Navy_CLEAN_PFAS_FOIA_request_covers.indd

NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 1700884

Naval Air Warfare Center Trenton
Trenton, New Jersey

August 2019

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

N62376.SF.001176
NAWC TRENTON
5090.3c

LABORATORY DATA PACKAGE, 1700884, NAWC TRENTON, NJ

08/07/2017

VISTA ANALYTICAL LABORATORY

August 07, 2017

Vista Work Order No. 1700884

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

Dear Ms. Mang,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on July 15, 2017. This sample set was analyzed on a standard turn-around time, under your Project Name 'NAWC Trenton'. The SDG Number is WE08.

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,

Karen J. Volpendesta for

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.

SDG Number WE08
Vista Work Order No. 1700884
Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

Modified EPA Method 537

Samples "MW-37BR-20170714" and "MW-32BR-20170714" contained particulate and were centrifuged prior to extraction.

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

Holding Times

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

Quality Control

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

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

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

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
B7G0079-BLK1	B7G0079-BLK1	Modified EPA Method 537	13C2-PFTeDA	H	45.1
B7G0079-BS1	B7G0079-BS1	Modified EPA Method 537	13C2-PFTeDA	H	36.3

H = Recovery was outside laboratory acceptance criteria.

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

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

Signature: [signature] Title: QA Manager Date: 08/07/2017

Revision 9
ISG
08/18/16

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Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1700884-01	MW-37BR-20170714	14-Jul-17 10:50	15-Jul-17 09:16	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1700884-02	MW-32BR-20170714	14-Jul-17 11:30	15-Jul-17 09:16	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1700884-03	MW-35S-20170714	14-Jul-17 12:20	15-Jul-17 09:16	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL
1700884-04	FRB-02-20170714	14-Jul-17 09:00	15-Jul-17 09:16	HDPE Bottle, 125 mL
				HDPE Bottle, 125 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

Modified EPA Method 537

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7G0079
Date Extracted: 20-Jul-2017 11:18

Lab Sample: B7G0079-BLK1
Date Analyzed: 31-Jul-17 11:02 Column: BEH C18
31-Jul-17 14:54 Column: BEH C18

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

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	106	50 - 150	
IS	13C2-PFHxA	87.3	50 - 150	
IS	13C4-PFHpA	86.9	50 - 150	
IS	18O2-PFHxS	92.3	50 - 150	
IS	13C2-PFOA	85.3	50 - 150	
IS	13C8-PFOS	89.5	50 - 150	
IS	13C5-PFNA	91.2	50 - 150	
IS	13C2-PFDA	76.5	50 - 150	
IS	d3-MeFOSAA	50.5	50 - 150	
IS	13C2-PFUnA	59.0	50 - 150	
IS	d5-EtFOSAA	50.3	50 - 150	
IS	13C2-PFDoA	56.4	50 - 150	
IS	13C2-PFTeDA	45.1	50 - 150	H

DL - Detection limit
RL - Reporting limit

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

Sample ID: OPR

Modified EPA Method 537

Matrix:	Aqueous	QC Batch:	B7G0079	Lab Sample:	B7G0079-BS1
Sample Size:	0.125 L	Date Extracted:	20-Jul-2017 11:18	Date Analyzed:	31-Jul-17 10:37 Column: BEH C18
					31-Jul-17 14:11 Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits
PFBS	74.1	80.0	92.6	70 - 130
PFHxA	86.7	80.0	108	70 - 130
PFHpA	87.0	80.0	109	70 - 130
PFHxS	83.0	80.0	104	70 - 130
PFOA	90.3	80.0	113	70 - 130
PFOS	76.5	80.0	95.7	70 - 130
PFNA	77.6	80.0	97.0	70 - 130
PFDA	77.5	80.0	96.9	70 - 130
MeFOSAA	94.5	80.0	118	70 - 130
PFUnA	87.6	80.0	110	70 - 130
EtFOSAA	82.3	80.0	103	70 - 130
PFDoA	79.7	80.0	99.7	70 - 130
PFTrDA	75.3	80.0	94.1	60 - 130
PFTeDA	95.3	80.0	119	70 - 130

	Labeled Standard	%R	LCL-UCL
IS	13C3-PFBS	107	50 - 150
IS	13C2-PFHxA	93.6	50 - 150
IS	13C4-PFHpA	86.2	50 - 150
IS	18O2-PFHxS	88.3	50 - 150
IS	13C2-PFOA	90.4	50 - 150
IS	13C8-PFOS	92.9	50 - 150
IS	13C5-PFNA	91.2	50 - 150
IS	13C2-PFDA	76.4	50 - 150
IS	d3-MeFOSAA	52.0	50 - 150
IS	13C2-PFUnA	61.6	50 - 150
IS	d5-EtFOSAA	56.7	50 - 150
IS	13C2-PFDoA	57.7	50 - 150
IS	13C2-PFTeDA	36.3	50 - 150

LCL-UCL - Lower control limit - upper control limit

Sample ID: MW-37BR-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 10:50
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.119 L

Laboratory Data

Lab Sample: 1700884-01 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 18:35 Column: BEH C18
31-Jul-17 18:50 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	20.7	1.87	5.25	8.38	
PFHxA	41.7	2.28	5.25	8.38	
PFHpA	9.49	0.619	5.25	8.38	
PFHxS	230	0.992	5.25	8.38	
PFOA	120	0.682	5.25	8.38	
PFOS	570	0.845	5.25	8.38	
PFNA	ND	0.848	5.25	8.38	
PFDA	ND	1.56	5.25	8.38	
MeFOSAA	ND	1.73	5.25	8.38	
PFUnA	ND	1.10	5.25	8.38	
EtFOSAA	ND	1.43	5.25	8.38	
PFDoA	ND	0.829	5.25	8.38	
PFTrDA	ND	0.517	5.25	8.38	
PFTeDA	ND	0.791	5.25	8.38	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	113	50 - 150	
IS	13C2-PFHxA	100	50 - 150	
IS	13C4-PFHpA	92.0	50 - 150	
IS	18O2-PFHxS	108	50 - 150	
IS	13C2-PFOA	100	50 - 150	
IS	13C8-PFOS	94.7	50 - 150	
IS	13C5-PFNA	82.5	50 - 150	
IS	13C2-PFDA	70.5	50 - 150	
IS	d3-MeFOSAA	60.9	50 - 150	
IS	13C2-PFUnA	70.7	50 - 150	
IS	d5-EtFOSAA	63.6	50 - 150	
IS	13C2-PFDoA	66.8	50 - 150	
IS	13C2-PFTeDA	66.3	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: MW-32BR-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 11:30
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.119 L

Laboratory Data

Lab Sample: 1700884-02 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 18:47 Column: BEH C18
31-Jul-17 19:02 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	47.5	1.88	5.25	8.40	
PFHxA	169	2.29	5.25	8.40	
PFHpA	58.4	0.621	5.25	8.40	
PFHxS	330	0.995	5.25	8.40	
PFOA	35.0	0.684	5.25	8.40	
PFOS	321	0.848	5.25	8.40	
PFNA	4.44	0.851	5.25	8.40	J
PFDA	ND	1.57	5.25	8.40	
MeFOSAA	ND	1.73	5.25	8.40	
PFUnA	ND	1.10	5.25	8.40	
EtFOSAA	ND	1.44	5.25	8.40	
PFDoA	ND	0.832	5.25	8.40	
PFTrDA	ND	0.519	5.25	8.40	
PFTeDA	ND	0.793	5.25	8.40	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	104	50 - 150	
IS	13C2-PFHxA	92.2	50 - 150	
IS	13C4-PFHpA	82.3	50 - 150	
IS	18O2-PFHxS	97.7	50 - 150	
IS	13C2-PFOA	98.0	50 - 150	
IS	13C8-PFOS	89.1	50 - 150	
IS	13C5-PFNA	91.7	50 - 150	
IS	13C2-PFDA	76.9	50 - 150	
IS	d3-MeFOSAA	64.5	50 - 150	
IS	13C2-PFUnA	70.0	50 - 150	
IS	d5-EtFOSAA	69.0	50 - 150	
IS	13C2-PFDoA	67.5	50 - 150	
IS	13C2-PFTeDA	55.1	50 - 150	

DL - Detection limit

RL - Reporting limit

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

Sample ID: MW-35S-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 12:20
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.120 L

Laboratory Data

Lab Sample: 1700884-03 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 19:00 Column: BEH C18
31-Jul-17 19:15 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	26.4	1.87	5.21	8.34	
PFHxA	101	2.27	5.21	8.34	
PFHpA	34.7	0.616	5.21	8.34	
PFHxS	170	0.988	5.21	8.34	
PFOA	21.6	0.679	5.21	8.34	
PFOS	156	0.842	5.21	8.34	
PFNA	ND	0.845	5.21	8.34	
PFDA	ND	1.55	5.21	8.34	
MeFOSAA	ND	1.72	5.21	8.34	
PFUnA	ND	1.10	5.21	8.34	
EtFOSAA	ND	1.43	5.21	8.34	
PFDoA	ND	0.826	5.21	8.34	
PFTrDA	ND	0.515	5.21	8.34	
PFTeDA	ND	0.788	5.21	8.34	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	124	50 - 150	
IS	13C2-PFHxA	102	50 - 150	
IS	13C4-PFHpA	92.6	50 - 150	
IS	18O2-PFHxS	96.3	50 - 150	
IS	13C2-PFOA	97.3	50 - 150	
IS	13C8-PFOS	82.3	50 - 150	
IS	13C5-PFNA	71.4	50 - 150	
IS	13C2-PFDA	70.6	50 - 150	
IS	d3-MeFOSAA	63.4	50 - 150	
IS	13C2-PFUnA	61.6	50 - 150	
IS	d5-EtFOSAA	54.4	50 - 150	
IS	13C2-PFDoA	67.6	50 - 150	
IS	13C2-PFTeDA	66.5	50 - 150	

DL - Detection limit

RL - Reporting limit

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

Sample ID: FRB-02-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 9:00
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.120 L

Laboratory Data

Lab Sample: 1700884-04 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 19:12 Column: BEH C18
31-Jul-17 19:28 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.87	5.21	8.34	
PFHxA	ND	2.27	5.21	8.34	
PFHpA	ND	0.616	5.21	8.34	
PFHxS	ND	0.988	5.21	8.34	
PFOA	ND	0.679	5.21	8.34	
PFOS	ND	0.842	5.21	8.34	
PFNA	ND	0.845	5.21	8.34	
PFDA	ND	1.55	5.21	8.34	
MeFOSAA	ND	1.72	5.21	8.34	
PFUnA	ND	1.10	5.21	8.34	
EtFOSAA	ND	1.43	5.21	8.34	
PFDoA	ND	0.826	5.21	8.34	
PFTrDA	ND	0.515	5.21	8.34	
PFTeDA	ND	0.788	5.21	8.34	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	105	50 - 150	
IS	13C2-PFHxA	101	50 - 150	
IS	13C4-PFHpA	81.6	50 - 150	
IS	18O2-PFHxS	96.7	50 - 150	
IS	13C2-PFOA	107	50 - 150	
IS	13C8-PFOS	101	50 - 150	
IS	13C5-PFNA	101	50 - 150	
IS	13C2-PFDA	77.4	50 - 150	
IS	d3-MeFOSAA	65.4	50 - 150	
IS	13C2-PFUnA	70.5	50 - 150	
IS	d5-EtFOSAA	58.7	50 - 150	
IS	13C2-PFDoA	67.8	50 - 150	
IS	13C2-PFTeDA	66.9	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

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

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

CERTIFICATIONS

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

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

NELAP Accredited Test Methods

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

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

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

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

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

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

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1700884 Temp: 3.8 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

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

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

Invoice to: Name | Company | Address | City | State | Ph# | Fax#

Tetra Tech | Foster Plaza VII | 661 Andersen Drive | Pittsburgh | PA | 15220 | 412 921 7090 | 412 921 4040

Relinquished by (printed name and signature) | Date | Time | Received by (printed name and signature) | Date | Time

Charles Meyer | 16:00 | 7/14/17 | B. Benedict | 07/15/17 | 0922

Relinquished by (printed name and signature) | Date | Time | Received by (printed name and signature) | Date | Time

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

ATTN: Sample Custodian

Method of Shipment: Fed Ex

Tracking No.: 6612 1492 7058

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	PFOS-14				EPA Method 537(DW only): PFOA/PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
MW-37BR-20170714	7/14/17	10:50	NAWC Trenton	2	PJ	AQ						2							
MW-32BR-20170714	7/14/17	11:30	NAWC Trenton	2	PJ	AQ						2							
MW-35S-20170714	7/14/17	12:20	NAWC Trenton	2	PJ	AQ						2							
FRB-02-20170714	7/14/17	09:00	NAWC Trenton	2	PJ	AQ						2							

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:

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

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

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

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

Vista Analytical Laboratory

Sample Log-in Checklist

Vista Work Order #: 1700884 **TAT** Std

Samples Arrival:	**Date/Time** 07/15/17 0914	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** NA
Logged In:	**Date/Time** 07/15/17 1003	**Initials:** JBB	**Location:** WR-2 **Shelf/Rack:** E5

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

Temp °C: 4.2 (uncorrected)	**Time:** 0921	**Thermometer ID:** IR-2
Temp °C: 3.8 (corrected)	**Probe used:** Yes☐ No☑	

	YES	NO	NA
Adequate Sample Volume Received? A/B	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill Trk # 4612 1992 7058	✓		
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	

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

Comments: Sample label ID: "MW-35S-20170714"
COC ID: MW-35S-20170714

Sample: MW-32BR-20170714; Red brown tint present

Correspondence

Karen Volpendesta

From: Karen Volpendesta
Sent: Monday, July 17, 2017 8:43 AM
To: Mang, Mary; Ritchie, Megan
Cc: Martha Maier
Subject: Vista Work Order #1700884; NAWC Trenton
Attachments: WO# 1700884_Acklet.pdf

Mary,

Please find attached the sample receiving acknowledgement for Vista Analytical Work Order: 1700884.

These samples will be analyzed by Modified EPA Method 537 for the list of 14 analytes.

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

Best Regards,

Karen L. Volpendesta
(formerly Lopez)
Project Manager

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

A woman-owned, small business enterprise.

EXTRACTION INFORMATION

Process Sheet

Workorder: 1700884

Prep Expiration: 2017-Jul-28

Client: Tetra Tech

Workorder Due: 07-Aug-17 00:00

TAT: 23

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

Matrix: **Aqueous**

Prep Batch: _____

Prep Data Entered: HB 7/21/17
Date and Initials

Version: 537 (14 Analyte)

Initial Sequence: _____

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1700884-01	☑	MW-37BR-20170714	15-Jul-17 09:16	WR-2 E-5	
1700884-02	☐	MW-32BR-20170714	15-Jul-17 09:16	WR-2 E-5	
1700884-03	☐	MW-35S-20170714	15-Jul-17 09:16	WR-2 E-5	
1700884-04	☐	FRB-02-20170714	15-Jul-17 09:16	WR-2 E-5	

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

Vista PM:Martha Maier

Vial Box ID: Save US

Sample Reconciled By: _____ /__/____

Page 1 of 1

Vista Analytical Laboratory

HRMS - 8

BALANCE CALIBRATION CHECK

Weights # 22370 and 7718

	Date	☑ for Weight # verification	Weight 1 1 g (0.9900 – 1.0100)	Weight 2 100 g (99.00 – 101.00)	Weight 3 2000 g (1980 – 2020)	Initials	Acceptable? (Y/N)
	7/19/17	✓	1.00	100.00	2000.00	KBF	Y
	7/20/17	✓	1.01	100.01	2000.04	BSS	Y
	7/21/17	✓	0.99	100.00	2000.00	EL	Y
	7.24.17	✓	1.00	100.01	2000.01	BP	Y
	7/24/17	✓	1.00	100.01	2000.00	EL	Y
	7/25/17	✓	1.00	99.99	2000.02	HB	Y
	7.26.17	✓	1.00	100.00	2000.01	BP	Y
	7/27/17	✓	1.00	99.99	2000.00	HB	Y
	7/28/17	✓	0.99	100.00	2000.02	KBF	Y
	7/31/17	✓	1.00	100.01	2000.04	HB	Y
	8/1/17	✓	1.00	100.00	2000.00	HB	Y
	8/2/17	✓	0.99	100.00	2000.01	HB	Y
Ⓐ	8/3/17	✓	1.00	100.00	2000.05	HB	Y
	8/4/17	✓	1.00	100.04	2000.06	EL	Y
Ⓐ	8/7/17		1.00	100.00	1999.99	KBF	Y

Comments: Ⓐ calibration weights from air lab used because soil lab weights sent out for calibration. HB 8/3/17

Batch: B7G0079

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1700875-01	0.11821	NA	NA	1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-02	0.11912			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-03	0.11822			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-04	0.11793			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-05	0.11994			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-01	0.11935			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-02	0.11989			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-03	0.11984			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-04	0.11984			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-01	0.08342			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-02	0.09939			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-03	0.11445			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-04	0.12081			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-05	0.11776			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-06	0.10593			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
B7G0079-BLK1	0.125			1000	20-Jul-17 11:18	BAP				QC
B7G0079-BS1	0.125			1000	20-Jul-17 11:18	BAP	17D2705	10		QC

HB 7/21/17

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOO as mRL)

B7G0079

Chemist: BP

Prep Date/Time: ~~18~~ 20-Jul-17 11:18

BP 7.20.17

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE B7G0079	RS CHEM/WIT DATE
☐	B7G0079-BLK1	5	2	0	~~HB 7/18/17~~ 2	NA	NA	(0.125)	BP 7.20.17	7.20.17	BP 7.20.17
☐	B7G0079-BS1	5	2	0	~~HB 7/18/17~~ 2	↓	↓	↓	↓	↓	↓
☐	1700875-01 (A)	6	2	0	3	144.93	26.72	0.11821			
☐	1700875-02 (A)	6	2	0	3	145.83	26.71	0.11912			
☐	1700875-03 (A)	6	2	0	3	144.94	26.72	0.11822			
☐	1700875-04	6	2	0	3	144.96	27.03	0.11793			
☐	1700875-05	5	2	0	2	146.55	26.61	0.11994			
☐	1700884-01 (A)	6	2	0	3	146.09	26.74	0.11935			
☐	1700884-02 (A)	5	2	0	2	145.69	26.71	0.11898			
☐	1700884-03	5	2	0	2	146.55	26.71	0.11984			
☐	1700884-04	5	2	0	2	146.70	26.86	0.11964			
☐	1700887-01 (A) (B) (C)	5	2	0	2	109.95	26.53	0.8342			
☐	1700887-02 (A) (B) (C)	6	2	0	3	125.99	26.60	0.09939			
☐	1700887-03	5	2	0	2	141.87	26.92	0.11495			
☐	1700887-04 (A) (B)	5	2	0	2	147.43	26.62	0.12081			
☐	1700887-05 (A) (B)	5	2	0	2	144.36	26.66	0.11776			

IS Name	NS Name	RS Name		
17G1307, 10uL (V6)	1702705, 10uL (V1)	17F3038, 10µL (V3)	SPE Chem: Strata X-AW 33µm 200mg 6mL Ele SOLV: 0.5% NH4OH in MeOH/MeOH Final Volume(s) 1mL	Check Out: Chemist/Date: HB 7/18/17 Check In: HB 7/18/17 empty HB 7/18/17 Balance ID: HRMS-8 pH Adjusted: Chemist/Date: HB 7/18/17

Comments: Assume 1 g = 1 mL (A) samples were centrifuged to remove particulate. HB 7/18/17 (B) samples had thick layer of particulate. HB 7/18/17
(C) limited sample amount after centrifuging particulate out. HB 7/18/17

Matrix: Aqueous

Method: 537M PFAS DOD (LOO as mRL)

PREPARATION BENCH SHEET

B7G0079

Chemist: BP

Prep Date/Time: ~~19~~ 20-Jul-17 11:18

BP 7.20.17

Prepared using: LCMS - SPE Extraction-LCMS

B7G0079

C	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE	RS CHEM/WIT DATE
☐	1700887-06 (A)(B)	5	2	0	2	132.52	26.59	0.10593	BP 7.20.17	7.20.17	BP 7.20.17

IS Name	NS Name	RS Name		
1761307, 10uL (V6)	1702705, 10uL (V1)	17-7638, 10µL (V3)	SPE Chem: Strata XAW 33µ 200mg 6mL Ele SOLV: 0.5% NH4OH in MeOH/MeOH Final Volume(s) 1mL	Check Out: Chemist/Date: HB 7/18/17 Check In: HB 7/18/17 HB 7/18/17 Chemist/Date: ~~empty~~ Balance ID: HRMS-8 pH Adjusted: Chemist/Date: HB 7/18/17

Comments: Assume 1 g = 1 mL (A) sample was centrifuged to remove particulate. HB 7/18/17 (B) sample had thick layer of particulate. HB 7/18/17

SAMPLE DATA – MODIFIED EPA METHOD 537

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-8.qld

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Printed: Tuesday, August 01, 2017 12:58:26 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G2_8, Date: 31-Jul-2017, Time: 11:02:39

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	3	PFBS	299.0 > 79.7		3.938e3		0.125			
2	4	PFHxA	312.9 > 268.9		4.470e3		0.125			
3	5	PFHpA	363 > 318.9		5.864e3		0.125			
4	6	PFHxS	398.9 > 79.6		3.430e3		0.125			
5	7	PFOA	413.0 > 368.7	6.025e1	1.194e4		0.125	4.22		
6	8	PFNA	463.0 > 418.8		5.289e3		0.125			
7	9	PFOS	499.0 >79.9		6.175e3		0.125			
8	10	PFDA	512.7 > 219.0	5.251e0	9.635e3		0.125	4.87		
9	12	13C3-PFBS	302.0 > 98.8	3.938e3	1.420e4	0.263	0.125	2.89	106	106
10	14	13C2-PFHxA	315.0 > 269.8	4.470e3	1.420e4	0.361	0.125	3.27	87.3	87.3
11	15	13C4-PFHpA	367.2 > 321.8	5.864e3	1.420e4	0.475	0.125	3.81	86.9	86.9
12	16	18O2-PFHxS	403 > 102.6	3.430e3	9.048e3	0.411	0.125	3.93	92.3	92.3
13	17	13C2-PFOA	414.9 > 369.7	1.194e4	4.928e3	2.843	0.125	4.22	85.3	85.3
14	18	13C5-PFNA	468.2 > 422.9	5.289e3	6.794e3	0.854	0.125	4.56	91.2	91.2
15	19	13C2-PFDA	514.8 > 469.7	9.635e3	7.235e3	1.742	0.125	4.86	76.5	76.5
16	20	13C8-PFOS	507.0 > 79.9	6.175e3	7.445e3	0.927	0.125	4.63	89.5	89.5
17	22	13C5-PFHxA	318>272.9	1.420e4	1.420e4	1.000	0.125	3.27	100	100
18	23	13C3-PFHxS	401.9 > 79.9	9.048e3	9.048e3	1.000	0.125	3.93	100	100
19	24	13C8-PFOA	421.3 > 376	4.928e3	4.928e3	1.000	0.125	4.22	100	100
20	25	13C9-PFNA	472.2 > 426.9	6.794e3	6.794e3	1.000	0.125	4.56	100	100
21	26	13C4-PFOS	503.0 > 79.9	7.445e3	7.445e3	1.000	0.125	4.63	100	100
22	27	13C6-PFDA	519.10 > 473.70	7.235e3	7.235e3	1.000	0.125	4.86	100	100
23	28	Total PFBS	299.0 > 79.7		3.938e3		0.125			
24	29	Total PFHxS	398.9 > 79.6		3.430e3		0.125			
25	30	Total PFOA	413.0 > 368.7		1.194e4		0.125			
26	31	Total PFOS	499.0 >79.9		6.175e3		0.125			

LA 8/1/2017

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-8.qld

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Printed: Tuesday, August 01, 2017 12:58:26 Pacific Daylight Time

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ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G2_8, Date: 31-Jul-2017, Time: 11:02:39

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	7	PFOA	413.0 > 368.7	4.22	60.253	11944.127	

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

LA 8/1/2017

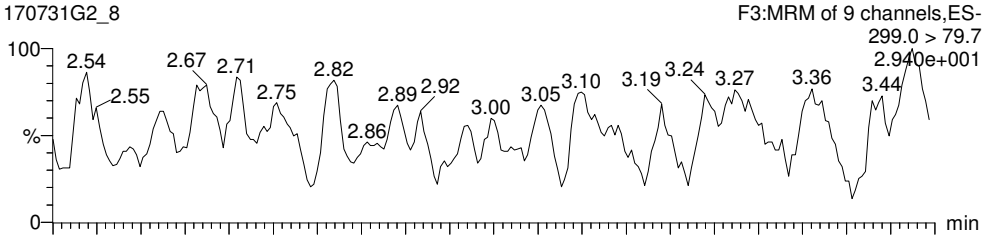
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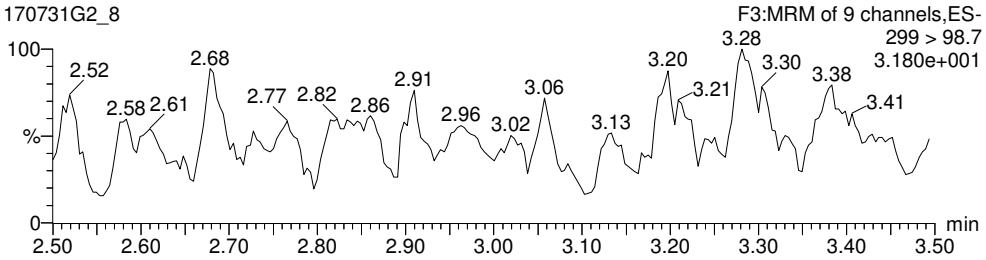
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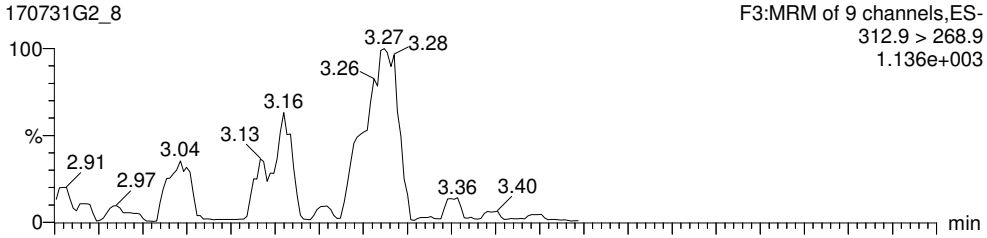
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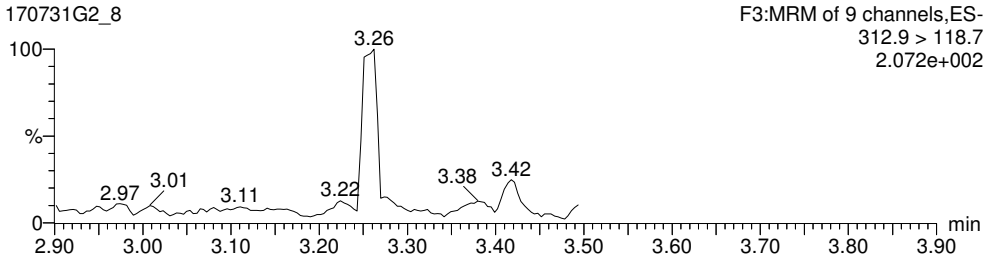
Total PFBS



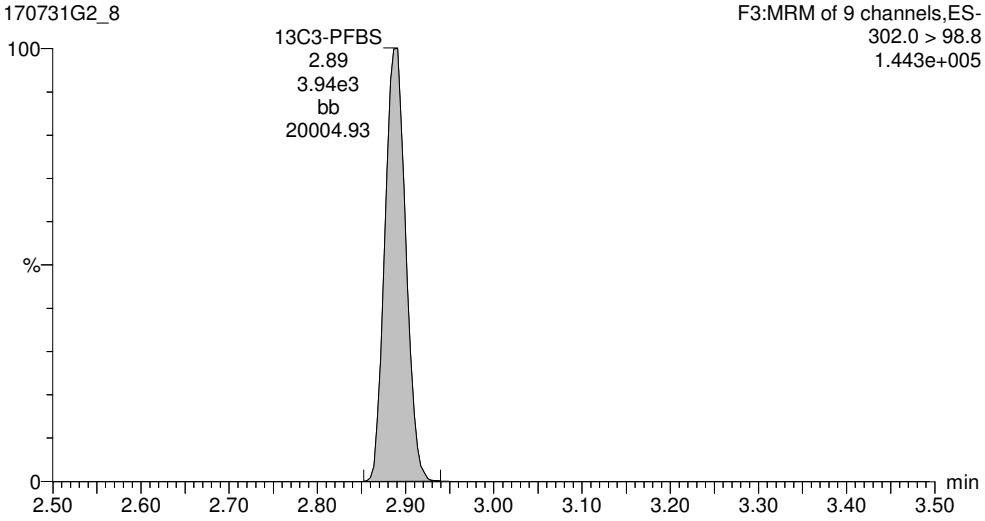


PFHxA

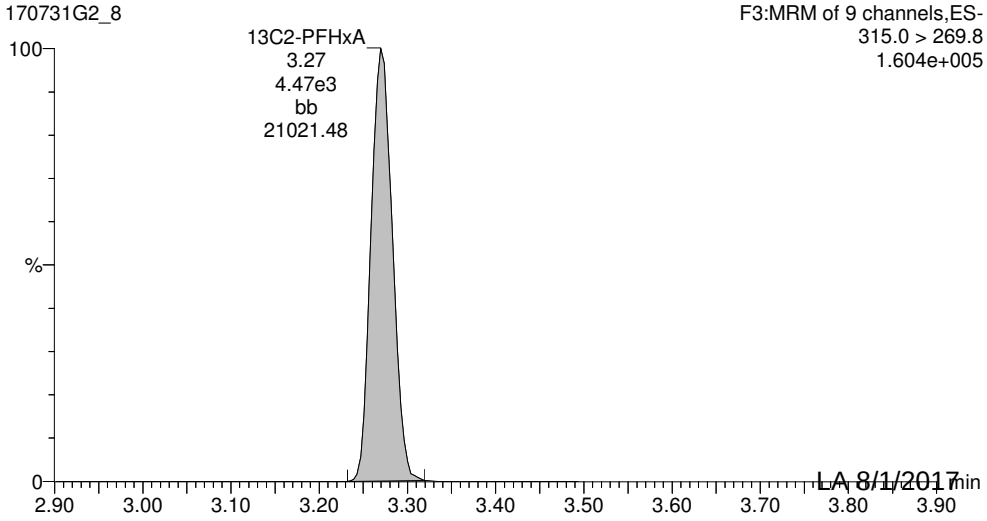




13C3-PFBS



13C2-PFHxA



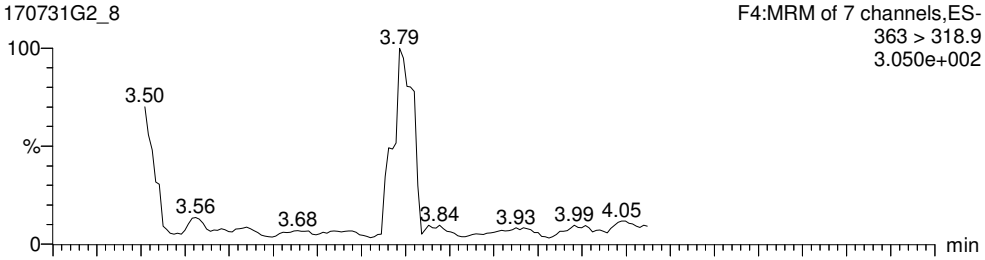
LA 8/1/2017

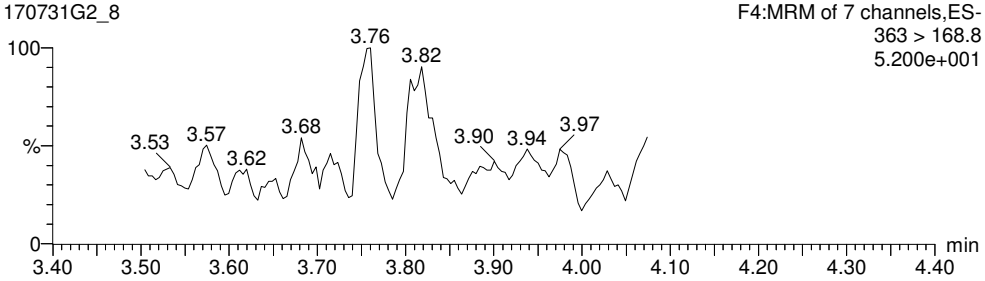
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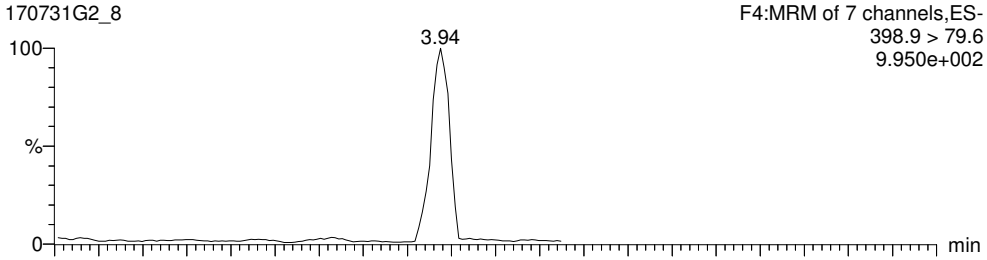
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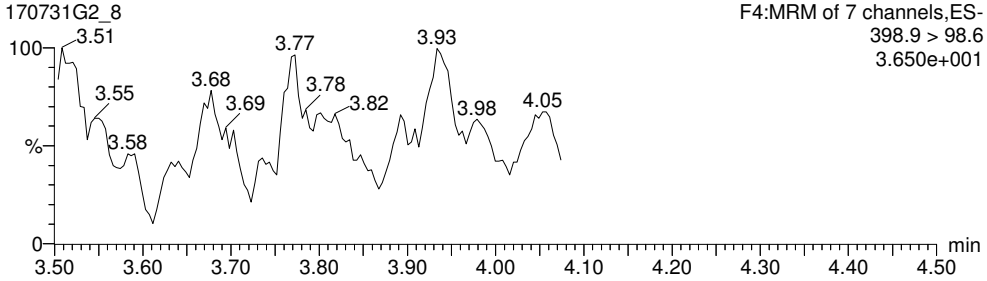
PFHpA



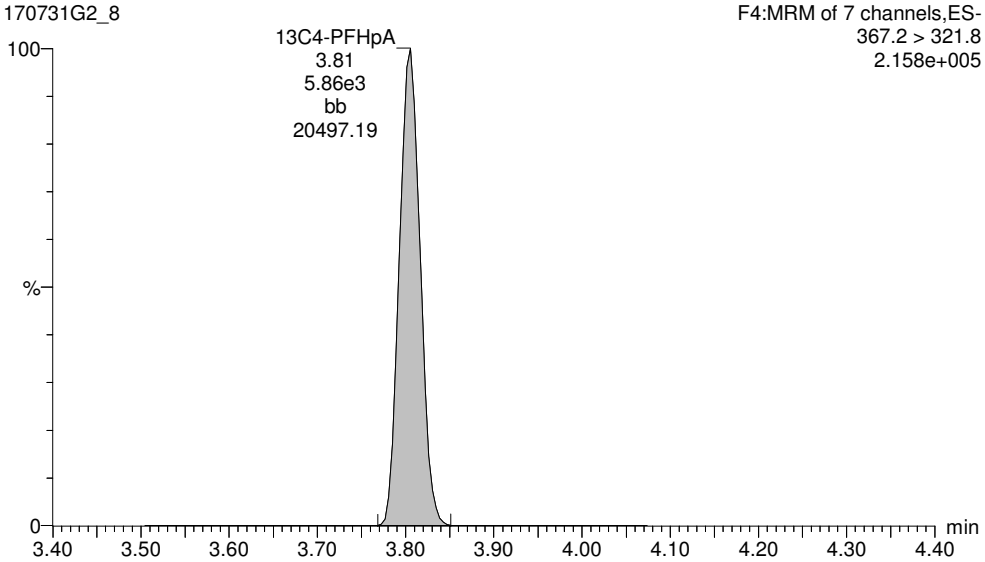


Total PFHxS

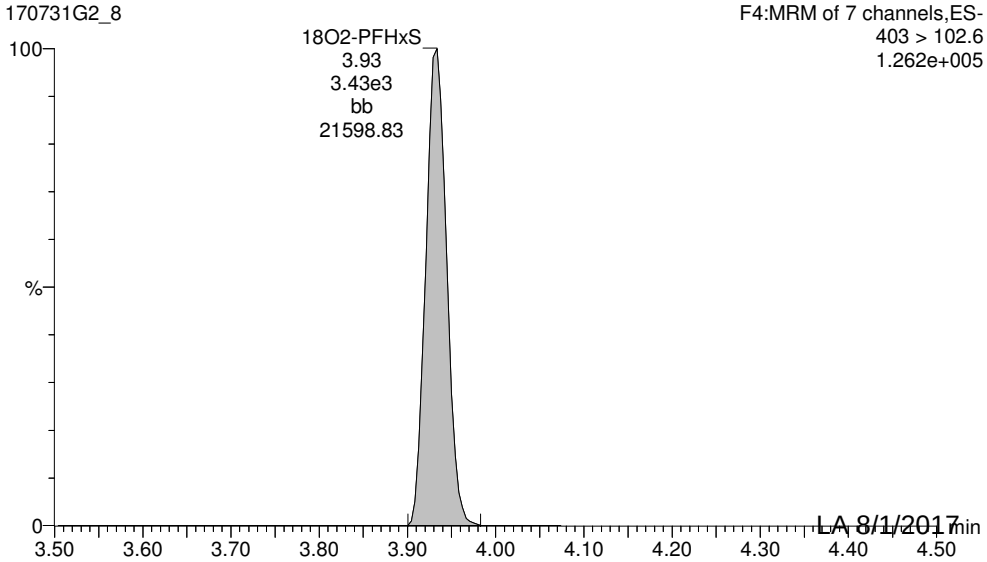




13C4-PFHpA



18O2-PFHxS



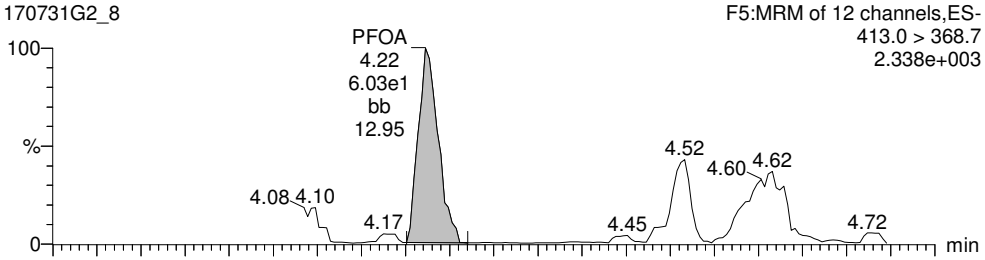
LA 8/1/2017

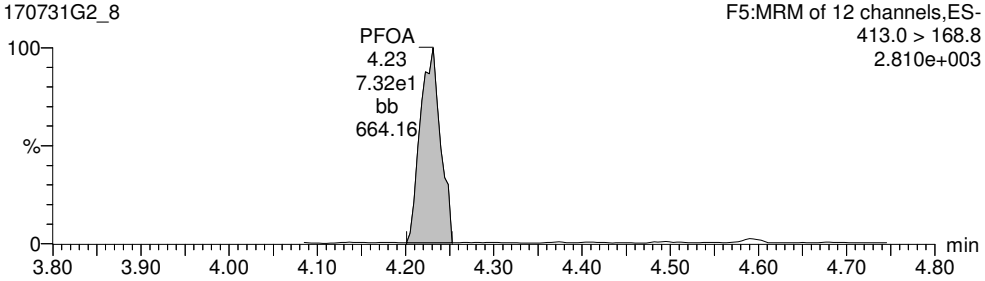
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Printed: Tuesday, August 01, 2017 12:58:26 Pacific Daylight Time

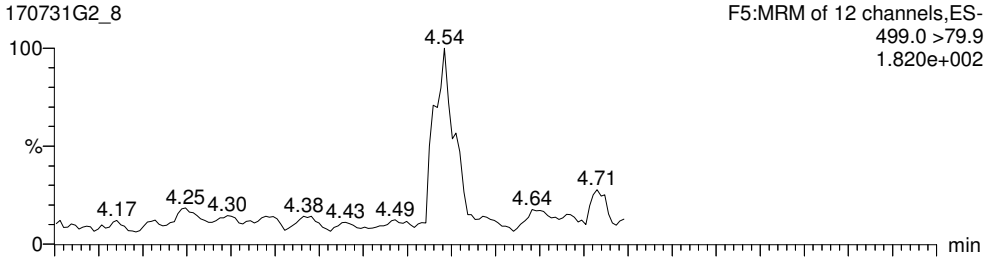
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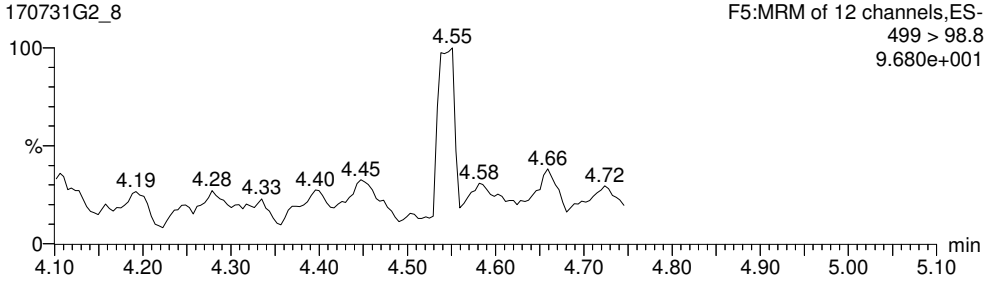
Total PFOA



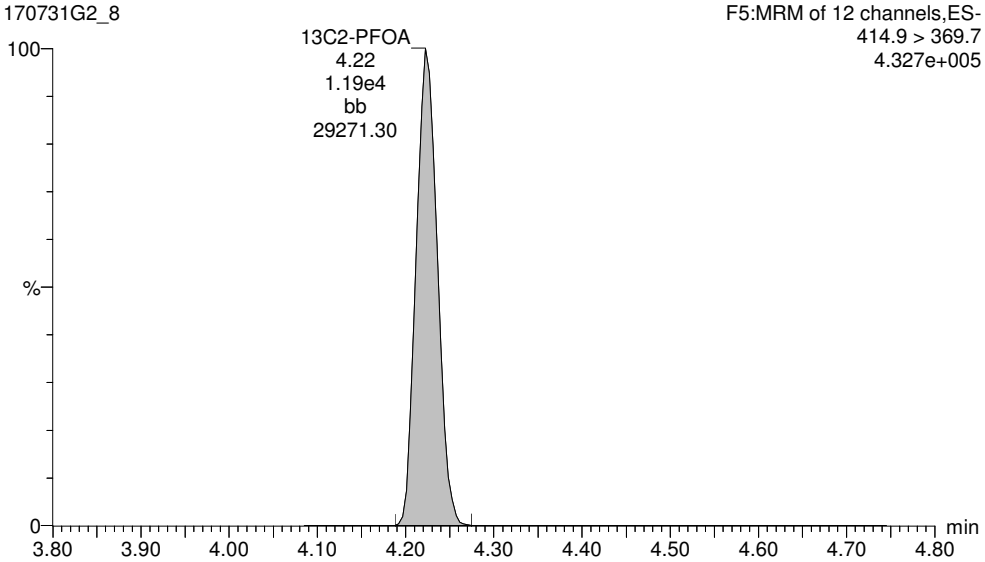


Total PFOS

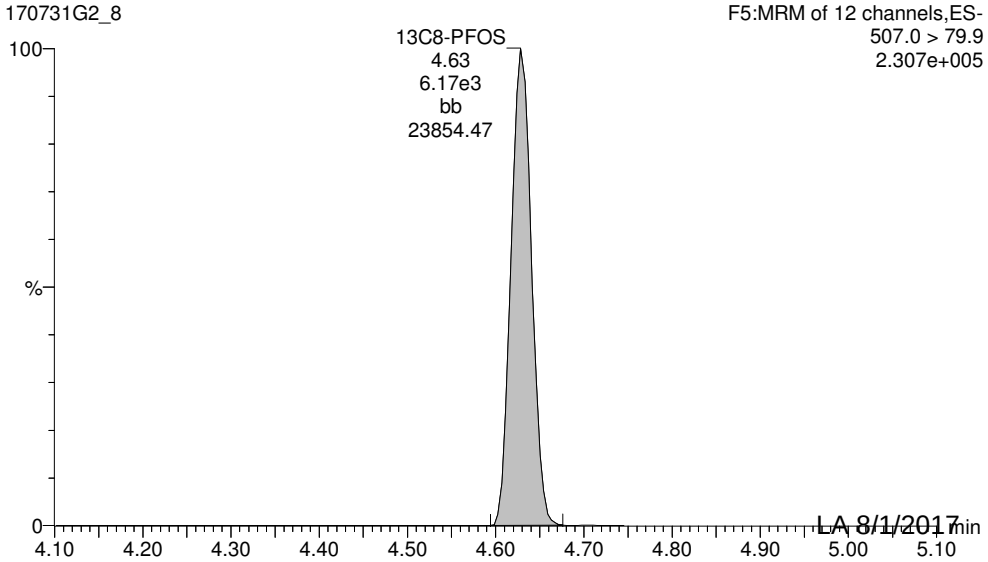




13C2-PFOA



13C8-PFOS



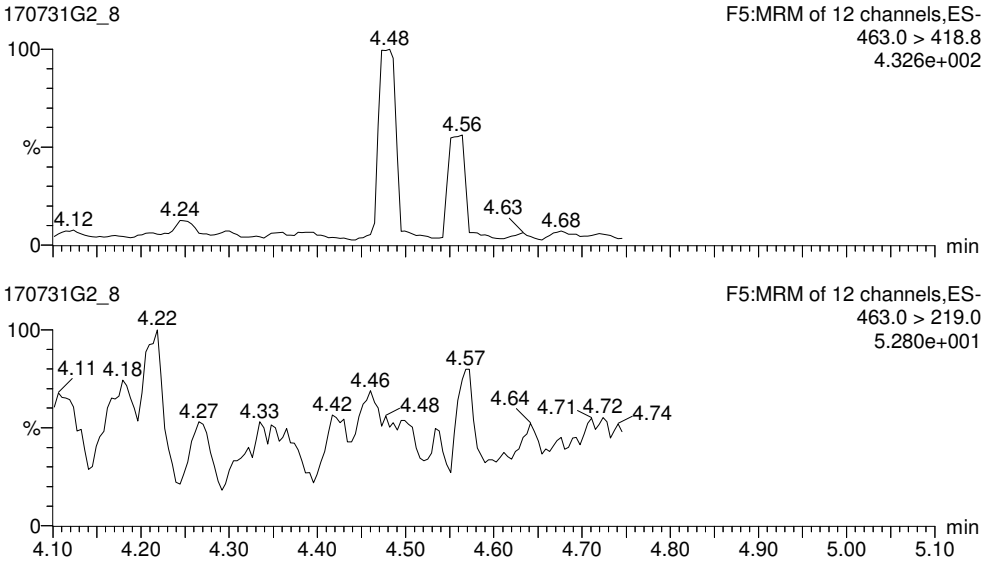
LA 8/1/2017

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-8.qld

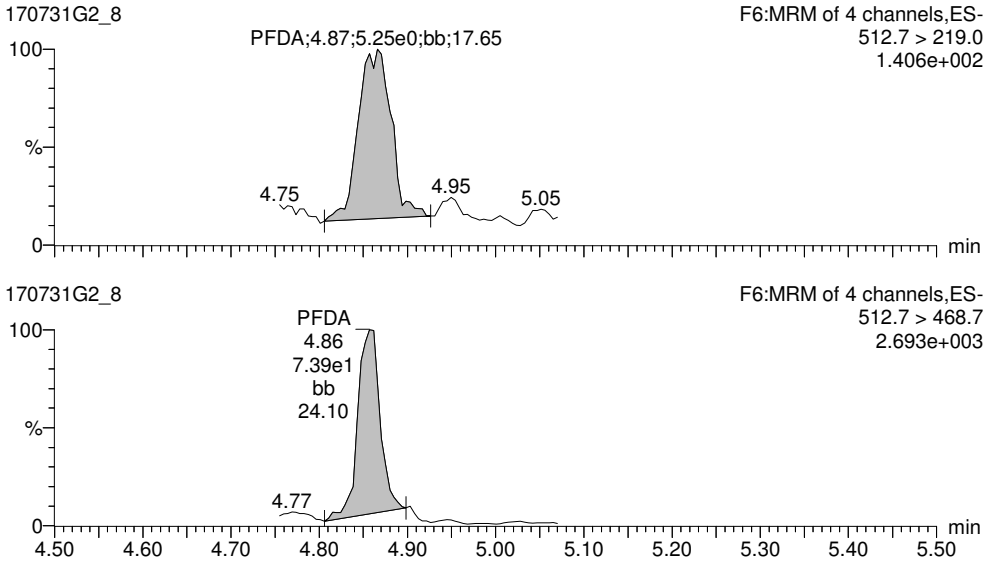
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Printed: Tuesday, August 01, 2017 12:58:26 Pacific Daylight Time

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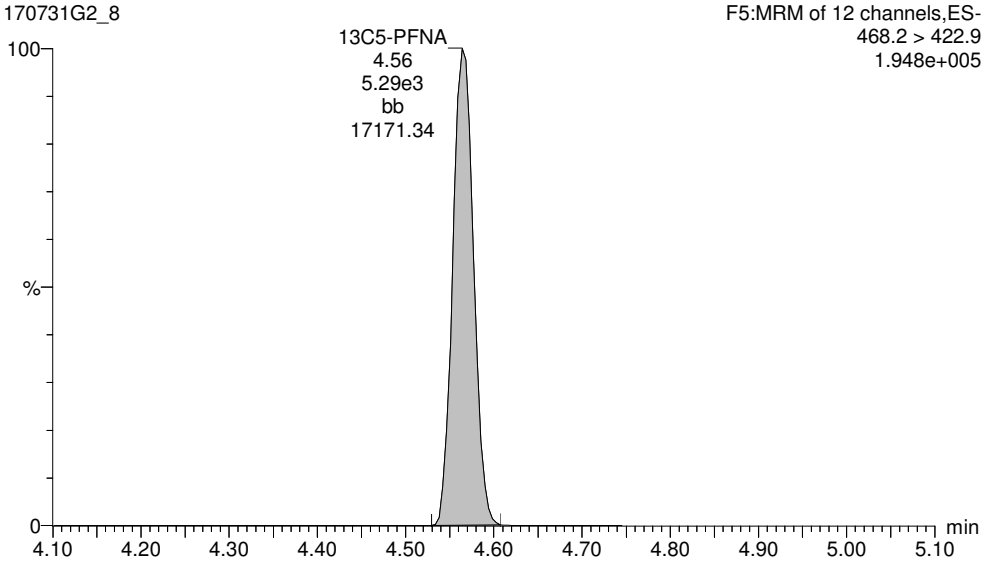
PFNA



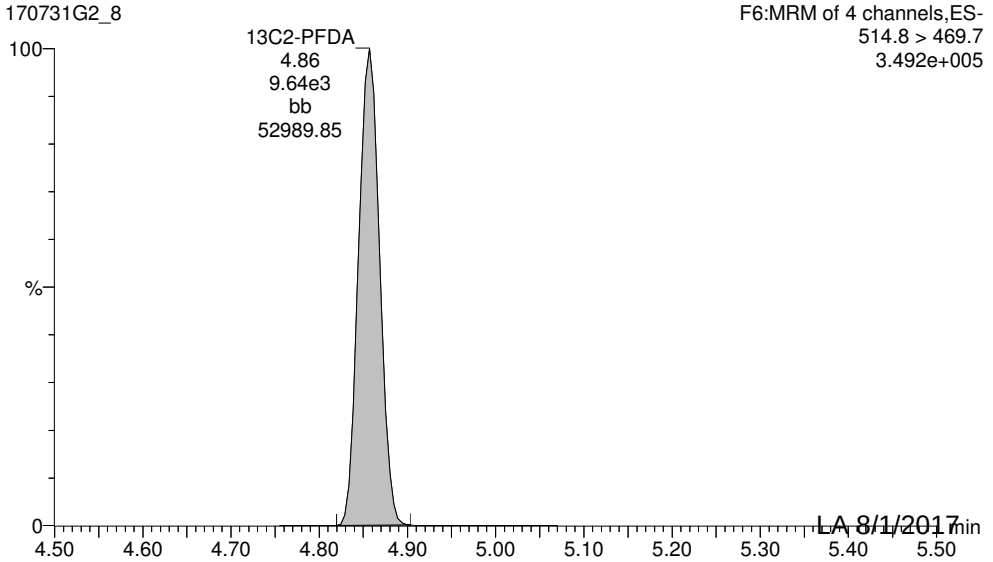
PFDA



13C5-PFNA



13C2-PFDA



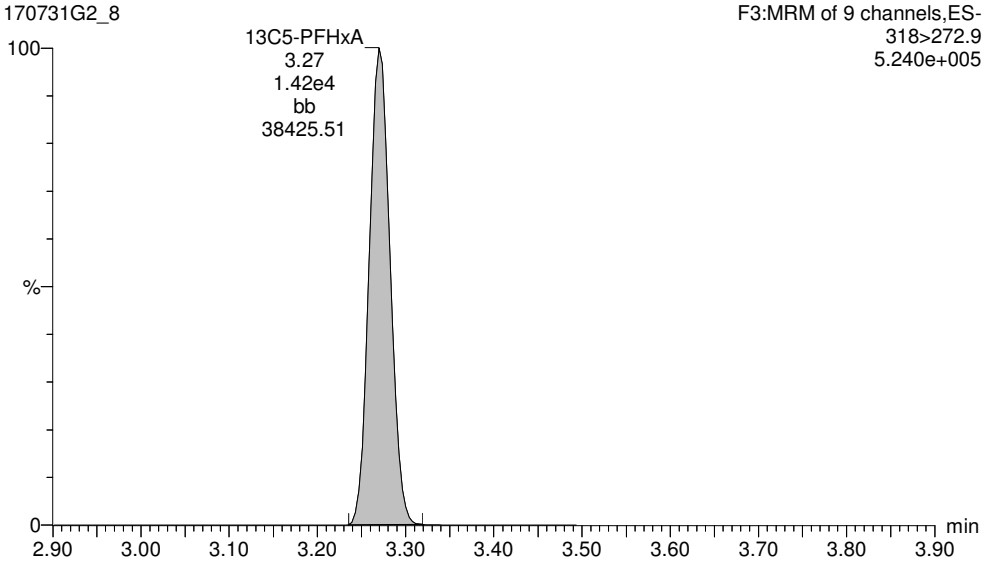
LA 8/1/2017

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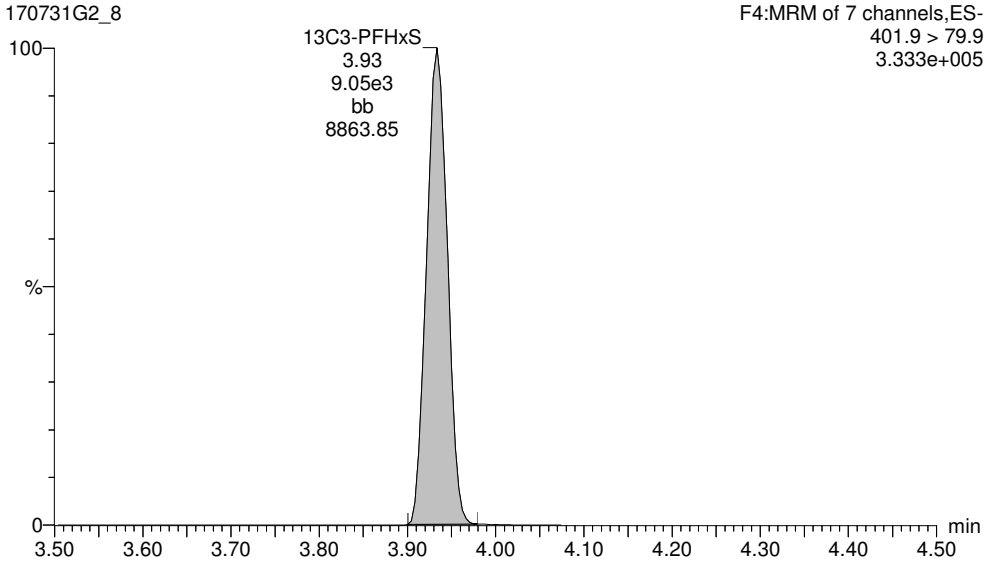
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Printed: Tuesday, August 01, 2017 12:58:26 Pacific Daylight Time

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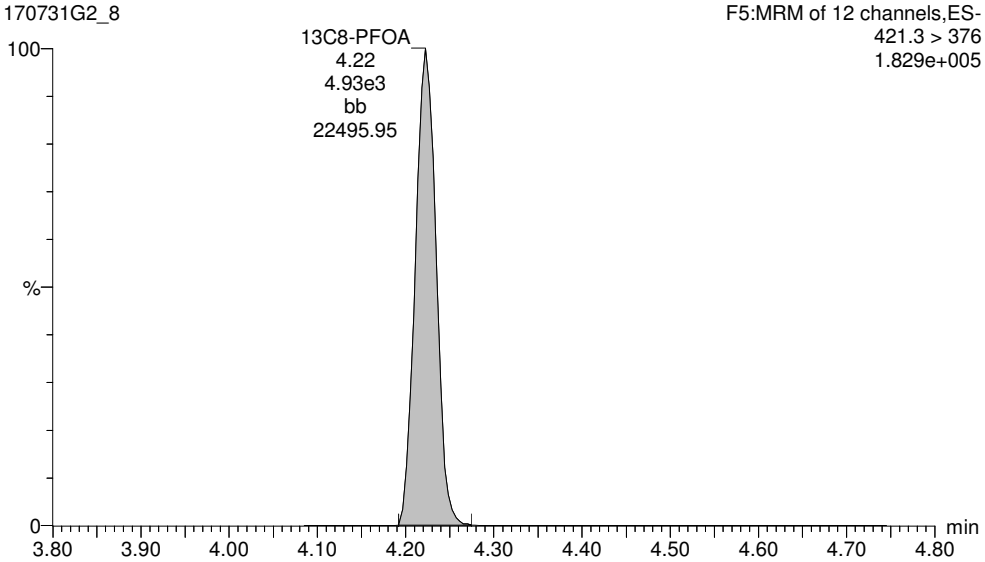
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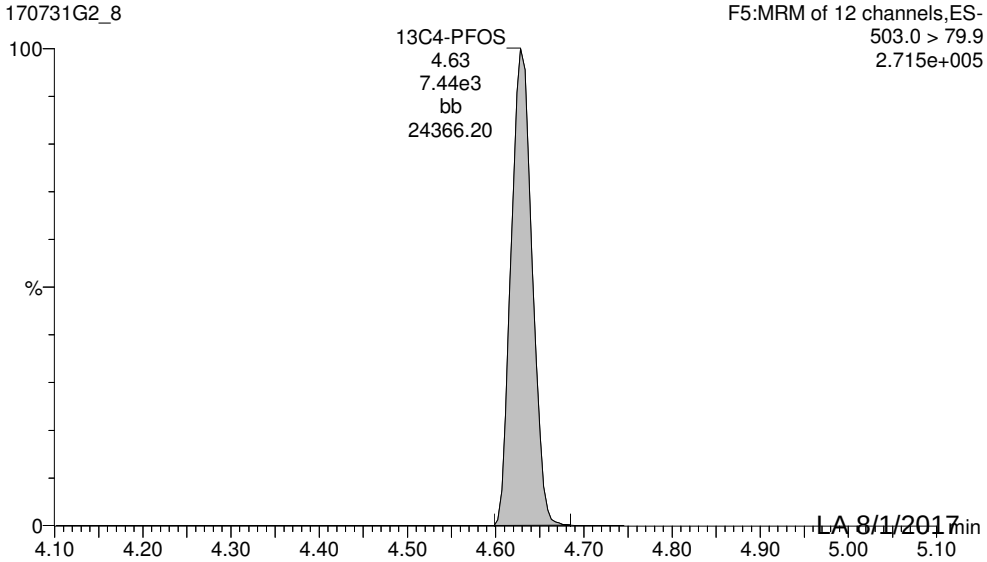
13C3-PFHxS



13C8-PFOA



13C4-PFOS



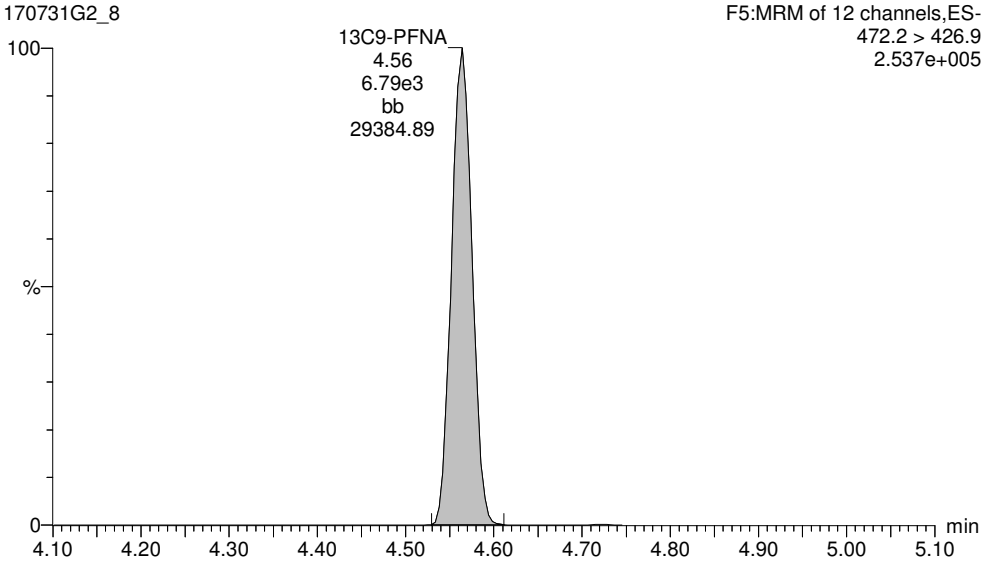
LA 8/1/2017

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-8.qld

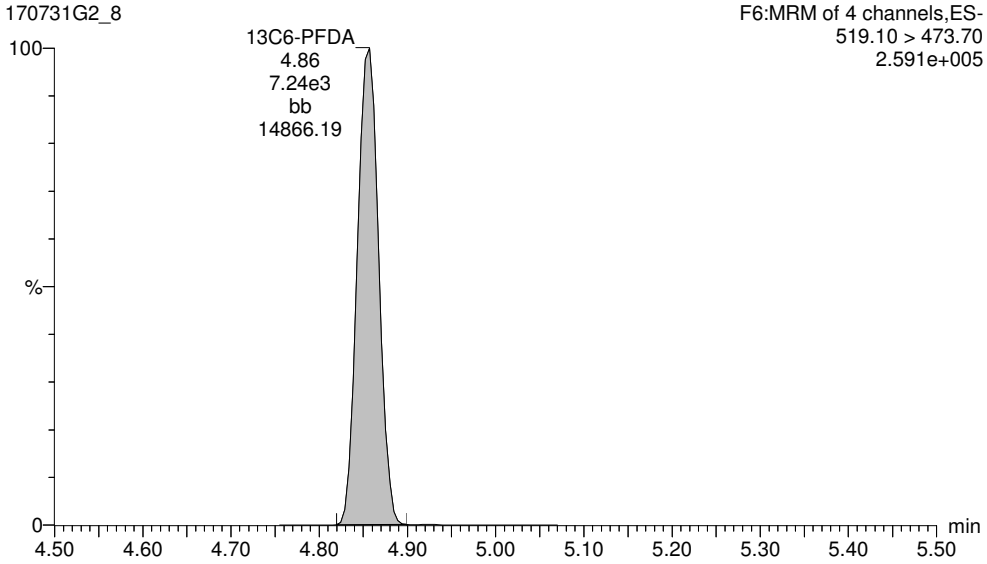
Last Altered: Monday, July 31, 2017 11:22:46 Pacific Daylight Time
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ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G2_8, Date: 31-Jul-2017, Time: 11:02:39, Instrument: , Lab: , User:

13C9-PFNA



13C6-PFDA



LA 8/1/2017

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-6.qld

Last Altered: Monday, July 31, 2017 16:24:20 Pacific Daylight Time
Printed: Wednesday, August 02, 2017 14:11:20 Pacific Daylight Time

Method: U:\G1.PRO\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G1_6, Date: 31-Jul-2017, Time: 14:54:16

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec	
1	2	N-MeFOSAA	570.1 > 419.0		2.887e3		0.125				
2	4	PFUnA	563 > 518.9	2.897e2	1.446e4		0.125	5.12			
3	5	N-EtFOSAA	584.2 > 419.0		3.389e3		0.125				
4	6	PFDoA	612.9 > 318.8		1.771e4		0.125				
5	7	PFTrDA	662.9 > 618.9		0.000e0		0.125				
6	8	PFTeDA	712.9 > 668.8	1.682e2	1.496e4		0.125	5.73			
7	10	d3-N-MeFOSAA	573.3 > 419.0	2.887e3	1.666e4	0.026	0.125	4.99	657	50.5	
8	11	13C2-PFUnA	565 > 519.8	1.446e4	1.666e4	1.471	0.125	5.13	59.0	59.0	
9	12	d5-N-EtFOSAA	589.3 > 419.0	3.389e3	1.666e4	0.031	0.125	5.11	654	50.3	
10	13	13C2-PFDoA	615 > 569.7	1.771e4	1.666e4	1.887	0.125	5.36	56.4	56.4	
11	14	13C2-PFTeDA	715 > 669.7	1.496e4	1.666e4	1.990	0.125	5.74	45.1	45.1	H
12	15	13C7-PFUnA	570.1 > 524.8	1.666e4	1.666e4	1.000	0.125	5.12	100	100	
13	16	Total N-MeFOSAA	570.1 > 419.0		2.887e3		0.125				
14	17	Total N-EtFOSAA	584.2 > 419.0		3.389e3		0.125				

LA 8/2/2017

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-6.qld

Last Altered: Monday, July 31, 2017 16:24:20 Pacific Daylight Time
Printed: Wednesday, August 02, 2017 14:11:20 Pacific Daylight Time

Method: U:\G1.PRO\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G1_6, Date: 31-Jul-2017, Time: 14:54:16

Total N-MeFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

Total N-EtFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

LA 8/2/2017

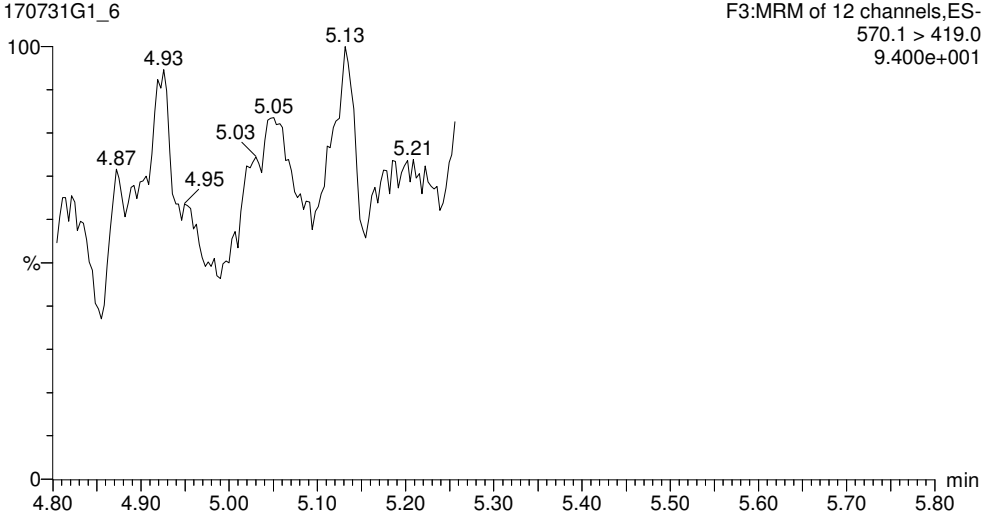
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Last Altered: Monday, July 31, 2017 16:24:20 Pacific Daylight Time
Printed: Wednesday, August 02, 2017 14:11:20 Pacific Daylight Time

