Navy_CLEAN_PFAS_FOIA_request_covers.indd

NAVFAC
Naval Facilities Engineering Command

Drinking Water Sample Results, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, Sample Location Report, SDG 1900154

NAS
Chase Field TX
December 2020

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

January 28, 2019

Vista Work Order No. 1900154

Ms. Nia Nikmanesh
KMEA
2423 Hoover Avenue
National City, CA 91950

Dear Ms. Nikmanesh,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on January 19, 2019 under your Project Name 'Chase Field NAS'.

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. 1900154
Case Narrative

Sample Condition on Receipt:

Two drinking water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. Per the COC, sample "PW4-011719-FB" was extract and hold.

Analytical Notes:

EPA Method 537, Rev. 1.1

Sample "PW4-011719-DW" was extracted and analyzed for a selected list of 14 PFAS using EPA Method 537, Rev. 1.1.

Holding Times

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

Quality Control

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

A Laboratory Fortified Blank (LFB) and a Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank above 1/2 the LOQ. The LFB recoveries were within the method acceptance criteria.

The surrogate recoveries for all 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
1900154-01	PW4-011719-DW	17-Jan-19 15:16	19-Jan-19 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1900154-02	PW4-011719-FB	17-Jan-19 15:18	19-Jan-19 10:13	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

Vista Project: 1900154

Client Project: Chase Field NAS

ANALYTICAL RESULTS

Sample ID: LRB

EPA Method 537

Client Data

Name: KMEA
Project: Chase Field NAS
Matrix: Aqueous

Laboratory Data

Lab Sample: B9A0154-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	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFHxA	307-24-4	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFHpA	375-85-9	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFHxS	355-46-4	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFOA	335-67-1	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFNA	375-95-1	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFOS	1763-23-1	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFDA	335-76-2	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
MeFOSAA	2355-31-9	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
EtFOSAA	2991-50-6	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFUnA	2058-94-8	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFDoA	307-55-1	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFTrDA	72629-94-8	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
PFTeDA	376-06-7	ND	0.00304	0.00500	0.0100		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	94.7	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
13C2-PFDA	SURR	98.1	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	1
d5-EtFOSAA	SURR	93.3	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 22:29	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: LFB **EPA Method 537**

Client Data

Name: KMEA
Project: Chase Field NAS
Matrix: Aqueous

Laboratory Data

Lab Sample: B9A0154-BS1 Column: BEH C18

Analyte	CAS Number	Amt Found (ug/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0658	0.0708	92.9	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFHxA	307-24-4	0.0741	0.0800	92.6	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFHpA	375-85-9	0.0774	0.0800	96.8	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFHxS	355-46-4	0.0677	0.0728	93.0	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFOA	335-67-1	0.0767	0.0800	95.8	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFNA	375-95-1	0.0735	0.0800	91.9	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFOS	1763-23-1	0.0666	0.0740	90.0	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFDA	335-76-2	0.0721	0.0800	90.2	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
MeFOSAA	2355-31-9	0.0742	0.0800	92.7	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
EtFOSAA	2991-50-6	0.0706	0.0800	88.2	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFUnA	2058-94-8	0.0729	0.0800	91.1	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFDoA	307-55-1	0.0697	0.0800	87.1	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFTrDA	72629-94-8	0.0606	0.0800	75.8	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
PFTeDA	376-06-7	0.0582	0.0800	72.7	70 - 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	93.7	70- 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
13C2-PFDA	SURR	99.9	70- 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1
d5-EtFOSAA	SURR	90.4	70- 130		B9A0154	22-Jan-19	0.250 L	25-Jan-19 21:54	1

Sample ID: PW4-011719-DW

EPA Method 537

Client Data

Name: KMEA
Project: Chase Field NAS
Matrix: Drinking Water
Date Collected: 17-Jan-19 15:16

Laboratory Data

Lab Sample: 1900154-01
Date Received: 19-Jan-19 10:13
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFHxA	307-24-4	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFHpA	375-85-9	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFHxS	355-46-4	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFOA	335-67-1	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFNA	375-95-1	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFOS	1763-23-1	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFDA	335-76-2	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
MeFOSAA	2355-31-9	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
EtFOSAA	2991-50-6	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFUnA	2058-94-8	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFDoA	307-55-1	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFTrDA	72629-94-8	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
PFTeDA	376-06-7	ND	0.00296	0.00486	0.00972		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA	SURR	99.3	70 - 130		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
13C2-PFDA	SURR	95.0	70 - 130		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	1
d5-EtFOSAA	SURR	89.3	70 - 130		B9A0154	22-Jan-19	0.257 L	26-Jan-19 01:14	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
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	Ion ratio outside of 70-130% of Standard Ratio.
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.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

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

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	**Method**
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

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

MATRIX: Drinking Water	
Description of Test	**Method**
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

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

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

Rev. No.: 0
Rev. Date: 06/27/2017

ID: LR - 537COC

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1900154 Temp: 0.5 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

Project ID: Chase Field NAS PO#: P0934 Sampler: B. Gieselman (name)

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

Invoice to: Name	Company	Address	City	State	Ph#	Fax#
Kevin Olness/Kelli Miller	9210 Sky Park Court, Suite 200		San Diego	CA	858-633-2804	

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Brian Gieselman / Brian Gieselman	01/18/19	15:45	B. Benedict / B. Benedict	01/19/19	1013
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

Method of Shipment:

ATTN: Tracking No.:

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
PW4-011719-DW	1/17/19	15:16	Preservative: TZ	2	P	DW								X	
PW4-011719-FB	"	15:18	"	2	P	DW								X	Extraction Only

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:

Name: Kevin Olness/Kelli Miller
Company:
Address:
City: State: Zip:
Phone: Fax:
Email:

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:

Page: 1 of 1

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 1900154 TAT 7

Samples Arrival:	**Date/Time** 01/19/19 1013	**Initials:** BAD	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 01/19/19 1315	**Initials:** BAB	**Location:** WR-2 **Shelf/Rack:** A3 / E5

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

Temp °C: 0.6 (uncorrected)	**Probe used:** Y (N)	**Thermometer ID:** IR-4
Temp °C: 0.5 (corrected)		

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill / Trk # 7742 4933 2620	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?*		✓	✓

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

Comments:

* COC ID# PW4-011719-FB

SAMPLE LABEL ID# PW-011719-FB

DOES NOT EFFECT SAMPLE INTEGRITY NO ANOMALY. KE 1/21/19

EXTRACTION INFORMATION

RUSH

Process Sheet

Workorder: 1900154

Prep Expiration: 2019-Jan-31
Client: KMEA

Workorder Due: 28-Jan-19 00:00

TAT: 9

Method: **537 PFAS DW DoD Unmodified**
Matrix: **Aqueous**

Prep Batch: B9A0154

Prep Data Entered: 01/23/19 MAC
Date and Initials

Version: 14 Analyte DW (Full List)
DoD: DoD QSM 5.1

Initial Sequence: S9A0069

LabSampID	A/B	Prep Rec	Spike Req	ClientSampleID	Comments	Location	Container
1900154-01	A	☒	☑	PW4-011719-DW		WR-2 A-3	HDPE Bottle, 250 mL
1900154-02	↓	☐	☐	PW4-011719-FB	~~"PW4-011719-FB"~~ FR 01/21/19 "PW-011719-FB" ✓	WR-2 A-3	HDPE Bottle, 250 mL

Pre-Prep Check Out: FR 01/21/19
Pre-Prep Check In: ER 01/21/19

Prep Check Out: MAC 01/22/19
Prep Check In: NA

Prep Reconciled Initals/Date: FR 01/21/19
Spike Reconciled Initals/Date: MAC 01/22/19
VialBoxID: Blastoise

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537 PFAS DW DoD Unmodified

B9A0154

Chemist: MAC

Prep Date: 01/22/19

Prep Time: 0855

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HRMS-9 Date/Initials: 01/21/19 TR

Cen	VISTA Sample ID	When checked Trizma Added in Lab	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☑	B9A0154-BLK1 (A)	☒	NA	N/A	(0.250)	MAC MJ 01/22/19	MAC 01/23/19	QE MJ 01/23/19
☑	B9A0154-BS1	☒	↓	↓	(0.250)	↓	↓	↓
☐	B9A0154-MS1 1900153-06	☐	299.88	37.68	026220			
☐	B9A0154-MSD1 1900153-06	☐	296.05	37.29	0.25876			
☑	1900143-01 (B)	☐	272.94	26.62	0.24632			
☐	1900143-02	☐	289.73	26.68	0.26305			
☑	1900153-01 (B)	☐	286.12	37.25	0.24887			
☐	1900153-02	☐	294.85	37.26	0.25759			
☐	1900153-03 (B)	☐	297.58	37.33	0.26025			
☐	1900153-04	☐	298.93	37.32	0.26161			
☐	1900153-05	☐	297.34	37.24	0.26010			
☐	1900153-06	☐	299.11	37.67	0.26144			
☐	1900153-07	☐	299.72	37.24	0.26248			
☐	1900153-08 (B)	☐	297.06	37.24	0.25982			
☐	1900153-09	☐	298.24	37.37	0.26087			
☐	1900154-01	☐	283.81	26.64	0.25717 ✓	↓	↓	↓

SS/IS: 181712, 10µL (V2)

NS: 182623, 20µL (V2)

IS/RS: 1811713, 10 µL (V2)

SPE Chem: Strata X 33um 500mg/6mL
Lot#: SLB-004379

Ele SOLV: MeOH
Lot#: JB072509

Final Volume(s) 1

Notes: (A) Trizma added TR 01/21/19
(B) Sample was discolored at final volume TR 01/23/19

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

1 = Sample colored after centrifuge
2 = Cartridge sorbent discolored after SPE
3 = Went dry during SPE Cartridge

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537 PFAS DW DoD Unmodified

B9A0154

Chemist: MAC

Prep Date: 01/22/19

Prep Time: 0855

Prepared using: LCMS - SPE Extraction-LCMS

BalanceID: HRMS-9 Date/Initials: 01/21/19 TR

Cen	VISTA Sample ID	When checked Trizma Added in Lab	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	SS/NS CHEM/WIT DATE	SPE	IS CHEM/WIT DATE
☐	1900154-02	☐	288.33	26.63	0.26170	MAC MJ 01/22/19	MAC 01/22/19	AE MJ 01/23/19

SS/IS: 18L1712, 10µL (V2)

NS: 18L2623, 20µL (V2)

IS/RS: 18L1713, 10mL (V2)

SPE Chem: Strata X 33um 500mg/6mL
Lot#: 518-004879

Ele SOLV: MeOH
Lot#: JB072509

Final Volume(s) 1

Notes:

Comments: Assume 1 g = 1 mL
Cen = Centrifuged

1 = Sample colored after centrifuge
2 = Cartridge sorbent discolored after SPE
3 = Went dry during SPE Cartridge

Batch: B9A0154

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1900143-01	0.24632	NA	NA	1000	22-Jan-19 08:55	MAC			Aqueous	537 PFAS DW DoD Unmod
1900143-02	0.26305			1000	22-Jan-19 08:55	MAC			Aqueous	537 PFAS DW DoD Unmod
1900153-01	0.24887			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-02	0.25759			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-03	0.26025			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-04	0.26161			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-05	0.2601			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-06	0.26144			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-07	0.26248			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-08	0.25982			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900153-09	0.26087			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900154-01	0.25717			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
1900154-02	0.2617			1000	22-Jan-19 08:55	MAC			Drinking Water	537 PFAS DW DoD Unmod
B9A0154-BLK1	0.25			1000	22-Jan-19 08:55	MAC				QC
B9A0154-BS1	0.25			1000	22-Jan-19 08:55	MAC	18L2623	20		QC
B9A0154-MS1	0.2622			1000	22-Jan-19 08:55	MAC	18L2623	20		QC
B9A0154-MSD1	0.25876			1000	22-Jan-19 08:55	MAC	18L2623	20		QC

MAC 01/23/19

Printed: 1/23/2019 9:49:25AM

SAMPLE DATA –EPA METHOD 537

Vista Analytical Laboratory

MM 1/28/2019

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-27.qld

Last Altered: Sunday, January 27, 2019 16:47:23 Pacific Standard Time
Printed: Sunday, January 27, 2019 16:47:35 Pacific Standard Time

Name: 190125M2_27, Date: 25-Jan-2019, Time: 22:29:29, ID: B9A0154-BLK1 LRB 0.25, Description: LRB

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		6052.171	0.250		3.73				
2	2	PFHxA	313.2 > 268.9		12440.223	0.250		4.05				
3	3	PFHpA	363 > 318.9		12440.223	0.250		4.42				
4	4	PFHxS	398.9 > 79.6		6052.171	0.250		4.53				
5	5	PFOA	413 > 368.7		12440.223	0.250		4.77				
6	19	13C4-PFOS	503.0 > 79.9	6052.171	6052.171	0.250	1.000	5.10	5.10	28.7	115	100.0
7	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
8	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
9	19	13C4-PFOS	503.0 > 79.9	6052.171	6052.171	0.250	1.000	5.10	5.10	28.7	115	100.0
10	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
11	-1											
12	6	PFNA	463 > 418.8		12440.223	0.250		5.05				
13	7	PFOS	499 >79.9	1.942	6052.171	0.250		5.10	5.12	0.00921	0.0348	
14	8	PFDA	513 > 468.8		12440.223	0.250		5.29				
15	9	N-MeFOSAA	570.1 > 419.0	10.331	10105.665	0.250		5.39	5.38	0.0409	0.0855	
16	10	N-EtFOSAA	584.2 >419.0		10105.665	0.250		5.50				
17	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
18	19	13C4-PFOS	503.0 > 79.9	6052.171	6052.171	0.250	1.000	5.10	5.10	28.7	115	100.0
19	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
20	20	d3-N-MeFOSAA	573.3 > 419.0	10105.665	10105.665	0.250	1.000	5.39	5.39	40.0	160	100.0
21	20	d3-N-MeFOSAA	573.3 > 419.0	10105.665	10105.665	0.250	1.000	5.39	5.39	40.0	160	100.0
22	-1											
23	11	PFUnA	563 > 518.9		12440.223	0.250		5.50				
24	12	PFDoA	612.9 > 318.8		12440.223	0.250		5.68				
25	13	PFTrDA	662.9 > 618.9		12440.223	0.250		5.84				
26	14	PFTeDA	712.9 > 668.8		12440.223	0.250		5.98				
27	15	13C2-PFHxA	315 > 269.8	7553.965	12440.223	0.250	0.641	4.24	4.06	6.07	37.9	94.7
28	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
29	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
30	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
31	18	13C2-PFOA	414.9 > 369.7	12440.223	12440.223	0.250	1.000	4.77	4.77	10.0	40.0	100.0
32	16	13C2-PFDA	515.1 > 469.9	10939.060	12440.223	0.250	0.896	5.29	5.29	8.79	39.2	98.1
33	-1											
34	17	d5-N-EtFOSAA	589.3 > 419.0	14260.101	10105.665	0.250	1.512	5.39	5.49	56.4	149	93.3

GM 1/27/2019

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-27.qld

Last Altered: Sunday, January 27, 2019 16:47:23 Pacific Standard Time
Printed: Sunday, January 27, 2019 16:47:35 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_27, Date: 25-Jan-2019, Time: 22:29:29, ID: B9A0154-BLK1 LRB 0.25, Description: LRB

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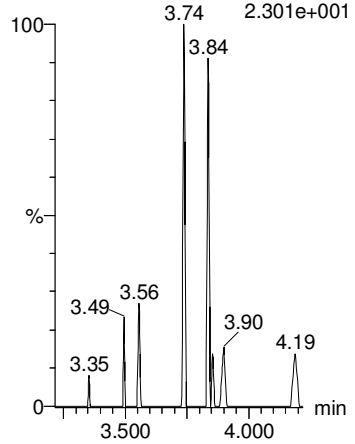
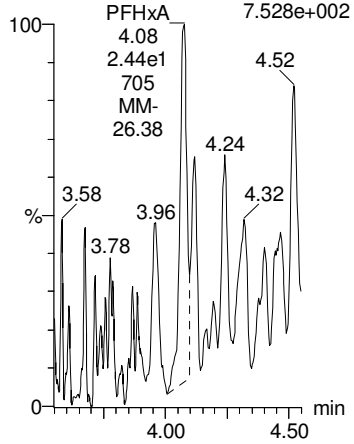


PFHxA



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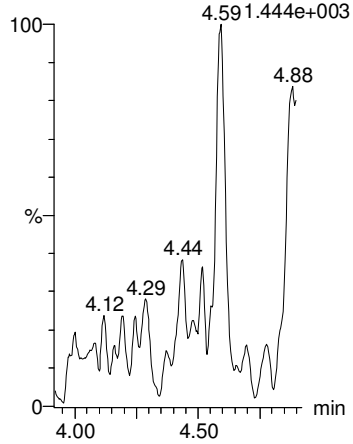

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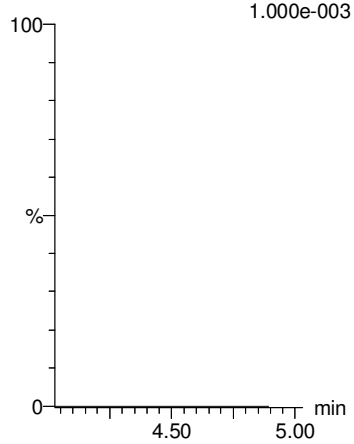
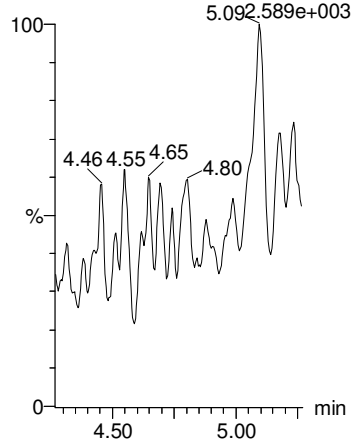


PFOA



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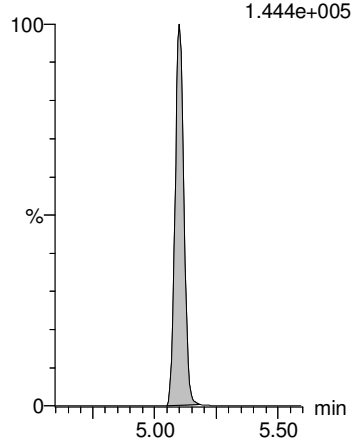

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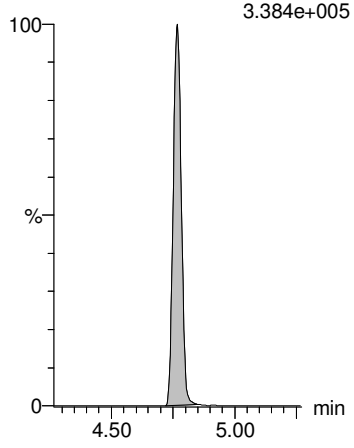

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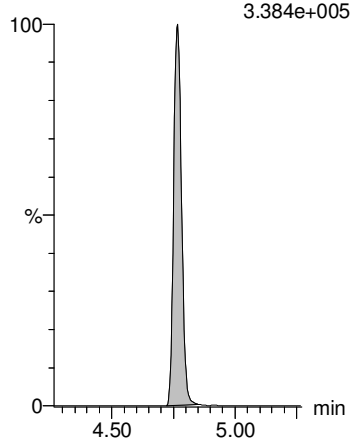

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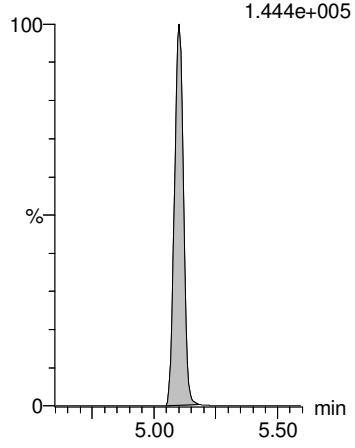

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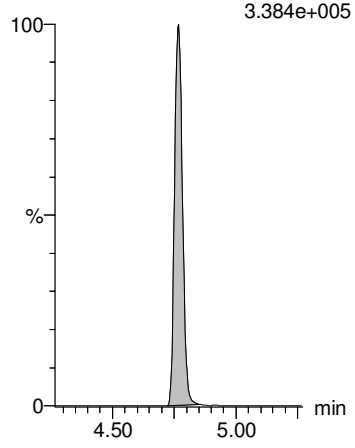

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-27.qld

Last Altered: Sunday, January 27, 2019 16:47:23 Pacific Standard Time
Printed: Sunday, January 27, 2019 16:47:35 Pacific Standard Time

Name: 190125M2_27, Date: 25-Jan-2019, Time: 22:29:29, ID: B9A0154-BLK1 LRB 0.25, Description: LRB

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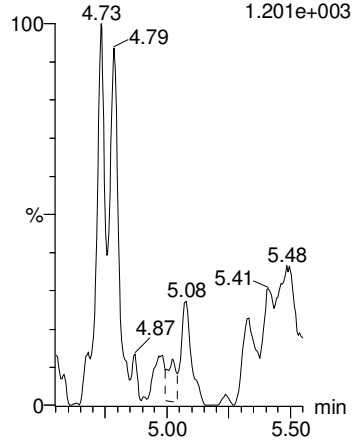

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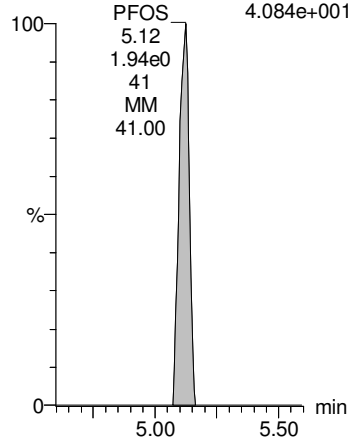

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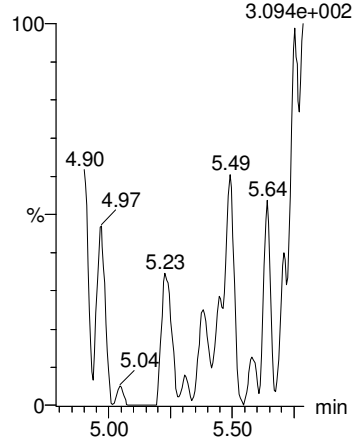

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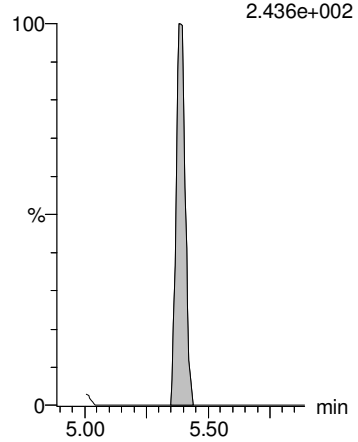

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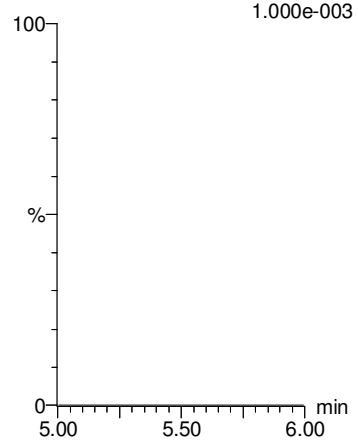

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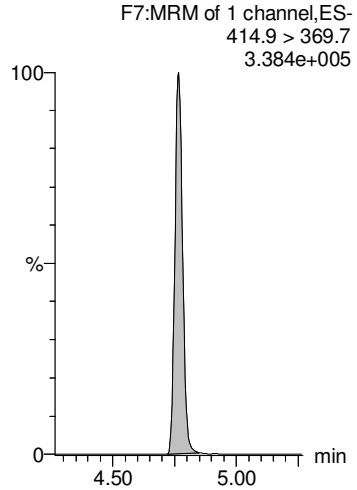

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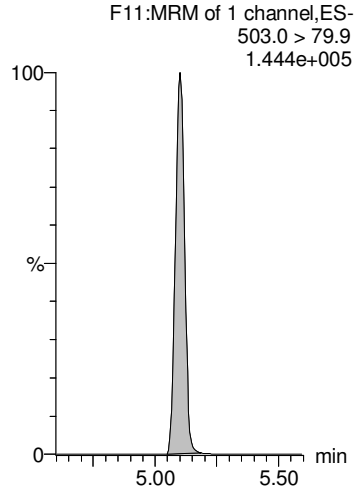

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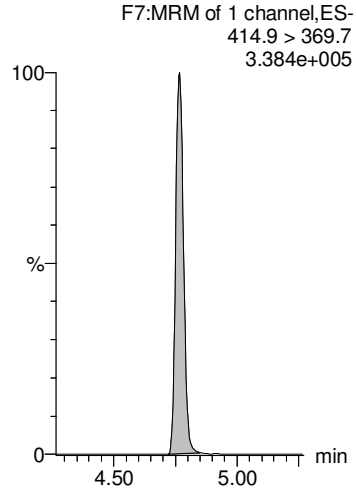

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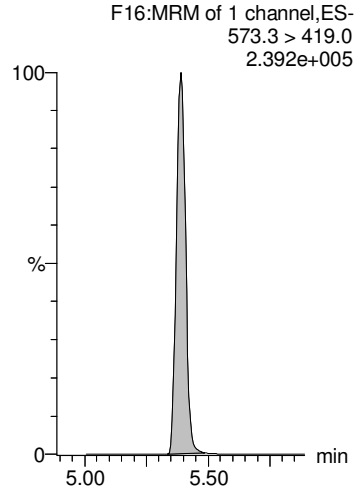

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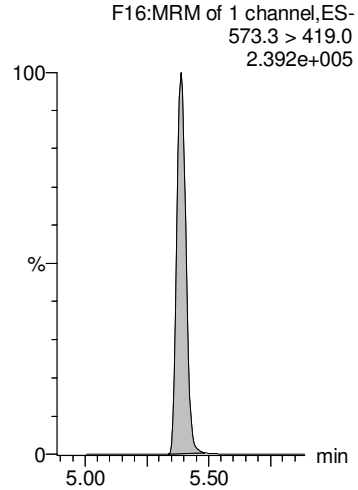

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-27.qld

Last Altered: Sunday, January 27, 2019 16:47:23 Pacific Standard Time
Printed: Sunday, January 27, 2019 16:47:35 Pacific Standard Time

Name: 190125M2_27, Date: 25-Jan-2019, Time: 22:29:29, ID: B9A0154-BLK1 LRB 0.25, Description: LRB

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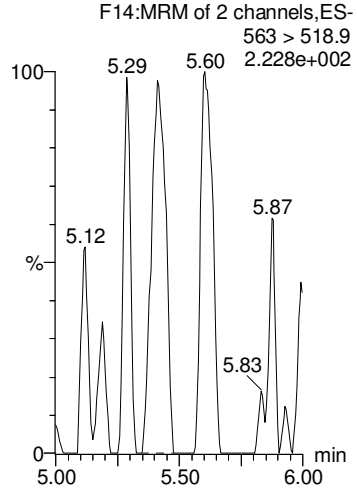

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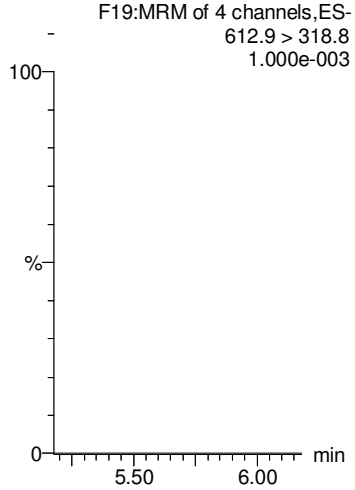

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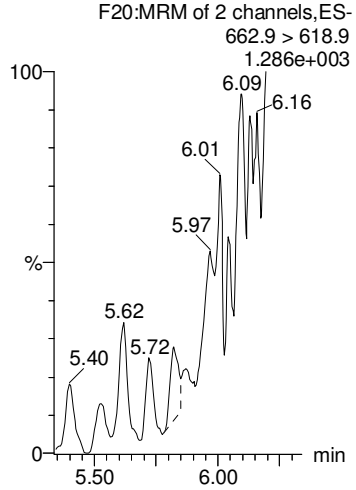

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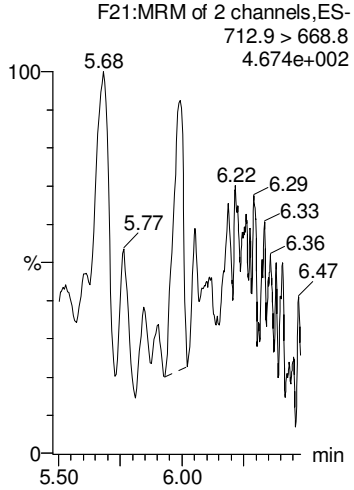

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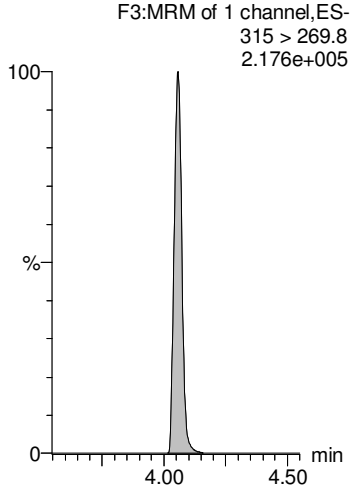

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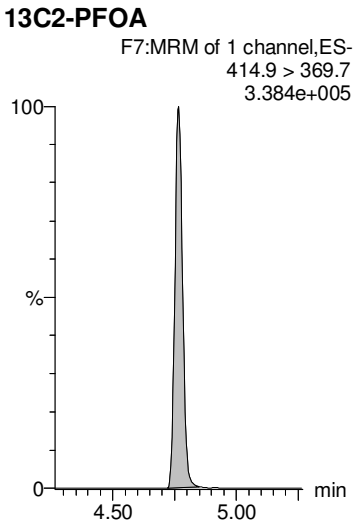

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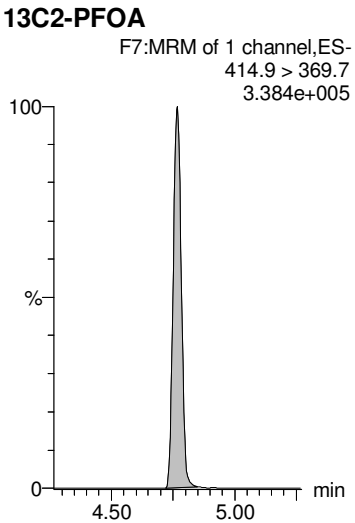

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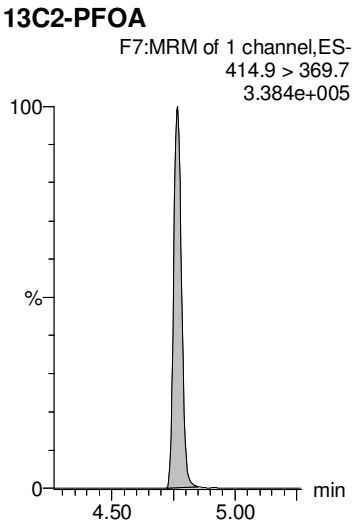

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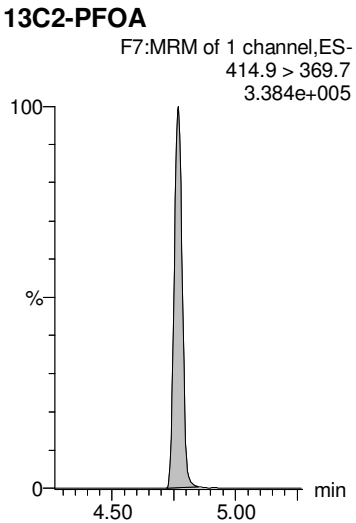

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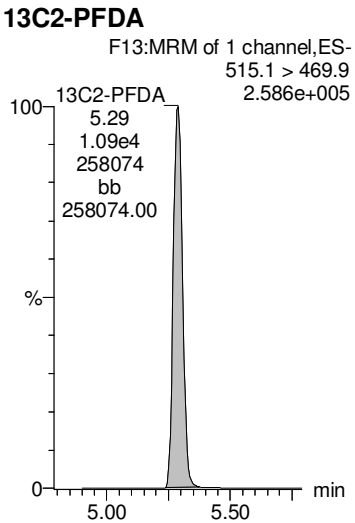
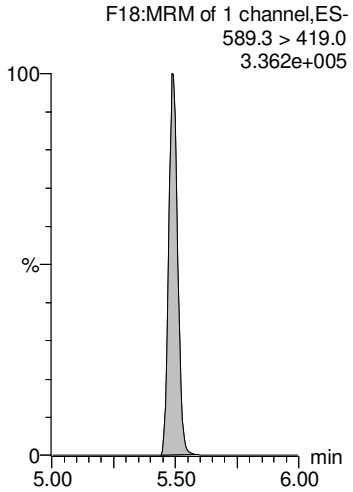


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-27.qld

Last Altered: Sunday, January 27, 2019 16:47:23 Pacific Standard Time
Printed: Sunday, January 27, 2019 16:47:35 Pacific Standard Time

Name: 190125M2_27, Date: 25-Jan-2019, Time: 22:29:29, ID: B9A0154-BLK1 LRB 0.25, Description: LRB

d5-N-EtFOSAA



Vista Analytical Laboratory

MM 1/28/2019

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-24.qld

Last Altered: Sunday, January 27, 2019 16:39:33 Pacific Standard Time
Printed: Sunday, January 27, 2019 16:40:24 Pacific Standard Time

Name: 190125M2_24, Date: 25-Jan-2019, Time: 21:54:07, ID: B9A0154-BS1 LFB 0.25, Description: LFB

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	3462.347	6507.852	0.250		3.73	3.73	15.3	65.8	92.9
2	2	PFHxA	313.2 > 268.9	19802.994	12810.407	0.250		4.05	4.06	15.5	74.1	92.6
3	3	PFHpA	363 > 318.9	17851.678	12810.407	0.250		4.42	4.43	13.9	77.4	96.8
4	4	PFHxS	398.9 > 79.6	2778.925	6507.852	0.250		4.53	4.53	12.3	67.7	93.0
5	5	PFOA	413 > 368.7	23489.256	12810.407	0.250		4.77	4.77	18.3	76.7	95.8
6	19	13C4-PFOS	503.0 > 79.9	6507.852	6507.852	0.250	1.000	5.10	5.10	28.7	115	100.0
7	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
8	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
9	19	13C4-PFOS	503.0 > 79.9	6507.852	6507.852	0.250	1.000	5.10	5.10	28.7	115	100.0
10	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
11	-1											
12	6	PFNA	463 > 418.8	24445.664	12810.407	0.250		5.05	5.05	19.1	73.5	91.9
13	7	PFOS	499 >79.9	4001.067	6507.852	0.250		5.10	5.10	17.6	66.6	90.0
14	8	PFDA	513 > 468.8	25067.080	12810.407	0.250		5.29	5.29	19.6	72.1	90.2
15	9	N-MeFOSAA	570.1 > 419.0	9087.916	10207.644	0.250		5.39	5.39	35.6	74.2	92.7
16	10	N-EtFOSAA	584.2 >419.0	6869.830	10207.644	0.250		5.50	5.49	26.9	70.6	88.2
17	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
18	19	13C4-PFOS	503.0 > 79.9	6507.852	6507.852	0.250	1.000	5.10	5.10	28.7	115	100.0
19	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
20	20	d3-N-MeFOSAA	573.3 > 419.0	10207.644	10207.644	0.250	1.000	5.39	5.39	40.0	160	100.0
21	20	d3-N-MeFOSAA	573.3 > 419.0	10207.644	10207.644	0.250	1.000	5.39	5.39	40.0	160	100.0
22	-1											
23	11	PFUnA	563 > 518.9	23481.762	12810.407	0.250		5.50	5.50	18.3	72.9	91.1
24	12	PFDoA	612.9 > 318.8	3190.188	12810.407	0.250		5.68	5.68	2.49	69.7	87.1
25	13	PFTrDA	662.9 > 618.9	27276.006	12810.407	0.250		5.84	5.84	21.3	60.6	75.8
26	14	PFTeDA	712.9 > 668.8	23517.473	12810.407	0.250		5.98	5.98	18.4	58.2	72.7
27	15	13C2-PFHxA	315 > 269.8	7694.769	12810.407	0.250	0.641	4.24	4.06	6.01	37.5	93.7
28	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
29	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
30	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
31	18	13C2-PFOA	414.9 > 369.7	12810.407	12810.407	0.250	1.000	4.77	4.77	10.0	40.0	100.0
32	16	13C2-PFDA	515.1 > 469.9	11471.349	12810.407	0.250	0.896	5.29	5.29	8.95	40.0	99.9
33	-1											
34	17	d5-N-EtFOSAA	589.3 > 419.0	13953.099	10207.644	0.250	1.512	5.39	5.49	54.7	145	90.4

GM 1/27/2019

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-24.qld

Last Altered: Sunday, January 27, 2019 16:39:33 Pacific Standard Time
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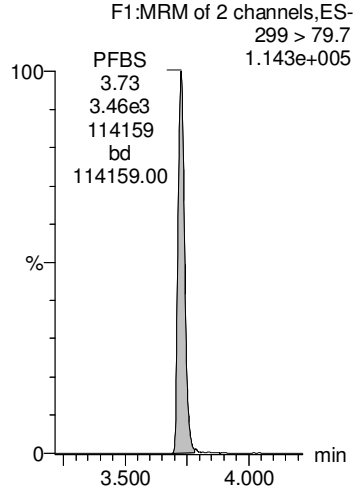
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_24, Date: 25-Jan-2019, Time: 21:54:07, ID: B9A0154-BS1 LFB 0.25, Description: LFB

PFBS



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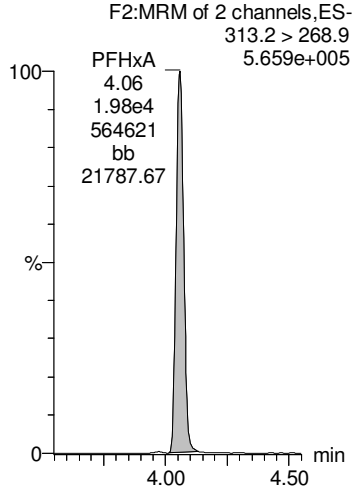

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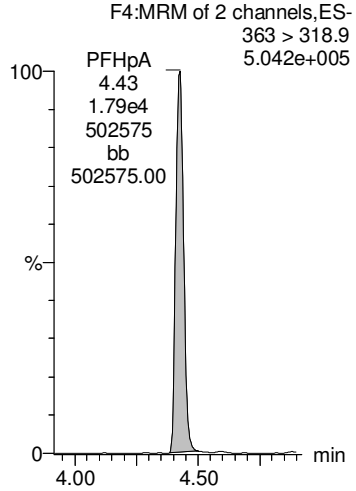

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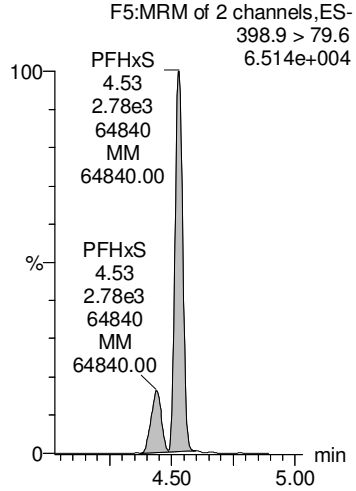
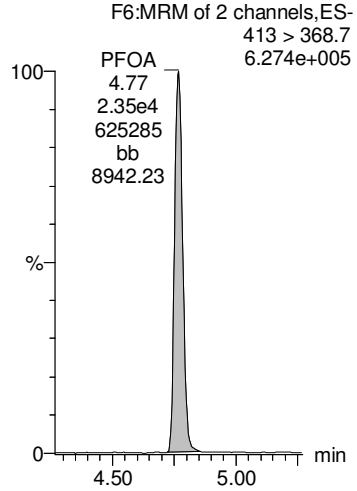


PFOA



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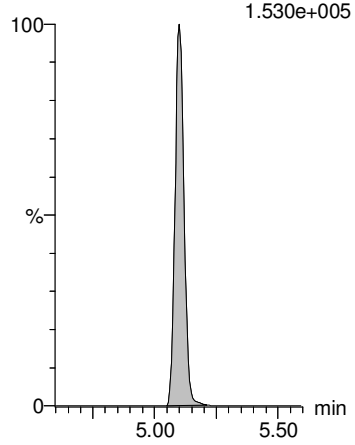

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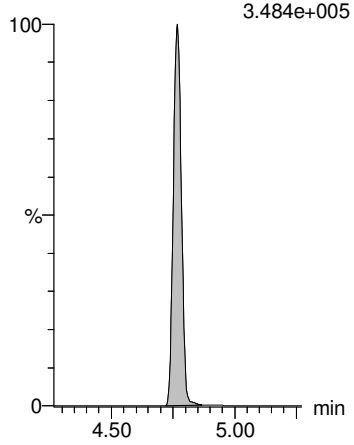

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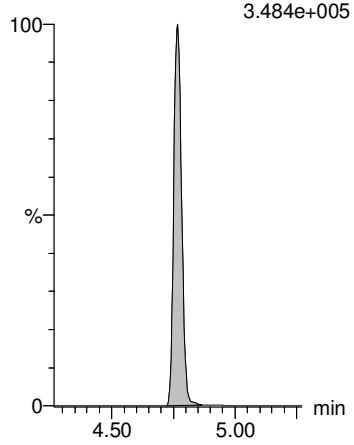

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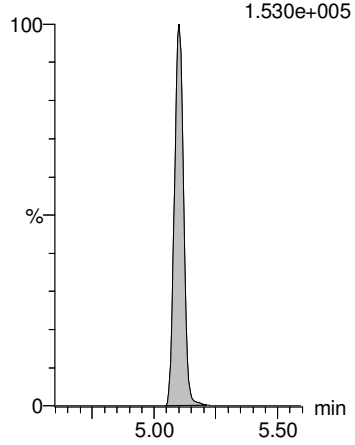

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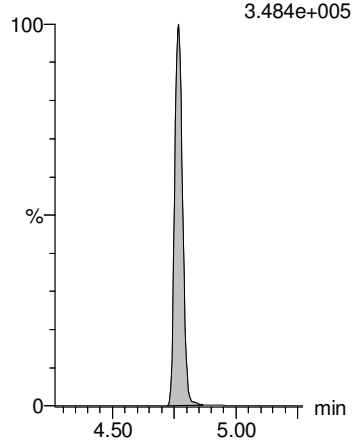

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Name: 190125M2_24, Date: 25-Jan-2019, Time: 21:54:07, ID: B9A0154-BS1 LFB 0.25, Description: LFB

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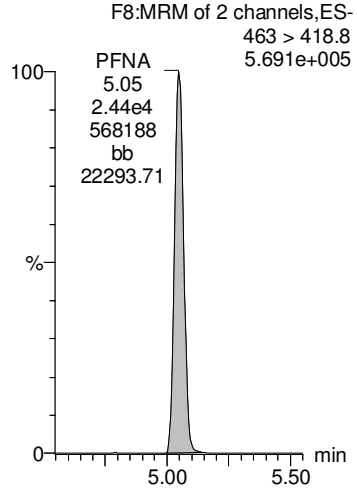

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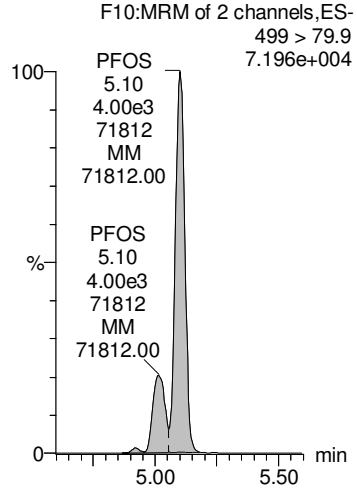

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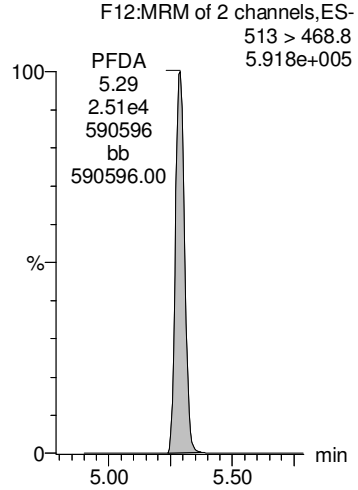
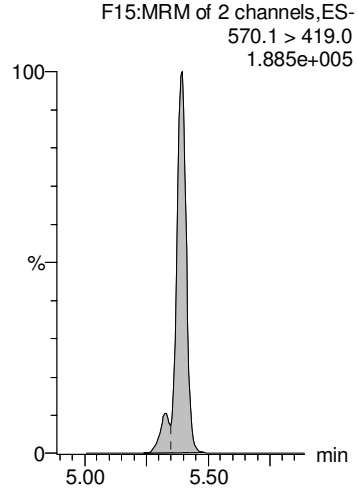


N-MeFOSAA



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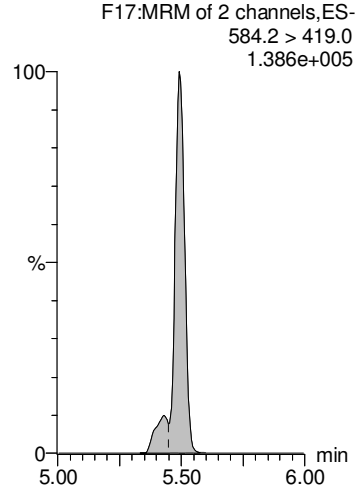

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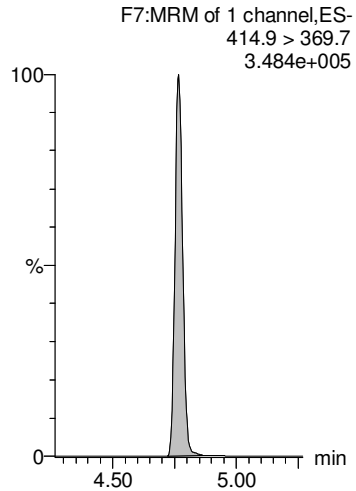

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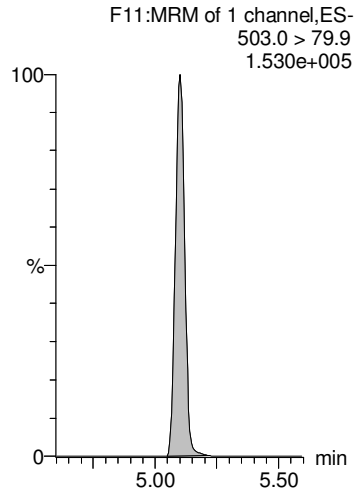

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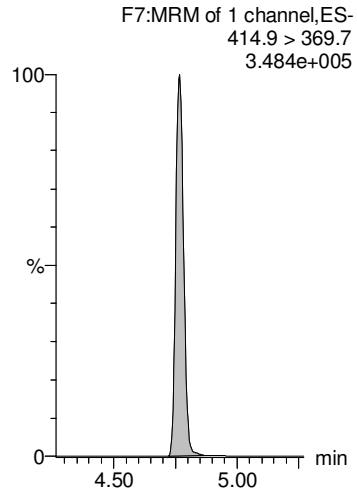

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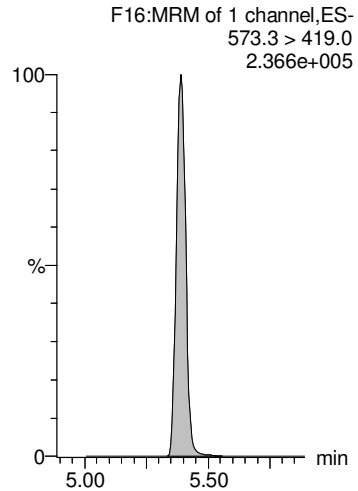

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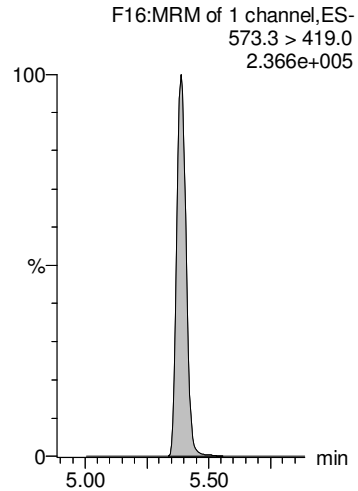

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-24.qld

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Name: 190125M2_24, Date: 25-Jan-2019, Time: 21:54:07, ID: B9A0154-BS1 LFB 0.25, Description: LFB

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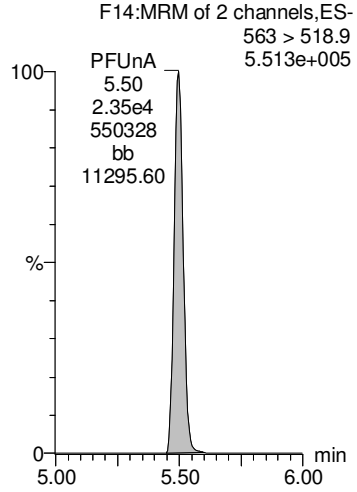

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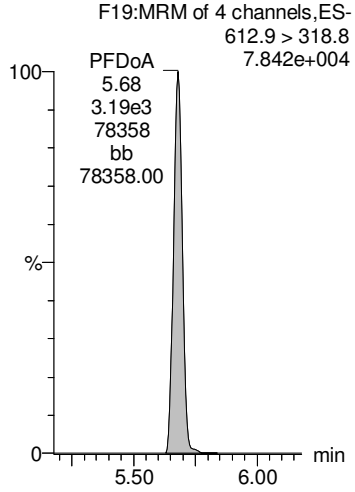

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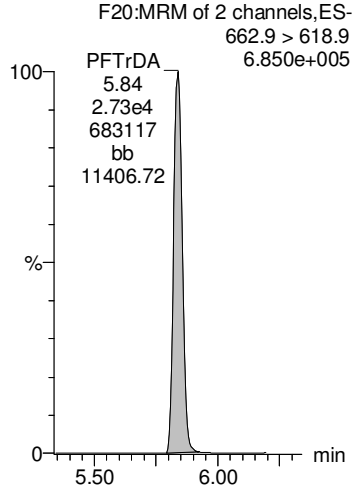
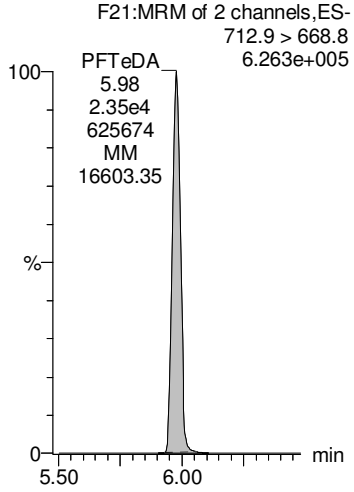


PFTeDA



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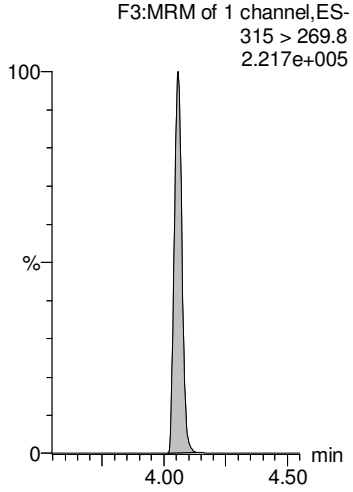

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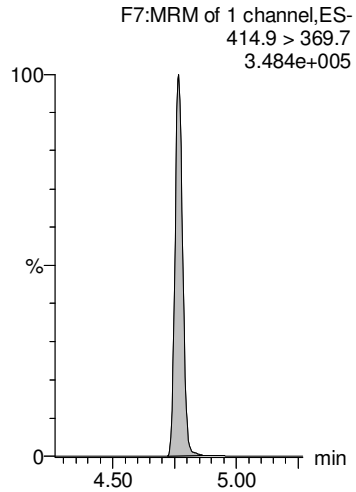

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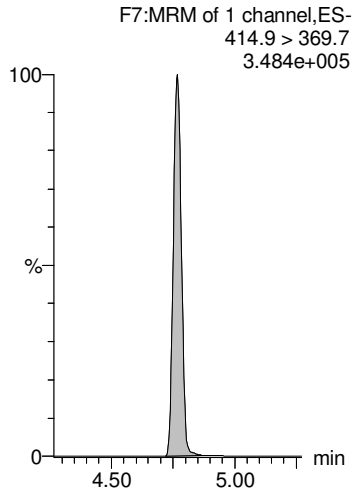

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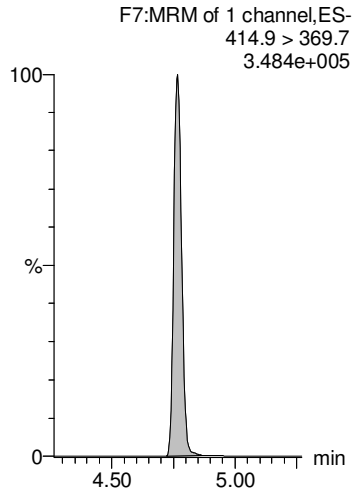

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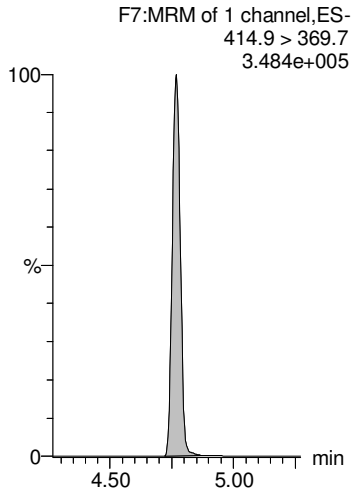

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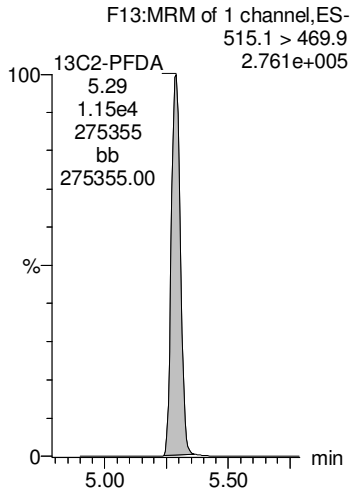

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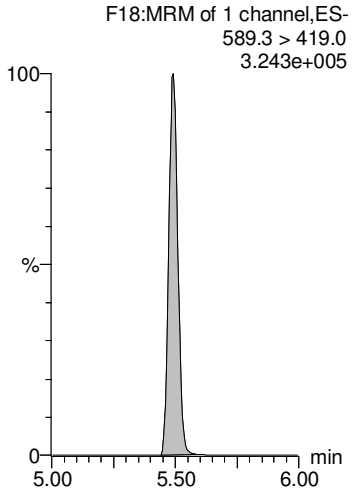
Name: 190125M2_24, Date: 25-Jan-2019, Time: 21:54:07, ID: B9A0154-BS1 LFB 0.25, Description: LFB

d5-N-EtFOSAA



Vista Analytical Laboratory

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Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-41.qld

Last Altered: Sunday, January 27, 2019 17:05:36 Pacific Standard Time
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Name: 190125M2_41, Date: 26-Jan-2019, Time: 01:14:43, ID: 1900154-01 PW4-011719-DW 0.25717, Description: PW4-011719-DW

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7		7213.286	0.257		3.73				
2	2	PFHxA	313.2 > 268.9		14351.518	0.257		4.05				
3	3	PFHpA	363 > 318.9		14351.518	0.257		4.42				
4	4	PFHxS	398.9 > 79.6		7213.286	0.257		4.53				
5	5	PFOA	413 > 368.7		14351.518	0.257		4.77				
6	19	13C4-PFOS	503.0 > 79.9	7213.286	7213.286	0.257	1.000	5.10	5.10	28.7	112	100.0
7	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
8	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
9	19	13C4-PFOS	503.0 > 79.9	7213.286	7213.286	0.257	1.000	5.10	5.10	28.7	112	100.0
10	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
11	-1											
12	6	PFNA	463 > 418.8		14351.518	0.257		5.05				
13	7	PFOS	499 >79.9	1.017	7213.286	0.257		5.10	5.09	0.00405	0.0148	
14	8	PFDA	513 > 468.8		14351.518	0.257		5.29				
15	9	N-MeFOSAA	570.1 > 419.0	0.634	12335.590	0.257		5.39	5.37	0.00206	0.00418	
16	10	N-EtFOSAA	584.2 >419.0		12335.590	0.257		5.50				
17	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
18	19	13C4-PFOS	503.0 > 79.9	7213.286	7213.286	0.257	1.000	5.10	5.10	28.7	112	100.0
19	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
20	20	d3-N-MeFOSAA	573.3 > 419.0	12335.590	12335.590	0.257	1.000	5.39	5.39	40.0	156	100.0
21	20	d3-N-MeFOSAA	573.3 > 419.0	12335.590	12335.590	0.257	1.000	5.39	5.39	40.0	156	100.0
22	-1											
23	11	PFUnA	563 > 518.9		14351.518	0.257		5.50				
24	12	PFDoA	612.9 > 318.8		14351.518	0.257		5.68				
25	13	PFTrDA	662.9 > 618.9		14351.518	0.257		5.84				
26	14	PFTeDA	712.9 > 668.8		14351.518	0.257		5.98				
27	15	13C2-PFHxA	315 > 269.8	9139.260	14351.518	0.257	0.641	4.24	4.05	6.37	38.6	99.3
28	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
29	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
30	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
31	18	13C2-PFOA	414.9 > 369.7	14351.518	14351.518	0.257	1.000	4.77	4.77	10.0	38.9	100.0
32	16	13C2-PFDA	515.1 > 469.9	12216.670	14351.518	0.257	0.896	5.29	5.29	8.51	36.9	95.0
33	-1											
34	17	d5-N-EtFOSAA	589.3 > 419.0	16651.631	12335.590	0.257	1.512	5.39	5.49	54.0	139	89.3

GM 1/27/2019

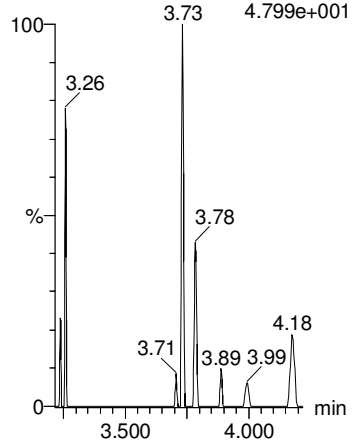
Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-41.qld

Last Altered: Sunday, January 27, 2019 17:05:36 Pacific Standard Time
Printed: Sunday, January 27, 2019 17:06:08 Pacific Standard Time

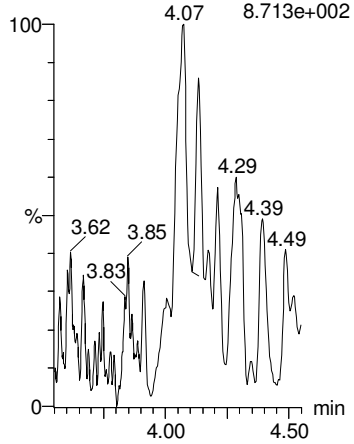
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_41, Date: 26-Jan-2019, Time: 01:14:43, ID: 1900154-01 PW4-011719-DW 0.25717, Description: PW4-011719-DW

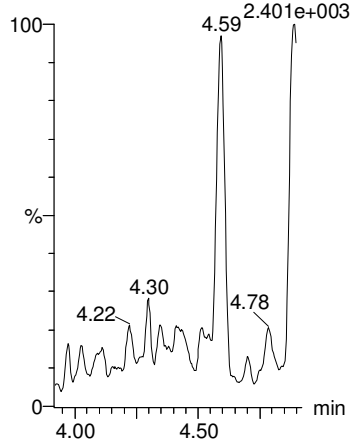
PFBS



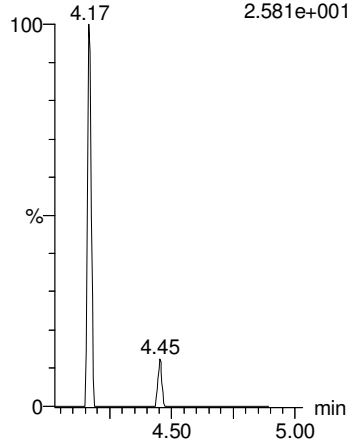
PFHxA



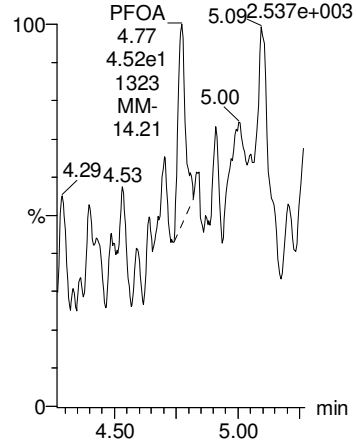
PFHpA



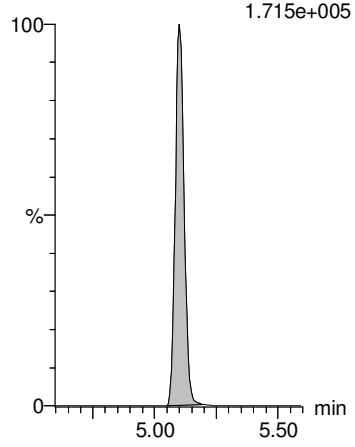
PFHxS



PFOA



13C4-PFOS



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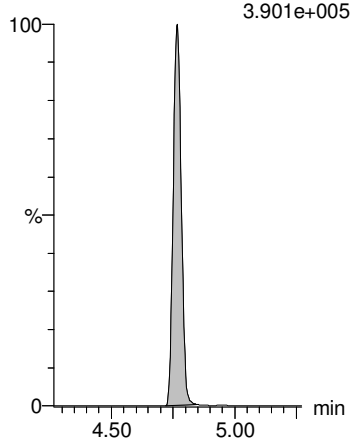

