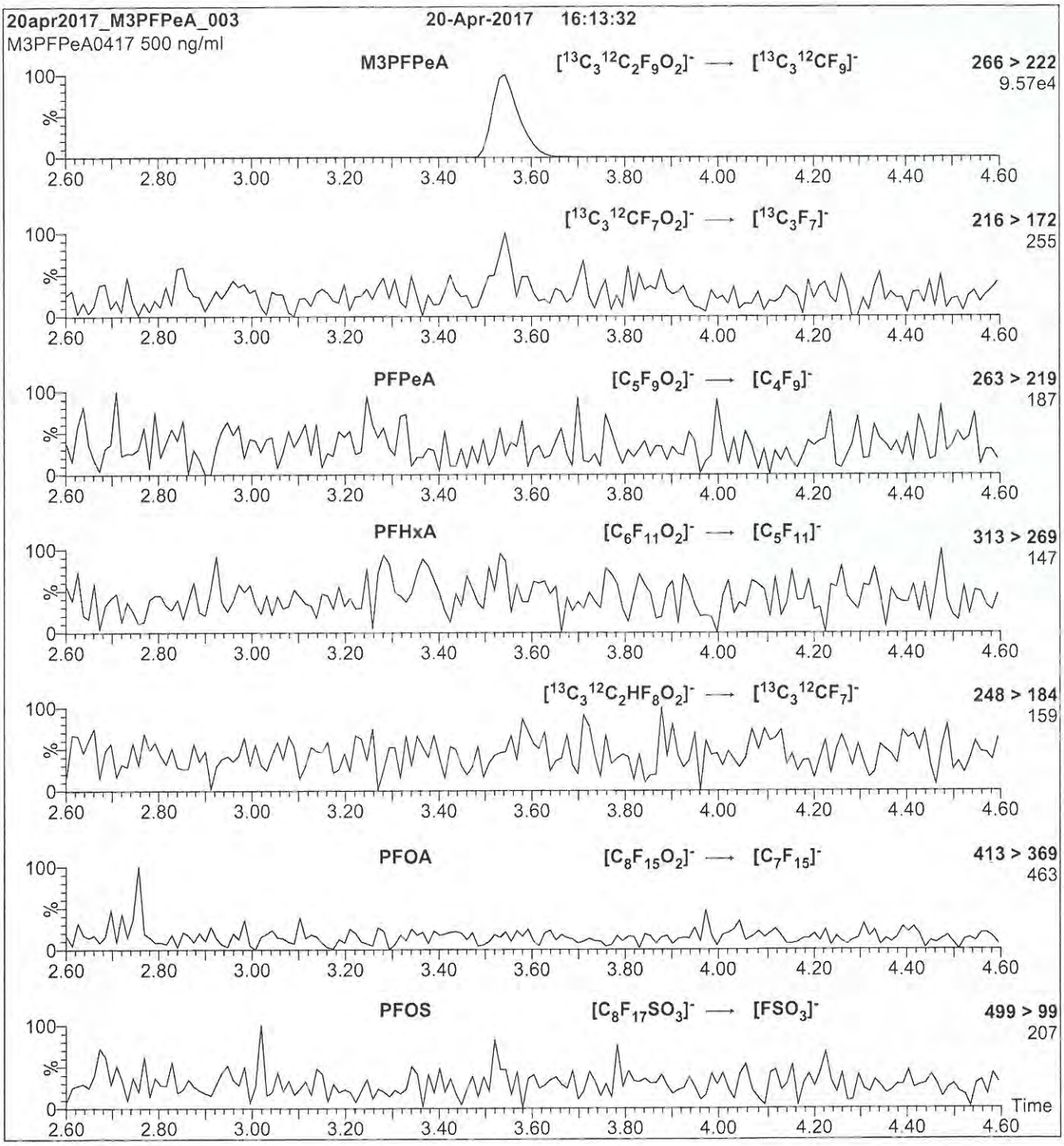
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1513

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% (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) = 9

18B1514

WELLINGTON LABORATORIES

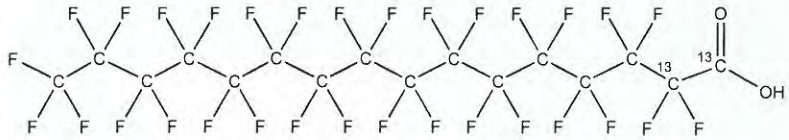
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFHxDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

LOT NUMBER: M2PFHxDA0717

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)	07/13/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/13/2022		
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.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1514

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

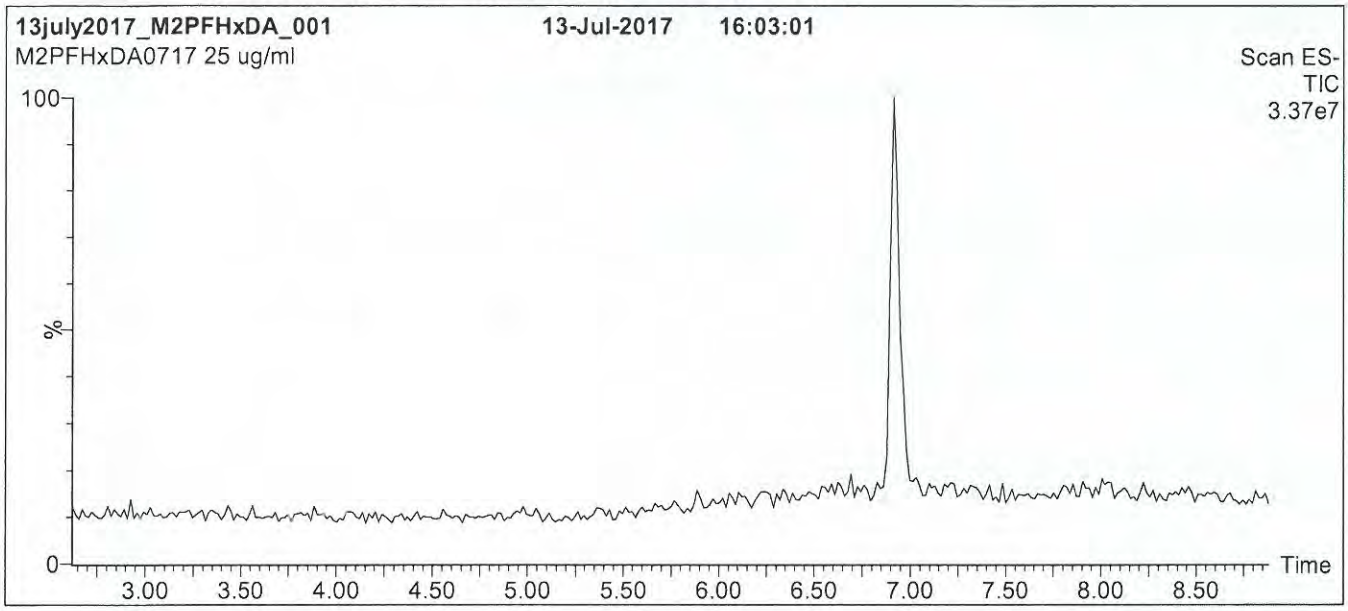
CALA

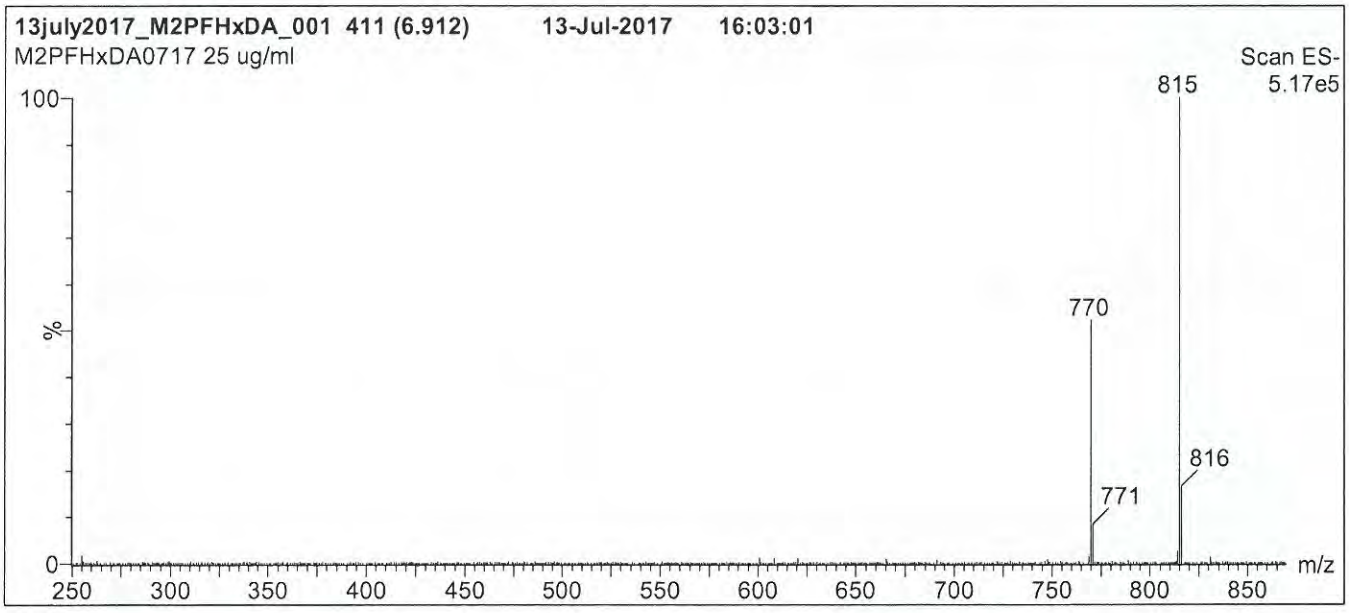
ANAB ACCREDITED

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

18B514

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: 55% (80:20 MeOH:ACN) / 45% 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

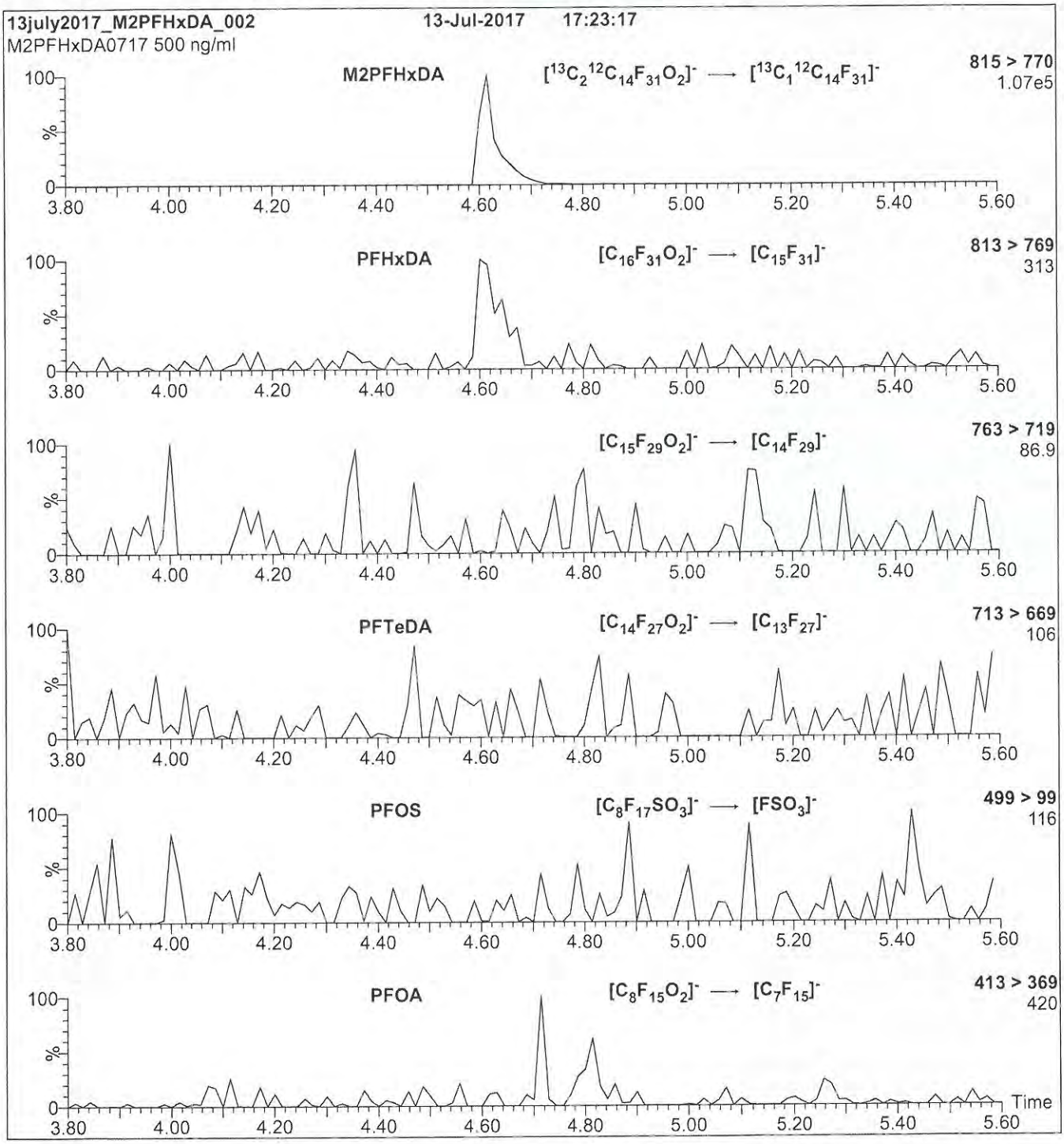
MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1514

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

18B1515

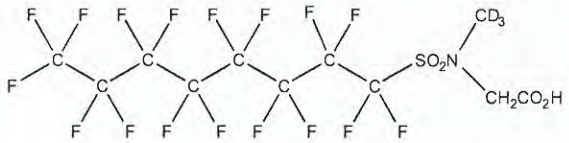
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1117

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)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
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.
- 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: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

188515

INTENDED USE:

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HAZARDS:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED

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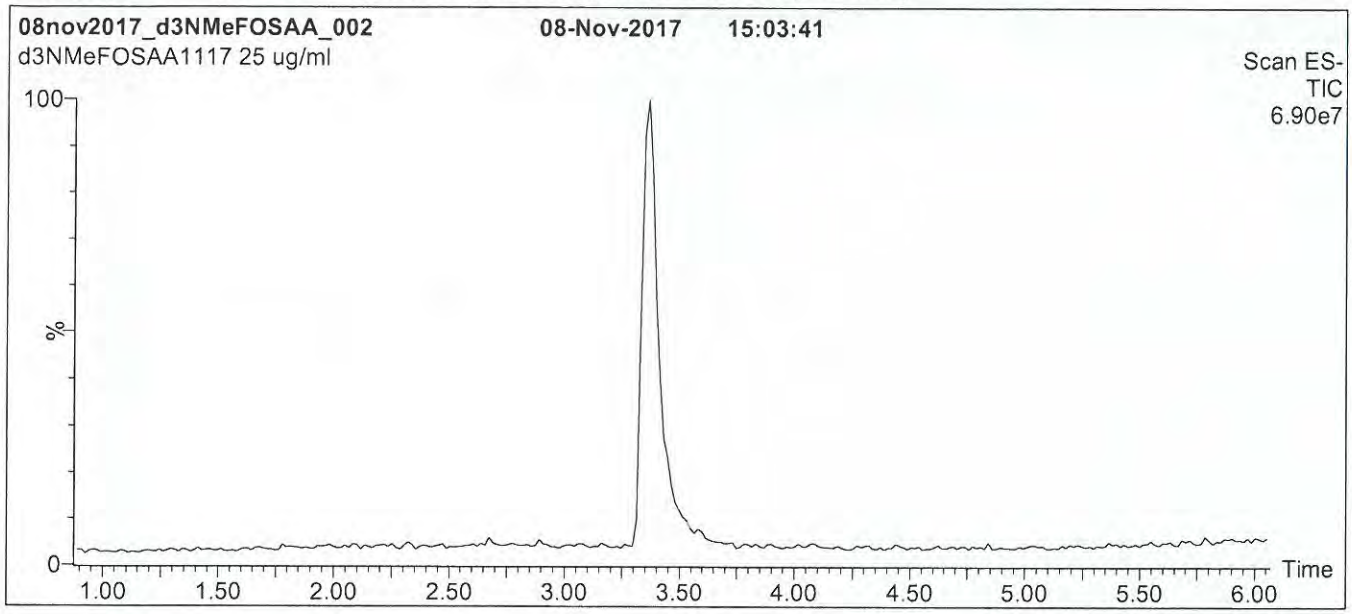
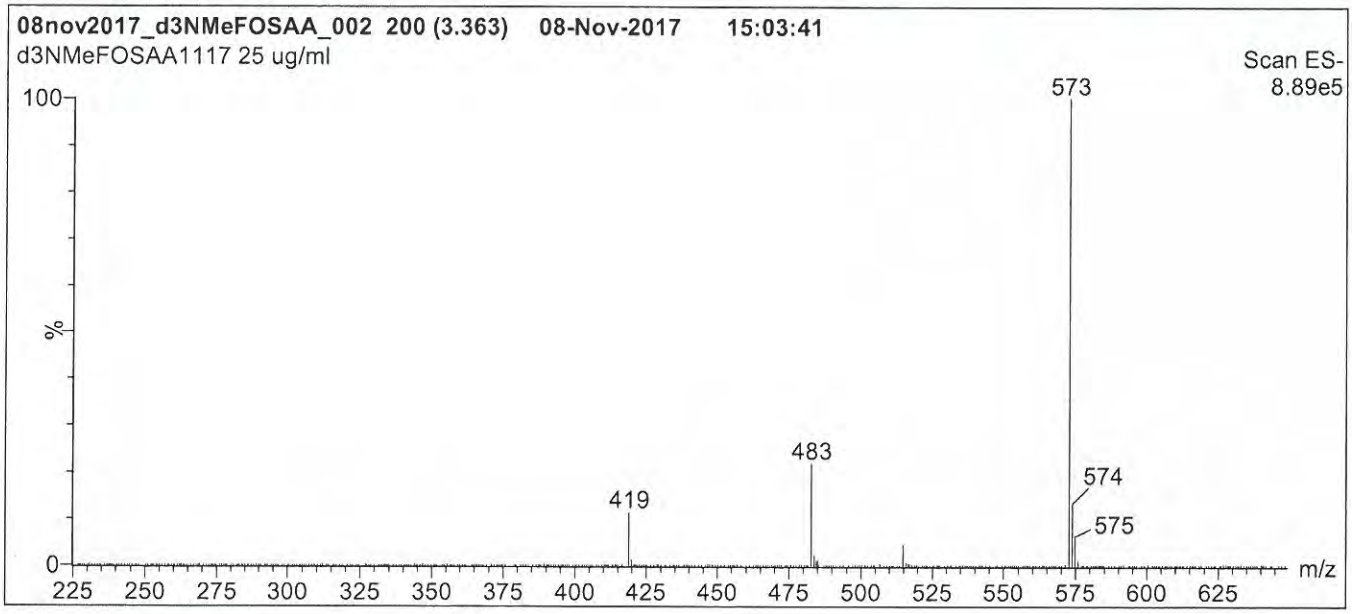
18B1515

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

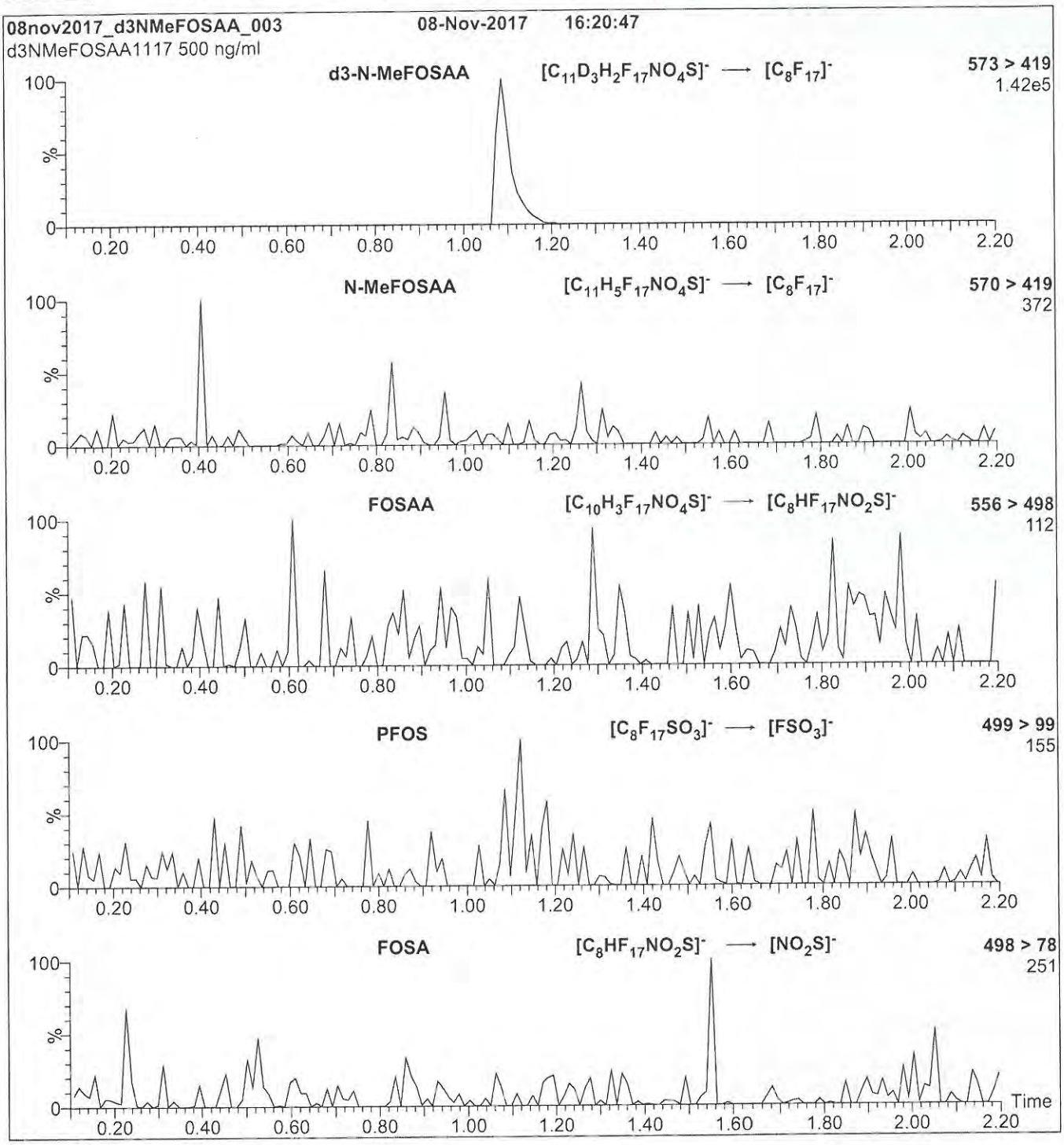
MS Parameters

Experiment: Full Scan (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

1801515

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

18B1516

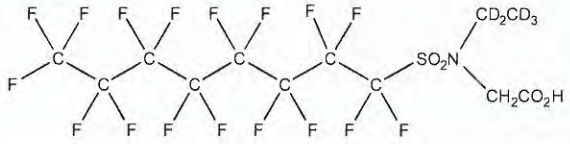
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1117

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)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
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.
- 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: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1801516

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:

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UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ 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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

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

LIMITED WARRANTY:

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CALA

ANAB ACCREDITED

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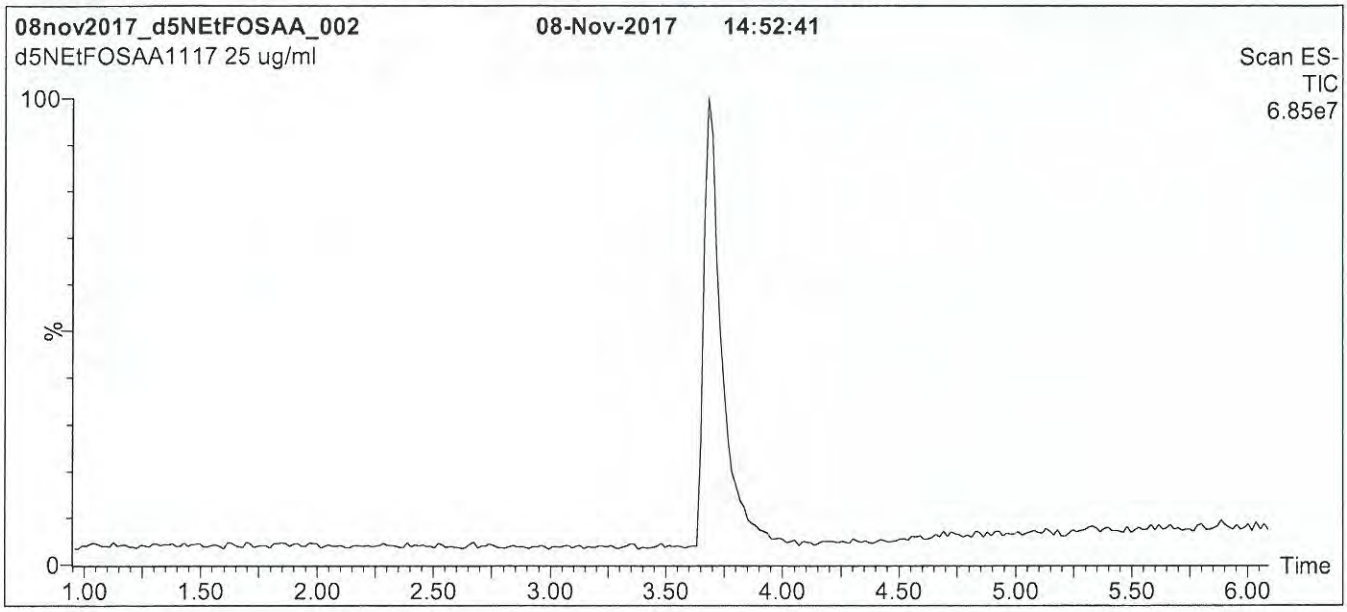
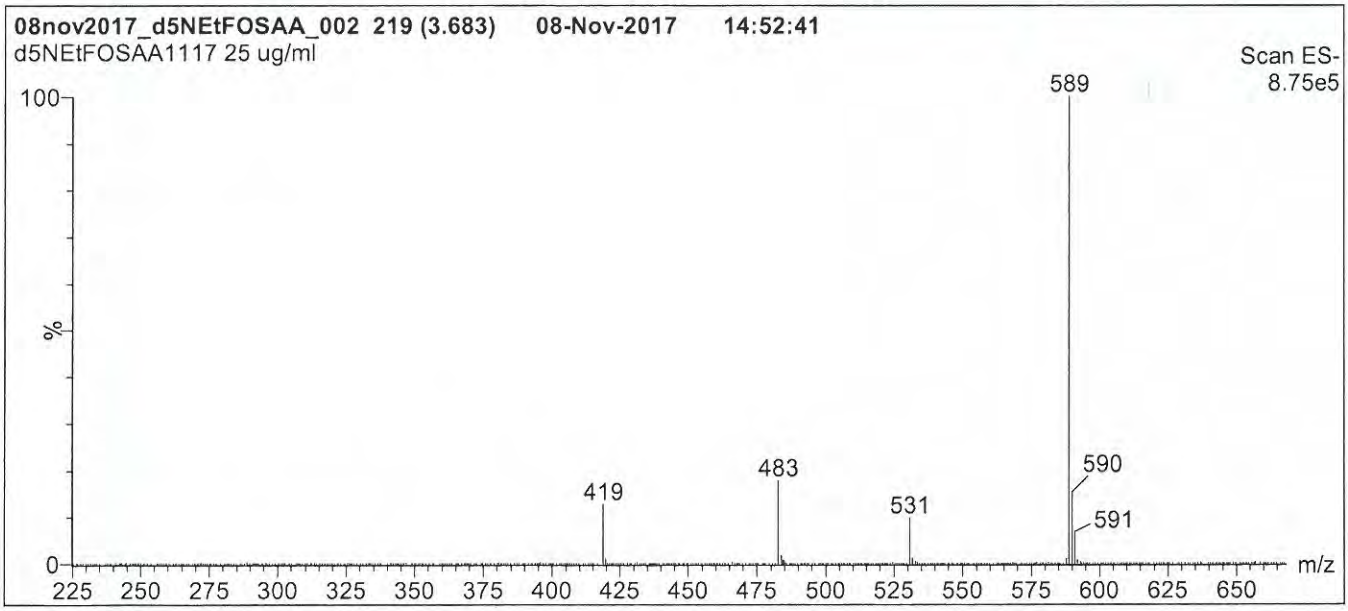
18B1516

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

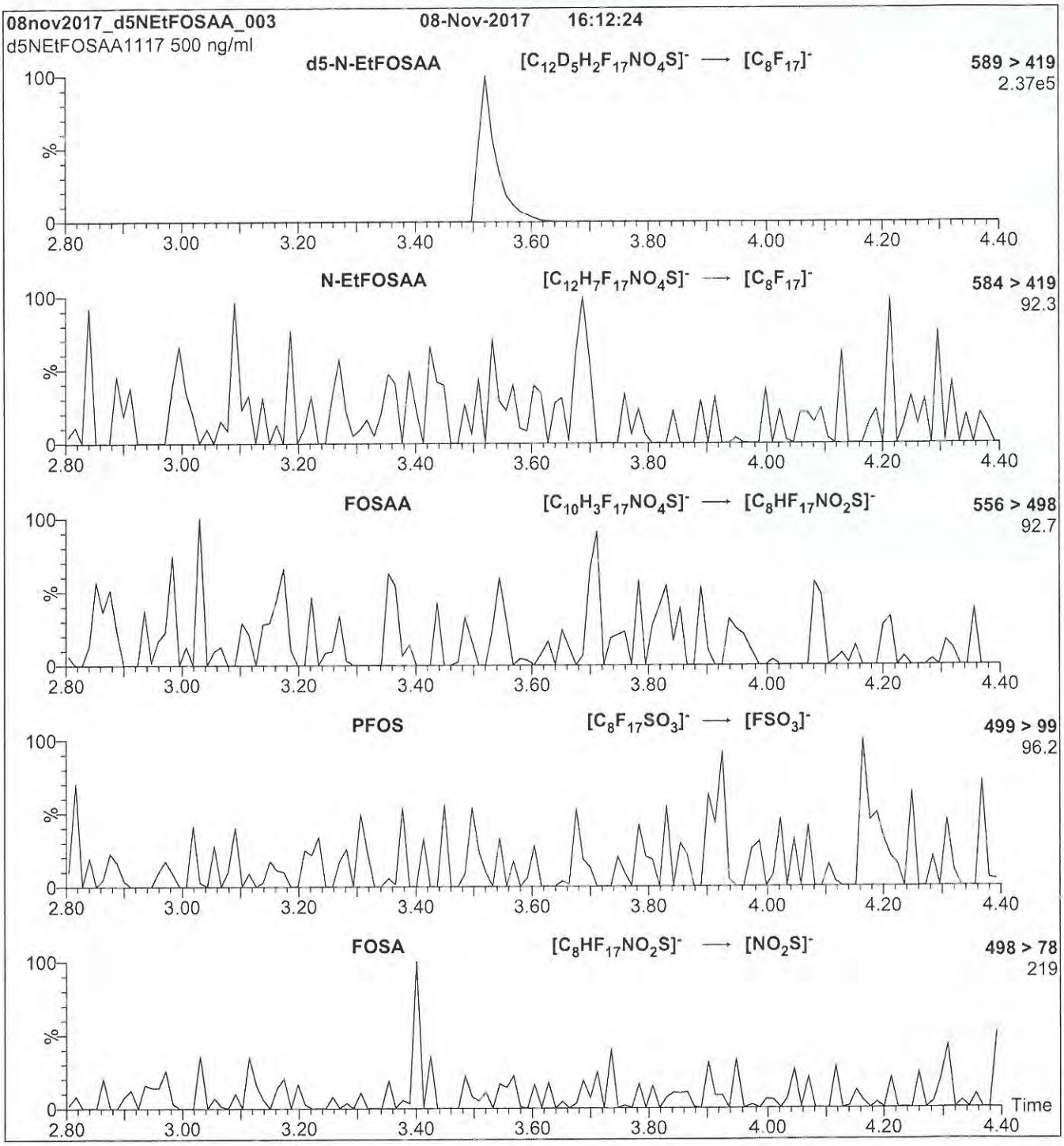
MS Parameters

Experiment: Full Scan (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

18B1576

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) = 3.50e-3
Collision Energy (eV) = 20

18B1517

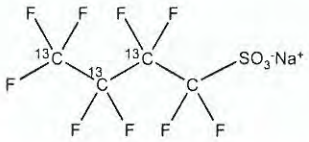
WELLINGTON LABORATORIES

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)	05/24/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2022		
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.

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Certified By: _____ **Date:** 05/25/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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CALA

ANAB ACCREDITED

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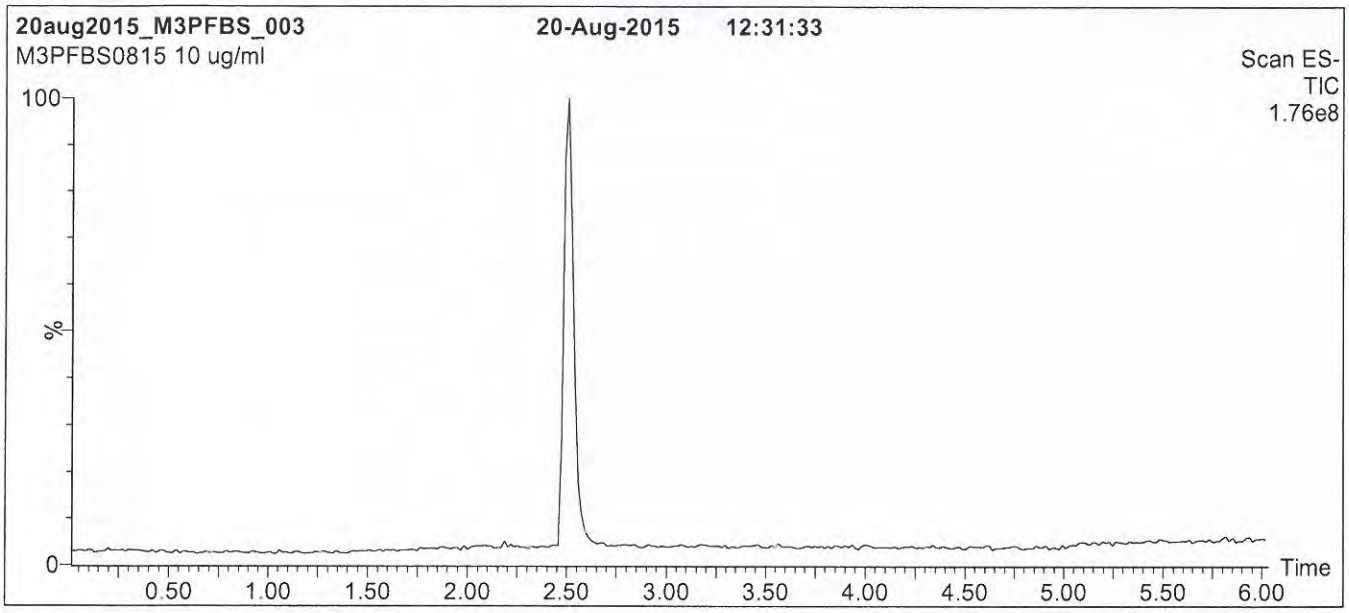
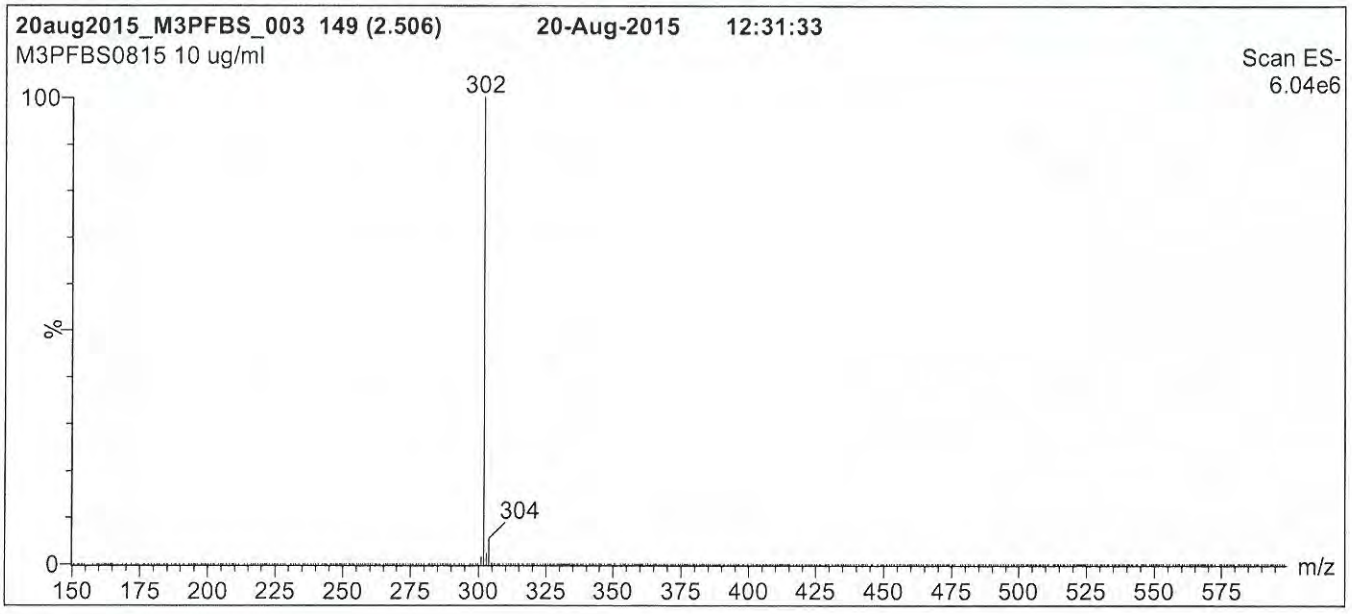
18B1517

Figure 1: **M3PFBS; 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

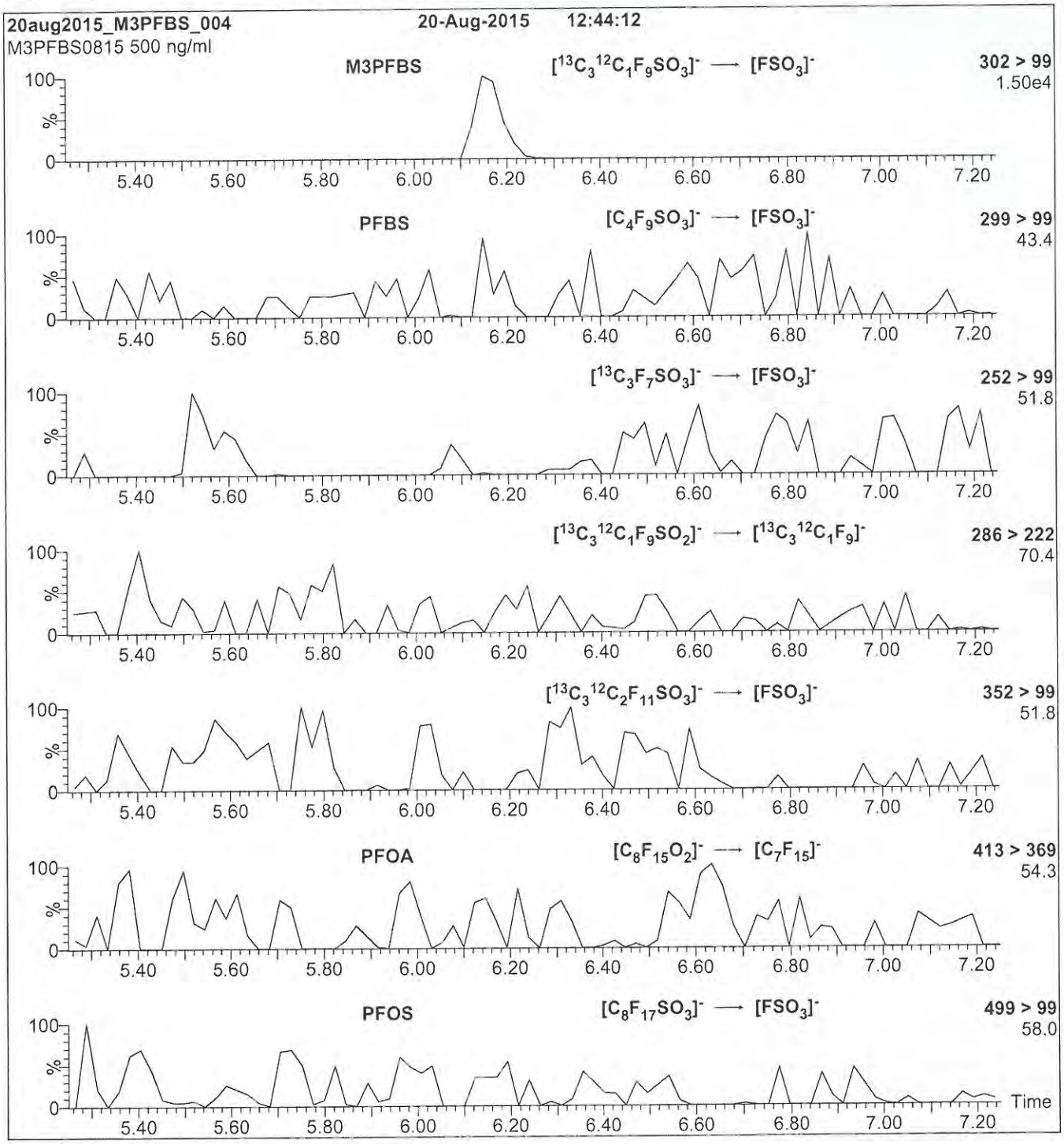
MS Parameters

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

18B1517

Figure 2: **M3PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFBS)

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

Flow: 300 µl/min

MS Parameters

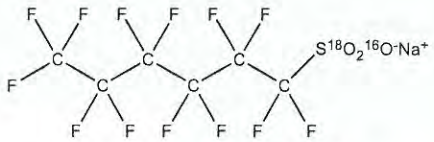
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

18B1518

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/02/2017 (mm/dd/yyyy)

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18B1518

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CALA

ANAB ACCREDITED

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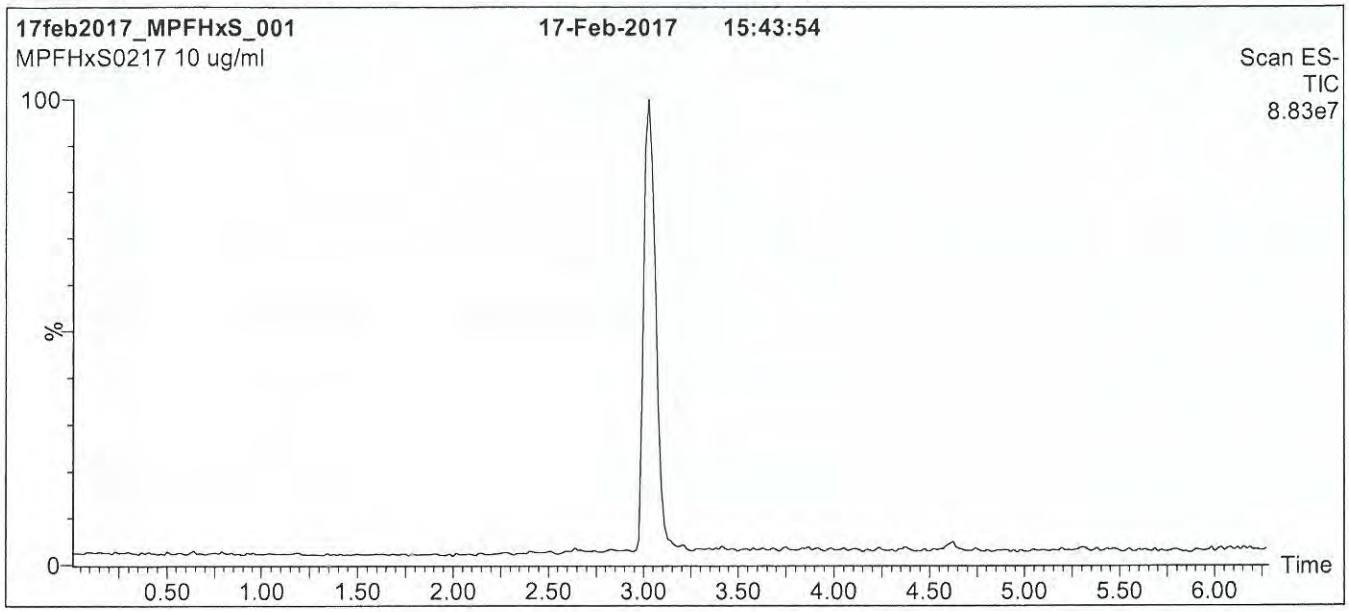
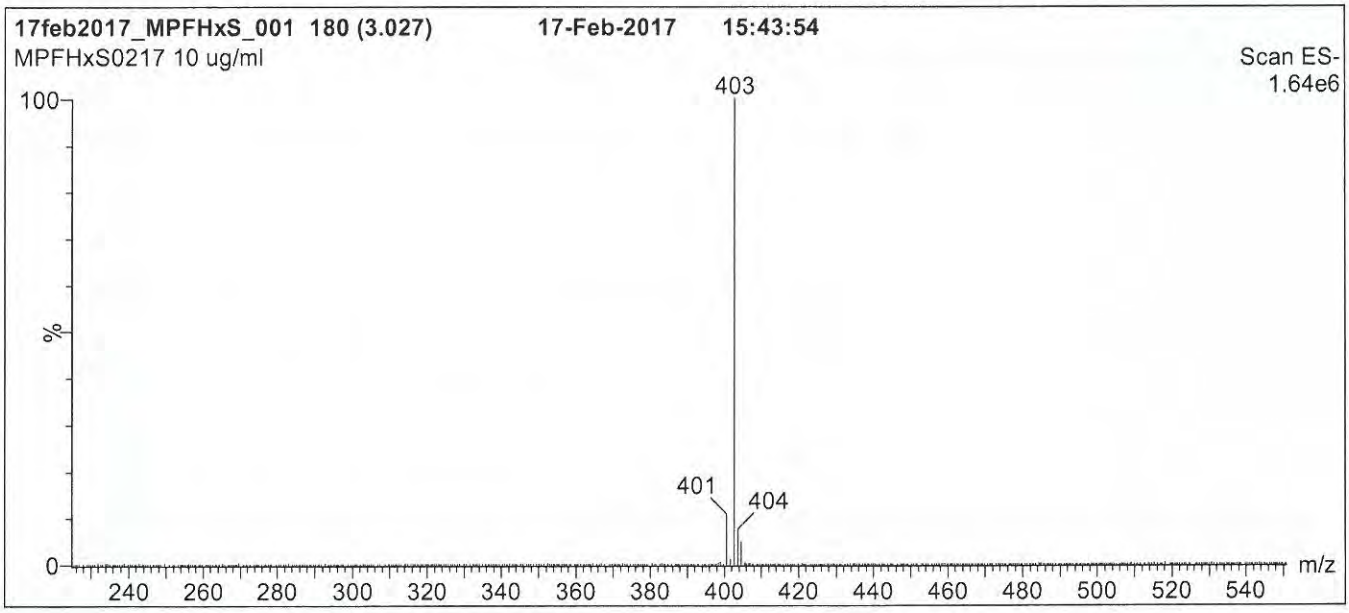
18B1518

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 8 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

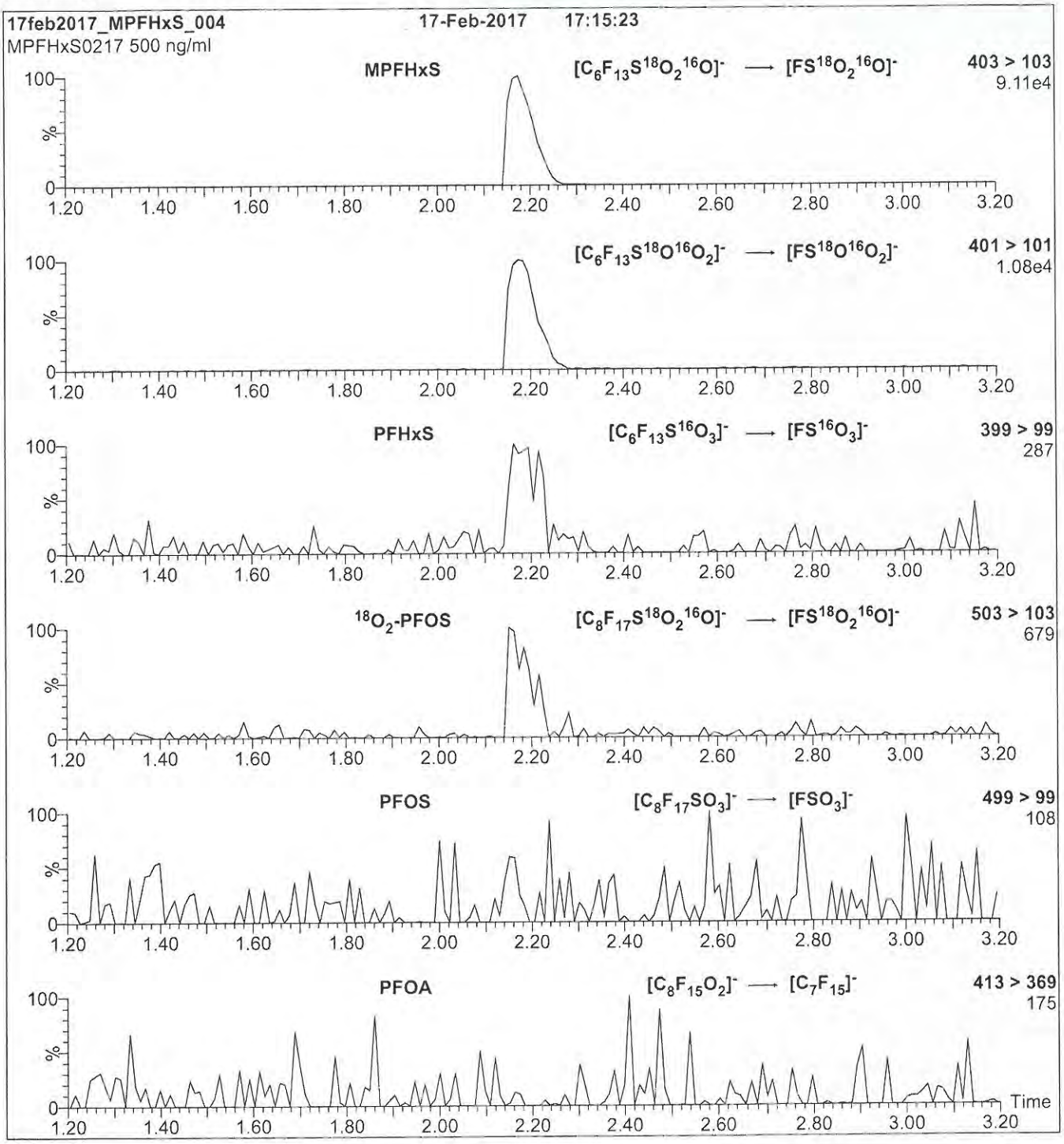
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1518

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

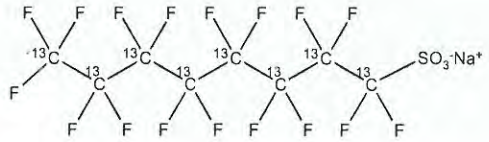
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

18B1520

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M8PFOS	**LOT NUMBER:**	M8PFOS1117
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:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (M8PFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
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 ~ 0.3% of sodium perfluoro-1-[$^{13}C_7$]heptanesulfonate ($^{13}C_7$-PFHpS) and ~ 0.8% of sodium perfluoro-1-[$^{13}C_4$]octanesulfonate (MPFOS).

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

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.

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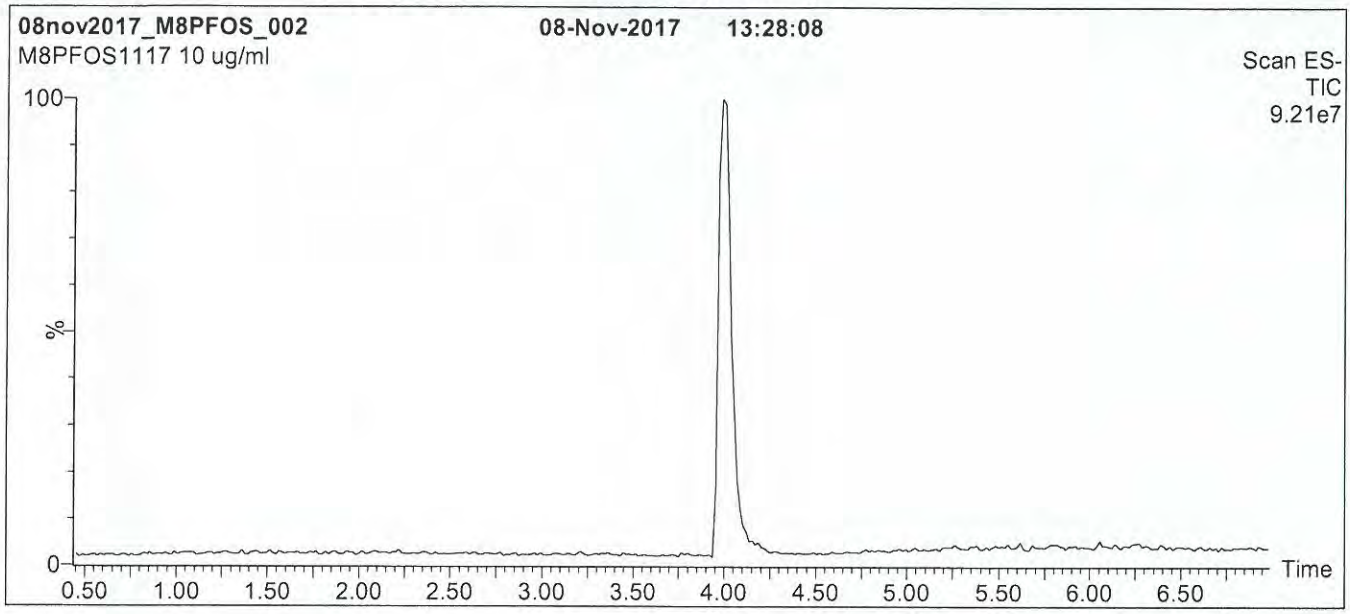
CALA

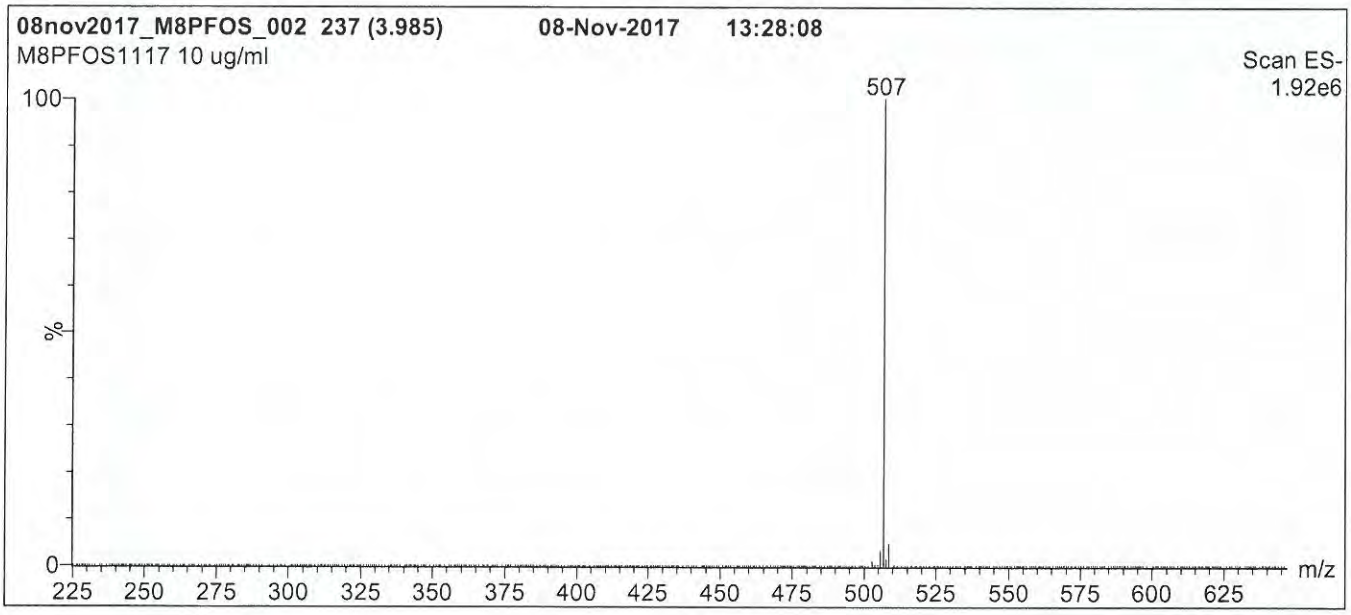
ANAB ACCREDITED

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

18B1520

Figure 1: **M8PFOS; 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

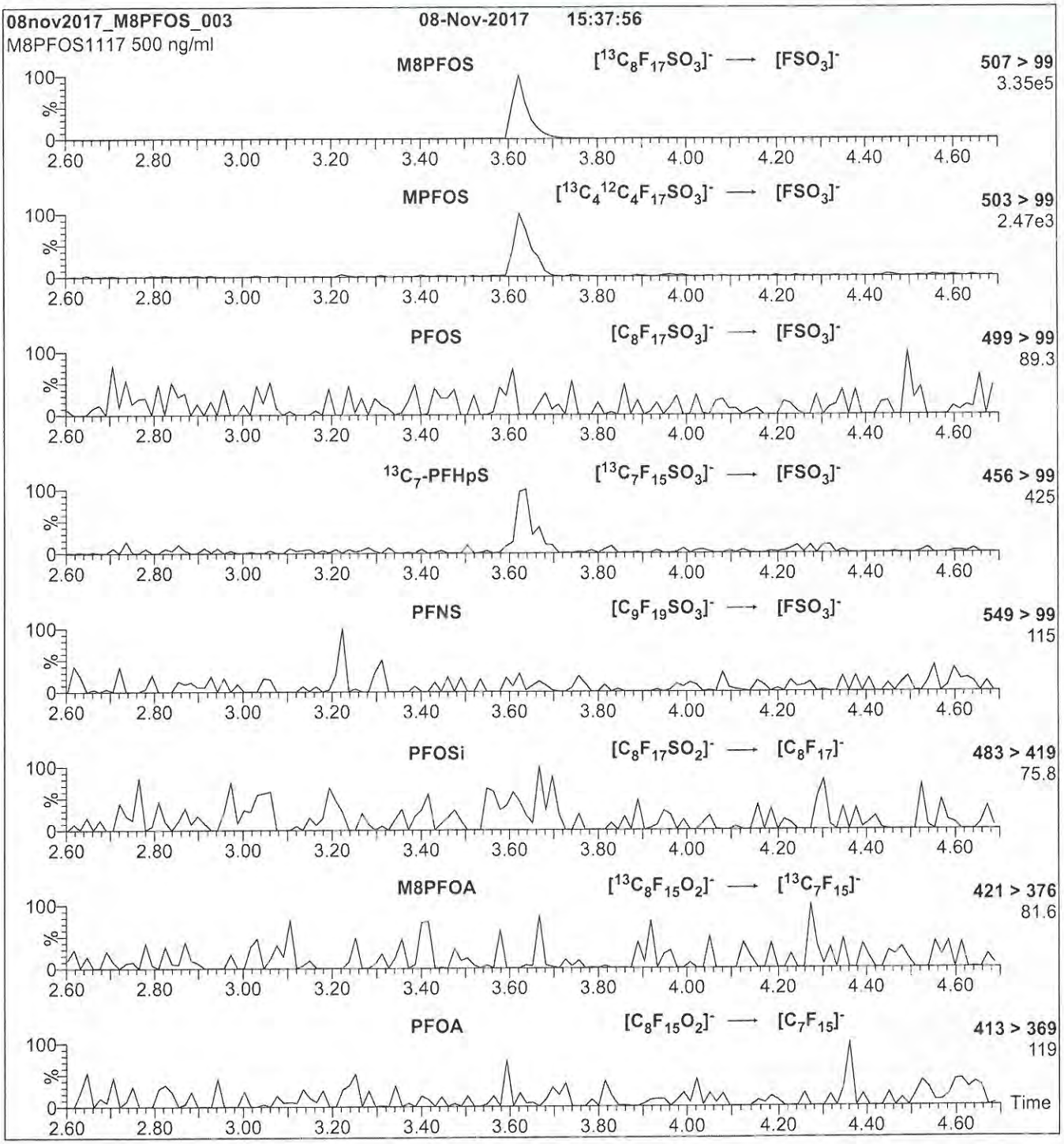
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1520

Figure 2: **M8PFOS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8PFOS)

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) = 3.46e-3
Collision Energy (eV) = 40

18B1525

WELLINGTON LABORATORIES

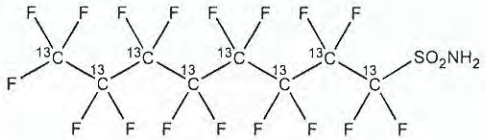
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

LOT NUMBER: M8FOSA1017I

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)	10/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2022		
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.
- Contains ~ 1.1% of perfluoro-1-[$^{13}C_4$]octanesulfonamide and ~ 0.01% of perfluoro-1-[$^{13}C_7$]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1525

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.

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CALA

ANAB ACCREDITED

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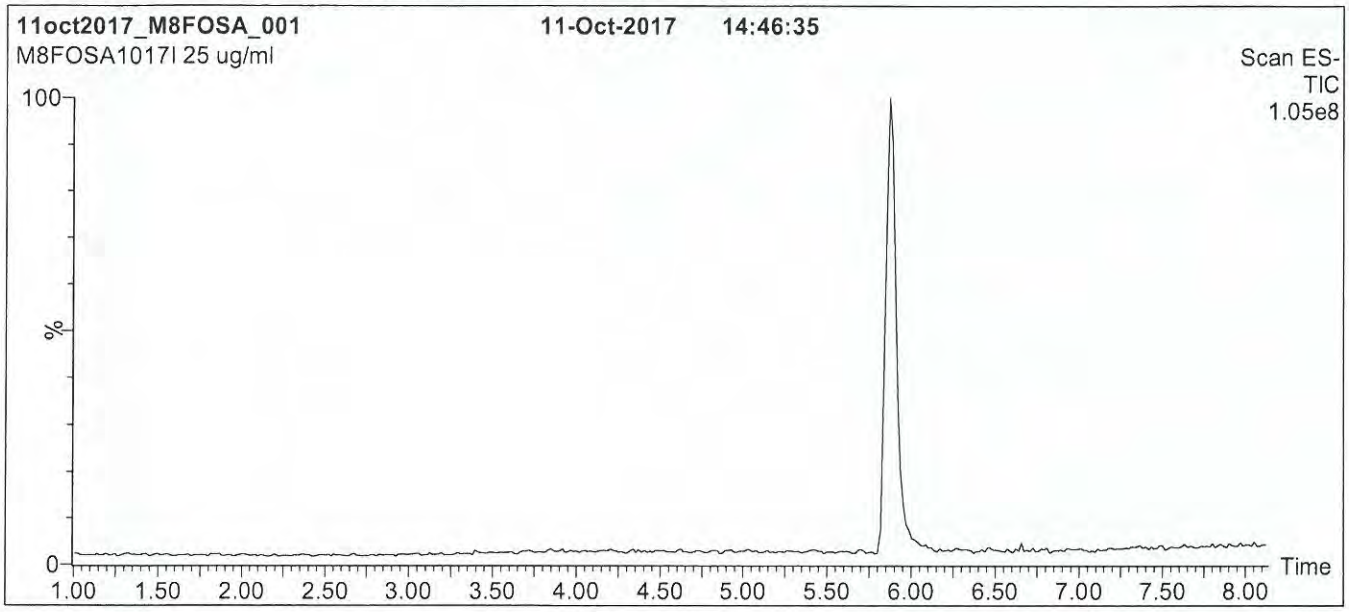
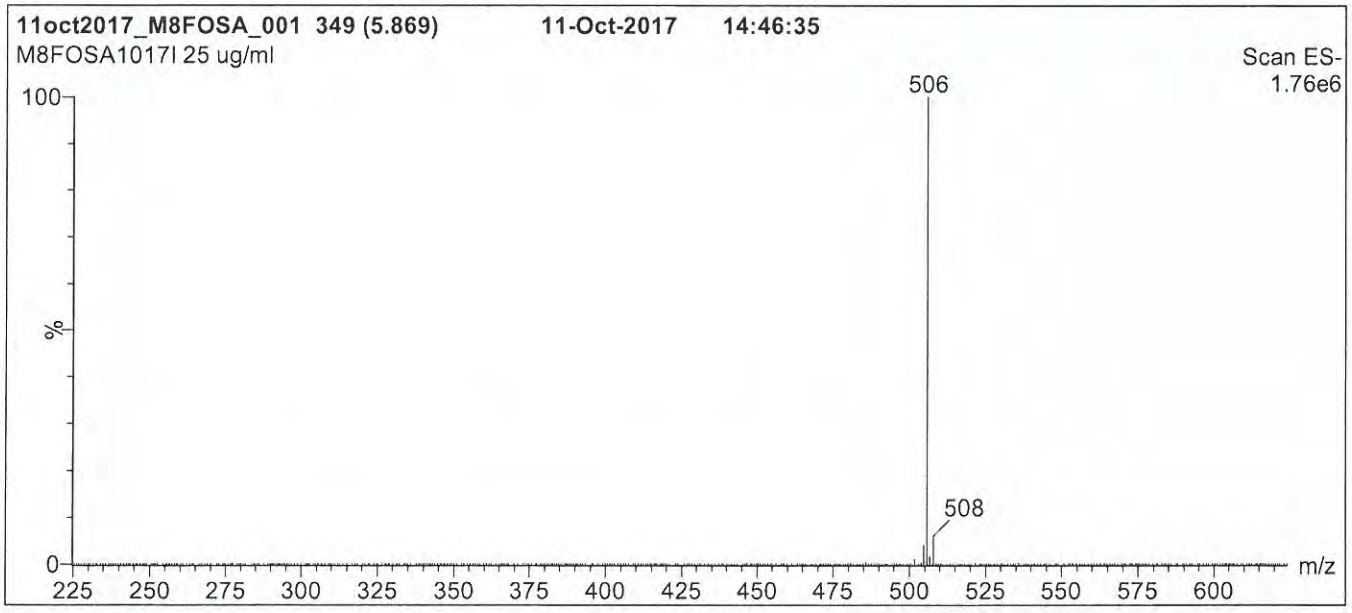
18B1525

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 85% 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

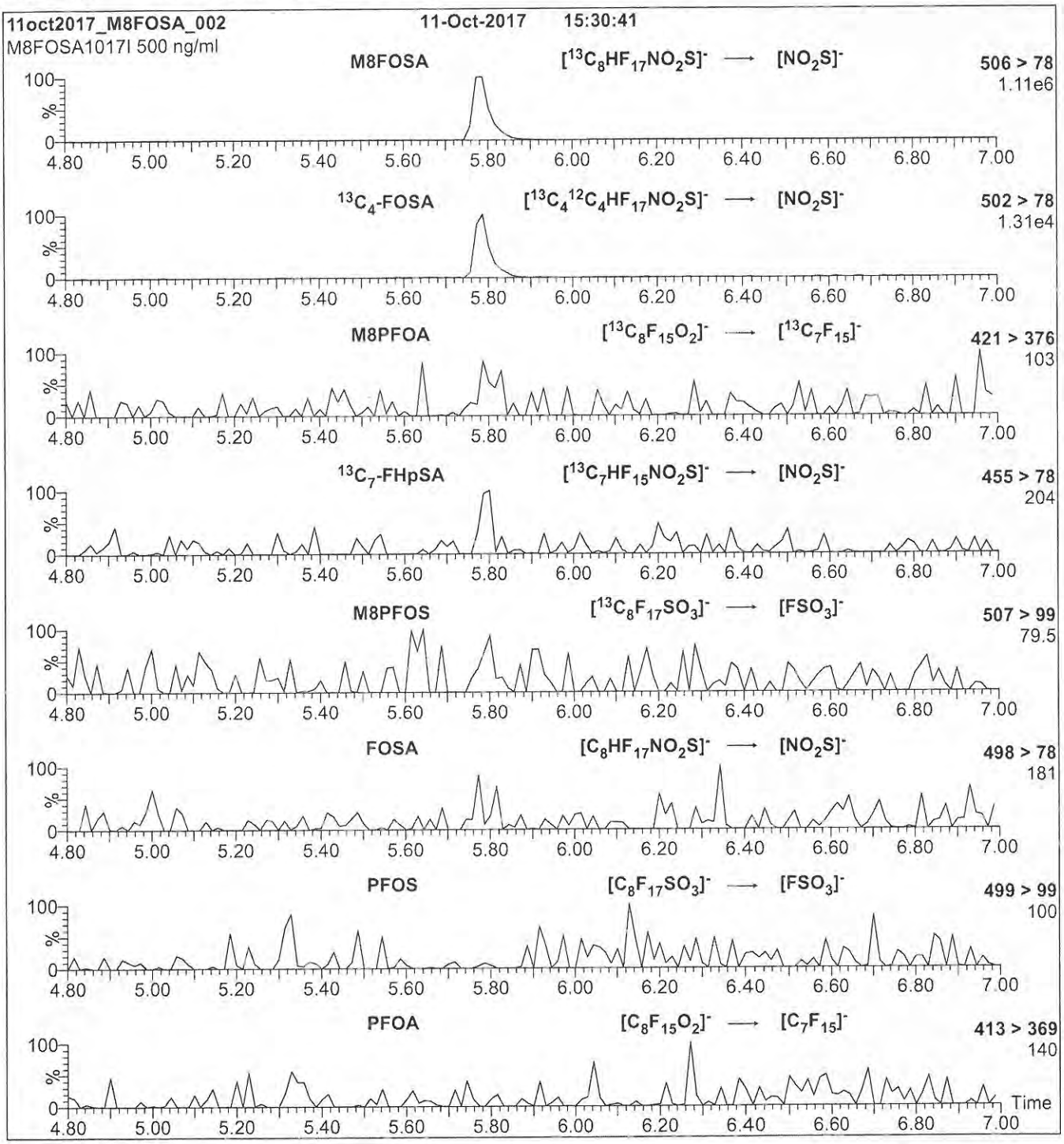
MS Parameters

Experiment: Full Scan (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

1881525

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) = 3.43e-3
Collision Energy (eV) = 30

1801084

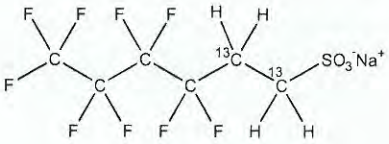
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-4:2FTS **LOT NUMBER:** M242FTS0817

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) 09/01/2017

EXPIRY DATE: (mm/dd/yyyy) 09/01/2022

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 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).

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Certified By: _____ **Date:** 09/29/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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1801084

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CALA

ANAB ACCREDITED

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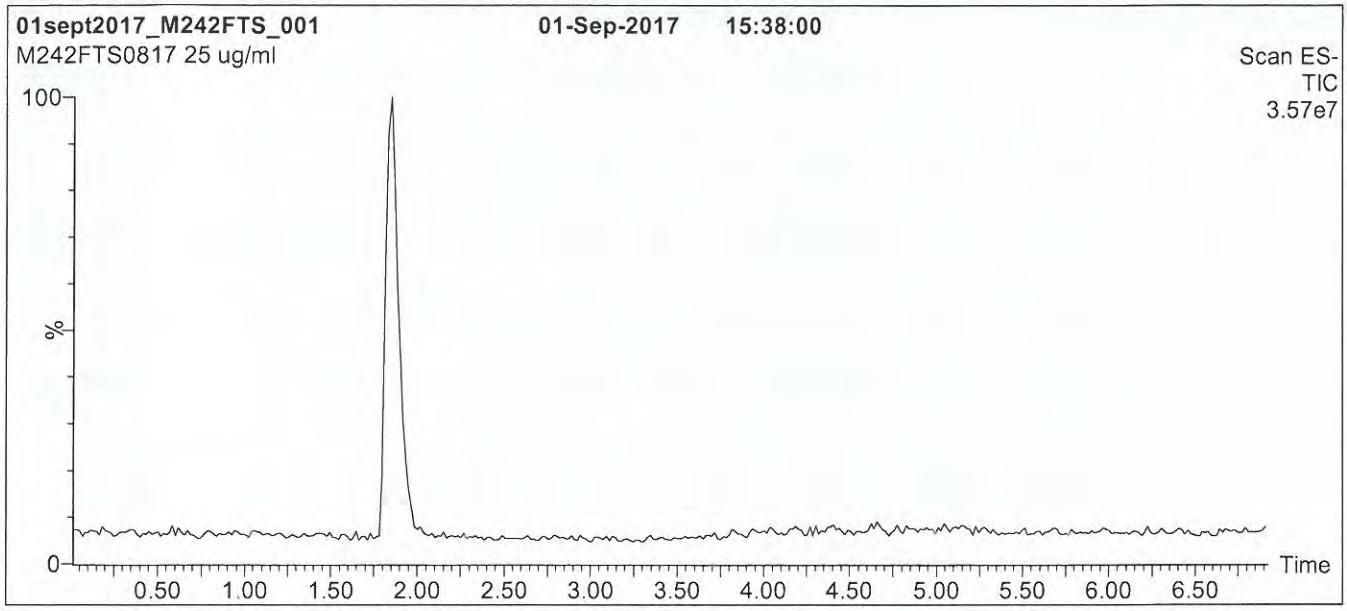
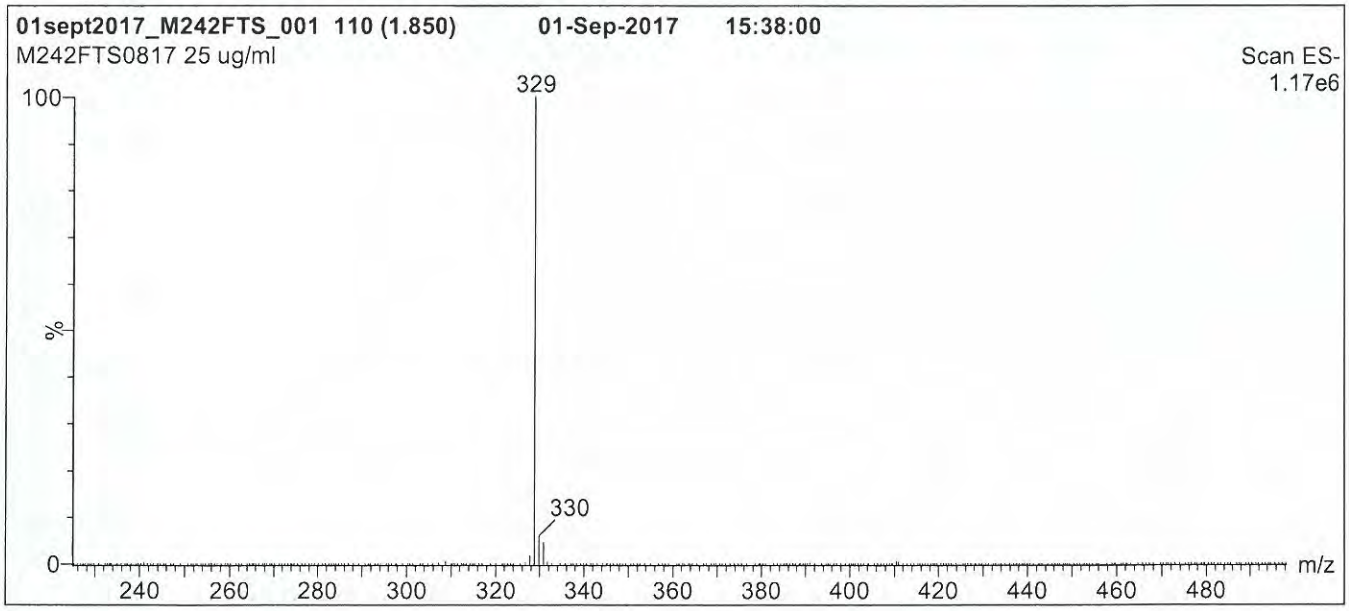
18C0910

Figure 1: **M2-4:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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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 8 min
and hold for 1 min before returning
to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

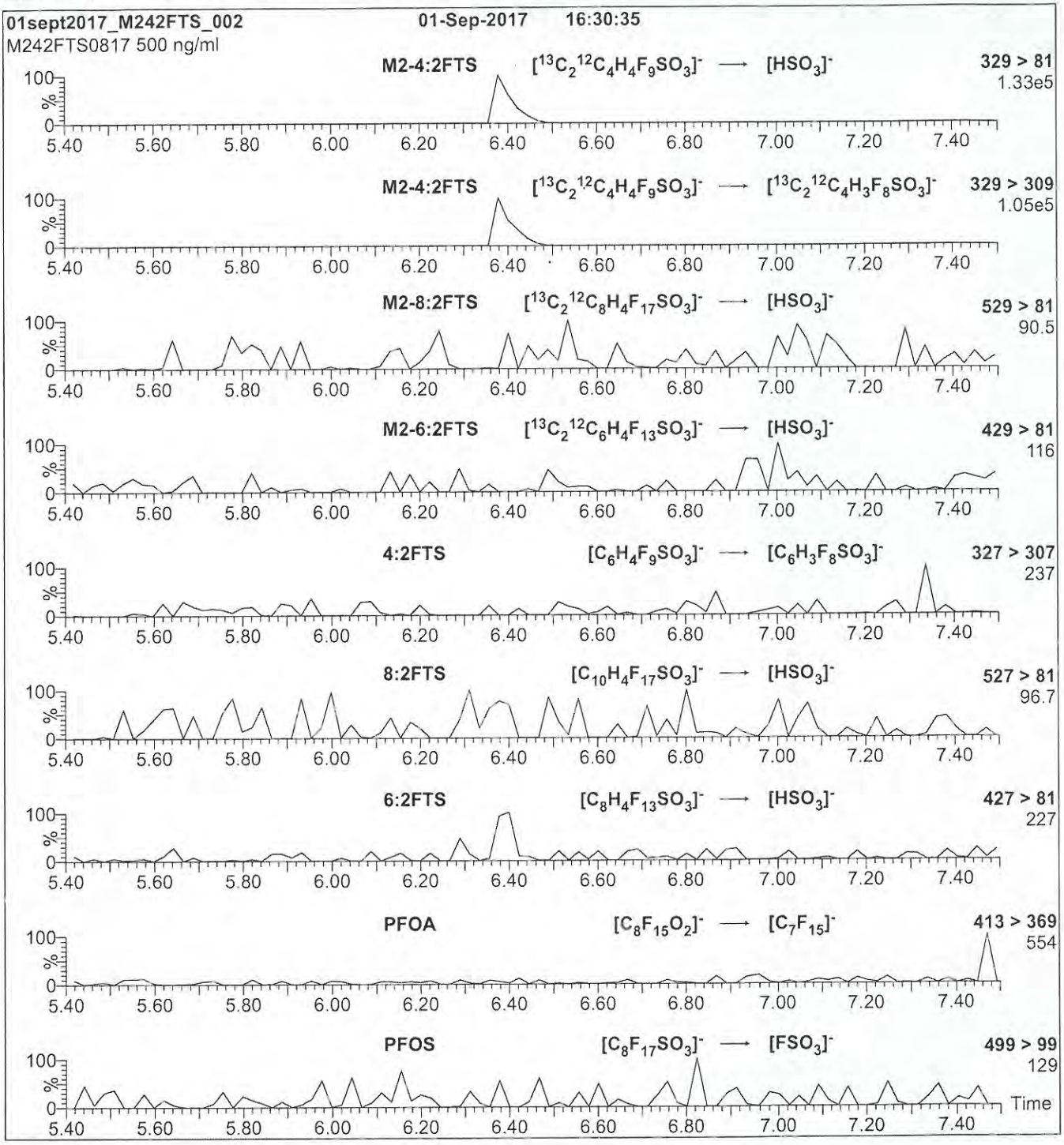
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18C0910

Figure 2: **M2-4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-4:2FTS)

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) = 3.28e-3
Collision Energy (eV) = 25

Analytical Standard Record

Vista Analytical Laboratory

18E0923

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
18C2711	PFDoA	27-Mar-18	** Vendor **	29-May-22	0.4
18C2712	PFBA	27-Mar-18	** Vendor **	14-Dec-22	0.4
18C2713	PFPeA	27-Mar-18	** Vendor **	14-Jun-22	0.4
18C2714	PFHxA	27-Mar-18	** Vendor **	27-Sep-22	0.4
18C2715	PFDA	27-Mar-18	** Vendor **	14-Dec-22	0.4
18C2716	PFUdA	27-Mar-18	** Vendor **	21-Sep-22	0.4
18C2717	PFTrDA	27-Mar-18	** Vendor **	02-May-22	0.4
18C2718	PFHpA	27-Mar-18	** Vendor **	27-Sep-22	0.4
18C2719	PFOA	27-Mar-18	** Vendor **	27-Sep-22	0.4
18C2720	PFNA	27-Mar-18	** Vendor **	20-Jul-22	0.4
18C2721	PFTeDA	27-Mar-18	** Vendor **	21-Sep-22	0.4
18C2722	PFHxDA	27-Mar-18	** Vendor **	13-Jul-22	0.4
18C2723	PFODA	27-Mar-18	** Vendor **	13-Jul-22	0.4
18C2724	br-PFHxSK	27-Mar-18	** Vendor **	04-Jan-22	0.44
18C2725	br-PFOSK anion	27-Mar-18	** Vendor **	12-Jan-22	0.431
18C2726	L-PFBS	27-Mar-18	** Vendor **	21-Sep-22	0.454
18C2727	L-PFPeS	27-Mar-18	** Vendor **	11-Jan-22	0.428
18C2728	L-PFHpS	27-Mar-18	** Vendor **	01-Sep-22	0.42
18C2729	L-PFNS	27-Mar-18	** Vendor **	27-Sep-22	0.418
18C2730	L-PFDS	27-Mar-18	** Vendor **	08-Nov-22	0.415
18C2731	4:2 FTS	27-Mar-18	** Vendor **	12-Dec-21	0.43
18C2732	6:2FTS	27-Mar-18	** Vendor **	20-Apr-22	0.422
18C2733	8:2FTS	27-Mar-18	** Vendor **	24-Jan-23	0.418
18C2734	FOSA-I	27-Mar-18	** Vendor **	01-Sep-22	0.4
18C2737	N-MeFOSA-M	27-Mar-18	** Vendor **	05-Jul-22	2
18C2738	N-EtFOSA-M	27-Mar-18	** Vendor **	05-Jul-22	2
18C2739	N-MeFOSE-M	27-Mar-18	** Vendor **	24-Apr-22	2
18C2740	N-EtFOSE-M	27-Mar-18	** Vendor **	24-Apr-22	2
18D1306	br-NMeFOSAA	13-Apr-18	** Vendor **	17-Jan-23	0.4
18D1307	br-NEtFOSAA	13-Apr-18	** Vendor **	17-Jan-23	0.4

Description:	PFC NS Stock	Expires:	10-May-20
Standard Type:	Analyte Spike	Prepared:	10-May-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	31-May-18 14:02 by AEW

PFOS and PFHxS linear and branched components
As of 5/27/18, MeFOSAA and EtFOSAA include Linear and Branched.