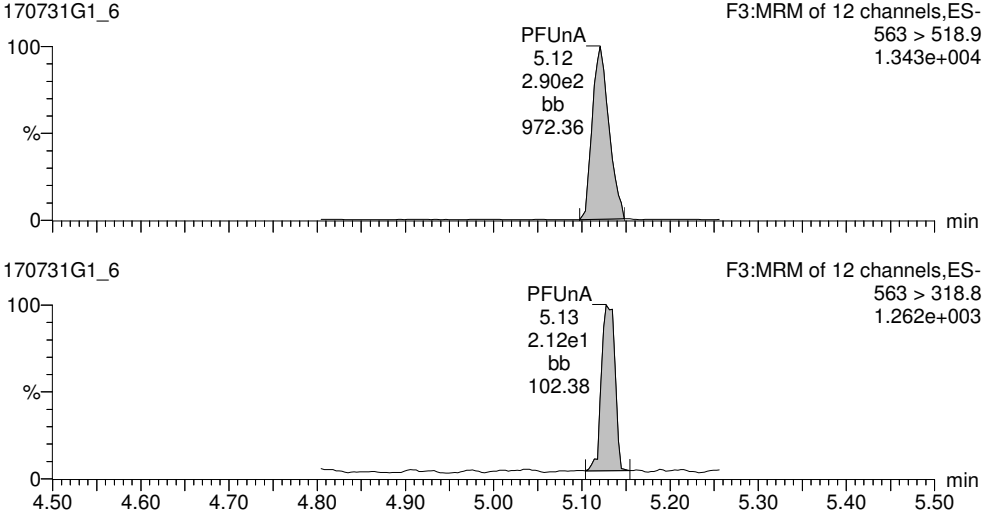
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ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G1_6, Date: 31-Jul-2017, Time: 14:54:16, Instrument: , Lab: , User:

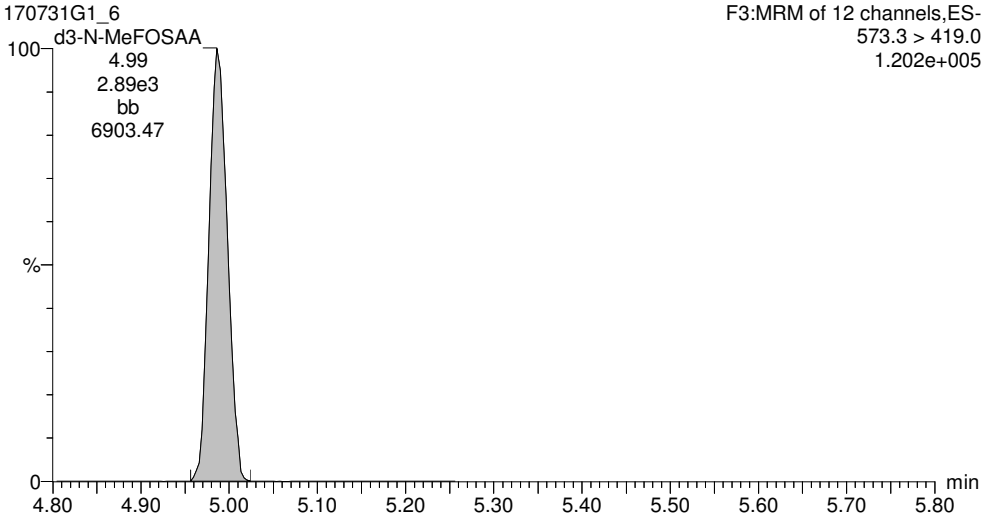
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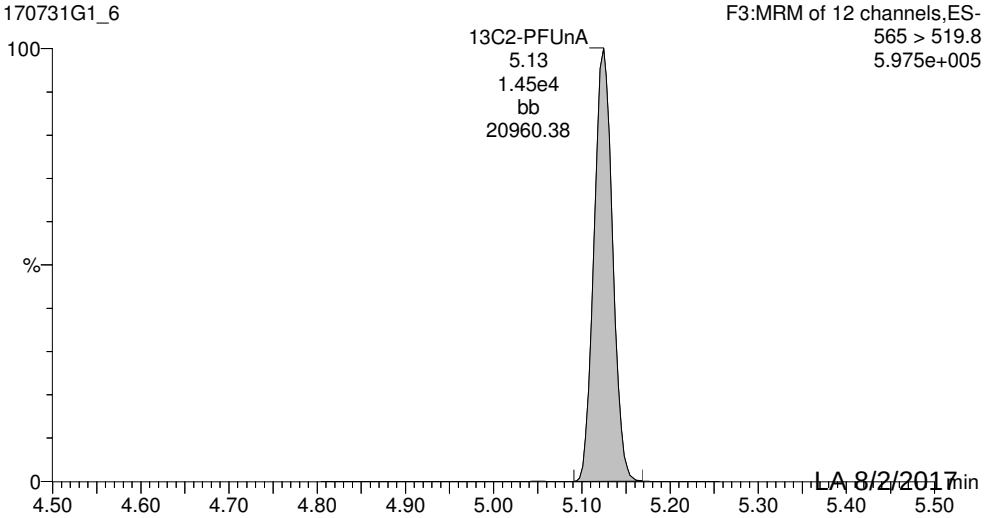
PFUnA



d3-N-MeFOSAA



13C2-PFUnA



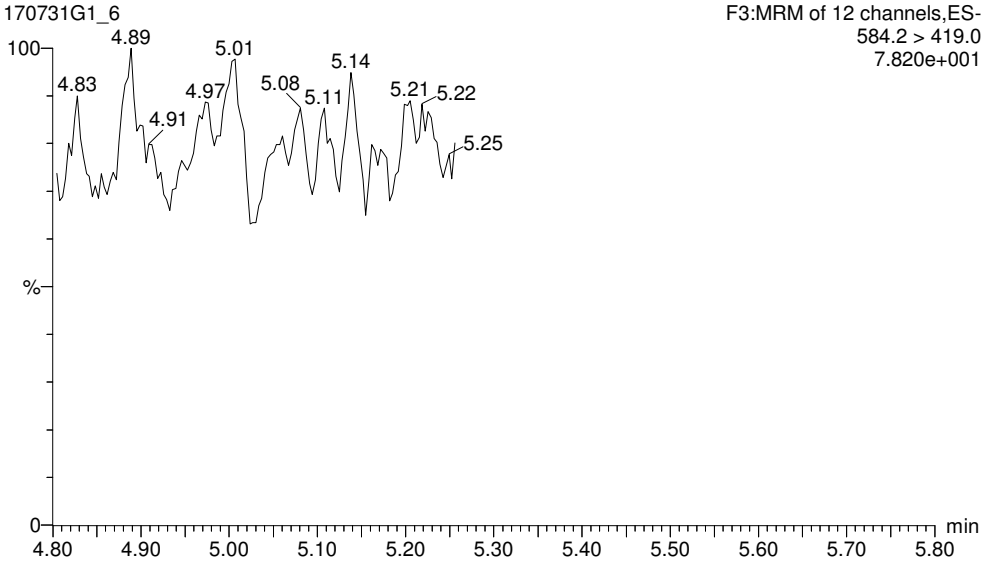
LA 8/2/2017

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-6.qld

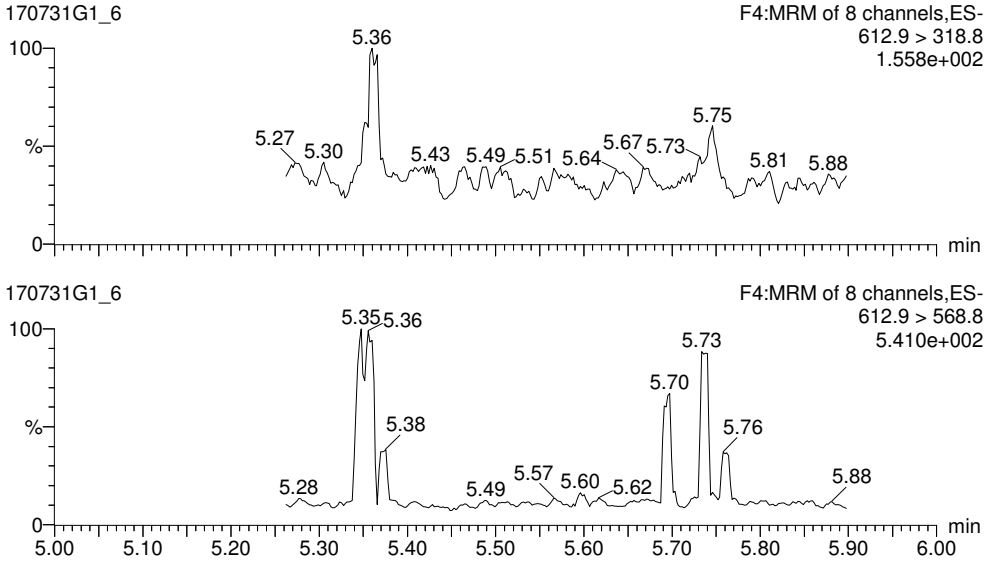
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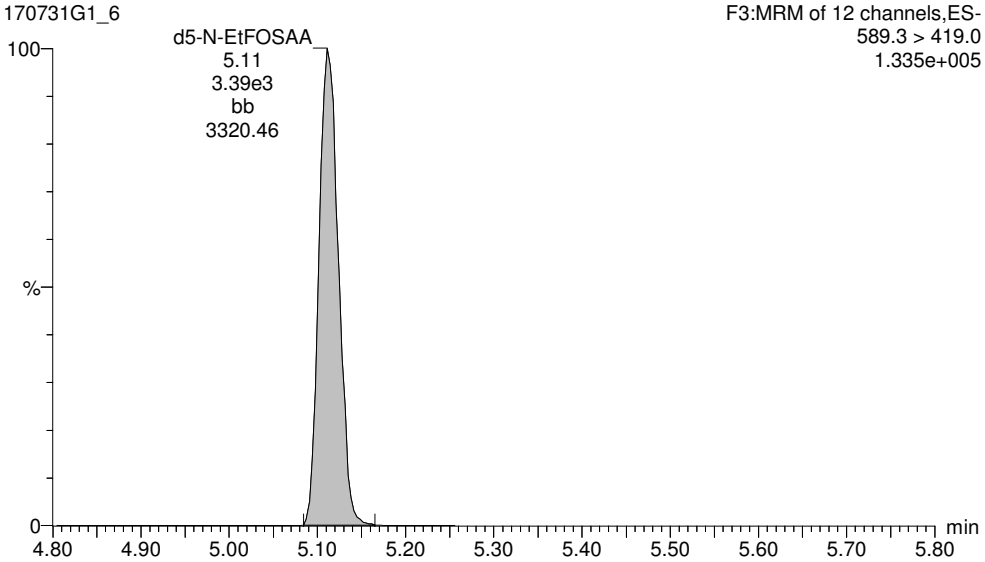
Total N-EtFOSAA



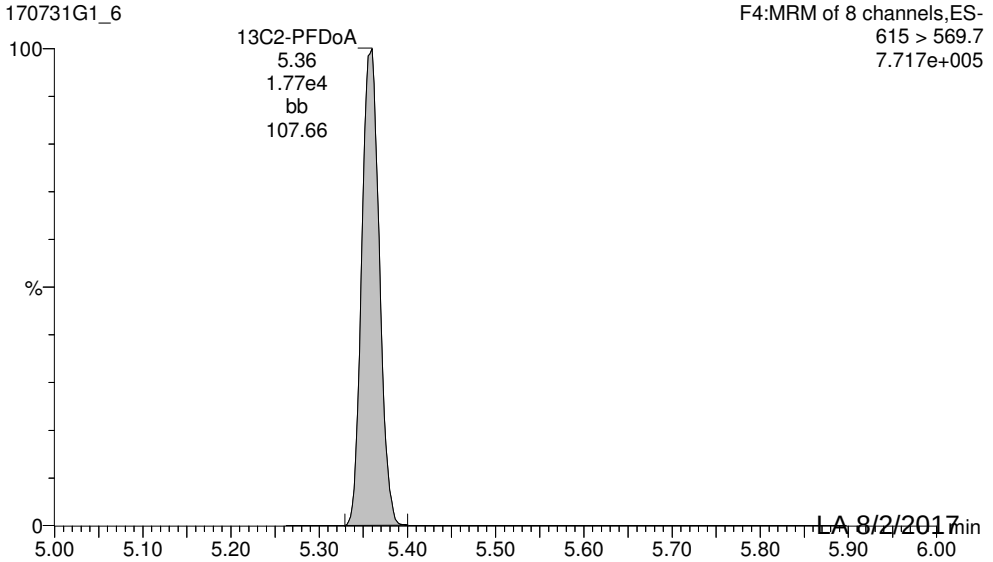
PFDoA



d5-N-EtFOSAA



13C2-PFDoA



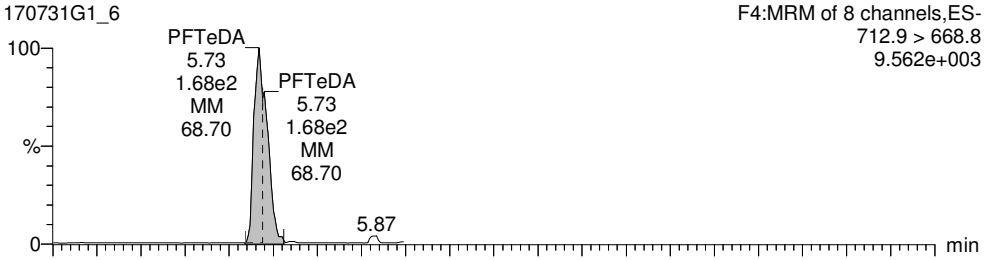
LA 8/2/2017

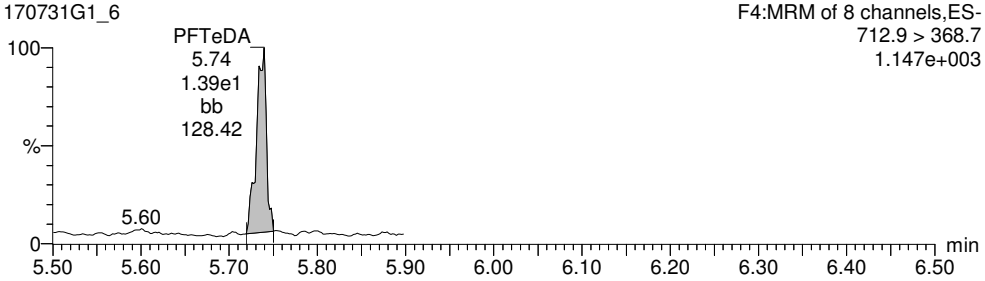
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Printed: Wednesday, August 02, 2017 14:11:20 Pacific Daylight Time

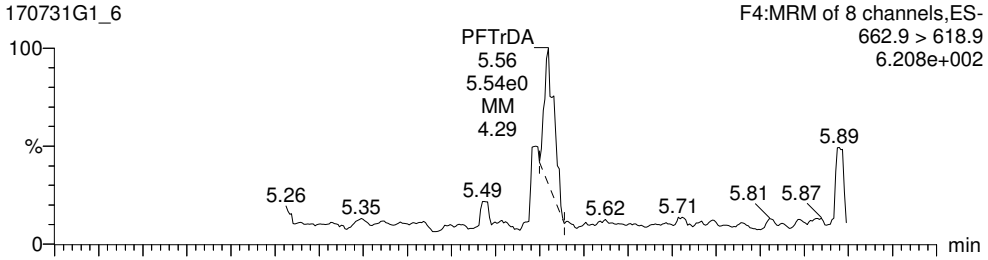
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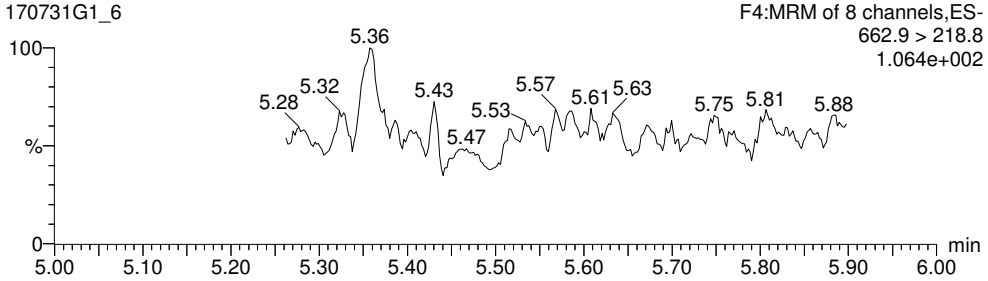
PFTeDA



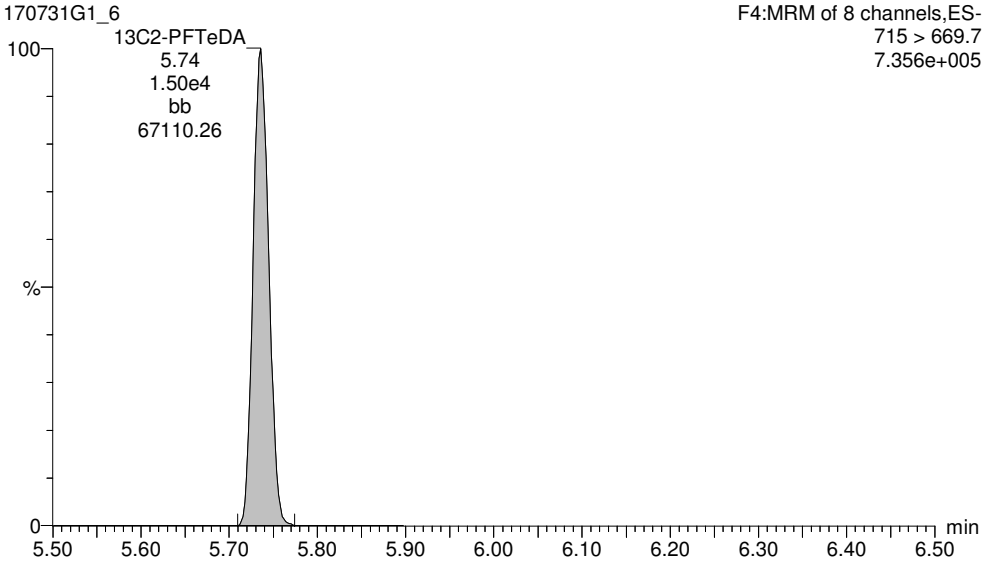


PFTrDA

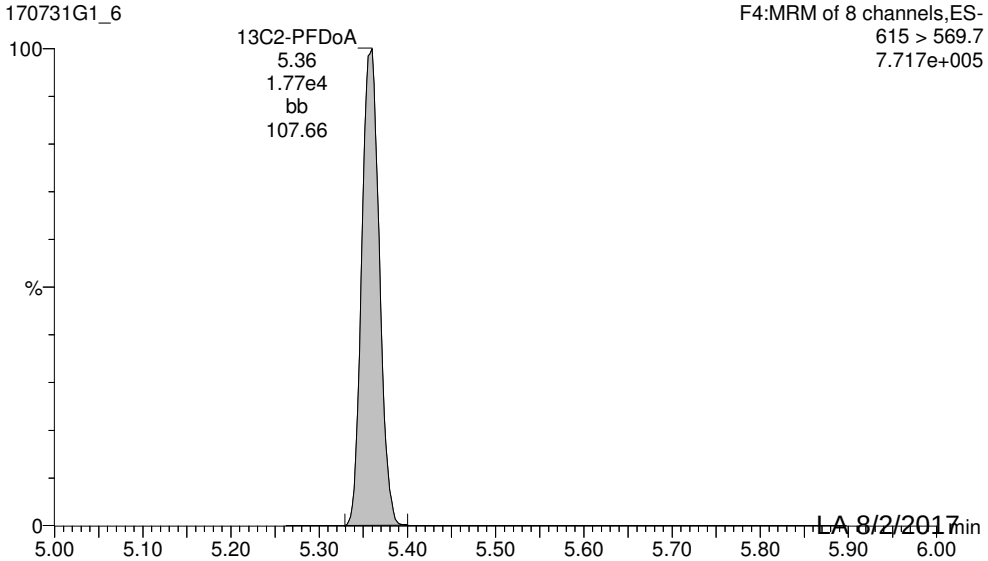




13C2-PFTeDA



13C2-PFDoA



LA 8/2/2017

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-6.qld

Last Altered: Monday, July 31, 2017 16:24:20 Pacific Daylight Time
Printed: Wednesday, August 02, 2017 14:11:20 Pacific Daylight Time

ID: B7G0079-BLK1 Method Blank 0.125, Description: Method Blank, Name: 170731G1_6, Date: 31-Jul-2017, Time: 14:54:16, Instrument: , Lab: , User:

13C7-PFUnA



LA 8/2/2017

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-6.qld

Last Altered: Monday, July 31, 2017 11:16:53 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 12:55:43 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: B7G0079-BS1 OPR 0.125, Description: OPR, Name: 170731G2_6, Date: 31-Jul-2017, Time: 10:37:29

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	3	PFBS	299.0 > 79.7	5.126e3	4.141e3		0.125	2.89	74.1	92.6
2	4	PFHxA	312.9 > 268.9	8.241e3	4.969e3		0.125	3.27	86.7	108
3	5	PFHpA	363 > 318.9	1.035e4	6.038e3		0.125	3.81	87.0	109
4	6	PFHxS	398.9 > 79.6	4.500e3	3.031e3		0.125	3.93	83.0	104
5	7	PFOA	413.0 > 368.7	8.000e3	1.100e4		0.125	4.23	90.3	113
6	8	PFNA	463.0 > 418.8	8.763e3	4.884e3		0.125	4.56	77.6	97.0
7	9	PFOS	499.0 >79.9	2.303e3	6.359e3		0.125	4.63	76.5	95.7
8	10	PFDA	512.7 > 219.0	1.413e3	9.155e3		0.125	4.86	77.5	96.9
9	12	13C3-PFBS	302.0 > 98.8	4.141e3	1.473e4	0.263	0.125	2.89	107	107
10	14	13C2-PFHxA	315.0 > 269.8	4.969e3	1.473e4	0.361	0.125	3.27	93.6	93.6
11	15	13C4-PFHpA	367.2 > 321.8	6.038e3	1.473e4	0.475	0.125	3.81	86.2	86.2
12	16	18O2-PFHxS	403 > 102.6	3.031e3	8.357e3	0.411	0.125	3.93	88.3	88.3
13	17	13C2-PFOA	414.9 > 369.7	1.100e4	4.279e3	2.843	0.125	4.22	90.4	90.4
14	18	13C5-PFNA	468.2 > 422.9	4.884e3	6.276e3	0.854	0.125	4.56	91.2	91.2
15	19	13C2-PFDA	514.8 > 469.7	9.155e3	6.876e3	1.742	0.125	4.86	76.4	76.4
16	20	13C8-PFOS	507.0 > 79.9	6.359e3	7.385e3	0.927	0.125	4.63	92.9	92.9
17	22	13C5-PFHxA	318>272.9	1.473e4	1.473e4	1.000	0.125	3.27	100	100
18	23	13C3-PFHxS	401.9 > 79.9	8.357e3	8.357e3	1.000	0.125	3.93	100	100
19	24	13C8-PFOA	421.3 > 376	4.279e3	4.279e3	1.000	0.125	4.22	100	100
20	25	13C9-PFNA	472.2 > 426.9	6.276e3	6.276e3	1.000	0.125	4.56	100	100
21	26	13C4-PFOS	503.0 > 79.9	7.385e3	7.385e3	1.000	0.125	4.63	100	100
22	27	13C6-PFDA	519.10 > 473.70	6.876e3	6.876e3	1.000	0.125	4.86	100	100
23	28	Total PFBS	299.0 > 79.7		4.141e3		0.125		74.1	
24	29	Total PFHxS	398.9 > 79.6		3.031e3		0.125		83.0	
25	30	Total PFOA	413.0 > 368.7		1.100e4		0.125		90.3	
26	31	Total PFOS	499.0 >79.9		6.359e3		0.125		76.5	

LA 8/1/2017

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-6.qld

Last Altered: Monday, July 31, 2017 11:16:53 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 12:55:43 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: B7G0079-BS1 OPR 0.125, Description: OPR, Name: 170731G2_6, Date: 31-Jul-2017, Time: 10:37:29

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	3	PFBS	299.0 > 79.7	2.89	5126.127	4140.785	74.1

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	6	PFHxS	398.9 > 79.6	3.93	4500.121	3030.833	83.0

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	7	PFOA	413.0 > 368.7	4.23	8000.339	10997.512	90.3

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	9	PFOS	499.0 >79.9	4.63	2302.586	6359.301	76.5

LA 8/1/2017

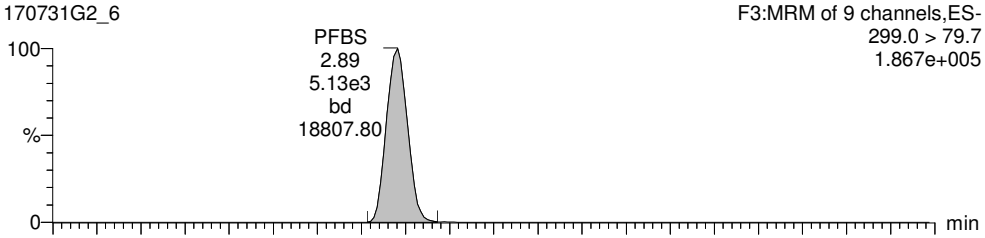
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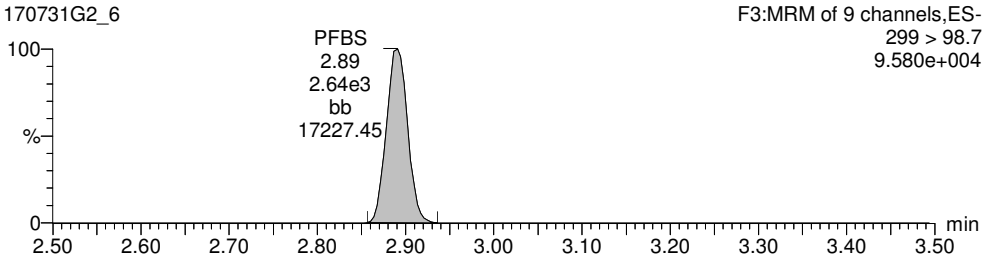
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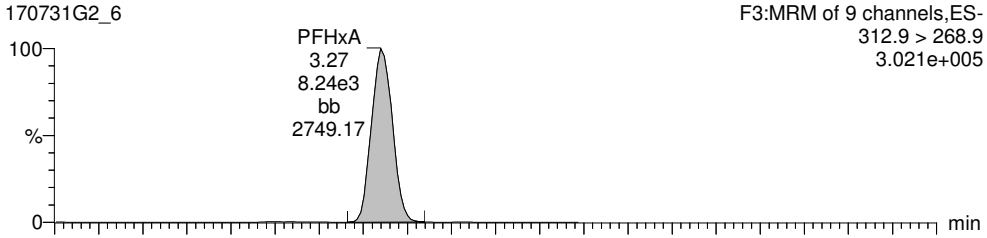
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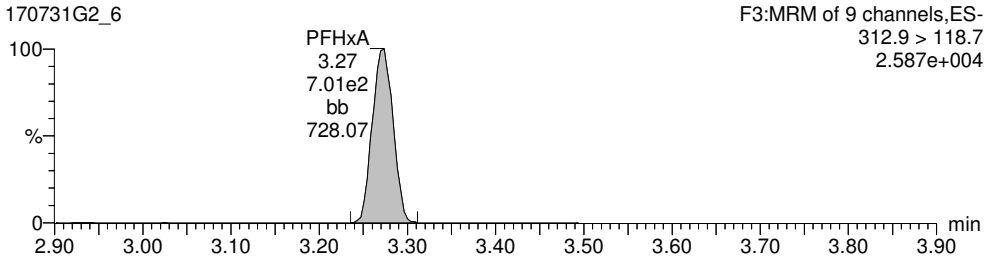
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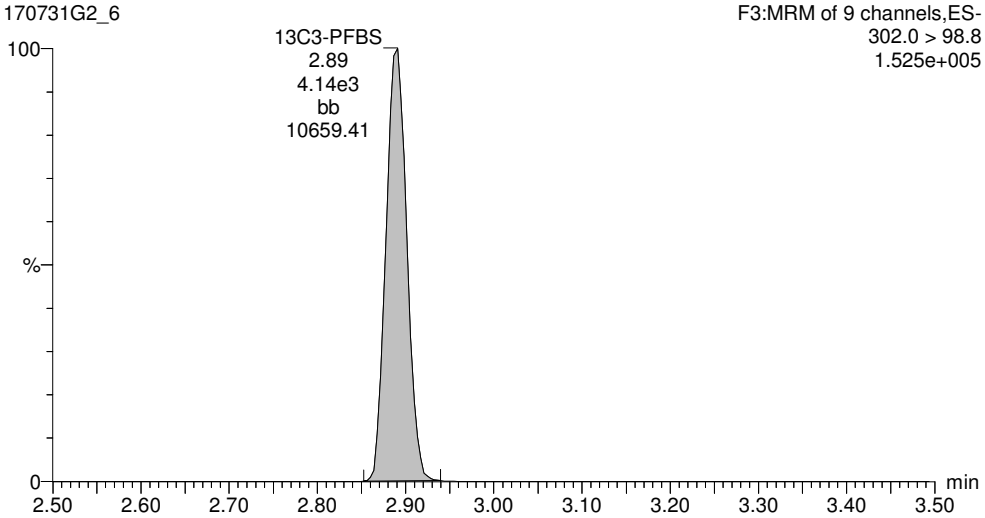


PFHxA

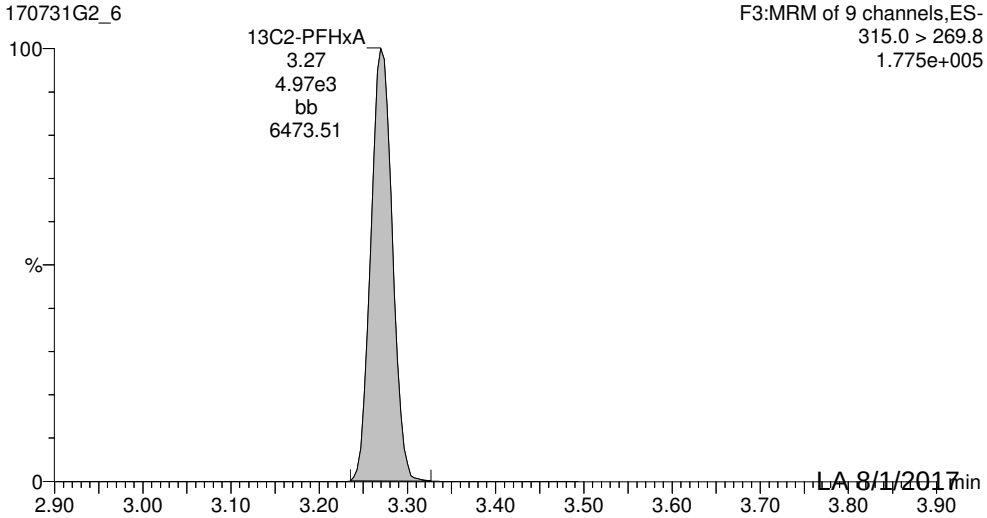




13C3-PFBS



13C2-PFHxA



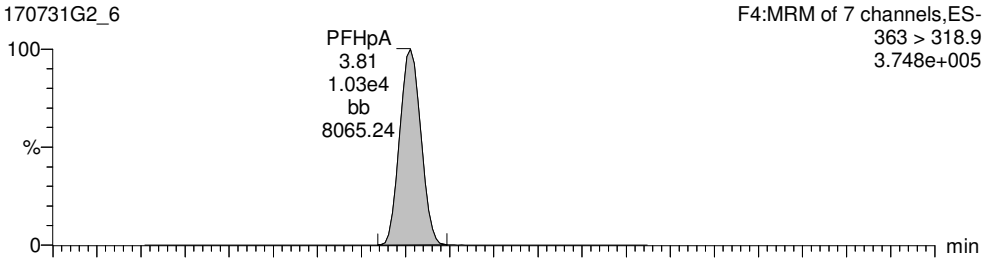
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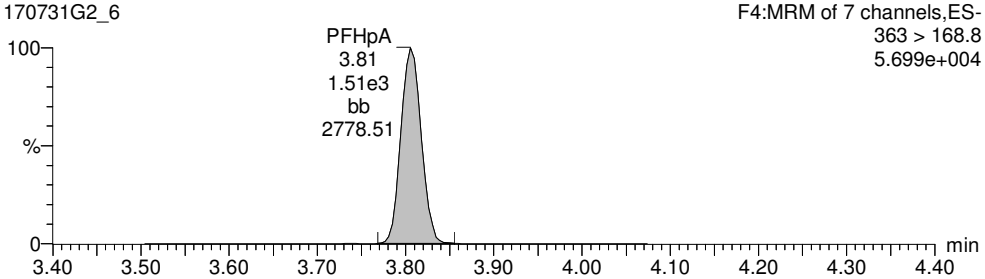
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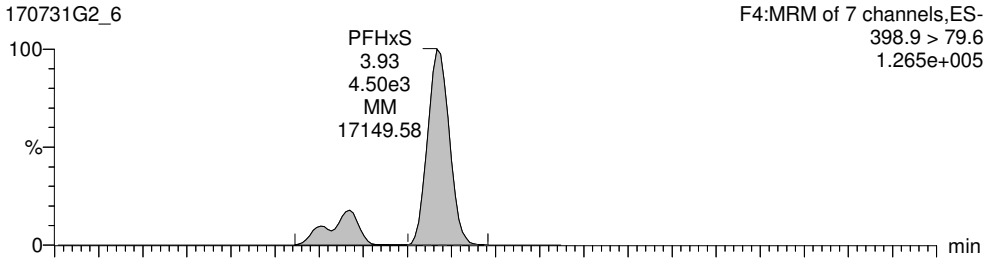
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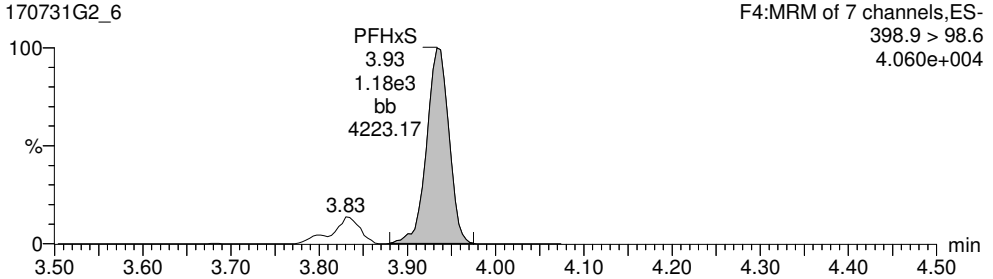
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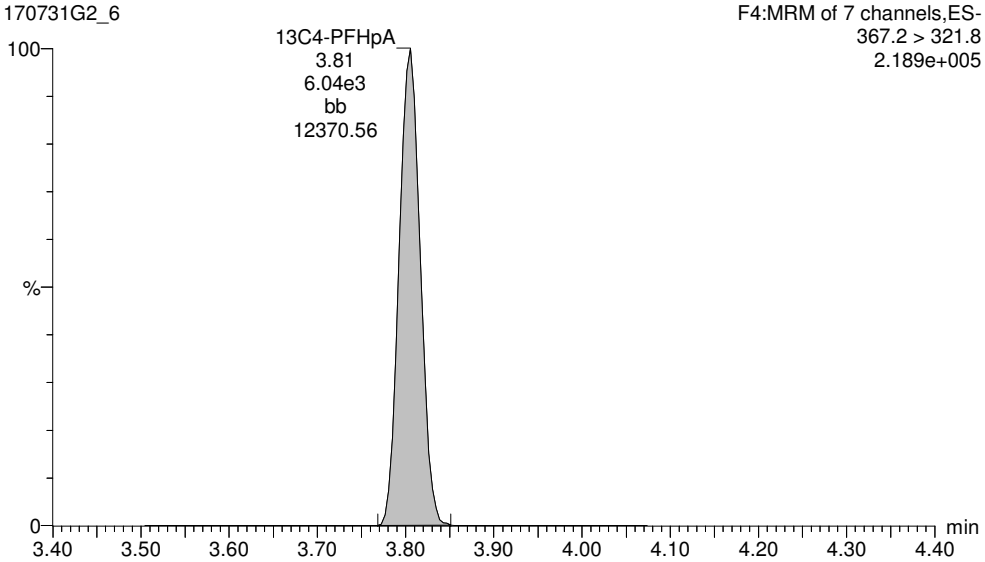


Total PFHxS

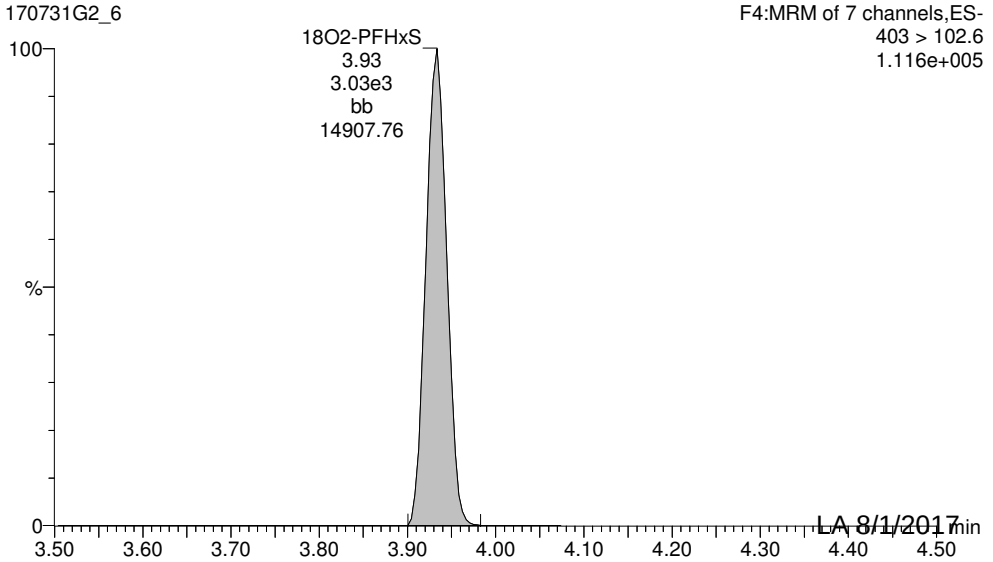




13C4-PFHpA



18O2-PFHxS



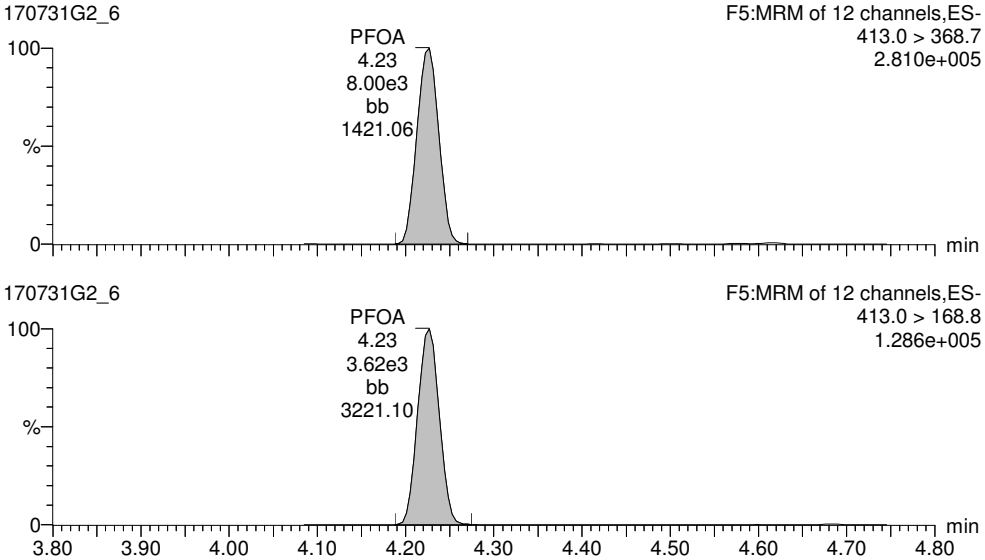
LA 8/1/2017

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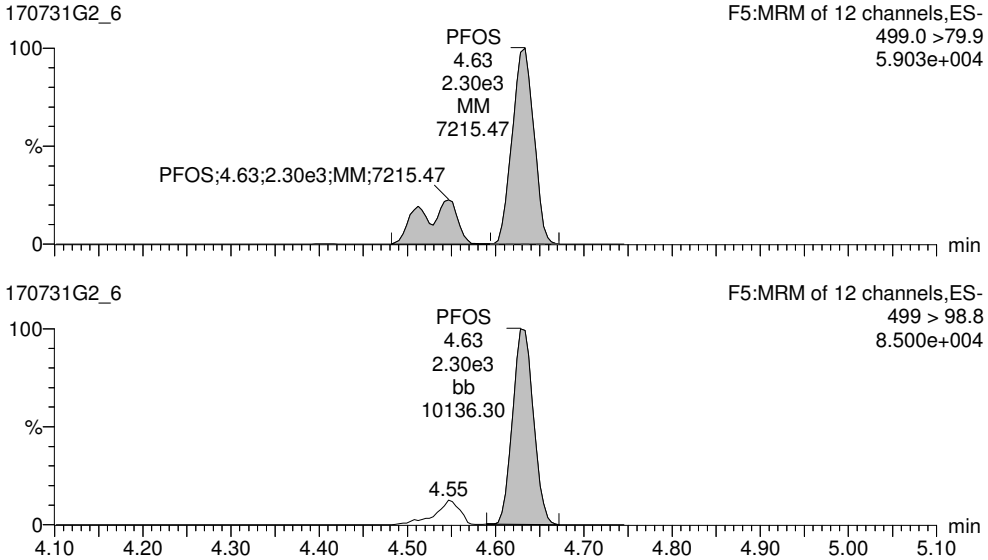
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Printed: Tuesday, August 01, 2017 12:55:43 Pacific Daylight Time

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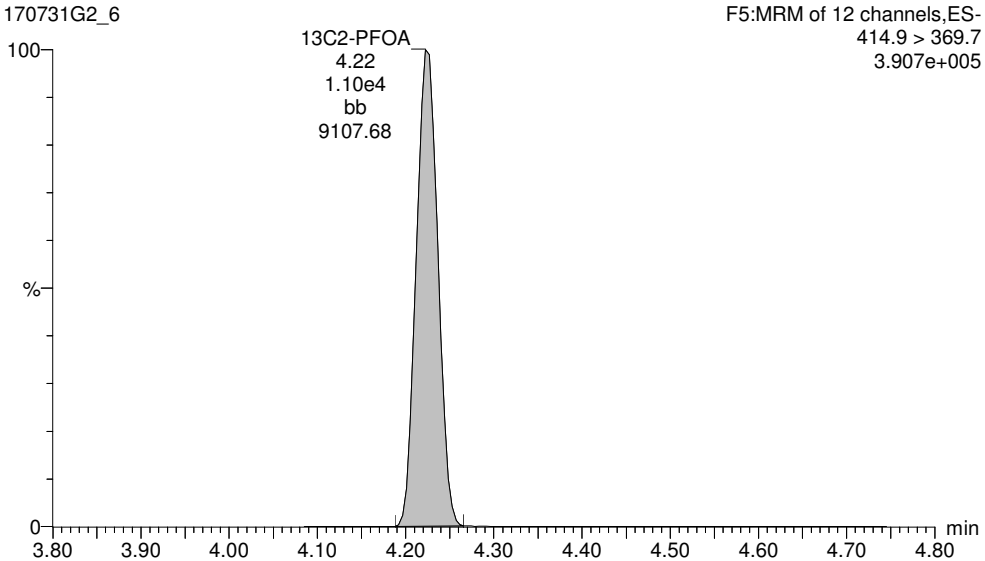
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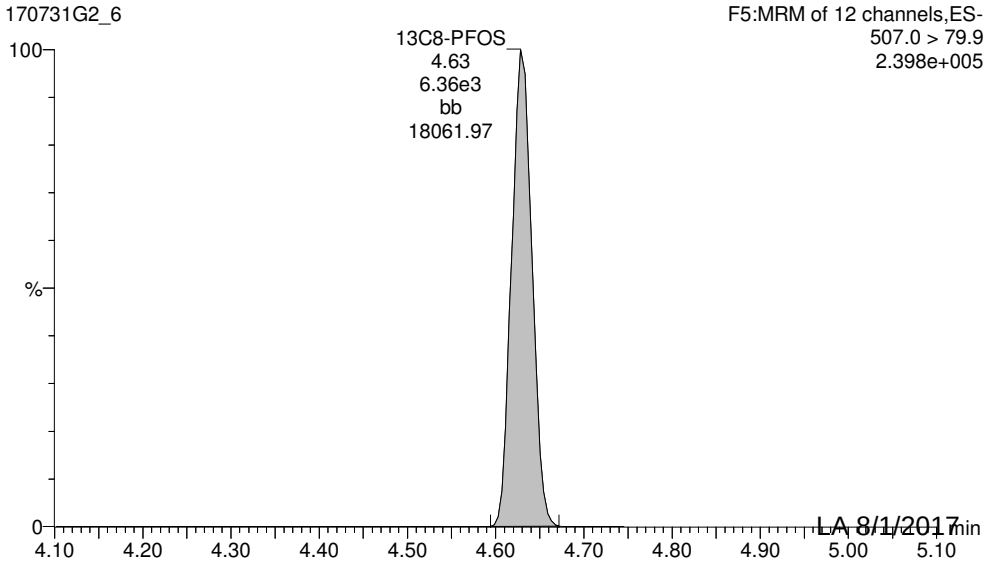
Total PFOS



13C2-PFOA



13C8-PFOS



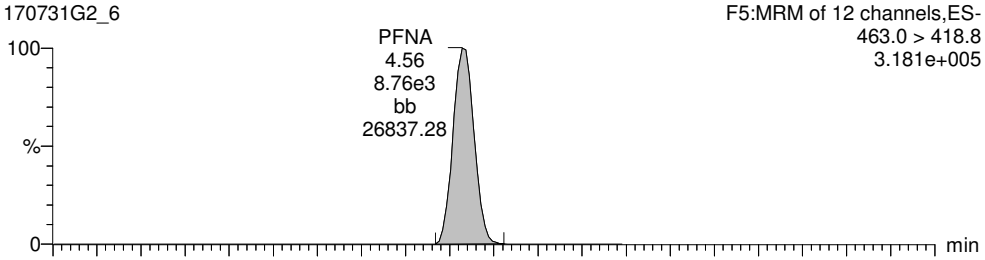
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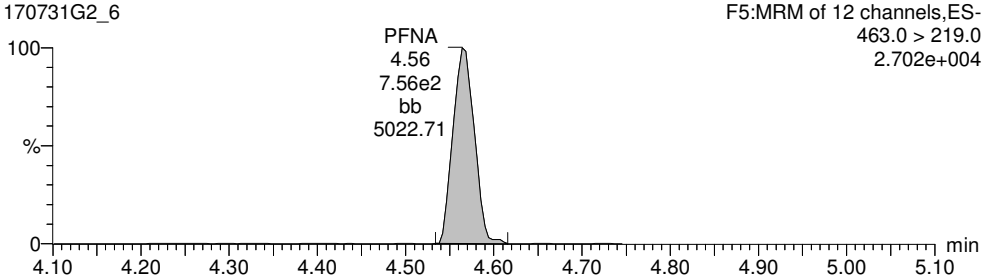
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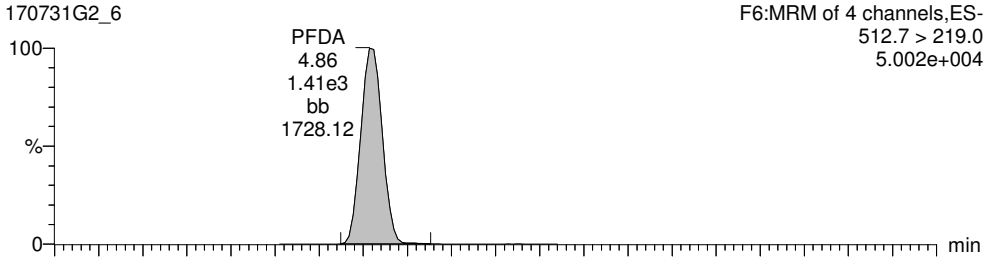
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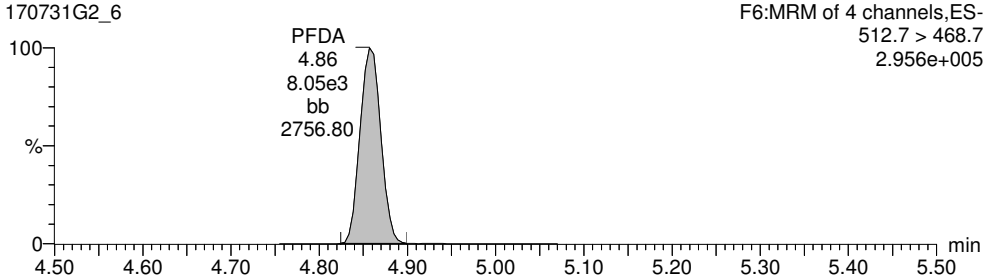
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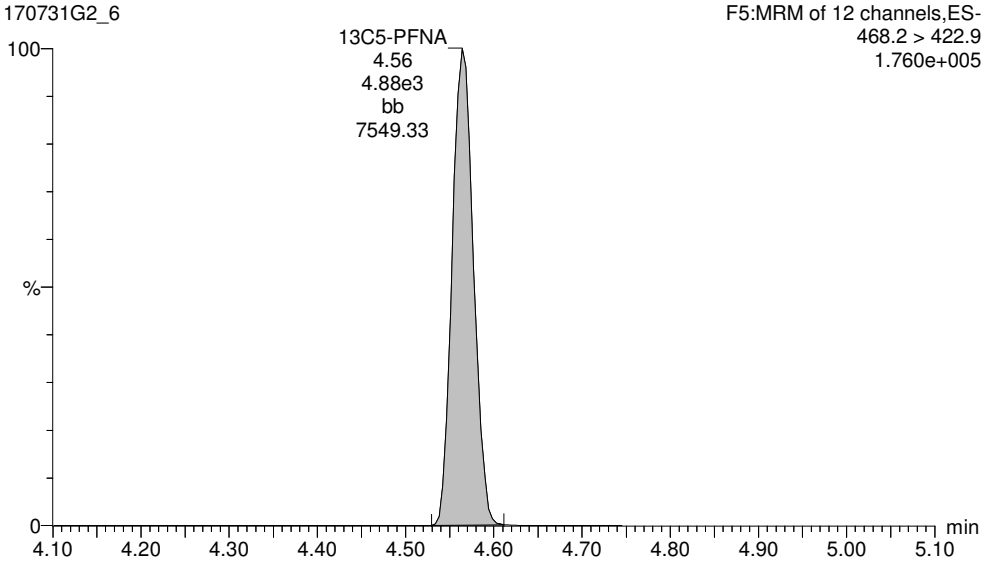


PFDA

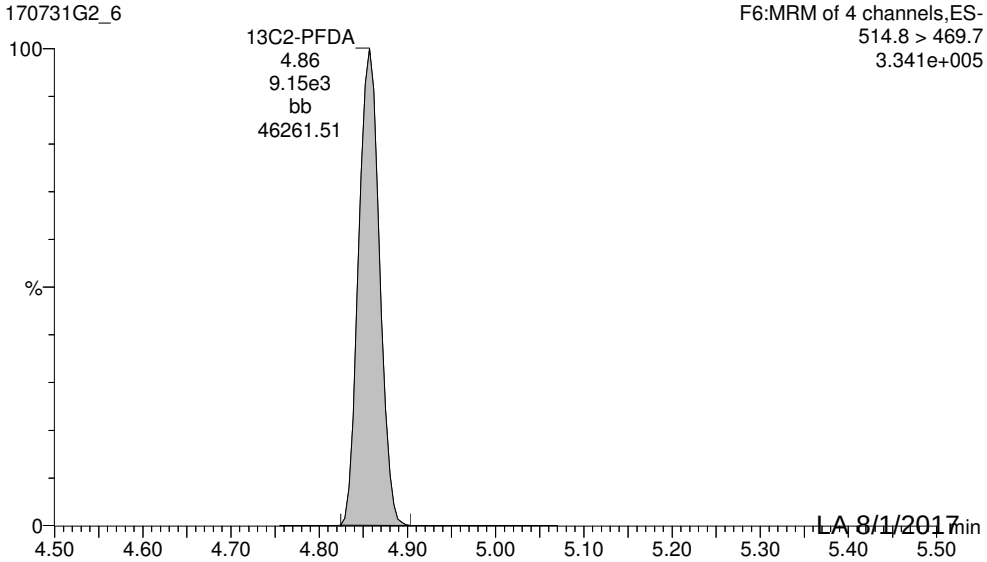




13C5-PFNA



13C2-PFDA



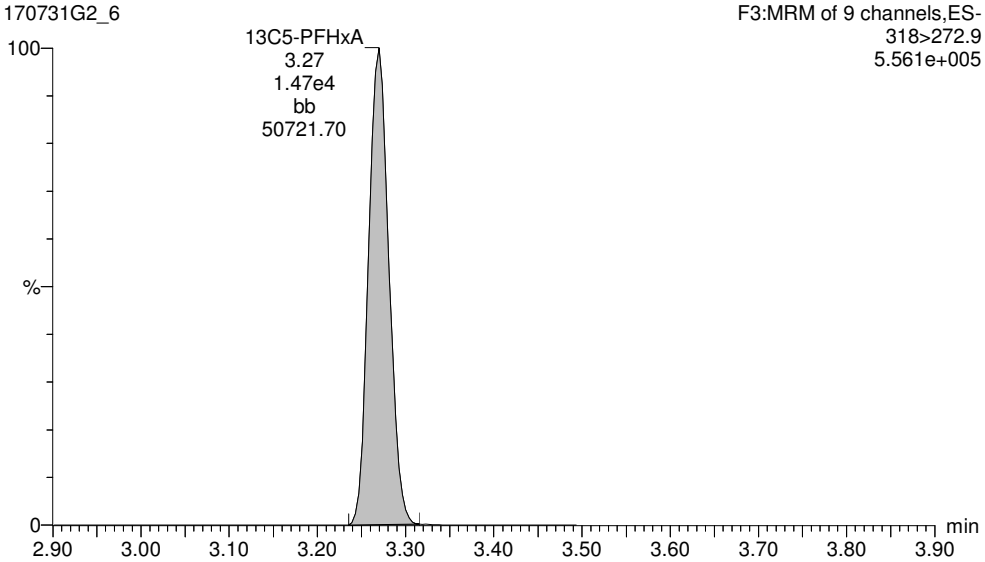
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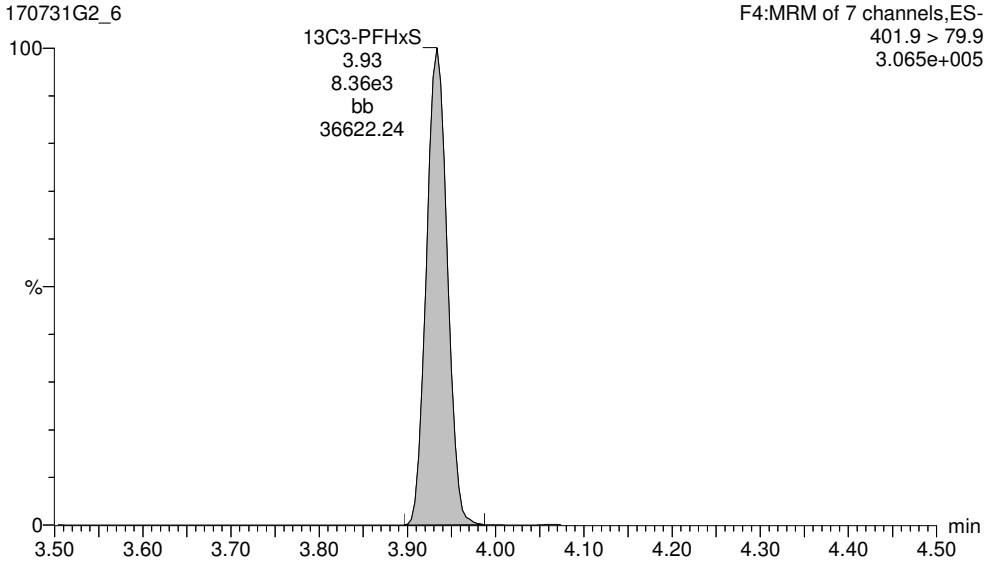
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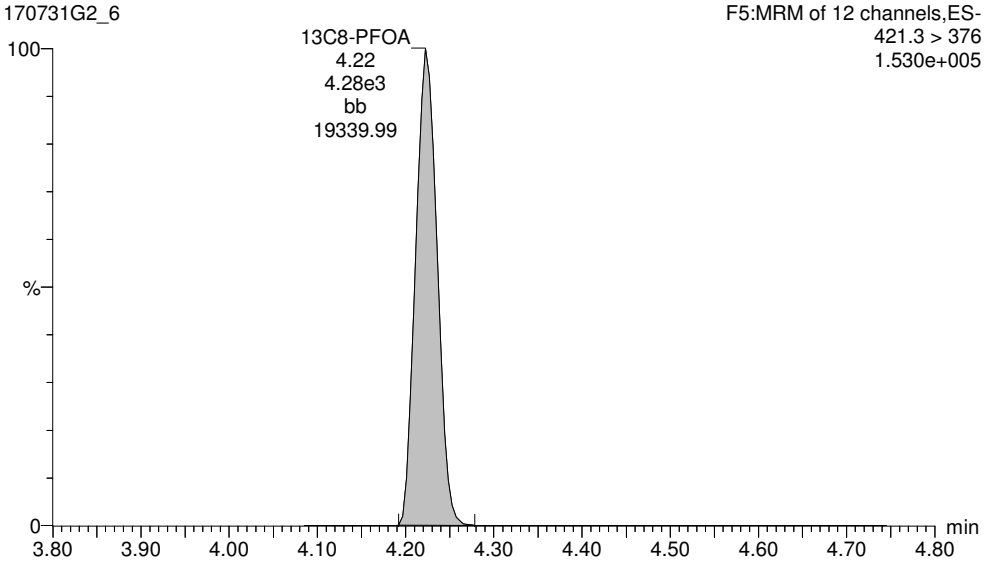
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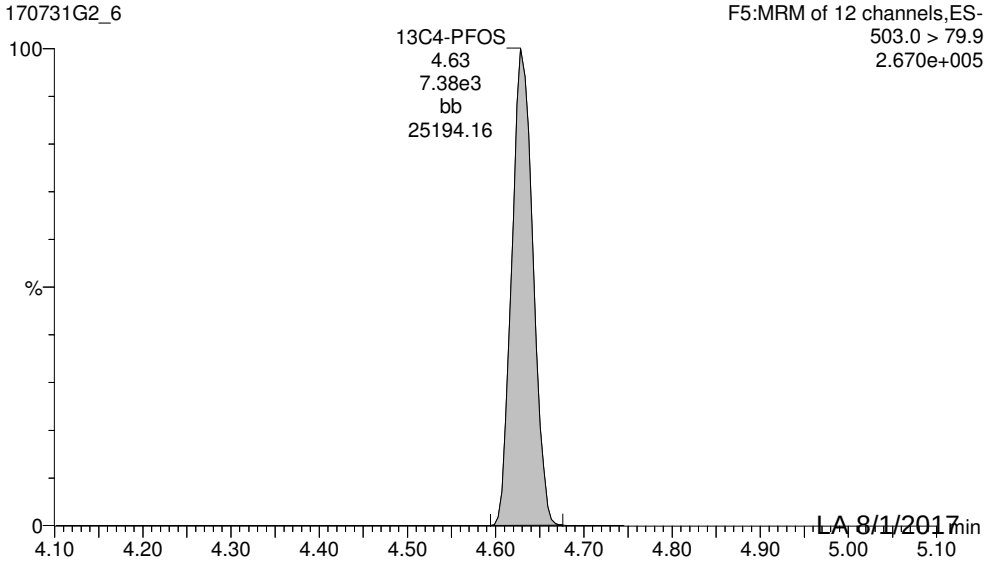
13C3-PFHxS



13C8-PFOA



13C4-PFOS



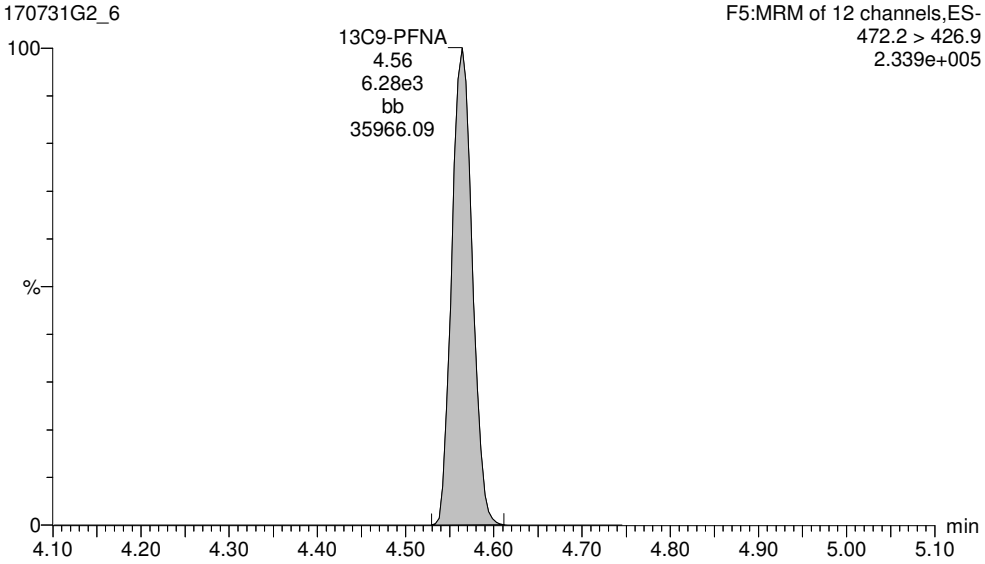
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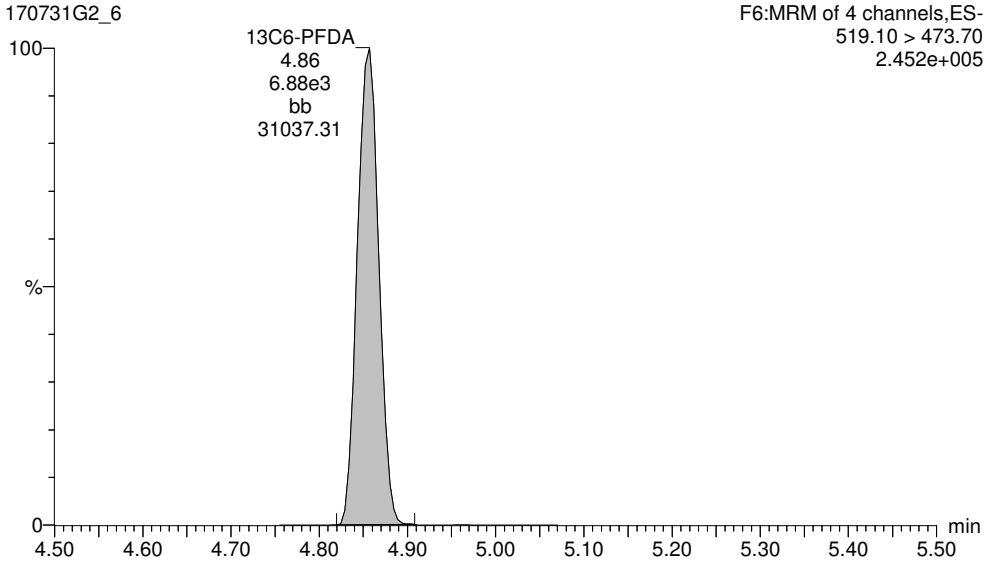
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13C9-PFNA



13C6-PFDA



LA 8/1/2017

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-4.qld

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Printed: Wednesday, August 02, 2017 14:10:37 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

ID: B7G0079-BS1 OPR 0.125, Description: OPR, Name: 170731G1_4, Date: 31-Jul-2017, Time: 14:11:43

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	2	N-MeFOSAA	570.1 > 419.0	4.623e3	2.203e3		0.125	4.99	94.5	118
2	4	PFUnA	563 > 518.9	9.547e3	1.118e4		0.125	5.12	87.6	110
3	5	N-EtFOSAA	584.2 > 419.0	3.102e3	2.829e3		0.125	5.11	82.3	103
4	6	PFDoA	612.9 > 318.8	1.305e3	1.345e4		0.125	5.36	79.7	99.7
5	7	PFTrDA	662.9 > 618.9	1.019e4	0.000e0		0.125	5.56	75.3	94.1
6	8	PFTeDA	712.9 > 668.8	7.787e3	8.910e3		0.125	5.73	95.3	119
7	10	d3-N-MeFOSAA	573.3 > 419.0	2.203e3	1.234e4	0.026	0.125	4.98	677	52.0
8	11	13C2-PFUnA	565 > 519.8	1.118e4	1.234e4	1.471	0.125	5.12	61.6	61.6
9	12	d5-N-EtFOSAA	589.3 > 419.0	2.829e3	1.234e4	0.031	0.125	5.11	737	56.7
10	13	13C2-PFDoA	615 > 569.7	1.345e4	1.234e4	1.887	0.125	5.35	57.7	57.7
11	14	13C2-PFTeDA	715 > 669.7	8.910e3	1.234e4	1.990	0.125	5.73	36.3	36.3
12	15	13C7-PFUnA	570.1 > 524.8	1.234e4	1.234e4	1.000	0.125	5.11	100	100
13	16	Total N-MeFOSAA	570.1 > 419.0		2.203e3		0.125		94.5	
14	17	Total N-EtFOSAA	584.2 > 419.0		2.829e3		0.125		82.3	

LA 8/2/2017

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-4.qld

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ID: B7G0079-BS1 OPR 0.125, Description: OPR, Name: 170731G1_4, Date: 31-Jul-2017, Time: 14:11:43

Total N-MeFOSAA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	2	N-MeFOSAA	570.1 > 419.0	4.99	4622.846	2202.750	94.5

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	5	N-EtFOSAA	584.2 > 419.0	5.11	3102.213	2829.002	82.3

LA 8/2/2017

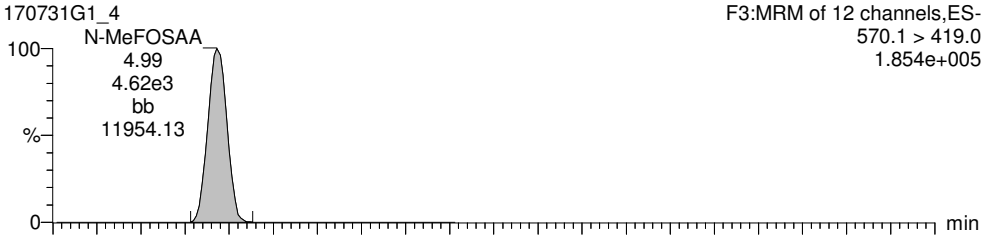
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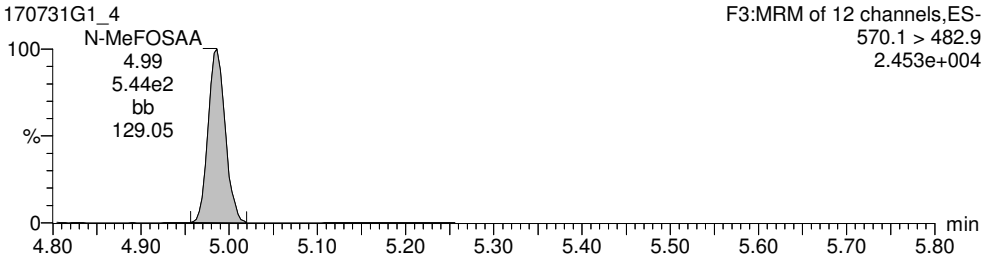
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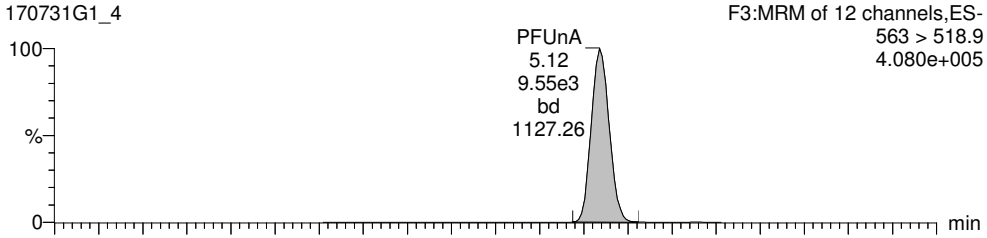
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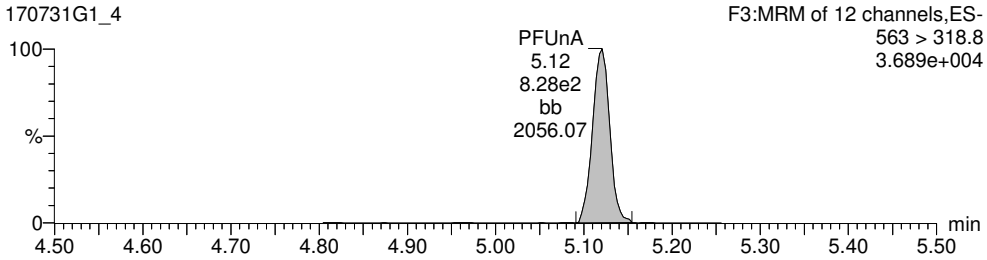
Total N-MeFOSAA