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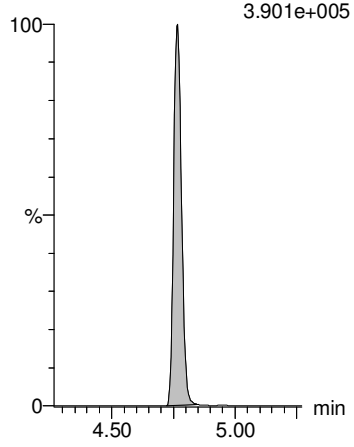

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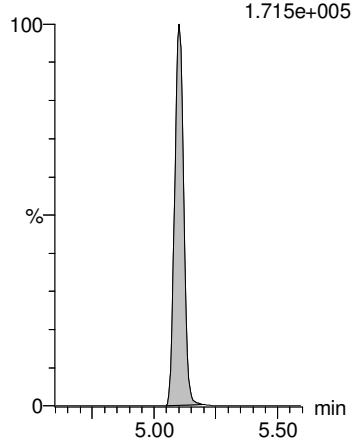

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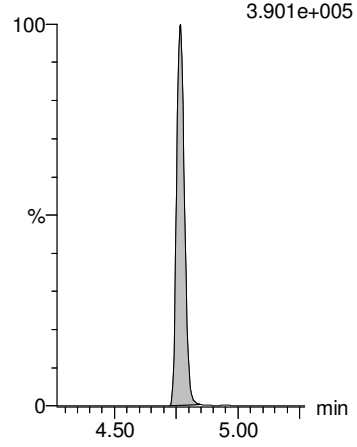
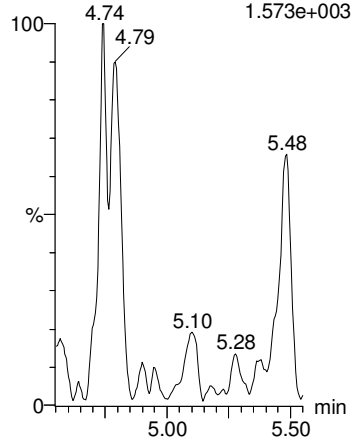


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-41.qld

Last Altered: Sunday, January 27, 2019 17:05:36 Pacific Standard Time
Printed: Sunday, January 27, 2019 17:06:08 Pacific Standard Time

Name: 190125M2_41, Date: 26-Jan-2019, Time: 01:14:43, ID: 1900154-01 PW4-011719-DW 0.25717, Description: PW4-011719-DW

PFNA



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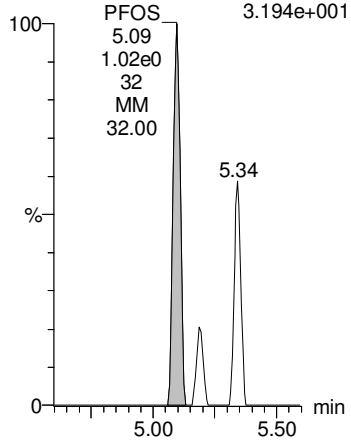

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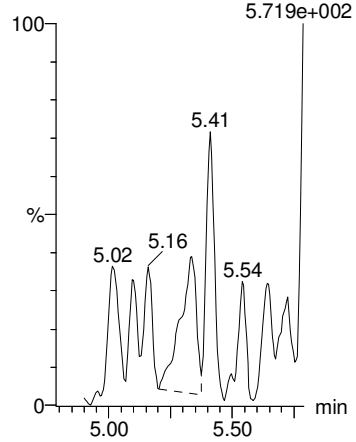
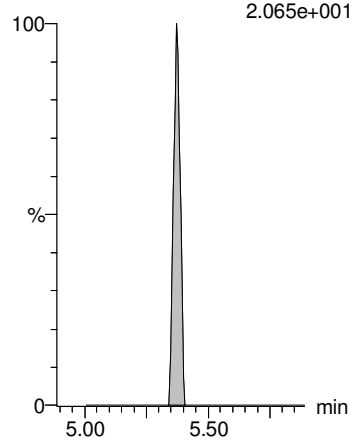


N-MeFOSAA



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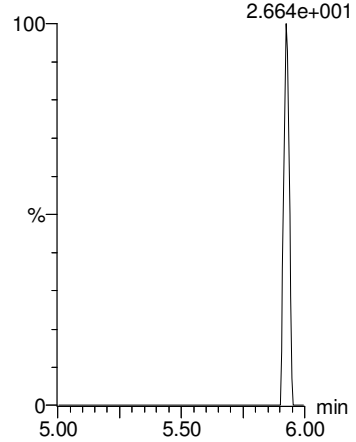

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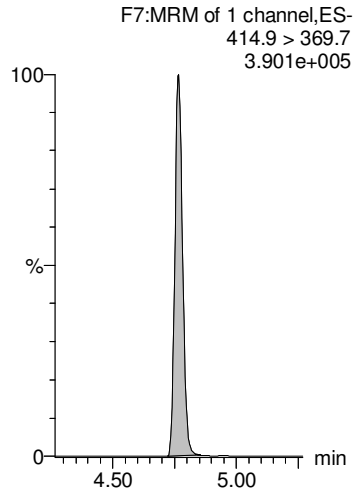

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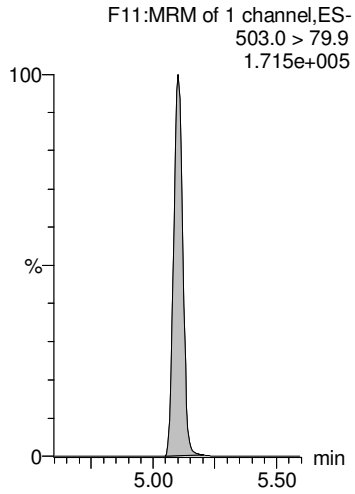

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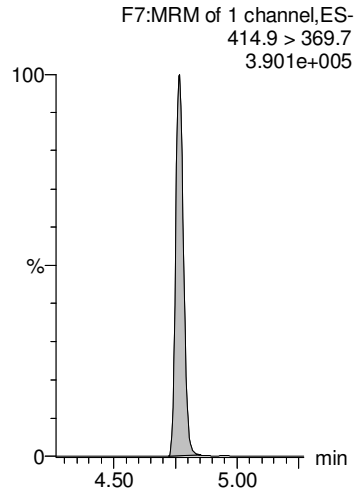

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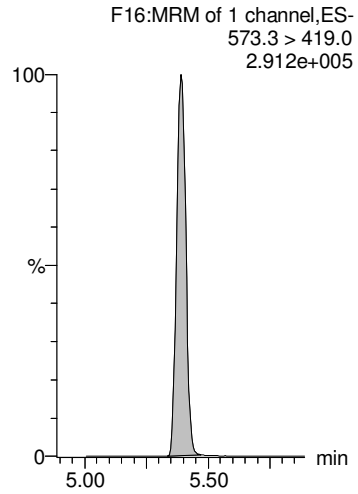

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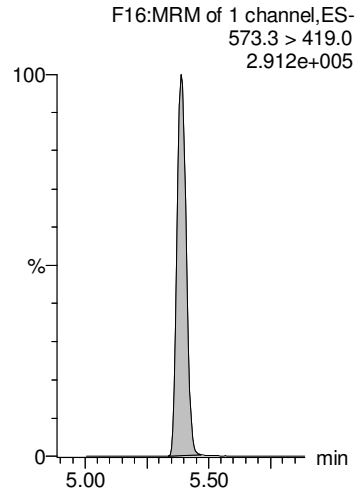


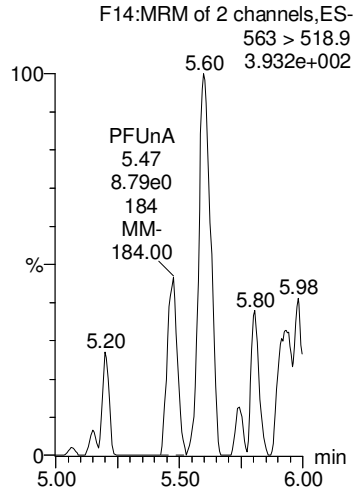
GM 1/27/2019

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-41.qld

Last Altered: Sunday, January 27, 2019 17:05:36 Pacific Standard Time
Printed: Sunday, January 27, 2019 17:06:08 Pacific Standard Time

Name: 190125M2_41, Date: 26-Jan-2019, Time: 01:14:43, ID: 1900154-01 PW4-011719-DW 0.25717, Description: PW4-011719-DW

PFUnA



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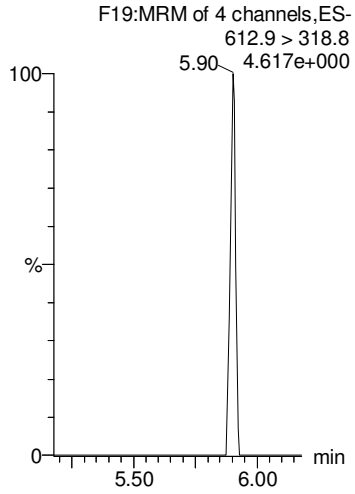

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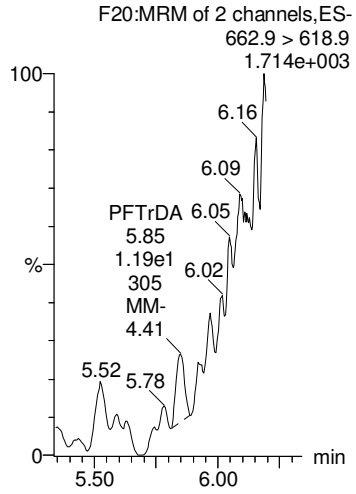

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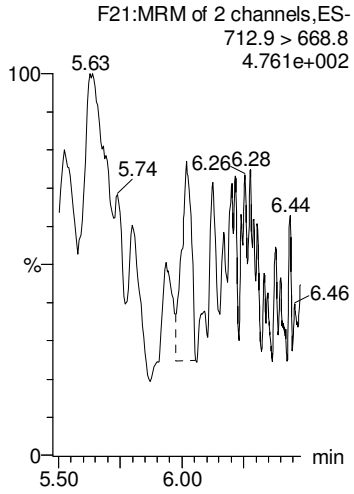

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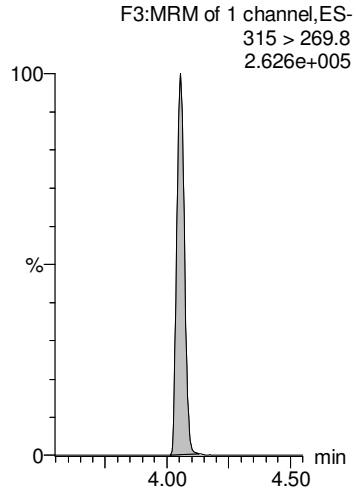

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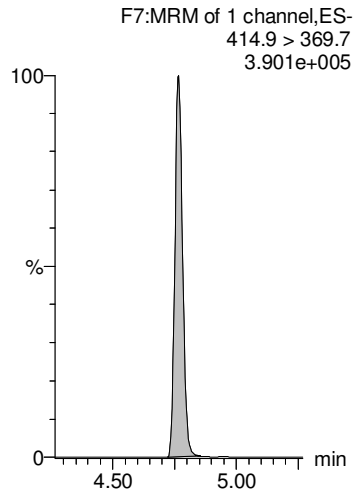

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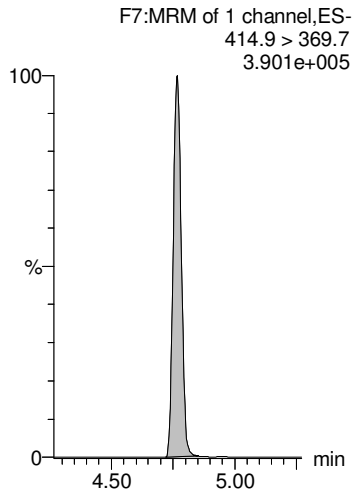

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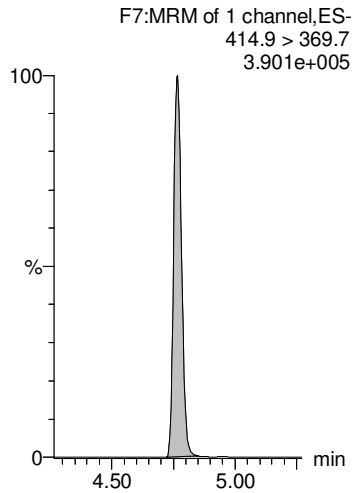

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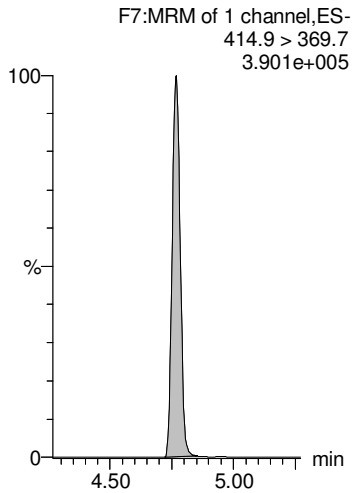

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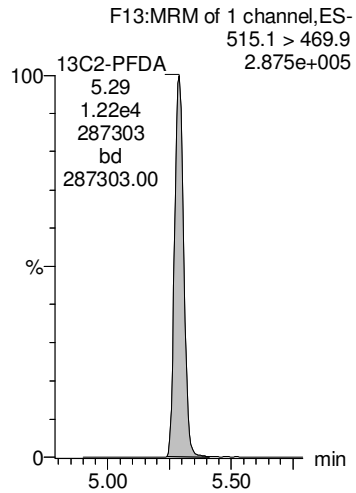
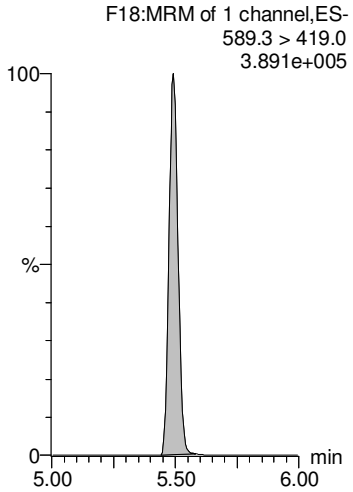


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-41.qld

Last Altered: Sunday, January 27, 2019 17:05:36 Pacific Standard Time
Printed: Sunday, January 27, 2019 17:06:08 Pacific Standard Time

Name: 190125M2_41, Date: 26-Jan-2019, Time: 01:14:43, ID: 1900154-01 PW4-011719-DW 0.25717, Description: PW4-011719-DW

d5-N-EtFOSAA



INJECTION INTERNAL STANDARD (IIS) AREAS,

AND

CONTINUTING CALIBRATION VERIFICATIONS CCV)

ICAL

Compound 18: 13C2-PFOA

	ID	Name	Type	Std. Conc	RT	Area	ICAL Area	Area %
1	IPA	190125M2_1	Analyte	10			13400.96	0.00
2	ST190125M2-1 537 CS-4 19A1701	190125M2_2	Analyte	10	4.77	13292.36	13400.96	99.19
3	ST190125M2-2 537 CS-3 19A1702	190125M2_3	Analyte	10	4.76	13422.57	13400.96	100.16
4	ST190125M2-3 537 CS-2 19A1703	190125M2_4	Analyte	10	4.76	13197.23	13400.96	98.48
5	ST190125M2-4 537 CS-1 19A1704	190125M2_5	Analyte	10	4.76	13232.86	13400.96	98.75
6	ST190125M2-5 537 CS0 19A1705	190125M2_6	Analyte	10	4.77	14111.92	13400.96	105.31
7	ST190125M2-6 537 CS1 19A1706	190125M2_7	Analyte	10	4.77	14405.22	13400.96	107.49
8	ST190125M2-7 537 CS2 19A1707	190125M2_8	Analyte	10	4.77	13324.02	13400.96	99.43
9	ST190125M2-8 537 CS3 19A1708	190125M2_9	Analyte	10	4.76	13136.78	13400.96	98.03
10	ST190125M2-9 537 CS4 19A1709	190125M2_10	Analyte	10	4.76	13058.35	13400.96	97.44
11	ST190125M2-10 537 CS5 19A1710	190125M2_11	Analyte	10	4.76	12929.79	13400.96	96.48
12	IPA	190125M2_12	Analyte	10			13400.96	0.00
13	ICV190125M2-1 537 ICV 19A1711	190125M2_13	Analyte	10	4.76	13791.20	13400.96	102.91
14	IPA	190125M2_14	Analyte	10			13400.96	0.00
15	B9A0191-BS1 LFB 0.25	190125M2_15	Analyte	10	4.76	12721.65	13400.96	94.93
16	B9A0191-BSD1 LFBD 0.25	190125M2_16	Analyte	10	4.77	12865.38	13400.96	96.00
17	B9A0191-BLK1 LRB 0.25	190125M2_17	Analyte	10	4.76	12506.92	13400.96	93.33
18	1900103-03RE1 WI-AF-1RW67-0119 0.2408	190125M2_18	Analyte	10	4.76	12305.25	13400.96	91.82
19	1900103-05RE1 WI-AF-1RW68-0119 0.24813	190125M2_19	Analyte	10	4.76	13385.57	13400.96	99.89
20	1900103-06RE1 WI-AF-1RW68P-0119 0.2517	190125M2_20	Analyte	10	4.76	13503.83	13400.96	100.77
21	1900103-08RE1 WI-AF-1RW69-0119 0.24947	190125M2_21	Analyte	10	4.77	12942.26	13400.96	96.58
22	1900103-12RE1 WI-AF-1RW71-0119 0.2497	190125M2_22	Analyte	10	4.76	13925.21	13400.96	103.91
23	1900157-01 WR1901181300KER 0.25378	190125M2_23	Analyte	10	4.76	12548.71	13400.96	93.64
24	B9A0154-BS1 LFB 0.25	190125M2_24	Analyte	10	4.77	12810.41	13400.96	95.59
25	B9A0154-MS1 LFSM 0.2622	190125M2_25	Analyte	10	4.76	13701.67	13400.96	102.24
26	B9A0154-MSD1 LFSMD 0.25876	190125M2_26	Analyte	10	4.77	12109.25	13400.96	90.36
27	B9A0154-BLK1 LRB 0.25	190125M2_27	Analyte	10	4.77	12440.22	13400.96	92.83
28	1900143-01 F8F9-PFOS 0.24632	190125M2_28	Analyte	10	4.77	13048.66	13400.96	97.37
29	1900143-02 F8F9-Blank 0.26305	190125M2_29	Analyte	10	4.77	13494.36	13400.96	100.70

30	1900153-01 WI-AF-1RW77-0119 0.24887	190125M2_30	Analyte	10	4.77	11687.37	13400.96	87.21
31	1900153-02 WI-AF-1FB77-0119 0.25759	190125M2_31	Analyte	10	4.77	13163.90	13400.96	98.23
32	IPA	190125M2_32	Analyte	10			13400.96	0.00
33	ST190125M2-11 537 CS1 19A1706	190125M2_33	Analyte	10	4.77	13718.64	13400.96	102.37
34	1900153-03 WI-AF-1RW78-0119 0.26025	190125M2_34	Analyte	10	4.76	13743.12	13400.96	102.55
35	1900153-04 WI-AF-1RW78P-0119 0.26161	190125M2_35	Analyte	10	4.76	13413.73	13400.96	100.10
36	1900153-05 WI-AF-1FB78-0119 0.2601	190125M2_36	Analyte	10	4.76	14040.47	13400.96	104.77
37	1900153-06 WI-AF-1RW79-0119 0.26144	190125M2_37	Analyte	10	4.77	14076.20	13400.96	105.04
38	1900153-07 WI-AF-1FB79-0119 0.26248	190125M2_38	Analyte	10	4.76	12106.64	13400.96	90.34
39	1900153-08 WI-AF-1RW80-0119 0.25982	190125M2_39	Analyte	10	4.77	14877.23	13400.96	111.02
40	1900153-09 WI-AF-1FB80-0119 0.26087	190125M2_40	Analyte	10	4.77	13241.72	13400.96	98.81
41	1900154-01 PW4-011719-DW 0.25717	190125M2_41	Analyte	10	4.77	14351.52	13400.96	107.09
42	1900154-02 PW4-011719-FB 0.2617	190125M2_42	Analyte	10	4.77	14731.99	13400.96	109.93
43	IPA	190125M2_43	Analyte	10			13400.96	0.00
44	ST190125M2-12 537 CS3 19A1708	190125M2_44	Analyte	10	4.77	13334.69	13400.96	99.51
45	B9A0141-BS1 LFB 0.25	190125M2_45	Analyte	10	4.77	13847.64	13400.96	103.33
46	B9A0141-BSD1 LFBD 0.25	190125M2_46	Analyte	10	4.77	13691.86	13400.96	102.17
47	B9A0141-BLK1 LRB 0.25	190125M2_47	Analyte	10	4.76	11878.12	13400.96	88.64
48	1900136-01 GWNT1901160950KME 0.24097	190125M2_48	Analyte	10	4.77	12212.24	13400.96	91.13
49	1900137-01 WR1901161110KER 0.24094	190125M2_49	Analyte	10	4.77	14468.36	13400.96	107.97
50	IPA	190125M2_50	Analyte	10			13400.96	0.00
51	ST190125M2-13 537 CS-1 19A1704	190125M2_51	Analyte	10	4.76	14723.16	13400.96	109.87

Compound 19: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	ICAL Area	Area %
1	IPA	190125M2_1	Analyte	28.7			6522.30	0.00
2	ST190125M2-1 537 CS-4 19A1701	190125M2_2	Analyte	28.7	5.10	6318.25	6522.30	96.87
3	ST190125M2-2 537 CS-3 19A1702	190125M2_3	Analyte	28.7	5.10	6177.97	6522.30	94.72
4	ST190125M2-3 537 CS-2 19A1703	190125M2_4	Analyte	28.7	5.10	6156.59	6522.30	94.39
5	ST190125M2-4 537 CS-1 19A1704	190125M2_5	Analyte	28.7	5.10	6344.74	6522.30	97.28
6	ST190125M2-5 537 CS0 19A1705	190125M2_6	Analyte	28.7	5.10	6716.11	6522.30	102.97
7	ST190125M2-6 537 CS1 19A1706	190125M2_7	Analyte	28.7	5.10	7051.90	6522.30	108.12

8	ST190125M2-7 537 CS2 19A1707	190125M2_8	Analyte	28.7	5.10	6881.49	6522.30	105.51
9	ST190125M2-8 537 CS3 19A1708	190125M2_9	Analyte	28.7	5.10	6653.97	6522.30	102.02
10	ST190125M2-9 537 CS4 19A1709	190125M2_10	Analyte	28.7	5.10	6486.16	6522.30	99.45
11	ST190125M2-10 537 CS5 19A1710	190125M2_11	Analyte	28.7	5.10	6435.83	6522.30	98.67
12	IPA	190125M2_12	Analyte	28.7			6522.30	0.00
13	ICV190125M2-1 537 ICV 19A1711	190125M2_13	Analyte	28.7	5.10	6857.27	6522.30	105.14
14	IPA	190125M2_14	Analyte	28.7			6522.30	0.00
15	B9A0191-BS1 LFB 0.25	190125M2_15	Analyte	28.7	5.10	6143.01	6522.30	94.18
16	B9A0191-BSD1 LFBD 0.25	190125M2_16	Analyte	28.7	5.10	6378.95	6522.30	97.80
17	B9A0191-BLK1 LRB 0.25	190125M2_17	Analyte	28.7	5.10	6286.17	6522.30	96.38
18	1900103-03RE1 WI-AF-1RW67-0119 0.2408	190125M2_18	Analyte	28.7	5.10	6409.75	6522.30	98.27
19	1900103-05RE1 WI-AF-1RW68-0119 0.24813	190125M2_19	Analyte	28.7	5.10	6646.72	6522.30	101.91
20	1900103-06RE1 WI-AF-1RW68P-0119 0.2517	190125M2_20	Analyte	28.7	5.10	6459.45	6522.30	99.04
21	1900103-08RE1 WI-AF-1RW69-0119 0.24947	190125M2_21	Analyte	28.7	5.10	6269.86	6522.30	96.13
22	1900103-12RE1 WI-AF-1RW71-0119 0.2497	190125M2_22	Analyte	28.7	5.10	7048.35	6522.30	108.07
23	1900157-01 WR1901181300KER 0.25378	190125M2_23	Analyte	28.7	5.10	6441.93	6522.30	98.77
24	B9A0154-BS1 LFB 0.25	190125M2_24	Analyte	28.7	5.10	6507.85	6522.30	99.78
25	B9A0154-MS1 LFSM 0.2622	190125M2_25	Analyte	28.7	5.10	6672.41	6522.30	102.30
26	B9A0154-MSD1 LFSMD 0.25876	190125M2_26	Analyte	28.7	5.10	5705.42	6522.30	87.48
27	B9A0154-BLK1 LRB 0.25	190125M2_27	Analyte	28.7	5.10	6052.17	6522.30	92.79
28	1900143-01 F8F9-PFOS 0.24632	190125M2_28	Analyte	28.7	5.10	6151.74	6522.30	94.32
29	1900143-02 F8F9-Blank 0.26305	190125M2_29	Analyte	28.7	5.10	6490.25	6522.30	99.51
30	1900153-01 WI-AF-1RW77-0119 0.24887	190125M2_30	Analyte	28.7	5.10	5957.04	6522.30	91.33
31	1900153-02 WI-AF-1FB77-0119 0.25759	190125M2_31	Analyte	28.7	5.10	6893.07	6522.30	105.68
32	IPA	190125M2_32	Analyte	28.7			6522.30	0.00
33	ST190125M2-11 537 CS1 19A1706	190125M2_33	Analyte	28.7	5.10	6638.92	6522.30	101.79
34	1900153-03 WI-AF-1RW78-0119 0.26025	190125M2_34	Analyte	28.7	5.10	6557.18	6522.30	100.53
35	1900153-04 WI-AF-1RW78P-0119 0.26161	190125M2_35	Analyte	28.7	5.10	6952.72	6522.30	106.60
36	1900153-05 WI-AF-1FB78-0119 0.2601	190125M2_36	Analyte	28.7	5.10	7039.28	6522.30	107.93
37	1900153-06 WI-AF-1RW79-0119 0.26144	190125M2_37	Analyte	28.7	5.10	6868.30	6522.30	105.30
38	1900153-07 WI-AF-1FB79-0119 0.26248	190125M2_38	Analyte	28.7	5.10	6190.28	6522.30	94.91
39	1900153-08 WI-AF-1RW80-0119 0.25982	190125M2_39	Analyte	28.7	5.10	7286.29	6522.30	111.71
40	1900153-09 WI-AF-1FB80-0119 0.26087	190125M2_40	Analyte	28.7	5.10	6621.71	6522.30	101.52
41	1900154-01 PW4-011719-DW 0.25717	190125M2_41	Analyte	28.7	5.10	7213.29	6522.30	110.59

42	1900154-02 PW4-011719-FB 0.2617	190125M2_42	Analyte	28.7	5.10	7444.60	6522.30	114.14
43	IPA	190125M2_43	Analyte	28.7			6522.30	0.00
44	ST190125M2-12 537 CS3 19A1708	190125M2_44	Analyte	28.7	5.10	6635.06	6522.30	101.73
45	B9A0141-BS1 LFB 0.25	190125M2_45	Analyte	28.7	5.10	6535.11	6522.30	100.20
46	B9A0141-BSD1 LFBD 0.25	190125M2_46	Analyte	28.7	5.10	7059.48	6522.30	108.24
47	B9A0141-BLK1 LRB 0.25	190125M2_47	Analyte	28.7	5.10	5718.07	6522.30	87.67
48	1900136-01 GWNT1901160950KME 0.24097	190125M2_48	Analyte	28.7	5.10	6240.24	6522.30	95.68
49	1900137-01 WR1901161110KER 0.24094	190125M2_49	Analyte	28.7	5.10	7087.78	6522.30	108.67
50	IPA	190125M2_50	Analyte	28.7			6522.30	0.00
51	ST190125M2-13 537 CS-1 19A1704	190125M2_51	Analyte	28.7	5.10	7300.99	6522.30	111.94

Compound 20: d3-N-MeFOSAA

	ID	Name	Type	Std. Conc	RT	Area	ICAL Area	Area %
1	IPA	190125M2_1	Analyte	40			10753.65	0.00
2	ST190125M2-1 537 CS-4 19A1701	190125M2_2	Analyte	40	5.39	10088.12	10753.65	93.81
3	ST190125M2-2 537 CS-3 19A1702	190125M2_3	Analyte	40	5.39	10084.90	10753.65	93.78
4	ST190125M2-3 537 CS-2 19A1703	190125M2_4	Analyte	40	5.39	10739.07	10753.65	99.86
5	ST190125M2-4 537 CS-1 19A1704	190125M2_5	Analyte	40	5.39	10593.76	10753.65	98.51
6	ST190125M2-5 537 CS0 19A1705	190125M2_6	Analyte	40	5.39	10954.44	10753.65	101.87
7	ST190125M2-6 537 CS1 19A1706	190125M2_7	Analyte	40	5.39	11478.53	10753.65	106.74
8	ST190125M2-7 537 CS2 19A1707	190125M2_8	Analyte	40	5.39	11323.08	10753.65	105.30
9	ST190125M2-8 537 CS3 19A1708	190125M2_9	Analyte	40	5.39	10746.07	10753.65	99.93
10	ST190125M2-9 537 CS4 19A1709	190125M2_10	Analyte	40	5.39	10429.39	10753.65	96.98
11	ST190125M2-10 537 CS5 19A1710	190125M2_11	Analyte	40	5.39	11099.10	10753.65	103.21
12	IPA	190125M2_12	Analyte	40			10753.65	0.00
13	ICV190125M2-1 537 ICV 19A1711	190125M2_13	Analyte	40	5.39	11937.70	10753.65	111.01
14	IPA	190125M2_14	Analyte	40			10753.65	0.00
15	B9A0191-BS1 LFB 0.25	190125M2_15	Analyte	40	5.39	10486.17	10753.65	97.51
16	B9A0191-BSD1 LFBD 0.25	190125M2_16	Analyte	40	5.40	10122.23	10753.65	94.13
17	B9A0191-BLK1 LRB 0.25	190125M2_17	Analyte	40	5.39	10414.11	10753.65	96.84
18	1900103-03RE1 WI-AF-1RW67-0119 0.2408	190125M2_18	Analyte	40	5.39	10652.49	10753.65	99.06
19	1900103-05RE1 WI-AF-1RW68-0119 0.24813	190125M2_19	Analyte	40	5.39	10929.26	10753.65	101.63

20	1900103-06RE1 WI-AF-1RW68P-0119 0.2517	190125M2_20	Analyte	40	5.39	11258.46	10753.65	104.69
21	1900103-08RE1 WI-AF-1RW69-0119 0.24947	190125M2_21	Analyte	40	5.39	10456.21	10753.65	97.23
22	1900103-12RE1 WI-AF-1RW71-0119 0.2497	190125M2_22	Analyte	40	5.39	11119.07	10753.65	103.40
23	1900157-01 WR1901181300KER 0.25378	190125M2_23	Analyte	40	5.39	10932.40	10753.65	101.66
24	B9A0154-BS1 LFB 0.25	190125M2_24	Analyte	40	5.39	10207.64	10753.65	94.92
25	B9A0154-MS1 LFSM 0.2622	190125M2_25	Analyte	40	5.39	11506.62	10753.65	107.00
26	B9A0154-MSD1 LFSMD 0.25876	190125M2_26	Analyte	40	5.39	9952.61	10753.65	92.55
27	B9A0154-BLK1 LRB 0.25	190125M2_27	Analyte	40	5.39	10105.67	10753.65	93.97
28	1900143-01 F8F9-PFOS 0.24632	190125M2_28	Analyte	40	5.39	10685.91	10753.65	99.37
29	1900143-02 F8F9-Blank 0.26305	190125M2_29	Analyte	40	5.39	11327.13	10753.65	105.33
30	1900153-01 WI-AF-1RW77-0119 0.24887	190125M2_30	Analyte	40	5.39	10248.05	10753.65	95.30
31	1900153-02 WI-AF-1FB77-0119 0.25759	190125M2_31	Analyte	40	5.40	11496.63	10753.65	106.91
32	IPA	190125M2_32	Analyte	40			10753.65	0.00
33	ST190125M2-11 537 CS1 19A1706	190125M2_33	Analyte	40	5.39	11589.88	10753.65	107.78
34	1900153-03 WI-AF-1RW78-0119 0.26025	190125M2_34	Analyte	40	5.39	11602.90	10753.65	107.90
35	1900153-04 WI-AF-1RW78P-0119 0.26161	190125M2_35	Analyte	40	5.39	11647.97	10753.65	108.32
36	1900153-05 WI-AF-1FB78-0119 0.2601	190125M2_36	Analyte	40	5.39	12301.80	10753.65	114.40
37	1900153-06 WI-AF-1RW79-0119 0.26144	190125M2_37	Analyte	40	5.39	11544.30	10753.65	107.35
38	1900153-07 WI-AF-1FB79-0119 0.26248	190125M2_38	Analyte	40	5.39	10446.77	10753.65	97.15
39	1900153-08 WI-AF-1RW80-0119 0.25982	190125M2_39	Analyte	40	5.39	12744.75	10753.65	118.52
40	1900153-09 WI-AF-1FB80-0119 0.26087	190125M2_40	Analyte	40	5.39	11154.42	10753.65	103.73
41	1900154-01 PW4-011719-DW 0.25717	190125M2_41	Analyte	40	5.39	12335.59	10753.65	114.71
42	1900154-02 PW4-011719-FB 0.2617	190125M2_42	Analyte	40	5.39	12760.36	10753.65	118.66
43	IPA	190125M2_43	Analyte	40			10753.65	0.00
44	ST190125M2-12 537 CS3 19A1708	190125M2_44	Analyte	40	5.39	11109.69	10753.65	103.31
45	B9A0141-BS1 LFB 0.25	190125M2_45	Analyte	40	5.39	11631.68	10753.65	108.16
46	B9A0141-BSD1 LFBD 0.25	190125M2_46	Analyte	40	5.39	11811.07	10753.65	109.83
47	B9A0141-BLK1 LRB 0.25	190125M2_47	Analyte	40	5.39	10646.56	10753.65	99.00
48	1900136-01 GWNT1901160950KME 0.24097	190125M2_48	Analyte	40	5.39	10639.09	10753.65	98.93
49	1900137-01 WR1901161110KER 0.24094	190125M2_49	Analyte	40	5.39	11806.01	10753.65	109.79
50	IPA	190125M2_50	Analyte	40			10753.65	0.00
51	ST190125M2-13 537 CS-1 19A1704	190125M2_51	Analyte	40	5.39	12934.24	10753.65	120.28

CCAL

	ID	Name	Type	Std. Conc	RT	Area	CCAL Area	Area %
32	IPA	190125M2_32	Analyte	10			13718.64	0.00
33	**ST190125M2-11 537 CS1 19A1706**	**190125M2_33**	**Analyte**	**10**	**4.77**	**13718.64**	**13718.64**	**100.00**
34	1900153-03 WI-AF-1RW78-0119 0.26025	190125M2_34	Analyte	10	4.76	13743.12	13718.64	100.18
35	1900153-04 WI-AF-1RW78P-0119 0.26161	190125M2_35	Analyte	10	4.76	13413.73	13718.64	97.78
36	1900153-05 WI-AF-1FB78-0119 0.2601	190125M2_36	Analyte	10	4.76	14040.47	13718.64	102.35
37	1900153-06 WI-AF-1RW79-0119 0.26144	190125M2_37	Analyte	10	4.77	14076.20	13718.64	102.61
38	1900153-07 WI-AF-1FB79-0119 0.26248	190125M2_38	Analyte	10	4.76	12106.64	13718.64	88.25
39	1900153-08 WI-AF-1RW80-0119 0.25982	190125M2_39	Analyte	10	4.77	14877.23	13718.64	108.45
40	1900153-09 WI-AF-1FB80-0119 0.26087	190125M2_40	Analyte	10	4.77	13241.72	13718.64	96.52
41	1900154-01 PW4-011719-DW 0.25717	190125M2_41	Analyte	10	4.77	14351.52	13718.64	104.61
42	1900154-02 PW4-011719-FB 0.2617	190125M2_42	Analyte	10	4.77	14731.99	13718.64	107.39
43	IPA	190125M2_43	Analyte	10			13718.64	0.00
44	ST190125M2-12 537 CS3 19A1708	190125M2_44	Analyte	10	4.77	13334.69	13718.64	97.20
44	**ST190125M2-12 537 CS3 19A1708**	**190125M2_44**	**Analyte**	**10**	**4.77**	**13334.69**	**13334.69**	**100.00**
45	B9A0141-BS1 LFB 0.25	190125M2_45	Analyte	10	4.77	13847.64	13334.69	103.85
46	B9A0141-BSD1 LFBD 0.25	190125M2_46	Analyte	10	4.77	13691.86	13334.69	102.68
47	B9A0141-BLK1 LRB 0.25	190125M2_47	Analyte	10	4.76	11878.12	13334.69	89.08
48	1900136-01 GWNT1901160950KME 0.24097	190125M2_48	Analyte	10	4.77	12212.24	13334.69	91.58
49	1900137-01 WR1901161110KER 0.24094	190125M2_49	Analyte	10	4.77	14468.36	13334.69	108.50
50	IPA	190125M2_50	Analyte	10			13334.69	0.00
51	ST190125M2-13 537 CS-1 19A1704	190125M2_51	Analyte	10	4.76	14723.16	13334.69	110.41

Compound 19: 13C4-PFOS

	ID	Name	Type	Std. Conc	RT	Area	CCAL Area	Area %
32	IPA	190125M2_32	Analyte	28.7			6638.92	0.00
33	**ST190125M2-11 537 CS1 19A1706**	**190125M2_33**	**Analyte**	**28.7**	**5.10**	**6638.92**	**6638.92**	**100.00**
34	1900153-03 WI-AF-1RW78-0119 0.26025	190125M2_34	Analyte	28.7	5.10	6557.18	6638.92	98.77
35	1900153-04 WI-AF-1RW78P-0119 0.26161	190125M2_35	Analyte	28.7	5.10	6952.72	6638.92	104.73

36	1900153-05 WI-AF-1FB78-0119 0.2601	190125M2_36	Analyte	28.7	5.10	7039.28	6638.92	106.03
37	1900153-06 WI-AF-1RW79-0119 0.26144	190125M2_37	Analyte	28.7	5.10	6868.30	6638.92	103.45
38	1900153-07 WI-AF-1FB79-0119 0.26248	190125M2_38	Analyte	28.7	5.10	6190.28	6638.92	93.24
39	1900153-08 WI-AF-1RW80-0119 0.25982	190125M2_39	Analyte	28.7	5.10	7286.29	6638.92	109.75
40	1900153-09 WI-AF-1FB80-0119 0.26087	190125M2_40	Analyte	28.7	5.10	6621.71	6638.92	99.74
41	1900154-01 PW4-011719-DW 0.25717	190125M2_41	Analyte	28.7	5.10	7213.29	6638.92	108.65
42	1900154-02 PW4-011719-FB 0.2617	190125M2_42	Analyte	28.7	5.10	7444.60	6638.92	112.14
43	IPA	190125M2_43	Analyte	28.7			6638.92	0.00
44	ST190125M2-12 537 CS3 19A1708	190125M2_44	Analyte	28.7	5.10	6635.06	6638.92	99.94
44	**ST190125M2-12 537 CS3 19A1708**	**190125M2_44**	**Analyte**	**28.7**	**5.10**	**6635.06**	**6635.06**	**100.00**
45	B9A0141-BS1 LFB 0.25	190125M2_45	Analyte	28.7	5.10	6535.11	6635.06	98.49
46	B9A0141-BSD1 LFBD 0.25	190125M2_46	Analyte	28.7	5.10	7059.48	6635.06	106.40
47	B9A0141-BLK1 LRB 0.25	190125M2_47	Analyte	28.7	5.10	5718.07	6635.06	86.18
48	1900136-01 GWNT1901160950KME 0.24097	190125M2_48	Analyte	28.7	5.10	6240.24	6635.06	94.05
49	1900137-01 WR1901161110KER 0.24094	190125M2_49	Analyte	28.7	5.10	7087.78	6635.06	106.82
50	IPA	190125M2_50	Analyte	28.7			6635.06	0.00
51	ST190125M2-13 537 CS-1 19A1704	190125M2_51	Analyte	28.7	5.10	7300.99	6635.06	110.04

Compound 20: d3-N-MeFOSAA

	ID	Name	Type	Std. Conc	RT	Area	CCAL Area	Area %
32	IPA	190125M2_32	Analyte	40			11589.88	0.00
33	**ST190125M2-11 537 CS1 19A1706**	**190125M2_33**	**Analyte**	**40**	**5.39**	**11589.88**	**11589.88**	**100.00**
34	1900153-03 WI-AF-1RW78-0119 0.26025	190125M2_34	Analyte	40	5.39	11602.90	11589.88	100.11
35	1900153-04 WI-AF-1RW78P-0119 0.26161	190125M2_35	Analyte	40	5.39	11647.97	11589.88	100.50
36	1900153-05 WI-AF-1FB78-0119 0.2601	190125M2_36	Analyte	40	5.39	12301.80	11589.88	106.14
37	1900153-06 WI-AF-1RW79-0119 0.26144	190125M2_37	Analyte	40	5.39	11544.30	11589.88	99.61
38	1900153-07 WI-AF-1FB79-0119 0.26248	190125M2_38	Analyte	40	5.39	10446.77	11589.88	90.14
39	1900153-08 WI-AF-1RW80-0119 0.25982	190125M2_39	Analyte	40	5.39	12744.75	11589.88	109.96
40	1900153-09 WI-AF-1FB80-0119 0.26087	190125M2_40	Analyte	40	5.39	11154.42	11589.88	96.24
41	1900154-01 PW4-011719-DW 0.25717	190125M2_41	Analyte	40	5.39	12335.59	11589.88	106.43
42	1900154-02 PW4-011719-FB 0.2617	190125M2_42	Analyte	40	5.39	12760.36	11589.88	110.10

43	IPA	190125M2_43	Analyte	40			11589.88	0.00
44	ST190125M2-12 537 CS3 19A1708	190125M2_44	Analyte	40	5.39	11109.69	11589.88	95.86
44	**ST190125M2-12 537 CS3 19A1708**	**190125M2_44**	**Analyte**	**40**	**5.39**	**11109.69**	**11109.69**	**100.00**
45	B9A0141-BS1 LFB 0.25	190125M2_45	Analyte	40	5.39	11631.68	11109.69	104.70
46	B9A0141-BSD1 LFBD 0.25	190125M2_46	Analyte	40	5.39	11811.07	11109.69	106.31
47	B9A0141-BLK1 LRB 0.25	190125M2_47	Analyte	40	5.39	10646.56	11109.69	95.83
48	1900136-01 GWNT1901160950KME 0.24097	190125M2_48	Analyte	40	5.39	10639.09	11109.69	95.76
49	1900137-01 WR1901161110KER 0.24094	190125M2_49	Analyte	40	5.39	11806.01	11109.69	106.27
50	IPA	190125M2_50	Analyte	40			11109.69	0.00
51	ST190125M2-13 537 CS-1 19A1704	190125M2_51	Analyte	40	5.39	12934.24	11109.69	116.42

LC Calibration Standards Review Checklist Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID: ST190125M2-11	L (M) H	NA	☑	☑	☑	☑	☑	☐
Calibration ID: -12	L M (H)	☐	☑	☑	☑	☑	☑	☐
Calibration ID: -13	(L) M H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

VBF 1/26/19

NA
VBF 1/26/19

Full Mass Cal. Date: 1/07/19

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☐ NA

IIS Area Saved ☑

Reviewed By: 1/27/19
Initials/Date

Comments:

DW - L14

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-33.qld

Last Altered: Saturday, January 26, 2019 18:32:42 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:32:59 Pacific Standard Time

Jan 1/27/19

Name: 190125M2_33, Date: 25-Jan-2019, Time: 23:40:16, ID: ST190125M2-11 537 CS1 19A1706, Description: 537 CS1 19A1706

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	1965.663	6638.924	1.00		3.73	3.73	8.50	9.16	103.6
2	2	PFHxA	313.2 > 268.9	11300.706	13718.638	1.00		4.05	4.06	8.24	9.87	98.7
3	3	PFHpA	363 > 318.9	9838.320	13718.638	1.00		4.42	4.43	7.17	9.96	99.6
4	4	PFHxS	398.9 > 79.6	1566.168	6638.924	1.00		4.53	4.53	6.77	9.35	102.5
5	5	PFOA	413 > 368.7	13357.084	13718.638	1.00		4.77	4.77	9.74	10.2	101.8
6	19	13C4-PFOS	503.0 > 79.9	6638.924	6638.924	1.00	1.000	5.10	5.10	28.7	28.7	100.0
7	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
8	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
9	19	13C4-PFOS	503.0 > 79.9	6638.924	6638.924	1.00	1.000	5.10	5.10	28.7	28.7	100.0
10	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
11	-1											
12	6	PFNA	463 > 418.8	14337.630	13718.638	1.00		5.05	5.05	10.5	10.1	100.6
13	7	PFOS	499 >79.9	2240.805	6638.924	1.00		5.10	5.10	9.69	9.14	98.9
14	8	PFDA	513 > 468.8	13721.275	13718.638	1.00		5.29	5.29	10.0	9.17	91.7
15	9	N-MeFOSAA	570.1 > 419.0	5112.962	11589.878	1.00		5.39	5.39	17.6	9.20	92.0
16	10	N-EtFOSAA	584.2 >419.0	4295.566	11589.878	1.00		5.50	5.49	14.8	9.72	97.2
17	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
18	19	13C4-PFOS	503.0 > 79.9	6638.924	6638.924	1.00	1.000	5.10	5.10	28.7	28.7	100.0
19	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
20	20	d3-N-MeFOSAA	573.3 > 419.0	11589.878	11589.878	1.00	1.000	5.39	5.39	40.0	40.0	100.0
21	20	d3-N-MeFOSAA	573.3 > 419.0	11589.878	11589.878	1.00	1.000	5.39	5.39	40.0	40.0	100.0
22	-1											
23	11	PFUnA	563 > 518.9	13510.265	13718.638	1.00		5.50	5.50	9.85	9.79	97.9
24	12	PFDoA	612.9 > 318.8	1950.431	13718.638	1.00		5.68	5.68	1.42	9.95	99.5
25	13	PFTrDA	662.9 > 618.9	18160.631	13718.638	1.00		5.84	5.84	13.2	9.42	94.2
26	14	PFTeDA	712.9 > 668.8	16477.041	13718.638	1.00		5.98	5.98	12.0	9.51	95.1
27	15	13C2-PFHxA	315 > 269.8	9043.211	13718.638	1.00	0.641	4.24	4.05	6.59	10.3	102.8
28	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
29	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
30	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
31	18	13C2-PFOA	414.9 > 369.7	13718.638	13718.638	1.00	1.000	4.77	4.77	10.0	10.0	100.0
32	16	13C2-PFDA	515.1 > 469.9	12331.659	13718.638	1.00	0.896	5.29	5.29	8.99	10.0	100.3
33	-1											
34	17	d5-N-EtFOSAA	589.3 > 419.0	18001.186	11589.878	1.00	1.512	5.39	5.49	62.1	41.1	102.7

MF 1/26/19

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-IIS AREAS.qld

Last Altered: Saturday, January 26, 2019 15:47:03 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:30:44 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
1	1	190125M2_1	IPA	25-Jan-19	17:22:45
2	2	190125M2_2	ST190125M2-1 537 CS-4 19A1701	25-Jan-19	17:34:29
3	3	190125M2_3	ST190125M2-2 537 CS-3 19A1702	25-Jan-19	17:46:20
4	4	190125M2_4	ST190125M2-3 537 CS-2 19A1703	25-Jan-19	17:58:06
5	5	190125M2_5	ST190125M2-4 537 CS-1 19A1704	25-Jan-19	18:09:57
6	6	190125M2_6	ST190125M2-5 537 CS0 19A1705	25-Jan-19	18:21:43
7	7	190125M2_7	ST190125M2-6 537 CS1 19A1706	25-Jan-19	18:33:26
8	8	190125M2_8	ST190125M2-7 537 CS2 19A1707	25-Jan-19	18:45:17
9	9	190125M2_9	ST190125M2-8 537 CS3 19A1708	25-Jan-19	18:57:03
10	10	190125M2_10	ST190125M2-9 537 CS4 19A1709	25-Jan-19	19:08:54
11	11	190125M2_11	ST190125M2-10 537 CS5 19A1710	25-Jan-19	19:20:39
12	12	190125M2_12	IPA	25-Jan-19	19:32:30
13	13	190125M2_13	ICV190125M2-1 537 ICV 19A1711	25-Jan-19	19:44:16
14	14	190125M2_14	IPA	25-Jan-19	19:56:07
15	15	190125M2_15	B9A0191-BS1 LFB 0.25	25-Jan-19	20:07:52
16	16	190125M2_16	B9A0191-BSD1 LFBD 0.25	25-Jan-19	20:19:43
17	17	190125M2_17	B9A0191-BLK1 LRB 0.25	25-Jan-19	20:31:29
18	18	190125M2_18	1900103-03RE1 WI-AF-1RW67-0119 0.2408	25-Jan-19	20:43:20
19	19	190125M2_19	1900103-05RE1 WI-AF-1RW68-0119 0.24813	25-Jan-19	20:55:03
20	20	190125M2_20	1900103-06RE1 WI-AF-1RW68P-0119 0.2517	25-Jan-19	21:06:54
21	21	190125M2_21	1900103-08RE1 WI-AF-1RW69-0119 0.24947	25-Jan-19	21:18:40
22	22	190125M2_22	1900103-12RE1 WI-AF-1RW71-0119 0.2497	25-Jan-19	21:30:31
23	23	190125M2_23	1900157-01 WR1901181300KER 0.25378	25-Jan-19	21:42:15
24	24	190125M2_24	B9A0154-BS1 LFB 0.25	25-Jan-19	21:54:07
25	25	190125M2_25	B9A0154-MS1 LFSM 0.2622	25-Jan-19	22:05:52
26	26	190125M2_26	B9A0154-MSD1 LFSMD 0.25876	25-Jan-19	22:17:44
27	27	190125M2_27	B9A0154-BLK1 LRB 0.25	25-Jan-19	22:29:29
28	28	190125M2_28	1900143-01 F8F9-PFOS 0.24632	25-Jan-19	22:41:12
29	29	190125M2_29	1900143-02 F8F9-Blank 0.26305	25-Jan-19	22:53:03
30	30	190125M2_30	1900153-01 WI-AF-1RW77-0119 0.24887	25-Jan-19	23:04:49
31	31	190125M2_31	1900153-02 WI-AF-1FB77-0119 0.25759	25-Jan-19	23:16:40
32	32	190125M2_32	IPA	25-Jan-19	23:28:25

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-IIS AREAS.qld

Last Altered: Saturday, January 26, 2019 15:47:03 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:30:44 Pacific Standard Time

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
33	33	190125M2_33	ST190125M2-11 537 CS1 19A1706	25-Jan-19	23:40:16
34	34	190125M2_34	1900153-03 WI-AF-1RW78-0119 0.26025	25-Jan-19	23:52:01
35	35	190125M2_35	1900153-04 WI-AF-1RW78P-0119 0.26161	26-Jan-19	00:03:52
36	36	190125M2_36	1900153-05 WI-AF-1FB78-0119 0.2601	26-Jan-19	00:15:37
37	37	190125M2_37	1900153-06 WI-AF-1RW79-0119 0.26144	26-Jan-19	00:27:29
38	38	190125M2_38	1900153-07 WI-AF-1FB79-0119 0.26248	26-Jan-19	00:39:14
39	39	190125M2_39	1900153-08 WI-AF-1RW80-0119 0.25982	26-Jan-19	00:51:05
40	40	190125M2_40	1900153-09 WI-AF-1FB80-0119 0.26087	26-Jan-19	01:02:52
41	41	190125M2_41	1900154-01 PW4-011719-DW 0.25717	26-Jan-19	01:14:43
42	42	190125M2_42	1900154-02 PW4-011719-FB 0.2617	26-Jan-19	01:26:27
43	43	190125M2_43	IPA	26-Jan-19	01:38:19
44	44	190125M2_44	ST190125M2-12 537 CS3 19A1708	26-Jan-19	01:50:04
45	45	190125M2_45	B9A0141-BS1 LFB 0.25	26-Jan-19	02:01:56
46	46	190125M2_46	B9A0141-BSD1 LFBD 0.25	26-Jan-19	02:13:41
47	47	190125M2_47	B9A0141-BLK1 LRB 0.25	26-Jan-19	02:25:24
48	48	190125M2_48	1900136-01 GWNT1901160950KME 0.24097	26-Jan-19	02:37:15
49	49	190125M2_49	1900137-01 WR1901161110KER 0.24094	26-Jan-19	02:49:00
50	50	190125M2_50	IPA	26-Jan-19	03:00:52
51	51	190125M2_51	ST190125M2-13 537 CS-1 19A1704	26-Jan-19	03:12:37

Vista Analytical Laboratory

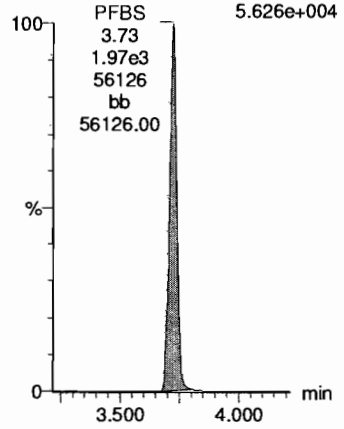
Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-33.qld

Last Altered: Saturday, January 26, 2019 18:32:42 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:32:59 Pacific Standard Time

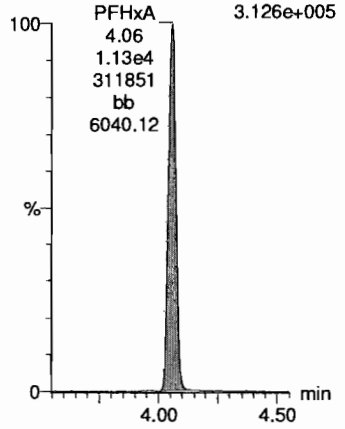
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_33, Date: 25-Jan-2019, Time: 23:40:16, ID: ST190125M2-11 537 CS1 19A1706, Description: 537 CS1 19A1706

PFBS



PFHxA



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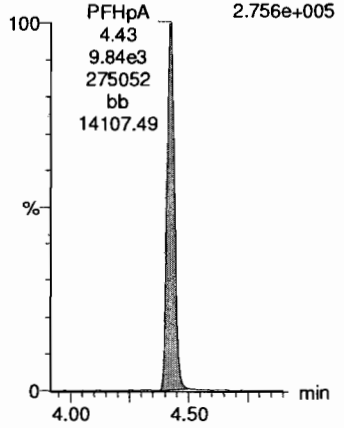

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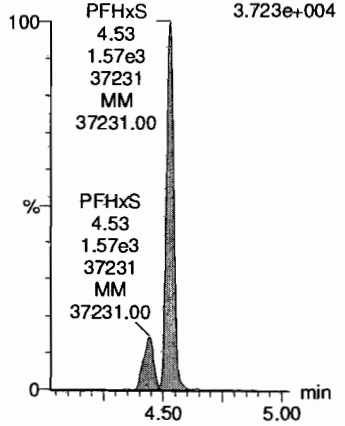
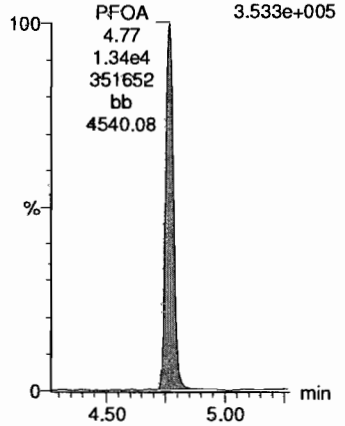
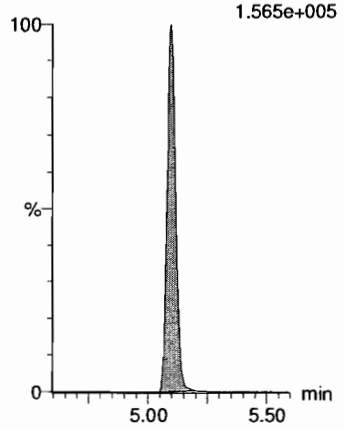


PFOA



13C4-PFOS



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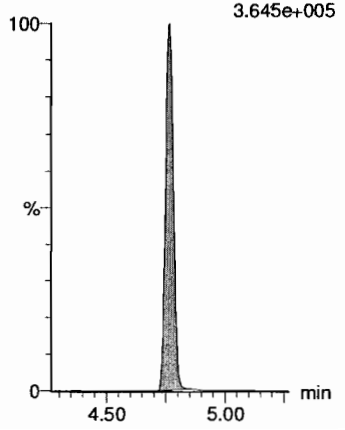

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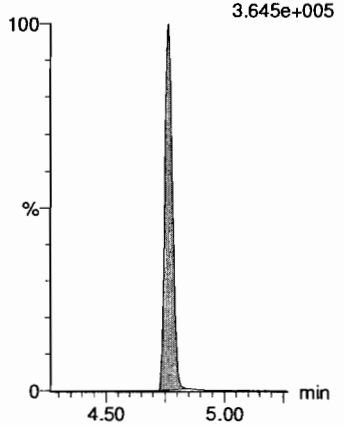

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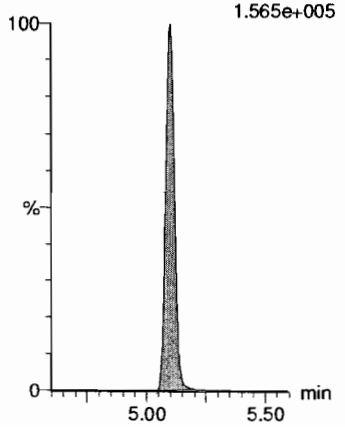

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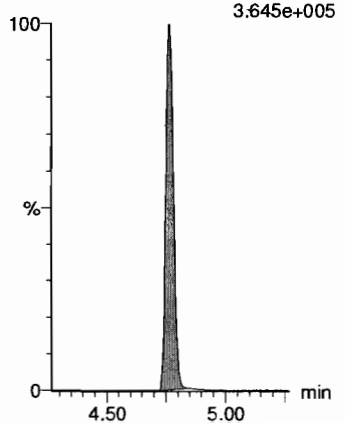
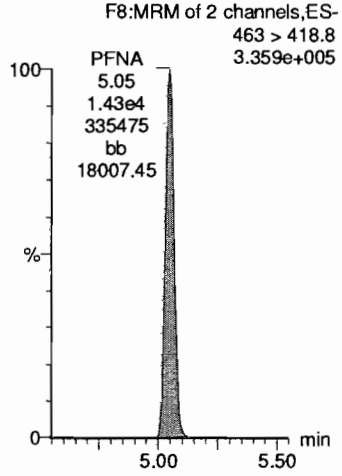


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-33.qld

Last Altered: Saturday, January 26, 2019 18:32:42 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:32:59 Pacific Standard Time

Name: 190125M2_33, Date: 25-Jan-2019, Time: 23:40:16, ID: ST190125M2-11 537 CS1 19A1706, Description: 537 CS1 19A1706

PFNA



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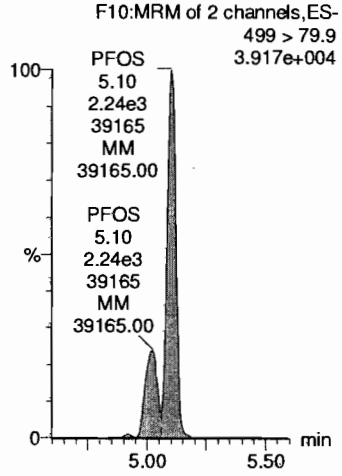