Analyte	CAS Number	Concentration	Units
180517M1-4			
QC OPR Tester for New Spikes. Run on May 17, 2018. GRB			
L-PFOA		1	ug/mL
L-PFTrDA		1	ug/mL
L-PFHpA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

18E0923

Description:	PFC NS Stock	Expires:	10-May-20
Standard Type:	Analyte Spike	Prepared:	10-May-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	31-May-18 14:02 by AEW

PFOS and PFHxS linear and branched components
As of 5/27/18, MeFOSAA and EtFOSAA include Linear and Branched.
180517M1-4
QC OPR Tester for New Spikes. Run on May 17, 2018. GRB

Analyte	CAS Number	Concentration	Units
L-PFHpS		1	ug/mL
L-PFHxA		1	ug/mL
L-PFHxDA		1	ug/mL
L-PFHxS		0.812	ug/mL
L-PFDoA		1	ug/mL
L-PFNS	68259-12-1	1	ug/mL
L-PFDA		1	ug/mL
L-PFODA		1	ug/mL
L-PFOS		0.789	ug/mL
L-PFOSA		1	ug/mL
L-PFPeA		1	ug/mL
L-PFPeS	2706-91-4	1	ug/mL
4:2 FTS	757124-72-4	1	ug/mL
L-PFNA		1	ug/mL
L-4:2 FTS	75124-72-4	1	ug/mL
6:2 FTS	27619-97-2	1	ug/mL
8:2 FTS	39108-34-4	1	ug/mL
Br-EtFOSAA		0.224	ug/mL
Br-MeFOSAA		0.24	ug/mL
Br-PFHxS	3871-99-6	0.189	ug/mL
EtFOSA	4151-50-2	5	ug/mL
L-PFDS		1	ug/mL
EtFOSE	1691-99-2	5	ug/mL
L-PFUnA		1	ug/mL
L-6:2 FTS		1	ug/mL
L-8:2FTS		1	ug/mL
L-EtFOSAA	2991-50-6	1	ug/mL
L-MeFOSAA	2355-31-9	1	ug/mL
L-PFBA		1	ug/mL
L-PFBS		1	ug/mL
EtFOSAA	2991-50-6	1	ug/mL
Total EtFOSAA		1	ug/mL
L-PFTeDA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

18E0923

Description:	PFC NS Stock	Expires:	10-May-20
Standard Type:	Analyte Spike	Prepared:	10-May-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	31-May-18 14:02 by AEW

PFOS and PFHxS linear and branched components
As of 5/27/18, MeFOSAA and EtFOSAA include Linear and Branched.
180517M1-4
QC OPR Tester for New Spikes. Run on May 17, 2018. GRB

Analyte	CAS Number	Concentration	Units
PFOSA	754-91-6	1	ug/mL
PFPeA	2706-90-3	1	ug/mL
PFPeS	2706-91-4	1	ug/mL
PFTeDA	376-06-7	1	ug/mL
PFTrDA	72629-94-8	1	ug/mL
PFODA	16517-11-6	1	ug/mL
Total 6:2 FTS		1	ug/mL
PFOA	335-67-1	1	ug/mL
Total MeFOSAA		1	ug/mL
Total PFDS		1	ug/mL
Total PFHpS		1	ug/mL
Total PFHxS		1	ug/mL
Total PFOA		1	ug/mL
Total PFOS		1	ug/mL
PFUnA	2058-94-8	1	ug/mL
PFHpA	375-85-9	1	ug/mL
MeFOSA	31506-32-8	5	ug/mL
MeFOSAA	2355-31-9	1	ug/mL
MeFOSE	24448-09-7	5	ug/mL
PFBA	375-22-4	1	ug/mL
PFBS	375-73-5	1	ug/mL
PFDA	335-76-2	1	ug/mL
PFOS	1763-23-1	1	ug/mL
PFDS	335-77-3	1	ug/mL
Total PFUnA		1	ug/mL
PFHpS	375-92-8	1	ug/mL
PFHxA	307-24-4	1	ug/mL
PFHxDA	67905-19-5	1	ug/mL
PFHxS	355-46-4	1	ug/mL
PFNA	375-95-1	1	ug/mL
PFNS	68259-12-1	1	ug/mL
PFDoA	307-55-1	1	ug/mL

18C2711

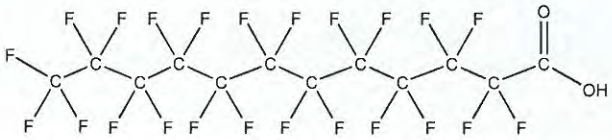
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDoA
COMPOUND: Perfluoro-n-dodecanoic acid
LOT NUMBER: PFDoA0517

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) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2711

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

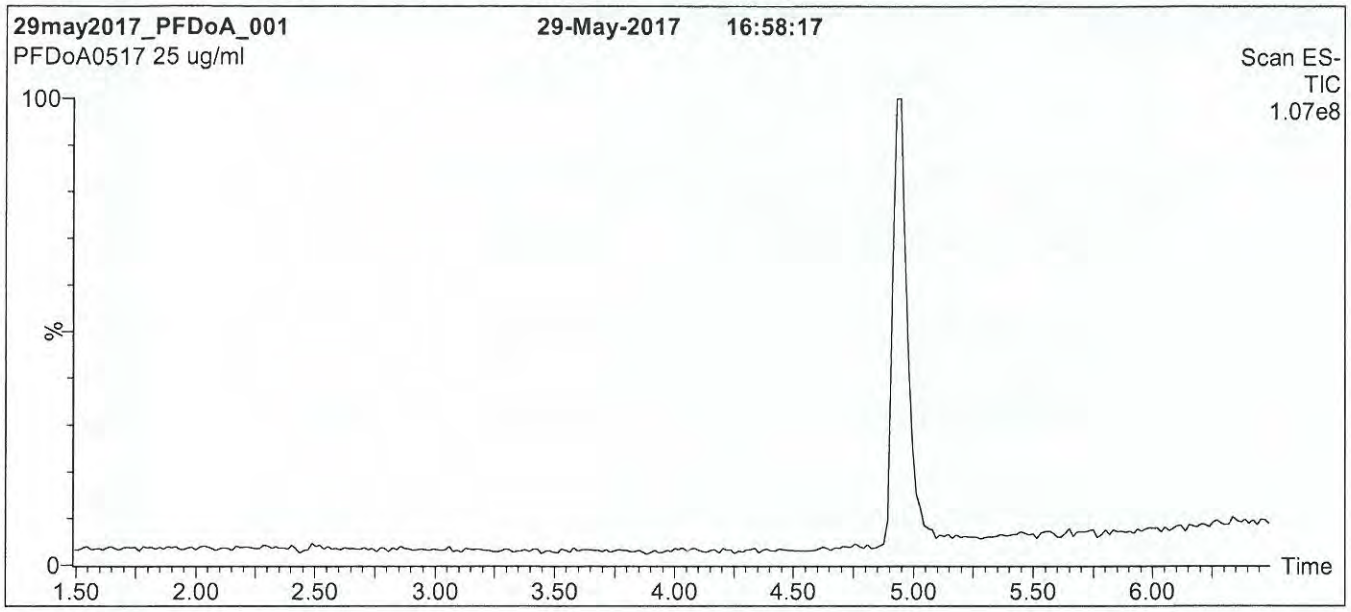
CALA Testing Accreditation No. A 1226

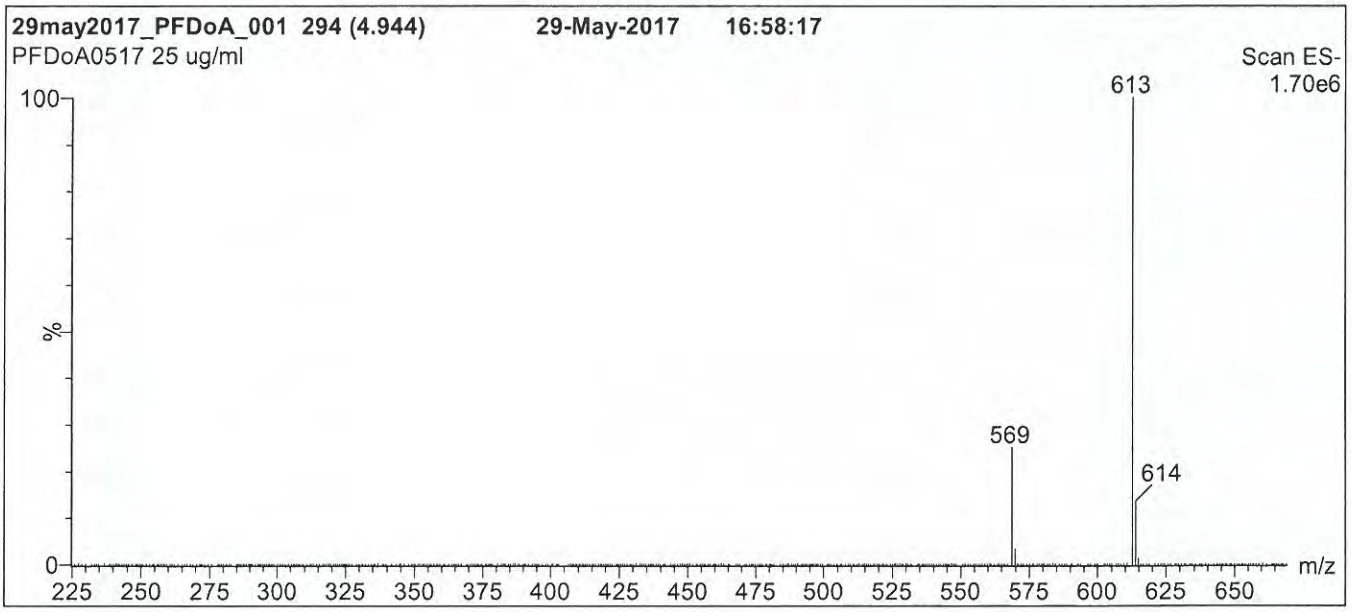
ANAB ACCREDITED Reference Material Producer

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

18C2711

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: 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

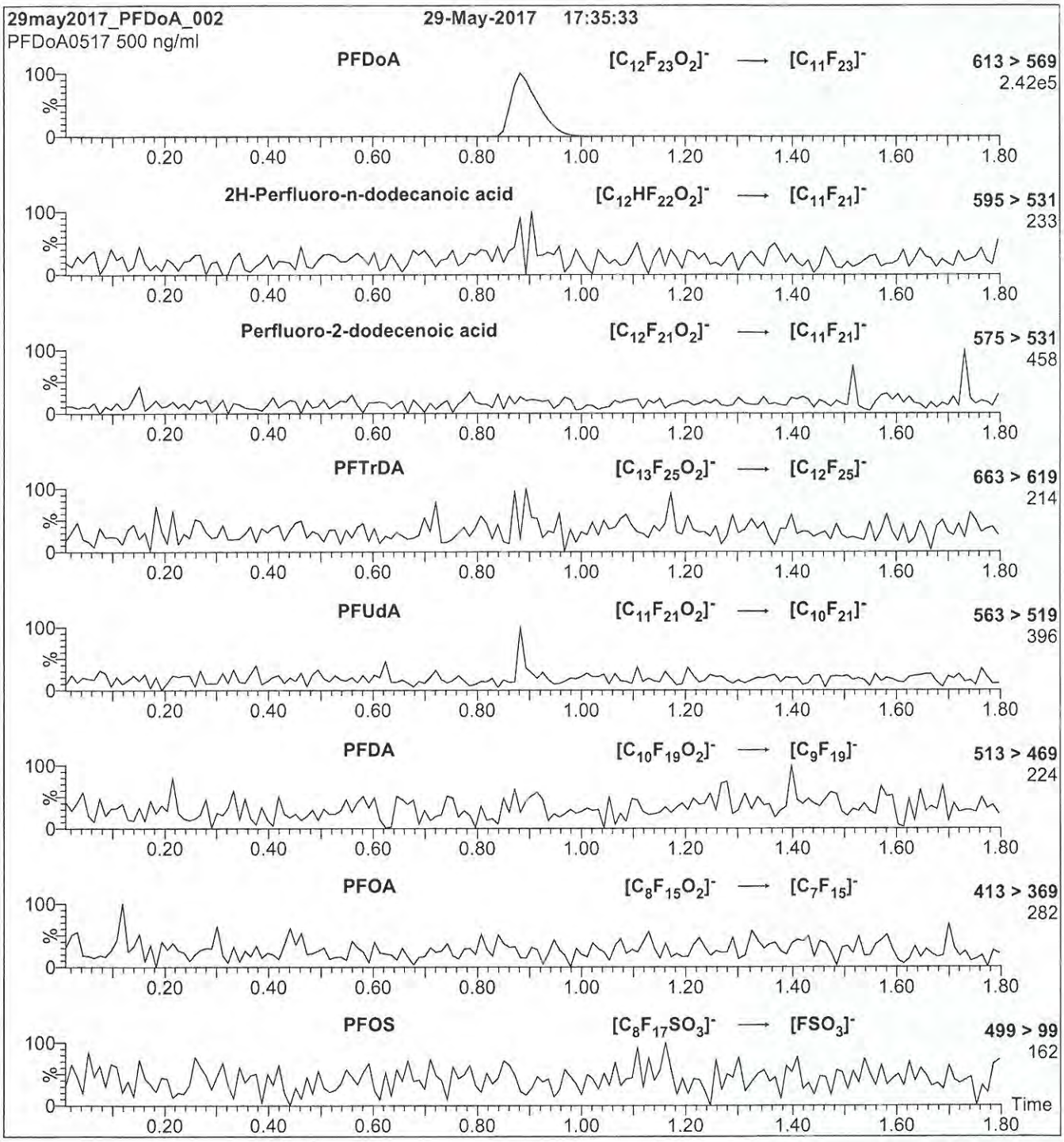
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18C2711

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



Conditions for Figure 2:

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

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

18C2712

WELLINGTON LABORATORIES

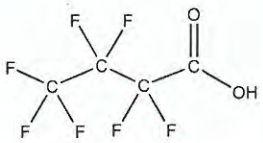
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA1217

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2712

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

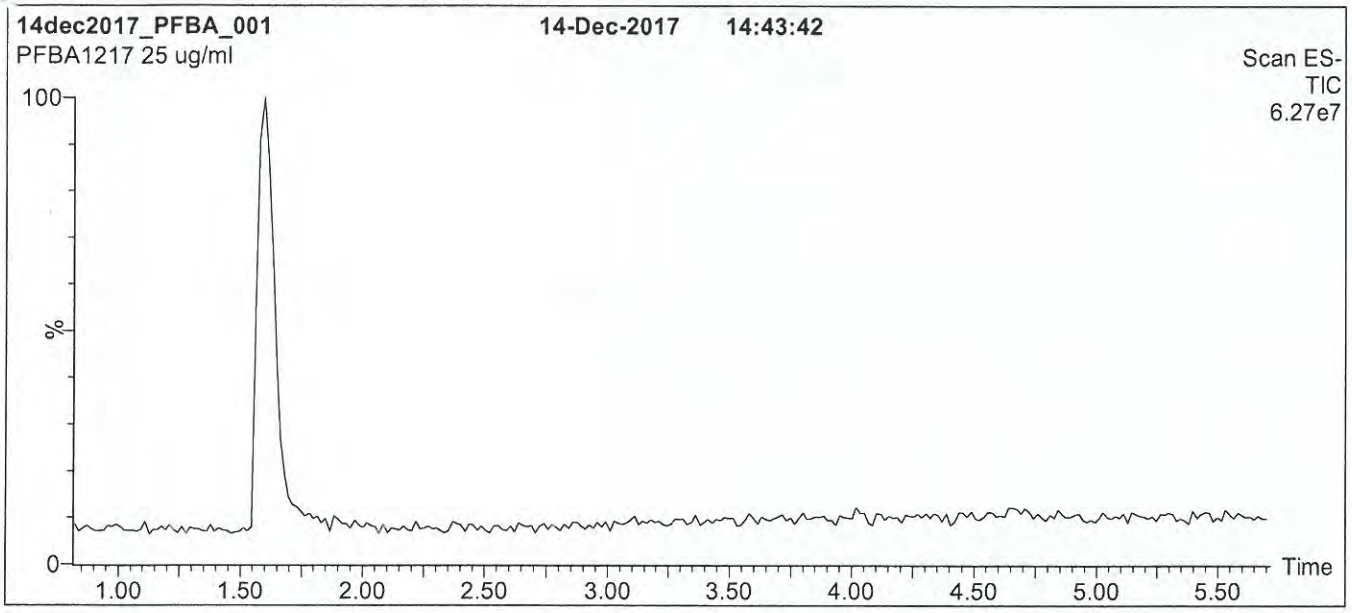
CALA Testing

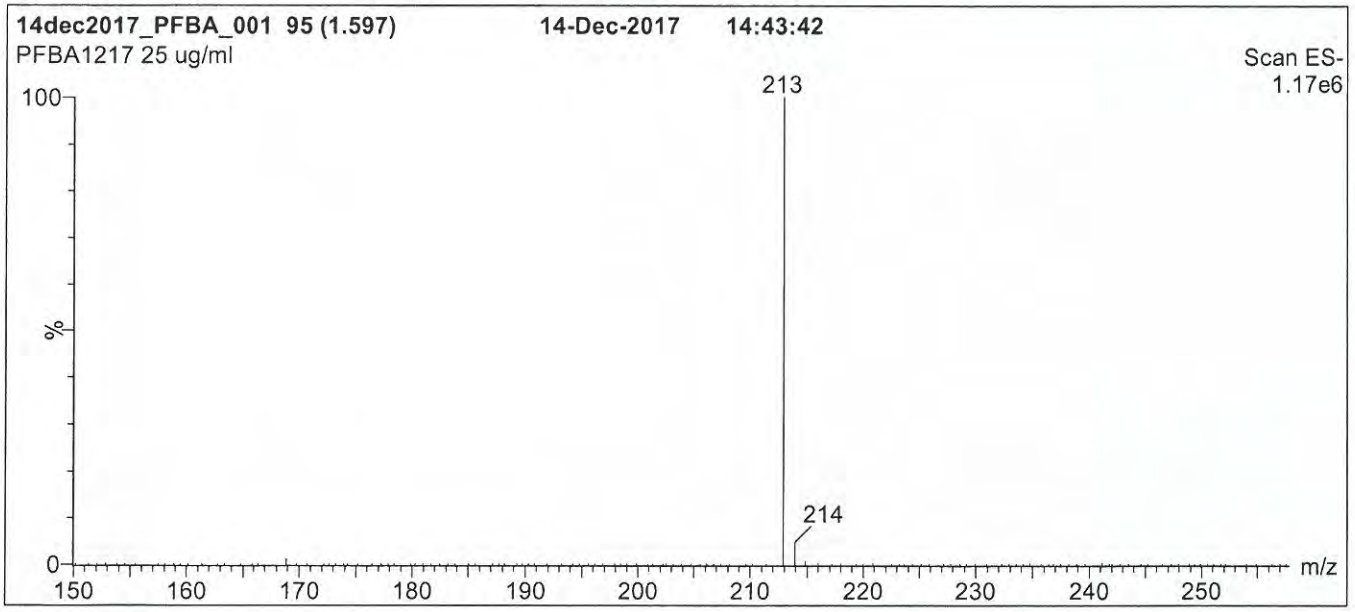
ANAB ACCREDITED Reference Material Producer

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

18C2712

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

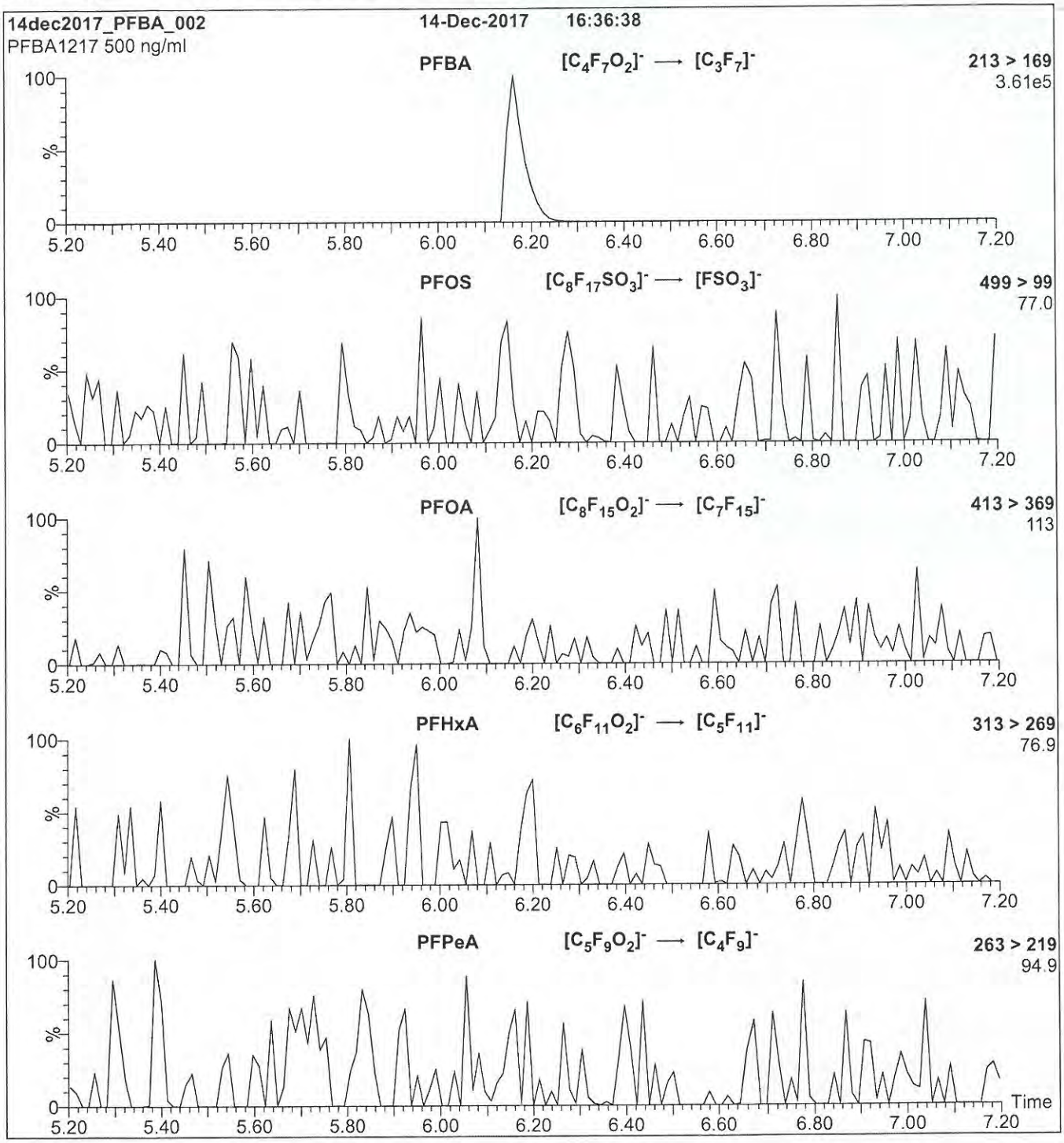
MS Parameters

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

18C2712

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) = 3.31e-3
Collision Energy (eV) = 10

18C2713

WELLINGTON LABORATORIES

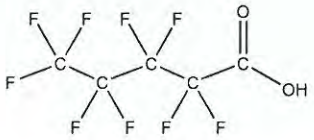
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0617

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 264.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/14/2017
EXPIRY DATE: (mm/dd/yyyy) 06/14/2022
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.
- 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: _____ **Date:** 06/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C273

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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TRACEABILITY:

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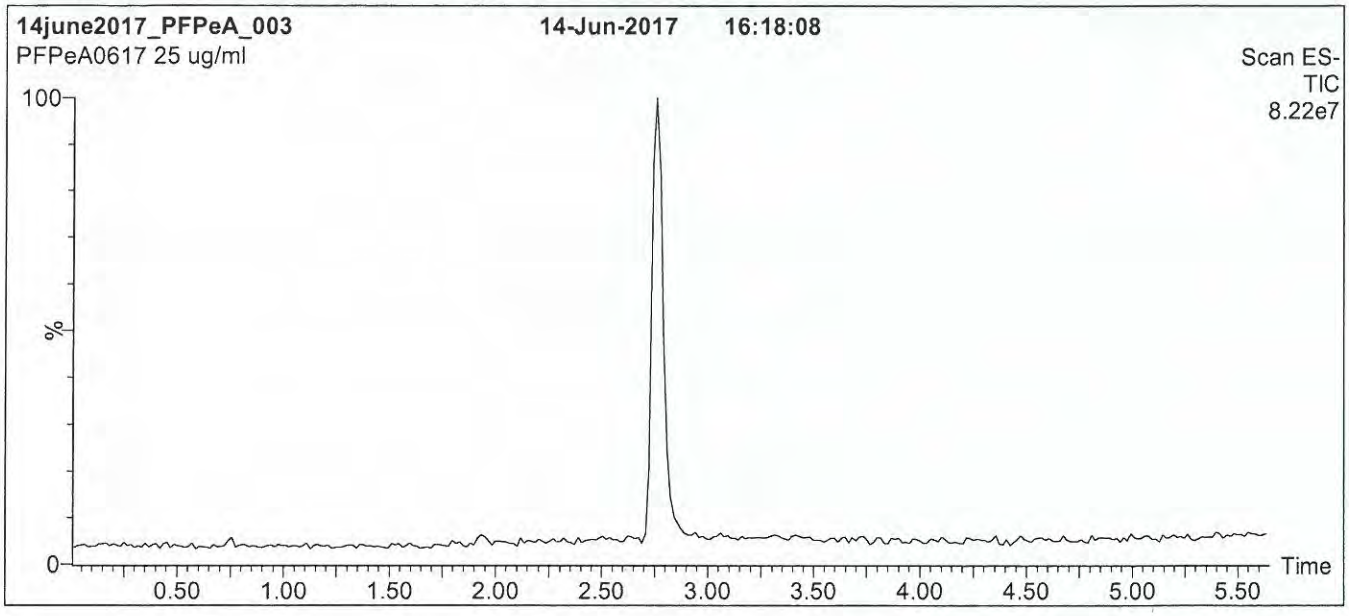
CALA Testing

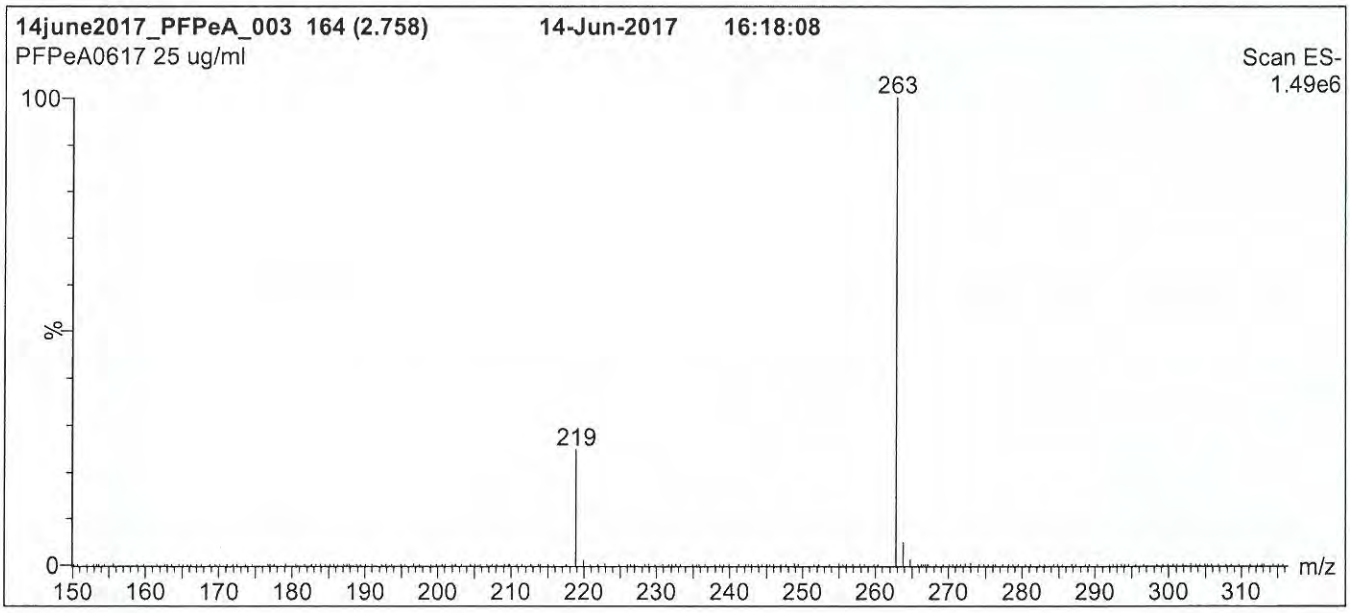
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

182713

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

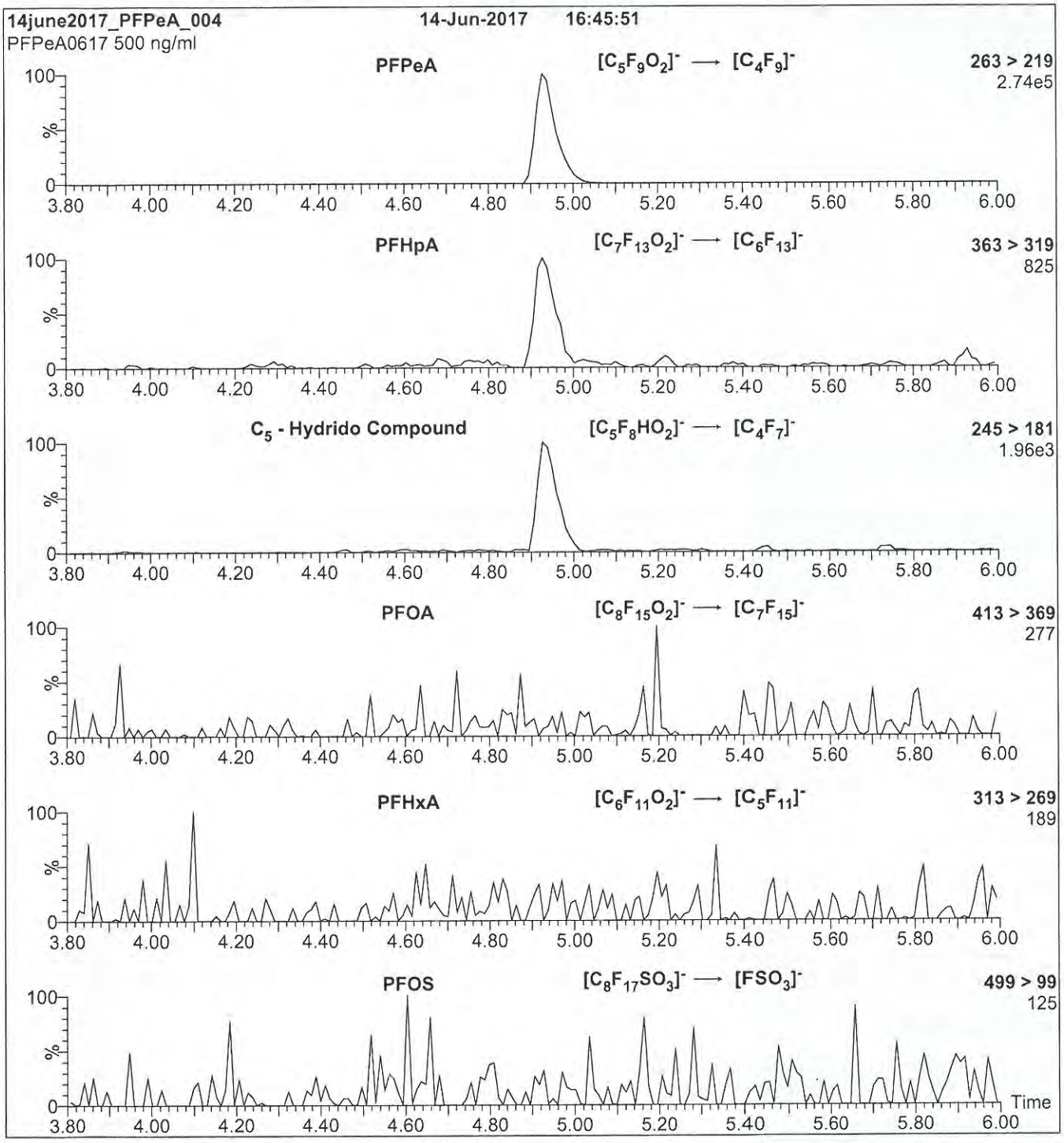
MS Parameters

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

18C2713

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) = 3.62e-3
Collision Energy (eV) = 9

18C2714

WELLINGTON LABORATORIES

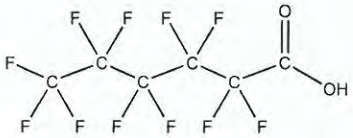
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA0917

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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.
- Contains ~ 1.0% of branched isomers.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2714

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

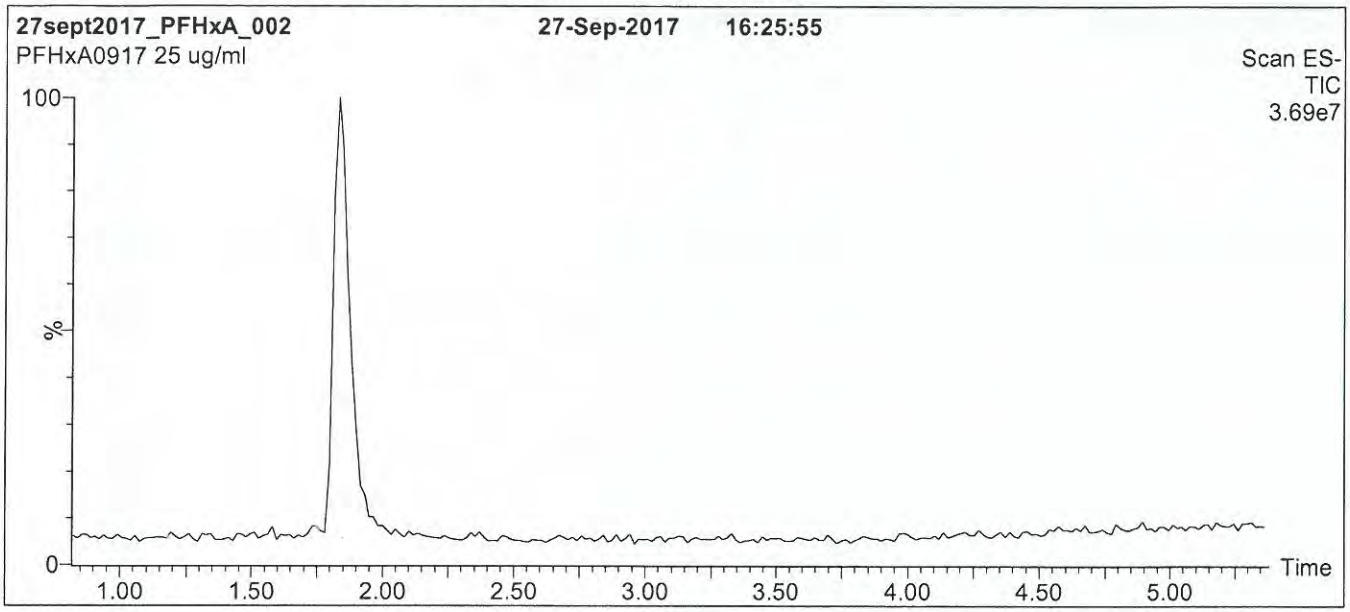
CALA Testing Accreditation No. A1226

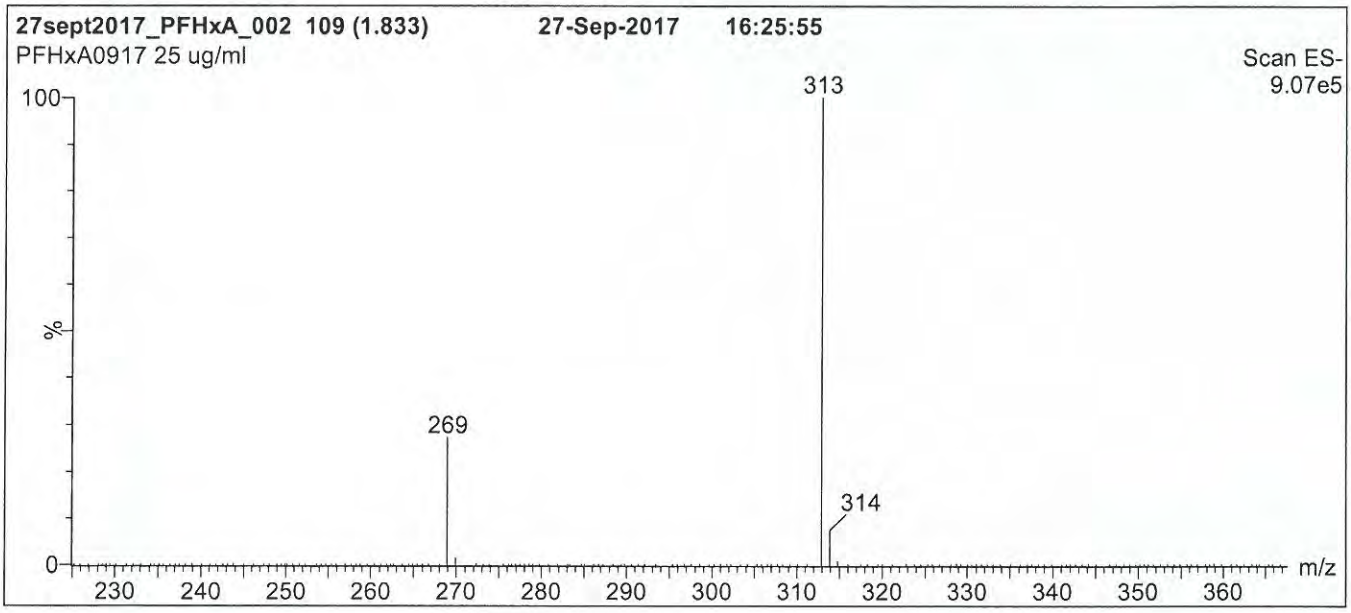
ANAB ACCREDITED Reference Material Producer

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

18C2714

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

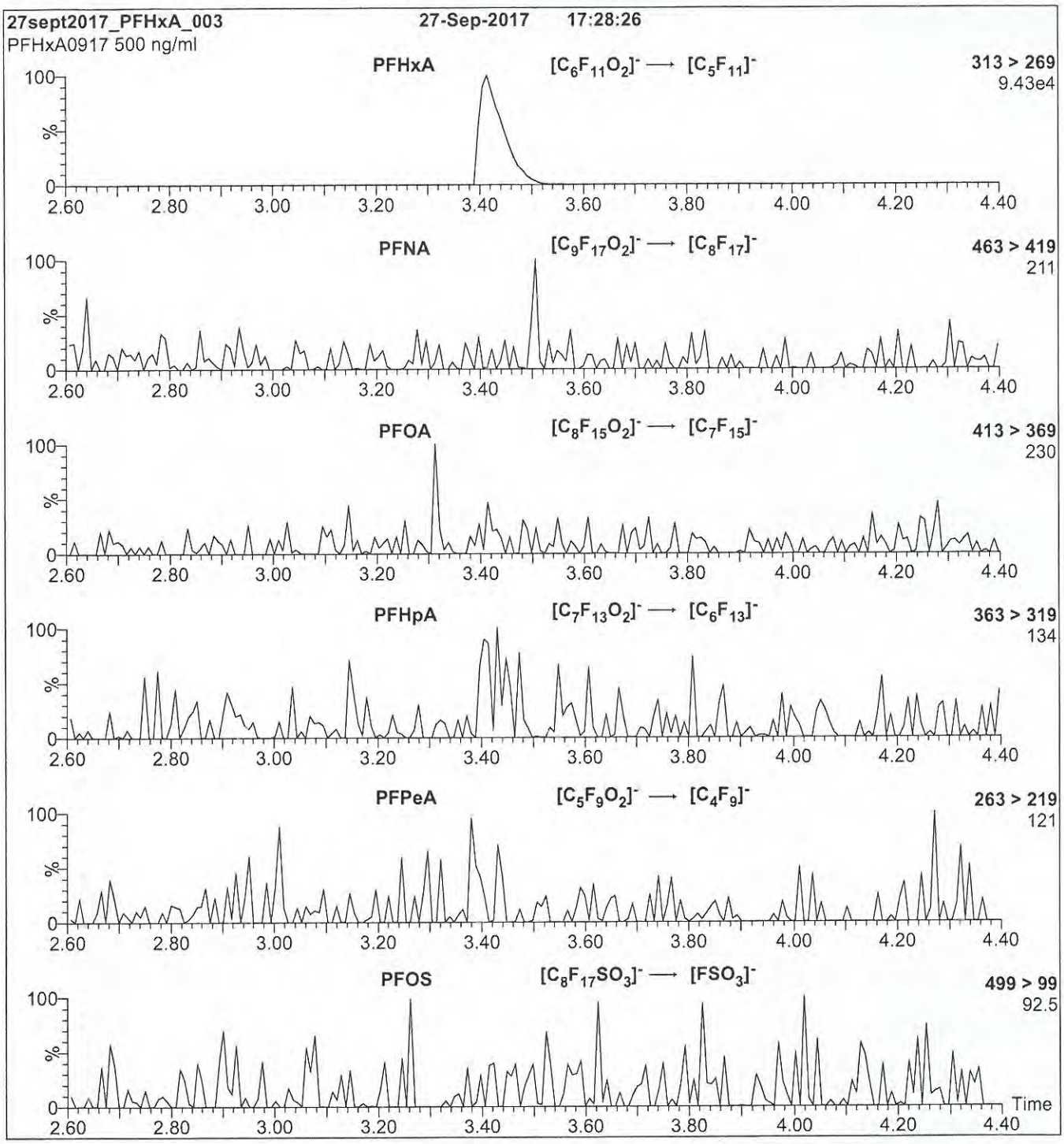
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18C2714

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) = 3.46e-3
Collision Energy (eV) = 10

18C2715

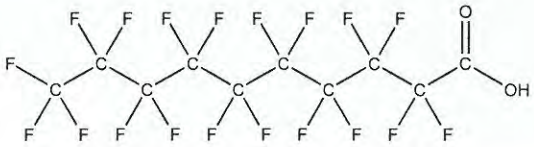
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA
COMPOUND: Perfluoro-n-decanoic acid
LOT NUMBER: PFDA1217

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) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
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.
- Contains ~ 0.2% of perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1802715

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED Reference Material Producer

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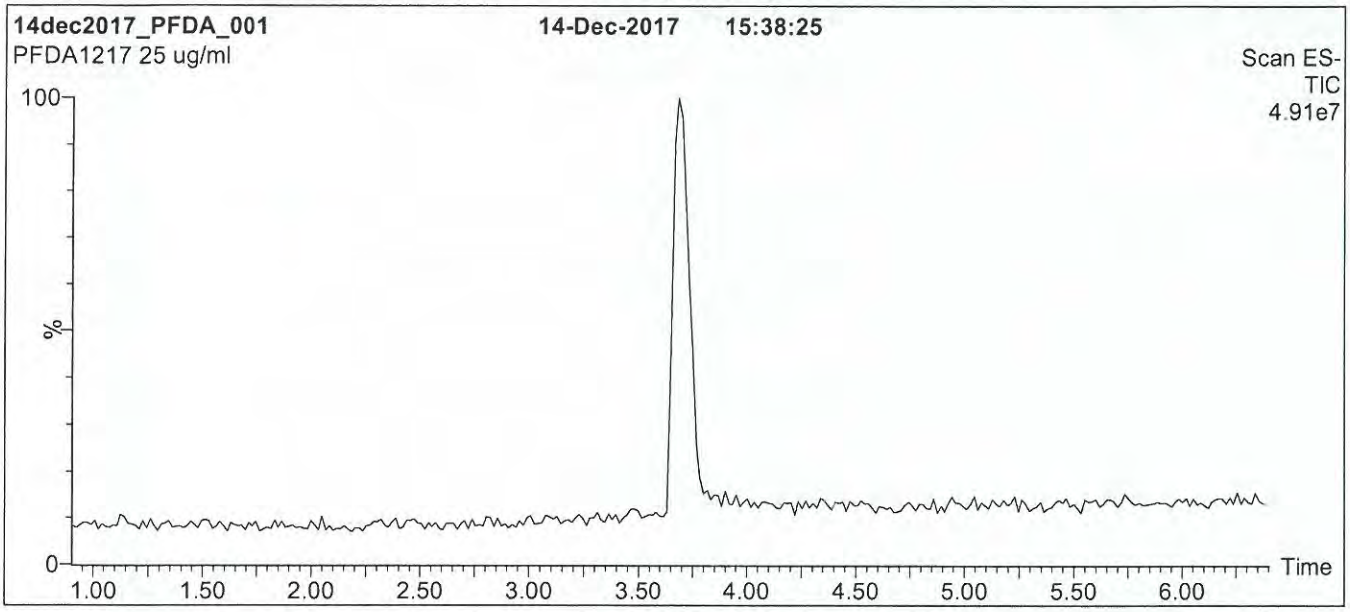
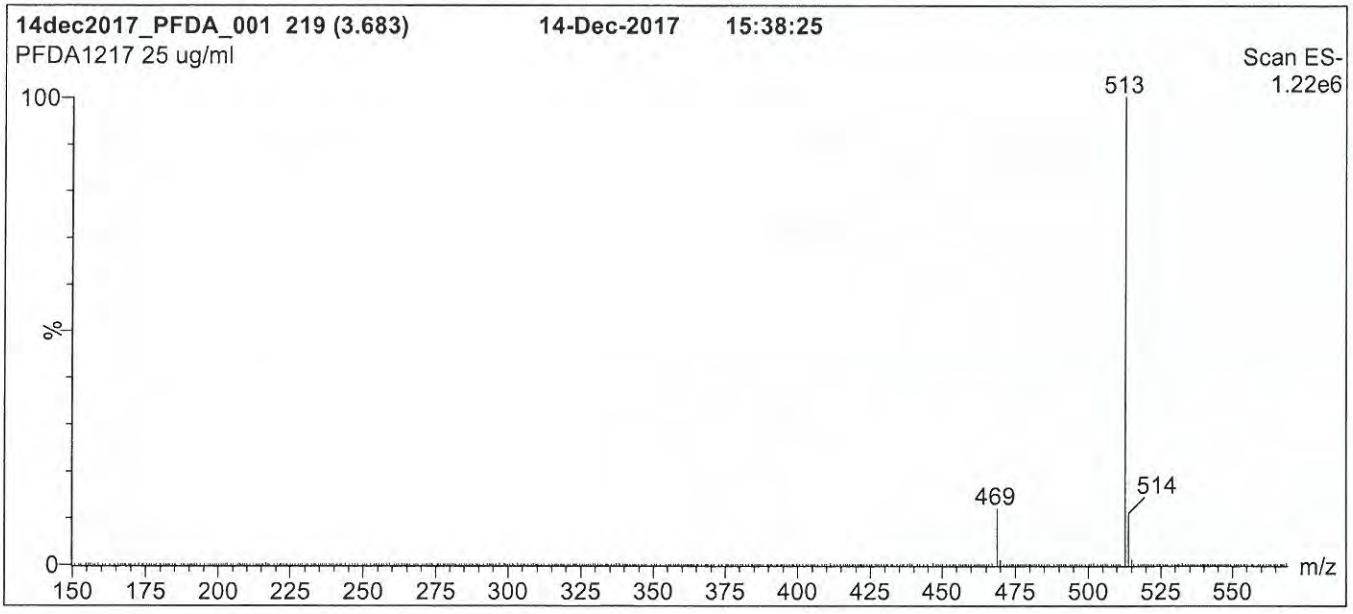
1802715

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: 55% (80:20 MeOH:ACN) / 45% 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

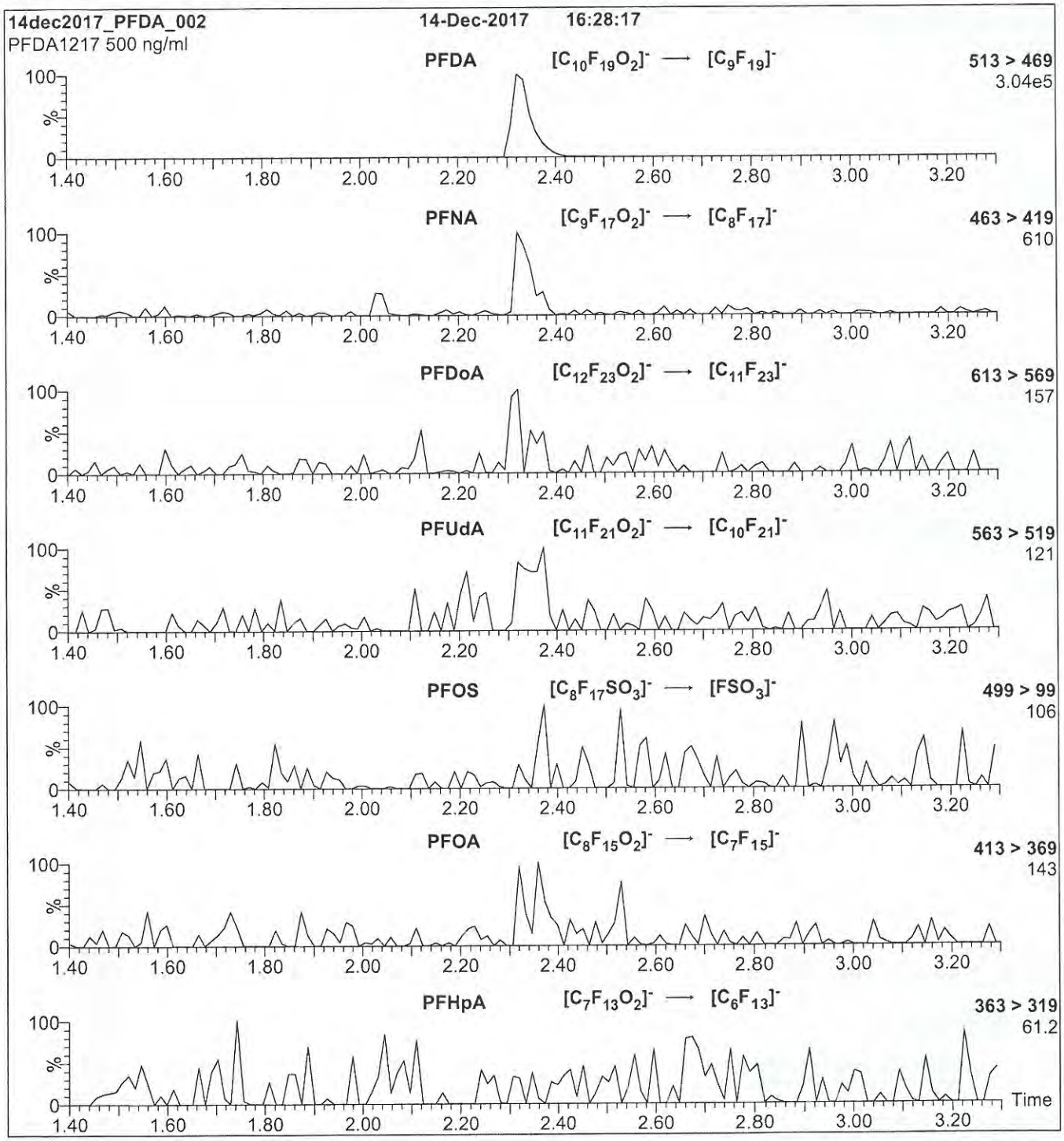
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18C2715

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) = 3.35e-3
Collision Energy (eV) = 13

18C2716

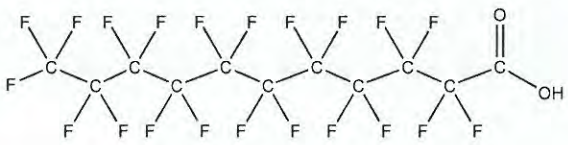
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid
LOT NUMBER: PFUdA0917

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) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2716

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

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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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation Inc. A1226

ANAB ACCREDITED Reference Material Producer

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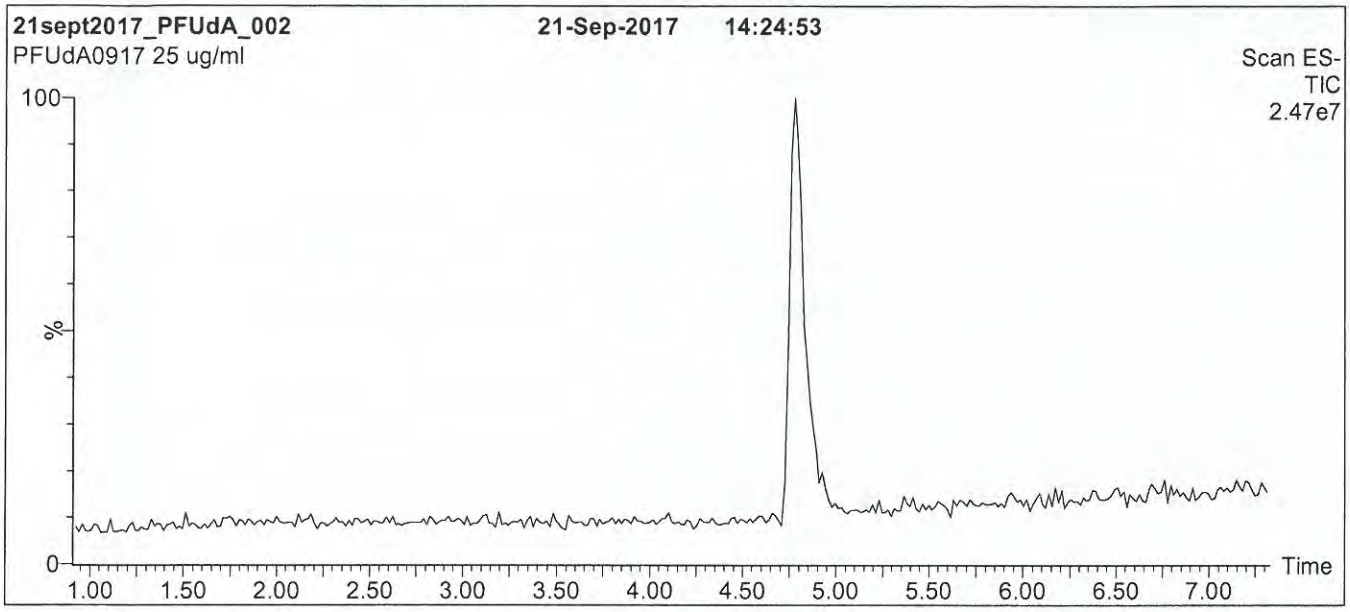
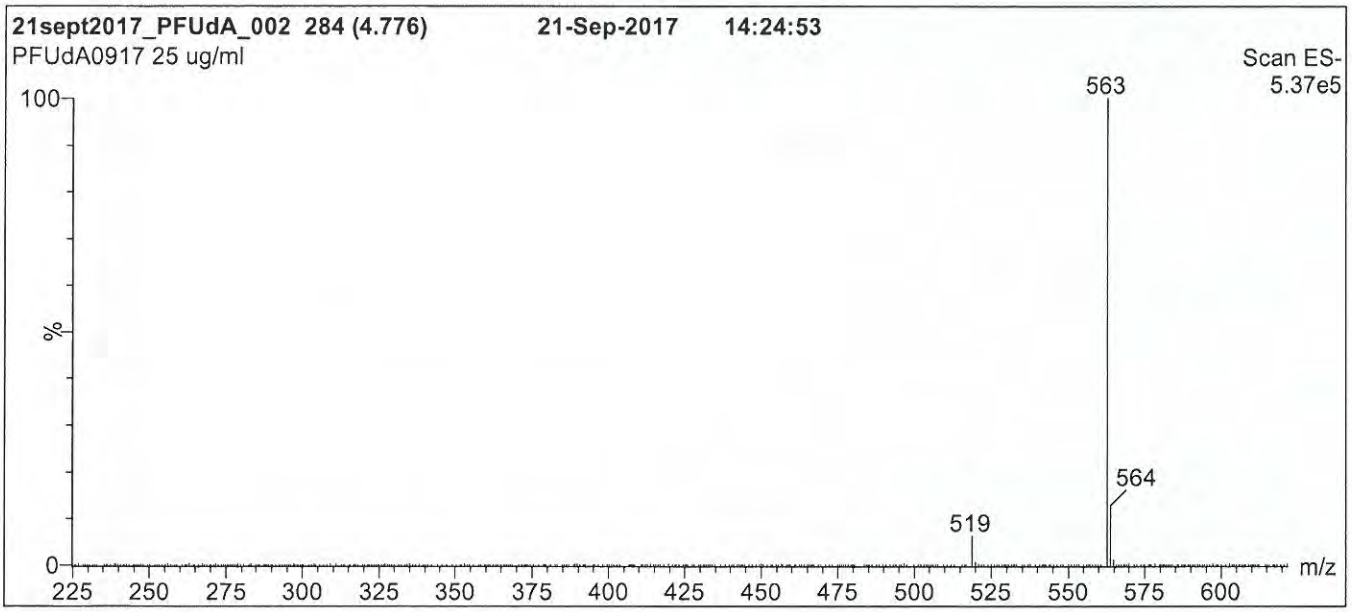
18C2716

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 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

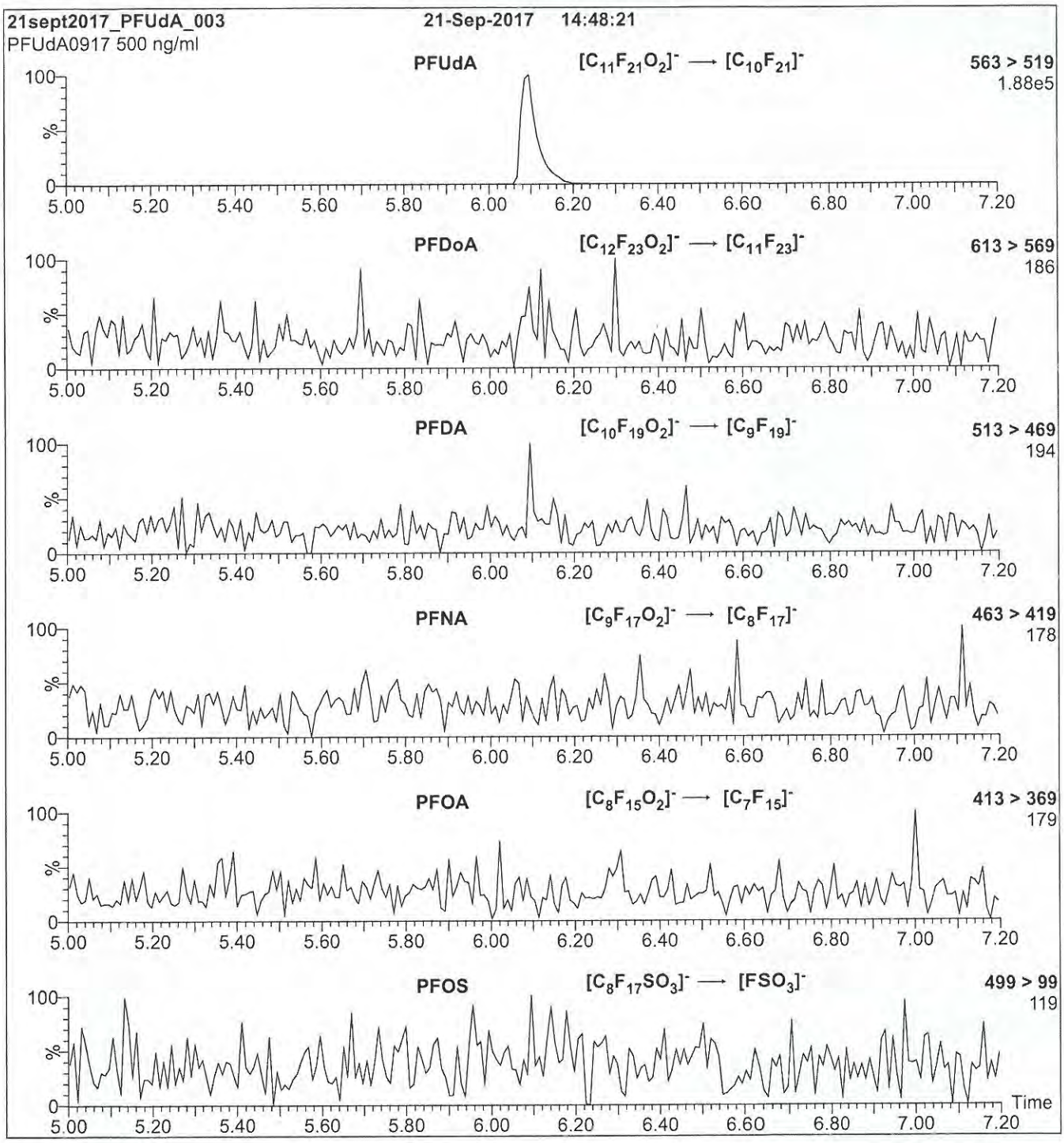
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

18C2716

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



Conditions for Figure 2:

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

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) = 3.46e-3
Collision Energy (eV) = 11

18C2717

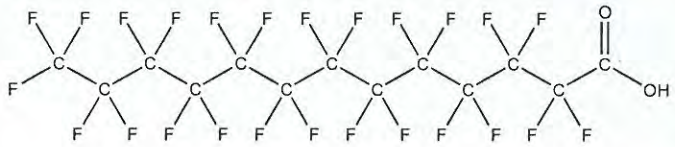
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid
LOT NUMBER: PFTrDA0517

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) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
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.
- 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, General Manager
Date: 05/04/2017 (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

18C2717

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

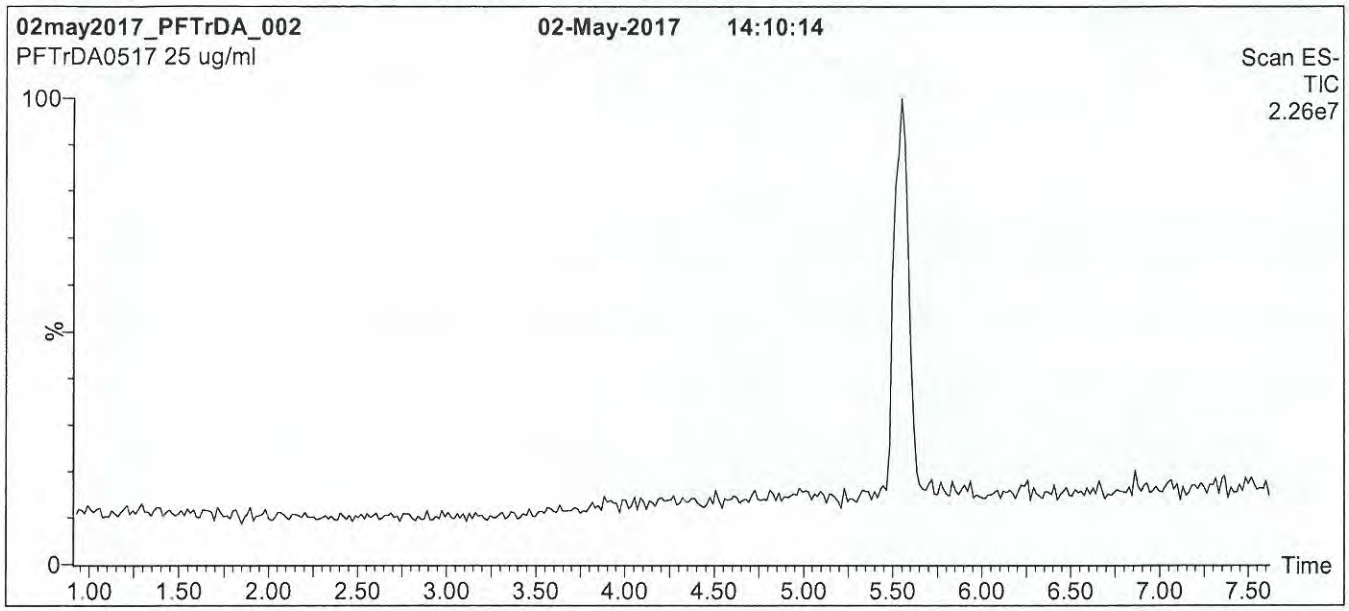
CALA

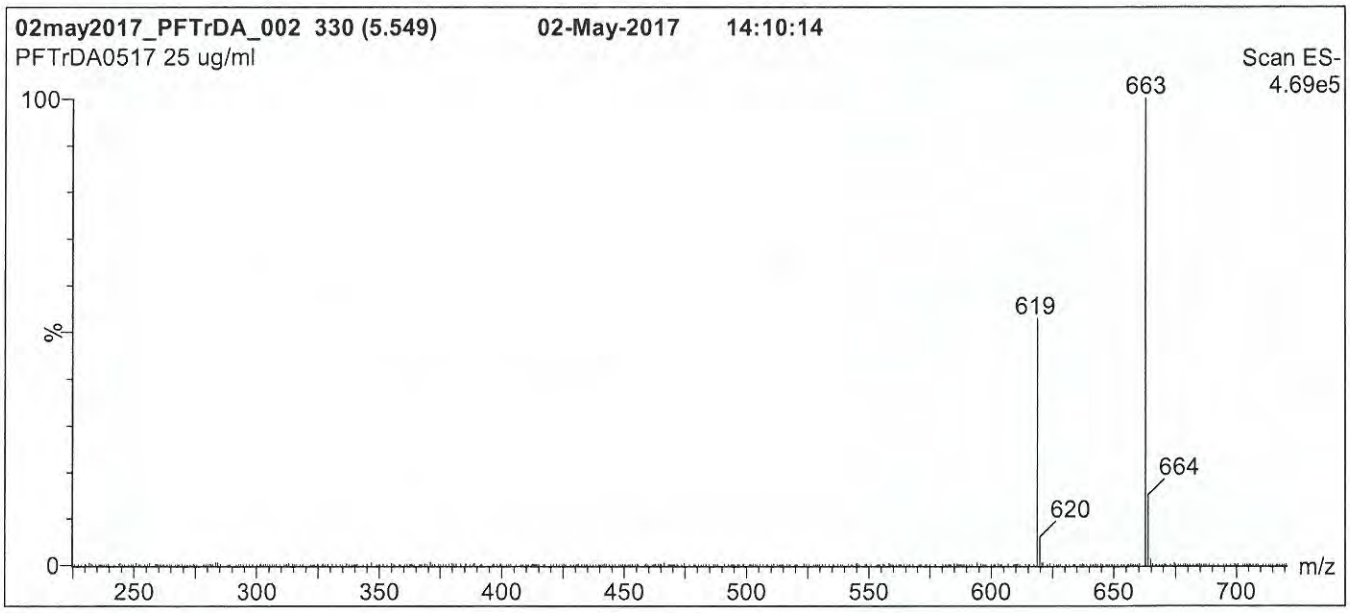
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

18C2717

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

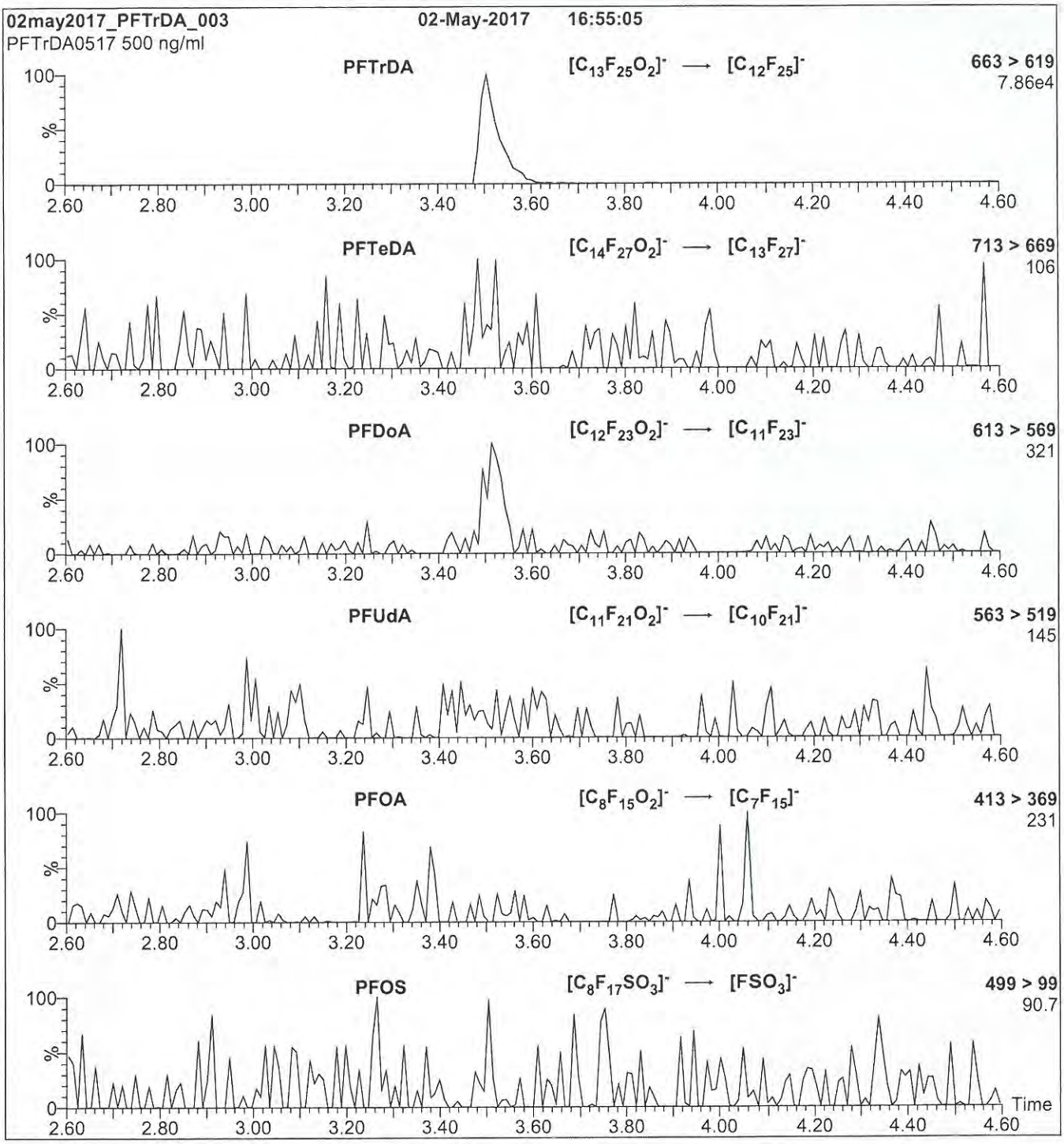
MS Parameters

Experiment: Full Scan (225 - 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

18C2717

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 15

18C2718

WELLINGTON LABORATORIES

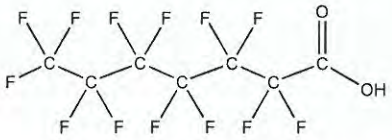
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFHpA0917

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/29/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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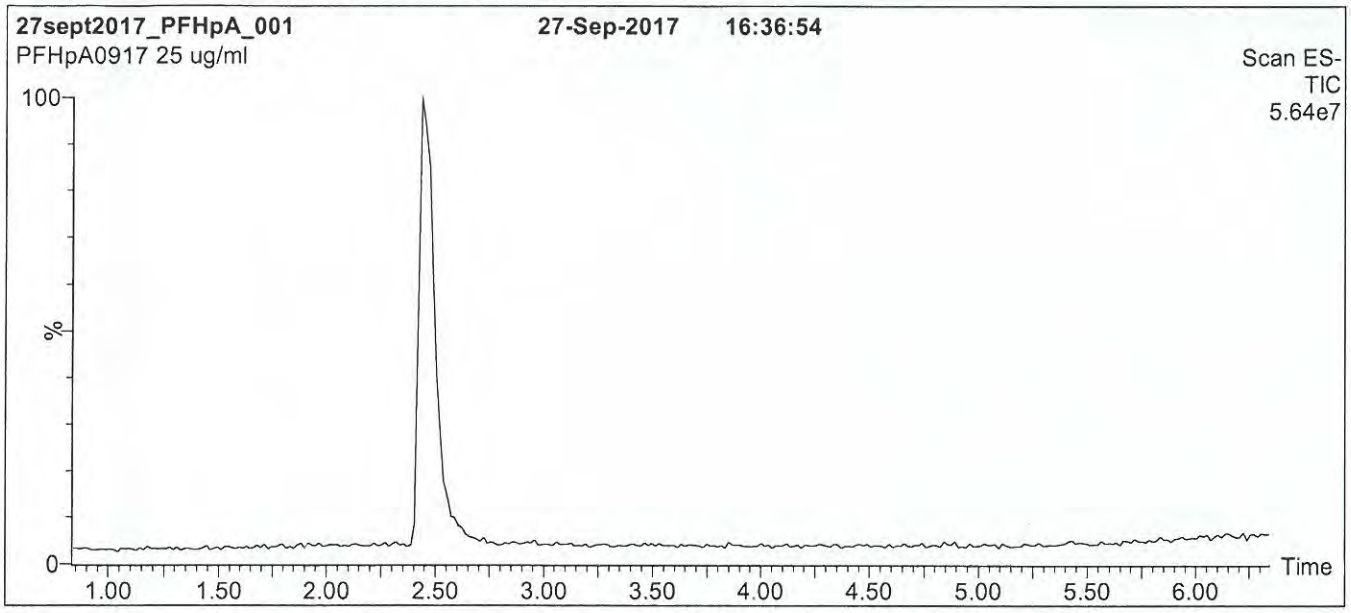
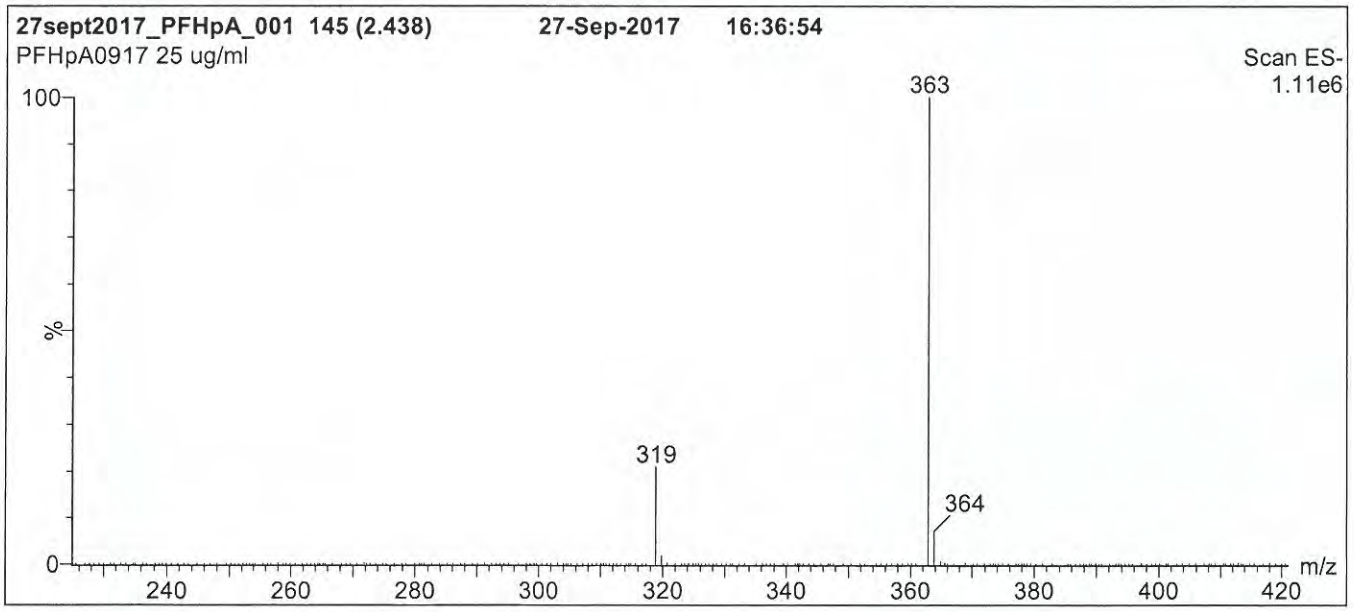
18C2718

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

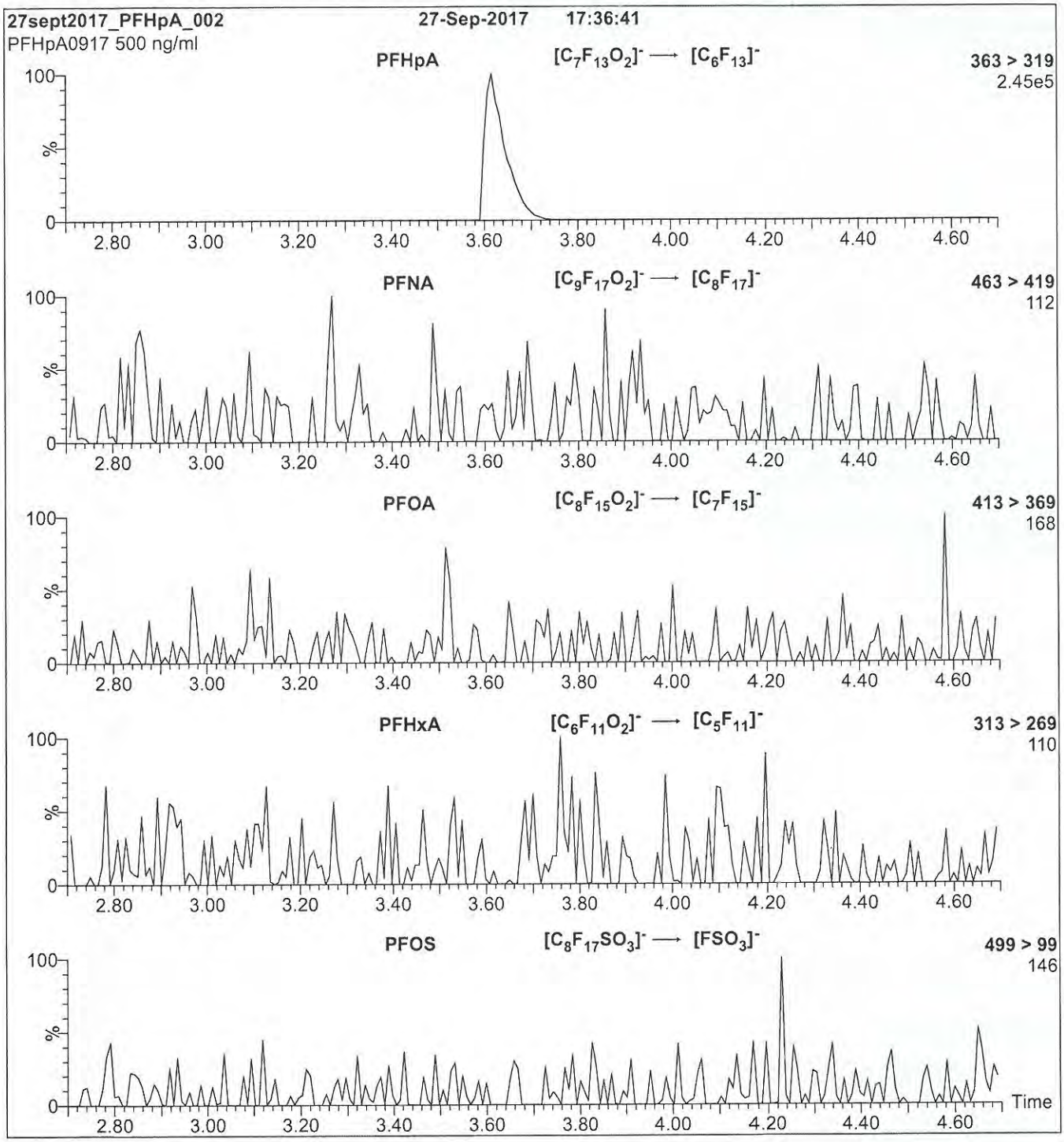
MS Parameters

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

18C2718

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



Conditions for Figure 2:

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

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) = 11

18C2719

WELLINGTON LABORATORIES

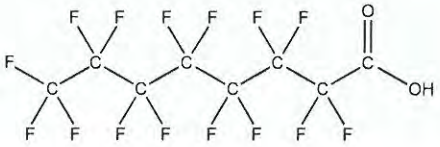
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0917

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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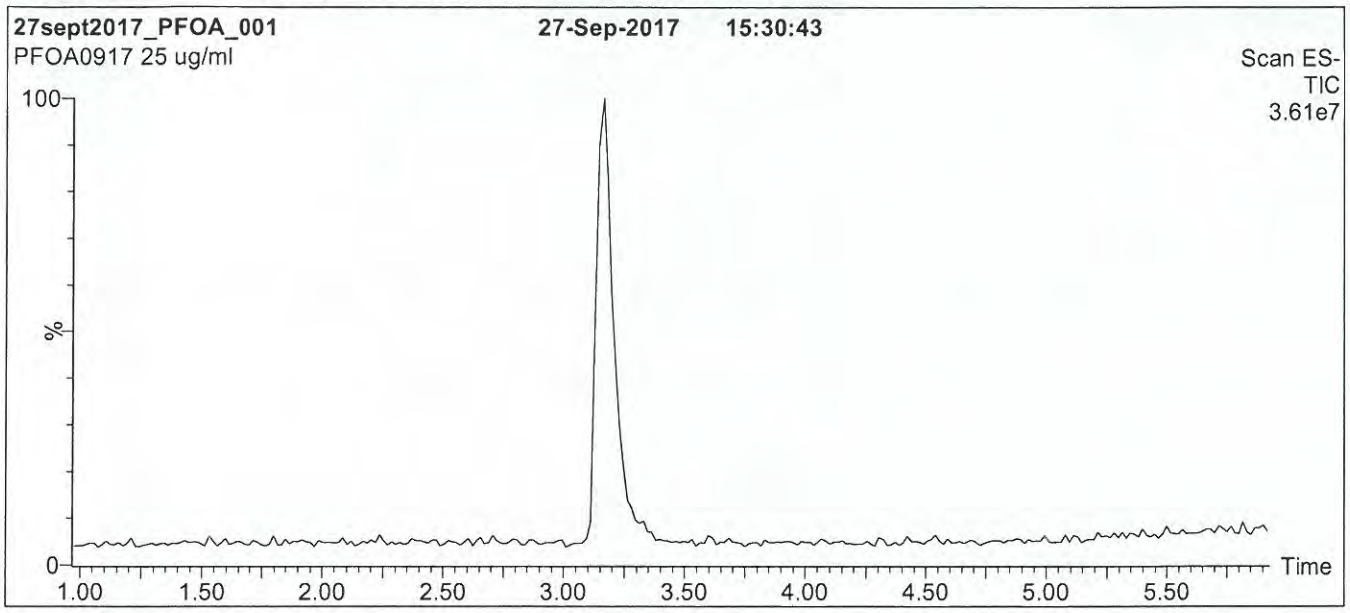
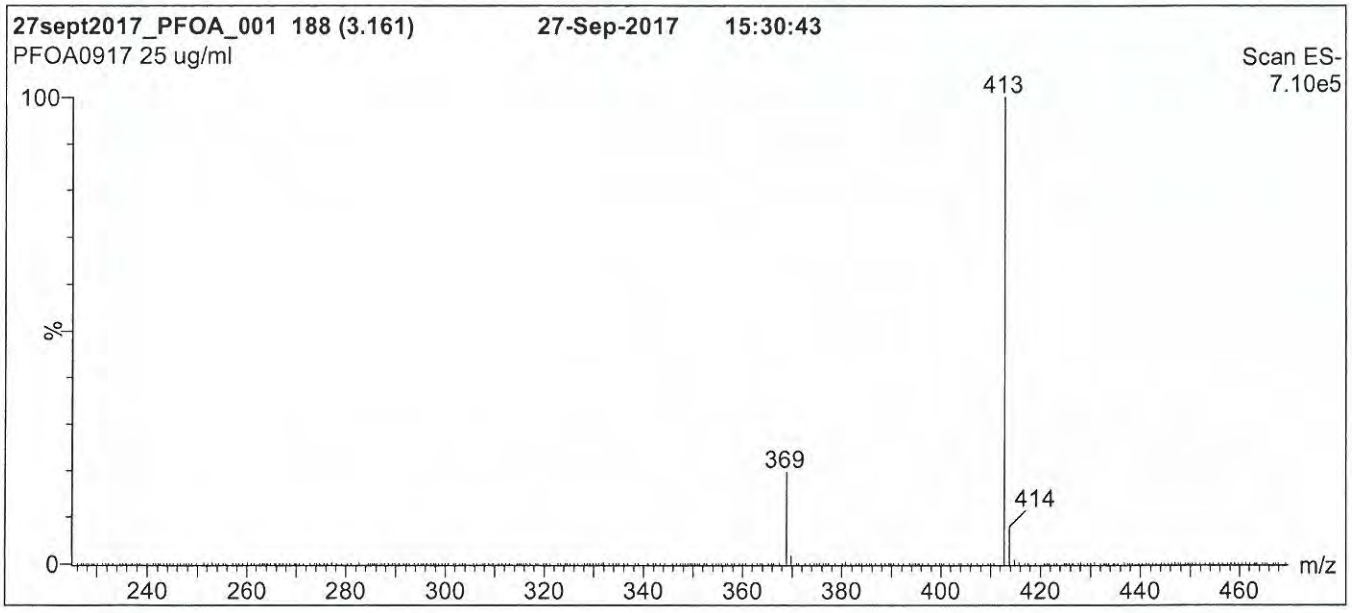
18C2719

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
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

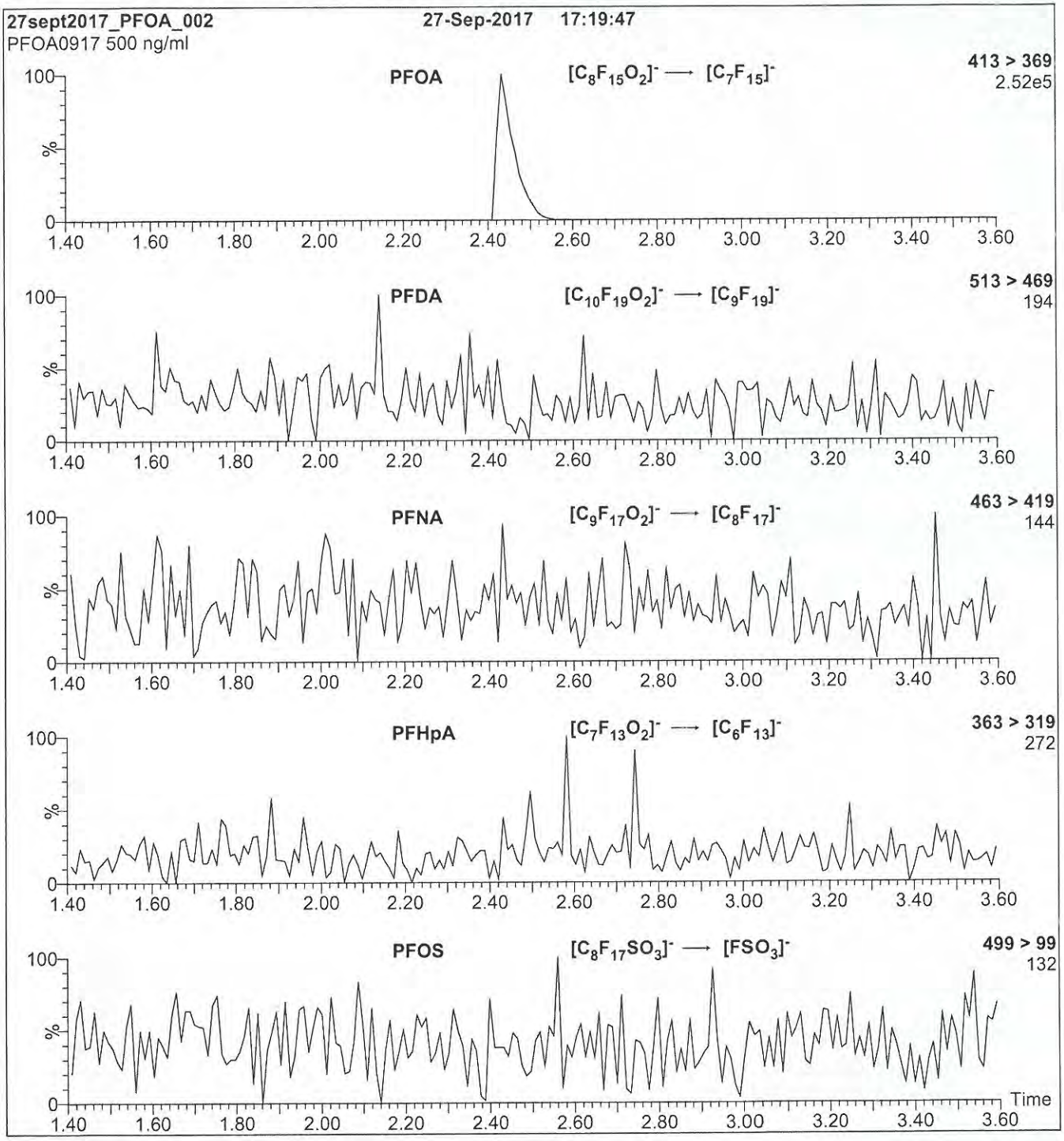
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18C2719

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

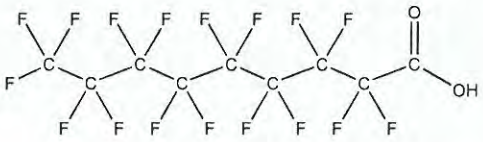
Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

18C2720

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFNA	**LOT NUMBER:**	PFNA0717
COMPOUND:	Perfluoro-n-nonanoic acid		
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)	07/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/20/2022		
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.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/24/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

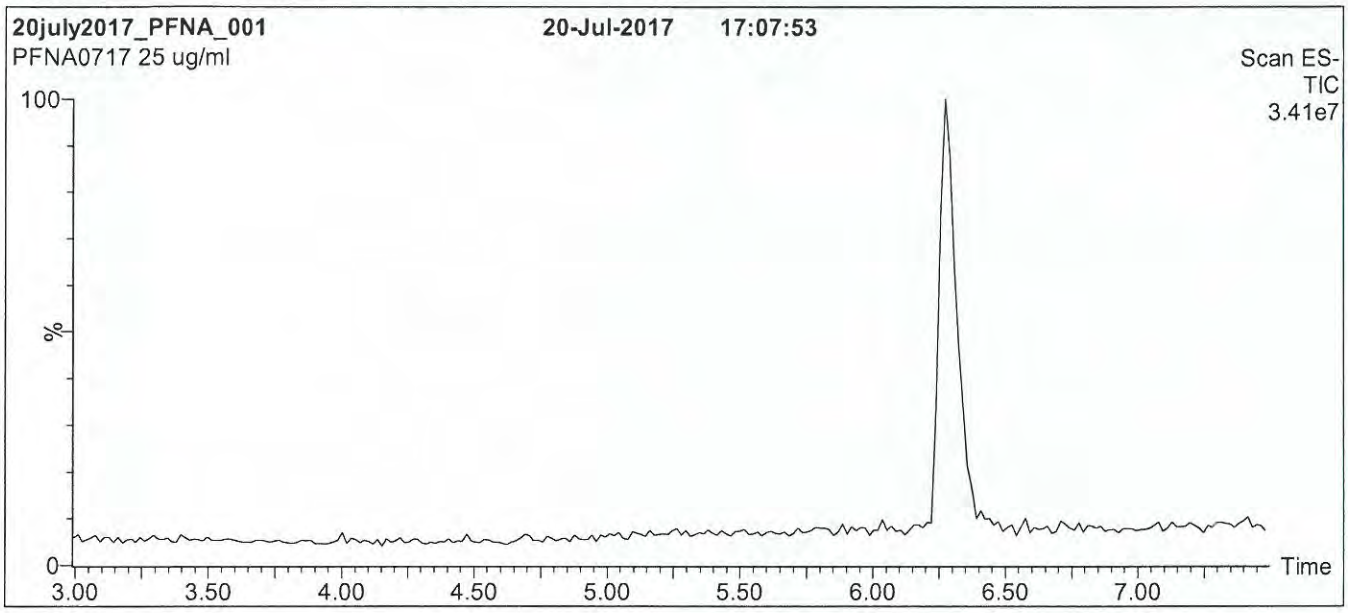
CALA Testing

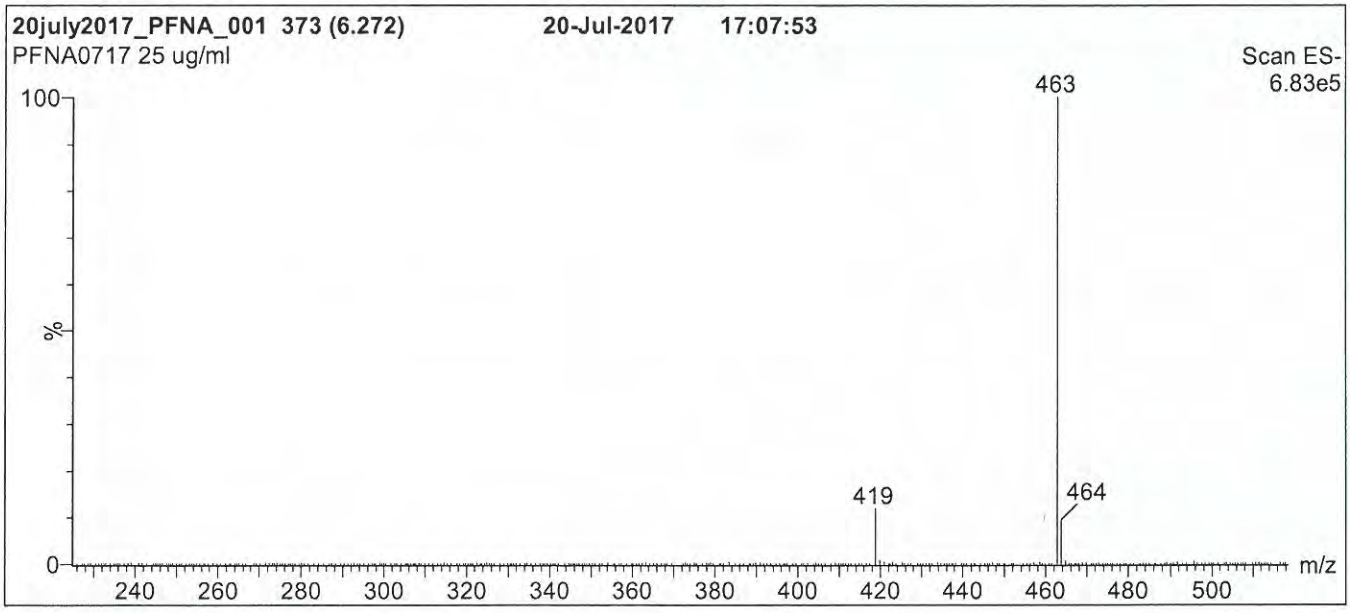
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