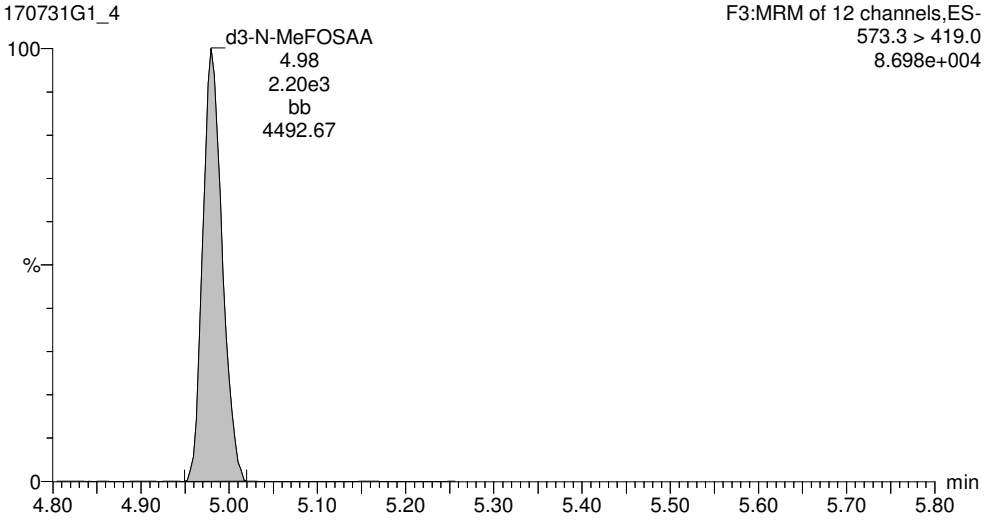


PFUnA

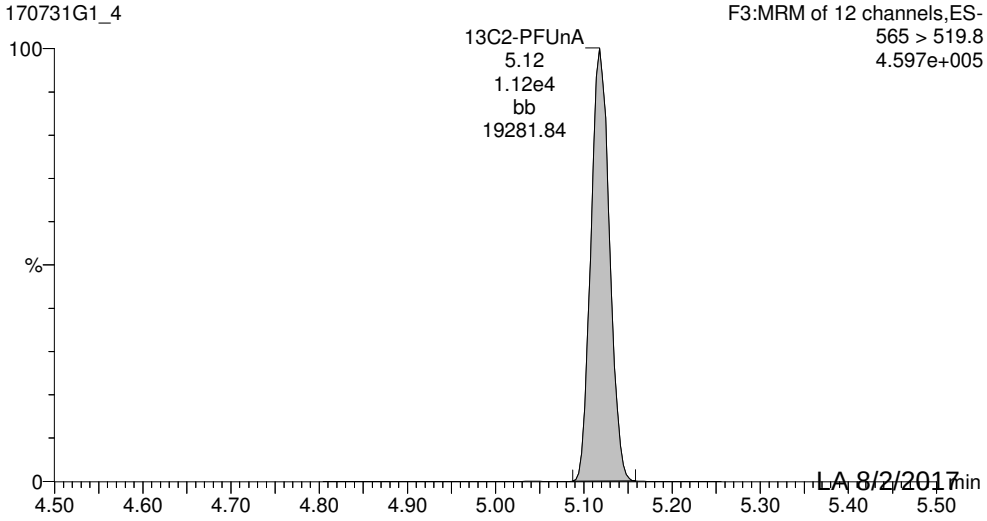




d3-N-MeFOSAA



13C2-PFUnA



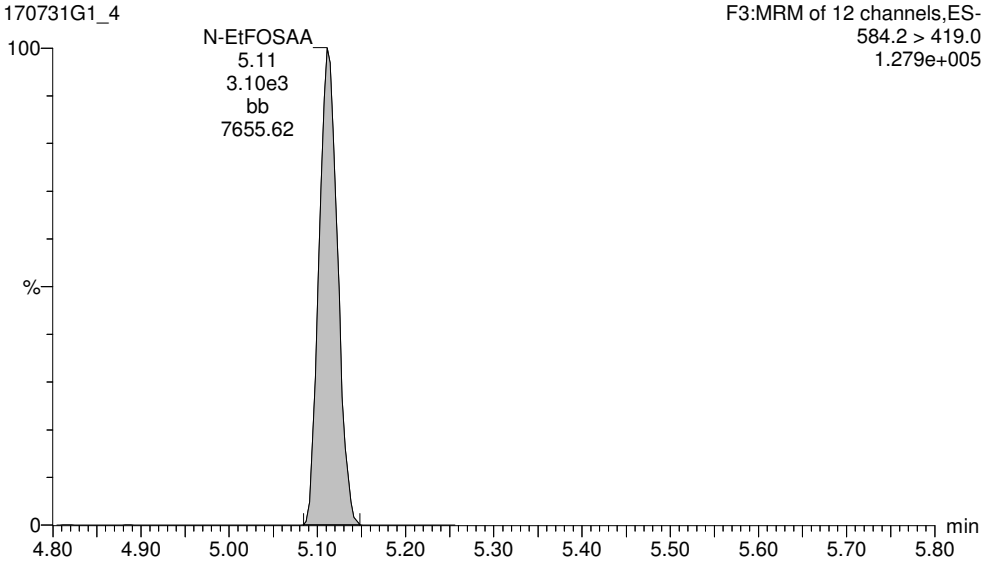
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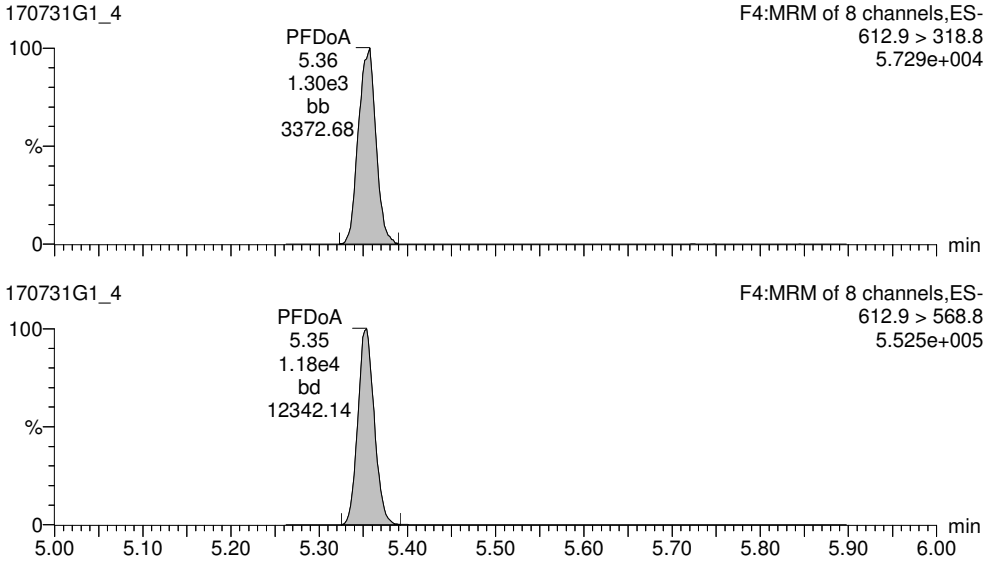
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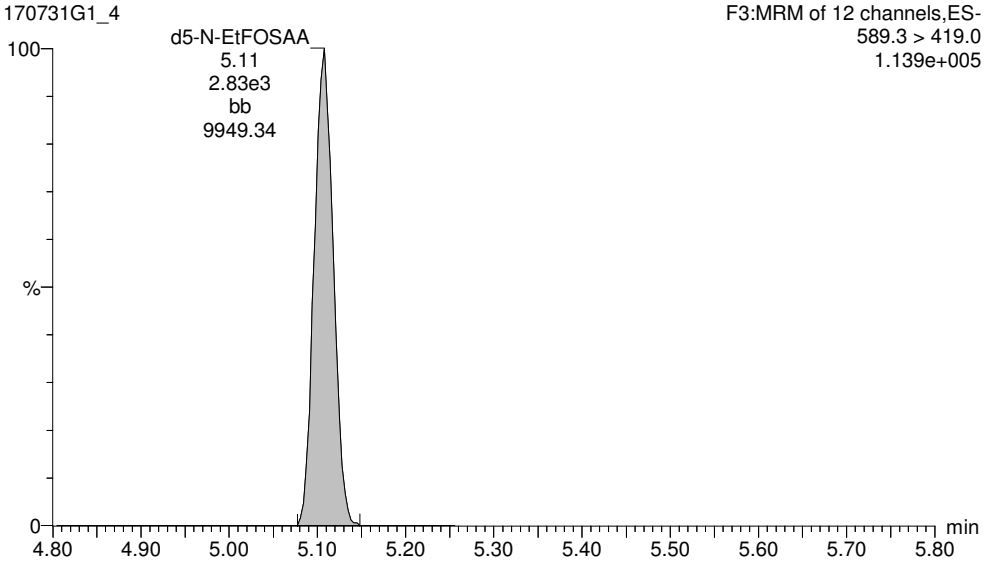
Total N-EtFOSAA



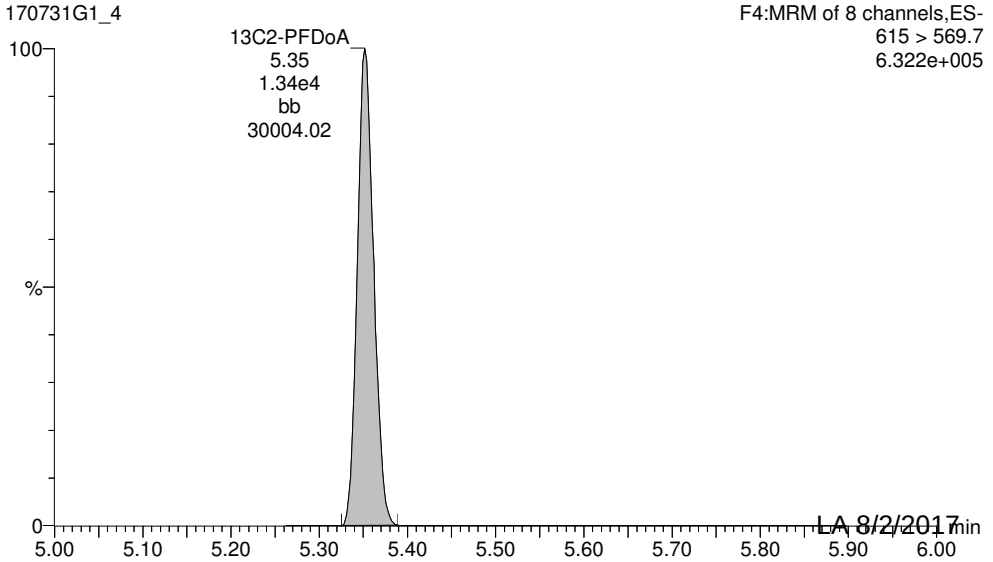
PFDoA



d5-N-EtFOSAA



13C2-PFDoA



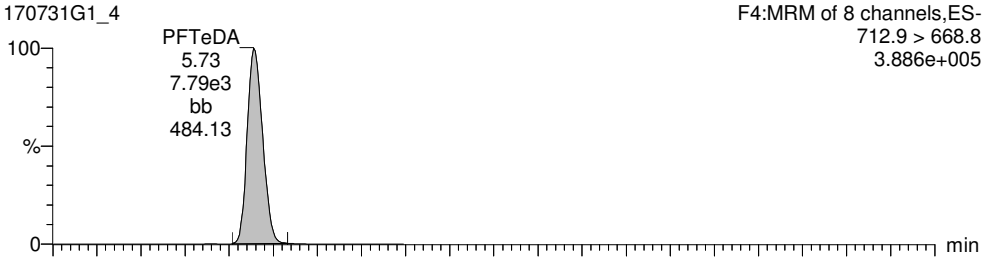
LA 8/2/2017

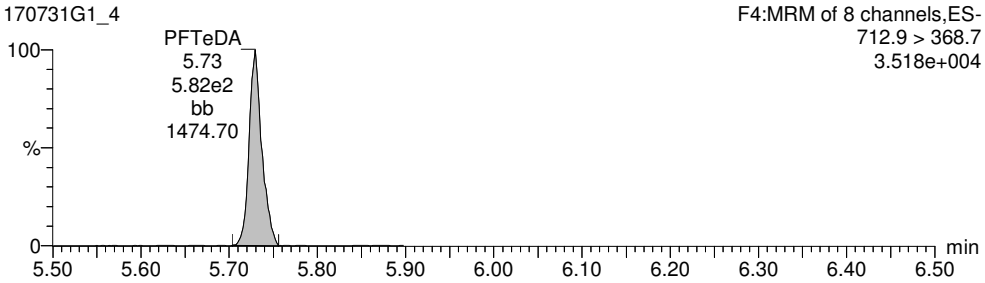
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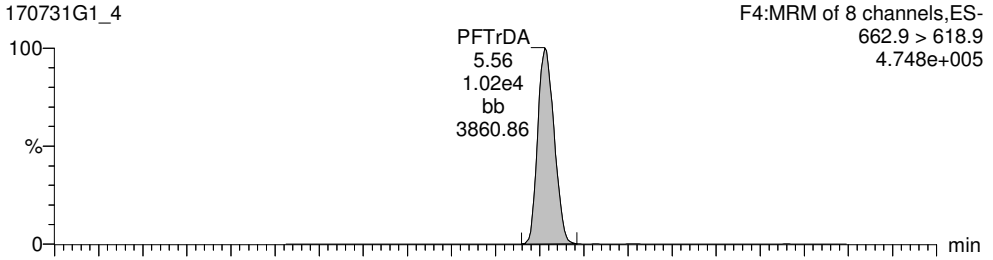
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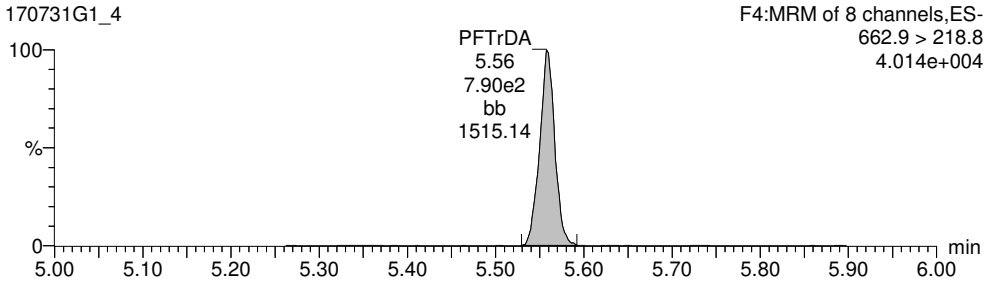
PFTeDA



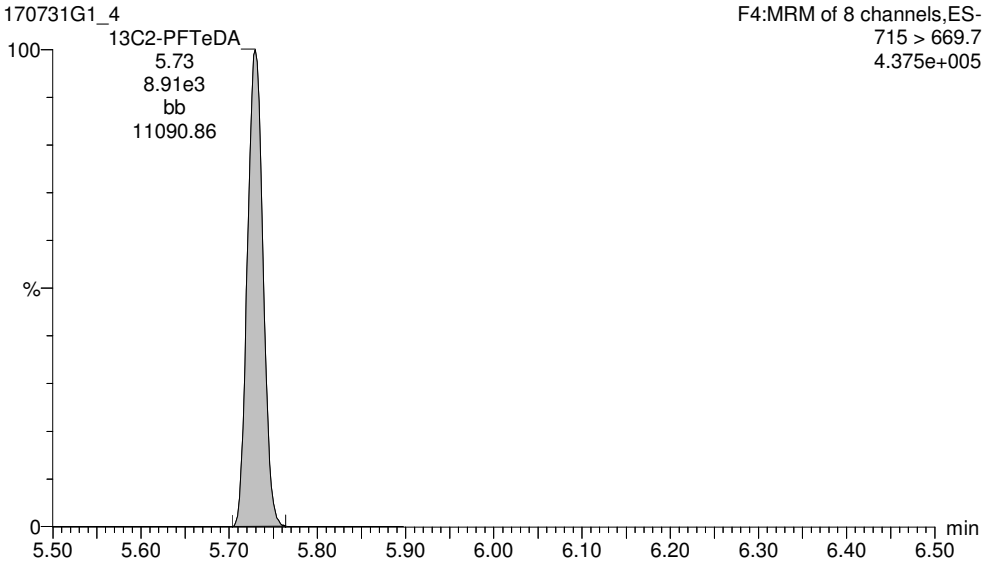


PFTrDA

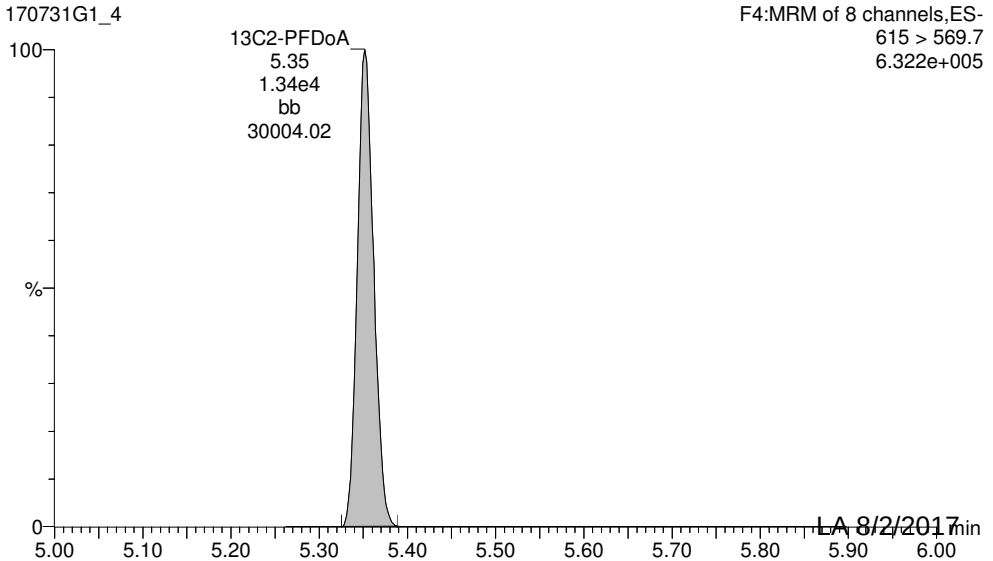




13C2-PFTeDA



13C2-PFDoA



LA 8/2/2017

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ID: B7G0079-BS1 OPR 0.125, Description: OPR, Name: 170731G1_4, Date: 31-Jul-2017, Time: 14:11:43, Instrument: , Lab: , User:

13C7-PFUnA



LA 8/2/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-9.qld

Last Altered: Thursday, August 03, 2017 11:46:53 Pacific Daylight Time
Printed: Thursday, August 03, 2017 11:48:25 Pacific Daylight Time

Method: U:\G1.PRO\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170731G3_9, Date: 31-Jul-2017, Time: 18:50:15

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	2	N-MeFOSAA	570.1 > 419.0		2.723e3		0.119			
2	4	PFUnA	563 > 518.9	3.224e2	1.356e4		0.119	5.12	0.313	
3	5	N-EtFOSAA	584.2 > 419.0		3.349e3		0.119			
4	6	PFDoA	612.9 > 318.8	8.832e0	1.643e4		0.119	5.35	0.422	
5	7	PFTrDA	662.9 > 618.9		0.000e0		0.119			
6	8	PFTeDA	712.9 > 668.8	2.016e2	1.719e4		0.119	5.73		
7	10	d3-N-MeFOSAA	573.3 > 419.0	2.723e3	1.304e4	0.026	0.119	4.98	829	60.9
8	11	13C2-PFUnA	565 > 519.8	1.356e4	1.304e4	1.471	0.119	5.12	74.1	70.7
9	12	d5-N-EtFOSAA	589.3 > 419.0	3.349e3	1.304e4	0.031	0.119	5.11	865	63.6
10	13	13C2-PFDoA	615 > 569.7	1.643e4	1.304e4	1.887	0.119	5.35	69.9	66.8
11	14	13C2-PFTeDA	715 > 669.7	1.719e4	1.304e4	1.990	0.119	5.73	69.4	66.3
12	15	13C7-PFUnA	570.1 > 524.8	1.304e4	1.304e4	1.000	0.119	5.12	105	100
13	16	Total N-MeFOSAA	570.1 > 419.0		2.723e3		0.119			
14	17	Total N-EtFOSAA	584.2 > 419.0		3.349e3		0.119			

LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-9.qld

Last Altered: Thursday, August 03, 2017 11:46:53 Pacific Daylight Time
Printed: Thursday, August 03, 2017 11:48:25 Pacific Daylight Time

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ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170731G3_9, Date: 31-Jul-2017, Time: 18:50:15

Total N-MeFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

Total N-EtFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

LA 8/3/2017

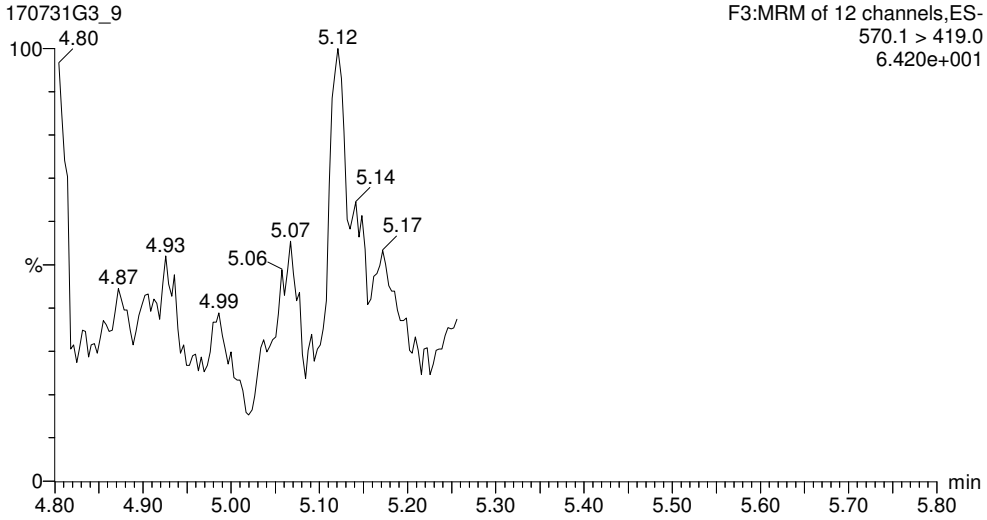
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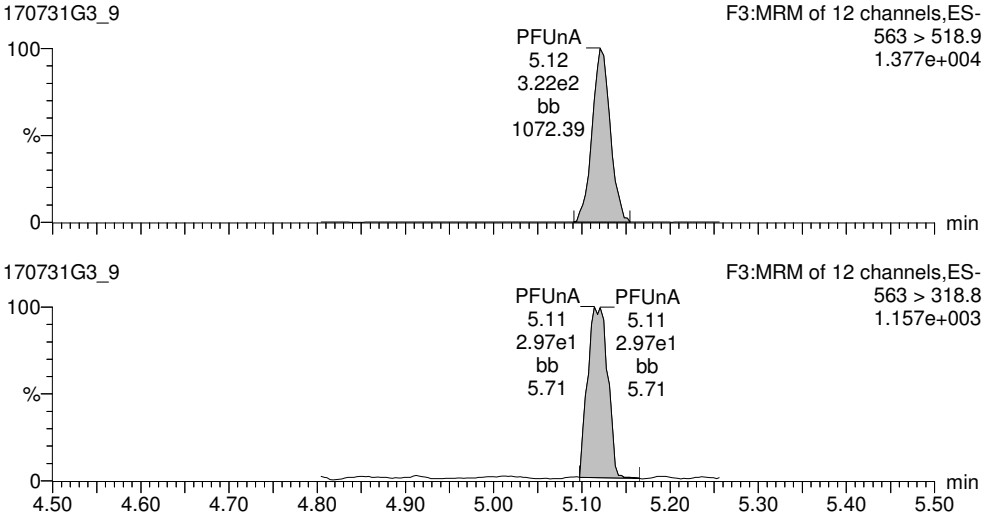
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ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170731G3_9, Date: 31-Jul-2017, Time: 18:50:15, Instrument: , Lab: , User:

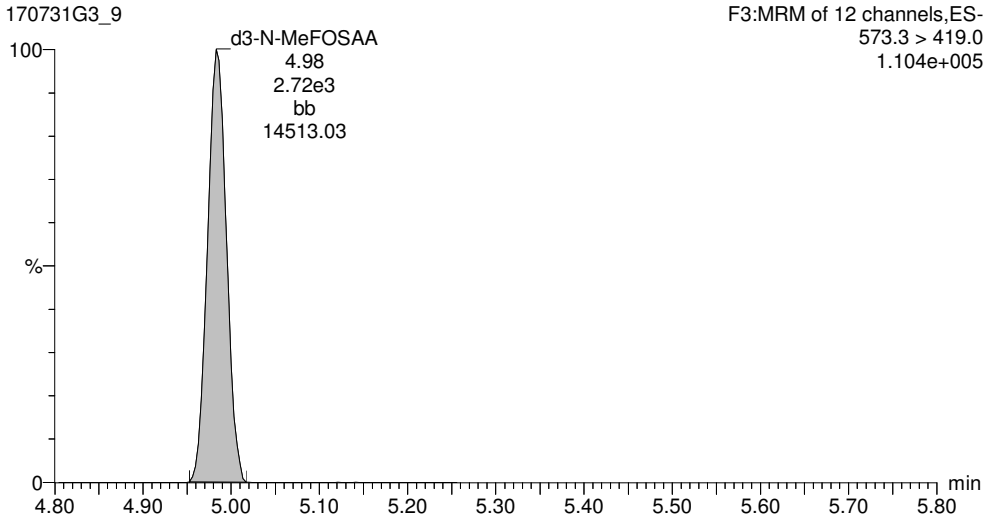
Total N-MeFOSAA



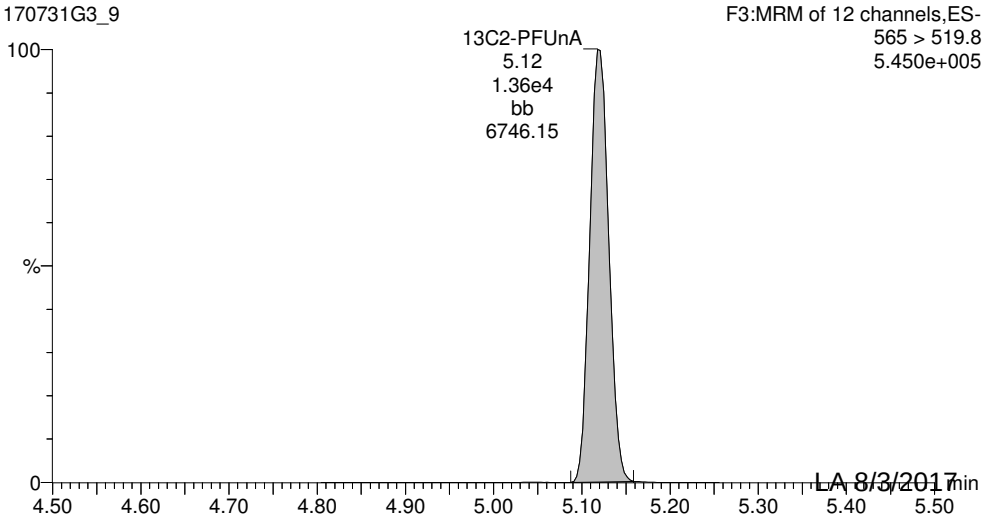
PFUnA



d3-N-MeFOSAA



13C2-PFUnA



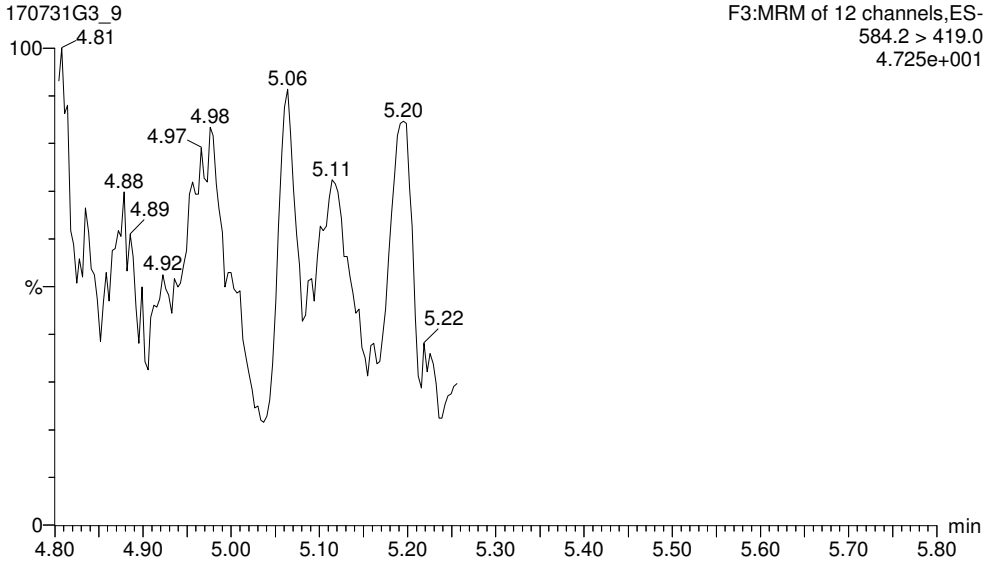
LA 8/3/2017

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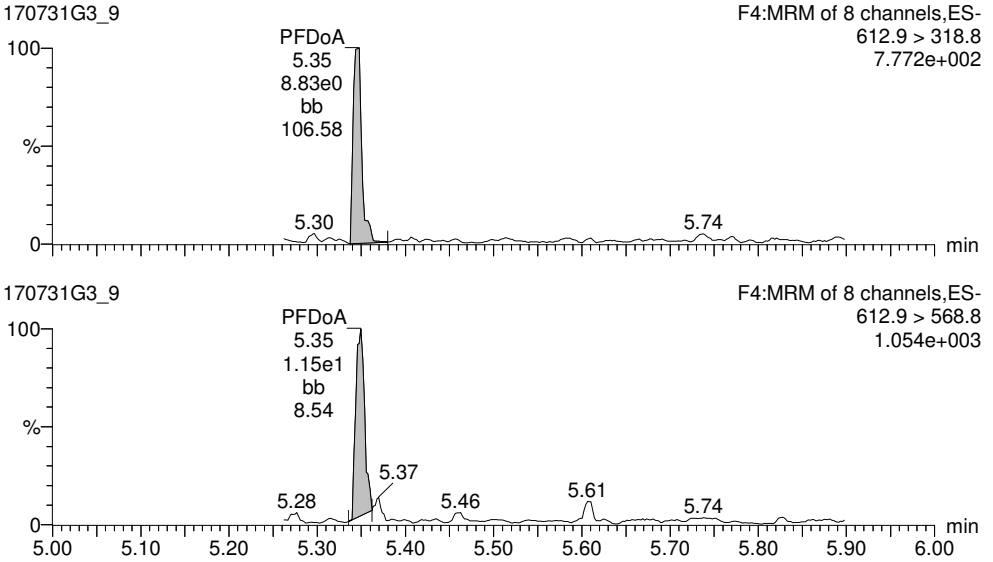
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Printed: Thursday, August 03, 2017 11:48:25 Pacific Daylight Time

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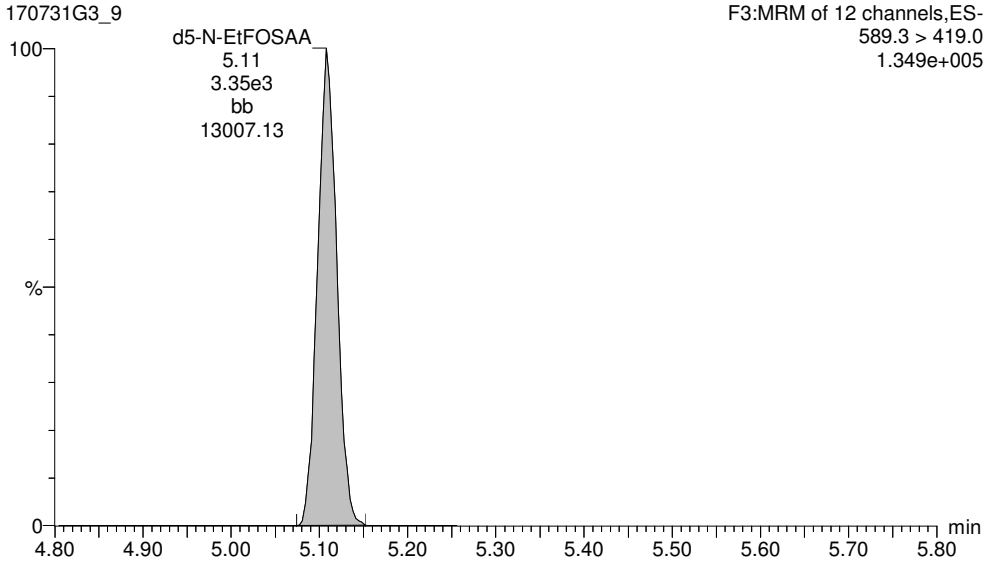
Total N-EtFOSAA



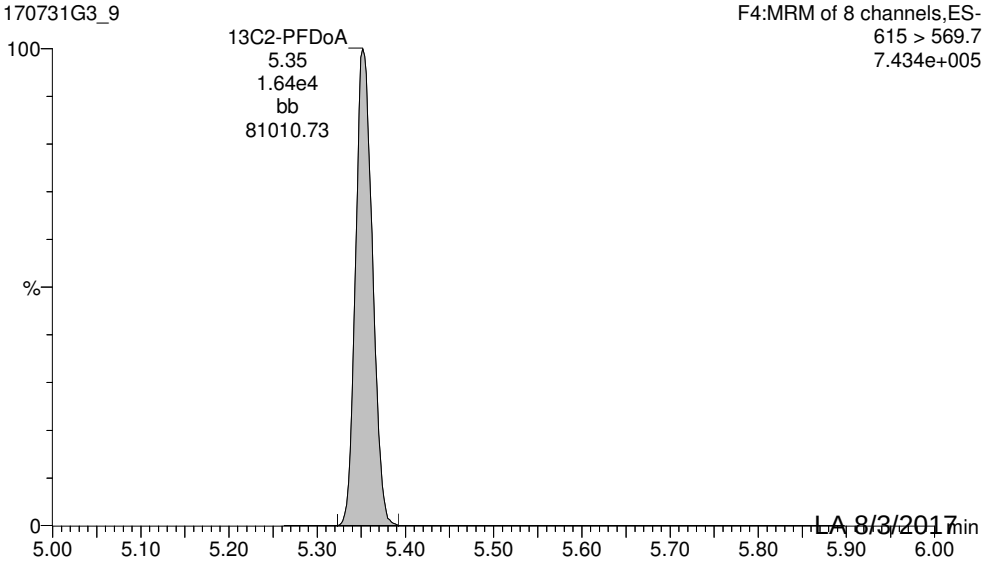
PFDoA



d5-N-EtFOSAA



13C2-PFDoA



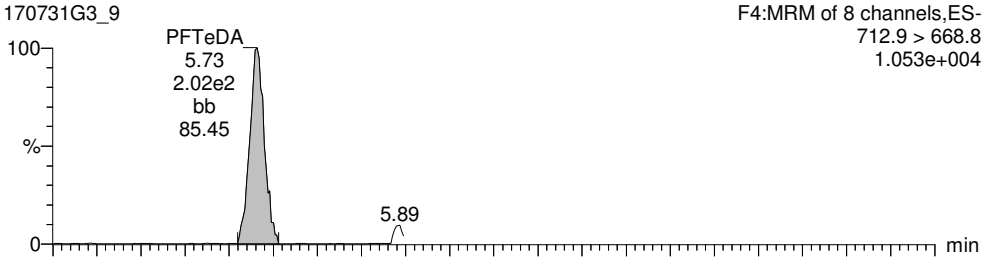
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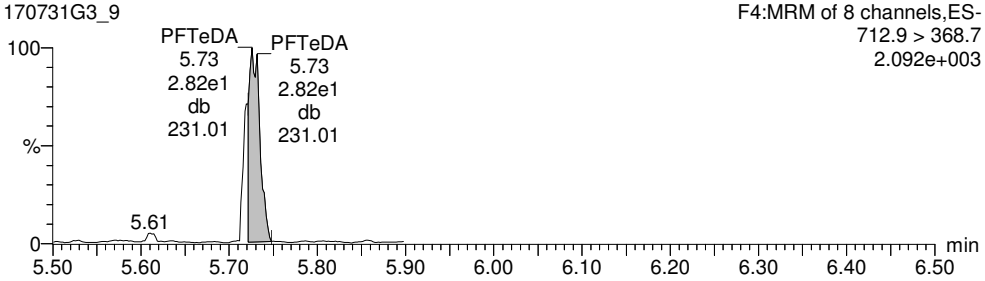
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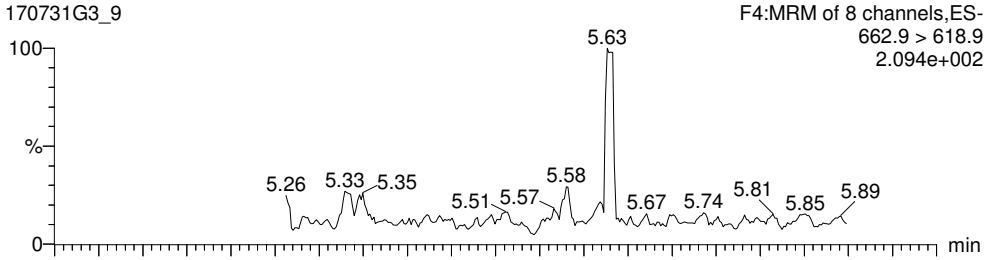
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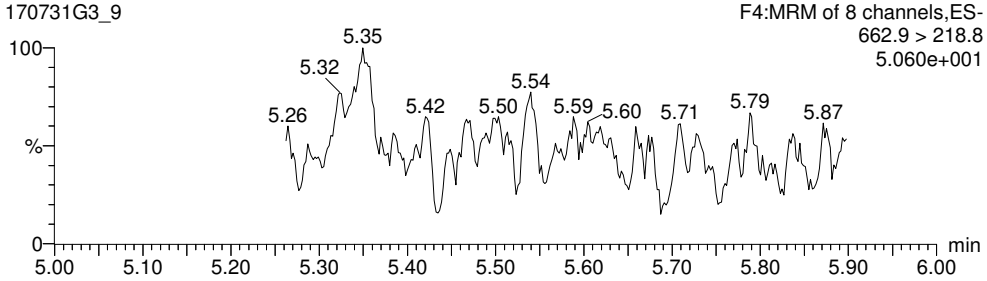
PFTeDA



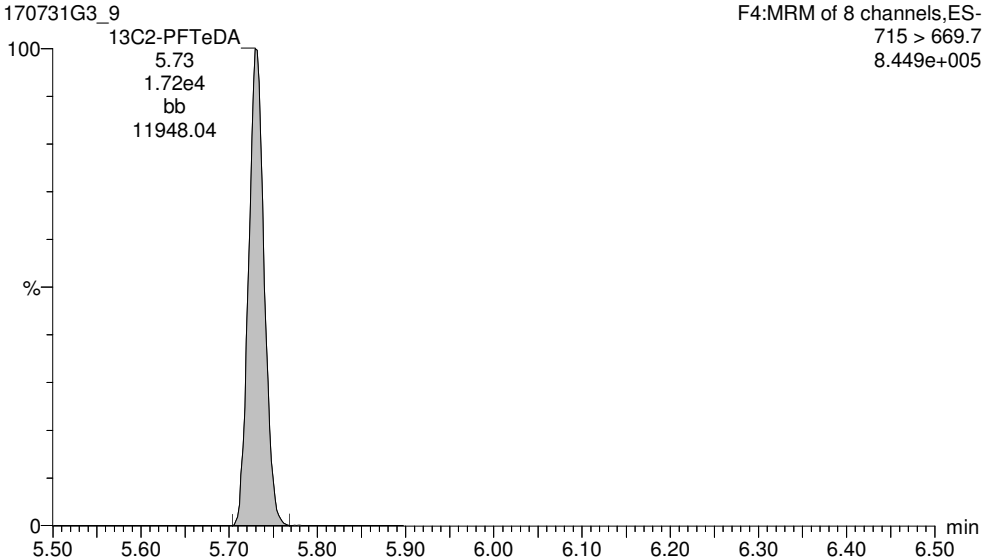


PFTrDA

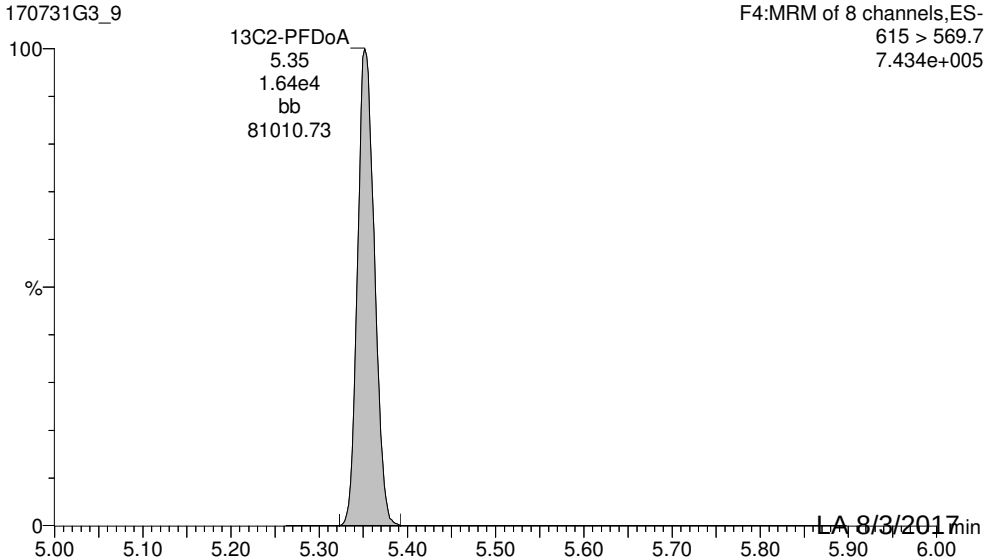




13C2-PFTeDA



13C2-PFDoA



LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-9.qld

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Printed: Thursday, August 03, 2017 11:48:25 Pacific Daylight Time

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13C7-PFUnA



LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-9.qld

Last Altered: Friday, August 04, 2017 10:41:57 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:42:51 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170803G2_9, Date: 03-Aug-2017, Time: 18:35:05

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	3	PFBS	299.0 > 79.7	1.241e3	3.397e3		0.119	2.89	20.7	
2	4	PFHxA	312.9 > 268.9	3.189e3	4.149e3		0.119	3.27	41.7	
3	5	PFHpA	363 > 318.9	9.869e2	5.014e3		0.119	3.80	9.49	
4	6	PFHxS	398.9 > 79.6	1.136e4	2.897e3		0.119	3.93	230	
5	7	PFOA	413.0 > 368.7	6.754e3	8.728e3		0.119	4.23	101	
6	8	PFNA	463.0 > 418.8	7.192e1	3.231e3		0.119	4.57	0.731	
7	9	PFOS	499.0 >79.9	1.248e4	4.873e3		0.119	4.64	570	
8	10	PFDA	512.7 > 219.0	9.281e0	6.767e3		0.119	4.87		
9	12	13C3-PFBS	302.0 > 98.8	3.397e3	1.147e4	0.263	0.119	2.89	118	113
10	14	13C2-PFHxA	315.0 > 269.8	4.149e3	1.147e4	0.361	0.119	3.27	105	100
11	15	13C4-PFHpA	367.2 > 321.8	5.014e3	1.147e4	0.475	0.119	3.80	96.3	92.0
12	16	18O2-PFHxS	403 > 102.6	2.897e3	6.549e3	0.411	0.119	3.93	113	108
13	17	13C2-PFOA	414.9 > 369.7	8.728e3	3.061e3	2.843	0.119	4.23	105	100
14	18	13C5-PFNA	468.2 > 422.9	3.231e3	4.586e3	0.854	0.119	4.57	86.5	82.5
15	19	13C2-PFDA	514.8 > 469.7	6.767e3	5.514e3	1.742	0.119	4.86	73.8	70.5
16	20	13C8-PFOS	507.0 > 79.9	4.873e3	5.553e3	0.927	0.119	4.64	99.1	94.7
17	22	13C5-PFHxA	318>272.9	1.147e4	1.147e4	1.000	0.119	3.27	105	100
18	23	13C3-PFHxS	401.9 > 79.9	6.549e3	6.549e3	1.000	0.119	3.93	105	100
19	24	13C8-PFOA	421.3 > 376	3.061e3	3.061e3	1.000	0.119	4.23	105	100
20	25	13C9-PFNA	472.2 > 426.9	4.586e3	4.586e3	1.000	0.119	4.57	105	100
21	26	13C4-PFOS	503.0 > 79.9	5.553e3	5.553e3	1.000	0.119	4.64	105	100
22	27	13C6-PFDA	519.10 > 473.70	5.514e3	5.514e3	1.000	0.119	4.86	105	100
23	28	Total PFBS	299.0 > 79.7		3.397e3		0.119		20.7	
24	29	Total PFHxS	398.9 > 79.6		2.897e3		0.119		230	
25	30	Total PFOA	413.0 > 368.7		8.728e3		0.119		120	
26	31	Total PFOS	499.0 >79.9		4.873e3		0.119		570	

LA 8/4/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-9.qld

Last Altered: Friday, August 04, 2017 10:41:57 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:42:51 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170803G2_9, Date: 03-Aug-2017, Time: 18:35:05

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	3	PFBS	299.0 > 79.7	2.89	1241.442	3396.710	20.7

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	6	PFHxS	398.9 > 79.6	3.93	11362.411	2896.664	230.5

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	7	PFOA	413.0 > 368.7	4.23	6753.915	8727.558	100.7
2	30	Total PFOA	413.0 > 368.7	4.13	1323.409	8727.558	18.9

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	9	PFOS	499.0 >79.9	4.64	12481.934	4873.246	570.1

LA 8/4/2017

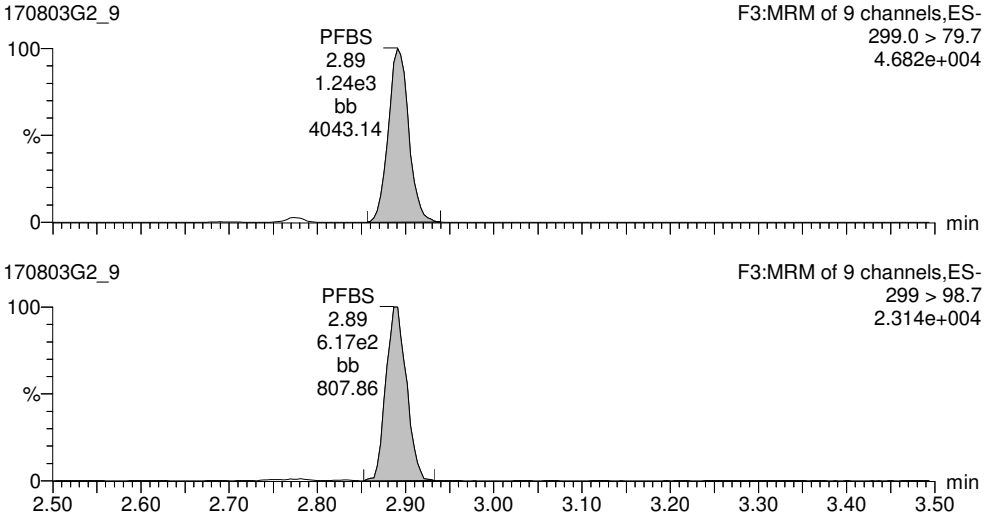
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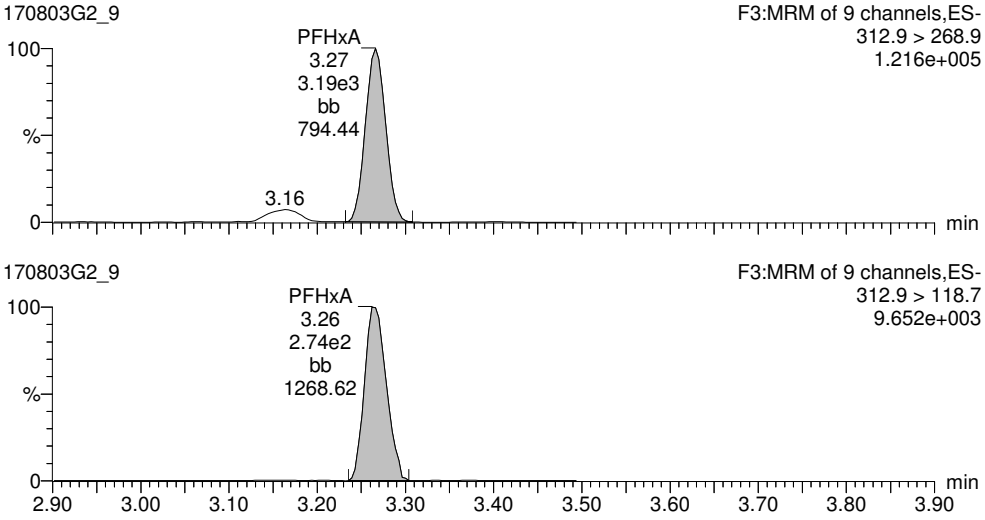
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ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170803G2_9, Date: 03-Aug-2017, Time: 18:35:05, Instrument: , Lab: , User:

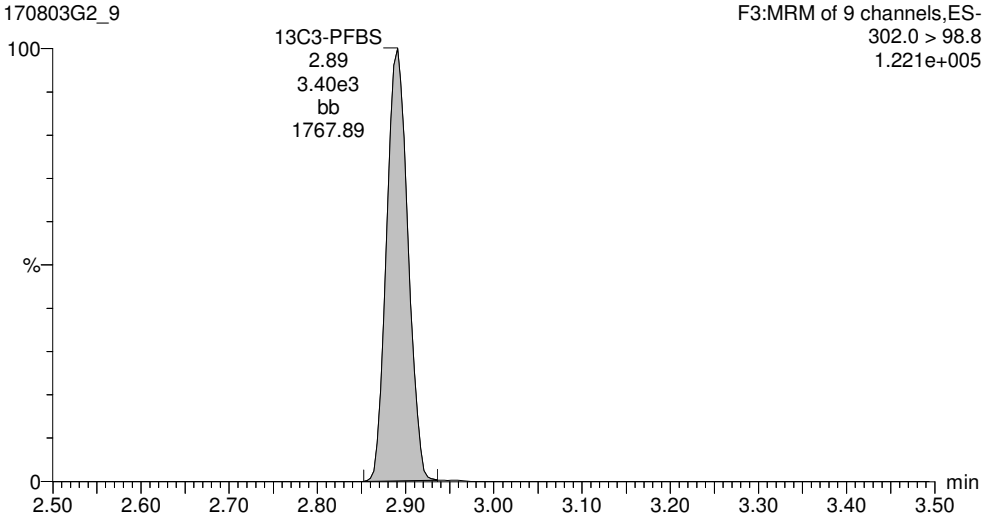
Total PFBS



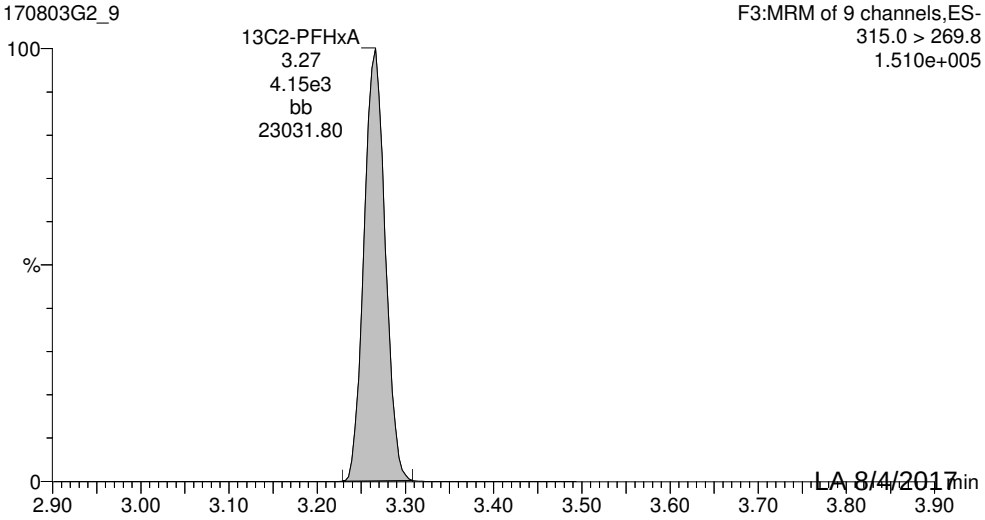
PFHxA



13C3-PFBS



13C2-PFHxA



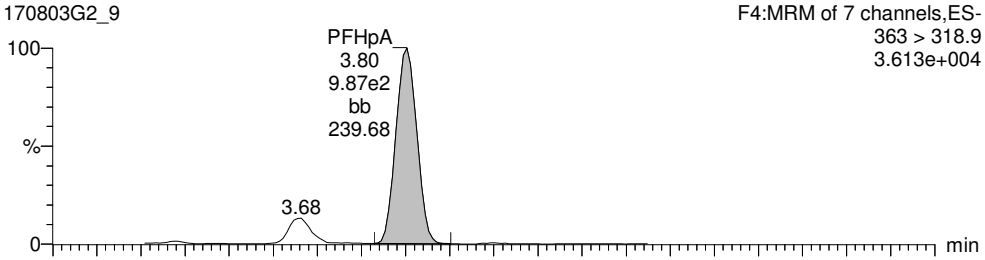
LA 8/4/2017

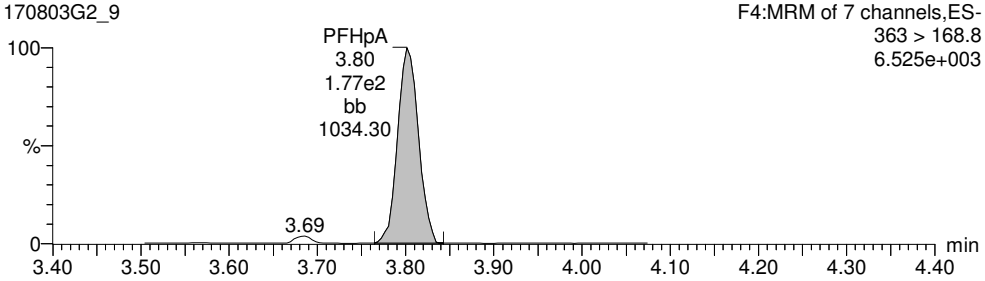
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Printed: Friday, August 04, 2017 10:42:51 Pacific Daylight Time

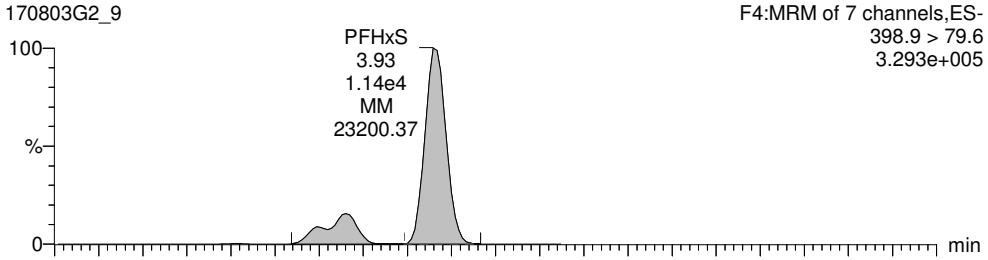
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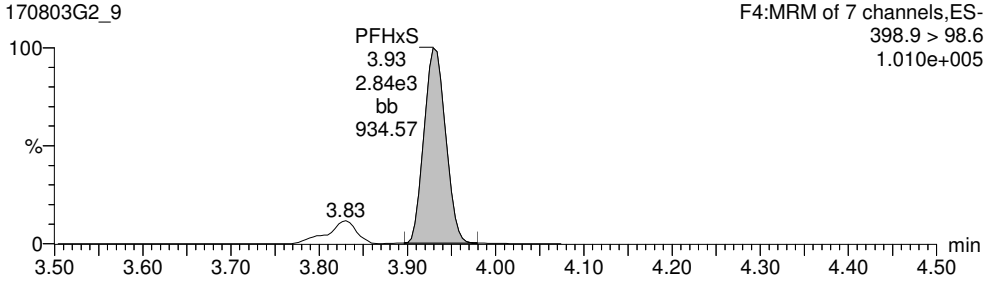
PFHpA



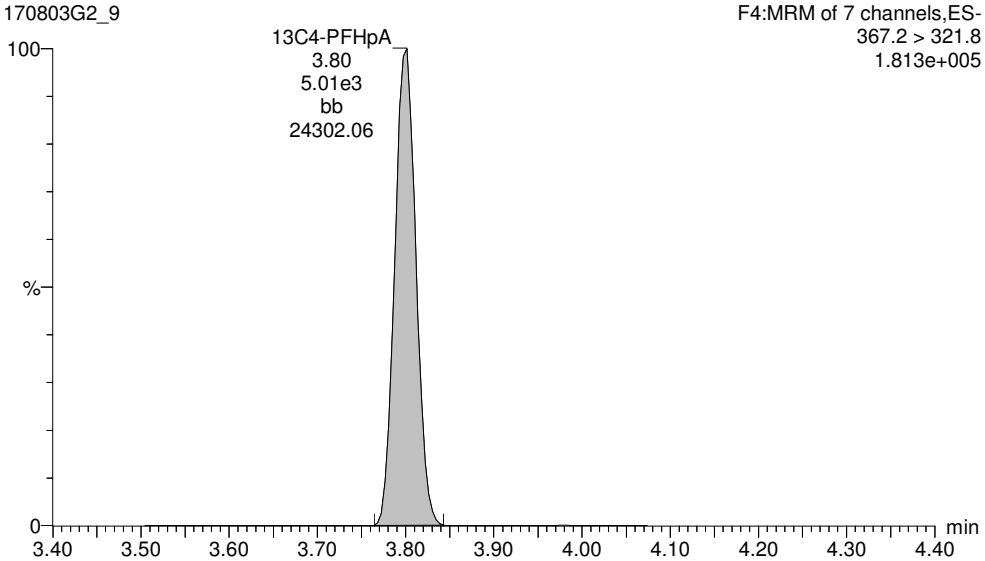


Total PFHxS

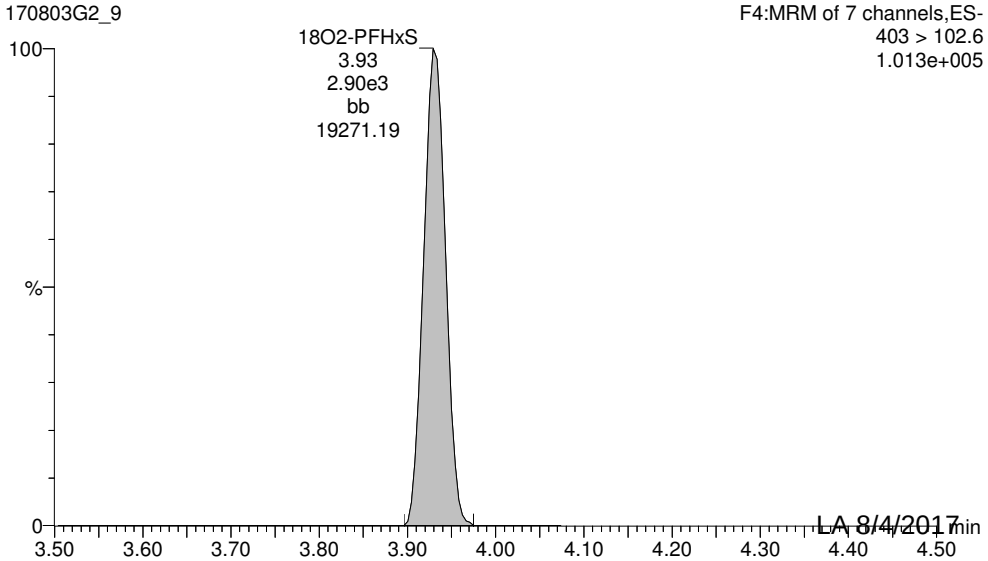




13C4-PFHpA



18O2-PFHxS



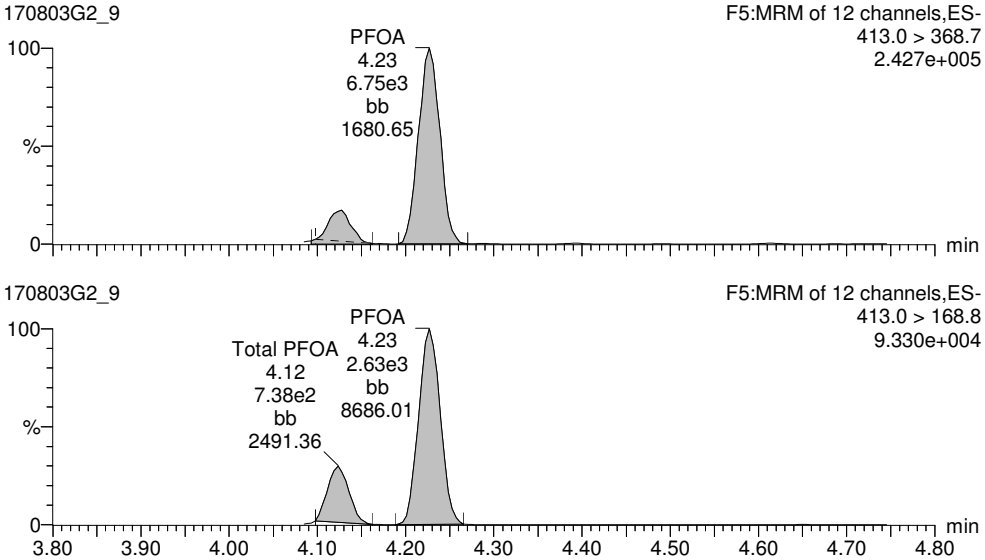
LA 8/4/2017

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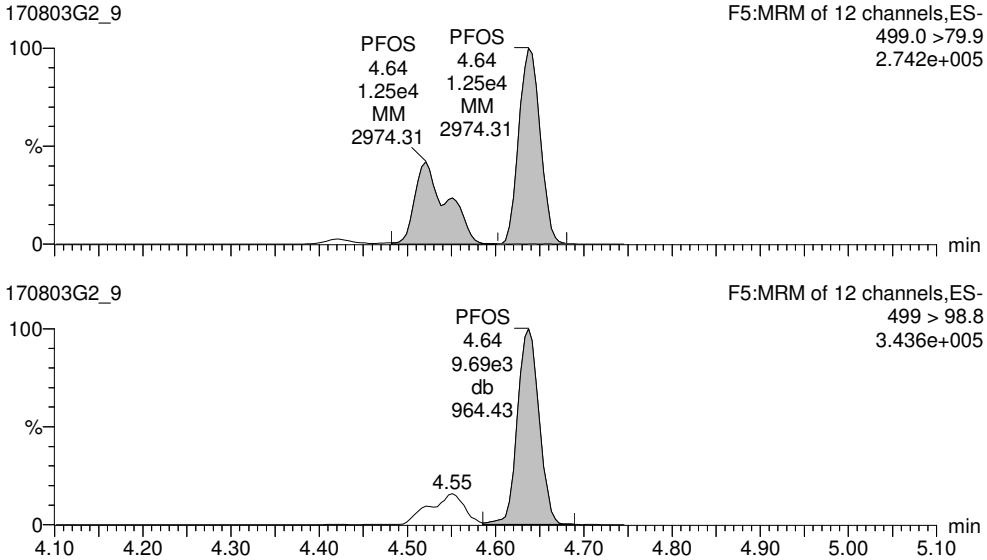
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Printed: Friday, August 04, 2017 10:42:51 Pacific Daylight Time

ID: 1700884-01 MW-37BR-20170714 0.11935, Description: MW-37BR-20170714, Name: 170803G2_9, Date: 03-Aug-2017, Time: 18:35:05, Instrument: , Lab: , User:

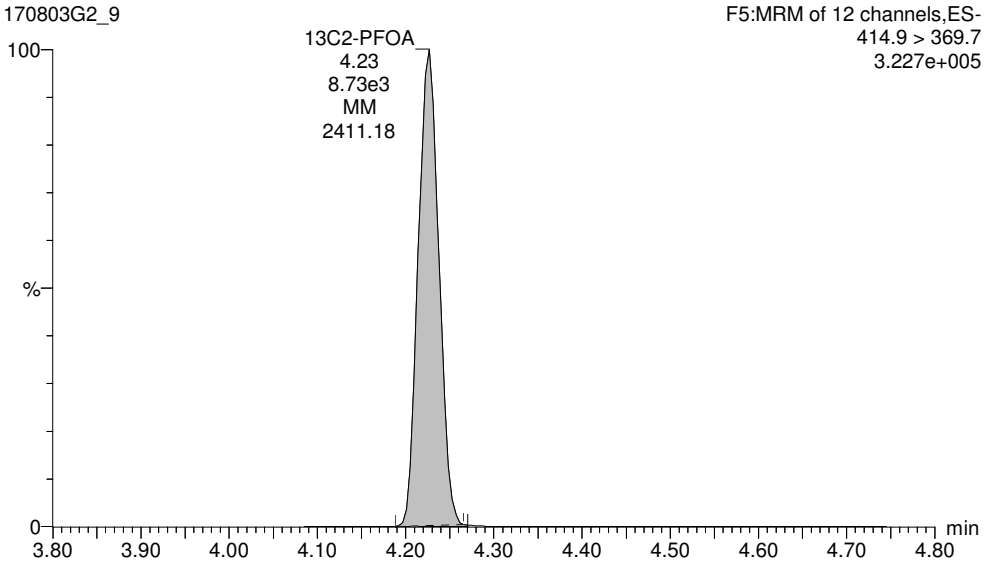
Total PFOA



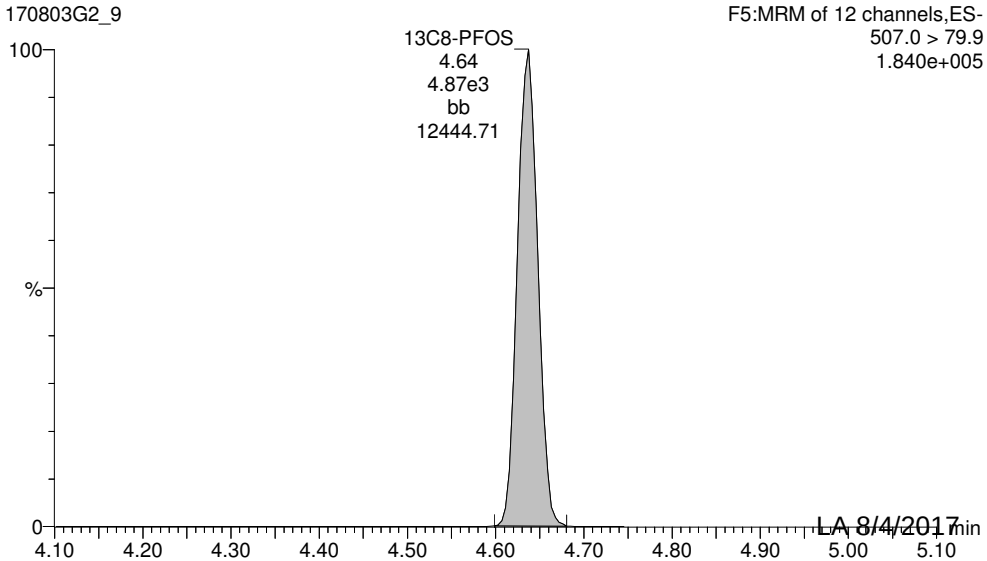
Total PFOS



13C2-PFOA



13C8-PFOS



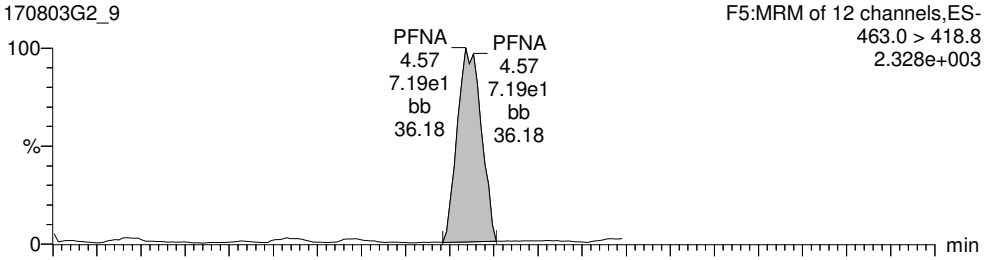
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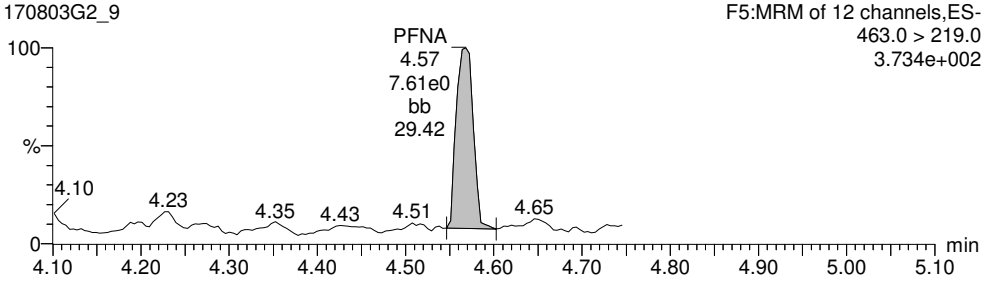
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Printed: Friday, August 04, 2017 10:42:51 Pacific Daylight Time