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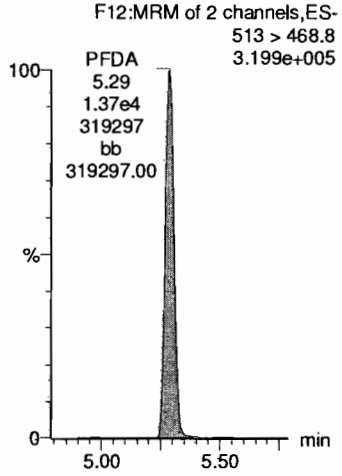
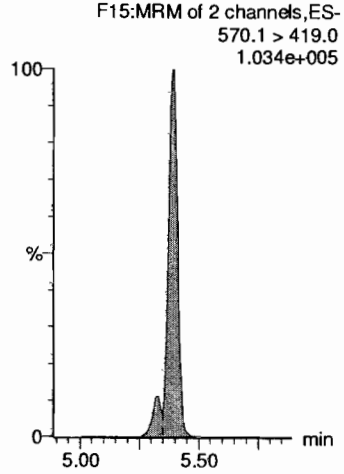


N-MeFOSAA



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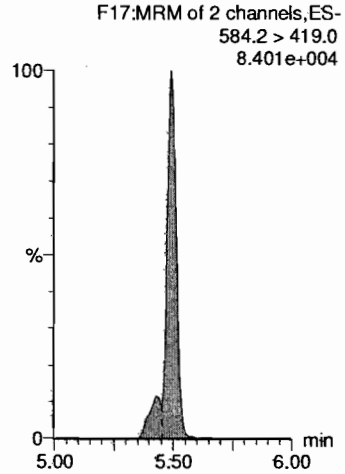
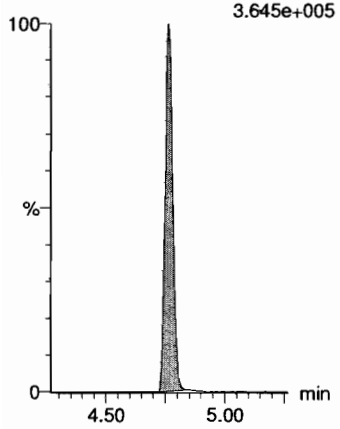


13C2-PFOA



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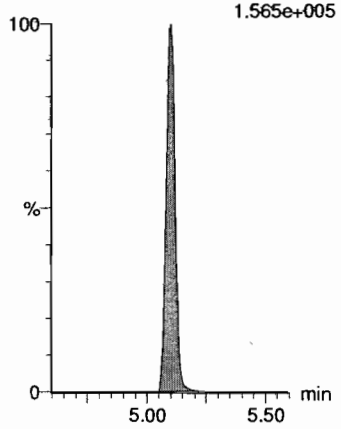

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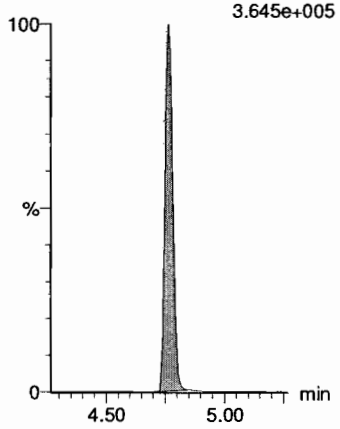
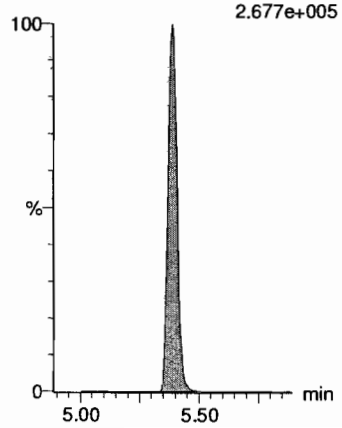
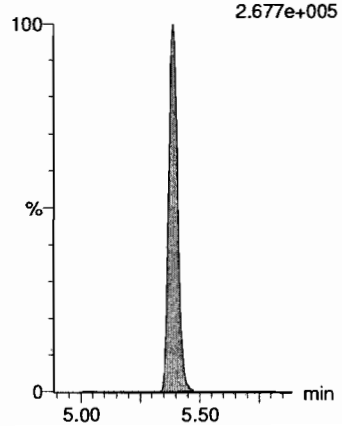


d3-N-MeFOSAA



d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-33.qld

Last Altered: Saturday, January 26, 2019 18:32:42 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:32:59 Pacific Standard Time

Name: 190125M2_33, Date: 25-Jan-2019, Time: 23:40:16, ID: ST190125M2-11 537 CS1 19A1706, Description: 537 CS1 19A1706

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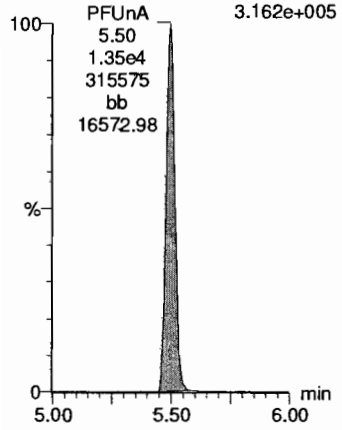
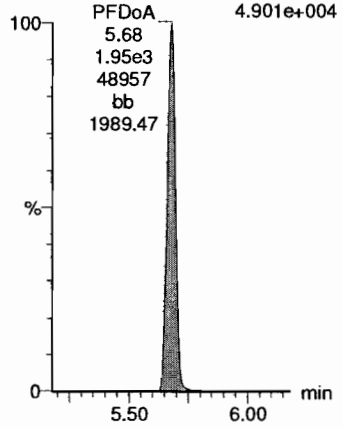


PFDoA



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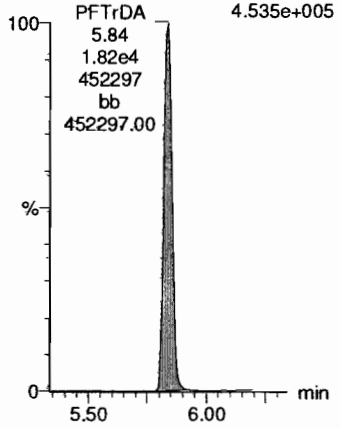

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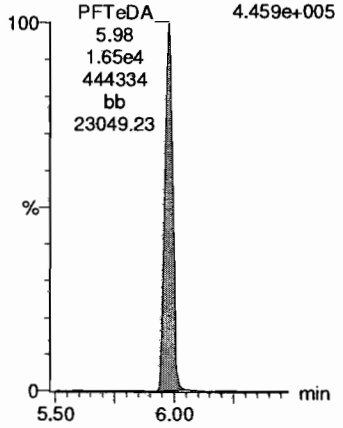
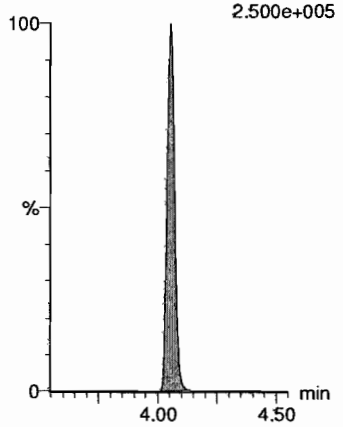


13C2-PFHxA



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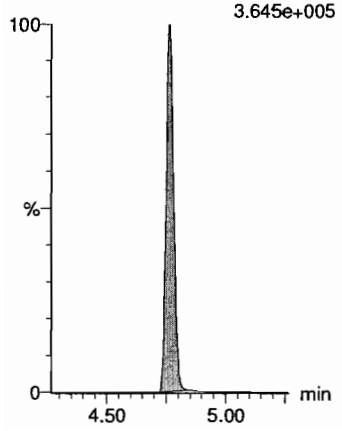

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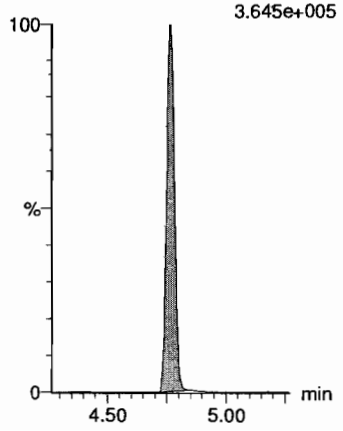

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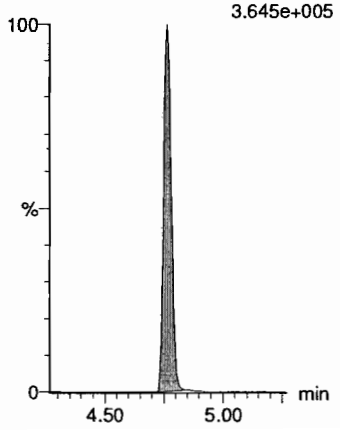
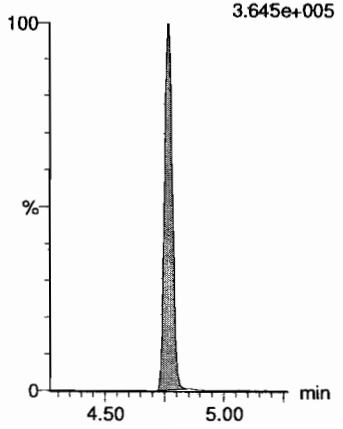
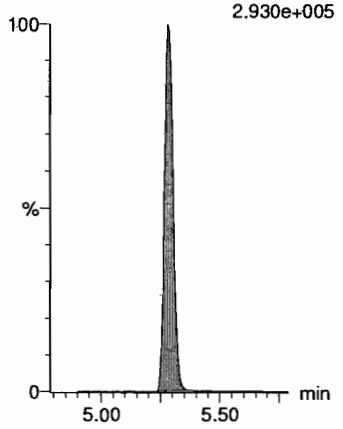


13C2-PFOA



13C2-PFDA

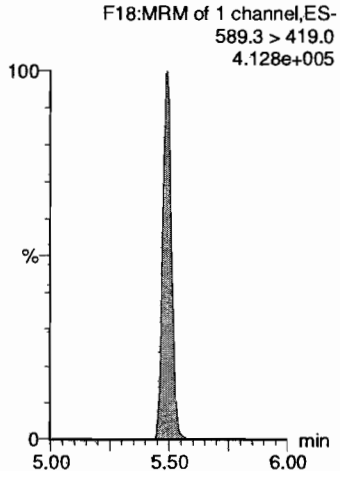


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-33.qld

Last Altered: Saturday, January 26, 2019 18:32:42 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:32:59 Pacific Standard Time

Name: 190125M2_33, Date: 25-Jan-2019, Time: 23:40:16, ID: ST190125M2-11 537 CS1 19A1706, Description: 537 CS1 19A1706

d5-N-EtFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-44.qld

Last Altered: Saturday, January 26, 2019 18:35:09 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:35:41 Pacific Standard Time

Name: 190125M2_44, Date: 26-Jan-2019, Time: 01:50:04, ID: ST190125M2-12 537 CS3 19A1708, Description: 537 CS3 19A1708

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	9570.362	6635.058	1.00		3.73	3.73	41.4	44.6	100.9
2	2	PFHxA	313.2 > 268.9	54515.504	13334.688	1.00		4.05	4.05	40.9	49.0	98.0
3	3	PFHpA	363 > 318.9	47324.012	13334.688	1.00		4.42	4.43	35.5	49.3	98.6
4	4	PFHxS	398.9 > 79.6	8098.305	6635.058	1.00		4.53	4.53	35.0	48.4	106.3
5	5	PFOA	413 > 368.7	64979.844	13334.688	1.00		4.77	4.77	48.7	50.9	101.9
6	19	13C4-PFOS	503.0 > 79.9	6635.058	6635.058	1.00	1.000	5.10	5.10	28.7	28.7	100.0
7	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
8	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
9	19	13C4-PFOS	503.0 > 79.9	6635.058	6635.058	1.00	1.000	5.10	5.10	28.7	28.7	100.0
10	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
11	-1											
12	6	PFNA	463 > 418.8	69619.906	13334.688	1.00		5.05	5.05	52.2	50.3	100.5
13	7	PFOS	499 >79.9	11752.551	6635.058	1.00		5.10	5.10	50.8	48.0	103.8
14	8	PFDA	513 > 468.8	70396.117	13334.688	1.00		5.29	5.29	52.8	49.6	99.2
15	9	N-MeFOSAA	570.1 > 419.0	26637.004	11109.694	1.00		5.39	5.39	95.9	49.6	99.3
16	10	N-EtFOSAA	584.2 >419.0	21631.857	11109.694	1.00		5.50	5.49	77.9	51.1	102.1
17	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
18	19	13C4-PFOS	503.0 > 79.9	6635.058	6635.058	1.00	1.000	5.10	5.10	28.7	28.7	100.0
19	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
20	20	d3-N-MeFOSAA	573.3 > 419.0	11109.694	11109.694	1.00	1.000	5.39	5.39	40.0	40.0	100.0
21	20	d3-N-MeFOSAA	573.3 > 419.0	11109.694	11109.694	1.00	1.000	5.39	5.39	40.0	40.0	100.0
22	-1											
23	11	PFUnA	563 > 518.9	65987.211	13334.688	1.00		5.50	5.50	49.5	49.2	98.4
24	12	PFDoA	612.9 > 318.8	9315.945	13334.688	1.00		5.68	5.68	6.99	48.9	97.8
25	13	PFTrDA	662.9 > 618.9	89531.938	13334.688	1.00		5.84	5.84	67.1	47.8	95.6
26	14	PFTeDA	712.9 > 668.8	81415.414	13334.688	1.00		5.98	5.98	61.1	48.4	96.7
27	15	13C2-PFHxA	315 > 269.8	8584.813	13334.688	1.00	0.641	4.24	4.05	6.44	10.0	100.4
28	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
29	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
30	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
31	18	13C2-PFOA	414.9 > 369.7	13334.688	13334.688	1.00	1.000	4.77	4.77	10.0	10.0	100.0
32	16	13C2-PFDA	515.1 > 469.9	11958.436	13334.688	1.00	0.896	5.29	5.29	8.97	10.0	100.1
33	-1											
34	17	d5-N-EtFOSAA	589.3 > 419.0	16920.309	11109.694	1.00	1.512	5.39	5.49	60.9	40.3	100.7

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-IIS AREAS.qld

Last Altered: Saturday, January 26, 2019 15:47:03 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:30:44 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Compound name: PFBS

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1	1	190125M2_1	IPA	25-Jan-19	17:22:45
2	2	190125M2_2	ST190125M2-1 537 CS-4 19A1701	25-Jan-19	17:34:29
3	3	190125M2_3	ST190125M2-2 537 CS-3 19A1702	25-Jan-19	17:46:20
4	4	190125M2_4	ST190125M2-3 537 CS-2 19A1703	25-Jan-19	17:58:06
5	5	190125M2_5	ST190125M2-4 537 CS-1 19A1704	25-Jan-19	18:09:57
6	6	190125M2_6	ST190125M2-5 537 CS0 19A1705	25-Jan-19	18:21:43
7	7	190125M2_7	ST190125M2-6 537 CS1 19A1706	25-Jan-19	18:33:26
8	8	190125M2_8	ST190125M2-7 537 CS2 19A1707	25-Jan-19	18:45:17
9	9	190125M2_9	ST190125M2-8 537 CS3 19A1708	25-Jan-19	18:57:03
10	10	190125M2_10	ST190125M2-9 537 CS4 19A1709	25-Jan-19	19:08:54
11	11	190125M2_11	ST190125M2-10 537 CS5 19A1710	25-Jan-19	19:20:39
12	12	190125M2_12	IPA	25-Jan-19	19:32:30
13	13	190125M2_13	ICV190125M2-1 537 ICV 19A1711	25-Jan-19	19:44:16
14	14	190125M2_14	IPA	25-Jan-19	19:56:07
15	15	190125M2_15	B9A0191-BS1 LFB 0.25	25-Jan-19	20:07:52
16	16	190125M2_16	B9A0191-BSD1 LFBD 0.25	25-Jan-19	20:19:43
17	17	190125M2_17	B9A0191-BLK1 LRB 0.25	25-Jan-19	20:31:29
18	18	190125M2_18	1900103-03RE1 WI-AF-1RW67-0119 0.2408	25-Jan-19	20:43:20
19	19	190125M2_19	1900103-05RE1 WI-AF-1RW68-0119 0.24813	25-Jan-19	20:55:03
20	20	190125M2_20	1900103-06RE1 WI-AF-1RW68P-0119 0.2517	25-Jan-19	21:06:54
21	21	190125M2_21	1900103-08RE1 WI-AF-1RW69-0119 0.24947	25-Jan-19	21:18:40
22	22	190125M2_22	1900103-12RE1 WI-AF-1RW71-0119 0.2497	25-Jan-19	21:30:31
23	23	190125M2_23	1900157-01 WR1901181300KER 0.25378	25-Jan-19	21:42:15
24	24	190125M2_24	B9A0154-BS1 LFB 0.25	25-Jan-19	21:54:07
25	25	190125M2_25	B9A0154-MS1 LFSM 0.2622	25-Jan-19	22:05:52
26	26	190125M2_26	B9A0154-MSD1 LFSMD 0.25876	25-Jan-19	22:17:44
27	27	190125M2_27	B9A0154-BLK1 LRB 0.25	25-Jan-19	22:29:29
28	28	190125M2_28	1900143-01 F8F9-PFOS 0.24632	25-Jan-19	22:41:12
29	29	190125M2_29	1900143-02 F8F9-Blank 0.26305	25-Jan-19	22:53:03
30	30	190125M2_30	1900153-01 WI-AF-1RW77-0119 0.24887	25-Jan-19	23:04:49
31	31	190125M2_31	1900153-02 WI-AF-1FB77-0119 0.25759	25-Jan-19	23:16:40
32	32	190125M2_32	IPA	25-Jan-19	23:28:25

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-IIS AREAS.qld

Last Altered: Saturday, January 26, 2019 15:47:03 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:30:44 Pacific Standard Time

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
33	33	190125M2_33	ST190125M2-11 537 CS1 19A1706	25-Jan-19	23:40:16
34	34	190125M2_34	1900153-03 WI-AF-1RW78-0119 0.26025	25-Jan-19	23:52:01
35	35	190125M2_35	1900153-04 WI-AF-1RW78P-0119 0.26161	26-Jan-19	00:03:52
36	36	190125M2_36	1900153-05 WI-AF-1FB78-0119 0.2601	26-Jan-19	00:15:37
37	37	190125M2_37	1900153-06 WI-AF-1RW79-0119 0.26144	26-Jan-19	00:27:29
38	38	190125M2_38	1900153-07 WI-AF-1FB79-0119 0.26248	26-Jan-19	00:39:14
39	39	190125M2_39	1900153-08 WI-AF-1RW80-0119 0.25982	26-Jan-19	00:51:05
40	40	190125M2_40	1900153-09 WI-AF-1FB80-0119 0.26087	26-Jan-19	01:02:52
41	41	190125M2_41	1900154-01 PW4-011719-DW 0.25717	26-Jan-19	01:14:43
42	42	190125M2_42	1900154-02 PW4-011719-FB 0.2617	26-Jan-19	01:26:27
43	43	190125M2_43	IPA	26-Jan-19	01:38:19
44	44	190125M2_44	ST190125M2-12 537 CS3 19A1708	26-Jan-19	01:50:04
45	45	190125M2_45	B9A0141-BS1 LFB 0.25	26-Jan-19	02:01:56
46	46	190125M2_46	B9A0141-BSD1 LFBD 0.25	26-Jan-19	02:13:41
47	47	190125M2_47	B9A0141-BLK1 LRB 0.25	26-Jan-19	02:25:24
48	48	190125M2_48	1900136-01 GWNT1901160950KME 0.24097	26-Jan-19	02:37:15
49	49	190125M2_49	1900137-01 WR1901161110KER 0.24094	26-Jan-19	02:49:00
50	50	190125M2_50	IPA	26-Jan-19	03:00:52
51	51	190125M2_51	ST190125M2-13 537 CS-1 19A1704	26-Jan-19	03:12:37

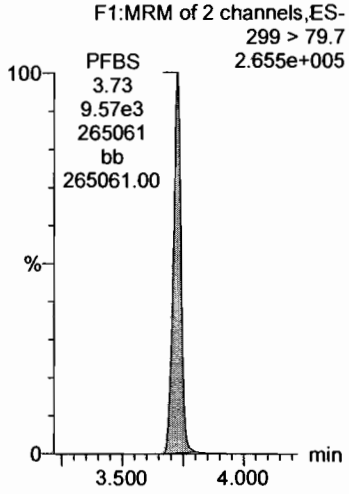
Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-44.qld

Last Altered: Saturday, January 26, 2019 18:35:09 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:35:41 Pacific Standard Time

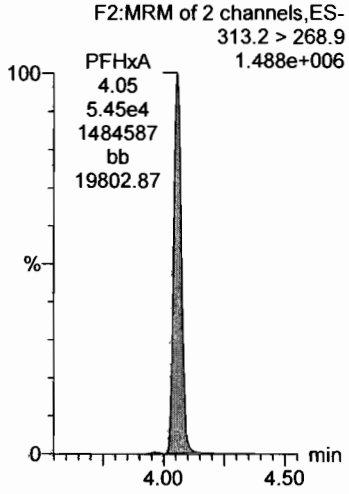
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_44, Date: 26-Jan-2019, Time: 01:50:04, ID: ST190125M2-12 537 CS3 19A1708, Description: 537 CS3 19A1708

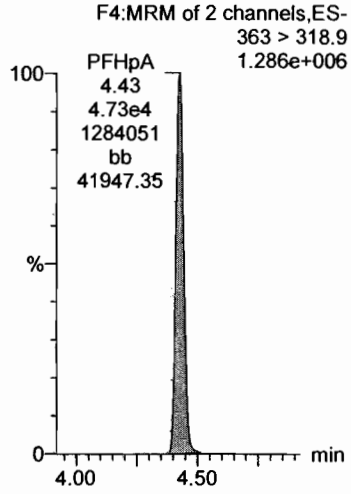
PFBS



PFHxA



PFHpA



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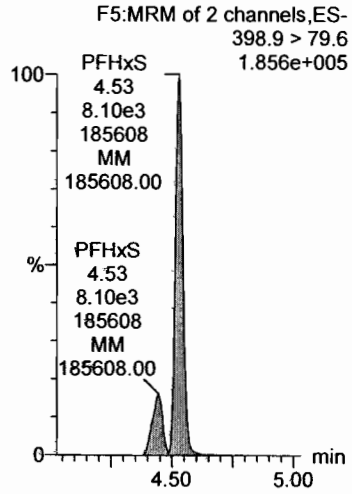
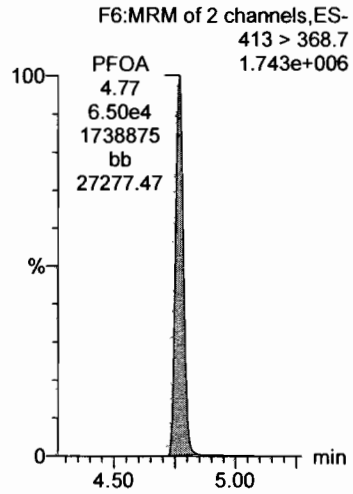
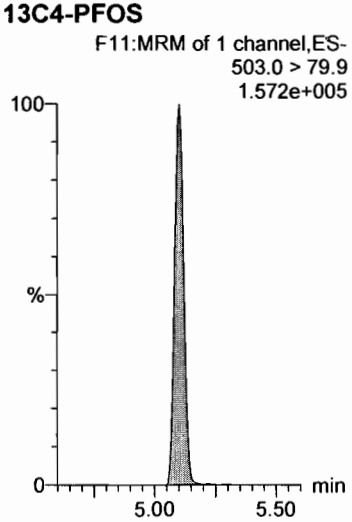


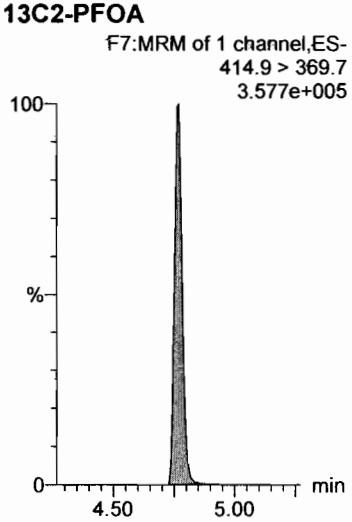
PFOA



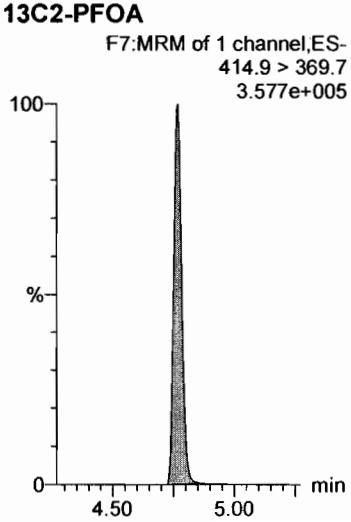
13C4-PFOS



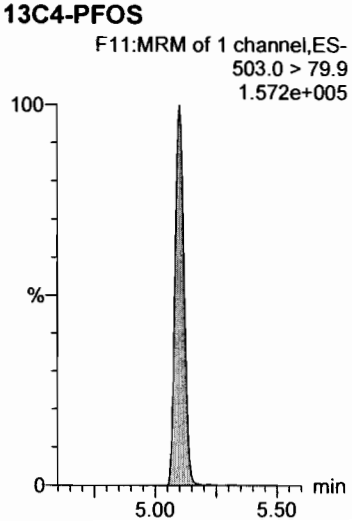
13C2-PFOA



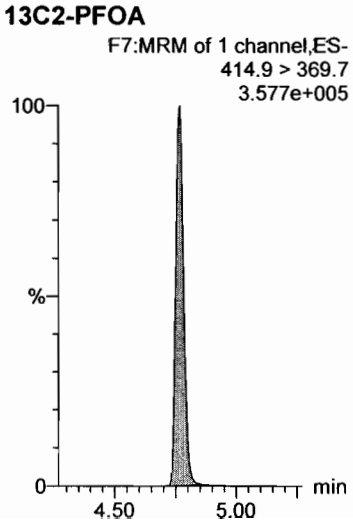
13C2-PFOA



13C4-PFOS



13C2-PFOA

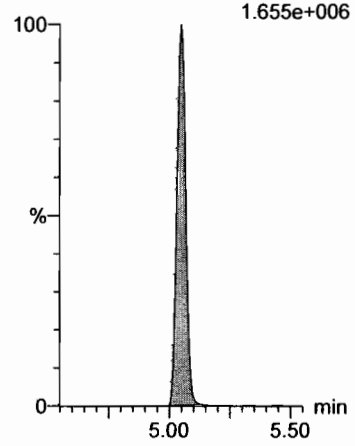


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-44.qld

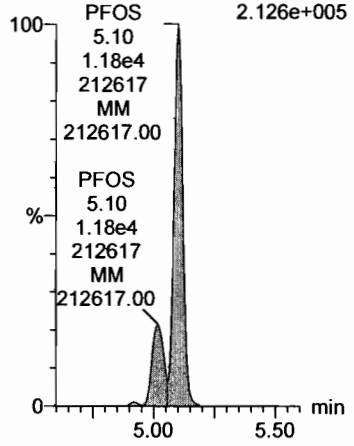
Last Altered: Saturday, January 26, 2019 18:35:09 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:35:41 Pacific Standard Time

Name: 190125M2_44, Date: 26-Jan-2019, Time: 01:50:04, ID: ST190125M2-12 537 CS3 19A1708, Description: 537 CS3 19A1708

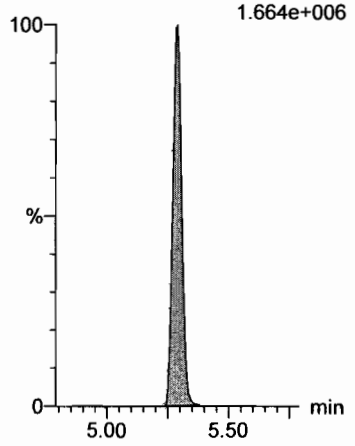
PFNA



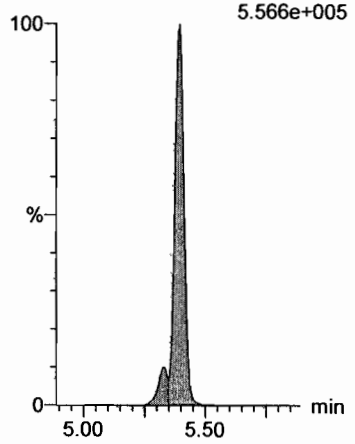
PFOS



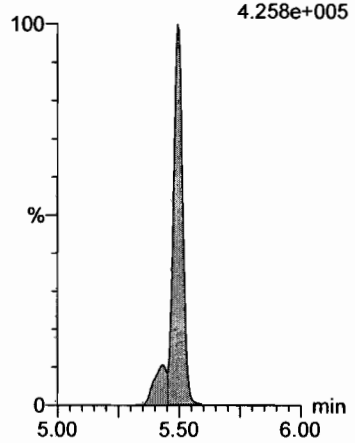
PFDA



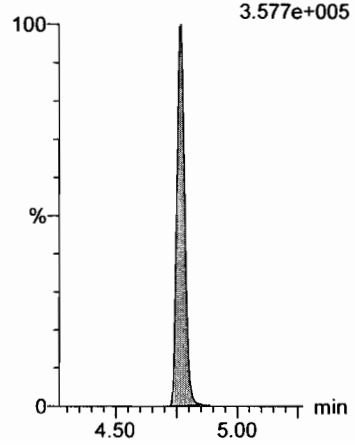
N-MeFOSAA



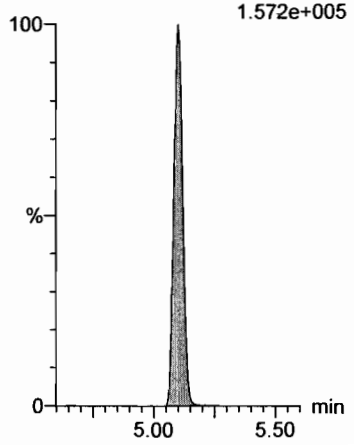
N-EtFOSAA



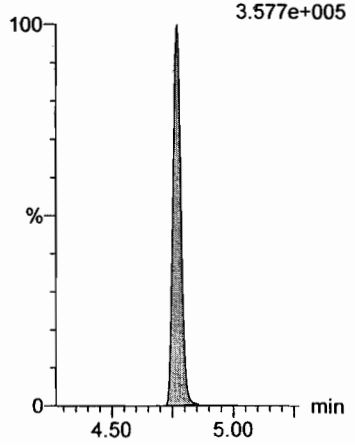
13C2-PFOA



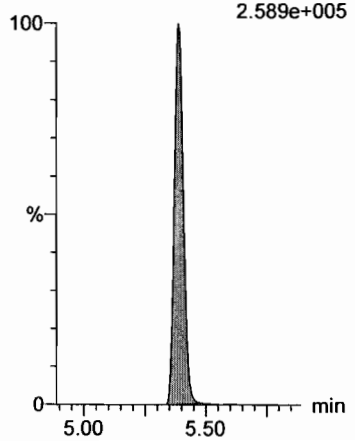
13C4-PFOS



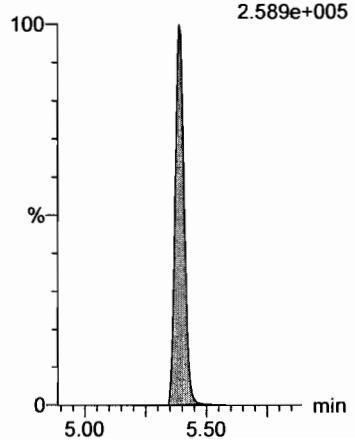
13C2-PFOA



d3-N-MeFOSAA



d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-44.qld

Last Altered: Saturday, January 26, 2019 18:35:09 Pacific Standard Time
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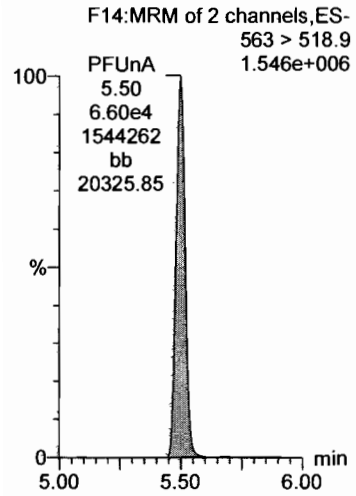
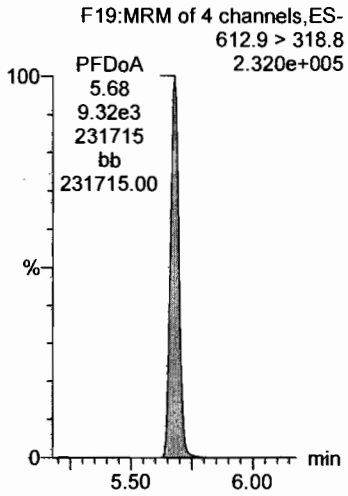
Name: 190125M2_44, Date: 26-Jan-2019, Time: 01:50:04, ID: ST190125M2-12 537 CS3 19A1708, Description: 537 CS3 19A1708

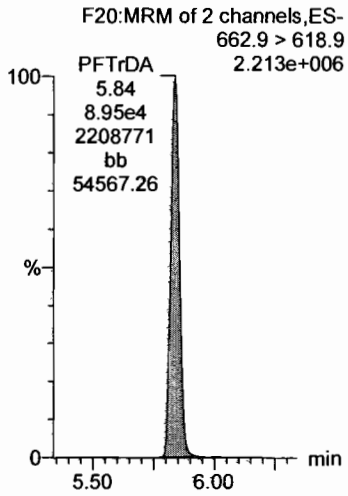
PFUnA



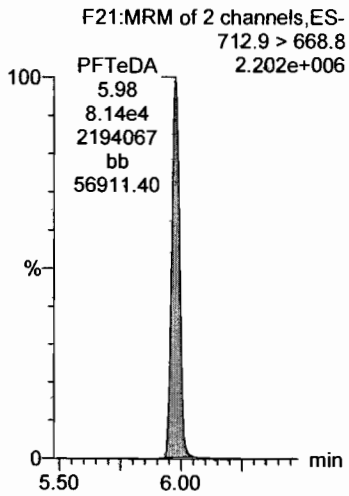
PFDoA



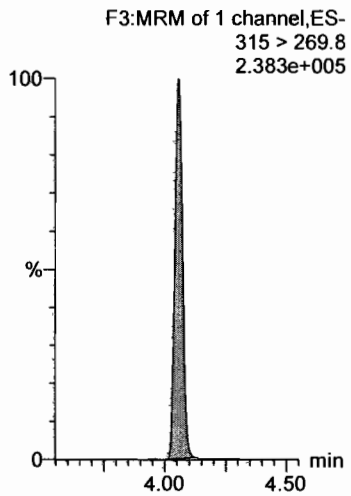
PFTrDA



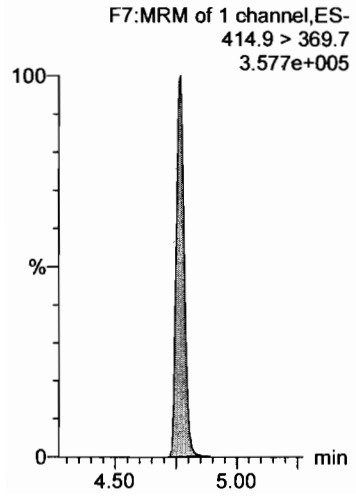
PFTeDA



13C2-PFHxA



13C2-PFOA



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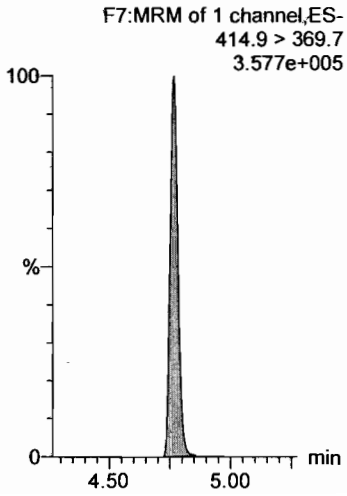

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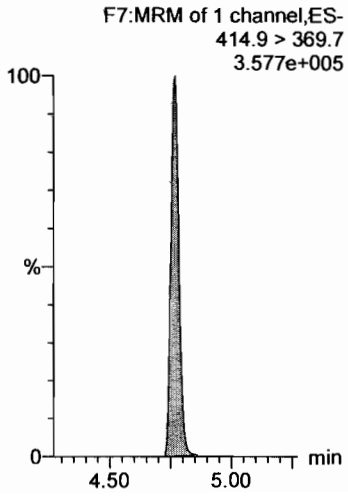

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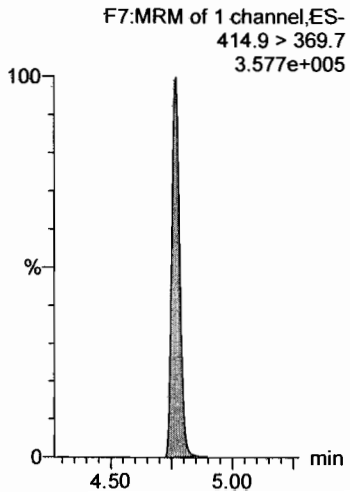

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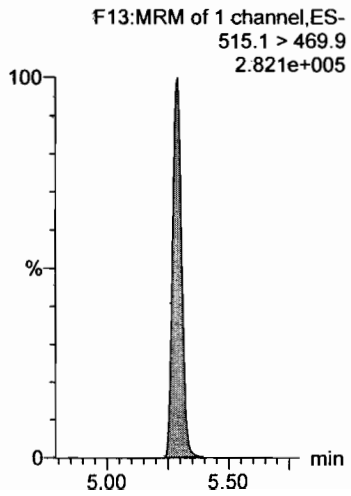
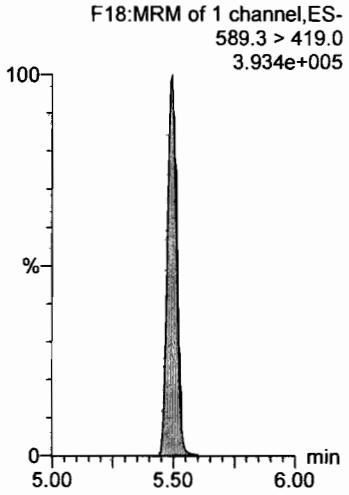


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-44.qld

Last Altered: Saturday, January 26, 2019 18:35:09 Pacific Standard Time
Printed: Saturday, January 26, 2019 18:35:41 Pacific Standard Time

Name: 190125M2_44, Date: 26-Jan-2019, Time: 01:50:04, ID: ST190125M2-12 537 CS3 19A1708, Description: 537 CS3 19A1708

d5-N-EtFOSAA



INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV)

LCMS ICAL Checklist

- [x] Correct run log — 537_Q4_01-25-19_L14
- [x] Name with the date it was run
- [x] CoD Summary - Natives r2 ≥ 0.99 - IS Relative SD < 20 - RS RSD=0
- [x] Chromatograms - check integration - PFHxS and PFOS - linear and branched
- [x] Verify Standard IDs
- [x] Natives St. Concentration checked against Element or current Spike Sheet
- [x] IS St. Concentration checked against Element or current Spike Sheet
- [x] RS Concentration correct
- [x] Natives $r^2 \geq 0.99$
- [x] Natives ±30% , lowest point ± 50%.
- [x] Graphs - $r^2 \geq 0.99$
- [x] 6 points for quadratic/5 points for linear/correct curve fitting
- [x] IS Relative SD < 20
- [x] IS ±50%
- [x] RS Relative SD = 0
- [x] ICV Ical correct
- [x] ICV name correct
- [x] ICV attached to ICAL
- [x] ICV 70-130%
- [x] Checkmark, date, sign
- [NA] Instrument blank saved

Initial/Date: 1/27/19

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Low pt
E+FOSAA = 0.5
no high pts dropped

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:22:19 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Jm 1/27/19

1/26/19

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999485
Calibration curve: 0.928174 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.222	3.72	37.142	6318.250	0.169	0.2	-18.1	NO	0.999	NO	MM
2	2	190125M2_3	Standard	0.444	3.72	86.122	6177.965	0.400	0.4	-2.9	NO	0.999	NO	MM
3	3	190125M2_4	Standard	0.888	3.73	169.538	6156.587	0.790	0.9	-4.1	NO	0.999	NO	bb
4	4	190125M2_5	Standard	1.780	3.72	323.601	6344.740	1.464	1.6	-11.4	NO	0.999	NO	bb
5	5	190125M2_6	Standard	4.440	3.72	872.646	6716.111	3.729	4.0	-9.5	NO	0.999	NO	bb
6	6	190125M2_7	Standard	8.840	3.72	1926.760	7051.897	7.842	8.4	-4.4	NO	0.999	NO	MM
7	7	190125M2_8	Standard	22.100	3.73	4827.993	6881.489	20.136	21.7	-1.8	NO	0.999	NO	MM
8	8	190125M2_9	Standard	44.200	3.72	9495.939	6653.967	40.958	44.1	-0.2	NO	0.999	NO	MM
9	9	190125M2_10	Standard	66.400	3.72	13991.980	6486.159	61.912	66.7	0.5	NO	0.999	NO	MM
10	10	190125M2_11	Standard	88.500	3.72	18687.174	6435.829	83.334	89.8	1.4	NO	0.999	NO	MM

Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999436
Calibration curve: 0.834519 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	4.05	250.110	13238.635	0.189	0.2	-9.4	NO	0.999	NO	bb
2	2	190125M2_3	Standard	0.500	4.05	504.260	13422.568	0.376	0.5	-10.0	NO	0.999	NO	bb
3	3	190125M2_4	Standard	1.000	4.05	1030.131	13197.230	0.781	0.9	-6.5	NO	0.999	NO	bb
4	4	190125M2_5	Standard	2.000	4.05	1994.523	13232.861	1.507	1.8	-9.7	NO	0.999	NO	bb
5	5	190125M2_6	Standard	5.000	4.05	5163.569	14111.915	3.659	4.4	-12.3	NO	0.999	NO	bb
6	6	190125M2_7	Standard	10.000	4.05	11549.869	14405.215	8.018	9.6	-3.9	NO	0.999	NO	bb
7	7	190125M2_8	Standard	25.000	4.05	28385.268	13324.019	21.304	25.5	2.1	NO	0.999	NO	bb
8	8	190125M2_9	Standard	50.000	4.05	54667.926	13089.006	41.766	50.0	0.1	NO	0.999	NO	bb
9	9	190125M2_10	Standard	75.000	4.05	81400.586	13058.350	62.336	74.7	-0.4	NO	0.999	NO	bb
10	10	190125M2_11	Standard	100.000	4.05	109051.883	12929.790	84.342	101.1	1.1	NO	0.999	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
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Compound name: PFHpA
Coefficient of Determination: R^2 = 0.999680
Calibration curve: 0.720119 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	4.42	220.704	13238.635	0.167	0.2	-7.4	NO	1.000	NO	bb
2	2	190125M2_3	Standard	0.500	4.42	454.692	13422.568	0.339	0.5	-5.9	NO	1.000	NO	bb
3	3	190125M2_4	Standard	1.000	4.42	869.100	13197.230	0.659	0.9	-8.6	NO	1.000	NO	bb
4	4	190125M2_5	Standard	2.000	4.42	1860.497	13232.861	1.406	2.0	-2.4	NO	1.000	NO	bb
5	5	190125M2_6	Standard	5.000	4.43	4592.191	14111.915	3.254	4.5	-9.6	NO	1.000	NO	bb
6	6	190125M2_7	Standard	10.000	4.42	10106.488	14405.215	7.016	9.7	-2.6	NO	1.000	NO	bb
7	7	190125M2_8	Standard	25.000	4.42	24010.725	13324.019	18.021	25.0	0.1	NO	1.000	NO	bb
8	8	190125M2_9	Standard	50.000	4.42	47813.813	13089.006	36.530	50.7	1.5	NO	1.000	NO	bb
9	9	190125M2_10	Standard	75.000	4.42	71108.672	13058.350	54.455	75.6	0.8	NO	1.000	NO	bb
10	10	190125M2_11	Standard	100.000	4.42	92690.008	12929.790	71.687	99.5	-0.5	NO	1.000	NO	bb

Compound name: PFHxS
Coefficient of Determination: R^2 = 0.998938
Calibration curve: 0.724235 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.228	4.53	28.842	6318.250	0.131	0.2	-20.7	NO	0.999	NO	MM
2	2	190125M2_3	Standard	0.456	4.53	60.555	6177.965	0.281	0.4	-14.8	NO	0.999	NO	MM
3	3	190125M2_4	Standard	0.912	4.53	120.716	6156.587	0.563	0.8	-14.8	NO	0.999	NO	MM
4	4	190125M2_5	Standard	1.820	4.53	280.718	6344.740	1.270	1.8	-3.7	NO	0.999	NO	MM
5	5	190125M2_6	Standard	4.560	4.53	683.872	6716.111	2.922	4.0	-11.5	NO	0.999	NO	MM
6	6	190125M2_7	Standard	9.120	4.53	1535.540	7051.897	6.249	8.6	-5.4	NO	0.999	NO	MM
7	7	190125M2_8	Standard	22.800	4.53	3795.457	6881.489	15.829	21.9	-4.1	NO	0.999	NO	MM
8	8	190125M2_9	Standard	45.500	4.53	7523.678	6653.967	32.451	44.8	-1.5	NO	0.999	NO	MM
9	9	190125M2_10	Standard	68.200	4.53	11243.596	6486.159	49.751	68.7	0.7	NO	0.999	NO	MM
10	10	190125M2_11	Standard	91.000	4.53	15180.713	6435.829	67.697	93.5	2.7	NO	0.999	NO	MM

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Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

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Compound name: PFOA
Coefficient of Determination: R^2 = 0.999691
Calibration curve: 0.956545 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	4.77	278.162	13238.635	0.210	0.2	-12.1	NO	1.000	NO	bb
2	2	190125M2_3	Standard	0.500	4.77	632.741	13422.568	0.471	0.5	-1.4	NO	1.000	NO	bb
3	3	190125M2_4	Standard	1.000	4.77	1185.657	13197.230	0.898	0.9	-6.1	NO	1.000	NO	MM
4	4	190125M2_5	Standard	2.000	4.77	2463.822	13232.861	1.862	1.9	-2.7	NO	1.000	NO	bb
5	5	190125M2_6	Standard	5.000	4.77	6339.692	14111.915	4.492	4.7	-6.1	NO	1.000	NO	MM
6	6	190125M2_7	Standard	10.000	4.76	13534.362	14405.215	9.395	9.8	-1.8	NO	1.000	NO	MM
7	7	190125M2_8	Standard	25.000	4.77	32468.365	13324.019	24.368	25.5	1.9	NO	1.000	NO	bb
8	8	190125M2_9	Standard	50.000	4.76	62510.633	13089.006	47.758	49.9	-0.1	NO	1.000	NO	bb
9	9	190125M2_10	Standard	75.000	4.76	95427.750	13058.350	73.078	76.4	1.9	NO	1.000	NO	bb
10	10	190125M2_11	Standard	100.000	4.76	122234.961	12929.790	94.537	98.8	-1.2	NO	1.000	NO	bb

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999510
Calibration curve: 1.03879 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	5.05	310.586	13238.635	0.235	0.2	-9.7	NO	1.000	NO	bb
2	2	190125M2_3	Standard	0.500	5.05	676.892	13422.568	0.504	0.5	-2.9	NO	1.000	NO	bb
3	3	190125M2_4	Standard	1.000	5.05	1232.312	13197.230	0.934	0.9	-10.1	NO	1.000	NO	MM
4	4	190125M2_5	Standard	2.000	5.05	2549.725	13232.861	1.927	1.9	-7.3	NO	1.000	NO	bb
5	5	190125M2_6	Standard	5.000	5.05	6632.506	14111.915	4.700	4.5	-9.5	NO	1.000	NO	bb
6	6	190125M2_7	Standard	10.000	5.05	14183.233	14405.215	9.846	9.5	-5.2	NO	1.000	NO	bb
7	7	190125M2_8	Standard	25.000	5.05	35495.316	13324.019	26.640	25.6	2.6	NO	1.000	NO	bb
8	8	190125M2_9	Standard	50.000	5.05	68814.852	13089.006	52.575	50.6	1.2	NO	1.000	NO	bb
9	9	190125M2_10	Standard	75.000	5.05	102438.109	13058.350	78.446	75.5	0.7	NO	1.000	NO	bb
10	10	190125M2_11	Standard	100.000	5.05	133652.688	12929.790	103.368	99.5	-0.5	NO	1.000	NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

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Compound name: PFOS
Coefficient of Determination: R^2 = 0.999087
Calibration curve: 1.05987 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.232	5.11	40.336	6318.250	0.183	0.2	-25.5	NO	0.999	NO	MM
2	2	190125M2_3	Standard	0.464	5.10	100.258	6177.965	0.466	0.4	-5.3	NO	0.999	NO	MM
3	3	190125M2_4	Standard	0.928	5.10	183.556	6156.587	0.856	0.8	-13.0	NO	0.999	NO	MM
4	4	190125M2_5	Standard	1.860	5.10	364.900	6344.740	1.651	1.6	-16.3	NO	0.999	NO	MM
5	5	190125M2_6	Standard	4.640	5.10	1091.568	6716.111	4.665	4.4	-5.1	NO	0.999	NO	MM
6	6	190125M2_7	Standard	9.240	5.10	2331.671	7051.897	9.489	9.0	-3.1	NO	0.999	NO	MM
7	7	190125M2_8	Standard	23.100	5.10	5700.035	6881.489	23.773	22.4	-2.9	NO	0.999	NO	MM
8	8	190125M2_9	Standard	46.200	5.10	11295.927	6653.967	48.722	46.0	-0.5	NO	0.999	NO	MM
9	9	190125M2_10	Standard	69.400	5.10	16418.201	6486.159	72.647	68.5	-1.2	NO	0.999	NO	MM
10	10	190125M2_11	Standard	92.500	5.10	22647.469	6435.829	100.994	95.3	3.0	NO	0.999	NO	MM

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999110
Calibration curve: -0.000668869 * x^2 + 1.09721 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, 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	190125M2_2	Standard	0.250	5.29	363.418	13238.635	0.275	0.3	0.1	NO	0.999	NO	bb
2	2	190125M2_3	Standard	0.500	5.29	722.222	13422.568	0.538	0.5	-1.9	NO	0.999	NO	bb
3	3	190125M2_4	Standard	1.000	5.28	1396.377	13197.230	1.058	1.0	-3.5	NO	0.999	NO	bb
4	4	190125M2_5	Standard	2.000	5.29	2729.562	13232.861	2.063	1.9	-5.9	NO	0.999	NO	bb
5	5	190125M2_6	Standard	5.000	5.29	6726.882	14111.915	4.767	4.4	-12.9	NO	0.999	NO	bb
6	6	190125M2_7	Standard	10.000	5.29	14669.250	14405.215	10.183	9.3	-6.7	NO	0.999	NO	bb
7	7	190125M2_8	Standard	25.000	5.29	37072.961	13324.019	27.824	25.8	3.1	NO	0.999	NO	bb
8	8	190125M2_9	Standard	50.000	5.29	71425.406	13089.006	54.569	51.3	2.7	NO	0.999	NO	bb
9	9	190125M2_10	Standard	75.000	5.29	103551.703	13058.350	79.299	75.8	1.0	NO	0.999	NO	bb
10	10	190125M2_11	Standard	100.000	5.28	131459.625	12929.790	101.672	98.6	-1.4	NO	0.999	NO	bb

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Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

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Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.998535
Calibration curve: 0.000374442 * x^2 + 1.91365 * x
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, 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	190125M2_2	Standard	0.250	5.39	82.741	10088.120	0.328	0.2	-31.4	NO	0.999	NO	MM
2	2	190125M2_3	Standard	0.500	5.39	199.056	10084.904	0.790	0.4	-17.5	NO	0.999	NO	MM
3	3	190125M2_4	Standard	1.000	5.39	488.625	10739.072	1.820	1.0	-4.9	NO	0.999	NO	MM
4	4	190125M2_5	Standard	2.000	5.39	902.930	10593.758	3.409	1.8	-11.0	NO	0.999	NO	MM
5	5	190125M2_6	Standard	5.000	5.39	2609.205	10954.437	9.527	5.0	-0.5	NO	0.999	NO	MM
6	6	190125M2_7	Standard	10.000	5.39	5074.707	11478.527	17.684	9.2	-7.8	NO	0.999	NO	MM
7	7	190125M2_8	Standard	25.000	5.39	13389.051	11323.078	47.298	24.6	-1.6	NO	0.999	NO	MM
8	8	190125M2_9	Standard	50.000	5.39	26630.715	10746.071	99.127	51.3	2.6	NO	0.999	NO	MM
9	9	190125M2_10	Standard	75.000	5.39	39574.680	10429.392	151.781	78.1	4.2	NO	0.999	NO	MM
10	10	190125M2_11	Standard	100.000	5.39	52609.309	11099.103	189.598	97.2	-2.8	NO	0.999	NO	MM

Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.998372
Calibration curve: 1.52534 * x
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	5.50	45.770	10088.120	0.181	0.1	-52.4	NO	0.998	NO	MMX
2	2	190125M2_3	Standard	0.500	5.49	194.907	10084.904	0.773	0.5	1.4	NO	0.998	NO	MM
3	3	190125M2_4	Standard	1.000	5.49	405.399	10739.072	1.510	1.0	-1.0	NO	0.998	NO	MM
4	4	190125M2_5	Standard	2.000	5.49	748.909	10593.758	2.828	1.9	-7.3	NO	0.998	NO	MM
5	5	190125M2_6	Standard	5.000	5.49	1974.844	10954.437	7.211	4.7	-5.4	NO	0.998	NO	MM
6	6	190125M2_7	Standard	10.000	5.49	4324.360	11478.527	15.069	9.9	-1.2	NO	0.998	NO	MM
7	7	190125M2_8	Standard	25.000	5.50	10045.784	11323.078	35.488	23.3	-6.9	NO	0.998	NO	MM
8	8	190125M2_9	Standard	50.000	5.49	21213.309	10746.071	78.962	51.8	3.5	NO	0.998	NO	MM
9	9	190125M2_10	Standard	75.000	5.49	31060.146	10429.392	119.125	78.1	4.1	NO	0.998	NO	MM
10	10	190125M2_11	Standard	100.000	5.49	41229.375	11099.103	148.586	97.4	-2.6	NO	0.998	NO	MM

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Compound name: PFUnA
Coefficient of Determination: R^2 = 0.999265
Calibration curve: 1.00604 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	5.50	348.493	13238.635	0.263	0.3	4.7	NO	0.999	NO	bb
2	2	190125M2_3	Standard	0.500	5.50	716.673	13422.568	0.534	0.5	6.1	NO	0.999	NO	bb
3	3	190125M2_4	Standard	1.000	5.49	1188.670	13197.230	0.901	0.9	-10.5	NO	0.999	NO	bb
4	4	190125M2_5	Standard	2.000	5.50	2708.960	13232.861	2.047	2.0	1.7	NO	0.999	NO	bb
5	5	190125M2_6	Standard	5.000	5.50	6248.540	14111.915	4.428	4.4	-12.0	NO	0.999	NO	MM
6	6	190125M2_7	Standard	10.000	5.50	14135.051	14405.215	9.812	9.8	-2.5	NO	0.999	NO	bb
7	7	190125M2_8	Standard	25.000	5.50	32950.063	13324.019	24.730	24.6	-1.7	NO	0.999	NO	bb
8	8	190125M2_9	Standard	50.000	5.50	68081.484	13089.006	52.014	51.7	3.4	NO	0.999	NO	bb
9	9	190125M2_10	Standard	75.000	5.50	99808.242	13058.350	76.433	76.0	1.3	NO	0.999	NO	bb
10	10	190125M2_11	Standard	100.000	5.50	128277.594	12929.790	99.211	98.6	-1.4	NO	0.999	NO	bb

Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999125
Calibration curve: 0.142897 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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	190125M2_2	Standard	0.250	5.68	51.881	13238.635	0.039	0.3	9.7	NO	0.999	NO	bb
2	2	190125M2_3	Standard	0.500	5.69	84.475	13422.568	0.063	0.4	-11.9	NO	0.999	NO	bb
3	3	190125M2_4	Standard	1.000	5.68	160.247	13197.230	0.121	0.8	-15.0	NO	0.999	NO	MM
4	4	190125M2_5	Standard	2.000	5.68	379.448	13232.861	0.287	2.0	0.3	NO	0.999	NO	bb
5	5	190125M2_6	Standard	5.000	5.68	931.800	14111.915	0.660	4.6	-7.6	NO	0.999	NO	bb
6	6	190125M2_7	Standard	10.000	5.68	1844.601	14405.215	1.281	9.0	-10.4	NO	0.999	NO	bb
7	7	190125M2_8	Standard	25.000	5.68	4954.741	13324.019	3.719	26.0	4.1	NO	0.999	NO	bb
8	8	190125M2_9	Standard	50.000	5.68	9500.939	13089.006	7.259	50.8	1.6	NO	0.999	NO	bd
9	9	190125M2_10	Standard	75.000	5.68	13932.652	13058.350	10.670	74.7	-0.4	NO	0.999	NO	MM
10	10	190125M2_11	Standard	100.000	5.68	18496.830	12929.790	14.306	100.1	0.1	NO	0.999	NO	bb

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Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999385
Calibration curve: 1.40511 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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 190125M2_2	Standard	0.250	5.84	517.185	13238.635	0.391	0.3	11.2	NO	0.999	NO	bb
2	2 190125M2_3	Standard	0.500	5.84	960.131	13422.568	0.715	0.5	1.8	NO	0.999	NO	bb
3	3 190125M2_4	Standard	1.000	5.84	1803.740	13197.230	1.367	1.0	-2.7	NO	0.999	NO	bb
4	4 190125M2_5	Standard	2.000	5.84	3697.014	13232.861	2.794	2.0	-0.6	NO	0.999	NO	bb
5	5 190125M2_6	Standard	5.000	5.84	9384.550	14111.915	6.650	4.7	-5.3	NO	0.999	NO	bb
6	6 190125M2_7	Standard	10.000	5.84	20118.523	14405.215	13.966	9.9	-0.6	NO	0.999	NO	bb
7	7 190125M2_8	Standard	25.000	5.84	49768.676	13324.019	37.353	26.6	6.3	NO	0.999	NO	bb
8	8 190125M2_9	Standard	50.000	5.84	93476.539	13089.006	71.416	50.8	1.7	NO	0.999	NO	bb
9	9 190125M2_10	Standard	75.000	5.84	135829.625	13058.350	104.017	74.0	-1.3	NO	0.999	NO	bb
10	10 190125M2_11	Standard	100.000	5.84	179666.344	12929.790	138.955	98.9	-1.1	NO	0.999	NO	bb

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999344
Calibration curve: 1.2626 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, 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 190125M2_2	Standard	0.250	5.98	434.062	13238.635	0.328	0.3	3.9	NO	0.999	NO	MM
2	2 190125M2_3	Standard	0.500	5.98	842.208	13422.568	0.627	0.5	-0.6	NO	0.999	NO	bb
3	3 190125M2_4	Standard	1.000	5.98	1653.217	13197.230	1.253	1.0	-0.8	NO	0.999	NO	bb
4	4 190125M2_5	Standard	2.000	5.98	3361.671	13232.861	2.540	2.0	0.6	NO	0.999	NO	bb
5	5 190125M2_6	Standard	5.000	5.98	8498.948	14111.915	6.023	4.8	-4.6	NO	0.999	NO	bb
6	6 190125M2_7	Standard	10.000	5.98	18097.814	14405.215	12.563	10.0	-0.5	NO	0.999	NO	bb
7	7 190125M2_8	Standard	25.000	5.98	44419.969	13324.019	33.338	26.4	5.6	NO	0.999	NO	bb
8	8 190125M2_9	Standard	50.000	5.98	84103.367	13089.006	64.255	50.9	1.8	NO	0.999	NO	bb
9	9 190125M2_10	Standard	75.000	5.98	124337.516	13058.350	95.217	75.4	0.6	NO	0.999	NO	bb
10	10 190125M2_11	Standard	100.000	5.98	159268.281	12929.790	123.179	97.6	-2.4	NO	0.999	NO	bb

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Compound name: 13C2-PFHxA
Response Factor: 0.641184
RRF SD: 0.0202142, Relative SD: 3.15263
Response type: Internal Std (Ref 18), 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	190125M2_2	Standard	10.000	4.05	8170.001	13238.635	6.171	9.6	-3.8	NO		NO	bb
2	2	190125M2_3	Standard	10.000	4.05	8478.630	13422.568	6.317	9.9	-1.5	NO		NO	bb
3	3	190125M2_4	Standard	10.000	4.05	8309.997	13197.230	6.297	9.8	-1.8	NO		NO	bb
4	4	190125M2_5	Standard	10.000	4.05	8658.929	13232.861	6.544	10.2	2.1	NO		NO	bb
5	5	190125M2_6	Standard	10.000	4.05	8697.279	14111.915	6.163	9.6	-3.9	NO		NO	bb
6	6	190125M2_7	Standard	10.000	4.05	9001.449	14405.215	6.249	9.7	-2.5	NO		NO	bb
7	7	190125M2_8	Standard	10.000	4.05	8873.097	13324.019	6.659	10.4	3.9	NO		NO	bb
8	8	190125M2_9	Standard	10.000	4.05	8423.649	13089.006	6.436	10.0	0.4	NO		NO	bb
9	9	190125M2_10	Standard	10.000	4.05	8783.473	13058.350	6.726	10.5	4.9	NO		NO	bb
10	10	190125M2_11	Standard	10.000	4.05	8477.752	12929.790	6.557	10.2	2.3	NO		NO	bb