1801720

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)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

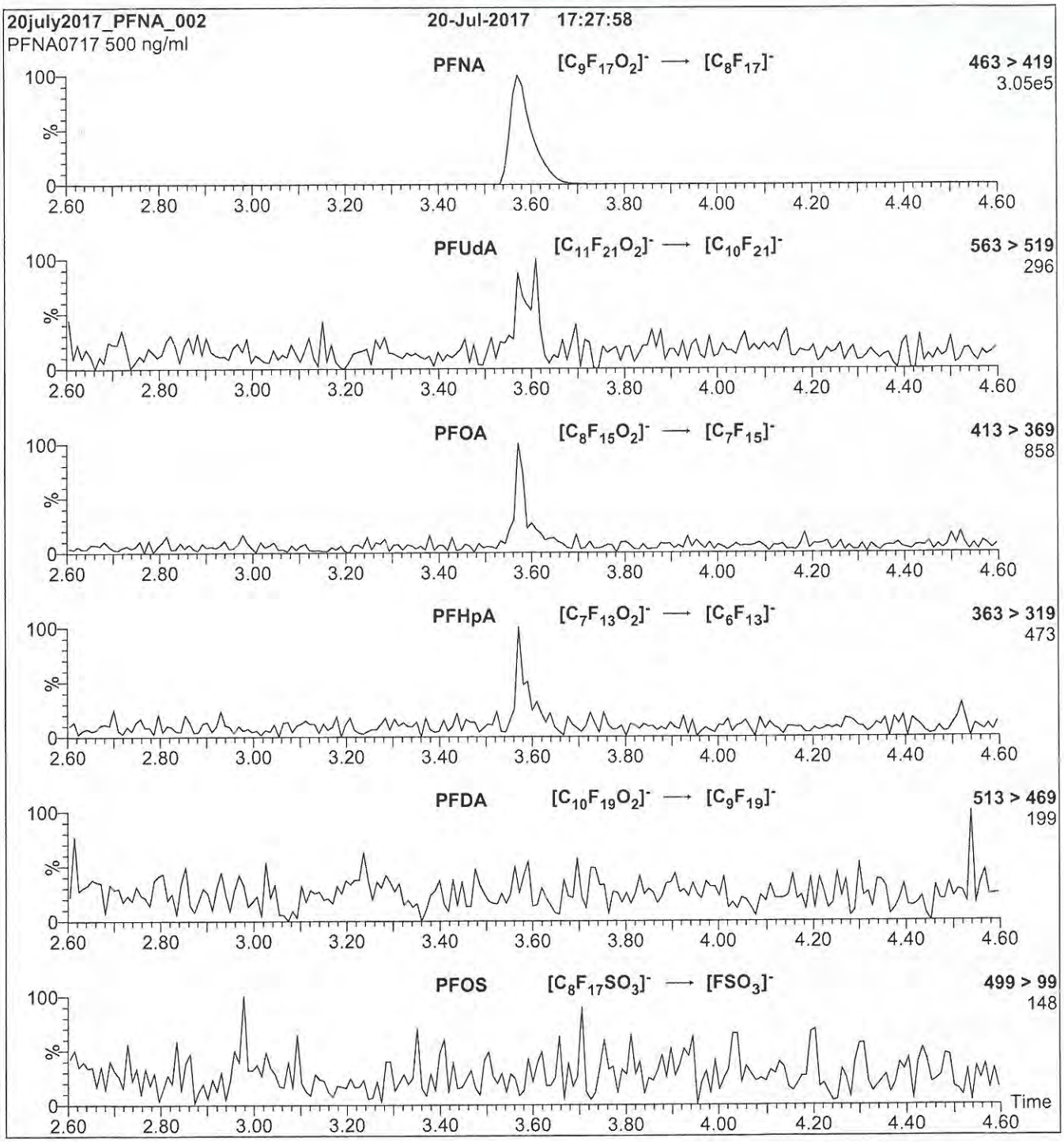
MS Parameters

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

18C2720

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

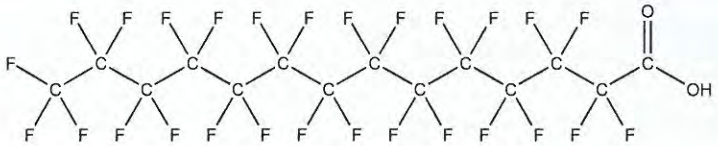
18C2721

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
COMPOUND: Perfluoro-n-tetradecanoic acid
LOT NUMBER: PFTeDA0917

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) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
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.
- 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: _____ **Date:** 09/21/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2721

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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HOMOGENEITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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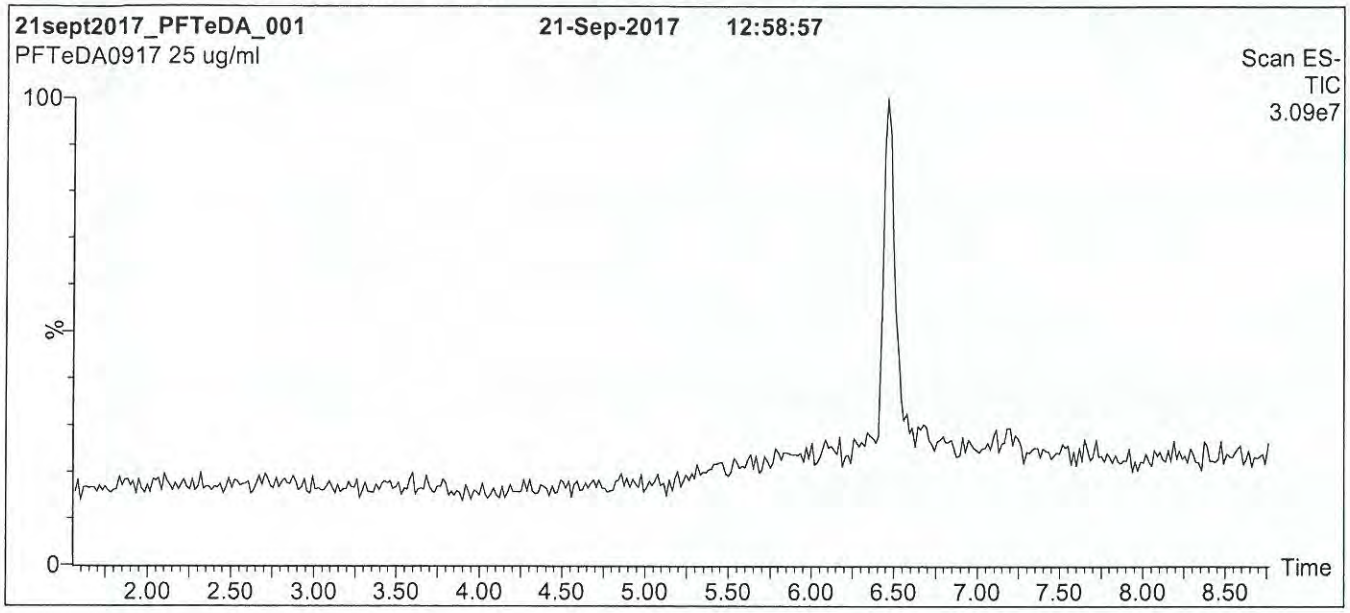
CALA

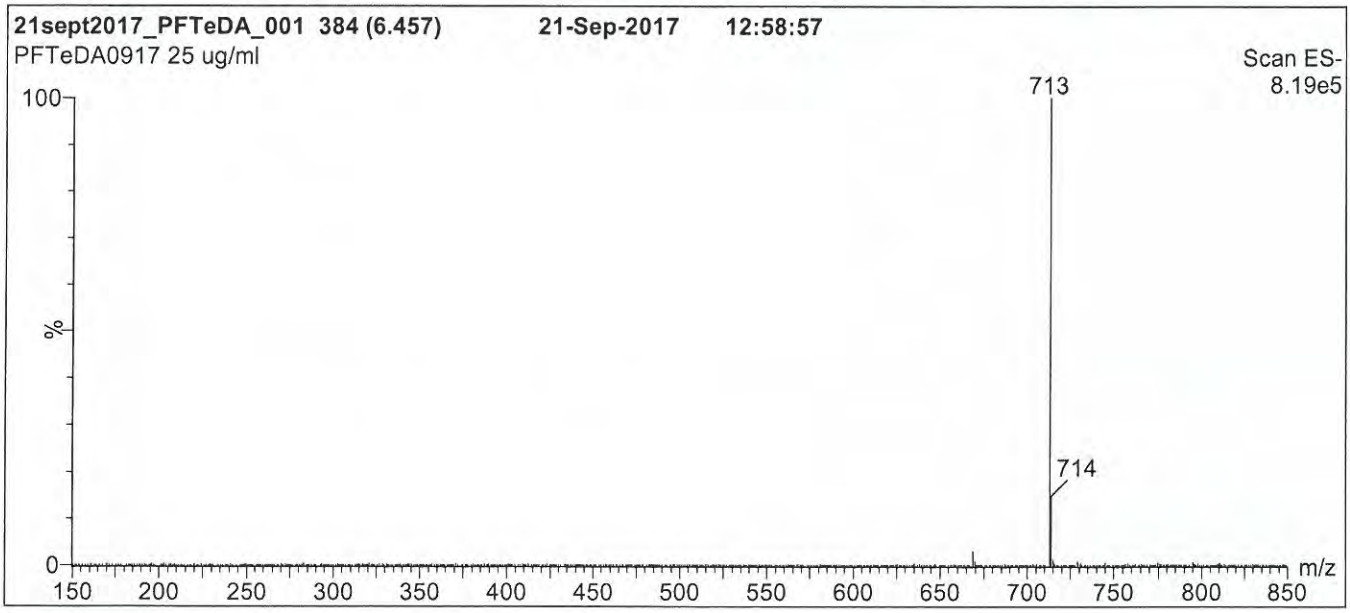
ANAB ACCREDITED

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

18C2721

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: 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

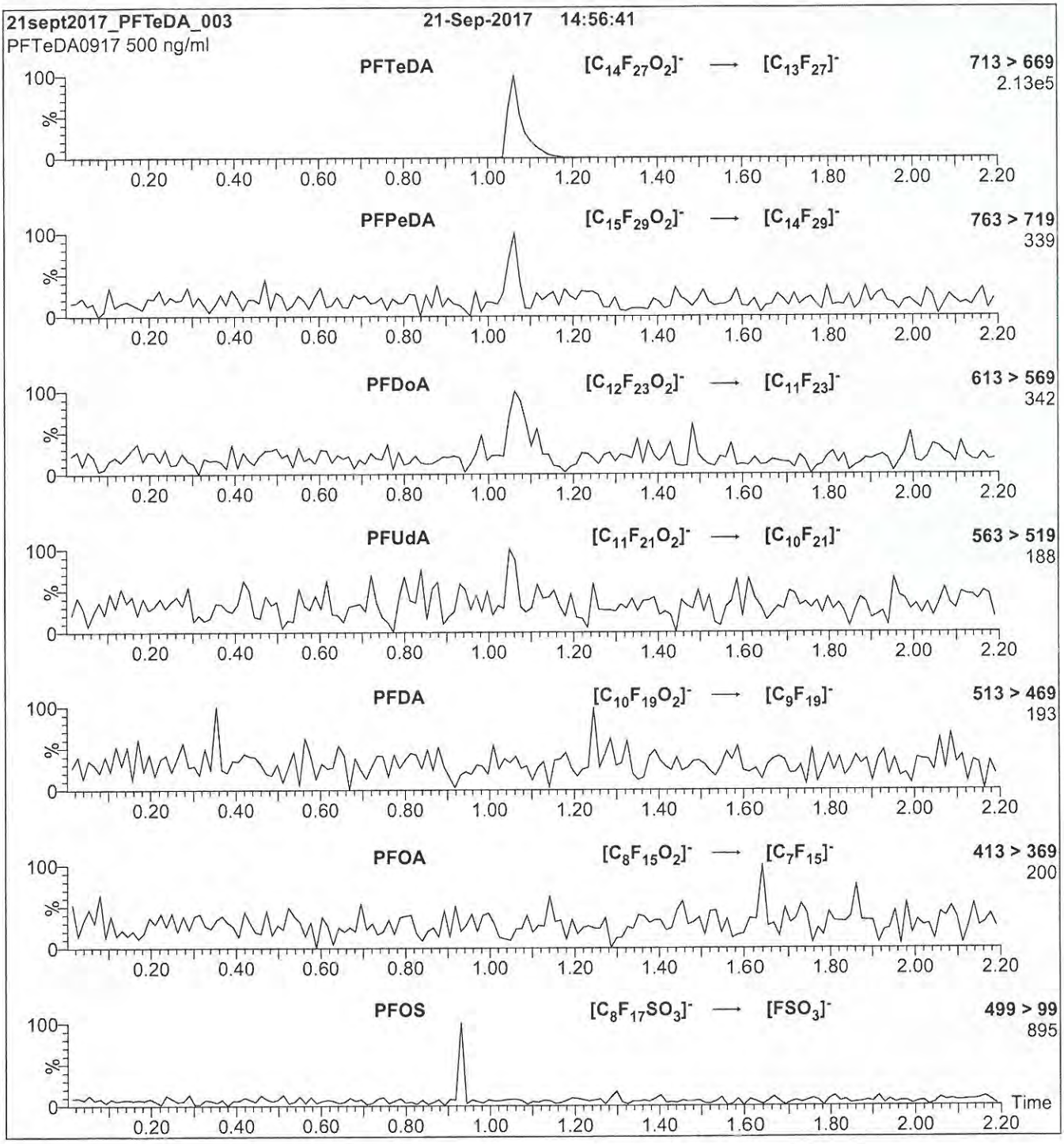
MS Parameters

Experiment: Full Scan (150 - 850 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

18C2721

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) = 3.46e-3
Collision Energy (eV) = 14

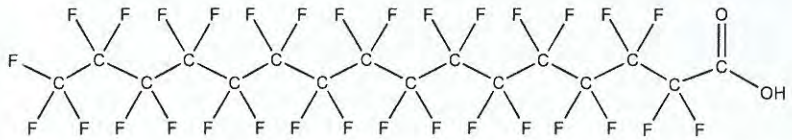
18C2722

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxDA
COMPOUND: Perfluoro-n-hexadecanoic acid
LOT NUMBER: PFHxDA0717

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) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 08/04/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1802722

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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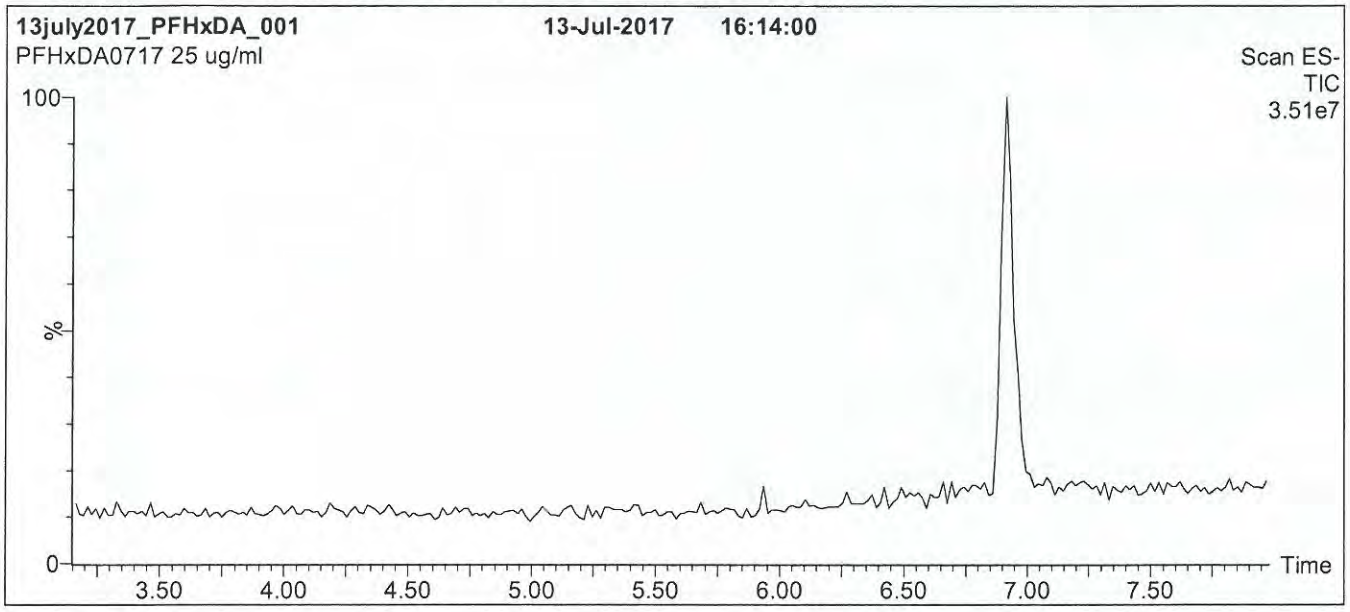
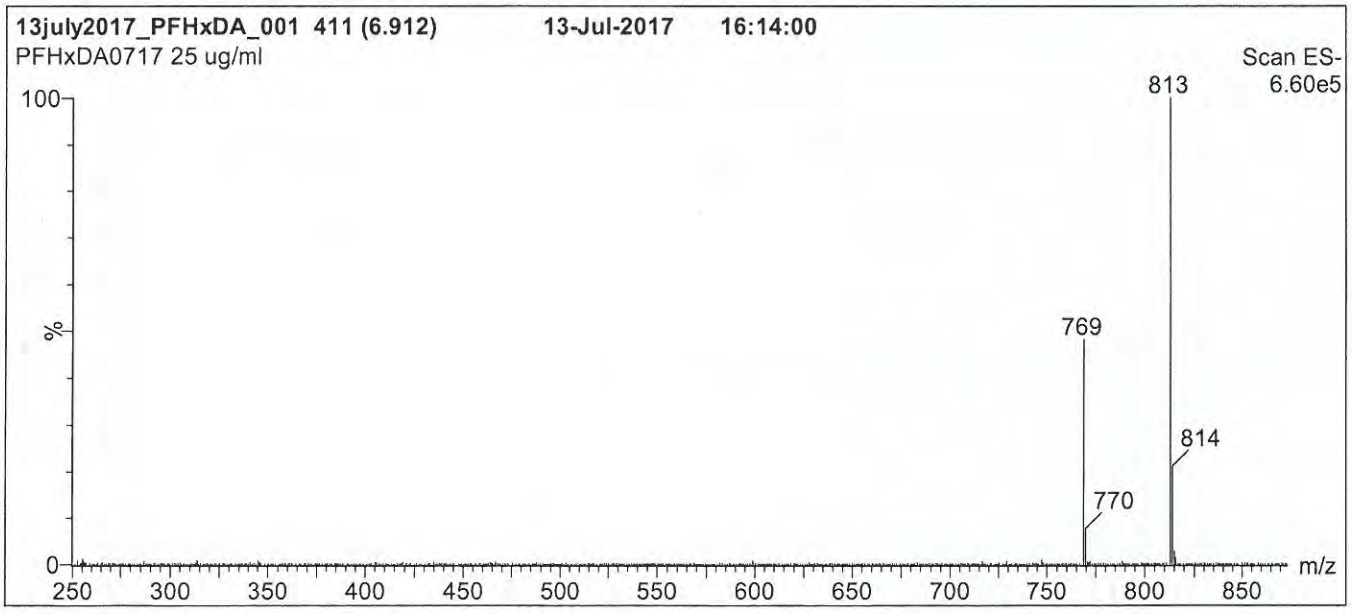
18C2722

Figure 1: **PFHxDA; 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: 55% (80:20 MeOH:ACN) / 45% 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

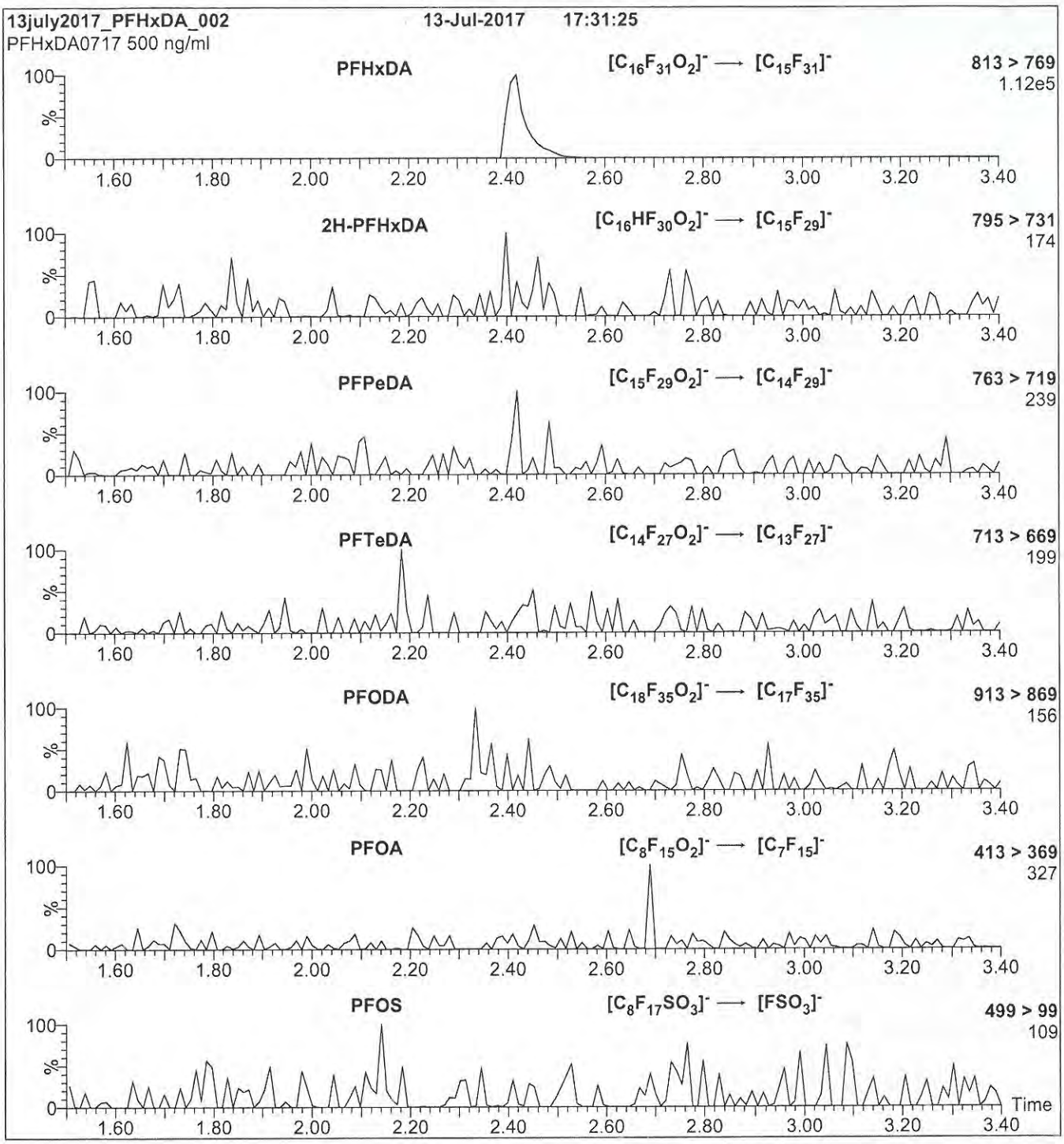
MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18C2722

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



Conditions for Figure 2:

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

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) = 3.13e-3
Collision Energy (eV) = 15

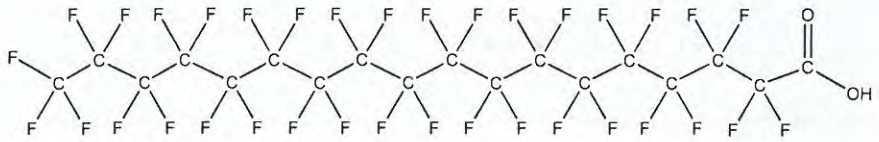
18C2723

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0717

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) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2723

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to 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).

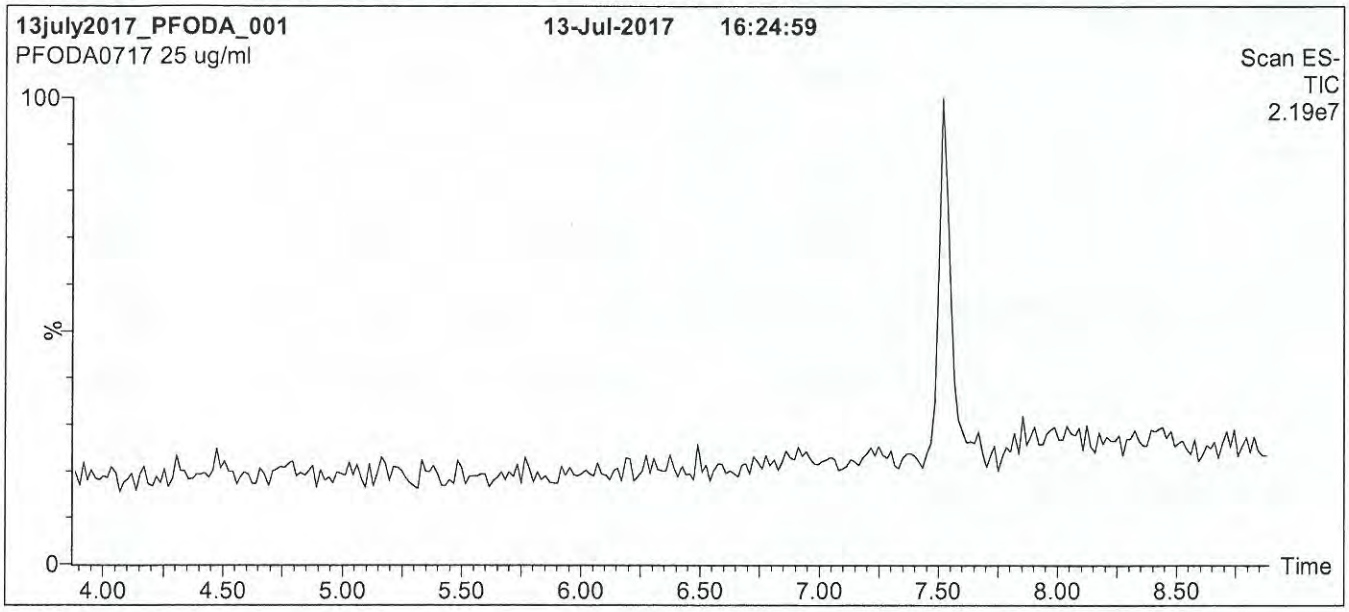
CALA Testing Accreditation No. A1226

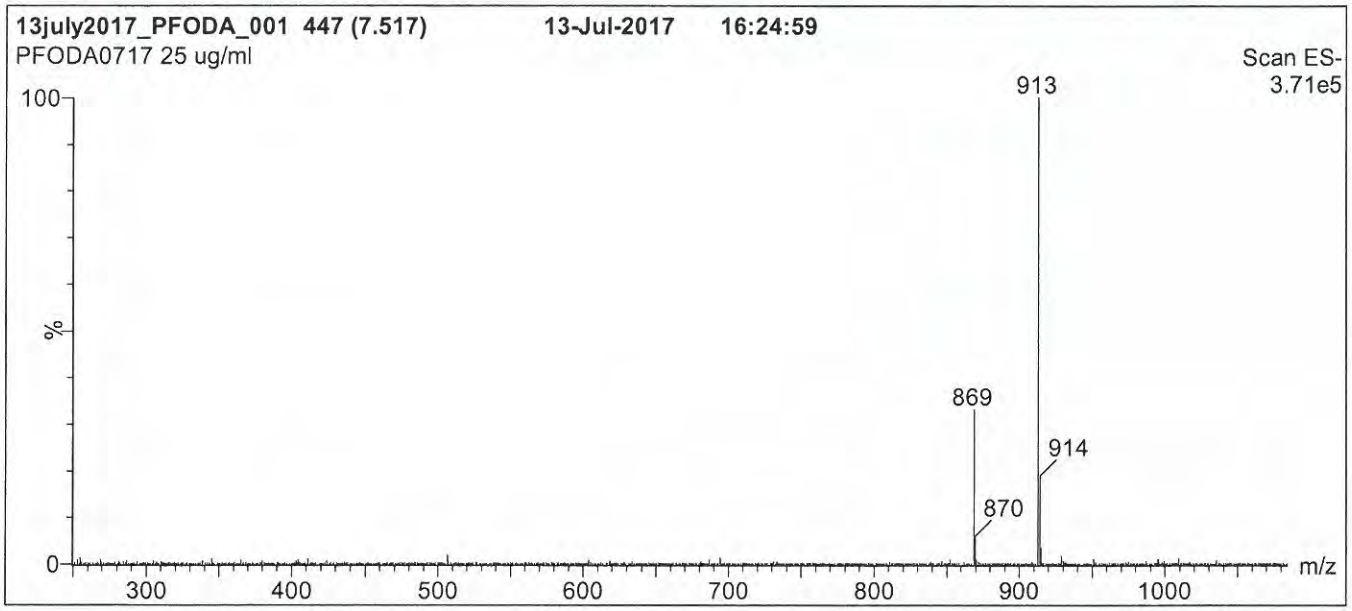
ANAB ACCREDITED Reference Material Producer

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

18C2723

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: 55% (80:20 MeOH:ACN) / 45% 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

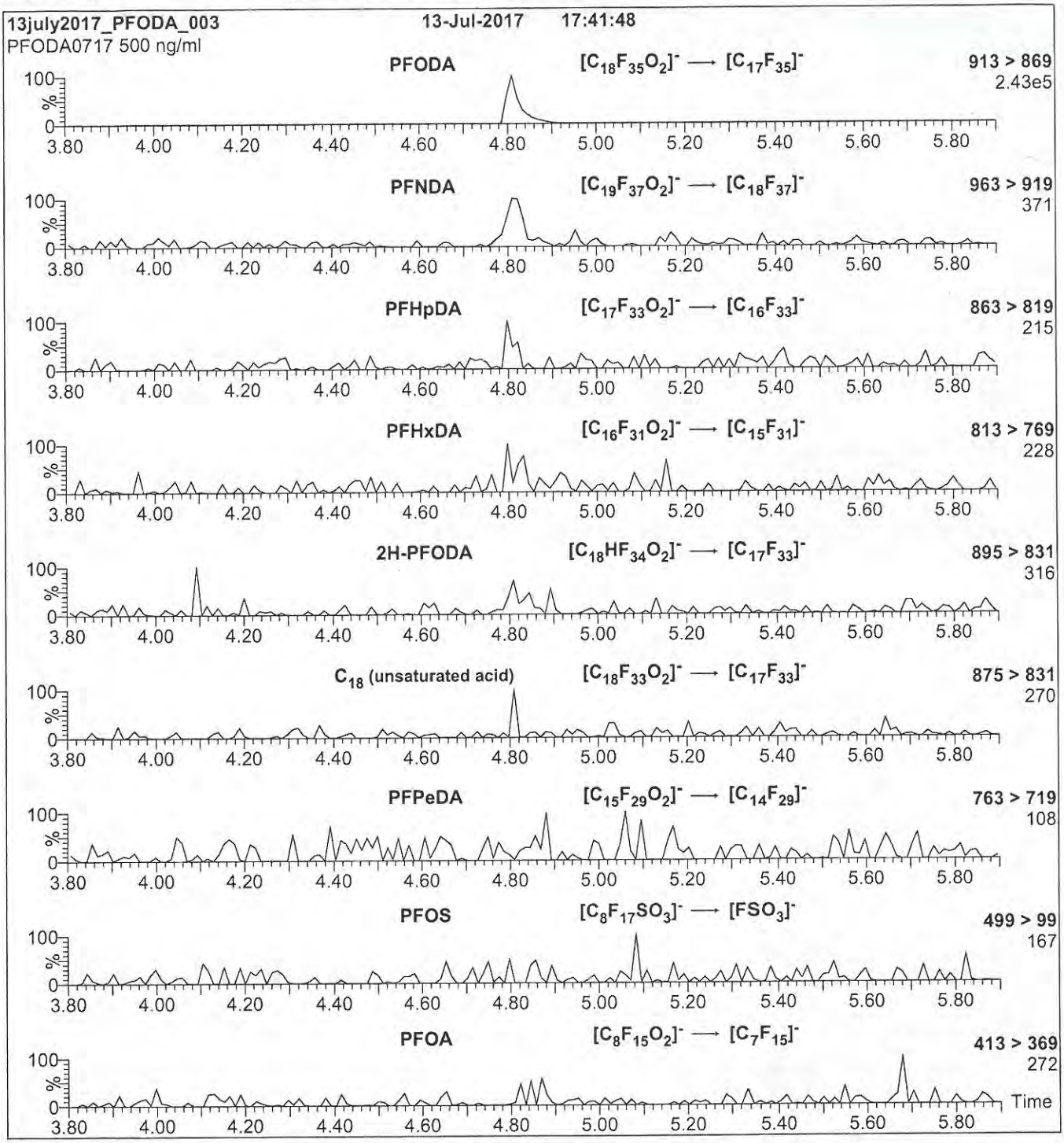
MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18C2723

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

18C2724

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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18C2724

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 $x_1, x_2, \ldots x_n$ 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

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

1802724

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

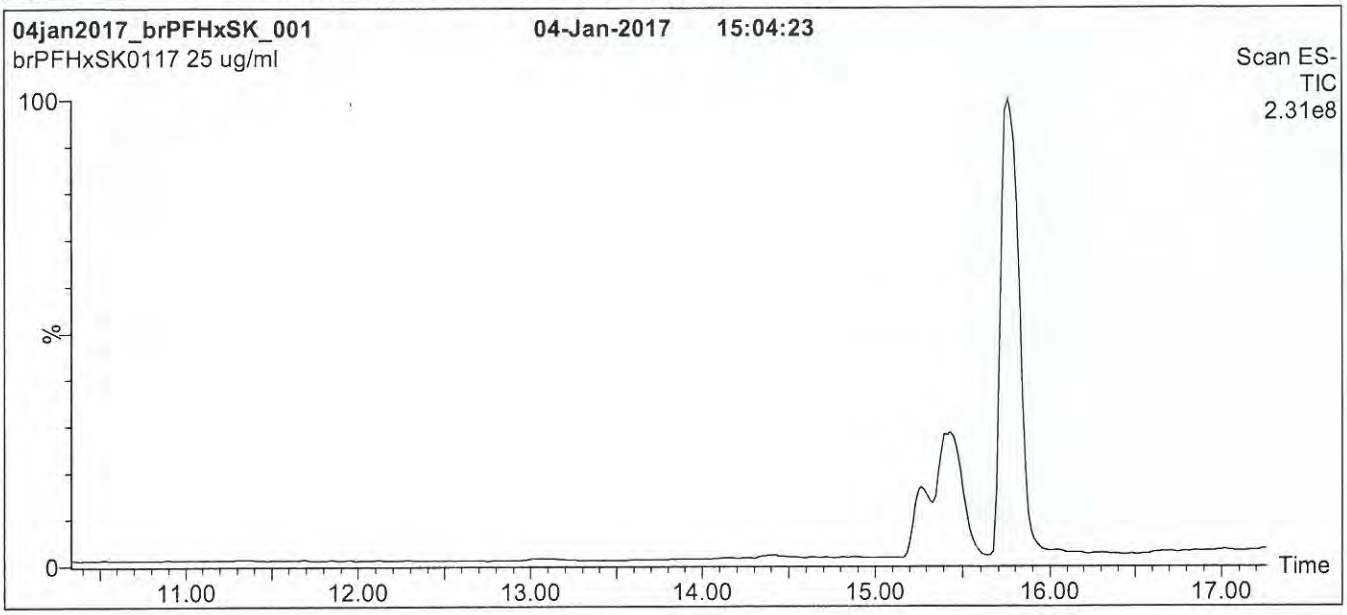
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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

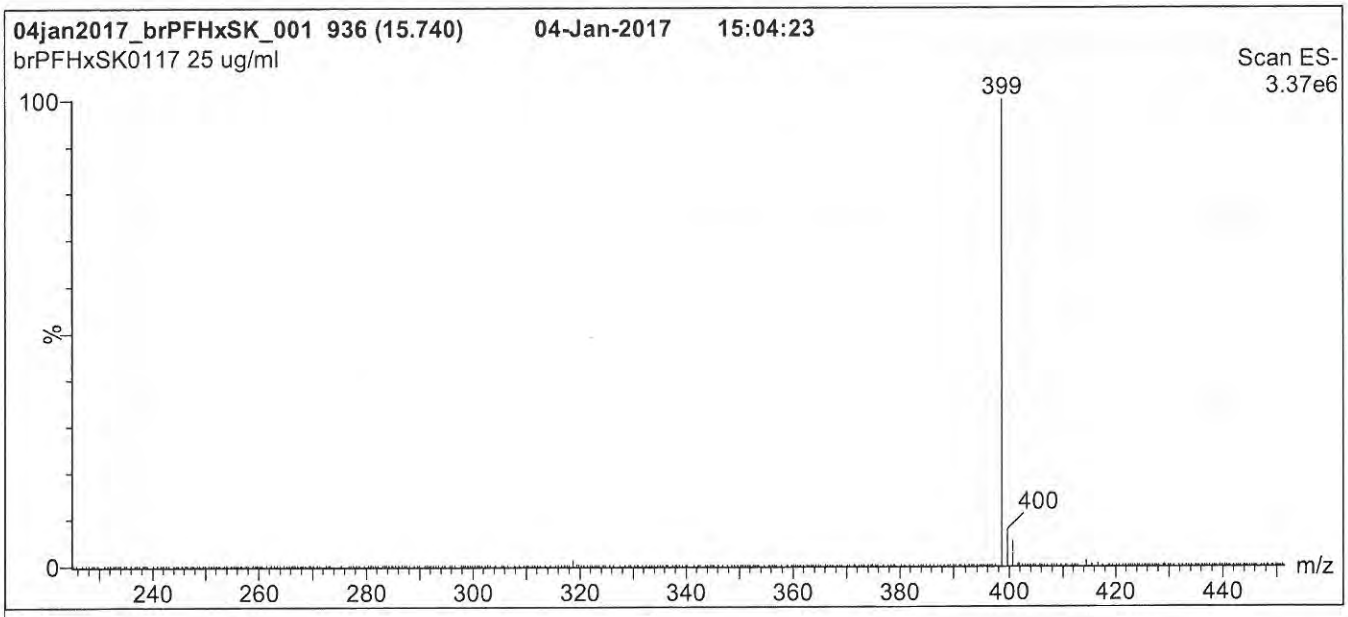
* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

18C2724

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

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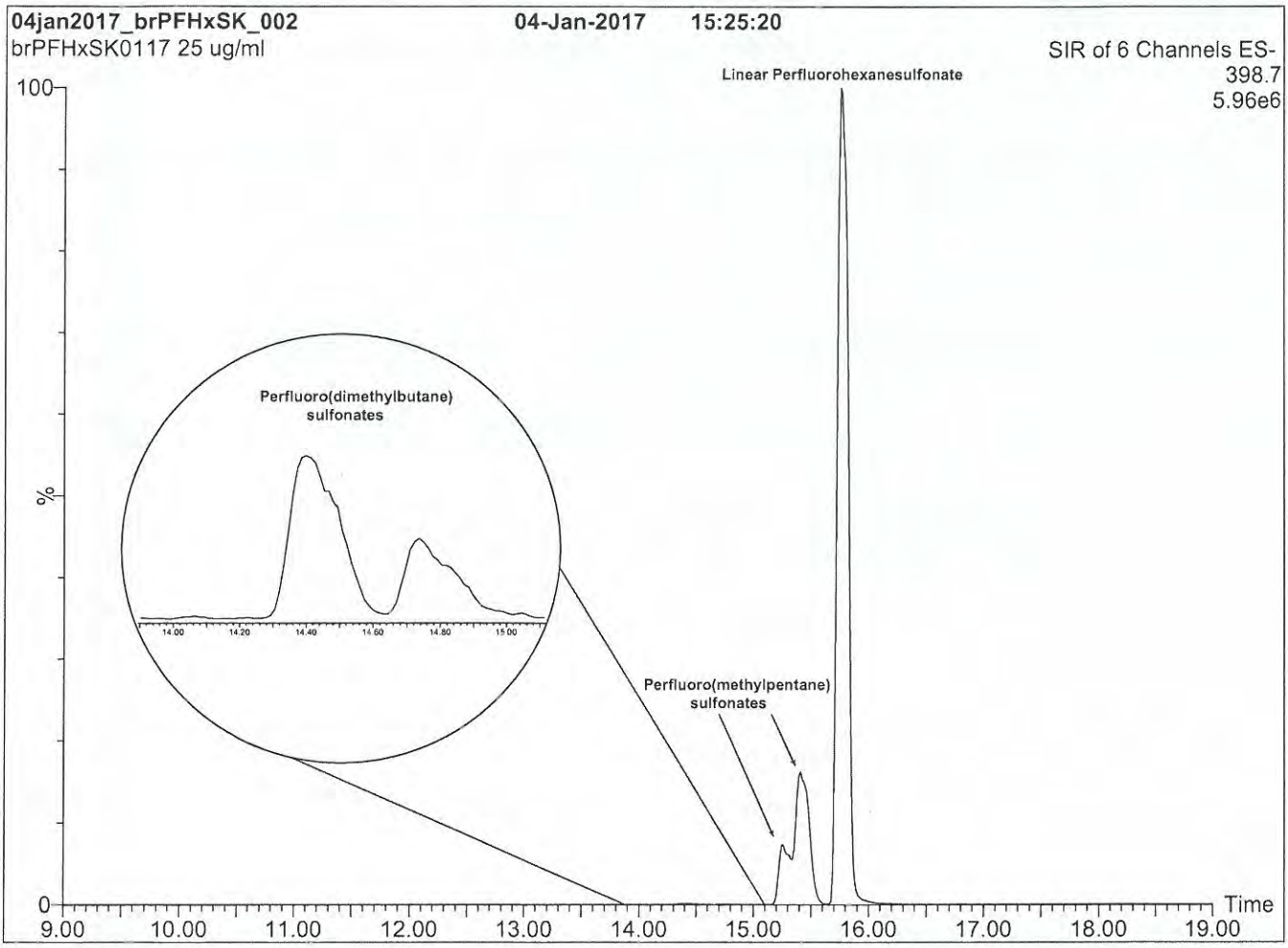
Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



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

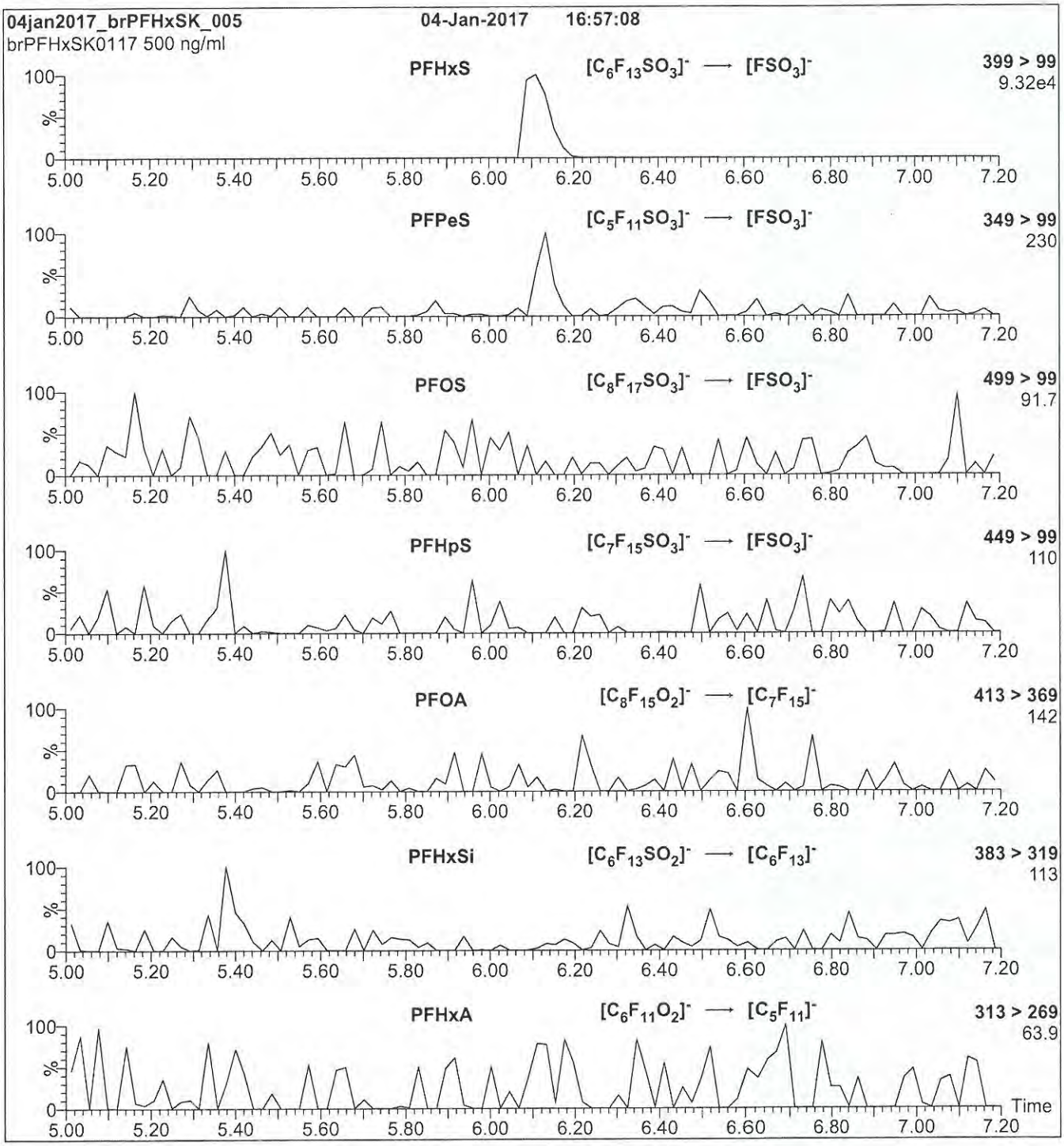
MS Parameters

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

18C2724

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

18C2725

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0117
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)	01/09/2017
LAST TESTED: (mm/dd/yyyy)	01/12/2017
EXPIRY DATE: (mm/dd/yyyy)	01/12/2022
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).

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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 $x_1, x_2, \ldots x_n$ 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:

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QUALITY MANAGEMENT:

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CALA Testing

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18C2725

Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

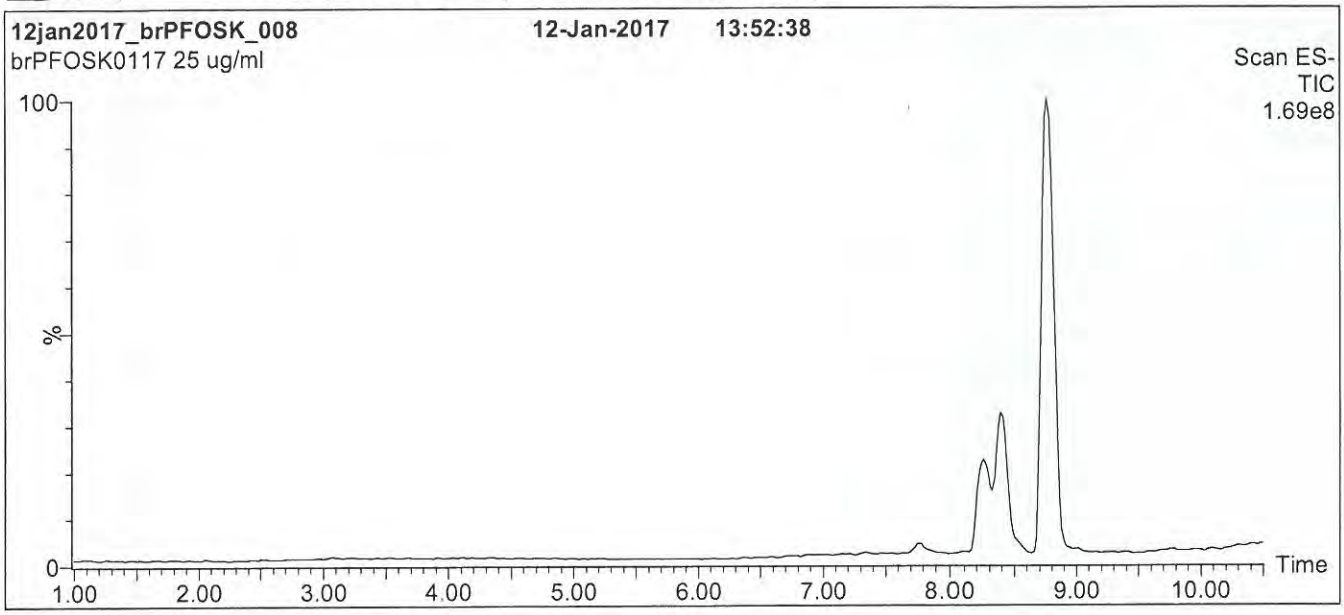
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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	$CF_3C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07

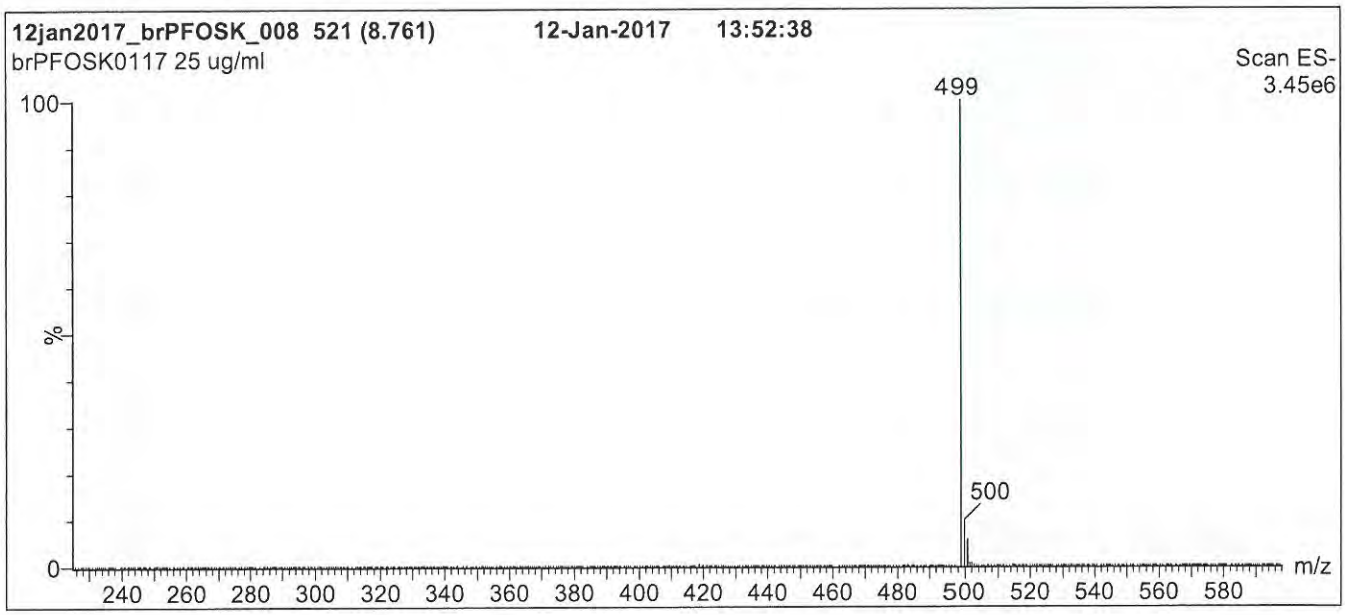
* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

18C2725

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

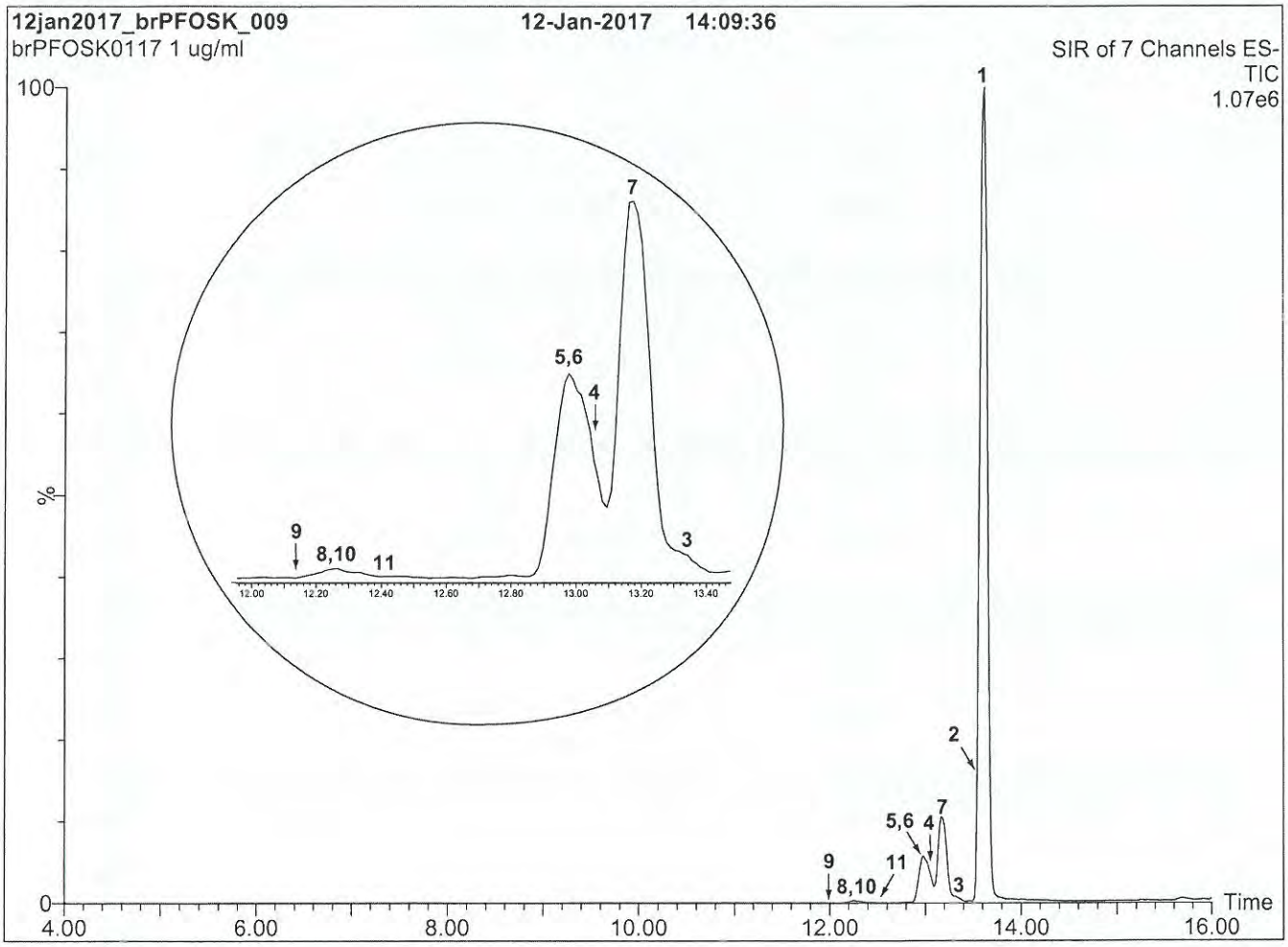
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18C2725

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

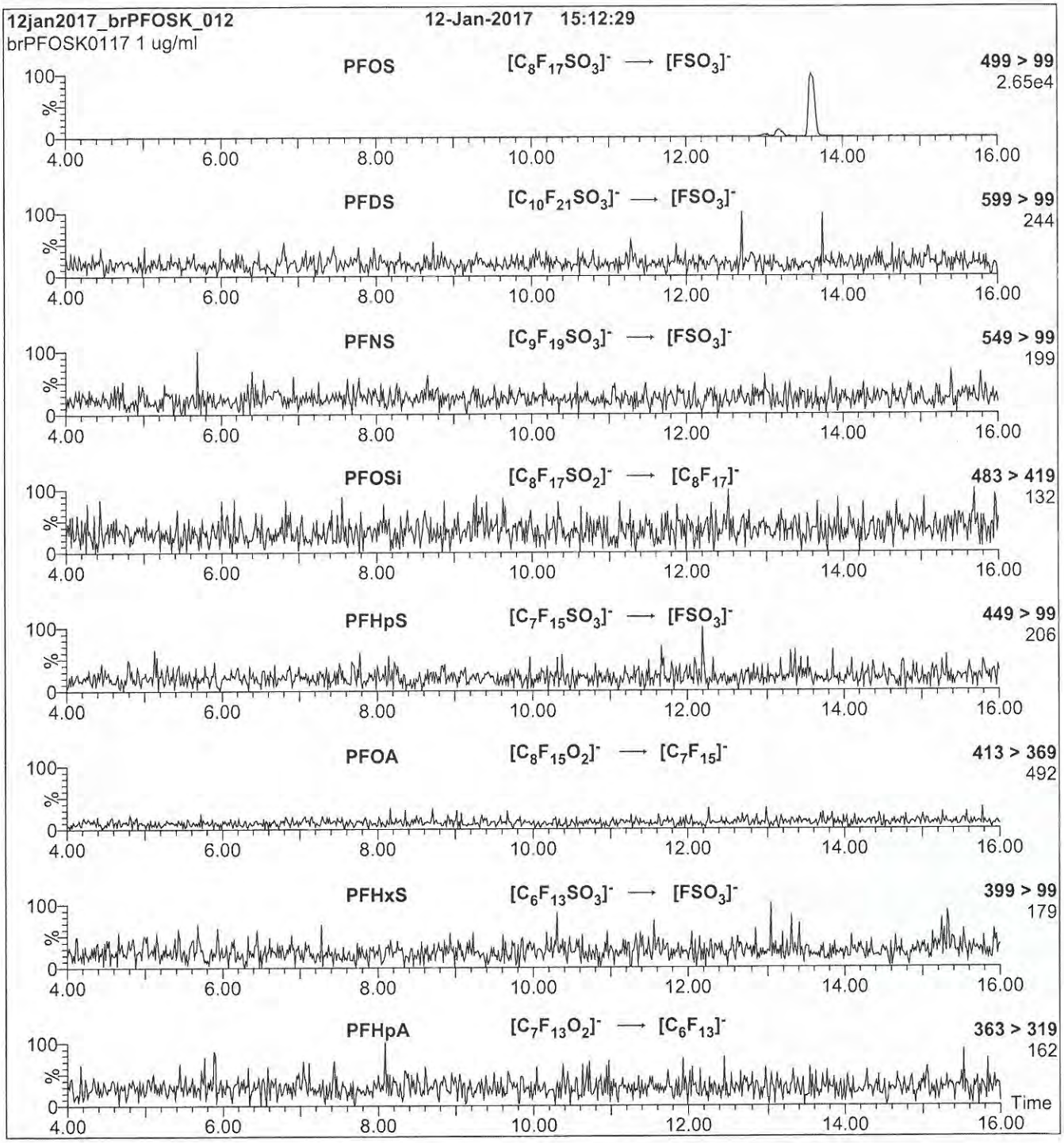
Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

18C2725

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

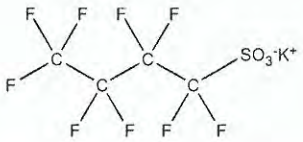
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

18C2726

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFBS	**LOT NUMBER:**	LPFBS0917
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)	09/21/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/21/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1802726

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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

ANAB ACCREDITED

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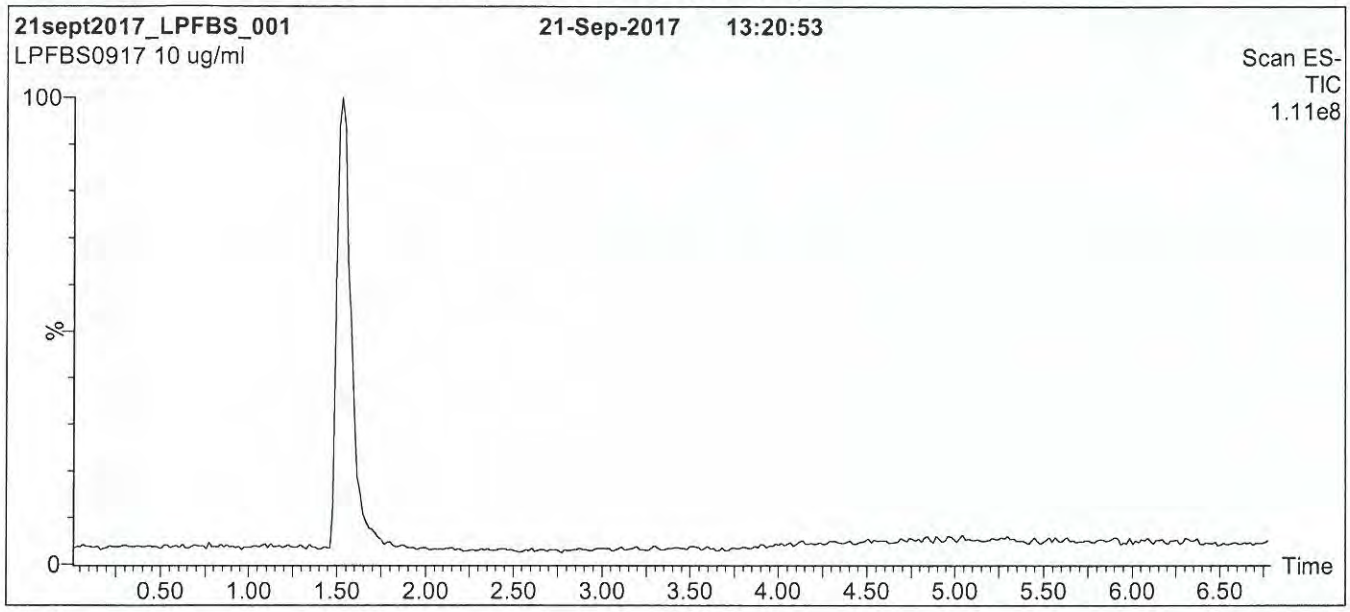
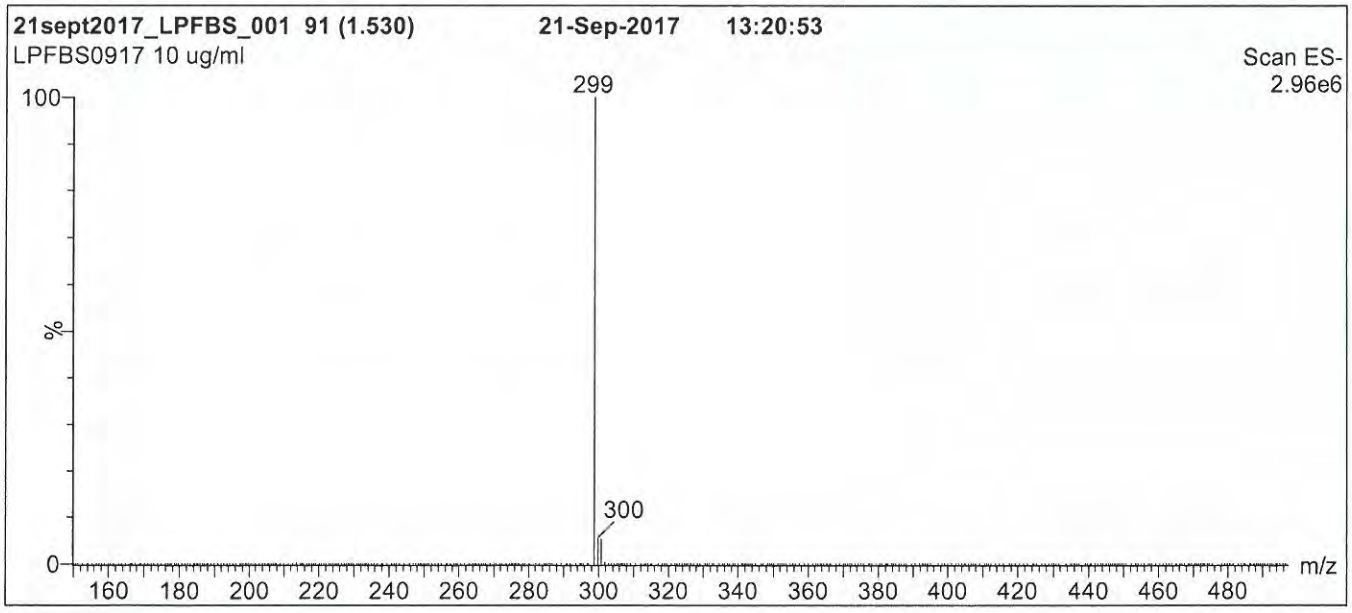
18C2726

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: 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

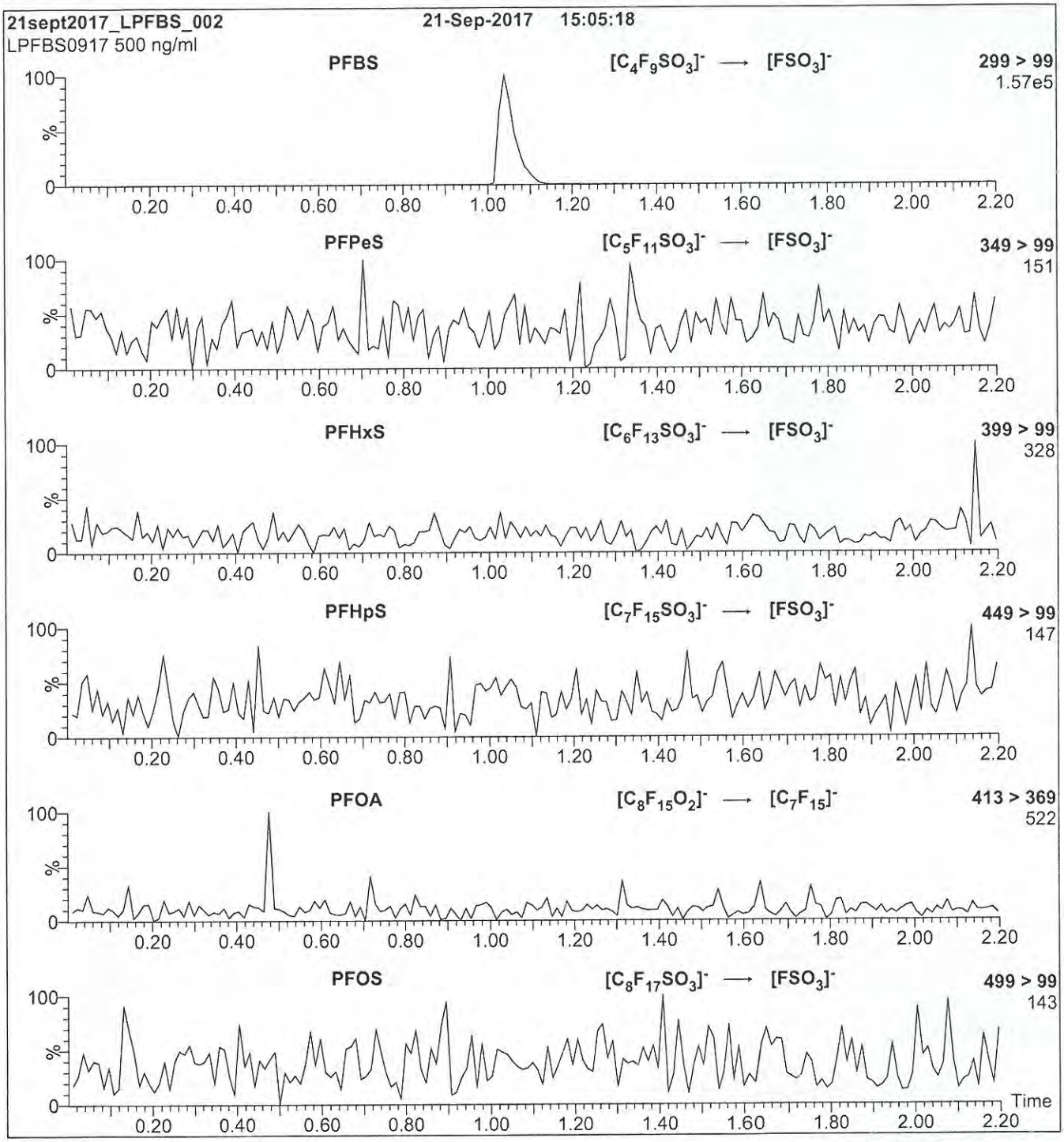
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18C2726

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

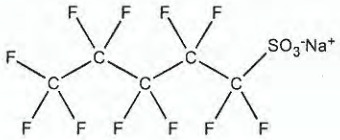
Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

18C2727

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFPeS	**LOT NUMBER:**	LPFPeS0117
COMPOUND:	Sodium perfluoro-1-pentanesulfonate		
STRUCTURE:		**CAS #:**	630402-22-1



MOLECULAR FORMULA:	$C_5F_{11}SO_3Na$	**MOLECULAR WEIGHT:**	372.09
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.9 ± 2.3 µg/ml (PFPeS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	01/11/2022		
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.

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CALA

ANAB ACCREDITED

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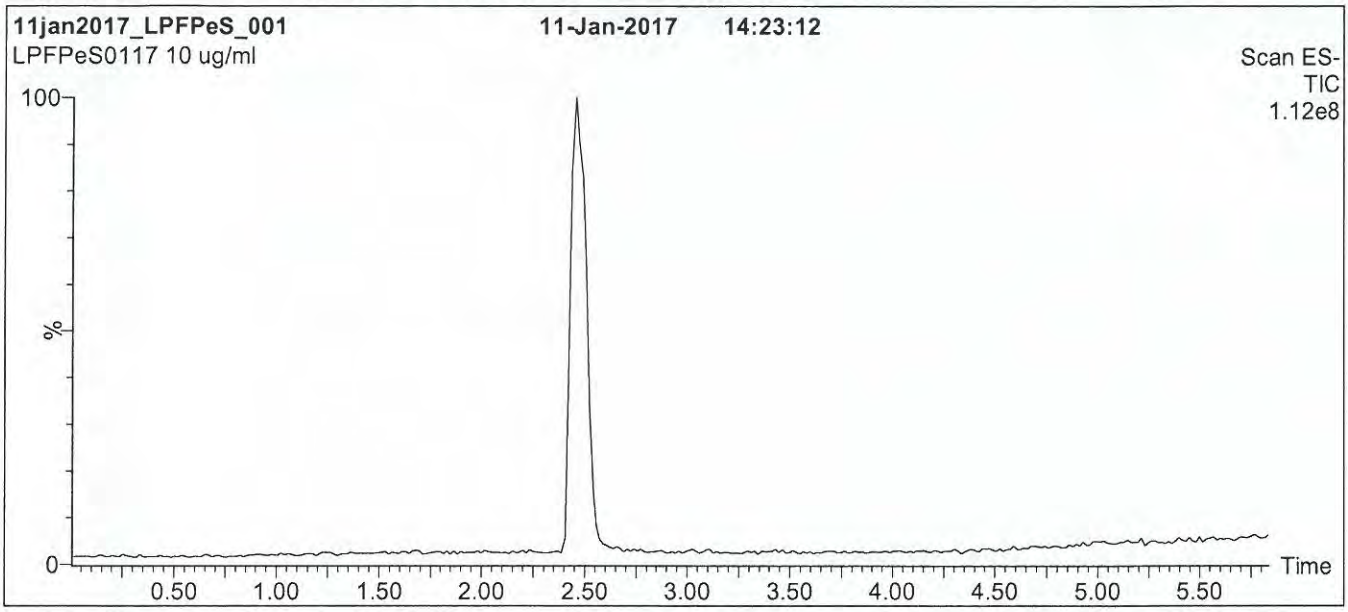
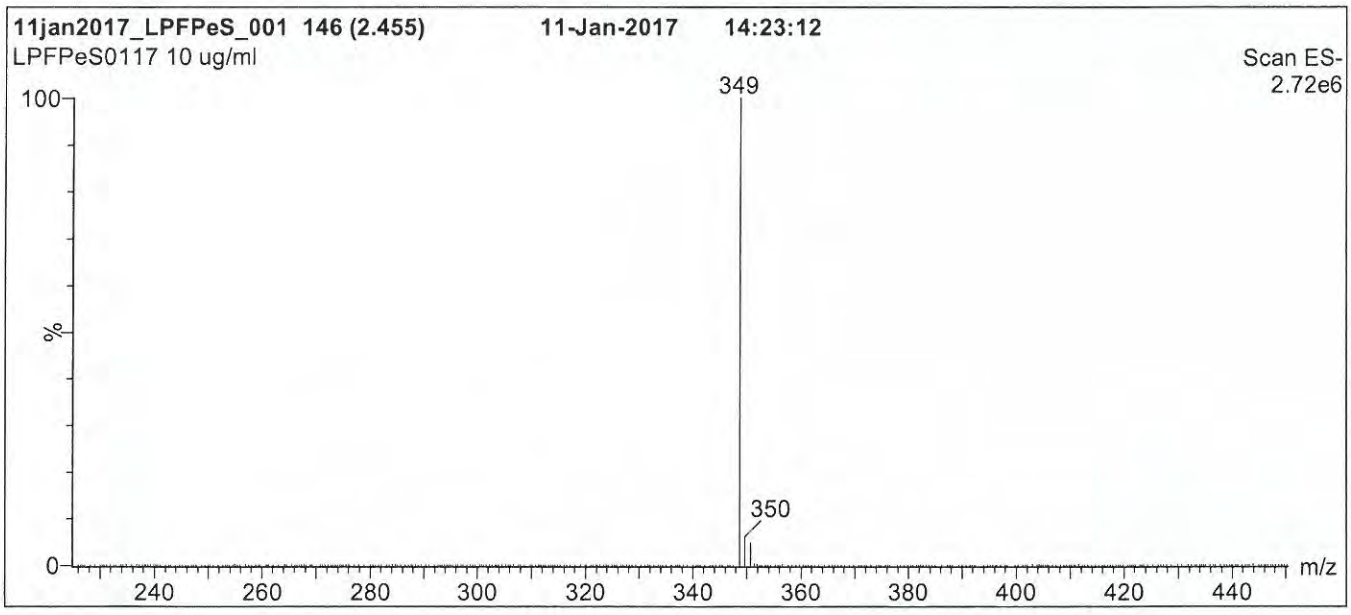
1802727

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

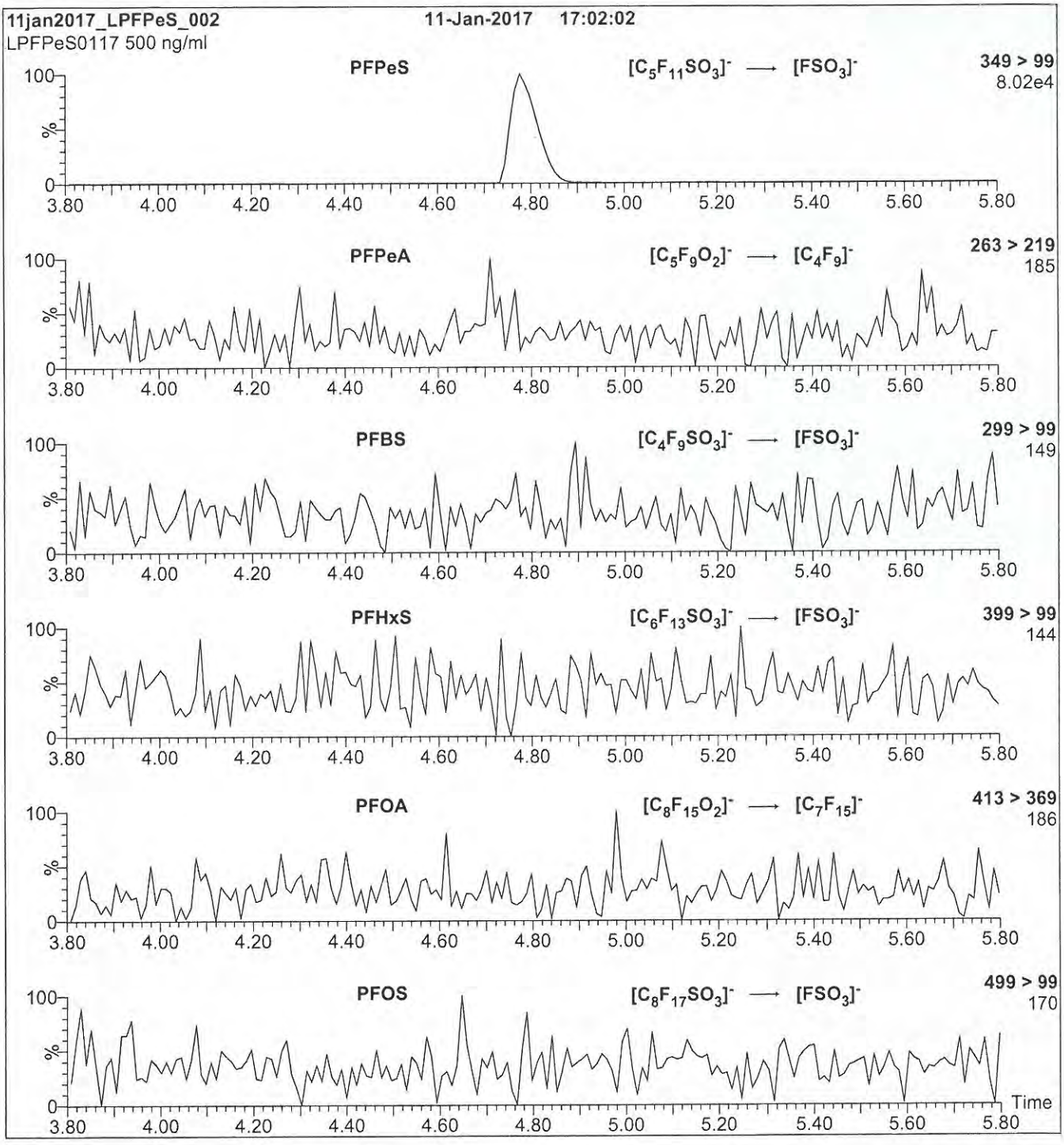
MS Parameters

Experiment: Full Scan (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

1802727

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFPeS)

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

18C2728

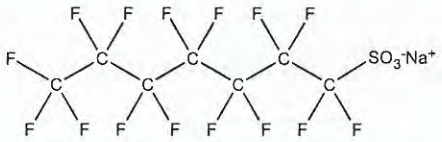
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS0817

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)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
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 ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

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Certified By: _____ **Date:** 09/07/2017 (mm/dd/yyyy)
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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED Reference Material Producer

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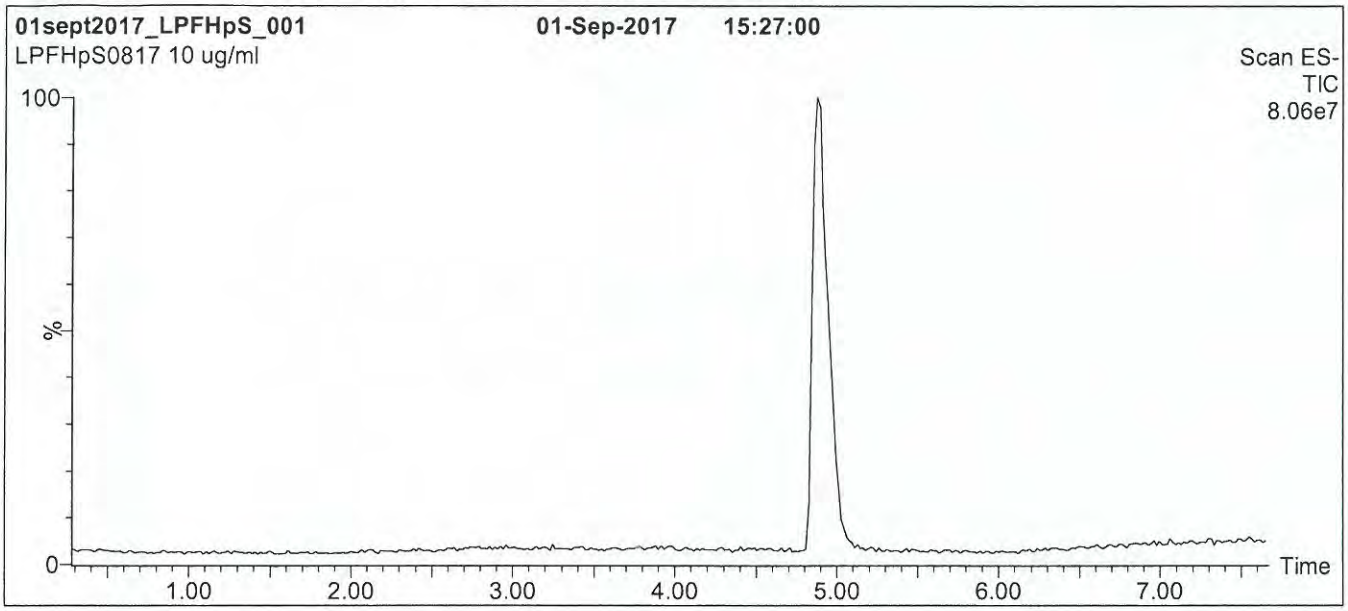
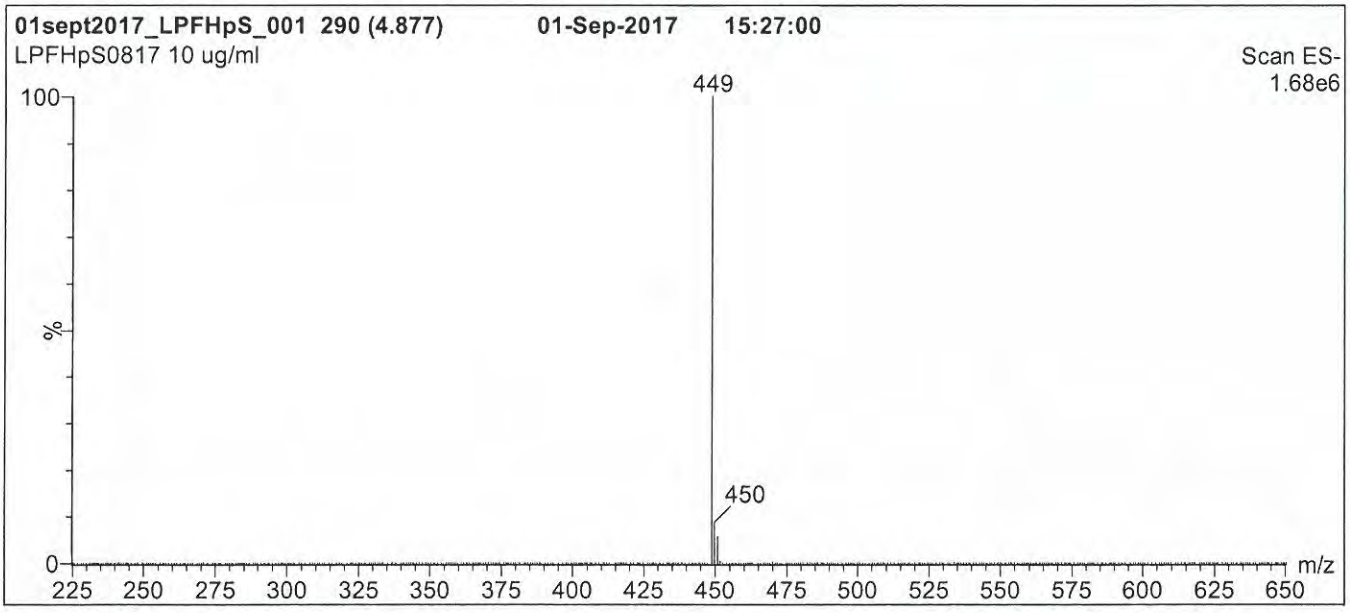
18C2728

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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 8 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

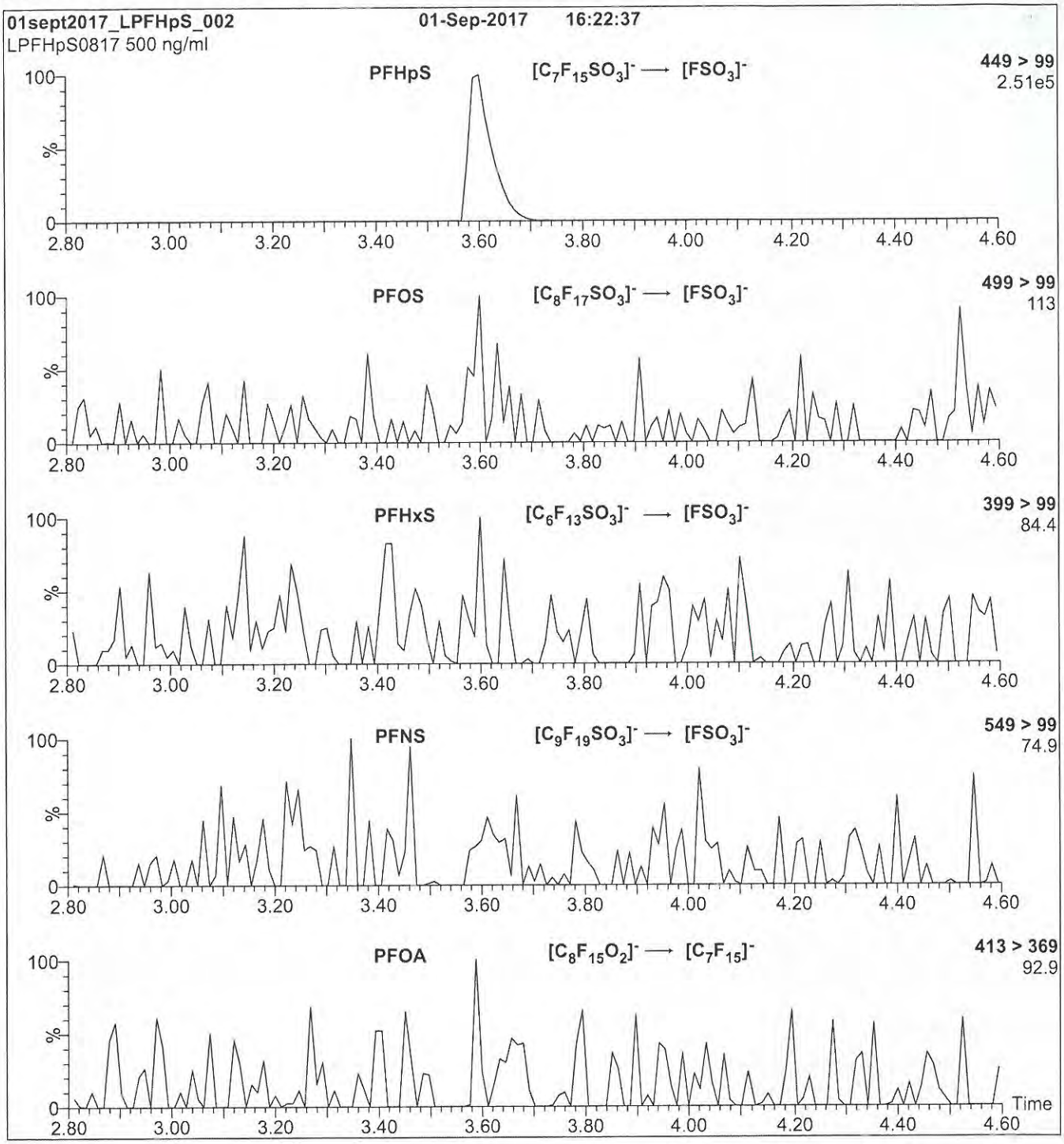
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18C2728

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

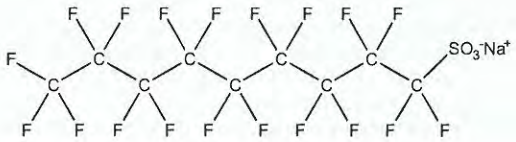
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 35

18C2729

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFNS	**LOT NUMBER:**	LPFNS0917
COMPOUND:	Sodium perfluoro-1-nonanesulfonate		
STRUCTURE:		**CAS #:**	98789-57-2



MOLECULAR FORMULA:	$C_9F_{19}SO_3Na$	**MOLECULAR WEIGHT:**	572.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.0 ± 2.4 µg/ml (PFNS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/27/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/27/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