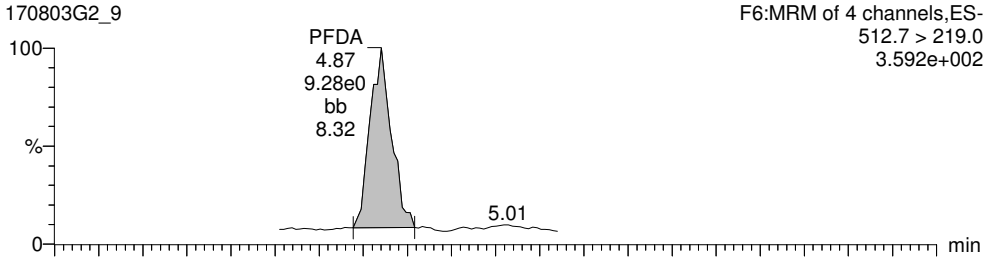
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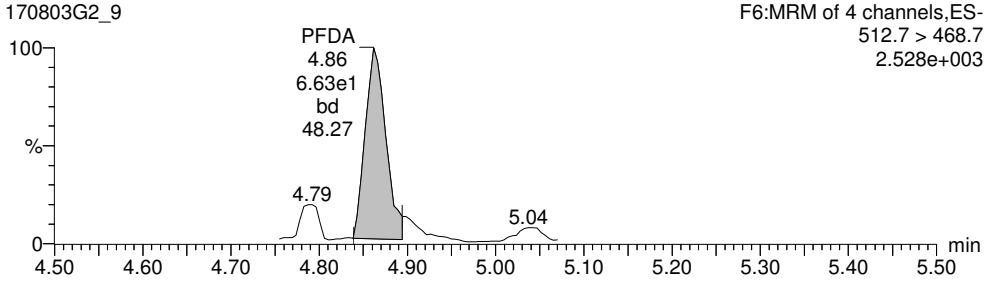
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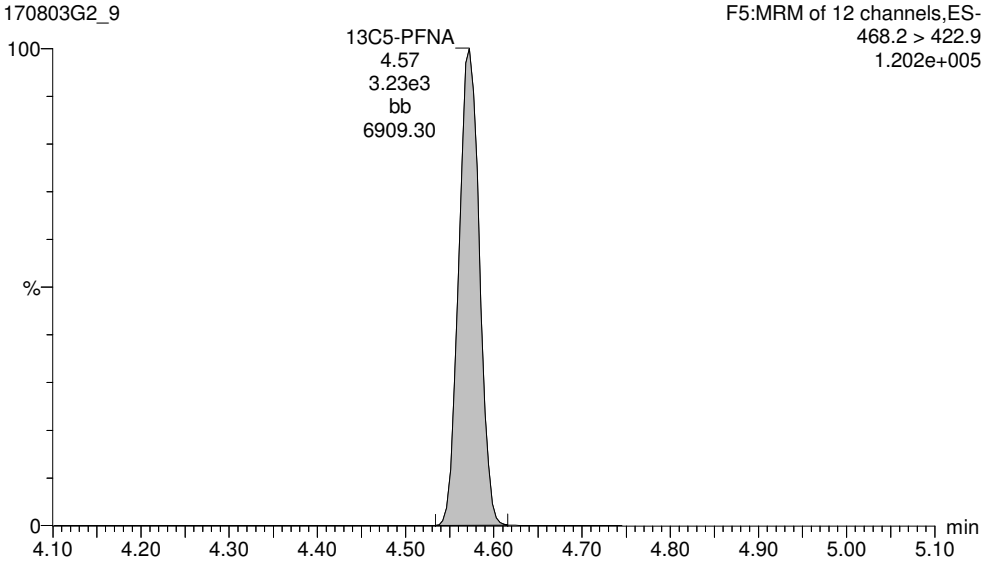


PFDA

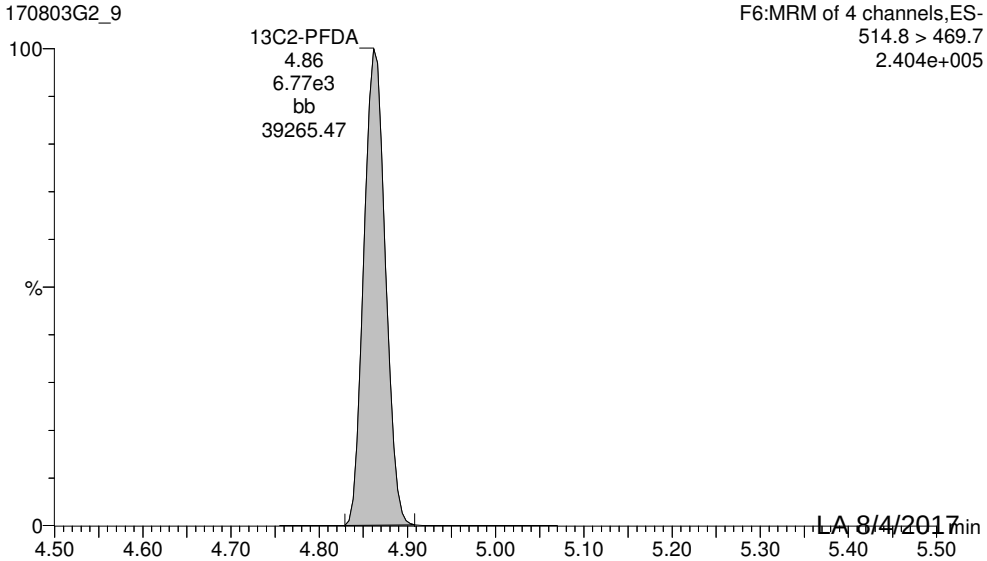




13C5-PFNA



13C2-PFDA



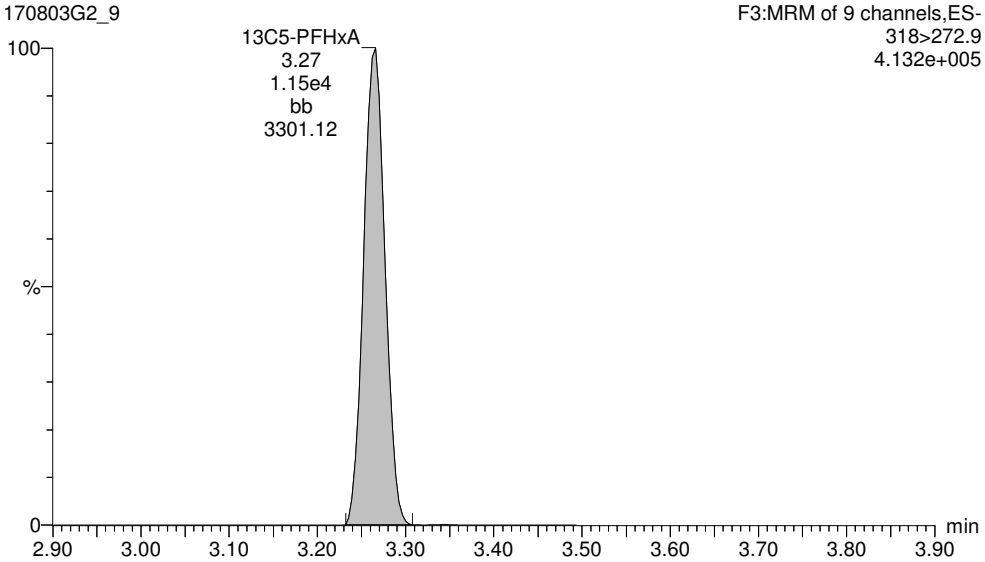
LA 8/4/2017

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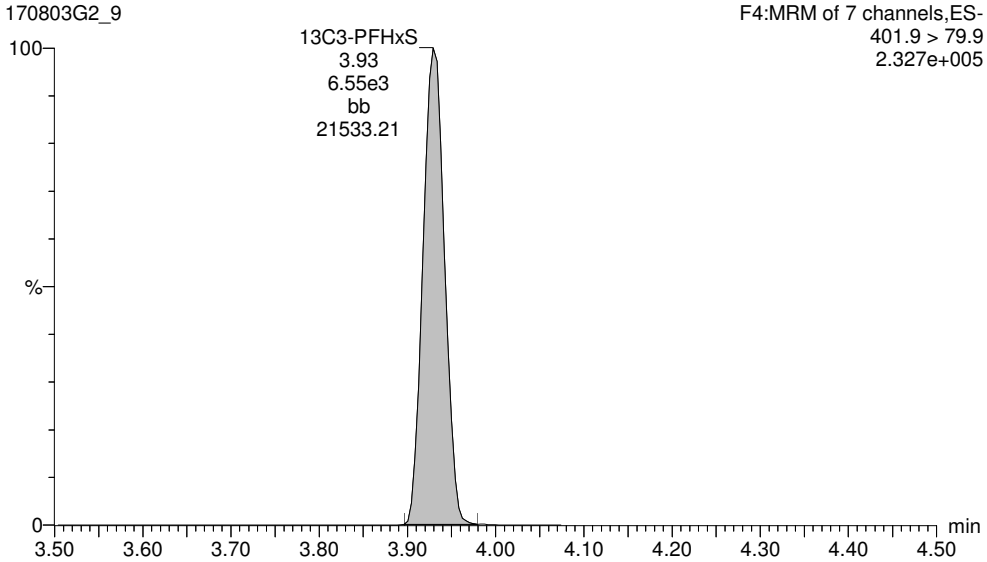
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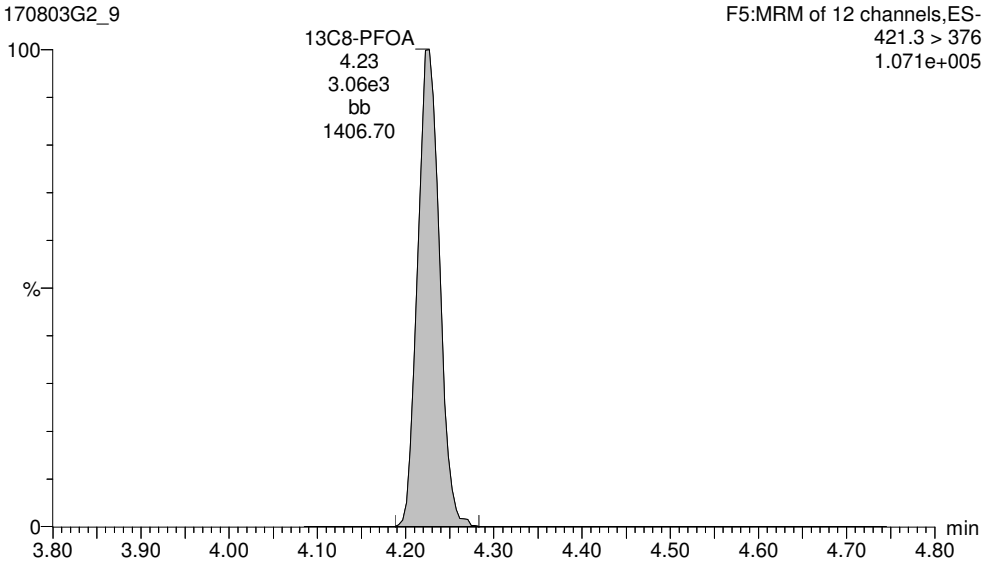
13C5-PFHxA



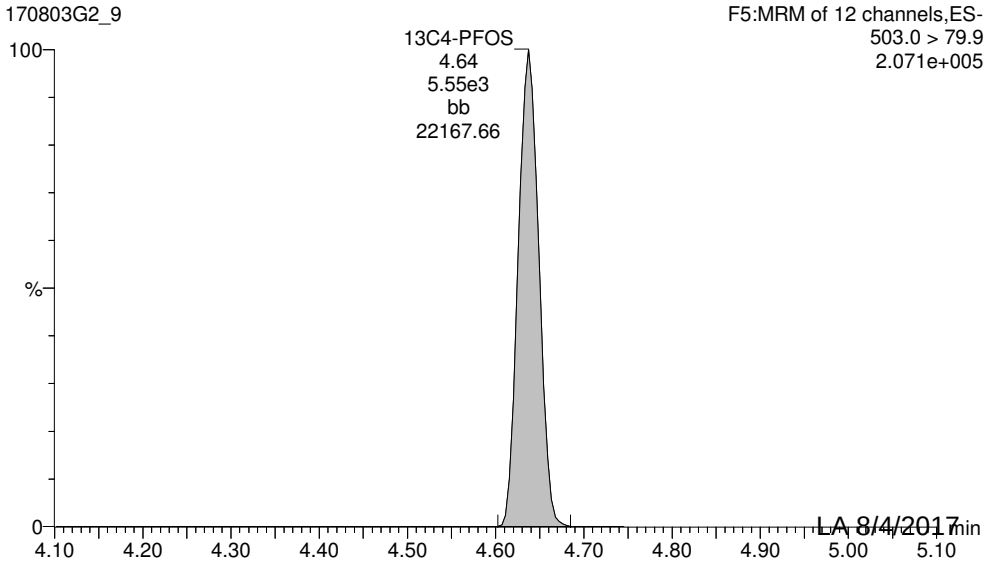
13C3-PFHxS



13C8-PFOA



13C4-PFOS



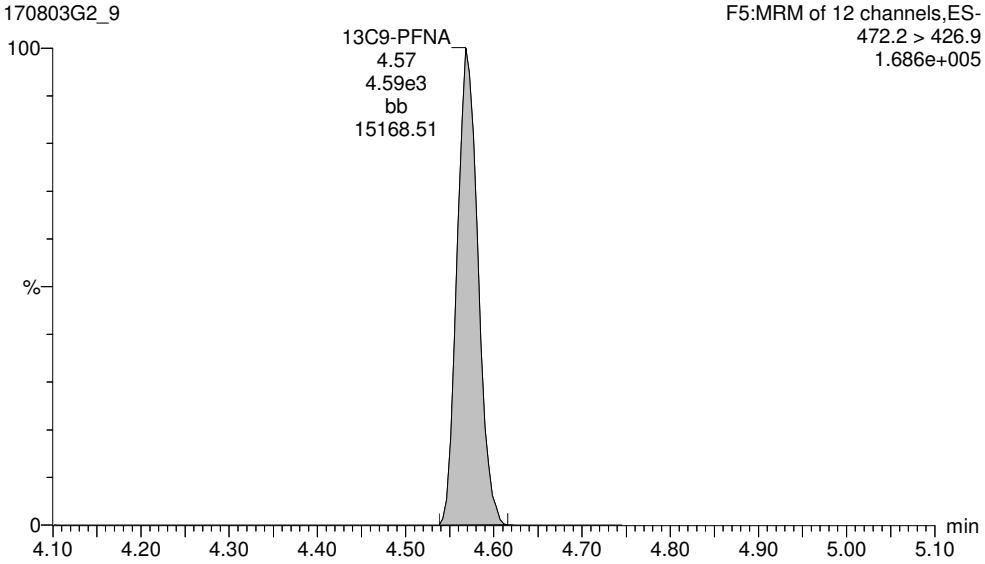
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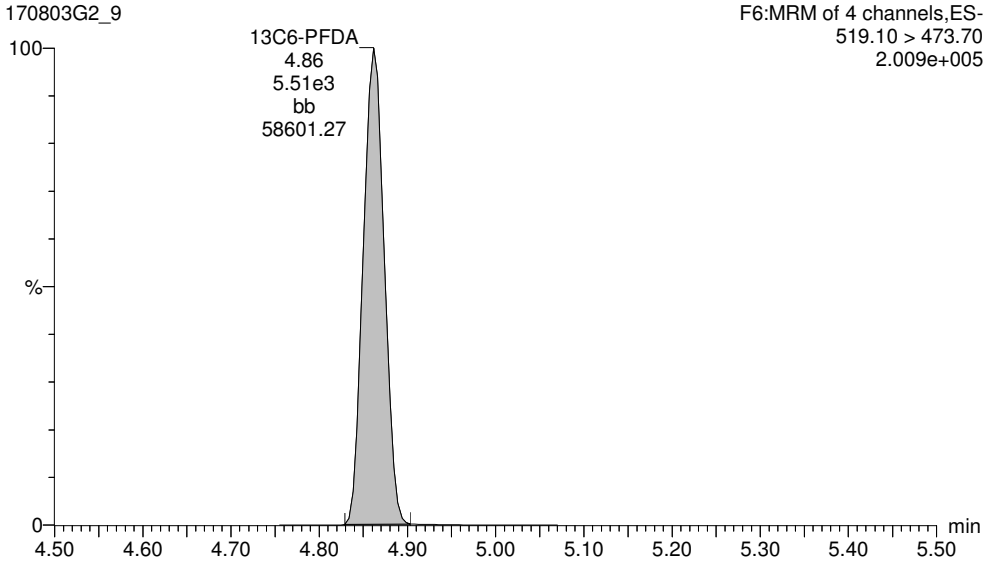
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13C9-PFNA



13C6-PFDA



LA 8/4/2017

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-10.qld

Last Altered: Monday, August 07, 2017 09:57:25 Pacific Daylight Time
Printed: Monday, August 07, 2017 10:01:27 Pacific Daylight Time

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Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

ID: 1700884-02 MW-32BR-20170714 0.11989, Description: MW-32BR-20170714, Name: 170731G3_10, Date: 31-Jul-2017, Time: 19:02:54

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	2	N-MeFOSAA	570.1 > 419.0		2.948e3		0.119			
2	4	PFUnA	563 > 518.9	1.776e2	1.374e4		0.119	5.12		
3	5	N-EtFOSAA	584.2 > 419.0		3.720e3		0.119			
4	6	PFDoA	612.9 > 318.8	1.491e1	1.698e4		0.119	5.35	0.718	
5	7	PFTrDA	662.9 > 618.9		0.000e0		0.119			
6	8	PFTeDA	712.9 > 668.8	1.467e2	1.461e4		0.119	5.73		
7	10	d3-N-MeFOSAA	573.3 > 419.0	2.948e3	1.334e4	0.026	0.119	4.99	880	64.5
8	11	13C2-PFUnA	565 > 519.8	1.374e4	1.334e4	1.471	0.119	5.12	73.6	70.0
9	12	d5-N-EtFOSAA	589.3 > 419.0	3.720e3	1.334e4	0.031	0.119	5.11	942	69.0
10	13	13C2-PFDoA	615 > 569.7	1.698e4	1.334e4	1.887	0.119	5.35	70.9	67.5
11	14	13C2-PFTeDA	715 > 669.7	1.461e4	1.334e4	1.990	0.119	5.73	57.8	55.1
12	15	13C7-PFUnA	570.1 > 524.8	1.334e4	1.334e4	1.000	0.119	5.12	105	100
13	16	Total N-MeFOSAA	570.1 > 419.0		2.948e3		0.119			
14	17	Total N-EtFOSAA	584.2 > 419.0		3.720e3		0.119			

Reviewed: WJL 8/7/2017 LA 8/7/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-10.qld

Last Altered: Monday, August 07, 2017 09:57:25 Pacific Daylight Time
Printed: Monday, August 07, 2017 10:01:27 Pacific Daylight Time

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ID: 1700884-02 MW-32BR-20170714 0.11989, Description: MW-32BR-20170714, Name: 170731G3_10, Date: 31-Jul-2017, Time: 19:02:54

Total N-MeFOSAA

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

Total N-EtFOSAA

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

Vista Analytical Laboratory Q1

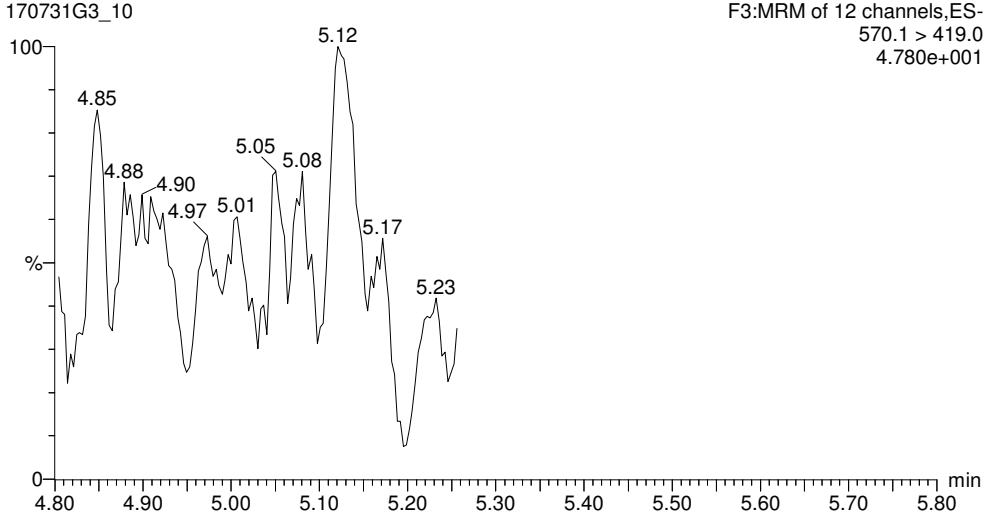
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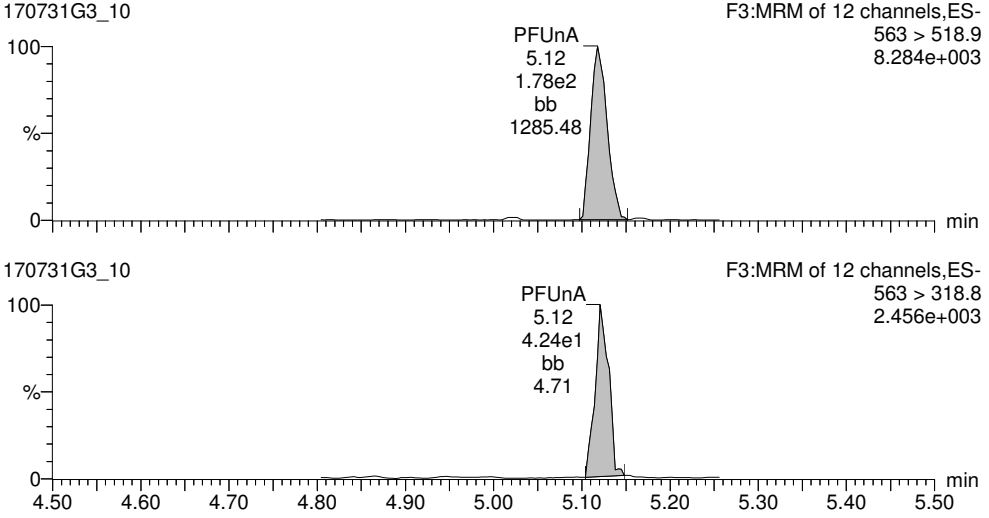
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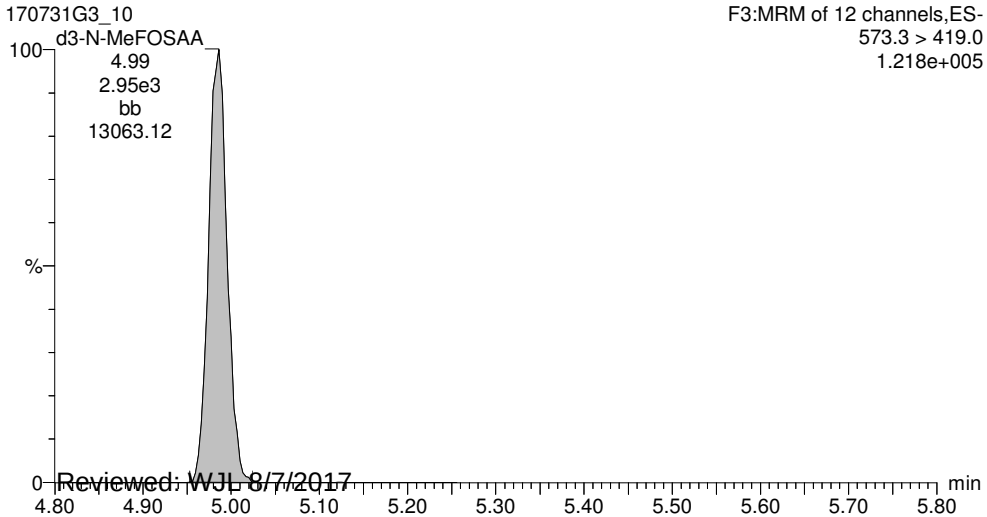
Total N-MeFOSAA



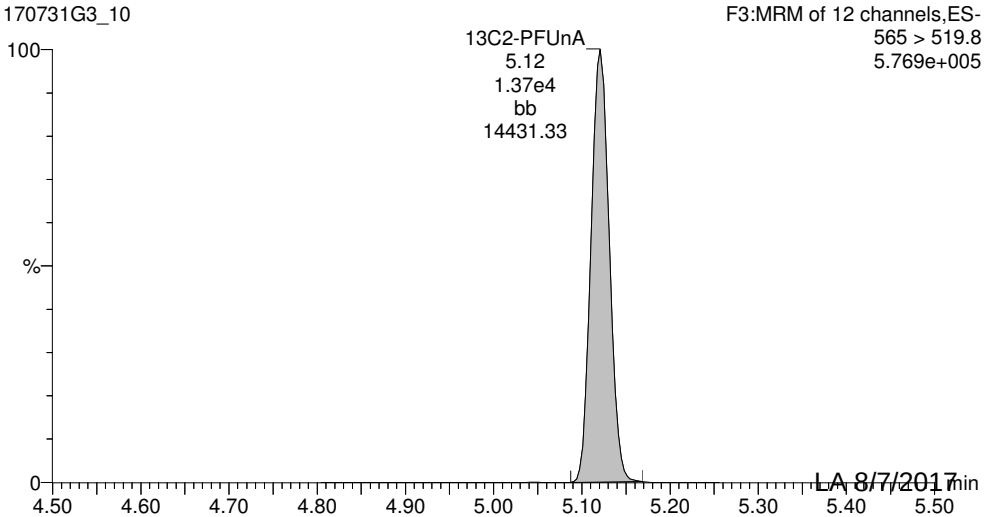
PFUnA



d3-N-MeFOSAA



13C2-PFUnA



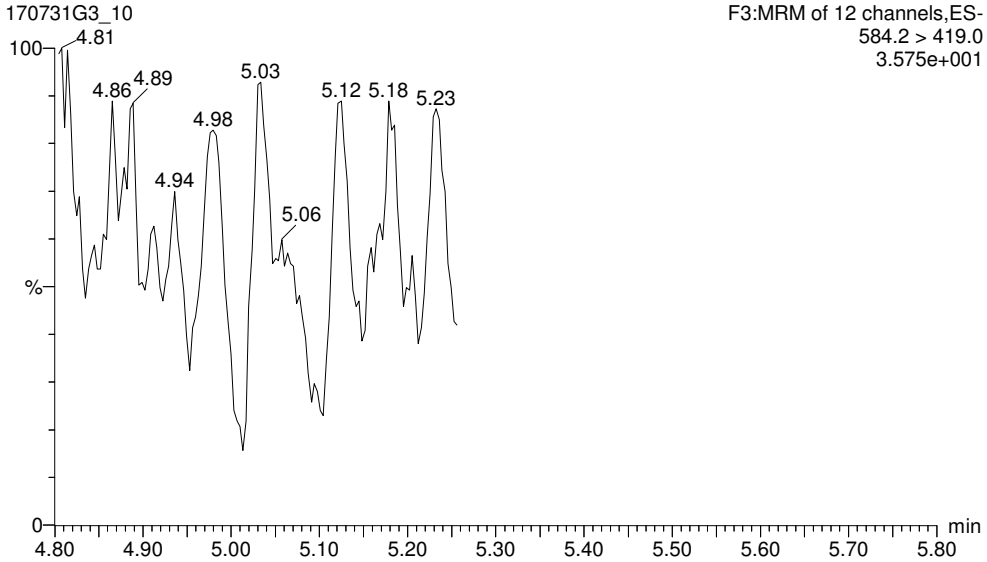
Reviewed: WJL 8/7/2017 LA 8/7/2017

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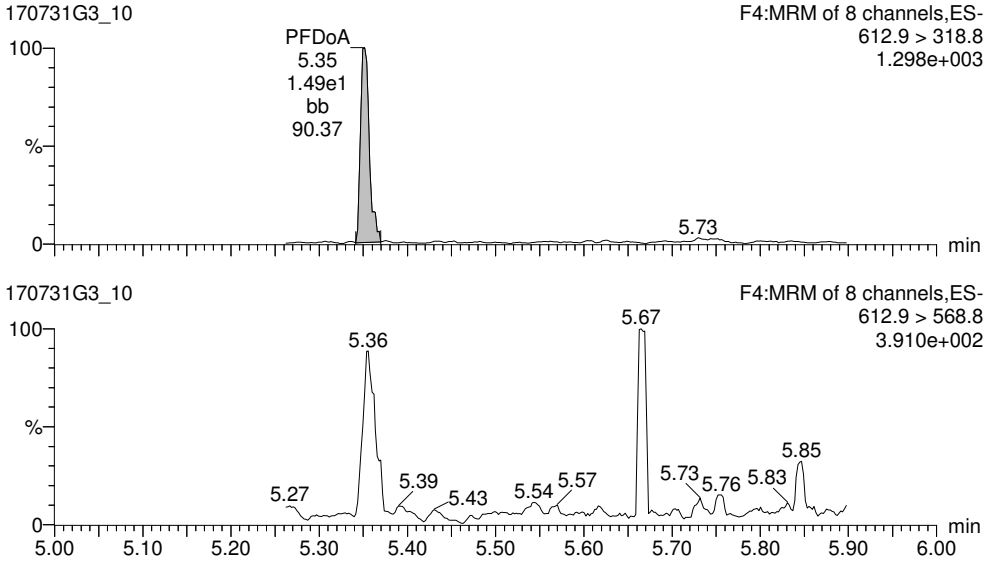
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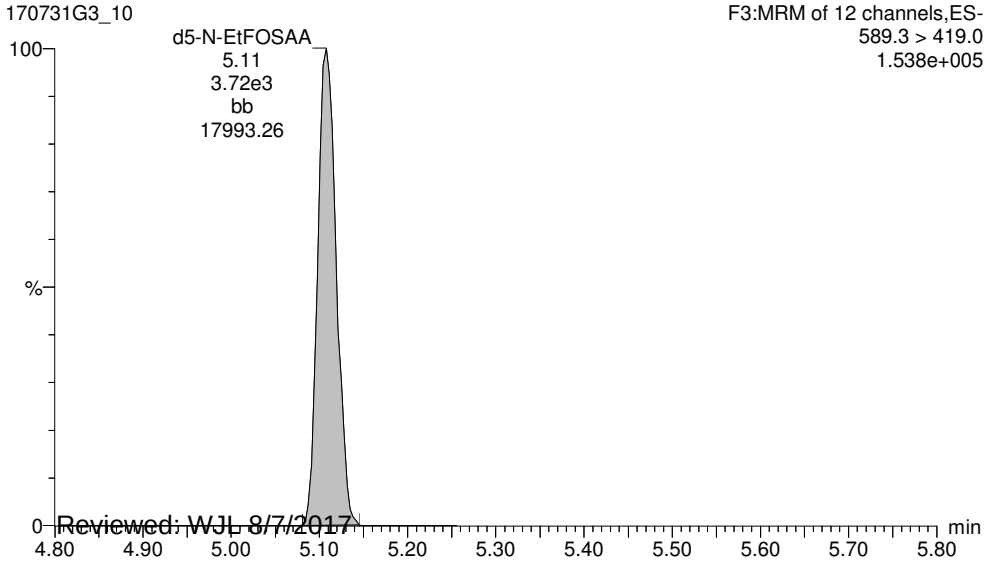
Total N-EtFOSAA



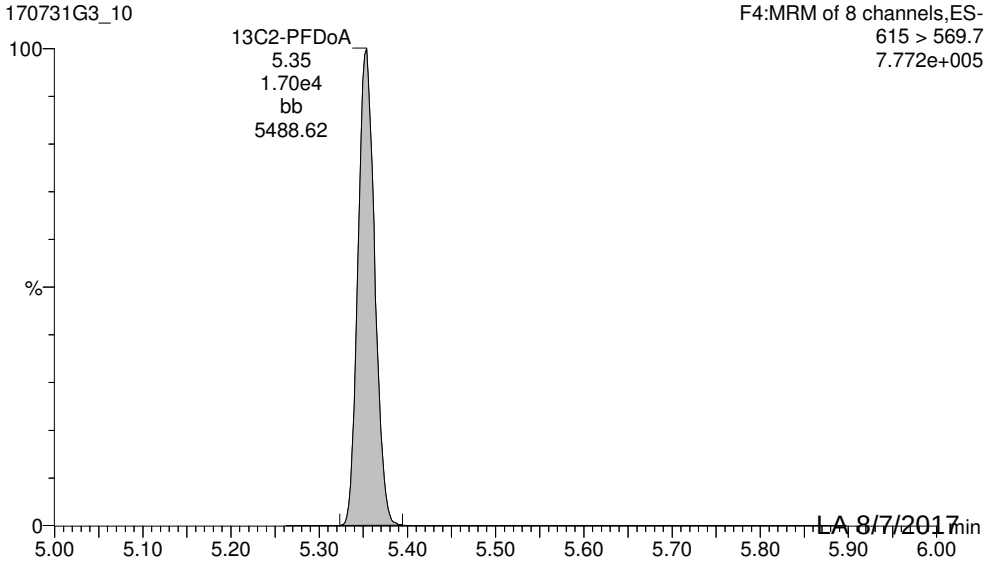
PFDoA



d5-N-EtFOSAA



13C2-PFDoA



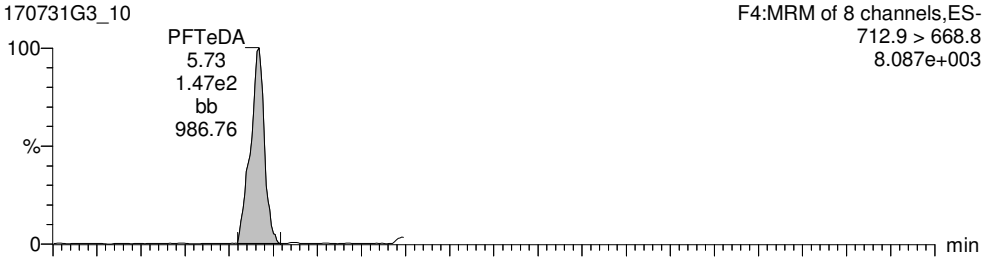
Reviewed: WJL 8/7/2017 LA 8/7/2017

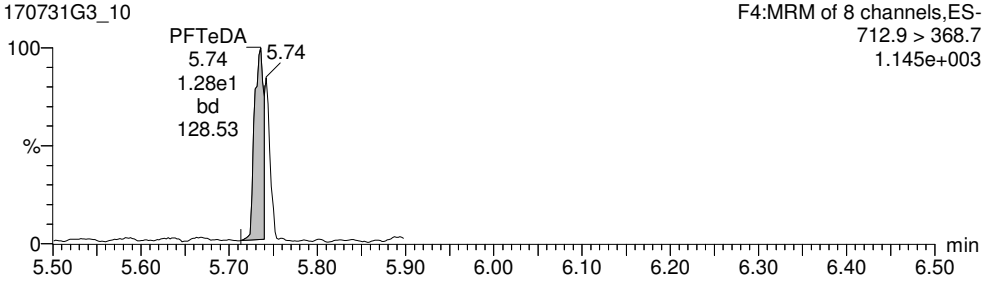
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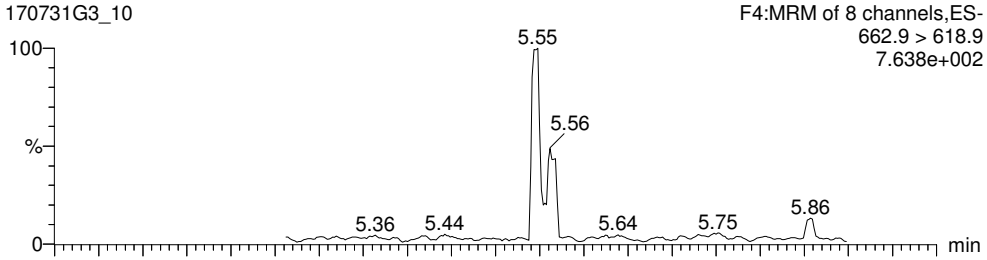
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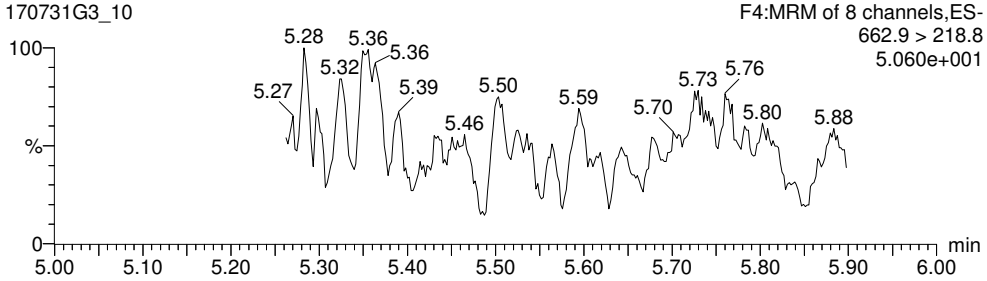
PFTeDA



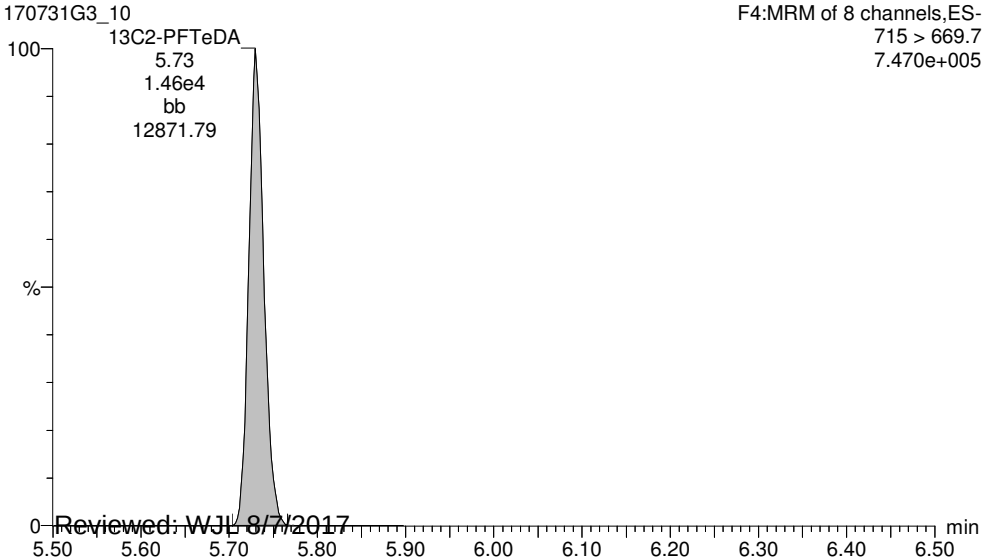


PFTrDA

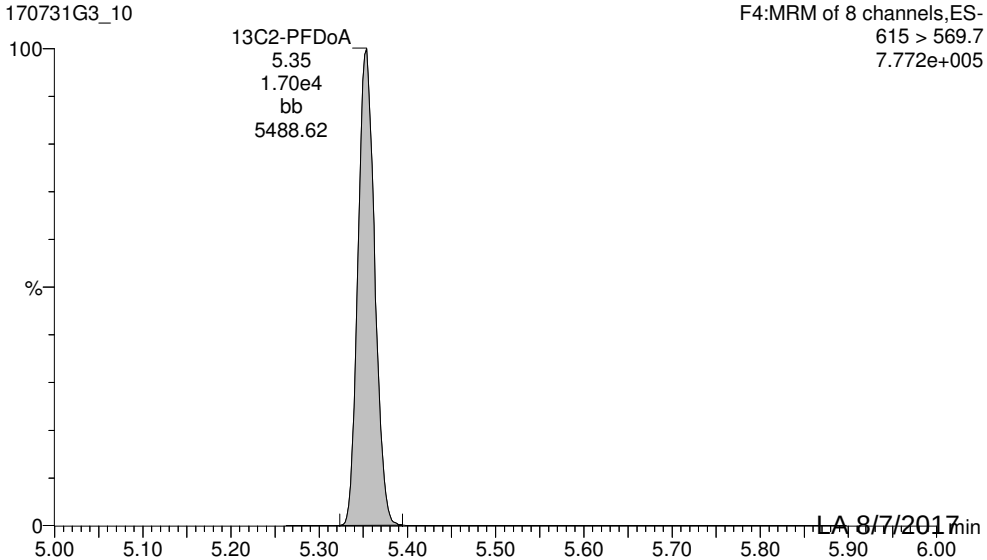




13C2-PFTeDA



13C2-PFDoA



Reviewed: WJL 8/7/2017 LA 8/7/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-10.qld

Last Altered: Monday, August 07, 2017 09:57:25 Pacific Daylight Time
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ID: 1700884-02 MW-32BR-20170714 0.11989, Description: MW-32BR-20170714, Name: 170731G3_10, Date: 31-Jul-2017, Time: 19:02:54, Instrument: , Lab: , User:

13C7-PFUnA



Reviewed: WJL 8/7/2017 LA 8/7/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-10.qld

Last Altered: Friday, August 04, 2017 10:49:52 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:50:08 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: 1700884-02 MW-32BR-20170714 0.11989, Description: MW-32BR-20170714, Name: 170803G2_10, Date: 03-Aug-2017, Time: 18:47:39

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	3	PFBS	299.0 > 79.7	2.686e3	3.471e3		0.119	2.89	47.5	
2	4	PFHxA	312.9 > 268.9	1.295e4	4.220e3		0.119	3.27	169	
3	5	PFHpA	363 > 318.9	5.472e3	4.967e3		0.119	3.80	58.4	
4	6	PFHxS	398.9 > 79.6	1.705e4	3.044e3		0.119	3.93	330	
5	7	PFOA	413.0 > 368.7	2.658e3	1.065e4		0.119	4.23	31.9	
6	8	PFNA	463.0 > 418.8	4.177e2	4.002e3		0.119	4.58	4.44	
7	9	PFOS	499.0 >79.9	7.708e3	5.352e3		0.119	4.64	321	
8	10	PFDA	512.7 > 219.0	8.008e0	7.939e3		0.119	4.87		
9	12	13C3-PFBS	302.0 > 98.8	3.471e3	1.270e4	0.263	0.119	2.89	109	104
10	14	13C2-PFHxA	315.0 > 269.8	4.220e3	1.270e4	0.361	0.119	3.27	96.9	92.2
11	15	13C4-PFHpA	367.2 > 321.8	4.967e3	1.270e4	0.475	0.119	3.80	86.4	82.3
12	16	18O2-PFHxS	403 > 102.6	3.044e3	7.586e3	0.411	0.119	3.93	103	97.7
13	17	13C2-PFOA	414.9 > 369.7	1.065e4	3.822e3	2.843	0.119	4.23	103	98.0
14	18	13C5-PFNA	468.2 > 422.9	4.002e3	5.112e3	0.854	0.119	4.57	96.4	91.7
15	19	13C2-PFDA	514.8 > 469.7	7.939e3	5.927e3	1.742	0.119	4.86	80.8	76.9
16	20	13C8-PFOS	507.0 > 79.9	5.352e3	6.477e3	0.927	0.119	4.64	93.6	89.1
17	22	13C5-PFHxA	318>272.9	1.270e4	1.270e4	1.000	0.119	3.27	105	100
18	23	13C3-PFHxS	401.9 > 79.9	7.586e3	7.586e3	1.000	0.119	3.93	105	100
19	24	13C8-PFOA	421.3 > 376	3.822e3	3.822e3	1.000	0.119	4.23	105	100
20	25	13C9-PFNA	472.2 > 426.9	5.112e3	5.112e3	1.000	0.119	4.57	105	100
21	26	13C4-PFOS	503.0 > 79.9	6.477e3	6.477e3	1.000	0.119	4.64	105	100
22	27	13C6-PFDA	519.10 > 473.70	5.927e3	5.927e3	1.000	0.119	4.86	105	100
23	28	Total PFBS	299.0 > 79.7		3.471e3		0.119		47.5	
24	29	Total PFHxS	398.9 > 79.6		3.044e3		0.119		330	
25	30	Total PFOA	413.0 > 368.7		1.065e4		0.119		35.0	
26	31	Total PFOS	499.0 >79.9		5.352e3		0.119		321	

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Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-10.qld

Last Altered: Friday, August 04, 2017 10:49:52 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:50:08 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: 1700884-02 MW-32BR-20170714 0.11989, Description: MW-32BR-20170714, Name: 170803G2_10, Date: 03-Aug-2017, Time: 18:47:39

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	3	PFBS	299.0 > 79.7	2.89	2686.120	3471.255	47.5

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	6	PFHxS	398.9 > 79.6	3.93	17052.361	3044.168	330.4

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	30	Total PFOA	413.0 > 368.7	4.12	327.033	10647.009	3.1
2	7	PFOA	413.0 > 368.7	4.23	2657.596	10647.009	31.9

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	9	PFOS	499.0 >79.9	4.64	7708.459	5351.650	321.4

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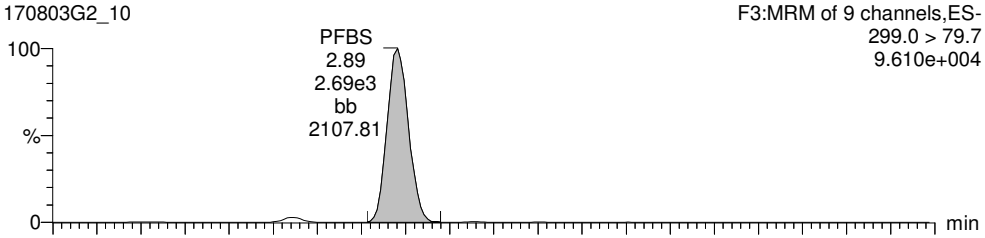
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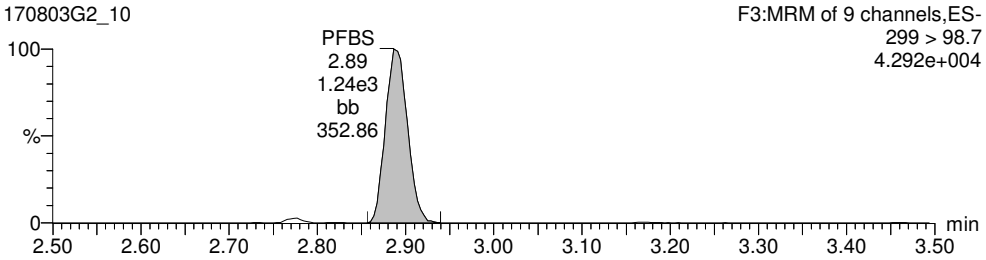
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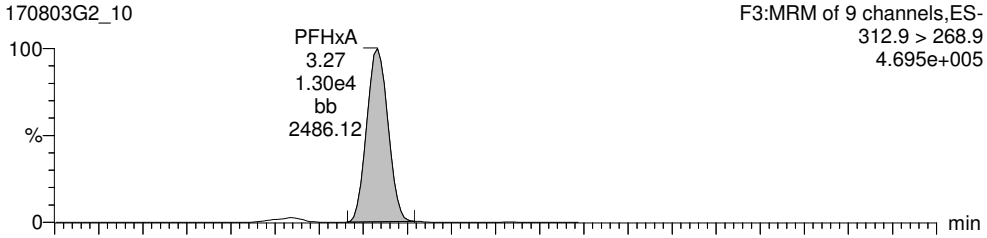
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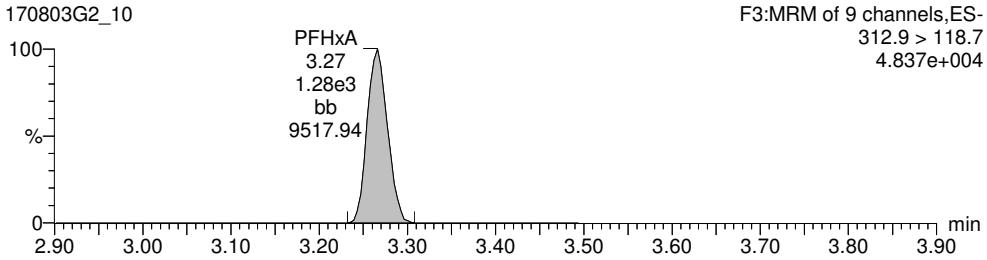
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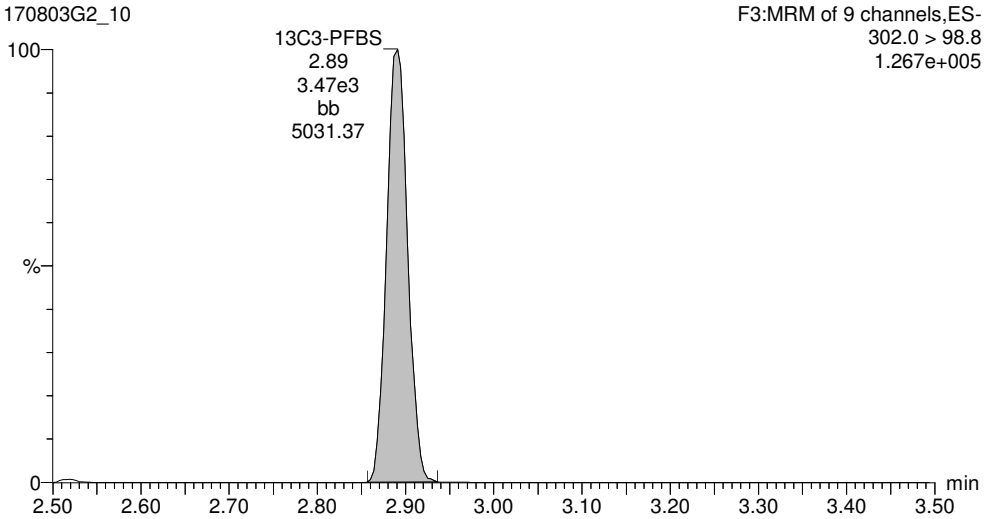


PFHxA

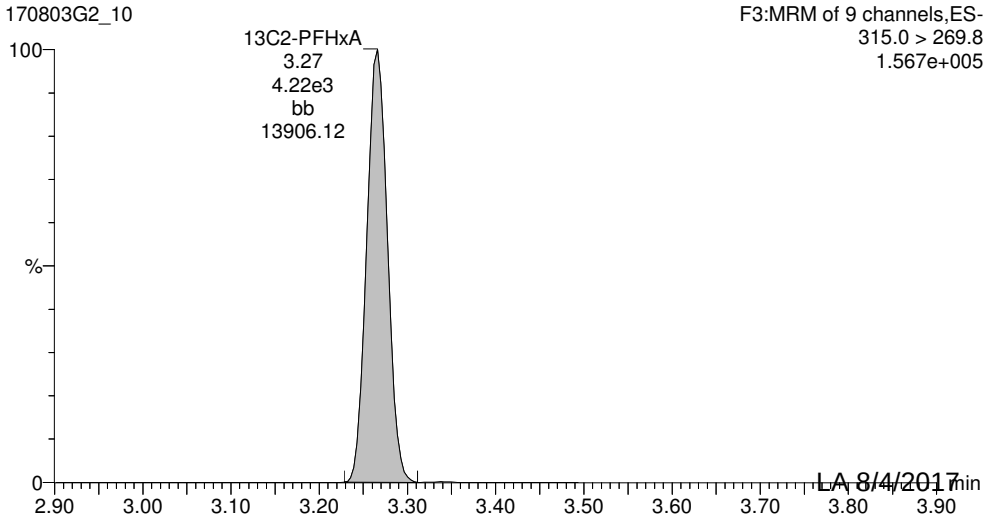




13C3-PFBS



13C2-PFHxA



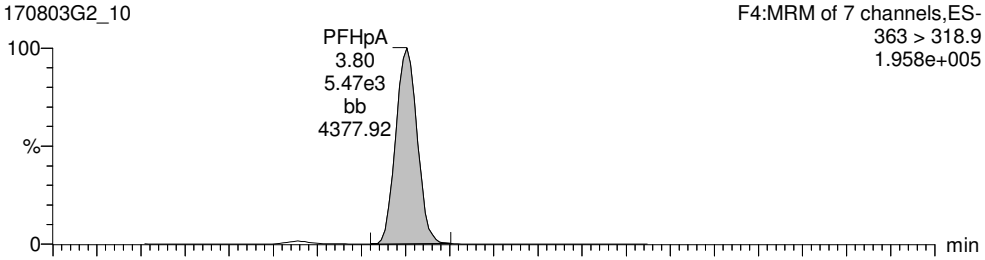
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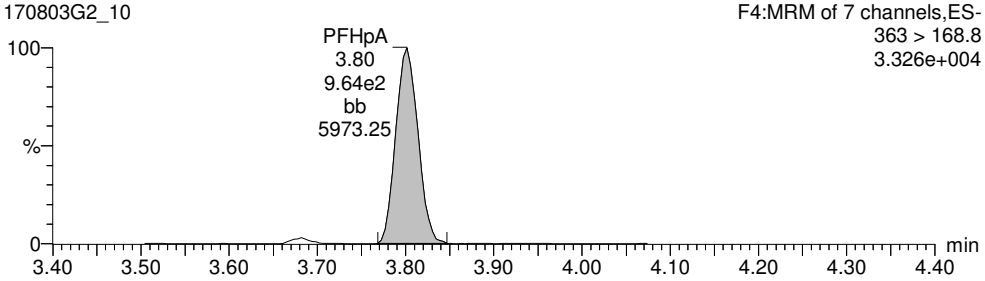
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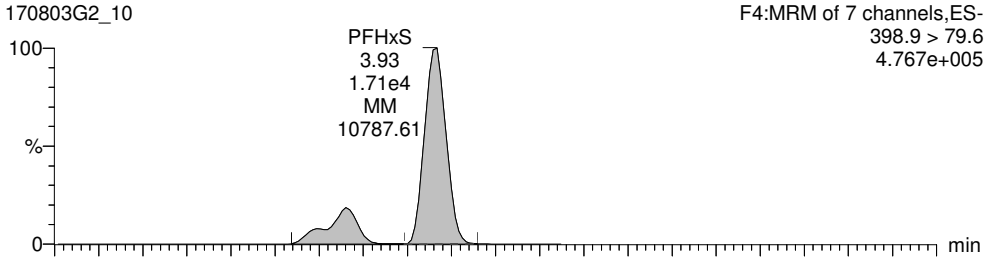
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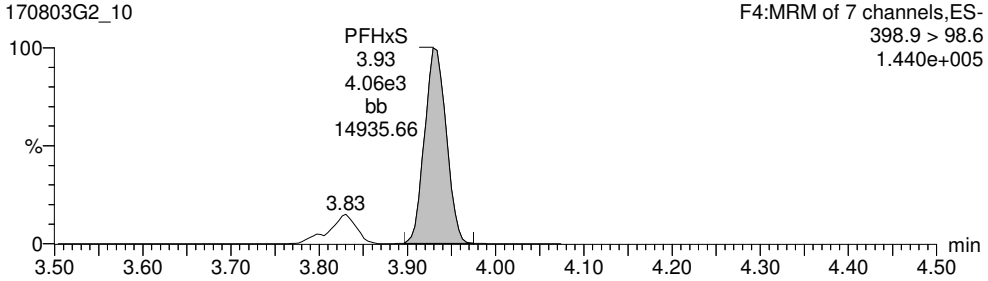
PFHpA



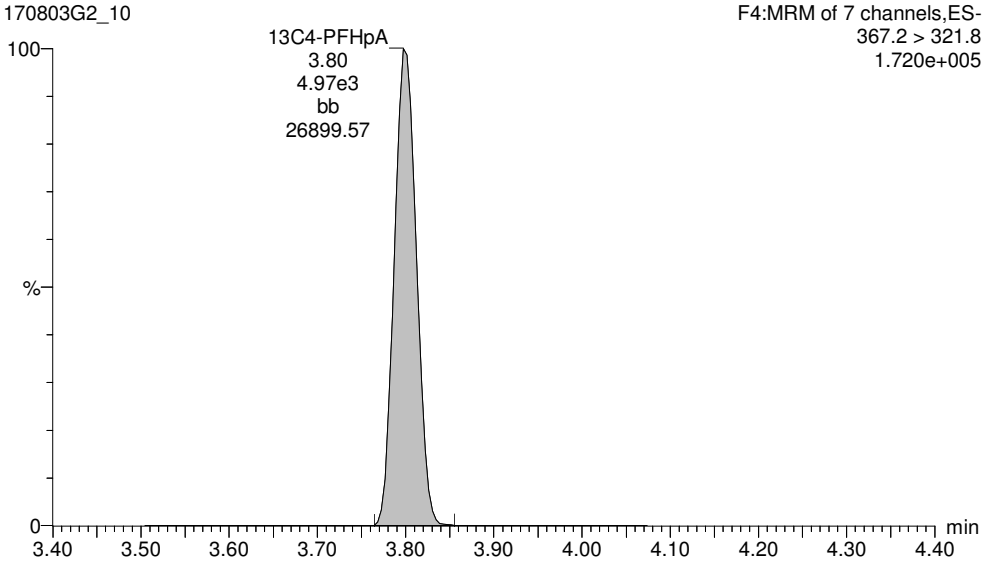


Total PFHxS

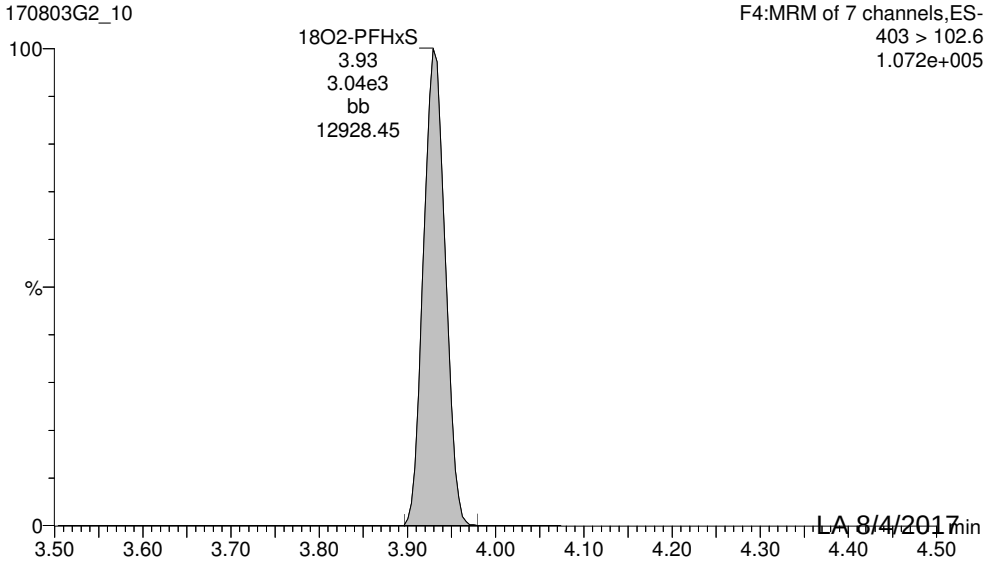




13C4-PFHpA



18O2-PFHxS



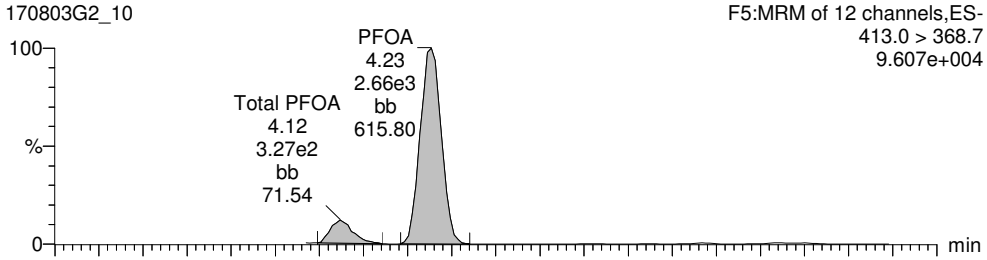
LA 8/4/2017

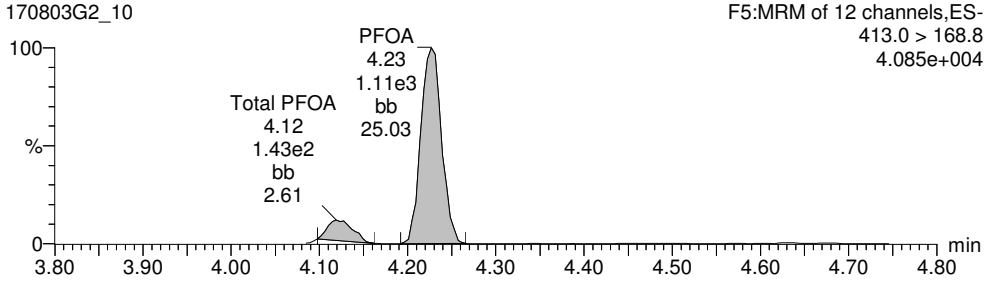
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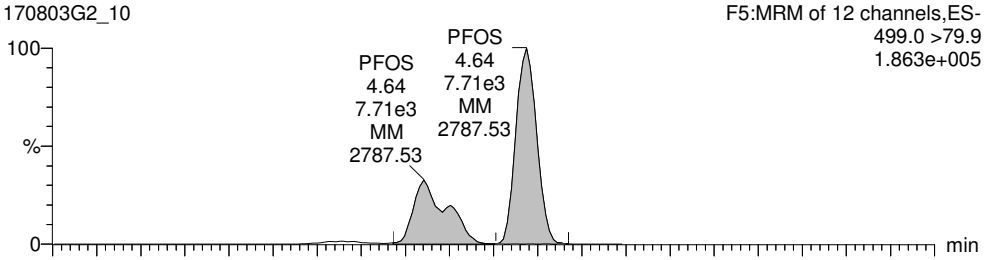
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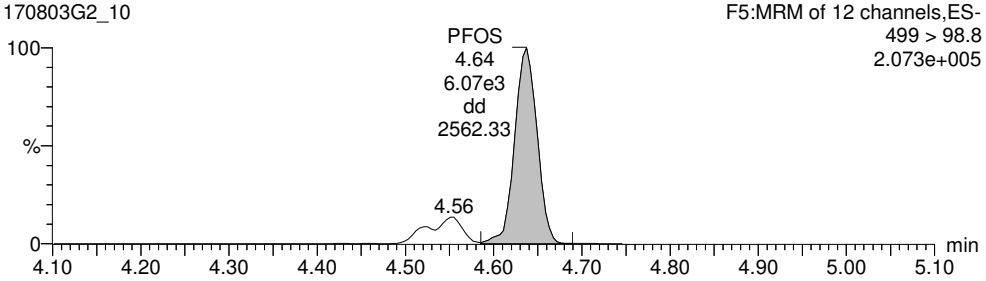
Total PFOA



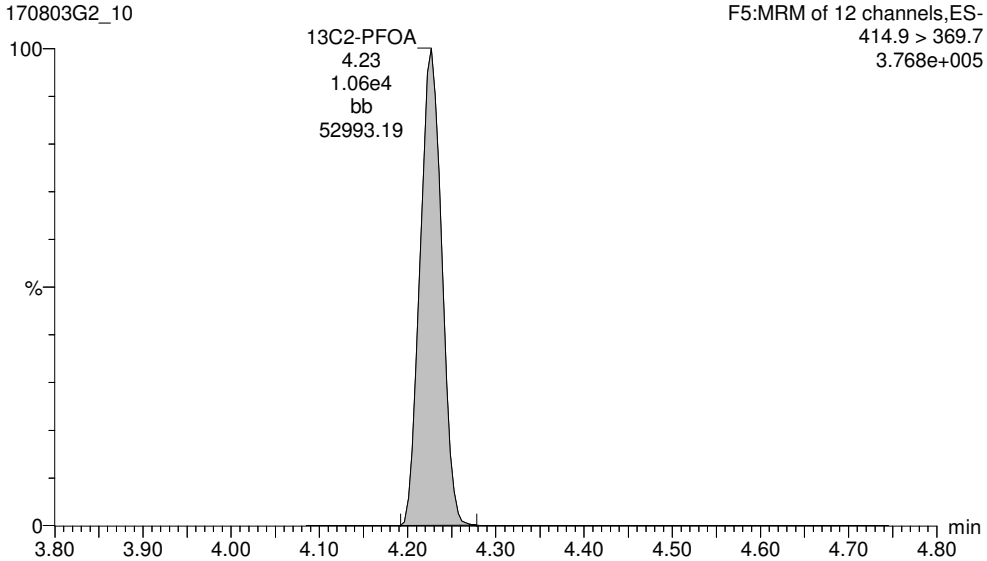


Total PFOS

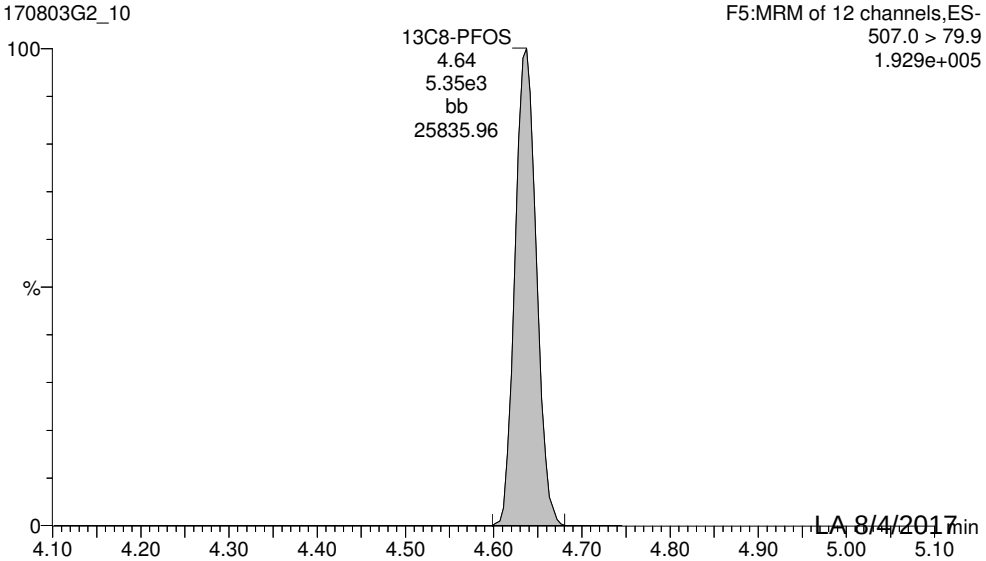




13C2-PFOA



13C8-PFOS



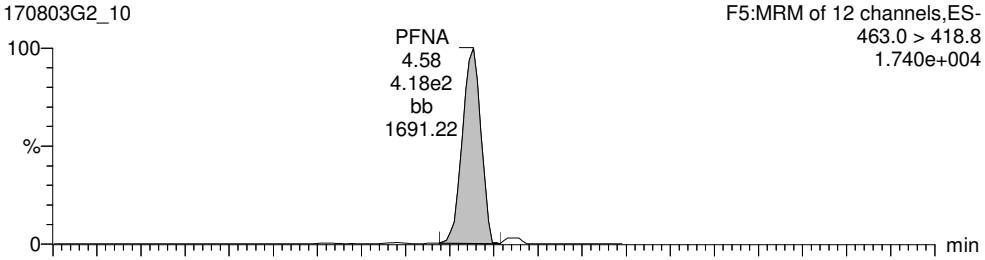
LA 8/4/2017

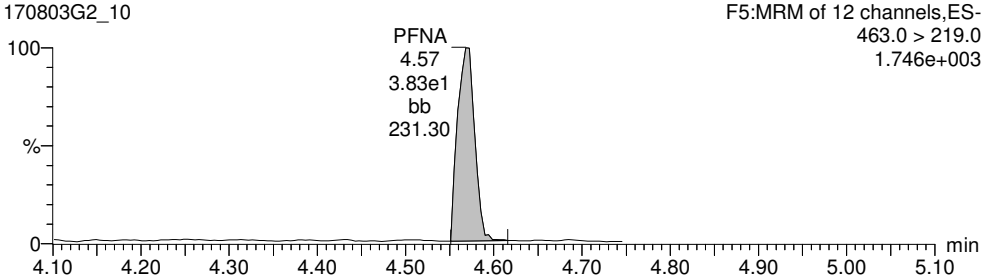
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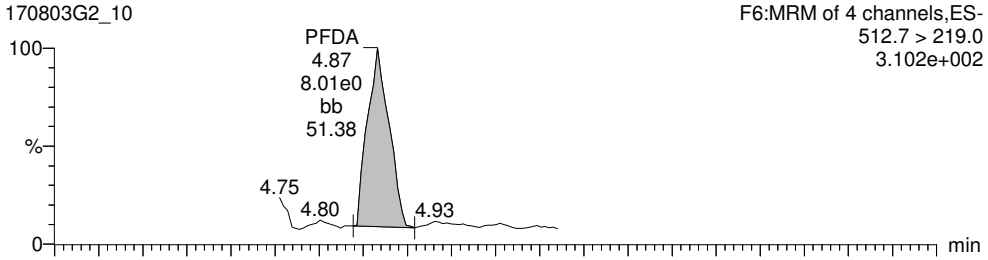
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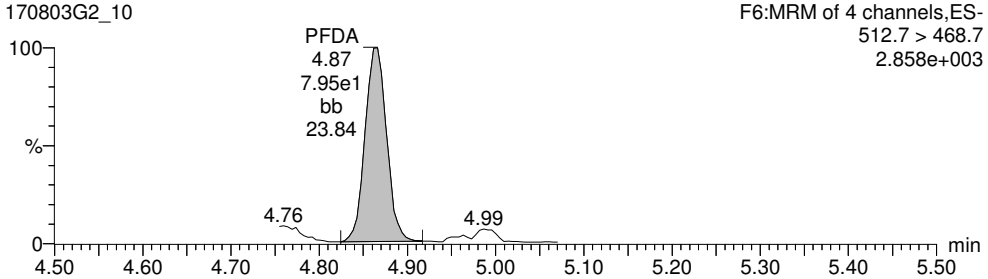
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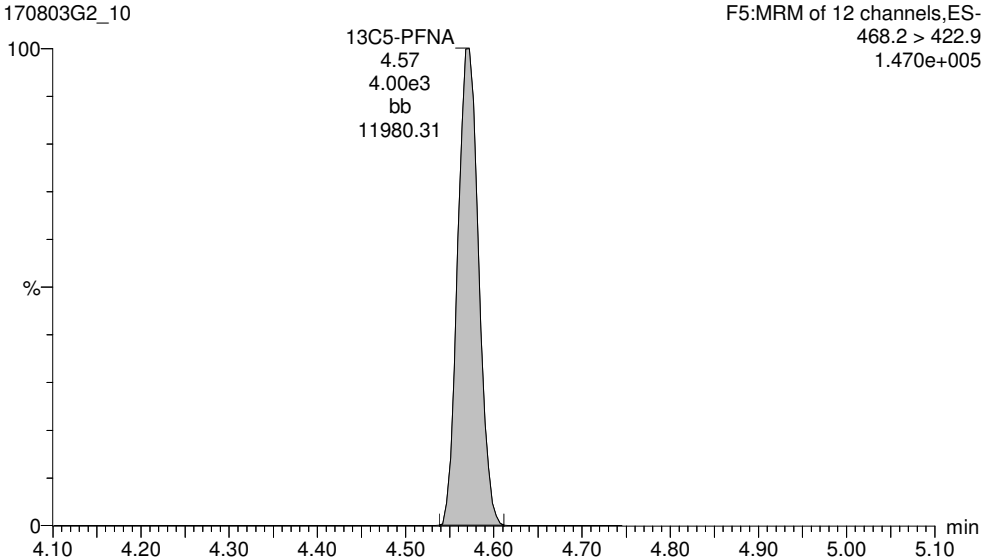