Compound name: 13C2-PFDA
Response Factor: 0.896264
RRF SD: 0.0463036, Relative SD: 5.16629
Response type: Internal Std (Ref 18), 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	190125M2_2	Standard	10.000	5.29	11360.929	13238.635	8.582	9.6	-4.3	NO		NO	bb
2	2	190125M2_3	Standard	10.000	5.29	11049.973	13422.568	8.232	9.2	-8.1	NO		NO	bb
3	3	190125M2_4	Standard	10.000	5.28	11915.188	13197.230	9.029	10.1	0.7	NO		NO	bb
4	4	190125M2_5	Standard	10.000	5.29	12742.672	13232.861	9.630	10.7	7.4	NO		NO	bd
5	5	190125M2_6	Standard	10.000	5.29	11653.777	14111.915	8.258	9.2	-7.9	NO		NO	bb
6	6	190125M2_7	Standard	10.000	5.29	12973.651	14405.215	9.006	10.0	0.5	NO		NO	bb
7	7	190125M2_8	Standard	10.000	5.29	12177.899	13324.019	9.140	10.2	2.0	NO		NO	bb
8	8	190125M2_9	Standard	10.000	5.29	12267.064	13089.006	9.372	10.5	4.6	NO		NO	bb
9	9	190125M2_10	Standard	10.000	5.29	12043.475	13058.350	9.223	10.3	2.9	NO		NO	bb
10	10	190125M2_11	Standard	10.000	5.29	11837.586	12929.790	9.155	10.2	2.1	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

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Compound name: d5-N-EtFOSAA
Response Factor: 1.51187
RRF SD: 0.0499222, Relative SD: 3.30201
Response type: Internal Std (Ref 20), 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	190125M2_2	Standard	40.000	5.49	14940.671	10088.120	59.241	39.2	-2.0	NO		NO	bb
2	2	190125M2_3	Standard	40.000	5.49	15981.315	10084.904	63.387	41.9	4.8	NO		NO	bb
3	3	190125M2_4	Standard	40.000	5.49	16059.066	10739.072	59.815	39.6	-1.1	NO		NO	bb
4	4	190125M2_5	Standard	40.000	5.49	15986.667	10593.758	60.363	39.9	-0.2	NO		NO	bb
5	5	190125M2_6	Standard	40.000	5.49	17095.248	10954.437	62.423	41.3	3.2	NO		NO	bb
6	6	190125M2_7	Standard	40.000	5.49	17064.428	11478.527	59.466	39.3	-1.7	NO		NO	bb
7	7	190125M2_8	Standard	40.000	5.49	17114.920	11323.078	60.460	40.0	-0.0	NO		NO	bb
8	8	190125M2_9	Standard	40.000	5.49	15535.926	10746.071	57.829	38.3	-4.4	NO		NO	bb
9	9	190125M2_10	Standard	40.000	5.49	16546.311	10429.392	63.460	42.0	4.9	NO		NO	bb
10	10	190125M2_11	Standard	40.000	5.49	16178.246	11099.103	58.305	38.6	-3.6	NO		NO	bb

Compound name: 13C2-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 18), 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	190125M2_2	Standard	10.000	4.77	13238.635	13238.635	10.000	10.0	0.0	NO		NO	MM
2	2	190125M2_3	Standard	10.000	4.76	13422.568	13422.568	10.000	10.0	0.0	NO		NO	bb
3	3	190125M2_4	Standard	10.000	4.76	13197.230	13197.230	10.000	10.0	0.0	NO		NO	bb
4	4	190125M2_5	Standard	10.000	4.76	13232.861	13232.861	10.000	10.0	0.0	NO		NO	bb
5	5	190125M2_6	Standard	10.000	4.77	14111.915	14111.915	10.000	10.0	0.0	NO		NO	bb
6	6	190125M2_7	Standard	10.000	4.77	14405.215	14405.215	10.000	10.0	0.0	NO		NO	bb
7	7	190125M2_8	Standard	10.000	4.77	13324.019	13324.019	10.000	10.0	0.0	NO		NO	bb
8	8	190125M2_9	Standard	10.000	4.76	13089.006	13089.006	10.000	10.0	0.0	NO		NO	MM
9	9	190125M2_10	Standard	10.000	4.76	13058.350	13058.350	10.000	10.0	0.0	NO		NO	bb
10	10	190125M2_11	Standard	10.000	4.76	12929.790	12929.790	10.000	10.0	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:22:19 Pacific Standard Time

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 19), 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	190125M2_2	Standard	28.700	5.10	6318.250	6318.250	28.700	28.7	0.0	NO		NO	bb
2	2	190125M2_3	Standard	28.700	5.10	6177.965	6177.965	28.700	28.7	0.0	NO		NO	bb
3	3	190125M2_4	Standard	28.700	5.10	6156.587	6156.587	28.700	28.7	0.0	NO		NO	bb
4	4	190125M2_5	Standard	28.700	5.10	6344.740	6344.740	28.700	28.7	0.0	NO		NO	bb
5	5	190125M2_6	Standard	28.700	5.10	6716.111	6716.111	28.700	28.7	0.0	NO		NO	bb
6	6	190125M2_7	Standard	28.700	5.10	7051.897	7051.897	28.700	28.7	0.0	NO		NO	bb
7	7	190125M2_8	Standard	28.700	5.10	6881.489	6881.489	28.700	28.7	0.0	NO		NO	bb
8	8	190125M2_9	Standard	28.700	5.10	6653.967	6653.967	28.700	28.7	0.0	NO		NO	bb
9	9	190125M2_10	Standard	28.700	5.10	6486.159	6486.159	28.700	28.7	0.0	NO		NO	bb
10	10	190125M2_11	Standard	28.700	5.10	6435.829	6435.829	28.700	28.7	0.0	NO		NO	bb

Compound name: d3-N-MeFOSAA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 20), 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	190125M2_2	Standard	40.000	5.39	10088.120	10088.120	40.000	40.0	0.0	NO		NO	bb
2	2	190125M2_3	Standard	40.000	5.39	10084.904	10084.904	40.000	40.0	0.0	NO		NO	bb
3	3	190125M2_4	Standard	40.000	5.39	10739.072	10739.072	40.000	40.0	0.0	NO		NO	bb
4	4	190125M2_5	Standard	40.000	5.39	10593.758	10593.758	40.000	40.0	0.0	NO		NO	bb
5	5	190125M2_6	Standard	40.000	5.39	10954.437	10954.437	40.000	40.0	0.0	NO		NO	bb
6	6	190125M2_7	Standard	40.000	5.39	11478.527	11478.527	40.000	40.0	0.0	NO		NO	bb
7	7	190125M2_8	Standard	40.000	5.39	11323.078	11323.078	40.000	40.0	0.0	NO		NO	bb
8	8	190125M2_9	Standard	40.000	5.39	10746.071	10746.071	40.000	40.0	0.0	NO		NO	bb
9	9	190125M2_10	Standard	40.000	5.39	10429.392	10429.392	40.000	40.0	0.0	NO		NO	bb
10	10	190125M2_11	Standard	40.000	5.39	11099.103	11099.103	40.000	40.0	0.0	NO		NO	bb

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:22:34 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_2, Date: 25-Jan-2019, Time: 17:34:29, ID: ST190125M2-1 537 CS-4 19A1701, Description: 537 CS-4 19A1701

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBS	19	0.9995	NO	
2	2	PFHxA	18	0.9994	NO	
3	3	PFHpA	18	0.9997	NO	
4	4	PFHxS	19	0.9989	NO	
5	5	PFOA	18	0.9997	NO	
6	6	PFNA	18	0.9995	NO	
7	7	PFOS	19	0.9991	NO	
8	8	PFDA	18	0.9991	NO	
9	9	N-MeFOSAA	20	0.9985	NO	
10	10	N-EtFOSAA	20	0.9984	NO	
11	11	PFUnA	18	0.9993	NO	
12	12	PFDoA	18	0.9991	NO	
13	13	PFTrDA	18	0.9994	NO	
14	14	PFTeDA	18	0.9993	NO	
15	15	13C2-PFHxA	18		NO	3.153
16	16	13C2-PFDA	18		NO	5.166
17	17	d5-N-EtFOSAA	20		NO	3.302
18	18	13C2-PFOA	18		NO	0.000
19	19	13C4-PFOS	19		NO	0.000
20	20	d3-N-MeFOSAA	20		NO	0.000

Vista Analytical Laboratory

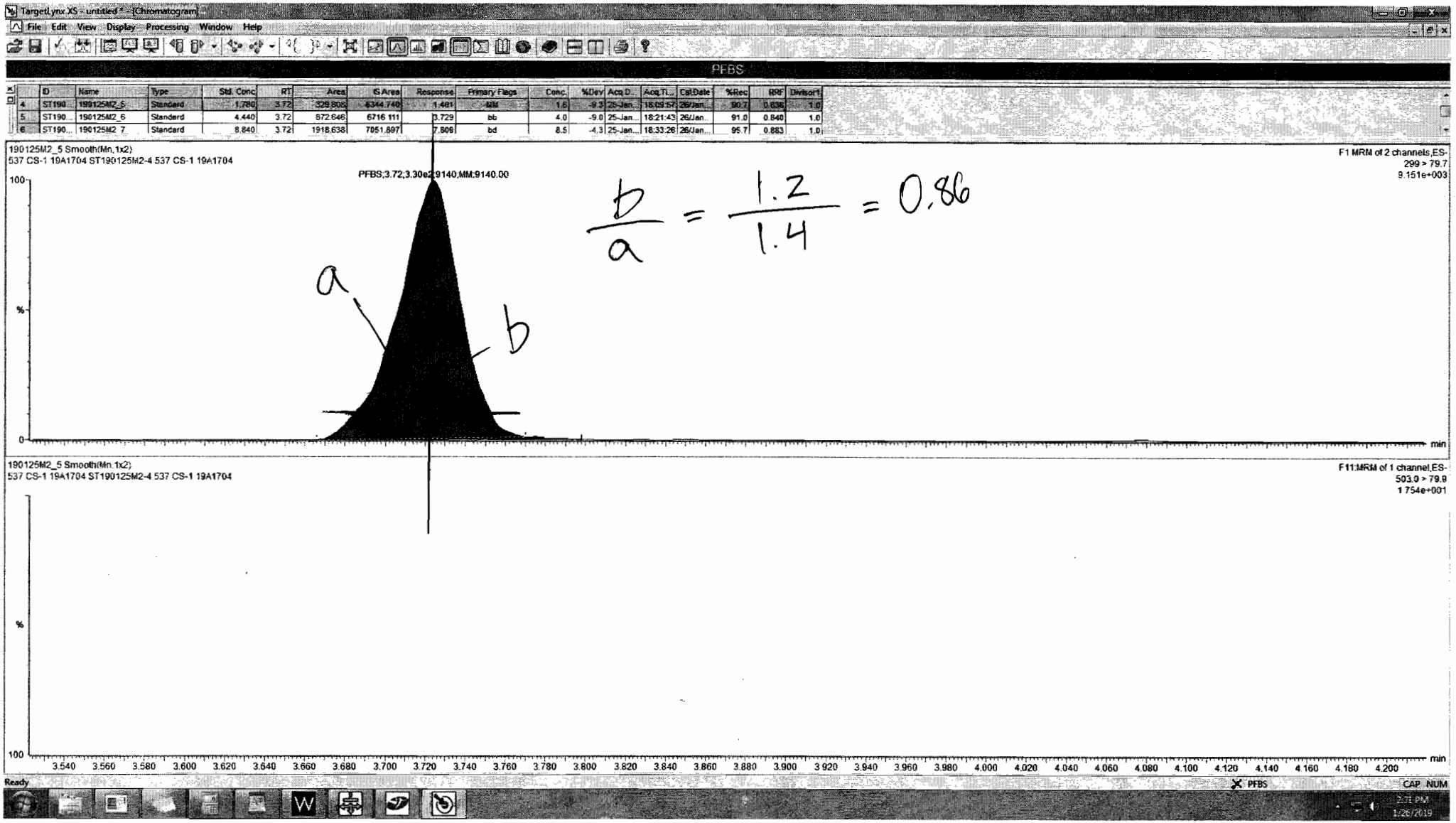
Dataset: Untitled

Last Altered: Saturday, January 26, 2019 15:29:42 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:29:51 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_011919.mdb 19 Jan 2019 16:03:11
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Compound name: PFBS

	#	Name	ID	Acq.Date	Acq.Time
1	1	190125M2_1	IPA	25-Jan-19	17:22:45
2	2	190125M2_2	ST190125M2-1 537 CS-4 19A1701	25-Jan-19	17:34:29
3	3	190125M2_3	ST190125M2-2 537 CS-3 19A1702	25-Jan-19	17:46:20
4	4	190125M2_4	ST190125M2-3 537 CS-2 19A1703	25-Jan-19	17:58:06
5	5	190125M2_5	ST190125M2-4 537 CS-1 19A1704	25-Jan-19	18:09:57
6	6	190125M2_6	ST190125M2-5 537 CS0 19A1705	25-Jan-19	18:21:43
7	7	190125M2_7	ST190125M2-6 537 CS1 19A1706	25-Jan-19	18:33:26
8	8	190125M2_8	ST190125M2-7 537 CS2 19A1707	25-Jan-19	18:45:17
9	9	190125M2_9	ST190125M2-8 537 CS3 19A1708	25-Jan-19	18:57:03
10	10	190125M2_10	ST190125M2-9 537 CS4 19A1709	25-Jan-19	19:08:54
11	11	190125M2_11	ST190125M2-10 537 CS5 19A1710	25-Jan-19	19:20:39
12	12	190125M2_12	IPA	25-Jan-19	19:32:30
13	13	190125M2_13	ICV190125M2-1 537 ICV 19A1711	25-Jan-19	19:44:16
14	14	190125M2_14	IPA	25-Jan-19	19:56:07


TargetLynx XS - untitled - [Chromatogram]
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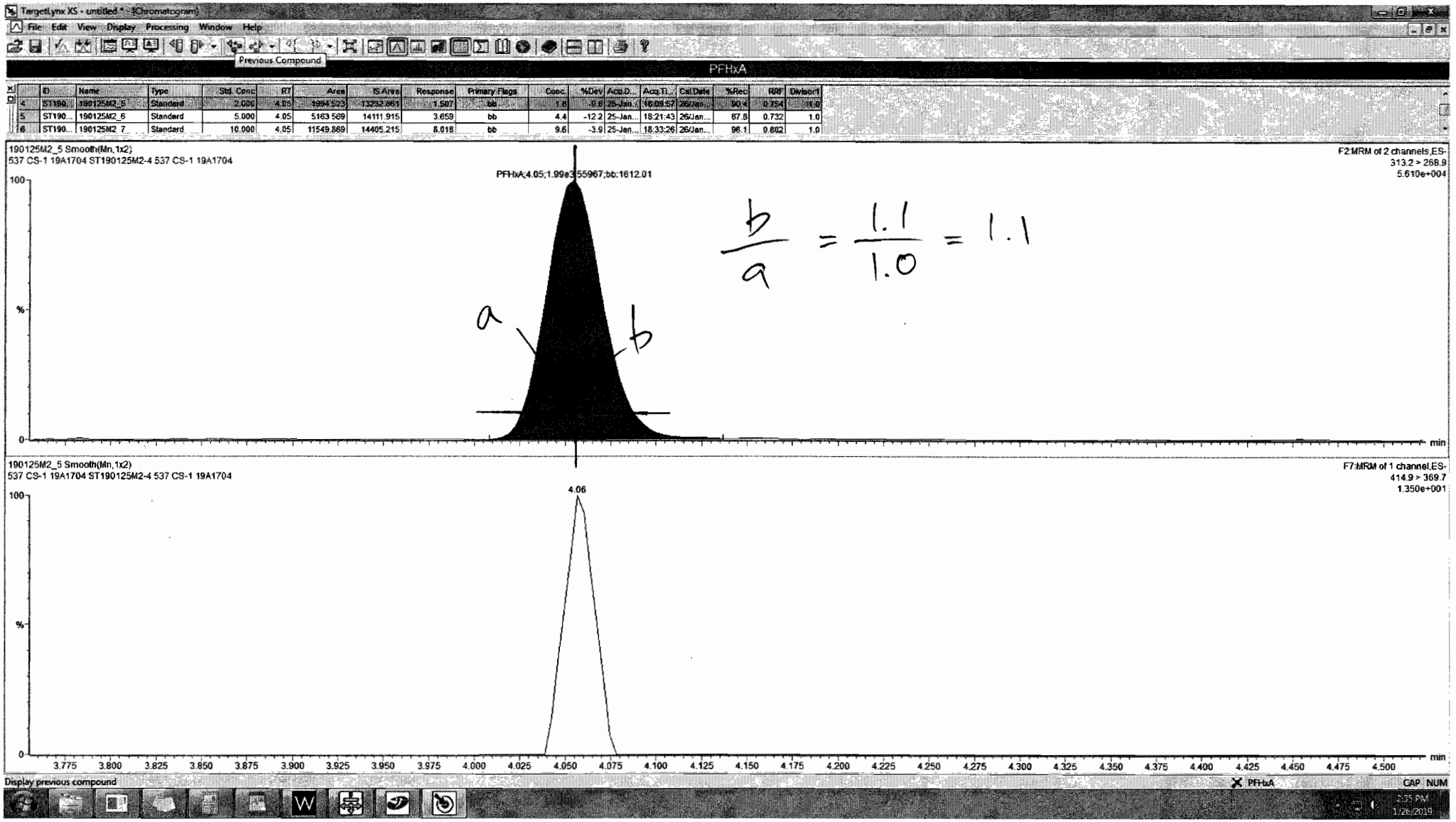
PFBS
ID Name Type Std. Conc RT Area IS Area Response Primary Flags Conc. %Dev Acq D... Acq Ti... Cal Date %Rec RRF Divisor1
4 ST190... 190125M2_5 Standard 1.780 3.72 329.808 6344.740 1.481 MM 1.6 -9.3 25-Jan... 18:09:57 26/Jan... 90.7 0.636 1.0
5 ST190... 190125M2_6 Standard 4.440 3.72 872.646 6716.111 3.729 bb 4.0 -9.0 25-Jan... 18:21:43 26/Jan... 91.0 0.840 1.0
6 ST190... 190125M2_7 Standard 8.840 3.72 1918.638 7051.897 7.806 bd 8.5 -4.3 25-Jan... 18:33:26 26/Jan... 95.7 0.883 1.0
190125M2_5 Smooth(Mn,1x2)
537 CS-1 19A1704 ST190125M2-4 537 CS-1 19A1704
PFBS;3.72;3.30e2;9140;MM;9140.00
F1 MRM of 2 channels,ES-
299 > 79.7
9.151e+003
100
%
0
min
a
b
$\frac{b}{a} = \frac{1.2}{1.4} = 0.86$
190125M2_5 Smooth(Mn,1x2)
537 CS-1 19A1704 ST190125M2-4 537 CS-1 19A1704
F11:MRM of 1 channel,ES-
503.0 > 79.9
1.754e+001
%
100
min
3.540 3.560 3.580 3.600 3.620 3.640 3.660 3.680 3.700 3.720 3.740 3.760 3.780 3.800 3.820 3.840 3.860 3.880 3.900 3.920 3.940 3.960 3.980 4.000 4.020 4.040 4.060 4.080 4.100 4.120 4.140 4.160 4.180 4.200
Ready
PFBS
CAP NUM
2:21 PM
1/26/2019


TargetLynx XS - untitled * - [Chromatogram]
File Edit View Display Processing Window Help
Previous Compound
PFHxA
190125M2_5 Smooth(Mn,1x2)
537 CS-1 19A1704 ST190125M2-4 537 CS-1 19A1704
PFHxA;4.05;1.99e3;55967;bb;1612.01
F2:MRM of 2 channels,ES-
313.2 > 268.9
5.610e+004
a
b
b/a = 1.1/1.0 = 1.1
190125M2_5 Smooth(Mn,1x2)
537 CS-1 19A1704 ST190125M2-4 537 CS-1 19A1704
F7:MRM of 1 channel,ES-
414.9 > 369.7
1.350e+001
4.06
min
Display previous compound
PFHxA
GAP NUM

ICAL

	High	14405.22	**RPD**
Compound 18: 13C2-PFOA	Low	12929.79	**10.80**

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Flags
1	ST190125M2-1 537 CS-4 19A1701	190125M2_2	Standard	10	4.77	13238.64	13238.64	10	MM
2	ST190125M2-2 537 CS-3 19A1702	190125M2_3	Standard	10	4.76	13422.57	13422.57	10	bb
3	ST190125M2-3 537 CS-2 19A1703	190125M2_4	Standard	10	4.76	13197.23	13197.23	10	bb
4	ST190125M2-4 537 CS-1 19A1704	190125M2_5	Standard	10	4.76	13232.86	13232.86	10	bb
5	ST190125M2-5 537 CS0 19A1705	190125M2_6	Standard	10	4.77	14111.92	14111.92	10	bb
6	ST190125M2-6 537 CS1 19A1706	190125M2_7	Standard	10	4.77	14405.22	14405.22	10	bb
7	ST190125M2-7 537 CS2 19A1707	190125M2_8	Standard	10	4.77	13324.02	13324.02	10	bb
8	ST190125M2-8 537 CS3 19A1708	190125M2_9	Standard	10	4.76	13089.01	13089.01	10	MM
9	ST190125M2-9 537 CS4 19A1709	190125M2_10	Standard	10	4.76	13058.35	13058.35	10	bb
10	ST190125M2-10 537 CS5 19A1710	190125M2_11	Standard	10	4.76	12929.79	12929.79	10	bb
						Average:	**13400.96**		

	High	7051.897	**RPD**
Compound 19: 13C4-PFOS	Low	6156.587	**13.56**

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Flags
1	ST190125M2-1 537 CS-4 19A1701	190125M2_2	Standard	28.7	5.10	6318.25	6318.25	28.7	bb
2	ST190125M2-2 537 CS-3 19A1702	190125M2_3	Standard	28.7	5.10	6177.97	6177.97	28.7	bb
3	ST190125M2-3 537 CS-2 19A1703	190125M2_4	Standard	28.7	5.10	6156.59	6156.59	28.7	bb
4	ST190125M2-4 537 CS-1 19A1704	190125M2_5	Standard	28.7	5.10	6344.74	6344.74	28.7	bb
5	ST190125M2-5 537 CS0 19A1705	190125M2_6	Standard	28.7	5.10	6716.11	6716.11	28.7	bb
6	ST190125M2-6 537 CS1 19A1706	190125M2_7	Standard	28.7	5.10	7051.90	7051.90	28.7	bb
7	ST190125M2-7 537 CS2 19A1707	190125M2_8	Standard	28.7	5.10	6881.49	6881.49	28.7	bb
8	ST190125M2-8 537 CS3 19A1708	190125M2_9	Standard	28.7	5.10	6653.97	6653.97	28.7	bb
9	ST190125M2-9 537 CS4 19A1709	190125M2_10	Standard	28.7	5.10	6486.16	6486.16	28.7	bb
10	ST190125M2-10 537 CS5 19A1710	190125M2_11	Standard	28.7	5.10	6435.83	6435.83	28.7	bb
						Average:	**6522.30**		

KBF 1/26/2019

	High	11478.53	**RPD**
Compound 20: d3-N-MeFOSAA	Low	10084.90	**12.93**

	ID	Name	Type	Std. Conc	RT	Area	IS Area	Response	Primary Flags
1	ST190125M2-1 537 CS-4 19A1701	190125M2_2	Standard	40	5.39	10088.12	10088.12	40	bb
2	ST190125M2-2 537 CS-3 19A1702	190125M2_3	Standard	40	5.39	10084.90	10084.90	40	bb
3	ST190125M2-3 537 CS-2 19A1703	190125M2_4	Standard	40	5.39	10739.07	10739.07	40	bb
4	ST190125M2-4 537 CS-1 19A1704	190125M2_5	Standard	40	5.39	10593.76	10593.76	40	bb
5	ST190125M2-5 537 CS0 19A1705	190125M2_6	Standard	40	5.39	10954.44	10954.44	40	bb
6	ST190125M2-6 537 CS1 19A1706	190125M2_7	Standard	40	5.39	11478.53	11478.53	40	bb
7	ST190125M2-7 537 CS2 19A1707	190125M2_8	Standard	40	5.39	11323.08	11323.08	40	bb
8	ST190125M2-8 537 CS3 19A1708	190125M2_9	Standard	40	5.39	10746.07	10746.07	40	bb
9	ST190125M2-9 537 CS4 19A1709	190125M2_10	Standard	40	5.39	10429.39	10429.39	40	bb
10	ST190125M2-10 537 CS5 19A1710	190125M2_11	Standard	40	5.39	11099.10	11099.10	40	bb
						Average:	**10753.65**		

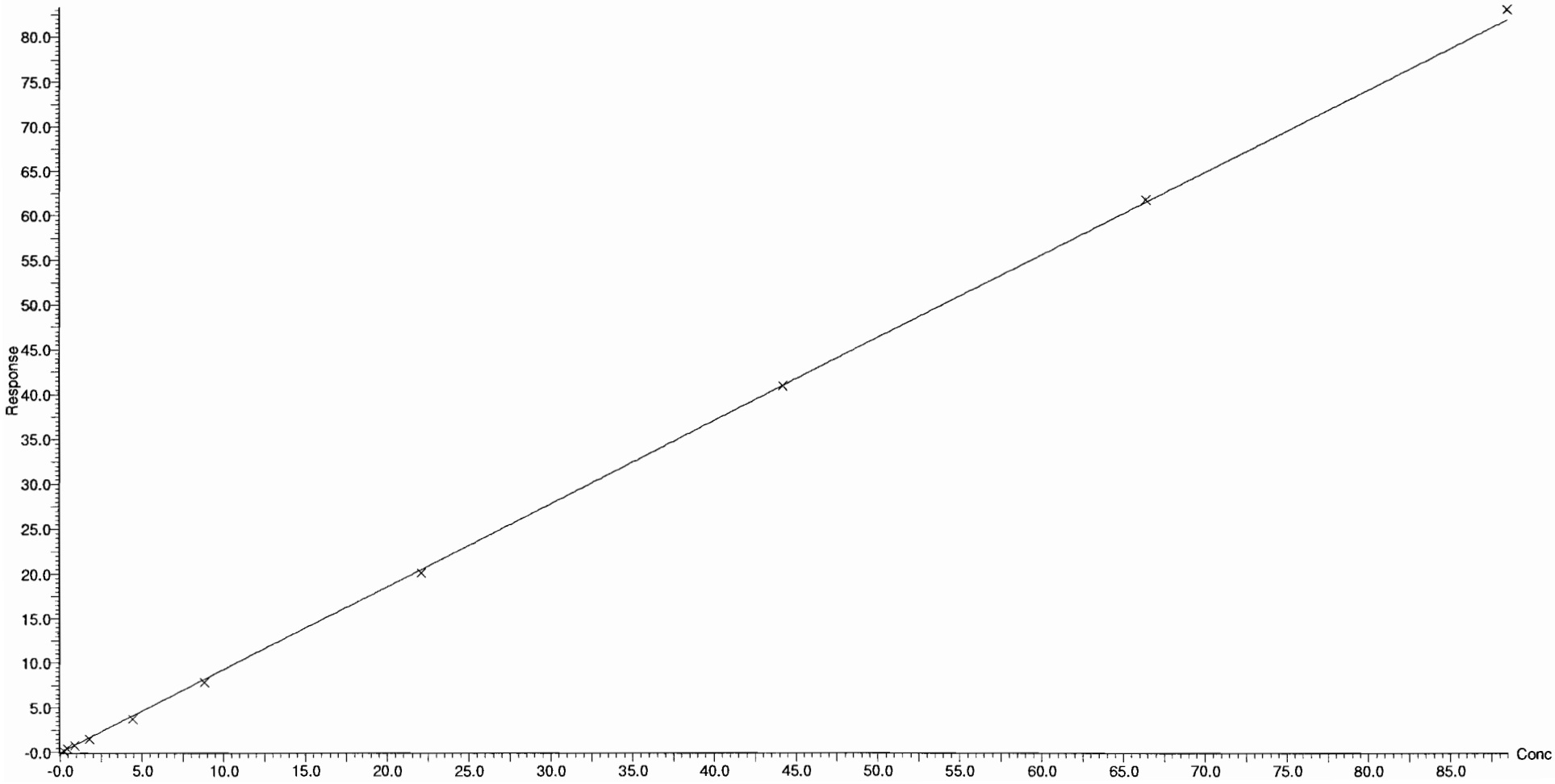
KBF 1/26/2019

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

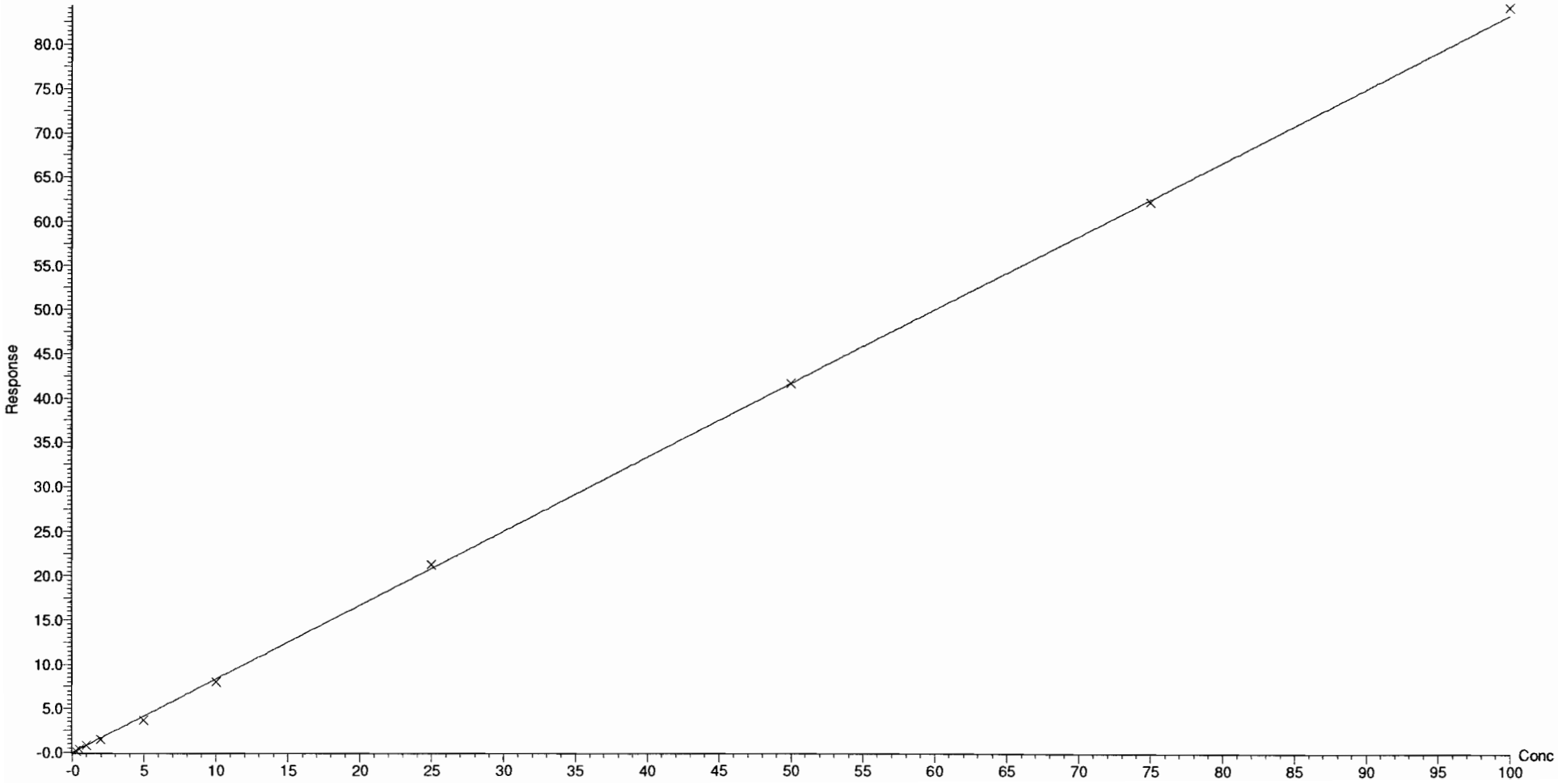
Compound name: PFBS
Coefficient of Determination: R^2 = 0.999485
Calibration curve: 0.928174 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

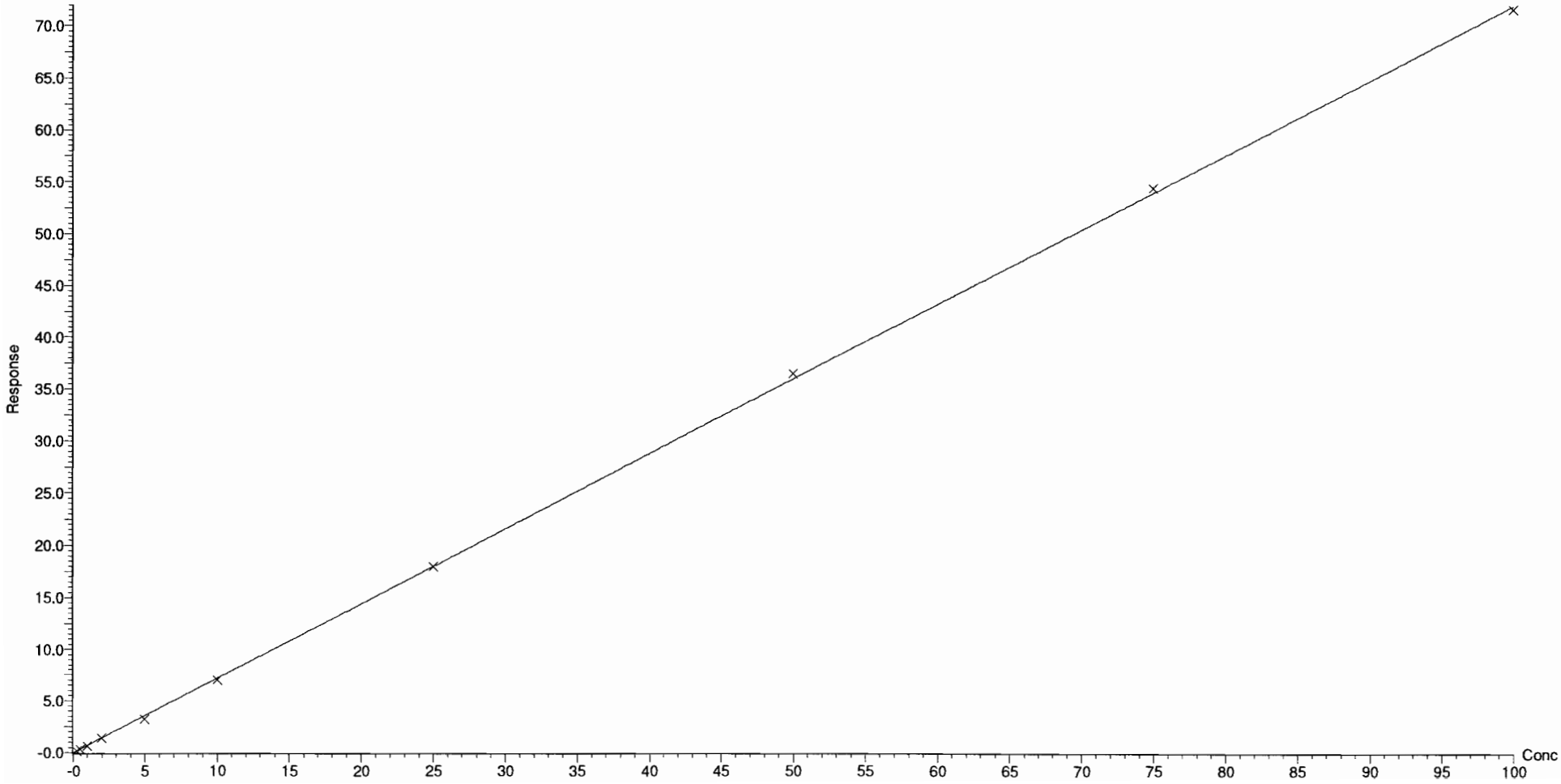
Compound name: PFHxA
Coefficient of Determination: R^2 = 0.999436
Calibration curve: 0.834519 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

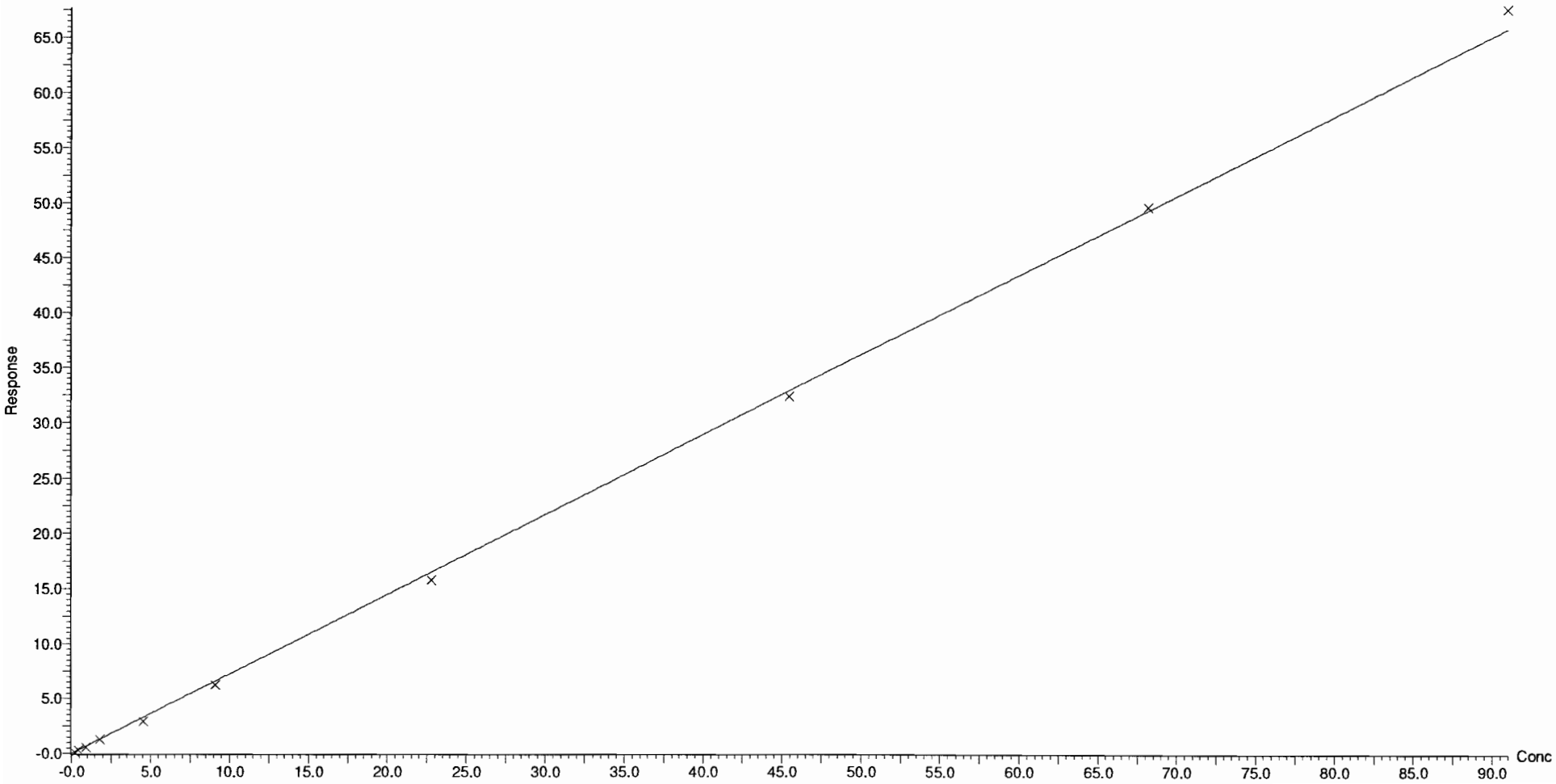
Compound name: PFHpA
Coefficient of Determination: R^2 = 0.999680
Calibration curve: 0.720119 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

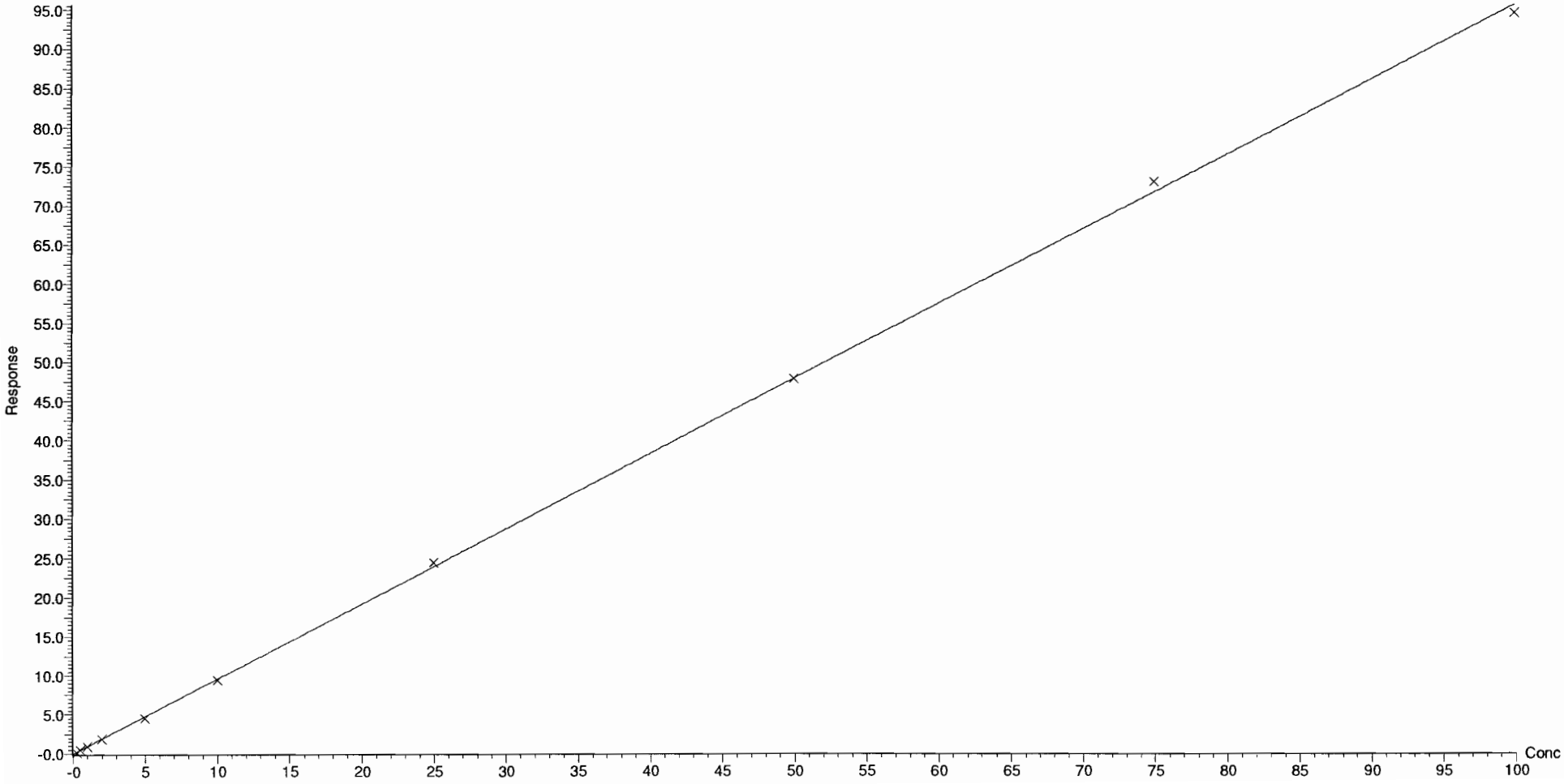
Compound name: PFHxS
Coefficient of Determination: R^2 = 0.998938
Calibration curve: 0.724235 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

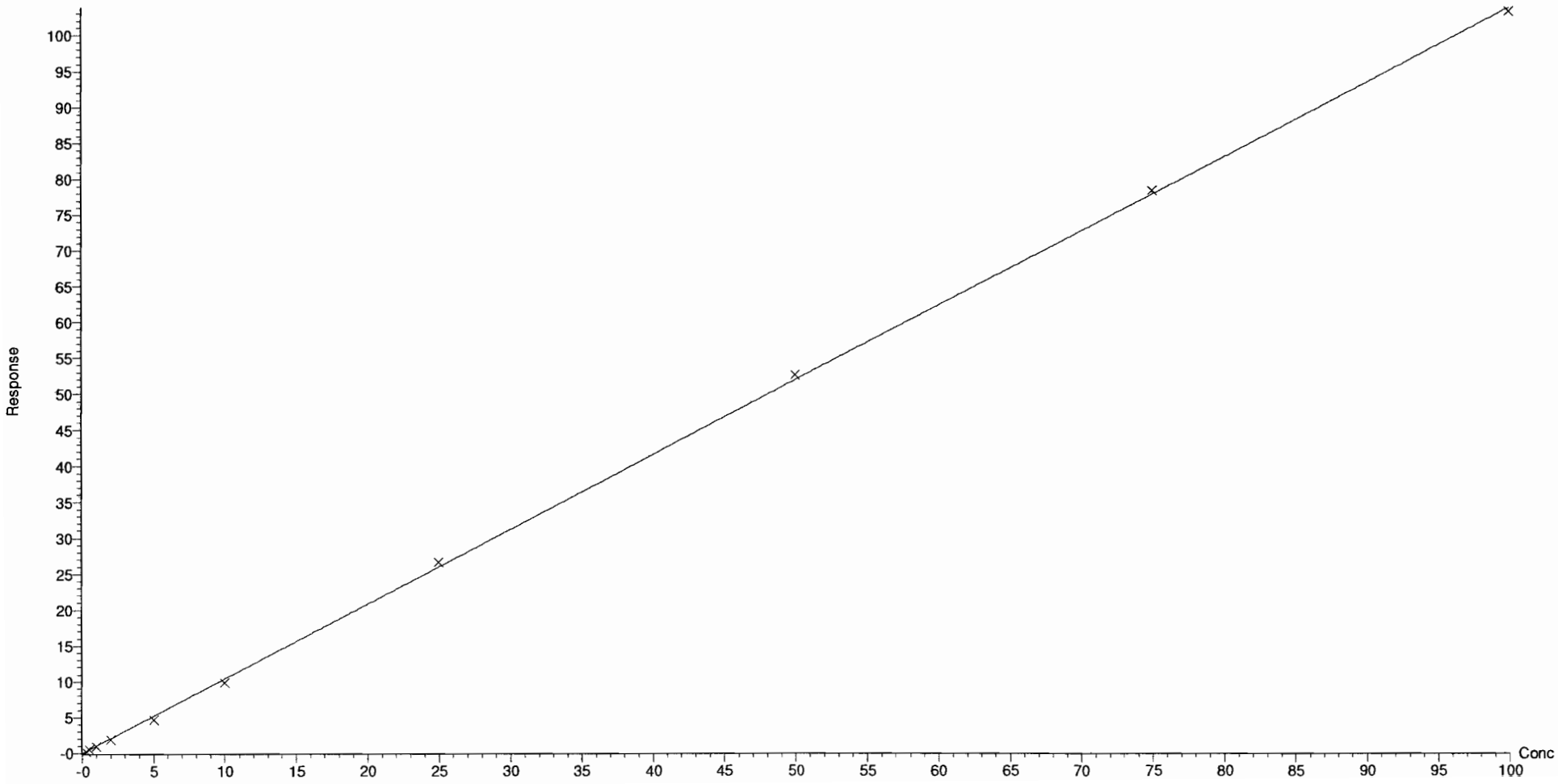
Compound name: PFOA
Coefficient of Determination: R^2 = 0.999691
Calibration curve: 0.956545 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

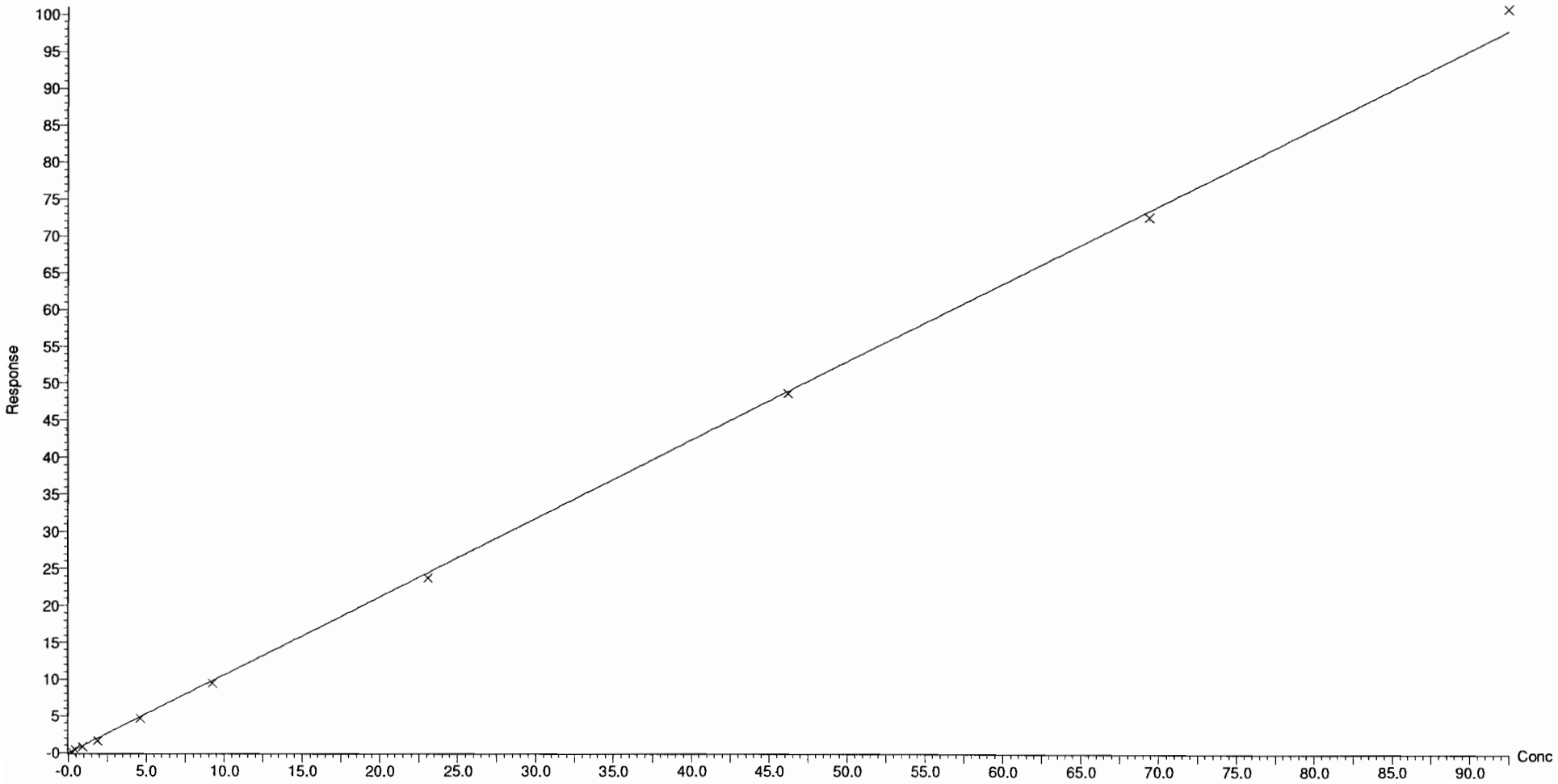
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999510
Calibration curve: 1.03879 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

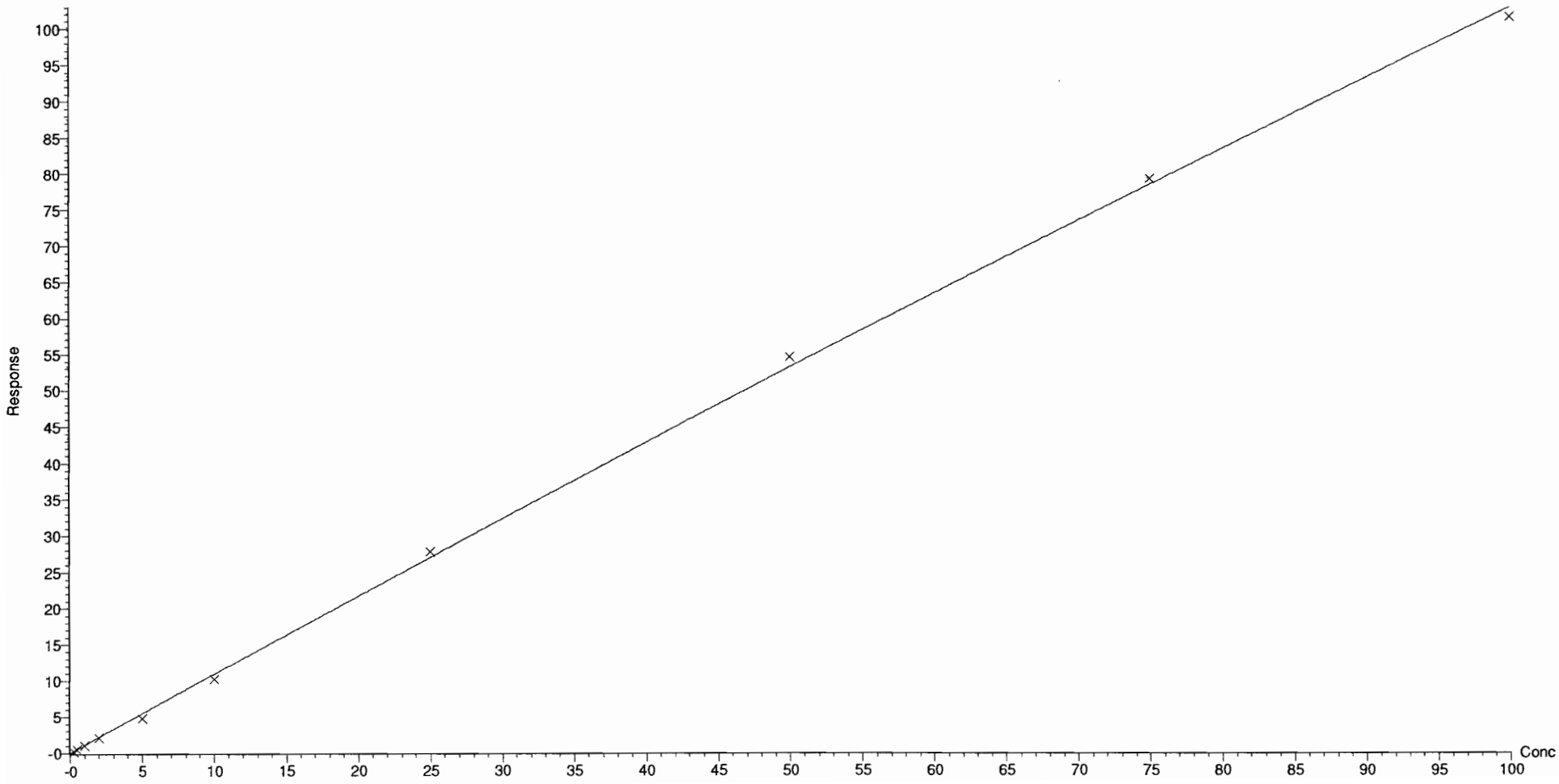
Compound name: PFOS
Coefficient of Determination: R^2 = 0.999087
Calibration curve: 1.05987 * x
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

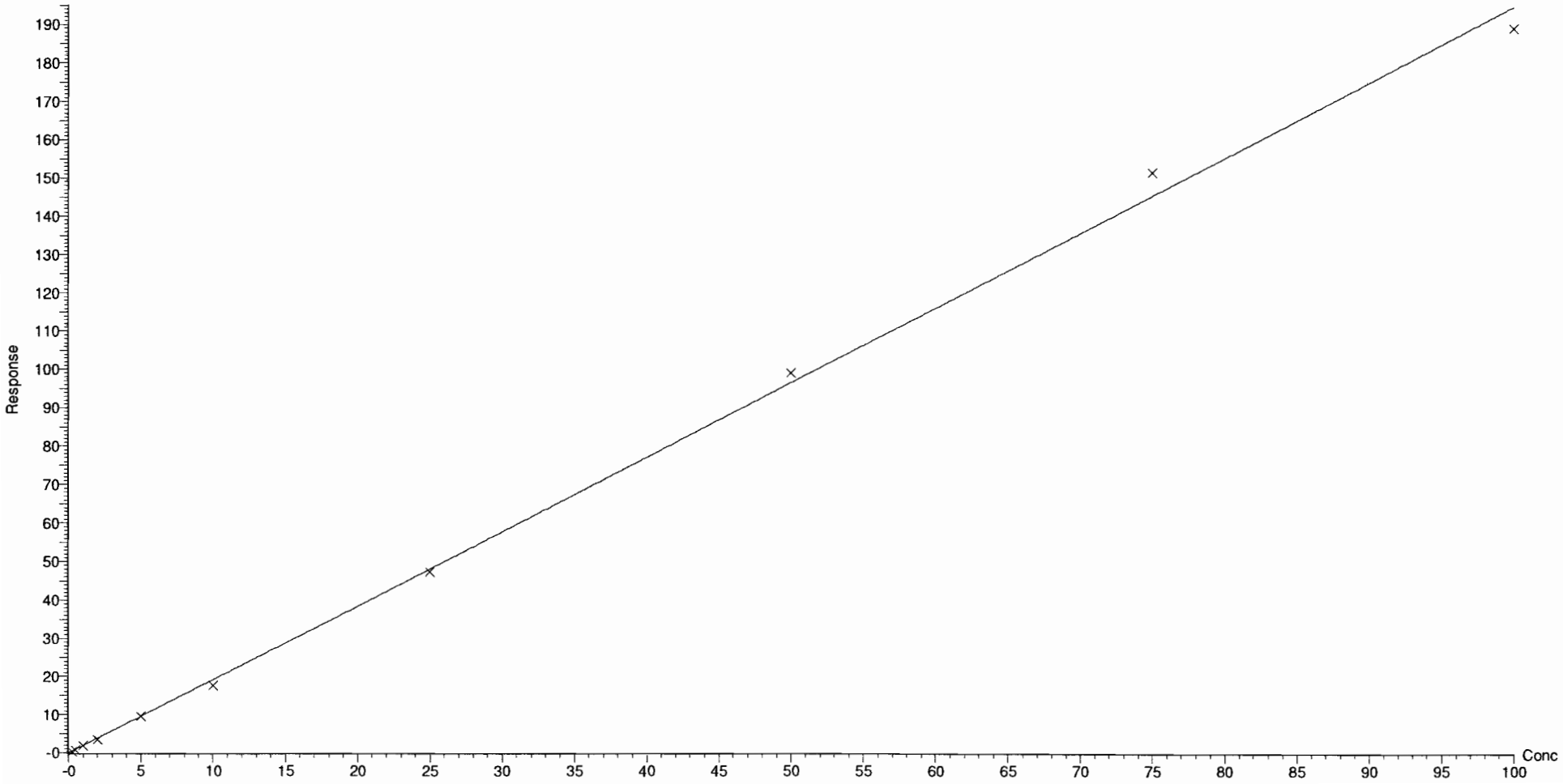
Compound name: PFDA
Coefficient of Determination: R^2 = 0.999110
Calibration curve: -0.000668869 * x^2 + 1.09721 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