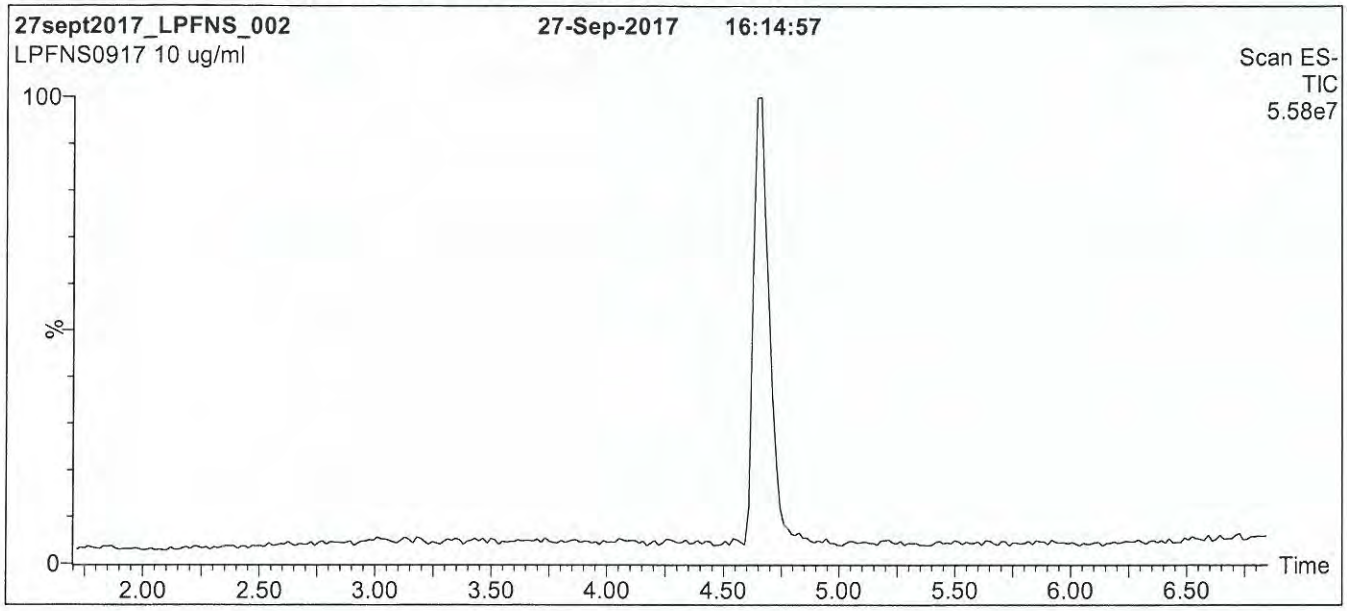
CALA

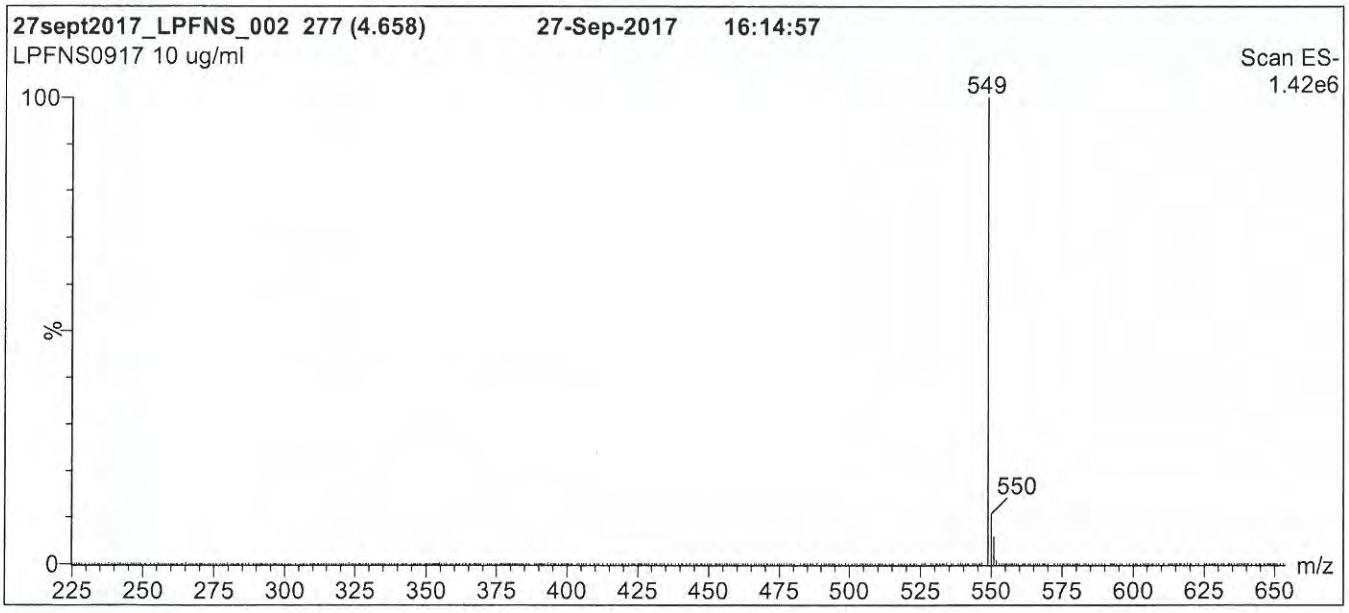
ANAB ACCREDITED

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

18C2729

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

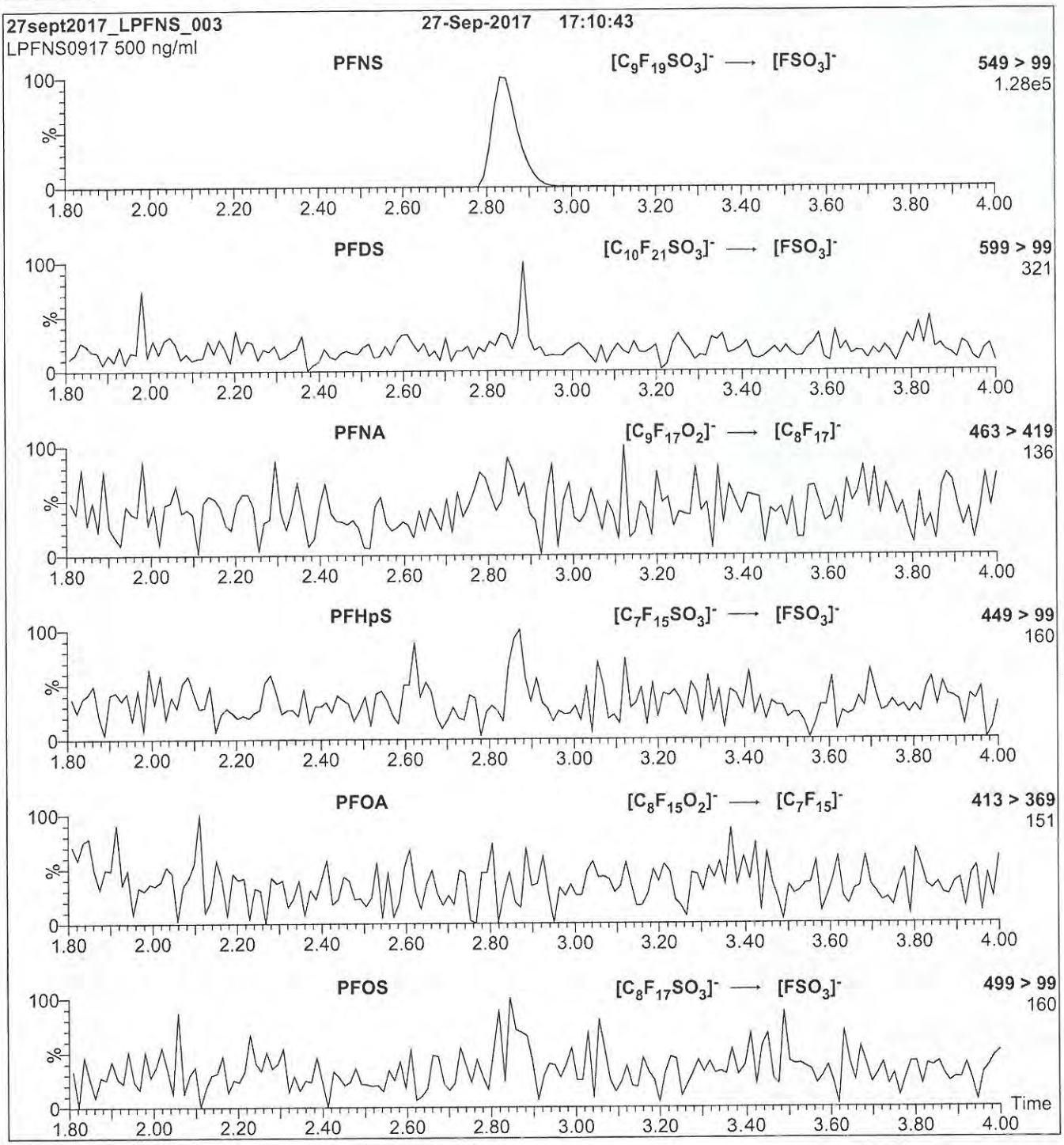
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18C2729

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFNS)

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

Flow: 300 µl/min

MS Parameters

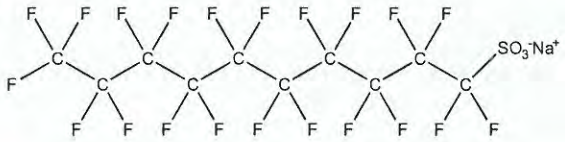
Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 45

18C2730

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFDS	**LOT NUMBER:**	LPFDS1117
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)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2730

INTENDED USE:

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HAZARDS:

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CALA

ANAB ACCREDITED

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18C2730

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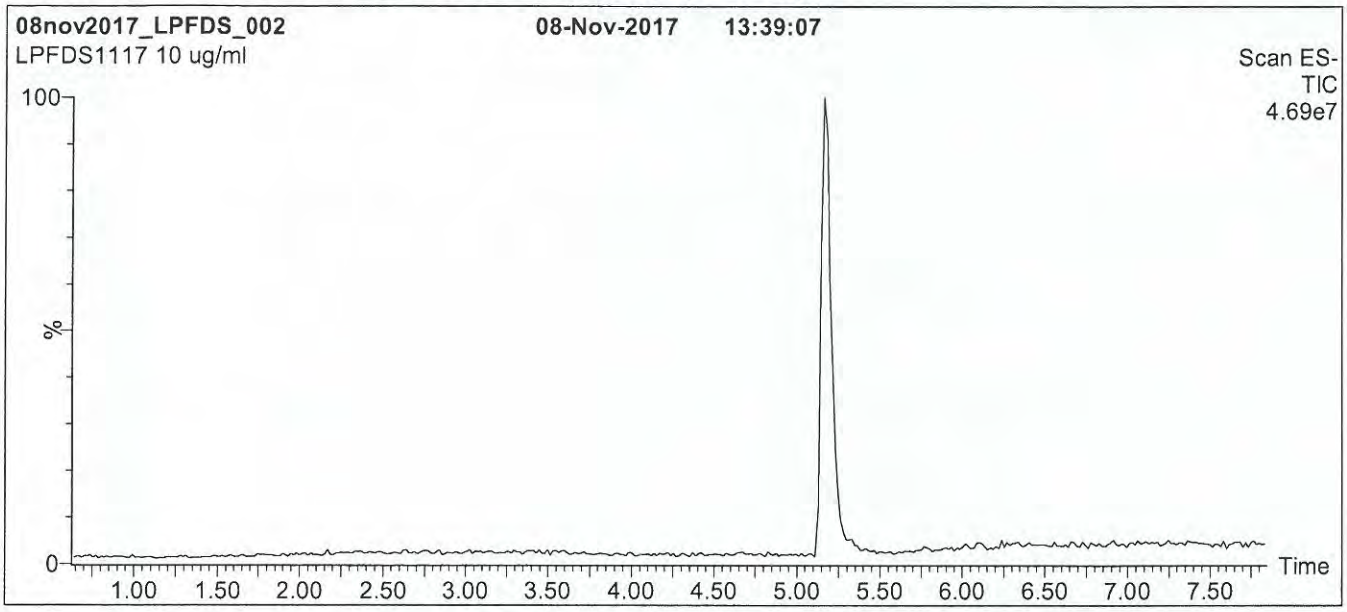

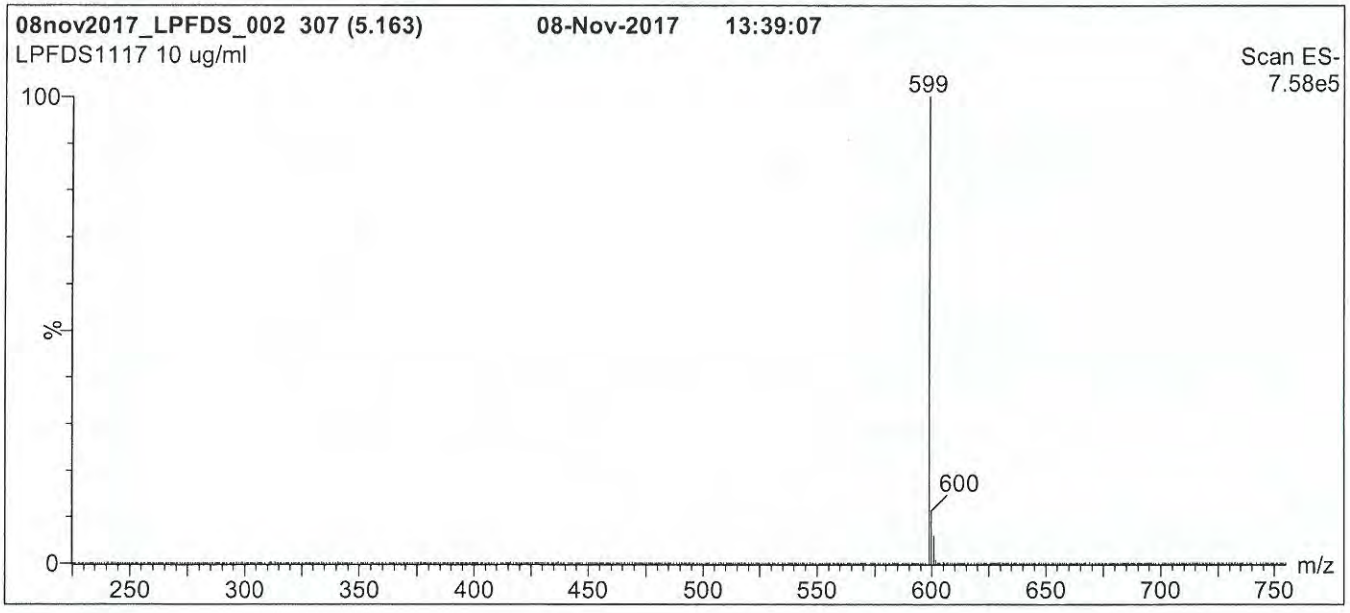

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(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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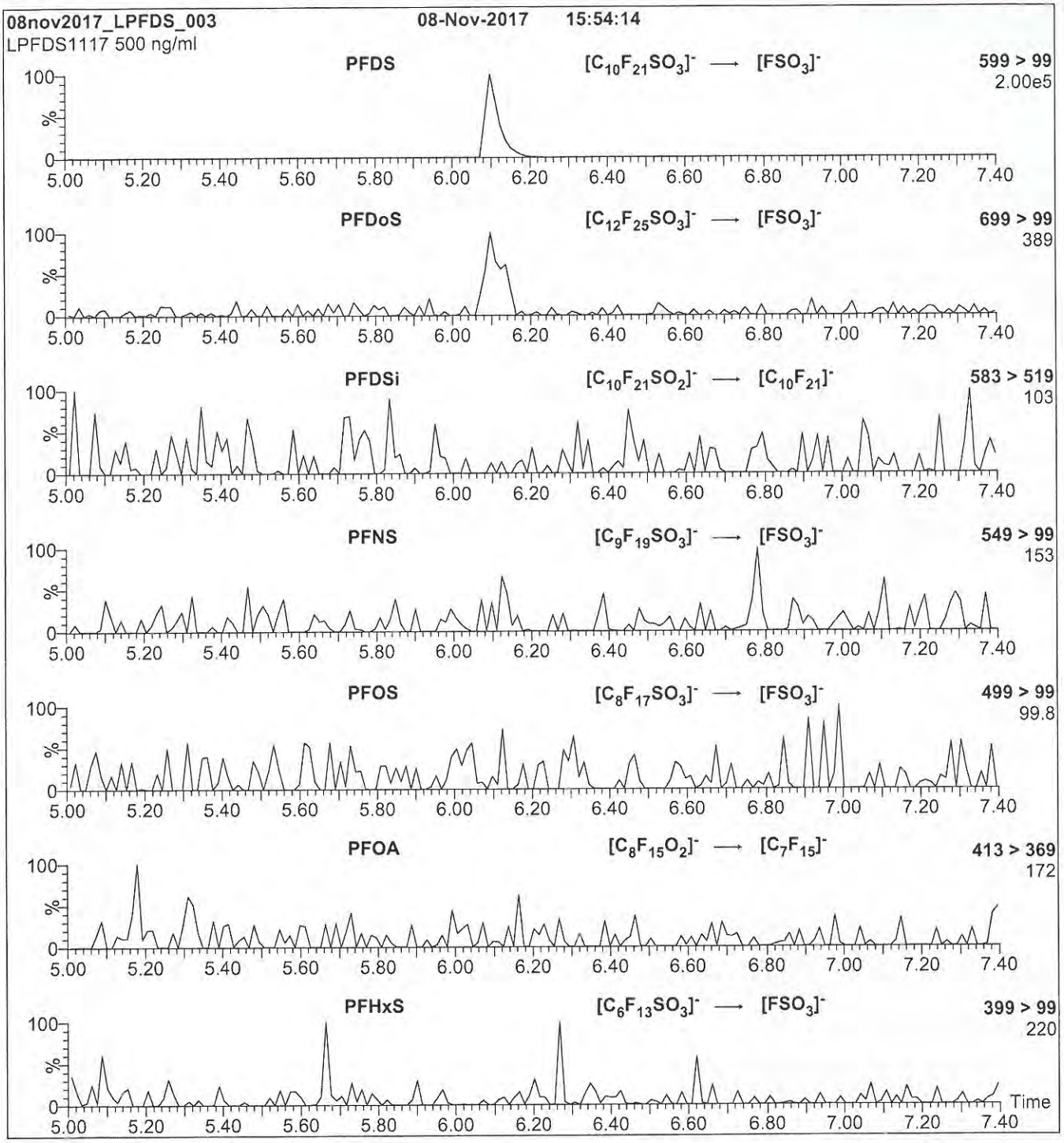
Figure 2: **L-PFDS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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) = 3.46e-3
Collision Energy (eV) = 50

18C2731

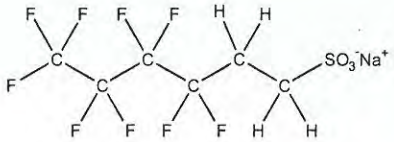
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS1216

COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_6H_4F_9SO_3Na$	**MOLECULAR WEIGHT:**	350.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	46.7 ± 2.3 µg/ml (4:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/12/2021		
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:** 12/21/2016 (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

18C2731

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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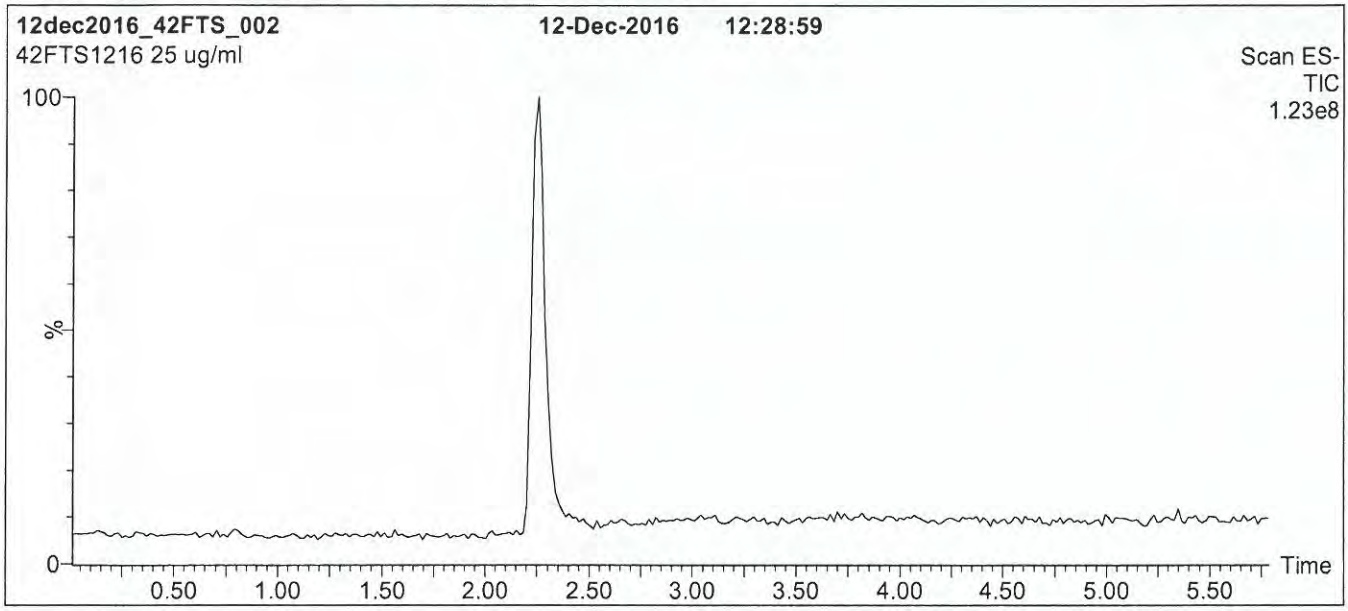
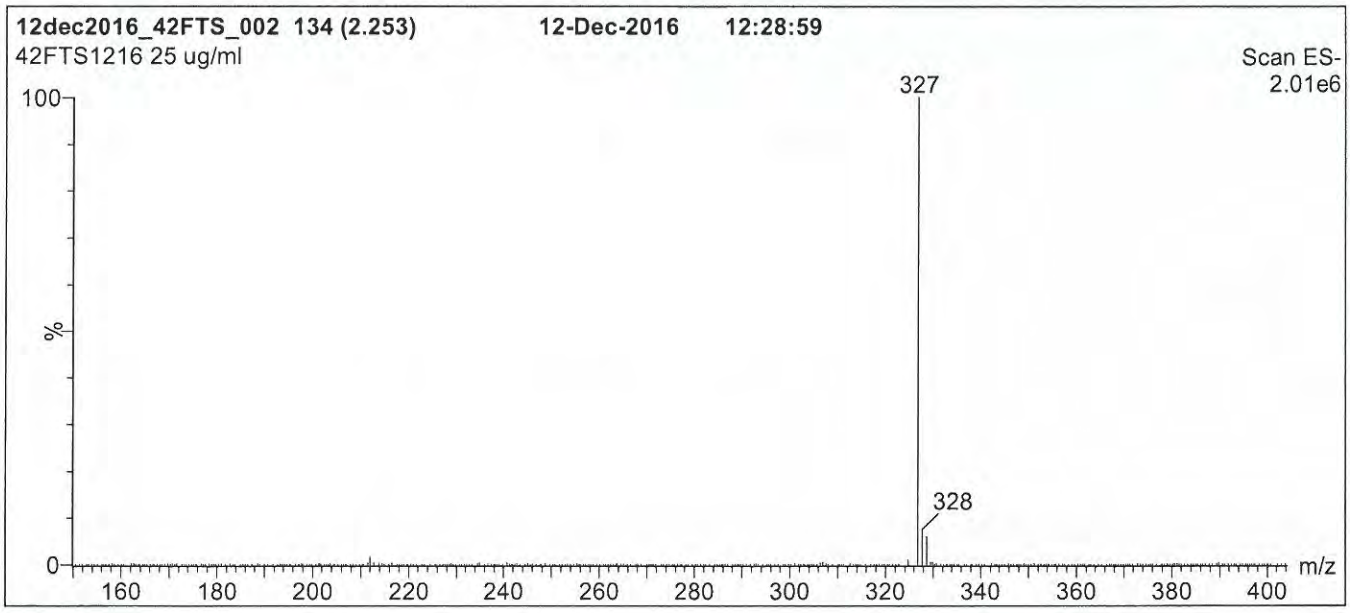
18C2731

Figure 1: **4:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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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

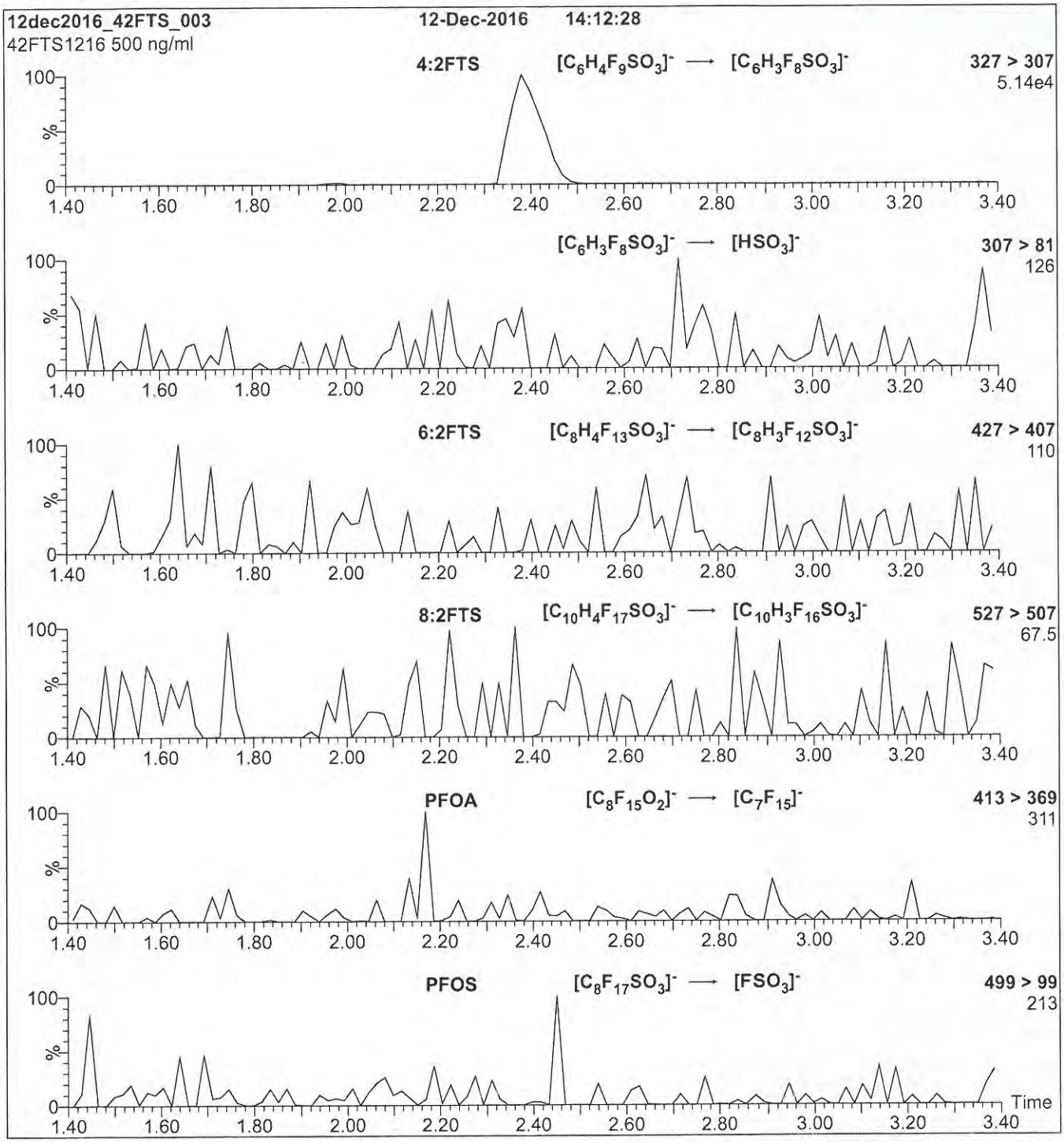
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18C2731

Figure 2: **4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 4:2FTS)

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) = 25

18C2732

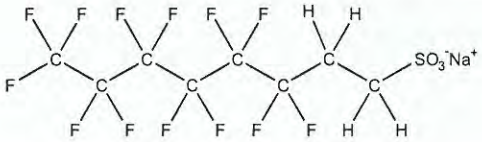
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0417

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)	04/20/2017			
EXPIRY DATE: (mm/dd/yyyy)	04/20/2022			
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/24/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

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

18C2732

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CALA

ANAB ACCREDITED

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18C2732

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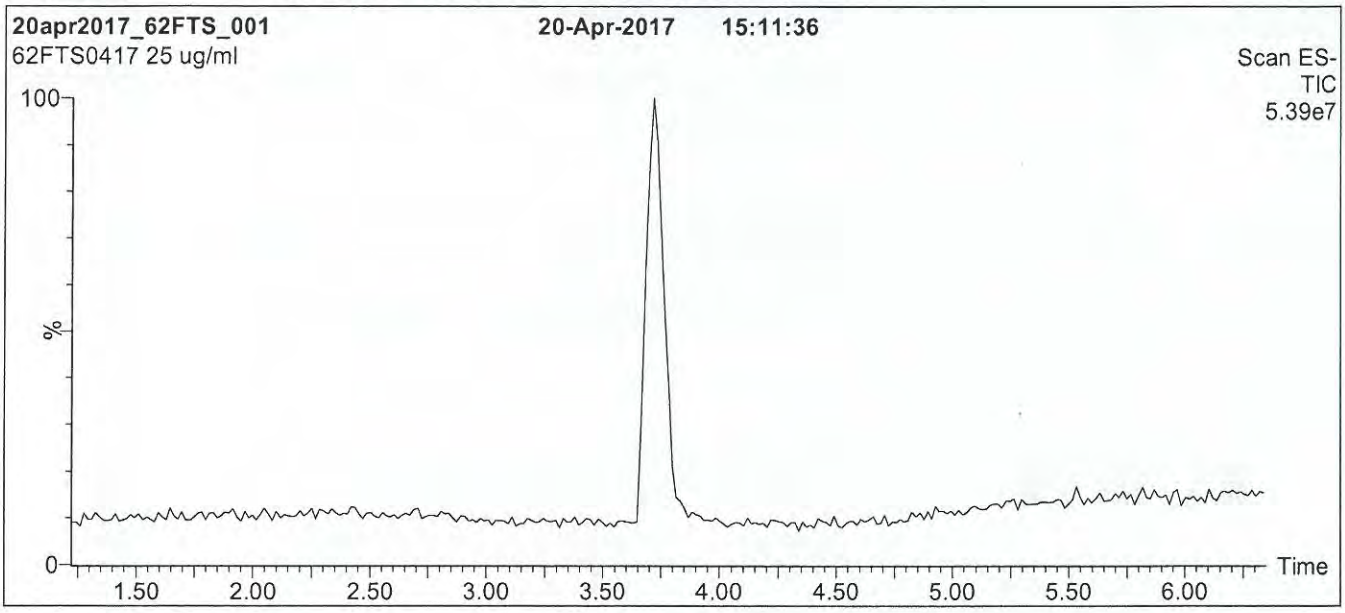

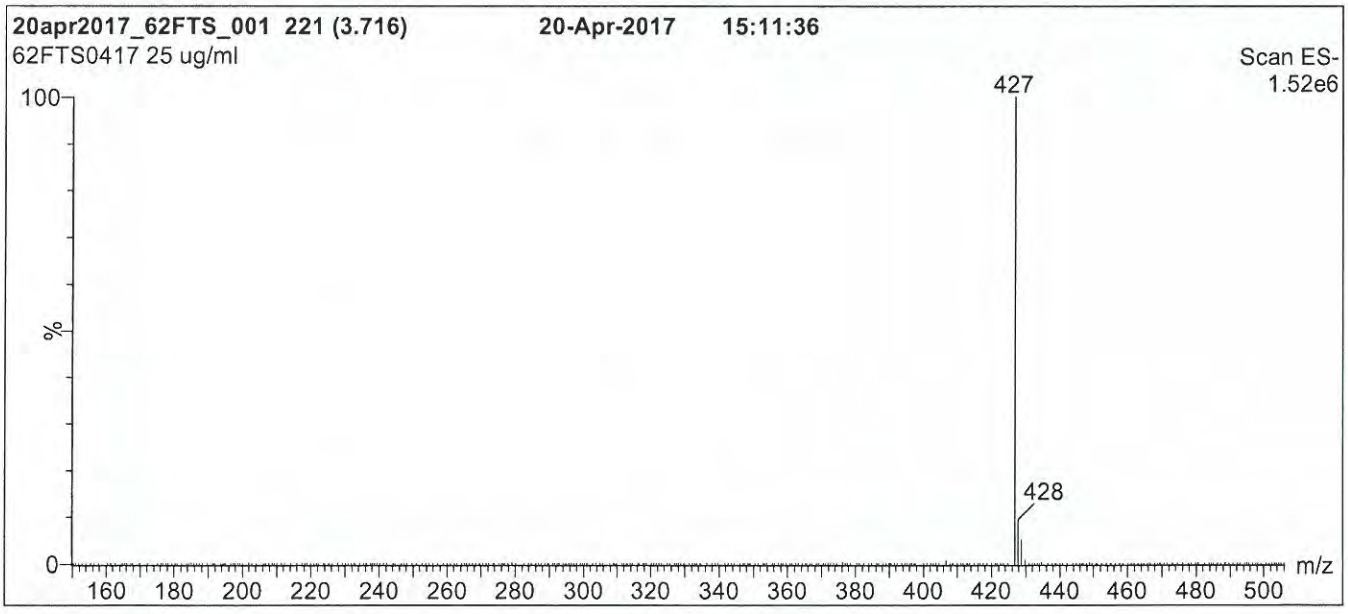

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Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

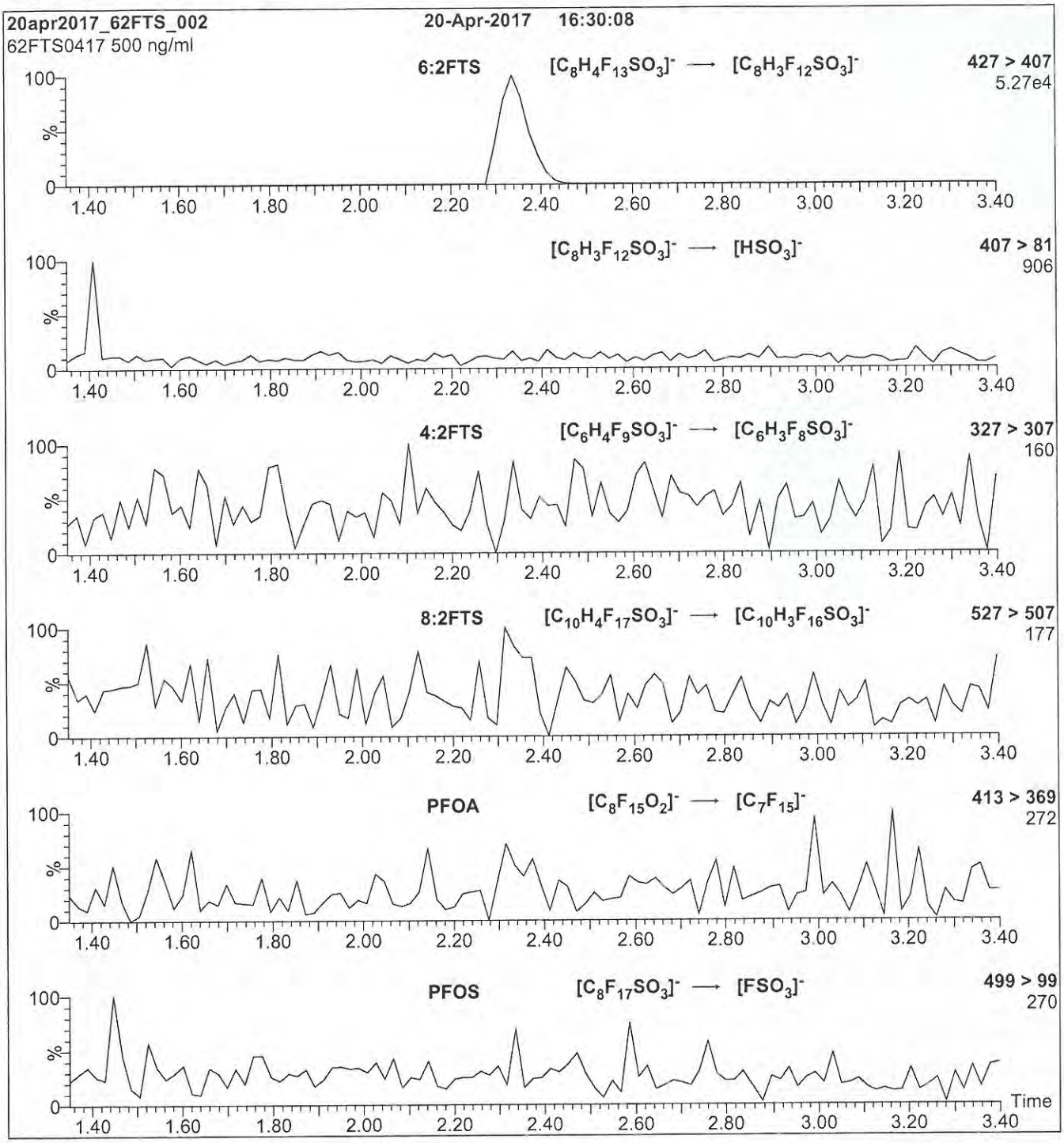
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

1802732

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



Conditions for Figure 2:

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

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) = 3.35e-3
Collision Energy (eV) = 25

18C2733

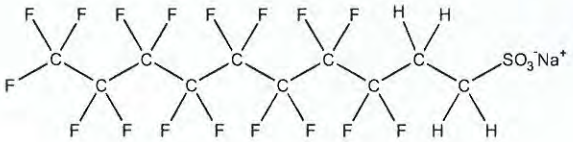
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0118

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)	01/24/2018			
EXPIRY DATE: (mm/dd/yyyy)	01/24/2023			
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: _____ **Date:** 01/31/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

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

18C2733

INTENDED USE:

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

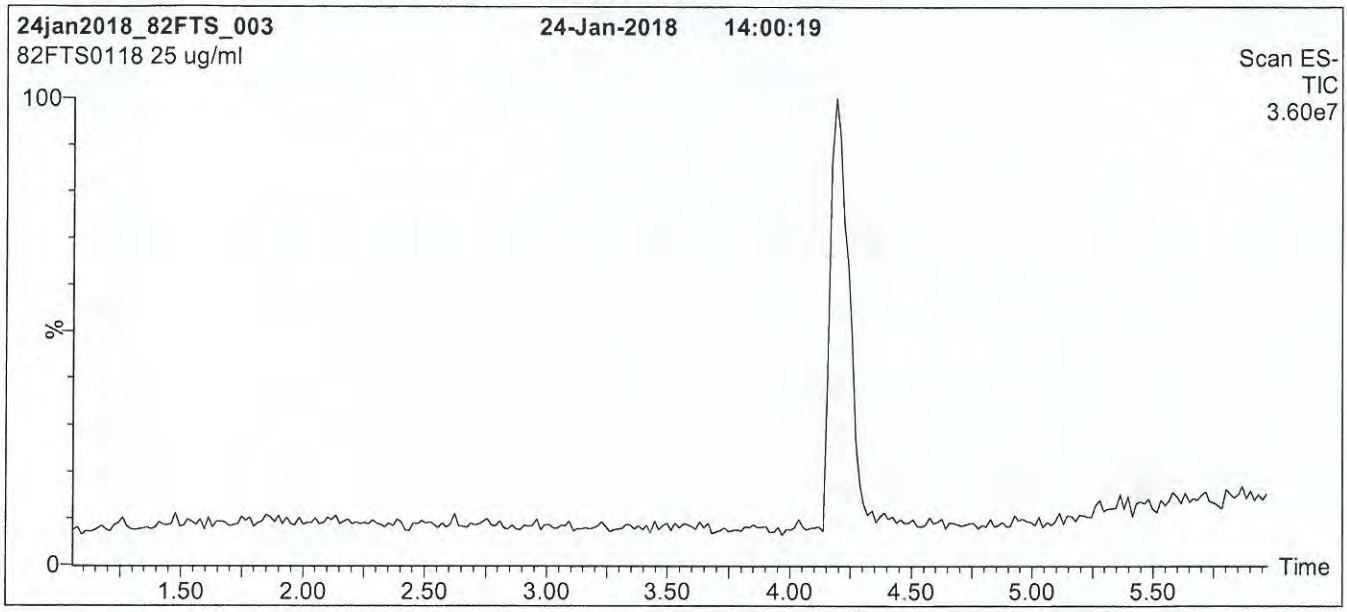
CALA

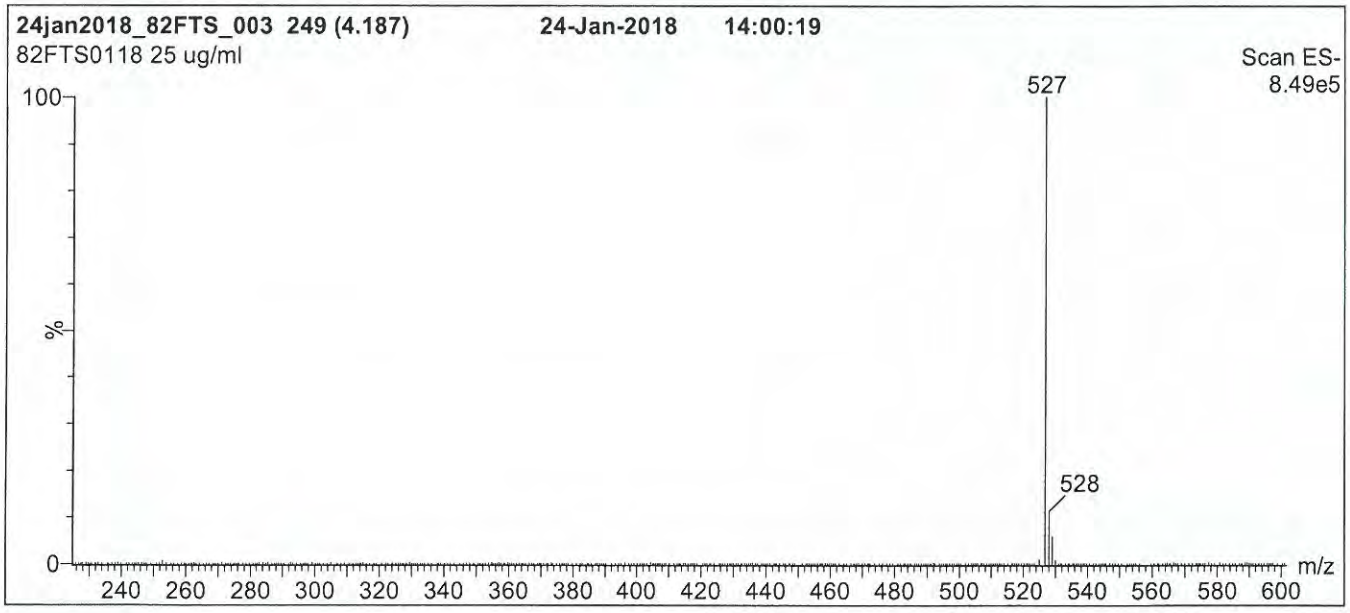
ANAB ACCREDITED 20709 REFERENCE MATERIAL PRODUCER

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

18C2733

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{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

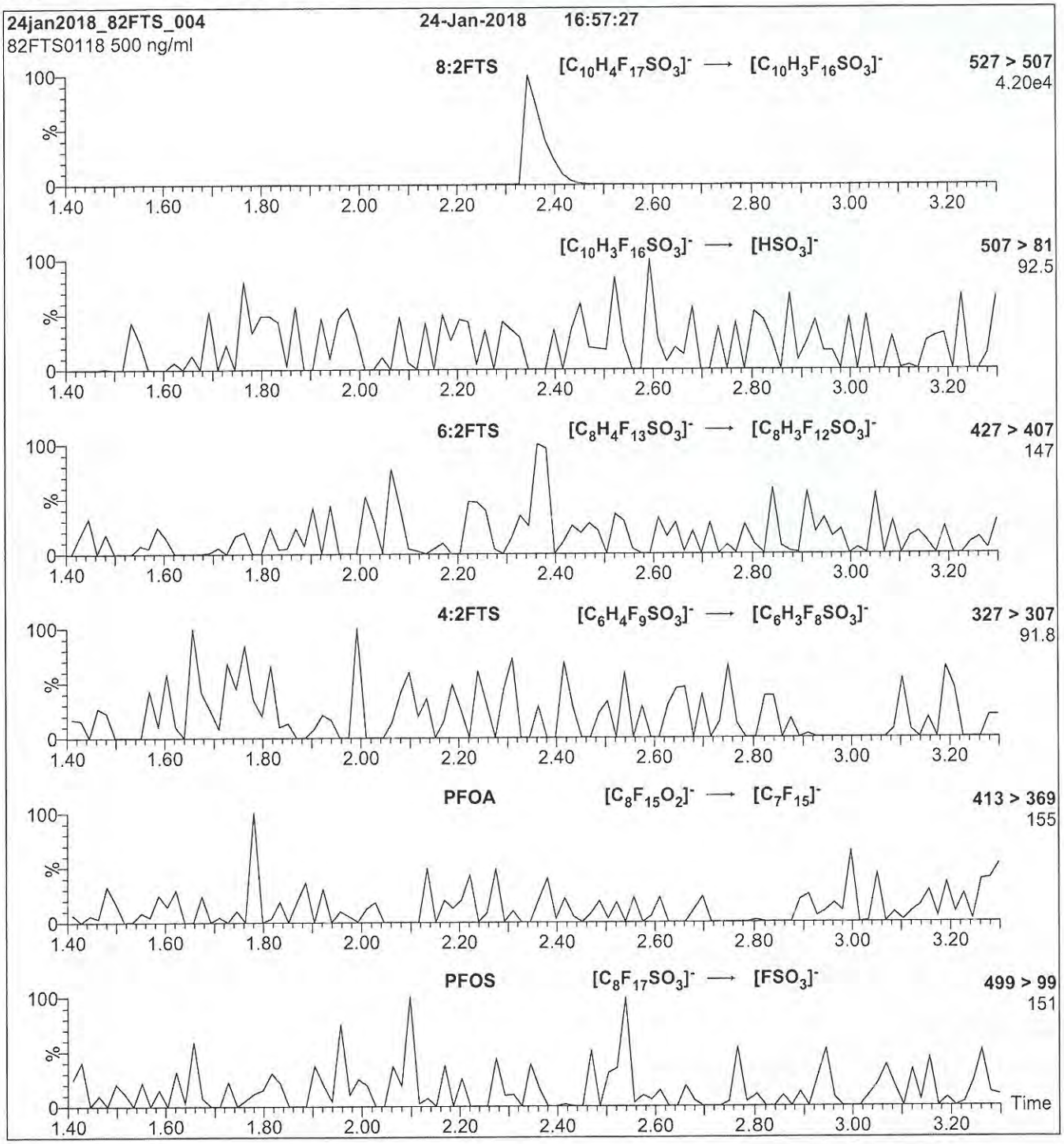
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18C2733

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) = 3.39e-3
Collision Energy (eV) = 25

18C2734

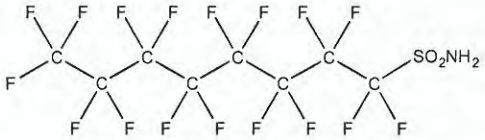
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide
LOT NUMBER: FOSA0817I

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)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18C2734

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. 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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

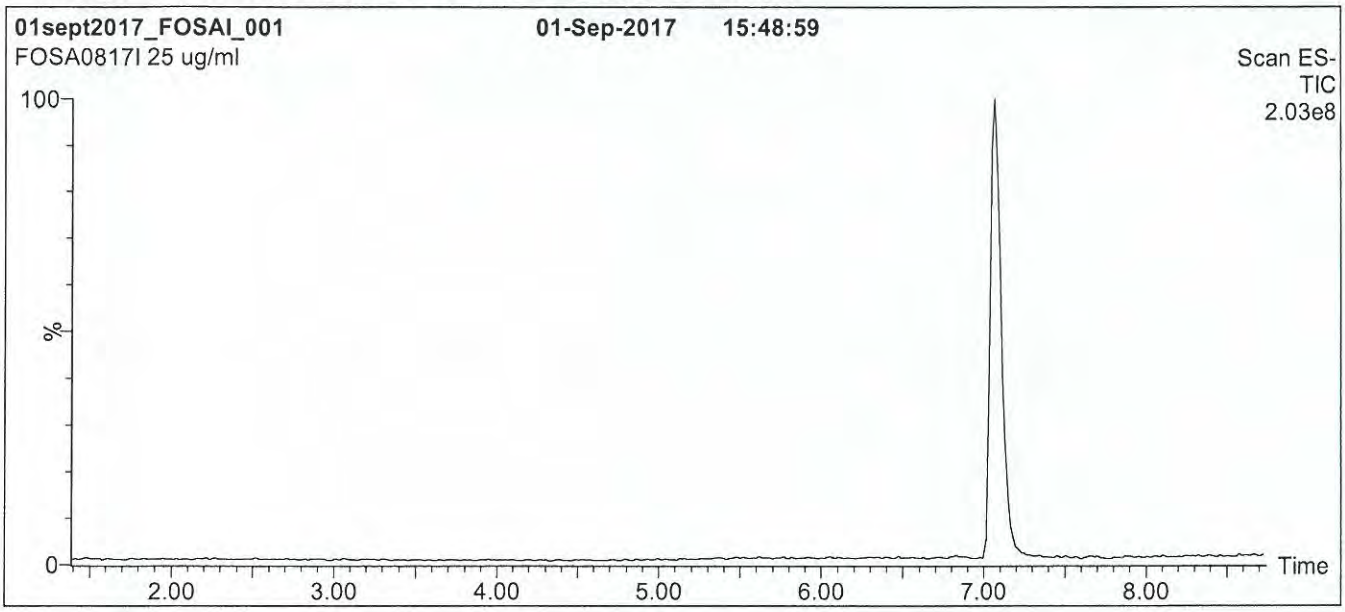
CALA Testing Accreditation No. A 1226

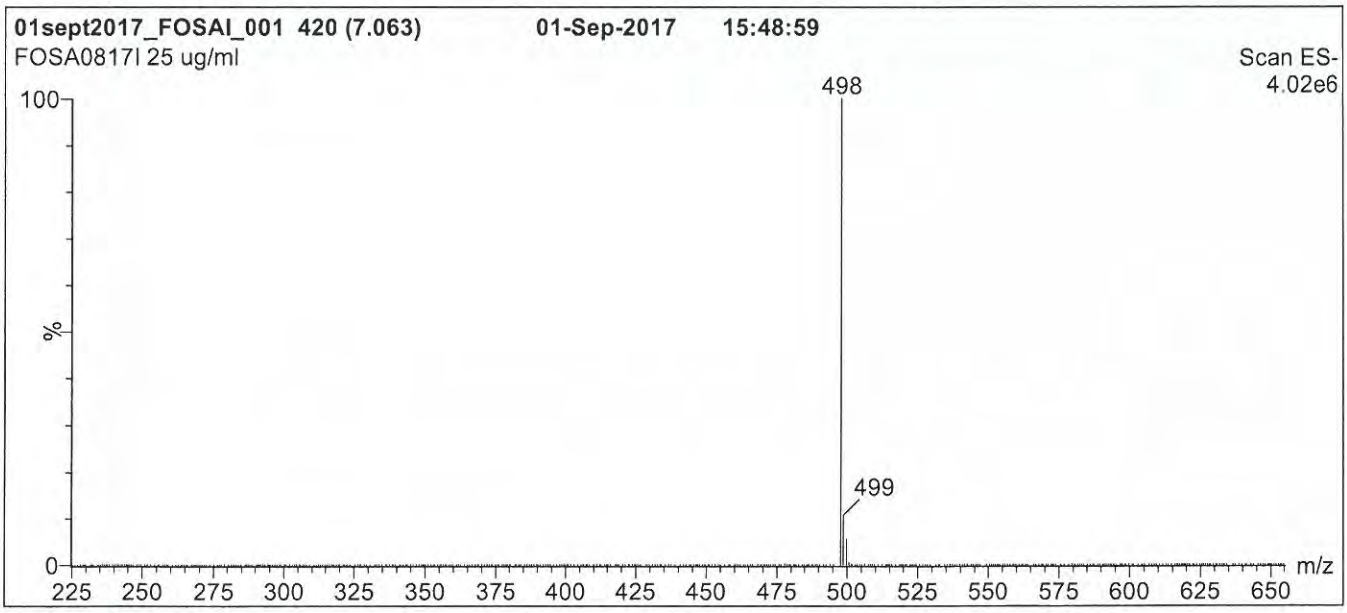
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

18C2734

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: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

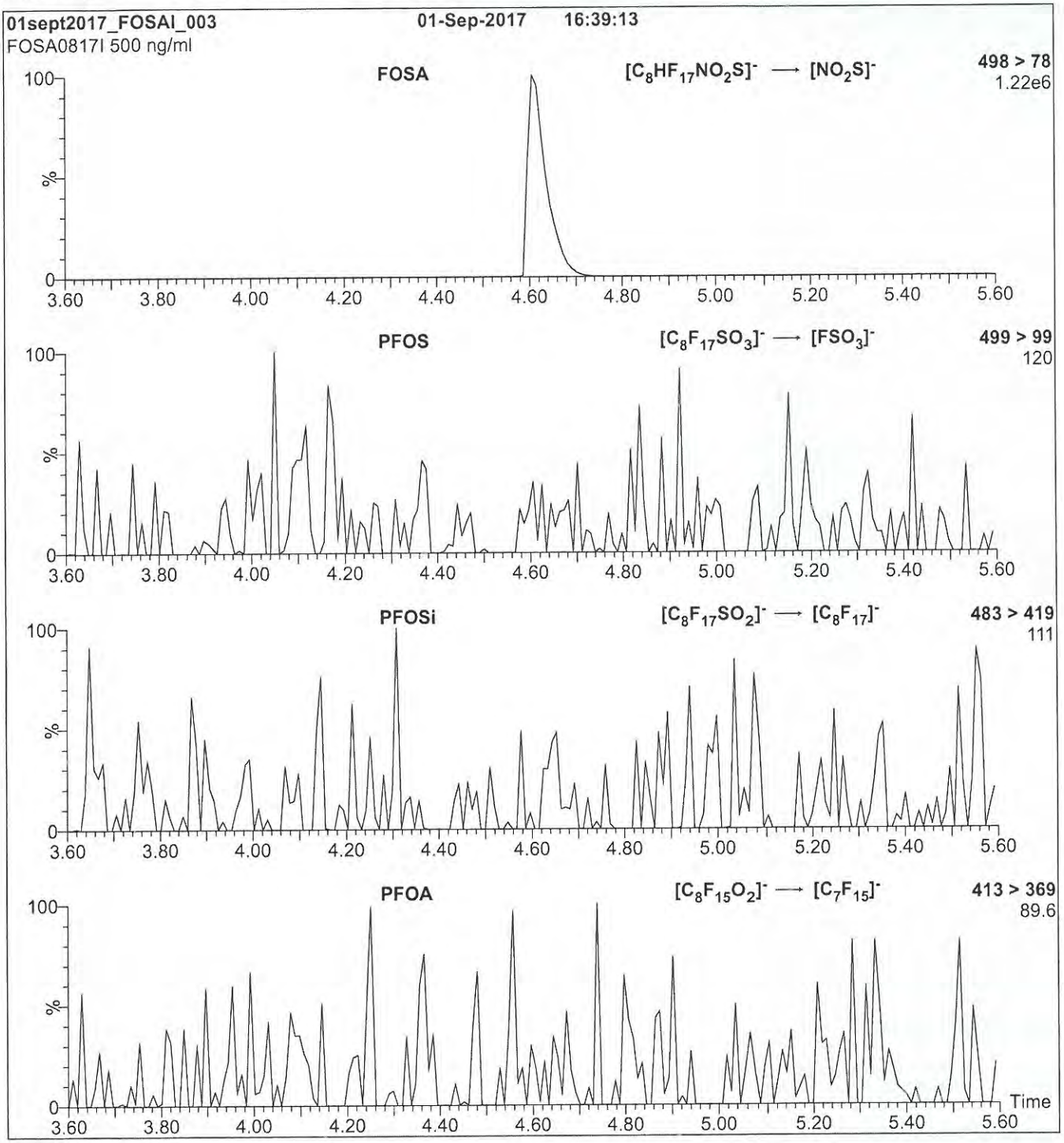
MS Parameters

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

18C2734

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

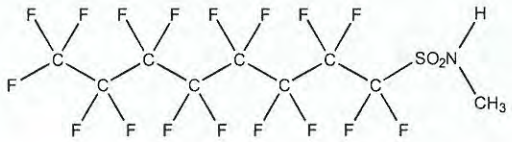
Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

1802737

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0717M
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)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/10/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1802737

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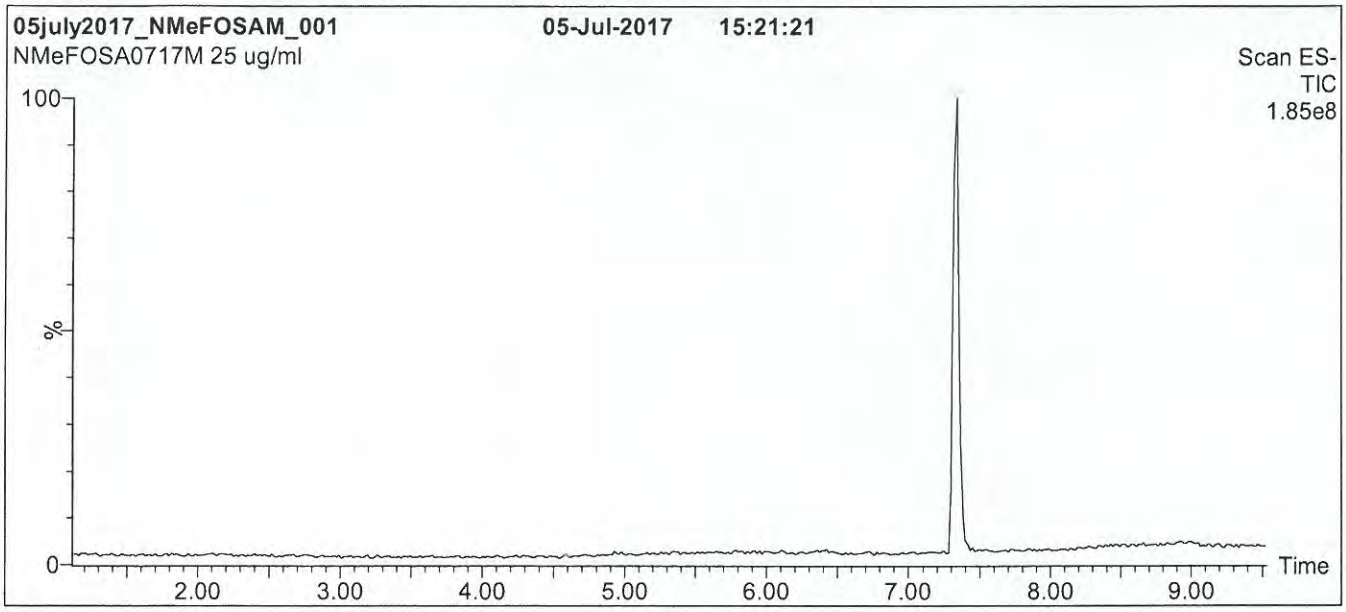
CALA Testing Accreditation No. A 1226

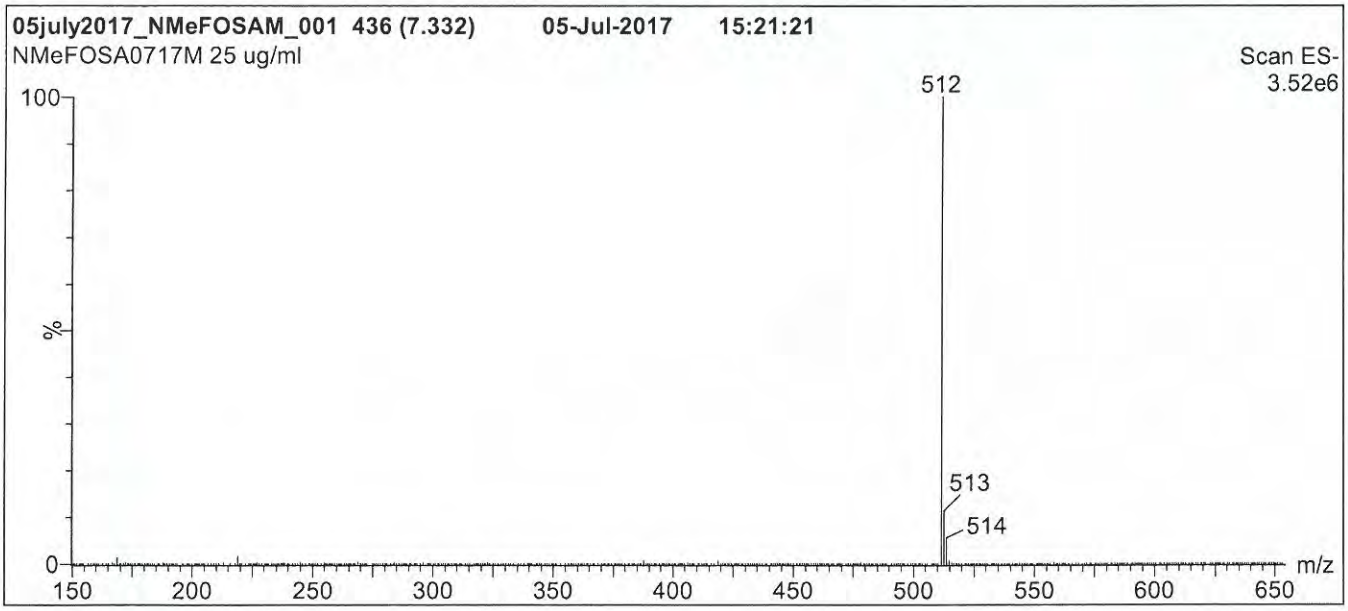
ANAB ACCREDITED Reference Material Producer

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

18C2737

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(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

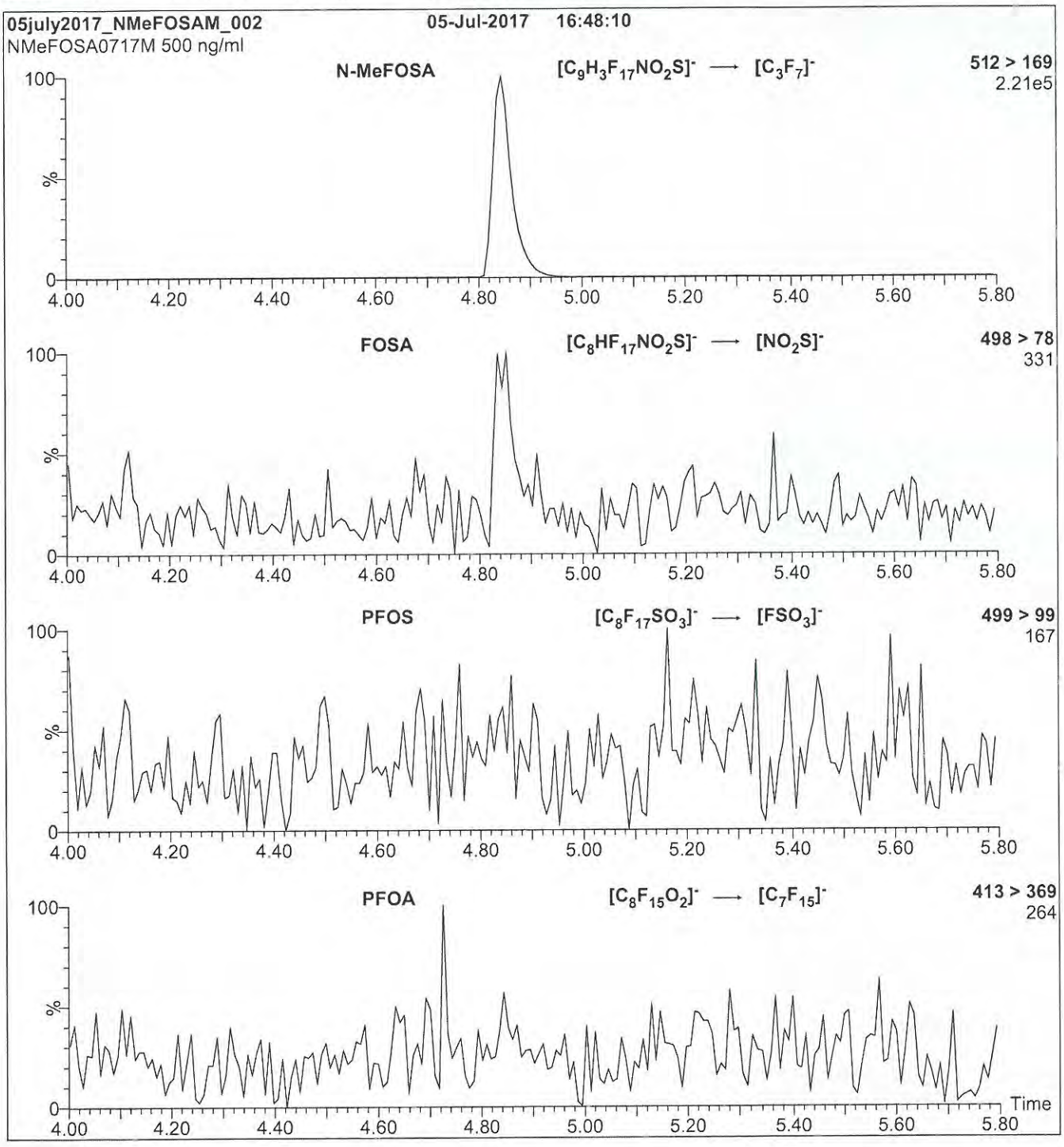
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18C2737

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

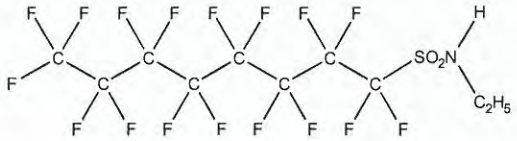
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

18C2738

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-EtFOSA-M	**LOT NUMBER:**	NEtFOSA0717M
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)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1802738

INTENDED USE:

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HAZARDS:

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

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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:

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LIMITED WARRANTY:

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CALA Testing Accreditation No. A 0226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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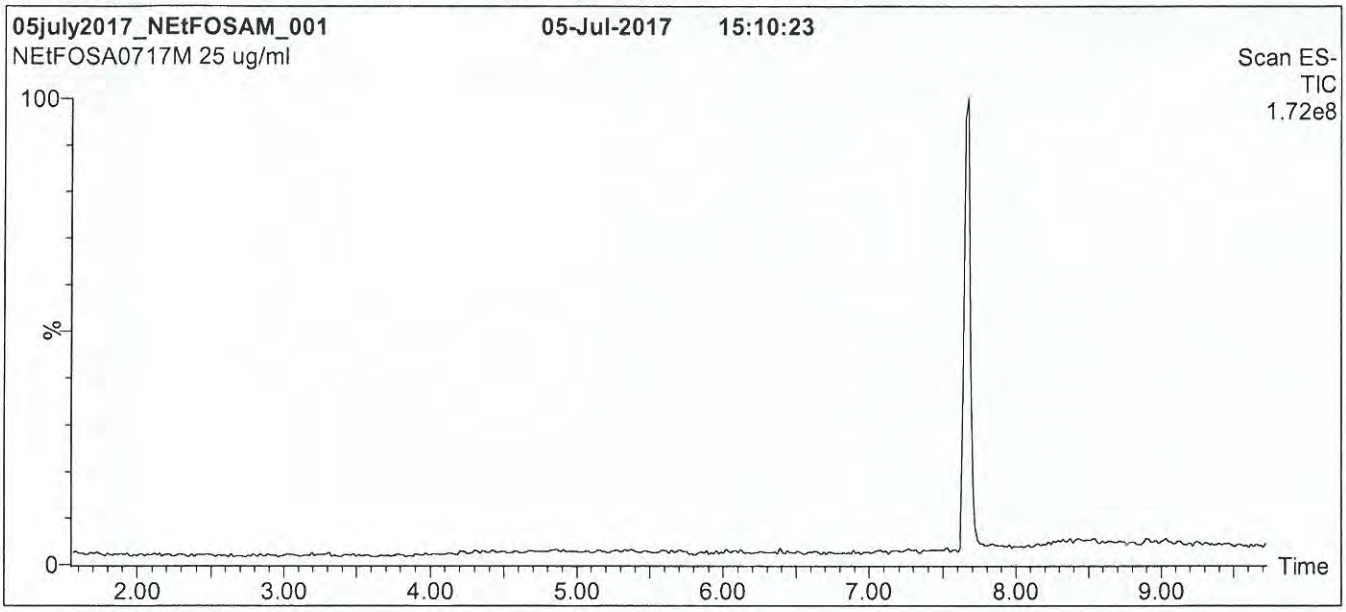
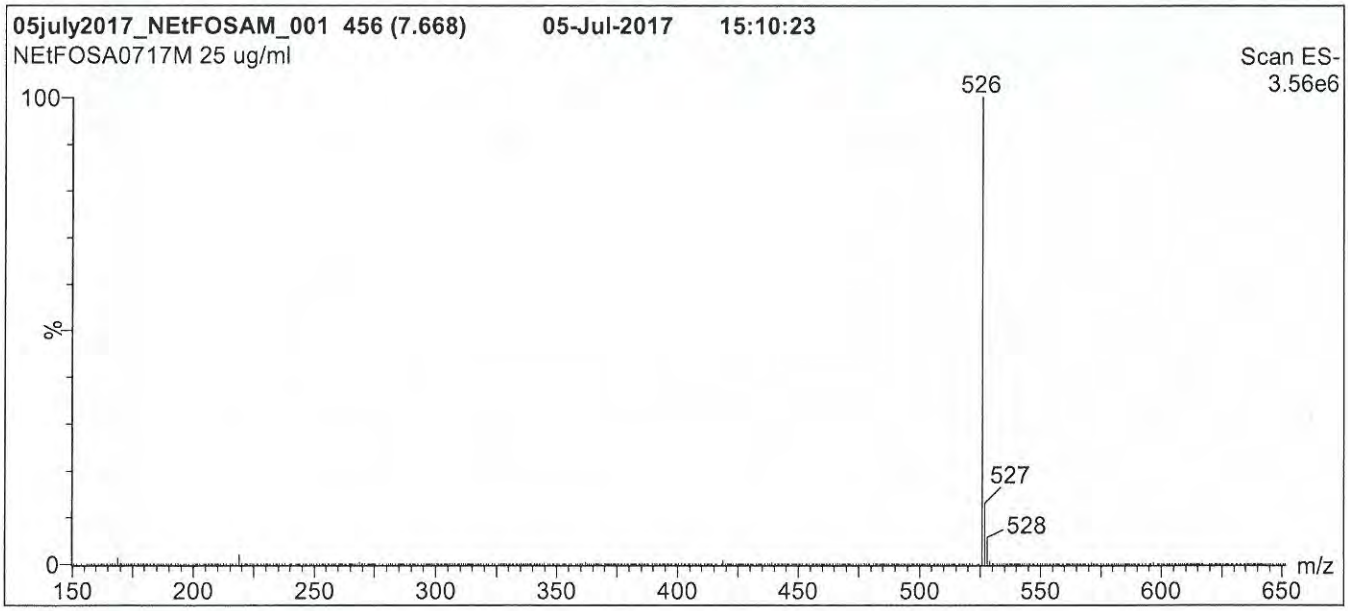
18C2738

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(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

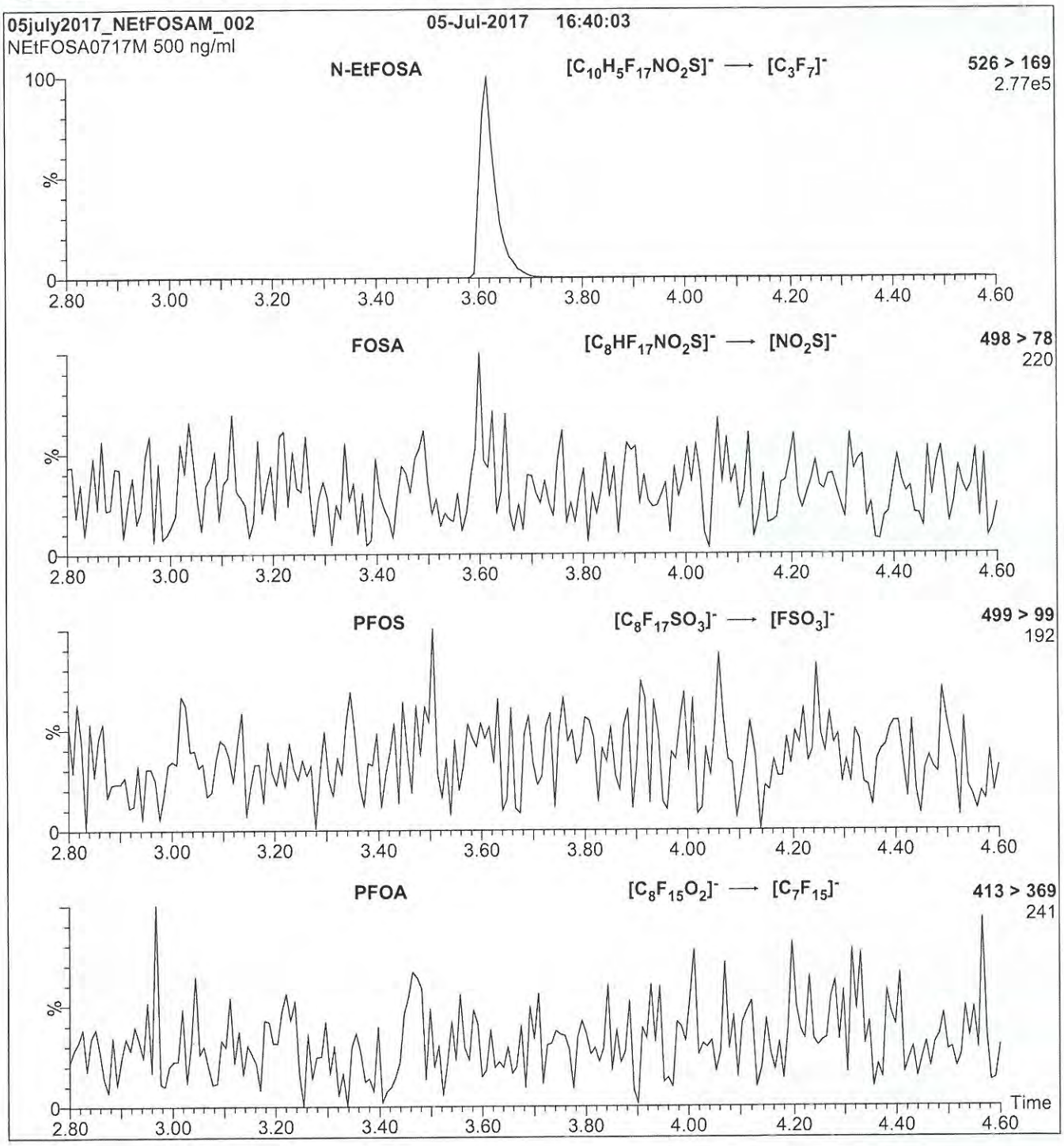
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18C2738

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



Conditions for Figure 2:

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

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) = 30

18C2739

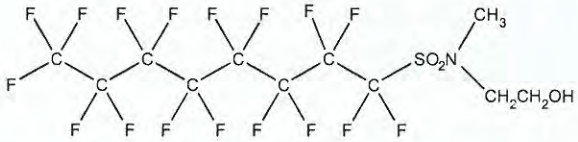
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0417M

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) 04/24/2017 (HRGC/LRMS)
04/21/2017 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy) 04/24/2022

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: _____ **Date:** 05/05/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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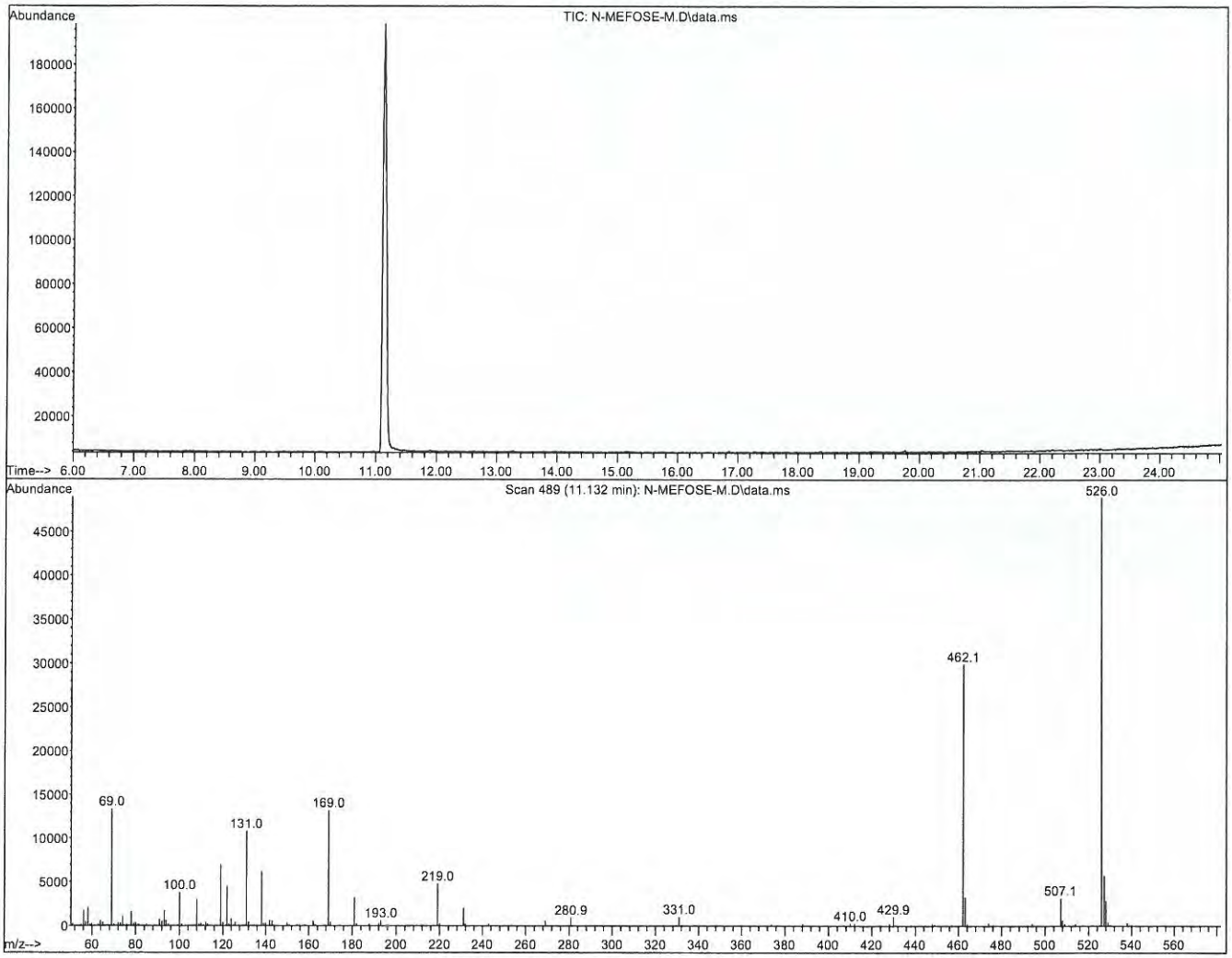
18C2739

Figure 1: **N-MeFOSE-M; HRGC/LRMS Data (TIC and Mass Spectrum)**



HRGC/LRMS:

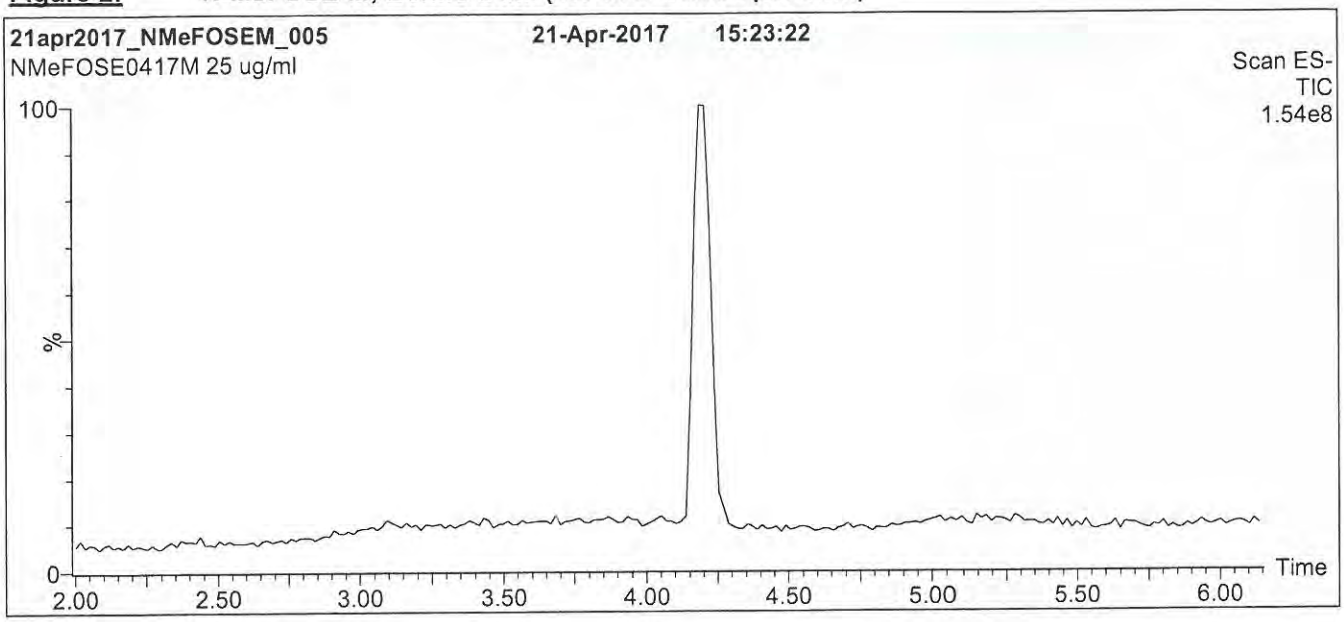
Agilent 7890A (HRGC)
Agilent 5975C (LRMS)

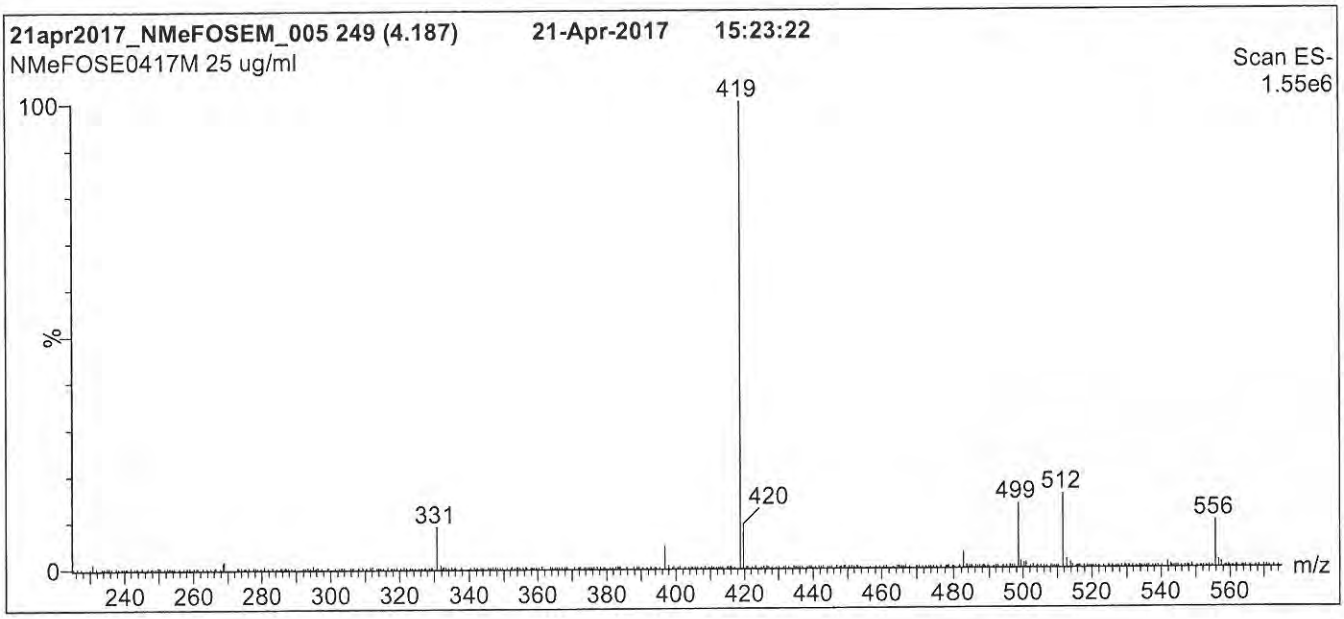
Chromatographic Conditions:

Column:	30 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W
Injector:	250 °C (Splitless Injection)
Oven:	100 °C (5 min)
	10 °C/min to 325 °C
	325 °C (20 min)
Ionization:	EI+
Detector:	250 °C
	Full Scan (50-1000 amu)

18C2739

Figure 2: **N-MeFOSE-M; LC/MS Data (TIC and Mass Spectrum)**





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: 60% MeOH / 40% H_2O
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

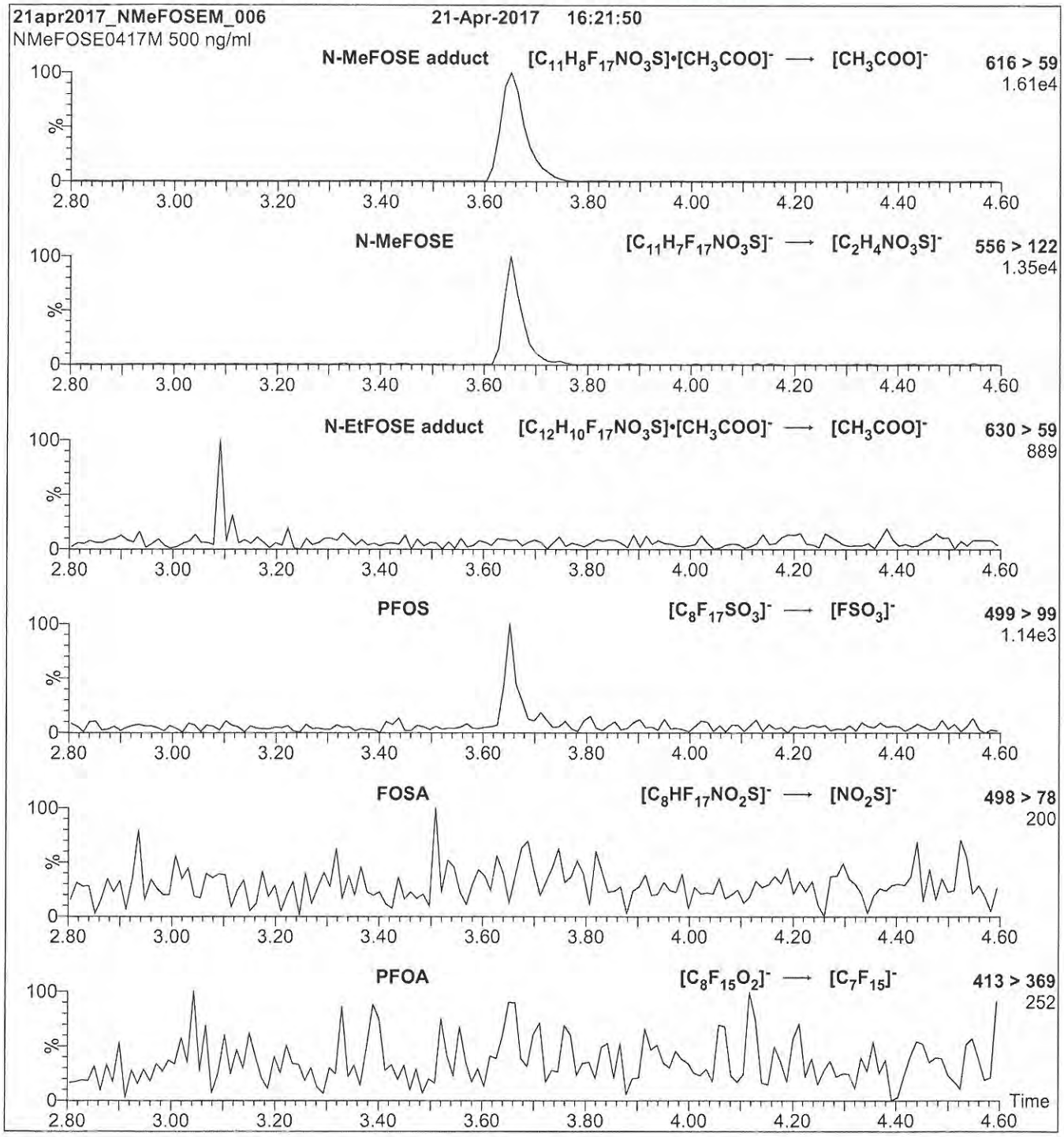
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18C2739

Figure 3: **N-MeFOSE-M; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSE-M)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 35

1802740

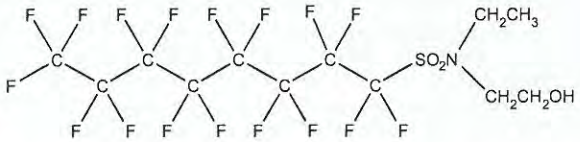
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0417M

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)	04/24/2017 (HRGC/LRMS) 04/21/2017 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	04/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
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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.