PFDA

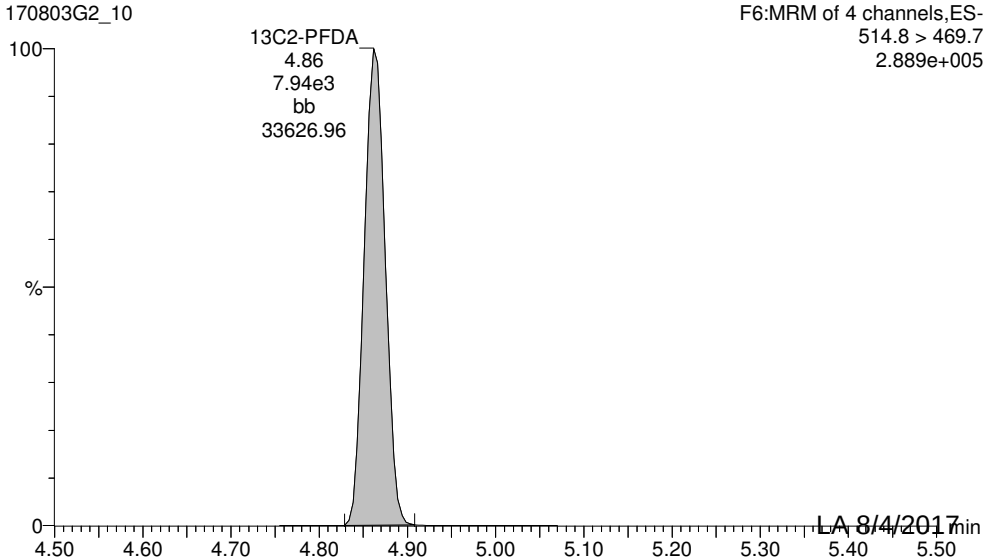




13C5-PFNA



13C2-PFDA



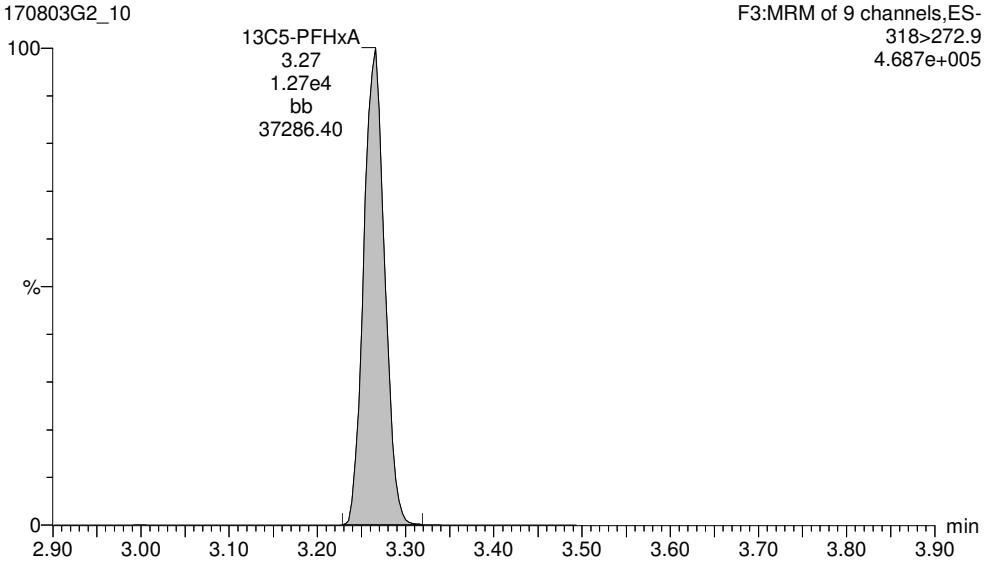
LA 8/4/2017

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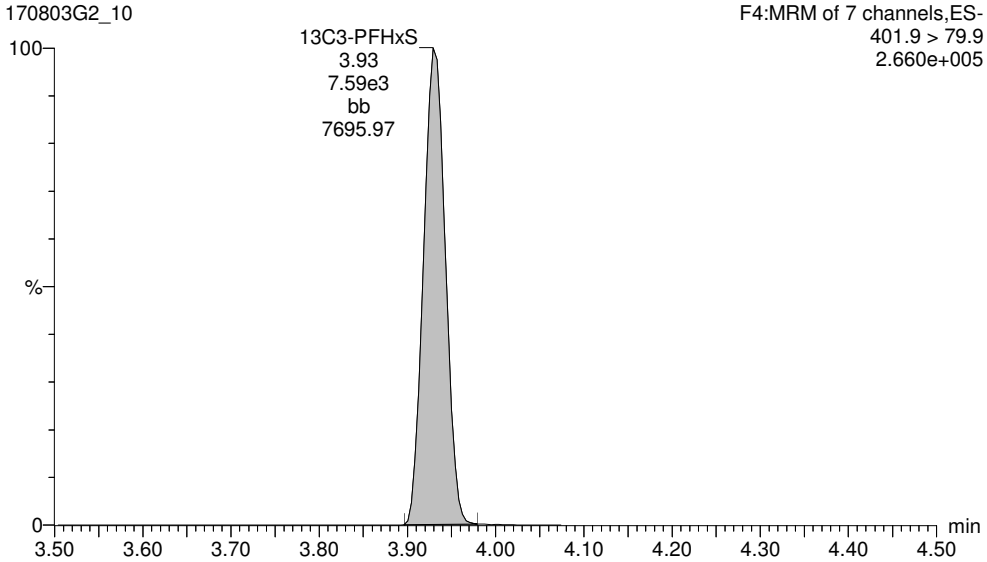
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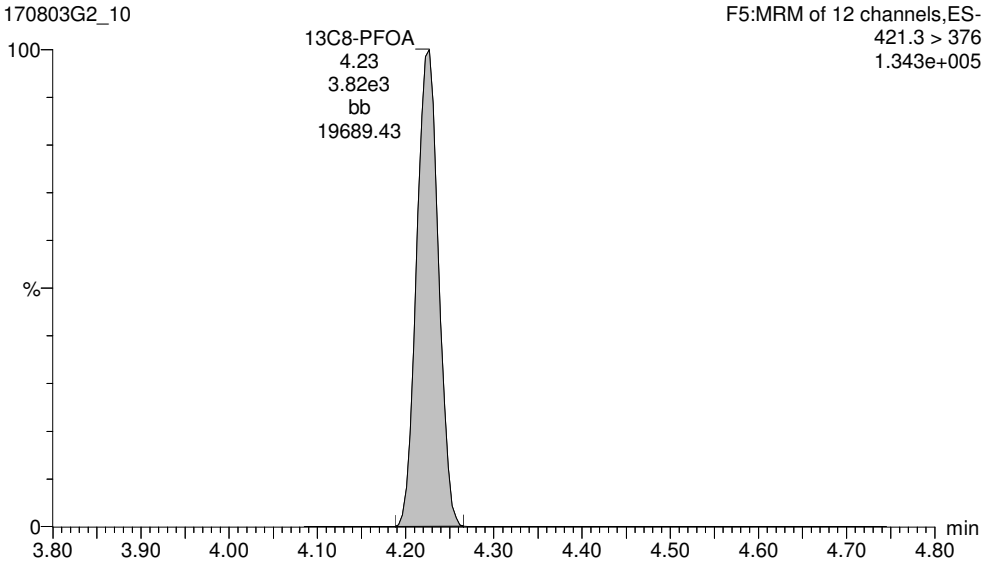
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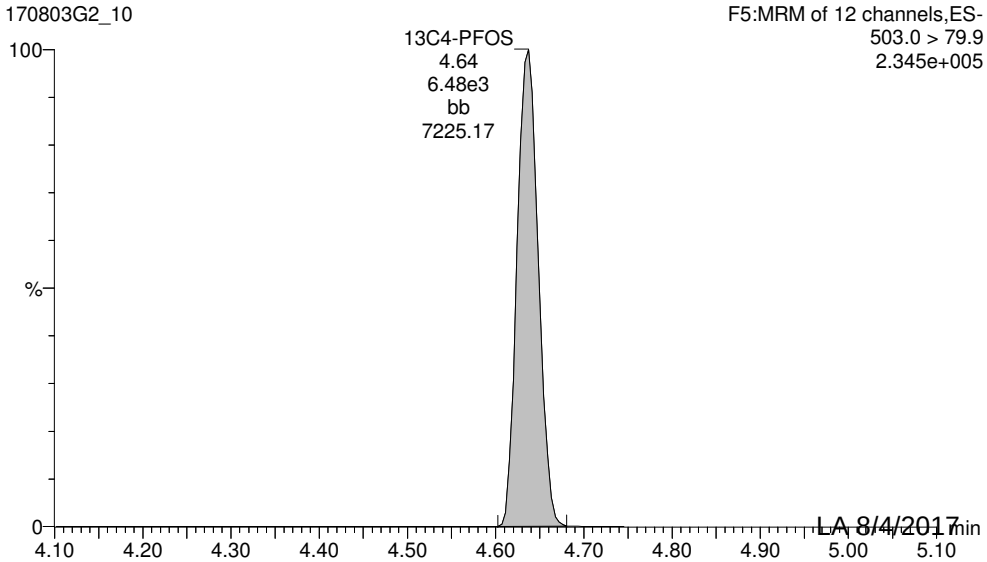
13C3-PFHxS



13C8-PFOA



13C4-PFOS



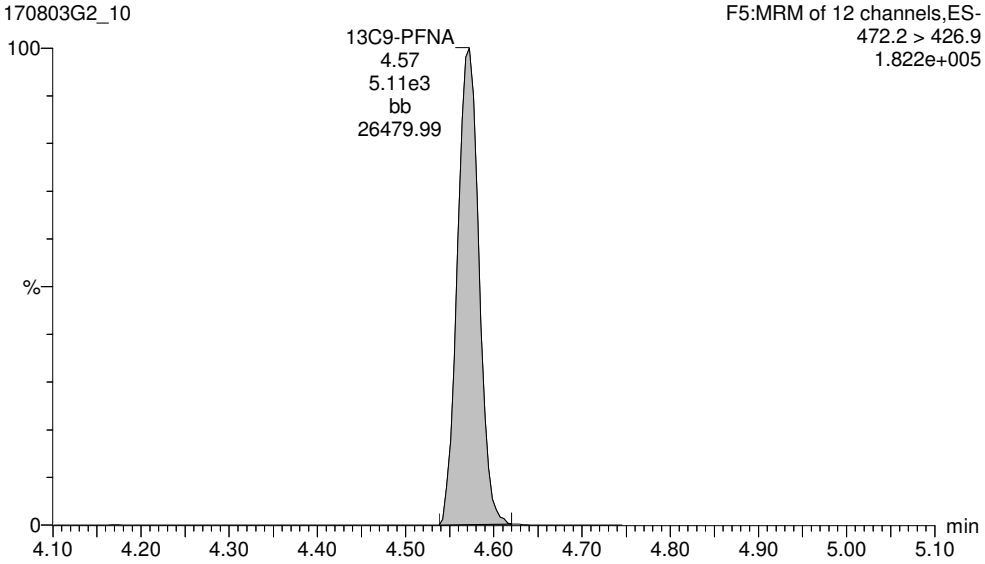
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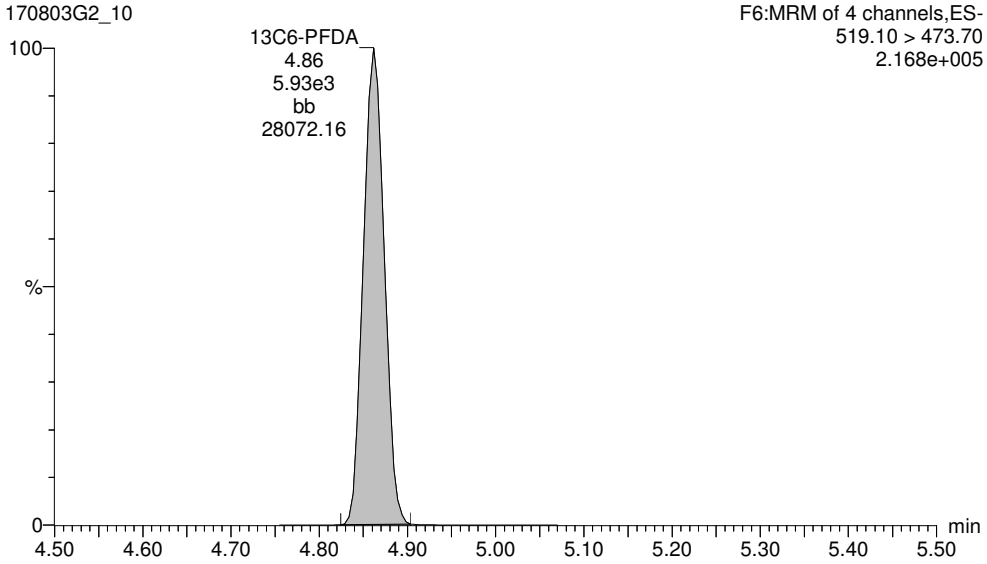
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13C9-PFNA



13C6-PFDA



LA 8/4/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-11.qld

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ID: 1700884-03 MW-35S-20170714 0.11984, Description: MW-35S-20170714, Name: 170731G3_11, Date: 31-Jul-2017, Time: 19:15:28

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	2	N-MeFOSAA	570.1 > 419.0		3.340e3		0.120			
2	4	PFUnA	563 > 518.9	2.476e2	1.393e4		0.120	5.12		
3	5	N-EtFOSAA	584.2 > 419.0		3.378e3		0.120			
4	6	PFDoA	612.9 > 318.8	1.282e1	1.959e4		0.120	5.35	0.521	
5	7	PFTrDA	662.9 > 618.9		0.000e0		0.120			
6	8	PFTeDA	712.9 > 668.8	2.833e2	2.034e4		0.120	5.73	0.175	
7	10	d3-N-MeFOSAA	573.3 > 419.0	3.340e3	1.537e4	0.026	0.120	4.98	859	63.4
8	11	13C2-PFUnA	565 > 519.8	1.393e4	1.537e4	1.471	0.120	5.12	64.3	61.6
9	12	d5-N-EtFOSAA	589.3 > 419.0	3.378e3	1.537e4	0.031	0.120	5.11	737	54.4
10	13	13C2-PFDoA	615 > 569.7	1.959e4	1.537e4	1.887	0.120	5.35	70.5	67.6
11	14	13C2-PFTeDA	715 > 669.7	2.034e4	1.537e4	1.990	0.120	5.73	69.4	66.5
12	15	13C7-PFUnA	570.1 > 524.8	1.537e4	1.537e4	1.000	0.120	5.12	104	100
13	16	Total N-MeFOSAA	570.1 > 419.0		3.340e3		0.120			
14	17	Total N-EtFOSAA	584.2 > 419.0		3.378e3		0.120			

LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-11.qld

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ID: 1700884-03 MW-35S-20170714 0.11984, Description: MW-35S-20170714, Name: 170731G3_11, Date: 31-Jul-2017, Time: 19:15:28

Total N-MeFOSAA

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1						

Total N-EtFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

LA 8/3/2017

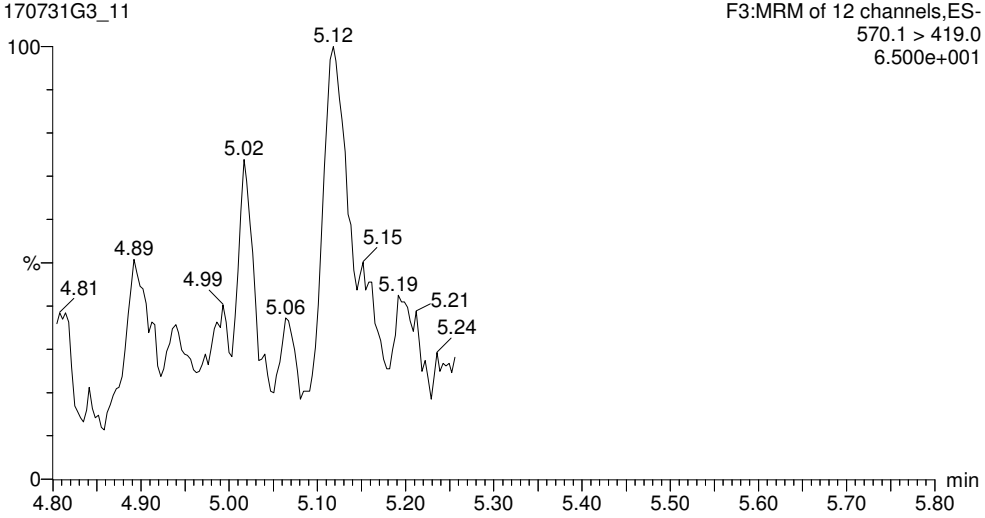
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Printed: Thursday, August 03, 2017 12:00:28 Pacific Daylight Time

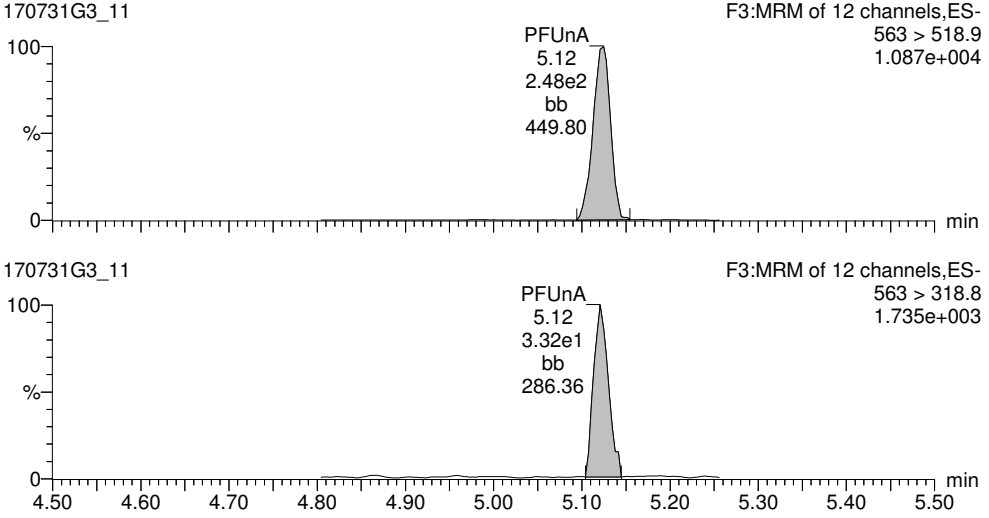
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ID: 1700884-03 MW-35S-20170714 0.11984, Description: MW-35S-20170714, Name: 170731G3_11, Date: 31-Jul-2017, Time: 19:15:28, Instrument: , Lab: , User:

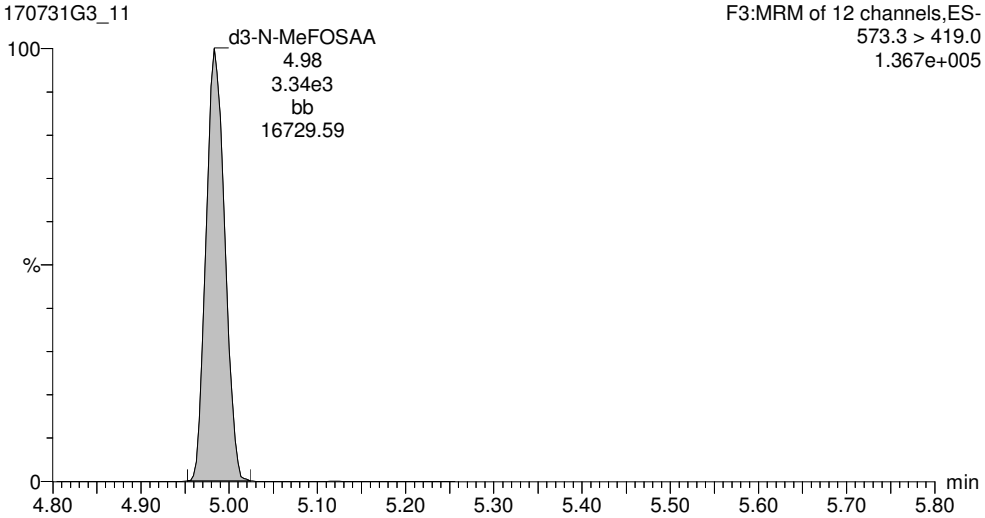
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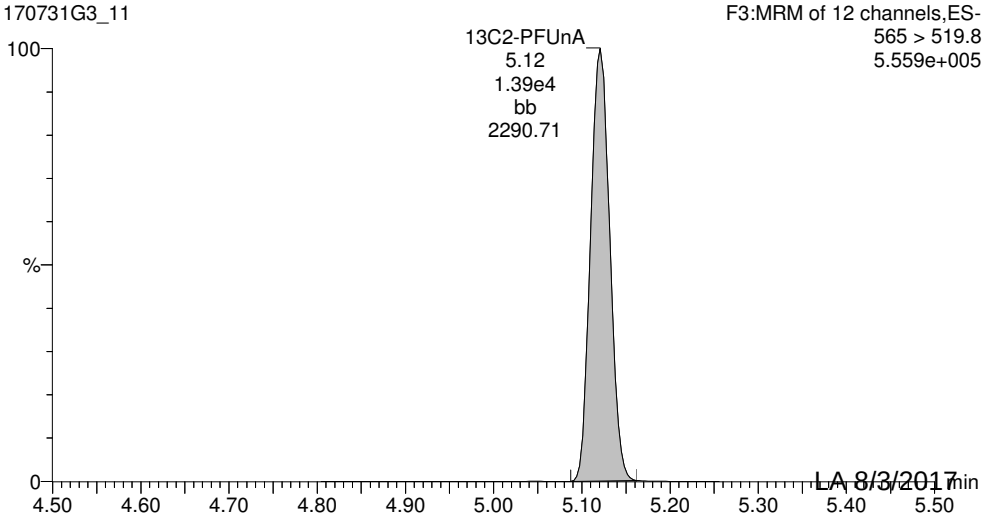
PFUnA



d3-N-MeFOSAA



13C2-PFUnA



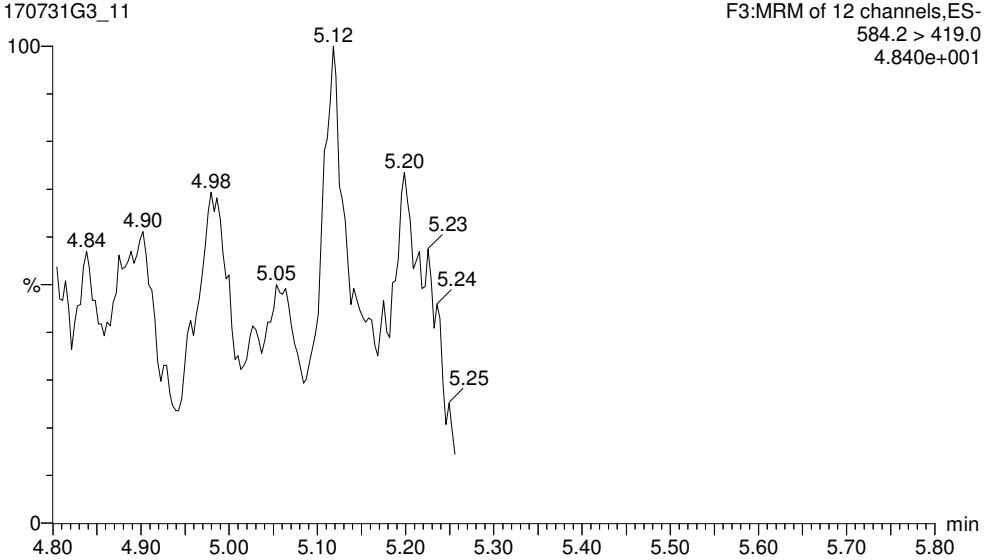
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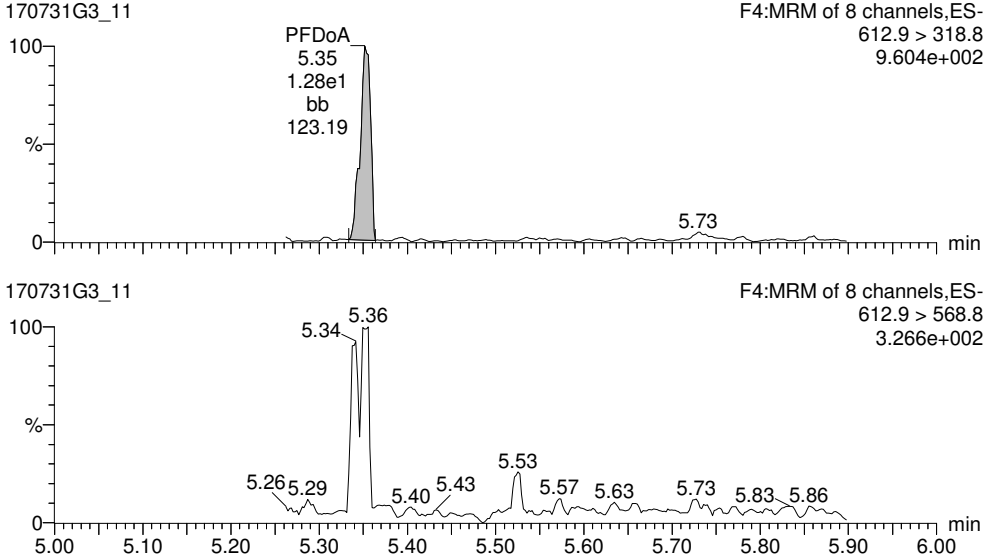
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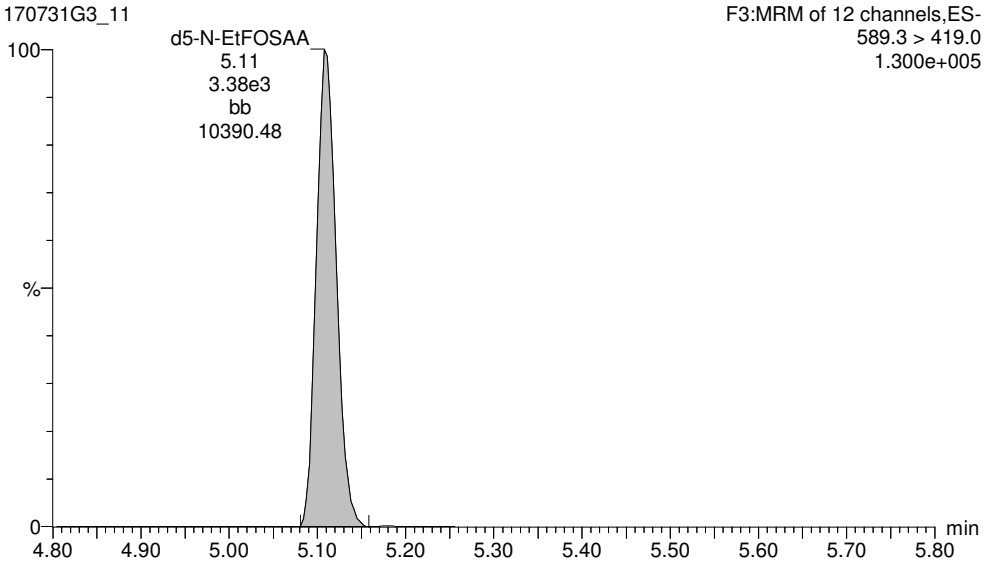
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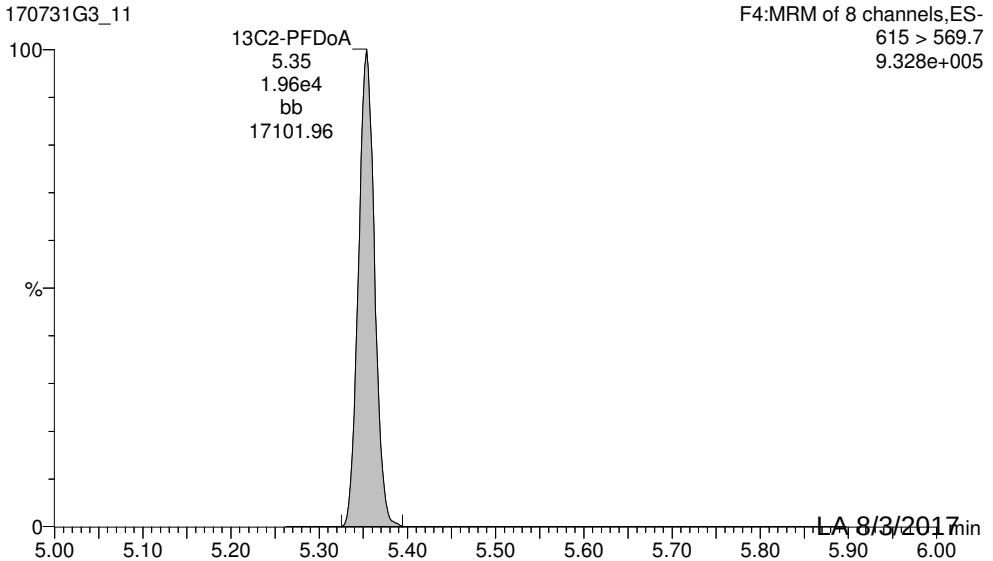
PFDoA



d5-N-EtFOSAA



13C2-PFDoA



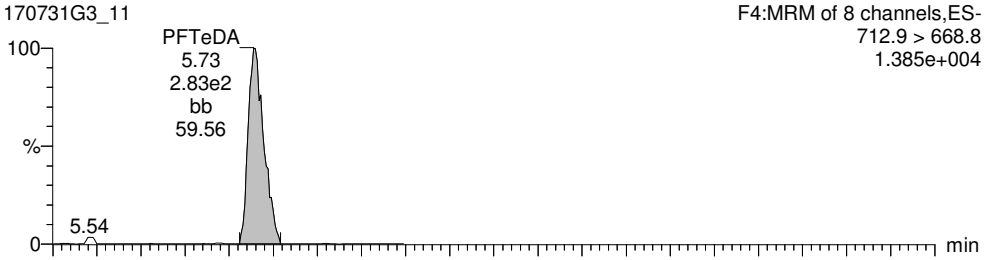
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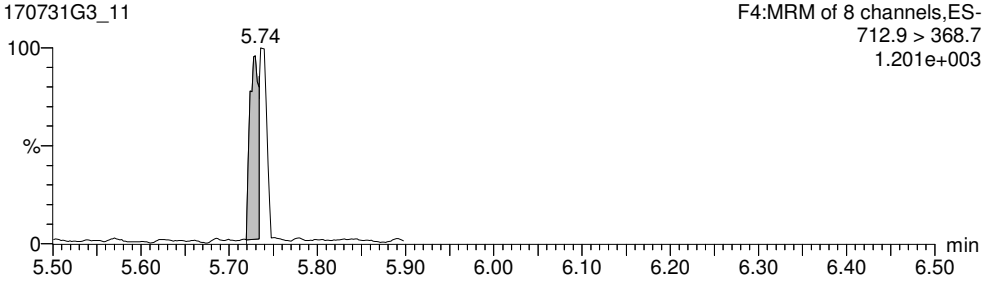
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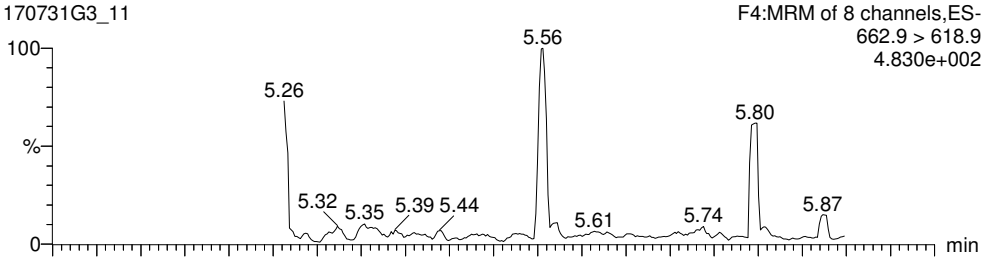
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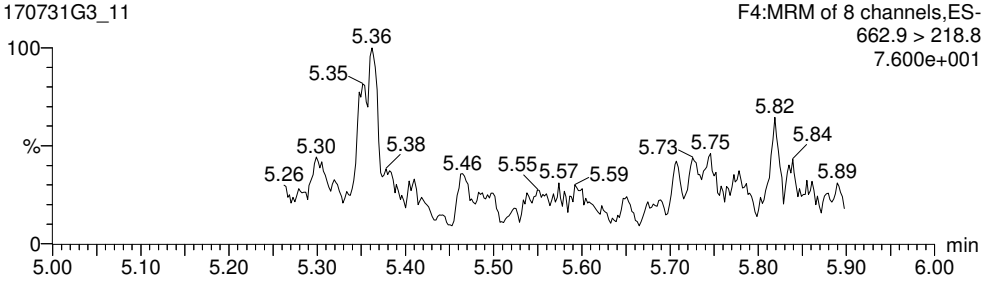
PFTeDA



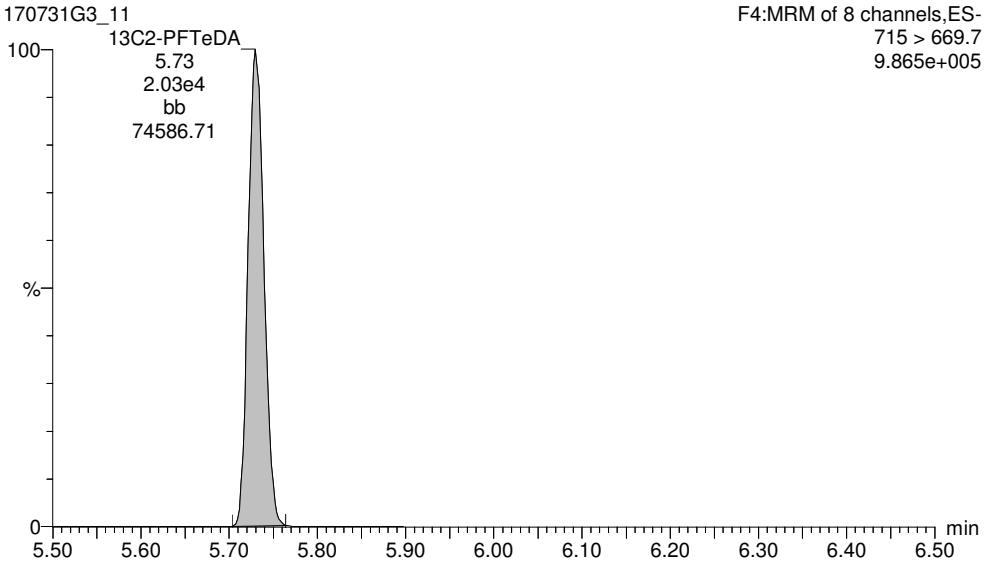


PFTrDA

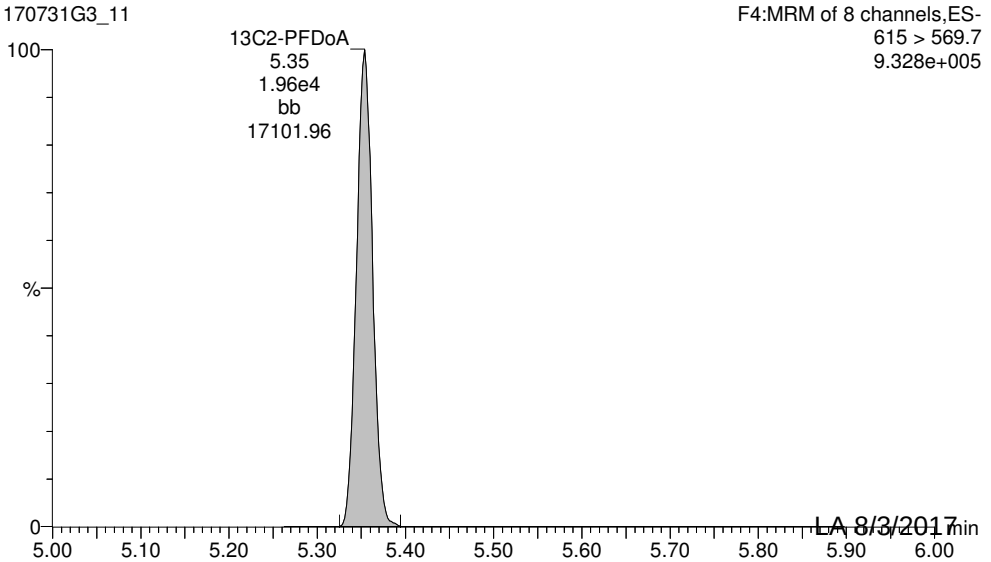




13C2-PFTeDA



13C2-PFDoA



LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-11.qld

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13C7-PFUnA



LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-11.qld

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: 1700884-03 MW-35S-20170714 0.11984, Description: MW-35S-20170714, Name: 170803G2_11, Date: 03-Aug-2017, Time: 19:00:12

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	3	PFBS	299.0 > 79.7	1.811e3	3.990e3		0.120	2.89	26.4	
2	4	PFHxA	312.9 > 268.9	8.394e3	4.524e3		0.120	3.27	101	
3	5	PFHpA	363 > 318.9	3.617e3	5.408e3		0.120	3.80	34.7	
4	6	PFHxS	398.9 > 79.6	9.296e3	3.200e3		0.120	3.93	170	
5	7	PFOA	413.0 > 368.7	1.665e3	9.850e3		0.120	4.23	21.1	
6	8	PFNA	463.0 > 418.8		3.178e3		0.120			
7	9	PFOS	499.0 >79.9	3.789e3	5.365e3		0.120	4.64	156	
8	10	PFDA	512.7 > 219.0	1.259e1	7.778e3		0.120	4.87		
9	12	13C3-PFBS	302.0 > 98.8	3.990e3	1.228e4	0.263	0.120	2.89	129	124
10	14	13C2-PFHxA	315.0 > 269.8	4.524e3	1.228e4	0.361	0.120	3.27	107	102
11	15	13C4-PFHpA	367.2 > 321.8	5.408e3	1.228e4	0.475	0.120	3.80	96.6	92.6
12	16	18O2-PFHxS	403 > 102.6	3.200e3	8.096e3	0.411	0.120	3.93	100	96.3
13	17	13C2-PFOA	414.9 > 369.7	9.850e3	3.563e3	2.843	0.120	4.23	101	97.3
14	18	13C5-PFNA	468.2 > 422.9	3.178e3	5.218e3	0.854	0.120	4.57	74.4	71.4
15	19	13C2-PFDA	514.8 > 469.7	7.778e3	6.326e3	1.742	0.120	4.86	73.6	70.6
16	20	13C8-PFOS	507.0 > 79.9	5.365e3	7.030e3	0.927	0.120	4.64	85.9	82.3
17	22	13C5-PFHxA	318>272.9	1.228e4	1.228e4	1.000	0.120	3.26	104	100
18	23	13C3-PFHxS	401.9 > 79.9	8.096e3	8.096e3	1.000	0.120	3.93	104	100
19	24	13C8-PFOA	421.3 > 376	3.563e3	3.563e3	1.000	0.120	4.23	104	100
20	25	13C9-PFNA	472.2 > 426.9	5.218e3	5.218e3	1.000	0.120	4.57	104	100
21	26	13C4-PFOS	503.0 > 79.9	7.030e3	7.030e3	1.000	0.120	4.64	104	100
22	27	13C6-PFDA	519.10 > 473.70	6.326e3	6.326e3	1.000	0.120	4.86	104	100
23	28	Total PFBS	299.0 > 79.7		3.990e3		0.120		26.4	
24	29	Total PFHxS	398.9 > 79.6		3.200e3		0.120		170	
25	30	Total PFOA	413.0 > 368.7		9.850e3		0.120		21.6	
26	31	Total PFOS	499.0 >79.9		5.365e3		0.120		156	

LA 8/4/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-11.qld

Last Altered: Friday, August 04, 2017 10:51:45 Pacific Daylight Time
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ID: 1700884-03 MW-35S-20170714 0.11984, Description: MW-35S-20170714, Name: 170803G2_11, Date: 03-Aug-2017, Time: 19:00:12

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	3	PFBS	299.0 > 79.7	2.89	1810.949	3990.493	26.4

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	6	PFHxS	398.9 > 79.6	3.93	9295.926	3200.427	169.8

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	7	PFOA	413.0 > 368.7	4.23	1664.642	9850.190	21.1
2	30	Total PFOA	413.0 > 368.7	4.12	107.094	9850.190	0.5

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Conc.
1	9	PFOS	499.0 >79.9	4.64	3788.506	5364.697	156.2

LA 8/4/2017

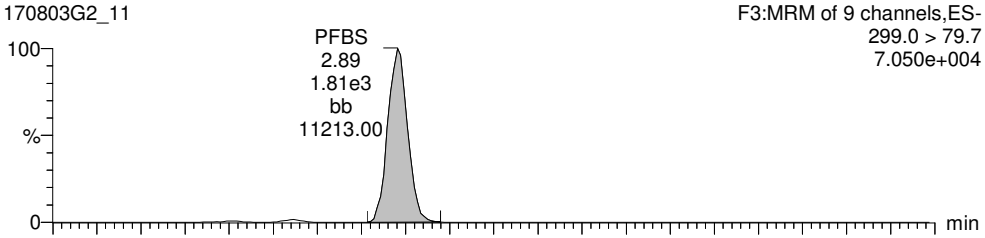
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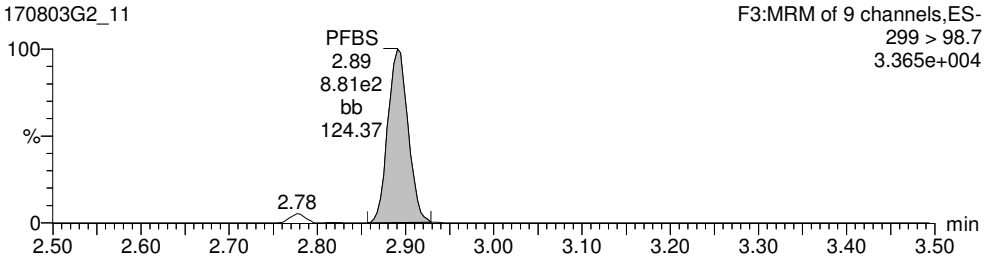
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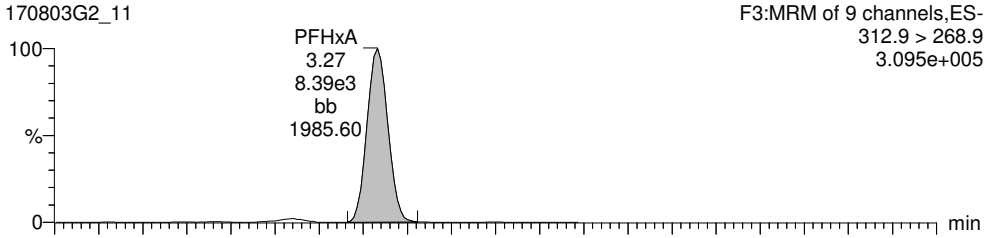
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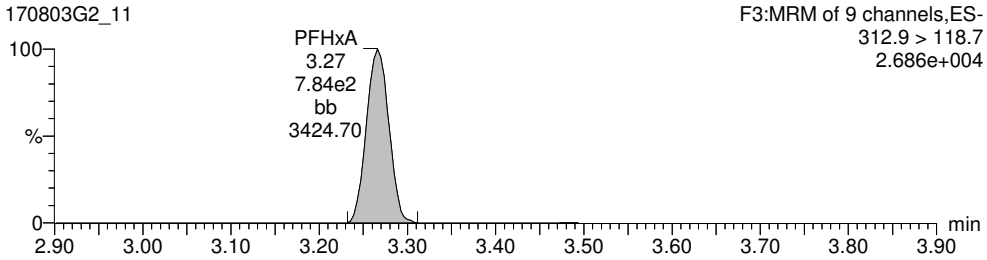
Total PFBS



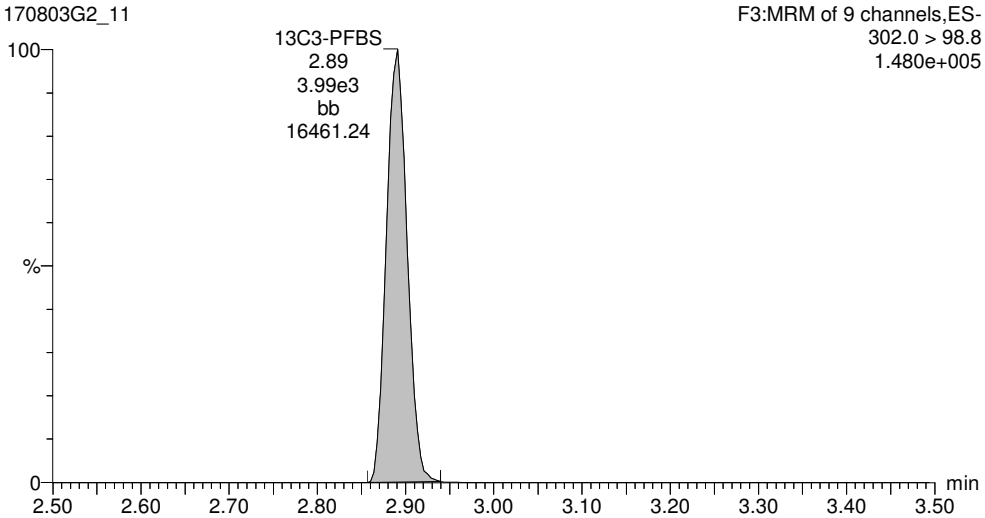


PFHxA

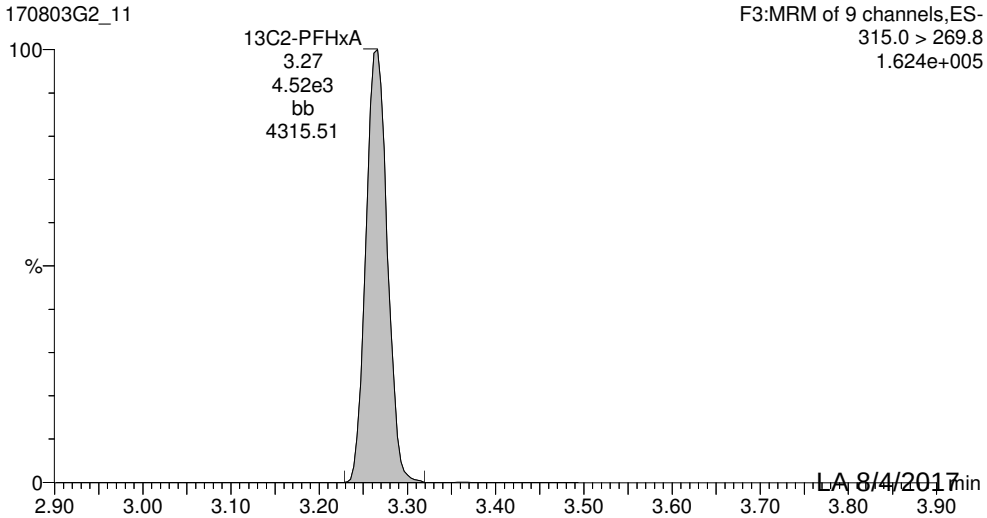




13C3-PFBS



13C2-PFHxA



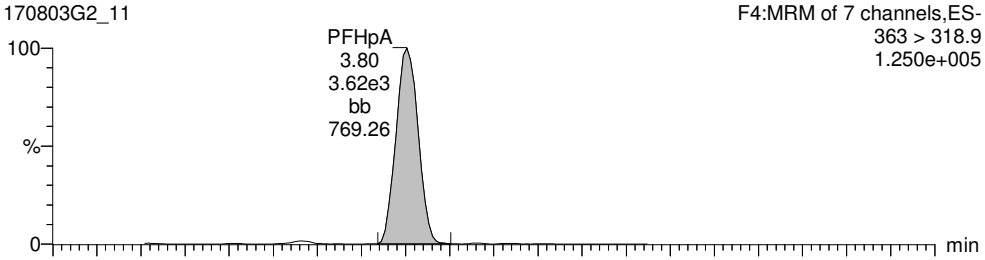
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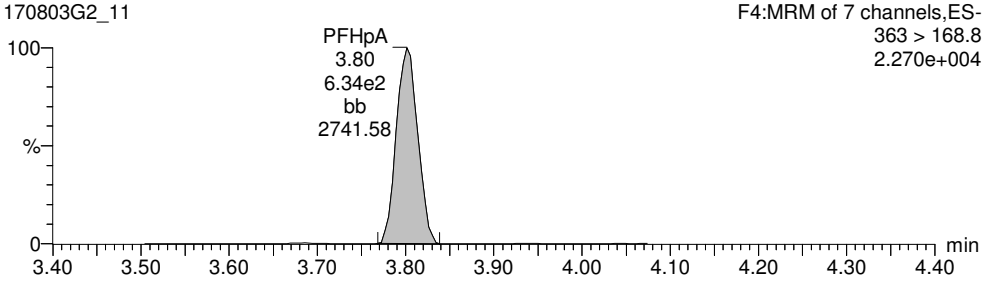
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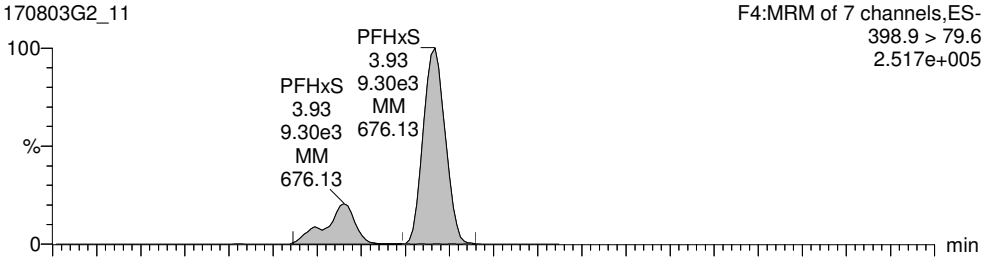
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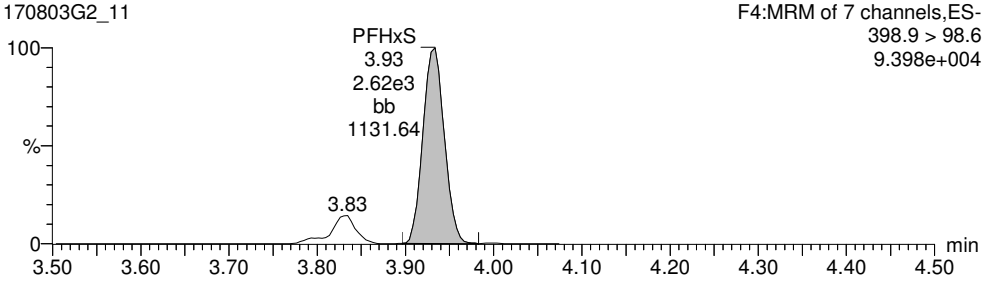
PFHpA



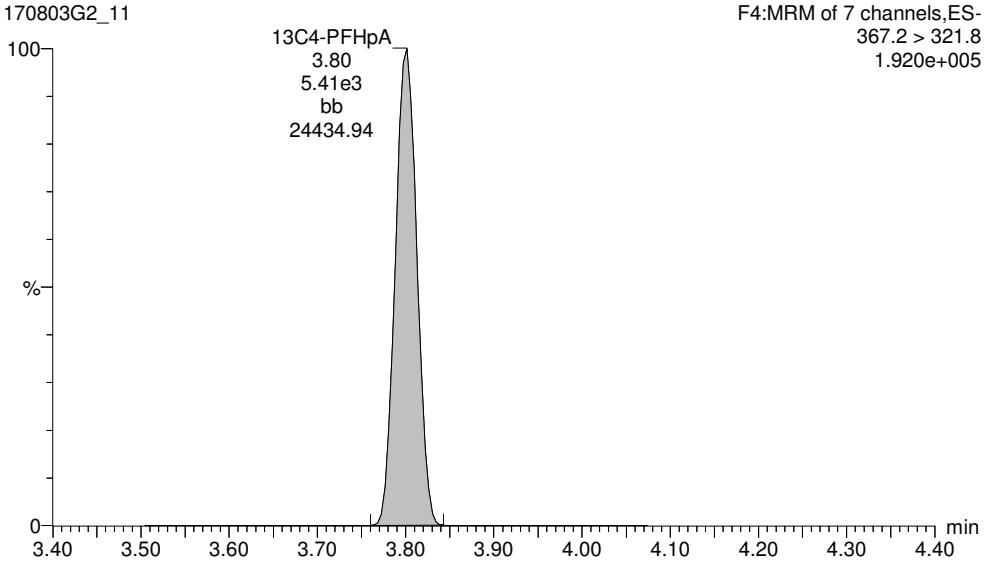


Total PFHxS

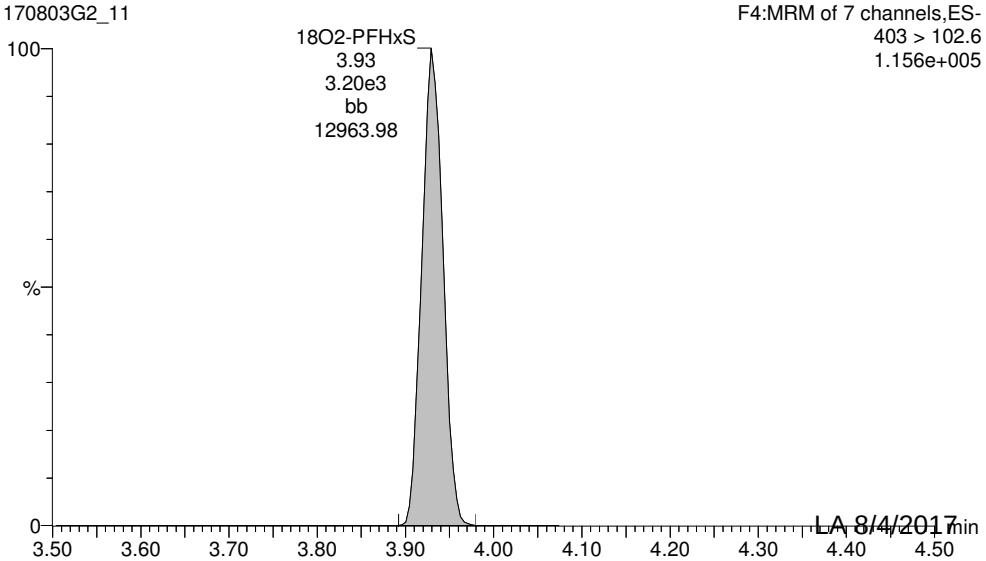




13C4-PFHpA



18O2-PFHxS



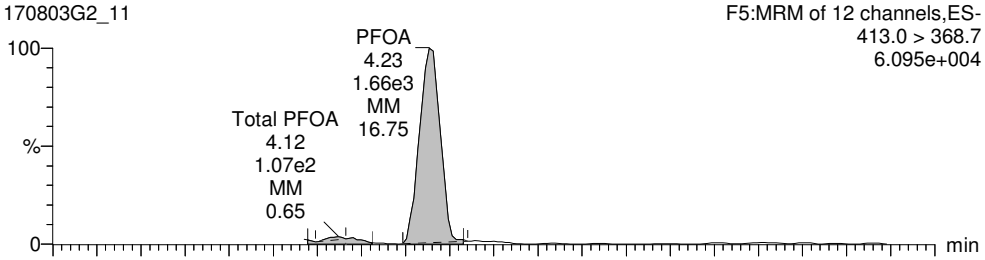
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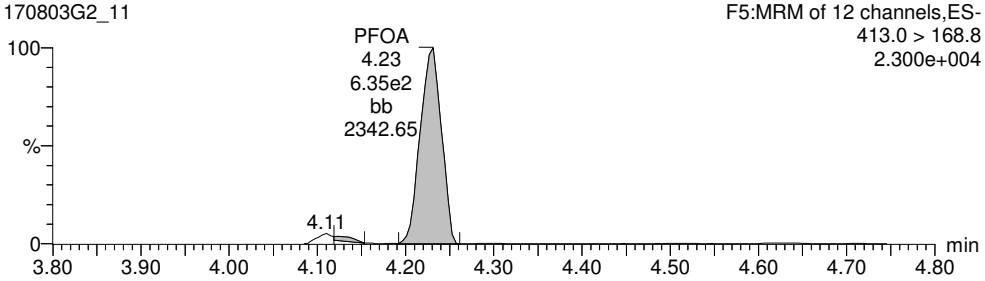
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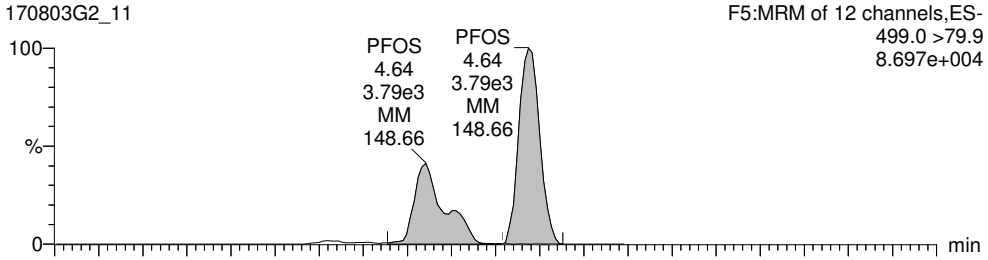
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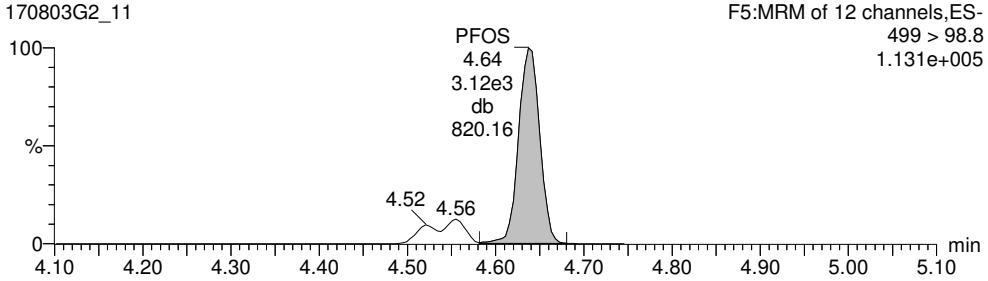
Total PFOA



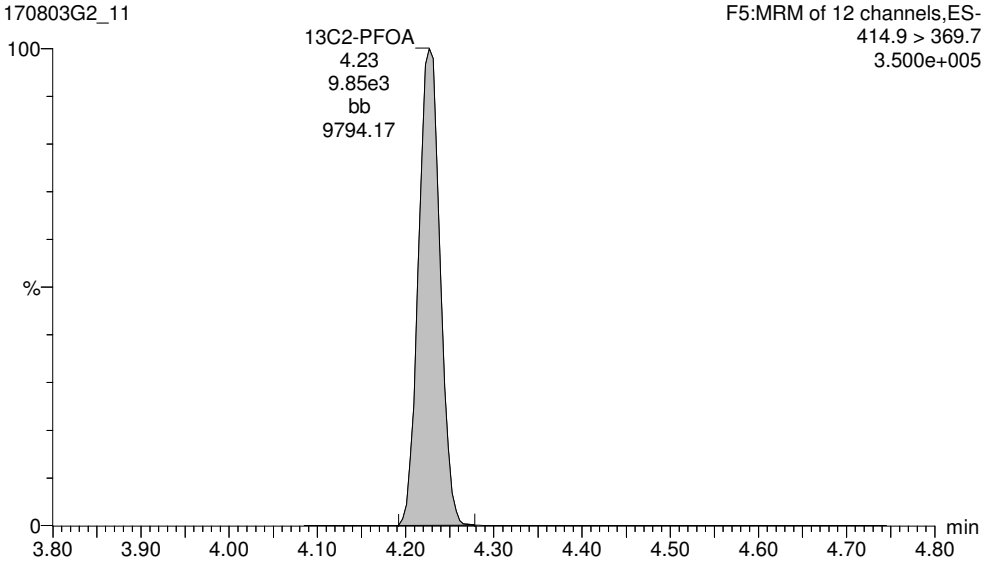


Total PFOS

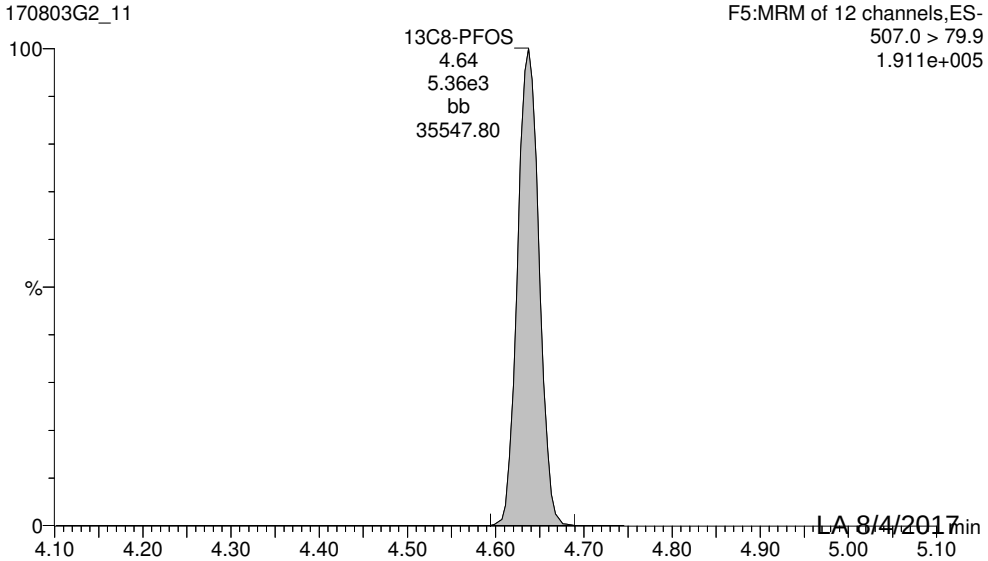




13C2-PFOA



13C8-PFOS



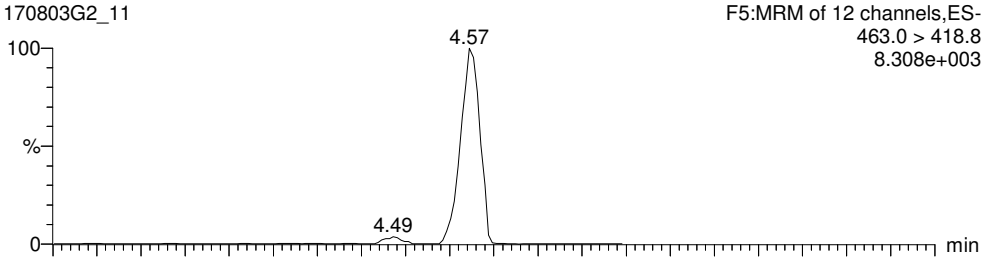
LA 8/4/2017

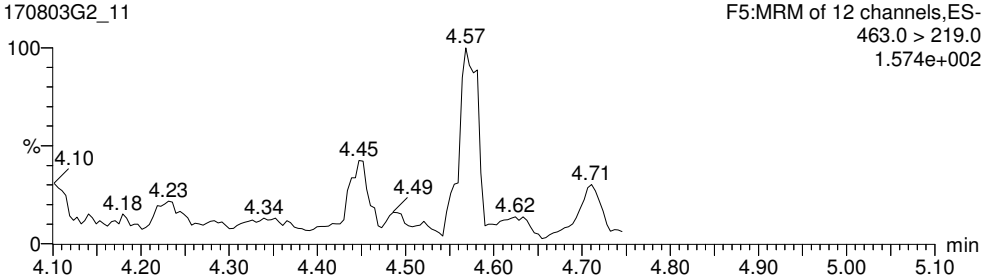
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Last Altered: Friday, August 04, 2017 10:51:45 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:52:07 Pacific Daylight Time

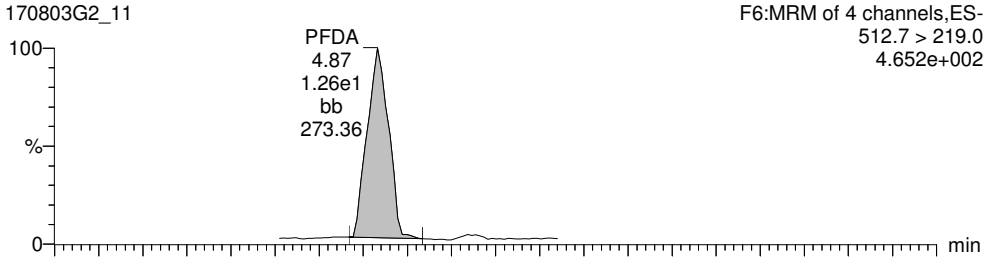
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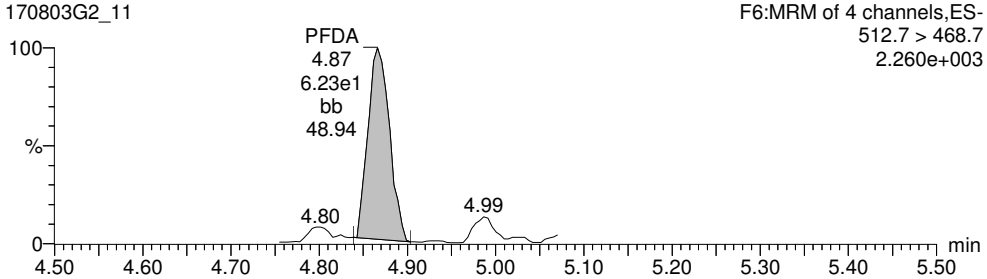
PFNA