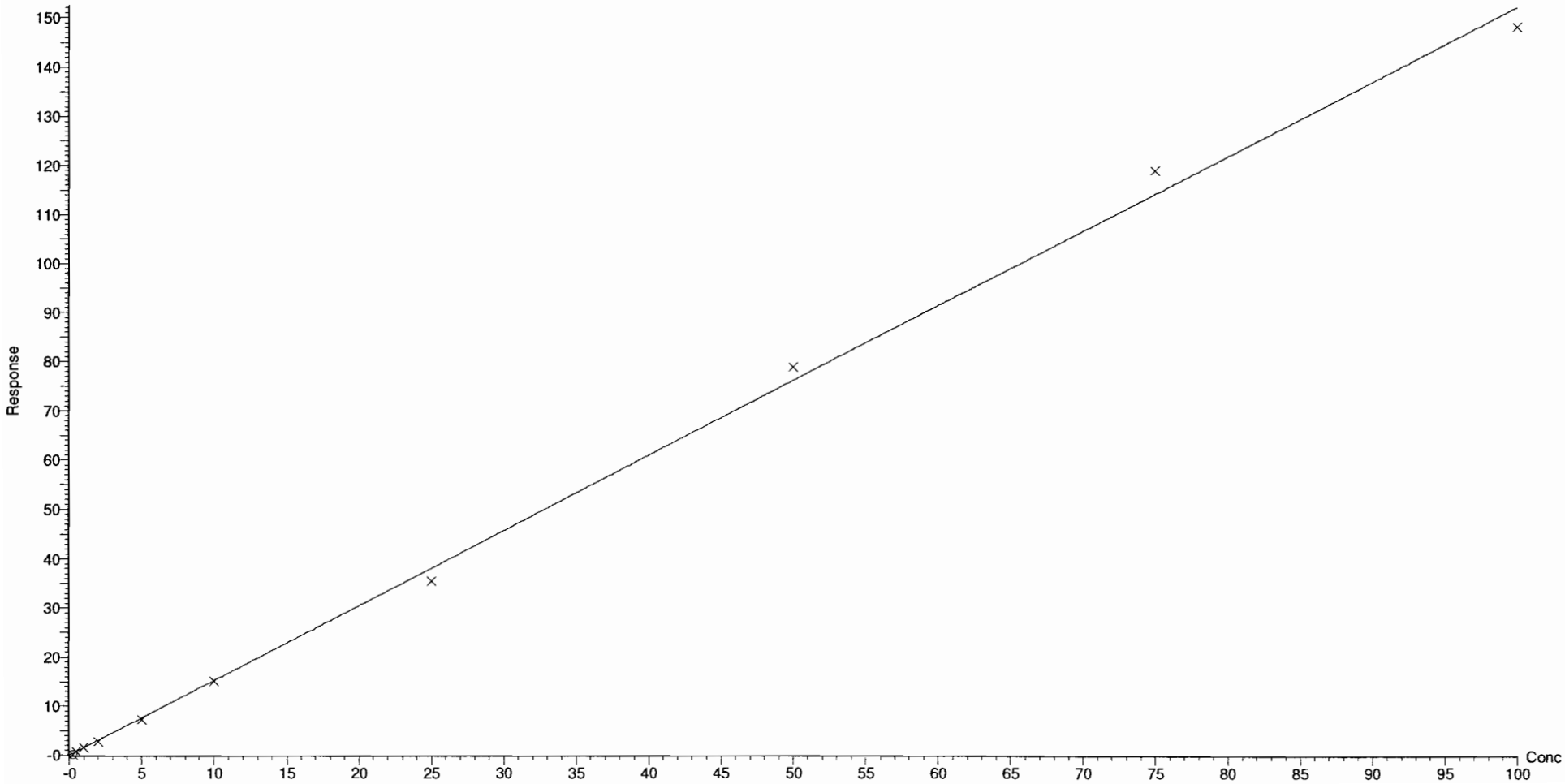
Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.998535
Calibration curve: 0.000374442 * x^2 + 1.91365 * x
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

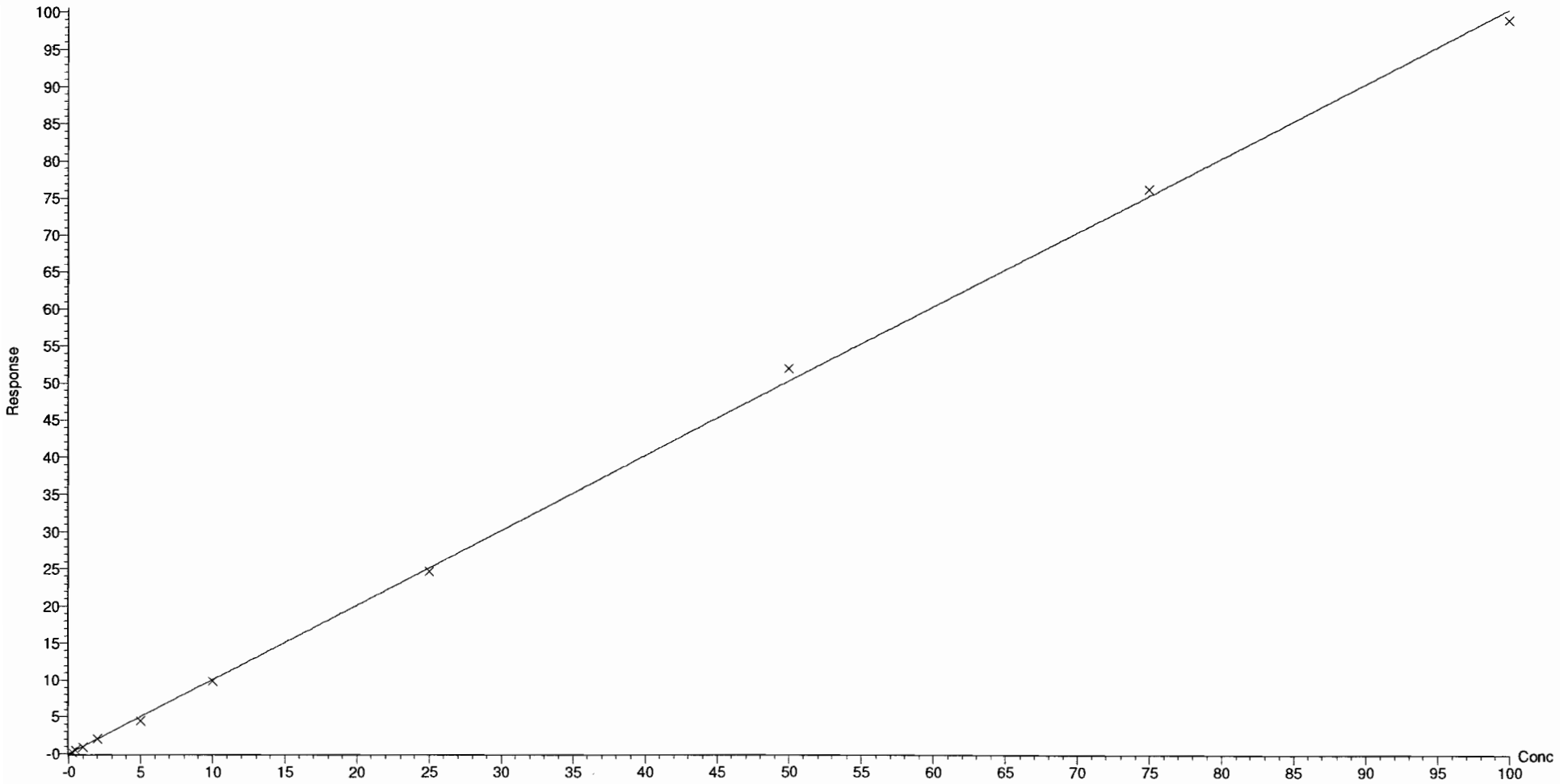
Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.998372
Calibration curve: 1.52534 * x
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

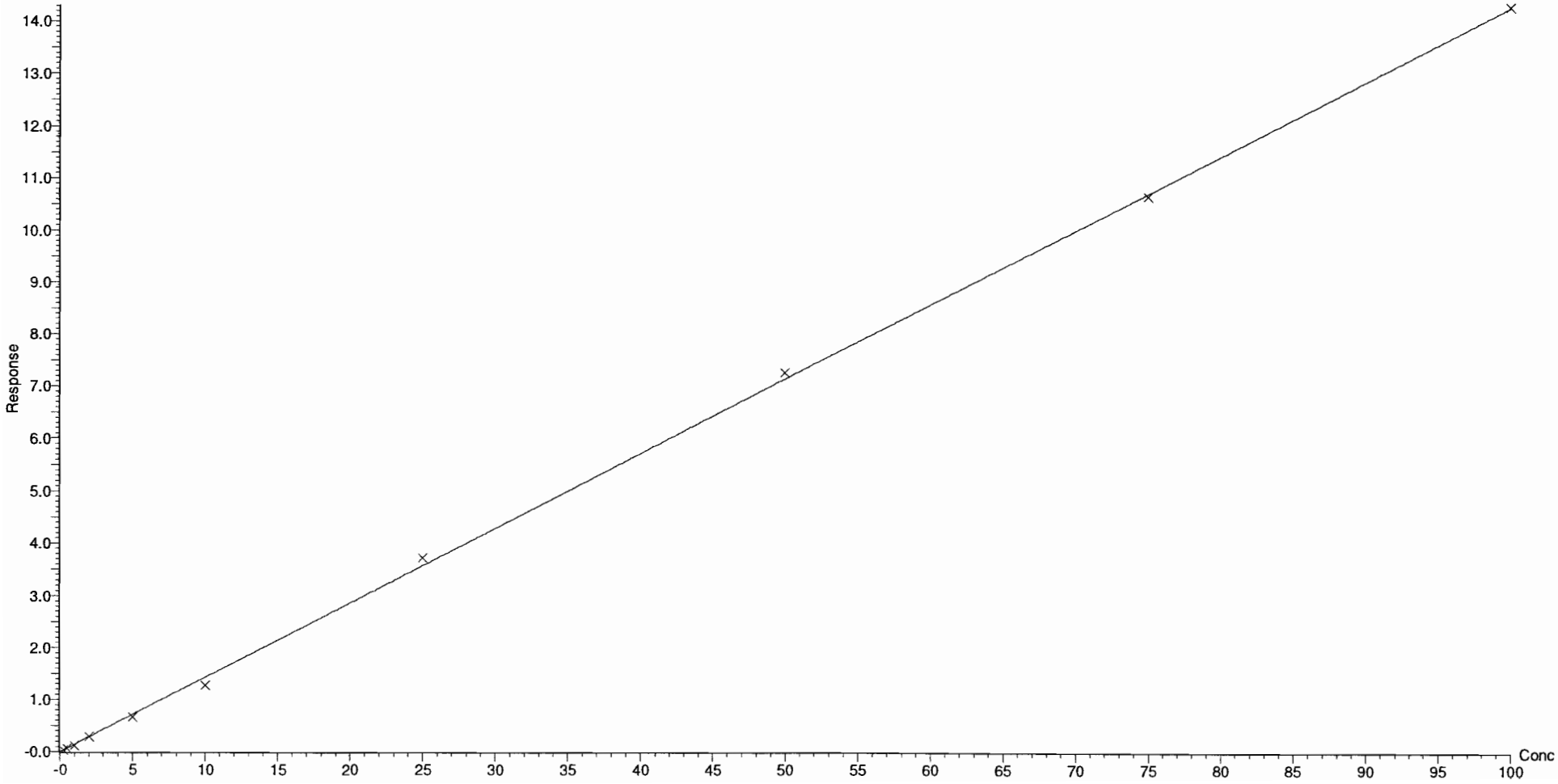
Compound name: PFUnA
Coefficient of Determination: R^2 = 0.999265
Calibration curve: 1.00604 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

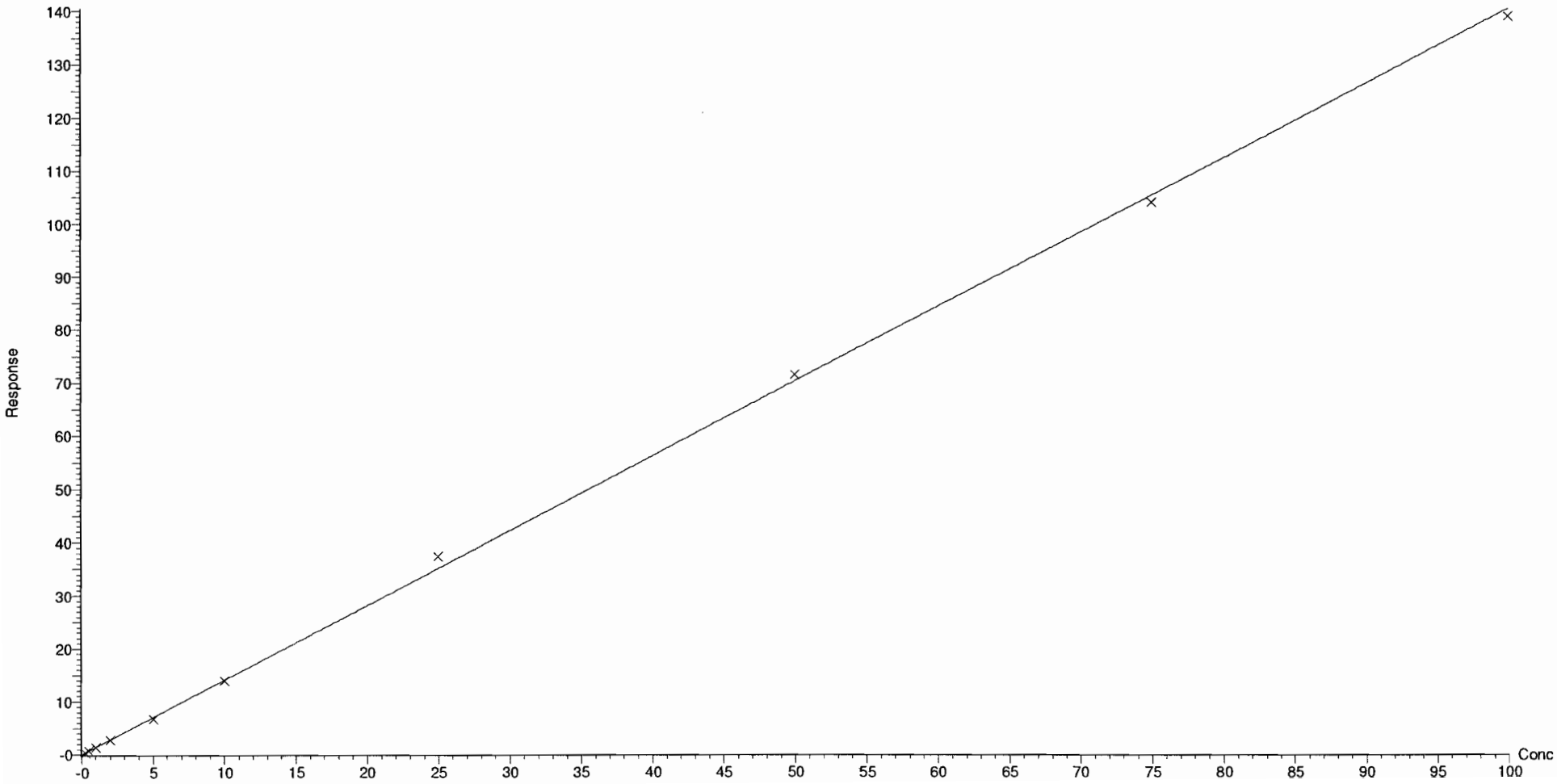
Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999125
Calibration curve: 0.142897 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

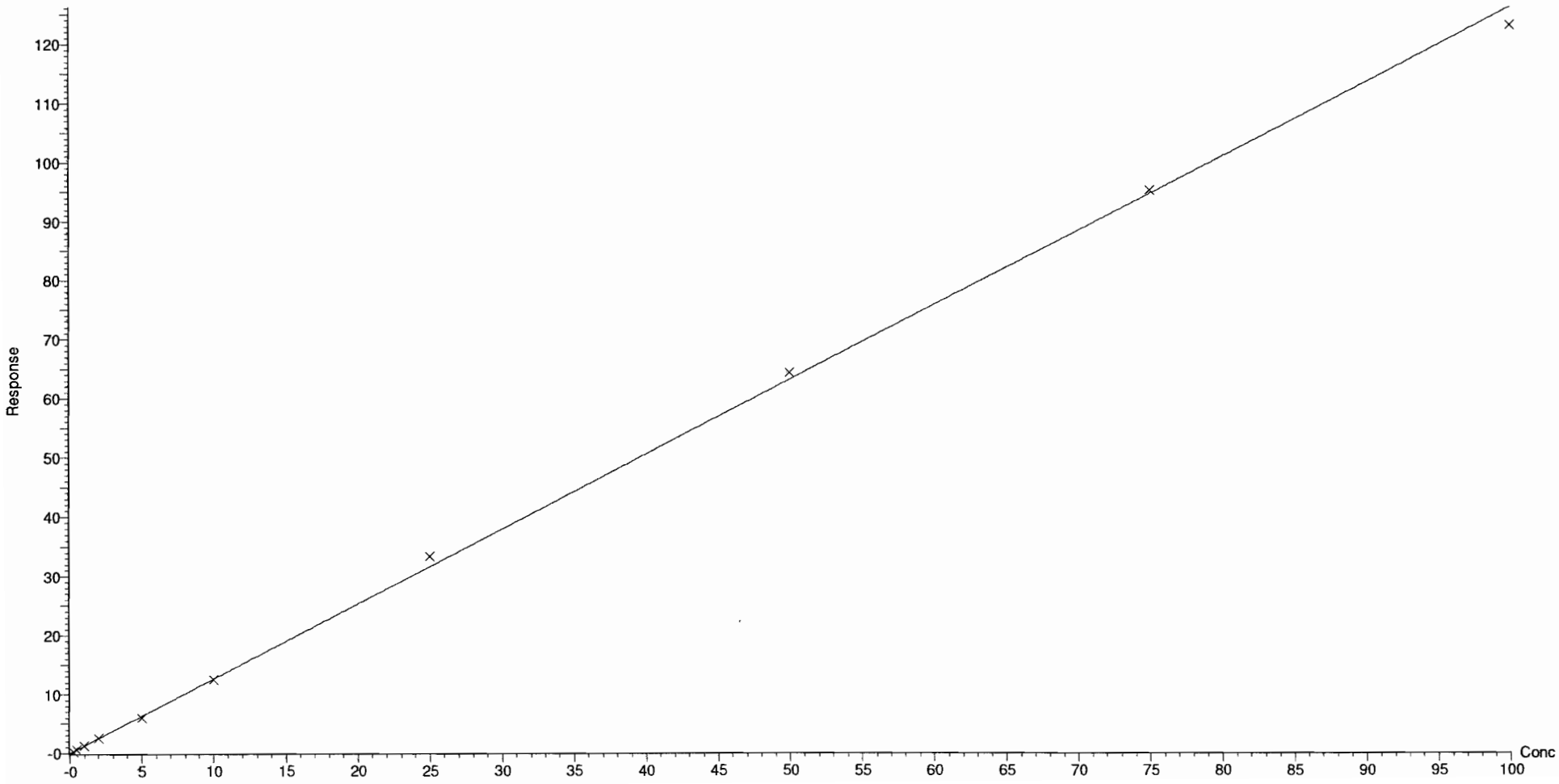
Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999385
Calibration curve: 1.40511 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:25:21 Pacific Standard Time

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999344
Calibration curve: 1.2626 * x
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Force, Weighting: 1/x, Axis trans: None



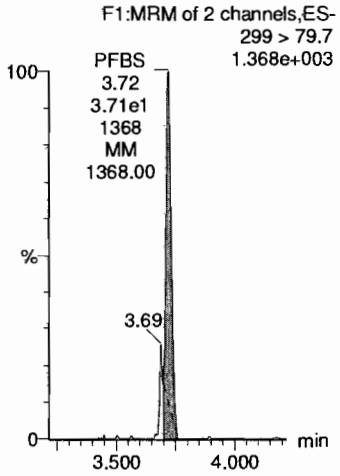
Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

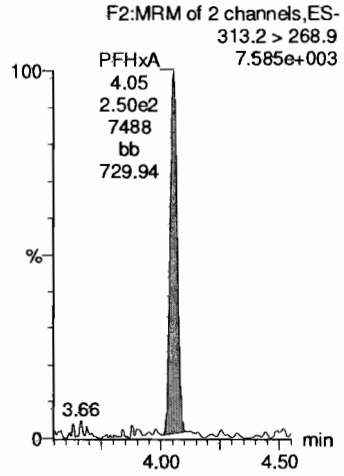
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_2, Date: 25-Jan-2019, Time: 17:34:29, ID: ST190125M2-1 537 CS-4 19A1701, Description: 537 CS-4 19A1701

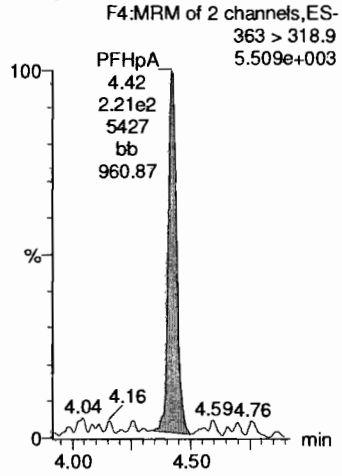
PFBS



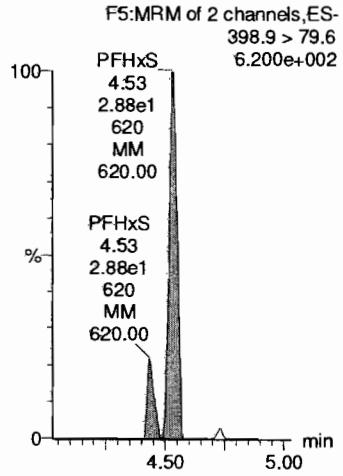
PFHxA



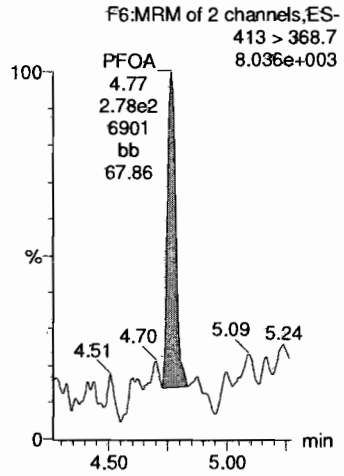
PFHpA



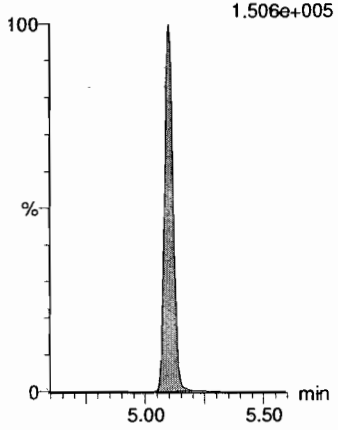
PFHxS



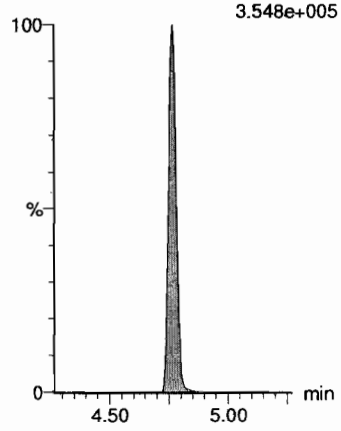
PFOA



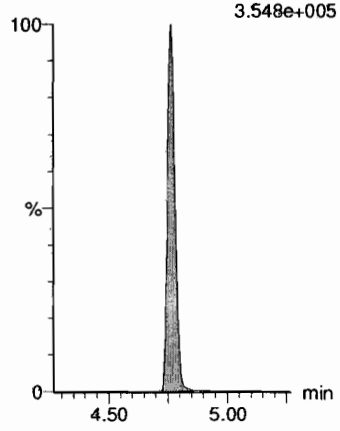
13C4-PFOS



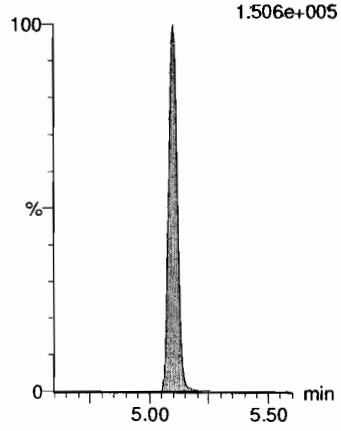
13C2-PFOA



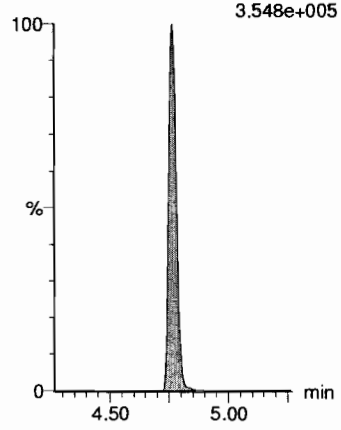
13C2-PFOA



13C4-PFOS



13C2-PFOA

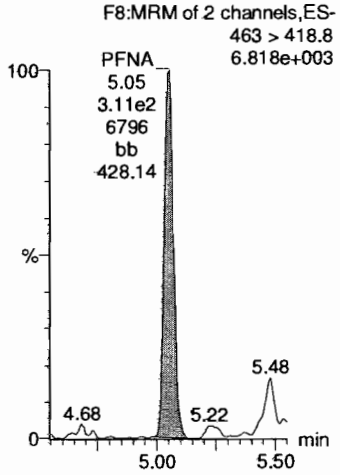


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

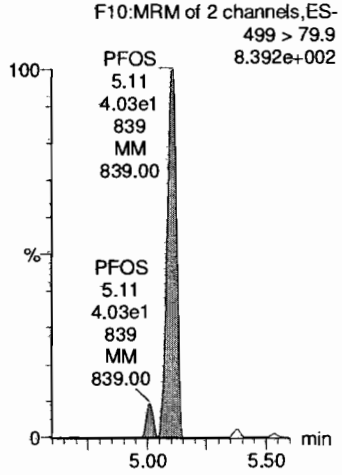
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_2, Date: 25-Jan-2019, Time: 17:34:29, ID: ST190125M2-1 537 CS-4 19A1701, Description: 537 CS-4 19A1701

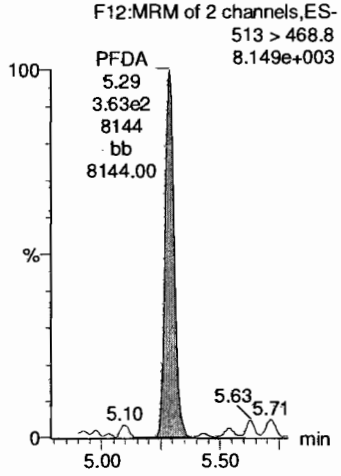
PFNA



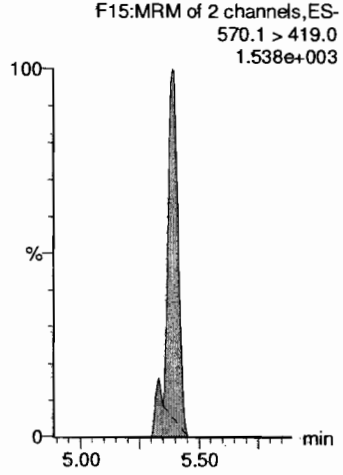
PFOS



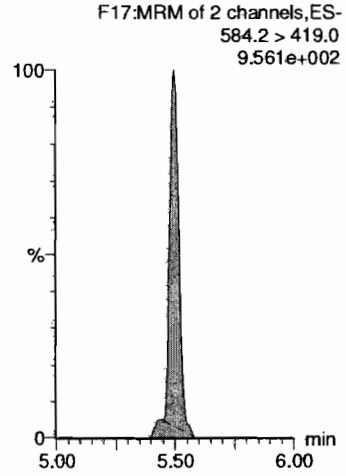
PFDA



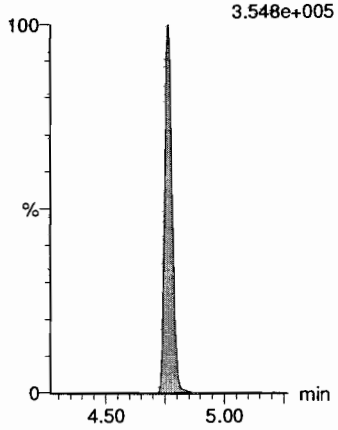
N-MeFOSAA



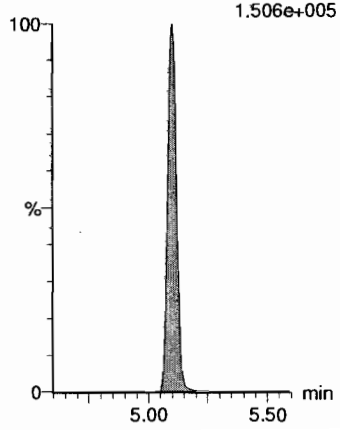
N-EtFOSAA



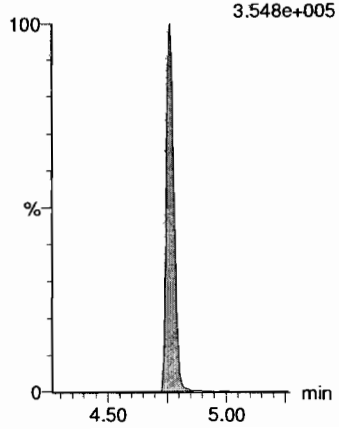
13C2-PFOA



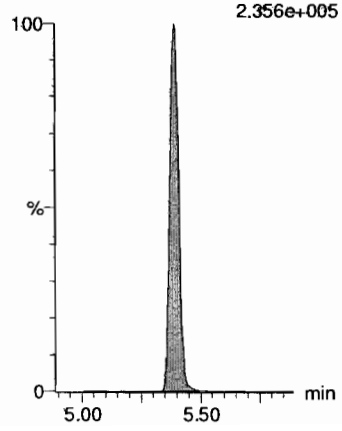
13C4-PFOS



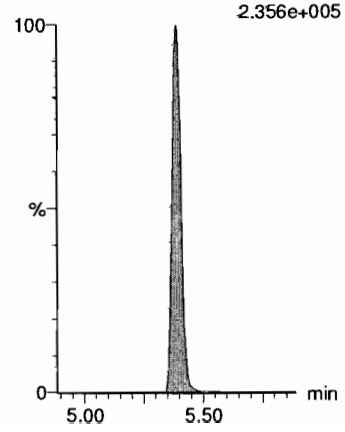
13C2-PFOA



d3-N-MeFOSAA



d3-N-MeFOSAA

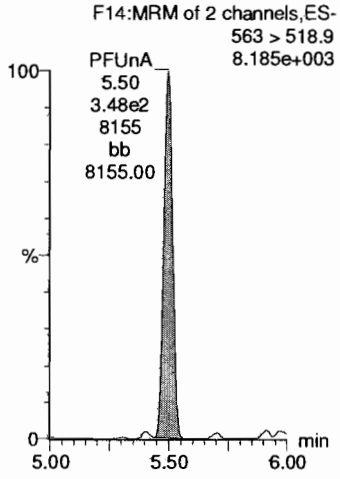


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

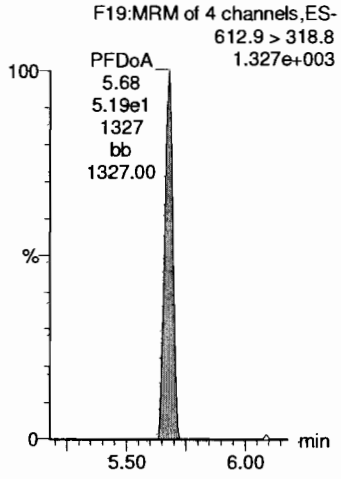
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_2, Date: 25-Jan-2019, Time: 17:34:29, ID: ST190125M2-1 537 CS-4 19A1701, Description: 537 CS-4 19A1701

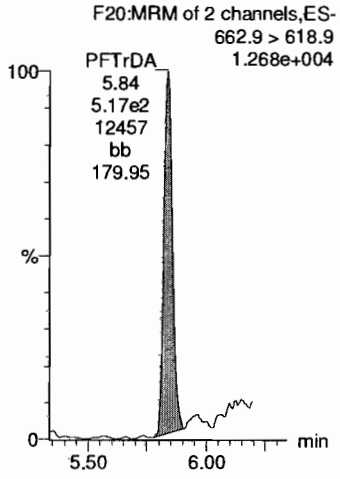
PFUnA



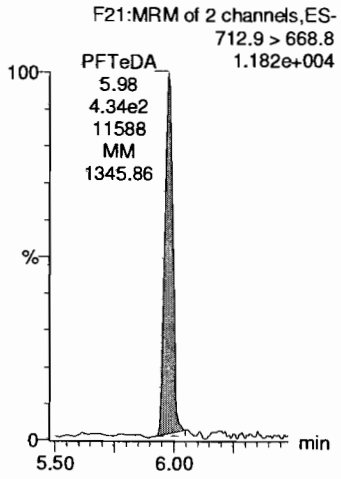
PFDoA



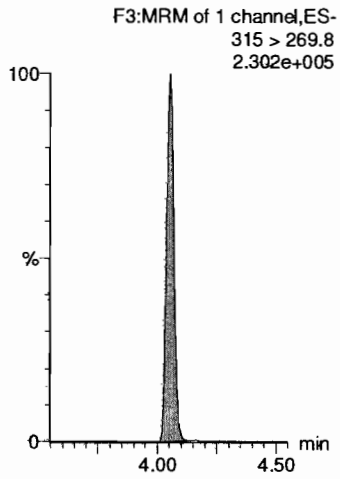
PFTrDA



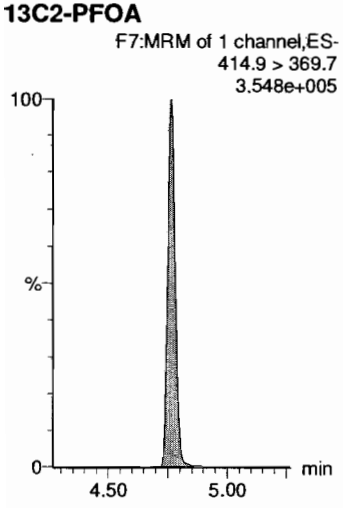
PFTeDA



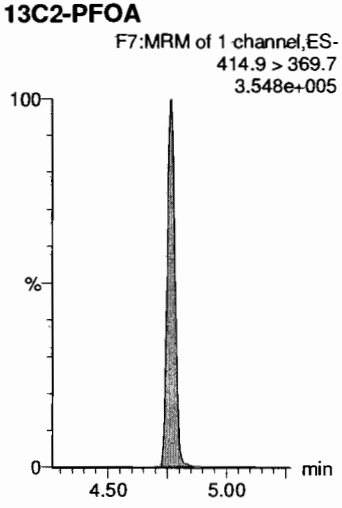
13C2-PFHxA



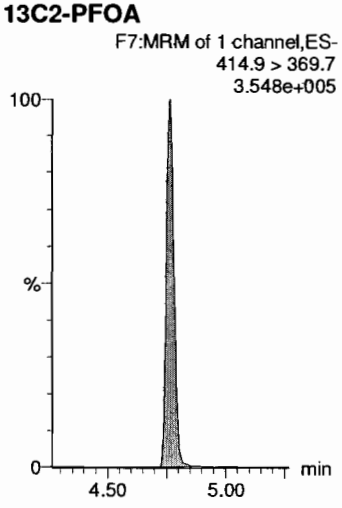
13C2-PFOA



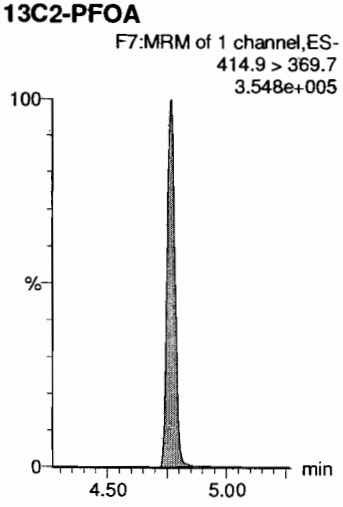
13C2-PFOA



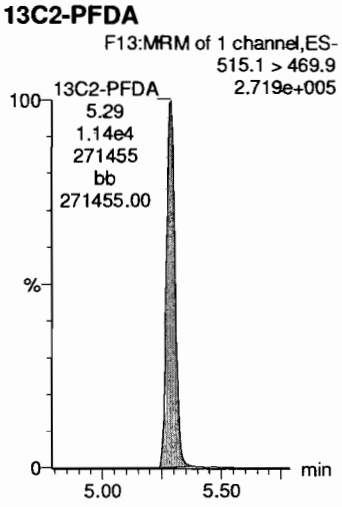
13C2-PFOA



13C2-PFOA



13C2-PFDA

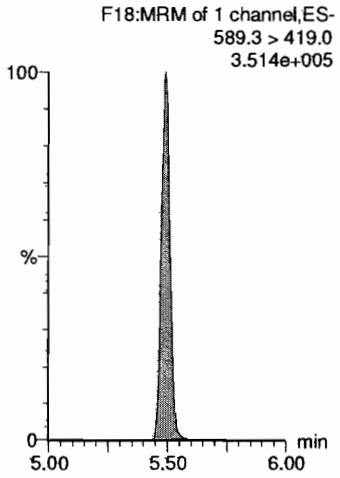


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_2, Date: 25-Jan-2019, Time: 17:34:29, ID: ST190125M2-1 537 CS-4 19A1701, Description: 537 CS-4 19A1701

d5-N-EtFOSAA

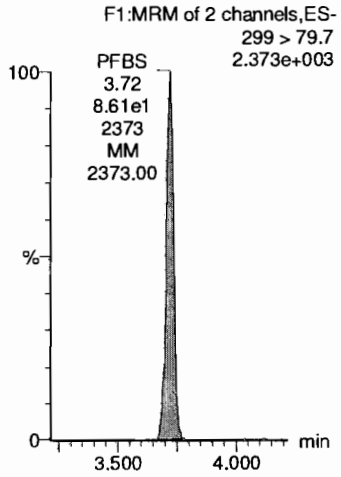


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

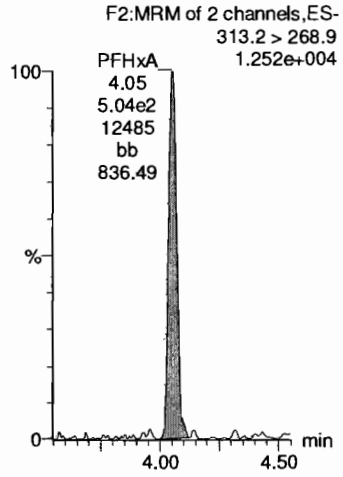
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_3, Date: 25-Jan-2019, Time: 17:46:20, ID: ST190125M2-2 537 CS-3 19A1702, Description: 537 CS-3 19A1702

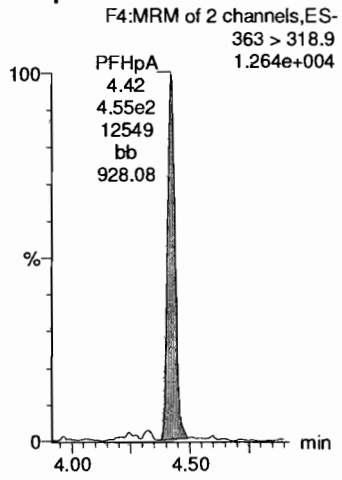
PFBS



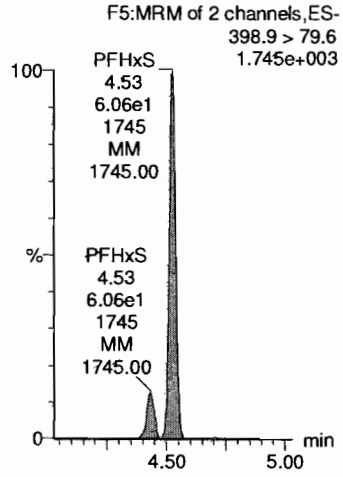
PFHxA



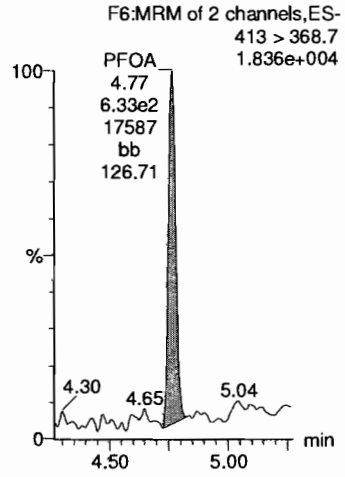
PFHpA



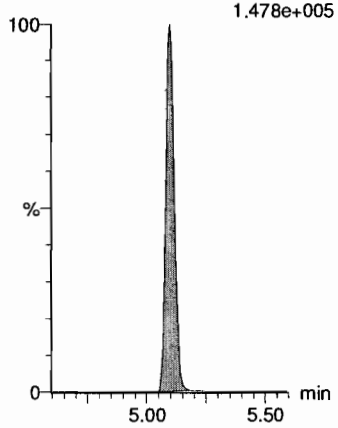
PFHxS



PFOA



13C4-PFOS



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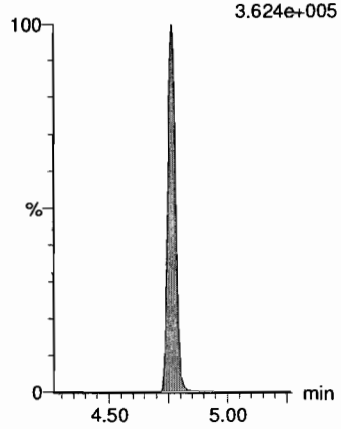

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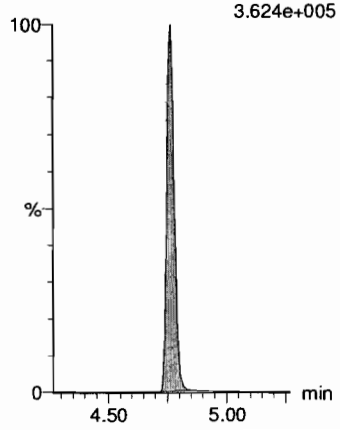

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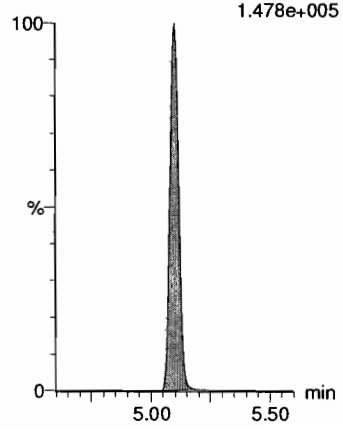

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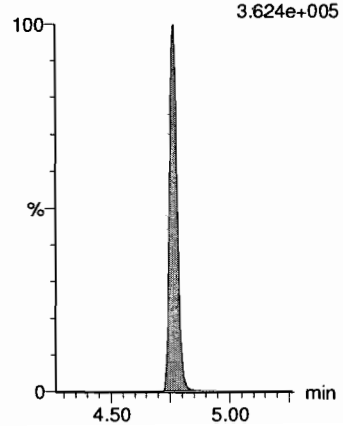

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_3, Date: 25-Jan-2019, Time: 17:46:20, ID: ST190125M2-2 537 CS-3 19A1702, Description: 537 CS-3 19A1702

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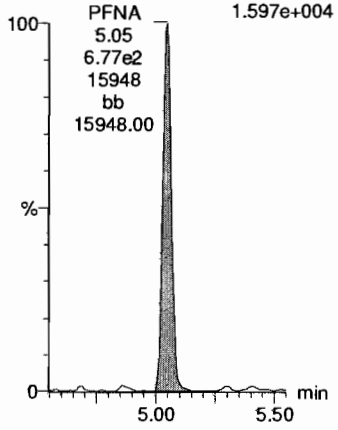

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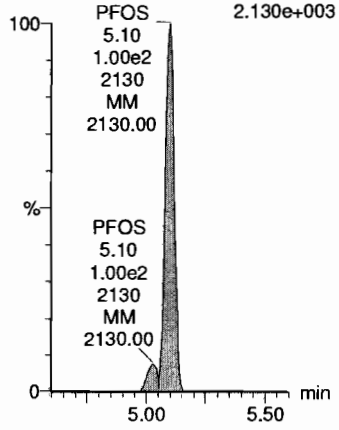

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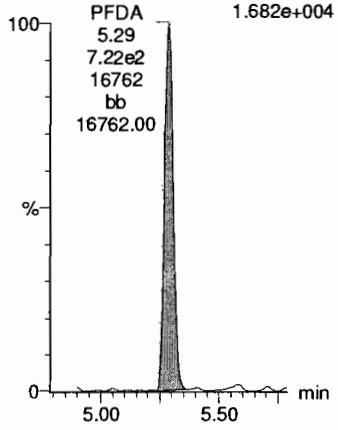
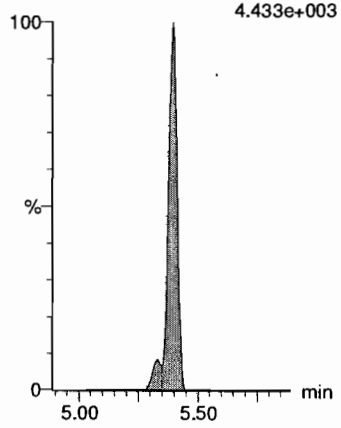


N-MeFOSAA



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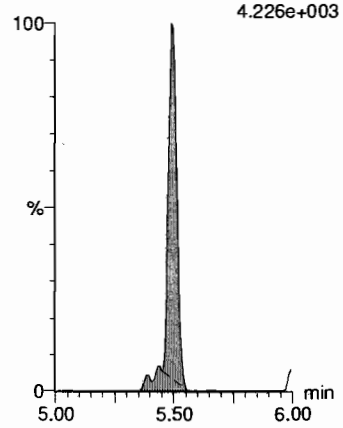

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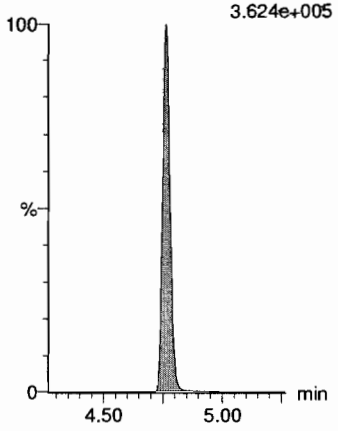

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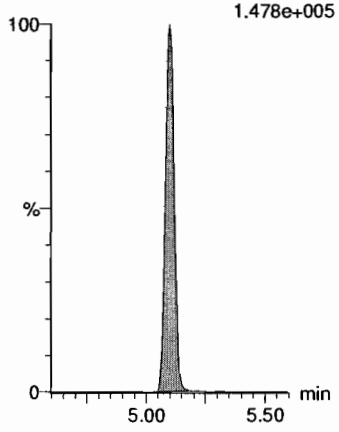

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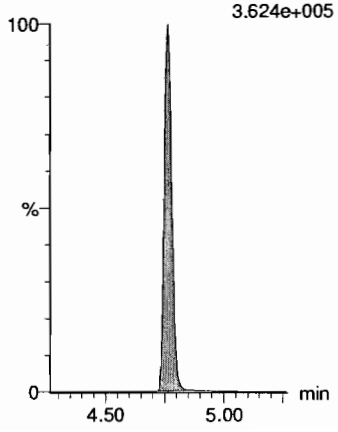
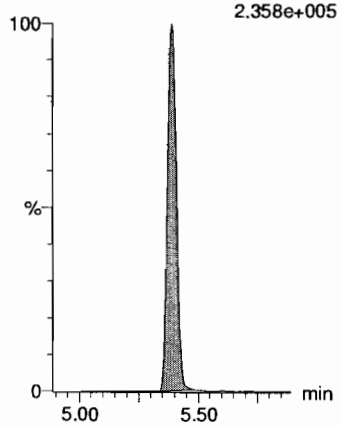


d3-N-MeFOSAA



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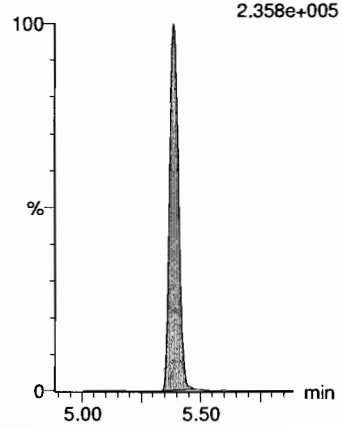

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_3, Date: 25-Jan-2019, Time: 17:46:20, ID: ST190125M2-2 537 CS-3 19A1702, Description: 537 CS-3 19A1702

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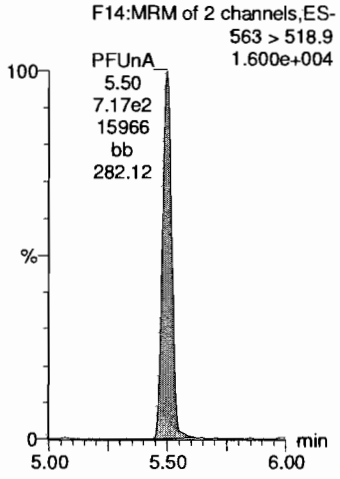

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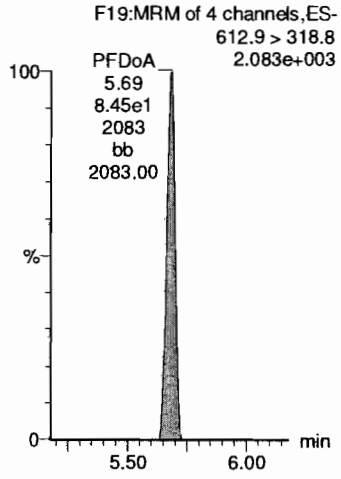

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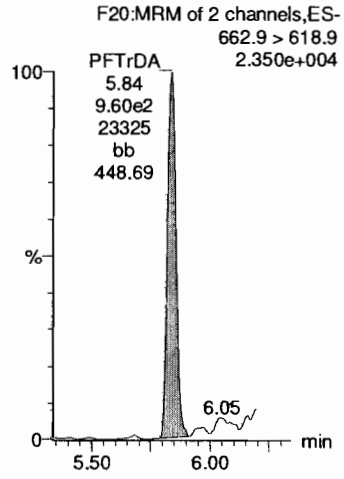

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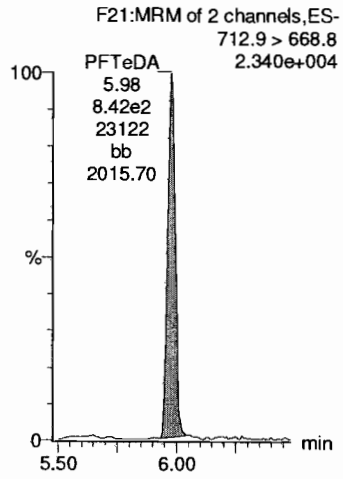

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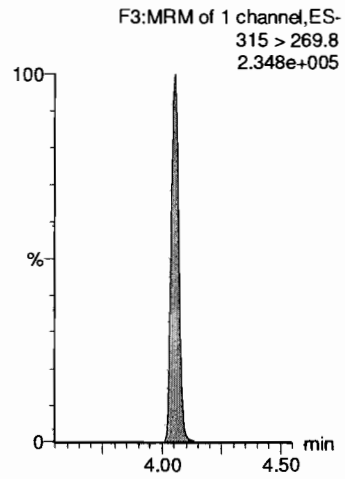

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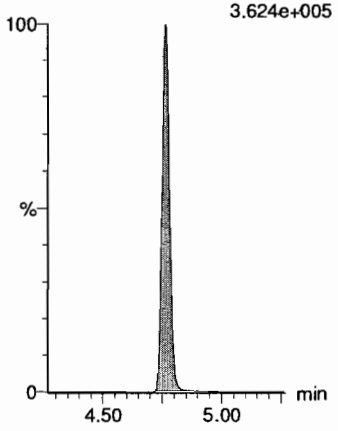

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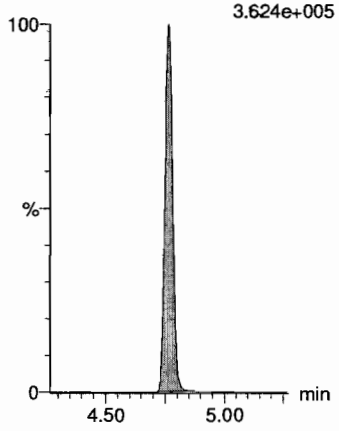

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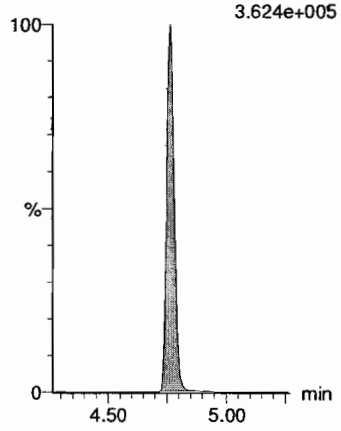

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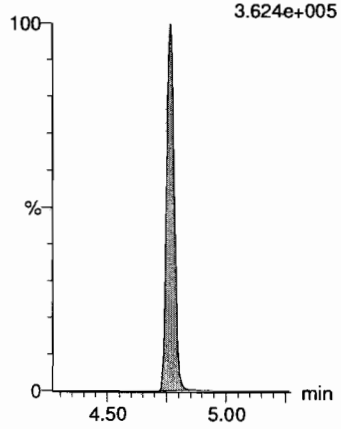

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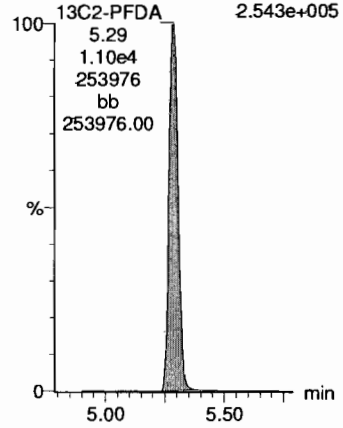
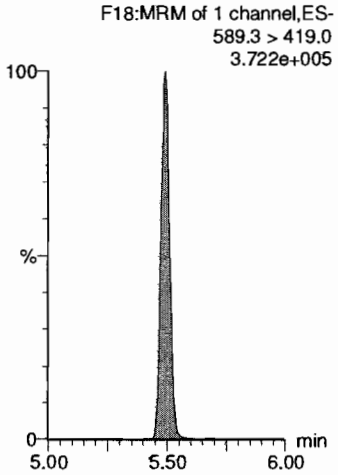


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_3, Date: 25-Jan-2019, Time: 17:46:20, ID: ST190125M2-2 537 CS-3 19A1702, Description: 537 CS-3 19A1702

d5-N-EtFOSAA



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Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_4, Date: 25-Jan-2019, Time: 17:58:06, ID: ST190125M2-3 537 CS-2 19A1703, Description: 537 CS-2 19A1703

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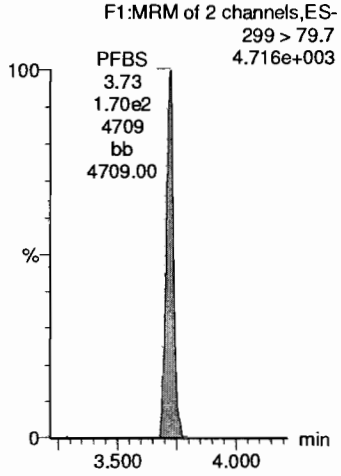

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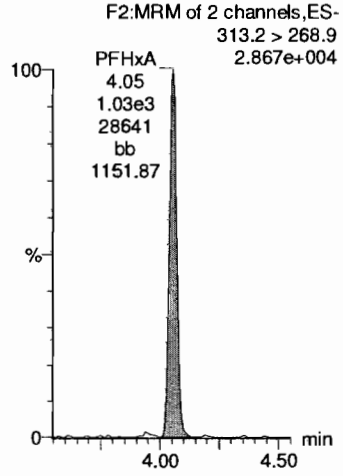

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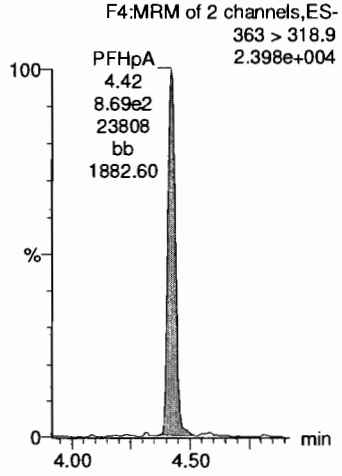

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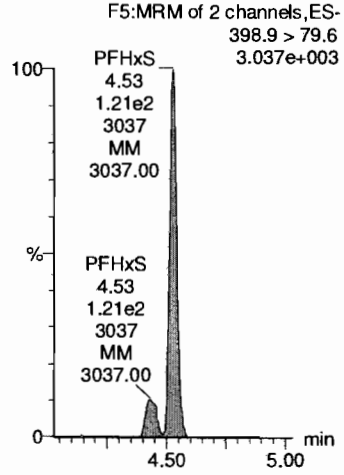

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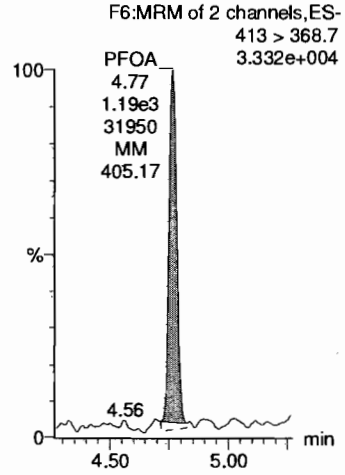
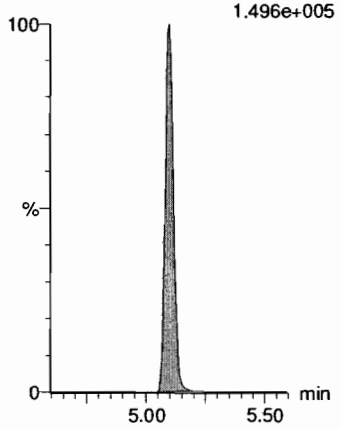


13C4-PFOS



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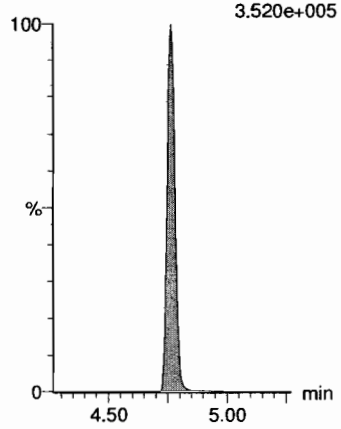

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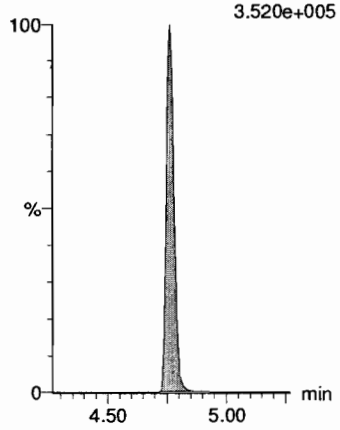

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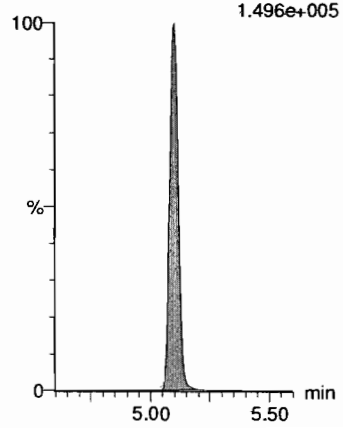

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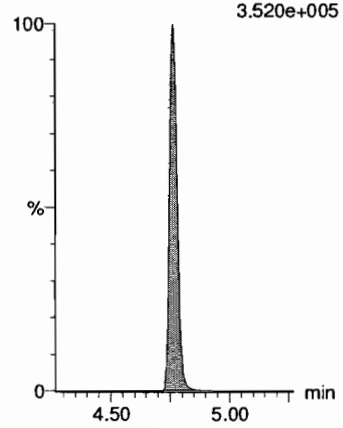

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_4, Date: 25-Jan-2019, Time: 17:58:06, ID: ST190125M2-3 537 CS-2 19A1703, Description: 537 CS-2 19A1703

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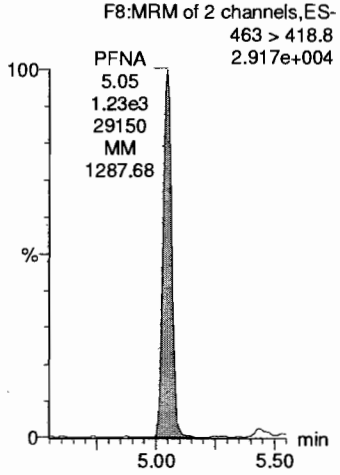
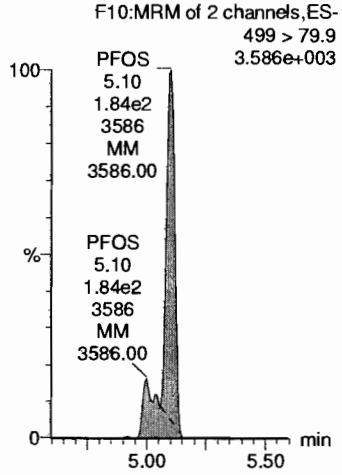
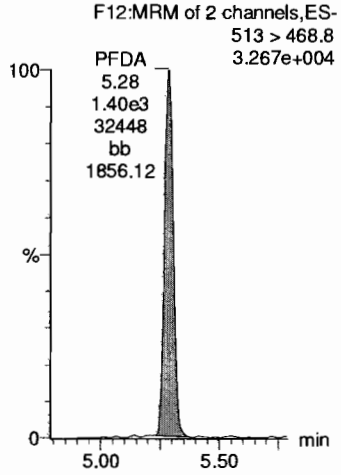