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Certified By: _____ **Date:** 04/26/2017 (mm/dd/yyyy)
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CALA

ANAB ACCREDITED

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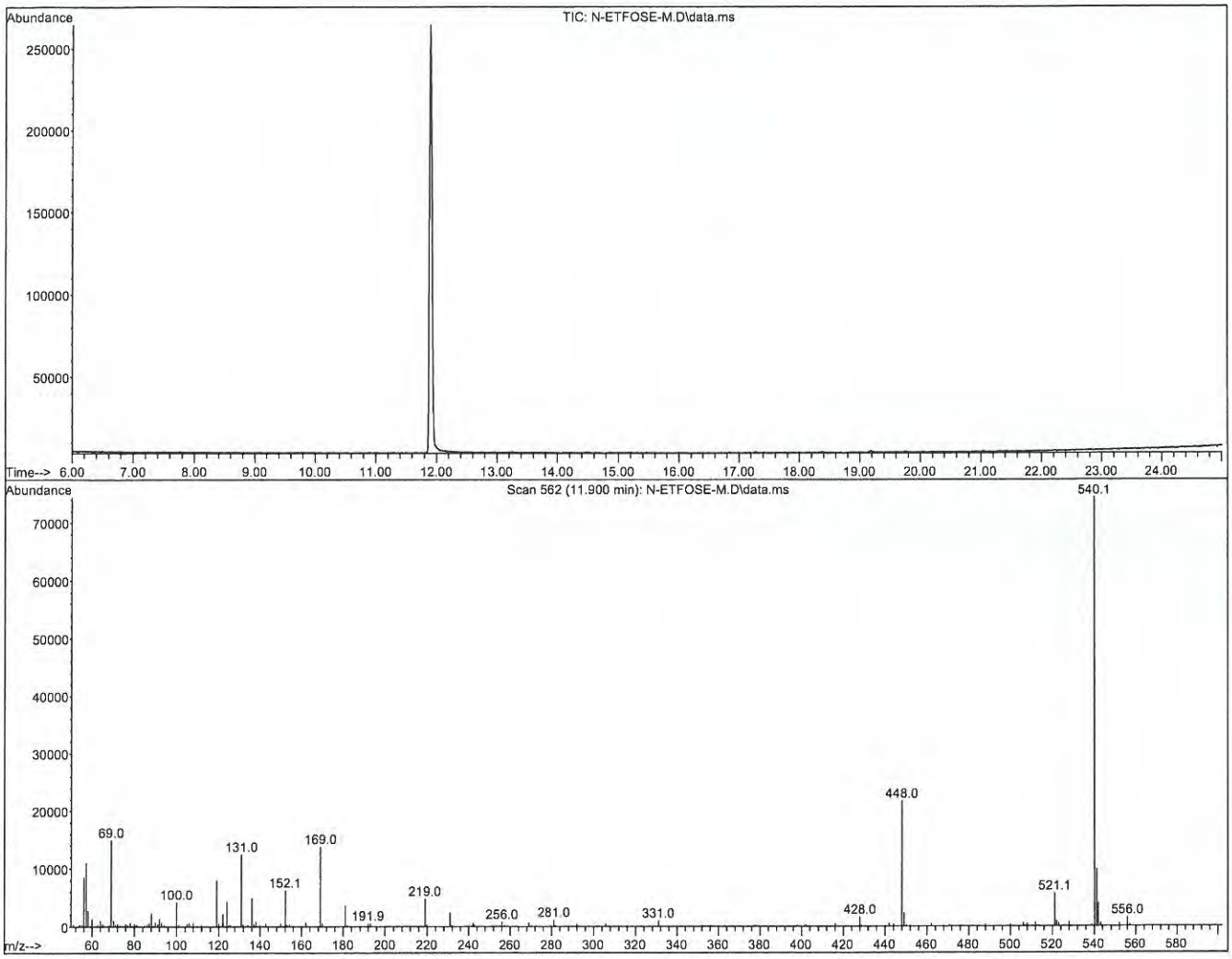
18C2740

Figure 1: **N-EtFOSE-M; HRGC/LRMS Data (TIC and Mass Spectrum)**



HRGC/LRMS:

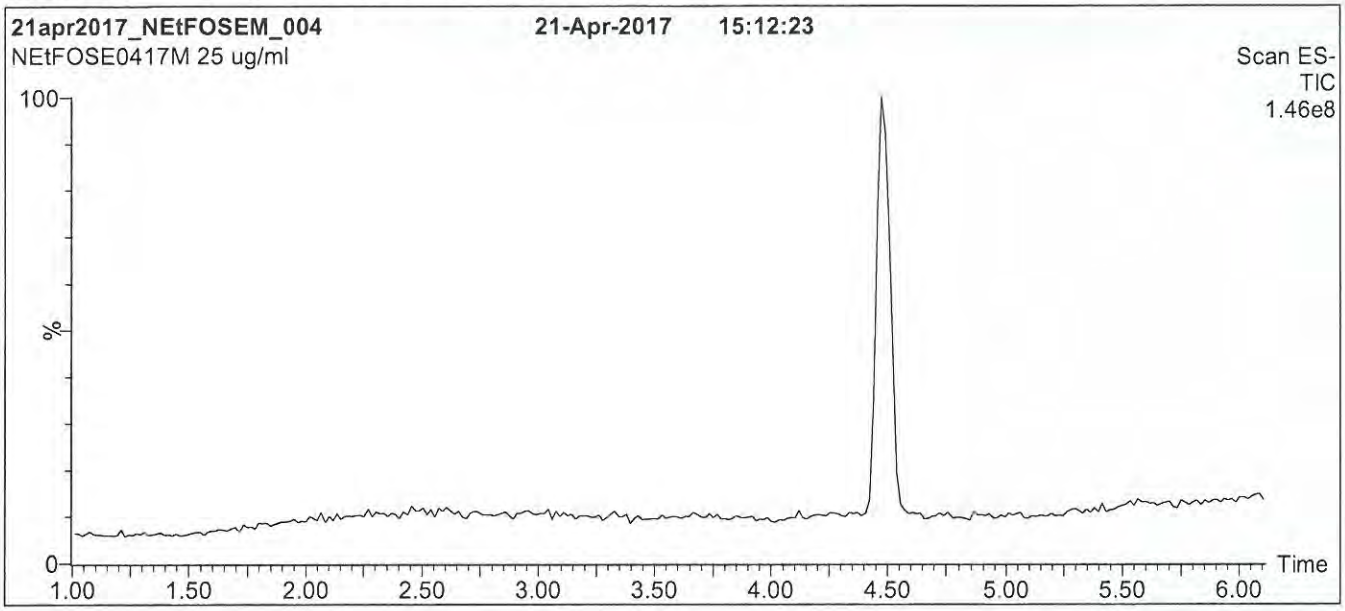
Agilent 7890A (HRGC)
Agilent 5975C (LRMS)

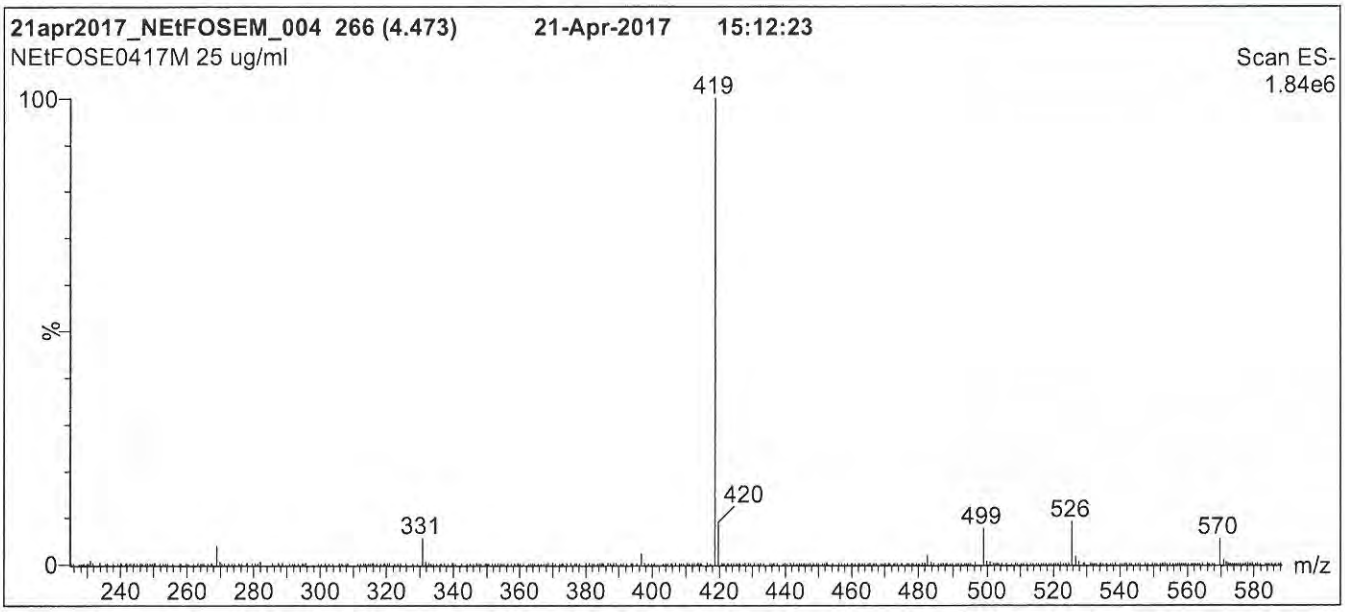
Chromatographic Conditions:

Column:	30 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W
Injector:	250 °C (Splitless Injection)
Oven:	100 °C (5 min) 10 °C/min to 325 °C 325 °C (20 min)
Ionization:	EI+
Detector:	250 °C Full Scan (50-1000 amu)

18C2746

Figure 2: **N-EtFOSE-M; LC/MS Data (TIC and Mass Spectrum)**





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: 60% MeOH / 40% H_2O
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

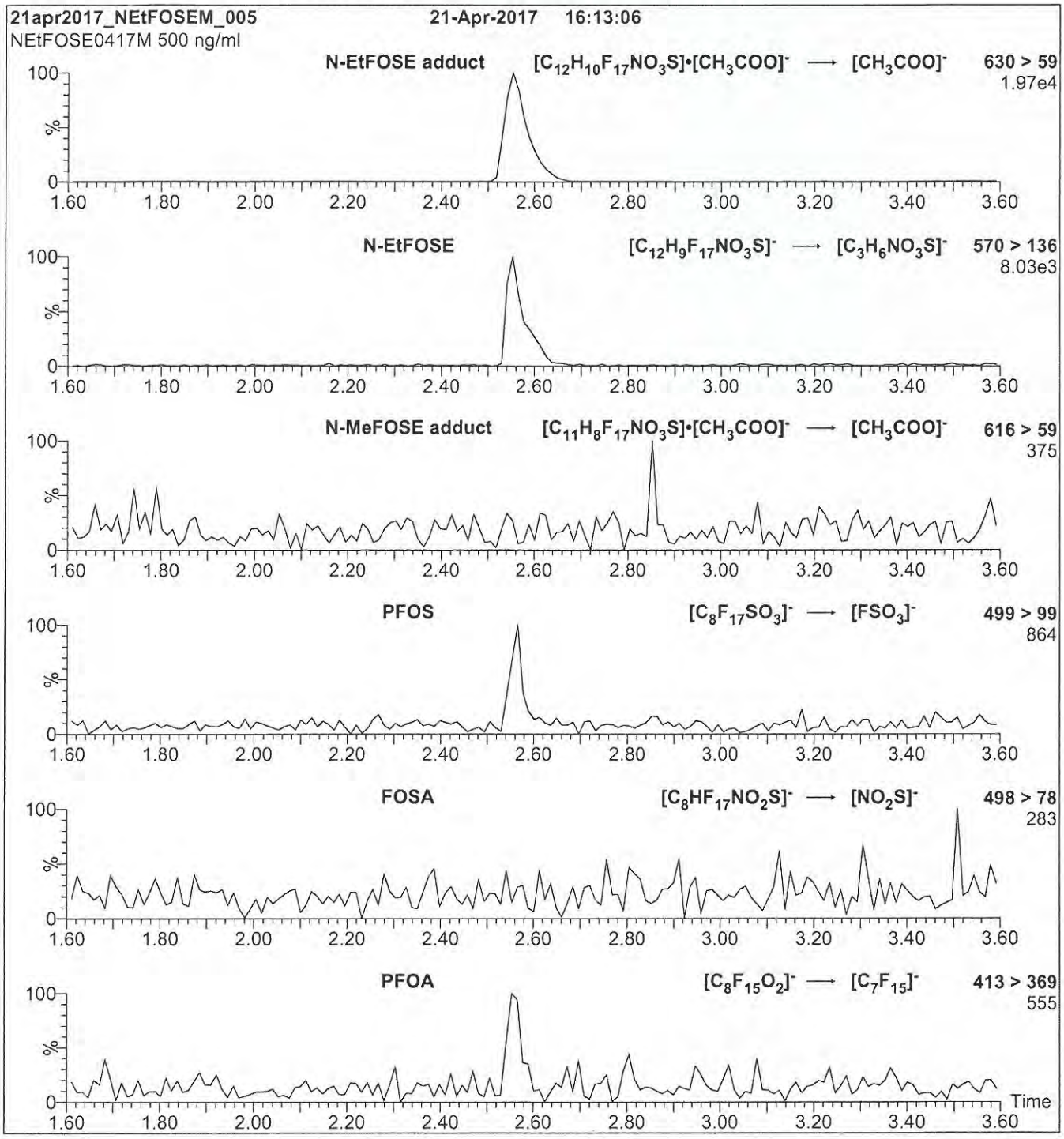
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

1802740

Figure 3: **N-EtFOSE-M; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml N-EtFOSE-M)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 33

18D1306

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSAA

N-Methylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NMeFOSAA
LOT NUMBER:	brNMeFOSAA0118
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2018
LAST TESTED: (mm/dd/yyyy)	01/17/2018
EXPIRY DATE: (mm/dd/yyyy)	01/17/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamidoacetic acid (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 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

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HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

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

1801306

Table A: **br-NMeFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2
7	Other Unidentified Isomers		1.1

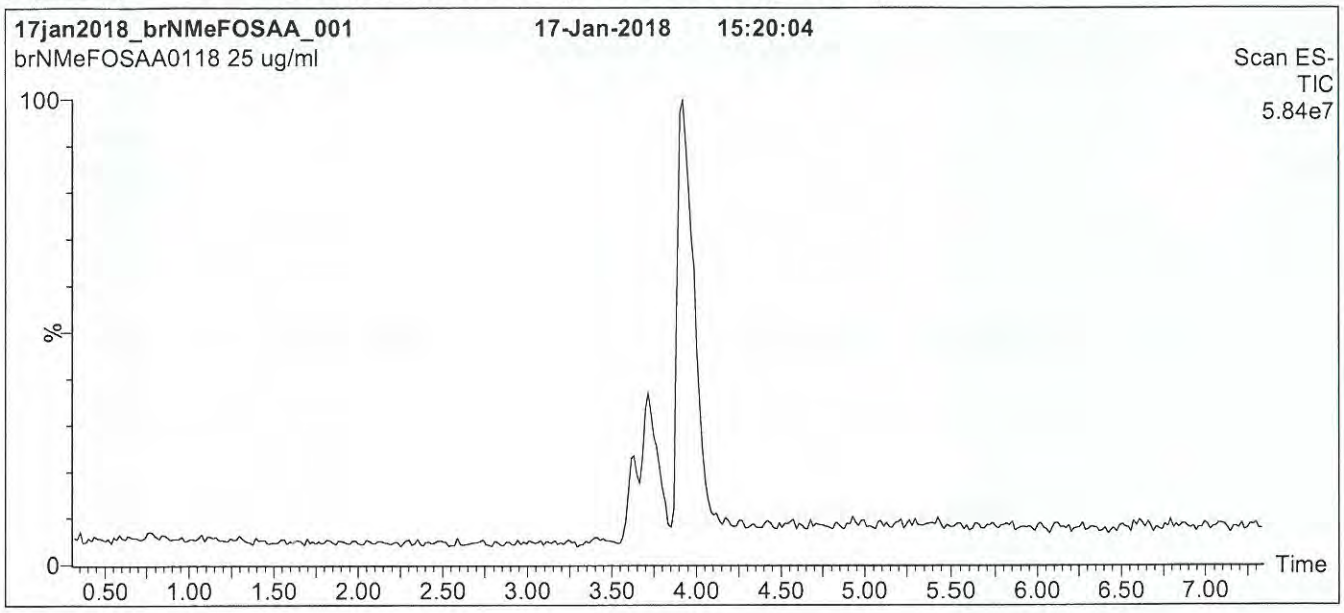
* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

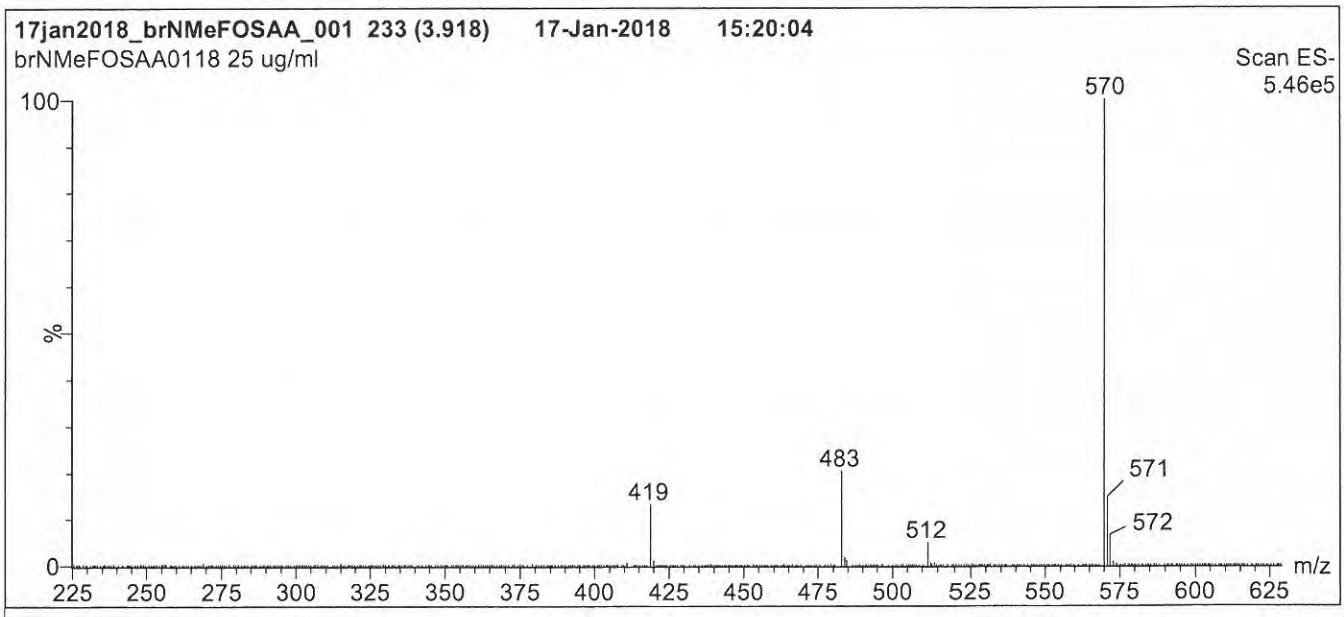
Certified By: _____ **Date:** 03/22/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

1801306

Figure 1: **br-NMeFOSAA; 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: 55% (80:20 MeOH:ACN) / 45% 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

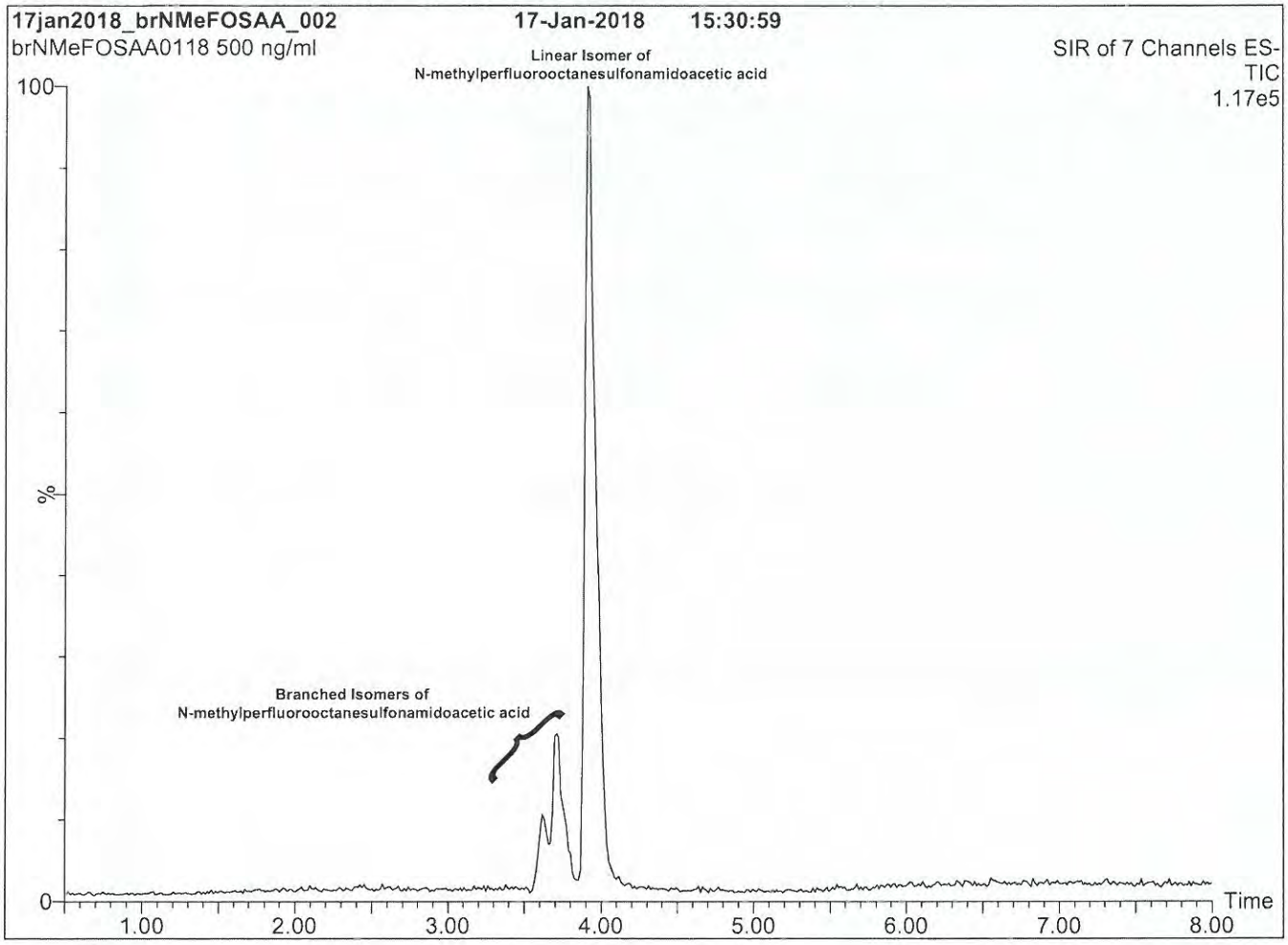
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

1801306

Figure 2: **br-NMeFOSAA; 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: 55% (80:20 MeOH:ACN) / 45% 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

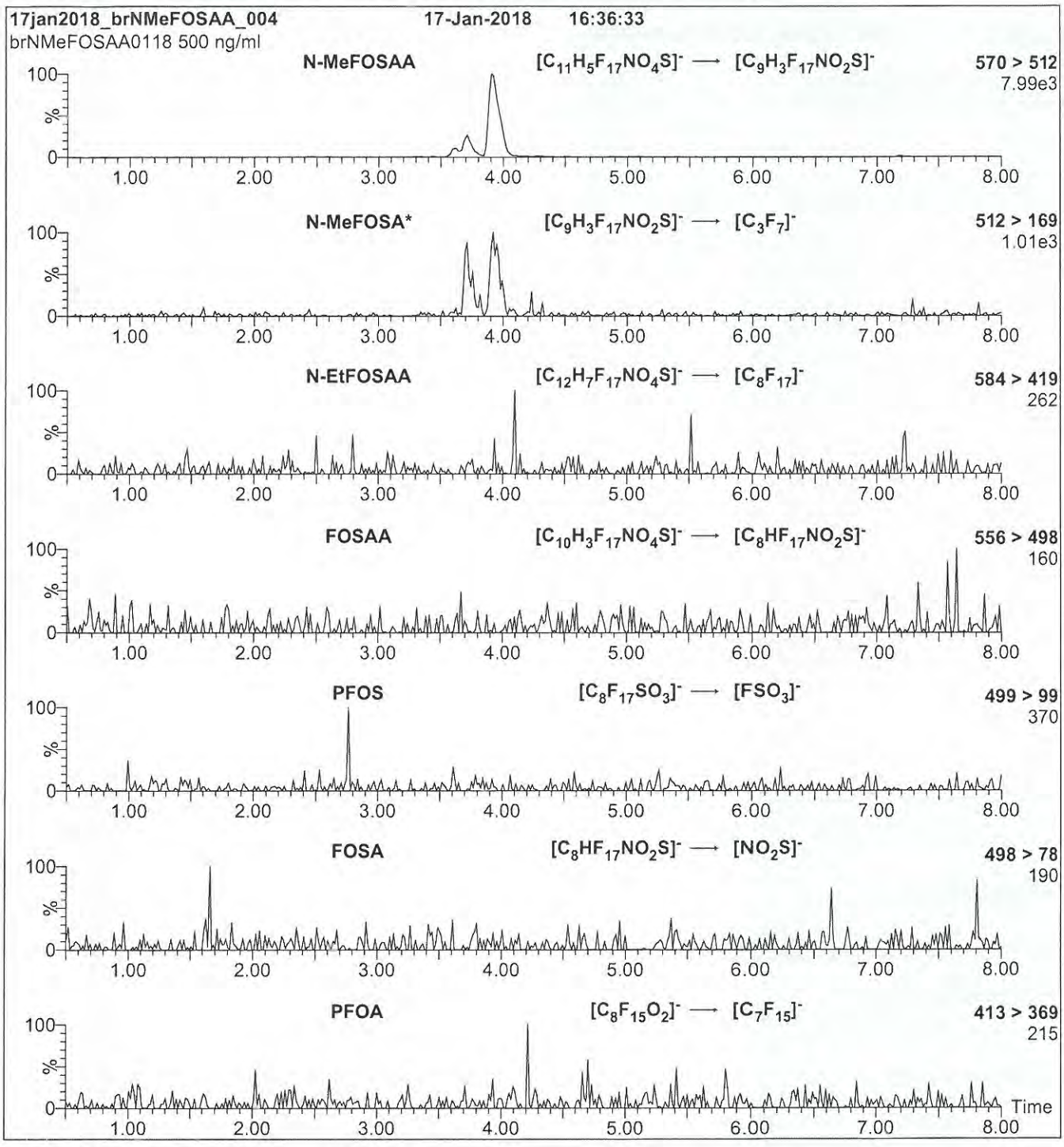
MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18D1306

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



***Note**: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

18D1307

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-NEtFOSAA

N-Ethylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NEtFOSAA
LOT NUMBER:	brNEtFOSAA0118
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2018
LAST TESTED: (mm/dd/yyyy)	01/17/2018
EXPIRY DATE: (mm/dd/yyyy)	01/17/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamidoacetic acid (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 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

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

1801307

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HANDLING:

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

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CALA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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18D1307

Table A: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	2.2
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	5.4
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$	10.4
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	0.3
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	0.3
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	0.3
9	Other Unidentified Isomers		1.3

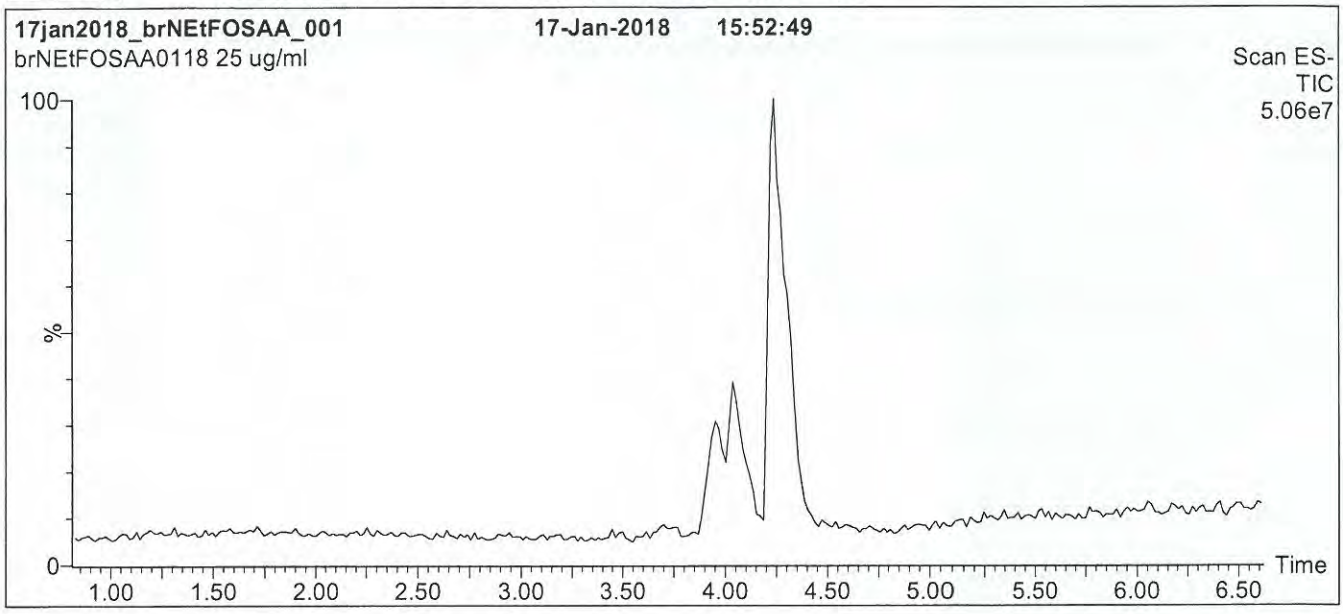
* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

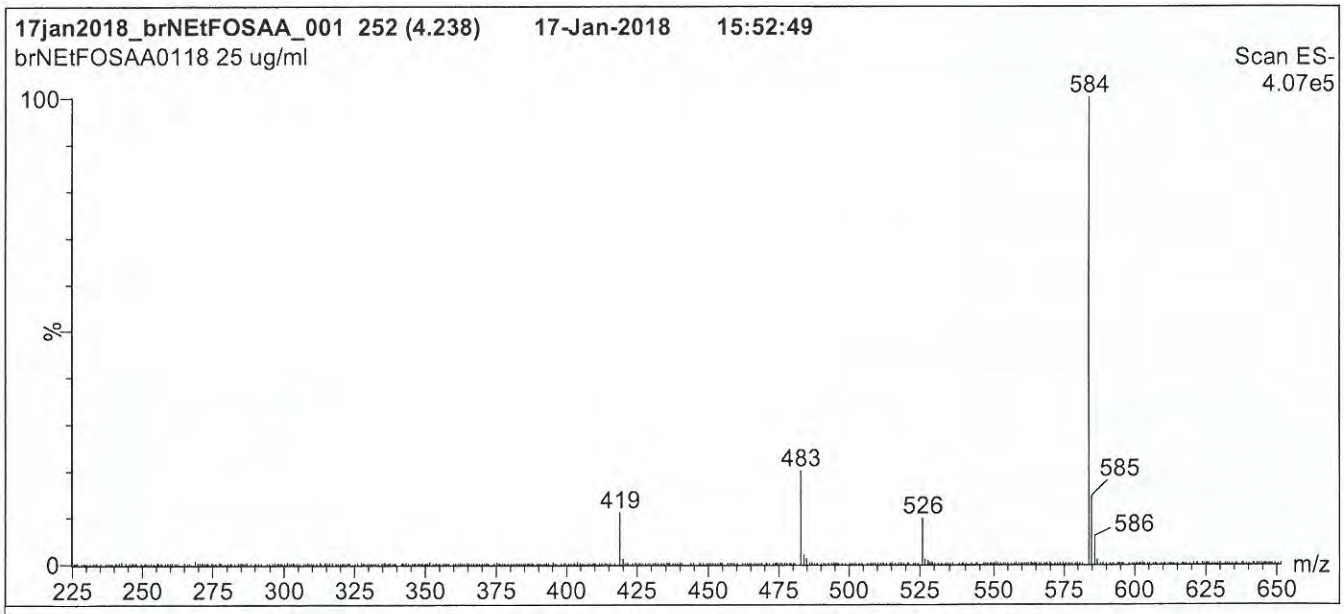
Certified By: _____ **Date:** 03/22/2018
(mm/dd/yyyy)

B.G. Chittim, General Manager

1801307

Figure 1: **br-NEtFOSAA; 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: 55% (80:20 MeOH:ACN) / 45% 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

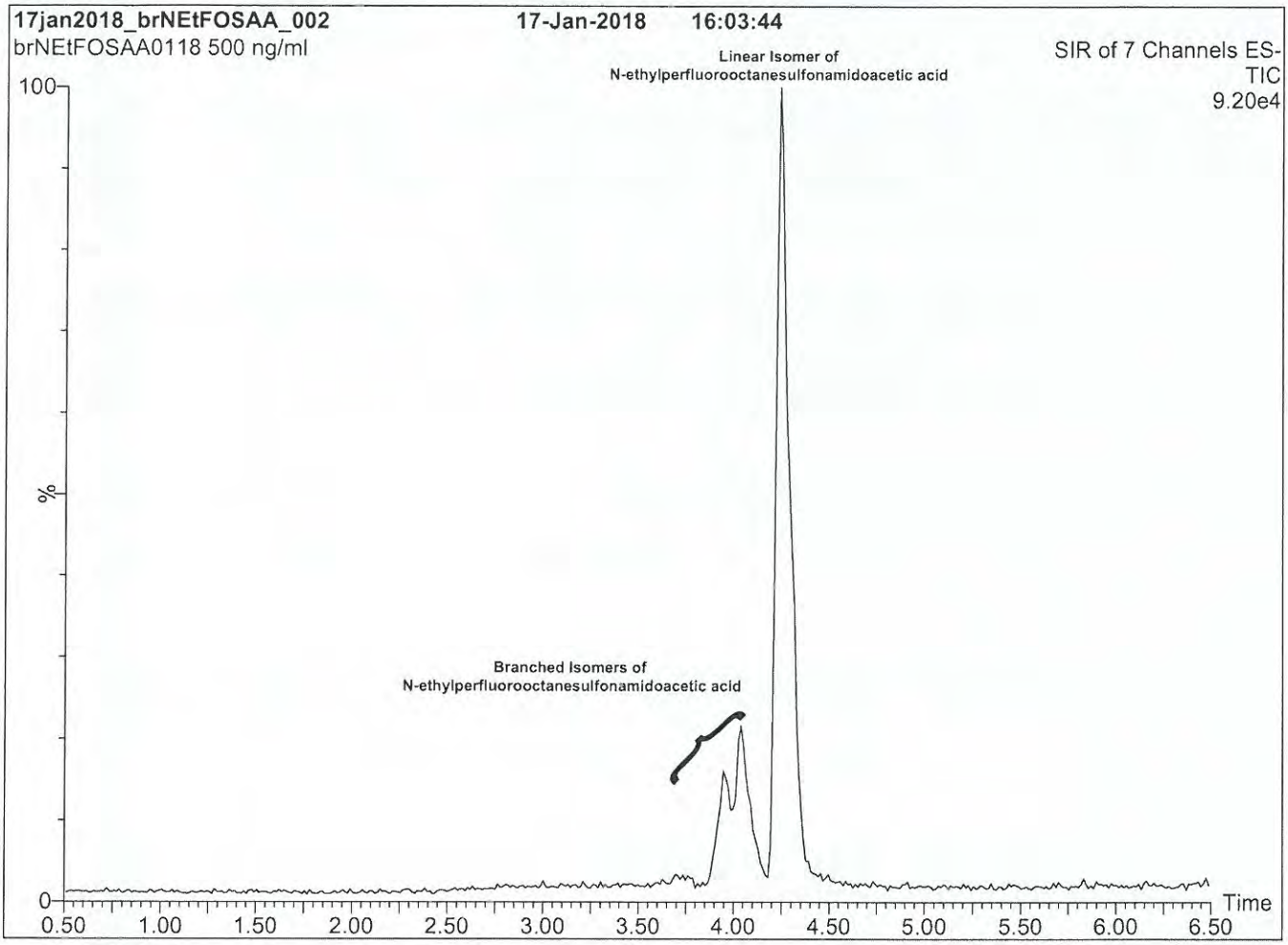
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: **br-NEtFOSAA; 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: 55% (80:20 MeOH:ACN) / 45% 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

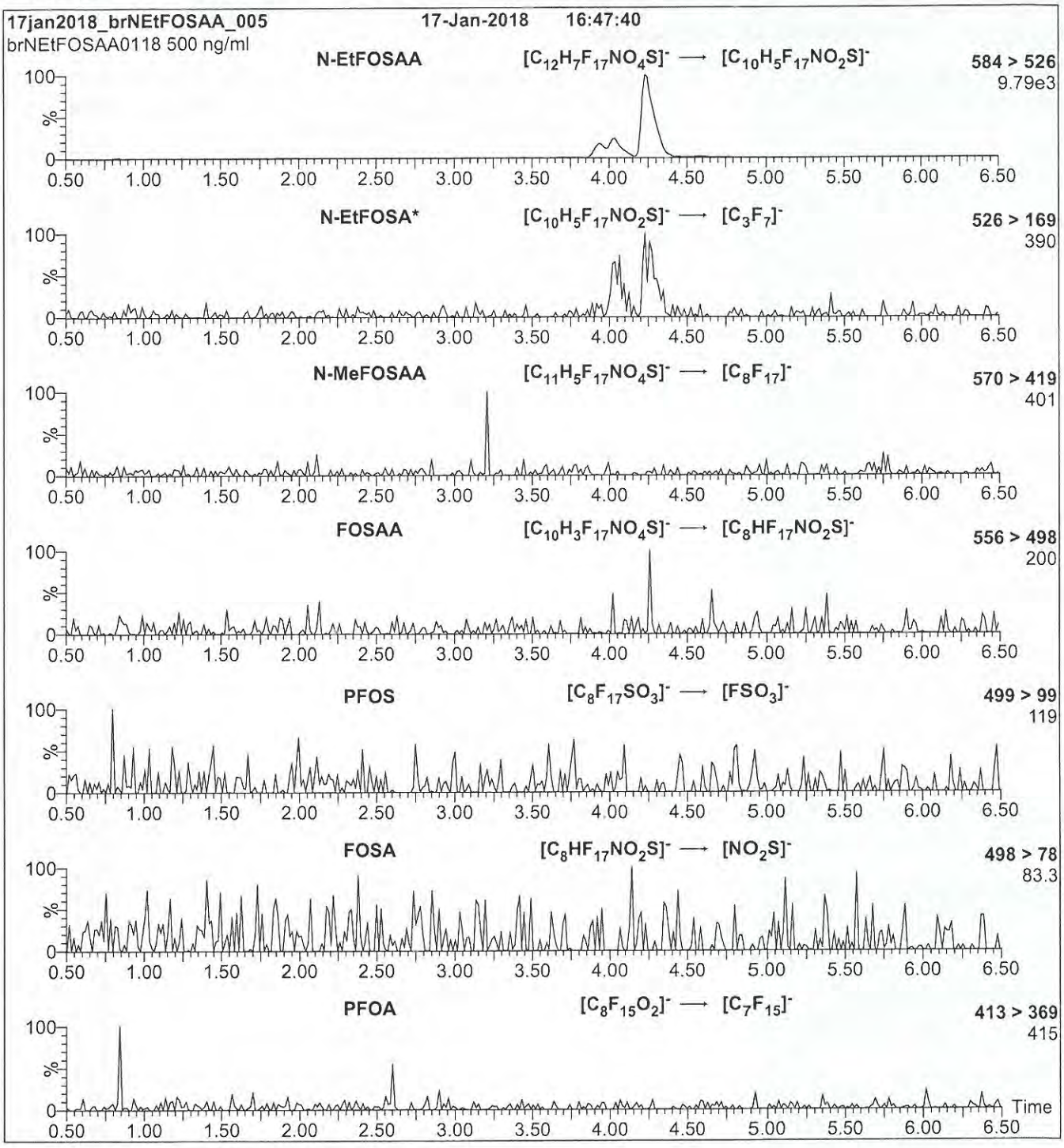
MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

1801307

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



***Note**: N-EtFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

Analytical Standard Record

Vista Analytical Laboratory

18D2005

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
18B1530	13C2-FOUEA	15-Feb-18	** Vendor **	14-Nov-19	1
18B1531	13C3-PFHxS	15-Feb-18	** Vendor **	05-Jul-22	1.06
18B1532	13C4-PFOS	15-Feb-18	** Vendor **	17-Oct-22	1.05
18B1533	13C7-PFUdA	15-Feb-18	** Vendor **	13-Jul-22	1
18B1534	13C5-PFHxA	15-Feb-18	** Vendor **	17-Oct-22	1
18B1535	13C6-PFDA	15-Feb-18	** Vendor **	17-Oct-22	1
18B1536	13C8-PFOA	15-Feb-18	** Vendor **	05-Jul-22	1.02
18B1537	13C4-PFBA	15-Feb-18	** Vendor **	12-Apr-22	1
18B1538	13C9-PFNA	15-Feb-18	** Vendor **	23-May-22	1

Description:	PFC-RS	Expires:	20-Apr-20
Standard Type:	Reagent	Prepared:	20-Apr-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	20-Apr-18 10:41 by GRB

Analyte	CAS Number	Concentration	Units
13C9-PFNA		1.25	ug/mL
13C8-PFOA		1.25	ug/mL
13C7-PFUnA		1.25	ug/mL
13C6-PFDA		1.25	ug/mL
13C5-PFHxA		1.25	ug/mL
13C4-PFOS		1.25	ug/mL
13C4-PFBA		1.25	ug/mL
13C3-PFHxS		1.25	ug/mL
13C2-FOUEA		1.25	ug/mL

1881530

WELLINGTON LABORATORIES

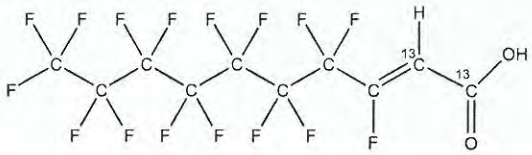
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MFOUEA
COMPOUND: 2H-Perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid

LOT NUMBER: MFOUEA1117

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)	11/14/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/14/2019		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/15/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1530

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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

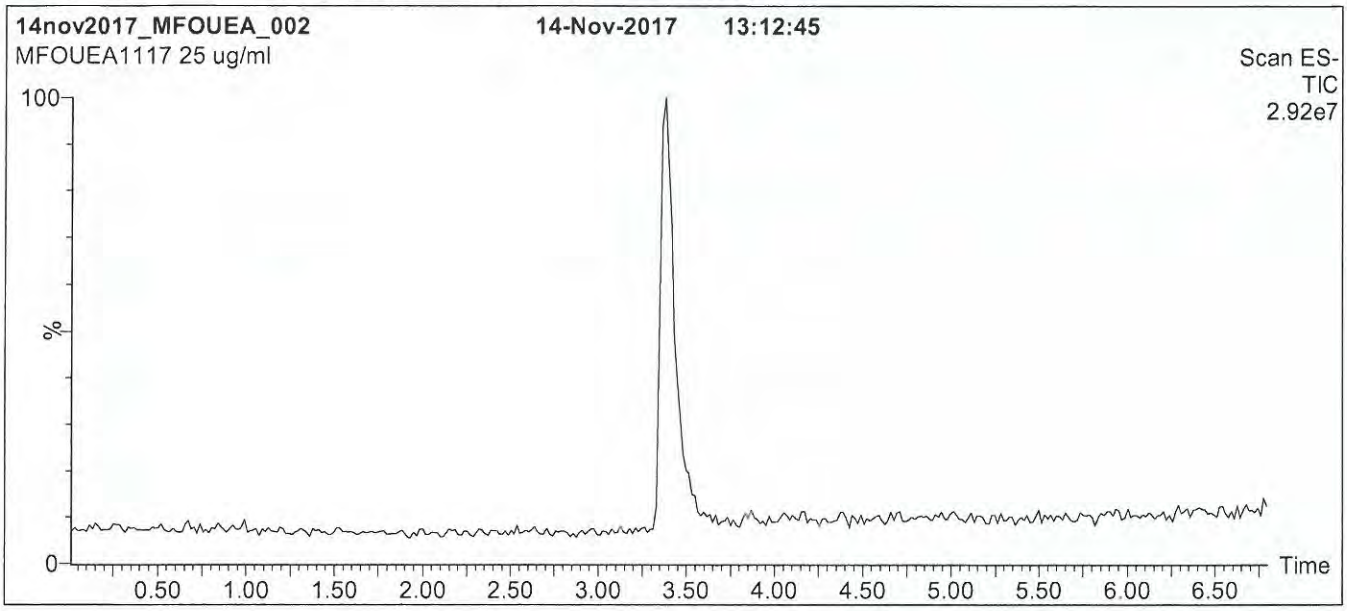
CALA

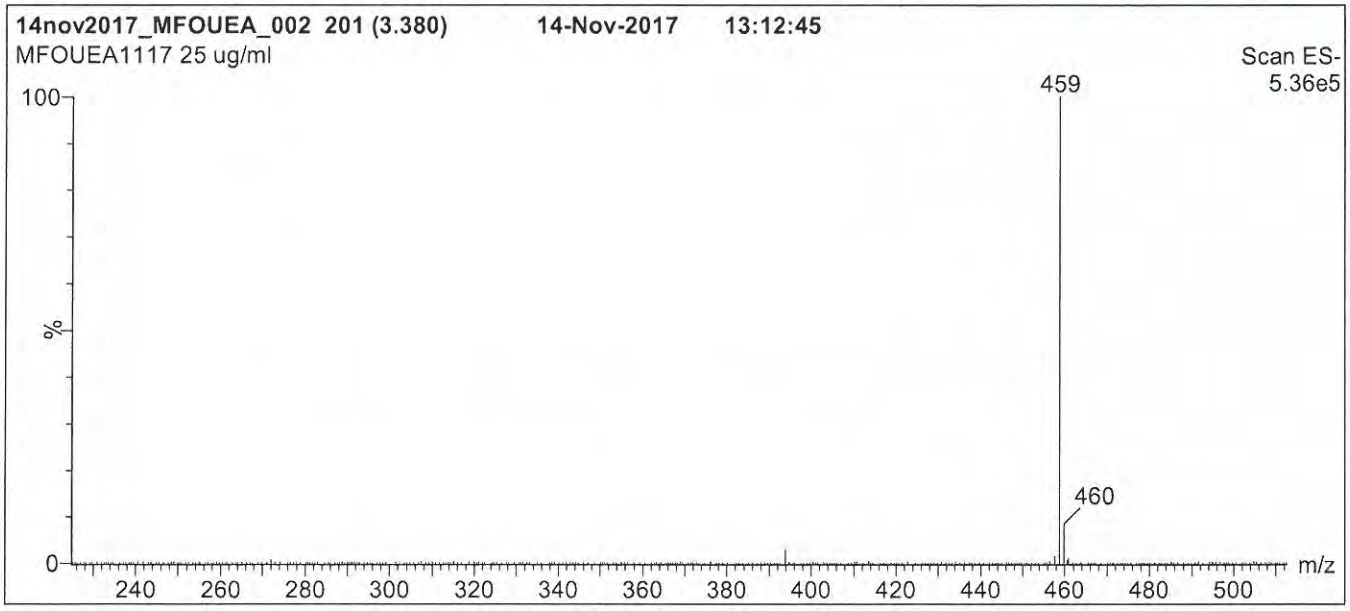
ANAB ACCREDITED

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

18B1530

Figure 1: **MFOUEA; 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: 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

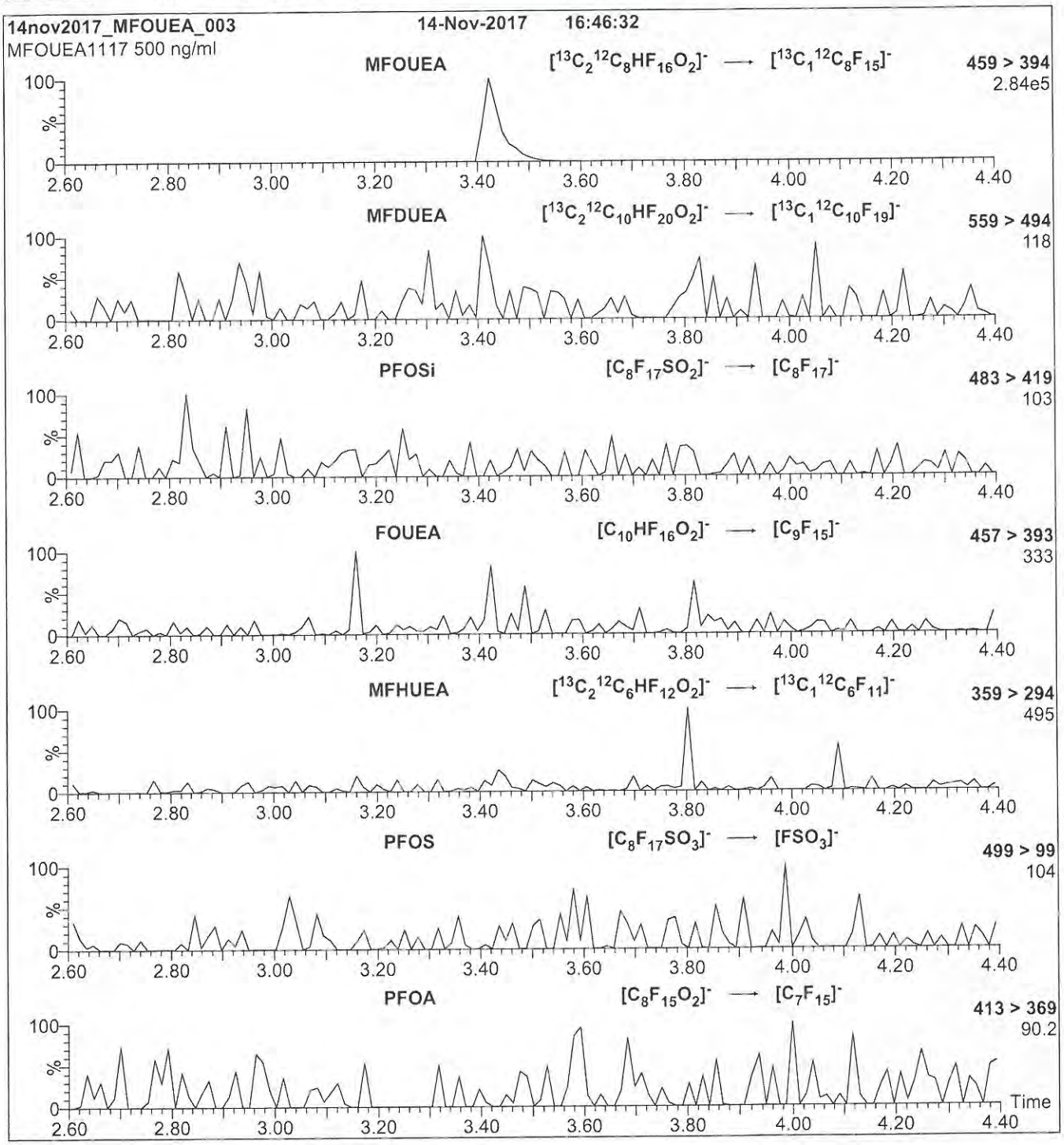
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 14.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1530

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



Conditions for Figure 2:

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

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) = 21

18B1531

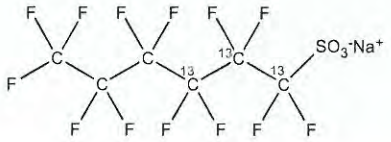
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFHxS **LOT NUMBER:** M3PFHxS0717

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)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

1881531

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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CALA

ANAB ACCREDITED

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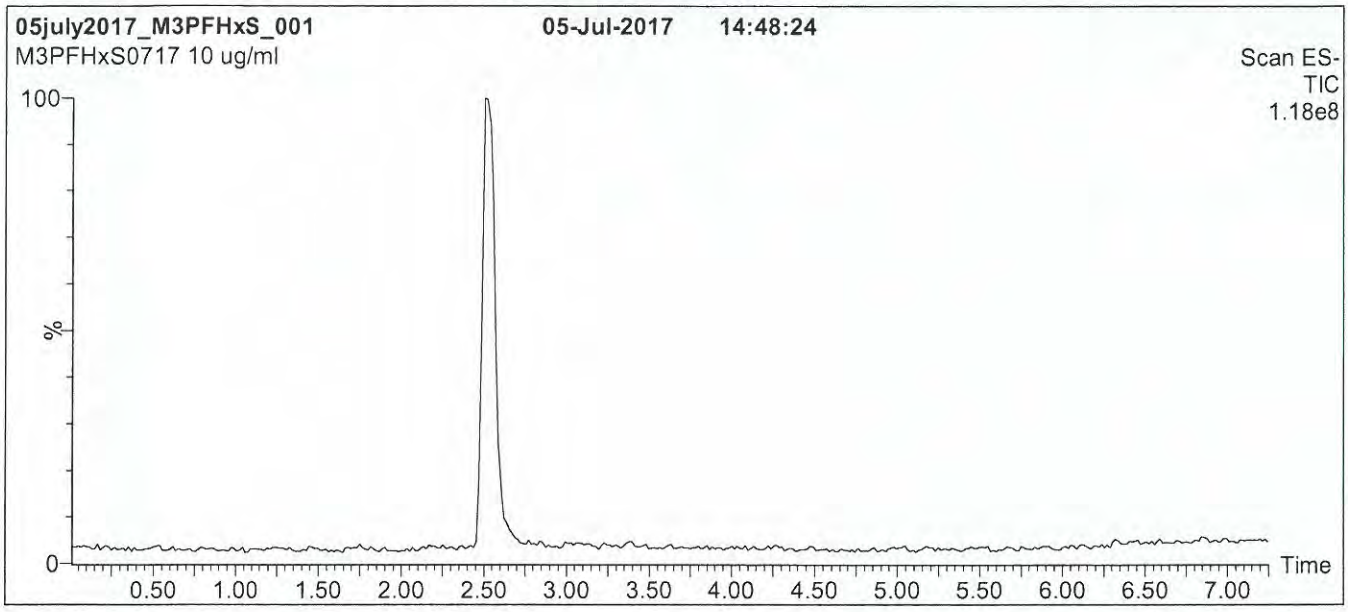
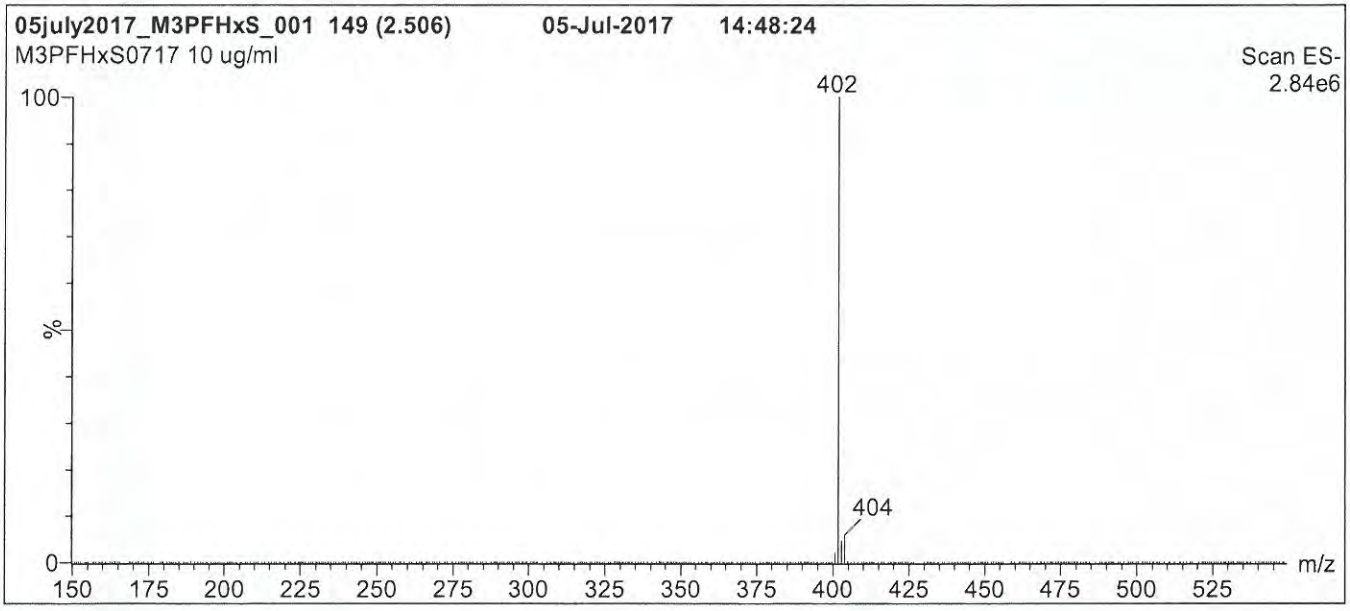
18B1531

Figure 1: **M3PFHxS; 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: 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

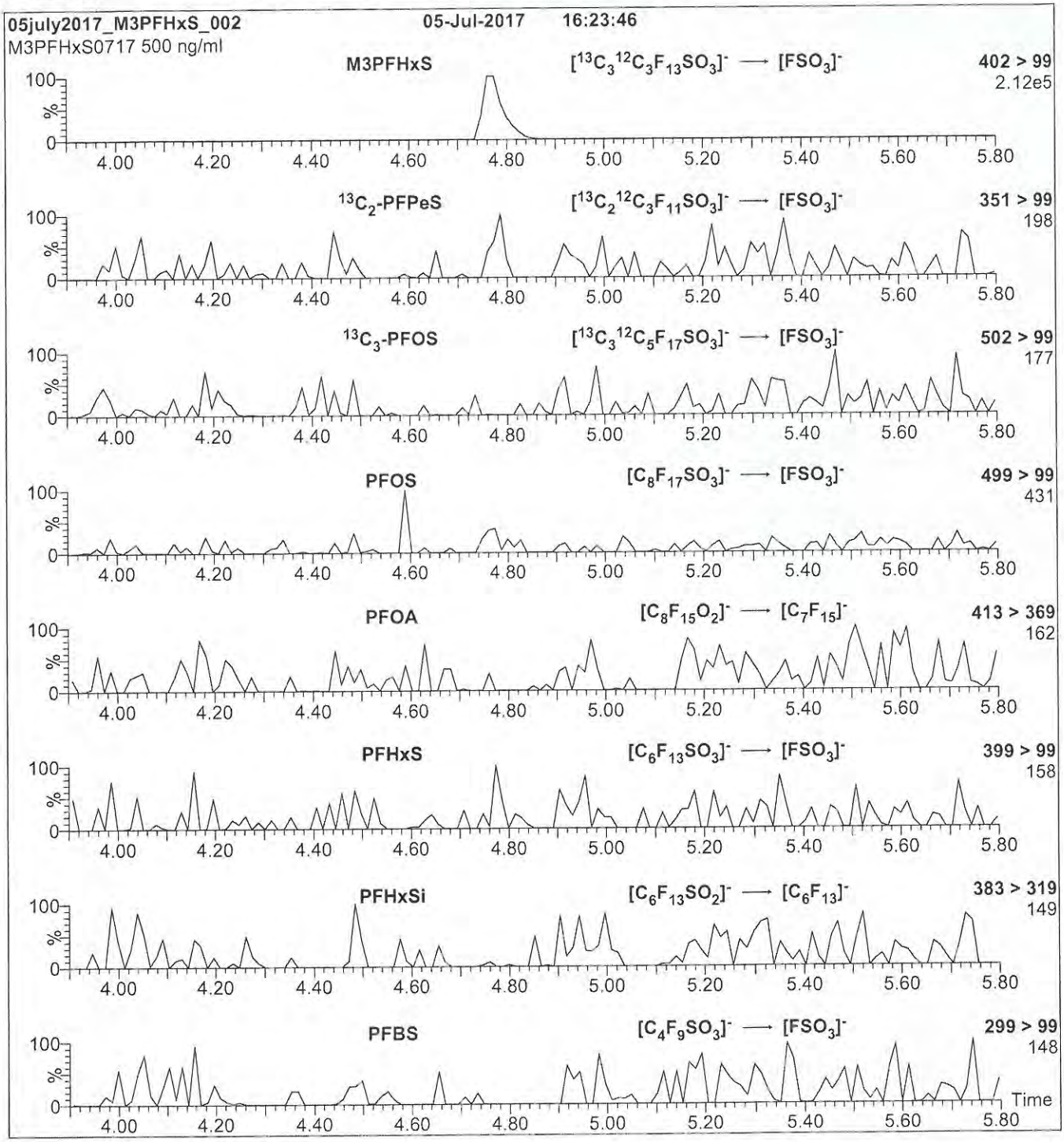
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1531

Figure 2: **M3PFHxS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFHxS)

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) = 30

18B1532

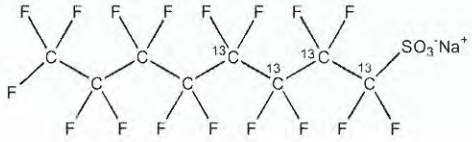
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1017

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 ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	10/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/17/2022		
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 ~ 0.4% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1532

INTENDED USE:

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HAZARDS:

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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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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

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CALA

ANAB ACCREDITED

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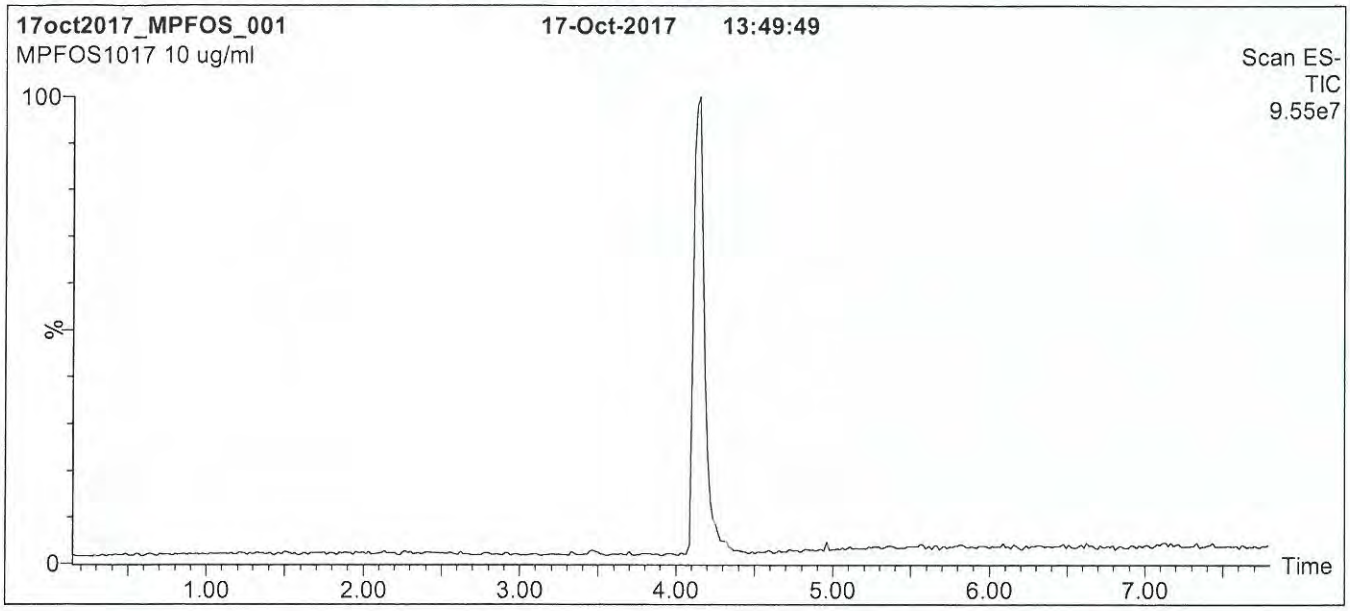
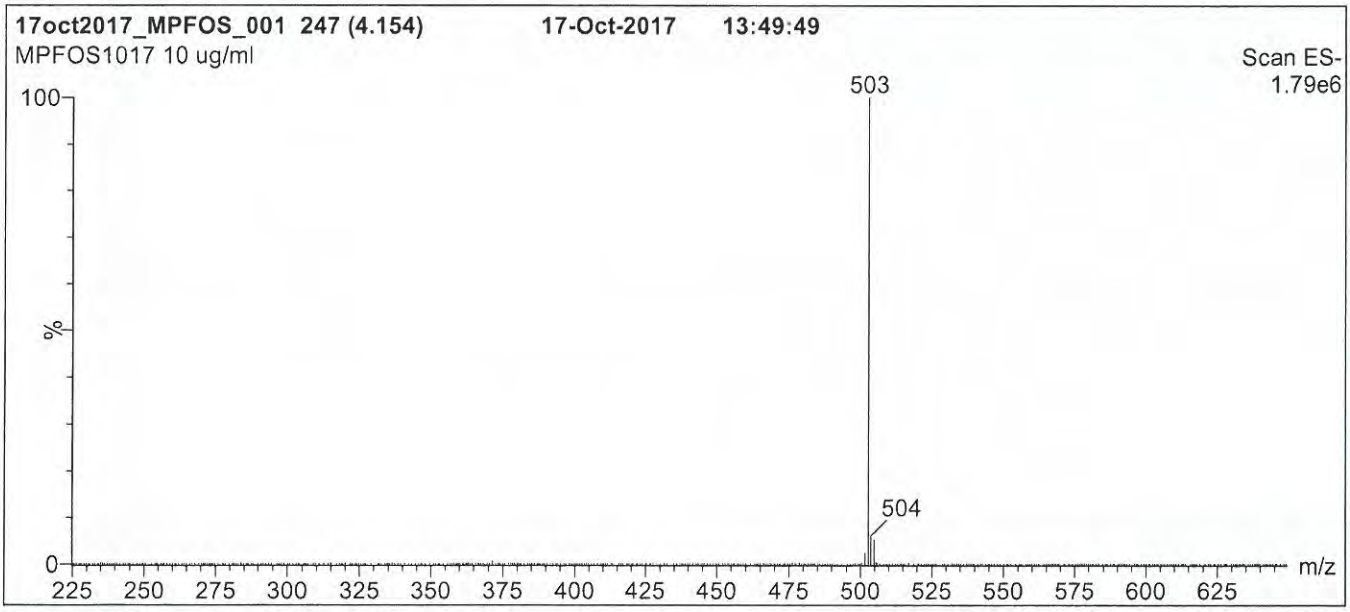
18B1532

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

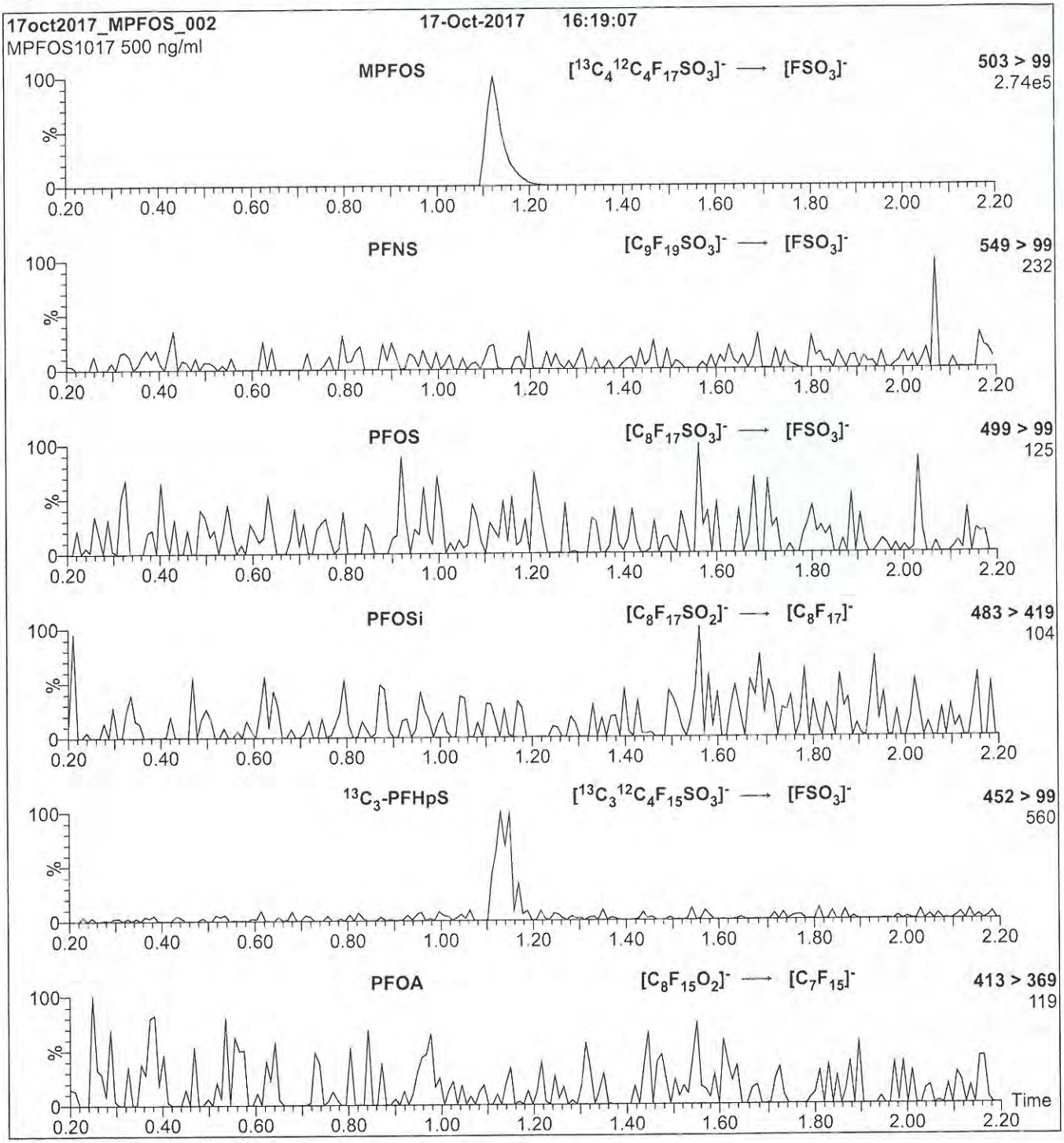
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1532

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

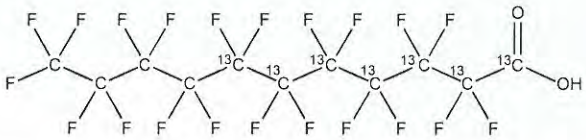
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 40

18B1533

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M7PFUdA	**LOT NUMBER:**	M7PFUdA0717
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)	07/13/2017		(1,2,3,4,5,6,7-$^{13}C_7$)
EXPIRY DATE: (mm/dd/yyyy)	07/13/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1533

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CALA

ANAB ACCREDITED

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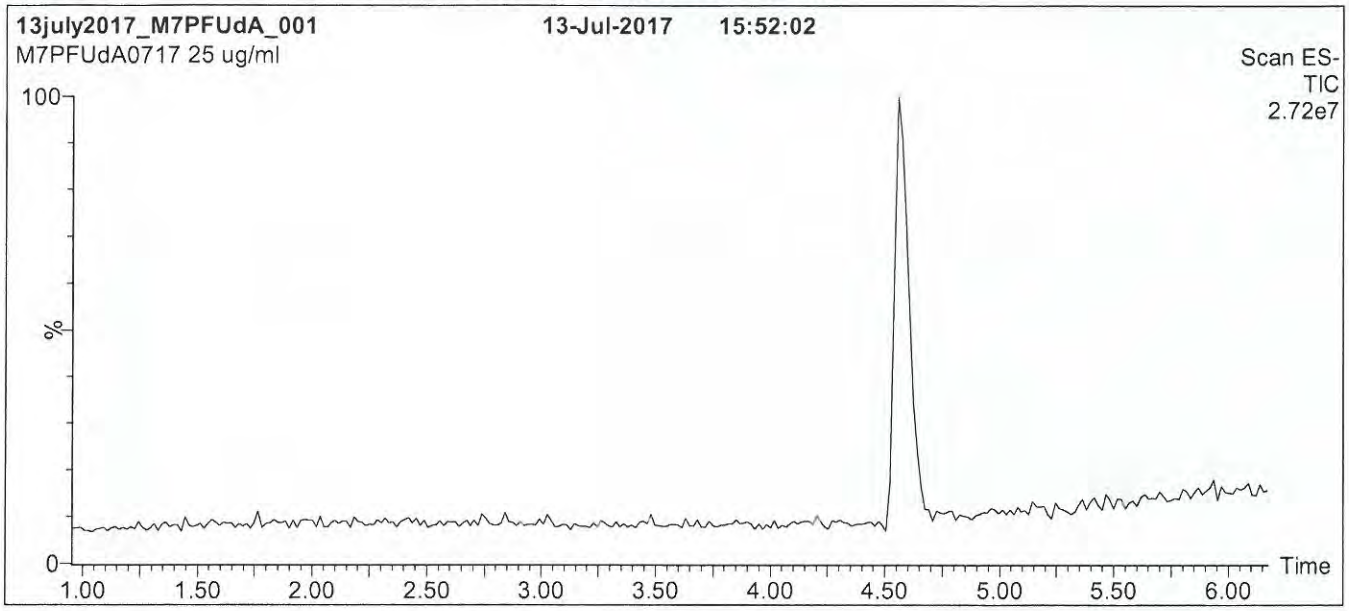
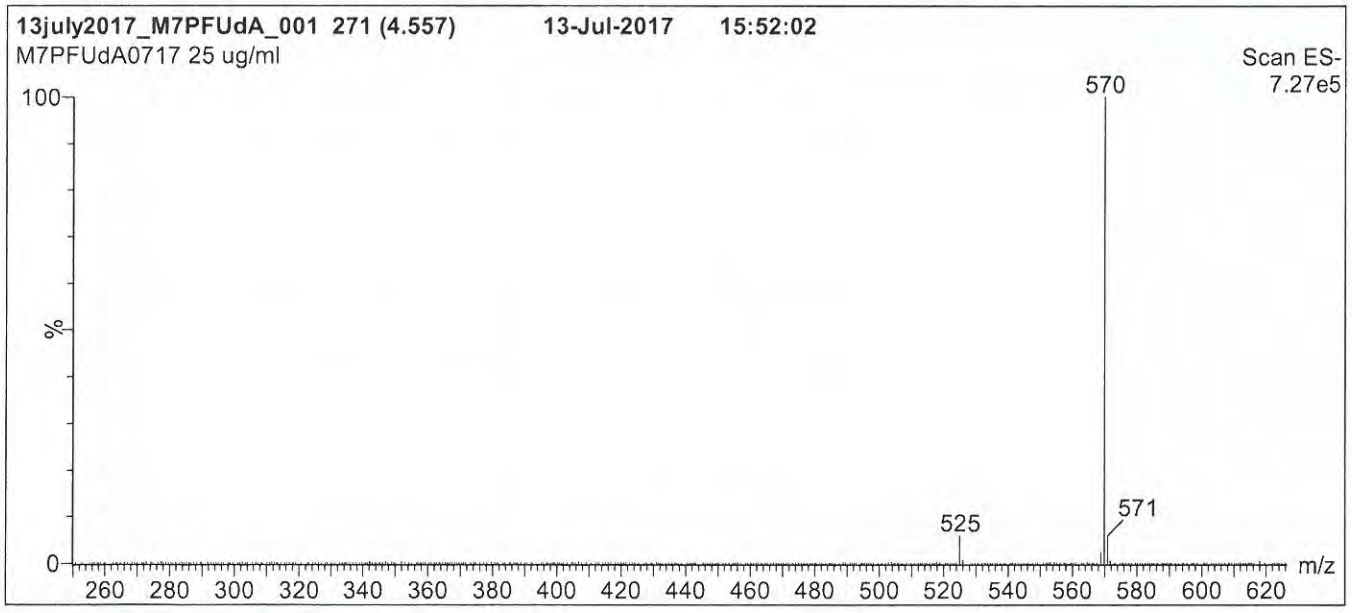
18B1533

Figure 1: **M7PFUdA; 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: 55% (80:20 MeOH:ACN) / 45% 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

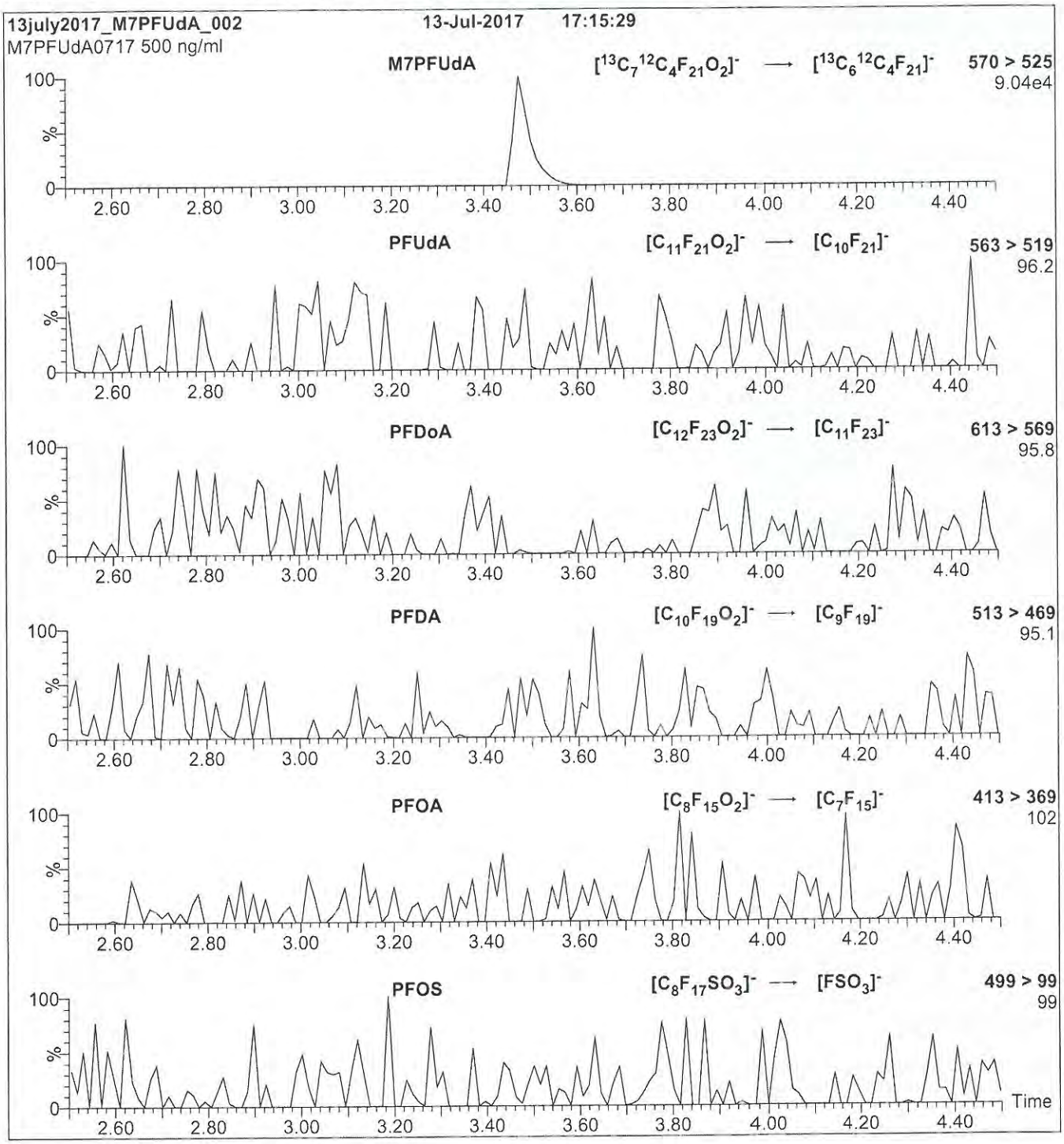
MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

18B1533

Figure 2: **M7PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M7PFUdA)

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

Flow: 300 µl/min

MS Parameters

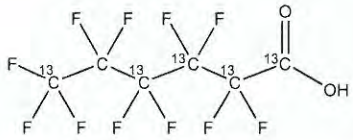
Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

18B1534

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M5PFHxA	**LOT NUMBER:**	M5PFHxA1017
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)	10/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/17/2022		
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 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:** 10/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1534

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

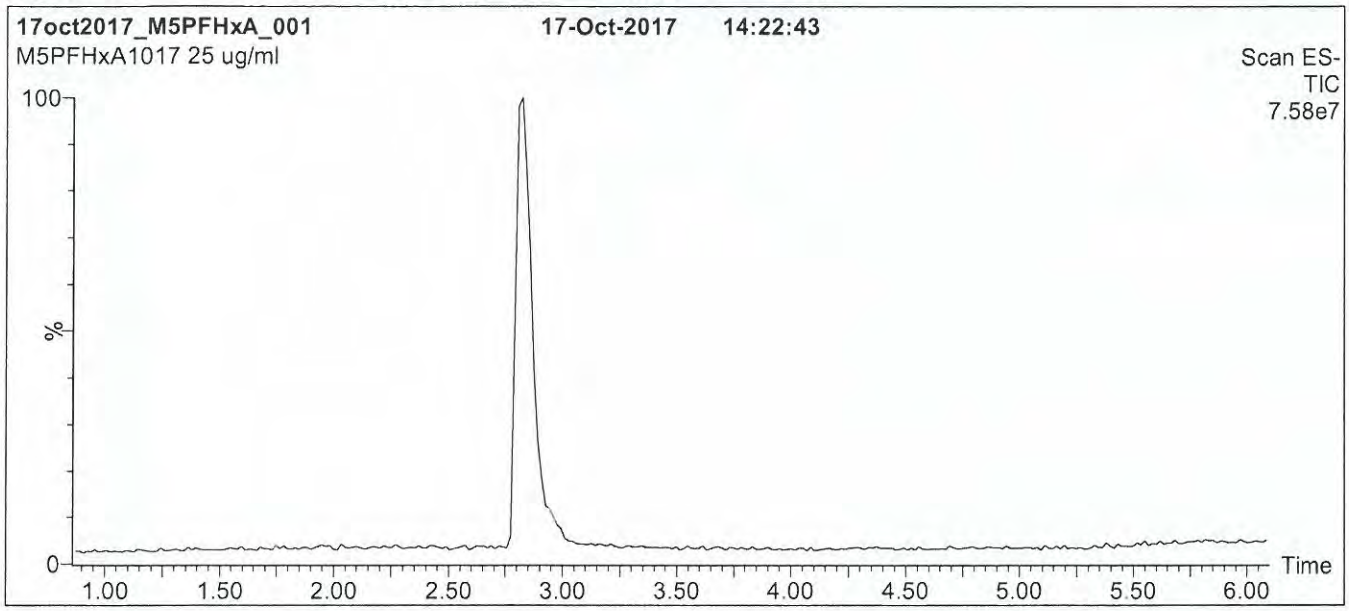
CALA Testing

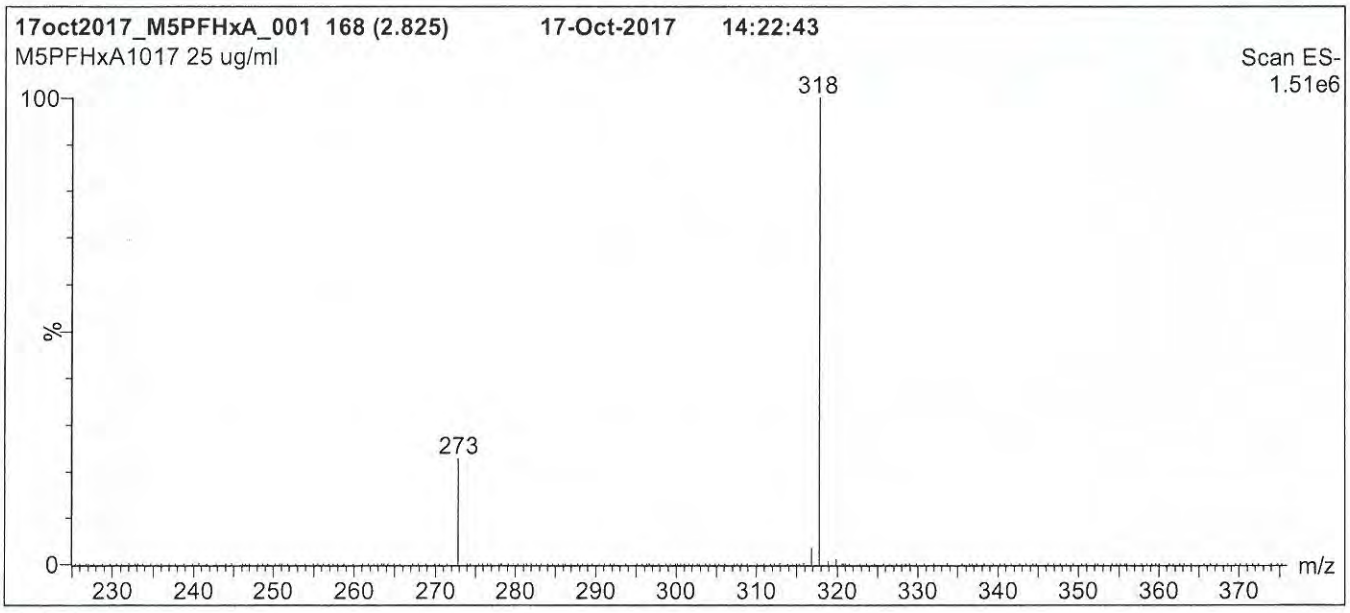
ANAB ACCREDITED

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

18B1534

Figure 1: **M5PFHxA; 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

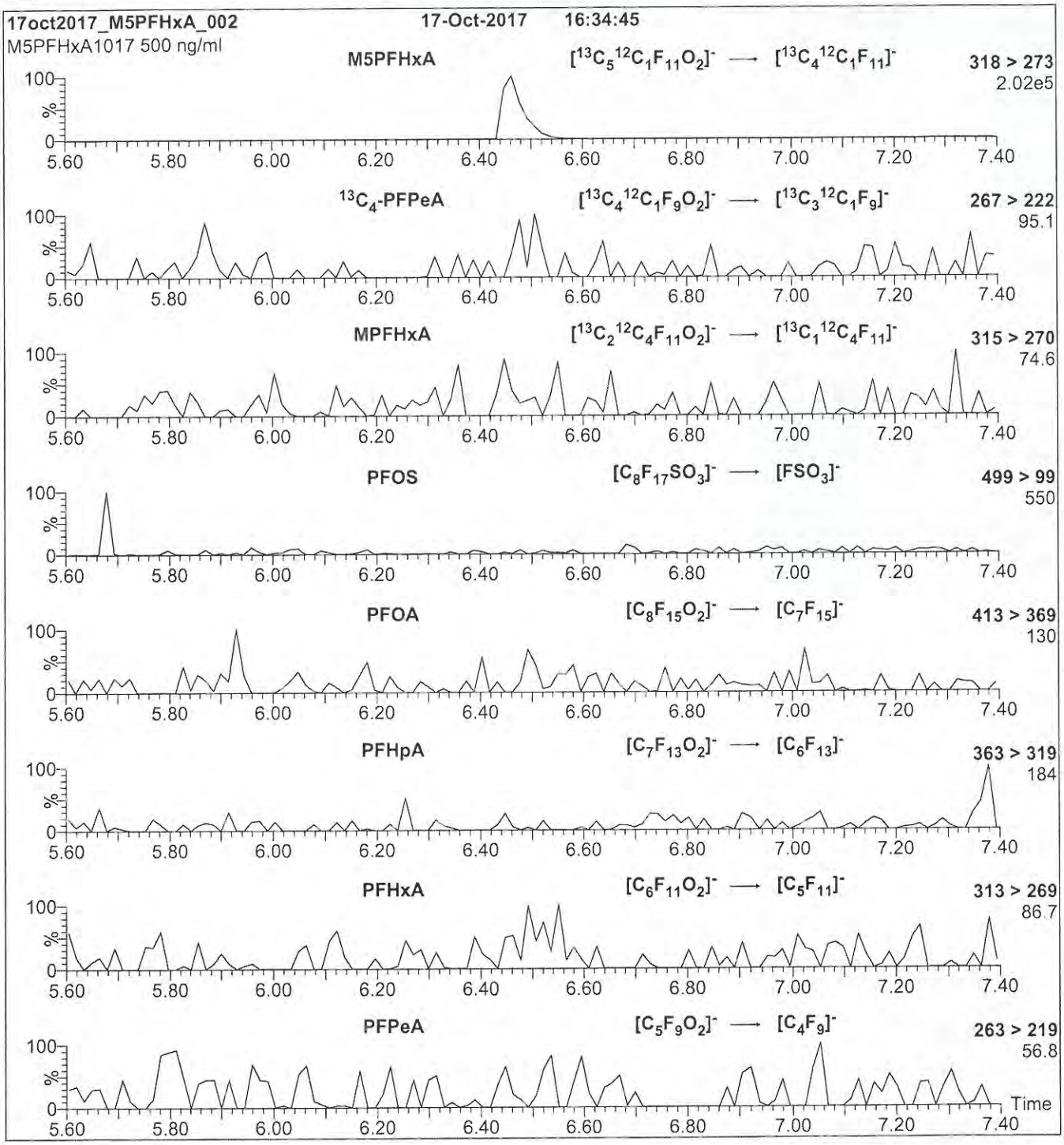
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1534