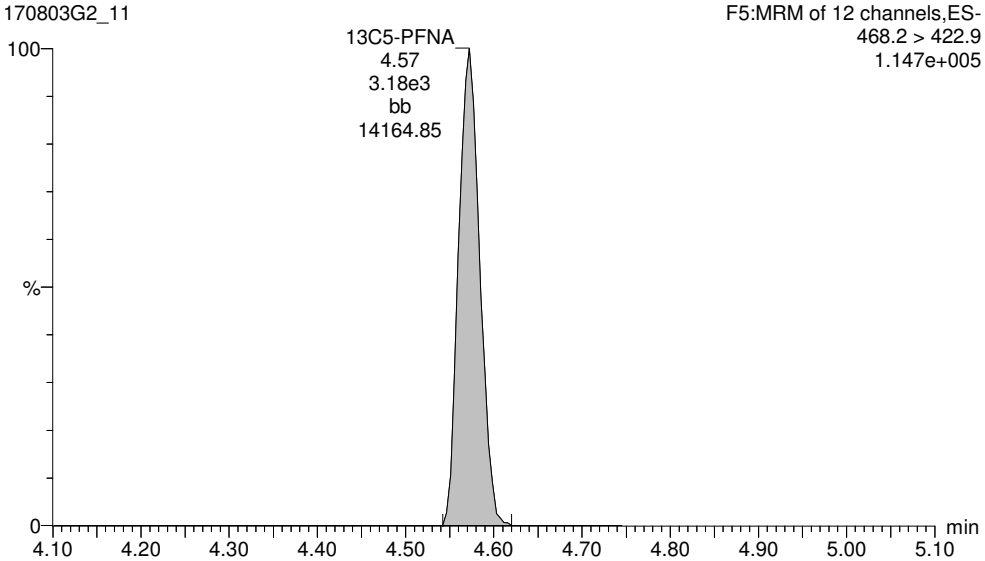


PFDA

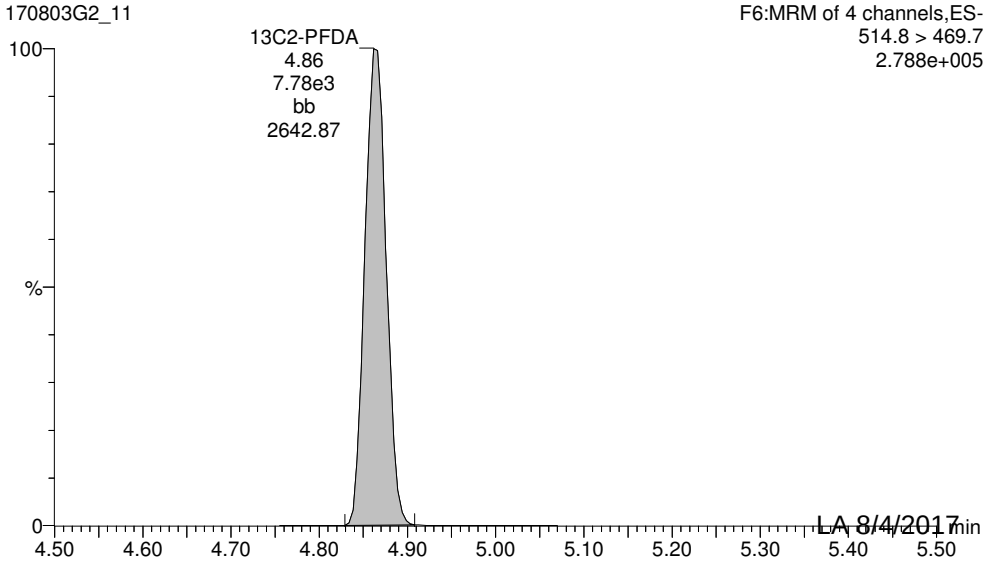




13C5-PFNA



13C2-PFDA



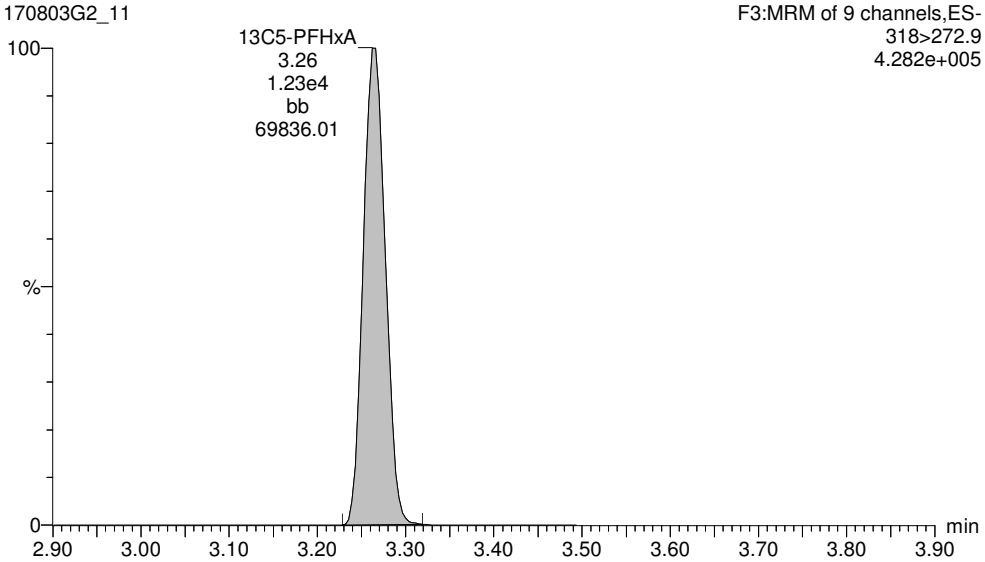
LA 8/4/2017

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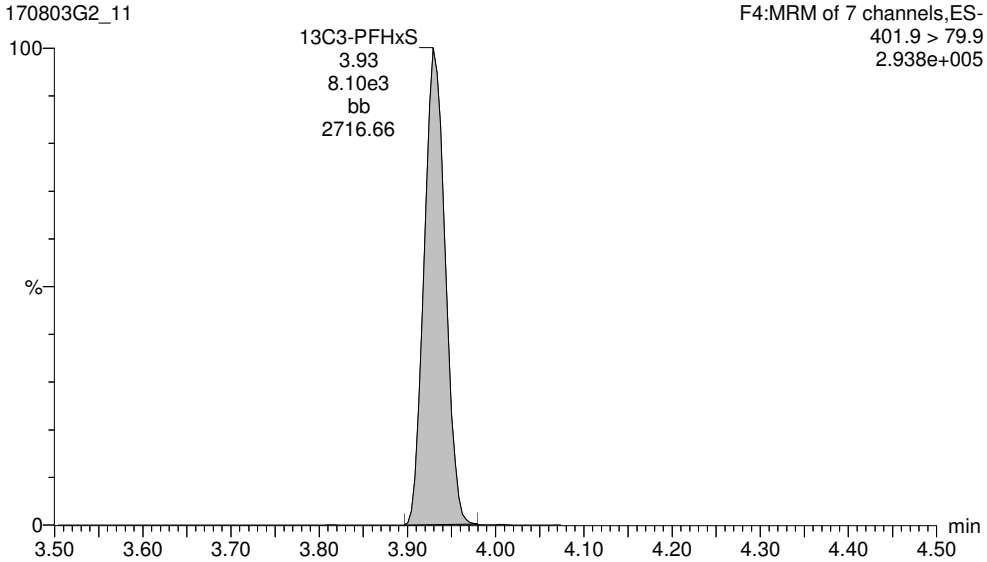
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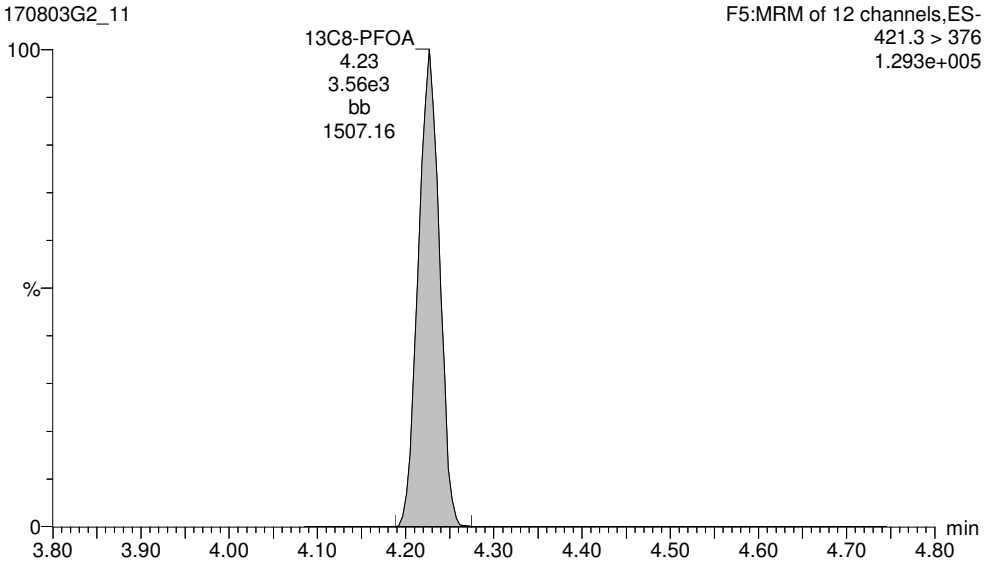
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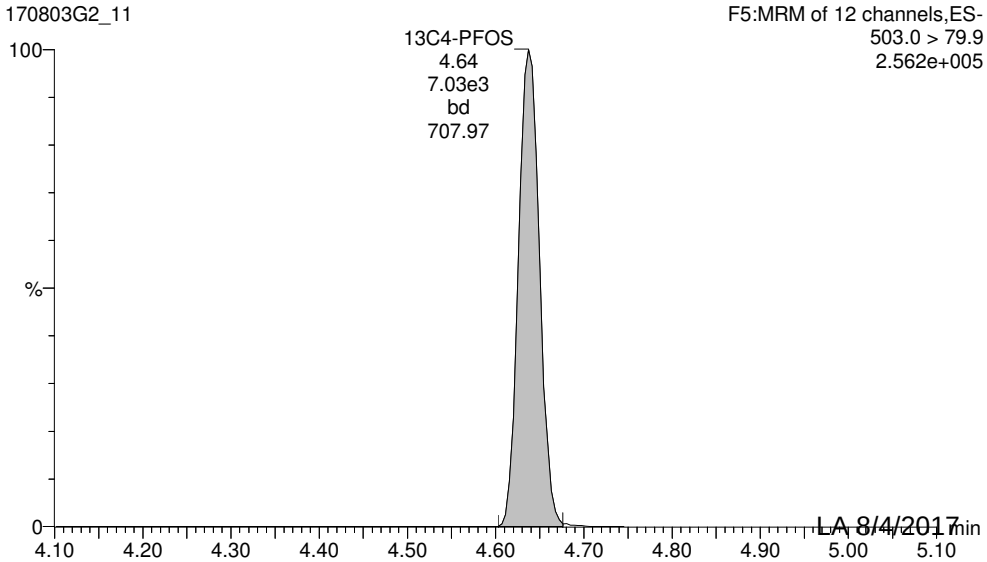
13C3-PFHxS



13C8-PFOA



13C4-PFOS



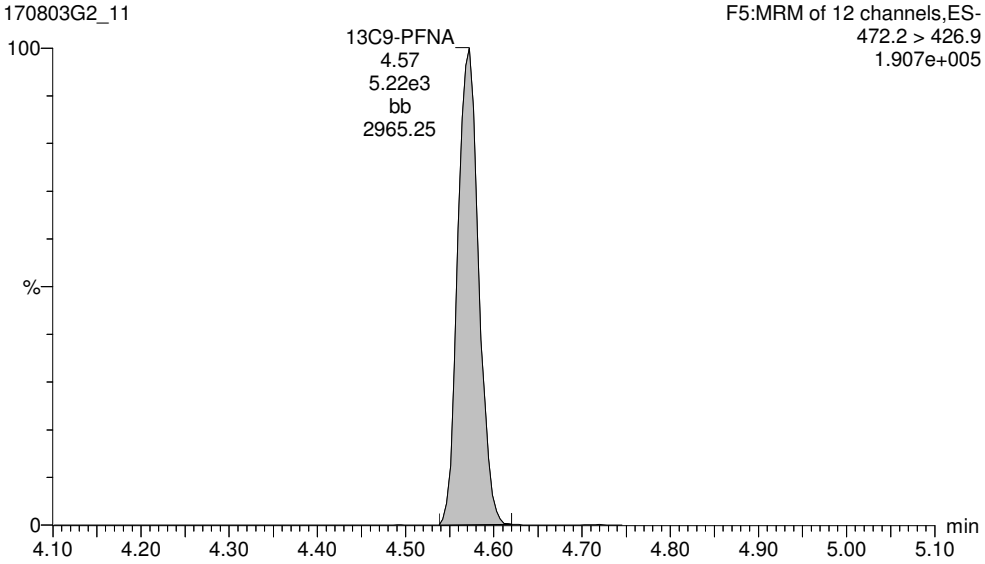
LA 8/4/2017

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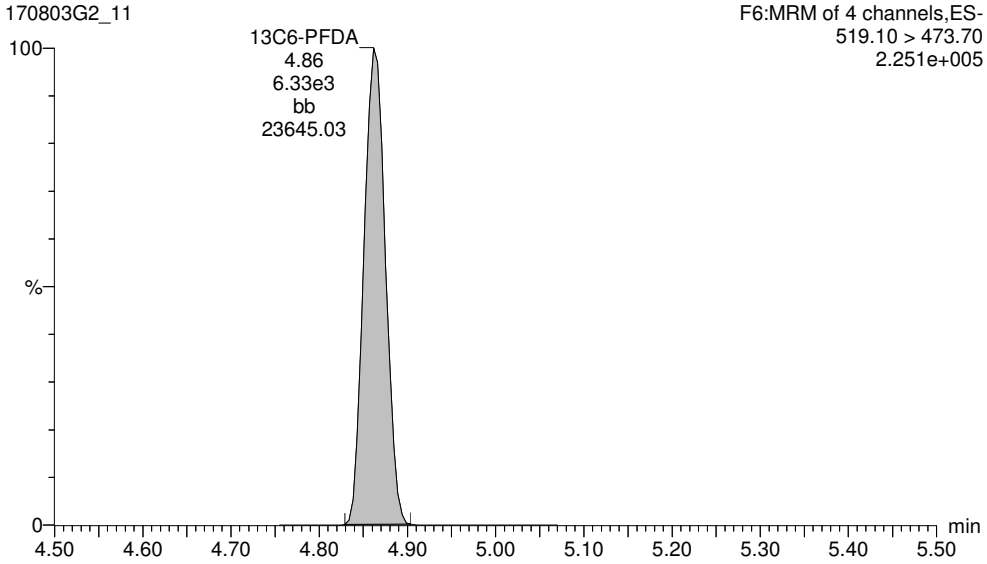
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ID: 1700884-03 MW-35S-20170714 0.11984, Description: MW-35S-20170714, Name: 170803G2_11, Date: 03-Aug-2017, Time: 19:00:12, Instrument: , Lab: , User:

13C9-PFNA



13C6-PFDA



LA 8/4/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-12.qld

Last Altered: Thursday, August 03, 2017 12:01:44 Pacific Daylight Time
Printed: Thursday, August 03, 2017 12:04:14 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

ID: 1700884-04 FRB-02-20170714 0.11984, Description: FRB-02-20170714, Name: 170731G3_12, Date: 31-Jul-2017, Time: 19:28:02

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	2	N-MeFOSAA	570.1 > 419.0		2.974e3		0.120			
2	4	PFUnA	563 > 518.9	2.691e2	1.376e4		0.120	5.12		
3	5	N-EtFOSAA	584.2 > 419.0		3.149e3		0.120			
4	6	PFDoA	612.9 > 318.8	8.361e0	1.697e4		0.120	5.35	0.382	
5	7	PFTrDA	662.9 > 618.9		0.000e0		0.120			
6	8	PFTeDA	712.9 > 668.8	1.366e2	1.765e4		0.120	5.73		
7	10	d3-N-MeFOSAA	573.3 > 419.0	2.974e3	1.327e4	0.026	0.120	4.98	886	65.4
8	11	13C2-PFUnA	565 > 519.8	1.376e4	1.327e4	1.471	0.120	5.12	73.5	70.5
9	12	d5-N-EtFOSAA	589.3 > 419.0	3.149e3	1.327e4	0.031	0.120	5.11	796	58.7
10	13	13C2-PFDoA	615 > 569.7	1.697e4	1.327e4	1.887	0.120	5.35	70.7	67.8
11	14	13C2-PFTeDA	715 > 669.7	1.765e4	1.327e4	1.990	0.120	5.73	69.7	66.9
12	15	13C7-PFUnA	570.1 > 524.8	1.327e4	1.327e4	1.000	0.120	5.12	104	100
13	16	Total N-MeFOSAA	570.1 > 419.0		2.974e3		0.120			
14	17	Total N-EtFOSAA	584.2 > 419.0		3.149e3		0.120			

LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-12.qld

Last Altered: Thursday, August 03, 2017 12:01:44 Pacific Daylight Time
Printed: Thursday, August 03, 2017 12:04:14 Pacific Daylight Time

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ID: 1700884-04 FRB-02-20170714 0.11984, Description: FRB-02-20170714, Name: 170731G3_12, Date: 31-Jul-2017, Time: 19:28:02

Total N-MeFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

Total N-EtFOSAA

	# Name	Trace	RT	Area	IS Area	Conc.
1						

LA 8/3/2017

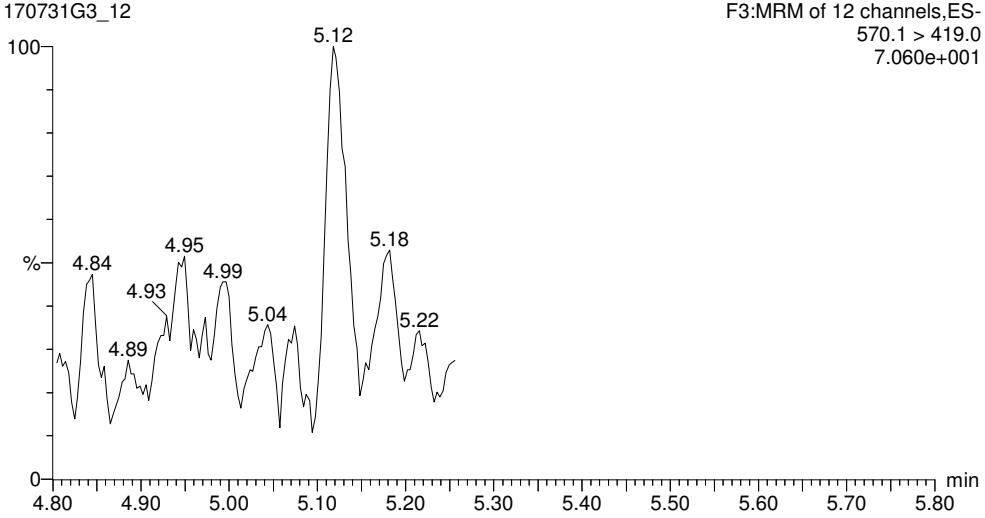
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Printed: Thursday, August 03, 2017 12:04:14 Pacific Daylight Time

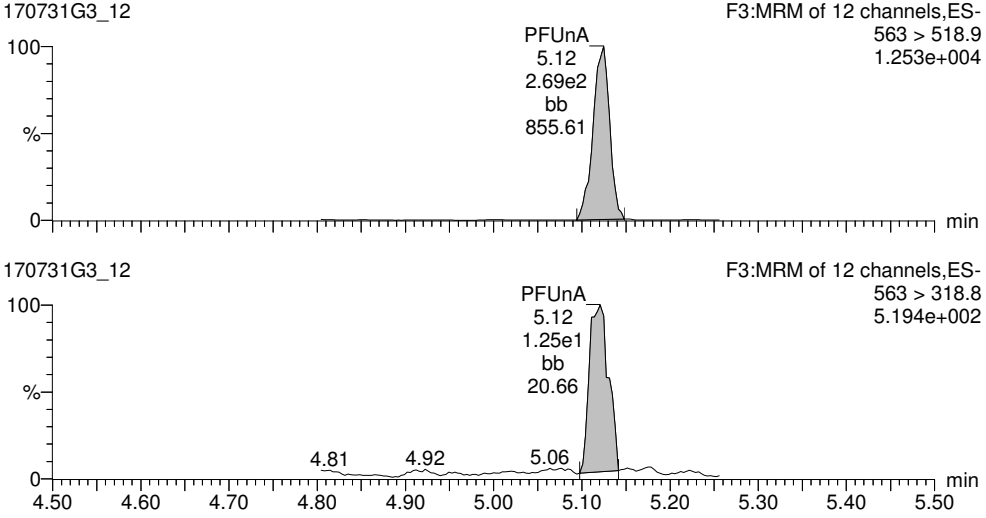
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ID: 1700884-04 FRB-02-20170714 0.11984, Description: FRB-02-20170714, Name: 170731G3_12, Date: 31-Jul-2017, Time: 19:28:02, Instrument: , Lab: , User:

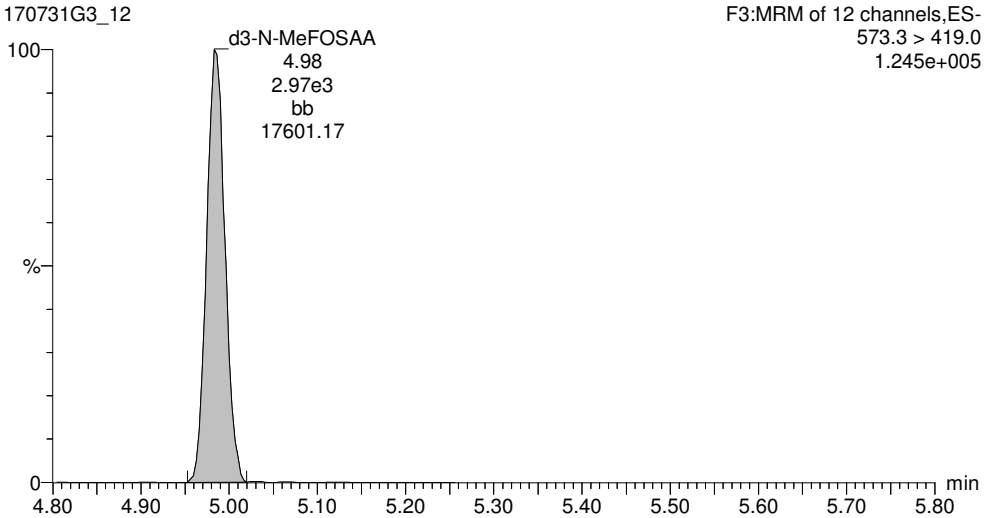
Total N-MeFOSAA



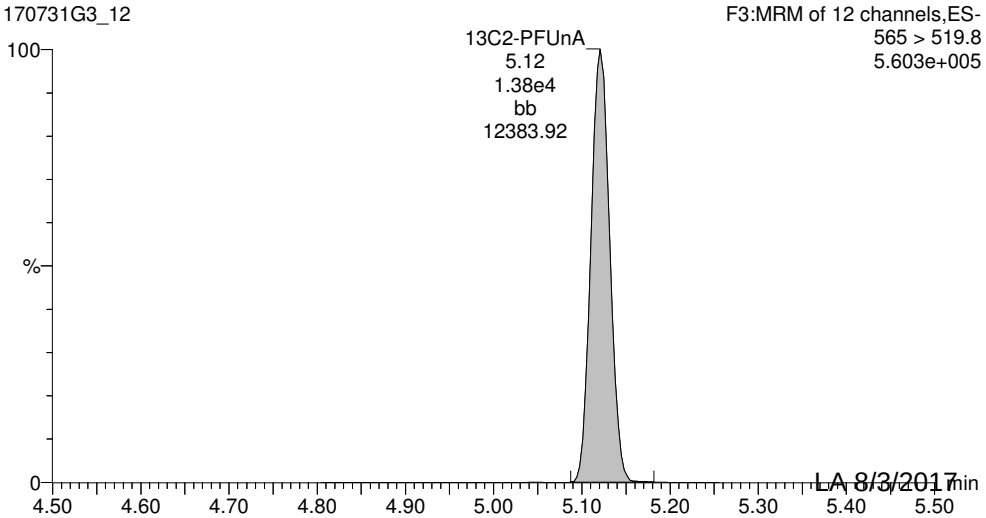
PFUnA



d3-N-MeFOSAA



13C2-PFUnA



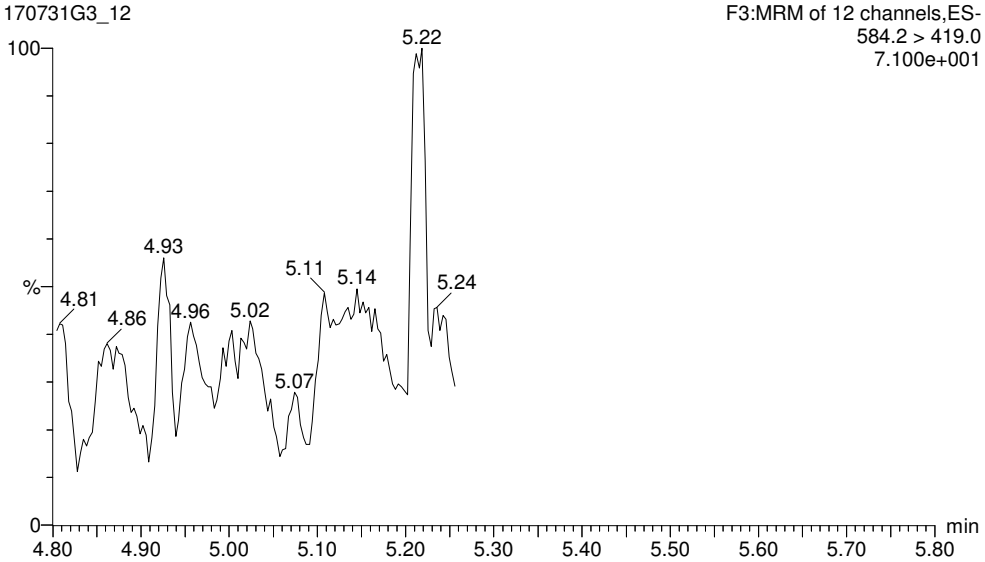
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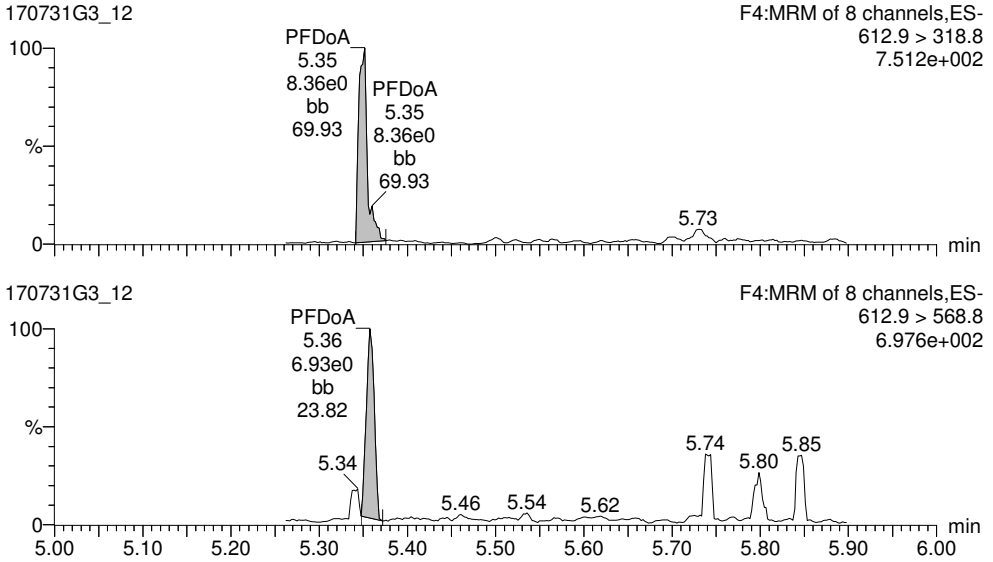
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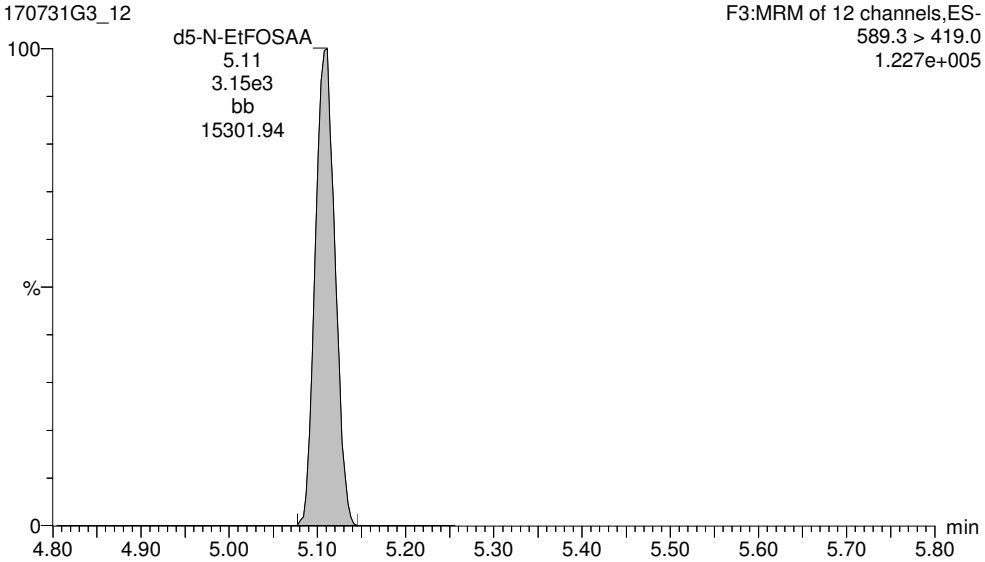
Total N-EtFOSAA



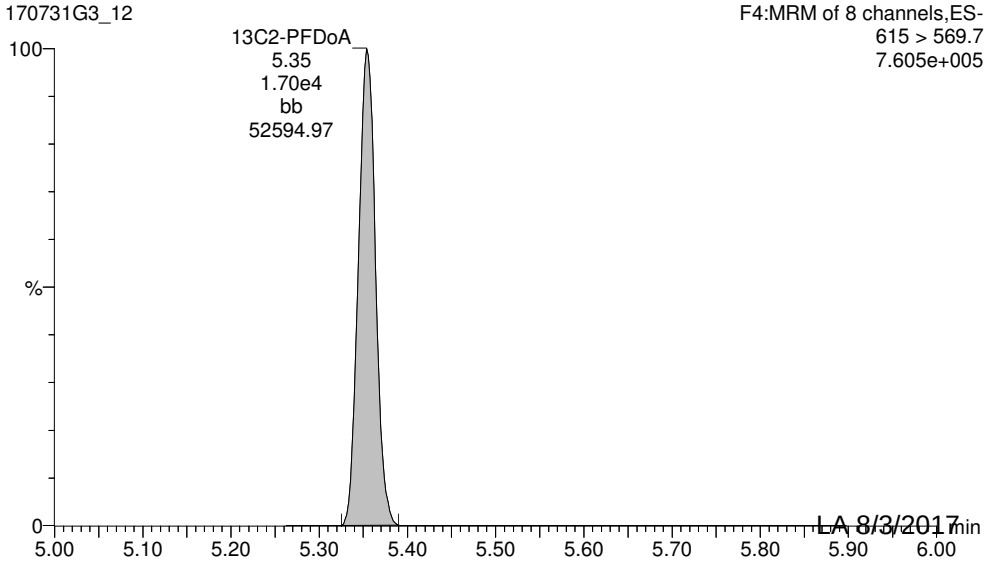
PFDoA



d5-N-EtFOSAA



13C2-PFDoA



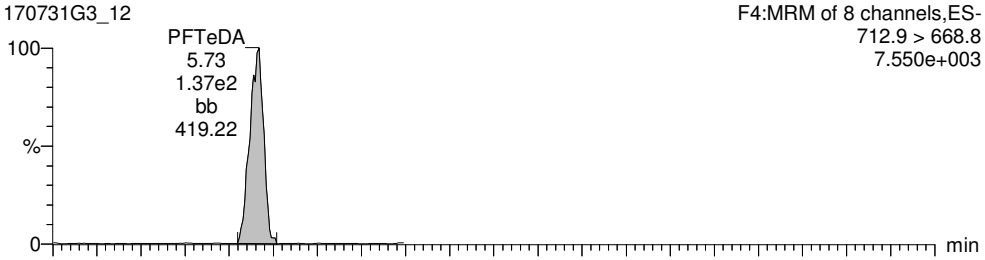
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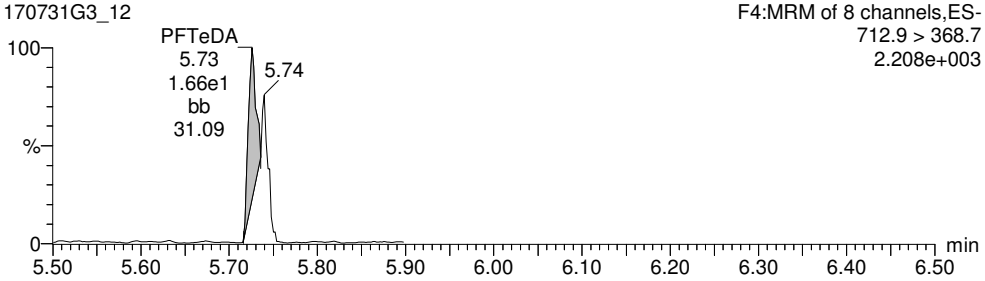
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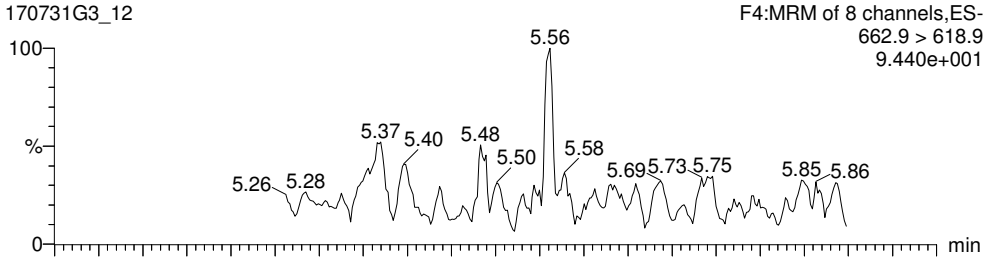
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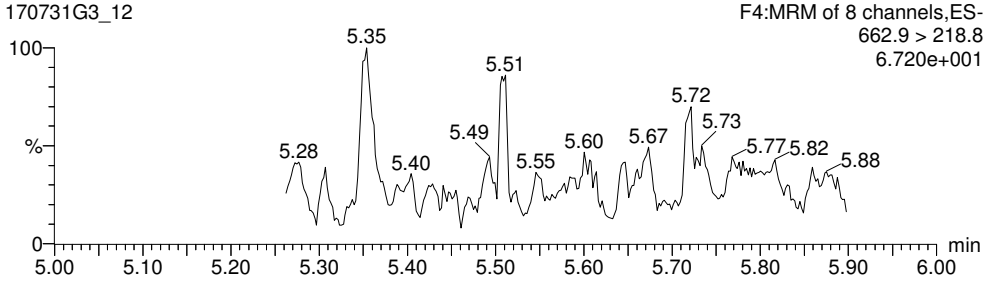
PFTeDA



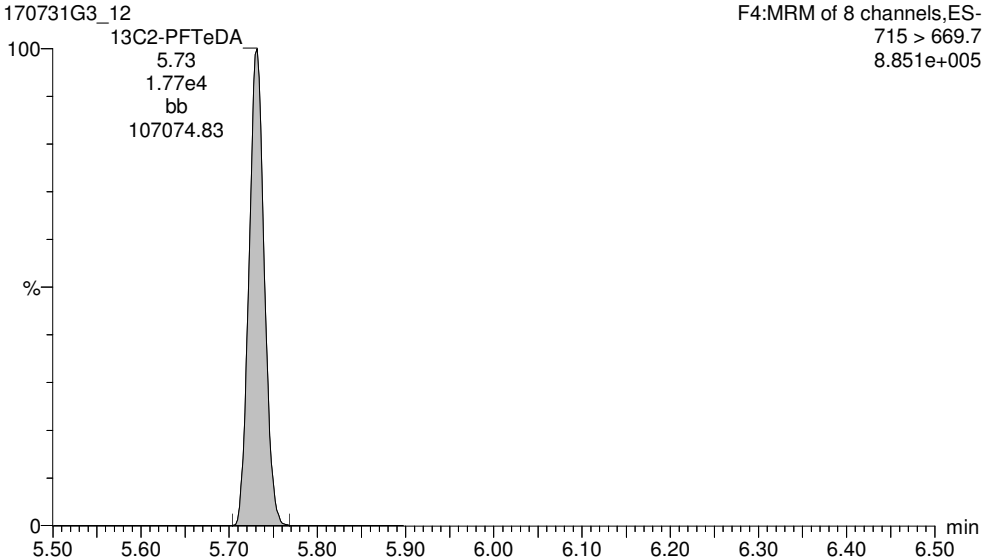


PFTrDA

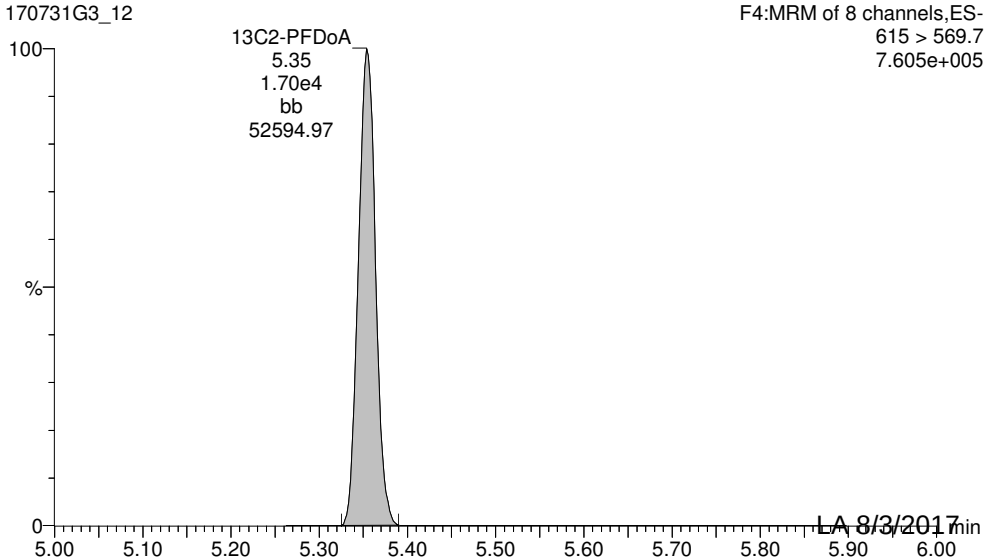




13C2-PFTeDA



13C2-PFDoA



LA 8/3/2017

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ID: 1700884-04 FRB-02-20170714 0.11984, Description: FRB-02-20170714, Name: 170731G3_12, Date: 31-Jul-2017, Time: 19:28:02, Instrument: , Lab: , User:

13C7-PFUnA



LA 8/3/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-12.qld

Last Altered: Friday, August 04, 2017 10:54:22 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:54:28 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

ID: 1700884-04 FRB-02-20170714 0.11984, Description: FRB-02-20170714, Name: 170803G2_12, Date: 03-Aug-2017, Time: 19:12:45

	#	Name	Trace	Peak Area	IS Resp	RRF Mean	wt/vol	RT	Conc.	%Rec
1	3	PFBS	299.0 > 79.7		3.141e3		0.120			
2	4	PFHxA	312.9 > 268.9		4.178e3		0.120			
3	5	PFHpA	363 > 318.9		4.437e3		0.120			
4	6	PFHxS	398.9 > 79.6		2.689e3		0.120			
5	7	PFOA	413.0 > 368.7	7.503e1	9.664e3		0.120	4.23	0.0479	
6	8	PFNA	463.0 > 418.8		3.769e3		0.120			
7	9	PFOS	499.0 >79.9		4.991e3		0.120			
8	10	PFDA	512.7 > 219.0	1.467e1	7.182e3		0.120	4.87		
9	12	13C3-PFBS	302.0 > 98.8	3.141e3	1.144e4	0.263	0.120	2.89	109	105
10	14	13C2-PFHxA	315.0 > 269.8	4.178e3	1.144e4	0.361	0.120	3.27	106	101
11	15	13C4-PFHpA	367.2 > 321.8	4.437e3	1.144e4	0.475	0.120	3.80	85.1	81.6
12	16	18O2-PFHxS	403 > 102.6	2.689e3	6.770e3	0.411	0.120	3.93	101	96.7
13	17	13C2-PFOA	414.9 > 369.7	9.664e3	3.172e3	2.843	0.120	4.23	112	107
14	18	13C5-PFNA	468.2 > 422.9	3.769e3	4.356e3	0.854	0.120	4.57	106	101
15	19	13C2-PFDA	514.8 > 469.7	7.182e3	5.328e3	1.742	0.120	4.87	80.7	77.4
16	20	13C8-PFOS	507.0 > 79.9	4.991e3	5.313e3	0.927	0.120	4.64	106	101
17	22	13C5-PFHxA	318>272.9	1.144e4	1.144e4	1.000	0.120	3.27	104	100
18	23	13C3-PFHxS	401.9 > 79.9	6.770e3	6.770e3	1.000	0.120	3.93	104	100
19	24	13C8-PFOA	421.3 > 376	3.172e3	3.172e3	1.000	0.120	4.23	104	100
20	25	13C9-PFNA	472.2 > 426.9	4.356e3	4.356e3	1.000	0.120	4.57	104	100
21	26	13C4-PFOS	503.0 > 79.9	5.313e3	5.313e3	1.000	0.120	4.64	104	100
22	27	13C6-PFDA	519.10 > 473.70	5.328e3	5.328e3	1.000	0.120	4.86	104	100
23	28	Total PFBS	299.0 > 79.7		3.141e3		0.120			
24	29	Total PFHxS	398.9 > 79.6		2.689e3		0.120			
25	30	Total PFOA	413.0 > 368.7		9.664e3		0.120		0.0479	
26	31	Total PFOS	499.0 >79.9		4.991e3		0.120			

LA 8/4/2017

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-12.qld

Last Altered: Friday, August 04, 2017 10:54:22 Pacific Daylight Time
Printed: Friday, August 04, 2017 10:54:28 Pacific Daylight Time

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ID: 1700884-04 FRB-02-20170714 0.11984, Description: FRB-02-20170714, Name: 170803G2_12, Date: 03-Aug-2017, Time: 19:12:45

Total PFBS

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

Total PFHxS

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

Total PFOA

	#	Name	Trace	RT	Area	IS Area	Conc.
1	7	PFOA	413.0 > 368.7	4.23	75.033	9663.883	0.0

Total PFOS

	#	Name	Trace	RT	Area	IS Area	Conc.
1							

LA 8/4/2017

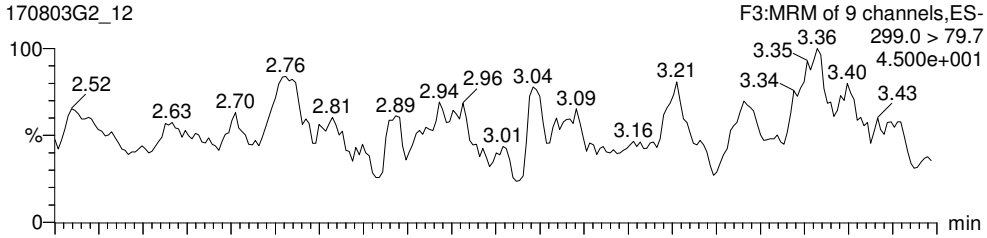
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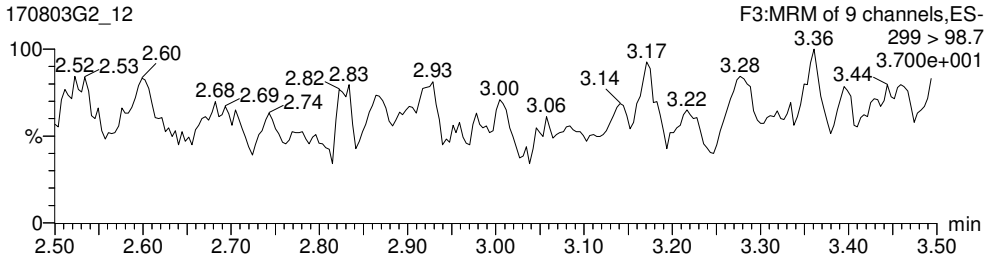
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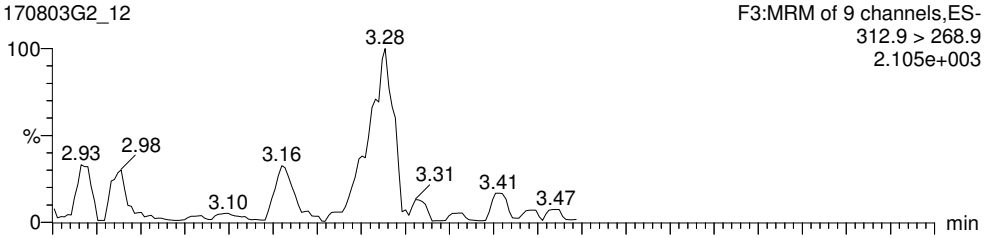
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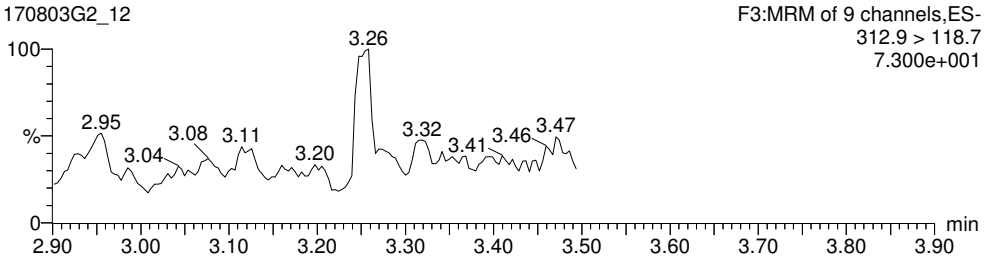
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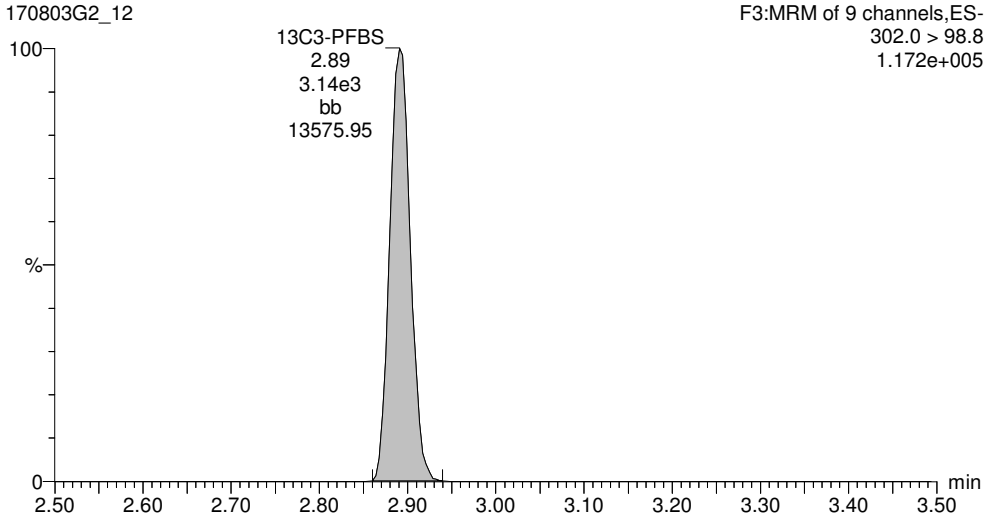


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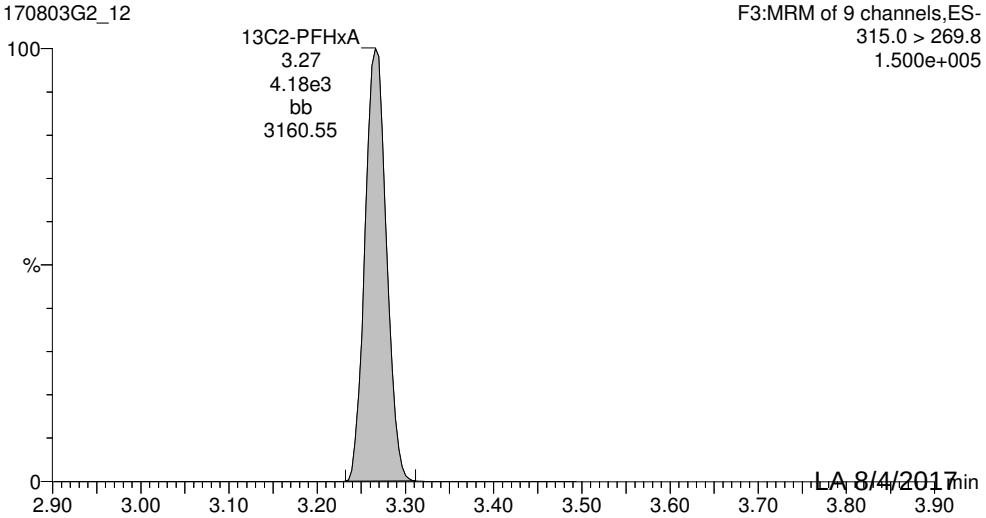




13C3-PFBS



13C2-PFHxA



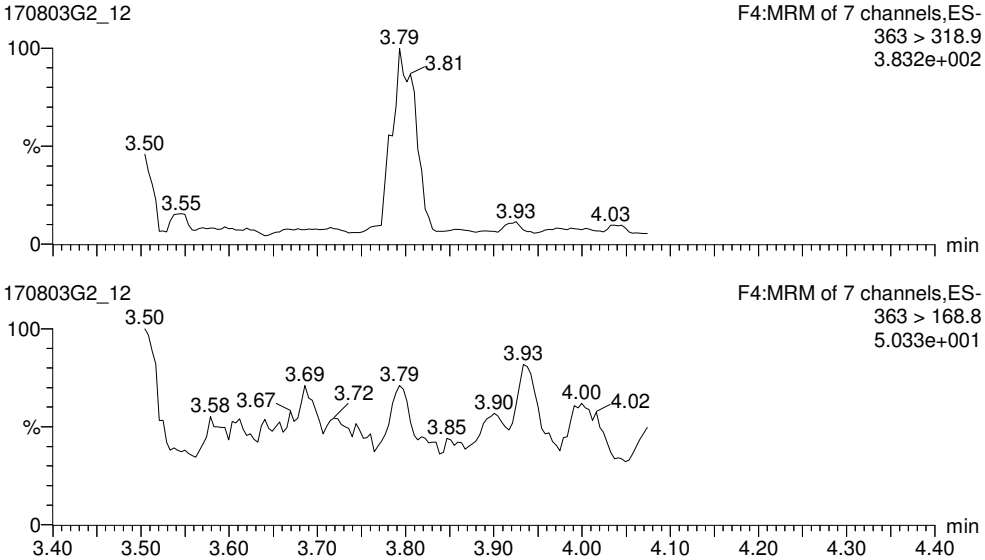
LA 8/4/2017

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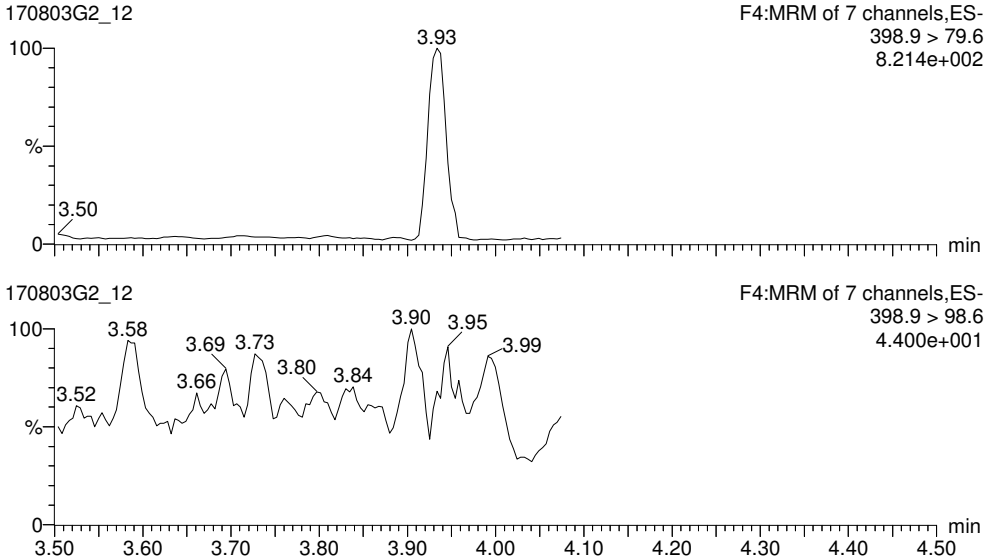
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Printed: Friday, August 04, 2017 10:54:28 Pacific Daylight Time

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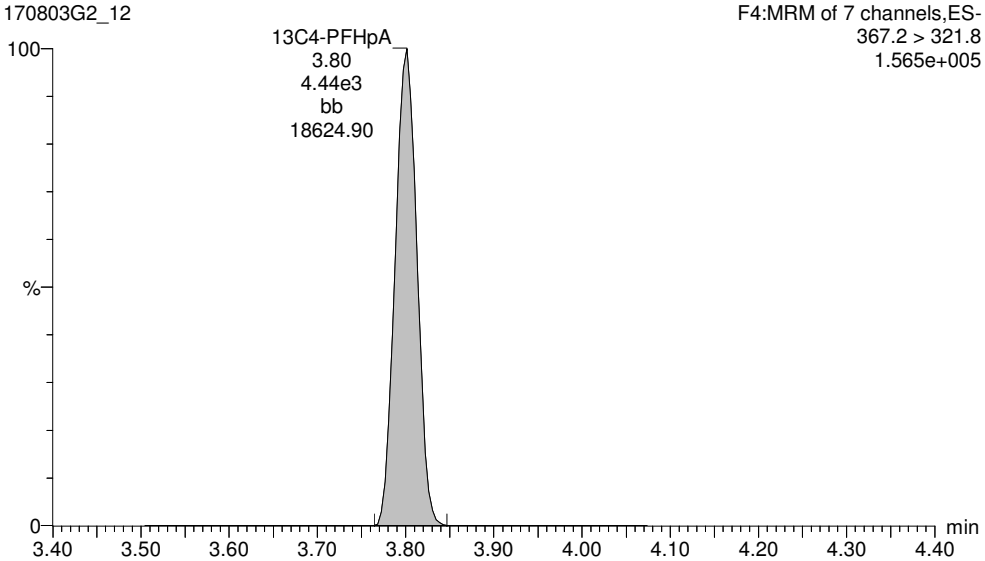
PFHpA



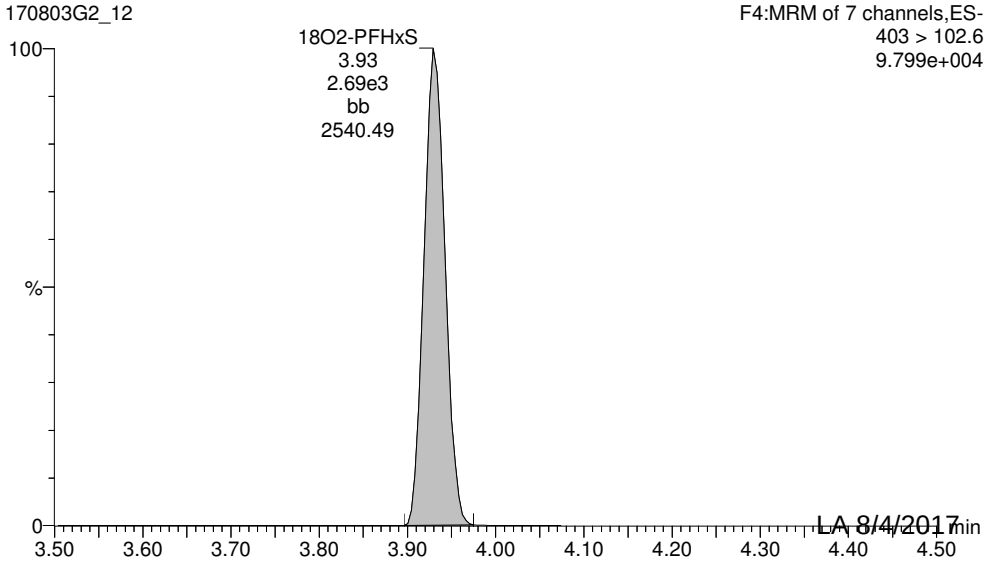
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13C4-PFHpA



18O2-PFHxS



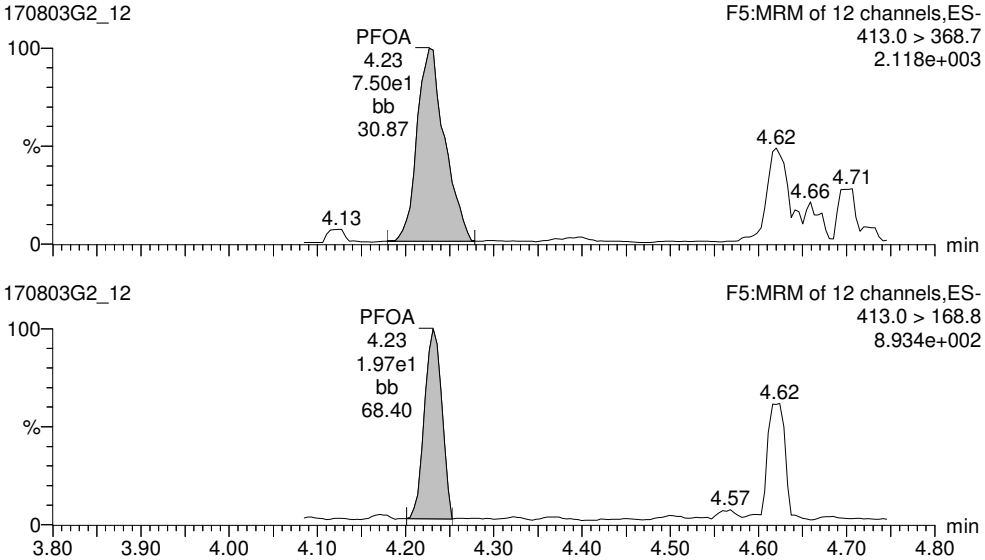
LA 8/4/2017

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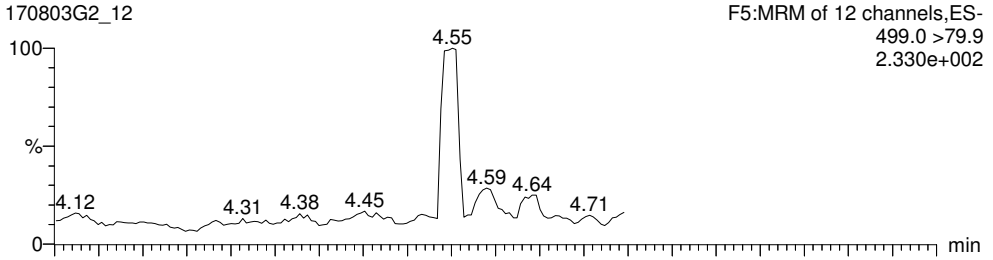
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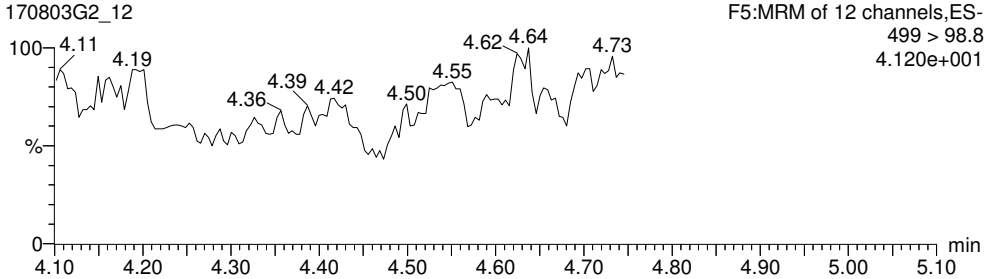
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Total PFOA

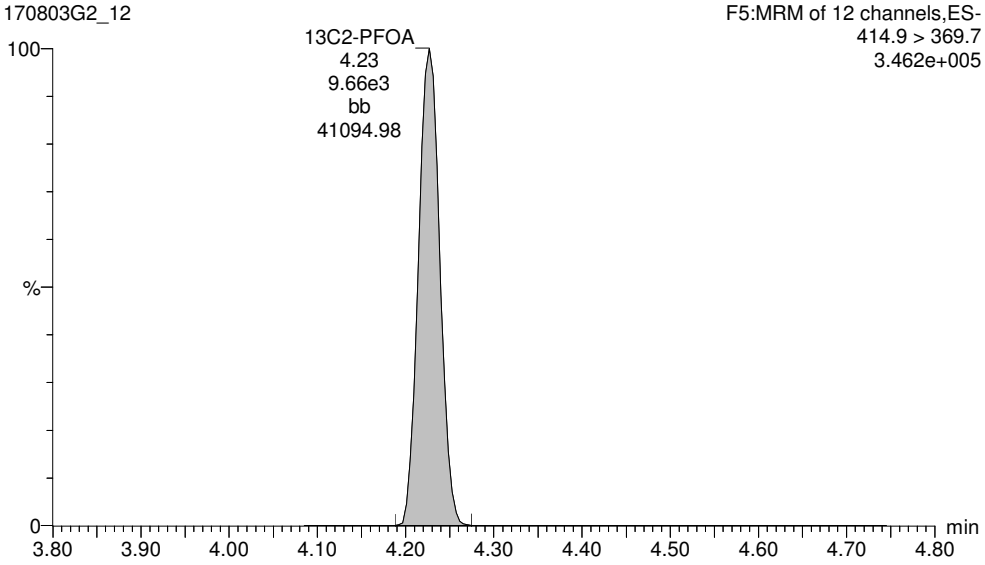


Total PFOS

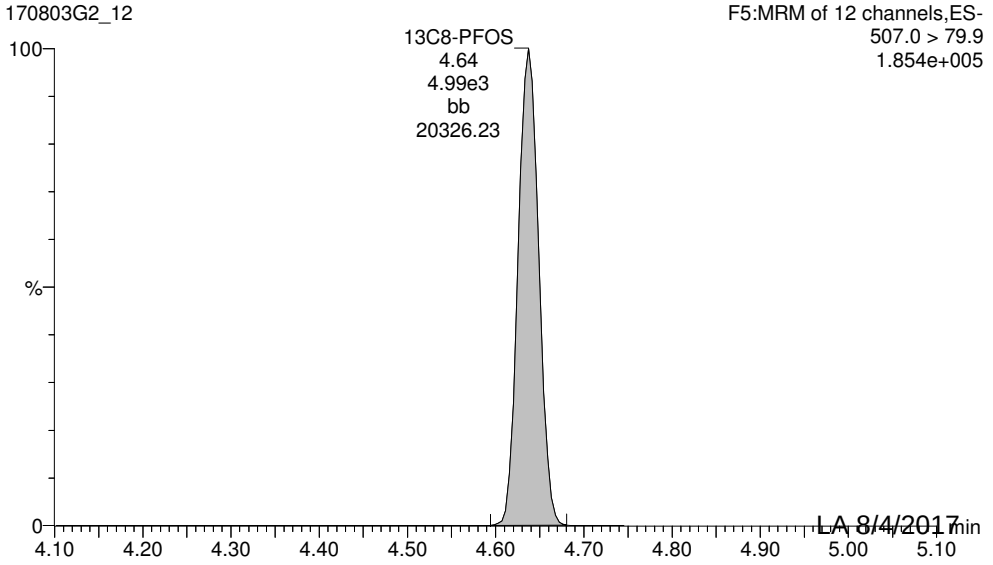




13C2-PFOA



13C8-PFOS



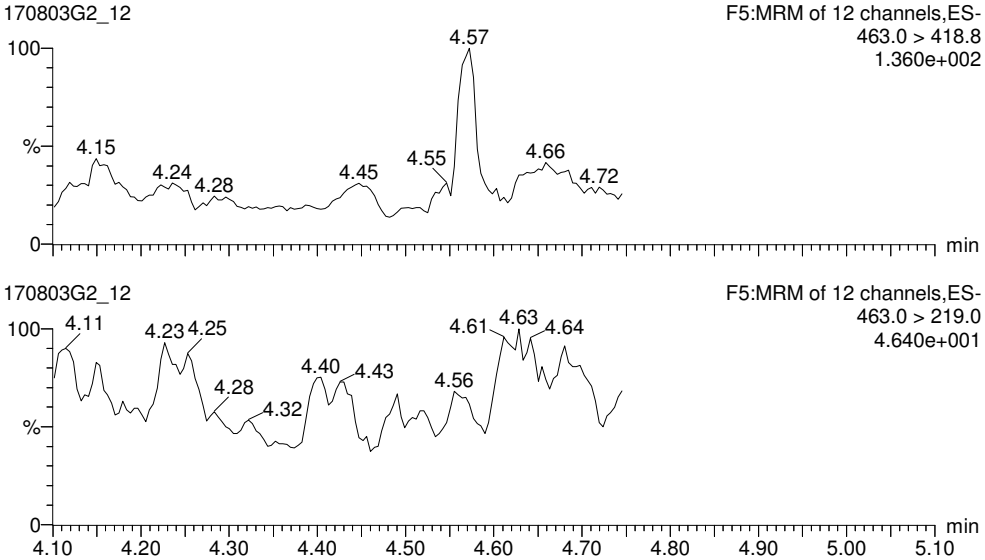
LA 8/4/2017

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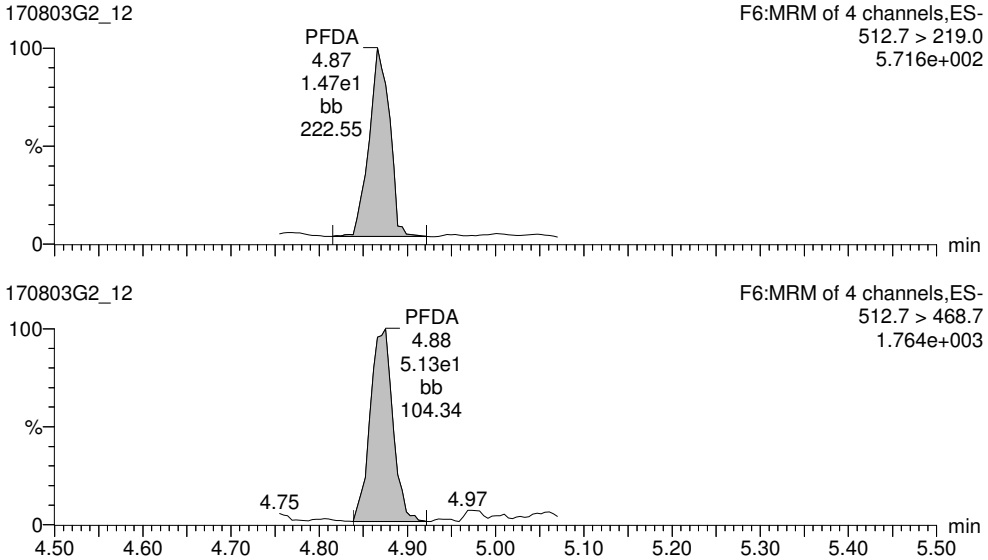
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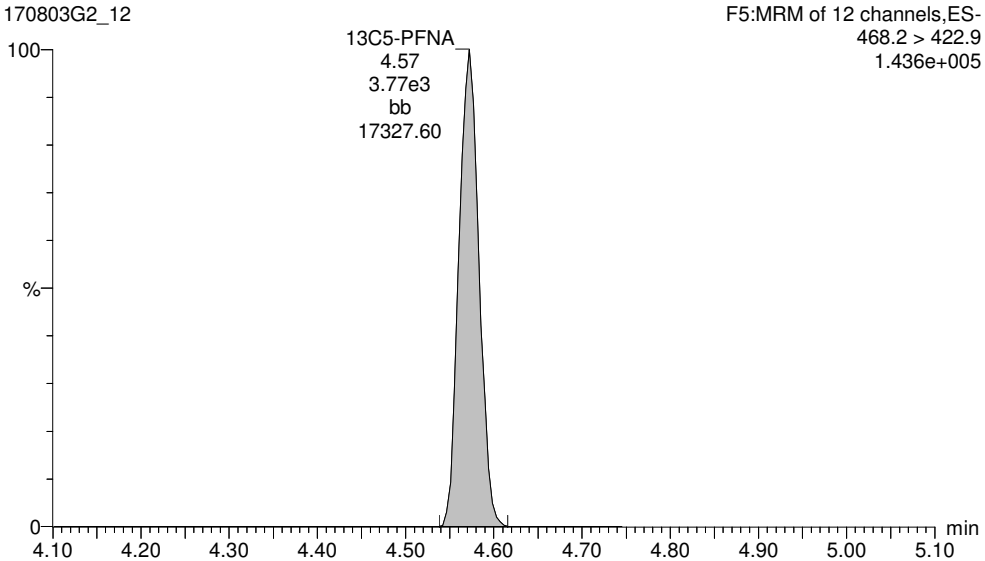
PFNA