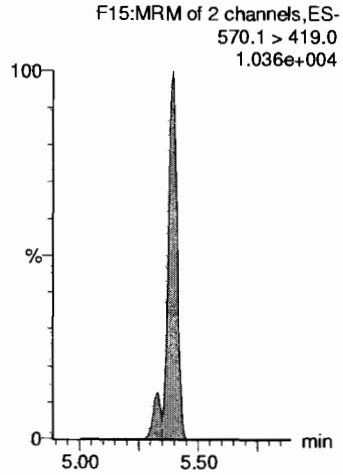
PFOS



PFDA



N-MeFOSAA



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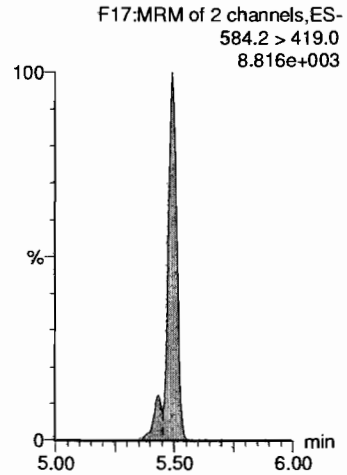
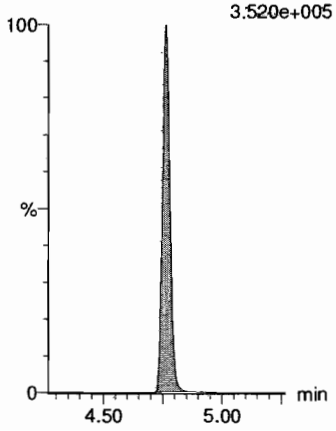


13C2-PFOA



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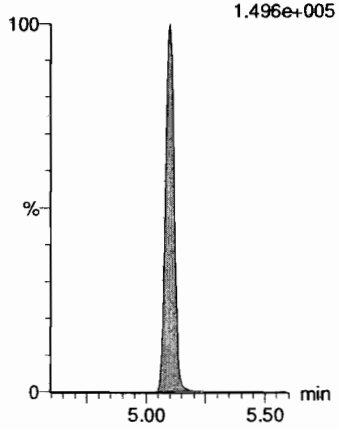

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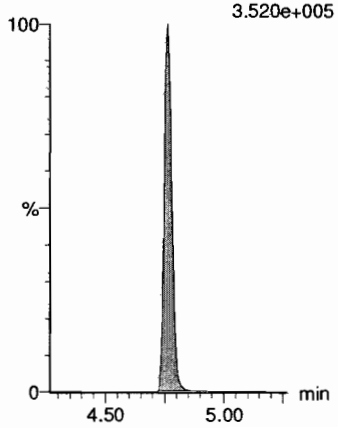
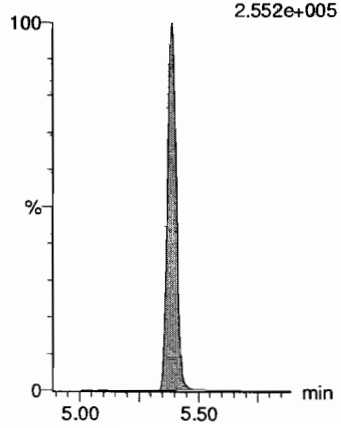


d3-N-MeFOSAA



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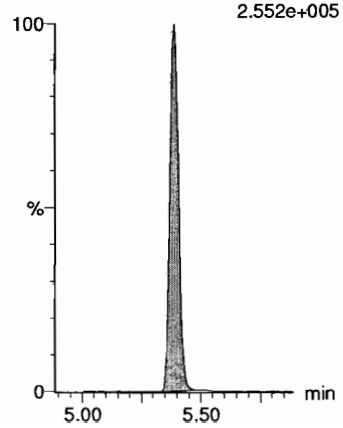

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_4, Date: 25-Jan-2019, Time: 17:58:06, ID: ST190125M2-3 537 CS-2 19A1703, Description: 537 CS-2 19A1703

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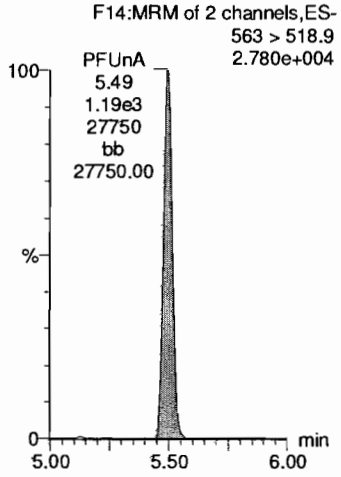
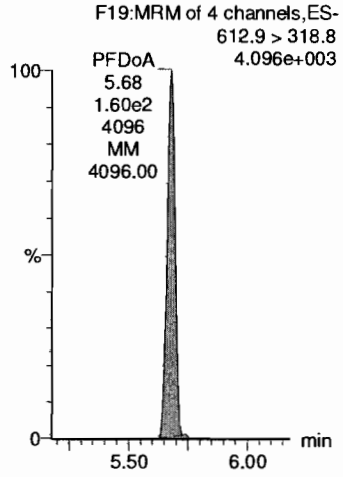
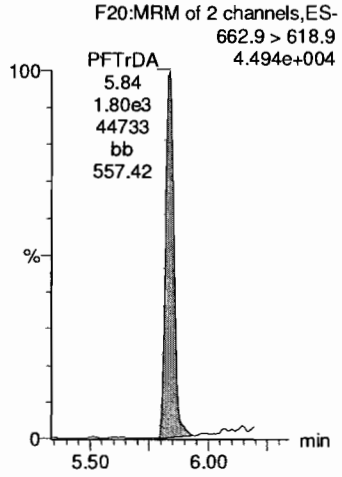


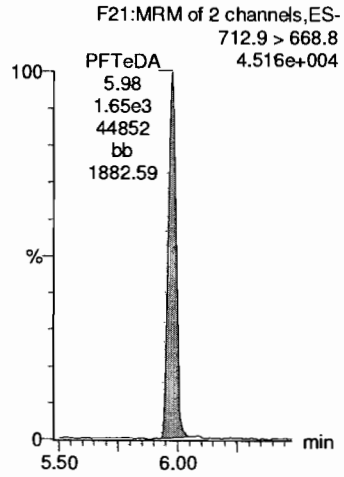
PFDoA



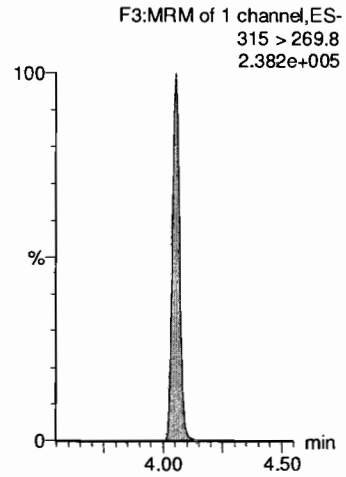
PFTrDA



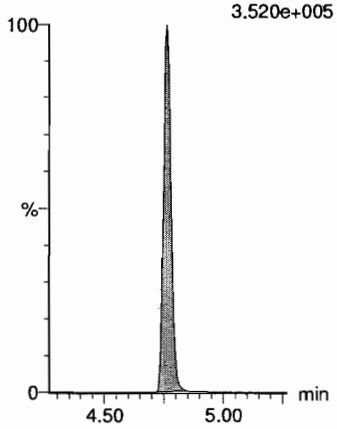
PFTeDA



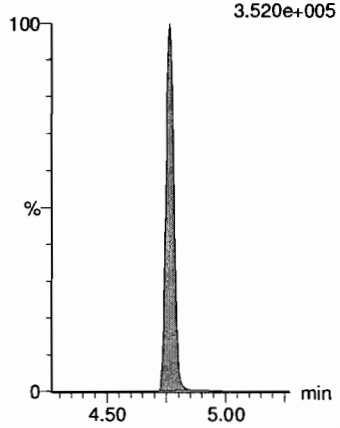
13C2-PFHxA



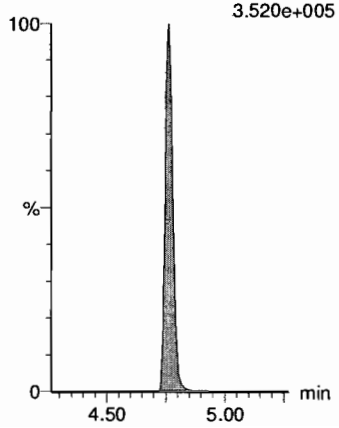
13C2-PFOA



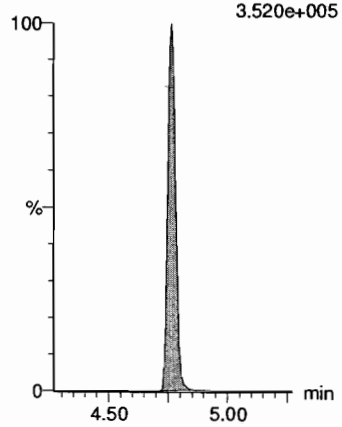
13C2-PFOA



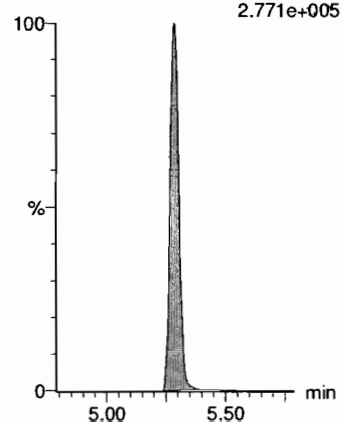
13C2-PFOA



13C2-PFOA



13C2-PFDA

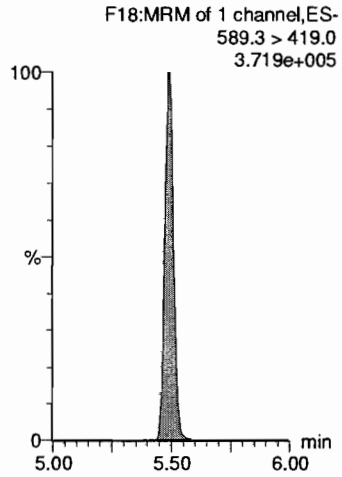


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_4, Date: 25-Jan-2019, Time: 17:58:06, ID: ST190125M2-3 537 CS-2 19A1703, Description: 537 CS-2 19A1703

d5-N-EtFOSAA

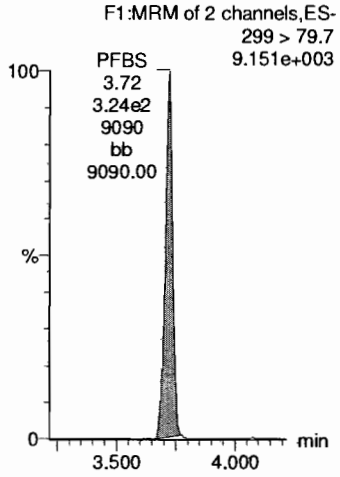


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

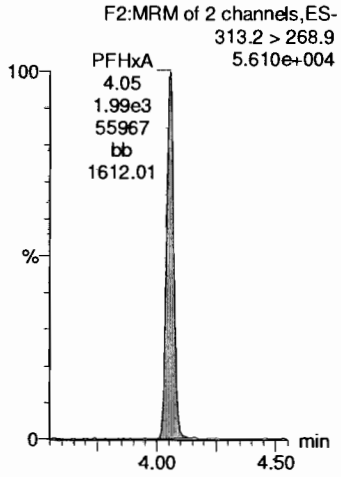
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_5, Date: 25-Jan-2019, Time: 18:09:57, ID: ST190125M2-4 537 CS-1 19A1704, Description: 537 CS-1 19A1704

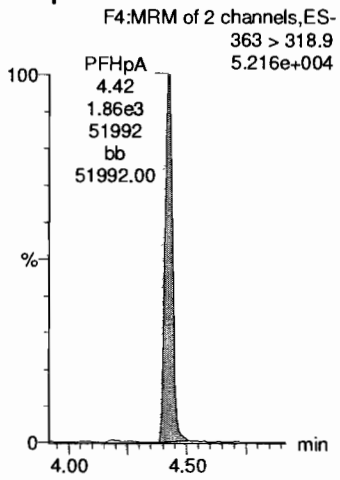
PFBS



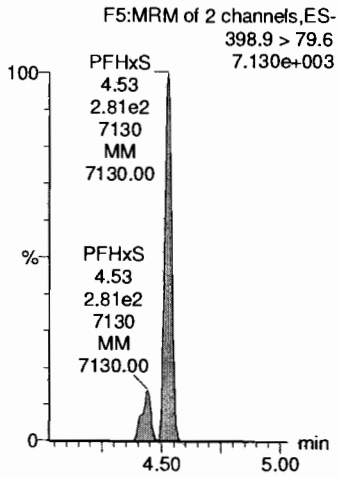
PFHxA



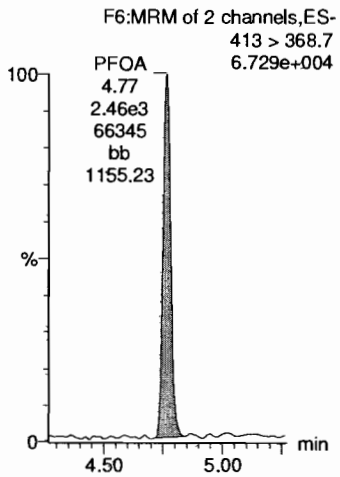
PFHpA



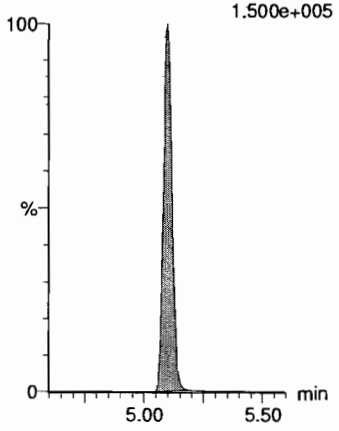
PFHxS



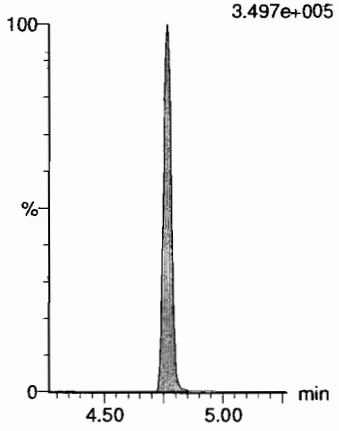
PFOA



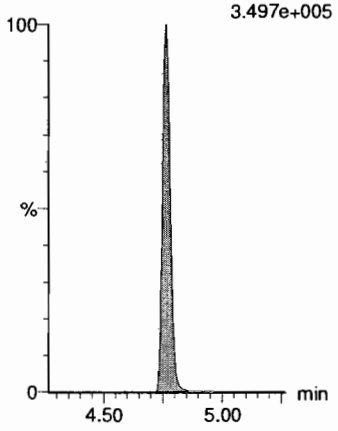
13C4-PFOS



13C2-PFOA



13C2-PFOA



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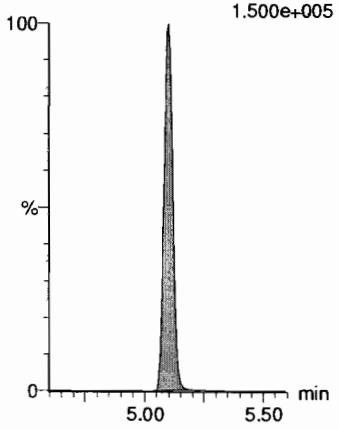
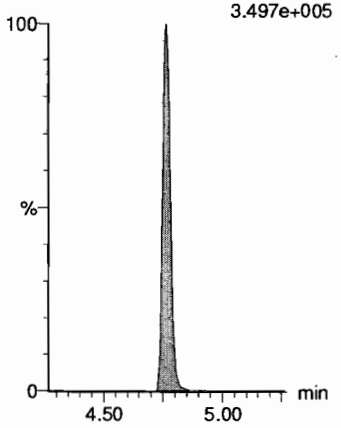


13C2-PFOA

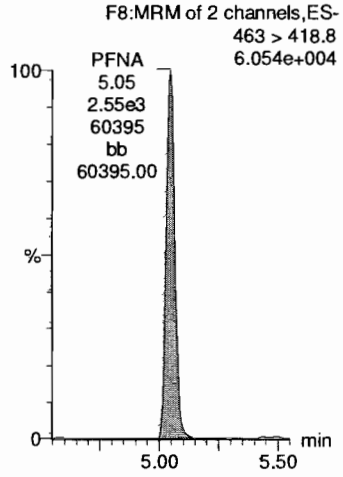


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

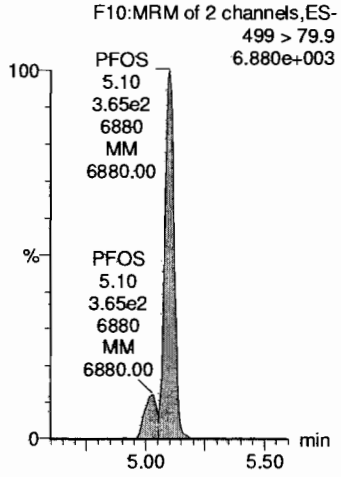
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_5, Date: 25-Jan-2019, Time: 18:09:57, ID: ST190125M2-4 537 CS-1 19A1704, Description: 537 CS-1 19A1704

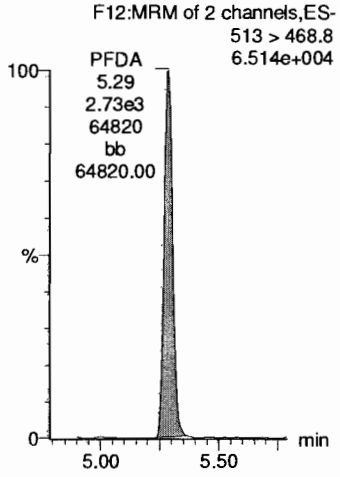
PFNA



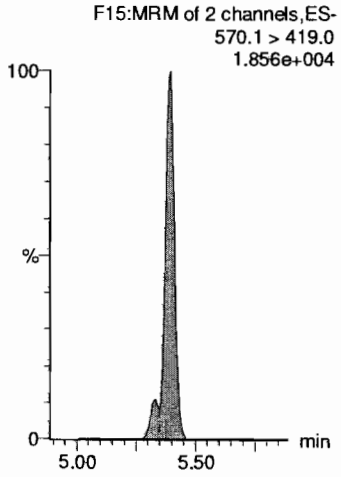
PFOS



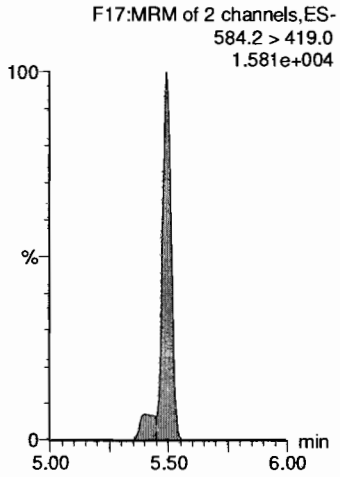
PFDA



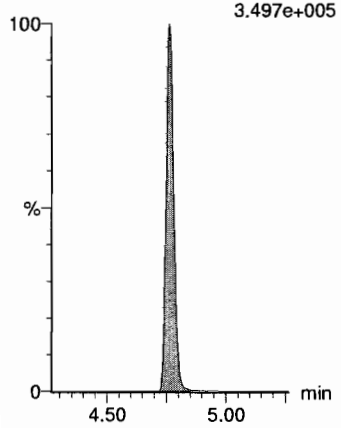
N-MeFOSAA



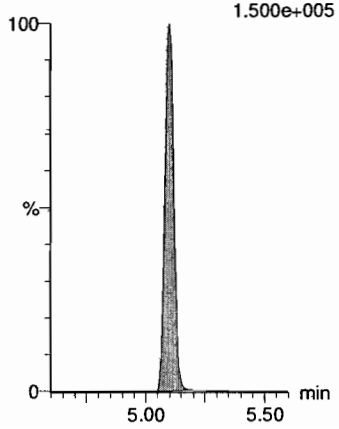
N-EtFOSAA



13C2-PFOA



13C4-PFOS



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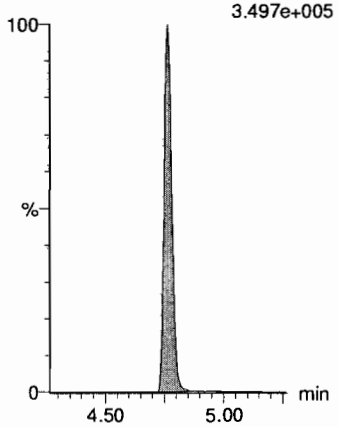
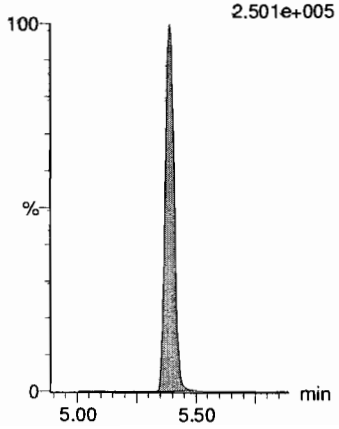


d3-N-MeFOSAA



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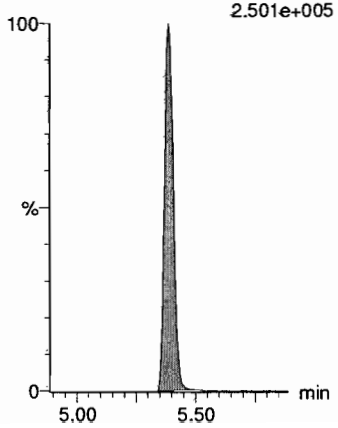
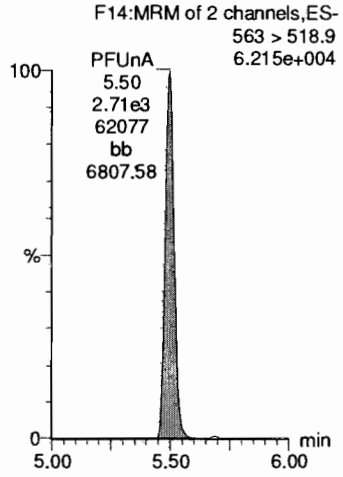


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

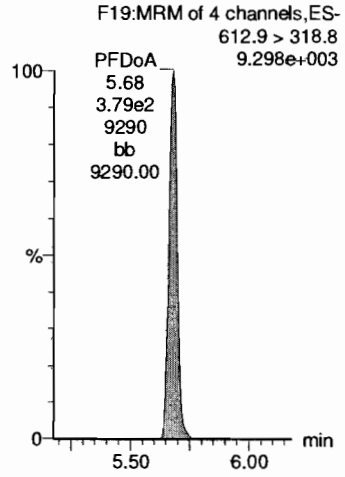
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_5, Date: 25-Jan-2019, Time: 18:09:57, ID: ST190125M2-4 537 CS-1 19A1704, Description: 537 CS-1 19A1704

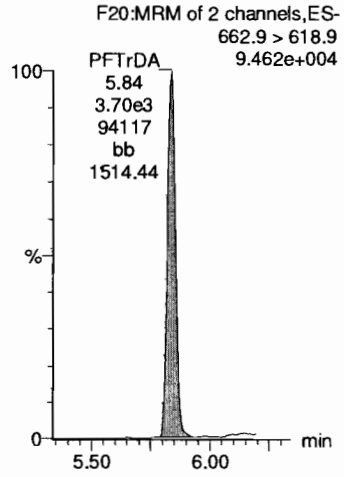
PFUnA



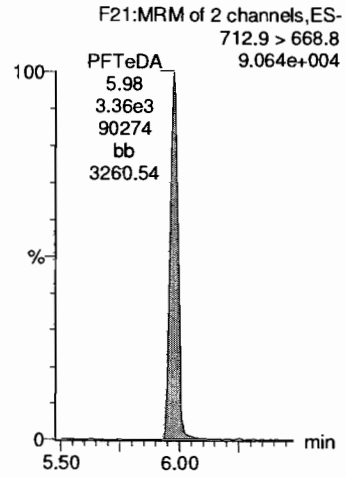
PFDoA



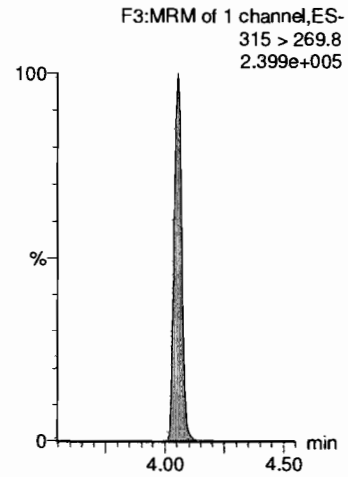
PFTrDA



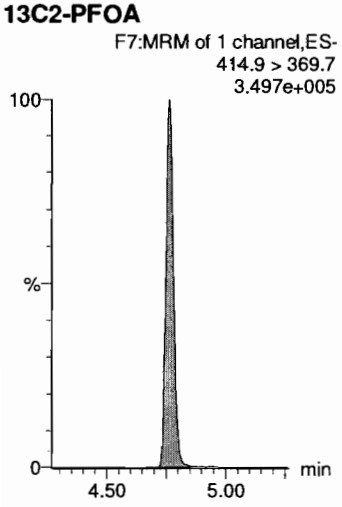
PFTeDA



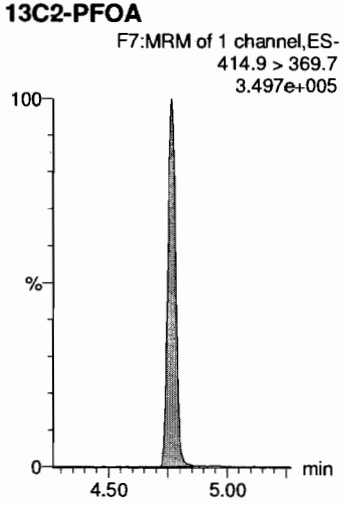
13C2-PFHxA



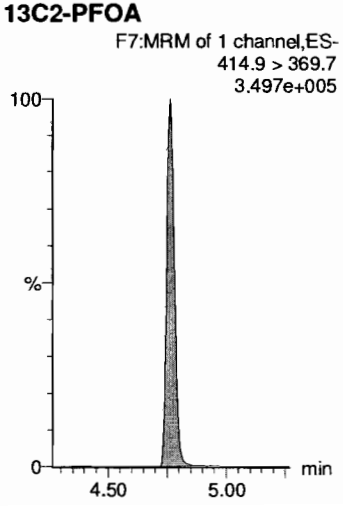
13C2-PFOA



13C2-PFOA



13C2-PFOA



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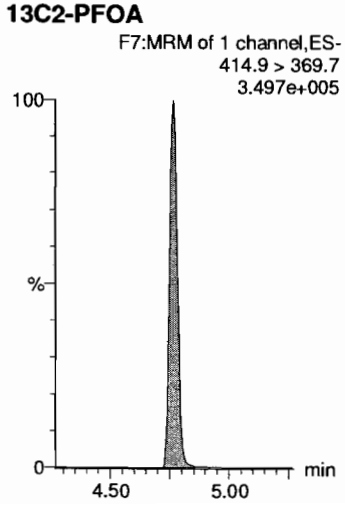

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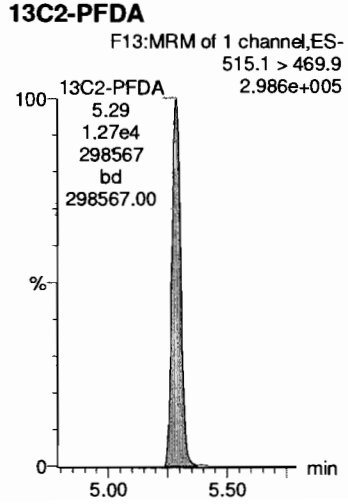
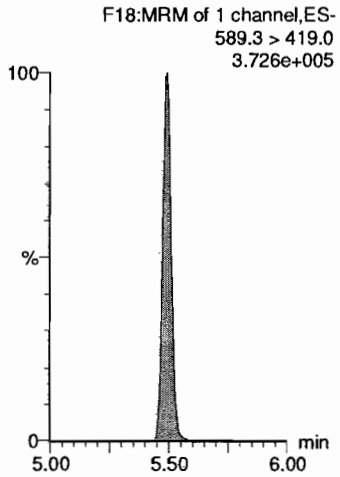


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_5, Date: 25-Jan-2019, Time: 18:09:57, ID: ST190125M2-4 537 CS-1 19A1704, Description: 537 CS-1 19A1704

d5-N-EtFOSAA

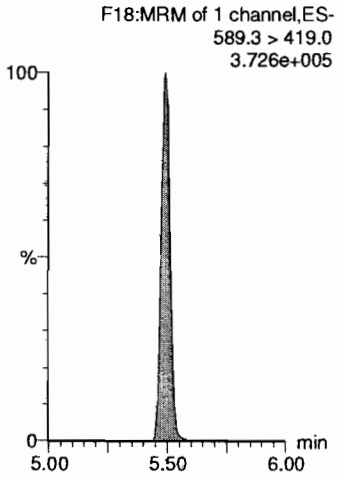


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_5, Date: 25-Jan-2019, Time: 18:09:57, ID: ST190125M2-4 537 CS-1 19A1704, Description: 537 CS-1 19A1704

d5-N-EtFOSAA

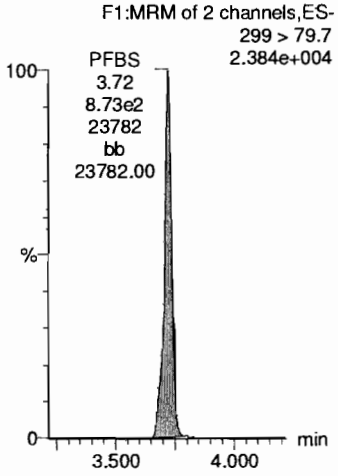


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

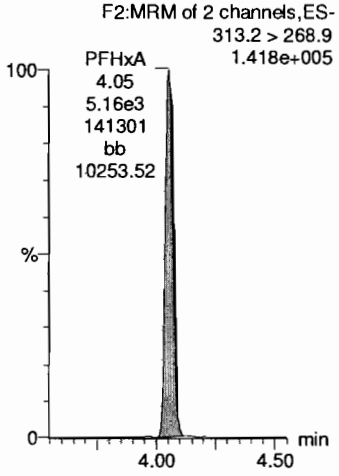
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_6, Date: 25-Jan-2019, Time: 18:21:43, ID: ST190125M2-5 537 CS0 19A1705, Description: 537 CS0 19A1705

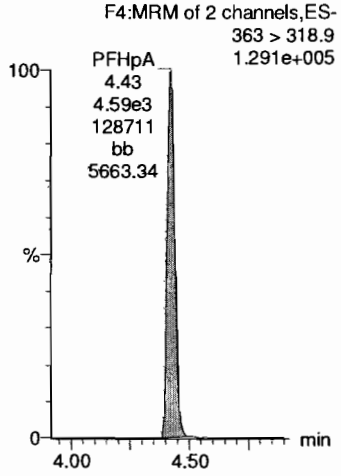
PFBS



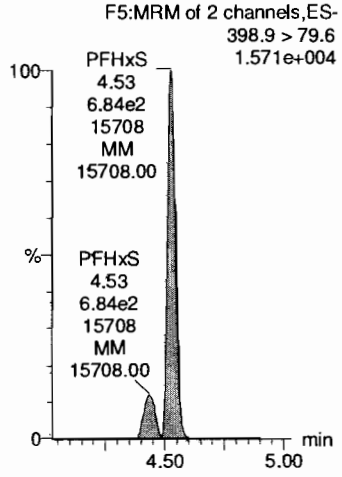
PFHxA



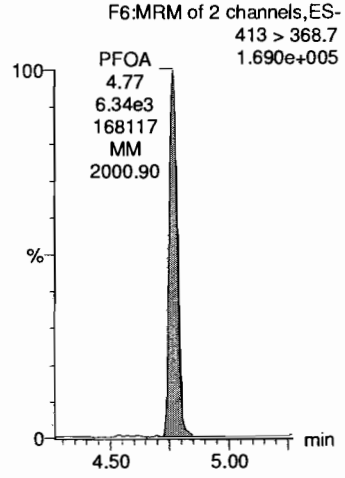
PFHpA



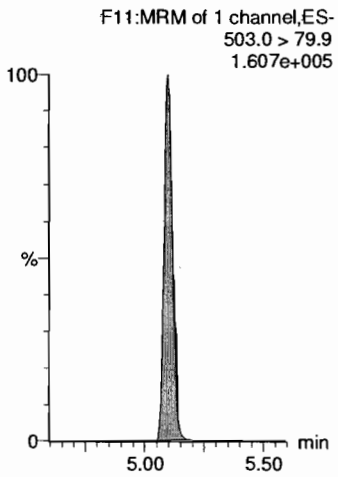
PFHxS



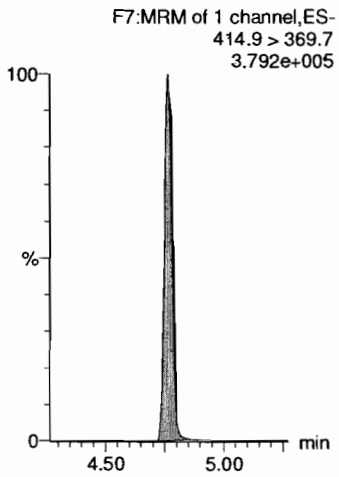
PFOA



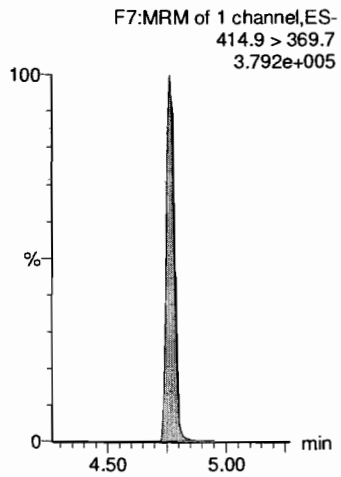
13C4-PFOS



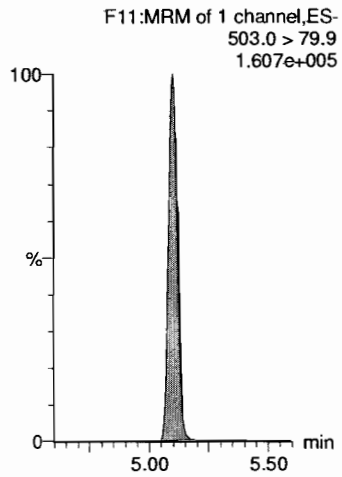
13C2-PFOA



13C2-PFOA



13C4-PFOS



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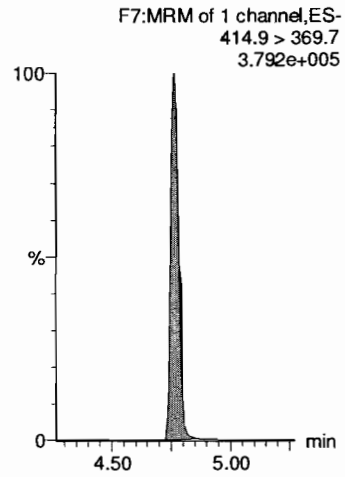

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_6, Date: 25-Jan-2019, Time: 18:21:43, ID: ST190125M2-5 537 CS0 19A1705, Description: 537 CS0 19A1705

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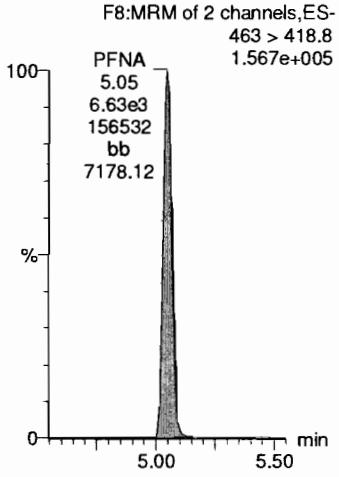

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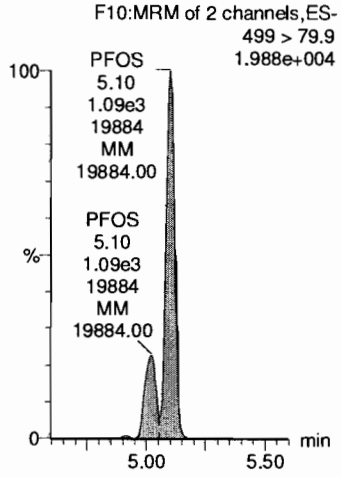

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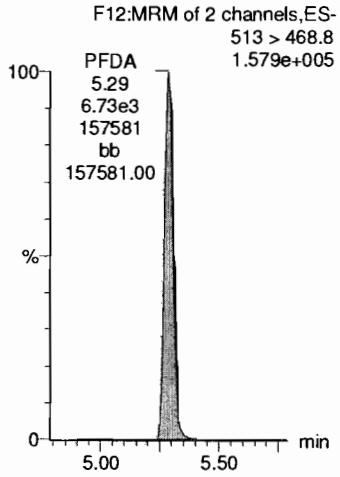
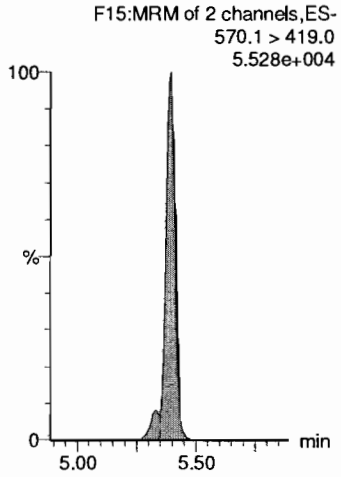


N-MeFOSAA



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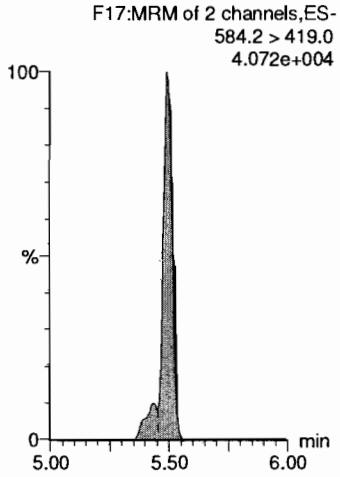

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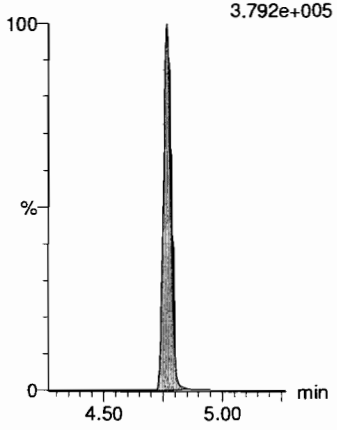

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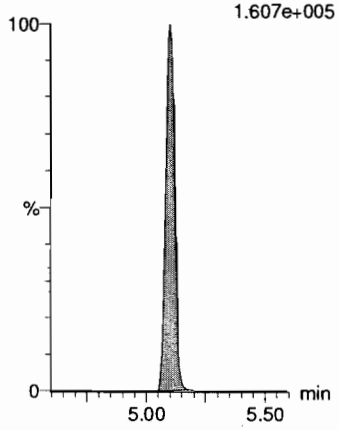

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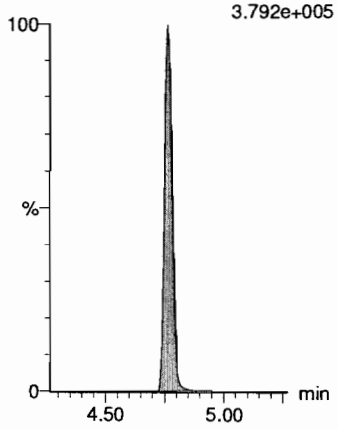

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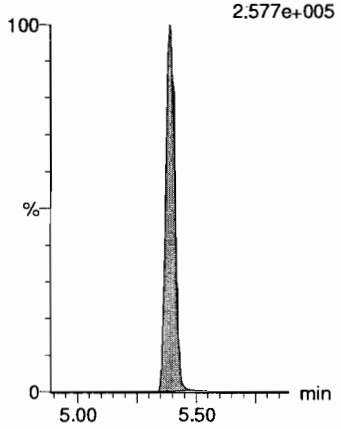

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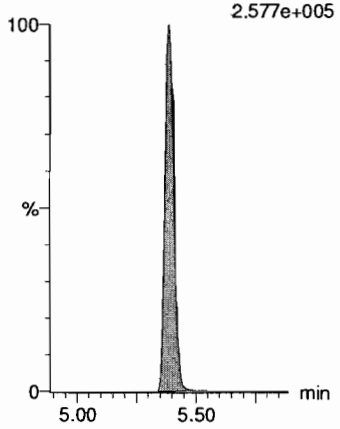

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Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_6, Date: 25-Jan-2019, Time: 18:21:43, ID: ST190125M2-5 537 CS0 19A1705, Description: 537 CS0 19A1705

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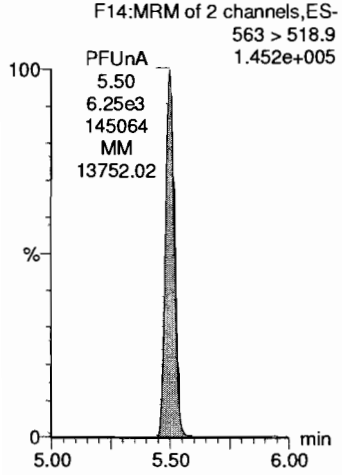
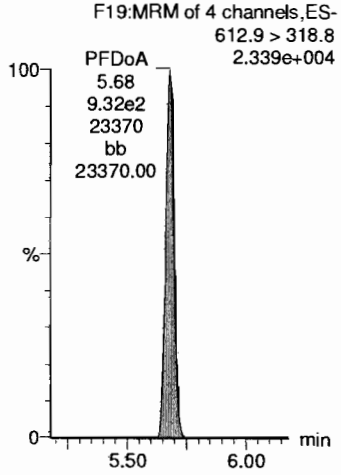


PFDoA



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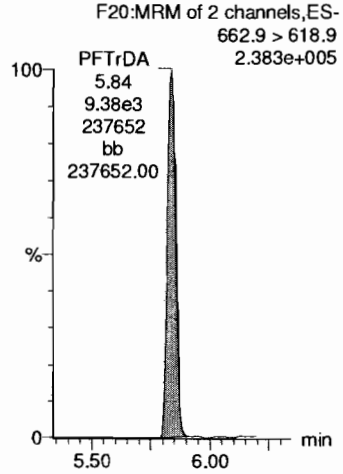

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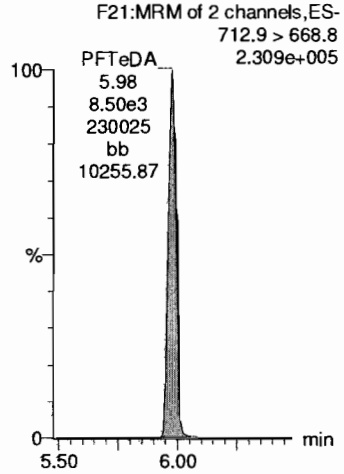

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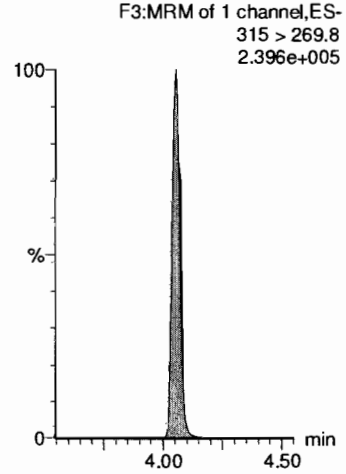

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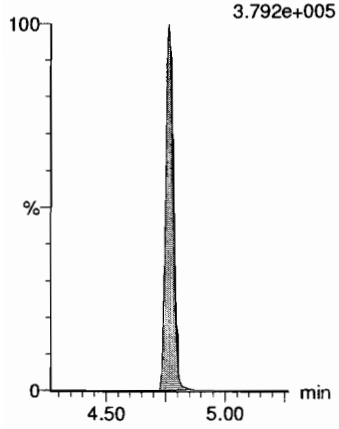

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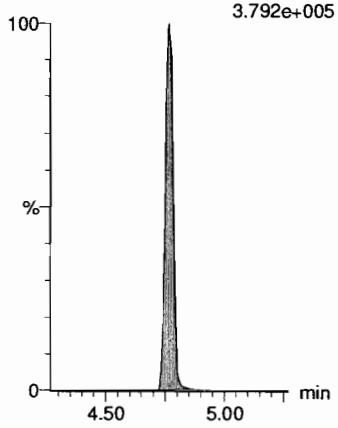

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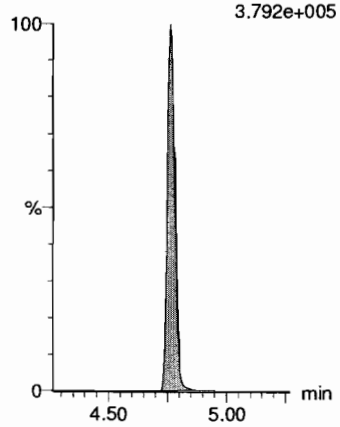

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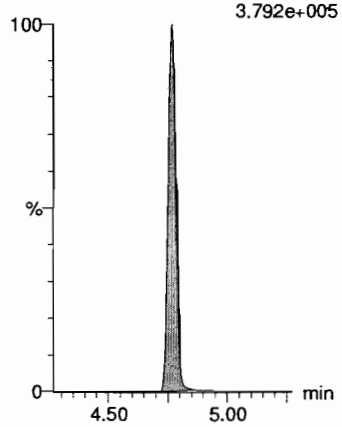

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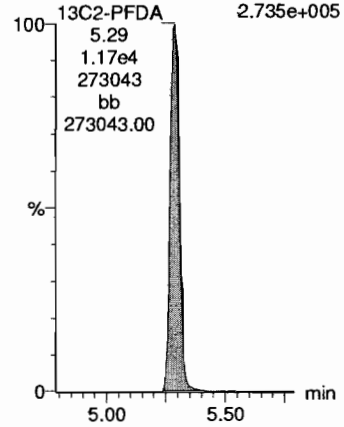
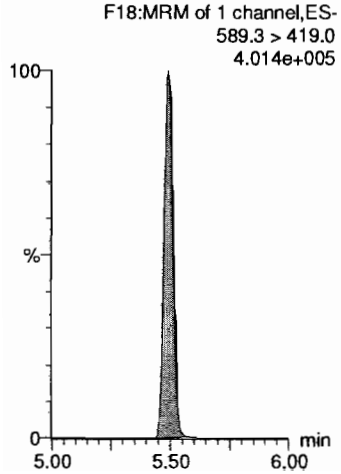


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_6, Date: 25-Jan-2019, Time: 18:21:43, ID: ST190125M2-5 537 CS0 19A1705, Description: 537 CS0 19A1705

d5-N-EtFOSAA



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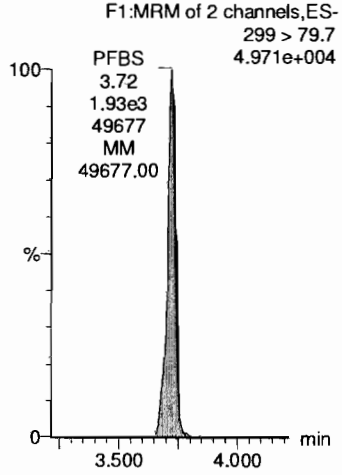
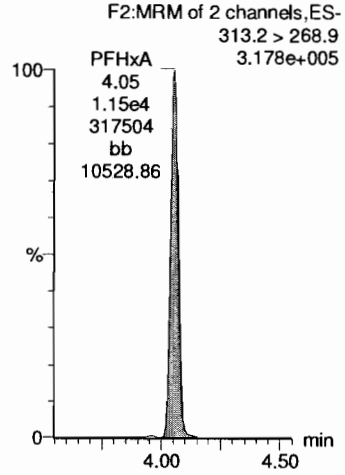
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_7, Date: 25-Jan-2019, Time: 18:33:26, ID: ST190125M2-6 537 CS1 19A1706, Description: 537 CS1 19A1706

PFBS



PFHxA



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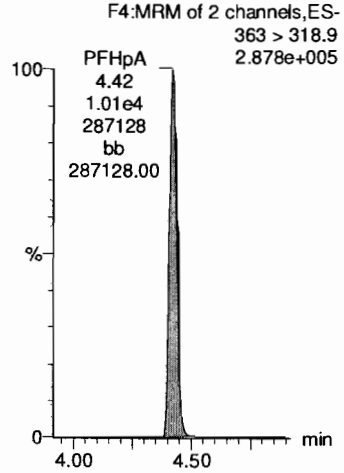

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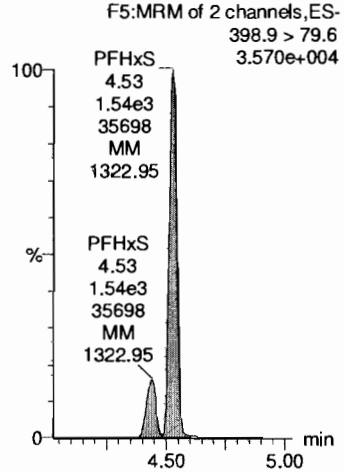

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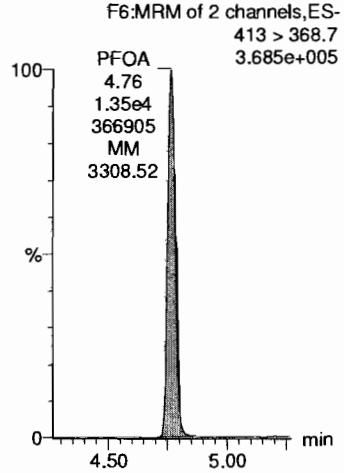
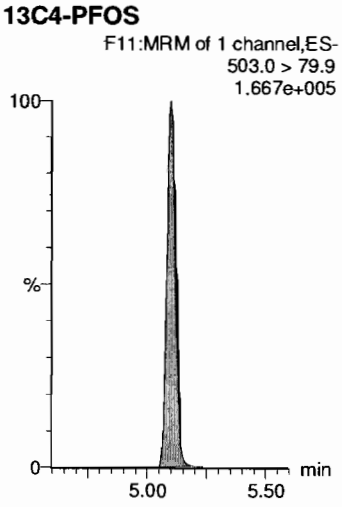
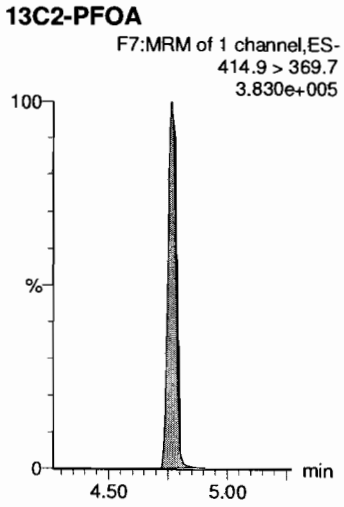


13C4-PFOS



13C2-PFOA



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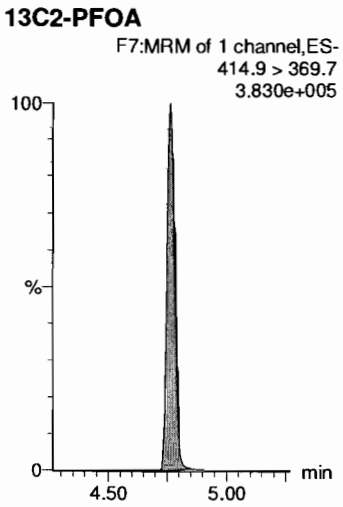

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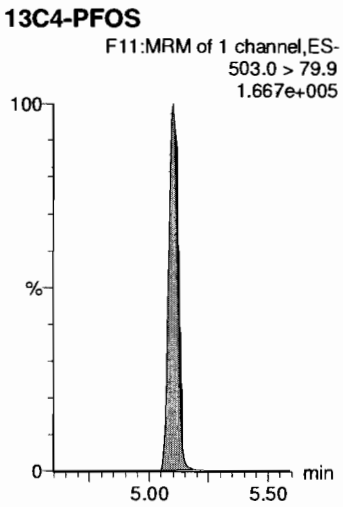

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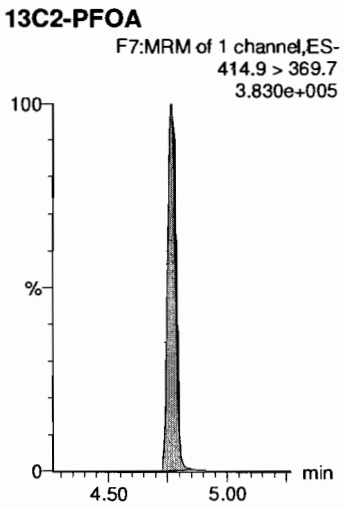

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Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
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Name: 190125M2_7, Date: 25-Jan-2019, Time: 18:33:26, ID: ST190125M2-6 537 CS1 19A1706, Description: 537 CS1 19A1706

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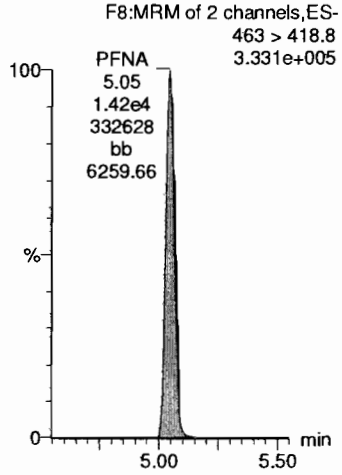

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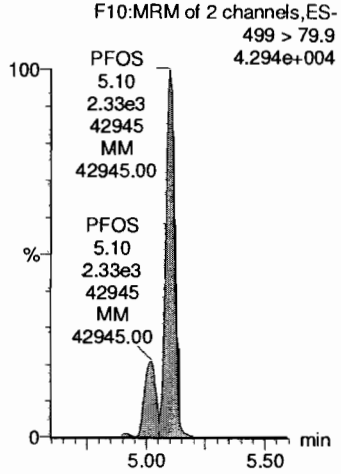

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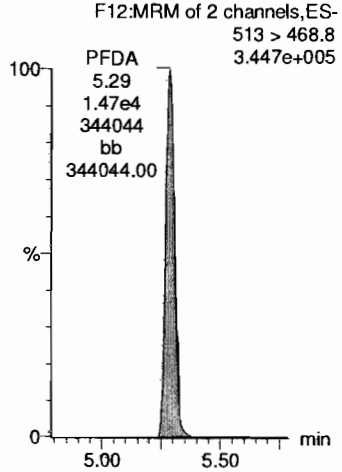
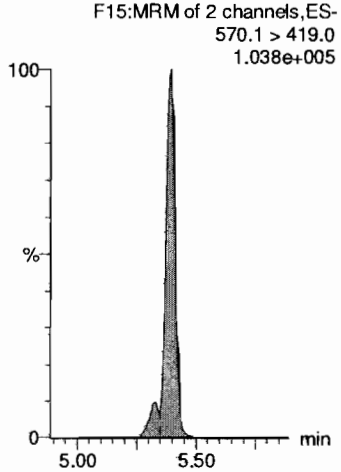


N-MeFOSAA



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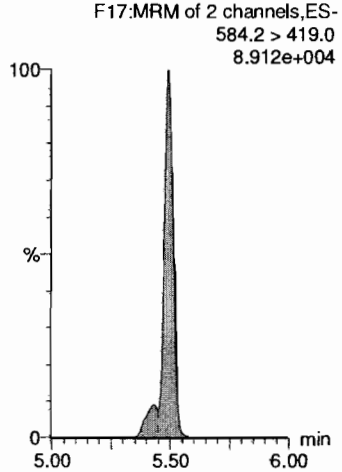
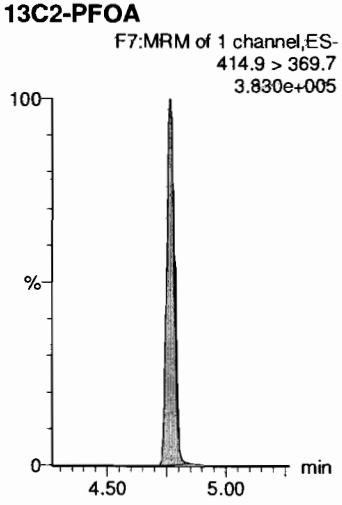


13C2-PFOA



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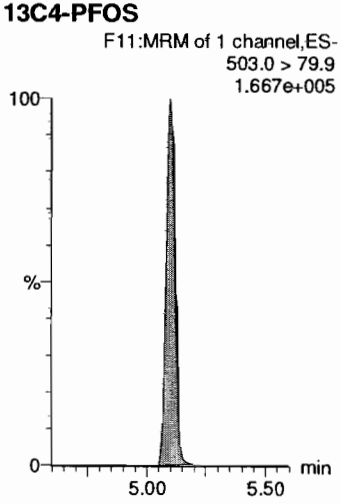

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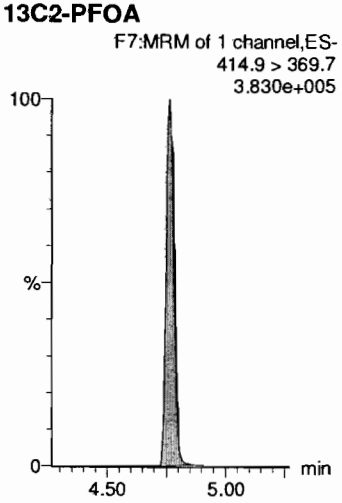
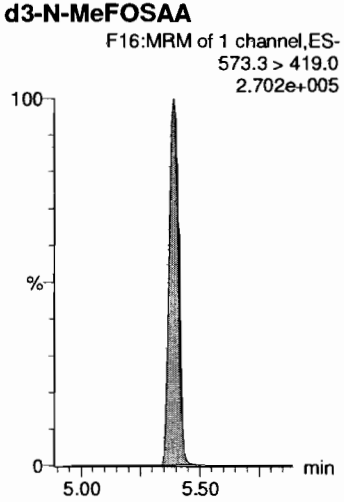


d3-N-MeFOSAA



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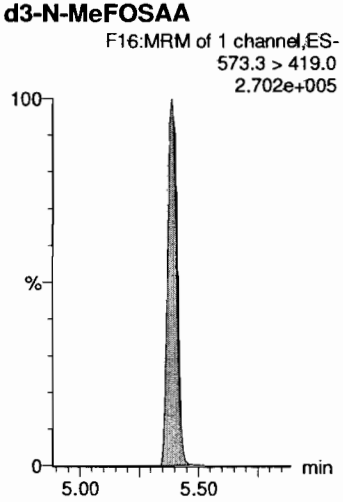

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_7, Date: 25-Jan-2019, Time: 18:33:26, ID: ST190125M2-6 537 CS1 19A1706, Description: 537 CS1 19A1706

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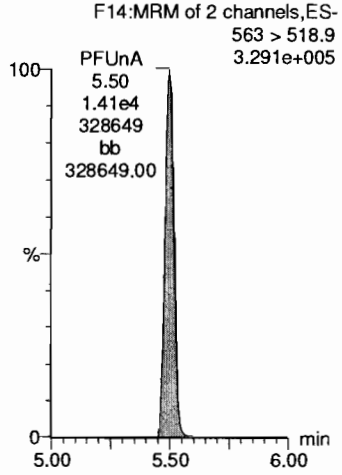
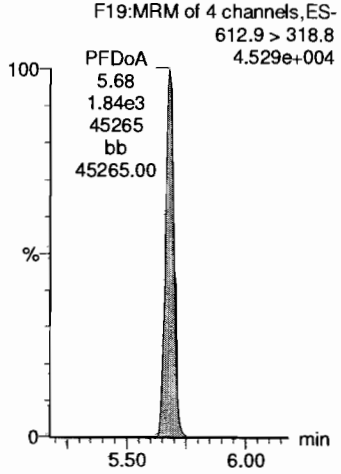


PFDoA



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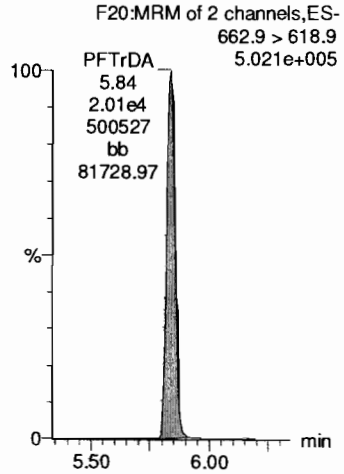
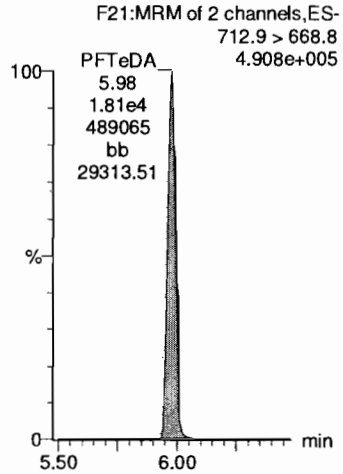