Figure 2: **M5PFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M5PFHxA)

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

Flow: 300 µl/min

MS Parameters

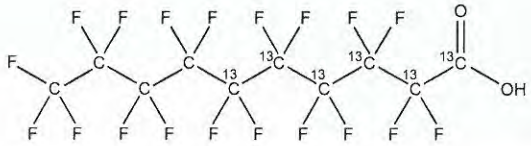
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 9

18B1535

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M6PFDA	**LOT NUMBER:**	M6PFDA1017
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)	10/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/17/2022		
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 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:** 10/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1535

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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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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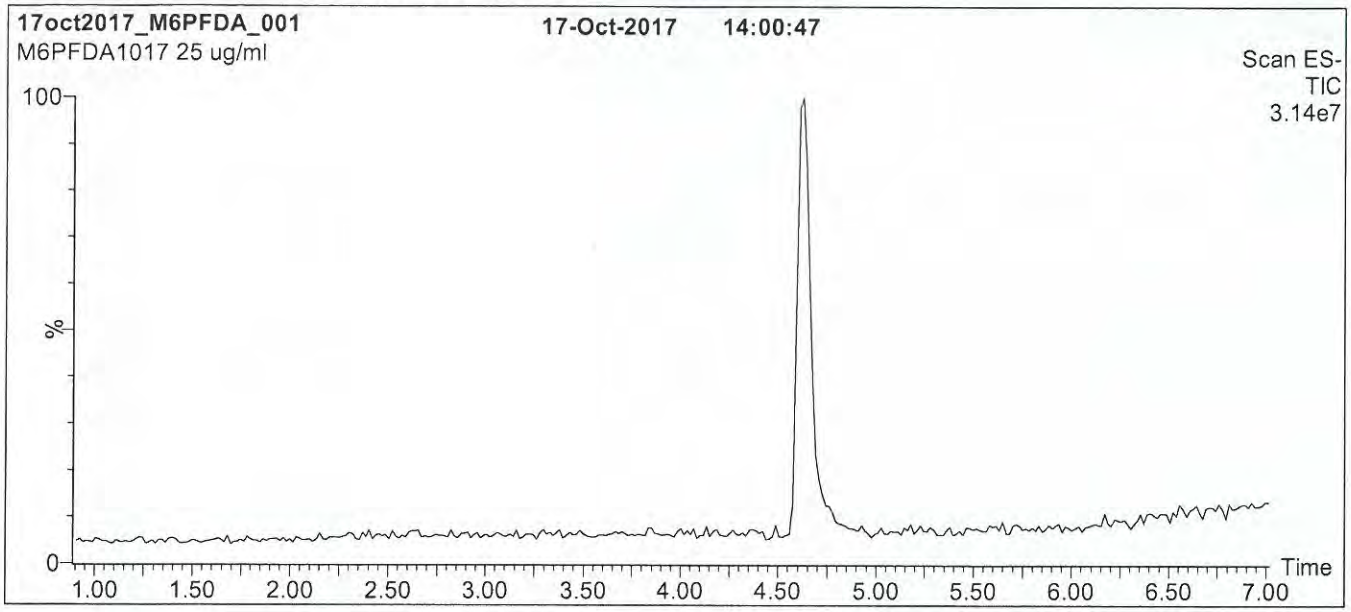
CALA

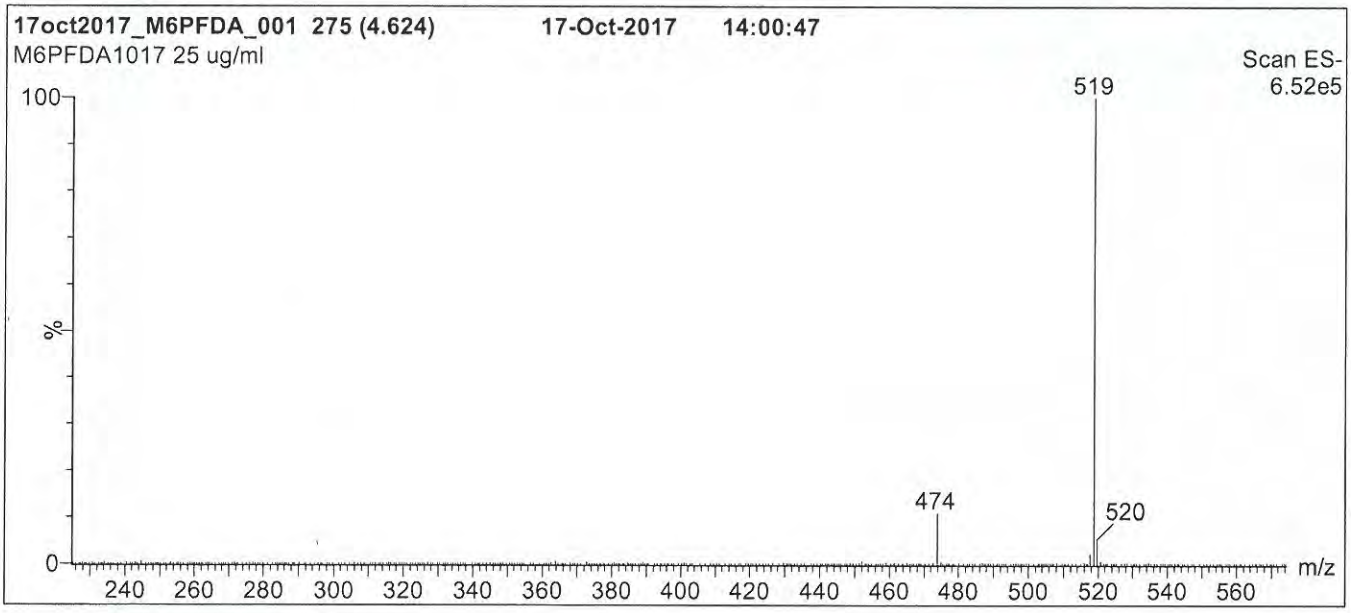
ANAB ACCREDITED

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

18B1535

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 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

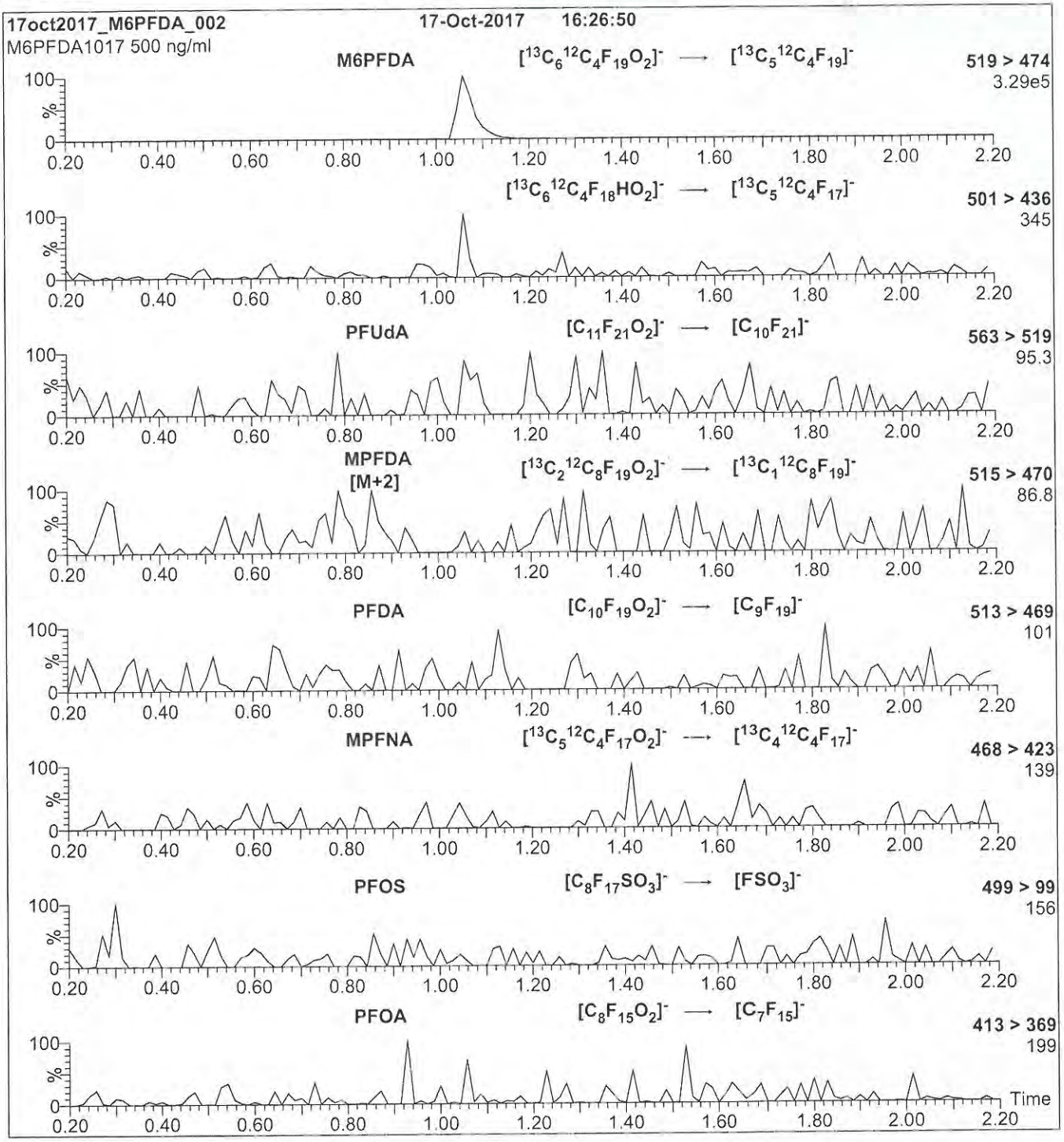
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1535

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

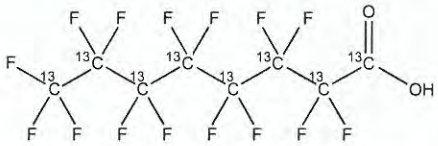
Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 13

18B1536

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M8PFOA	**LOT NUMBER:**	M8PFOA0717
COMPOUND:	Perfluoro-n-[$^{13}C_8$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	422.01
CONCENTRATION:	49 ± 2.45 µg/ml	**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)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
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.
- 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: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B536

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CALA

ANAB ACCREDITED

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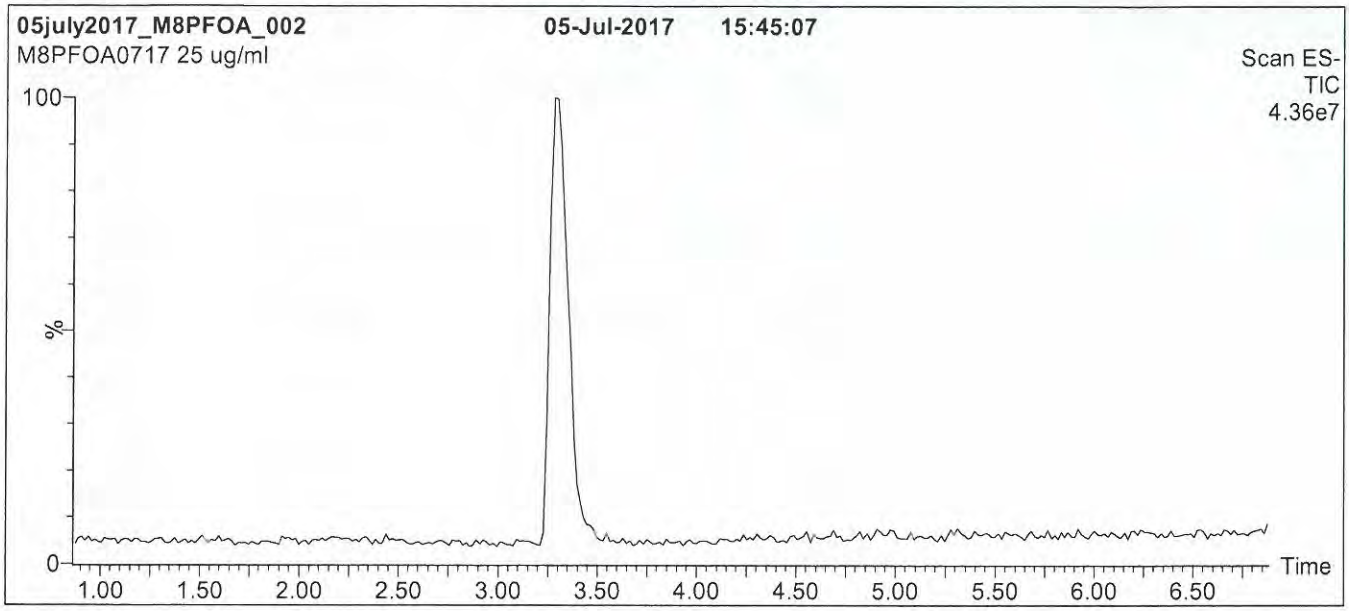
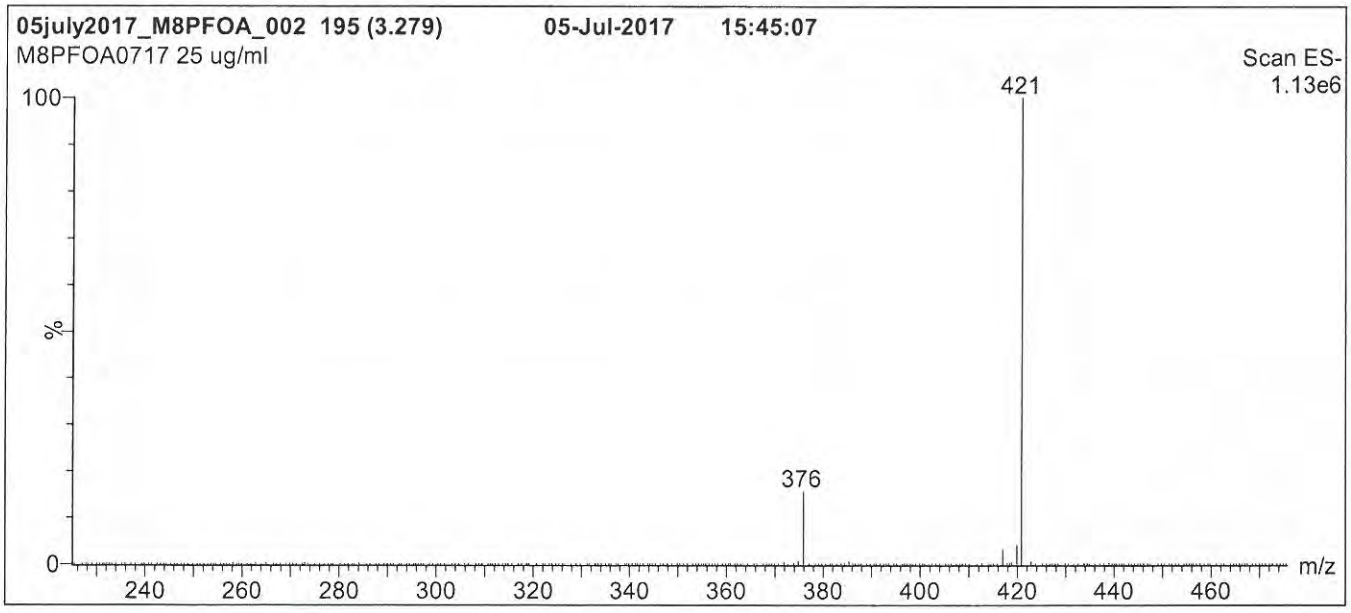
18B1536

Figure 1: **M8PFOA; 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: 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

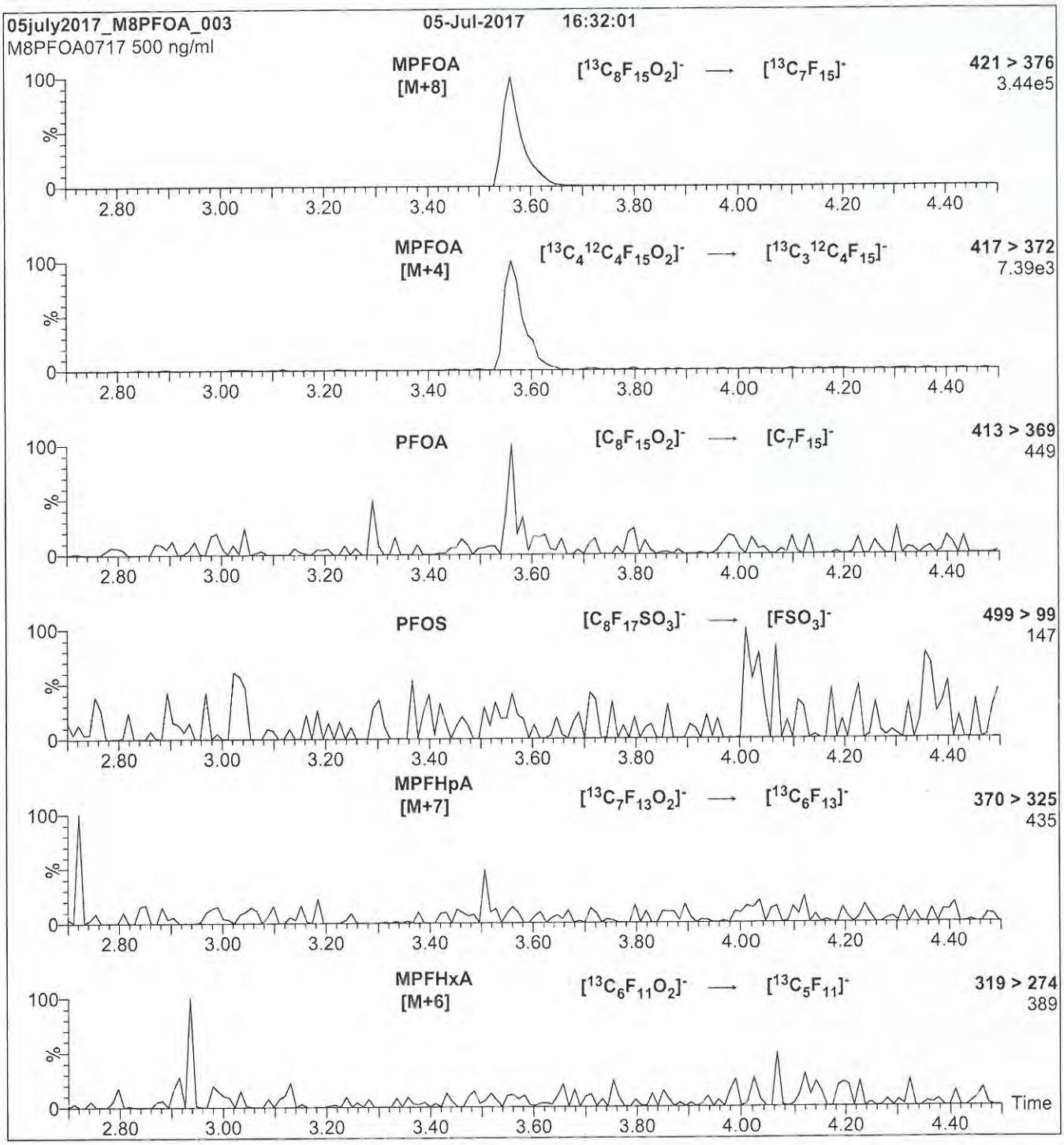
MS Parameters

Experiment: Full Scan (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

18B1536

Figure 2: **M8PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8PFOA)

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) = 10

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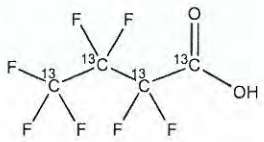
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA0417
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)	04/12/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/12/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1537

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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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 calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, 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).

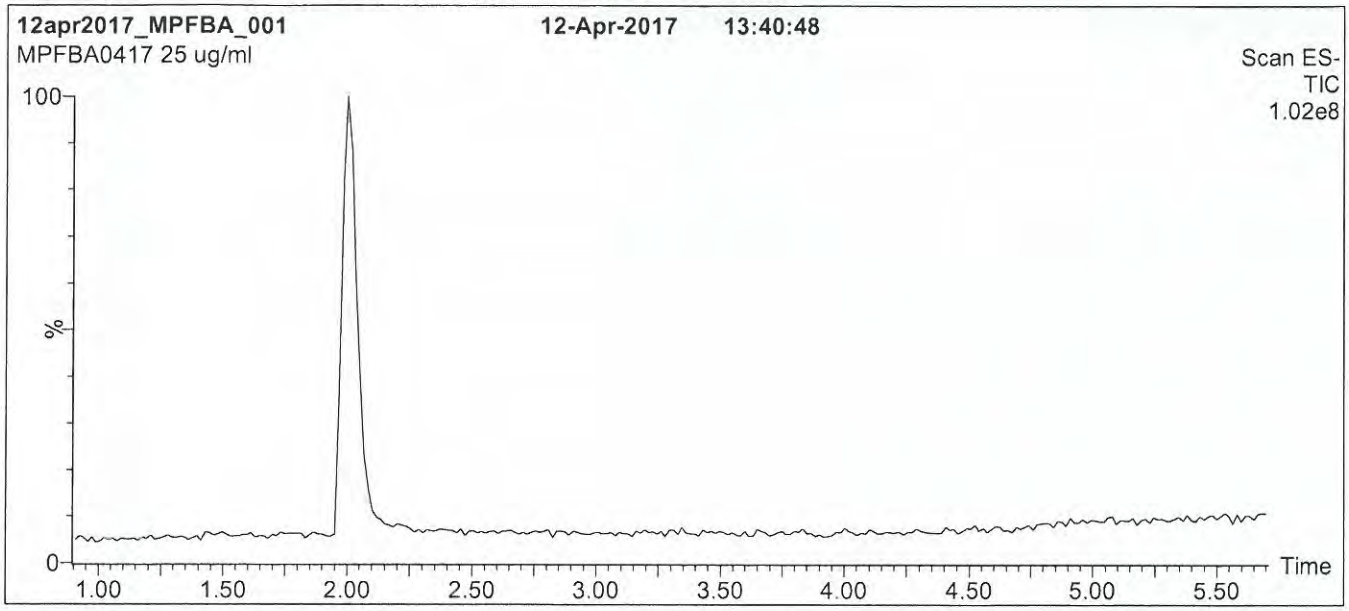
CALA

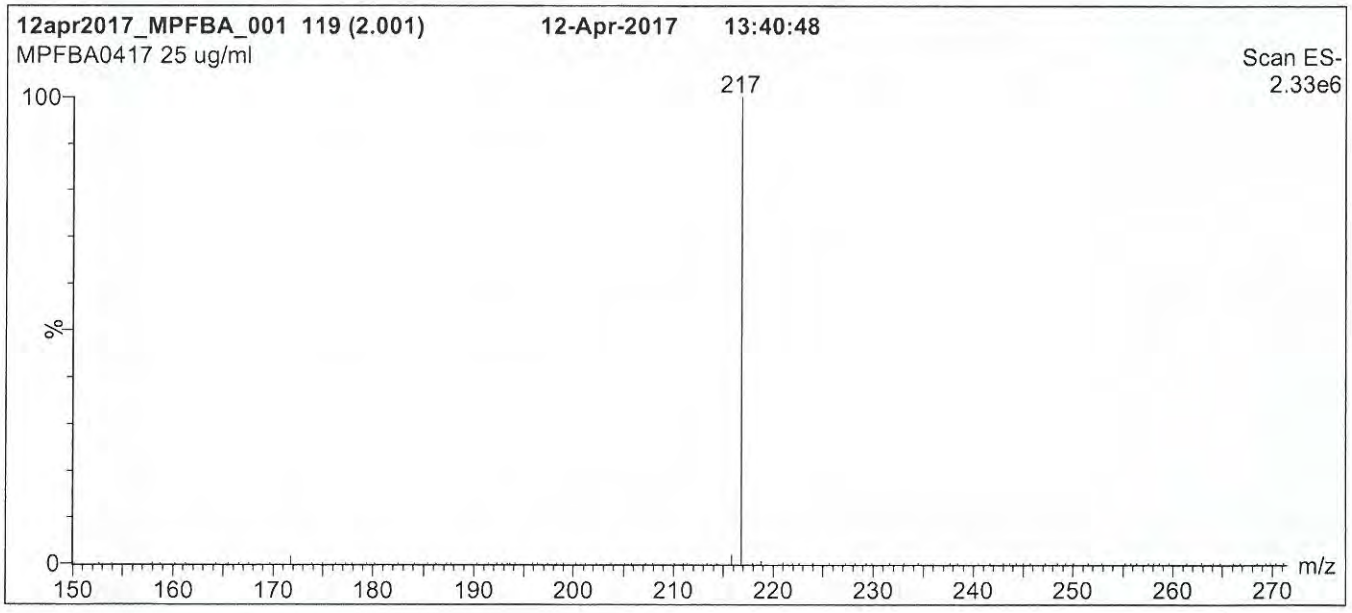
ANAB ACCREDITED

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

18B1537

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

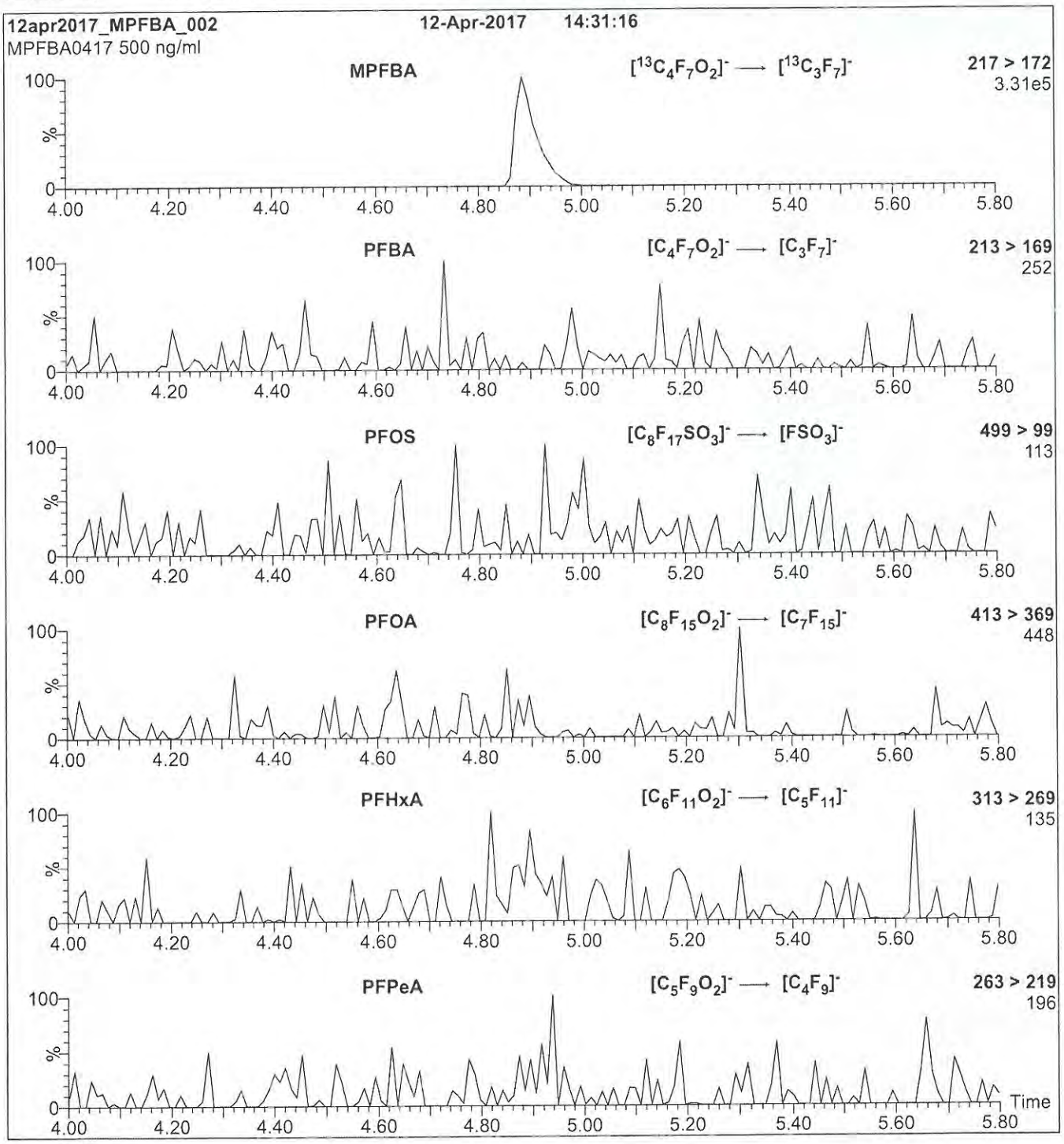
MS Parameters

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

18B1537

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

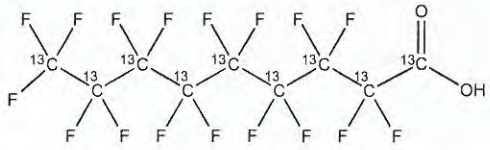
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

18B1538

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M9PFNA	**LOT NUMBER:**	M9PFNA0517
COMPOUND:	Perfluoro-n-[$^{13}C_9$]nonanoic acid		
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)	05/23/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/23/2022		
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.
- 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: _____ **Date:** 05/25/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

18B1538

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

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.

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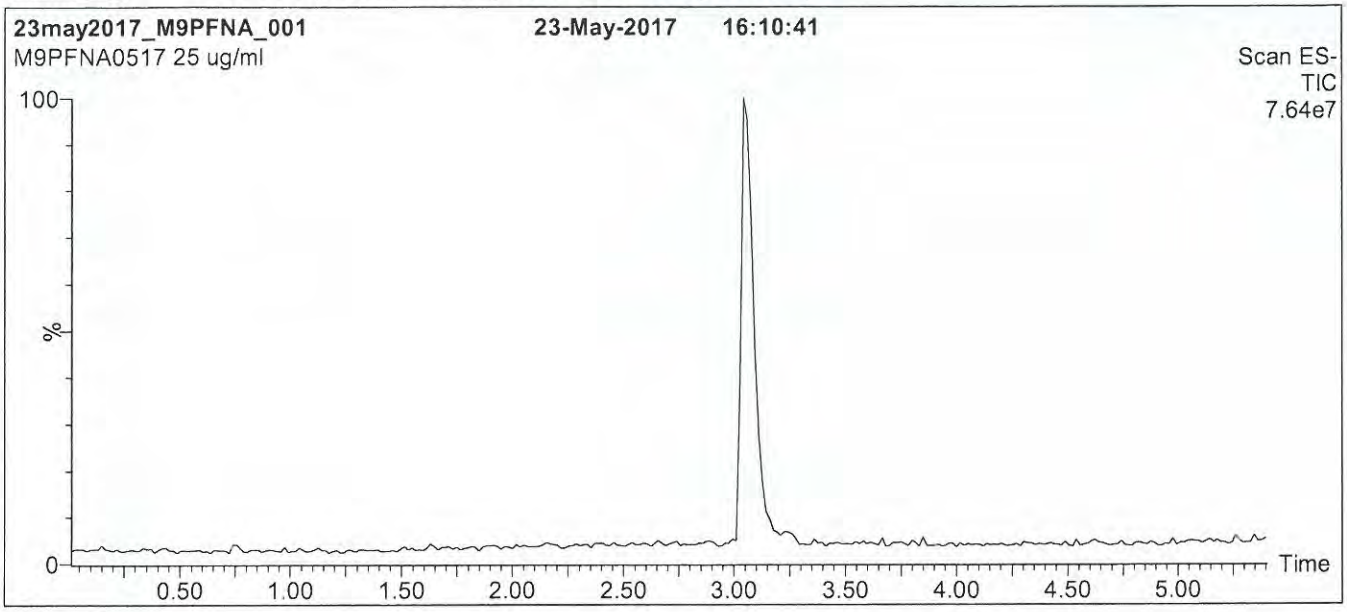
CALA

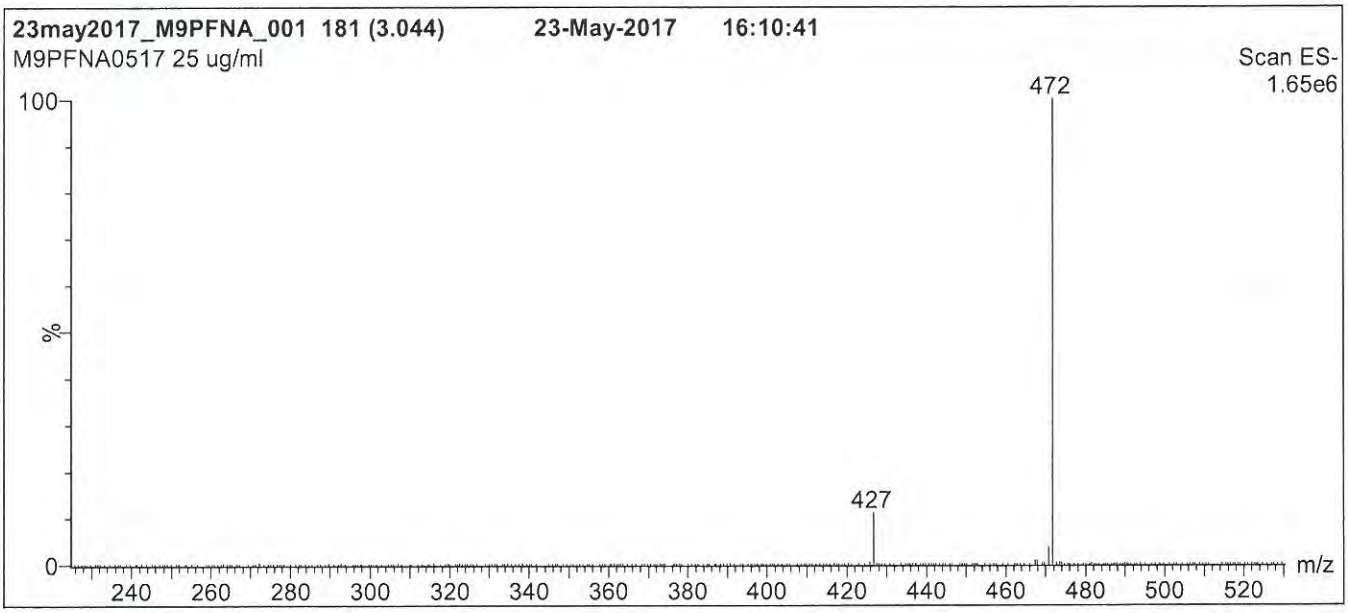
ANAB ACCREDITED

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

18B1538

Figure 1: **M9PFNA; 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

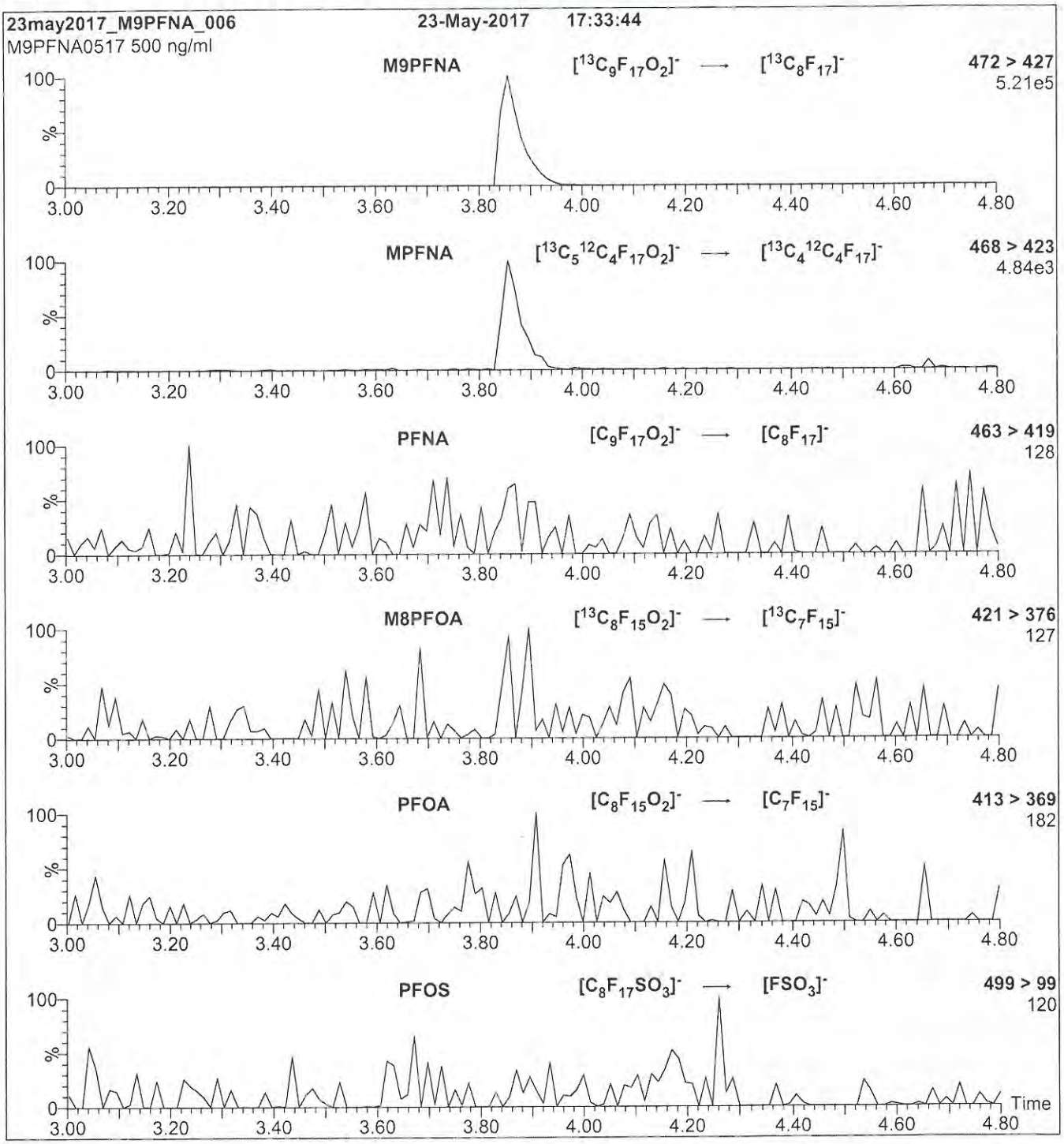
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1538

Figure 2: **M9PFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M9PFNA)

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) = 11

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"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","355-46-
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1","PFNA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000405"
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1","PFOS","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000404"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","335-76-
2","PFDA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000745"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","2355-31-
9","NMeFOSAA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000825"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","2991-50-
6","NEtFOSAA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000685"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","2058-94-
8","PFUnA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000525"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","307-55-
1","PFDoA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000396"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","72629-94-
8","PFTrDA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000247"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","376-06-
7","PFTeDA","0.00400","ug/L","U","0.00250","CRDL","","TRG","","","0.00400","CRDL","YES","0.000378"
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C3-PFBS","13C3-
PFBS","95.9","%R","","","CRDL","","IS","95.9","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C2-PFHxA","13C2-
PFHxA","92.0","%R","","","CRDL","","IS","92.0","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C4-PFHpA","13C4-
PFHpA","104","%R","","","CRDL","","IS","104","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","18O2-PFHxS","18O2-
PFHxS","98.8","%R","","","CRDL","","IS","98.8","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C2-PFOA","13C2-
PFOA","91.4","%R","","","CRDL","","IS","91.4","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C5-PFNA","13C5-
PFNA","88.6","%R","","","CRDL","","IS","88.6","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C8-PFOS","13C8-
PFOS","105","%R","","","CRDL","","IS","105","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C2-PFDA","13C2-
PFDA","75.1","%R","","","CRDL","","IS","75.1","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","d3-MeFOSAA","d3-
MeFOSAA","72.4","%R","","","CRDL","","IS","72.4","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","d5-EtFOSAA","d5-
EtFOSAA","61.9","%R","","","CRDL","","IS","61.9","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C2-PFUnA","13C2-
PFUnA","63.6","%R","","","CRDL","","IS","63.6","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C2-PFDoA","13C2-
PFDoA","70.2","%R","","","CRDL","","IS","70.2","","","CRDL","",""
"B8F0069-BLK1","537 MOD","RES","B8F0069-BLK1","Vista","13C2-PFTeDA","13C2-

PFTeDA","63.5","%R","","","CRDL","","IS","63.5","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","375-73-
5","PFBS","0.0365","ug/L","","0.00250","CRDL","","SPK","91.2","","0.00400","CRDL","YES","0.000895"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","307-24-
4","PFHxA","0.0409","ug/L","","0.00250","CRDL","","SPK","102","","0.00400","CRDL","YES","0.00109"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","375-85-
9","PFHpA","0.0378","ug/L","","0.00250","CRDL","","SPK","94.5","","0.00400","CRDL","YES","0.000296"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","355-46-
4","PFHxS","0.0361","ug/L","","0.00250","CRDL","","SPK","90.3","","0.00400","CRDL","YES","0.000474"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","335-67-
1","PFOA","0.0354","ug/L","","0.00250","CRDL","","SPK","88.5","","0.00400","CRDL","YES","0.000326"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","375-95-
1","PFNA","0.0387","ug/L","","0.00250","CRDL","","SPK","96.7","","0.00400","CRDL","YES","0.000405"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","1763-23-
1","PFOS","0.0348","ug/L","","0.00250","CRDL","","SPK","87.1","","0.00400","CRDL","YES","0.000404"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","335-76-
2","PFDA","0.0389","ug/L","","0.00250","CRDL","","SPK","97.2","","0.00400","CRDL","YES","0.000745"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","2355-31-
9","NMeFOSAA","0.0458","ug/L","","0.00250","CRDL","","SPK","115","","0.00400","CRDL","YES","0.000825"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","2991-50-
6","NEtFOSAA","0.0476","ug/L","","0.00250","CRDL","","SPK","119","","0.00400","CRDL","YES","0.000685"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","2058-94-
8","PFUnA","0.0397","ug/L","","0.00250","CRDL","","SPK","99.3","","0.00400","CRDL","YES","0.000525"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","307-55-
1","PFDoA","0.0401","ug/L","","0.00250","CRDL","","SPK","100","","0.00400","CRDL","YES","0.000396"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","72629-94-
8","PFTrDA","0.0417","ug/L","","0.00250","CRDL","","SPK","104","","0.00400","CRDL","YES","0.000247"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","376-06-
7","PFTeDA","0.0390","ug/L","","0.00250","CRDL","","SPK","97.4","","0.00400","CRDL","YES","0.000378"
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C3-PFBS","13C3-
PFBS","117","%R","","","CRDL","","IS","117","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C2-PFHxA","13C2-
PFHxA","88.8","%R","","","CRDL","","IS","88.8","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C4-PFHpA","13C4-
PFHpA","95.5","%R","","","CRDL","","IS","95.5","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","18O2-PFHxS","18O2-
PFHxS","84.8","%R","","","CRDL","","IS","84.8","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C2-PFOA","13C2-
PFOA","84.0","%R","","","CRDL","","IS","84.0","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C5-PFNA","13C5-
PFNA","76.5","%R","","","CRDL","","IS","76.5","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C8-PFOS","13C8-
PFOS","89.4","%R","","","CRDL","","IS","89.4","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C2-PFDA","13C2-
PFDA","74.6","%R","","","CRDL","","IS","74.6","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","d3-MeFOSAA","d3-
MeFOSAA","61.4","%R","","","CRDL","","IS","61.4","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","d5-EtFOSAA","d5-
EtFOSAA","64.5","%R","","","CRDL","","IS","64.5","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C2-PFUnA","13C2-
PFUnA","63.9","%R","","","CRDL","","IS","63.9","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C2-PFDoA","13C2-
PFDoA","76.9","%R","","","CRDL","","IS","76.9","","","CRDL","",""
"B8F0069-BS1","537 MOD","RES","B8F0069-BS1","Vista","13C2-PFTeDA","13C2-

PFTeDA","77.4","%R","","","CRDL","","IS","77.4","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","375-73-
5","PFBS","0.0375","ug/L","","0.00250","CRDL","","SPK","93.6","2.67","0.00400","CRDL","YES","0.000895"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","307-24-
4","PFHxA","0.0404","ug/L","","0.00250","CRDL","","SPK","101","1.06","0.00400","CRDL","YES","0.00109"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","375-85-
9","PFHpA","0.0414","ug/L","","0.00250","CRDL","","SPK","103","9.10","0.00400","CRDL","YES","0.000296"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","355-46-
4","PFHxS","0.0367","ug/L","","0.00250","CRDL","","SPK","91.7","1.50","0.00400","CRDL","YES","0.000474"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","335-67-
1","PFOA","0.0408","ug/L","","0.00250","CRDL","","SPK","102","14.0","0.00400","CRDL","YES","0.000326"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","375-95-
1","PFNA","0.0361","ug/L","","0.00250","CRDL","","SPK","90.2","7.01","0.00400","CRDL","YES","0.000405"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","1763-23-
1","PFOS","0.0373","ug/L","","0.00250","CRDL","","SPK","93.2","6.80","0.00400","CRDL","YES","0.000404"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","335-76-
2","PFDA","0.0389","ug/L","","0.00250","CRDL","","SPK","97.3","0.0397","0.00400","CRDL","YES","0.000745"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","2355-31-
9","NMeFOSAA","0.0365","ug/L","","0.00250","CRDL","","SPK","91.2","22.7","0.00400","CRDL","YES","0.000825
"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","2991-50-
6","NEtFOSAA","0.0481","ug/L","","0.00250","CRDL","","SPK","120","1.02","0.00400","CRDL","YES","0.000685"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","2058-94-
8","PFUnA","0.0415","ug/L","","0.00250","CRDL","","SPK","104","4.27","0.00400","CRDL","YES","0.000525"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","307-55-
1","PFDoA","0.0377","ug/L","","0.00250","CRDL","","SPK","94.3","6.11","0.00400","CRDL","YES","0.000396"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","72629-94-
8","PFTrDA","0.0404","ug/L","","0.00250","CRDL","","SPK","101","3.07","0.00400","CRDL","YES","0.000247"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","376-06-
7","PFTeDA","0.0378","ug/L","","0.00250","CRDL","","SPK","94.5","3.06","0.00400","CRDL","YES","0.000378"
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C3-PFBS","13C3-
PFBS","124","%R","","","CRDL","","IS","124","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C2-PFHxA","13C2-
PFHxA","96.7","%R","","","CRDL","","IS","96.7","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C4-PFHpA","13C4-
PFHpA","97.9","%R","","","CRDL","","IS","97.9","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","18O2-PFHxS","18O2-
PFHxS","94.0","%R","","","CRDL","","IS","94.0","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C2-PFOA","13C2-
PFOA","91.3","%R","","","CRDL","","IS","91.3","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C5-PFNA","13C5-
PFNA","87.1","%R","","","CRDL","","IS","87.1","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C8-PFOS","13C8-
PFOS","102","%R","","","CRDL","","IS","102","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C2-PFDA","13C2-
PFDA","66.5","%R","","","CRDL","","IS","66.5","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","d3-MeFOSAA","d3-
MeFOSAA","75.2","%R","","","CRDL","","IS","75.2","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","d5-EtFOSAA","d5-
EtFOSAA","62.9","%R","","","CRDL","","IS","62.9","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C2-PFUnA","13C2-
PFUnA","71.3","%R","","","CRDL","","IS","71.3","","","CRDL","",""
"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C2-PFDoA","13C2-
PFDoA","84.0","%R","","","CRDL","","IS","84.0","","","CRDL","",""

"B8F0069-BSD1","537 MOD","RES","B8F0069-BSD1","Vista","13C2-PFTeDA","13C2-PFTeDA","80.7","%R","","","CRDL","","IS","80.7","","","CRDL","",""
"4663.3803","CTO 17F3803 Yuma","EB-20180531","05/31/2018 10:15","AQ","1801084-01","","","","537 MOD","Gen Prep","RES","06/13/2018 10:00","06/19/2018 03:05","Vista","COA","","","1","","","","","B8F0069","B8F0069","S8F0056","S8F0056","1801084","06/01/2018 09:41","06/21/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","B8F0069-BLK1","","AQ","B8F0069-BLK1","MB","","","537 MOD","Gen Prep","RES","06/13/2018 10:00","06/18/2018 11:06","Vista","COA","","","1","","","","","B8F0069","B8F0069","S8F0051","S8F0051","1801084","","06/21/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","B8F0069-BS1","","AQ","B8F0069-BS1","LCS","","","537 MOD","Gen Prep","RES","06/13/2018 10:00","06/20/2018 09:29","Vista","COA","","","1","","","","","B8F0069","B8F0069","S8F0051","S8F0051","1801084","","06/21/2018 00:00"
"4663.3803","CTO 17F3803 Yuma","B8F0069-BSD1","","AQ","B8F0069-BSD1","LCSD","","","537 MOD","Gen Prep","RES","06/13/2018 10:00","06/18/2018 23:26","Vista","COA","","","1","","","","","B8F0069","B8F0069","S8F0051","S8F0051","1801084","","06/21/2018 00:00"

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
ATTN: Ms. Sabina Sudoko

July 24, 2018

SUBJECT: MCAS Yuma, CTO 17F3803, Data Validation

Dear Ms. Sudoko,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on July 6, 2018. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #42613:

SDG #	Fraction
280-110058-1, 280-110112-1 280-110226-1, 280-110291-1 280-110353-1, L1818881 L1819087, L1819352 L1819562, L1820050 L1820175, 1801024 1801037, 1801039 1801054, 1801071 1801084	Volatiles, 1,4-Dioxane, Wet Chemistry, Perfluorinated Alkyl Acids

The data validation was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona; April 2018
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1; 2017
- USEPA National Functional Guidelines for Superfund Organic Methods Data Review; January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Data Review; January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

ADR/Stage 4 NEDD 80/20 **LDC #42613 (Tetra Tech-EC, Inc.-Irvine, CA / MCAS Yuma, CTO 17F3803)** **PO# 1153059**

LDC	SDG#	DATE REC'D	(3) DATE DUE	(3) VOA (8260B)		1,4-Diox (8270D -SIM)		PFAs (537)		Cl,SO_4 NO_3-N (9056A)		Fe II (3500 -Fe B)		pH (9040C)																							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	280-110058-1	07/06/18	07/27/18	6	0	-	-	-	-	5	0	5	0	5	0																				
B	280-110112-1	07/06/18	07/27/18	7	0	-	-	-	-	6	0	6	0	6	0																				
C	280-110226-1	07/06/18	07/27/18	9	0	-	-	-	-	6	0	6	0	6	0																				
D	280-110291-1	07/06/18	07/27/18	7	0	-	-	-	-	6	0	6	0	6	0																				
E	280-110353-1	07/06/18	07/27/18	5	0	-	-	-	-	3	0	3	0	3	0																				
F	L1818881	07/06/18	07/27/18	-	-	5	0	-	-	-	-	-	-	-	-																				
G	L1819087	07/06/18	07/27/18	-	-	6	0	-	-	-	-	-	-	-	-																				
H	L1819352	07/06/18	07/27/18	-	-	5	0	-	-	-	-	-	-	-	-																				
I	L1819562	07/06/18	07/27/18	-	-	8	0	-	-	-	-	-	-	-	-																				
J	L1820050	07/06/18	07/27/18	-	-	4	0	-	-	-	-	-	-	-	-																				
K	L1820175	07/06/18	07/27/18	-	-	1	0	-	-	-	-	-	-	-	-																				
L	1801024	07/06/18	07/27/18	-	-	-	-	6	0	-	-	-	-	-	-																				
M	1801037	07/06/18	07/27/18	-	-	-	-	1	0	-	-	-	-	-	-																				
M	1801037	07/06/18	07/27/18	-	-	-	-	8	0	-	-	-	-	-	-																				
N	1801039	07/06/18	07/27/18	-	-	-	-	6	0	-	-	-	-	-	-																				
O	1801054	07/06/18	07/27/18	-	-	-	-	9	0	-	-	-	-	-	-																				
P	1801071	07/06/18	07/27/18	-	-	-	-	5	0	-	-	-	-	-	-																				
Q	1801084	07/06/18	07/27/18	-	-	-	-	1	0	-	-	-	-	-	-																				
Total	T/SM			34	0	29	0	36	0	26	0	26	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	177

Shaded cells indicate Stage 4 validation (all other cells are ADR/Stage 2B validation).

Data Validation Report
MCAS Yuma, CTO 17F3803

SDGs: 280-110058-1, 280-110112-1, 280-110226-1, 280-110291-1, 280-110353-1, L1818881, L1819087, L1819352, L1819562, L1820050, L1820175, 1801024, 1801037, 1801039, 1801054, 1801071, and 1801084

Prepared for

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

July 24, 2018

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2B and Stage 4 data validation results for samples collected during the May 2018 sampling period. Data validation was performed in accordance with the Final Sampling and Analysis Plan (SAP) for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), a modified outline of the US EPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017), and a modified outline of the US EPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B
1,4-Dioxane by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Perfluorinated Alkyl Acids (PFAs) by EPA Method 537 Modified

Wet Chemistry:
Chloride, Nitrate as Nitrogen, and Sulfate by EPA SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

For samples reviewed by automated data review, the sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2B Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Stage 4 validation was performed are presented in Enclosure II. Validation for 1,4-Dioxane was performed manually and DVRs for Stage 2B and Stage 4 manual validation are also presented in Enclosure II.

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ongoing precision recovery (OPR), internal standards, trip blanks, equipment blanks, field rinsate blanks, and field duplicates. Approximately 20 percent of samples were subjected to Stage 4 evaluation as indicated in Attachment 1, which comprises a review of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the calibrations, ICB/CCBs, and internal standards, and all QC for 1,4-Dioxane, which were validated manually. Quality assurance (QA)/QC criteria specified in the SAP, DoD QSM, and NFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not applicable): Data did not warrant qualification since detected results only are affected and the compound was not detected in the associated samples.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt & Technical Holding Times

All samples were received in good condition with the following exceptions:

SDG/ Method	Sample	Compound	Finding	Criteria	Flag	A or P
280-110291-1/ 8260B	A1-MW-23-SA1	All compounds	A headspace of >6 mm was apparent in the sample containers.	There should be no headspace in the sample containers.	J (all detects) UJ (all non-detects)	A

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures upon receipt by the laboratory met validation criteria with the exception of one cooler in SDG L1818881 that was reported at 7.9°C. No data was qualified based on the cooler temperature.

All technical holding time requirements were met with the exception of twenty-five samples for pH and twenty-one samples for ferrous iron. Due to grossly exceeded holding times (e.g., >2x recommended holding time), 15 ferrous iron results were qualified as rejected (R). Additionally, the remainder of the data were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

II. Instrument Performance Check

A tune was performed at 12 hour intervals as required by the methods.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

All criteria for the initial calibration and initial calibration verifications of each method were met.

IV. Continuing Calibration

All criteria for the continuing calibration of each method were met with the exception of one continuing calibration for PFAs. Since the outlier was associated with laboratory QC and there were no associated client samples, no data were qualified.

V. Laboratory Blanks

Laboratory blanks were performed as required by the methods. No contaminant concentrations were detected in the laboratory blanks reviewed by the ADR software program with the exception of one blank for chloride and sulfate. The associated sample results were not detected or were significantly greater than the concentrations found in the blanks, therefore no data were qualified. The details are presented in Enclosure I.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

SDG/ Method	Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
280-110226-1/ 9056A	ICB/CCB	Nitrate as Nitrogen	0.04663 mg/L	A1-MW-42-SA1 A1-MW-54-SA1 A1-PZ-19-SA1 A1-MW-52-SA1 A1-MW-01-SA1 A1-MW-31-SA1
280-110291-1/ 9056A	ICB/CCB	Sulfate	0.2460 mg/L	A1-MW-14-SA1 A1-MW-23-SA1 A1-MW-55-SA1
280-110353-1/ 9056A	ICB/CCB	Chloride Sulfate	0.5385 mg/L 0.6554 mg/L	A1-MW-13-SA1 A1-MW-11-SA1 A1-MW-15-SA1

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks.

VI. Field Blank Samples

Five trip blanks were collected and analyzed for VOCs. No contaminants were found.

One equipment blank was collected and analyzed for VOCs and PFAs. No contaminants were found.

Five field rinsate blanks were collected and analyzed for PFAs. No contaminants were found.

VII. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of sample 16-HS-03-SA1 in SDG 280-110112-1 for VOCs. The associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosure I.

IX. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for 1,1-dichloroethene, two MS/MSD pairs for several PFAs, three MS/MSD pairs for chloride and sulfate, and three MS/MSD pairs for ferrous iron. The ferrous iron results in samples 16-HS-03-SA1 and A1-MW-31-SA1 were qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., ≤ 30%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. No data were qualified where sample concentrations were significantly greater (>4x) than the spike amount. The details regarding the qualification of data are provided in Enclosures I and II.

X. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

XII. Laboratory Control Samples/Ongoing Precision Recovery

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

Ongoing precision recovery (OPR) samples were analyzed as required by Method 537 Mod. Percent recoveries (%R) were within QC limits with the exception of two OPR for PFTrDA. No data were qualified due to high %Rs since the associated results were non-detected. The details are presented in Enclosures I and II.

XIII. Field Duplicate Samples

Two field duplicate pairs were collected and analyzed for all methods. All RPDs were within QC limits. RPDs were not calculated when sample results in one or both samples were less than 5X the limit of quantitation (LOQ). The field duplicate result comparisons are provided in Enclosures I and II.

XIV. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

SDG/ Method	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
1801024/ 537	A1-MW-51-SA1	^{13}C3-PFBS	247 (50-150)	PFBS	J (all detects)	P
1801024/ 537	A1-MW-51-SA1	^{13}C3-NEtFOSAA	151 (50-150)	NEtFOSAA	UJ (all non-detects)	P
1801037/ 537	A1-MW-18-SA1	^{13}C3-PFBS	170 (50-150)	PFBS	J (all detects)	P
1801037/ 537	16-MW-08-SA1	^{13}C3-PFBS	187 (50-150)	PFBS	J (all detects)	P
1801037/ 537	A1-MW-19-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P
1801037/ 537	A1-MW-37-SA1	^{13}C3-PFBS	228 (50-150)	PFBS	J (all detects)	P
1801037/ 537	A1-MW-37-SA1D	^{13}C3-PFBS	161 (50-150)	PFBS	J (all detects)	P

SDG/ Method	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
1801037/ 537	16-HS-03-SA1	^{13}C3-PFBS	154 (50-150)	PFBS	J (all detects)	P
1801037/ 537	16-MW-09-SA1	^{13}C3-PFBS	153 (50-150)	PFBS	J (all detects)	P
1801037/ 537	16-MW-06-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-13-SA1	^{13}C3-PFBS	419 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-11-SA1	^{13}C3-PFBS	271 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-14-SA1	^{13}C3-PFBS	527 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-15-SA1	^{13}C3-PFBS	235 (50-150)	PFBS	J (all detects)	P
1801039/ 537	A1-MW-25-SA1	^{13}C3-PFBS	428 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-42-SA1	^{13}C3-PFBS	310 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-54-SA1	^{13}C3-PFBS	175 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-53-SA1	^{13}C3-PFBS	154 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-PZ-19-SA1	^{13}C3-PFBS	182 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-52-SA1	^{13}C3-PFBS	211 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-01-SA1	^{13}C3-PFBS	192 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-01-SA1D	^{13}C3-PFBS	204 (50-150)	PFBS	J (all detects)	P
1801054/ 537	A1-MW-31-SA1	^{13}C3-PFBS	254 (50-150)	PFBS	J (all detects)	P
1801071/ 537	A1-MW-27-SA1	^{13}C3-PFBS	174 (50-150)	PFBS	J (all detects)	P

SDG/ Method	Sample	Internal Standards	%R (Limits)	Compound	Flag	A or P
1801071/ 537	A1-MW-07-SA1	$^{13}C3$-PFBS	209 (50-150)	PFBS	J (all detects)	P
1801071/ 537	A1-MW-55-SA1	$^{13}C3$-PFBS	165 (50-150)	PFBS	UJ (all non-detects)	P

XV. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

All compounds reported below the LOQ as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosures I and II.

XVI. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to severe holding time exceedances and MS/MSD %Rs, data were qualified as rejected in fifteen samples.

Due to headspace, data were qualified as estimated in one sample.

Due to holding time exceedances, data were qualified as estimated in twenty-five samples.

Due to surrogate %R, data were qualified as estimated in one sample.

Due to MS/MSD %R and RPD, data were qualified as estimated in three samples.

Due to internal standard %R, data were qualified as estimated in twenty-five samples.

Due to results below the LOQ, data were qualified as estimated in twenty-six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
22-May-2018	TB-20180522	280-110058-1	TB	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1	1801024-01	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-51-SA1	280-110058-2	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-51-SA1DUP	280-110058-2DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-51-SA1MS	280-110058-2MS	MS	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1MS	280-110058-2MS	MS	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-51-SA1MSD	280-110058-2MSD	MSD	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-51-SA1MSD	280-110058-2MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-50-SA1	1801024-02	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-50-SA1	280-110058-3	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-50-SA1DUP	280-110058-3DUP	DUP	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-49-SA1	1801024-03	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-49-SA1	280-110058-4	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-05-SA1	1801024-04	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	9056A	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
22-May-2018	A1-MW-05-SA1	280-110058-5	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	A1-MW-04-SA1	1801024-05	N	Gen Prep	537 MOD	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	8260B	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	9040C	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	9056A	Stage 2B
22-May-2018	A1-MW-04-SA1	280-110058-6	N	METHOD	SM3500 Fe B D	Stage 2B
22-May-2018	FRB-20180522	1801024-06	FRB	Gen Prep	537 MOD	Stage 2B
23-May-2018	TB-20180523	280-110112-1	TB	METHOD	8260B	Stage 4
23-May-2018	A1-MW-18-SA1	1801037-01	N	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	8260B	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	9040C	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	9056A	Stage 4
23-May-2018	A1-MW-18-SA1	280-110112-2	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-18-SA1DUP	280-110112-2DUP	DUP	METHOD	9056A	Stage 4
23-May-2018	A1-MW-18-SA1MS	280-110112-2MS	MS	METHOD	9056A	Stage 4
23-May-2018	A1-MW-18-SA1MSD	280-110112-2MSD	MSD	METHOD	9056A	Stage 4
23-May-2018	16-MW-06-SA1	1801037-08	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-MW-09-SA1	1801037-07	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-MW-08-SA1	1801037-02	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	8260B	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	9040C	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	9056A	Stage 4
23-May-2018	16-MW-08-SA1	280-110112-3	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-19-SA1	1801037-03	N	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	8260B	Stage 4
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	9040C	Stage 4

N = Normal Sample
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MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	9056A	Stage 4
23-May-2018	A1-MW-19-SA1	280-110112-4	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-37-SA1	1801037-04	N	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	8260B	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	9040C	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	9056A	Stage 4
23-May-2018	A1-MW-37-SA1	280-110112-6	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	A1-MW-37-SA1D	1801037-05	FD	Gen Prep	537 MOD	Stage 4
23-May-2018	A1-MW-37-SA1D	280-110112-5	FD	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1	1801037-06	N	Gen Prep	537 MOD	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	9040C	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1	280-110112-7	N	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	16-HS-03-SA1DUP	280-110112-7DUP	DUP	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1DUP	280-110112-7DUP	DUP	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	16-HS-03-SA1MS	280-110112-7MS	MS	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1MS	280-110112-7MS	MS	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1MS	280-110112-7MS	MS	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	16-HS-03-SA1MSD	280-110112-7MSD	MSD	METHOD	8260B	Stage 4
23-May-2018	16-HS-03-SA1MSD	280-110112-7MSD	MSD	METHOD	9056A	Stage 4
23-May-2018	16-HS-03-SA1MSD	280-110112-7MSD	MSD	METHOD	SM3500 Fe B D	Stage 4
23-May-2018	FRB-20180523	1801037-09	FRB	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-13-SA1	1801039-01	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-11-SA1	1801039-02	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-14-SA1	1801039-03	N	Gen Prep	537 MOD	Stage 2B

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MSD = Matrix Spike Duplicate
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DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
24-May-2018	A1-MW-15-SA1	1801039-04	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	A1-MW-25-SA1	1801039-07	N	Gen Prep	537 MOD	Stage 2B
24-May-2018	FRB-20180524	1801039-08	FRB	Gen Prep	537 MOD	Stage 2B
25-May-2018	TB-20180525	280-110226-12	TB	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-42-SA1	1801054-01	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-42-SA1	280-110226-1	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-54-SA1	1801054-02	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-54-SA1	280-110226-2	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-53-SA1	1801054-03	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-53-SA1	280-110226-3	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-53-SA1MS	280-110226-3MS	MS	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-53-SA1MSD	280-110226-3MSD	MSD	METHOD	8260B	Stage 2B
25-May-2018	A1-PZ-19-SA1	1801054-04	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	8260B	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	9040C	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	9056A	Stage 2B
25-May-2018	A1-PZ-19-SA1	280-110226-4	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-52-SA1	1801054-05	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	9040C	Stage 2B

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MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-52-SA1	280-110226-5	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-52-SA1DUP	280-110226-5DUP	DUP	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-52-SA1MS	280-110226-5MS	MS	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-52-SA1MSD	280-110226-5MSD	MSD	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-01-SA1	1801054-06	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-01-SA1	280-110226-6	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-01-SA1D	1801054-07	FD	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-01-SA1D	280-110226-7	FD	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-31-SA1	1801054-08	N	Gen Prep	537 MOD	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	8260B	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	9040C	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	9056A	Stage 2B
25-May-2018	A1-MW-31-SA1	280-110226-8	N	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-31-SA1DUP	280-110226-8DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-31-SA1MS	280-110226-8MS	MS	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	A1-MW-31-SA1MSD	280-110226-8MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
25-May-2018	FRB-20180525	1801054-09	FRB	Gen Prep	537 MOD	Stage 2B
30-May-2018	TB-20180530	280-110291-1	TB	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-27-SA1	1801071-01	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	9056A	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2018	A1-MW-27-SA1	280-110291-6	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-25-SA1	280-110291-5	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-55-SA1	1801071-02	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-55-SA1	280-110291-4	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-23-SA1	1801071-03	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-23-SA1	280-110291-3	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-07-SA1	1801071-04	N	Gen Prep	537 MOD	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-07-SA1	280-110291-7	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	8260B	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	9040C	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-14-SA1	280-110291-2	N	METHOD	SM3500 Fe B D	Stage 2B
30-May-2018	A1-MW-14-SA1DUP	280-110291-2DUP	DUP	METHOD	9056A	Stage 2B
30-May-2018	A1-MW-14-SA1MS	280-110291-2MS	MS	METHOD	9056A	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-May-2018	A1-MW-14-SA1MSD	280-110291-2MSD	MSD	METHOD	9056A	Stage 2B
30-May-2018	FRB-20180530	1801071-05	FRB	Gen Prep	537 MOD	Stage 2B
31-May-2018	TB-20180531	280-110353-1	TB	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	9056A	Stage 2B
31-May-2018	A1-MW-13-SA1	280-110353-2	N	METHOD	SM3500 Fe B D	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	9056A	Stage 2B
31-May-2018	A1-MW-11-SA1	280-110353-3	N	METHOD	SM3500 Fe B D	Stage 2B
31-May-2018	A1-MW-11-SA1DUP	280-110353-3DUP	DUP	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	8260B	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	9040C	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	9056A	Stage 2B
31-May-2018	A1-MW-15-SA1	280-110353-4	N	METHOD	SM3500 Fe B D	Stage 2B
31-May-2018	EB-20180531	1801084-01	EB	Gen Prep	537 MOD	Stage 2B
31-May-2018	EB-20180531	280-110353-5	EB	METHOD	8260B	Stage 2B
31-May-2018	16-HS-03-SA1MS	B8E0244-MS1	MS	Gen Prep	537 MOD	Stage 4
31-May-2018	A1-MW-53-SA1MS	B8E0244-MS2	MS	Gen Prep	537 MOD	Stage 2B
31-May-2018	16-HS-03-SA1MSD	B8E0244-MSD1	MSD	Gen Prep	537 MOD	Stage 4
31-May-2018	A1-MW-53-SA1MSD	B8E0244-MSD2	MSD	Gen Prep	537 MOD	Stage 2B

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Attachment 2

Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110058-1

Method Category: EM

Method: 9040C **Matrix: AQ**

Sample ID: A1-MW-04-SA1 **Collected:** 5/22/2018 2:06:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-05-SA1 **Collected:** 5/22/2018 1:19:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-49-SA1 **Collected:** 5/22/2018 12:20:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-50-SA1 **Collected:** 5/22/2018 11:30:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-51-SA1 **Collected:** 5/22/2018 10:14:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM

Method: 9056A **Matrix: AQ**

Sample ID: A1-MW-49-SA1 **Collected:** 5/22/2018 12:20:00 PM **Analysis Type:** RE/TOT **Dilution:** 10

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	2.82	J	1.00	LOD	5.00	LOQ	mg/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110058-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-04-SA1** ***Collected:*** **5/22/2018 2:06:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0751	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: **A1-MW-05-SA1** ***Collected:*** **5/22/2018 1:19:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0617	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: **A1-MW-49-SA1** ***Collected:*** **5/22/2018 12:20:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	UJ	StoA

Sample ID: **A1-MW-50-SA1** ***Collected:*** **5/22/2018 11:30:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-51-SA1** ***Collected:*** **5/22/2018 10:14:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0563	J HF F1	0.0500	LOD	0.200	LOQ	mg/L	J	RI, Ms, StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA1** ***Collected:*** **5/22/2018 11:30:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.643	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.903	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110058-1

Method Category: VOA

Method: 8260B **Matrix:** AQ

Sample ID: A1-MW-51-SA1 **Collected:** 5/22/2018 10:14:00 AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.629	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.571	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110112-1

Method Category: EM

Method: 9040C **Matrix:** AQ

Sample ID: 16-HS-03-SA1 **Collected:** 5/23/2018 2:19:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.2	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: 16-MW-08-SA1 **Collected:** 5/23/2018 11:09:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-18-SA1 **Collected:** 5/23/2018 9:00:00 AM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-19-SA1 **Collected:** 5/23/2018 12:03:00 PM **Analysis Type:** RES/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110112-1

Method Category: EM
Method: 9040C ***Matrix:*** AQ

Sample ID: A1-MW-37-SA1 ***Collected:*** 5/23/2018 1:16:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.7	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM
Method: 9056A ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RE2/TOT ***Dilution:*** 50

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Sulfate	2120	F1	25.0	LOD	250	LOQ	mg/L	J	Ms

Method Category: GENCHEM
Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	Ms

Sample ID: 16-MW-08-SA1 ***Collected:*** 5/23/2018 11:09:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0403	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI

Sample ID: A1-MW-18-SA1 ***Collected:*** 5/23/2018 9:00:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0215	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110112-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-37-SA1 ***Collected:*** 5/23/2018 1:16:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.166	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.800	U F1 F2	0.800	LOD	1.00	LOQ	ug/L	UJ	Ms, Surr
TETRACHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Surr
TRICHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Surr

Sample ID: 16-MW-08-SA1 ***Collected:*** 5/23/2018 11:09:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.669	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-18-SA1 ***Collected:*** 5/23/2018 9:00:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.452	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-19-SA1 ***Collected:*** 5/23/2018 12:03:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.424	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110112-1

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-37-SA1 ***Collected:*** 5/23/2018 1:16:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.624	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-37-SA1D ***Collected:*** 5/23/2018 1:26:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.652	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110226-1

Method Category: EM

Method: 9040C ***Matrix:*** AQ

Sample ID: A1-MW-01-SA1 ***Collected:*** 5/25/2018 1:56:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-31-SA1 ***Collected:*** 5/25/2018 2:49:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-42-SA1 ***Collected:*** 5/25/2018 7:56:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-52-SA1 ***Collected:*** 5/25/2018 1:00:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110226-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **9056A** ***Matrix:*** **AQ**

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RE/TOT** ***Dilution:*** **5**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
CHLORIDE	500	F1	2.50	LOD	15.0	LOQ	mg/L	J	Ms

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	0.343	J	0.100	LOD	0.500	LOQ	mg/L	J	RI

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-01-SA1** ***Collected:*** **5/25/2018 1:56:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110226-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-31-SA1** ***Collected:*** **5/25/2018 2:49:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	Ms, StoA

Sample ID: **A1-MW-42-SA1** ***Collected:*** **5/25/2018 7:56:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.198	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-31-SA1** ***Collected:*** **5/25/2018 2:49:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.353	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110226-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-42-SA1** ***Collected:*** **5/25/2018 7:56:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.298	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.415	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.507	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.627	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.269	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110291-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA1** ***Collected:*** **5/30/2018 12:06:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-14-SA1** ***Collected:*** **5/30/2018 1:38:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110291-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-23-SA1** ***Collected:*** **5/30/2018 11:10:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-25-SA1** ***Collected:*** **5/30/2018 9:12:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-27-SA1** ***Collected:*** **5/30/2018 8:18:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-55-SA1** ***Collected:*** **5/30/2018 10:16:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA1** ***Collected:*** **5/30/2018 12:06:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-14-SA1** ***Collected:*** **5/30/2018 1:38:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110291-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-23-SA1 ***Collected:*** 5/30/2018 11:10:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-25-SA1 ***Collected:*** 5/30/2018 9:12:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.123	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: A1-MW-27-SA1 ***Collected:*** 5/30/2018 8:18:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-55-SA1 ***Collected:*** 5/30/2018 10:16:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-07-SA1 ***Collected:*** 5/30/2018 12:06:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.405	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.797	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-14-SA1 ***Collected:*** 5/30/2018 1:38:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.898	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-110291-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-14-SA1** ***Collected:*** **5/30/2018 1:38:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.876	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-23-SA1** ***Collected:*** **5/30/2018 11:10:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.800	U	0.800	LOD	1.00	LOQ	ug/L	UJ	Headspace
TETRACHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Headspace
TRICHLOROETHENE	0.400	U	0.400	LOD	1.00	LOQ	ug/L	UJ	Headspace

Sample ID: **A1-MW-25-SA1** ***Collected:*** **5/30/2018 9:12:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.204	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.418	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-110353-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-11-SA1** ***Collected:*** **5/31/2018 8:24:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-13-SA1** ***Collected:*** **5/31/2018 7:43:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1, **Laboratory: TA DEN**

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-110353-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-15-SA1** ***Collected:*** **5/31/2018 9:16:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-11-SA1** ***Collected:*** **5/31/2018 8:24:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-13-SA1** ***Collected:*** **5/31/2018 7:43:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-MW-15-SA1** ***Collected:*** **5/31/2018 9:16:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-15-SA1** ***Collected:*** **5/31/2018 9:16:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	*Lab Result*	*Lab Qual*	*DL*	*DL Type*	*RL*	*RL Type*	*Units*	*Data Review Qual*	*Reason Code*
TRICHLOROETHENE	0.321	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-110058-1, 280-110112-1,

Laboratory: TA DEN

EDD Filename: Prep280-110058-1, Prep280-110112-1, Prep280-110226-1, Prep280-110291-1, Prep280-110353-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

Reason Code Legend

Reason Code	*Description*
Headspace	Preservation
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
Preservation	Preservation
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
StoA	Sampling to Analysis Rejection
Surr	Surrogate/Tracer Recovery Lower Estimation

* denotes a non-reportable result

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801024

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-04-SA1** ***Collected:*** **5/22/2018 2:06:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00333	J	0.00508	LOD	0.00812	LOQ	ug/L	J	RI
PFOS	0.00161	J	0.00508	LOD	0.00812	LOQ	ug/L	J	RI

Sample ID: **A1-MW-05-SA1** ***Collected:*** **5/22/2018 1:19:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.000917	J	0.00525	LOD	0.00842	LOQ	ug/L	J	RI
PFHxS	0.00278	J	0.00525	LOD	0.00842	LOQ	ug/L	J	RI

Sample ID: **A1-MW-49-SA1** ***Collected:*** **5/22/2018 12:20:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.00627	J	0.00508	LOD	0.00812	LOQ	ug/L	J	RI

Sample ID: **A1-MW-51-SA1** ***Collected:*** **5/22/2018 10:14:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00521	U	0.00521	LOD	0.00836	LOQ	ug/L	UJ	Is
PFBS	0.0613		0.00521	LOD	0.00836	LOQ	ug/L	J	Is
PFOS	0.00303	J	0.00521	LOD	0.00836	LOQ	ug/L	J	RI

SDG: 1801037

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **16-HS-03-SA1** ***Collected:*** **5/23/2018 2:19:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.582		0.00500	LOD	0.00803	LOQ	ug/L	J	Is
PFHxS	0.150		0.00500	LOD	0.00803	LOQ	ug/L	J	Ms

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801037

Method Category: SVOA

Method: 537 MOD ***Matrix:*** AQ

Sample ID: 16-HS-03-SA1 ***Collected:*** 5/23/2018 2:19:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.0218		0.00500	LOD	0.00803	LOQ	ug/L	J	Ms
PFHpA	0.198		0.00500	LOD	0.00803	LOQ	ug/L	J	Ms, Ms

Sample ID: 16-MW-06-SA1 ***Collected:*** 5/23/2018 9:50:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.112		0.00563	LOD	0.00897	LOQ	ug/L	J	Is
PFOS	0.00227	J	0.00563	LOD	0.00897	LOQ	ug/L	J	RI

Sample ID: 16-MW-08-SA1 ***Collected:*** 5/23/2018 11:09:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	1.29		0.00543	LOD	0.00870	LOQ	ug/L	J	Is
PFNA	0.00102	J	0.00543	LOD	0.00870	LOQ	ug/L	J	RI

Sample ID: 16-MW-09-SA1 ***Collected:*** 5/23/2018 10:15:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.124		0.00543	LOD	0.00871	LOQ	ug/L	J	Is
PFDA	0.00440	J	0.00543	LOD	0.00871	LOQ	ug/L	J	RI
PFNA	0.00326	J	0.00543	LOD	0.00871	LOQ	ug/L	J	RI

Sample ID: A1-MW-18-SA1 ***Collected:*** 5/23/2018 9:00:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0244		0.00553	LOD	0.00888	LOQ	ug/L	J	Is
PFOA	0.00187	J	0.00553	LOD	0.00888	LOQ	ug/L	J	RI
PFOS	0.00437	J	0.00553	LOD	0.00888	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801037

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-19-SA1** ***Collected:*** **5/23/2018 12:03:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0166		0.00530	LOD	0.00846	LOQ	ug/L	J	Is
PFDA	0.00727	J	0.00530	LOD	0.00846	LOQ	ug/L	J	RI

Sample ID: **A1-MW-37-SA1** ***Collected:*** **5/23/2018 1:16:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.230		0.00525	LOD	0.00839	LOQ	ug/L	J	Is
PFNA	0.00170	J	0.00525	LOD	0.00839	LOQ	ug/L	J	RI

Sample ID: **A1-MW-37-SA1D** ***Collected:*** **5/23/2018 1:26:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.252		0.00539	LOD	0.00862	LOQ	ug/L	J	Is
PFNA	0.00210	J	0.00539	LOD	0.00862	LOQ	ug/L	J	RI
PFUnA	0.00135	J	0.00539	LOD	0.00862	LOQ	ug/L	J	RI

SDG: 1801039

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-11-SA1** ***Collected:*** **5/24/2018 8:51:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00359	J	0.00539	LOD	0.00860	LOQ	ug/L	J	RI
PFBS	0.109		0.00539	LOD	0.00860	LOQ	ug/L	J	Is

Sample ID: **A1-MW-13-SA1** ***Collected:*** **5/24/2018 7:44:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.318		0.00568	LOD	0.00912	LOQ	ug/L	J	Is

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039, **Laboratory: Vista**

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

SDG: 1801039

Method Category: SVOA

Method: 537 MOD ***Matrix:*** AQ

Sample ID: A1-MW-14-SA1 ***Collected:*** 5/24/2018 10:05:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.118		0.00558	LOD	0.00893	LOQ	ug/L	J	Is

Sample ID: A1-MW-15-SA1 ***Collected:*** 5/24/2018 11:11:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.523		0.00558	LOD	0.00889	LOQ	ug/L	J	Is

Sample ID: A1-MW-25-SA1 ***Collected:*** 5/24/2018 2:18:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.355		0.00553	LOD	0.00889	LOQ	ug/L	J	Is

SDG: 1801054

Method Category: SVOA

Method: 537 MOD ***Matrix:*** AQ

Sample ID: A1-MW-01-SA1 ***Collected:*** 5/25/2018 1:56:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0524		0.00568	LOD	0.00907	LOQ	ug/L	J	Is
PFHpA	0.00225	J	0.00568	LOD	0.00907	LOQ	ug/L	J	RI

Sample ID: A1-MW-01-SA1D ***Collected:*** 5/25/2018 2:06:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0557		0.00534	LOD	0.00854	LOQ	ug/L	J	Is
PFHpA	0.00273	J	0.00534	LOD	0.00854	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039, **Laboratory: Vista**

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

SDG: 1801054

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-31-SA1** ***Collected:*** **5/25/2018 2:49:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0634		0.00553	LOD	0.00887	LOQ	ug/L	J	Is
PFHpA	0.00851	J	0.00553	LOD	0.00887	LOQ	ug/L	J	RI

Sample ID: **A1-MW-42-SA1** ***Collected:*** **5/25/2018 7:56:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.292		0.00553	LOD	0.00887	LOQ	ug/L	J	Is
PFOS	0.00186	J	0.00553	LOD	0.00887	LOQ	ug/L	J	RI

Sample ID: **A1-MW-52-SA1** ***Collected:*** **5/25/2018 1:00:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.146		0.00543	LOD	0.00869	LOQ	ug/L	J	Is

Sample ID: **A1-MW-53-SA1** ***Collected:*** **5/25/2018 10:14:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.551		0.00548	LOD	0.00878	LOQ	ug/L	J	Is
PFOS	0.00188	J	0.00548	LOD	0.00878	LOQ	ug/L	J	RI

Sample ID: **A1-MW-54-SA1** ***Collected:*** **5/25/2018 9:09:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.536		0.00558	LOD	0.00892	LOQ	ug/L	J	Is
PFOS	0.00652	J	0.00558	LOD	0.00892	LOQ	ug/L	J	RI

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0152		0.00534	LOD	0.00852	LOQ	ug/L	J	Is

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1801054

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-PZ-19-SA1** ***Collected:*** **5/25/2018 11:59:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00326	J	0.00534	LOD	0.00852	LOQ	ug/L	J	RI
PFOA	0.00756	J	0.00534	LOD	0.00852	LOQ	ug/L	J	RI
PFOS	0.00115	J	0.00534	LOD	0.00852	LOQ	ug/L	J	RI

SDG: 1801071

Method Category: **SVOA**

Method: **537 MOD** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA1** ***Collected:*** **5/30/2018 12:06:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.112		0.00525	LOD	0.00840	LOQ	ug/L	J	Is

Sample ID: **A1-MW-23-SA1** ***Collected:*** **5/30/2018 11:10:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHxS	0.00581	J	0.00548	LOD	0.00874	LOQ	ug/L	J	RI

Sample ID: **A1-MW-27-SA1** ***Collected:*** **5/30/2018 8:18:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.0819		0.00534	LOD	0.00854	LOQ	ug/L	J	Is

Sample ID: **A1-MW-55-SA1** ***Collected:*** **5/30/2018 10:16:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFBS	0.00548	U	0.00548	LOD	0.00875	LOQ	ug/L	UJ	Is

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 1801024, 1801037, 1801039,

Laboratory: Vista

EDD Filename: 1801024, 1801037, 1801039, 1801054, 1801071, 1801084

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

Reason Code Legend

Reason Code	*Description*
Is	Internal Standard Estimation
Lcs	Laboratory Control Spike Upper Estimation
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Enclosure I

Stage 2B ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

280-110058-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110058-1 **Laboratory: TA DEN**

EDD Filename: 280-110058-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA1 (RES/TOT)	Sampling To Analysis	226.00	24.00	HOURS	J (all detects)
A1-MW-05-SA1 (RES/TOT)		319.25	24.00	HOURS	
A1-MW-49-SA1 (RES/TOT)		227.75	24.00	HOURS	
A1-MW-50-SA1 (RES/TOT)		228.25	24.00	HOURS	
A1-MW-50-SA1DUP (RES/TOT)		228.50	24.00	HOURS	
A1-MW-51-SA1 (RES/TOT)		229.25	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA1 (RES/TOT)	Sampling To Analysis	45.75	24.00	HOURS	J(all detects)
A1-MW-05-SA1 (RES/TOT)		46.50	24.00	HOURS	UJ(all non-detects)
A1-MW-49-SA1 (RES/TOT)		47.50	24.00	HOURS	
A1-MW-50-SA1 (RES/TOT)	Sampling To Analysis	48.25	24.00	HOURS	J(all detects)
A1-MW-51-SA1 (RES/TOT)		49.50	24.00	HOURS	R(all non-detects)
A1-MW-51-SA1DUP (RES/TOT)		49.50	24.00	HOURS	
A1-MW-51-SA1MS (RES/TOT)		49.50	24.00	HOURS	
A1-MW-51-SA1MSD (RES/TOT)		49.50	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-110058-1 **Laboratory: TA DEN**

EDD Filename: 280-110058-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **SM3500 Fe B D**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-51-SA1MS A1-MW-51-SA1MSD (A1-MW-51-SA1)	Ferrous Iron	38	39	85.00-113.00	-	Ferrous Iron	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110058-1 **Laboratory: TA DEN**

EDD Filename: 280-110058-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-50-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.643 0.903	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-51-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.629 0.571	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-49-SA1	NITRATE	J	2.82	5.00	LOQ	mg/L	J (all detects)

Method: SM3500 Fe B D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-04-SA1	Ferrous Iron	J HF	0.0751	0.200	LOQ	mg/L	J (all detects)
A1-MW-05-SA1	Ferrous Iron	J HF	0.0617	0.200	LOQ	mg/L	J (all detects)
A1-MW-51-SA1	Ferrous Iron	J HF F1	0.0563	0.200	LOQ	mg/L	J (all detects)

LDC #: 42613A1
SDG #: 280-110058-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/13/18
Page: 1 of 1
Reviewer: Q
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤15%. ICV≤20%
IV.	Continuing calibration	A	CCV≤20/60%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB=1.
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180522	280-110058-1	Water	05/22/18
2	A1-MW-51-SA1	280-110058-2	Water	05/22/18
3	A1-MW-50-SA1	280-110058-3	Water	05/22/18
4	A1-MW-49-SA1	280-110058-4	Water	05/22/18
5	A1-MW-05-SA1	280-110058-5	Water	05/22/18
6	A1-MW-04-SA1	280-110058-6	Water	05/22/18
7	A1-MW-51-SA1MS	280-110058-2MS	Water	05/22/18
8	A1-MW-51-SA1MSD	280-110058-2MSD	Water	05/22/18
9				
10				

Notes:

LDC #: 42613A6
SDG #: 280-110058-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/18/18
Page: 1 of 1
Reviewer: a
2nd Reviewer: KC

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	—	
VI.	Matrix Spike/Matrix Spike Duplicates	N	
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	—	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-51-SA1	280-110058-2	Water	05/22/18
2	A1-MW-50-SA1	280-110058-3	Water	05/22/18
3	A1-MW-49-SA1	280-110058-4	Water	05/22/18
4	A1-MW-05-SA1	280-110058-5	Water	05/22/18
5	A1-MW-04-SA1	280-110058-6	Water	05/22/18
6	A1-MW-51-SA1MS	280-110058-2MS	Water	05/22/18
7	A1-MW-51-SA1MSD	280-110058-2MSD	Water	05/22/18
8	A1-MW-51-SA1DUP	280-110058-2DUP	Water	05/22/18
9	A1-MW-50-SA1DUP	280-110058-3DUP	Water	05/22/18
10				
11				
12				
13				
14				
15				

Notes:

LDC #: 42613A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KW

All circled methods are applicable to each sample.