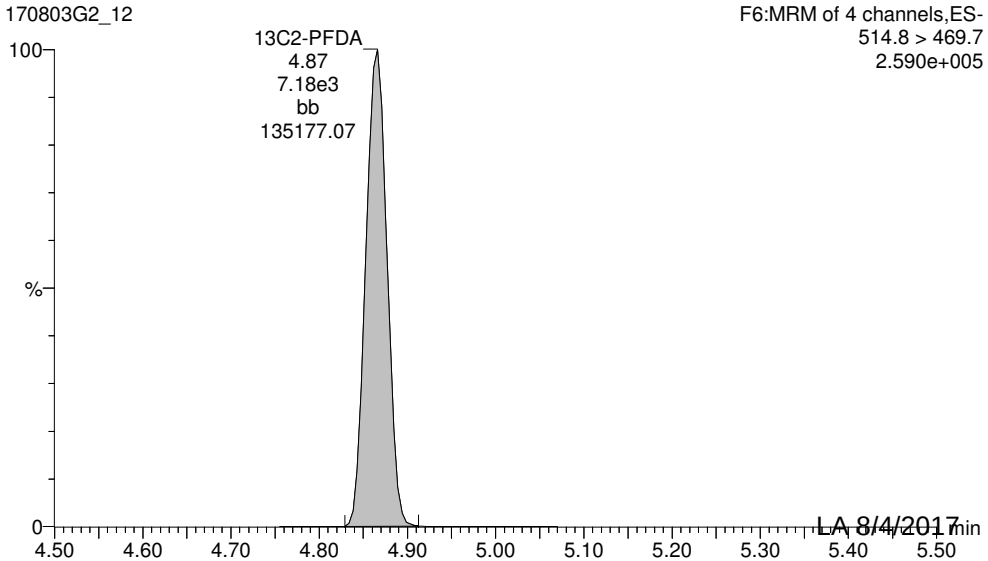
PFDA



13C5-PFNA



13C2-PFDA



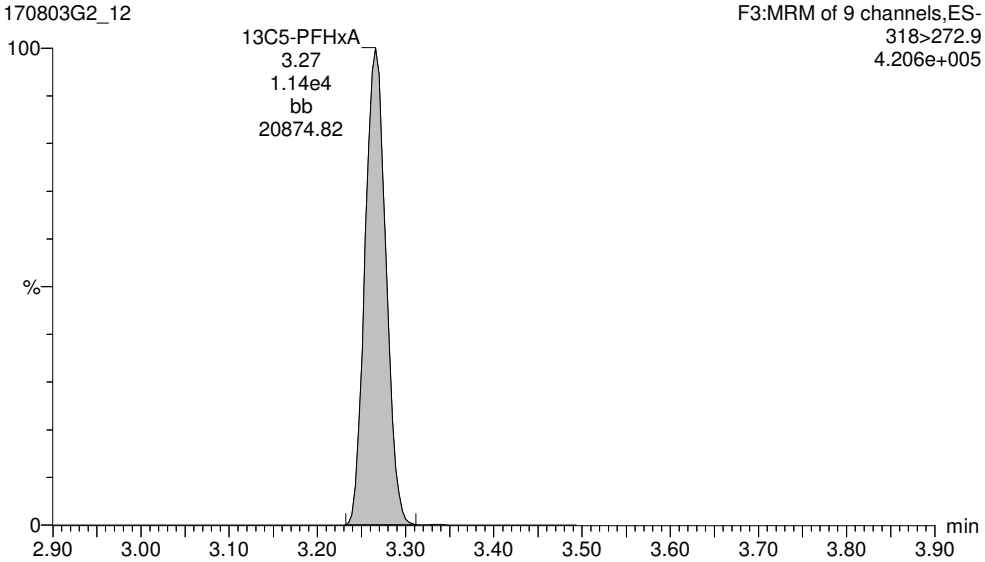
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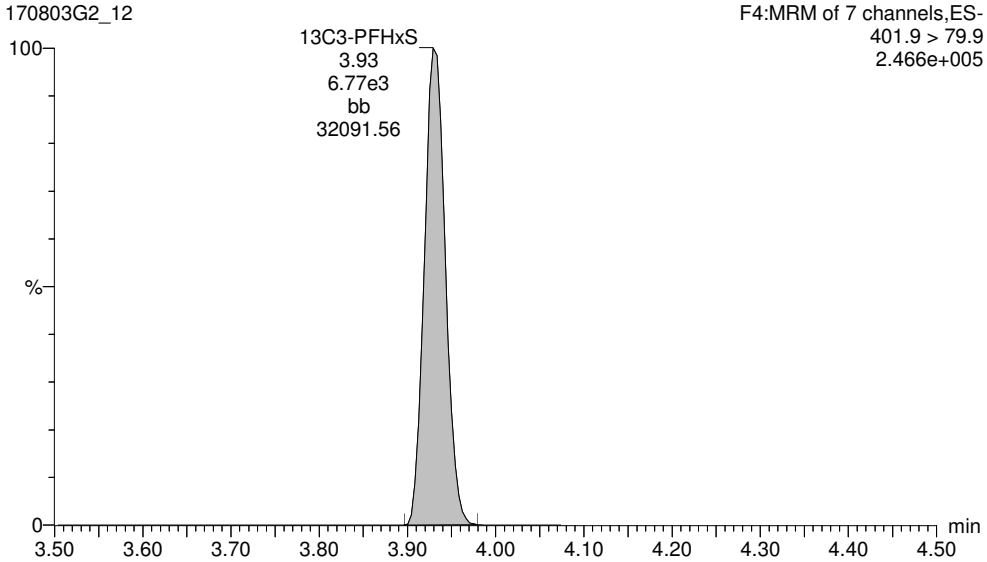
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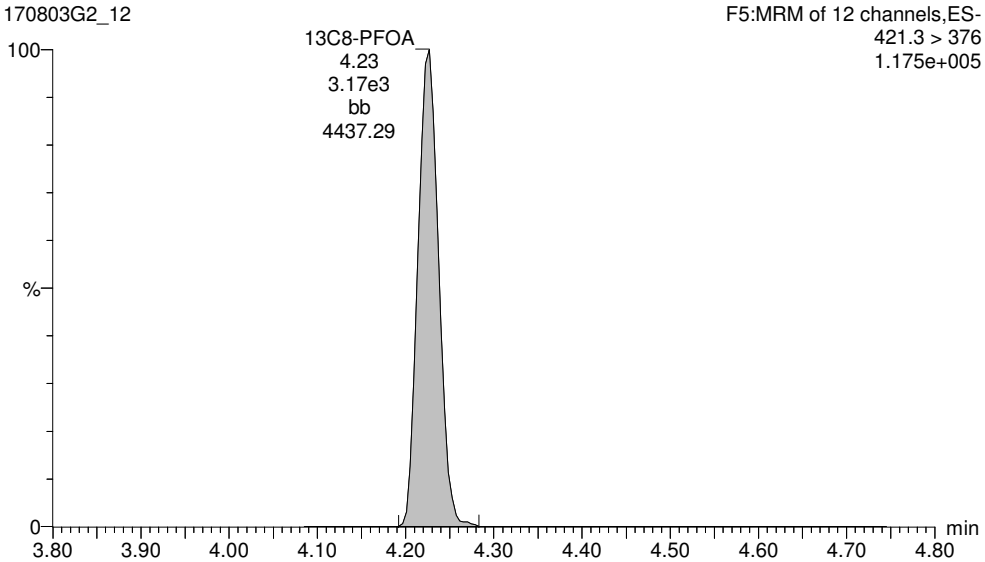
13C5-PFHxA



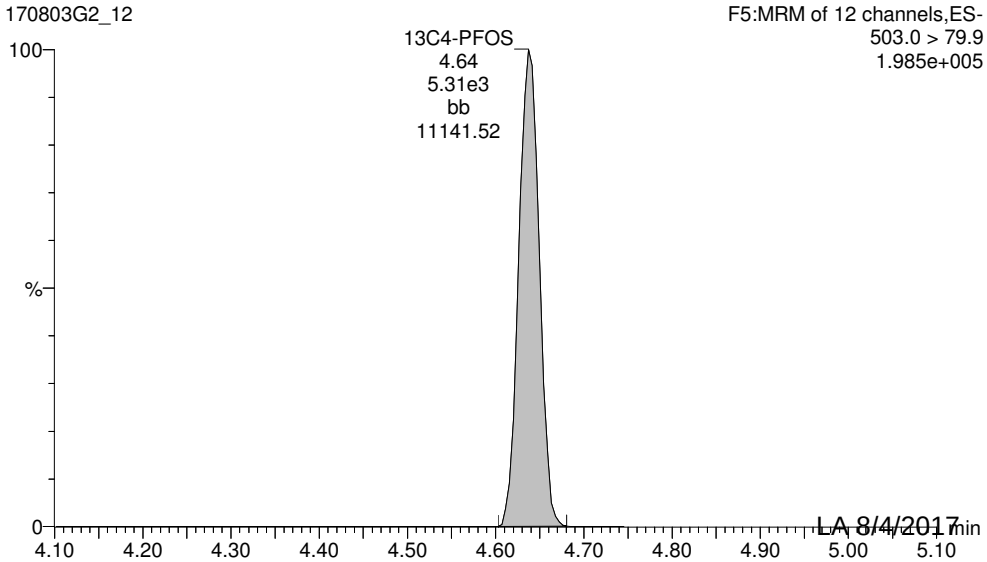
13C3-PFHxS



13C8-PFOA



13C4-PFOS



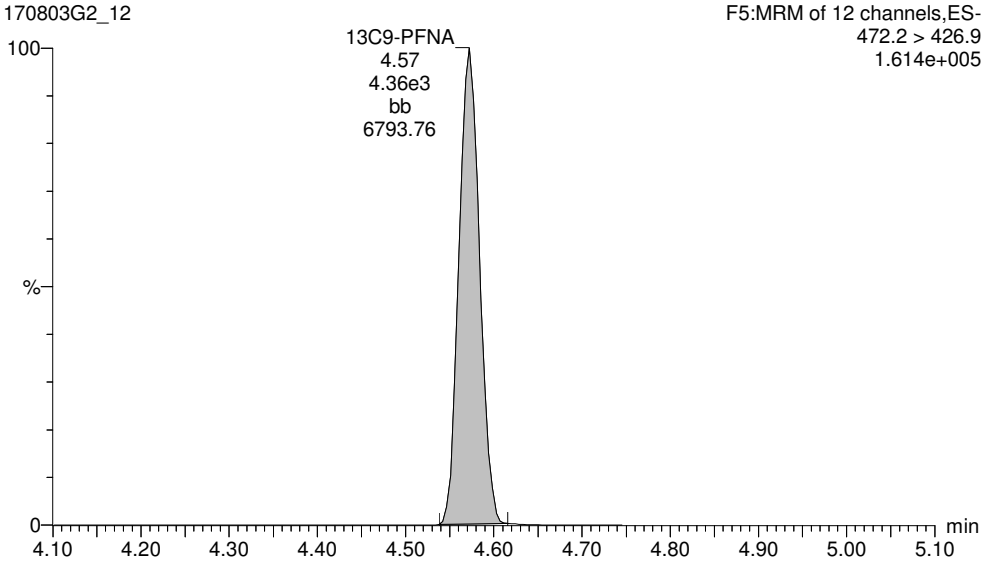
LA 8/4/2017

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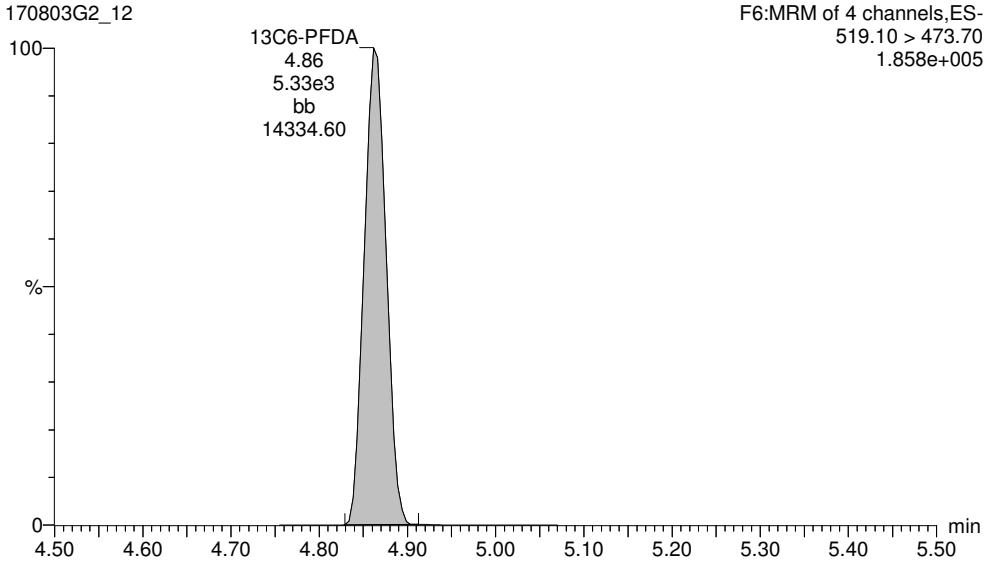
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13C9-PFNA



13C6-PFDA



LA 8/4/2017

CONTINUING CALIBRATION

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-2.qld

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Printed: Monday, July 31, 2017 14:39:02 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G1_2, Date: 31-Jul-2017, Time: 13:46:30, ID: ST170731G1-1 PFC CS-1 17G3102, Description: PFC CS-1 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	1.28e3	2.20e4		1.000	4.61	0.479	95.9
2	2	N-MeFOSAA	570.1 > 419.0	4.90e2	6.46e3		1.000	4.99	0.419	83.7
3	3	PFDS	598.8 > 98.7	6.36e2	2.91e4		1.000	5.15	0.636	127.1
4	4	PFUnA	563 > 518.9	1.88e3	2.91e4		1.000	5.12	0.572	114.4
5	5	N-EtFOSAA	584.2 > 419.0	2.71e2	8.21e3		1.000	5.12	0.366	73.2
6	6	PFDoA	612.9 > 318.8	1.45e2	3.92e4		1.000	5.35	0.375	75.1
7	7	PFTrDA	662.9 > 618.9	1.94e3	0.00e0		1.000	5.56	0.517	103.4
8	8	PFTeDA	712.9 > 668.8	2.22e3	4.01e4		1.000	5.73	0.595	118.9
9	9	13C8-PFOSA	506.1 > 77.7	2.20e4	2.13e4	1.146	1.000	4.61	11.2	90.0
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.46e3	2.13e4	0.026	1.000	4.98	144	88.5
11	11	13C2-PFUnA	565 > 519.8	2.91e4	2.13e4	1.471	1.000	5.12	11.6	93.0
12	12	d5-N-EtFOSAA	589.3 > 419.0	8.21e3	2.13e4	0.031	1.000	5.11	155	95.3
13	13	13C2-PFDoA	615 > 569.7	3.92e4	2.13e4	1.887	1.000	5.35	12.2	97.5
14	14	13C2-PFTeDA	715 > 669.7	4.01e4	2.13e4	1.990	1.000	5.73	11.8	94.6
15	15	13C7-PFUnA	570.1 > 524.8	2.13e4	2.13e4	1.000	1.000	5.12	12.5	100.0

70-130

50-150

KEL 7/31/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 16:53:40 Pacific Daylight Time
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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G1_1	IPA	31-Jul-17	13:33:35
2	170731G1_2	ST170731G1-1 PFC CS-1 17G3102	31-Jul-17	13:46:30
3	170731G1_3	IPA	31-Jul-17	13:59:06
4	170731G1_4	B7G0079-BS1 OPR 0.125	31-Jul-17	14:11:43
5	170731G1_5	IPA	31-Jul-17	14:24:17
6	170731G1_6	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	14:54:16
7	170731G1_7	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	15:06:51
8	170731G1_8	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	15:19:26
9	170731G1_9	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	15:32:02
10	170731G1_10	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	15:44:39
11	170731G1_11	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	15:57:16
12	170731G1_12	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	16:09:57
13	170731G1_13	IPA	31-Jul-17	16:22:30
14	170731G1_14	ST170731G1-2 PFC CS3 17G3102	31-Jul-17	16:35:07
15	170731G1_15			

LC Calibration Standards Review Checklist Q1

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID: ST170731G1 - 1	(L) M H	NA ☑	☑	☑	☑	☑	☑	☐
Calibration ID: - 2	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/5/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: CP 7/31/17
Initials/Date

Comments:

B L14 - 2 TGNS

Vista Analytical Laboratory Q1

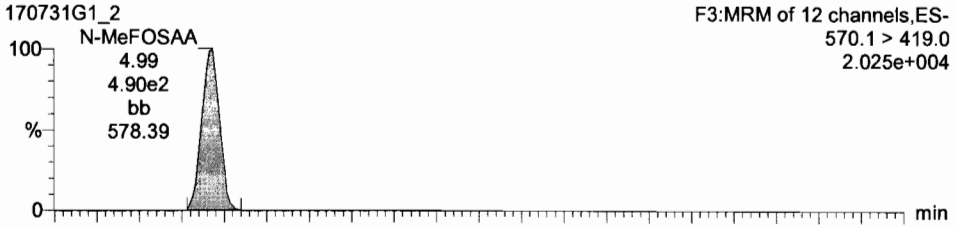
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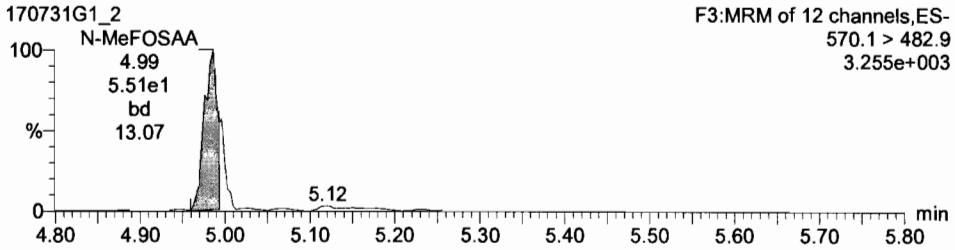
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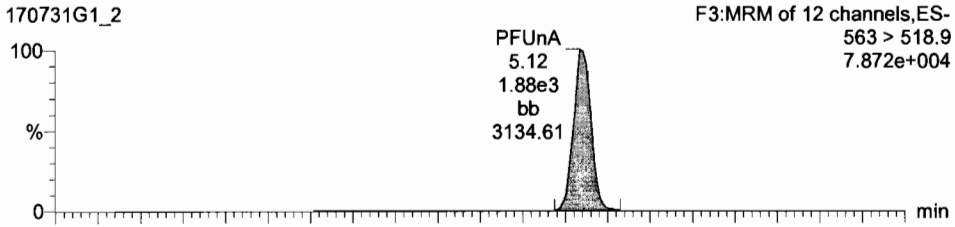
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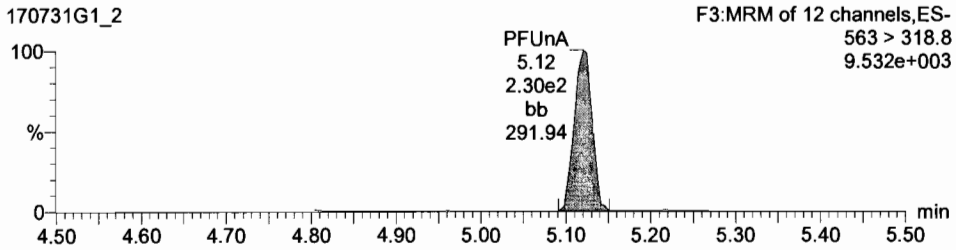
Total N-MeFOSAA



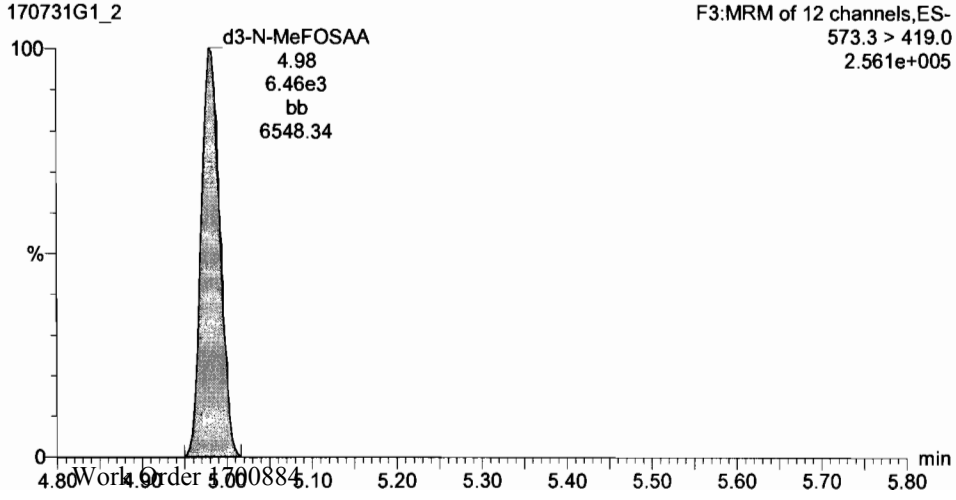


PFUnA

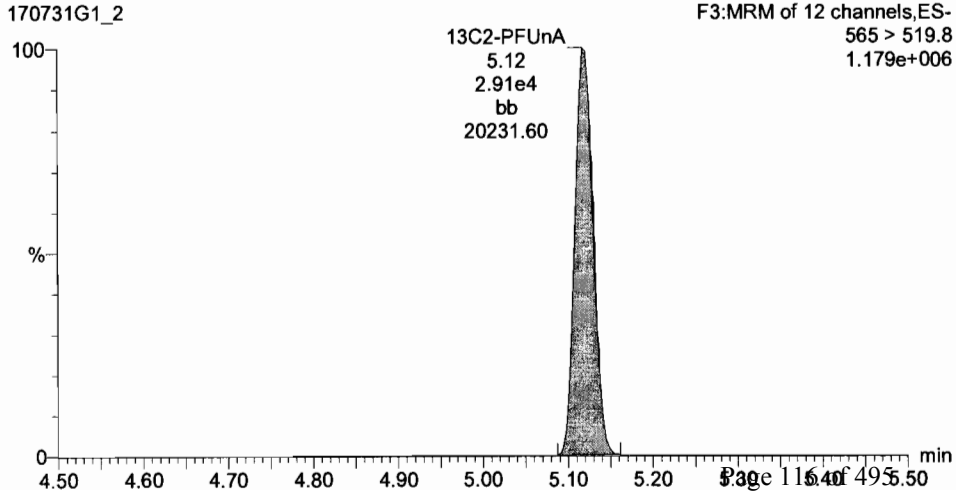




d3-N-MeFOSAA



13C2-PFUnA

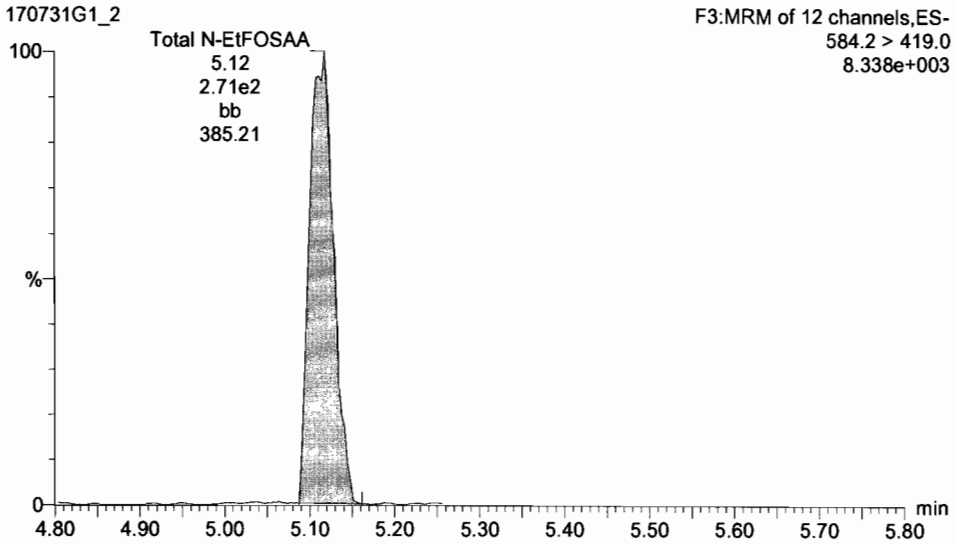


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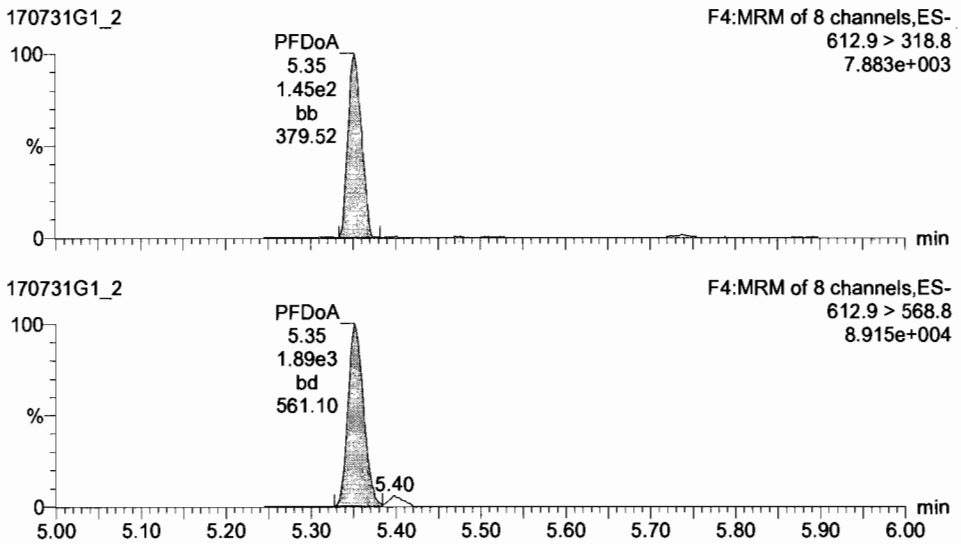
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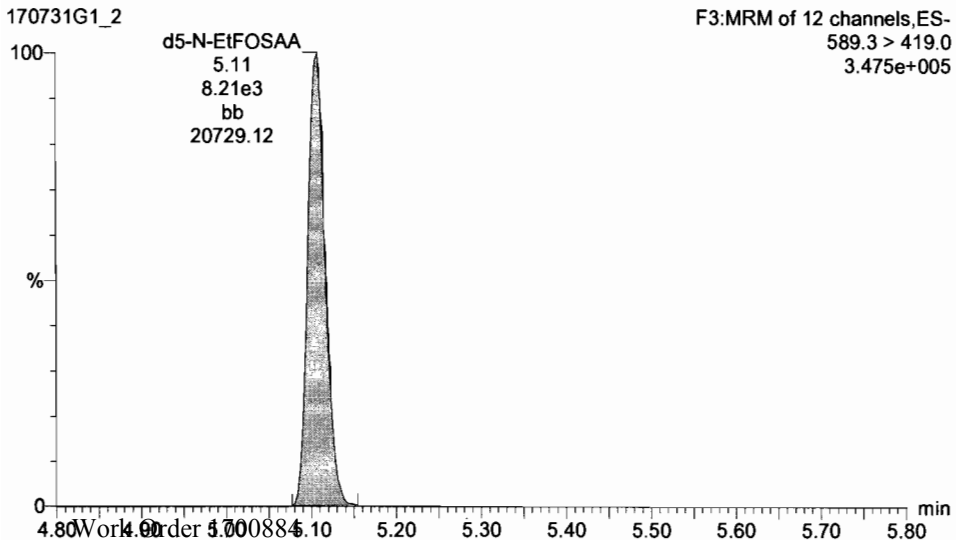
Total N-EtFOSAA



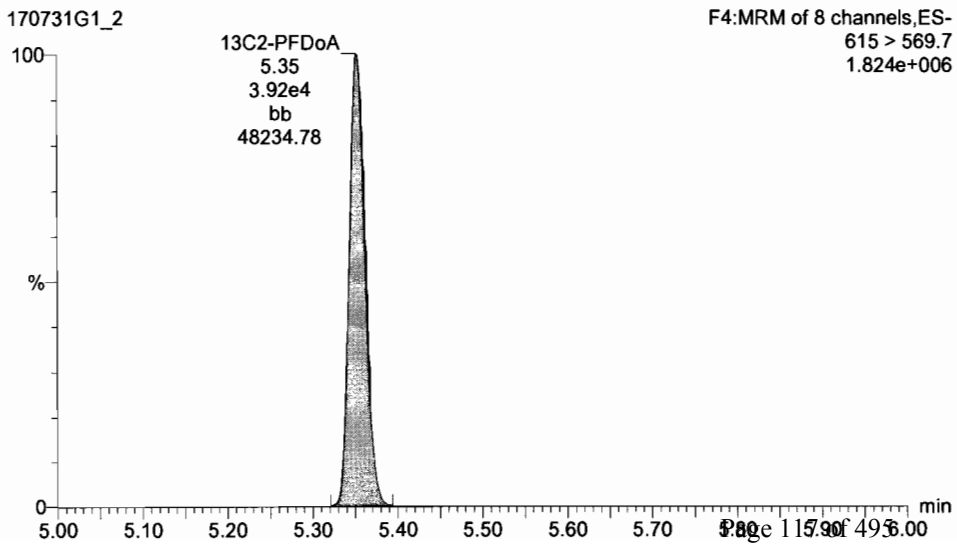
PFDoA



d5-N-EtFOSAA



13C2-PFDoA

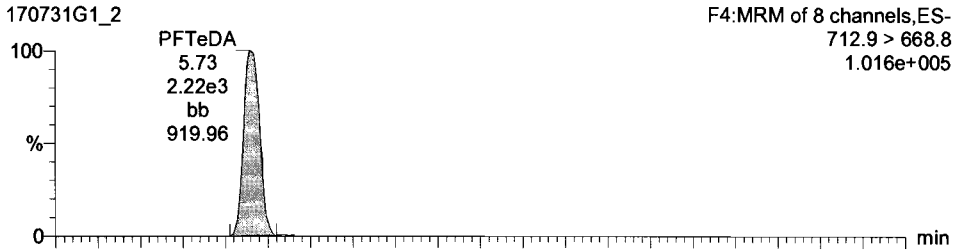


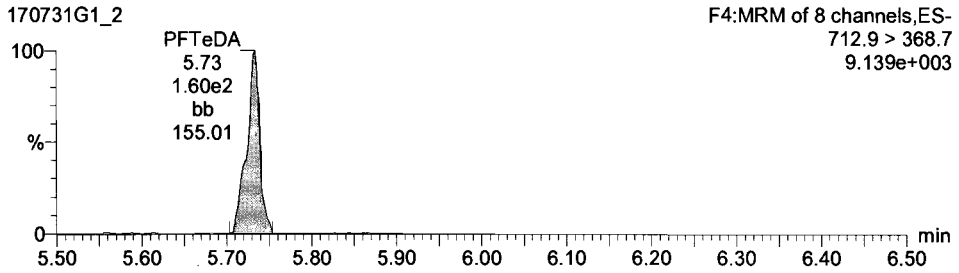
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Printed: Monday, July 31, 2017 14:38:48 Pacific Daylight Time

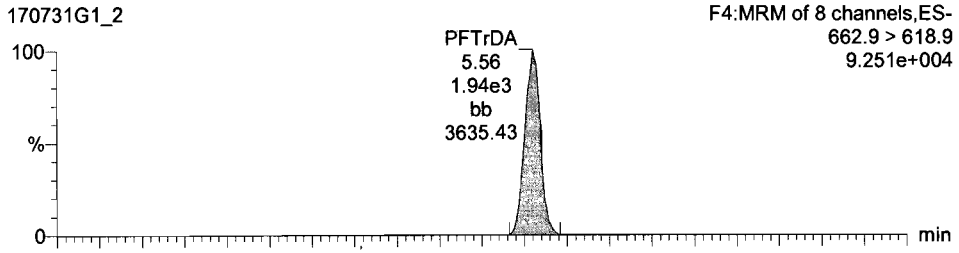
ID: ST170731G1-1 PFC CS-1 17G3102, Description: PFC CS-1 17G3102 B, Name: 170731G1_2, Date: 31-Jul-2017, Time: 13:46:30, Instrument: , Lab: , User:

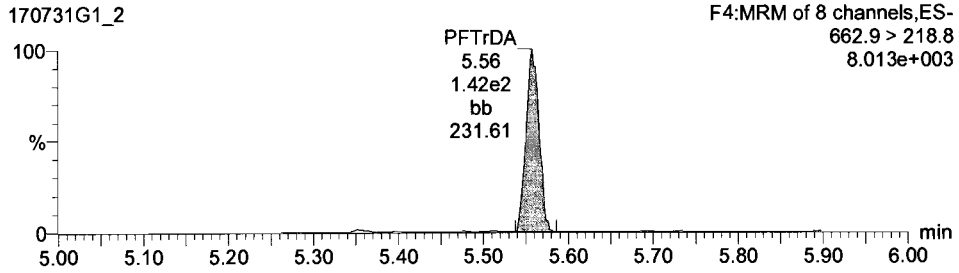
PFTeDA



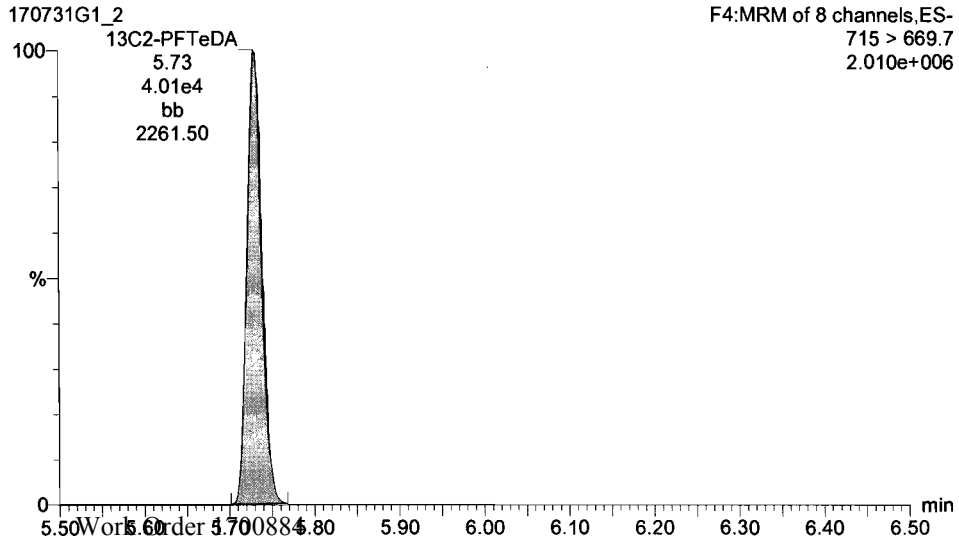


PFTrDA

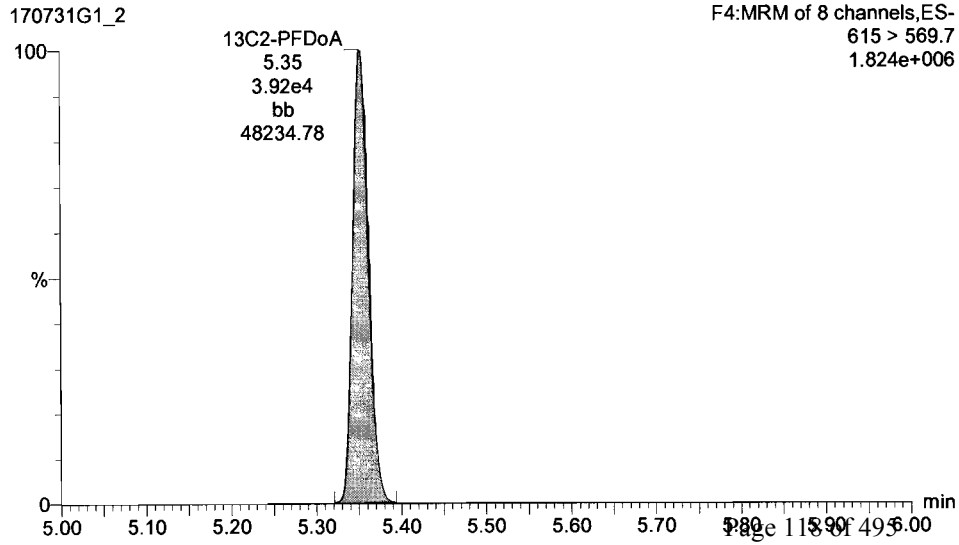




13C2-PFTeDA



13C2-PFDoA



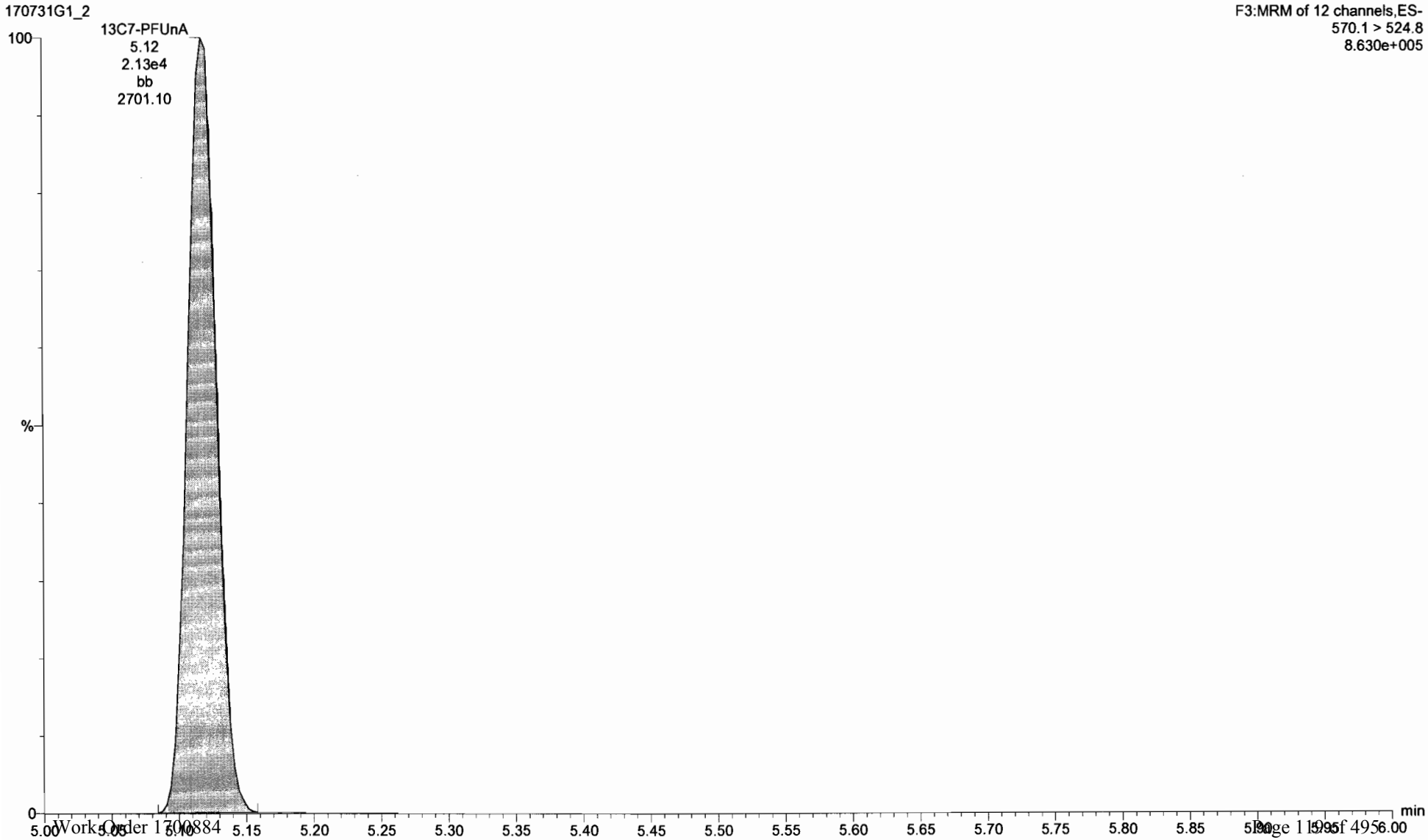
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-2.qld

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Printed: Monday, July 31, 2017 14:38:48 Pacific Daylight Time

ID: ST170731G1-1 PFC CS-1 17G3102, Description: PFC CS-1 17G3102 B, Name: 170731G1_2, Date: 31-Jul-2017, Time: 13:46:30, Instrument: , Lab: , User:

13C7-PFUnA



Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-14.qld

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Printed: Monday, July 31, 2017 16:53:26 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G1_14, Date: 31-Jul-2017, Time: 16:35:07, ID: ST170731G1-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	2.05e4	2.00e4		1.000	4.61	10.4	103.8
2	2	N-MeFOSAA	570.1 > 419.0	1.06e4	6.65e3		1.000	4.99	8.91	89.1
3	3	PFDS	598.8 > 98.7	1.10e4	2.77e4		1.000	5.15	10.8	107.8
4	4	PFUnA	563 > 518.9	2.12e4	2.77e4		1.000	5.12	9.79	97.9
5	5	N-EtFOSAA	584.2 > 419.0	7.43e3	5.76e3		1.000	5.11	12.1	121.3
6	6	PFDoA	612.9 > 318.8	3.63e3	3.50e4		1.000	5.35	10.7	106.6
7	7	PFTrDA	662.9 > 618.9	3.48e4	0.00e0		1.000	5.56	9.63	96.3
8	8	PFTeDA	712.9 > 668.8	2.96e4	3.97e4		1.000	5.73	10.1	101.2
9	9	13C8-PFOSA	506.1 > 77.7	2.00e4	1.93e4	1.146	1.000	4.61	11.3	90.6
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.65e3	1.93e4	0.026	1.000	4.98	163	100.5
11	11	13C2-PFUnA	565 > 519.8	2.77e4	1.93e4	1.471	1.000	5.12	12.2	97.8
12	12	d5-N-EtFOSAA	589.3 > 419.0	5.76e3	1.93e4	0.031	1.000	5.11	120	73.9
13	13	13C2-PFDoA	615 > 569.7	3.50e4	1.93e4	1.887	1.000	5.35	12.0	96.1
14	14	13C2-PFTeDA	715 > 669.7	3.97e4	1.93e4	1.990	1.000	5.73	12.9	103.5
15	15	13C7-PFUnA	570.1 > 524.8	1.93e4	1.93e4	1.000	1.000	5.12	12.5	100.0

70-130

50-150

7/31/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

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Printed: Monday, July 31, 2017 16:53:54 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G1_1	IPA	31-Jul-17	13:33:35
2	170731G1_2	ST170731G1-1 PFC CS-1 17G3102	31-Jul-17	13:46:30
3	170731G1_3	IPA	31-Jul-17	13:59:06
4	170731G1_4	B7G0079-BS1 OPR 0.125	31-Jul-17	14:11:43
5	170731G1_5	IPA	31-Jul-17	14:24:17
6	170731G1_6	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	14:54:16
7	170731G1_7	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	15:06:51
8	170731G1_8	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	15:19:26
9	170731G1_9	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	15:32:02
10	170731G1_10	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	15:44:39
11	170731G1_11	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	15:57:16
12	170731G1_12	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	16:09:57
13	170731G1_13	IPA	31-Jul-17	16:22:30
14	170731G1_14	ST170731G1-2 PFC CS3 17G3102	31-Jul-17	16:35:07
15	170731G1_15			

Vista Analytical Laboratory Q1

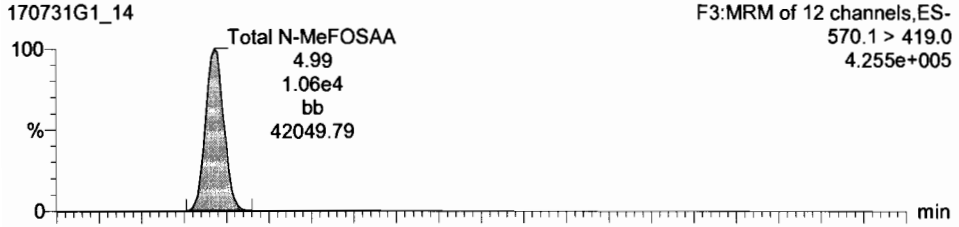
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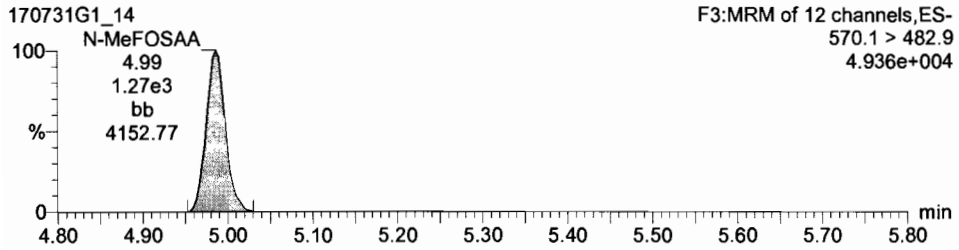
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Printed: Monday, July 31, 2017 16:53:16 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

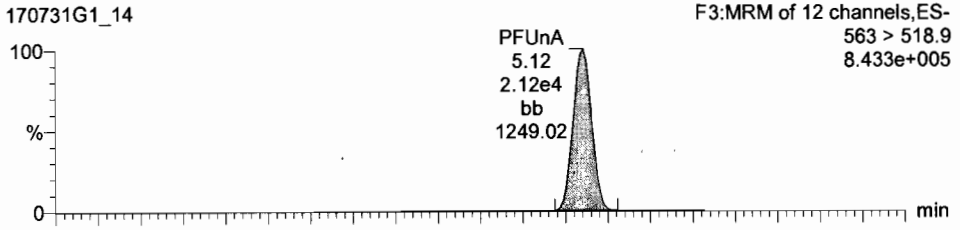
ID: ST170731G1-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B, Name: 170731G1_14, Date: 31-Jul-2017, Time: 16:35:07, Instrument: , Lab: , User:

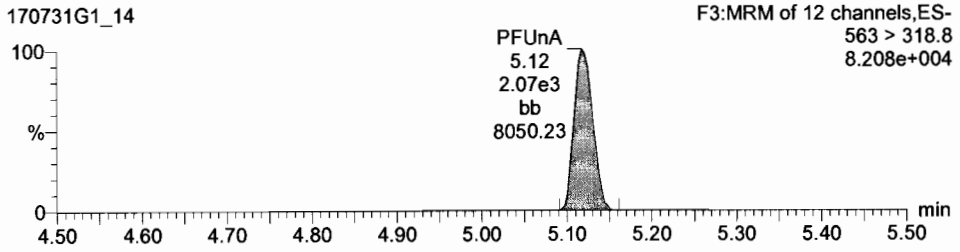
Total N-MeFOSAA



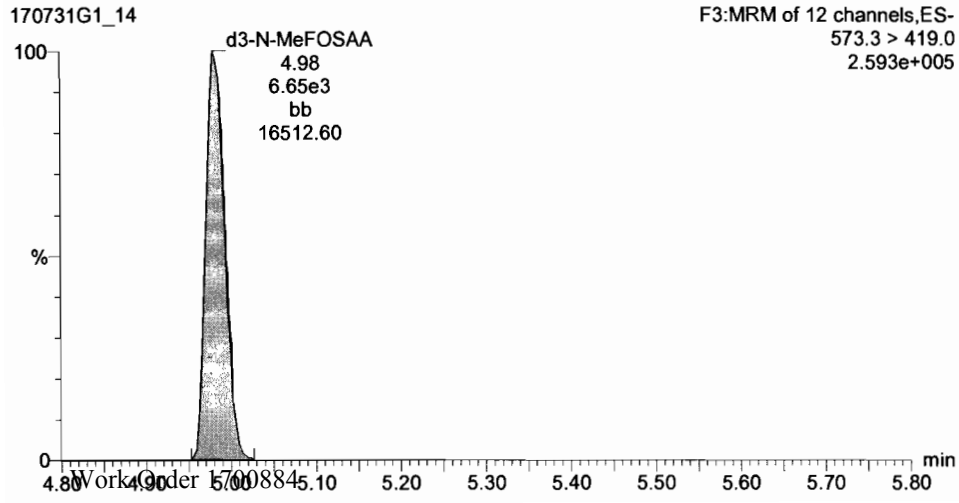


PFUnA

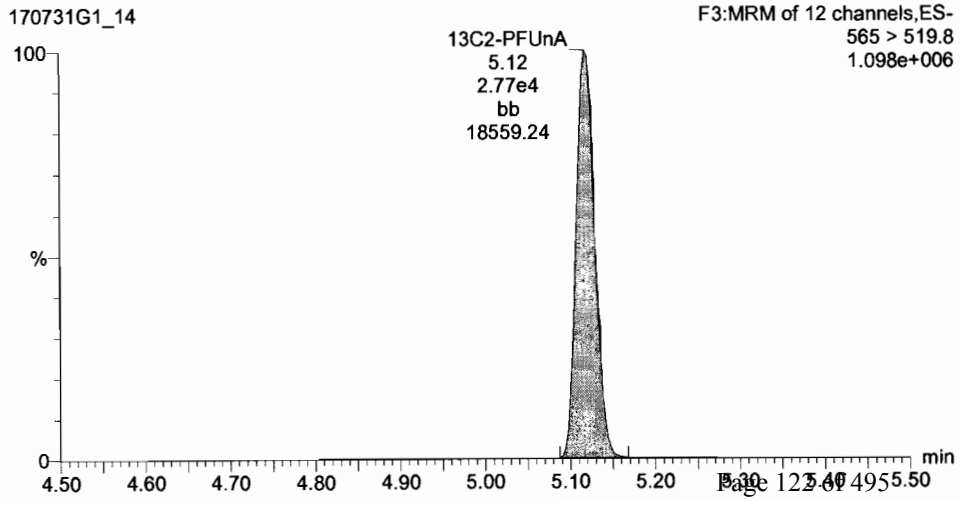




d3-N-MeFOSAA



13C2-PFUnA

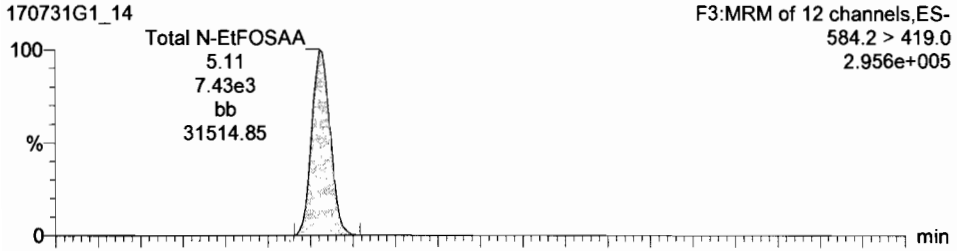


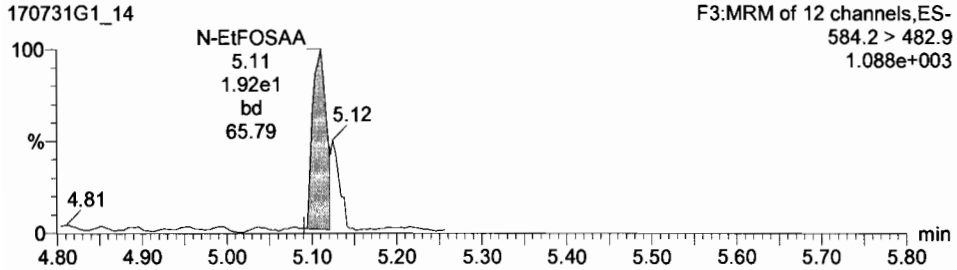
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Printed: Monday, July 31, 2017 16:53:16 Pacific Daylight Time

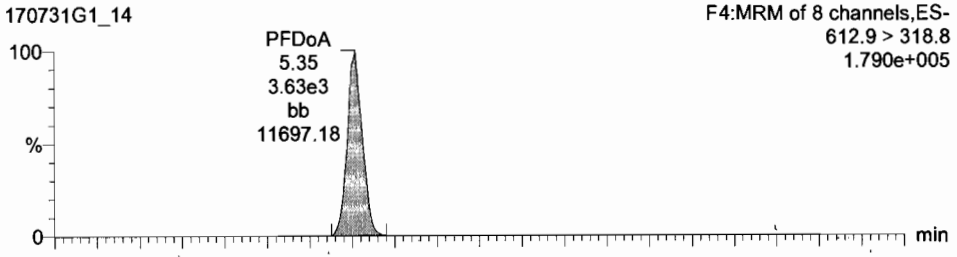
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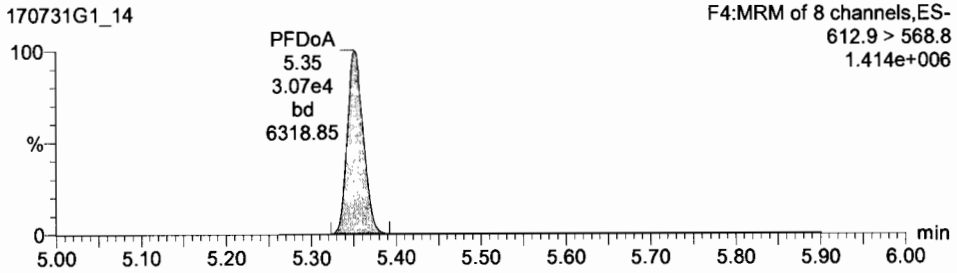
Total N-EtFOSAA



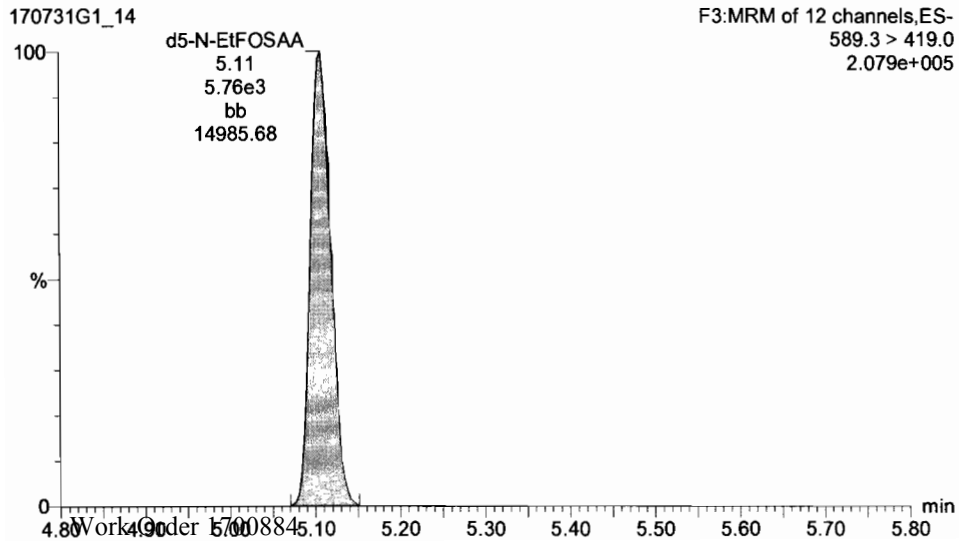


PFDoA

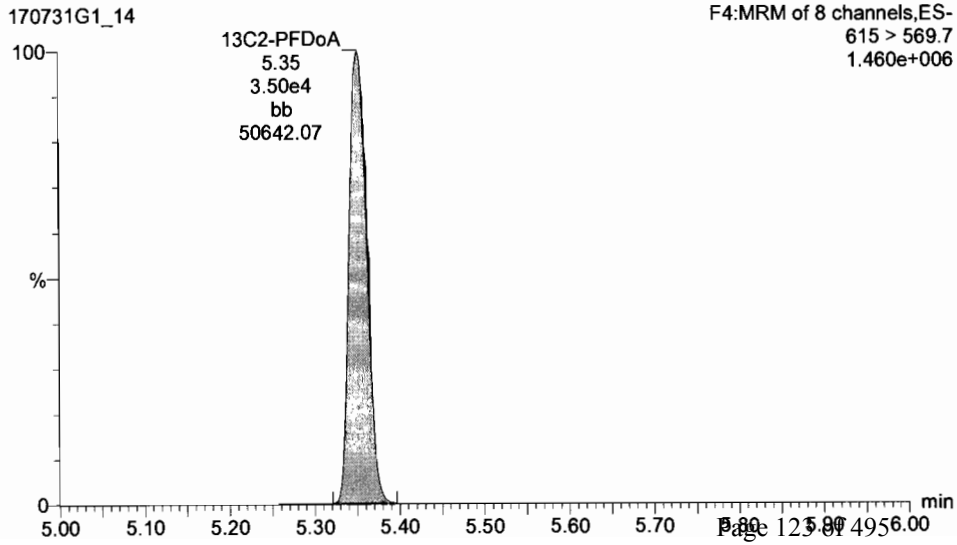




d5-N-EtFOSAA



13C2-PFDoA

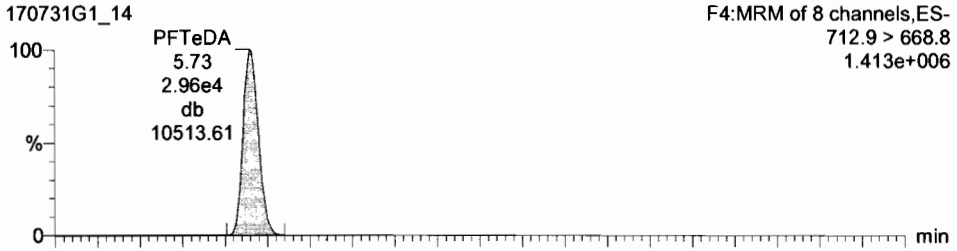


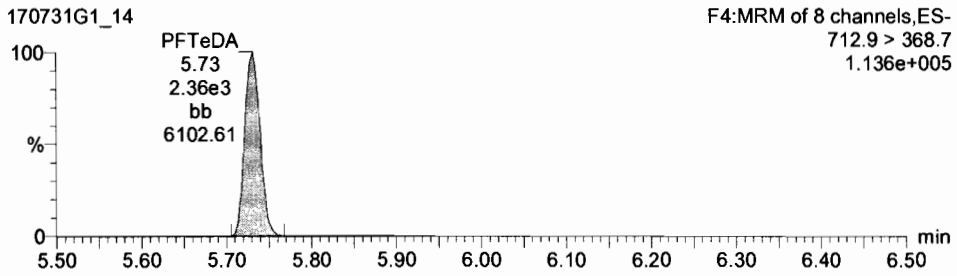
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Printed: Monday, July 31, 2017 16:53:16 Pacific Daylight Time

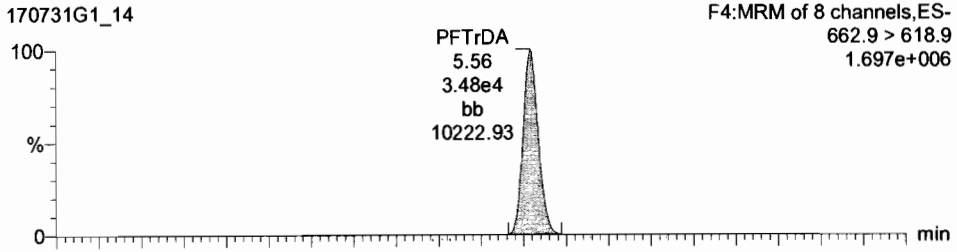
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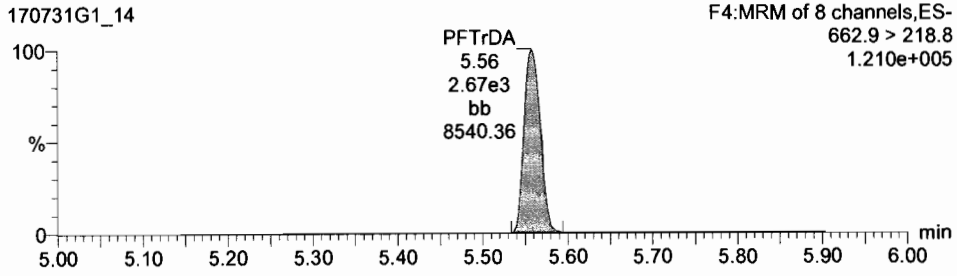
PFTeDA



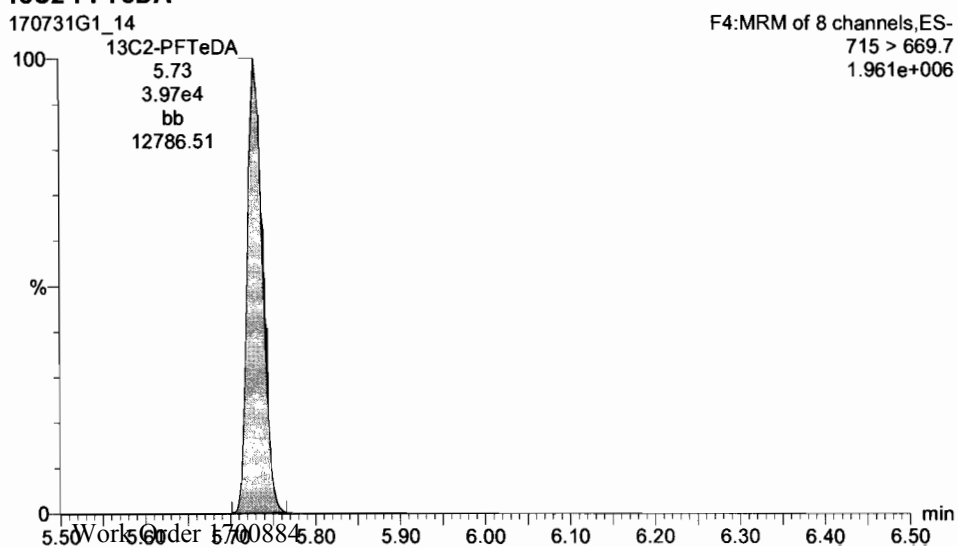


PFTrDA

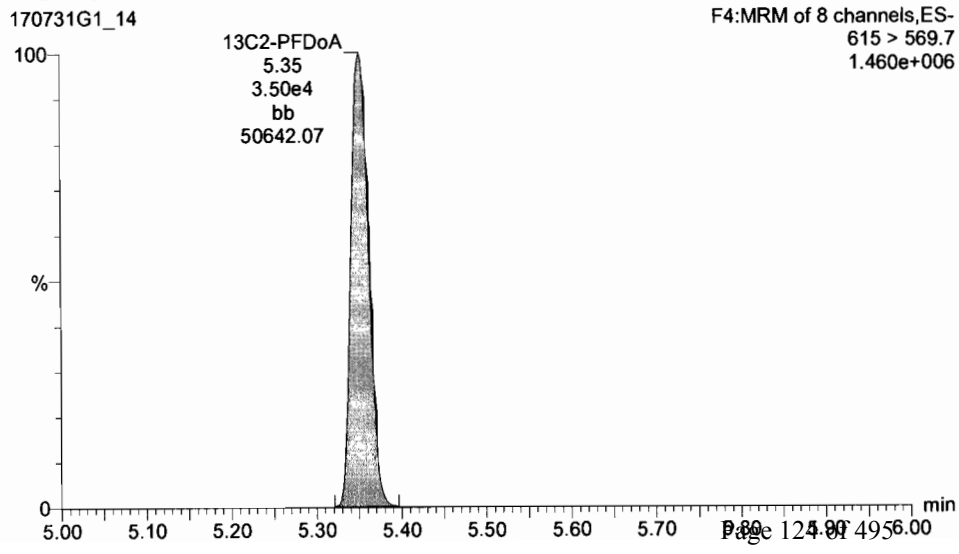




13C2-PFTeDA



13C2-PFDoA



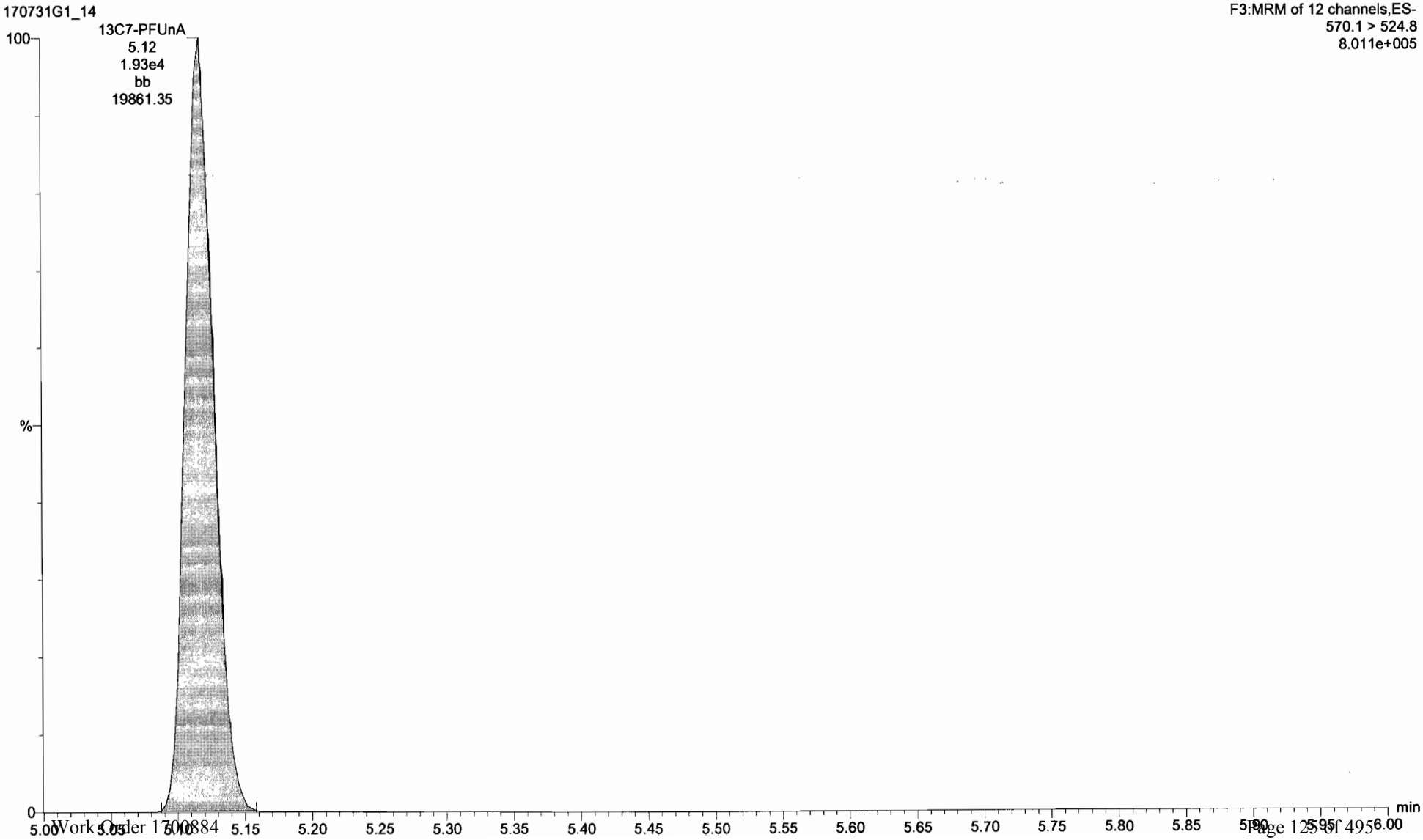
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-14.qld

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Printed: Monday, July 31, 2017 16:53:16 Pacific Daylight Time

ID: ST170731G1-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B, Name: 170731G1_14, Date: 31-Jul-2017, Time: 16:35:07, Instrument: , Lab: , User:

13C7-PFUnA



Quantify Sample Summary Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-2.qld