PFTeDA



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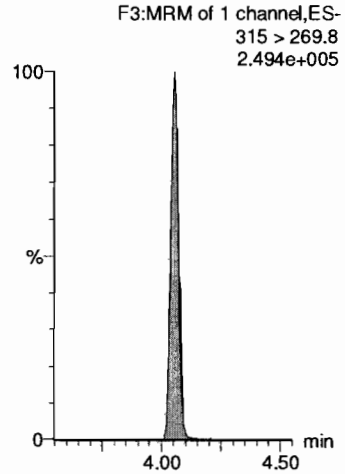
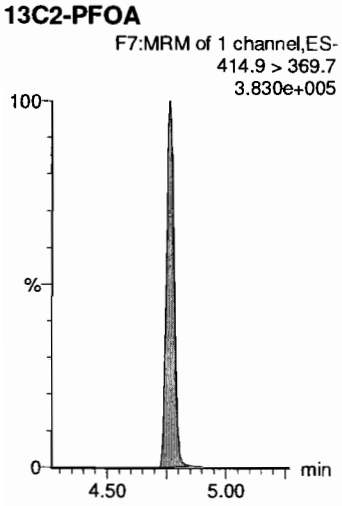


13C2-PFOA



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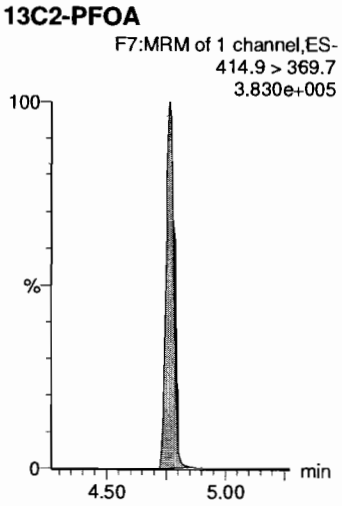

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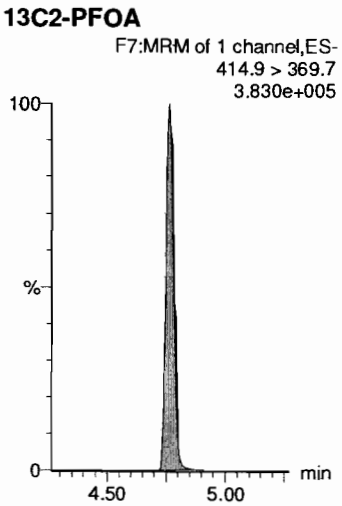
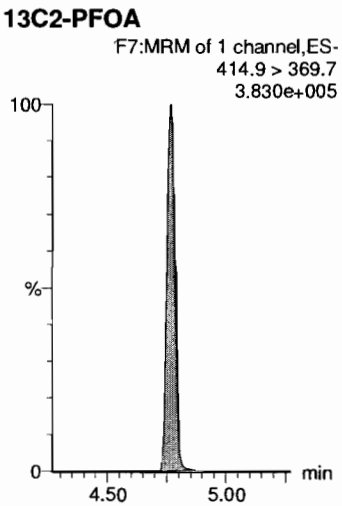
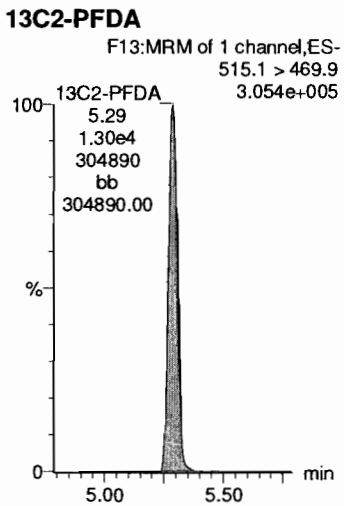


13C2-PFOA



13C2-PFDA

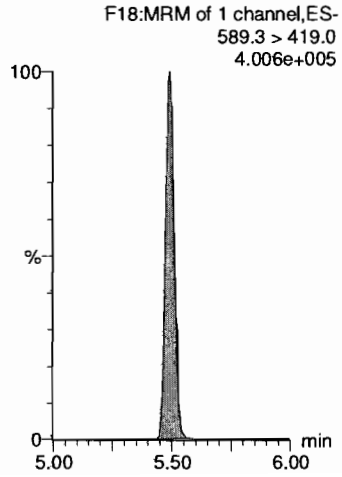


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_7, Date: 25-Jan-2019, Time: 18:33:26, ID: ST190125M2-6 537 CS1 19A1706, Description: 537 CS1 19A1706

d5-N-EtFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_8, Date: 25-Jan-2019, Time: 18:45:17, ID: ST190125M2-7 537 CS2 19A1707, Description: 537 CS2 19A1707

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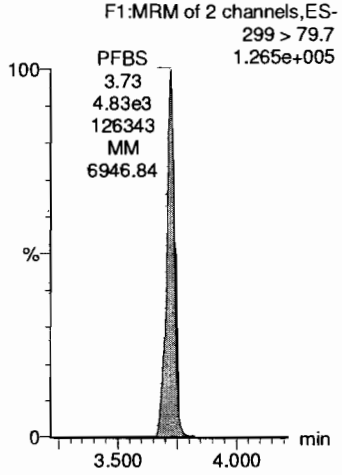
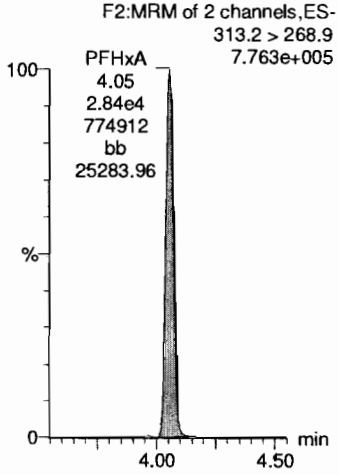
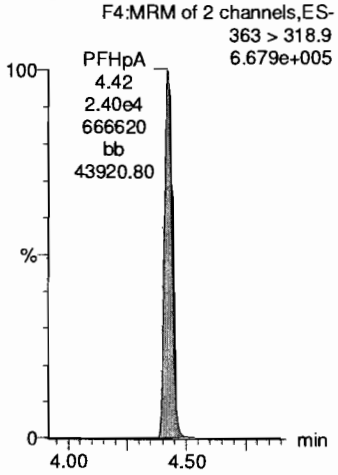


PFHxA



PFHpA



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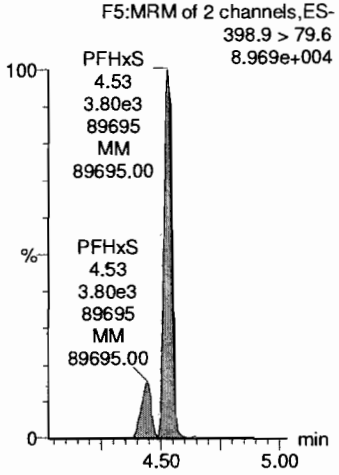
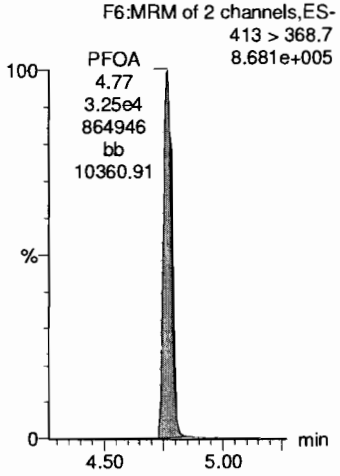
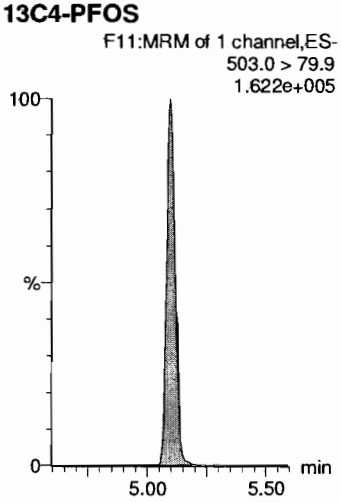


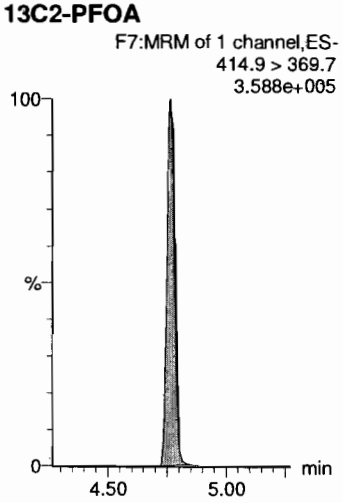
PFOA



13C4-PFOS



13C2-PFOA



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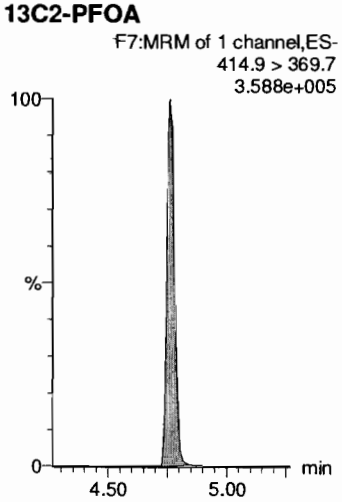

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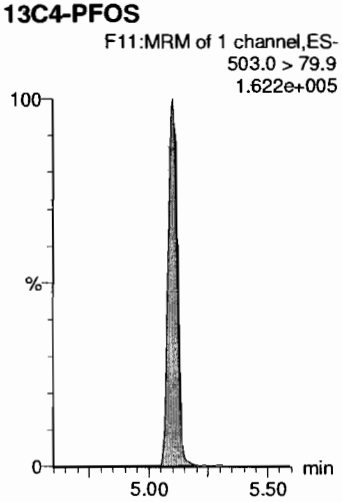

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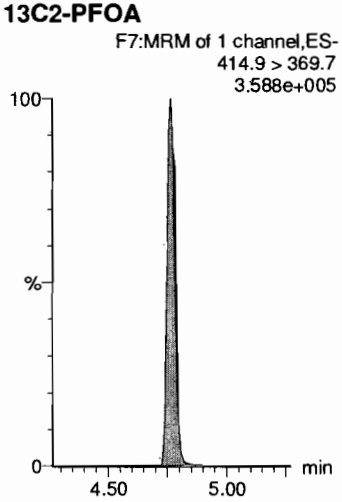

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_8, Date: 25-Jan-2019, Time: 18:45:17, ID: ST190125M2-7 537 CS2 19A1707, Description: 537 CS2 19A1707

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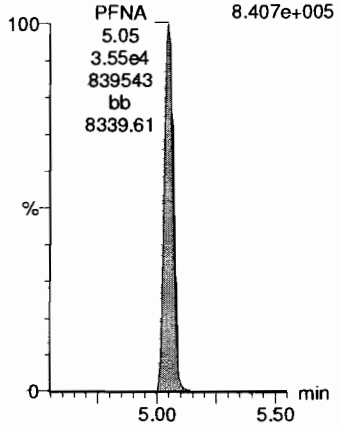
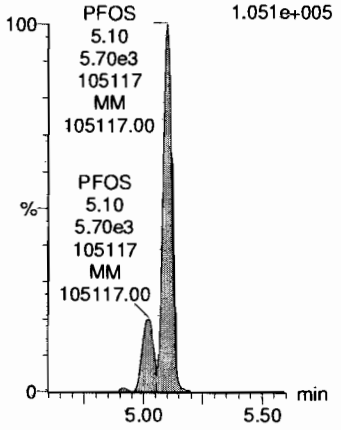
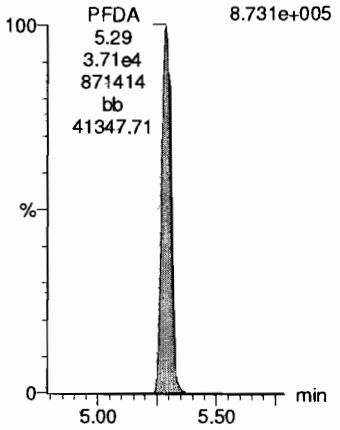


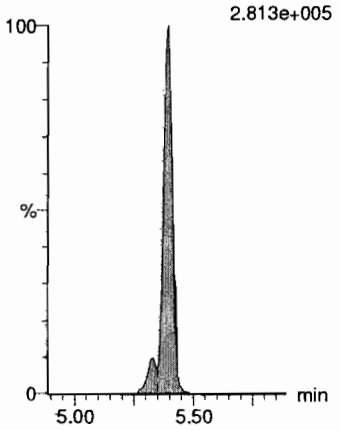
PFOS



PFDA



N-MeFOSAA



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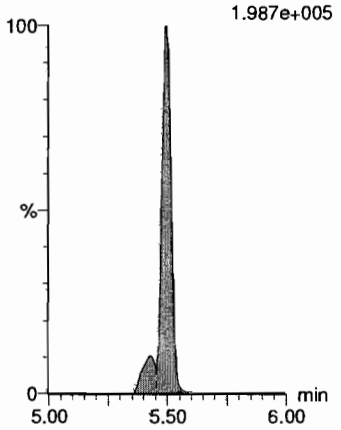

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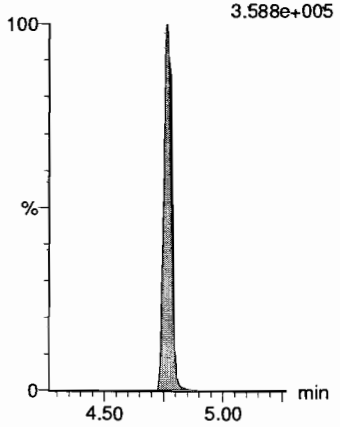

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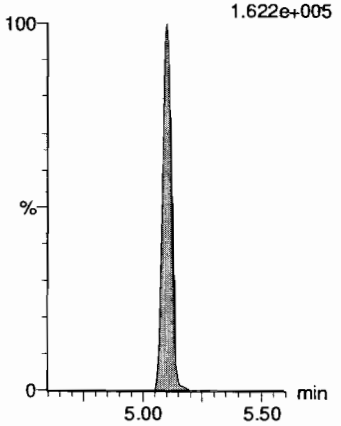

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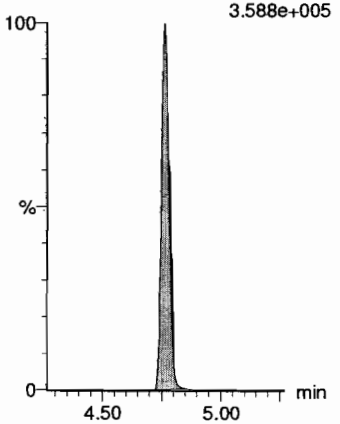
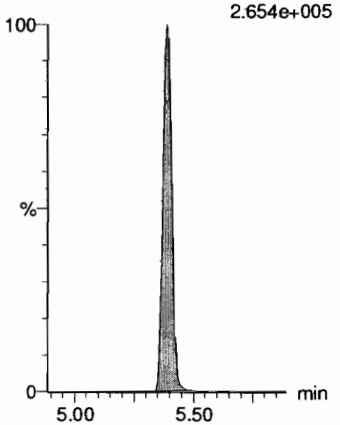


d3-N-MeFOSAA



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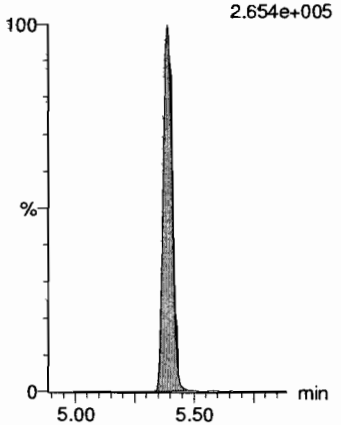

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_8, Date: 25-Jan-2019, Time: 18:45:17, ID: ST190125M2-7 537 CS2 19A1707, Description: 537 CS2 19A1707

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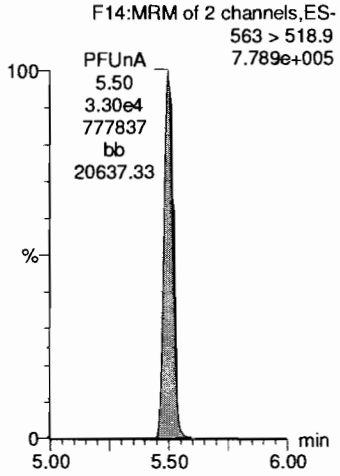
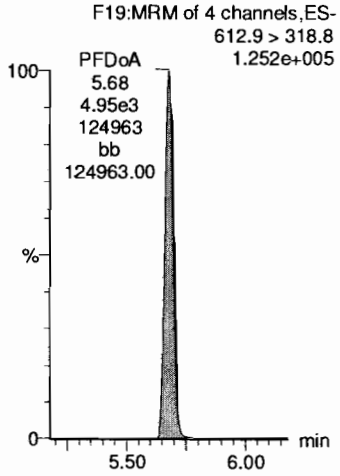


PFDoA



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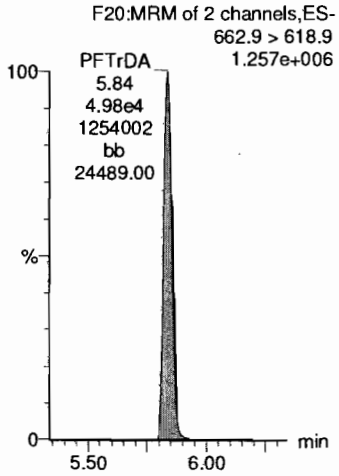

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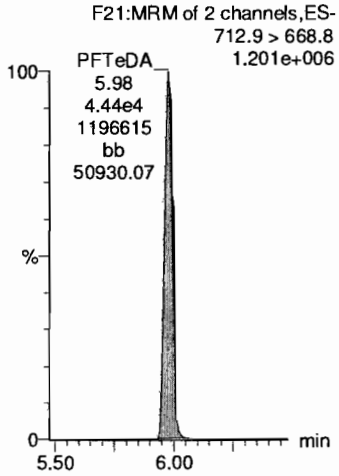

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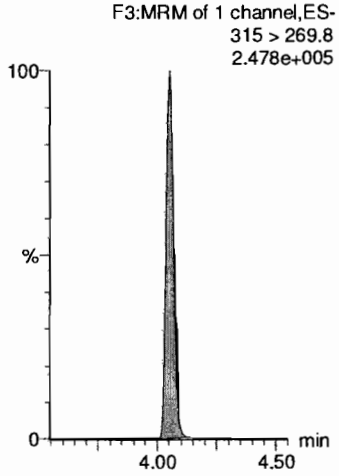
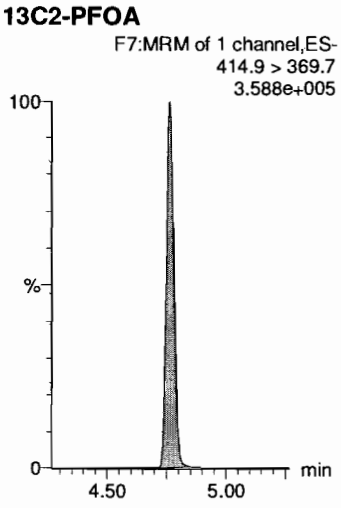


13C2-PFOA



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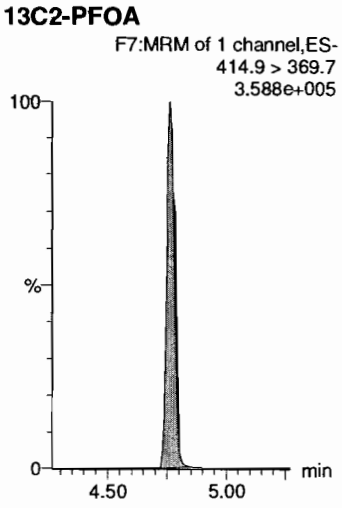
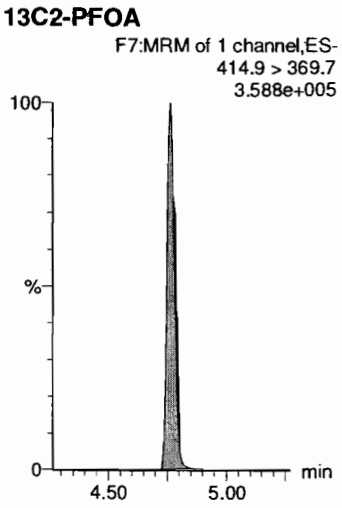
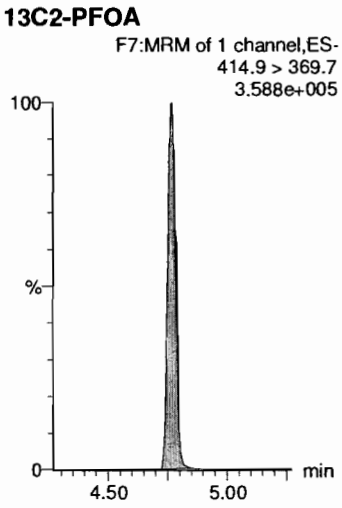


13C2-PFOA



13C2-PFOA



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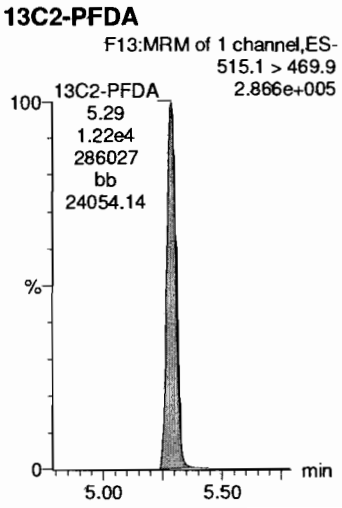
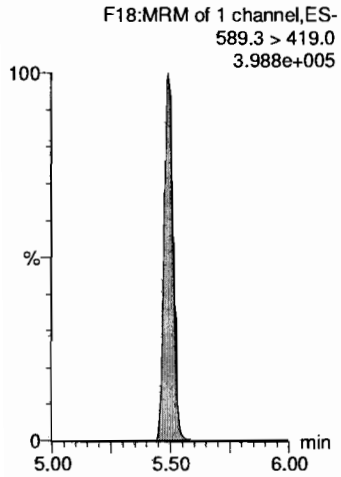


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_8, Date: 25-Jan-2019, Time: 18:45:17, ID: ST190125M2-7 537 CS2 19A1707, Description: 537 CS2 19A1707

d5-N-EtFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_9, Date: 25-Jan-2019, Time: 18:57:03, ID: ST190125M2-8 537 CS3 19A1708, Description: 537 CS3 19A1708

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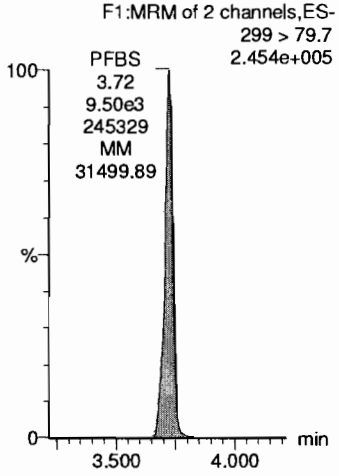
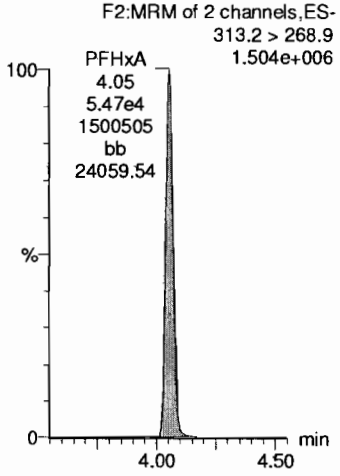
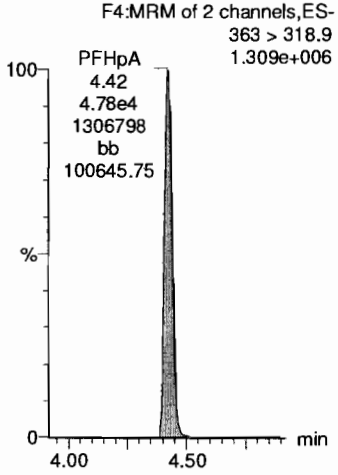


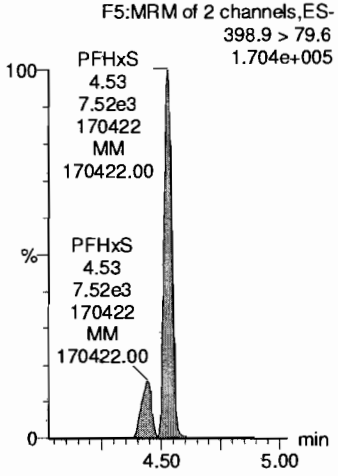
PFHxA



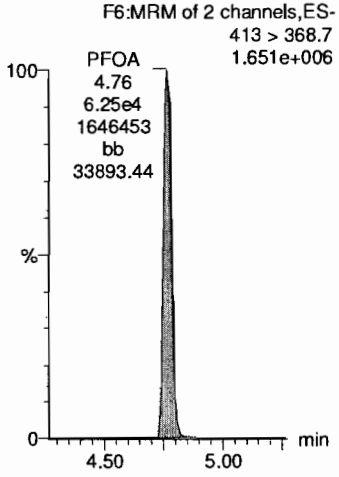
PFHpA



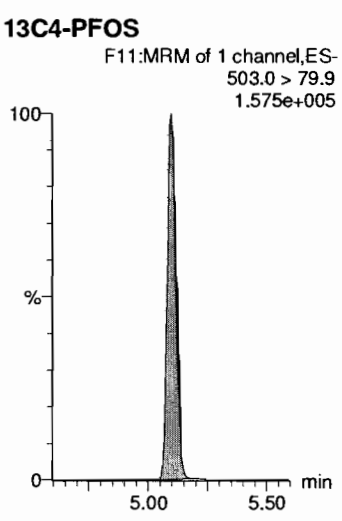
PFHxS



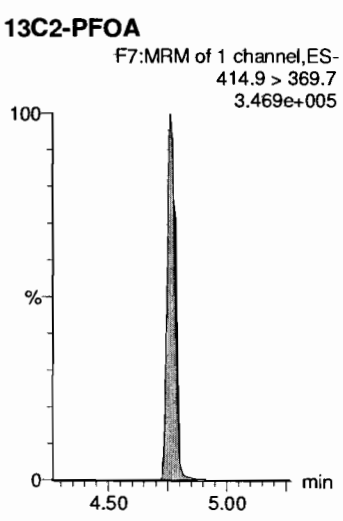
PFOA



13C4-PFOS



13C2-PFOA



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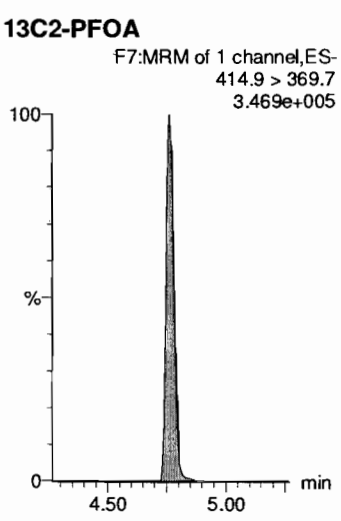

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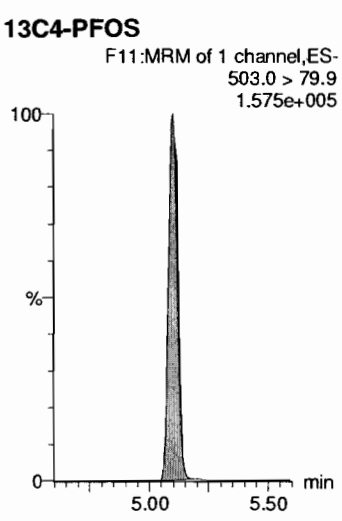

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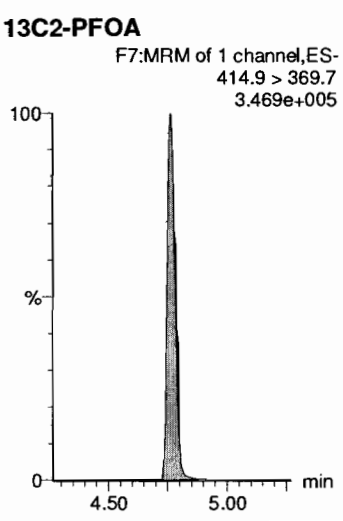

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_9, Date: 25-Jan-2019, Time: 18:57:03, ID: ST190125M2-8 537 CS3 19A1708, Description: 537 CS3 19A1708

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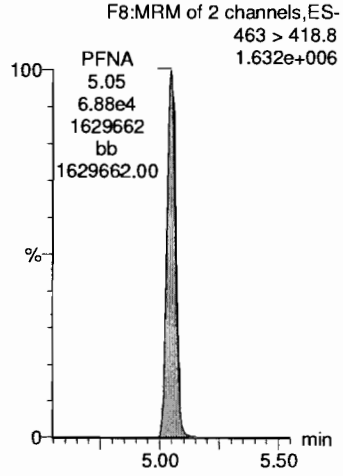
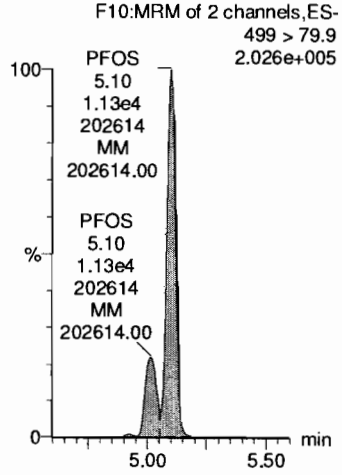


PFOS



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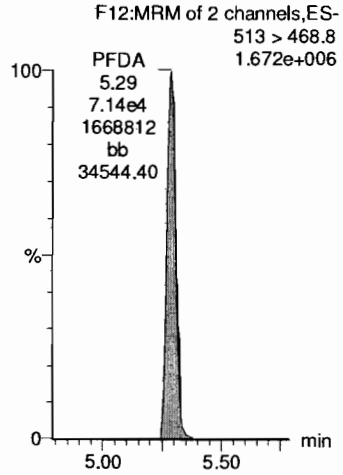
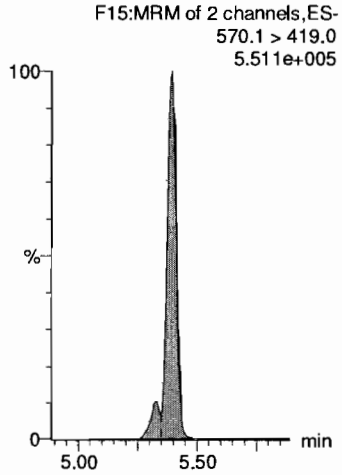


N-MeFOSAA



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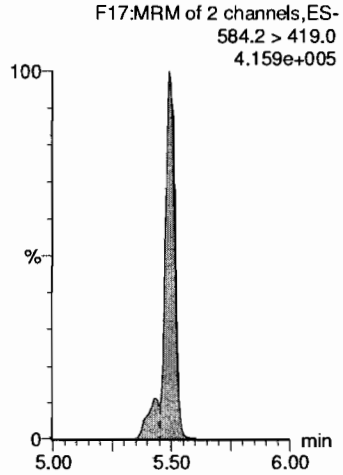
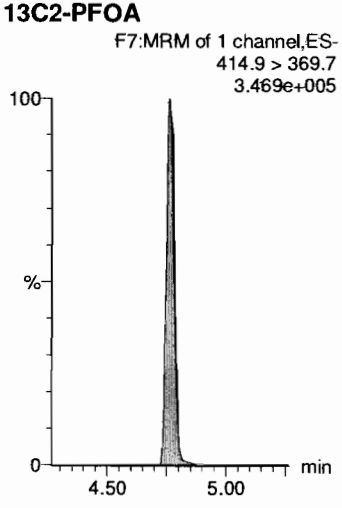


13C2-PFOA



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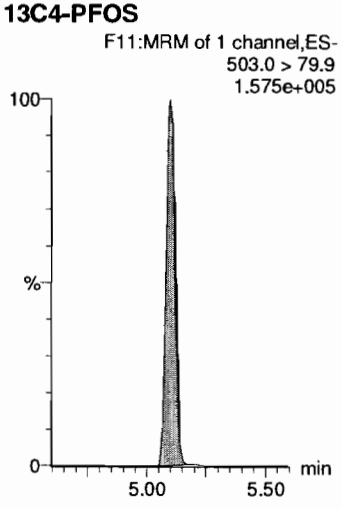

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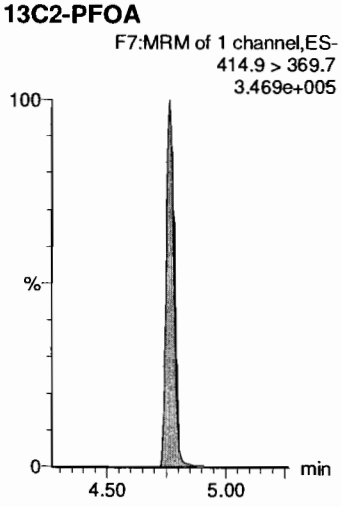

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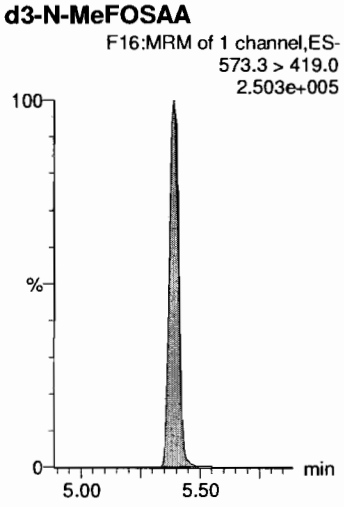

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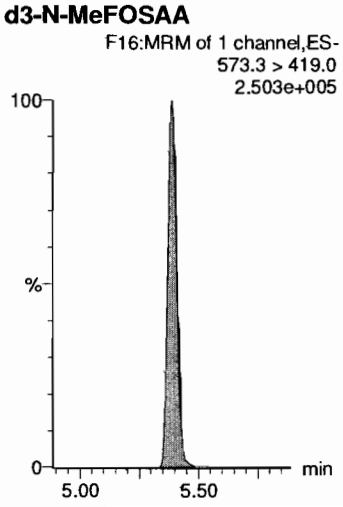

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_9, Date: 25-Jan-2019, Time: 18:57:03, ID: ST190125M2-8 537 CS3 19A1708, Description: 537 CS3 19A1708

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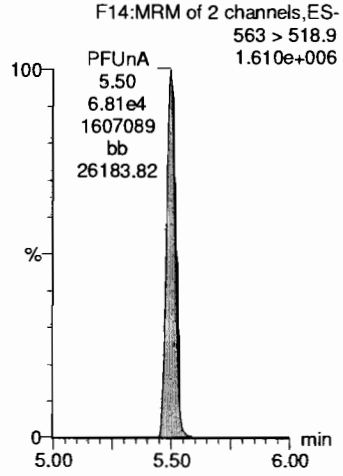

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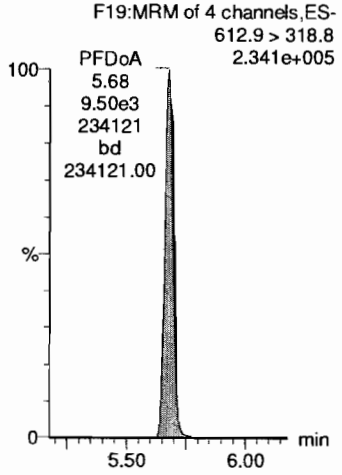

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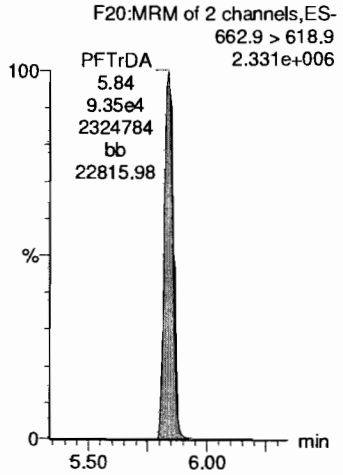

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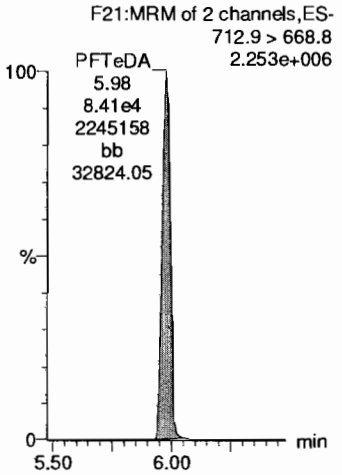

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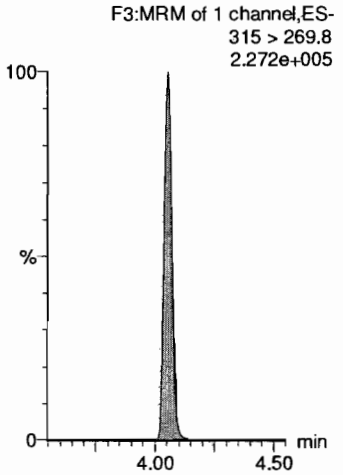

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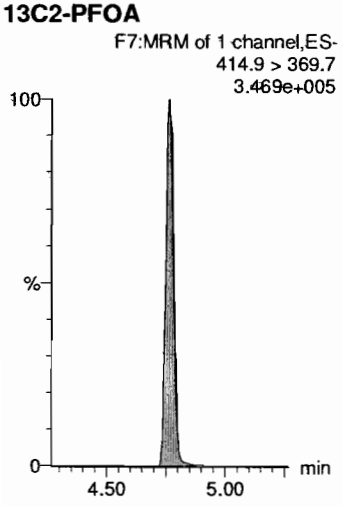

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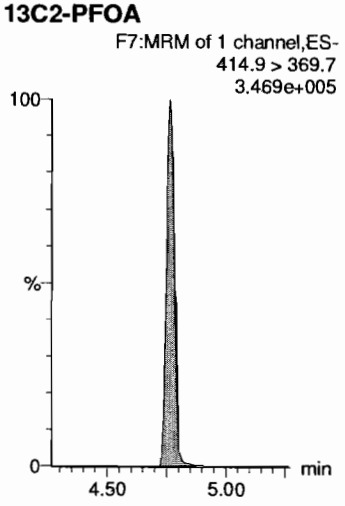

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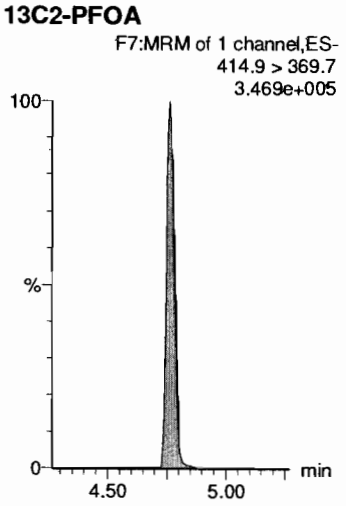

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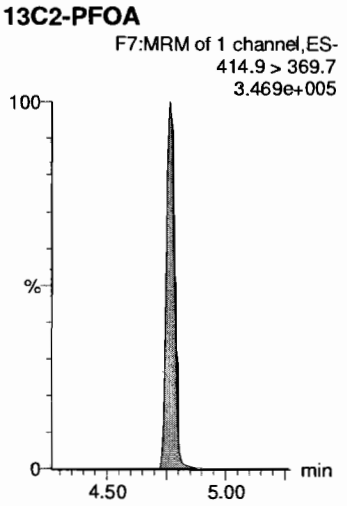

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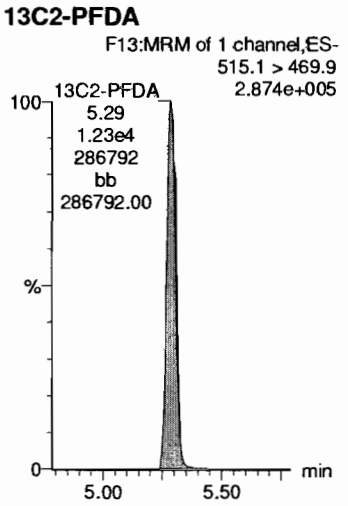

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_9, Date: 25-Jan-2019, Time: 18:57:03, ID: ST190125M2-8 537 CS3 19A1708, Description: 537 CS3 19A1708

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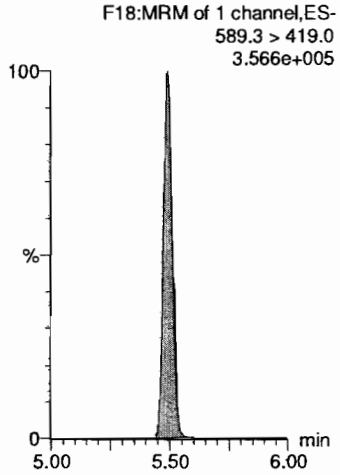

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Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
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Name: 190125M2_10, Date: 25-Jan-2019, Time: 19:08:54, ID: ST190125M2-9 537 CS4 19A1709, Description: 537 CS4 19A1709

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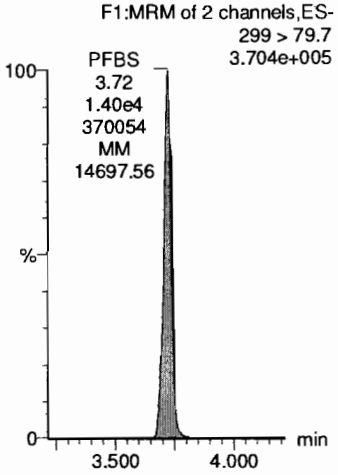

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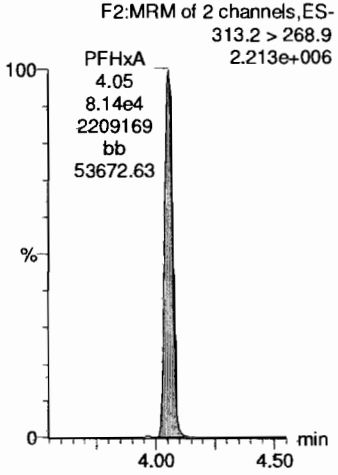

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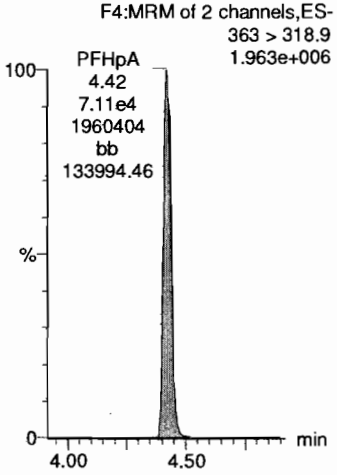

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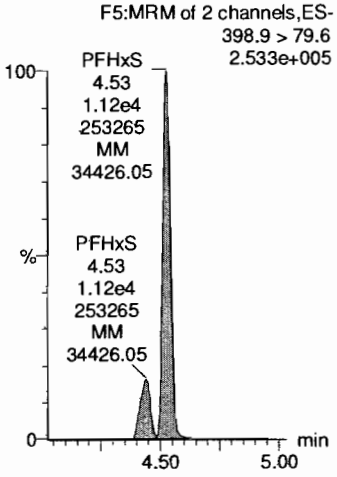

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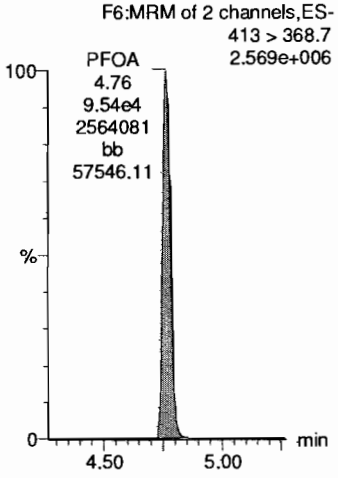

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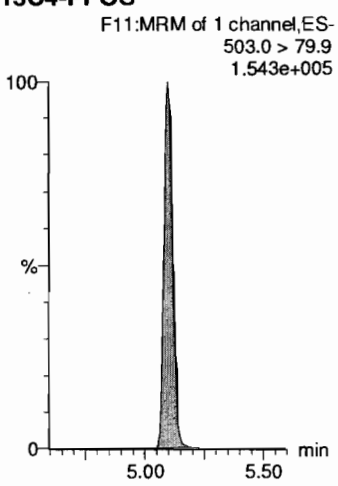

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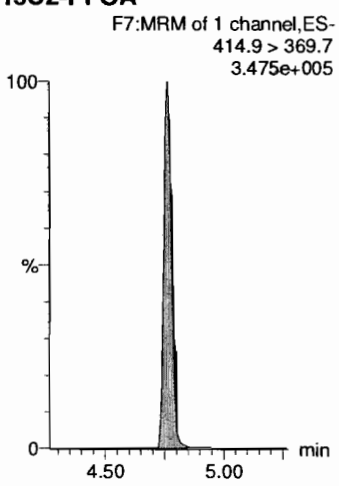

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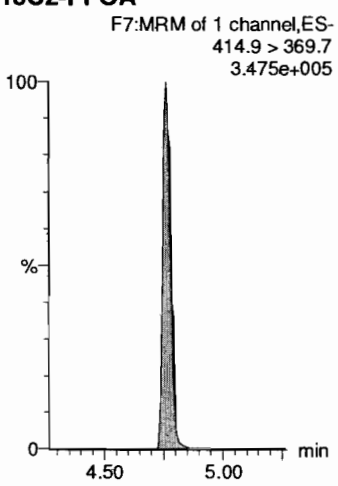

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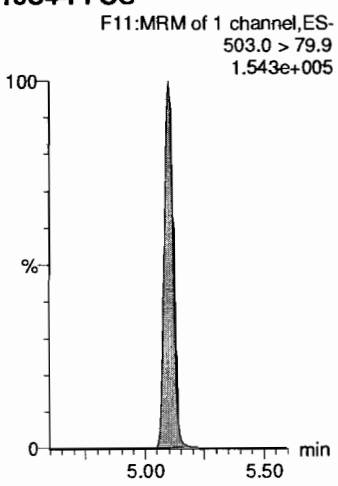

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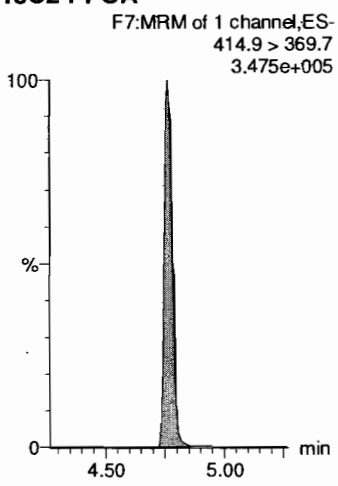

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_10, Date: 25-Jan-2019, Time: 19:08:54, ID: ST190125M2-9 537 CS4 19A1709, Description: 537 CS4 19A1709

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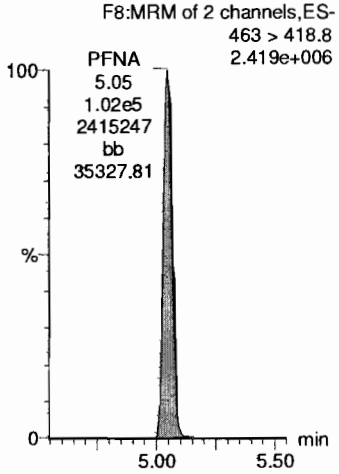

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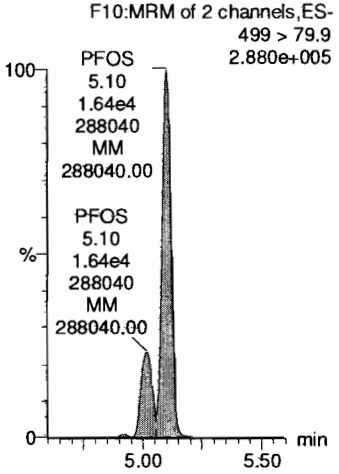
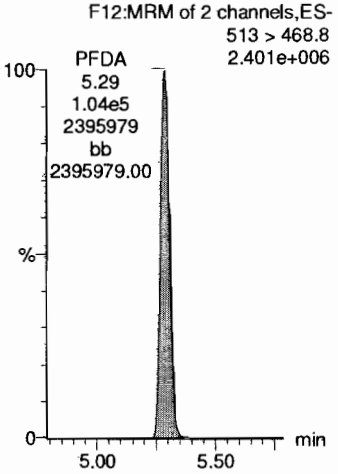
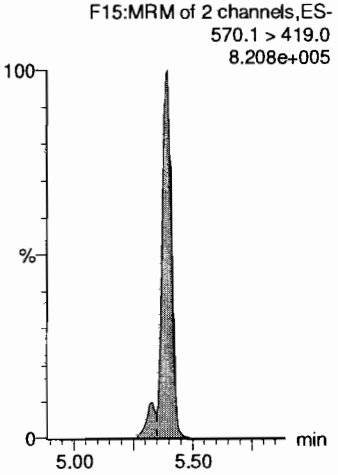


PFDA



N-MeFOSAA



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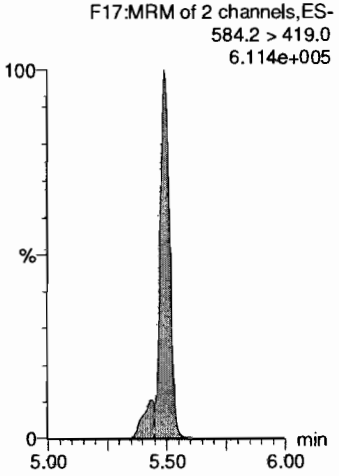

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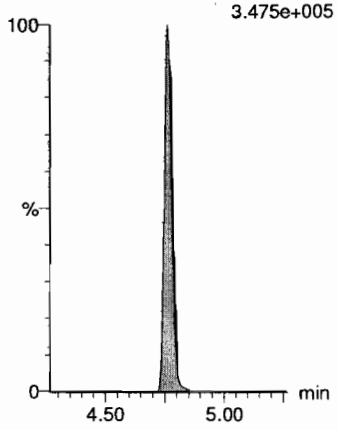

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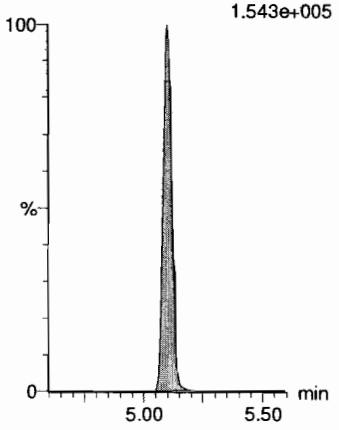

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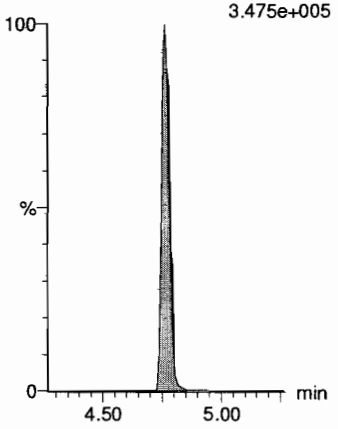

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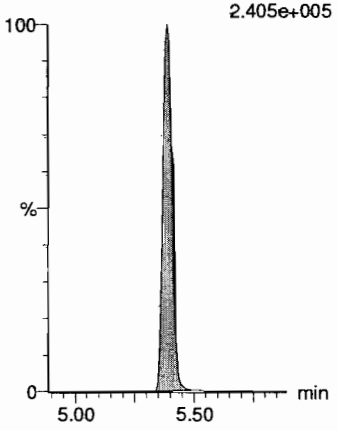

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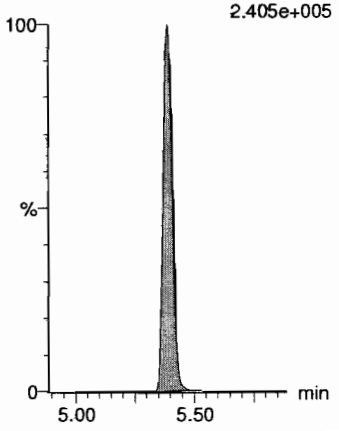

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
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Name: 190125M2_10, Date: 25-Jan-2019, Time: 19:08:54, ID: ST190125M2-9 537 CS4 19A1709, Description: 537 CS4 19A1709

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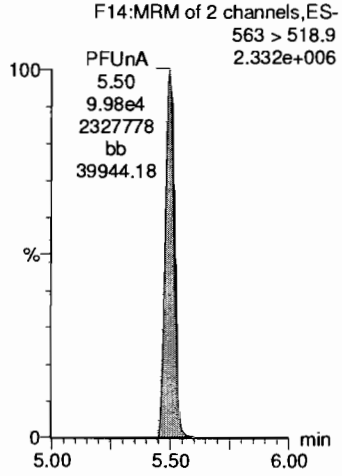

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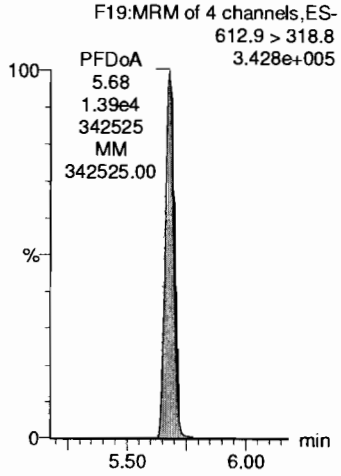

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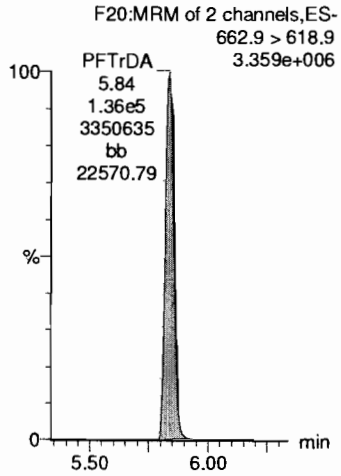

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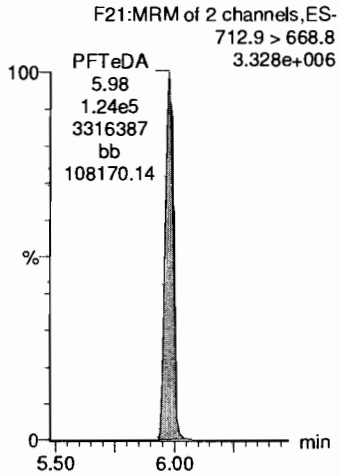

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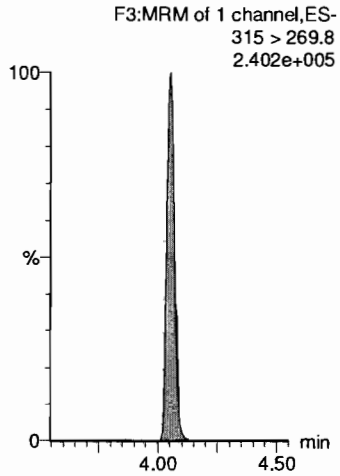

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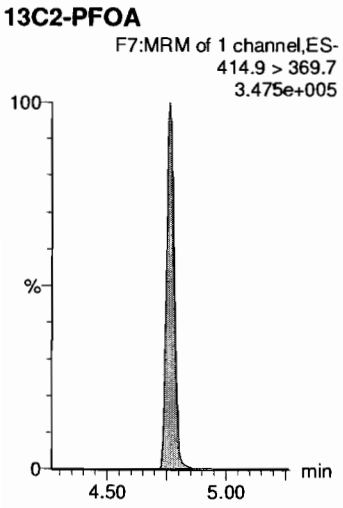

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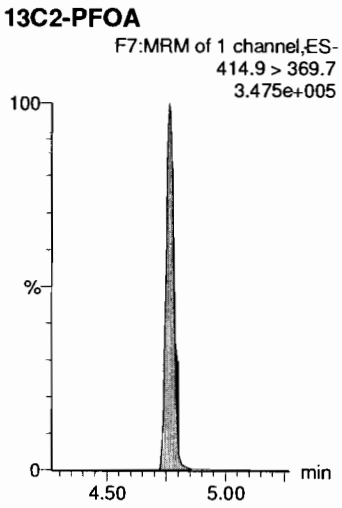

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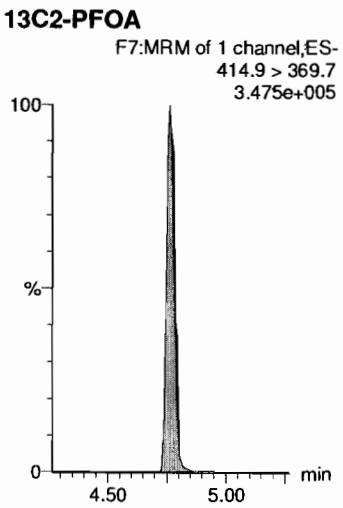

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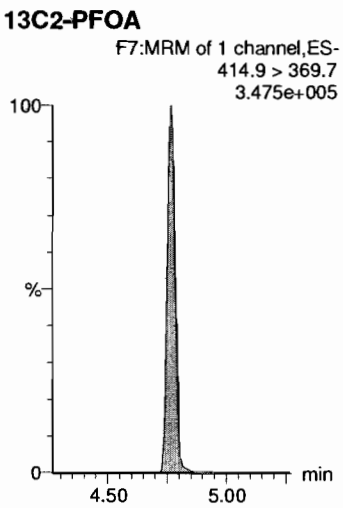
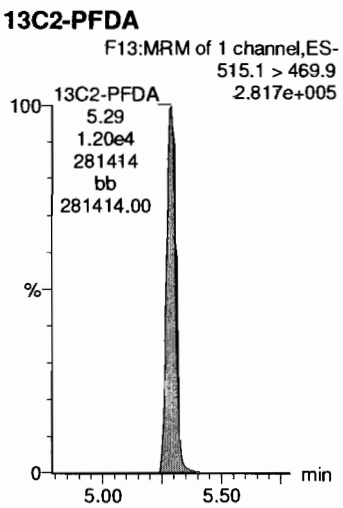


13C2-PFDA

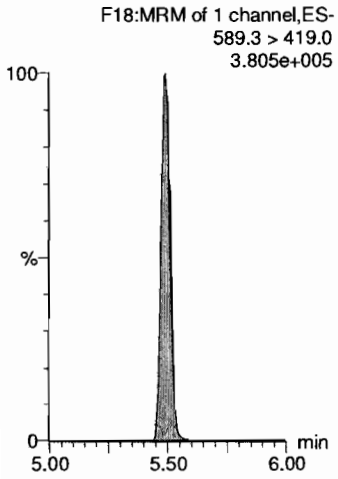


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_10, Date: 25-Jan-2019, Time: 19:08:54, ID: ST190125M2-9 537 CS4 19A1709, Description: 537 CS4 19A1709

d5-N-EtFOSAA

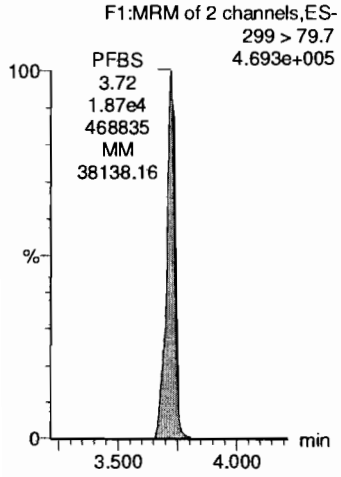


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

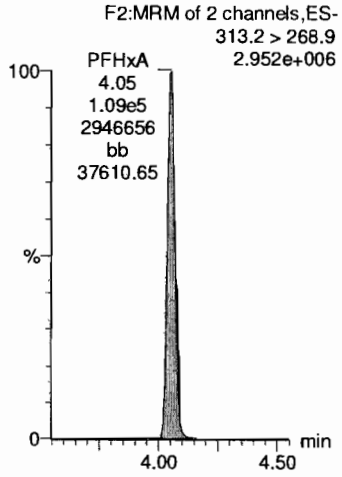
Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_11, Date: 25-Jan-2019, Time: 19:20:39, ID: ST190125M2-10 537 CS5 19A1710, Description: 537 CS5 19A1710