Sample ID	Parameter
1-5	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe3+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC:6,7	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
8	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
9	(pH) TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

Quality Control
Outlier Reports

280-110112-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**
EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**
Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
16-HS-03-SA1 (RES/TOT)	Sampling To Analysis	201.25	24.00	HOURS	J (all detects)
16-MW-08-SA1 (RES/TOT)		204.25	24.00	HOURS	
A1-MW-18-SA1 (RES/TOT)		206.25	24.00	HOURS	
A1-MW-19-SA1 (RES/TOT)		203.25	24.00	HOURS	
A1-MW-37-SA1 (RES/TOT)		202.25	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**
Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-18-SA1 (RES/TOT)	Sampling To Analysis	26.85	24.00	HOURS	J(all detects) UJ(all non-detects)

Surrogate Outlier Report

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**
Matrix: **AQ**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
16-HS-03-SA1	TOLUENE-D8	75	89.00-112.00	All Target Analytes	J (all detects) UJ (all non-detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: SM3500 Fe B D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	Ferrous Iron	1	0	85.00-113.00	-	Ferrous Iron	J (all detects) R (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	1,1-DICHLOROETHENE	56	33	71.00-131.00	53 (20.00)	1,1-DICHLOROETHENE	J(all detects) UJ(all non-detects)

Method: 9056A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-HS-03-SA1MSD (16-HS-03-SA1)	Sulfate	-	86	87.00-112.00	-	Sulfate	J(all detects) UJ(all non-detects)
A1-MW-18-SA1MS A1-MW-18-SA1MSD (A1-MW-18-SA1)	CHLORIDE Sulfate	50 73	45 72	87.00-111.00 87.00-112.00	- -	CHLORIDE Sulfate	No Qual, >4x

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-08-SA1	TETRACHLOROETHENE	J	0.669	1.00	LOQ	ug/L	J (all detects)
A1-MW-18-SA1	1,1-DICHLOROETHENE	J	0.452	1.00	LOQ	ug/L	J (all detects)
A1-MW-19-SA1	TRICHLOROETHENE	J	0.424	1.00	LOQ	ug/L	J (all detects)
A1-MW-37-SA1	TRICHLOROETHENE	J	0.624	1.00	LOQ	ug/L	J (all detects)
A1-MW-37-SA1D	TRICHLOROETHENE	J	0.652	1.00	LOQ	ug/L	J (all detects)

Method: **SM3500 Fe B D**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-08-SA1	Ferrous Iron	J HF	0.0403	0.200	LOQ	mg/L	J (all detects)
A1-MW-18-SA1	Ferrous Iron	J HF	0.0215	0.200	LOQ	mg/L	J (all detects)
A1-MW-37-SA1	Ferrous Iron	J HF	0.166	0.200	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-110112-1 **Laboratory: TA DEN**

EDD Filename: 280-110112-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-37-SA1	A1-MW-37-SA1D			
TRICHLOROETHENE	0.624	0.652	NC	30.00	No Qualifiers Applied

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Quality Control
Outlier Reports

280-110226-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110226-1 **Laboratory: TA DEN**

EDD Filename: 280-110226-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA1 (RES/TOT)	Sampling To Analysis	154.50	24.00	HOURS	J (all detects)
A1-MW-31-SA1 (RES/TOT)		154.00	24.00	HOURS	
A1-MW-42-SA1 (RES/TOT)		160.25	24.00	HOURS	
A1-MW-52-SA1 (RES/TOT)		155.50	24.00	HOURS	
A1-MW-54-SA1 (RES/TOT)		159.25	24.00	HOURS	
A1-PZ-19-SA1 (RES/TOT)		156.50	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA1 (RES/TOT)	Sampling To Analysis	452.25	24.00	HOURS	J(all detects)
A1-MW-31-SA1 (RES/TOT)		451.25	24.00	HOURS	R(all non-detects)
A1-MW-31-SA1DUP (RES/TOT)		451.25	24.00	HOURS	
A1-MW-31-SA1DUP (RE/TOT)		452.25	24.00	HOURS	
A1-MW-31-SA1MS (RES/TOT)		451.25	24.00	HOURS	
A1-MW-31-SA1MS (RE/TOT)		452.25	24.00	HOURS	
A1-MW-31-SA1MSD (RES/TOT)		451.50	24.00	HOURS	
A1-MW-31-SA1MSD (RE/TOT)		452.25	24.00	HOURS	
A1-MW-42-SA1 (RES/TOT)		458.25	24.00	HOURS	
A1-MW-52-SA1 (RES/TOT)		453.25	24.00	HOURS	
A1-MW-54-SA1 (RES/TOT)		457.00	24.00	HOURS	
A1-PZ-19-SA1 (RES/TOT)		454.25	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-110226-1 **Laboratory: TA DEN**

EDD Filename: 280-110226-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9056A
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-52-SA1MS A1-MW-52-SA1MSD (A1-MW-52-SA1)	CHLORIDE Sulfate	- 75	84 70	87.00-111.00 87.00-112.00	- -	CHLORIDE Sulfate**	J (all detects) ** No Qual, >4x

Method: SM3500 Fe B D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-31-SA1MS A1-MW-31-SA1MSD (A1-MW-31-SA1)	Ferrous Iron	21	21	85.00-113.00	-	Ferrous Iron	J(all detects) R(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110226-1 **Laboratory: TA DEN**

EDD Filename: 280-110226-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-31-SA1	TRICHLOROETHENE	J	0.353	1.00	LOQ	ug/L	J (all detects)
A1-MW-42-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.298 0.415	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-52-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.507 0.627	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-PZ-19-SA1	TRICHLOROETHENE	J	0.269	1.00	LOQ	ug/L	J (all detects)

Method: 9056A

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-54-SA1	NITRATE	J	0.343	0.500	LOQ	mg/L	J (all detects)

Method: SM3500 Fe B D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-PZ-19-SA1	Ferrous Iron	J HF	0.198	0.200	LOQ	mg/L	J (all detects)

LDC #: 42613C1
SDG #: 280-110226-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/19/18
Page: 1 of 1
Reviewer: 1
2nd Reviewer: RW

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/20%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB = 9
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	ND	D = 6+7
XI.	Internal standards	A	(MS/MSD - FSaut)
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	280-110226-1	Water	05/25/18
2	A1-MW-54-SA1	280-110226-2	Water	05/25/18
3	A1-MW-53-SA1	280-110226-3	Water	05/25/18
4	A1-PZ-19-SA1	280-110226-4	Water	05/25/18
5	A1-MW-52-SA1	280-110226-5	Water	05/25/18
6	A1-MW-01-SA1	280-110226-6	Water	05/25/18
7	A1-MW-01-SA1D	280-110226-7	Water	05/25/18
8	A1-MW-31-SA1	280-110226-8	Water	05/25/18
9	TB-20180525	280-110226-12	Water	05/25/18
10	A1-MW-53-SA1MS	280-110226-3MS	Water	05/25/18
11	A1-MW-53-SA1MSD	280-110226-3MSD	Water	05/25/18
12				
13				

LDC #: 42613C6
SDG #: 280-110226-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/18/18
Page: 1 of 1
Reviewer: G
2nd Reviewer: KW

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B)
pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/-	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	ASW	
V	Field blanks	-	
VI.	Matrix Spike/Matrix Spike Duplicates	N	7/8:SO4 7/x
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	-	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	280-110226-1	Water	05/25/18
2	A1-MW-54-SA1	280-110226-2	Water	05/25/18
3	A1-PZ-19-SA1	280-110226-4	Water	05/25/18
4	A1-MW-52-SA1	280-110226-5	Water	05/25/18
5	A1-MW-01-SA1	280-110226-6	Water	05/25/18
6	A1-MW-31-SA1	280-110226-8	Water	05/25/18
7	A1-MW-52-SA1MS	280-110226-5MS	Water	05/25/18
8	A1-MW-52-SA1MSD	280-110226-5MSD	Water	05/25/18
9	A1-MW-52-SA1DUP	280-110226-5DUP	Water	05/25/18
10	A1-MW-31-SA1MS1	280-110226-8MS1	Water	05/25/18
11	A1-MW-31-SA1MSD1	280-110226-8MSD1	Water	05/25/18
12	A1-MW-31-SA1DUP1	280-110226-8DUP2	Water	05/25/18
13	A1-MW-31-SA1MS2	280-110226-8MS2	Water	05/25/18
14	A1-MW-31-SA1MSD2	280-110226-8MSD2	Water	05/25/18
15	A1-MW-31-SA1DUP2	280-110226-8DUP2	Water	05/25/18
16				

Notes:

LDC #: 42613C6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KK

All circled methods are applicable to each sample.

Sample ID	Parameter
1-6	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC: 7,8	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
9	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
10,11	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
12	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
13,14	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
15	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

LDC #: 42613C6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: G
2nd Reviewer: KK

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** All

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No qual (>5x)								
NO3-N		0.04663	0.23315									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-110291-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110291-1 **Laboratory: TA DEN**

EDD Filename: 280-110291-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA1 (RES/TOT)	Sampling To Analysis	78.25	24.00	HOURS	J (all detects)
A1-MW-14-SA1 (RES/TOT)		76.25	24.00	HOURS	
A1-MW-23-SA1 (RES/TOT)		79.00	24.00	HOURS	
A1-MW-25-SA1 (RES/TOT)		81.00	24.00	HOURS	
A1-MW-27-SA1 (RES/TOT)		82.00	24.00	HOURS	
A1-MW-55-SA1 (RES/TOT)		79.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA1 (RES/TOT)	Sampling To Analysis	334.25	24.00	HOURS	J(all detects)
A1-MW-14-SA1 (RES/TOT)		332.50	24.00	HOURS	R(all non-detects)
A1-MW-23-SA1 (RES/TOT)		335.00	24.00	HOURS	
A1-MW-25-SA1 (RES/TOT)		337.00	24.00	HOURS	
A1-MW-27-SA1 (RES/TOT)		338.00	24.00	HOURS	
A1-MW-55-SA1 (RES/TOT)		336.00	24.00	HOURS	

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110291-1 **Laboratory: TA DEN**

EDD Filename: 280-110291-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-07-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.405 0.797	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-14-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.898 0.876	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-25-SA1	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.204 0.418	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

Method: **SM3500 Fe B D**

Matrix: **AQ**

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-25-SA1	Ferrous Iron	J HF	0.123	0.200	LOQ	mg/L	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613D1

SDG #: 280-110291-1

Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET

ADR

Date: 7/18/18

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration / Endrin	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180530	280-110291-1	Water	05/30/18
2	A1-MW-14-SA1	280-110291-2	Water	05/30/18
3	A1-MW-23-SA1	280-110291-3	Water	05/30/18
4	A1-MW-55-SA1	280-110291-4	Water	05/30/18
5	A1-MW-25-SA1	280-110291-5	Water	05/30/18
6	A1-MW-27-SA1	280-110291-6	Water	05/30/18
7	A1-MW-07-SA1	280-110291-7	Water	05/30/18
8				
9				

Notes:

LDC #: 43613D1

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: 9
2nd Reviewer: RK

All circled dates have exceeded the technical holding times.
(Y) N N/A Were all cooler temperatures within validation criteria?
(Y) N N/A Were air bubbles > 1/4 inch or was headspace present in the vials?

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
3 (ND)	Headspace		> 6 mm				J (ND)

TECHNICAL HOLDING TIME CRITERIA

Water unpreserved:	Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved:	Within 14 days of sample collection.
Soil:	Within 14 days of sample collection.

LDC #: 42613D6
SDG #: 280-110291-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/18/18
Page: 1 of 1
Reviewer: a
2nd Reviewer: KK

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/-	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	—	
VI.	Matrix Spike/Matrix Spike Duplicates	N	
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	—	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-14-SA1	280-110291-2	Water	05/30/18
2	A1-MW-23-SA1	280-110291-3	Water	05/30/18
3	A1-MW-55-SA1	280-110291-4	Water	05/30/18
4	A1-MW-25-SA1	280-110291-5	Water	05/30/18
5	A1-MW-27-SA1	280-110291-6	Water	05/30/18
6	A1-MW-07-SA1	280-110291-7	Water	05/30/18
7	A1-MW-14-SA1MS	280-110291-2MS	Water	05/30/18
8	A1-MW-14-SA1MSD	280-110291-2MSD	Water	05/30/18
9	A1-MW-14-SA1DUP	280-110291-2DUP	Water	05/30/18
10				
11				
12				
13				
14				
15				
16				

Notes:

LDC #: 42613O6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: RW

All circled methods are applicable to each sample.

Sample ID	Parameter
1-6	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC: 7,8	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
9	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments: _____

LDC #: 42613D6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: G
2nd Reviewer: KK

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 1-3

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No qual (>5x)								
SO4		0.2460	1.23									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-110353-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-110353-1 **Laboratory: TA DEN**

EDD Filename: 280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA1 (RES/TOT)	Sampling To Analysis	111.75	24.00	HOURS	J (all detects)
A1-MW-11-SA1DUP (RES/TOT)		111.75	24.00	HOURS	
A1-MW-13-SA1 (RES/TOT)		112.50	24.00	HOURS	
A1-MW-15-SA1 (RES/TOT)		110.50	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA1 (RES/TOT)	Sampling To Analysis	313.75	24.00	HOURS	J(all detects)
A1-MW-13-SA1 (RES/TOT)		314.50	24.00	HOURS	R(all non-detects)
A1-MW-15-SA1 (RES/TOT)		313.00	24.00	HOURS	

Method Blank Outlier Report

Lab Reporting Batch ID: 280-110353-1 **Laboratory: TA DEN**

EDD Filename: 280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-417070/6	6/1/2018 12:10:00 PM	CHLORIDE Sulfate	0.5189 mg/L 0.6146 mg/L	A1-MW-11-SA1 A1-MW-13-SA1 A1-MW-15-SA1

Reporting Limit Outliers

Lab Reporting Batch ID: 280-110353-1 **Laboratory: TA DEN**

EDD Filename: 280-110353-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-15-SA1	TRICHLOROETHENE	J	0.321	1.00	LOQ	ug/L	J (all detects)

LDC #: 42613E1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/12/18
SDG #: 280-110353-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	TB = 1. EB = 5
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180531	280-110353-1	Water	05/31/18
2	A1-MW-13-SA1	280-110353-2	Water	05/31/18
3	A1-MW-11-SA1	280-110353-3	Water	05/31/18
4	A1-MW-15-SA1	280-110353-4	Water	05/31/18
5	EB-20180531	280-110353-5	Water	05/31/18
6				
7				
8				

Notes:

LDC #: 42613E6
SDG #: 280-110353-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
ADR

Date: 7/8/18
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/—	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	—	
VI.	Matrix Spike/Matrix Spike Duplicates	N	
VII.	Duplicate sample analysis	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	—	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-13-SA1	280-110353-2	Water	05/31/18
2	A1-MW-11-SA1	280-110353-3	Water	05/31/18
3	A1-MW-15-SA1	280-110353-4	Water	05/31/18
4	A1-MW-11-SA1DUP	280-110353-3DUP	Water	05/31/18
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Notes:

LDC #: 42613E6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KK

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC:4	(pH) TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

LDC #: 42613E6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: G
2nd Reviewer: KK

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** All

Analyte	Blank ID	Blank ID	Blank Action Limit										
	PB	ICB/CCB (mg/L)		No qual (>5x)									
Cl		0.5385	2.6925										
SO4		0.6554	3.277										

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control Outlier Reports

1801024

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801024 **Laboratory: Vista**

EDD Filename: 1801024 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8E0250-BS1 (A1-MW-04-SA1 A1-MW-05-SA1 A1-MW-49-SA1 A1-MW-50-SA1 A1-MW-51-SA1 FRB-20180522)	PFTrDA	138	-	70.00-130.00	-	PFTrDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1801024 **Laboratory: Vista**

EDD Filename: 1801024 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-04-SA1	PFOA PFOS	J J	0.00333 0.00161	0.00812 0.00812	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-05-SA1	PFHpA PFHxS	J J	0.000917 0.00278	0.00842 0.00842	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-49-SA1	PFBS	J	0.00627	0.00812	LOQ	ug/L	J (all detects)
A1-MW-51-SA1	PFOS	J	0.00303	0.00836	LOQ	ug/L	J (all detects)

LDC #: 42613L96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801024 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 2nd Reviewer: KLC

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD<20% r². True/ICV = 30%
IV.	Continuing calibration	A	CCV = 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	FRB = 6
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-51-SA1	1801024-01	Water	05/22/18
2	A1-MW-50-SA1	1801024-02	Water	05/22/18
3	A1-MW-49-SA1	1801024-03	Water	05/22/18
4	A1-MW-05-SA1	1801024-04	Water	05/22/18
5	A1-MW-04-SA1	1801024-05	Water	05/22/18
6	FRB-20180522	1801024-06	Water	05/22/18
7				
8				
9				

Notes:

	BBE0250-BK1						

LDC #: 26132L96

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N N/A Were all internal standard area counts within 50-150% limits?

Y/N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		BBE0250-BA	13C2-PFUnA	AT. 6 (50-150)		Y/N/A
		1 (dets)	13C3-PFBS	247		(PFBS)
		(ND)	d5-Et FOSAA	151		(Et FOSAA)

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Quality Control
Outlier Reports

1801037

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	NMeFOSAA	-	-	70.00-130.00	41.1 (30.00)	NMeFOSAA	J (all detects)
	PFDA	132	-	70.00-130.00	-	PFDA	
	PFDoA	136	-	70.00-130.00	-	PFDoA	
	PFHpA	140	-	70.00-130.00	49.6 (30.00)	PFHpA	
	PFHxS	146	-	70.00-130.00	-	PFHxS	
	PFOA	131	-	70.00-130.00	-	PFOA	
	PFTrDA	136	133	70.00-130.00	-	PFTrDA	
16-HS-03-SA1MS 16-HS-03-SA1MSD (16-HS-03-SA1)	PFHxA	-21	-	70.00-130.00	329 (30.00)	PFHxA	No Qual, >4x
	PFBS	182	-	70.00-130.00	45.9 (30.00)	PFBS	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8E0244-BS1 (16-HS-03-SA1 16-MW-06-SA1 16-MW-08-SA1 16-MW-09-SA1 A1-MW-18-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D FRB-20180523)	PFTrDA	153	-	70.00-130.00	-	PFTrDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-06-SA1	PFOS	J	0.00227	0.00897	LOQ	ug/L	J (all detects)
16-MW-08-SA1	PFNA	J	0.00102	0.00870	LOQ	ug/L	J (all detects)
16-MW-09-SA1	PFDA PFNA	J J	0.00440 0.00326	0.00871 0.00871	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-18-SA1	PFOA PFOS	J J	0.00187 0.00437	0.00888 0.00888	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-19-SA1	PFDA	J	0.00727	0.00846	LOQ	ug/L	J (all detects)
A1-MW-37-SA1	PFNA	J	0.00170	0.00839	LOQ	ug/L	J (all detects)
A1-MW-37-SA1D	PFNA PFUnA	J J	0.00210 0.00135	0.00862 0.00862	LOQ LOQ	ug/L ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1801037 **Laboratory: Vista**

EDD Filename: 1801037 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	A1-MW-37-SA1	A1-MW-37-SA1D			
PFBS	0.230	0.252	9	30.00	No Qualifiers Applied
PFHpA	0.0328	0.0322	NC	30.00	
PFHxA	1.66	1.71	3	30.00	
PFHxS	0.155	0.152	2	30.00	
PFNA	0.00170	0.00210	NC	30.00	
PFOA	0.0196	0.0203	NC	30.00	
PFOS	0.0458	0.0416	NC	30.00	
PFUnA	0.00839 U	0.00135	NC	30.00	

LDC #: 42613M96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801037 ADR/Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 1
2nd Reviewer: KC

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	
IV.	Continuing calibration	A	
V.	Laboratory Blanks	N	Not reviewed for ADR validation
VI.	Field blanks	ND	FRB = 9
VII.	Surrogate spikes	N	Not reviewed for ADR validation
VIII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation
IX.	Laboratory control samples		Not reviewed for ADR validation
X.	Field duplicates	SW	D = 4+5
XI.	Internal standards	SW	Not reviewed for ADR validation
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation
XIII.	Target compound identification		Not reviewed for ADR validation
XIV.	System performance		Not reviewed for ADR validation
XV.	Overall assessment of data		Not reviewed for ADR validation

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA1**	1801037-01**	Water	05/23/18
2	16-MW-08-SA1**	1801037-02**	Water	05/23/18
3	A1-MW-19-SA1**	1801037-03**	Water	05/23/18
4	A1-MW-37-SA1**	1801037-04**	Water	05/23/18
5	A1-MW-37-SA1D**	1801037-05**	Water	05/23/18
6	16-HS-03-SA1**	1801037-06**	Water	05/23/18
7	16-MW-09-SA1**	1801037-07**	Water	05/23/18
8	16-MW-06-SA1**	1801037-08**	Water	05/23/18
9	FRB-20180523	1801037-09	Water	05/23/18
10	16-HS-03-SA1MS	1801037-06MS	Water	05/23/18
11	16-HS-03-SA1MSD	1801037-06MSD	Water	05/23/18
12				
13	B8E0244-BLK1			
14				

LDC #: 423496

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: [illegible]

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (lab)	13C3-PFBS	170 (50-150)		J (PFBS)
		2		187		
		3		214		
		4		228		
		5		161		
		6		154		
		7		153		
		8		214		
		10 (MS)		167		No Qual
		11 (MSD)		165		

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LDC#: 42613M96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: RK

METHOD: PFCs

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	4	5		
PFBS	0.230	0.252	9	
PFHxA	1.66	1.71	3	
PFHpA	0.0328	0.0322	~~2~~ NC	
PFHxS	0.155	0.152	2	
PFOA	0.0196	0.0203	~~4~~ NC	
PFNA	0.00170	0.00210	~~21~~ NC	
PFOS	0.0458	0.0416	~~10~~ NC	
PFUnA	0.00525U	0.00135	NC	

Quality Control
Outlier Reports

1801039

Reporting Limit Outliers

Lab Reporting Batch ID: 1801039 **Laboratory: Vista**

EDD Filename: 1801039 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-11-SA1	PFOS	J	0.00359	0.00860	LOQ	ug/L	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613N96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/12/18
SDG #: 1801039 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	
IV.	Continuing calibration	A	
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	FRB=6
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	SW	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-13-SA1	1801039-01	Water	05/24/18
2	A1-MW-11-SA1	1801039-02	Water	05/24/18
3	A1-MW-14-SA1	1801039-03	Water	05/24/18
4	A1-MW-15-SA1	1801039-04	Water	05/24/18
5	A1-MW-25-SA1	1801039-07	Water	05/24/18
6	FRB-20180524	1801039-08	Water	05/24/18
7				
8				
9				

Notes:

	BBF0004-BK1						

LDC #: ~~26363N96~~

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: [illegible]

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dob)	13C3-PFBS	419 (50-150)		Y/N/A (PFBS)
		2		271		
		3		527		
		4		235		
		5 (~~ND~~) (Det)		428		

Privileged and Confidential

Quality Control Outlier Reports

1801054

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-53-SA1MS A1-MW-53-SA1MSD (A1-MW-53-SA1)	NMeFOSAA PFTrDA	- 141	- 148	70.00-130.00 70.00-130.00	32.9 (30.00) -	NMeFOSAA PFTrDA	J (all detects)
A1-MW-53-SA1MS A1-MW-53-SA1MSD (A1-MW-53-SA1)	PFBS PFHxS PFHxA	- 141 232	37.7 58.4 175	70.00-130.00 70.00-130.00 70.00-130.00	96.5 (30.00) 82.8 (30.00) -	PFBS PFHxS PFHxA	No Qual, >4x

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8E0244-BS1 (A1-MW-01-SA1 A1-MW-01-SA1D A1-MW-31-SA1 A1-MW-42-SA1 A1-MW-52-SA1 A1-MW-53-SA1 A1-MW-54-SA1 A1-PZ-19-SA1 FRB-20180525)	PFTrDA	153	-	70.00-130.00	-	PFTrDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-01-SA1	PFHpA	J	0.00225	0.00907	LOQ	ug/L	J (all detects)
A1-MW-01-SA1D	PFHpA	J	0.00273	0.00854	LOQ	ug/L	J (all detects)
A1-MW-31-SA1	PFHpA	J	0.00851	0.00887	LOQ	ug/L	J (all detects)
A1-MW-42-SA1	PFOS	J	0.00186	0.00887	LOQ	ug/L	J (all detects)
A1-MW-53-SA1	PFOS	J	0.00188	0.00878	LOQ	ug/L	J (all detects)
A1-MW-54-SA1	PFOS	J	0.00652	0.00892	LOQ	ug/L	J (all detects)
A1-PZ-19-SA1	PFHpA	J	0.00326	0.00852	LOQ	ug/L	J (all detects)
	PFOA	J	0.00756	0.00852	LOQ	ug/L	
	PFOS	J	0.00115	0.00852	LOQ	ug/L	

Field Duplicate RPD Report

Lab Reporting Batch ID: 1801054 **Laboratory: Vista**

EDD Filename: 1801054 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-01-SA1	A1-MW-01-SA1D			
PFBS	0.0524	0.0557	6	30.00	No Qualifiers Applied
PFHpA	0.00225	0.00273	NC	30.00	
PFHxA	0.101	0.0971	4	30.00	
PFHxS	0.0230	0.0238	NC	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613O96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801054 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	RSD ≤ 20% . r^2 . TMC/ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	NO	FRB = 9
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	SW	D = 6+7
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	1801054-01	Water	05/25/18
2	A1-MW-54-SA1	1801054-02	Water	05/25/18
3	A1-MW-53-SA1	1801054-03	Water	05/25/18
4	A1-PZ-19-SA1	1801054-04	Water	05/25/18
5	A1-MW-52-SA1	1801054-05	Water	05/25/18
6	A1-MW-01-SA1	1801054-06	Water	05/25/18
7	A1-MW-01-SA1D	1801054-07	Water	05/25/18
8	A1-MW-31-SA1	1801054-08	Water	05/25/18
9	FRB-20180525	1801054-09	Water	05/25/18
10	A1-MW-53-SA1MS	1801054-03MS	Water	05/25/18
11	A1-MW-53-SA1MSD	1801054-03MSD	Water	05/25/18
12				
13				
14	B8E0244-B4[illegible]			

LDC#: 42613096

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: WK

METHOD: PFCs

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	6	7		
PFBS	0.0524	0.0557	6	
PFHxA	0.101	0.0971	4	
PFHpA	0.00225	0.00273	~~19~~ NC	
PFHxS	0.0230	0.0238	~~3~~ NC	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613O96.wpd

LDC #: 42613096

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: MK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dets)	13C3-PFBS	310 (50-150)		J (all dets) UJ (PFBS)
		2 (dets)		175		
		3		154		
		10 (MS)		169		No qual
		11 (MSD)		161		
		4 (dets)		182		J (all dets) UJ (PFBS)
		5		211		
		6		192		
		7		204		
		8		254		

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Quality Control Outlier Reports

1801071

Reporting Limit Outliers

Lab Reporting Batch ID: 1801071 **Laboratory: Vista**

EDD Filename: 1801071 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-23-SA1	PFHxS	J	0.00581	0.00874	LOQ	ug/L	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 42613P96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801071 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	
IV.	Continuing calibration	A	
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	FRB = 5
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	N	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-27-SA1	1801071-01	Water	05/30/18
2	A1-MW-55-SA1	1801071-02	Water	05/30/18
3	A1-MW-23-SA1	1801071-03	Water	05/30/18
4	A1-MW-07-SA1	1801071-04	Water	05/30/18
5	FRB-20180530	1801071-05	Water	05/30/18
6				
7				
8				
9				

Notes:

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 6:2FTS			
S. 8:2 FTS			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			

LDC #: 42613P96

VALIDATION FINDINGS WORKSHEET
Internal Standards

Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all internal standard area counts within 50-150% limits?

Y N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dets)	13C8-PFBS	174 (50-150)		J/UJ (PFBS)
		2 (ND)	↓	165		↓
		4 (dets)	↓	209		↓

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Quality Control
Outlier Reports

1801084

LDC #: 42613Q96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18

SDG #: 1801084 ADR Page: 1 of 1

Laboratory: Vista Analytical Laboratory Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	~~RSD≤20%~~. r^2 TMO/ICV ≤ 30%
IV.	Continuing calibration	SW	CCV ≤ 30% ~~≤20%~~
V.	Laboratory Blanks	N	
VI.	Field blanks	ND	EB=1
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	EB-20180531	1801084-01	Water	05/31/18
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	RBF0069-BLK1						

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			

LDC #: ~~42638~~ 96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: Q
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y (N) N/A Were all continuing calibration percent differences (%D) ≤30 %?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit:)	Associated Samples	Qualifications
	6/18/18	180617M1-10	d3-T	55.2 (~~>50%~~)		MB	J/UJ/P (T)

Enclosure II

Manual Stage 2B and Stage 4 Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 16, 2018

Parameters: Volatiles

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-110112-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
TB-20180523	280-110112-1	Water	05/23/18
A1-MW-18-SA1	280-110112-2	Water	05/23/18
16-MW-08-SA1	280-110112-3	Water	05/23/18
A1-MW-19-SA1	280-110112-4	Water	05/23/18
A1-MW-37-SA1D	280-110112-5	Water	05/23/18
A1-MW-37-SA1	280-110112-6	Water	05/23/18
16-HS-03-SA1	280-110112-7	Water	05/23/18
16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TB-20180523 was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
16-HS-03-SA1	Toluene-d8	75 (89-112)	All compounds	UJ (all non-detects)	A

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	1,1-Dichloroethene	56 (71-131)	33 (71-131)	UJ (all non-detects)	A

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	1,1-Dichloroethene	53 (≤20)	NA	-

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples A1-MW-37-SA1 and A1-MW-37-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	A1-MW-37-SA1D	A1-MW-37-SA1			
Trichloroethene	0.652	0.624	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1D A1-MW-37-SA1	All compounds reported below the LOQ.	J (all detects)	A

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, MS/MSD %R, and results below the LOQ, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Volatiles - Data Qualification Summary - SDG 280-110112-1

Sample	Compound	Flag	A or P	Reason
16-HS-03-SA1	All compounds	UJ (all non-detects)	A	Surrogates (%R)
16-HS-03-SA1	1,1-Dichloroethene	UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1D A1-MW-37-SA1	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Volatiles - Laboratory Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Volatiles - Field Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

LDC #: 42613B1 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18

SDG #: 280-110112-1 Stage 4 Page: 1 of 1

Laboratory: Test America, Inc. Reviewer: Q

2nd Reviewer: KLC

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration Level 3	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 1
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 5+6
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	TB-20180523	280-110112-1	Water	05/23/18
2	A1-MW-18-SA1	280-110112-2	Water	05/23/18
3	16-MW-08-SA1	280-110112-3	Water	05/23/18
4	A1-MW-19-SA1	280-110112-4	Water	05/23/18
5	A1-MW-37-SA1D	280-110112-5	Water	05/23/18
6	A1-MW-37-SA1	280-110112-6	Water	05/23/18
7	16-HS-03-SA1	280-110112-7	Water	05/23/18
8	16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
9	16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18
10				
11				
12				
13				

LDC #: 42613B1

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: RV

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) ≥ 0.05?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks were identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?		✓		
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?	✓			

LDC #: 42613B1

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data	✓			
Overall assessment of data was found to be acceptable.				

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 42613B1

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer:
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all surrogate %R within QC limits?

Y N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Date	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
		7	TOL	75 (89-112)	J/UH/A (ND)
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
				( )	
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				( )	
				( )	
				( )	
				( )	
				( )	
				( )	

(TOL) = Toluene-d8 (DCE) = 1,2-Dichloroethane-d4
(BFB) = Bromofluorobenzene (DFM) = Dibromofluoromethane

LDC #: 43633

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD : GC/MS VOA (EPA SW 846 Method 8260B)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

(Y) N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y (N) N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		8/9	H	56 (71-131)	33 (71-131)	( )	7 (ND)	J (H) / A
			H	( )	( )	53 (≤20)		J (all det.) / A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )	

LDC#: 42613B1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GCMS VOA 8260B

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	5	6		
S	0.652	0.624	4 NC	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613B1.wpd

LDC #: ~~42643B~~

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs
X = Mean of the RRFs

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (10 std)	Recalculated RRF (10 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL (R1)	5/16/18	H (1st internal standard)	0.3187	0.3187	0.3149	0.3149	4.8	4.8
			AA (2nd internal standard)	1.3348	1.3348	1.3251	1.3251	3.5	3.5
			(3rd internal standard)						
			(4th internal standard)						
2			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
3			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						
4			(1st internal standard)						
			(2nd internal standard)						
			(3rd internal standard)						
			(4th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613B1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	R1735	6/4/18	H (1st internal standard)	0.3149	0.3312	0.3312	5.2	5.2
			AA (2nd internal standard)	1.325	1.401	1.401	5.7	5.7
			(3rd internal standard)					
			(4th internal standard)					
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
3			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 40413B1

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	11.5	12.2	106	106	0
1,2-Dichloroethane-d4	↓	12.4	108	108	↓
Toluene-d8		11.5	100	100	
Bromofluorobenzene		11.6	100	102	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 42438J

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 8/9

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	5.00	5.00	ND	2.795	1.629	56	56	33	33	53	53
Trichloroethene	V	V	V	4.863	4.489	97	97	90	90	8	8
Benzene											
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613B1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration; SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 280-417198/4

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	5.615	NA	112	112				
Trichloroethene	↓	↓	5.111	↓	102	102				
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 26138

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: A
2nd reviewer: KK

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 2 , H :

Conc. = $\frac{(22988)(12.5)(1)}{(201941)(0.3149)(\quad)(\quad)}$

= 0.452 µg/L

#	Sample ID	Compound	Reported Concentration (µg/L)	Calculated Concentration ( )	Qualification
	2	H	0.452		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-110112-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-18-SA1	280-110112-2	Water	05/23/18
16-MW-08-SA1	280-110112-3	Water	05/23/18
A1-MW-19-SA1	280-110112-4	Water	05/23/18
A1-MW-37-SA1	280-110112-6	Water	05/23/18
16-HS-03-SA1	280-110112-7	Water	05/23/18
A1-MW-18-SA1MS	280-110112-2MS	Water	05/23/18
A1-MW-18-SA1MSD	280-110112-2MSD	Water	05/23/18
A1-MW-18-SA1DUP	280-110112-2DUP	Water	05/23/18
16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18
16-HS-03-SA1DUP	280-110112-7DUP	Water	05/23/18
16-HS-03-SA1DLMS	280-110112-7DLMS	Water	05/23/18
16-HS-03-SA1DLMSD	280-110112-7DLMSD	Water	05/23/18
16-HS-03-SA1DLDUP	280-110112-7DLDUP	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 16-HS-03-SA1	pH	8 days	24 hours	J (all detects)	P
A1-MW-18-SA1	Ferrous Iron	26.85 hours	24 hours	J (all detects)	P

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	Sulfate	88 (87-112)	86 (87-112)	J (all detects)	A
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	Ferrous Iron	1 (85-113)	0 (85-113)	R (all non-detects)	A

For A1-MW-18-SA1MS/MSD, no data were qualified for Chloride and Sulfate percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All sample result verifications were acceptable.

All analytes reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-37-SA1	All analytes reported below the LOQ.	J (all detects)	A

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to MS/MSD %R, data were rejected in one sample.

Due to technical holding time, MS/MSD %R, and results below the LOQ, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Wet Chemistry - Data Qualification Summary - SDG 280-110112-1

Sample	Analyte	Flag	A or P	Reason
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 16-HS-03-SA1	pH	J (all detects)	P	Technical holding times
A1-MW-18-SA1	Ferrous Iron	J (all detects)	P	Technical holding times
16-HS-03-SA1	Sulfate	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
16-HS-03-SA1	Ferrous Iron	R (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-37-SA1	All analytes reported below the LOQ.	J (all detects)	A	Sample result verification

MCAS Yuma, CTO 17F3803
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Wet Chemistry - Field Blank Data Qualification Summary - SDG 280-110112-1

No Sample Data Qualified in this SDG

LDC #: 42613B6
SDG #: 280-110112-1
Laboratory: Test America, Inc.

VALIDATION COMPLETENESS WORKSHEET
Statge 4

Date: 7/18/18
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: KK

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B) pH (EPA SW846 Method (9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW	~~10/11~~: Cl, SO_4: 7/8 >4x
VII.	Duplicate sample analysis	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	~~(4,5)~~ a
X.	Sample result verification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA1	280-110112-2	Water	05/23/18
2	16-MW-08-SA1	280-110112-3	Water	05/23/18
3	A1-MW-19-SA1	280-110112-4	Water	05/23/18
~~4~~	~~A1-MW-37-SA1D~~	~~280-110112-5~~	~~Water~~	~~05/23/18~~ 02
5	A1-MW-37-SA1	280-110112-6	Water	05/23/18
6	16-HS-03-SA1	280-110112-7	Water	05/23/18
7	A1-MW-18-SA1MS	280-110112-2MS	Water	05/23/18
8	A1-MW-18-SA1MSD	280-110112-2MSD	Water	05/23/18
9	A1-MW-18-SA1DUP	280-110112-2DUP	Water	05/23/18
10	16-HS-03-SA1MS	280-110112-7MS	Water	05/23/18
11	16-HS-03-SA1MSD	280-110112-7MSD	Water	05/23/18
12	16-HS-03-SA1DUP	280-110112-7DUP	Water	05/23/18
13	#6 DL MS			
14	↓ MSD			
15	↓ DUP			

Notes:

LDC #: 47961386

VALIDATION FINDINGS CHECKLIST

Reviewer: 01
2nd Reviewer: KK

Method: Inorganics (EPA Method Sel cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.		✓		
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓	✓	
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

LDC #: 4296B86

VALIDATION FINDINGS CHECKLIST

Reviewer: 02
2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 42653B6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: CR
2nd reviewer: KK

All circled methods are applicable to each sample.

Sample ID	Parameter
1-3,5,6	(pH) TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
QC: 7,8	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
9	pH TDS (Cl) F NO3 NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
10,11	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
12	pH TDS (Cl) F (NO3) NO2 (SO4) O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4 (Fe2+)
13,14	pH TDS (Cl) F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
15	pH TDS (Cl) F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4
	pH TDS Cl F NO3 NO2 SO4 O-PO4 Alk CN NH3 TKN TOC Cr6+ ClO4

Comments:

LDC #: 42613B6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: CA
2nd reviewer: KK

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method ?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	9040C				SM 3500 FE B		
Parameters:	pH				Ferrous Iron		
Technical holding time:	~~48 HRS~~ 24 hrs				24 hrs		
Sample ID	Sampling date	Analysis date	Time ~~Exceeded~~	Qualifier	Analysis date	Time Exceeded	Qualifier
All (Det)	5/23/18	5/31/18	8days	J/UJ/P			
1 (Det)	5/23/18				5/24/18	26.85 hrs	J/UJ/P
	(09:00)				(11:51)		

HTTETRA.wpd

LDC #: 42613B6

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Reviewer:
2nd Reviewer: KK

METHOD: Inorganics, EPA Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤35% for soil samples?

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
	10/11		SO_4	88(87-112)	86		6	J/UJ/A (Det)
			~~Ferrous Fe~~	1(85-113)	0		6	J/R/A (MD)
			Ferrous Iron					

Comments: 7/8: Cl, SO_4 74X

LDC #: 42623B6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: G
2nd Reviewer: KK

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of Cl was recalculated. Calibration date: 3/21/18

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found X 100 / True Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	Cl	s1	1.0	16911296	*1.000*	*1.000*	Y
		s2	2.5	43759132			
		s3	5	85841374			
		s4	60	1053445301			
		s5	120	2068634717			
		s6	200	3433898767			
Calibration verification	NO_3N	ICV	4	3.93	98	98	
Calibration verification	SO_4	CCV	100	102.1	102	102	
Calibration verification	Fe^{2+}	CCV	1.0	10686	107	107	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613B6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer: OR
2nd Reviewer: KK

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	Ferrous Iron	2.2416	2.00	112	112	Y
10	Matrix spike sample	NO3N	(SSR-SR) 10.0	10	100	100	
12	Duplicate sample	SO4	42.4	38.4	10	10	

Comments: _____

LDC #: 42613 B6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: CR
2nd reviewer: KK

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments?
Y N N/A Are all detection limits below the CRQL?

Compound (analyte) results for Cl reported with a positive detect were recalculated and verified using the following equation:

Concentration = $y = 1655360x - 440112$

Recalculation: $\frac{1079969301 + 440112}{1655360} \times 50 = 3263.3 mg/L$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	1	pH (SU)	7.7	7.7	Y
	2	Ferrous Iron	0.0403	0.0403	↓
	3	Cl	3260	3260	↓
	5	NO_3N	7.26	7.26	↓
	6	SO_4	2120	2120	✓

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1818881

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-51-SA1	L1818881-01	Water	05/22/18
A1-MW-50-SA1	L1818881-02	Water	05/22/18
A1-MW-49-SA1	L1818881-03	Water	05/22/18
A1-MW-05-SA1	L1818881-04	Water	05/22/18
A1-MW-04-SA1	L1818881-05	Water	05/22/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

The chain-of-custodies were reviewed for documentation of cooler temperatures. Cooler temperatures for all samples were reported at 7.9°C upon receipt by the laboratory. No data was qualified based on the cooler temperature.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1818881

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1818881

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1818881

No Sample Data Qualified in this SDG

LDC #: 42613F2b

SDG #: L1818881

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer:

2nd Reviewer: KW

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	Temp @ 7.9°C
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration / 2nd Col	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	⊂
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-51-SA1	L1818881-01	Water	05/22/18
2	A1-MW-50-SA1	L1818881-02	Water	05/22/18
3	A1-MW-49-SA1	L1818881-03	Water	05/22/18
4	A1-MW-05-SA1	L1818881-04	Water	05/22/18
5	A1-MW-04-SA1	L1818881-05	Water	05/22/18
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 16, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 4

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1819087

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-18-SA	L1819087-01	Water	05/23/18
16-MW-08-SA1	L1819087-02	Water	05/23/18
A1-MW-19-SA1	L1819087-03	Water	05/23/18
A1-MW-37-SA1	L1819087-04	Water	05/23/18
A1-MW-37-SA1D	L1819087-05	Water	05/23/18
16-HS-03-SA1	L1819087-06	Water	05/23/18
16-HS-03-SA1MS	L1819087-06MS	Water	05/23/18
16-HS-03-SA1MSD	L1819087-06MSD	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-37-SA1 and A1-MW-37-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/L)				
Compound	A1-MW-37-SA1	A1-MW-37-SA1D	RPD (Limits)	Flag	A or P
1,4-Dioxane	7780	7500	4 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations were within validation criteria.

XIII. Target Compound Identifications

All target compound identifications were within validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1819087

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1819087

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1819087

No Sample Data Qualified in this SDG

LDC #: 42613G2b **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: L1819087 Stage 4 Page: 1 of 1
Laboratory: Alpha Analytical, Inc. Reviewer: Q
2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD≤ 15%. ICV≤ 20%
IV.	Continuing calibration / Endrin	A	CCV≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D=4+5
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA	L1819087-01	Water	05/23/18
2	16-MW-08-SA1	L1819087-02	Water	05/23/18
3	A1-MW-19-SA1	L1819087-03	Water	05/23/18
4	A1-MW-37-SA1	L1819087-04	Water	05/23/18
5	A1-MW-37-SA1D	L1819087-05	Water	05/23/18
6	16-HS-03-SA1	L1819087-06	Water	05/23/18
7	16-HS-03-SA1MS	L1819087-06MS	Water	05/23/18
8	16-HS-03-SA1MSD	L1819087-06MSD	Water	05/23/18
9				

Notes:

LDC #: 42613F26

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: Semivolatiles (EPA SW 846 Method 8270C-SIM)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check (Not required)				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 15% and relative response factors (RRF) ≥ 0.05?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes				
Were all surrogate percent differences (%R) within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 42613B6

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: MK

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

VALIDATION FINDINGS WORKSHEET

METHOD: GC/MS SVOA

A. Phenol	AA. 2-Chloronaphthalene	AAA. Butylbenzylphthalate	AAAA. Dibenzothiophene	A1.
B. Bis (2-chloroethyl) ether	BB. 2-Nitroaniline	BBB. 3,3'-Dichlorobenzidine	BBBB. Benzo(a)fluoranthene	B1.
C. 2-Chlorophenol	CC. Dimethylphthalate	CCC. Benzo(a)anthracene	CCCC. Benzo(b)fluorene	C1.
D. 1,3-Dichlorobenzene	DD. Acenaphthylene	DDD. Chrysene	DDDD. cis/trans-Decalin	D1.
E. 1,4-Dichlorobenzene	EE. 2,6-Dinitrotoluene	EEE. Bis(2-ethylhexyl)phthalate	EEEE. Biphenyl	E1.
F. 1,2-Dichlorobenzene	FF. 3-Nitroaniline	FFF. Di-n-octylphthalate	FFFF. Retene	F1.
G. 2-Methylphenol	GG. Acenaphthene	GGG. Benzo(b)fluoranthene	GGGG. C30-Hopane	G1.
H. 2,2'-Oxybis(1-chloropropane)	HH. 2,4-Dinitrophenol	HHH. Benzo(k)fluoranthene	HHHH. 1-Methylphenanthrene	H1.
I. 4-Methylphenol	II. 4-Nitrophenol	III. Benzo(a)pyrene	IIII. 1,4-Dioxane	I1.
J. N-Nitroso-di-n-propylamine	JJ. Dibenzofuran	JJJ. Indeno(1,2,3-cd)pyrene	JJJJ. Acetophenone	J1.
K. Hexachloroethane	KK. 2,4-Dinitrotoluene	KKK. Dibenz(a,h)anthracene	KKKK. Atrazine	K1.
L. Nitrobenzene	LL. Diethylphthalate	LLL. Benzo(g,h,i)perylene	LLLL. Benzaldehyde	L1.
M. Isophorone	MM. 4-Chlorophenyl-phenyl ether	MMM. Bis(2-Chloroisopropyl)ether	MMMM. Caprolactam	M1.
N. 2-Nitrophenol	NN. Fluorene	NNN. Aniline	NNNN. 2,6-Dichlorophenol	N1.
O. 2,4-Dimethylphenol	OO. 4-Nitroaniline	OOO. N-Nitrosodimethylamine	OOOO. 1,2-Diphenylhydrazine	O1.
P. Bis(2-chloroethoxy)methane	PP. 4,6-Dinitro-2-methylphenol	PPP. Benzoic Acid	PPPP. 3-Methylphenol	P1.
Q. 2,4-Dichlorophenol	QQ. N-Nitrosodiphenylamine	QQQ. Benzyl alcohol	QQQQ. 3&4-Methylphenol	Q1.
R. 1,2,4-Trichlorobenzene	RR. 4-Bromophenyl-phenylether	RRR. Pyridine	RRRR. 4-Dimethyldibenzothiophene (4MDT)	R1.
S. Naphthalene	SS. Hexachlorobenzene	SSS. Benzidine	SSSS. 2/3-Dimethyldibenzothiophene (4MDT)	S1.
T. 4-Chloroaniline	TT. Pentachlorophenol	TTT. 1-Methylnaphthalene	TTTT. 1-Methyldibenzothiophene (1MDT)	T1.
U. Hexachlorobutadiene	UU. Phenanthrene	UUU.Benzo(b)thiophene	UUUU.	U1.
V. 4-Chloro-3-methylphenol	VV. Anthracene	VVV.Benzonaphthothiophene	VVVV.	V1.
W. 2-Methylnaphthalene	WW. Carbazole	WWW.Benzo(e)pyrene	WWWW.	W1.
X. Hexachlorocyclopentadiene	XX. Di-n-butylphthalate	XXX. 2,6-Dimethylnaphthalene	XXXX.	X1.
Y. 2,4,6-Trichlorophenol	YY. Fluoranthene	YYY. 2,3,5-Trimethylnaphthalene	YYYY.	Y1.
Z. 2,4,5-Trichlorophenol	ZZ. Pyrene	ZZZ. Perylene	ZZZZ.	Z1.

LDC#: 42613G2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GCMS SVOA 8270D-SIM

Compound	Concentration (ng/L)		(≤30) RPD	Qual
	4	5		
1,4-Dioxane	7780	7500	4	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613G2b.wpd

LDC #: [illegible]

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: Q
2nd Reviewer: KK

METHOD: GC/MS BNA (EPA SW 846 Method 8270C-SIM)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

A_x = Area of compound,
C_x = Concentration of compound,
S = Standard deviation of the RRFs,

A_{is} = Area of associated internal standard
C_{is} = Concentration of internal standard
X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Reported RRF (500 std)	Recalculated RRF (500 std)	Reported Average RRF (initial)	Recalculated Average RRF (initial)	Reported %RSD	Recalculated %RSD
1	ICAL	5/29/18	IIII (1st internal standard)	1.618	1.618	1.686	1.686	7.57	7.57
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Phenanthrene (4th internal standard)						
			Chrysene (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
2	ICAL	6/1/18	IIII (1st internal standard)	1.471	1.471	1.437	1.437	4.02	4.02
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Phenanthrene (4th internal standard)						
			Chrysene (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						
3			(1st internal standard)						
			Naphthalene (2nd internal standard)						
			Fluorene (3rd internal standard)						
			Phenanthrene (4th internal standard)						
			Chrysene (5th internal standard)						
			Benzo(a)pyrene (6th internal standard)						

Comments: Refer to Initial Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: ~~46613~~6

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: A
2nd Reviewer: KK

METHOD: GC/MS BNA (EPA SW 846 Method 8270C-SIM)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	F6060118 02	6/1/18	1111 (1st internal standard)	1.686	1.767	1.767	4.8	4.8
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Phenanthrene (4th internal standard)					
			Chrysene (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
2	F1606058 07	6/5/18	1111 (1st internal standard)	1.437	1.538	1.538	7	7
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Phenanthrene (4th internal standard)					
			Chrysene (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					
3	~~F~~		(1st internal standard)					
			Naphthalene (2nd internal standard)					
			Fluorene (3rd internal standard)					
			Phenanthrene (4th internal standard)					
			Chrysene (5th internal standard)					
			Benzo(a)pyrene (6th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42436-b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: KK

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					
1,4-Dioxane-d8	500	98.32	20	20	0

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID: _____

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

LDC #: 36154-D

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: GC/MS (EPA SW 846 Method 8270C-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 7/8

Compound	Spike Added (NS/L)		Sample Concentration (NS/L)	Spiked Sample Concentration (NS/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Acenaphthene											
Pyrene											
1,4-Dioxane	5100	5100	3270	8340	8660	99	99	106	106	4	4

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: [illegible]
2nd Reviewer: KK

METHOD: GC/MS Semivolatiles (EPA SW 846 Method 8270C-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA)

Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: NG1120650-2/-3

Compound	Spike Added (ug/L)		Spike Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Acenaphthene										
Pyrene										
1,4-Dioxane	5000	5000	5640	5660	113	113	113	113	0	0

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 42613-26

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: Q
2nd reviewer: KK

METHOD: GC/MS PAHs (EPA SW 846 Method 8270D-SIM)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 1,4-Dioxane

Conc. = $\frac{(2376)(500)(5)(1)(\quad)}{(5587)(1.686)(0.5)(\quad)(\quad)}$

= 1261.1 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	1	1,4-Dioxane	1260		

LDC Report# 42613H2b

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1819352

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-13-SA1	L1819352-01	Water	05/24/18
A1-MW-11-SA1	L1819352-02	Water	05/24/18
A1-MW-14-SA1	L1819352-03	Water	05/24/18
A1-MW-15-SA1	L1819352-04	Water	05/24/18
A1-MW-25-SA1	L1819352-07	Water	05/24/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1819352

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1819352

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1819352

No Sample Data Qualified in this SDG

LDC #: 42613H2b

SDG #: L1819352

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer:

2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCSB
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-13-SA1	L1819352-01	Water	05/24/18
2	A1-MW-11-SA1	L1819352-02	Water	05/24/18
3	A1-MW-14-SA1	L1819352-03	Water	05/24/18
4	A1-MW-15-SA1	L1819352-04	Water	05/24/18
5	A1-MW-25-SA1	L1819352-07	Water	05/24/18
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1819562

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-42-SA1	L1819562-01	Water	05/25/18
A1-MW-54-SA1	L1819562-02	Water	05/25/18
A1-MW-53-SA1	L1819562-03	Water	05/25/18
A1-PZ-19-SA1	L1819562-04	Water	05/25/18
A1-MW-52-SA1	L1819562-05	Water	05/25/18
A1-MW-01-SA1	L1819562-06	Water	05/25/18
A1-MW-01-SA1D	L1819562-07	Water	05/25/18
A1-MW-31-SA1	L1819562-08	Water	05/25/18
A1-MW-53-SA1MS	L1819562-03MS	Water	05/25/18
A1-MW-53-SA1MSD	L1819562-03MSD	Water	05/25/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-01-SA1 and A1-MW-01-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ug/L)				
Compound	A1-MW-01-SA1	A1-MW-01-SA1D	RPD (Limits)	Flag	A or P
1,4-Dioxane	1840	1880	2 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1819562

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1819562

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1819562

No Sample Data Qualified in this SDG

LDC #: 42613I2b

SDG #: L1819562

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer:

2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D = 6+7
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-42-SA1	L1819562-01	Water	05/25/18
2	A1-MW-54-SA1	L1819562-02	Water	05/25/18
3	A1-MW-53-SA1	L1819562-03	Water	05/25/18
4	A1-PZ-19-SA1	L1819562-04	Water	05/25/18
5	A1-MW-52-SA1	L1819562-05	Water	05/25/18
6	A1-MW-01-SA1	L1819562-06	Water	05/25/18
7	A1-MW-01-SA1D	L1819562-07	Water	05/25/18
8	A1-MW-31-SA1	L1819562-08	Water	05/25/18
9	A1-MW-53-SA1MS	L1819562-03MS	Water	05/25/18
10	A1-MW-53-SA1MSD	L1819562-03MSD	Water	05/25/18
11				
12				
13				

LDC#: 42613I2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: Q
2nd Reviewer: KK

METHOD: GCMS SVOA 8270D-SIM

Compound	Concentration (ng/L)		(≤30) RPD	Qual
	6	7		
1,4-Dioxane	1840	1880	2	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\42613I2b.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1820050

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-27-SA1	L1820050-01	Water	05/30/18
A1-MW-55-SA1	L1820050-02	Water	05/30/18
A1-MW-23-SA1	L1820050-03	Water	05/30/18
A1-MW-07-SA1	L1820050-04	Water	05/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compounds reported below the reporting limit (RL) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-23-SA1	All compounds reported below the RL.	J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results below the RL, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1820050

Sample	Compound	Flag	A or P	Reason
A1-MW-23-SA1	All compounds reported below the RL.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1820050

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1820050

No Sample Data Qualified in this SDG

LDC #: 42613J2b

SDG #: L1820050

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/12/18

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: KK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤15%. ICV≤20%
IV.	Continuing calibration	A	CCV≤20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	N	
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-27-SA1	L1820050-01	Water	05/30/18
2	A1-MW-55-SA1	L1820050-02	Water	05/30/18
3	A1-MW-23-SA1	L1820050-03	Water	05/30/18
4	A1-MW-07-SA1	L1820050-04	Water	05/30/18
5				
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 19, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1820175

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
EB-20180531	L1820175-01	Water	05/31/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB-20180531 was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1820175

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1820175

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1820175

No Sample Data Qualified in this SDG

LDC #: 42613K2b

SDG #: L1820175

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 7/13/18

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: RK

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB=1
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/6
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	EB-20180531	L1820175-01	Water	05/31/18
2				
3				
4				
5				
6				
7				
8				

Notes:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: July 16, 2018

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1801037

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-18-SA1	1801037-01	Water	05/23/18
16-MW-08-SA1	1801037-02	Water	05/23/18
A1-MW-19-SA1	1801037-03	Water	05/23/18
A1-MW-37-SA1	1801037-04	Water	05/23/18
A1-MW-37-SA1D	1801037-05	Water	05/23/18
16-HS-03-SA1	1801037-06	Water	05/23/18
16-MW-09-SA1	1801037-07	Water	05/23/18
16-MW-06-SA1	1801037-08	Water	05/23/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluorinated Alkyl Acids by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked as applicable.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, the percent relative standard deviations (%RSD) were less than or equal to 20.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration point, the percent differences (%D) for their true value were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample FRB-20180523 was identified as a field rinsate blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	PFHpA PFHxS PFOA	140 (70-130) 146 (70-130) 131 (70-130)	- - -	J (all detects) J (all detects) J (all detects)	A
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	PFDA PFDoA PFTrDA	132 (70-130) 136 (70-130) 136 (70-130)	- - 133 (70-130)	NA	-

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	PFHpA	49.6 (≤30)	J (all detects)	A
16-HS-03-SA1MS/MSD (16-HS-03-SA1)	NMeFOSAA	41.1 (≤30)	NA	-

For 16-HS-03-SA1MS/MSD, no data were qualified for PFBS and PFHxA percent recoveries (%R) and relative percent differences (RPD) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

VIII. Ongoing Precision Recovery

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

OPR ID (Associated Samples)	Compound	%R (Limits)	Flag	A or P
B8E0244-BS1 (All samples in SDG 1801037)	PFTrDA	153 (70-130)	NA	-

IX. Field Duplicates

Samples A1-MW-37-SA1 and A1-MW-37-SA1D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	A1-MW-37-SA1	A1-MW-37-SA1D			
PFBS	0.230	0.252	9 (≤30)	-	-
PFHxA	1.66	1.71	3 (≤30)	-	-
PFHpA	0.0328	0.0322	Not calculable	-	-
PFHxS	0.155	0.152	2 (≤30)	-	-
PFOA	0.0196	0.0203	Not calculable	-	-
PFNA	0.00170	0.00210	Not calculable	-	-
PFOS	0.0458	0.0416	Not calculable	-	-
PFUnA	0.00525U	0.00135	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

X. Internal Standards

All internal standard areas and retention times were within QC limits with the following exceptions:

Sample	Internal Standards	Area (Limits)	Affected Compound	Flag	A or P
A1-MW-18-SA1	^{13}C3-PFBS	170 (50-150)	PFBS	J (all detects)	P
16-MW-08-SA1	^{13}C3-PFBS	187 (50-150)	PFBS	J (all detects)	P
A1-MW-19-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P
A1-MW-37-SA1	^{13}C3-PFBS	228 (50-150)	PFBS	J (all detects)	P
A1-MW-37-SA1D	^{13}C3-PFBS	161 (50-150)	PFBS	J (all detects)	P
16-HS-03-SA1	^{13}C3-PFBS	154 (50-150)	PFBS	J (all detects)	P
16-MW-09-SA1	^{13}C3-PFBS	153 (50-150)	PFBS	J (all detects)	P
16-MW-06-SA1	^{13}C3-PFBS	214 (50-150)	PFBS	J (all detects)	P

XI. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D 16-MW-09-SA1 16-MW-06-SA1	All compounds reported below the LOQ.	J (all detects)	A

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and RPD, internal standard %R, and results below the LOQ, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1801037

Sample	Compound	Flag	A or P	Reason
16-HS-03-SA1	PFHpA PFHxS PFOA	J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
16-HS-03-SA1	PFHpA	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D 16-HS-03-SA1 16-MW-09-SA1 16-MW-06-SA1	PFBS	J (all detects)	P	Internal standards (%R)
A1-MW-18-SA1 16-MW-08-SA1 A1-MW-19-SA1 A1-MW-37-SA1 A1-MW-37-SA1D 16-MW-09-SA1 16-MW-06-SA1	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1801037

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1801037

No Sample Data Qualified in this SDG

LDC #: 42613M96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/13/18
SDG #: 1801037 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: [illegible]
2nd Reviewer: IKK

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537 Modified)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A A	RSD ≤ 20% or r^2 True value/ICV ≤ 30%
IV.	Continuing calibration	A	CCV ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	FRB = 9
~~VII.~~	~~Surrogate spikes~~	N	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	SW	OPR
X.	Field duplicates	SW	D = 1-5
XI.	Internal standards	SW	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-18-SA1**	1801037-01**	Water	05/23/18
2	16-MW-08-SA1**	1801037-02**	Water	05/23/18
3	A1-MW-19-SA1**	1801037-03**	Water	05/23/18
4	A1-MW-37-SA1**	1801037-04**	Water	05/23/18
5	A1-MW-37-SA1D**	1801037-05**	Water	05/23/18
6	16-HS-03-SA1**	1801037-06**	Water	05/23/18
7	16-MW-09-SA1**	1801037-07**	Water	05/23/18
8	16-MW-06-SA1**	1801037-08**	Water	05/23/18
9	FRB-20180523	1801037-09	Water	05/23/18
10	16-HS-03-SA1MS	1801037-06MS	Water	05/23/18
11	16-HS-03-SA1MSD	1801037-06MSD	Water	05/23/18
12				
13				
14				

LDC #: 42613496

VALIDATION FINDINGS CHECKLIST

Reviewer: Q
2nd Reviewer: WC

Method: LC/MS PFOS/PFOAs (EPA Method 537M)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
Were the S/N ratio for all compounds within validation criteria?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
IIIb.Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 30%	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) ≤ 30%	✓			
Were the S/N ratio for all compounds within validation criteria?	✓			
Were all the retention times within the acceptance windows?	✓			
V. Laboratory Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was a method blank analyzed for each matrix and concentration?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Field blanks were identified in this SDG.	✓			
Target compounds were detected in the field blanks.		✓		
VII. Surrogate spikes				
Were all surrogate %R within the QC limits?			✓	
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Matrix spike/Matrix spike duplicates				

LDC #: 42613M96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: KK

Validation Area	Yes	No	NA	Findings/Comments
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IV. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
X. Field duplicates				
Field duplicate pairs were identified in this SDG.	✓			
Target compounds were detected in the field duplicates.	✓			
XI. Internal standards				
Were internal standard area counts within acceptance limits?	✓			
XII. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XIII. Compound quantitation/CRQLs				
Were compound quantitation and CRQLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 6:2FTS			
S. 8:2 FTS			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			

LDC #: 42613M96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates/Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?
Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?
Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?
Y N N/A Were all duplicate sample relative percent differences (RPD) or differences within QC limits?

#	Date	MS/MSD/DUP ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		10/11	PFBS	182 (70-130)		45.9 (≤30)	6 (dets)	No Qual >4xSA
			PFHxA	-21.0 (↓)		32.9 (↓)	↓	↓
			PFHpA	140 (70-130)			↓	dets/A
			PFHxS	146 (↓)			↓	↓
			PFOA	131 (↓)			↓	↓
			PFDA	132 (↓)			(ND)	↓
			PFDoA	136 (↓)			↓	↓
			PFTxDA	136 (↓)	133 (70-130)		↓	↓
			PFHpA			49.6 (≤30)	(dets)	dets/A
			MeFOSAA			41.1 (↓)	(ND)	↓

LDC #: 42623M96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Was a LCS required?

Y (N) N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	BBE0244-BS1		( )	( )	( )		
	B		( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
	BBE0244-BS1	PFTeDA	153 (70-130)	( )	( )	All (ND)	J+ (all samples)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )	

LDC#: 42613M96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: KK

METHOD: PFCs

Compound	Concentration (ug/L)		(≤30) RPD	Qual
	4	5		
PFBS	0.230	0.252	9	
PFHxA	1.66	1.71	3	
PFHpA	0.0328	0.0322	~~2~~ NC	
PFHxS	0.155	0.152	2	
PFOA	0.0196	0.0203	~~4~~ NC	
PFNA	0.00170	0.00210	~~21~~ NC	
PFOS	0.0458	0.0416	~~10~~ NC	
PFUnA	0.00525U	0.00135	NC	

LDC #: 4-163496

VALIDATION FINDINGS WORKSHEET
Internal Standards

Page: 1 of 1
Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFCs

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N) N/A Were all internal standard area counts within 50-150% limits?

(Y) N N/A Were the retention times of the internal standards within +/- 30 seconds of the retention times of the associated calibration standard?

#	Date	Sample ID	Internal Standard	Area (Limits)	RT (Limits)	Qualifications
		1 (dets)	13C3-PFBS	170 (50-150)		J (4 PFBS)
		2		187		
		3		214		
		4		228		
		5		161		
		6		154		
		7		153		
		8		214		
		10 (MS)		167		No qual
		11 (MSD)		165		

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LDC #: 46634 96

Validation Findings Worksheet
Initial Calibration Calculation Verification

Reviewer: 9
2nd Reviewer: KK

Method: PFCs (EPA Method 537)

Calibration Date	Instrument/Column	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
6/6/2018	M2	PFBS	0	0.51953	0.25	0.0625
			s1	0.9040925	0.5	0.25
			s2	1.9572675	1	1
			s3	3.7049862	2	4
			s4	10.06541	5	25
			s5	19.886856	10	100
			s6	99.722347	50	2500
			s7	204.60758	100	10000
			s8	513.09516	250	62500
			s9	1017.3084	500	250000

Regression Output	Calculated		*Reported*	
Constant	c	-0.63805	c	-0.0700934
Std Err of Y Est				
R Squared		0.9999897		0.9999340
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	2.063159148	-5.34413E-05	2.03725	2.30679E-06
Std Err of Coef.				
Correlation Coefficient		0.999995		
Coefficient of Determination (r^2)		0.999990		

Validation Findings Worksheet
Initial Calibration Calculation Verification

Method: PFCs (EPA Method 537)

Calibration Date	Instrument/Column	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
6/6/2018	M2	PFOA	0	0.2482712	0.25	0.0625
			s1	0.5747737	0.5	0.25
			s2	1.0592625	1	1
			s3	1.846235	2	4
			s4	4.6900387	5	25
			s5	10.243193	10	100
			s6	51.521462	50	2500
			s7	93.85144027	100	10000
			s8	228.044994	250	62500
			s9	451.7265496	500	250000

Regression Output	Calculated		*Reported*	
Constant	c	0.76340	c	0.0441882
Std Err of Y Est				
R Squared		0.9998726		0.9994240
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	0.931889278	-6.1517E-05	0.964706	-0.000132122
Std Err of Coef.				
Correlation Coefficient		0.999936		
Coefficient of Determination (r^2)		0.999873		

Validation Findings Worksheet
Initial Calibration Calculation Verification

Method: PFCs (EPA Method 537)

Calibration Date	Instrument/Column	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
6/13/2018	M2	PFHxA	0	0.4266035	0.25	0.0625
			s1	0.97093	0.5	0.25
			s2	1.9639255	1	1
			s3	3.6634565	2	4
			s4	8.4481905	5	25
			s5	15.881127	10	100
			s6	85.352945	50	2500
			s7	154.4073192	100	10000
			s8	412.8312447	250	62500
			s9	789.7483287	500	250000

Regression Output	Calculated		*Reported*	
Constant	c	-0.57068	c	0.0713566
Std Err of Y Est				
R Squared		0.9997320		0.9993330
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.676648676	-0.000187679	1.64736	-0.000124659
Std Err of Coef.				
Correlation Coefficient		0.999866		
Coefficient of Determination (r^2)		0.999732		

LDC #: 26BU96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 1
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	18060TM2_3	6/7/18	PFBS (1st internal standard)	1.0	0.913	0.911	8.7	8.9
			PFOA (2nd internal standard)	1.0	1.05	1.06	5.4	5.8
			(3rd internalstandard)					
2	18060TM2_28	6/7/18	PFBS (1st internal standard)	10.0	9.27	9.27	7.3	7.3
			PFOA (2nd internal standard)	10.0	9.52	9.53	4.8	4.7
			(3rd internalstandard)					
3	18060TM2_45	6/7/18	PFBS (1st internal standard)	1.0	0.885	0.884	11.5	11.8
			PFOA (2nd internal standard)	1.0	1.10	1.10	9.8	10.1
			(3rd internalstandard)					
4	18061TM2_40	6/13/18	PFHxA (1st internal standard)	10.0	10.4	10.4	4.2	4.5
			(2nd internal standard)					
			(3rd internalstandard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

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LDC #: 4963M90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: 9
2nd Reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MSC - MSC | * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 10/11

Compound	Spike Added (ng/L)		Sample Concentration (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
PFBS	0.0907	0.0883	0.582	0.746	0.682	182	181	114	113	~~45.9~~	45.9
PFOA	↓	↓	0.0218	0.141	0.113	131	131	103	103	23.9	23.9

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

Privileged and Confidential

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BBE0244-BS1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFBS	0.0800	NA	0.0918	NA	115	115				
PFOA	↓	↓	0.0941	↓	118	118				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

Privileged and Confidential

LDC #: 426BH96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: [illegible]
2nd reviewer: KK

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, PFOA:

Conc. = $\frac{-0.964706 + \sqrt{(0.964706)^2 - 4 \times (-0.00013212)\left(\frac{-180 \times 12^5}{9070} + 0.0448\right)}}{(2)(-0.00013212)(2)(0.113)}$

= 1.87 ng/L

= 0.00187 µg/L

#	Sample ID	Compound	Reported Concentration (µg/L)	Calculated Concentration ( )	Qualification
	1	PFOA	0.00187		

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614
ATTN: Ms. Sabina Sudoko

January 2, 2019

SUBJECT: MCAS Yuma, CTO 3803, Data Validation

Dear Ms. Sudoko,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on December 10, 2018. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #43888:

SDG #	Fraction
280-116898-1, 280-116942-1 280-117007-1, 280-117103-1 280-117110-1, L1846366 L1846592, L1846856 L1847243, L1847316 1803615, 1803626 1803659, 1803676 1803678	Volatiles, 1,4-Dioxane, Wet Chemistry, Perfluoroalkyl and Polyfluoroalkyl Substances

The data validation was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona; April 2018
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1; 2017
- USEPA National Functional Guidelines for Superfund Organic Methods Data Review; January 2017
- USEPA National Functional Guidelines for Inorganic Superfund Data Review; January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Shauna McKellar
Project Manager/Chemist

Stage 2B/4 ADR/NEDD 80/20

LDC #43888 (Tetra Tech-EC, Inc.-Irvine, CA / MCAS Yuma, CTO 3803)

PO# 1153059

LDC	SDG#	DATE REC'D	(3) DATE DUE	(3) VOA (8260B)		1,4-Diox (8270D -SIM)		PFAs (537)		Cl,SO_4 NO_3-N (9056A)		Fe II (3500 -Fe B)		pH (9040C)																							
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	280-116898-1	12/10/18	01/02/19	1	0	-	-	-	-	1	0	1	0	1	0																				
A	280-116898-1	12/10/18	01/02/19	8	0	-	-	-	-	6	0	6	0	6	0																				
B	280-116942-1	12/10/18	01/02/19	9	0	-	-	-	-	7	0	7	0	7	0																				
C	280-117007-1	12/10/18	01/02/19	7	0	-	-	-	-	6	0	6	0	6	0																				
D	280-117103-1	12/10/18	01/02/19	8	0	-	-	-	-	6	0	6	0	6	0																				
E	280-117110-1	12/10/18	01/02/19	4	0	-	-	-	-	2	0	2	0	2	0																				
F	L1846366	12/10/18	01/02/19	-	-	1	0	-	-	-	-	-	-	-	-																				
F	L1846366	12/10/18	01/02/19	-	-	7	0	-	-	-	-	-	-	-	-																				
G	L1846592	12/10/18	01/02/19	-	-	8	0	-	-	-	-	-	-	-	-																				
H	L1846856	12/10/18	01/02/19	-	-	6	0	-	-	-	-	-	-	-	-																				
I	L1847243	12/10/18	01/02/19	-	-	7	0	-	-	-	-	-	-	-	-																				
J	L1847316	12/10/18	01/02/19	-	-	3	0	-	-	-	-	-	-	-	-																				
K	1803615	12/10/18	01/02/19	-	-	-	-	1	0	-	-	-	-	-	-																				
K	1803615	12/10/18	01/02/19	-	-	-	-	8	0	-	-	-	-	-	-																				
L	1803626	12/10/18	01/02/19	-	-	-	-	9	0	-	-	-	-	-	-																				
M	1803659	12/10/18	01/02/19	-	-	-	-	7	0	-	-	-	-	-	-																				
N	1803676	12/10/18	01/02/19	-	-	-	-	8	0	-	-	-	-	-	-																				
O	1803678	12/10/18	01/02/19	-	-	-	-	4	0	-	-	-	-	-	-																				
Total	T/SM			37	0	32	0	37	0	28	0	28	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	190

Shaded cells indicate Stage 4 validation (all other cells are ADR validation).

Data Validation Report
MCAS Yuma, CTO 3803

SDGs: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1, L1846366, L1846592, L1846856, L1847243, L1847316, 1803615, 1803626, 1803659, 1803676, and 1803678

Prepared for

Tetra Tech EC, Inc.
17885 Von Karman Avenue, Suite 500
Irvine, CA 92614

Prepared by

Laboratory Data Consultants, Inc
2701 Loker Ave West, Suite 220
Carlsbad, CA 92010

January 2, 2019

INTRODUCTION

This Data Validation Report (DVR) presents Stage 2B and Stage 4 data validation results for samples collected during the November 2018 sampling period. Data validation was performed in accordance with the Final Sampling and Analysis Plan (SAP) for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), a modified outline of the US EPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017), and a modified outline of the US EPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance is not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B
1,4-Dioxane by EPA SW 846 Method 8270D utilizing Selective Ion Monitoring (SIM)
Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by EPA Method 537 Modified

Wet Chemistry:
Chloride, Nitrate as Nitrogen, and Sulfate by EPA SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

For samples reviewed by automated data review, the sample identification and methods of analyses performed on each sample is presented in Attachment 1. Overall data qualification summary is presented in Attachment 2. Stage 2B Automated Data Review outliers are presented in Enclosure I. DVRs for samples on which Stage 4 validation was performed are presented in Enclosure II. Validation for 1,4-Dioxane was performed manually and DVRs for Stage 2B and Stage 4 manual validation are also presented in Enclosure II.

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results for sample holding times, initial and continuing calibrations, laboratory blanks, initial and continuing calibration blanks (ICB/CCBs), surrogates, matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample/laboratory control sample duplicates (LCS/LCSD), ongoing precision recovery (OPR), internal standards, trip blanks, equipment blanks, field rinsate blanks, and field duplicates. Approximately 20 percent of samples were subjected to Stage 4 evaluation as indicated in Attachment 1, which comprises a review of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

Automated data review was performed on all QC summary results using the Automated Data Review (ADR) software program (LDC, 2013) with the exception of the calibrations, ICB/CCBs, and internal standards, and all QC for 1,4-Dioxane, which were validated manually. Quality assurance (QA)/QC criteria specified in the SAP, DoD QSM, and NFGs were incorporated with the program's reference library to assess compliance with project requirements.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detect): The compound or analyte was analyzed for and positively identified by the laboratory; however the analyte should be considered non-detect at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not applicable): Data did not warrant qualification since detected results only are affected and the compound was not detected in the associated samples.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt & Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met with the exception of eight samples for PFAs, twenty-eight samples for pH, one sample for nitrate as N, and twenty-eight samples for ferrous iron. Due to grossly exceeded holding times (e.g., >2x recommended holding time), 23 ferrous iron results were qualified as rejected (R). The remainder of the data were qualified as detected estimated (J) and non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

II. Instrument Performance Check

A tune was performed at 12 hour intervals as required by the methods.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

All criteria for the initial calibration and initial calibration verifications of each method were met.

IV. Continuing Calibration

All criteria for the continuing calibration verifications of each method were met with the following exceptions:

SDG/ Method	Date	Compound	%D (Limits)	Associated Samples	Flag	A or P
1803676/ 537 Mod.	12/03/18	PFTeDA	42.4 (≤30)	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-37-SA2 A1-MW-37-SA2D FRB-20181115 A1-MW-31-SA2	UJ (all non-detects)	A
1803678/ 537 Mod.	12/03/18	PFTeDA	42.4 (≤30)	A1-MW-01-SA2 A1-MW-42-SA2 FRB-20181116 EB-20181116	UJ (all non-detects)	A

V. Laboratory Blanks

Laboratory blanks were performed as required by the methods. No contaminant concentrations were detected in the laboratory blanks reviewed by the ADR software program with the exception of several blanks for chloride, nitrate as N, and sulfate. The associated sample results were not detected or were significantly greater than the concentrations found in the blanks, therefore no data were qualified. The details are presented in Enclosures I and II.

No contaminant concentrations were detected in the initial or continuing calibration blanks with the following exceptions:

SDG/ Method	Laboratory Blank ID	Analyte	Maximum Concentration	Associated Samples
280-116898-1/ 9056A	ICB/CCB	Nitrate as Nitrogen Sulfate	0.04526 mg/L 0.3841 mg/L	A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-51-SA2 A1-PZ-19-SA2 A1-MW-52-SA2
280-116942-1/ 9056A	ICB/CCB	Sulfate	0.6931 mg/L	16-HS-03-SA2 16-MW-06-SA2 16-MW-08-SA2 16-MW-09-SA2 A1-MW-19-SA2
280-116942-1/ 9056A	ICB/CCB	Chloride	0.3086 mg/L	16-MW-06-SA2 16-MW-08-SA2 16-MW-09-SA2 A1-MW-53-SA2
280-117007-1/ 9056A	ICB/CCB	Chloride	0.2558 mg/L	A1-MW-07-SA2 A1-MW-23-SA2 A1-MW-25-SA2 A1-MW-27-SA2 A1-MW-55-SA2
280-117007-1/ 9056A	ICB/CCB	Chloride	0.2618 mg/L	A1-MW-54-SA2
280-117103-1/ 9056A	ICB/CCB	Chloride Sulfate	0.2982 mg/L 0.4094 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-37-SA2 A1-MW-31-SA2
280-117103-1/ 9056A	ICB/CCB	Nitrate as N	0.04805 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-37-SA2
280-117103-1/ 9056A	ICB/CCB	Nitrate as N	0.04749 mg/L	A1-MW-31-SA2
280-117110-1/ 9056A	ICB/CCB	Chloride Sulfate	0.6147 mg/L 0.3987 mg/L	A1-MW-42-SA2

Sample concentrations were compared to concentrations detected in the laboratory blanks. The sample concentrations were not detected or were significantly greater than the concentrations found in the associated blanks.

VI. Field Blank Samples

Five trip blanks were collected and analyzed for VOCs. No contaminants were found.
One equipment blank was collected and analyzed for VOCs and PFAs. No contaminants were found.

Five field rinsate blanks were collected and analyzed for PFAs. No contaminants were found.

VII. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the exception of sample EB-20181116 in SDG 280-117110-1 for VOCs. No data were qualified due to high %Rs since the associated results were non-detected.

IX. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the exception of one MS/MSD pair for 1,1-dichloroethene, one MS/MSD pair for PFTeDA, one MS/MSD pair for sulfate, three MS/MSD pairs for ferrous iron. The ferrous iron results in sample A1-MW-42-SA2 was qualified as rejected (R) due to MS/MSD %Rs grossly outside QC limits (i.e., < 30%). The remainder of the associated sample results were qualified as detected estimated (J) or non-detected estimated (UJ) as applicable. The details regarding the qualification of data are provided in Enclosures I and II.

X. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

XII. Laboratory Control Samples/Ongoing Precision Recovery

Laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

Ongoing precision recovery (OPR) samples were analyzed as required by Method 537 Mod. Percent recoveries (%R) were within QC limits with the exception of two OPR samples for PFTeDA. No data were qualified due to high %Rs since the associated results were non-detected. The details are presented in Enclosure I.

XIII. Field Duplicate Samples

Three field duplicate pairs were collected and analyzed for all methods. All RPDs were within QC limits. RPDs were not calculated when sample results in one or both samples were less than 5X the limit of quantitation (LOQ). The field duplicate result comparisons are provided in Enclosures I and II.

XIV. Internal Standards/Labeled Compounds

All internal standard areas and retention times were within QC limits. All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XV. Compound Quantitation

The laboratory reporting limits were evaluated. All laboratory reporting limits met the specified requirements.

The laboratory indicated that the parent/product transition ion ratios met laboratory requirements with the following exceptions:

SDG/Method	Sample	Compound	Finding
1803615/537M	A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.
1803626/537M	A1-MW-53-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.
1803659/537M	A1-MW-25-SA2 A1-MW-54-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.
1803678/537M	A1-MW-01-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.

Since there are no established transition ion ratio requirements in the validation documents for this project, using professional judgment, no data were qualified.

All compounds reported below the LOQ as detected by the laboratory were qualified as detected estimated (J). The details regarding the qualification of data are provided in Enclosures I and II.

XVI. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

Due to severe holding time exceedances, data were qualified as rejected in twenty-three samples.

Due to gross MS/MSD %R exceedance, data were qualified as rejected in one sample.

Due to holding time exceedances, data were qualified as estimated in thirty samples.

Due to CCV %D, data were qualified as estimated in twelve samples.

Due to MS/MSD %R, data were qualified as estimated in one sample.

Due to results below the LOQ, data were qualified as estimated in twenty-two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Data flags are summarized and are presented as Attachment 2.

Attachment 1

Sample Cross Reference

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
12-Nov-2018	TB-20181112	280-116898-7	TB	METHOD	8260B	Stage 2B
12-Nov-2018	A1-MW-49-SA2	1803615-03	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-49-SA2	280-116898-3	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-50-SA2	1803615-04	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2	280-116898-4	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-50-SA2DUP	280-116898-4DUP	DUP	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2MS	280-116898-4MS	MS	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-50-SA2MS	280-116898-4MS	MS	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2MSD	280-116898-4MSD	MSD	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-50-SA2MSD	280-116898-4MSD	MSD	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-50-SA2D	1803615-05	FD	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-50-SA2D	280-116898-5	FD	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-51-SA2	1803615-06	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	9040C	Stage 2B
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	9056A	Stage 2B
12-Nov-2018	A1-MW-51-SA2	280-116898-6	N	METHOD	SM3500 Fe B D	Stage 2B
12-Nov-2018	A1-MW-04-SA2	1803615-01	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	9040C	Stage 4

N = Normal Sample
FD = Field Duplicate
TB = Trip Blank
MS = Matrix Spike
MSD = Matrix Spike Duplicate
EB = Equipment Blank
DUP = Laboratory Duplicate
FRB = Field Rinsate Blank

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-04-SA2	280-116898-1	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-PZ-19-SA2	1803615-09	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-PZ-19-SA2	280-116898-8	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-52-SA2	1803615-07	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-52-SA2	280-116898-9	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	A1-MW-05-SA2	1803615-02	N	Gen Prep	537 MOD	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	8260B	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	9040C	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	9056A	Stage 4
12-Nov-2018	A1-MW-05-SA2	280-116898-2	N	METHOD	SM3500 Fe B D	Stage 4
12-Nov-2018	FRB-20181112	1803615-08	FRB	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	TB-20181113	280-116942-7	TB	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-06-SA2	1803626-02	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	9040C	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-06-SA2	280-116942-2	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-06-SA2DUP	280-116942-2DUP	DUP	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-06-SA2MS	280-116942-2MS	MS	METHOD	9056A	Stage 2B

N = Normal Sample *MS = Matrix Spike* *DUP = Laboratory Duplicate*
FD = Field Duplicate *MSD = Matrix Spike Duplicate*
TB = Trip Blank *EB = Equipment Blank* *FRB = Field Rinsate Blank*

Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
13-Nov-2018	16-MW-06-SA2MSD	280-116942-2MSD	MSD	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-18-SA2	1803626-05	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	8260B	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	9040C	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-18-SA2	280-116942-5	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	A1-MW-19-SA2	1803626-06	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	8260B	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	9040C	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-19-SA2	280-116942-6	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-HS-03-SA2	1803626-01	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	9040C	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-HS-03-SA2	280-116942-1	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-HS-03-SA2D	1803626-09	FD	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-HS-03-SA2D	280-116942-9	FD	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-08-SA2	1803626-03	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	9040C	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-08-SA2	280-116942-3	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2	1803626-04	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	8260B	Stage 2B
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	9040C	Stage 2B

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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	9056A	Stage 2B
13-Nov-2018	16-MW-09-SA2	280-116942-4	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2DUP	280-116942-4DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2MS	280-116942-4MS	MS	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	16-MW-09-SA2MSD	280-116942-4MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	A1-MW-53-SA2	1803626-08	N	Gen Prep	537 MOD	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	8260B	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	9040C	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	9056A	Stage 2B
13-Nov-2018	A1-MW-53-SA2	280-116942-8	N	METHOD	SM3500 Fe B D	Stage 2B
13-Nov-2018	FRB-20181113	1803626-07	FRB	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	TB-20181114	280-117007-6	TB	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-07-SA2	1803659-01	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-07-SA2	280-117007-1	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-07-SA2MS	280-117007-1MS	MS	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-07-SA2MSD	280-117007-1MSD	MSD	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-23-SA2	1803659-02	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-23-SA2	280-117007-2	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-55-SA2	1803659-05	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	8260B	Stage 2B

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DUP = Laboratory Duplicate
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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-55-SA2	280-117007-5	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-25-SA2	1803659-03	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-25-SA2	280-117007-3	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-27-SA2	1803659-04	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-27-SA2	280-117007-4	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	FRB-20181114	1803659-07	FRB	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-54-SA2	1803659-06	N	Gen Prep	537 MOD	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	8260B	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	9040C	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	9056A	Stage 2B
14-Nov-2018	A1-MW-54-SA2	280-117007-7	N	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-54-SA2DUP	280-117007-7DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-54-SA2MS	280-117007-7MS	MS	METHOD	SM3500 Fe B D	Stage 2B
14-Nov-2018	A1-MW-54-SA2MSD	280-117007-7MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	TB-20181115	280-117103-7	TB	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-13-SA2	1803676-02	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	9040C	Stage 2B

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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-13-SA2	280-117103-2	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-11-SA2	1803676-01	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-11-SA2	280-117103-1	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-15-SA2	1803676-04	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-15-SA2	280-117103-4	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-14-SA2	1803676-03	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-14-SA2	280-117103-3	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-14-SA2DUP	280-117103-3DUP	DUP	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-37-SA2	1803676-05	N	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-37-SA2	280-117103-5	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	A1-MW-37-SA2D	1803676-06	FD	Gen Prep	537 MOD	Stage 2B
15-Nov-2018	A1-MW-37-SA2D	280-117103-6	FD	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-31-SA2	1803676-08	N	Gen Prep	537 MOD	Stage 2B

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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	8260B	Stage 2B
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	9040C	Stage 2B
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	9056A	Stage 2B
15-Nov-2018	A1-MW-31-SA2	280-117103-8	N	METHOD	SM3500 Fe B D	Stage 2B
15-Nov-2018	FRB-20181115	1803676-07	FRB	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	TB-20181116	280-117110-3	TB	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-01-SA2	1803678-01	N	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	9040C	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	9056A	Stage 2B
16-Nov-2018	A1-MW-01-SA2	280-117110-1	N	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-01-SA2MS	280-117110-1MS	MS	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-01-SA2MSD	280-117110-1MSD	MSD	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-42-SA2	1803678-02	N	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	8260B	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	9040C	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	9056A	Stage 2B
16-Nov-2018	A1-MW-42-SA2	280-117110-2	N	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-42-SA2DUP	280-117110-2DUP	DUP	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-42-SA2MS	280-117110-2MS	MS	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	A1-MW-42-SA2MSD	280-117110-2MSD	MSD	METHOD	SM3500 Fe B D	Stage 2B
16-Nov-2018	FRB-20181116	1803678-03	FRB	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	EB-20181116	1803678-04	EB	Gen Prep	537 MOD	Stage 2B
16-Nov-2018	EB-20181116	280-117110-4	EB	METHOD	8260B	Stage 2B
19-Nov-2018	A1-MW-50-SA2MS	B8K0091-MS1	MS	Gen Prep	537 MOD	Stage 4
19-Nov-2018	A1-MW-50-SA2MSD	B8K0091-MSD1	MSD	Gen Prep	537 MOD	Stage 4

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Sample Cross Reference

Date Collected	Field Sample ID	Lab Sample ID	Sample Type	Prep Method	Analytical Method	Review Level
30-Nov-2018	A1-MW-01-SA2MS	B8K0153-MS1	MS	Gen Prep	537 MOD	Stage 2B
30-Nov-2018	A1-MW-01-SA2MSD	B8K0153-MSD1	MSD	Gen Prep	537 MOD	Stage 2B

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DUP = Laboratory Duplicate
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Attachment 2

Overall Data Qualification Summary

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

11/12/2018 11:40:00

Sample ID: **A1-MW-04-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 2:24:00

Sample ID: **A1-MW-05-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 8:32:00

Sample ID: **A1-MW-49-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 9:25:00

Sample ID: **A1-MW-50-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 10:46:00

Sample ID: **A1-MW-51-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/12/2018 1:39:00

Sample ID: **A1-MW-52-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: EM

Method: 9040C ***Matrix:*** AQ

Sample ID: A1-PZ-19-SA2 ***Collected:*** 11/12/2018 12:43:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM

Method: 9056A ***Matrix:*** AQ

Sample ID: A1-PZ-19-SA2 ***Collected:*** 11/12/2018 12:43:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 2

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	0.896	J B	0.200	LOD	1.00	LOQ	mg/L	J	RI

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-04-SA2 ***Collected:*** 11/12/2018 11:40:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-05-SA2 ***Collected:*** 11/12/2018 2:24:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.119	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: A1-MW-49-SA2 ***Collected:*** 11/12/2018 8:32:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA2** ***Collected:*** **11/12/2018 9:25:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.380	HF	0.0500	LOD	0.200	LOQ	mg/L	J	StoA

Sample ID: **A1-MW-51-SA2** ***Collected:*** **11/12/2018 10:46:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0278	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Sample ID: **A1-MW-52-SA2** ***Collected:*** **11/12/2018 1:39:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: **A1-PZ-19-SA2** ***Collected:*** **11/12/2018 12:43:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0591	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA2** ***Collected:*** **11/12/2018 9:25:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.564	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.780	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-50-SA2D** ***Collected:*** **11/12/2018 9:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.630	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116898-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-50-SA2D** ***Collected:*** **11/12/2018 9:35:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.949	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-52-SA2** ***Collected:*** **11/12/2018 1:39:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.458	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.811	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-PZ-19-SA2** ***Collected:*** **11/12/2018 12:43:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.430	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-116942-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **16-HS-03-SA2** ***Collected:*** **11/13/2018 12:00:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.4	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **16-MW-06-SA2** ***Collected:*** **11/13/2018 9:38:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.2	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116942-1

Method Category: EM

Method: 9040C **Matrix: AQ**

Sample ID:16-MW-08-SA2 **Collected: 11/13/2018 1:00:00 PM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:16-MW-09-SA2 **Collected: 11/13/2018 1:44:00 PM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:A1-MW-18-SA2 **Collected: 11/13/2018 10:31:00 AM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:A1-MW-19-SA2 **Collected: 11/13/2018 11:15:00 AM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID:A1-MW-53-SA2 **Collected: 11/13/2018 2:54:00 PM** **Analysis Type: RES/TOT** **Dilution: 1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: GENCHEM

Method: 9056A **Matrix: AQ**

Sample ID:16-MW-06-SA2 **Collected: 11/13/2018 9:38:00 AM** **Analysis Type: RE/TOT** **Dilution: 10**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Sulfate	695	F1	5.00	LOD	50.0	LOQ	mg/L	J	Ms

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116942-1

Method Category: GENCHEM

Method: 9056A ***Matrix:*** AQ

Sample ID: A1-MW-18-SA2 ***Collected:*** 11/13/2018 10:31:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 5

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NITRATE	11.0	H	0.500	LOD	2.50	LOQ	mg/L	J	StoA

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: 16-HS-03-SA2 ***Collected:*** 11/13/2018 12:00:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: 16-MW-06-SA2 ***Collected:*** 11/13/2018 9:38:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: 16-MW-08-SA2 ***Collected:*** 11/13/2018 1:00:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: 16-MW-09-SA2 ***Collected:*** 11/13/2018 1:44:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF F1	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-18-SA2 ***Collected:*** 11/13/2018 10:31:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-116942-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-19-SA2 ***Collected:*** 11/13/2018 11:15:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-53-SA2 ***Collected:*** 11/13/2018 2:54:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: 16-MW-06-SA2 ***Collected:*** 11/13/2018 9:38:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.195	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: 16-MW-08-SA2 ***Collected:*** 11/13/2018 1:00:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.538	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: 16-MW-09-SA2 ***Collected:*** 11/13/2018 1:44:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TETRACHLOROETHENE	0.271	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-19-SA2 ***Collected:*** 11/13/2018 11:15:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.545	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1,

Laboratory: TA DEN

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

SDG: 280-117007-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-07-SA2** ***Collected:*** **11/14/2018 9:07:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-23-SA2** ***Collected:*** **11/14/2018 10:03:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.9	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-25-SA2** ***Collected:*** **11/14/2018 12:15:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-27-SA2** ***Collected:*** **11/14/2018 1:03:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-54-SA2** ***Collected:*** **11/14/2018 3:17:00 PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-55-SA2** ***Collected:*** **11/14/2018 11:02:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117007-1

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

11/14/2018 9:07:00

Sample ID: **A1-MW-07-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 10:03:00

Sample ID: **A1-MW-23-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 12:15:00

Sample ID: **A1-MW-25-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 1:03:00

Sample ID: **A1-MW-27-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 3:17:00

Sample ID: **A1-MW-54-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF F1	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/14/2018 11:02:00

Sample ID: **A1-MW-55-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117007-1

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-07-SA2 ***Collected:*** 11/14/2018 9:07:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.357	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.826	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-25-SA2 ***Collected:*** 11/14/2018 12:15:00 PM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.273	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.539	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-117103-1

Method Category: EM

Method: 9040C ***Matrix:*** AQ

Sample ID: A1-MW-11-SA2 ***Collected:*** 11/15/2018 9:06:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-13-SA2 ***Collected:*** 11/15/2018 8:20:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: A1-MW-14-SA2 ***Collected:*** 11/15/2018 10:53:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117103-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

11/15/2018 10:07:00

Sample ID: **A1-MW-15-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.1	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/15/2018 2:16:00

Sample ID: **A1-MW-31-SA2** ***Collected:*** **PM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

11/15/2018 11:54:00

Sample ID: **A1-MW-37-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	7.8	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

11/15/2018 9:06:00

Sample ID: **A1-MW-11-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/15/2018 8:20:00

Sample ID: **A1-MW-13-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

11/15/2018 10:53:00

Sample ID: **A1-MW-14-SA2** ***Collected:*** **AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117103-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-15-SA2 ***Collected:*** 11/15/2018 10:07:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-31-SA2 ***Collected:*** 11/15/2018 2:16:00 PM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

Sample ID: A1-MW-37-SA2 ***Collected:*** 11/15/2018 11:54:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.156	J HF	0.0500	LOD	0.200	LOQ	mg/L	J	RI, StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-14-SA2 ***Collected:*** 11/15/2018 10:53:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.635	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.728	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-15-SA2 ***Collected:*** 11/15/2018 10:07:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.426	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: A1-MW-37-SA2 ***Collected:*** 11/15/2018 11:54:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.379	J	0.800	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117103-1

Method Category: **VOA**

Method: **8260B** ***Matrix:*** **AQ**

Sample ID: **A1-MW-37-SA2** ***Collected:*** **11/15/2018 11:54:00 AM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TRICHLOROETHENE	0.914	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

Sample ID: **A1-MW-37-SA2D** ***Collected:*** **11/15/2018 12:04:00 PM** ***Analysis Type:*** **RES** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.373	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.909	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

SDG: 280-117110-1

Method Category: **EM**

Method: **9040C** ***Matrix:*** **AQ**

Sample ID: **A1-MW-01-SA2** ***Collected:*** **11/16/2018 8:12:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Sample ID: **A1-MW-42-SA2** ***Collected:*** **11/16/2018 9:17:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PH	8.0	HF	0.1	LOD	0.1	LOQ	SU	J	StoA

Method Category: **GENCHEM**

Method: **SM3500 Fe B D** ***Matrix:*** **AQ**

Sample ID: **A1-MW-01-SA2** ***Collected:*** **11/16/2018 8:12:00 AM** ***Analysis Type:*** **RES/TOT** ***Dilution:*** **1**

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF	0.0500	LOD	0.200	LOQ	mg/L	R	StoA

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1, **Laboratory: TA DEN**

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

SDG: 280-117110-1

Method Category: GENCHEM

Method: SM3500 Fe B D ***Matrix:*** AQ

Sample ID: A1-MW-42-SA2 ***Collected:*** 11/16/2018 9:17:00 AM ***Analysis Type:*** RES/TOT ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
Ferrous Iron	0.0500	U HF F1	0.0500	LOD	0.200	LOQ	mg/L	R	Ms, StoA

Method Category: VOA

Method: 8260B ***Matrix:*** AQ

Sample ID: A1-MW-42-SA2 ***Collected:*** 11/16/2018 9:17:00 AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
1,1-DICHLOROETHENE	0.238	J	0.800	LOD	1.00	LOQ	ug/L	J	RI
TRICHLOROETHENE	0.367	J	0.400	LOD	1.00	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

Lab Reporting Batch ID: 280-116898-1, 280-116942-1,

Laboratory: TA DEN

EDD Filename: 280-116898-1, 280-116942-1, 280-117007-1, 280-117103-1, 280-117110-1

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver

Reason Code Legend

Reason Code	*Description*
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Lower Rejection
Ms	Matrix Spike Precision
RI	Reporting Limit Trace Value
StoA	Sampling to Analysis Estimation
StoA	Sampling to Analysis Rejection
Surr	Surrogate/Tracer Recovery Upper Estimation

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803615

Method Category: SVOA

Method: 537 MOD **Matrix:** AQ

11/12/2018 11:40:

Sample ID: A1-MW-04-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00646	J	0.00442	LOD	0.00881	LOQ	ug/L	J	RI

11/12/2018 2:24:0

Sample ID: A1-MW-05-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHxS	0.00359	J, Q	0.00431	LOD	0.00864	LOQ	ug/L	J	RI

11/12/2018 9:25:0

Sample ID: A1-MW-50-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00474	J, Q	0.00446	LOD	0.00894	LOQ	ug/L	J	RI

11/12/2018 9:35:0

Sample ID: A1-MW-50-SA2D **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00494	J	0.00439	LOD	0.00874	LOQ	ug/L	J	RI

11/12/2018 1:39:0

Sample ID: A1-MW-52-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00356	J	0.00435	LOD	0.00872	LOQ	ug/L	J	RI

11/12/2018 12:43:

Sample ID: A1-PZ-19-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHpA	0.00548	J	0.00442	LOD	0.00884	LOQ	ug/L	J	RI
PFOS	0.00321	J, Q	0.00442	LOD	0.00884	LOQ	ug/L	J	RI

SDG: 1803626

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803626

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/13/2018 9:38:0
Sample ID:16-MW-06-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00582	J	0.00417	LOD	0.00835	LOQ	ug/L	J	RI

11/13/2018 1:44:0
Sample ID:16-MW-09-SA2 **Collected:**PM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00449	J	0.00427	LOD	0.00852	LOQ	ug/L	J	RI
PFOS	0.00503	J	0.00427	LOD	0.00852	LOQ	ug/L	J	RI

11/13/2018 10:31:
Sample ID:A1-MW-18-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOA	0.00309	J	0.00427	LOD	0.00856	LOQ	ug/L	J	RI

11/13/2018 11:15:
Sample ID:A1-MW-19-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFDA	0.00721	J	0.00431	LOD	0.00861	LOQ	ug/L	J	RI
PFNA	0.00398	J	0.00431	LOD	0.00861	LOQ	ug/L	J	RI

11/13/2018 2:54:0
Sample ID:A1-MW-53-SA2 **Collected:**PM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFOS	0.00400	J, Q	0.00420	LOD	0.00841	LOQ	ug/L	J	RI

SDG: 1803659

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/14/2018 10:03:
Sample ID:A1-MW-23-SA2 **Collected:**AM **Analysis Type:**RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFHxS	0.00594	J	0.00424	LOD	0.00849	LOQ	ug/L	J	RI

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA
Method: 537 MOD ***Matrix:*** AQ

11/15/2018 9:06:0

Sample ID: A1-MW-11-SA2 ***Collected:*** AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFBS	0.184		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFDoA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFHpA	0.0352		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxA	0.460		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxS	0.109		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFNA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFOS	0.00916		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFTeDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFUnA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFOA	0.0349		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE

11/15/2018 8:20:0

Sample ID: A1-MW-13-SA2 ***Collected:*** AM ***Analysis Type:*** RES ***Dilution:*** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFBS	0.259		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFDA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFDoA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFHpA	0.105		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFHxA	0.655		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFHxS	0.368		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFNA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFOA	0.0695		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFOS	0.107		0.00455	LOD	0.00906	LOQ	ug/L	J	StoE
PFTeDA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE
PFUnA	0.00455	U	0.00455	LOD	0.00906	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA

Method: 537 MOD **Matrix:** AQ

11/15/2018 10:53

Sample ID: A1-MW-14-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFBS	0.101		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFDoA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFHpA	0.0658		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxA	0.327		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFHxS	0.253		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFNA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFOA	0.0527		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFOS	0.0604		0.00431	LOD	0.00860	LOQ	ug/L	J	StoE
PFTeDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE
PFUnA	0.00431	U	0.00431	LOD	0.00860	LOQ	ug/L	UJ	StoE

11/15/2018 10:07

Sample ID: A1-MW-15-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFBS	0.363		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFDA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFDoA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFHpA	0.0773		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFHxA	0.596		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFHxS	0.322		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFNA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFOA	0.190		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFOS	0.0185		0.00450	LOD	0.00902	LOQ	ug/L	J	StoE
PFTeDA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE
PFUnA	0.00450	U	0.00450	LOD	0.00902	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/15/2018 2:16:0

Sample ID: A1-MW-31-SA2 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFBS	0.0235		0.00427	LOD	0.00855	LOQ	ug/L	J	StoE
PFDA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFDoA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFHpA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFHxA	0.0732		0.00427	LOD	0.00855	LOQ	ug/L	J	StoE
PFHxS	0.00855		0.00427	LOD	0.00855	LOQ	ug/L	J	StoE
PFNA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFOA	0.00388	J	0.00427	LOD	0.00855	LOQ	ug/L	J	RI, StoE
PFOS	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFTeDA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE
PFUnA	0.00427	U	0.00427	LOD	0.00855	LOQ	ug/L	UJ	StoE

11/15/2018 11:54:

Sample ID: A1-MW-37-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFBS	0.151		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFDA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFDoA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFHpA	0.0856		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFHxA	0.520		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFHxS	0.438		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFNA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFOA	0.0599		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFOS	0.0288		0.00424	LOD	0.00851	LOQ	ug/L	J	StoE
PFTeDA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE
PFUnA	0.00424	U	0.00424	LOD	0.00851	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803676

Method Category: SVOA

Method: 537 MOD **Matrix:** AQ

11/15/2018 12:04:

Sample ID: A1-MW-37-SA2D **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFBS	0.150		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFDA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFDoA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFHpA	0.0830		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFHxA	0.529		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFHxS	0.429		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFNA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFOA	0.0555		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFOS	0.0275		0.00435	LOD	0.00870	LOQ	ug/L	J	StoE
PFTeDA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE
PFUnA	0.00435	U	0.00435	LOD	0.00870	LOQ	ug/L	UJ	StoE

11/15/2018 2:30:0

Sample ID: FRB-20181115 **Collected:** PM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
NEtFOSAA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
NMeFOSAA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFBS	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFDA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFDoA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFHpA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFHxA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFHxS	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFNA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFOA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFOS	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFTeDA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE, Ccv
PFTrDA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE
PFUnA	0.00450	U	0.00450	LOD	0.00904	LOQ	ug/L	UJ	StoE

* denotes a non-reportable result

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista

eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

SDG: 1803678

Method Category: SVOA
Method: 537 MOD **Matrix:** AQ

11/16/2018 8:12:0
Sample ID: A1-MW-01-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00446	U	0.00446	LOD	0.00894	LOQ	ug/L	UJ	Ccv

11/16/2018 9:17:0
Sample ID: A1-MW-42-SA2 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00424	U	0.00424	LOD	0.00849	LOQ	ug/L	UJ	Ccv

11/16/2018 9:50:0
Sample ID: EB-20181116 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00424	U	0.00424	LOD	0.00849	LOQ	ug/L	UJ	Ccv

11/16/2018 9:40:0
Sample ID: FRB-20181116 **Collected:** AM **Analysis Type:** RES **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
PFTeDA	0.00481	U	0.00481	LOD	0.00965	LOQ	ug/L	UJ	Ccv

* denotes a non-reportable result

Data Qualifier Summary

1803676, 1803678
EDD Filename: Prep1803615, Prep1803626, Prep1803659, Prep1803676, Prep1803678

Laboratory: Vista
eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista

Reason Code Legend

Reason Code	*Description*
Ccv	Continuing Calibration Verification Percent Difference Lower Estimation
Lcs	Laboratory Control Spike Upper Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value
StoE	Sampling to Extraction Estimation

* denotes a non-reportable result

Enclosure I

Stage 2B ADR Outliers

(Including Manual Review Outliers)

Quality Control
Outlier Reports

280-116898-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: 280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA2 (RES/TOT)	Sampling To Analysis	267.00	24.00	HOURS	J (all detects)
A1-MW-05-SA2 (RES/TOT)		335.00	24.00	HOURS	
A1-MW-49-SA2 (RES/TOT)		341.00	24.00	HOURS	
A1-MW-50-SA2 (RES/TOT)		270.00	24.00	HOURS	
A1-MW-51-SA2 (RES/TOT)		268.75	24.00	HOURS	
A1-MW-52-SA2 (RES/TOT)		265.75	24.00	HOURS	
A1-PZ-19-SA2 (RES/TOT)		336.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-04-SA2 (RES/TOT)	Sampling To Analysis	222.75	24.00	HOURS	J(all detects)
A1-MW-05-SA2 (RES/TOT)		220.00	24.00	HOURS	R(all non-detects)
A1-MW-49-SA2 (RES/TOT)		226.00	24.00	HOURS	
A1-MW-50-SA2 (RES/TOT)		225.00	24.00	HOURS	
A1-MW-51-SA2 (RES/TOT)		223.75	24.00	HOURS	
A1-MW-52-SA2 (RES/TOT)		220.75	24.00	HOURS	
A1-PZ-19-SA2 (RES/TOT)		221.75	24.00	HOURS	

Method Blank Outlier Report

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: 280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437370/6	11/13/2018 12:25:00 PM	Sulfate	0.3332 mg/L	A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2
MB 280-437371/6	11/13/2018 12:25:00 PM	NITRATE	0.04530 mg/L	A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: 280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-50-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.564 0.780	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-50-SA2D	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.630 0.949	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-52-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.458 0.811	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-PZ-19-SA2	TRICHLOROETHENE	J	0.430	1.00	LOQ	ug/L	J (all detects)

Method: 9056A
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-PZ-19-SA2	NITRATE	J B	0.896	1.00	LOQ	mg/L	J (all detects)

Method: SM3500 Fe B D
Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-05-SA2	Ferrous Iron	J HF	0.119	0.200	LOQ	mg/L	J (all detects)
A1-MW-51-SA2	Ferrous Iron	J HF	0.0278	0.200	LOQ	mg/L	J (all detects)
A1-PZ-19-SA2	Ferrous Iron	J HF	0.0591	0.200	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-116898-1 **Laboratory: TA DEN**

EDD Filename: Prep280-116898-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

Analyte	Concentration (ug/L)		Sample RPD	eQAPP RPD	Flag
	A1-MW-50-SA2	A1-MW-50-SA2D			
1,1-DICHLOROETHENE	0.564	0.630	NC	30.00	No Qualifiers Applied
TRICHLOROETHENE	0.780	0.949	NC	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 43888A1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/18/18
SDG #: 280-116898-1 ADR/Stage ~~2B~~ 4 Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: DM
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20 %
IV.	Continuing calibration	A	CCV ≤ 20/50 %
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks		
VII.	Surrogate spikes		Not reviewed for ADR validation.
VIII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
IX.	Laboratory control samples		Not reviewed for ADR validation.
X.	Field duplicates		
XI.	Internal standards	A	Not reviewed for ADR validation.
XII.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XIII.	Target compound identification		Not reviewed for ADR validation.
XIV.	System performance		Not reviewed for ADR validation.
XV.	Overall assessment of data		Not reviewed for ADR validation.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2**	280-116898-4**	Water	11/12/18
5	A1-MW-50-SA2D**	280-116898-5**	Water	11/12/18
6	A1-MW-51-SA2**	280-116898-6**	Water	11/12/18
7	TB-20181112	280-116898-7	Water	11/12/18
8	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
9	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
10	A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
11	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
12				
13	MB 280-498700/6 - 498747/4			

LDC #: 43888A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-116898-1 ADR/~~Stage 4~~ Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	Not reviewed for ADR validation. MS/MSD
VII.	Duplicate sample analysis	A	Not reviewed for ADR validation. DUP
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for ADR validation.
XI	Overall assessment of data	A	Not reviewed for ADR validation.

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2**	280-116898-4**	Water	11/12/18
5	A1-MW-51-SA2	280-116898-6	Water	11/12/18
6	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
7	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
8	A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
9	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
10	A1-MW-50-SA2DUP	280-116898-4DUP	Water	11/12/18
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1 → 7	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+3)
QC 8 → 10	↓	pH TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: MG
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:		9040C		SM 3500 Fe B			
Parameters:		pH		Ferrous Iron			
Technical holding time:		24 hr		24 hr			
Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier
1	11:40 11-12-18	14:43 11-23-18	(11 days)				J/UJ/P (det)
2	14:24 11-12-18	13:37 11-26-18	(14)				( )
3	08:32 11-12-18	13:36 11-26-18	(14)				( )
4	09:35 11-12-18	15:19 11-23-18	(11)				( )
5	10:46 11-12-18	15:33 11-23-18	(11)				( )
6	12:43 11-12-18	13:32 11-26-18	(14)				( )
7	13:39 11-12-18	15:23 11-23-18	(11)				( )
1	11:40 11-12-18			18:30 11-21-18	(9 days)		J/R/P (N.D.)
2	14:24 11-12-18				( )		(det)
3	08:32 11-12-18				( )		(ND)
4	09:35 11-12-18				( )		(det)
5	10:46 11-12-18				( )		( )
6	12:43 11-12-18				( )		( )
7	13:39 11-12-18				( )		(ND)

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** all **(NO3-N: 2x dil, SO4: 20x dil, >5x or ND)**

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
NO3-N	0.04530	0.04526	0.4526									
SO4	0.3332	0.3841	38.41									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-116942-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-116942-1 **Laboratory: TA DEN**

EDD Filename: 280-116942-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
16-HS-03-SA2 (RES/TOT)	Sampling To Analysis	316.00	24.00	HOURS	J (all detects)
16-MW-06-SA2 (RES/TOT)		318.50	24.00	HOURS	
16-MW-08-SA2 (RES/TOT)		314.75	24.00	HOURS	
16-MW-09-SA2 (RES/TOT)		314.50	24.00	HOURS	
A1-MW-18-SA2 (RES/TOT)		317.50	24.00	HOURS	
A1-MW-19-SA2 (RES/TOT)		316.25	24.00	HOURS	
A1-MW-53-SA2 (RES/TOT)		312.75	24.00	HOURS	

Method: 9056A **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-18-SA2 (RES/TOT)	Sampling To Analysis	62.25	48.00	HOURS	J(all detects)
		62.50	48.00	HOURS	UJ(all non-detects)

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
16-HS-03-SA2 (RES/TOT)	Sampling To Analysis	198.50	24.00	HOURS	J(all detects)
16-MW-06-SA2 (RES/TOT)		200.75	24.00	HOURS	R(all non-detects)
16-MW-08-SA2 (RES/TOT)		197.50	24.00	HOURS	
16-MW-09-SA2 (RES/TOT)		196.75	24.00	HOURS	
16-MW-09-SA2DUP (RES/TOT)		196.75	24.00	HOURS	
16-MW-09-SA2MS (RES/TOT)		196.75	24.00	HOURS	
16-MW-09-SA2MSD (RES/TOT)		196.75	24.00	HOURS	
A1-MW-18-SA2 (RES/TOT)		200.00	24.00	HOURS	
A1-MW-19-SA2 (RES/TOT)		199.25	24.00	HOURS	
A1-MW-53-SA2 (RES/TOT)		195.50	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-116942-1 **Laboratory: TA DEN**

EDD Filename: 280-116942-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-MW-06-SA2MS 16-MW-06-SA2MSD (16-MW-06-SA2)	Sulfate	80	74	87.00-112.00	-	Sulfate	J (all detects) UJ (all non-detects)

Method: **SM3500 Fe B D**
Matrix: **AQ**

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
16-MW-09-SA2MS 16-MW-09-SA2MSD (16-MW-09-SA2)	Ferrous Iron	53	51	85.00-113.00	-	Ferrous Iron	J(all detects) UJ(all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-116942-1 **Laboratory: TA DEN**

EDD Filename: 280-116942-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-06-SA2	TRICHLOROETHENE	J	0.195	1.00	LOQ	ug/L	J (all detects)
16-MW-08-SA2	TETRACHLOROETHENE	J	0.538	1.00	LOQ	ug/L	J (all detects)
16-MW-09-SA2	TETRACHLOROETHENE	J	0.271	1.00	LOQ	ug/L	J (all detects)
A1-MW-19-SA2	TRICHLOROETHENE	J	0.545	1.00	LOQ	ug/L	J (all detects)

LDC #: 43888B1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-116942-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: DG
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15%. ICV ≤ 20%.
IV.	Continuing calibration	A	CCV ≤ 20/50%.
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	~~N~~A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	16-HS-03-SA2	280-116942-1	Water	11/13/18
2	16-MW-06-SA2	280-116942-2	Water	11/13/18
3	16-MW-08-SA2	280-116942-3	Water	11/13/18
4	16-MW-09-SA2	280-116942-4	Water	11/13/18
5	A1-MW-18-SA2	280-116942-5	Water	11/13/18
6	A1-MW-19-SA2	280-116942-6	Water	11/13/18
7	TB-20181113	280-116942-7	Water	11/13/18
8	A1-MW-53-SA2	280-116942-8	Water	11/13/18
9	16-HS-063-SA2D	280-116942-9	Water	11/13/18
10				
11				
12	MB 280-438817/4			
13				

(H, AA, S only)

LDC #: 43888B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-116942-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}; NO3 out for #5
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	MS/MSD (#8/9: SO4 fails, #11/12: Fe^{+2} fails)
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	16-HS-03-SA2	280-116942-1	Water	11/13/18
2	16-MW-06-SA2	280-116942-2	Water	11/13/18
3	16-MW-08-SA2	280-116942-3	Water	11/13/18
4	16-MW-09-SA2	280-116942-4	Water	11/13/18
5	A1-MW-18-SA2	280-116942-5	Water	11/13/18
6	A1-MW-19-SA2	280-116942-6	Water	11/13/18
7	A1-MW-53-SA2	280-116942-8	Water	11/13/18
8	16-MW-06-SA2MS	280-116942-2MS	Water	11/13/18
9	16-MW-06-SA2MSD	280-116942-2MSD	Water	11/13/18
10	16-MW-06-SA2DUP	280-116942-2DUP	Water	11/13/18
11	16-MW-09-SA2MS	280-116942-4MS	Water	11/13/18
12	16-MW-09-SA2MSD	280-116942-4MSD	Water	11/13/18
13	16-MW-09-SA2DUP	280-116942-4DUP	Water	11/13/18
14	PBW1			
15	PBW2			

Notes:

LDC #: 43888B6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→7	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 8→10	↓	pH TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
↓ 11→13	↓	pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888B6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 1-4,6 (various dilutions, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
SO4		0.6931	3.466									

Conc. units: mg/L **Associated Samples:** 2,3,4,7 (various dilutions, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.3086	1.543									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-117007-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-117007-1 **Laboratory: TA DEN**

EDD Filename: 280-117007-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA2 (RES/TOT)	Sampling To Analysis	363.25	24.00	HOURS	J (all detects)
A1-MW-23-SA2 (RES/TOT)		362.25	24.00	HOURS	
A1-MW-25-SA2 (RES/TOT)		359.75	24.00	HOURS	
A1-MW-27-SA2 (RES/TOT)		359.25	24.00	HOURS	
A1-MW-54-SA2 (RES/TOT)		356.75	24.00	HOURS	
A1-MW-55-SA2 (RES/TOT)		361.00	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-07-SA2 (RES/TOT)	Sampling To Analysis	177.50	24.00	HOURS	J(all detects)
A1-MW-23-SA2 (RES/TOT)		176.50	24.00	HOURS	R(all non-detects)
A1-MW-25-SA2 (RES/TOT)		174.25	24.00	HOURS	
A1-MW-27-SA2 (RES/TOT)		173.50	24.00	HOURS	
A1-MW-54-SA2 (RES/TOT)		171.25	24.00	HOURS	
A1-MW-54-SA2DUP (RES/TOT)		171.25	24.00	HOURS	
A1-MW-54-SA2MS (RES/TOT)		171.25	24.00	HOURS	
A1-MW-54-SA2MSD (RES/TOT)		171.25	24.00	HOURS	
A1-MW-55-SA2 (RES/TOT)		175.50	24.00	HOURS	

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-117007-1 **Laboratory: TA DEN**

EDD Filename: 280-117007-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **SM3500 Fe B D**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-54-SA2MS A1-MW-54-SA2MSD (A1-MW-54-SA2)	Ferrous Iron	34	35	85.00-113.00	-	Ferrous Iron	J (all detects) UJ (all non-detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-117007-1 **Laboratory: TA DEN**

EDD Filename: 280-117007-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-07-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.357 0.826	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-25-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.273 0.539	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

LDC #: 43888C1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-117007-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: JV
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-07-SA2	280-117007-1	Water	11/14/18
2	A1-MW-23-SA2	280-117007-2	Water	11/14/18
3	A1-MW-25-SA2	280-117007-3	Water	11/14/18
4	A1-MW-27-SA2	280-117007-4	Water	11/14/18
5	A1-MW-55-SA2	280-117007-5	Water	11/14/18
6	TB-20181114	280-117007-6	Water	11/14/18
7	A1-MW-54-SA2	280-117007-7	Water	11/14/18
8	A1-MW-07-SA2MS	280-117007-1MS	Water	11/14/18
9	A1-MW-07-SA2MSD	280-117007-1MSD	Water	11/14/18
10				
11	MB 280-438841/6			
12				
13				

(H, AA, S only)

LDC #: 43888C6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-117007-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	MS/MSD (#7/8: Fe^{+2} fails)
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-07-SA2	280-117007-1	Water	11/14/18
2	A1-MW-23-SA2	280-117007-2	Water	11/14/18
3	A1-MW-25-SA2	280-117007-3	Water	11/14/18
4	A1-MW-27-SA2	280-117007-4	Water	11/14/18
5	A1-MW-55-SA2	280-117007-5	Water	11/14/18
6	A1-MW-54-SA2	280-117007-7	Water	11/14/18
7	A1-MW-54-SA2MS	280-117007-7MS	Water	11/14/18
8	A1-MW-54-SA2MSD	280-117007-7MSD	Water	11/14/18
9	A1-MW-54-SA2DUP	280-117007-7DUP	Water	11/14/18
10				
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888C6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→6	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 7→9	↓	pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888C6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 1-5 (10x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.2558	12.79									

Conc. units: mg/L **Associated Samples:** 6 (10x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual.								
Cl		0.2618	13.09									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-117103-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: 280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA2 (RES/TOT)	Sampling To Analysis	340.75	24.00	HOURS	J (all detects)
A1-MW-13-SA2 (RES/TOT)		341.00	24.00	HOURS	
A1-MW-14-SA2 (RES/TOT)		338.75	24.00	HOURS	
A1-MW-14-SA2DUP (RES/TOT)		338.75	24.00	HOURS	
A1-MW-15-SA2 (RES/TOT)		339.75	24.00	HOURS	
A1-MW-31-SA2 (RES/TOT)		335.50	24.00	HOURS	
A1-MW-37-SA2 (RES/TOT)		337.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-11-SA2 (RES/TOT)	Sampling To Analysis	153.50	24.00	HOURS	J(all detects)
A1-MW-13-SA2 (RES/TOT)		154.25	24.00	HOURS	R(all non-detects)
A1-MW-14-SA2 (RES/TOT)		151.75	24.00	HOURS	
A1-MW-15-SA2 (RES/TOT)		152.50	24.00	HOURS	
A1-MW-31-SA2 (RES/TOT)		148.25	24.00	HOURS	
A1-MW-37-SA2 (RES/TOT)		150.75	24.00	HOURS	

Method Blank Outlier Report

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: 280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **9056A**
Matrix: **AQ**

Method Blank Sample ID	Analysis Date	Analyte	Result	Associated Samples
MB 280-437914/6	11/16/2018 5:36:00 PM	CHLORIDE Sulfate	0.2635 mg/L 0.3386 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-31-SA2 A1-MW-37-SA2
MB 280-437915/6	11/16/2018 5:36:00 PM	NITRATE	0.04638 mg/L	A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-31-SA2 A1-MW-37-SA2

Reporting Limit Outliers

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: 280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-14-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.635 0.728	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-15-SA2	TRICHLOROETHENE	J	0.426	1.00	LOQ	ug/L	J (all detects)
A1-MW-37-SA2	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.379 0.914	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-37-SA2D	1,1-DICHLOROETHENE TRICHLOROETHENE	J J	0.373 0.909	1.00 1.00	LOQ LOQ	ug/L ug/L	J (all detects)

Method: SM3500 Fe B D

Matrix: AQ

SampleID	Analyte	Lab Qual	Result	Reporting Limit	RL Type	Units	Flag
A1-MW-37-SA2	Ferrous Iron	J HF	0.156	0.200	LOQ	mg/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 280-117103-1 **Laboratory: TA DEN**

EDD Filename: Prep280-117103-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 8260B
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-37-SA2	**A1-MW-37-SA2D**			
1,1-DICHLOROETHENE	0.379	0.373	NC	30.00	No Qualifiers Applied
TRICHLOROETHENE	0.914	0.909	NC	30.00	

LDC #: 43888D1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-117103-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: SV6
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 15? ICV ≤ 20?
IV.	Continuing calibration	A	CCV ≤ 20/50?
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-11-SA2	280-117103-1	Water	11/15/18
2	A1-MW-13-SA2	280-117103-2	Water	11/15/18
3	A1-MW-14-SA2	280-117103-3	Water	11/15/18
4	A1-MW-15-SA2	280-117103-4	Water	11/15/18
5	A1-MW-37-SA2	280-117103-5	Water	11/15/18
6	A1-MW-37-SA2D	280-117103-6	Water	11/15/18
7	TB-20181115	280-117103-7	Water	11/15/18
8	A1-MW-31-SA2	280-117103-8	Water	11/15/18
9				
10				
11				
12	MB 280-438823/9			
13				

(H, AA, S only)

LDC #: 43888D6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-117103-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	client specified
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-11-SA2	280-117103-1	Water	11/15/18
2	A1-MW-13-SA2	280-117103-2	Water	11/15/18
3	A1-MW-14-SA2	280-117103-3	Water	11/15/18
4	A1-MW-15-SA2	280-117103-4	Water	11/15/18
5	A1-MW-37-SA2	280-117103-5	Water	11/15/18
6	A1-MW-31-SA2	280-117103-8	Water	11/15/18
7	A1-MW-14-SA2DUP	280-117103-3DUP	Water	11/15/18
8				
9				
10				
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888D6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→6	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 7	↓	(pH) TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888D6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** all (20x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.2982	29.82									
SO4		0.4094	40.94									

Conc. units: mg/L **Associated Samples:** 1-5 (>5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
NO3-N		0.04805	0.2402									

Conc. units: mg/L **Associated Samples:** 6 (>5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual.								
NO3-N		0.04749	0.2374									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

280-117110-1

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: 9040C **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA2 (RES/TOT)	Sampling To Analysis	318.00	24.00	HOURS	J (all detects)
A1-MW-42-SA2 (RES/TOT)		316.75	24.00	HOURS	

Method: SM3500 Fe B D **Preparation Method: METHOD**

Matrix: AQ

Sample ID	Type	Actual	Criteria	Units	Flag
A1-MW-01-SA2 (RES/TOT)	Sampling To Analysis	130.25	24.00	HOURS	J(all detects)
A1-MW-42-SA2 (RES/TOT)		129.25	24.00	HOURS	R(all non-detects)
A1-MW-42-SA2DUP (RES/TOT)		129.25	24.00	HOURS	
A1-MW-42-SA2MS (RES/TOT)		129.25	24.00	HOURS	
A1-MW-42-SA2MSD (RES/TOT)		129.25	24.00	HOURS	

Surrogate Outlier Report

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**
Matrix: **AQ**

Sample ID (Analysis Type)	*Surrogate*	*Sample % Recovery*	*% Recovery Limits*	*Affected Compounds*	*Flag*
EB-20181116	1,2-DICHLOROETHANE-D4	122	81.00-118.00	All Target Analytes	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: SM3500 Fe B D
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-42-SA2MS A1-MW-42-SA2MSD (A1-MW-42-SA2)	Ferrous Iron	27	27	85.00-113.00	-	Ferrous Iron	J (all detects) R (all non-detects)

Method: 8260B
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	MS %R	MSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
A1-MW-01-SA2MSD (A1-MW-01-SA2)	1,1-DICHLOROETHENE	-	-	71.00-131.00	22 (20.00)	1,1-DICHLOROETHENE	J(all detects)

Reporting Limit Outliers

Lab Reporting Batch ID: 280-117110-1 **Laboratory: TA DEN**

EDD Filename: 280-117110-1 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Denver**

Method: **8260B**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-42-SA2	1,1-DICHLOROETHENE	J	0.238	1.00	LOQ	ug/L	J (all detects)
	TRICHLOROETHENE	J	0.367	1.00	LOQ	ug/L	

LDC #: 43888E1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-117110-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: JV
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	TB
VII.	Surrogate spikes	N	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N	
X.	Field duplicates	N	
XI.	Internal standards	NA	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	A1-MW-01-SA2	280-117110-1	Water	11/16/18
2	A1-MW-42-SA2	280-117110-2	Water	11/16/18
3	TB-20181116	280-117110-3	Water	11/16/18
4	EB-20181116	280-117110-4	Water	11/16/18
5	A1-MW-01-SA2MS	280-117110-1MS	Water	11/16/18
6	A1-MW-01-SA2MSD	280-117110-1MSD	Water	11/16/18
7				
8				
9				

Notes:

(H, AA, S only)

LDC #: 43888E6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18
SDG #: 280-117110-1 ADR Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: MG
2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	HT out for all pH, Fe^{+2}
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	ICB/CCB only
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	N	MS/MSD (#3/4: Fe^{+2} fails)
VII.	Duplicate sample analysis	N	DUP
VIII.	Laboratory control samples	N	LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-01-SA2	280-117110-1	Water	11/16/18
2	A1-MW-42-SA2	280-117110-2	Water	11/16/18
3	A1-MW-42-SA2MS	280-117110-2MS	Water	11/16/18
4	A1-MW-42-SA2MSD	280-117110-2MSD	Water	11/16/18
5	A1-MW-42-SA2DUP	280-117110-2DUP	Water	11/16/18
6				
7				
8				
9				
10				
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888E6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1, 2	W	(pH) TDS (Cl) F (NO3) NO2 (SO4) PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
QC 3→5	↓	pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4 (Fe+2)
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4
		pH TDS Cl F NO3 NO2 SO4 PO4 ALK CN- NH3 TKN TOC CR6+ ClO4

Comments:

LDC #: 43888E6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** 2 (20x dil, >5x)

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.								
Cl		0.6147	61.47									
SO4		0.3987	39.87									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

Quality Control
Outlier Reports

1803615

Reporting Limit Outliers

Lab Reporting Batch ID: 1803615 **Laboratory: Vista**

EDD Filename: 1803615 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-04-SA2	PFOA	J	0.00646	0.00881	LOQ	ug/L	J (all detects)
A1-MW-05-SA2	PFHxS	J, Q	0.00359	0.00864	LOQ	ug/L	J (all detects)
A1-MW-50-SA2	PFHpA	J, Q	0.00474	0.00894	LOQ	ug/L	J (all detects)
A1-MW-50-SA2D	PFHpA	J	0.00494	0.00874	LOQ	ug/L	J (all detects)
A1-MW-52-SA2	PFOS	J	0.00356	0.00872	LOQ	ug/L	J (all detects)
A1-PZ-19-SA2	PFHpA PFOS	J J, Q	0.00548 0.00321	0.00884 0.00884	LOQ LOQ	ug/L ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1803615 **Laboratory: Vista**

EDD Filename: Prep1803615 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-50-SA2	**A1-MW-50-SA2D**			
PFBS	0.0250	0.0264	5	30.00	
PFHpA	0.00474	0.00494	NC	30.00	
PFHxA	0.0806	0.0829	3	30.00	No Qualifiers Applied
PFHxS	0.0367	0.0355	3	30.00	
PFOA	0.00947	0.00878	8	30.00	

LDC #: 43888K96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803615 ADR/Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: JM
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 20% Individual ≤ 30% ICV ≤ 30%
IV.	Continuing calibration/ISC	A	CCV ≤ 30% true conc.
V.	Laboratory Blanks	N	Not reviewed for ADR validation.
VI.	Field blanks		
VII.	Matrix spike/Matrix spike duplicates		Not reviewed for ADR validation.
VIII.	Laboratory control samples		Not reviewed for ADR validation.
IX.	Field duplicates		
X.	Labeled Compounds	A	Not reviewed for ADR validation.
XI.	Compound quantitation RL/LOQ/LODs	N	Not reviewed for ADR validation.
XII.	Target compound identification		Not reviewed for ADR validation.
XIII.	System performance		Not reviewed for ADR validation.
XIV.	Overall assessment of data		Not reviewed for ADR validation.

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank
** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	1803615-01**	Water	11/12/18
2	A1-MW-05-SA2**	1803615-02**	Water	11/12/18
3	A1-MW-49-SA2**	1803615-03**	Water	11/12/18
4	A1-MW-50-SA2**	1803615-04**	Water	11/12/18
5	A1-MW-50-SA2D**	1803615-05**	Water	11/12/18
6	A1-MW-51-SA2**	1803615-06**	Water	11/12/18
7	A1-MW-52-SA2**	1803615-07**	Water	11/12/18
8	FRB-20181112	1803615-08	Water	11/12/18
9	A1-~~MW~~ PZ-19-SA2**	1803615-09**	Water	11/12/18
10	A1-MW-50-SA2MS	1803615-04MS	Water	11/12/18
11	A1-MW-50-SA2MSD	1803615-04MSD	Water	11/12/18
12				
13				
14	PBW0091-BLK1			
15				

Quality Control
Outlier Reports

1803626

Reporting Limit Outliers

Lab Reporting Batch ID: 1803626 **Laboratory: Vista**

EDD Filename: 1803626 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
16-MW-06-SA2	PFOS	J	0.00582	0.00835	LOQ	ug/L	J (all detects)
16-MW-09-SA2	PFOA PFOS	J J	0.00449 0.00503	0.00852 0.00852	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-18-SA2	PFOA	J	0.00309	0.00856	LOQ	ug/L	J (all detects)
A1-MW-19-SA2	PFDA PFNA	J J	0.00721 0.00398	0.00861 0.00861	LOQ LOQ	ug/L ug/L	J (all detects)
A1-MW-53-SA2	PFOS	J, Q	0.00400	0.00841	LOQ	ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1803626 **Laboratory: Vista**

EDD Filename: 1803626 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	16-HS-03-SA2	**16-HS-03-SA2D**			
PFBS	1.34	1.39	4	30.00	
PFHpA	0.405	0.412	2	30.00	
PFHxA	10.3	11.7	13	30.00	No Qualifiers Applied
PFHxS	0.324	0.312	4	30.00	
PFOA	0.0206	0.0200	3	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 43888L96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803626 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: JVC
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	r² Individual ≤30% Mean value ICV ≤30%
IV.	Continuing calibration/ISC	A	CCV ≤30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	N/A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	16-HS-03-SA2	1803626-01	Water	11/13/18
2	16-MW-06-SA2	1803626-02	Water	11/13/18
3	16-MW-08-SA2	1803626-03	Water	11/13/18
4	16-MW-09-SA2	1803626-04	Water	11/13/18
5	A1-MW-18-SA2	1803626-05	Water	11/13/18
6	A1-MW-19-SA2	1803626-06	Water	11/13/18
7	FRB-20181113	1803626-07	Water	11/13/18
8	A1-MW-53-SA2	1803626-08	Water	11/13/18
9	16-HS-03-SA2D	1803626-09	Water	11/13/18
10				
11				

Notes:

Quality Control
Outlier Reports

1803659

Reporting Limit Outliers

Lab Reporting Batch ID: 1803659 **Laboratory: Vista**

EDD Filename: 1803659 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-23-SA2	PFHxS	J	0.00594	0.00849	LOQ	ug/L	J (all detects)

LDC #: 43888M96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803659 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: SM
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	~~r~~ r Individual ≤30% ICV ≤ 30% True value
IV.	Continuing calibration/ISC	A	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	~~N~~ A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-07-SA2	1803659-01	Water	11/14/18
2	A1-MW-23-SA2	1803659-02	Water	11/14/18
3	A1-MW-25-SA2	1803659-03	Water	11/14/18
4	A1-MW-27-SA2	1803659-04	Water	11/14/18
5	A1-MW-55-SA2	1803659-05	Water	11/14/18
6	A1-MW-54-SA2	1803659-06	Water	11/14/18
7	FRB-20181114	1803659-07	Water	11/14/18
8				
9				
10				

Notes:

	B8K0149-BLK1						

Quality Control
Outlier Reports

1803676

QC Outlier Report: HoldingTimes

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD **Preparation Method: Gen Prep**

Matrix: AQ

Sample ID	*Type*	*Actual*	*Criteria*	*Units*	*Flag*
A1-MW-11-SA2 (RES)	Sampling To Extraction	15.00	14.00	DAYS	J (all detects)
A1-MW-13-SA2 (RES)		15.00	14.00	DAYS	UJ (all non-detects)
A1-MW-14-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-15-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-31-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-37-SA2 (RES)		15.00	14.00	DAYS	
A1-MW-37-SA2D (RES)		15.00	14.00	DAYS	
FRB-20181115 (RES)		15.00	14.00	DAYS	

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*LCS %R*	*LCSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
B8K0153-BS1 (A1-MW-11-SA2 A1-MW-13-SA2 A1-MW-14-SA2 A1-MW-15-SA2 A1-MW-31-SA2 A1-MW-37-SA2 A1-MW-37-SA2D FRB-20181115)	PFTeDA	140	-	70.00-130.00	-	PFTeDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Reporting Limit Outliers

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**

Matrix: **AQ**

SampleID	*Analyte*	*Lab Qual*	*Result*	*Reporting Limit*	*RL Type*	*Units*	*Flag*
A1-MW-31-SA2	PFOA	J	0.00388	0.00855	LOQ	ug/L	J (all detects)

Field Duplicate RPD Report

Lab Reporting Batch ID: 1803676 **Laboratory: Vista**

EDD Filename: 1803676 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

Analyte	*Concentration (ug/L)*		*Sample RPD*	*eQAPP RPD*	*Flag*
	A1-MW-37-SA2	**A1-MW-37-SA2D**			
PFBS	0.151	0.150	1	30.00	No Qualifiers Applied
PFHpA	0.0856	0.0830	3	30.00	
PFHxA	0.520	0.529	2	30.00	
PFHxS	0.438	0.429	2	30.00	
PFOA	0.0599	0.0555	8	30.00	
PFOS	0.0288	0.0275	5	30.00	

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

LDC #: 43888N96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803676 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: DG
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, ~~A~~SW	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	r r Individual ≤30% ICV≤30% true value
IV.	Continuing calibration/ISC	SW	CCV≤30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	~~N~~ A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-11-SA2	1803676-01	Water	11/15/18
2	A1-MW-13-SA2	1803676-02	Water	11/15/18
3	A1-MW-14-SA2	1803676-03	Water	11/15/18
4	A1-MW-15-SA2	1803676-04	Water	11/15/18
5	A1-MW-37-SA2	1803676-05	Water	11/15/18
6	A1-MW-37-SA2D	1803676-06	Water	11/15/18
7	FRB-20181115	1803676-07	Water	11/15/18
8	A1-MW-31-SA2	1803676-08	Water	11/15/18
9				
10				
11				

Notes:

	B8K0153-BLK1						

TARGET COMPOUND WORKSHEET

METHOD: PFAS

A. PFHxA			
B. PFHpA			
C. PFOA			
D. PFNA			
E. PFDA			
F. PFUnA			
G. PFDoA			
H. PFTriA			
I. PFTeDA			
J. PFBS			
K. PFHxS			
L. PFHpS			
M. PFOS			
N. PFDS			
O. FOSA			
P. PFBA			
Q. PFPeA			
R. 6:2FTS			
S. 8:2FTS			
T. MeFOSAA			
U. EtFOSAA			
V. Combined PFOAS/PFOS			

LDC #: 43588 N96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: MG
2nd Reviewer:

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y N N/A Were all continuing calibration percent differences (%D) ≤30 %?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Associated Samples	Qualifications
	12/03/18	181203M1_3	I	42.4	All (ND)	J/UJ/A

Quality Control
Outlier Reports

1803678

Matrix Spike/Matrix Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1803678 **Laboratory: Vista**

EDD Filename: 1803678 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: **537 MOD**
Matrix: **AQ**

QC Sample ID (Associated Samples)	*Compound*	*MS %R*	*MSD %R*	*%R Limits*	*RPD (Limits)*	*Affected Compounds*	*Flag*
A1-MW-01-SA2MS A1-MW-01-SA2MSD (A1-MW-01-SA2)	PFTeDA	139	-	70.00-130.00	31.7 (30.00)	PFTeDA	J (all detects)

Project Name and Number: 4663.3803 - CTO 17F3803 Yuma

Lab Control Spike/Lab Control Spike Duplicate Outlier Report

Lab Reporting Batch ID: 1803678 **Laboratory: Vista**

EDD Filename: 1803678 **eQAPP Name: SW RAC 6_CTO 3803 YUMA - Vista**

Method: 537 MOD
Matrix: AQ

QC Sample ID (Associated Samples)	Compound	LCS %R	LCSD %R	%R Limits	RPD (Limits)	Affected Compounds	Flag
B8K0153-BS1 (A1-MW-01-SA2 A1-MW-42-SA2 EB-20181116 FRB-20181116)	PFTeDA	140	-	70.00-130.00	-	PFTeDA	J (all detects)

LDC #: 43888O96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 1803678 ADR Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: JW
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	te r² Individual ≤ 30% ICV ≤ 30% True value
IV.	Continuing calibration/ISC	SW	CCV ≤ 30%
V.	Laboratory Blanks	N	
VI.	Field blanks	N	FRB = 3 EB = 4
VII.	Matrix spike/Matrix spike duplicates	N	
VIII.	Laboratory control samples	N	
IX.	Field duplicates	N	
X.	Labeled Compounds	N/A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	N	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	A1-MW-01-SA2	1803678-01	Water	11/16/18
2	A1-MW-42-SA2	1803678-02	Water	11/16/18
3	FRB-20181116	1803678-03	Water	11/16/18
4	EB-20181116	1803678-04	Water	11/16/18
5	A1-MW-01-SA2MS	1803678-01MS	Water	11/16/18
6	A1-MW-01-SA2MSD	1803678-01MSD	Water	11/16/18
7				
8				
9				
10				

Notes:

	B8K0153-BLK1						

TARGET COMPOUND WORKSHEET

METHOD: PFAS

A. PFHxA			
B. PFHpA			
C. PFOA			
D. PFNA			
E. PFDA			
F. PFUnA			
G. PFDoA			
H. PFTriA			
I. PFTeDA			
J. PFBS			
K. PFHxS			
L. PFHpS			
M. PFOS			
N. PFDS			
O. FOSA			
P. PFBA			
Q. PFPeA			
R. 6:2FTS			
S. 8:2FTS			
T. MeFOSAA			
U. EtFOSAA			
V. Combined PFOAS/PFOS			

LDC #: 43888096

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: JVG
2nd Reviewer: C

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a continuing calibration standard analyzed after every 10 injections for each instrument?

Y (N) N/A Were all continuing calibration percent differences (%D) ≤30 %?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤30.0%)	Finding RRF (Limit:)	Associated Samples	Qualifications
	12/03/18	181203M1_2	I	42.4		All (ND)	J/UJ/A

Enclosure II

Manual Stage 2B and Stage 4 Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: Volatiles

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-116898-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2	280-116898-1	Water	11/12/18
A1-MW-05-SA2	280-116898-2	Water	11/12/18
A1-MW-49-SA2	280-116898-3	Water	11/12/18
A1-MW-50-SA2	280-116898-4	Water	11/12/18
A1-MW-50-SA2D	280-116898-5	Water	11/12/18
A1-MW-51-SA2	280-116898-6	Water	11/12/18
A1-PZ-19-SA2	280-116898-8	Water	11/12/18
A1-MW-52-SA2	280-116898-9	Water	11/12/18
A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260B

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0% for all compounds.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0% for all compounds.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TB-20181112 was identified as a trip blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

Samples A1-MW-50-SA2 and A1-MW-50-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ug/L)				
Compound	A1-MW-50-SA2	A1-MW-50-SA2D	RPD (Limits)	Flag	A or P
1,1-Dichloroethene	0.564	0.630	Not calculable	-	-
Trichloroethene	0.780	0.949	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All compounds reported below the LOQ.	J (all detects)	A

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results below the LOQ, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Volatiles - Data Qualification Summary - SDG 280-116898-1

Sample	Compound	Flag	A or P	Reason
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Volatiles - Laboratory Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Volatiles - Field Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

LDC #: 43888A1a **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: 280-116898-1 ADR/Stage ~~2B~~ 4 Page: 1 of 1
Laboratory: Test America, Inc. Reviewer: SW
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50 %
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation.~~
VI.	Field blanks	ND	TB = 7
VII.	Surrogate spikes	A	~~Not reviewed for ADR validation.~~
VIII.	Matrix spike/Matrix spike duplicates	A	Not reviewed for ADR validation.
IX.	Laboratory control samples	A	~~Not reviewed for ADR validation.~~ LCS
X.	Field duplicates	SW	D = 4/5
XI.	Internal standards	A	~~Not reviewed for ADR validation.~~
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Target compound identification	A	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	~~Not reviewed for ADR validation.~~

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2** D	280-116898-4**	Water	11/12/18
5	A1-MW-50-SA2D** D	280-116898-5**	Water	11/12/18
6	A1-MW-51-SA2**	280-116898-6**	Water	11/12/18
7	~~TB-20181112~~	280-116898-7	Water	11/12/18
8	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
9	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
10	A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
11	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
12	MB 280-438700/6			
13	L - 438747/4			

(H, AA, S only)

LDC #: 43888A1N

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Method: Volatiles (EPA SW 846 Method 8260B)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
Were all percent relative standard deviations (%RSD) ≤ 30%/15% and relative response factors (RRF) ≥ 0.05?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 20% or percent recoveries (%R) 80-120%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) and relative response factors (RRF) within method criteria for all CCCs and SPCCs?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks were identified in this SDG?	✓	*		
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	

LDC #: 93888A1a

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene	A2.
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane	B2.
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane	C2.
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene	D2.
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11	E2.
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12	F2.
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113	G2.
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114	H2.
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane	I2.
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide	J2.
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane	K2.
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane	L2.
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane	M2.
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane	N2.
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane	O2.
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane	P2.
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane	Q2.
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane	R2.
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane	S2.
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane	T2.
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal	U2.
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene	V2.
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol	W2.
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene	X2.
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.	Y2.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.	Z2.

LDC#: 43888A1a

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: GCMS VOA (EPA SW 846 Method 8260B)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)	Qualifications (Parent only)
	4	5		
H	0.564	0.630	NC	
S	0.780	0.949	NC	

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LDC #: 43888A1a

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound — C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) — S= Standard deviation of the RRFs — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (RRF 10 std)	Recalculated RRF (RRF 10 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL GC MSV G	10/29/2018	Trichloroethene (IS1)	0.4141	0.4141	0.3989	0.3989	3.0	3.0
			Tetrachloroethene (IS2)	1.5494	1.5494	1.4974	1.4974	2.5	2.5
2	ICAL GC MSV Z	11/3/2018	Trichloroethene (IS1)	0.4665	0.4665	0.4837	0.4837	6.8	6.8
			Tetrachloroethene (IS2)	1.6975	1.6975	1.7599	1.7599	5.9	5.9

LDC # 43888A1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (IS)	Average RRF (Initial)	Reported RRF (CCV)	Recalculated RRF (CCV)	Reported % D	Recalculated %D
1	G2197 GC MSV G	11/26/2018	Trichloroethene (IS1)	0.3989	0.4216	0.4216	5.7	5.7
			Tetrachloroethene (IS2)	1.4974	1.5171	1.5171	1.3	1.3
2	Z3472 GC MSV Z	11/26/2018	Trichloroethene (IS1)	0.4837	0.5081	0.5081	5.0	5.0
			Tetrachloroethene (IS2)	1.7599	1.7106	1.7106	2.8	2.8

LDC #: 43888 A1a

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Page: 1 of 1
Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	10.0	10.1	101	101	0
1,2-Dichloroethane-d4		9.22	92	92	
Toluene-d8		10.3	103	103	
Bromofluorobenzene		10.1	101	101	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 42888A1a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 10/11

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	5.00	5.00	0.564	5.549	5.972	100	100	108	108	7	7
Trichloroethene	↓	↓	0.780	5.580	5.935	96	96	103	107	6	6
Benzene											
Toluene											
Chlorobenzene											

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 93888 A1a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: LCS 280-438700/4

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	5.00	NA	4.874	NA	97	97				
Trichloroethene	5.00	↓	5.029	↓	101	101				
Benzene										
Toluene										
Chlorobenzene										

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888A1a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260B)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 4, TCE:

Conc. = $\frac{(13951)(12.5)(\quad)}{(560722)(0.3989)(\quad)(\quad)}$

= 0.780 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration ( )	Qualification
			0.780		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: January 2, 2019

Parameters: Wet Chemistry

Validation Level: Stage 4

Laboratory: TestAmerica, Inc.

Sample Delivery Group (SDG): 280-116898-1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2	280-116898-1	Water	11/12/18
A1-MW-05-SA2	280-116898-2	Water	11/12/18
A1-MW-49-SA2	280-116898-3	Water	11/12/18
A1-MW-50-SA2	280-116898-4	Water	11/12/18
A1-PZ-19-SA2	280-116898-8	Water	11/12/18
A1-MW-52-SA2	280-116898-9	Water	11/12/18
A1-MW-50-SA2MS	280-116898-4MS	Water	11/12/18
A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
A1-MW-50-SA2DUP	280-116898-4DUP	Water	11/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Inorganic Superfund Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Chloride, Nitrate as Nitrogen, and Sulfate by Environmental Protection Agency (EPA) SW 846 Method 9056A
Ferrous Iron by Standard Method 3500-Fe B
pH by EPA SW 846 Method 9040C

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Time From Sample Collection Until Analysis	Required Holding Time From Sample Collection Until Analysis	Flag	A or P
A1-MW-04-SA2 A1-MW-50-SA2 A1-MW-52-SA2	pH	11 days	24 hours	J (all detects)	P
A1-MW-05-SA2 A1-MW-49-SA2 A1-PZ-19-SA2	pH	14 days	24 hours	J (all detects)	P
A1-MW-04-SA2 A1-MW-49-SA2 A1-MW-52-SA2	Ferrous Iron	9 days	24 hours	R (all non-detects)	P
A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	Ferrous Iron	9 days	24 hours	J (all detects)	P

II. Initial Calibration

All criteria for the initial calibration of each method were met.

III. Continuing Calibration

Continuing calibration frequency and analysis criteria were met for each method when applicable.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Nitrate as N Sulfate	0.04530 mg/L 0.3332 mg/L	All samples in SDG 280-116898-1
ICB/CCB	Nitrate as N Sulfate	0.04526 mg/L 0.3841 mg/L	All samples in SDG 280-116898-1

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

V. Field Blanks

No field blanks were identified in this SDG.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Sample Result Verification

All sample result verifications were acceptable.

All analytes reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All analytes reported below the LOQ.	J (all detects)	A

XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods.

Due to technical holding time, data were rejected in three samples.

Due to technical holding time and results below the LOQ, data were qualified as estimated in six samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Wet Chemistry - Data Qualification Summary - SDG 280-116898-1

Sample	Analyte	Flag	A or P	Reason
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	pH	J (all detects)	P	Technical holding times
A1-MW-04-SA2 A1-MW-49-SA2 A1-MW-52-SA2	Ferrous Iron	R (all non-detects)	P	Technical holding times
A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	Ferrous Iron	J (all detects)	P	Technical holding times
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-PZ-19-SA2 A1-MW-52-SA2	All analytes reported below the LOQ.	J (all detects)	A	Sample result verification

MCAS Yuma, CTO 17F3803
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Wet Chemistry - Field Blank Data Qualification Summary - SDG 280-116898-1

No Sample Data Qualified in this SDG

LDC #: 43888A6 **VALIDATION COMPLETENESS WORKSHEET** Date: 12-20-18

SDG #: 280-116898-1 ~~ADR~~/Stage 4 Page: 1 of 1

Laboratory: Test America, Inc. Reviewer: MG

2nd Reviewer:

METHOD: (Analyte) Chloride, Nitrate-N, Sulfate (EPA SW846 Method 9056A), Ferrous Iron (SM3500-Fe B), pH (EPA SW846 Method 9040C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	SW	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	Not reviewed for ADR validation. MS/MSD
VII.	Duplicate sample analysis	A	Not reviewed for ADR validation. DUP
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. LCS/LCSD
IX.	Field duplicates	N	
X.	Sample result verification	A	Not reviewed for ADR validation.
XI	Overall assessment of data	A	Not reviewed for ADR validation.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	280-116898-1**	Water	11/12/18
2	A1-MW-05-SA2**	280-116898-2**	Water	11/12/18
3	A1-MW-49-SA2**	280-116898-3**	Water	11/12/18
4	A1-MW-50-SA2**	280-116898-4**	Water	11/12/18
5	~~A1-MW-51-SA2~~	280-116898-6	Water	11/12/18
6	A1-PZ-19-SA2**	280-116898-8**	Water	11/12/18
7	A1-MW-52-SA2**	280-116898-9**	Water	11/12/18
8	~~A1-MW-50-SA2MS~~	280-116898-4MS	Water	11/12/18
9	A1-MW-50-SA2MSD	280-116898-4MSD	Water	11/12/18
10	~~A1-MW-50-SA2DUP~~	280-116898-4DUP	Water	11/12/18
11				
12				
13				
14				
15	PBW			

Notes:

LDC #: 43888A6

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer:

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.		✓		
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.	✓			
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Sample Specific Analysis Reference

Reviewer: MG
2nd reviewer:

All circled methods are applicable to each sample.

Sample ID	Matrix	Parameter
1→7	W	(pH) TDS (Cl) F (NO_3) NO_2 (SO_4) PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4 (Fe+2)
QC 8→10	↓	pH TDS (Cl) F (NO_3) NO_2 (SO_4) PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4
		pH TDS Cl F NO_3 NO_2 SO_4 PO_4 ALK CN^- NH_3 TKN TOC CR^{6+} ClO_4

Comments:

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: MG
2nd reviewer:

All circled dates have exceeded the technical holding time.
(Y) N N/A Were all samples preserved as applicable to each method?
(Y) N N/A Were all cooler temperatures within validation criteria?

Method:	9040C	SM 3500 Fe B				
Parameters:	pH	Ferrous Iron				
Technical holding time:	24 hr	24 hr				

Sample ID	Sampling date	Analysis date	Analysis date	Analysis date	Analysis date	Analysis date	Qualifier	
1	11:40 11-12-18	14:43 11-23-18	(11 days)				J/UJ/P	(det)
2	14:24 11-12-18	13:27 11-26-18	(14)					( )
3	08:32 11-12-18	13:36 11-26-18	(14)					( )
4	09:25 11-12-18	15:19 11-23-18	(11)					( )
~~5~~	~~10:46 11-12-18~~	~~15:33 11-23-18~~	(11)					( )
6	12:43 11-12-18	13:32 11-26-18	(14)					( )
7	13:39 11-12-18	15:23 11-23-18	(11)					( )
1	11:40 11-12-18			18:30 11-21-18	(9 days)		J/R/P	(N.D.)
2	14:24 11-12-18				( )			(det)
3	08:32 11-12-18				( )			(ND)
4	09:25 11-12-18				( )			(det)
~~5~~	~~10:46 11-12-18~~				( )			( )
6	12:43 11-12-18				( )			( )
7	13:39 11-12-18				( )			(ND)

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Blanks

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Conc. units: mg/L **Associated Samples:** all **(NO3-N: 2x dil, SO4: 20x dil, >5x or ND)**

Analyte	Blank ID	Blank ID	Blank Action Limit									
	PB	ICB/CCB (mg/L)		No Qual's.									
NO3-N	0.04530	0.04526	0.4526									
SO4	0.3332	0.3841	38.41									

CIRCLED RESULTS WERE NOT QUALIFIED. ALL RESULTS NOT CIRCLED WERE QUALIFIED BY THE FOLLOWING STATEMENT:
All contaminants within five times the method blank concentration were qualified as not detected, "U".

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See cover

The correlation coefficient (r) for the calibration of Cl was recalculated. Calibration date: 9-1-18

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution
True = concentration of each analyte in the ICV or CCV source

Type of Analysis	Analyte	Standard ID	Conc. Found (units)	Area True (units)	Recalculated r or %R	Reported r or %R	Acceptable (Y/N)
Initial calibration	Cl	Blank	-	-	r=1.000	r= 1.000	Y
		Standard 1	1.0 (mg/L)	17320827			
		Standard 2	2.5 ( )	46063990			
		Standard 3	5.0 ( )	94576246			
		Standard 4	60.0 ( )	1169987193			
		Standard 5	120.0 ( )	2305131911			
		Standard 6	200.0 ( )	3845262113			
		Standard 7	-	-			
Calibration verification	Ferrous Iron	1830 ICV	1.045 (mg/L)	1.00 (mg/L)	104	105	
Calibration verification	NO_3-N	1052 CCV	4.85 (mg/L)	5.00 (mg/L)	97	97	
Calibration verification	SO_4	1646 CCV	102.2 (mg/L)	100 (mg/L)	102	102	

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MG
2nd Reviewer:

METHOD: Inorganics, Method See Cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

%R = Found / True x 100 Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

RPD = |S-D| / (S+D)/2 x 100 Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	Found / S (units)	True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
1830 LCS	Laboratory control sample	Ferrous Iron	2.13 (mg/L)	2.00 (mg/L)	106	106	Y
1801 8	Matrix spike sample	Cl	(SSR-SR) 512 (mg/L)	500 (mg/L)	102	102	
1724/1743 10	Duplicate sample	SO_4	894 (mg/L)	866 (mg/L)	3	3	

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888A6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer:

METHOD: Inorganics, Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for #1, SO_4 reported with a positive detect were recalculated and verified using the following equation:

Concentration = $Y = mx + b$
where
$m = 14253830$
$b = -272056$
dil = 20 x

Recalculation:

$$601084316 = 14253830\left(\frac{x}{20}\right) - 272056$$

$$843.78 \text{ mg/L} = x$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
1	1	SO_4	847	844	Y
2	2	Ferrous Iron	0.119	0.119	
3	3	pH	7.9 (SU)	7.9 (SU)	
4	4	NO_3-N	3.26	3.18	
5	6	Ferrous Iron	0.0591	0.0591	
6	7	pH	8.0 (SU)	8.0 (SU)	

Note:

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B & 4

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1846366

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2**	L1846366-01**	Water	11/12/18
A1-MW-05-SA2**	L1846366-02**	Water	11/12/18
A1-MW-49-SA2**	L1846366-03**	Water	11/12/18
A1-MW-50-SA2**	L1846366-04**	Water	11/12/18
A1-MW-50-SA2D	L1846366-05	Water	11/12/18
A1-MW-51-SA2**	L1846366-06**	Water	11/12/18
A1-PZ-19-SA2**	L1846366-07**	Water	11/12/18
A1-MW-52-SA2**	L1846366-08**	Water	11/12/18
A1-MW-50-SA2MS	L1846366-04MS	Water	11/12/18
A1-MW-50-SA2MSD	L1846366-04MSD	Water	11/12/18

**Indicates sample underwent Stage 4 validation

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results. Samples appended with a double asterisk on the cover page were subjected to Stage 4 data validation, which is comprised of the QC summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-50-SA2** and A1-MW-50-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/L)				
Compound	A1-MW-50-SA2**	A1-MW-50-SA2D	RPD (Limits)	Flag	A or P
1,4-Dioxane	592	591	0 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

All target compound identifications met validation criteria for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

The system performance was acceptable for samples which underwent Stage 4 validation. Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1846366

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1846366

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1846366

No Sample Data Qualified in this SDG

LDC #: 43888F2b

SDG #: L1846366

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

~~ADR/~~Stage 4 2B

Date: 12/19/18

Page: 1 of 1

Reviewer: JG

2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	A	~~Not reviewed for ADR validation~~.
VI.	Field blanks	N	
VII.	Surrogate spikes	A	~~Not reviewed for ADR validation~~.
VIII.	Matrix spike/Matrix spike duplicates	A	Not reviewed for ~~ADR~~ validation.
IX.	Laboratory control samples	A	~~Not reviewed for ADR validation~~. LCS/D
X.	Field duplicates	SW	D = 4/5
XI.	Internal standards	A	~~Not reviewed for ADR validation~~.
XII.	Compound quantitation RL/LOQ/LODs	A	Not reviewed for ADR validation.
XIII.	Target compound identification	A	Not reviewed for ADR validation.
XIV.	System performance	A	Not reviewed for ADR validation.
XV.	Overall assessment of data	A	~~Not reviewed for ADR validation~~.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	L1846366-01**	Water	11/12/18
2	A1-MW-05-SA2**	L1846366-02**	Water	11/12/18
3	A1-MW-49-SA2**	L1846366-03**	Water	11/12/18
4	A1-MW-50-SA2** D	L1846366-04**	Water	11/12/18
5	A1-MW-50-SA2D D	L1846366-05	Water	11/12/18
6	A1-MW-51-SA2**	L1846366-06**	Water	11/12/18
7	A1-PZ-19-SA2**	L1846366-07**	Water	11/12/18
8	A1-MW-52-SA2**	L1846366-08**	Water	11/12/18
9	A1-MW-50-SA2MS	L1846366-04MS	Water	11/12/18
10	A1-MW-50-SA2MSD	L1846366-04MSD	Water	11/12/18
11				
12				
13	NG118091I-1 BLANK			

LDC #: 43888F2b

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Method: ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check (Not required)				
Were the DFTPP performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?			✓	
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤30% or percent recoveries (%R) 70-130%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) ≥ 0.05?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks identified in this SDG?		✓		
Were target compounds detected in the field blanks?			✓	
VII. Surrogate spikes				
Were all surrogate percent differences (%R) within QC limits?	✓			
If 2 or more base neutral or acid surrogates were outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any percent recoveries (%R) was less than 10 percent, was a reanalysis performed to confirm %R?			✓	

LDC #: 43858F26

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓	-		
Were target compounds detected in the field duplicates?		✓		
XI. Internal standards				
Were internal standard area counts within -50% or +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC #: 43888F2b

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The Relative Response Factor (RRF), average RRF, and percent relative standard deviation (%RSD) were recalculated for the compounds identified below using the following calculations:

$RRF = (A_x)(C_{is})/(A_{is})(C_x)$ — A_x = Area of Compound — A_{is} = Area of associated internal standard

average RRF = sum of the RRFs/number of standards — C_x = Concentration of compound, — C_{is} = Concentration of internal standard

%RSD = 100 * (S/X) — S= Standard deviation of the RRFs, — X = Mean of the RRFs

#	Standard ID	Calibration Date	Compound (IS)	Reported RRF (500 std)	Recalculated RRF (500 std)	Reported Average RRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
1	ICAL MS16	11/15/2018	1,4-Dioxane (DXN-d8)	1.428	1.428	1.407	1.407	3.61	3.60

LDC #: 43888 F2b

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
~~Nitrobenzene-d5~~ 1,4-Dioxane-d8	500	126.288	25	25	0
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Nitrobenzene-d5					
2-Fluorobiphenyl					
Terphenyl-d14					

LDC #: 43888 F26

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 9/10

Compound	Spike Added (ng/L)		Sample Concentration (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Acenaphthene											
Pyrene											
1,4-Dioxane-d8	5000	5000	592	6560	6760	119	119	123	123	3	3

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888F2b

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: WG11 80911-2/3

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
Acenaphthene										
Pyrene										
1,4-Dioxane	5000	5000	5780	5890	116	116	118	118	2	2

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888 F26

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS ~~PAH~~ SVOA (EPA SW 846 Method 8270D-SIM)

(Y) N N/A Were all reported results recalculated and verified for all level IV samples?
Y (N) N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, 1,4-Dioxane

Conc. = $\frac{(9071)(500)(5\ ml)(\ )(\ )(\ )}{(7476)(1.407)(0.5\ L)(\ )(\ )(\ )}$

= 4311 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
			4310		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1846592

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
16-HS-03-SA2	L1846592-01	Water	11/13/18
16-MW-06-SA2	L1846592-02	Water	11/13/18
16-MW-08-SA2	L1846592-03	Water	11/13/18
16-MW-09-SA2	L1846592-04	Water	11/13/18
A1-MW-18-SA2	L1846592-05	Water	11/13/18
A1-MW-19-SA2	L1846592-06	Water	11/13/18
A1-MW-53-SA2	L1846592-07	Water	11/13/18
16-HS-03-SA2D	L1846592-08	Water	11/13/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples 16-HS-03-SA2 and 16-HS-03-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Flag	A or P
	16-HS-03-SA2	16-HS-03-SA2D			
1,4-Dioxane	5330	6120	14 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1846592

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1846592

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1846592

No Sample Data Qualified in this SDG

LDC #: 43888G2b **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: L1846592 ADR Stage2B Page: 1 of 1
Laboratory: Alpha Analytical, Inc. Reviewer: SW
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	N/A	
VI.	Field blanks	N	
VII.	Surrogate spikes	N/A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	N/A	LCS/D
X.	Field duplicates	SW	D = 1/8
XI.	Internal standards	N/A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	N/A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID		Lab ID	Matrix	Date
1	16-HS-03-SA2	D	L1846592-01	Water	11/13/18
2	16-MW-06-SA2		L1846592-02	Water	11/13/18
3	16-MW-08-SA2		L1846592-03	Water	11/13/18
4	16-MW-09-SA2		L1846592-04	Water	11/13/18
5	A1-MW-18-SA2		L1846592-05	Water	11/13/18
6	A1-MW-19-SA2		L1846592-06	Water	11/13/18
7	A1-MW-53-SA2		L1846592-07	Water	11/13/18
8	16-HS-03-SA2D	D	L1846592-08	Water	11/13/18
9					
10					

Notes:

	WG 1180911-1 BLANK						

LDC#: 43888G2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JVG
2nd Reviewer:

METHOD: GCMS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ng/L)		RPD (≤30%)	Qualifications (Parent only)
	1	8		
1,4-Dioxane	5330	6120	14	

V:\Josephine\FIELD DUPLICATES\43888G2b ttech yuma.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1846856

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-07-SA2	L1846856-01	Water	11/14/18
A1-MW-23-SA2	L1846856-02	Water	11/14/18
A1-MW-25-SA2	L1846856-03	Water	11/14/18
A1-MW-27-SA2	L1846856-04	Water	11/14/18
A1-MW-55-SA2	L1846856-05	Water	11/14/18
A1-MW-54-SA2	L1846856-06	Water	11/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1846856

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1846856

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1846856

No Sample Data Qualified in this SDG

LDC #: 43888H2b **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18
SDG #: L1846856 ~~ADR~~ Stage2B Page: 1 of 1
Laboratory: Alpha Analytical, Inc. Reviewer: SW
2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	~~N~~ A	
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	~~N~~ A	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~N~~ A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
+ 1	A1-MW-07-SA2	L1846856-01	Water	11/14/18
— 2	A1-MW-23-SA2	L1846856-02	Water	11/14/18
+ 3	A1-MW-25-SA2	L1846856-03	Water	11/14/18
+ 4	A1-MW-27-SA2	L1846856-04	Water	11/14/18
— 5	A1-MW-55-SA2	L1846856-05	Water	11/14/18
— 6	A1-MW-54-SA2	L1846856-06	Water	11/14/18
7				
8				
9				

Notes:

—	WG1181575-1 BLANK						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1847243

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-11-SA2	L1847243-01	Water	11/15/18
A1-MW-13-SA2	L1847243-02	Water	11/15/18
A1-MW-14-SA2	L1847243-03	Water	11/15/18
A1-MW-15-SA2	L1847243-04	Water	11/15/18
A1-MW-37-SA2	L1847243-05	Water	11/15/18
A1-MW-37-SA2D	L1847243-06	Water	11/15/18
A1-MW-31-SA2	L1847243-07	Water	11/15/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples A1-MW-37-SA2 and A1-MW-37-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Flag	A or P
	A1-MW-37-SA2	A1-MW-37-SA2D			
1,4-Dioxane	13100	13200	1 (≤30)	-	-

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1847243

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1847243

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1847243

No Sample Data Qualified in this SDG

LDC #: 43888I2b

SDG #: L1847243

Laboratory: Alpha Analytical, Inc.

VALIDATION COMPLETENESS WORKSHEET

ADR Stage 2B

Date: 12/19/18

Page: 1 of 1

Reviewer: JM

2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	ICAL ≤ 15% ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20/50%
V.	Laboratory Blanks	~~N~~ A	
VI.	Field blanks	N	
VII.	Surrogate spikes	~~N~~ A	
VIII.	Matrix spike/Matrix spike duplicates	N	
IX.	Laboratory control samples	~~N~~ A	LCS/D
X.	Field duplicates	SW	D = 5/6
XI.	Internal standards	~~N~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~N~~ A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID		Lab ID	Matrix	Date
1	A1-MW-11-SA2		L1847243-01	Water	11/15/18
2	A1-MW-13-SA2		L1847243-02	Water	11/15/18
3	A1-MW-14-SA2		L1847243-03	Water	11/15/18
4	A1-MW-15-SA2		L1847243-04	Water	11/15/18
5	A1-MW-37-SA2	D	L1847243-05	Water	11/15/18
6	A1-MW-37-SA2D	D	L1847243-06	Water	11/15/18
7	A1-MW-31-SA2		L1847243-07	Water	11/15/18
8					
9					

Notes:

	WG1181805-1 BLANK						

(EB - on hold)

LDC#: 43888I2b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: GCMS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ng/L)		RPD (≤30%)	Qualifications (Parent only)
	5	6		
1,4-Dioxane	13100	13200	1	

V:\Josephine\FIELD DUPLICATES\43888I2b ttech yuma.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: December 20, 2018

Parameters: 1,4-Dioxane

Validation Level: Stage 2B

Laboratory: Alpha Analytical, Inc.

Sample Delivery Group (SDG): L1847316

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-01-SA2	L1847316-01	Water	11/16/18
A1-MW-42-SA2	L1847316-02	Water	11/16/18
EB-20181116	L1847316-03	Water	11/16/18
A1-MW-01-SA2MS	L1847316-01MS	Water	11/16/18
A1-MW-01-SA2MSD	L1847316-01MSD	Water	11/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

1,4-Dioxane by Environmental Protection Agency (EPA) SW 846 Method 8270D in Selected Ion Monitoring (SIM) mode

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A decafluorotriphenylphosphine (DFTPP) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 15.0%.

Average relative response factors (RRF) were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0%.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0%.

The percent differences (%D) of the ending continuing calibration verifications (CCVs) were less than or equal to 50.0%.

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB-20181116 was identified as an equipment blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIV. System Performance

Raw data were not reviewed for Stage 2B validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Data Qualification Summary - SDG L1847316

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Laboratory Blank Data Qualification Summary - SDG L1847316

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
1,4-Dioxane - Field Blank Data Qualification Summary - SDG L1847316

No Sample Data Qualified in this SDG

LDC #: 43888J2b

VALIDATION COMPLETENESS WORKSHEET

~~ADR~~ Stage2B

Date: 2/19/19

SDG #: L1847316

Page: 1 of 1

Laboratory: Alpha Analytical, Inc.

Reviewer: JVG

2nd Reviewer:

METHOD: GC/MS 1,4-Dioxane (EPA SW 846 Method 8270D-SIM)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 15%. ICV ≤ 20%
IV.	Continuing calibration	A	CCV ≤ 20%/50%.
V.	Laboratory Blanks	~~X~~ A	
VI.	Field blanks	ND	EB = 3
VII.	Surrogate spikes	~~X~~ A	
VIII.	Matrix spike/Matrix spike duplicates	~~X~~ A	
IX.	Laboratory control samples	~~X~~ A	LCS
X.	Field duplicates	N	
XI.	Internal standards	~~X~~ A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	~~X~~ A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
+ 1	A1-MW-01-SA2	L1847316-01	Water	11/16/18
+ 2	A1-MW-42-SA2	L1847316-02	Water	11/16/18
− 3	EB-20181116	L1847316-03	Water	11/16/18
4	A1-MW-01-SA2MS	L1847316-01MS	Water	11/16/18
5	A1-MW-01-SA2MSD	L1847316-01MSD	Water	11/16/18
6				
7				
8				

Notes:

−	WG1181887-1 BLANK						

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS Yuma, CTO 17F3803

LDC Report Date: January 2, 2019

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1803615

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
A1-MW-04-SA2	1803615-01	Water	11/12/18
A1-MW-05-SA2	1803615-02	Water	11/12/18
A1-MW-49-SA2	1803615-03	Water	11/12/18
A1-MW-50-SA2	1803615-04	Water	11/12/18
A1-MW-50-SA2D	1803615-05	Water	11/12/18
A1-MW-51-SA2	1803615-06	Water	11/12/18
A1-MW-52-SA2	1803615-07	Water	11/12/18
FRB-20181112	1803615-08	Water	11/12/18
A1-PZ-19-SA2	1803615-09	Water	11/12/18
A1-MW-50-SA2MS	1803615-04MS	Water	11/12/18
A1-MW-50-SA2MSD	1803615-04MSD	Water	11/12/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Groundwater Long-Term Monitoring Program at Operable Unit-1 Area 1, Marine Corps Air Station Yuma, Arizona (April 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Superfund Organic Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r^2) was greater than or equal to 0.990.

For each calibration standard, all compounds were less than or equal to 30% of their true value.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample FRB-20181112 was identified as a field rinsate blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Ongoing Precision Recovery

Ongoing precision recovery (OPR) samples were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples A1-MW-50-SA2 and A1-MW-50-SA2D were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Flag	A or P
	A1-MW-50-SA2	A1-MW-50-SA2D			
PFTeDA	0.0250	0.0264	5 (≤30)	-	-
PFHxA	0.0806	0.0829	3 (≤30)	-	-
PFHpA	0.00474	0.00494	Not calculable	-	-
PFHxS	0.0367	0.0355	3 (≤30)	-	-
PFOA	0.00947	0.00878	Not calculable	-	-

RPDs were not calculated when sample results in one or both samples were less than 5x the limit of quantitation (LOQ).

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that the parent/product transition ion ratios met laboratory requirements with the following exceptions:

Sample	Compound	Finding
A1-MW-05-SA2 A1-MW-50-SA2 A1-PZ-19-SA2	All compounds qualified 'Q' by the laboratory	The parent/product transition ion ratio was outside of the 70-130% laboratory limits.

Since there are no established transition ion ratio requirements in the validation documents for this project, using professional judgment, no data were qualified.

All compounds reported below the limit of quantitation (LOQ) were qualified as follows:

Sample	Finding	Flag	A or P
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2	All compounds reported below the LOQ.	J (all detects)	A

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to results below the LOQ, data were qualified as estimated in eight samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS Yuma, CTO 17F3803
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG 1803615

Sample	Compound	Flag	A or P	Reason
A1-MW-04-SA2 A1-MW-05-SA2 A1-MW-49-SA2 A1-MW-50-SA2 A1-MW-50-SA2D A1-MW-51-SA2 A1-MW-52-SA2 A1-PZ-19-SA2	All compounds reported below the LOQ.	J (all detects)	A	Compound quantitation

MCAS Yuma, CTO 17F3803
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 1803615

No Sample Data Qualified in this SDG

MCAS Yuma, CTO 17F3803
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 1803615

No Sample Data Qualified in this SDG

LDC #: 43888K96 **VALIDATION COMPLETENESS WORKSHEET** Date: 12/19/18

SDG #: 1803615 ADR/Stage 4 Page: 1 of 1

Laboratory: Vista Analytical Laboratory Reviewer: SVG

2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	ICAL ~~≤~~ r² Individual ≤30% ICV ≤ 30%
IV.	Continuing calibration/ISC	A	CCV ≤ 30% True value
V.	Laboratory Blanks	A	Not reviewed for ADR validation.
VI.	Field blanks	ND	FRB = 8
VII.	Matrix spike/Matrix spike duplicates	A	Not reviewed for ADR validation.
VIII.	Laboratory control samples	A	Not reviewed for ADR validation. OPR
IX.	Field duplicates	SW	D = 4/5
X.	Labeled Compounds	A	Not reviewed for ADR validation.
XI.	Compound quantitation RL/LOQ/LODs	SW	Not reviewed for ADR validation.
XII.	Target compound identification	A	Not reviewed for ADR validation.
XIII.	System performance	A	Not reviewed for ADR validation.
XIV.	Overall assessment of data	A	Not reviewed for ADR validation.

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER: FRB = Field Rinsate Blk

** Indicates sample underwent Stage 4 validation

	Client ID	Lab ID	Matrix	Date
1	A1-MW-04-SA2**	1803615-01**	Water	11/12/18
2	A1-MW-05-SA2**	1803615-02**	Water	11/12/18
3	A1-MW-49-SA2**	1803615-03**	Water	11/12/18
4	A1-MW-50-SA2**	1803615-04**	Water	11/12/18
5	A1-MW-50-SA2D**	1803615-05**	Water	11/12/18
6	A1-MW-51-SA2**	1803615-06**	Water	11/12/18
7	A1-MW-52-SA2**	1803615-07**	Water	11/12/18
8	FRB-20181112	1803615-08	Water	11/12/18
9	A1-MW-19-SA2**	1803615-09**	Water	11/12/18
10	A1-MW-50-SA2MS	1803615-04MS	Water	11/12/18
11	A1-MW-50-SA2MSD	1803615-04MSD	Water	11/12/18
12				
13				
14	B8K0091-BLK1			
15				

LDC #: 43888 K96

VALIDATION FINDINGS CHECKLIST

Reviewer: SK
2nd Reviewer: [illegible]

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?			✓	
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) < 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration analyzed daily?	✓			
Were all percent differences (%D) of the continuing calibration < 30%?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check < 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?	✓			
IX. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			

LDC #: P3888K96

VALIDATION FINDINGS CHECKLIST

Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
XII. Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: PFAS

A. PFHxA			
B. PFHpA			
C. PFOA			
D. PFNA			
E. PFDA			
F. PFUnA			
G. PFDoA			
H. PFTriA			
I. PFTeDA			
J. PFBS			
K. PFHxS			
L. PFHpS			
M. PFOS			
N. PFDS			
O. FOSA			
P. PFBA			
Q. PFPeA			
R. 6:2FTS			
S. 8:2FTS			
T. MeFOSAA			
U. EtFOSAA			
V. Combined PFOAS/PFOS			

LDC#: 43888K96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JVG
2nd Reviewer:

METHOD: LCMS PFAS (EPA Method 537M)

Y N NA Were field duplicate pairs identified in this SDG?
Y N NA Were target analytes detected in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD (≤30%)	Qualifications (Parent only)
	4	5		
J	0.0250	0.0264	5	
A	0.0806	0.0829	3	
B	0.00474	0.00494	NC	
K	0.0367	0.0355	3	
C	0.00947	0.00878	NC	

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LDC #: 43888K96

VALIDATION FINDINGS WORKSHEET
Compound Quantitation and Reported RLs

Reviewer: JVG
2nd Reviewer: A

METHOD: LCMS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?

Y N N/A Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?

#	Samples	Compound	Finding	Qualifications
	2, 4, 9	All compounds qualified "Q" by the lab.	The laboratory indicated that the parent/product transition ion ratio was outside of the 70-130% laboratory limits.	Since there are no established transition ion ratio requirements in the validation documents for this project, using professional judgment, no data were qualified.

Comments: See sample calculation verification worksheet for recalculations

LDC # 43888K96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFCs (EPA Method 537Mod)

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
11/19/2018	SCN960	PFOA	1	0.0327	0.02	0.00040
			2	0.0593	0.04	0.0016
		13C2-PFOA	3	0.1197	0.08	0.0064
			4	0.2358	0.16	0.0256
			5	0.5699	0.40	0.1600
			6	1.0165	0.80	0.6400
			7	5.1296	4.00	16.0000
			8	10.3516	8.00	64.0000
			9	25.6395	20.00	400.0000
			10	51.9892	40.00	1600.0000

Regression Output	**Calculated**		***Reported WQR***	
Constant	*c*	*0.03180*	*c*	*0.1398430*
Std Err of Y Est				
R Squared		*0.9999917*		*0.9999030*
Degrees of Freedom				
	m1	*m2*	*m1*	*m2*
X Coefficient(s)	*1.2736124*	*0.0006421*	*1.2814700*	*0.000032442*
Std Err of Coef.				
Correlation Coefficient		*0.999996*		
Coefficient of Determination (r^2)		*0.999992*		

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

METHOD: LC/MS PFCs (EPA Method 537Mod)

Calibration Date	System	Compound	Standard	(Y) Area ratio	(X) Conc ratio
11/19/2018	SCN960	PFOS	1	0.02405	0.020
			2	0.04028	0.040
			3	0.00828	0.080
		13C8-PFOS	4	0.15076	0.160
			5	0.42475	0.400
			6	0.84488	0.800
			7	4.25487	4.000
			8	8.43628	8.000
			9	21.03584	20.000
			10	43.32010	40.000

Regression Output	Calculated	Reported WLR
Constant	-0.073380	-0.0118865
Std Err of Y Est		
R Squared	0.999854	0.999775
Degrees of Freedom		
X Coefficient(s)	1.07855632	1.069710
Std Err of Coef.		
Correlation Coefficient	0.999927	
Coefficient of Determination (r^2)	0.999854	0.999775

LDC # 43888K96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFAs (EPA Method 537Mod)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
Ax = Area of compound
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	(IS)	Conc	Reported	Recalculated	Reported % R	Recalculated % R
1	181120M1_58	11/20/2018	PFOA	(13C2-PFOA)	1.00	1.139	1.139	113.9	113.9
			PFOS	(13C8-PFOS)	1.00	1.092	1.092	109.2	109.2

LDC #: 43888k9G

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFAS (EPA Method 537Mod)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 10/11

Compound	Spike Added (ng/L)		Sample Conc (ng/L)	Spiked Sample Concentration (ng/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalc
PFOA	0.0567	0.0863	0.00947	0.112	0.110	118	118	116	116	1.71	1.80
PFOS	↓	↓	0	0.0954	0.0910	110	110	105	105	4.65	4.72

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888K96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/ Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: LC/MS PFCs (EPA Method 537Mod)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: BSK0091-BS1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc..
PFOS	0.0800	~~0.086~~ NA	0.0864	NA	108	108				
PFOA	"	"	0.0969	"	119	119				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 43888 K96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JVG
2nd reviewer:

METHOD: LC/MS PFAS (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1 , PFOA :

Conc. $= \frac{(437)(12.5)}{(5070)} = 3.24421e-5X^2 + 1.28147X + 0.B9843$

$X = 0.73163$

final conc. $= \frac{(0.73163)(1L)}{(0.113454)(1000)}$

$= 0.00645$ ng/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration ( )	Qualification
			0.00646		