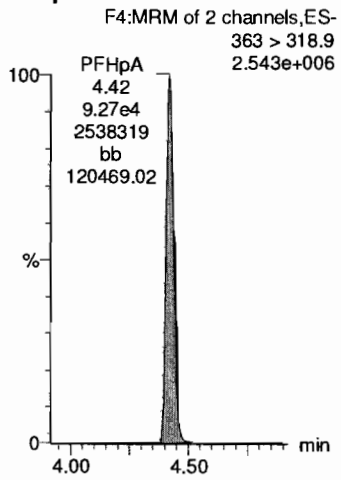
PFBS



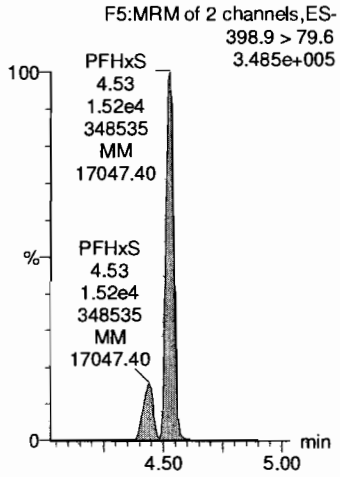
PFHxA



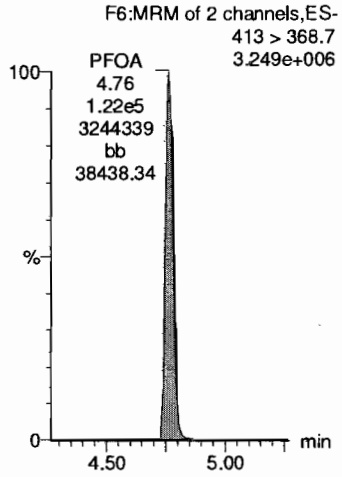
PFHpA



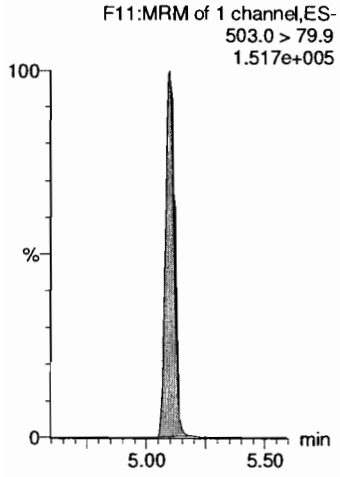
PFHxS



PFOA



13C4-PFOS



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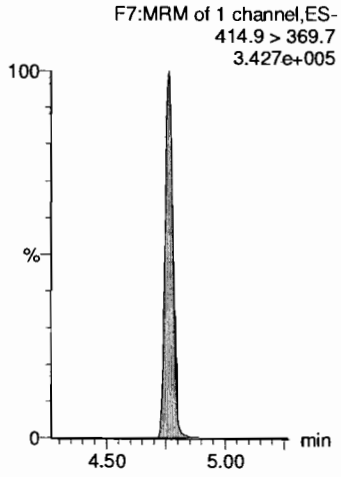

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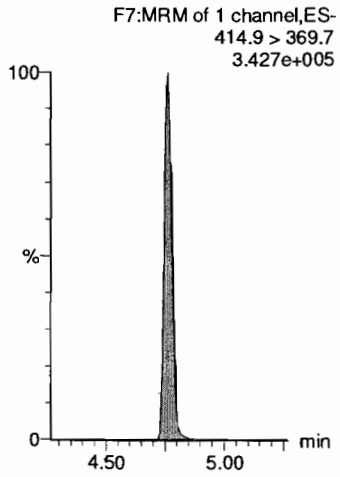

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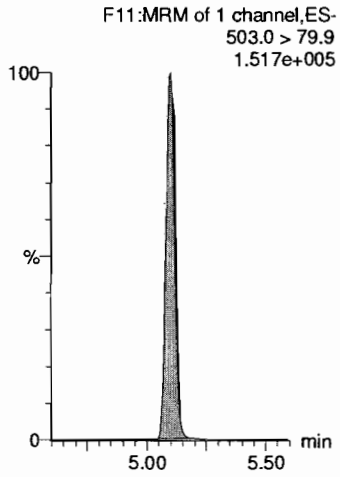

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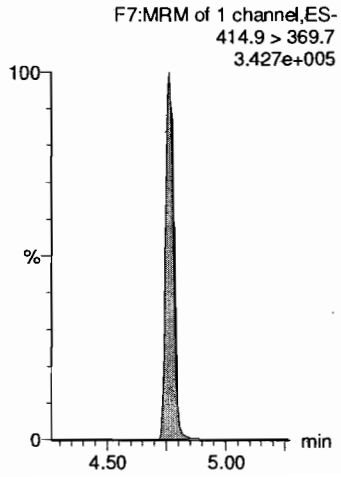

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_11, Date: 25-Jan-2019, Time: 19:20:39, ID: ST190125M2-10 537 CS5 19A1710, Description: 537 CS5 19A1710

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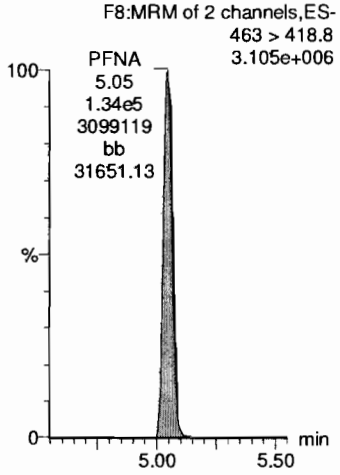
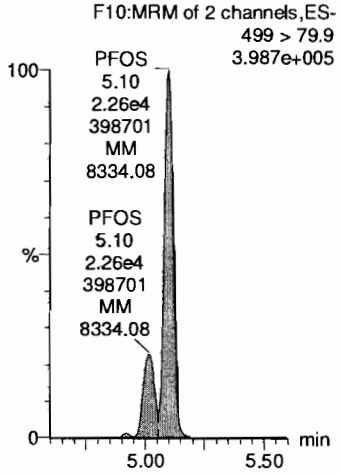
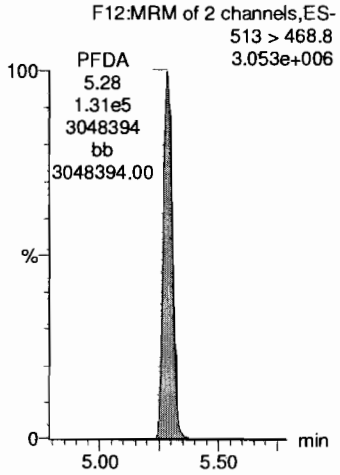


PFOS



PFDA



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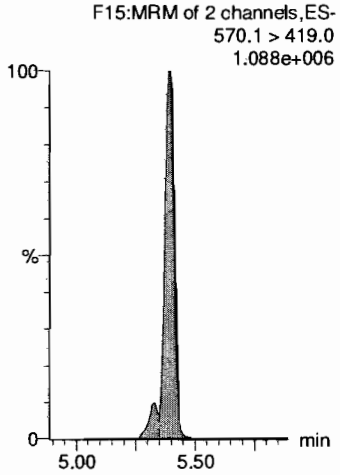
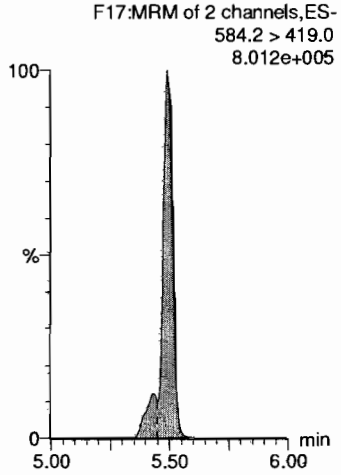
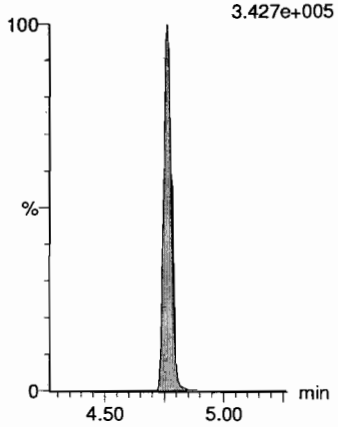


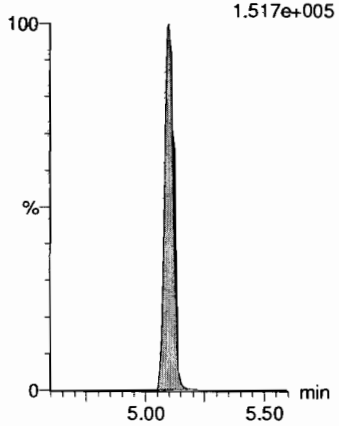
N-EtFOSAA



13C2-PFOA



13C4-PFOS



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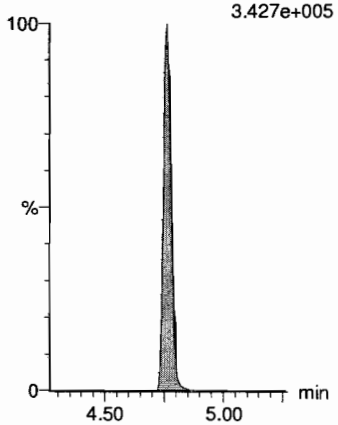
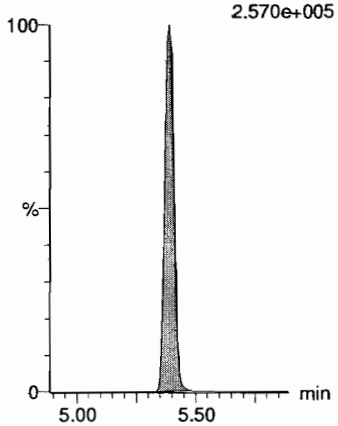


d3-N-MeFOSAA



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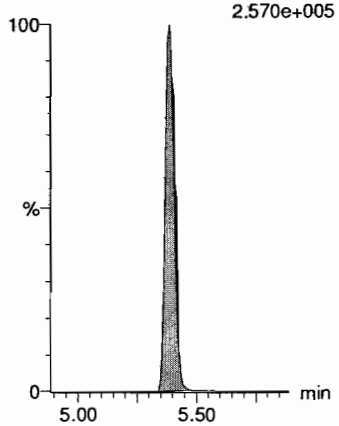
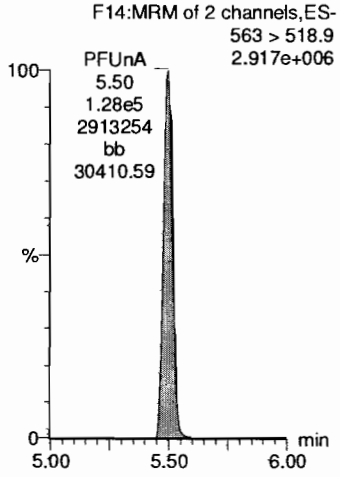


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_11, Date: 25-Jan-2019, Time: 19:20:39, ID: ST190125M2-10 537 CS5 19A1710, Description: 537 CS5 19A1710

PFUnA



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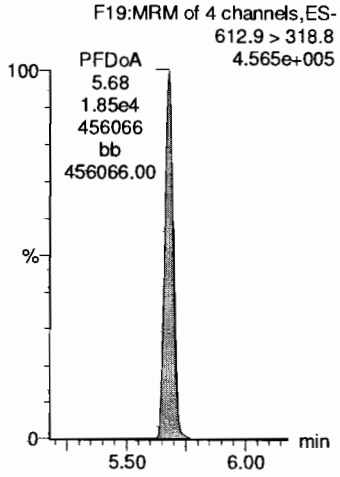

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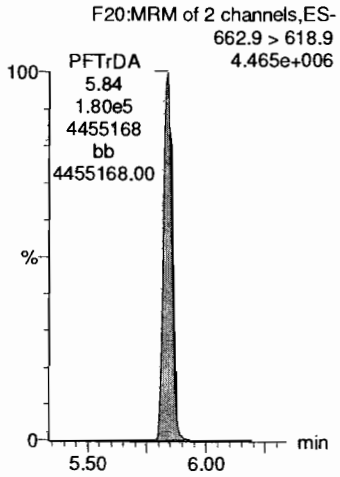
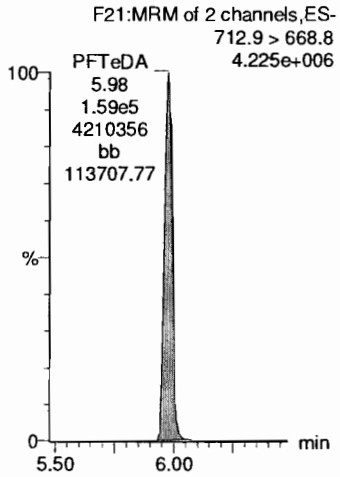


PFTeDA



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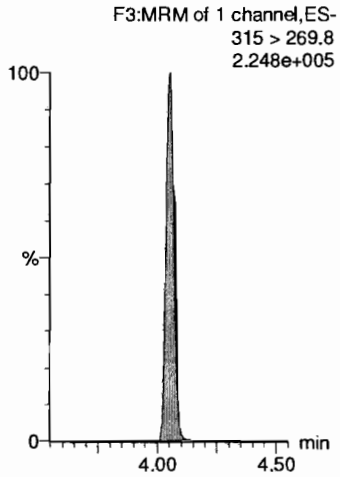

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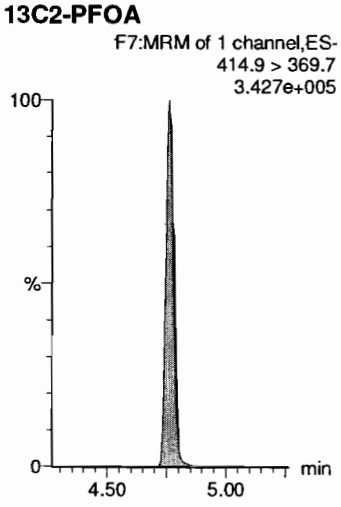

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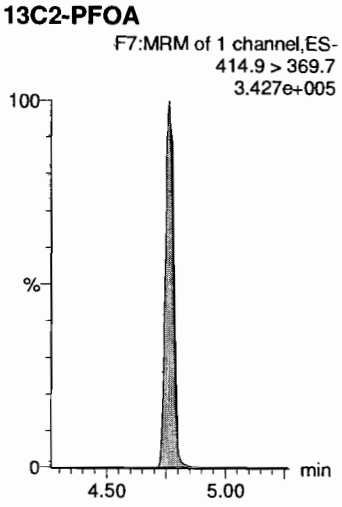

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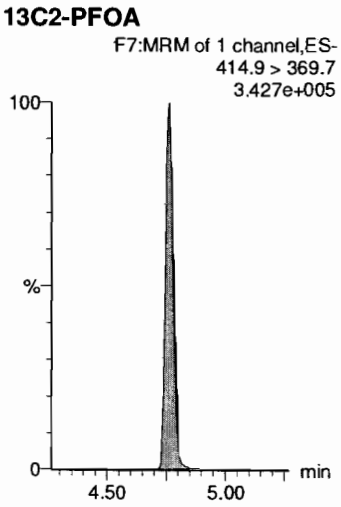

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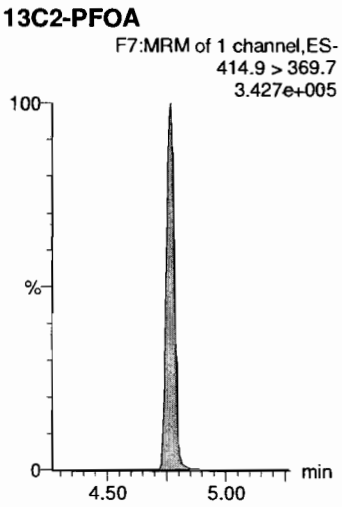

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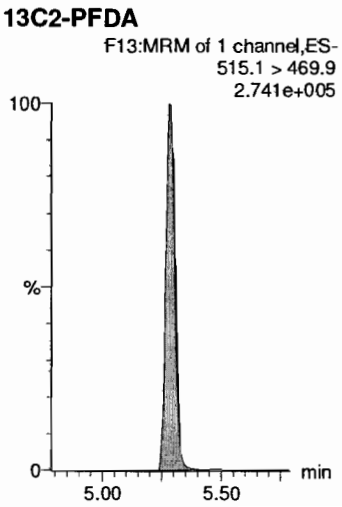
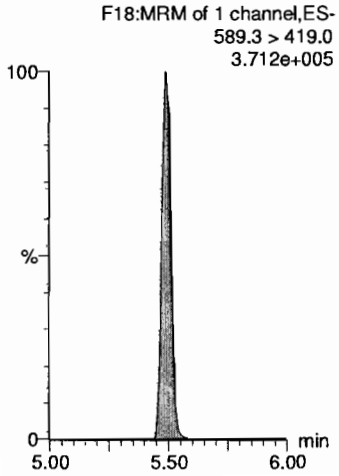


Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-CRV.qld

Last Altered: Saturday, January 26, 2019 15:19:04 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:19:43 Pacific Standard Time

Name: 190125M2_11, Date: 25-Jan-2019, Time: 19:20:39, ID: ST190125M2-10 537 CS5 19A1710, Description: 537 CS5 19A1710

d5-N-EtFOSAA



Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-ICV.qld

Last Altered: Saturday, January 26, 2019 15:43:17 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:43:34 Pacific Standard Time

JM 1/27/19

Name: 190125M2_13, Date: 25-Jan-2019, Time: 19:44:16, ID: ICV190125M2-1 537 ICV 19A1711, Description: 537 ICV 19A1711

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF Mean	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	1	PFBS	299 > 79.7	2130.199	6857.268	1.00		3.73	3.73	8.92	9.61	96.1
2	2	PFHxA	313.2 > 268.9	11460.937	13791.203	1.00		4.05	4.05	8.31	9.96	99.6
3	3	PFHpA	363 > 318.9	9615.201	13791.203	1.00		4.42	4.42	6.97	9.68	96.8
4	4	PFHxS	398.9 > 79.6	1604.354	6857.268	1.00		4.53	4.53	6.71	9.27	92.7
5	5	PFOA	413 > 368.7	13324.345	13791.203	1.00		4.76	4.76	9.66	10.1	101.0
6	19	13C4-PFOS	503.0 > 79.9	6857.268	6857.268	1.00	1.000	5.10	5.10	28.7	28.7	100.0
7	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
8	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
9	19	13C4-PFOS	503.0 > 79.9	6857.268	6857.268	1.00	1.000	5.10	5.10	28.7	28.7	100.0
10	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
11	-1											
12	6	PFNA	463 > 418.8	13493.583	13791.203	1.00		5.04	5.05	9.78	9.42	94.2
13	7	PFOS	499 >79.9	2305.231	6857.268	1.00		5.10	5.10	9.65	9.10	91.0
14	8	PFDA	513 > 468.8	13754.157	13791.203	1.00		5.29	5.29	9.97	9.14	91.4
15	9	N-MeFOSAA	570.1 > 419.0	4632.094	11937.695	1.00		5.39	5.39	15.5	8.10	81.0
16	10	N-EtFOSAA	584.2 >419.0	4285.079	11937.695	1.00		5.50	5.49	14.4	9.41	94.1
17	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
18	19	13C4-PFOS	503.0 > 79.9	6857.268	6857.268	1.00	1.000	5.10	5.10	28.7	28.7	100.0
19	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
20	20	d3-N-MeFOSAA	573.3 > 419.0	11937.695	11937.695	1.00	1.000	5.39	5.39	40.0	40.0	100.0
21	20	d3-N-MeFOSAA	573.3 > 419.0	11937.695	11937.695	1.00	1.000	5.39	5.39	40.0	40.0	100.0
22	-1											
23	11	PFUnA	563 > 518.9	13571.317	13791.203	1.00		5.49	5.50	9.84	9.78	97.8
24	12	PFDoA	612.9 > 318.8	1790.217	13791.203	1.00		5.68	5.68	1.30	9.08	90.8
25	13	PFTrDA	662.9 > 618.9	18902.754	13791.203	1.00		5.83	5.84	13.7	9.75	97.5
26	14	PFTeDA	712.9 > 668.8	16296.802	13791.203	1.00		5.97	5.98	11.8	9.36	93.6
27	15	13C2-PFHxA	315 > 269.8	9080.553	13791.203	1.00	0.641	4.24	4.05	6.58	10.3	102.7
28	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
29	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
30	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
31	18	13C2-PFOA	414.9 > 369.7	13791.203	13791.203	1.00	1.000	4.77	4.76	10.0	10.0	100.0
32	16	13C2-PFDA	515.1 > 469.9	12651.487	13791.203	1.00	0.896	5.29	5.29	9.17	10.2	102.4
33	-1											
34	17	d5-N-EtFOSAA	589.3 > 419.0	18434.670	11937.695	1.00	1.512	5.39	5.49	61.8	40.9	102.1

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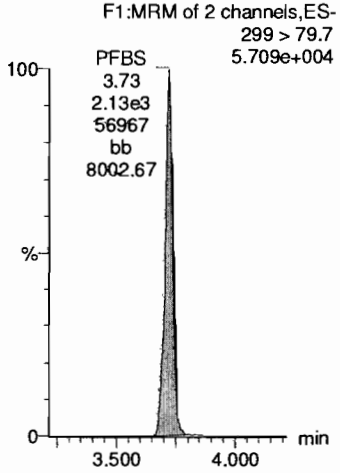
Dataset: F:\Projects\PFAS.PRO\Results\190125M2\190125M2-ICV.qld

Last Altered: Saturday, January 26, 2019 15:43:17 Pacific Standard Time
Printed: Saturday, January 26, 2019 15:43:34 Pacific Standard Time

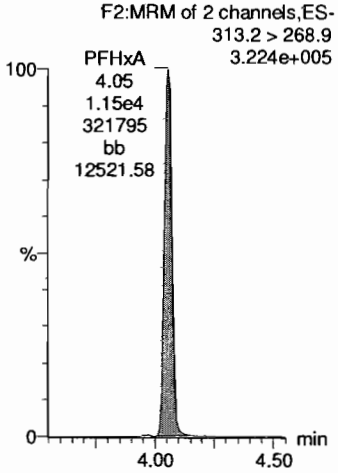
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_DW_L14_012519.mdb 26 Jan 2019 15:19:01
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_537_Q4_01-25-19_L14.cdb 26 Jan 2019 15:05:56

Name: 190125M2_13, Date: 25-Jan-2019, Time: 19:44:16, ID: ICV190125M2-1 537 ICV 19A1711, Description: 537 ICV 19A1711

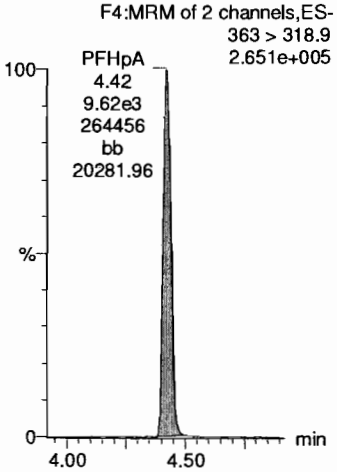
PFBS



PFHxA



PFHpA



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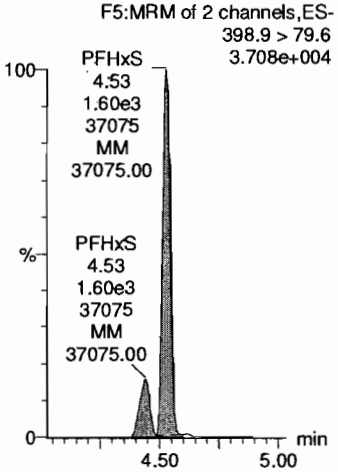

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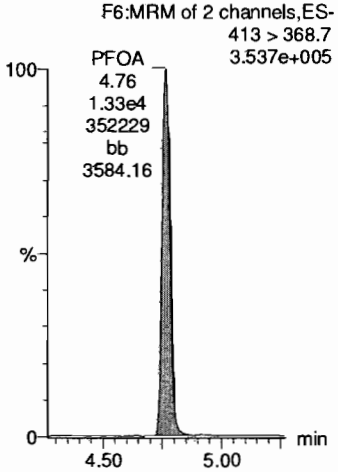

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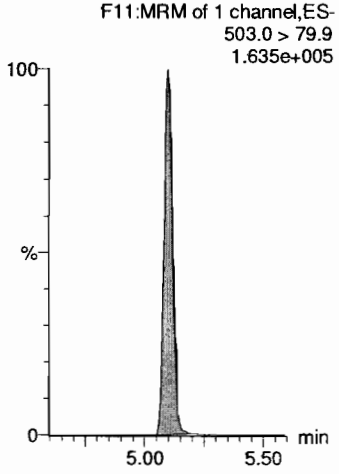

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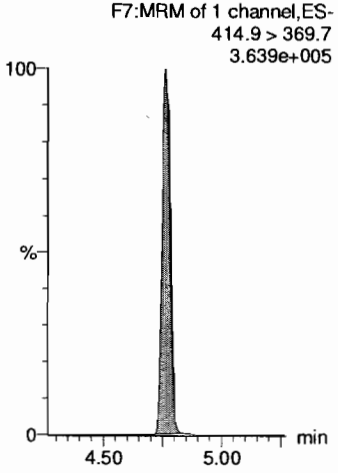

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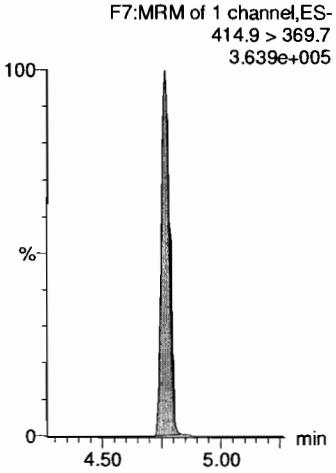

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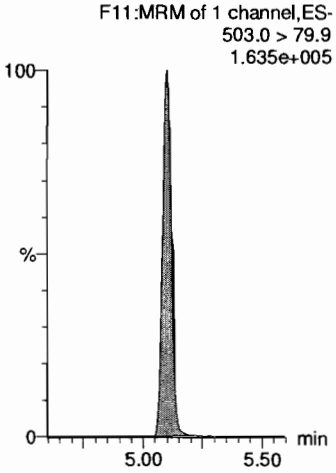

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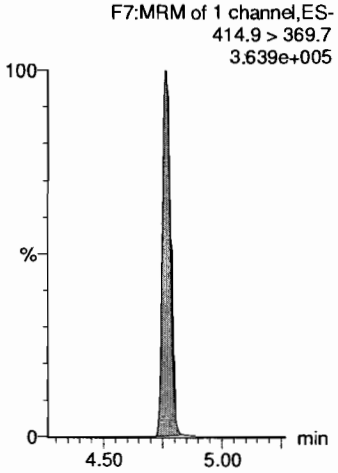

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Name: 190125M2_13, Date: 25-Jan-2019, Time: 19:44:16, ID: ICV190125M2-1 537 ICV 19A1711, Description: 537 ICV 19A1711

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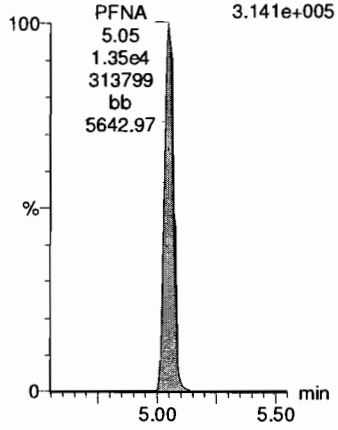

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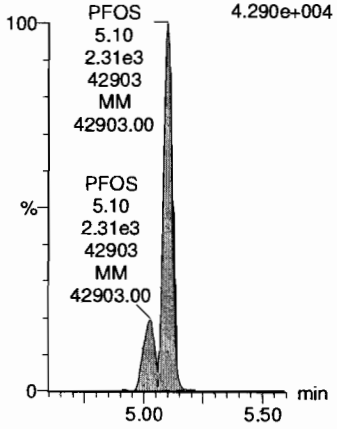

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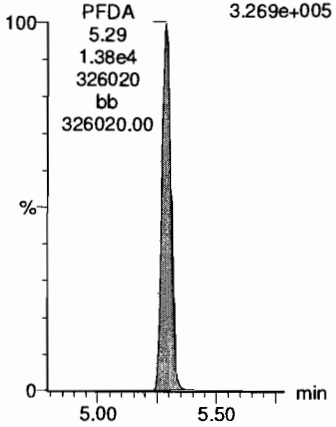

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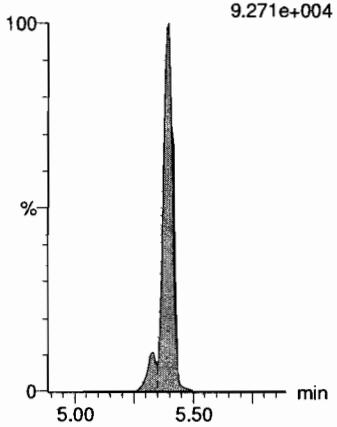

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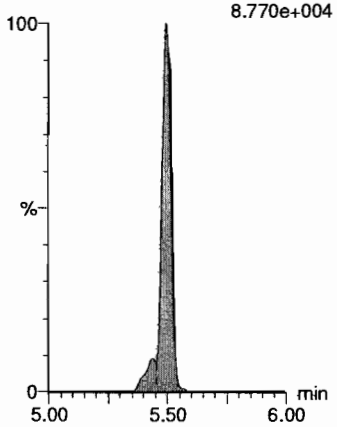

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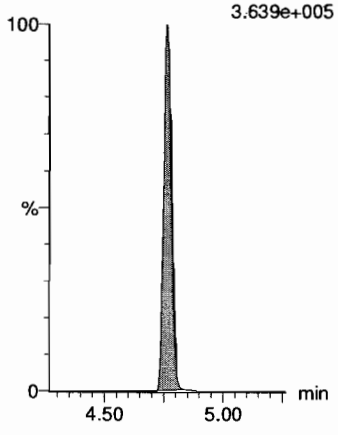

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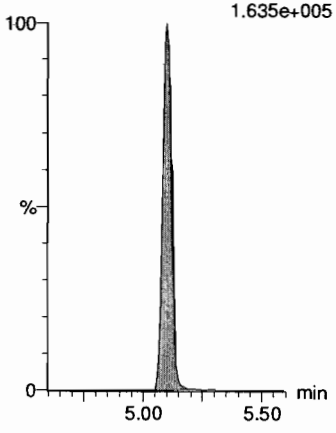

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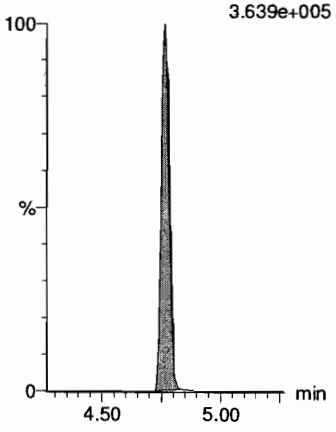

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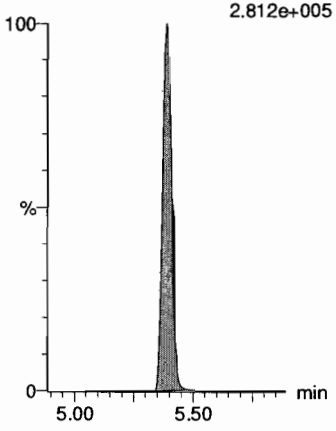

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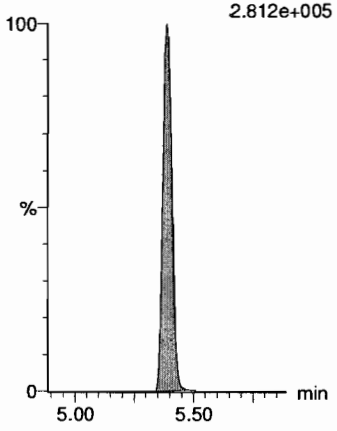

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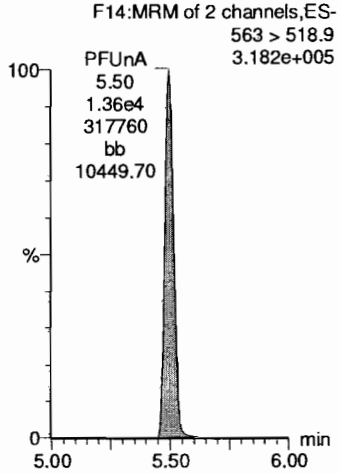

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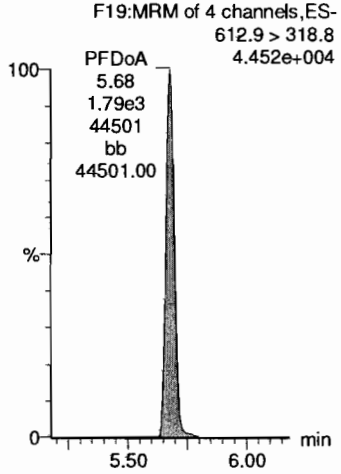

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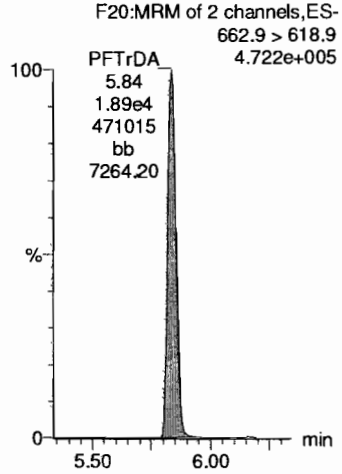

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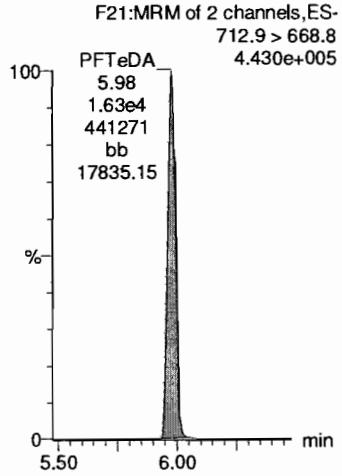

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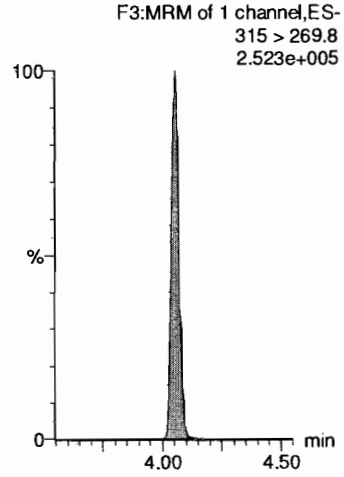

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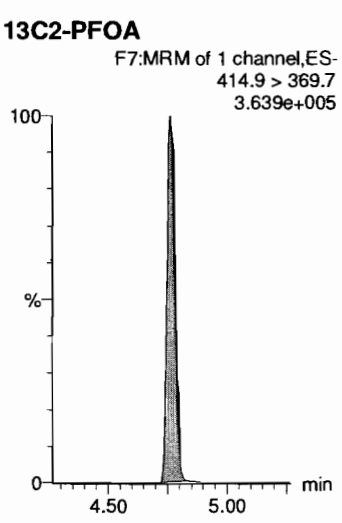

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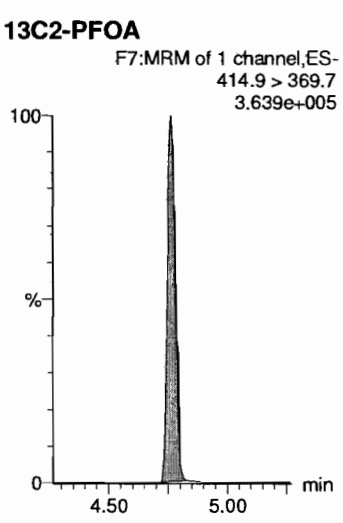

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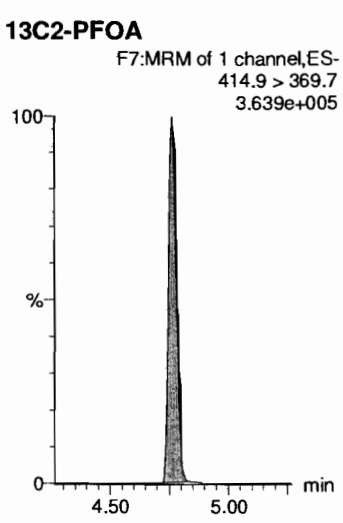

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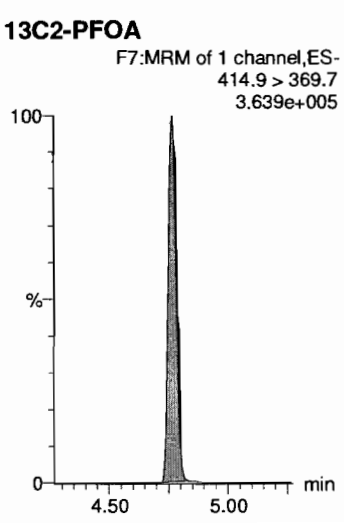

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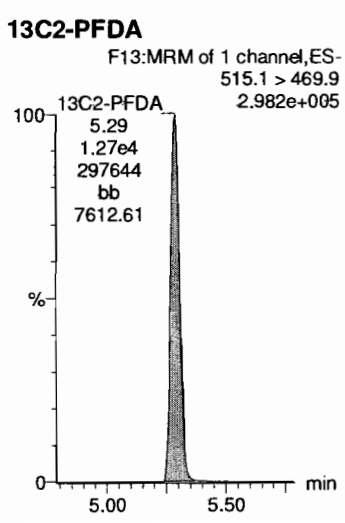

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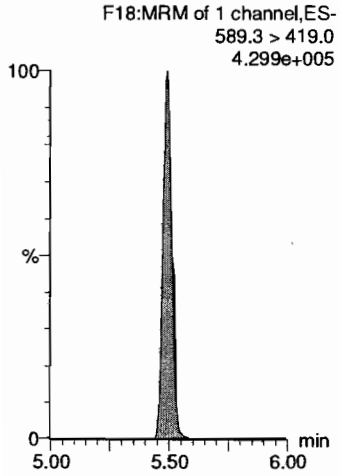

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"B9A0154-BLK1","537","01/25/19","22:29","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","
"B9A0154-BLK1","537","01/25/19","22:29","N","NA","000","72629-94-8","PFTrDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","
"B9A0154-BLK1","537","01/25/19","22:29","N","NA","000","376-06-7","PFTeDA","","","TRG","Yes","N","U","Y","0.00304","0.00500","0.0100","UG_L","UG_L","
"B9A0154-BLK1","537","01/25/19","22:29","N","NA","000","13C2-PFHxA","13C2-PFHxA","94.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","94.7","94.7","","","","","","70","130","","","","","","
"B9A0154-BLK1","537","01/25/19","22:29","N","NA","000","13C2-PFDA","13C2-PFDA","98.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","98.1","98.1","","","","","","70","130","","","","","

"B9A0154-BLK1","537","01/25/19","22:29","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","93.3","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","93.3","93.3","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","375-73-5","PFBS","0.0658","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0708","0.0658","92.9","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.0741","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0741","92.6","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0774","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0774","96.8","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0677","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0728","0.0677","93.0","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.0767","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0767","95.8","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","0.0735","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0735","91.9","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.0666","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0740","0.0666","90.0","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","0.0721","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0721","90.2","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","2355-31-9","MeFOSAA","0.0742","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0742","92.7","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","2991-50-6","EtFOSAA","0.0706","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0706","88.2","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","0.0729","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0729","91.1","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","0.0697","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0697","87.1","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","72629-94-8","PFTrDA","0.0606","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0606","75.8","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","376-06-7","PFTeDA","0.0582","","TRG","Yes","Y","","Y","0.00304","0.00500","0.0100","UG_L","UG_L","","","","0.0800","0.0582","72.7","","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","13C2-PFHxA","13C2-PFHxA","93.7","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","93.7","93.7","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","13C2-PFDA","13C2-PFDA","99.9","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","99.9","99.9","","","","","","70","130","","","","",""
"B9A0154-BS1","537","01/25/19","21:54","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","90.4","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","90.4","90.4","","","","","","70","130

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

AMEC Foster Wheeler, Inc.
7376 SW Durham Road
Portland, OR 97224
Attn: Ms. Kimberly Shiroodi
Kimberly.Shiroodi@woodplc.com

May 23, 2019

SUBJECT: Former Chase Field, Data Validation

Dear Ms. Shiroodi,

Enclosed are the final validation reports for the fraction listed below. These SDGs were received on May 23, 2019. Attachment 1 is a summary of the samples that were reviewed for analysis.

LDC Project #45129:

SDG #	Fraction
1803982, 1804167 1900154, 1900478	Perfluorinated Alkyl Acids

The data validation was performed under Stage 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Initial Assessment of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances, Sites at Various Base Realignment and Closure Installations; June 2017
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1, 2017
- USEPA, National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
Pgeng@lab-data.com.
Project Manager/Senior Chemist

746 pages-ADV ASAP Attachment 1

90/10 EDD

LDC #45129 (Wood Environment & Infrastructure Solutions, OR / Chase Field, TO 008)

KMEA PO000936

LDC	SDG#	DATE REC'D	(1) DATE DUE	PFAs (537M)																																	
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	W	S
A	1803982	05/23/19	ASAP	3	0																																
B	1804167	05/23/19	ASAP	1	0																																
C	1900154	05/23/19	ASAP	1	0																																
D	1900478	05/23/19	ASAP	1	0																																
Total	T/PG			6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B review). These sample counts do not include DL, RE, MS, MSD, or DUP's.

L:\Wood Environmental\Chase Field\45129ST.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1803982

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
Big Field-DW-120618	1803982-01	Water	12/06/18
Behind the Base-DW-120618	1803982-03	Water	12/06/18
Shooting Range 1-DW-120618	1803982-05	Water	12/06/18
Shooting Range 1-DW-120618MS	1803982-05MS	Water	12/06/18
Shooting Range 1-DW-120618MSD	1803982-05MSD	Water	12/06/18

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 Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), 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 Organic Superfund 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, Revision 1.1

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 standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

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 and Instrument Sensitivity Check

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.

The percent differences (%D) of the instrument sensitivity check (ISC) 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 Source Blank was identified as a source blank. No contaminants were found.

Sample Shooting Range 1-FB-120618 was identified as a field blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all drinking water 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 not within the QC limits for Shooting Range 1-DW-120618MS/MSD. No data were qualified since the parent sample results were greater than the spiked concentration

Relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
Shooting Range 1-DW-120618MS/MSD (Shooting Range 1-DW-120618)	PFOA	43 (≤30)	J (all detects)	A

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 Shooting Range 1-DW-120618 and DUP-1 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	Shooting Range 1-DW-120618	DUP-1				
PFBS	34.2	32.0	-	2.2 (≤10.6)	-	-
PFHxA	213	194	9 (≤30)	-	-	-
PHHpA	87.2	76.0	14 (≤30)	-	-	-
PFHxS	362	299	19 (≤30)	-	-	-

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	Shooting Range 1-DW-120618	DUP-1				
PFOA	246	185	28 (≤30)	-	-	-
PFNA	21.7	15.7	-	6 (≤10.6)	-	-
PFOS	375	268	33 (≤30)	-	J (all detects)	A

XI. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

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 MS/MSD RPD and field duplicate RPD, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1803982

Sample	Compound	Flag	A or P	Reason
Shooting Range 1-DW-120618	PFOA	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)
Shooting Range 1-DW-120618 DUP-1	PFOS	J (all detects)	A	Field duplicates (RPD)

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1803982

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1803982

No Sample Data Qualified in this SDG

LDC #: 45129A96

SDG #: 1803982

Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET

Stage 4

Date: 5/23/19

Page: 1 of 1

Reviewer:

2nd Reviewer: JVG

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537~~M~~, Rev.1.1)

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%. γ^2 True ≤ 30/50% (low). ICV ≤ 30%
IV.	Continuing calibration / ISC	A	CCV/ISC ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	SB=5. FB=4
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D=3+6
XI.	Labeled Compounds	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	Big Field-DW-120618	1803982-01	Water	12/06/18
2	Behind the Base-DW-120618	1803982-03	Water	12/06/18
3	Shooting Range 1-DW-120618	1803982-05	Water	12/06/18
~~4~~	~~Shooting Range 1-FB-120618~~	~~1803982-06~~	~~Water~~	~~12/06/18~~
~~5~~	~~Source Blank~~	~~1803982-07~~	~~Water~~	~~12/06/18~~
~~6~~	~~DUP 1~~	~~1803982-08~~	~~Water~~	~~12/06/18~~
7	Shooting Range 1-DW-120618MS	1803982-05MS	Water	12/06/18
8	Shooting Range 1-DW-120618MSD	1803982-05MSD	Water	12/06/18
9				
10				

Notes:

	B8L00T6-BK1						

LDC #: 45129A96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: JV

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?	✓			low ≤ 50% for drinking water
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 #: 45179A96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: MG

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: 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)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

LDC #: 45296A96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JV6

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 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 ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		7/8	~~PFHpA~~	240 (50-150)	( )	( )	3 (dets)	No Qual (>1x)
			PFHxS	703 (↓)	187 (50-150)	( )		↓
			~~PFOA~~	1350 (↓)	420 (↓)	( )		
			~~PFNA~~	190 (↓)	(↓)	( )		
			~~PFOS~~	( )	378 (↓)	( )		
			~~PFHpA~~	( )	( )	50.7 (≤ 30)		~~dets~~ No Qual (>4x)
			~~PFHxS~~	( )	( )	116 (↓)		↓
			~~PFOA~~	( )	( )	105 ( )		
			~~PFNA~~	( )	( )	35.3 ( )		~~dets~~ / A
			~~PFOS~~	( )	( )	192 (↓)		No Qual (>4x)
				( )	( )	( )		
			~~PFOA~~	( )	( )	43 (≤ 30)	3 (dets)	~~dets~~ / A
				( )	( )	(Recal using conc)		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC#: 45129A96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: 9
2nd Reviewer: MC

METHOD: PFCs (EPA Method 537, Rev.1.1))

Compound	Concentration (ng/L)		(≤30) RPD	Difference	Limits	Qual
	3	6				
PFBS	34.2	32.0		2.2	≤10.6	
PFHxA	213	194	9			
PHHpA	87.2	76.0	14			
PFHxS	362	299	19			
PFOA	246	185	28			
PFNA	21.7	15.7		6	≤10.6	
PFOS	375	268	33			J+ (all detects) A

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2019\45129A96_WOOD.wpd

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/14/2018	PFOS	1	0.232	0.1988737
		2	0.464	0.3287097
		3	0.928	0.7292670
		4	1.860	1.2784472
		5	4.640	3.7459125
		6	9.240	7.2972533
		7	23.100	21.6975380
		8	46.200	43.6619180
		9	69.400	63.9538080
		10	92.500	80.7597070

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.89864913*	0.899774
Correlation Coefficient	*0.999427*	0.99745
Coefficient of Determination (r^2)	*0.998854*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/14/2018	PFOA	1	0.250	0.2171360
		2	0.500	0.0506222
		3	1.000	0.9565940
		4	2.000	1.7298860
		5	5.000	4.5899330
		6	10.000	9.5954070
		7	25.000	21.7876640
		8	50.000	48.7801400
		9	75.000	69.3161600
		10	100.000	89.8638830

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.91588519*	0.920346
Correlation Coefficient	*0.999562*	0.99867
Coefficient of Determination (r^2)	*0.999124*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/16/2018	PFOA	1	0.250	0.2255790
		2	0.500	0.5356500
		3	1.000	1.0843630
		4	2.000	1.9421290
		5	5.000	5.2501000
		6	10.000	10.1869490
		7	25.000	26.3859800
		8	50.000	53.8977810
		9	75.000	74.5942910
		10	100.000	103.2234300

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*1.02778311*	1.031910
Correlation Coefficient	*0.999669*	0.99911
Coefficient of Determination (r^2)	*0.999338*	

LDC #: 45129A96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: MG

METHOD: LC/MS PFAS (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	Recalculated RRF	Reported %D	Recalculated %D
1	18RIAP2.66	12/15/18	PFOA ($^{13}C_2$-PFOA)	10.0	9.63	9.63	3.7	3.7
			PFOS ($^{13}C_8$-PFOS)	9.24	7.75	7.75	16.1	16.1
2	18B1PP1_2	12/17/18	PFOA ($^{13}C_2$-PFOA)	2.00	2.18	2.18	9.1	9.1
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

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.

Privileged and Confidential

LDC #: 45[illegible]90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JV6

METHOD: LC/MS PFAS (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 = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 7/8

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 (use for R)	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
PFOA	20.0	20.2	2.46	5.15	3.31	135	133	~~130~~ 105	121	105	106
PFOS	18.4	18.7	3.75	3.97	4.45	123	120	378	374	102	103

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

LDC #: 35279A96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: JM6

METHOD: LC/MS PFAS (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: BBL0076-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
PFOA	20.0	NA	21.2	NA	106	106				
PFOS	18.5	↓	21.6	↓	117	117				

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 #: 45129A96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: NG

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. 3, PFOA

Conc. = $\frac{(2630.279)(10.0)(1)(\quad)}{(4862.087)(0.920346)(0.239)}$

= 246.0 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	3	PFOA	246		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1804167

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PW2-122018-DW	1804167-01	Water	12/20/18

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 Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), 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 Organic Superfund 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, Revision 1.1

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 standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

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 and Instrument Sensitivity Check

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.

The percent differences (%D) of the instrument sensitivity check (ISC) 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

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all drinking water 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. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

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.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1804167

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1804167

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1804167

No Sample Data Qualified in this SDG

LDC #: 45129B96

SDG #: 1804167

Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET

Stage 4

Date: 5/23/19

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537~~M~~ Rev. 1.1)

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. Tml≤30/50(IOW). ICV≤30%
IV.	Continuing calibration /ISC	A	CCV≤30/30%
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.	Labeled Compounds	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	PW2-122018-DW	1804167-01	Water	12/20/18
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	B8L0193-BK1						

LDC #: 45296B6

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: JVP

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?	✓			<50% for lowest std
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			for dioxins W
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 #: 45729B96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: DG

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: 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)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/30/2018	PFOA	1	0.250	0.2325030
		2	0.500	0.4798370
		3	1.000	0.9733980
		4	2.000	1.9247560
		5	5.000	5.2004250
		6	10.000	9.1517780
		7	25.000	24.118581
		8	50.000	53.590312
		9	75.000	81.475686
		10	100.000	109.05315

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*1.08160882*	1.064930
Correlation Coefficient	*0.999715*	0.99788
Coefficient of Determination (r^2)	*0.999431*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
12/30/2018	PFOS	1	0.232	0.0784112
		2	0.464	0.2796298
		3	0.928	0.9002042
		4	1.860	1.3489832
		5	4.640	3.3358268
		6	9.240	6.8112131
		7	23.10	18.209455
		8	46.20	40.303338
		9	69.40	56.077719
		10	92.50	78.913789

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.83926116*	0.830260
Correlation Coefficient	*0.999501*	0.99746
Coefficient of Determination (r^2)	*0.999003*	

LDC #: 45129B96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JVG

METHOD: LC/MS PFAS (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	Recalculated RRF	Reported %D	Recalculated %D
1	18130L-33	1/30/18	PFOA ($^{13}C_2$-PFOA)	10.0	864	8.64	~~13.9~~ 13.6	13.6
			PFOS ($^{13}C_8$-PFOS)	9.24	7.88	7.88	14.7	14.7
2			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

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 #: 45279B96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: MC

METHOD: LC/MS PFAS (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: BBL0193-BS1/-BSD1

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
PFOA	0.0400	0.0400	0.0403	0.0412	101	101	103	103	2.15	2.22
PFOS	0.0370	0.0370	0.0335	0.0403	90.6	90.5	109	109	18.2	18.4

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 #: 45129B96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: SVG

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. NO, PFOA
B8L0193-BS1

Conc. = $\frac{(693.221)(10.0)(\quad)(\quad)(\quad)}{(6446.945)(106493)(0.25)(1000)(\quad)}$

= 0.0403 MPL

#	Sample ID	Compound	Reported Concentration (MPL)	Calculated Concentration ( )	Qualification
	B8L0193-BS1	PFOA	0.0403		

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1900154

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
PW4-011719-DW	1900154-01	Water	01/17/19

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 Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), 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 Organic Superfund 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, Revision 1.1

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 standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

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 and Instrument Sensitivity Check

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.

The percent differences (%D) of the instrument sensitivity check (ISC) 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

No field blanks were identified in this SDG.

VII. Surrogates

Surrogates were added to all drinking water 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) 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. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

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.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1900154

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1900154

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1900154

No Sample Data Qualified in this SDG

LDC #: 45129C96

SDG #: 1900154

Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET

Stage 4

Date: 5/23/19

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537~~M~~, Rev. 1.1.)

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	BSD ≤ 20%, r^2 TMC ≤ 30/50%. ICV ≤ 30%
IV.	Continuing calibration /ISC	A	CCV/ISC ≤ 30%
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
X.	Field duplicates	N	
XI.	Labeled Compounds	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	PW4-011719-DW	1900154-01	Water	01/17/19
2				
3				
4				
5				
6				
7				
8				
9				

Notes:

	B9A0154-B4-1						

LDC #: 45290B6

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: SVG

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?	✓			≤50% for lowest std (drinking W)
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 #: 43129C96

VALIDATION FINDINGS CHECKLIST

Reviewer: 9
2nd Reviewer: SVG

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: 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)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/25/2019	PFOA	1	0.250	0.2101130
		2	0.500	0.4714000
		3	1.000	0.8984130
		4	2.000	1.8618960
		5	5.000	4.4924390
		6	10.000	9.3954590
		7	25.000	24.368296
		8	50.000	47.758120
		9	75.000	73.077953
		10	100.000	94.537468

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.95618300*	0.956545
Correlation Coefficient	*0.999903*	0.99969
Coefficient of Determination (r^2)	*0.999805*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
1/25/2019	PFOS	1	0.232	0.1832208
		2	0.464	0.4657522
		3	0.928	0.8556761
		4	1.860	1.6506001
		5	4.640	4.6646023
		6	9.240	9.4894971
		7	23.10	23.772614
		8	46.20	48.721777
		9	69.40	72.647365
		10	92.50	100.994340

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*1.07089390*	1.059870
Correlation Coefficient	*0.999772*	0.99909
Coefficient of Determination (r^2)	*0.999544*	

LDC #: 45179-96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Reviewer: 9
2nd Reviewer: MV

METHOD: LC/MS PFAS (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	Recalculated RRF	Reported %D	Recalculated %D
1	190125HZ_33	1/25/19	PFOA ($^{13}C_2$-PFOA)	10.0	10.2	10.2	1.8	1.8
			PFOS ($^{13}C_8$-PFOS)	9.34	9.14	9.14	1.1	1.1
2			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

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.

Privileged and Confidential

LDC #: 45292e96

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: JV6

METHOD: LC/MS PFAS (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: BRA0154-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
PFOA	0.0800	NA	0.0767	NA	95.8	95.9				
PFOS	0.0740	V	0.0666	V	90.0	90.0				

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.

Privileged and Confidential

LDC #: 45129c96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: 9
2nd reviewer: JV6

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. NO, PFOS
BQA0154-BS1

Conc. = $\frac{(4001.85)(28.7)(\quad)(\quad)(\quad)}{(659.85)(1.0598)(250)(\quad)(\quad)}$

= 0.0666 MS/L

#	Sample ID	Compound	Reported Concentration (MBA)	Calculated Concentration ( )	Qualification
	BQA0154-BS1	PFOS	0.0666		

Privileged and Confidential

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Former Chase Field

LDC Report Date: May 23, 2019

Parameters: Perfluorinated Alkyl Acids

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 1900478

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
Charlie's Pasture-EW 031319	1900478-01	Water	03/13/19

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 Initial Assessment of Per-fluorinated Compounds (PFCS) or Per- and Polyfluoroalkyl Substances (PFAS) Sites at Various Base Realignment and Closure (BRAC) Installations (June 2017), 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 Organic Superfund 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, Revision 1.1

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 standard, except the lowest point, all compounds were within 70-130% of their true value. For the lowest calibration point, all compounds were within 50-150% of their true value.

The signal to noise (S/N) ratio was within validation criteria.

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 and Instrument Sensitivity Check

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.

The percent differences (%D) of the instrument sensitivity check (ISC) 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 Field Blank was identified as a field blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all drinking water 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 Charlie's Pasture-EW 031319 and Dup-1 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	Charlie's Pasture-EW 031319	Dup-1				
PFBS	0.0424	0.0444	-	0.002 (≤0.0101)	-	-
PFHxA	0.368	0.401	9 (≤30)	-	-	-
PHHpA	0.183	0.192	5 (≤30)	-	-	-
PFHxS	1.04	0.886	16 (≤30)	-	-	-
PFOA	0.807	0.827	2 (≤30)	-	-	-
PFNA	0.0280	0.0316	-	0.0036 (≤0.0101)	-	-
PFOS	1.52	1.38	10 (≤30)	-	-	-

XI. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAs are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

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.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Former Chase Field
Perfluorinated Alkyl Acids - Data Qualification Summary - SDG 1900478

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Laboratory Blank Data Qualification Summary - SDG 1900478

No Sample Data Qualified in this SDG

Former Chase Field
Perfluorinated Alkyl Acids - Field Blank Data Qualification Summary - SDG 1900478

No Sample Data Qualified in this SDG

LDC #: 45129D96

SDG #: 1900478

Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET

Stage 4

Date: 5/23/19

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: JVG

METHOD: LC/MS Perfluorinated Alkyl Acids (EPA Method 537M)

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 ≤ 30/50%, ICV ≤ 30%
IV.	Continuing calibration / ~~CSC~~	A	CCV / ISC ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	FB = 3
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	N	CS
IX.	Laboratory control samples	A	LCS/D
X.	Field duplicates	SW	D = 1+2
XI.	Labeled Compounds	A	~~LCS/D~~
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	Charlie's Pasture-EW 031319	1900478-01	Water	03/13/19
~~2~~	~~Dup-1~~	~~1900478-02~~	~~Water~~	~~03/13/19~~
~~3~~	~~Field Blank~~	~~1900478-03~~	~~Water~~	~~03/13/19~~
4				
5				
6				
7				
8				
9				

Notes:

	B9C0124-BK1						

LDC #: 45190 96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: JV6

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?	✓			≤50% for lowest std
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			for drinking W
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?	✓			

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: 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)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

LDC#45129D96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: 1
2nd Reviewer: MC

METHOD: PFCs (EPA Method 537, Rev.1.1))

Compound	Concentration (ng/L)		(≤30) RPD	Difference	Limits	Qual
	1	2				
PFBS	0.0424	0.0444		0.002	≤0.0101	
PFHxA	0.368	0.401	9			
PHHpA	0.183	0.192	5			
PFHxS	1.04	0.886	16			
PFOA	0.807	0.827	2			
PFNA	0.0280	0.0316		0.0036	≤0.0101	
PFOS	1.52	1.38	10			

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
3/28/2019	PFOA	1	0.250	0.3114790
		2	0.500	0.4559950
		3	1.000	0.9430580
		4	2.000	1.8980310
		5	5.000	4.8326870
		6	10.000	9.8324550
		7	25.000	23.5652720
		8	50.000	48.8485250
		9	75.000	72.3284030
		10	100.000	97.7633500

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.97244451*	0.970341
Correlation Coefficient	*0.999965*	0.99978
Coefficient of Determination (r^2)	*0.999929*	

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
3/28/2019	PFOS	1	0.232	0.2365741
		2	0.464	0.3770290
		3	0.928	0.6450009
		4	1.860	1.3866577
		5	4.640	3.7668348
		6	9.240	7.9072546
		7	23.10	18.761660
		8	46.20	40.878403
		9	69.40	62.960426
		10	92.50	80.724788

Linear through the origin

	calculated	***Reported***
Constant	*0.000000*	0.0000
X Coefficient(s)	*0.88238504*	0.875608
Correlation Coefficient	*0.999735*	0.99859
Coefficient of Determination (r^2)	*0.999469*	

LDC #: 45296D96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: JM6

METHOD: LC/MS PFAS (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	Recalculated RRF	Reported %D	Recalculated %D
1	190328L-38	3/28/19	PFOA ($^{13}C_2$-PFOA)	10.0	10.1	10.1	0.6	0.8
			PFOS ($^{13}C_8$-PFOS)	9.24	8.71	8.69	5.8	5.9
2	190330L-2	3/30/19	PFOA ($^{13}C_2$-PFOA)	2.00	2.16	2.16	8	7.8
			PFOS ($^{13}C_8$-PFOS)	1.86	1.40	1.40	24.6	24.6
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

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 #: 45290096

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: 9
2nd Reviewer: SVG

METHOD: LC/MS PFAS (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: BQ60124-BS1/BSD1

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
PFOA	0.0800	0.0800	0.0832	0.0766	104	104	95.8	95.8	8.18	8.26
PFOS	0.0740	0.0740	0.0701	0.0715	94.8	94.7	96.6	96.6	1.89	1.98

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.

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LDC #: 45129896

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: a
2nd reviewer: NC

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, PFOS:

Conc. = $\frac{(5.78e3)(28.7)(\quad)(\quad)(\quad)}{(4.97e2)(0.875608)(0.250)(1000)}$

= 1.52 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	1	PFOS	1.52		

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INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE	LOCATION_TYPE_DESC	COORD_X*	COORD_Y*	SAMPLE_NAME	SAMPLE_MATRIX	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
CHASE_FIELD_NAS	TBC	PW4	DW	Domestic Well	-97.653078	28.361589	PW4-011719-DW	WP	Drinking Water	17-Jan-19	Perfluoroalkyl Compounds	1900154