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Printed: Tuesday, August 01, 2017 13:09:20 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G3_2, Date: 31-Jul-2017, Time: 17:22:07, ID: ST170731G3-1 PFC CS3 17G3102, Description: PFC CS3 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	1.98e4	1.99e4		1.000	4.61	10.1	101.0
2	2	N-MeFOSAA	570.1 > 419.0	1.07e4	6.23e3		1.000	4.99	9.66	96.6
3	3	PFDS	598.8 > 98.7	1.05e4	2.87e4		1.000	5.15	10.0	100.1
4	4	PFUnA	563 > 518.9	2.17e4	2.87e4		1.000	5.12	9.70	97.0
5	5	N-EtFOSAA	584.2 > 419.0	7.40e3	8.06e3		1.000	5.11	8.60	86.0
6	6	PFDoA	612.9 > 318.8	3.53e3	3.72e4		1.000	5.35	9.74	97.4
7	7	PFTrDA	662.9 > 618.9	3.42e4	0.00e0		1.000	5.56	9.44	94.4
8	8	PFTeDA	712.9 > 668.8	2.97e4	3.76e4		1.000	5.73	10.8	107.6
9	9	13C8-PFOSA	506.1 > 77.7	1.99e4	1.92e4	1.146	1.000	4.61	11.3	90.7
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.23e3	1.92e4	0.026	1.000	4.98	154	94.8
11	11	13C2-PFUnA	565 > 519.8	2.87e4	1.92e4	1.471	1.000	5.12	12.7	101.6
12	12	d5-N-EtFOSAA	589.3 > 419.0	8.06e3	1.92e4	0.031	1.000	5.11	169	103.9
13	13	13C2-PFDoA	615 > 569.7	3.72e4	1.92e4	1.887	1.000	5.35	12.9	102.9
14	14	13C2-PFTeDA	715 > 669.7	3.76e4	1.92e4	1.990	1.000	5.73	12.3	98.5
15	15	13C7-PFUnA	570.1 > 524.8	1.92e4	1.92e4	1.000	1.000	5.12	12.5	100.0

70-130

50-150

8/1/17
AC
8/2/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Tuesday, August 01, 2017 13:19:59 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 13:20:16 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G3_1	IPA	31-Jul-17	17:09:02
2	170731G3_2	ST170731G3-1 PFC CS3 17G3102	31-Jul-17	17:22:07
3	170731G3_3	IPA	31-Jul-17	17:34:40
4	170731G3_4	1700875-01 MW-42S-20170713 0.11821	31-Jul-17	17:47:16
5	170731G3_5	1700875-02 MW-14BR-20170713 0.11912	31-Jul-17	17:59:53
6	170731G3_6	1700875-03 MW-51BR-20170713 0.11822	31-Jul-17	18:12:28
7	170731G3_7	1700875-04 DUP-06-20170713 0.11793	31-Jul-17	18:25:03
8	170731G3_8	1700875-05 MW-11S-20170713 0.11994	31-Jul-17	18:37:39
9	170731G3_9	1700884-01 MW-37BR-20170714 0.11935	31-Jul-17	18:50:15
10	170731G3_10	1700884-02 MW-32BR-20170714 0.11989	31-Jul-17	19:02:54
11	170731G3_11	1700884-03 MW-35S-20170714 0.11984	31-Jul-17	19:15:28
12	170731G3_12	1700884-04 FRB-02-20170714 0.11984	31-Jul-17	19:28:02
13	170731G3_13	IPA	31-Jul-17	19:40:37
14	170731G3_14	ST170731G3-2 PFC CS3 17G3102	31-Jul-17	19:53:14
15	170731G3_15	IPA	31-Jul-17	20:05:47

LC Calibration Standards Review Checklist Q1

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	ST17073163 - 1	L (M) H	NA ☐	☑	☑	☑	☑	☑	☐
Calibration ID:	- 2	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/5/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: AC 8/2/17
Initials/Date

Comments:

Vista Analytical Laboratory Q1

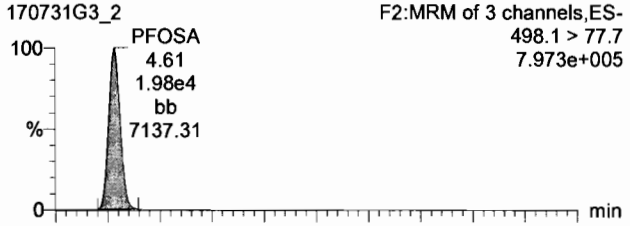
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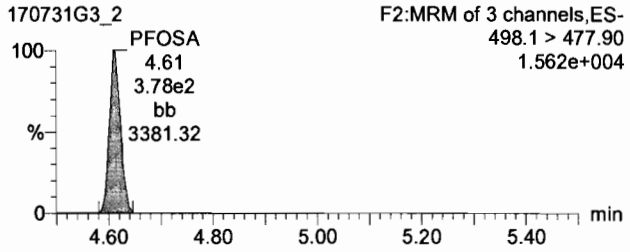
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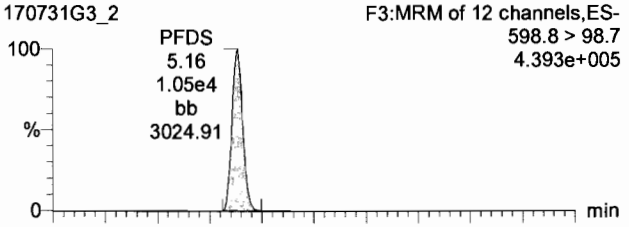
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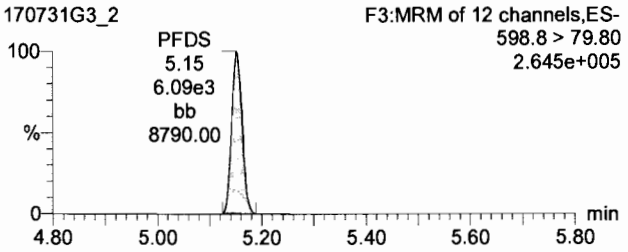
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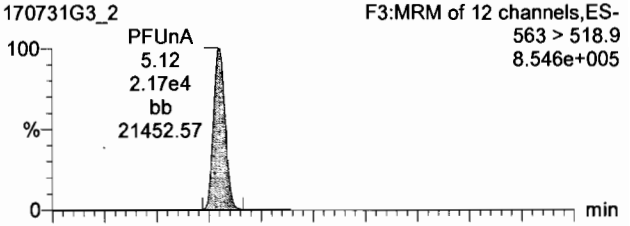


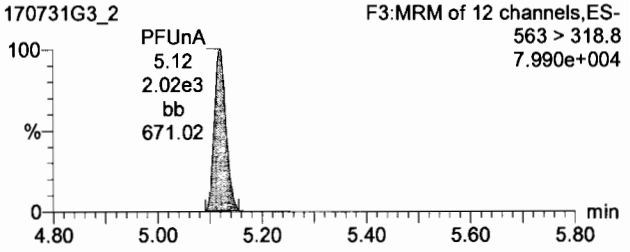
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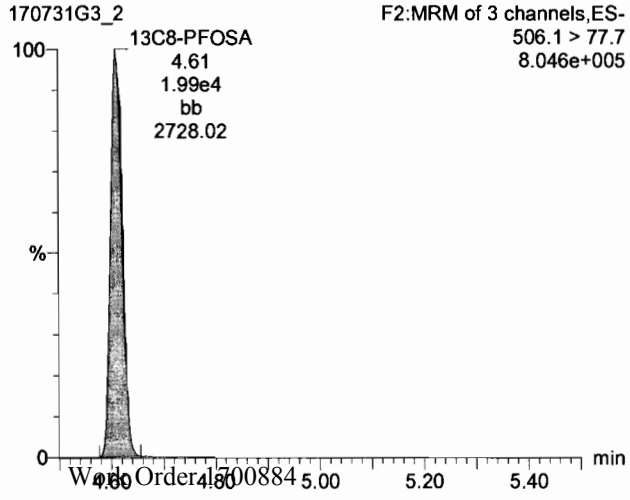


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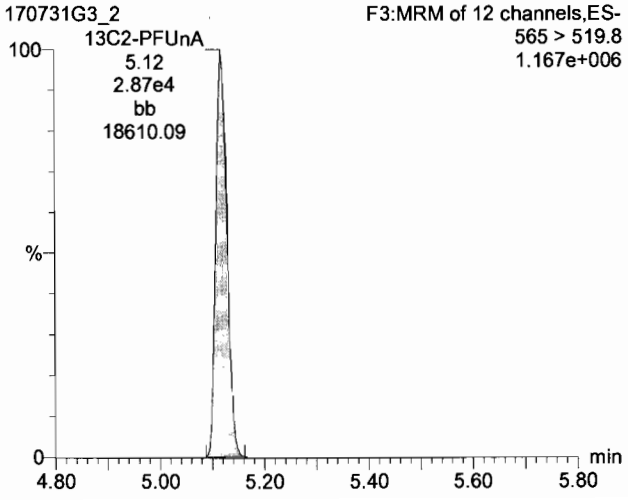




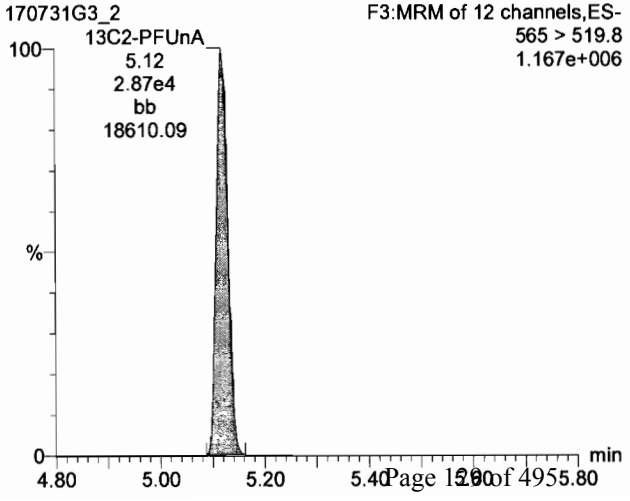
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13C2-PFUnA



13C2-PFUnA

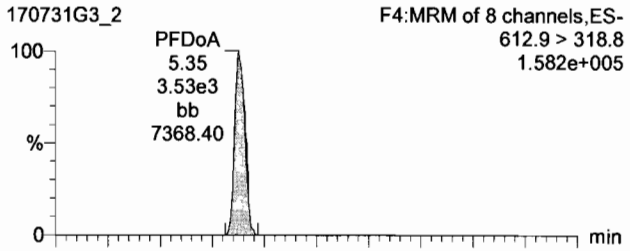


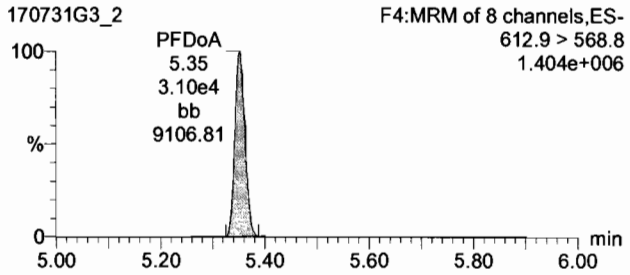
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Printed: Tuesday, August 01, 2017 13:17:21 Pacific Daylight Time

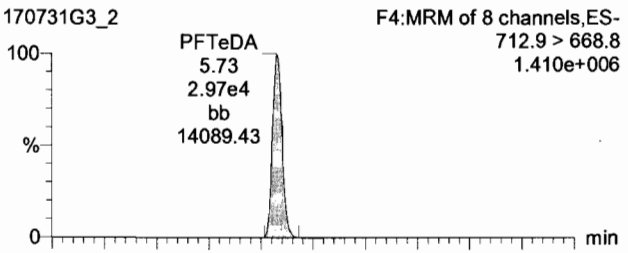
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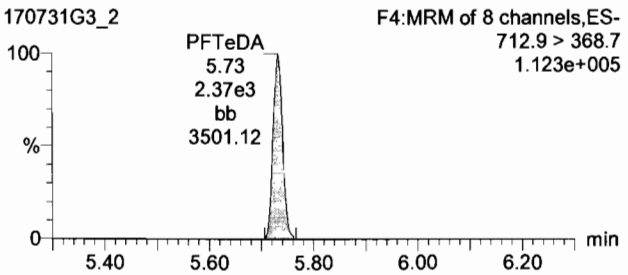
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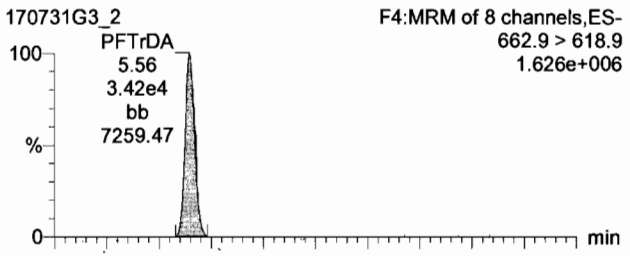


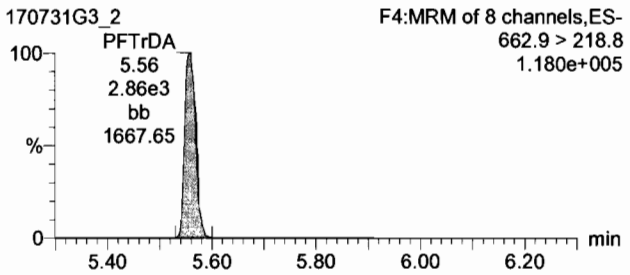
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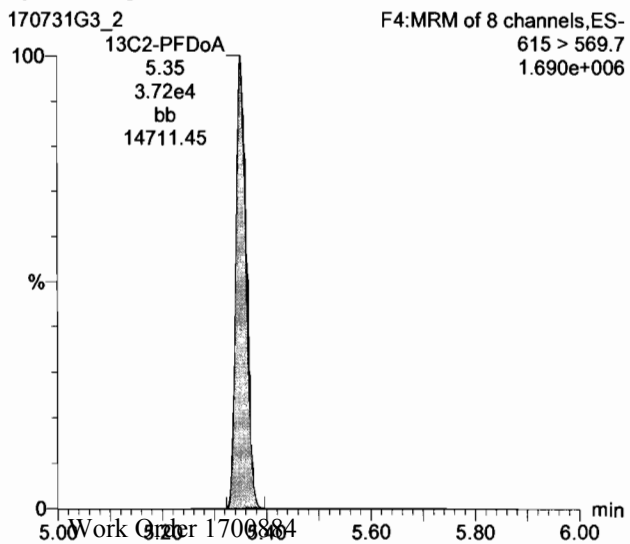


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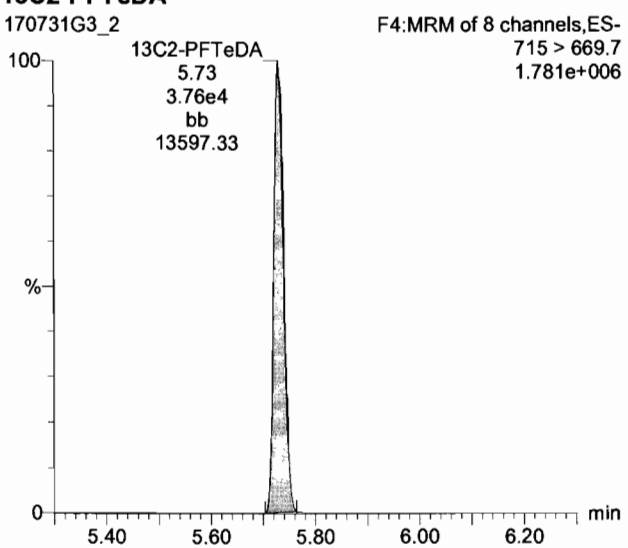




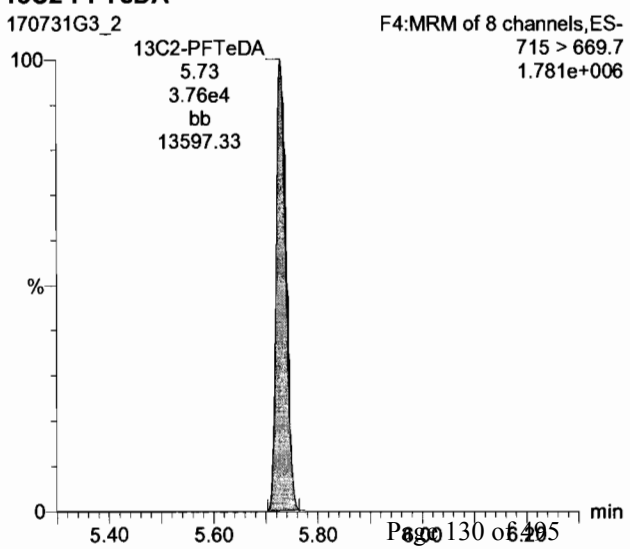
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13C2-PFTeDA



13C2-PFTeDA

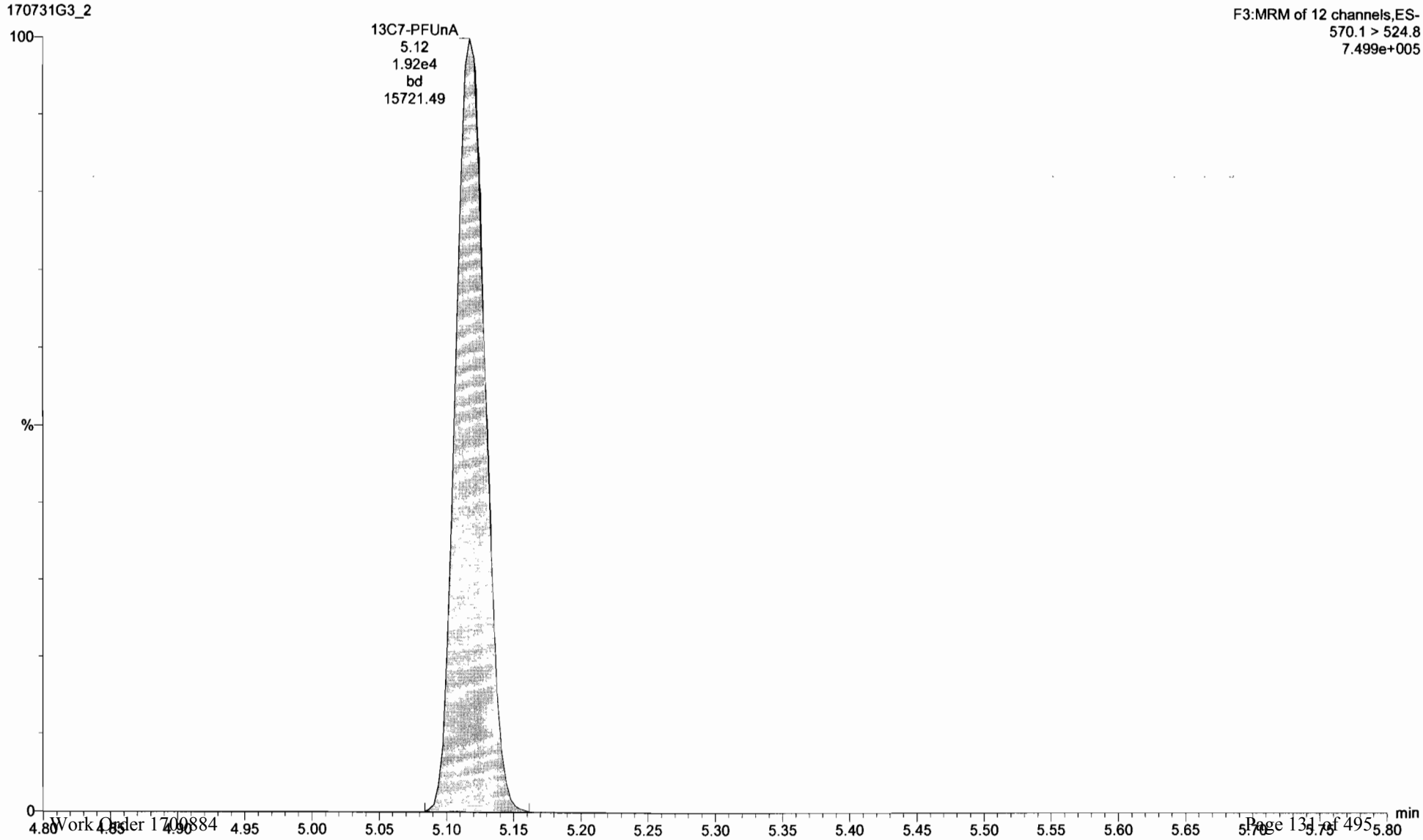


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13C7-PFUnA



Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-14.qld

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Name: 170731G3_14, Date: 31-Jul-2017, Time: 19:53:14, ID: ST170731G3-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	1.94e4	1.99e4		1.000	4.62	9.87	98.7
2	2	N-MeFOSAA	570.1 > 419.0	1.01e4	6.80e3		1.000	4.99	8.34	83.4
3	3	PFDS	598.8 > 98.7	1.08e4	2.88e4		1.000	5.16	10.2	101.9
4	4	PFUnA	563 > 518.9	2.09e4	2.88e4		1.000	5.12	9.28	92.8
5	5	N-EtFOSAA	584.2 > 419.0	7.36e3	7.29e3		1.000	5.11	9.46	94.6
6	6	PFDoA	612.9 > 318.8	3.61e3	3.51e4		1.000	5.36	10.6	105.6
7	7	PFTrDA	662.9 > 618.9	3.52e4	0.00e0		1.000	5.56	9.97	99.7
8	8	PFTeDA	712.9 > 668.8	3.11e4	3.79e4		1.000	5.74	11.2	111.7
9	9	13C8-PFOSA	506.1 > 77.7	1.99e4	2.07e4	1.146	1.000	4.62	10.5	84.1
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.80e3	2.07e4	0.026	1.000	4.99	156	96.0
11	11	13C2-PFUnA	565 > 519.8	2.88e4	2.07e4	1.471	1.000	5.12	11.9	94.9
12	12	d5-N-EtFOSAA	589.3 > 419.0	7.29e3	2.07e4	0.031	1.000	5.11	142	87.3
13	13	13C2-PFDoA	615 > 569.7	3.51e4	2.07e4	1.887	1.000	5.36	11.2	89.9
14	14	13C2-PFTeDA	715 > 669.7	3.79e4	2.07e4	1.990	1.000	5.73	11.5	92.2
15	15	13C7-PFUnA	570.1 > 524.8	2.07e4	2.07e4	1.000	1.000	5.12	12.5	100.0

70-130

50-130

8/1/17

✓AC
8/2/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

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Compound name: PFOSA

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2	170731G3_2	ST170731G3-1 PFC CS3 17G3102	31-Jul-17	17:22:07
3	170731G3_3	IPA	31-Jul-17	17:34:40
4	170731G3_4	1700875-01 MW-42S-20170713 0.11821	31-Jul-17	17:47:16
5	170731G3_5	1700875-02 MW-14BR-20170713 0.11912	31-Jul-17	17:59:53
6	170731G3_6	1700875-03 MW-51BR-20170713 0.11822	31-Jul-17	18:12:28
7	170731G3_7	1700875-04 DUP-06-20170713 0.11793	31-Jul-17	18:25:03
8	170731G3_8	1700875-05 MW-11S-20170713 0.11994	31-Jul-17	18:37:39
9	170731G3_9	1700884-01 MW-37BR-20170714 0.11935	31-Jul-17	18:50:15
10	170731G3_10	1700884-02 MW-32BR-20170714 0.11989	31-Jul-17	19:02:54
11	170731G3_11	1700884-03 MW-35S-20170714 0.11984	31-Jul-17	19:15:28
12	170731G3_12	1700884-04 FRB-02-20170714 0.11984	31-Jul-17	19:28:02
13	170731G3_13	IPA	31-Jul-17	19:40:37
14	170731G3_14	ST170731G3-2 PFC CS3 17G3102	31-Jul-17	19:53:14
15	170731G3_15	IPA	31-Jul-17	20:05:47

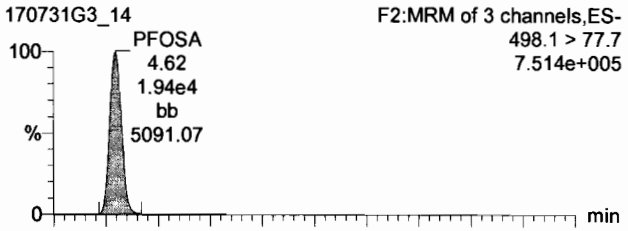
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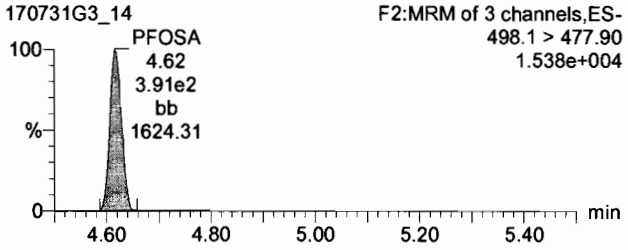
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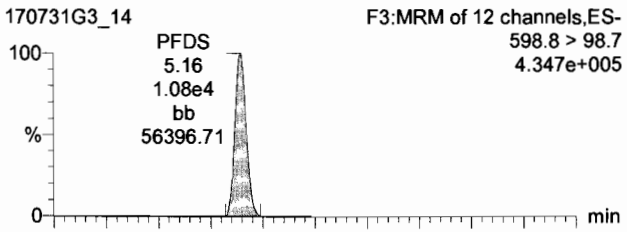
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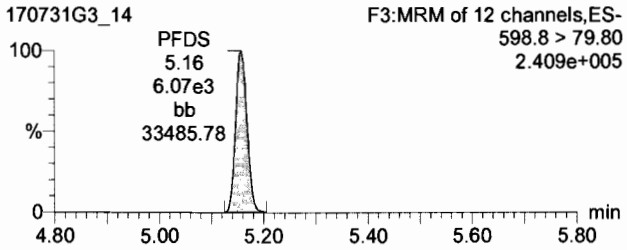
PFOSA



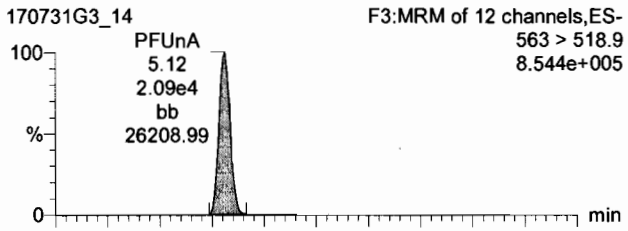


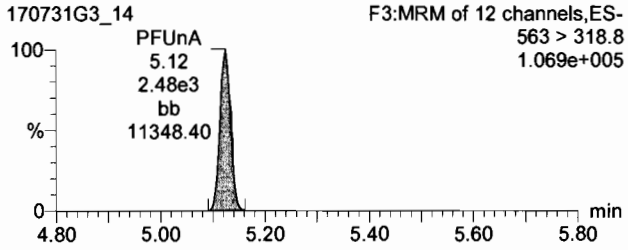
PFDS



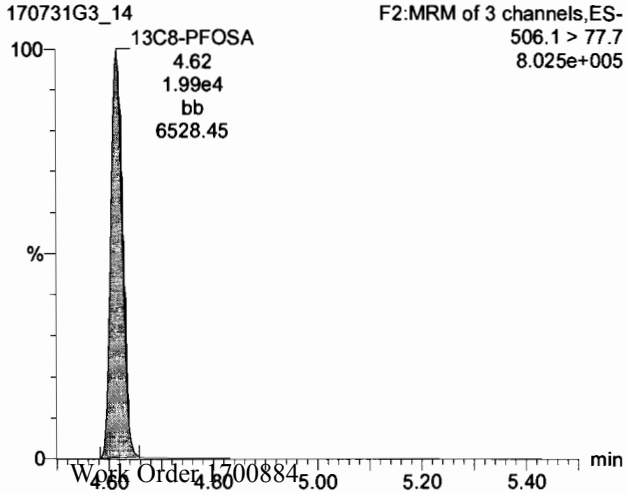


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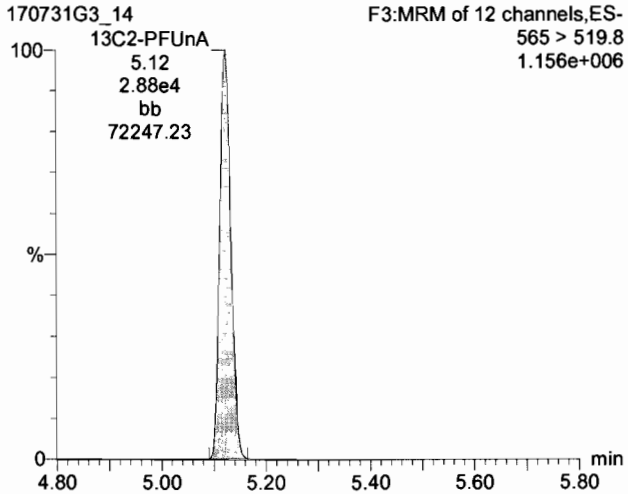




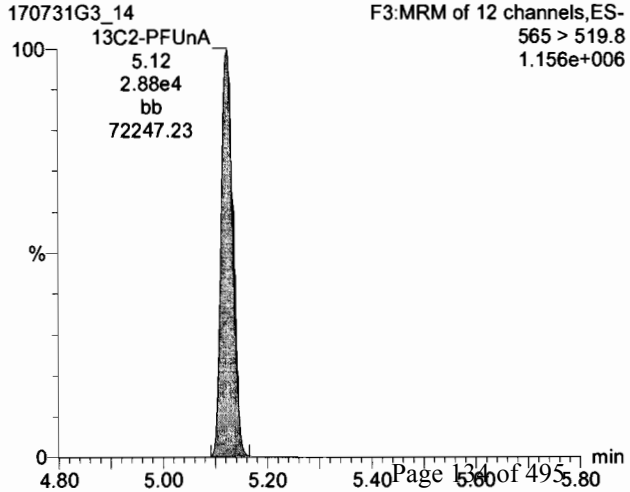
13C8-PFOSA



13C2-PFUnA



13C2-PFUnA

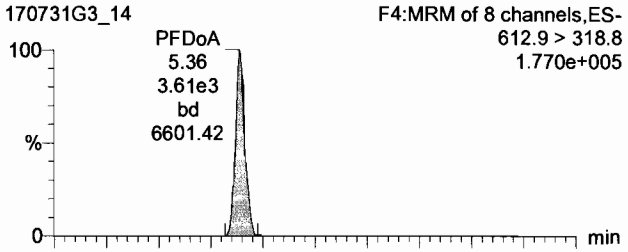


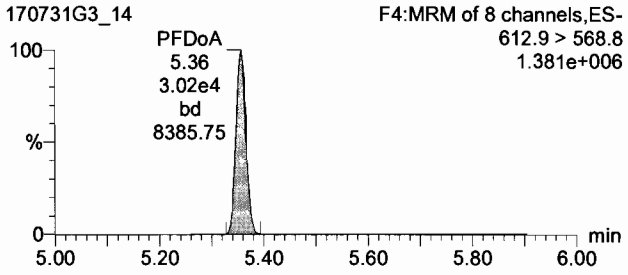
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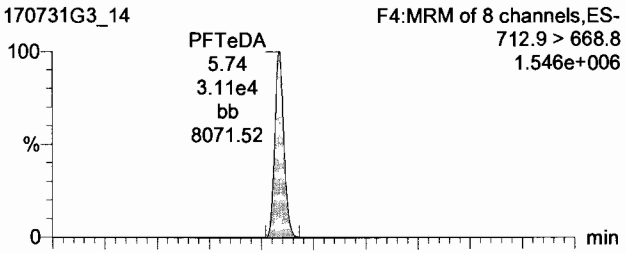
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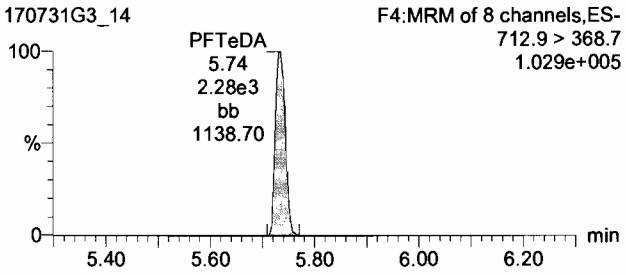
PFDoA



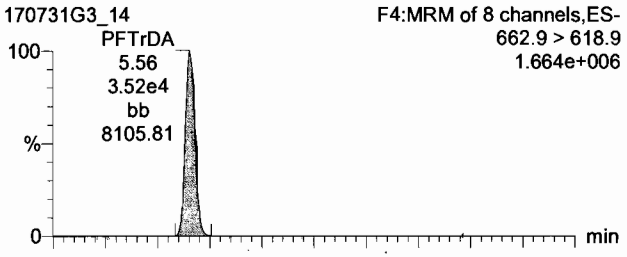


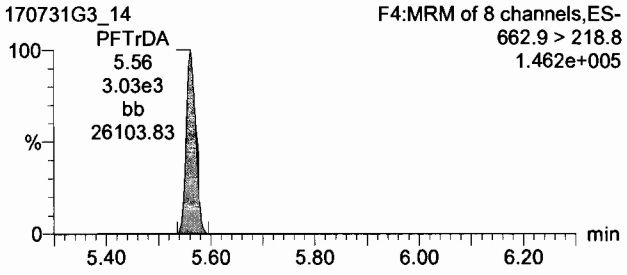
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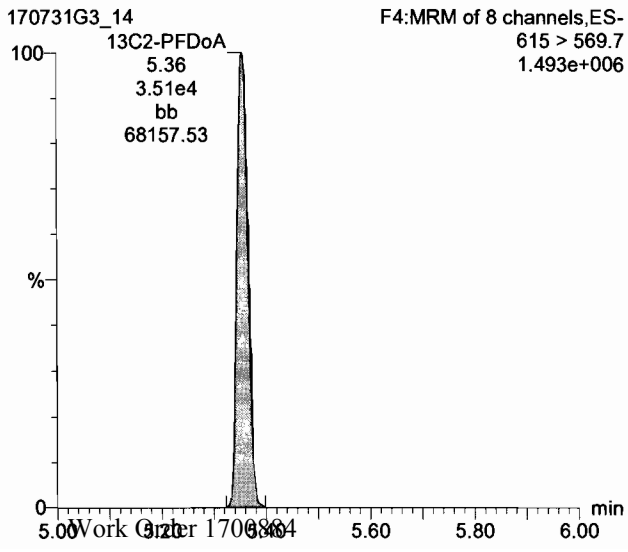


PFTrDA

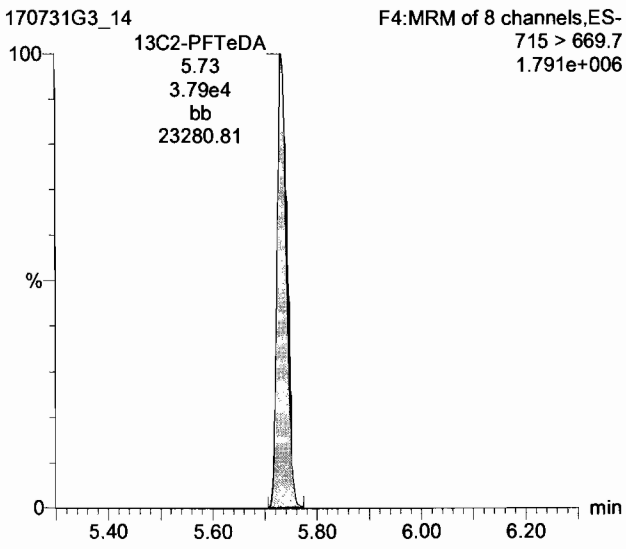




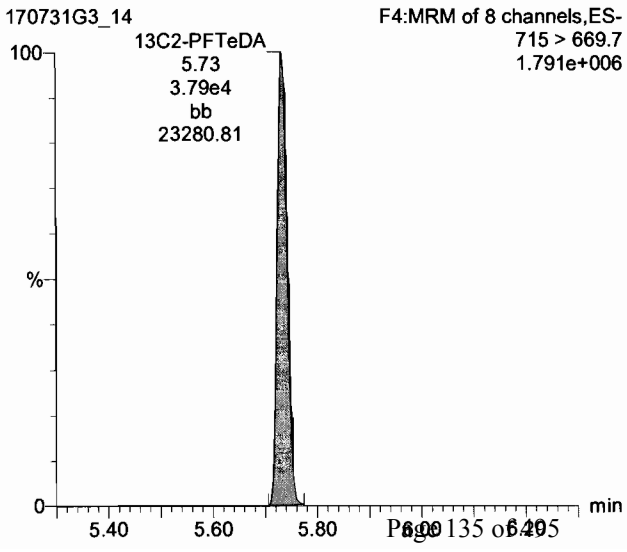
13C2-PFDoA



13C2-PFTeDA



13C2-PFTeDA

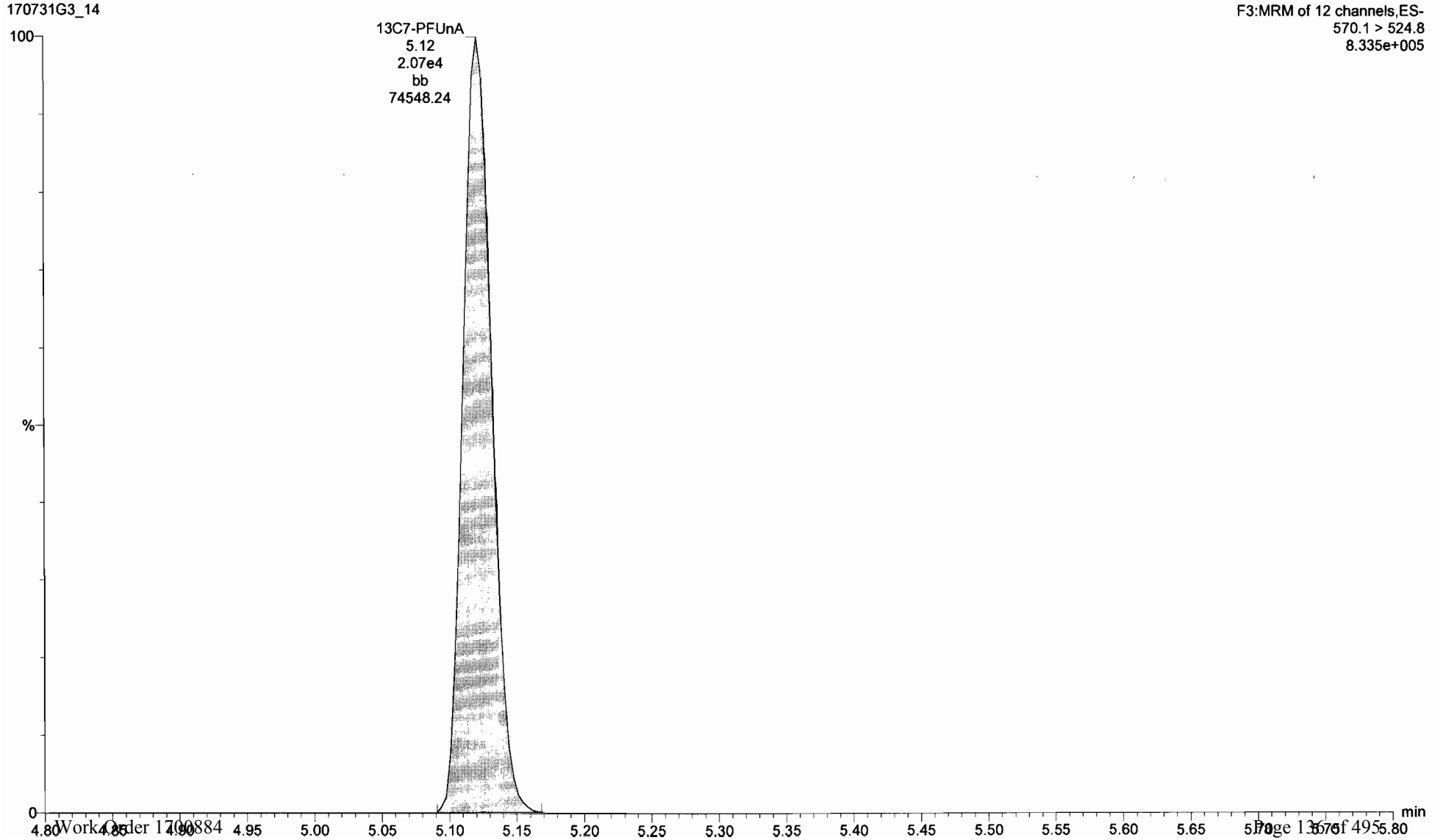


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Printed: Tuesday, August 01, 2017 13:17:15 Pacific Daylight Time

ID: ST170731G3-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B, Name: 170731G3_14, Date: 31-Jul-2017, Time: 19:53:14, Instrument: , Lab: , User:

13C7-PFUnA



Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-4.qld

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Printed: Monday, July 31, 2017 16:59:08 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170731G2_4, Date: 31-Jul-2017, Time: 10:12:39, ID: ST170731G2-2 PFC CS0 17G2609, Description: PFC CS0 17G2609 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	2.04e3	2.71e4		1.000	1.72	1.20	119.5
2	2	PFPeA	263.0 > 218.8	9.76e2	1.04e4		1.000	2.61	1.02	102.1
3	3	PFBS	299.0 > 79.7	1.05e3	6.54e3		1.000	2.88	0.876	87.6
4	4	PFHxA	312.9 > 268.9	1.47e3	8.61e3		1.000	3.27	1.04	104.2
5	5	PFHpA	363 > 318.9	2.10e3	1.12e4		1.000	3.81	1.07	107.2
6	6	PFHxS	398.9 > 79.6	1.01e3	6.09e3		1.000	3.94	1.10	110.0
7	7	PFOA	413.0 > 368.7	2.05e3	2.27e4		1.000	4.23	1.30	129.6
8	8	PFNA	463.0 > 418.8	1.88e3	1.07e4		1.000	4.57	0.914	91.4
9	9	PFOS	499.0 >79.9	3.63e2	1.03e4		1.000	4.63	0.872	87.2
10	10	PFDA	512.7 > 219.0	2.82e2	1.41e4		1.000	4.86	1.13	112.7
11	11	13C3-PFBA	215.9 > 171.8	2.71e4	2.54e4	1.183	1.000	1.71	11.3	90.3
12	12	13C3-PFBS	302.0 > 98.8	6.54e3	2.35e4	0.263	1.000	2.88	13.2	105.7
13	13	13C3-PFPeA	266.0 > 221.8	1.04e4	2.35e4	0.446	1.000	2.61	12.4	99.0
14	14	13C2-PFHxA	315.0 > 269.8	8.61e3	2.35e4	0.361	1.000	3.27	12.7	101.4
15	15	13C4-PFHpA	367.2 > 321.8	1.12e4	2.35e4	0.475	1.000	3.81	12.5	100.0
16	16	18O2-PFHxS	403 > 102.6	6.09e3	1.57e4	0.411	1.000	3.93	11.8	94.4
17	17	13C2-PFOA	414.9 > 369.7	2.27e4	8.50e3	2.843	1.000	4.23	11.7	94.0
18	18	13C5-PFNA	468.2 > 422.9	1.07e4	1.23e4	0.854	1.000	4.57	12.7	101.9
19	19	13C2-PFDA	514.8 > 469.7	1.41e4	9.51e3	1.742	1.000	4.86	10.6	84.8
20	20	13C8-PFOS	507.0 > 79.9	1.03e4	1.14e4	0.927	1.000	4.63	12.2	97.6
21	21	13C4-PFBA	216.9 > 171.8	2.54e4	2.54e4	1.000	1.000	1.71	12.5	100.0
22	22	13C5-PFHxA	318>272.9	2.35e4	2.35e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.57e4	1.57e4	1.000	1.000	3.93	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	8.50e3	8.50e3	1.000	1.000	4.22	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	1.23e4	1.23e4	1.000	1.000	4.57	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	1.14e4	1.14e4	1.000	1.000	4.63	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	9.51e3	9.51e3	1.000	1.000	4.86	12.5	100.0

70-130

50-150

7/31/17
7/31/17

Quantify Compound Summary Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 17:00:48 Pacific Daylight Time
Printed: Monday, July 31, 2017 17:00:55 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170731G2_1	IPA	31-Jul-17	09:32:17
2	170731G2_2	(A) ST170731G2-1 PFC CS-1 17G3103	31-Jul-17	09:44:30
3	170731G2_3	IPA	31-Jul-17	09:57:00
4	170731G2_4	ST170731G2-2 PFC CS0 17G2609	31-Jul-17	10:12:39
5	170731G2_5	IPA	31-Jul-17	10:24:52
6	170731G2_6	B7G0079-BS1 OPR 0.125	31-Jul-17	10:37:29
7	170731G2_7	IPA	31-Jul-17	10:50:03
8	170731G2_8	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	11:02:39
9	170731G2_9	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	11:15:11
10	170731G2_10	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	11:27:45
11	170731G2_11	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	11:40:15
12	170731G2_12	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	11:52:47
13	170731G2_13	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	12:05:21
14	170731G2_14	IPA	31-Jul-17	12:17:54
15	170731G2_15	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	12:30:29
16	170731G2_16	1700887-05@5X Building 110-GW-110GW01-...	31-Jul-17	12:43:01
17	170731G2_17	IPA	31-Jul-17	12:55:34
18	170731G2_18	ST170731G2-3 PFC CS3 17G3104	31-Jul-17	13:08:18
19	170731G2_19	IPA	31-Jul-17	13:20:57

(A) INJECTION NOT USED. KM 7/31/17

LC Calibration Standards Review Checklist Q1

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID: ST170731G2 - 2	(L) M H	NA ☐	☑	☑	☑	☑	☑	☐
Calibration ID: - 3	L (M) H	☑	☑	☑	☑	☑	☑	☑
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:	L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/5/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: GC 7/31/17
Initials/Date

Comments:

A L16 - 2 TRANS

Vista Analytical Laboratory Q1

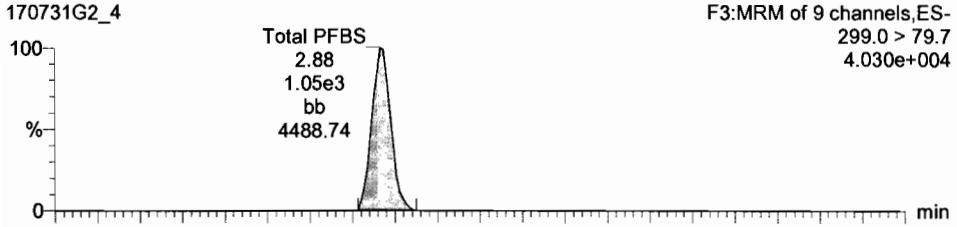
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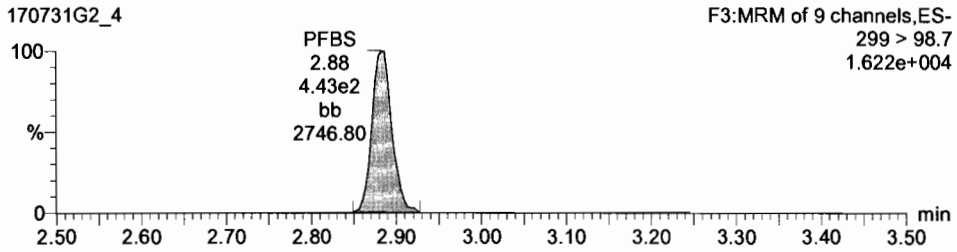
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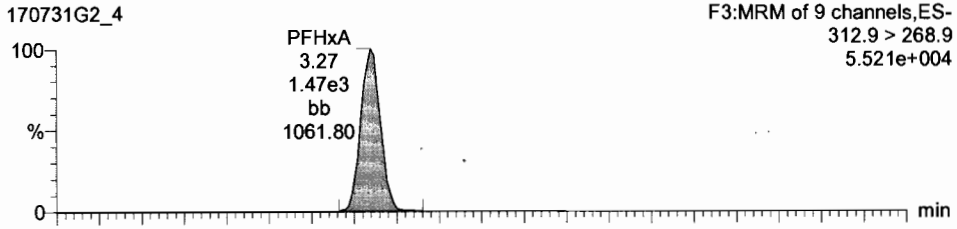
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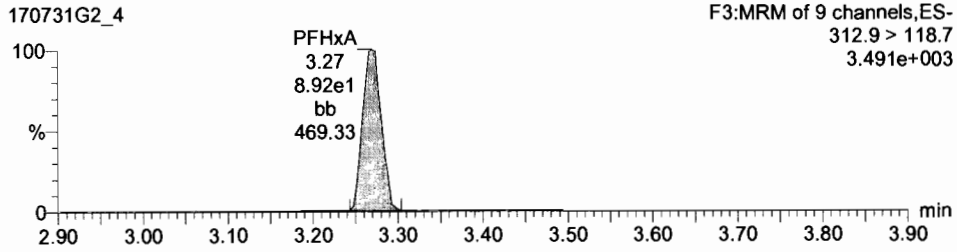
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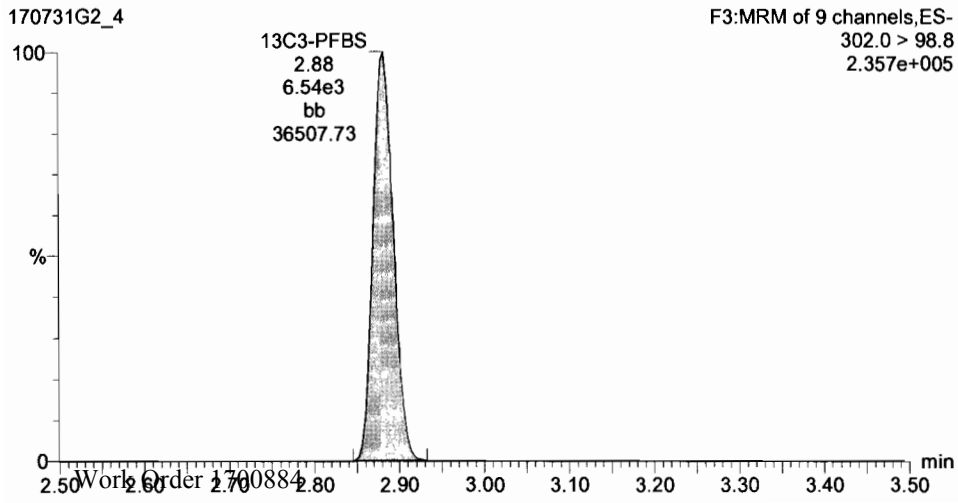


PFHxA

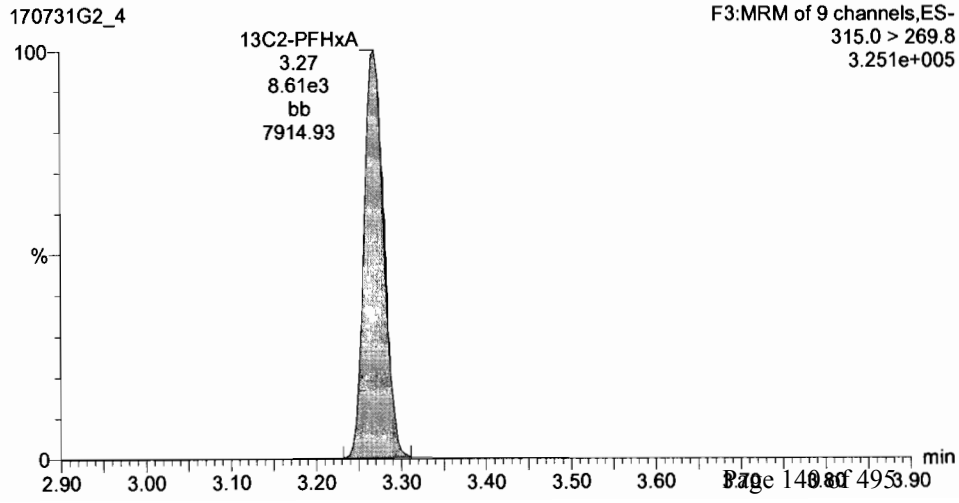




13C3-PFBS



13C2-PFHxA

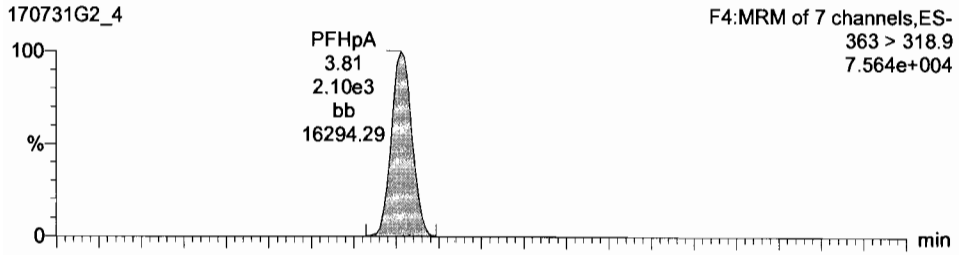


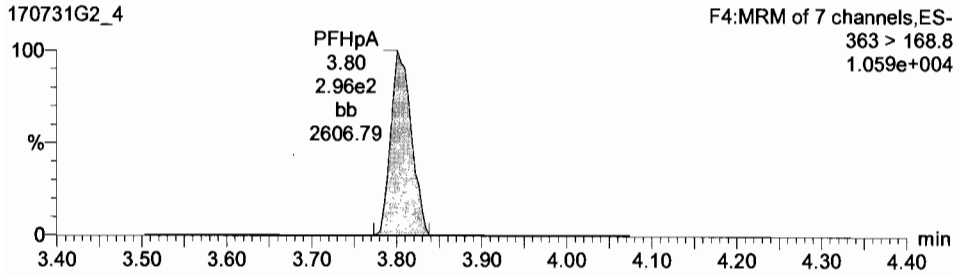
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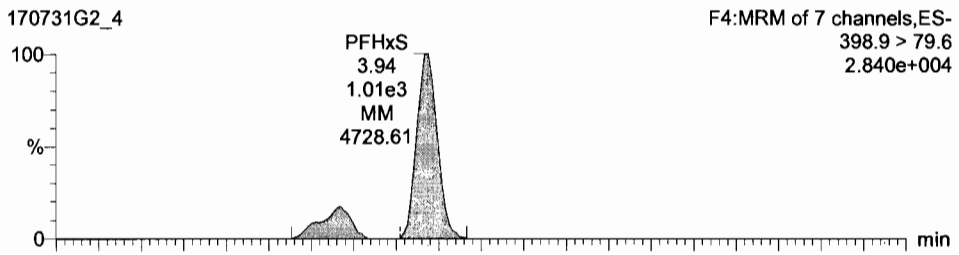
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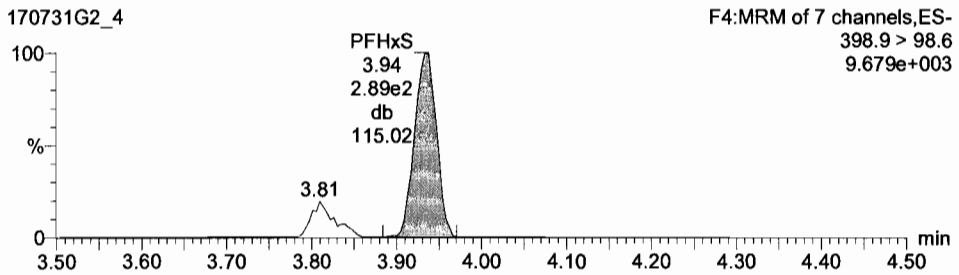
PFHpA



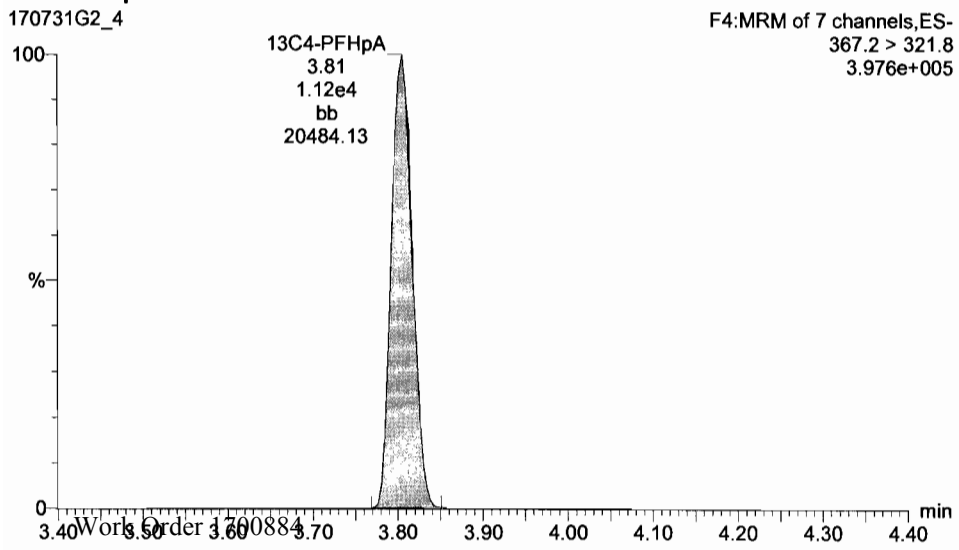


Total PFHxS

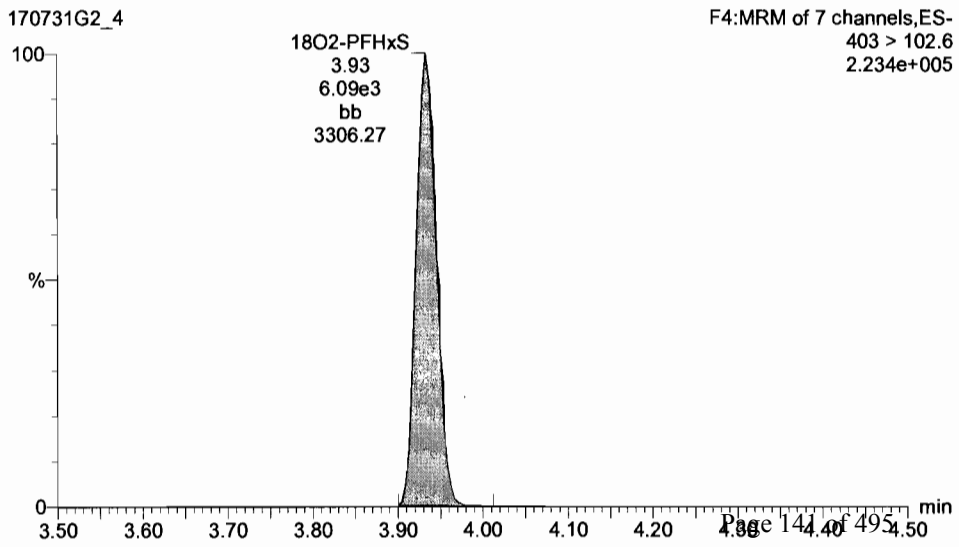




13C4-PFHpA



18O2-PFHxS

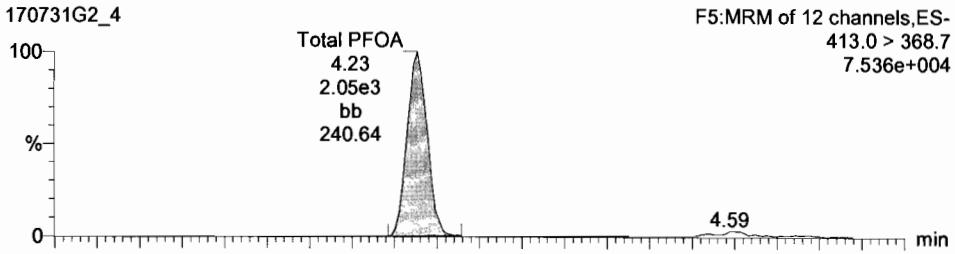


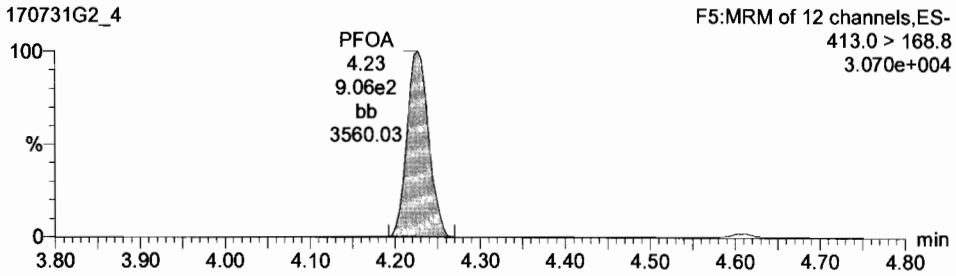
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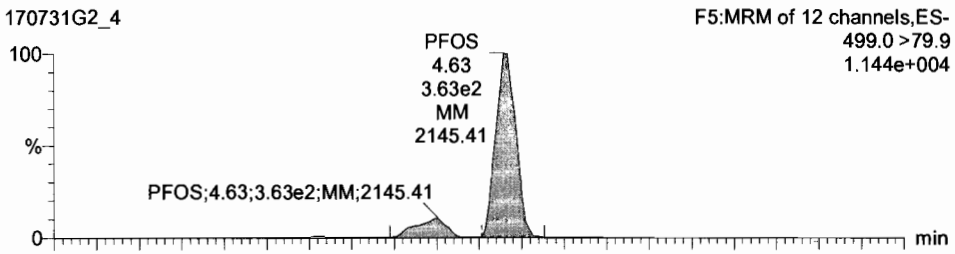
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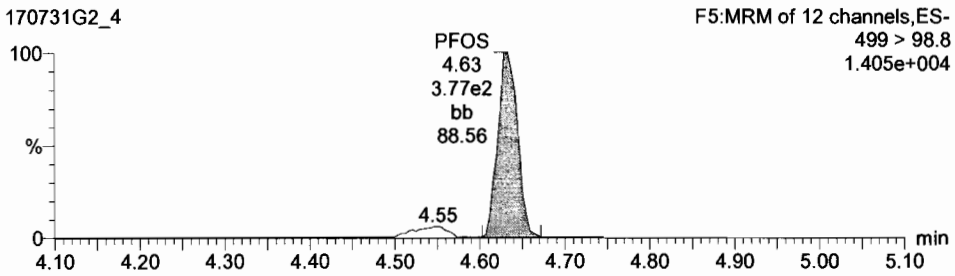
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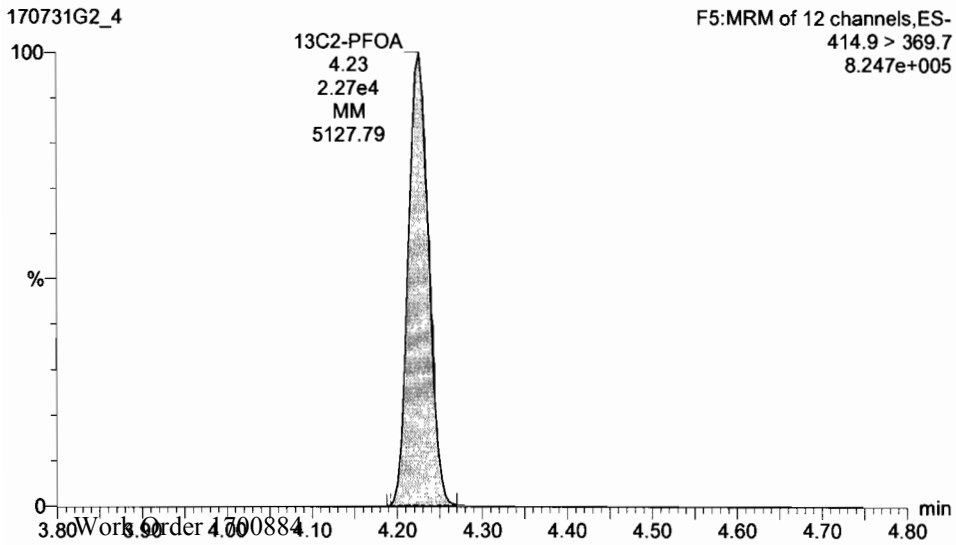


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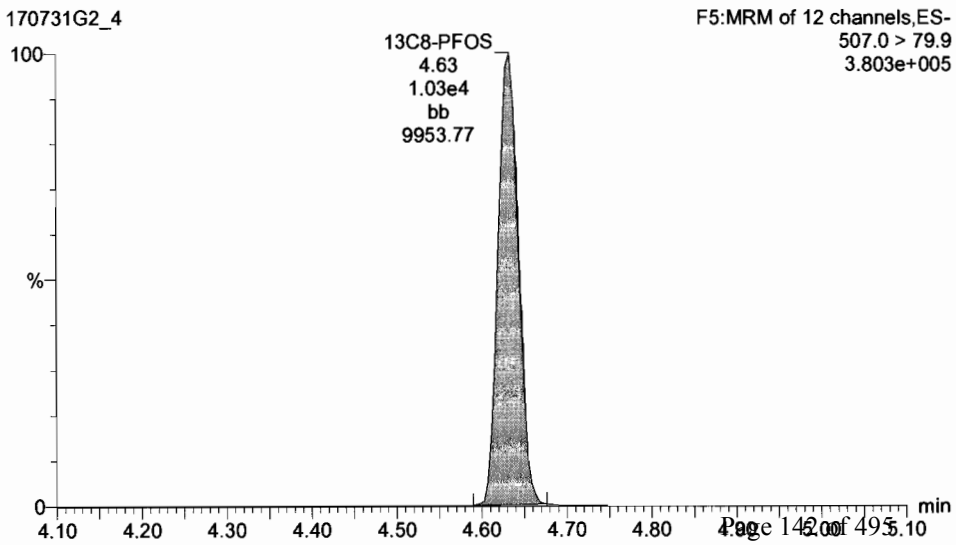




13C2-PFOA



13C8-PFOS

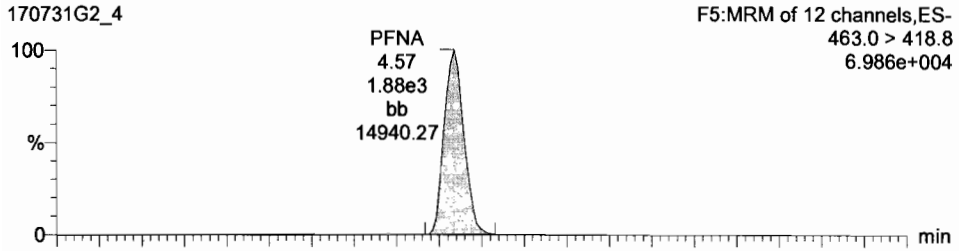


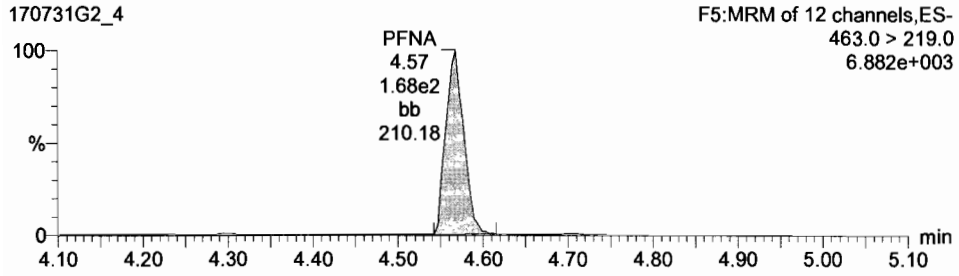
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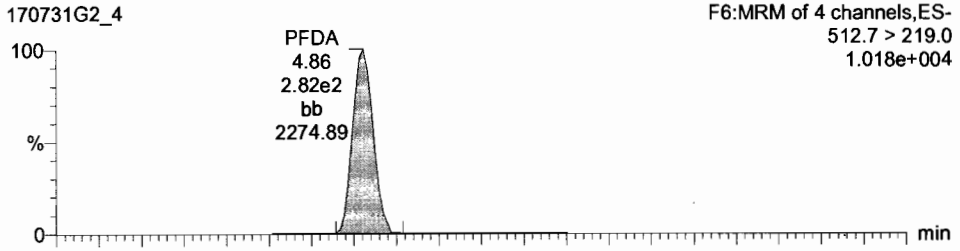
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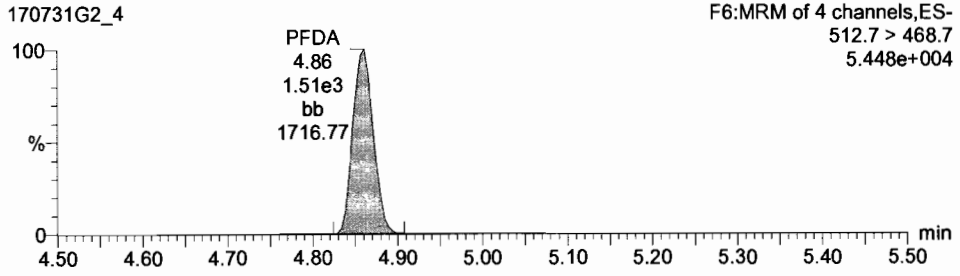
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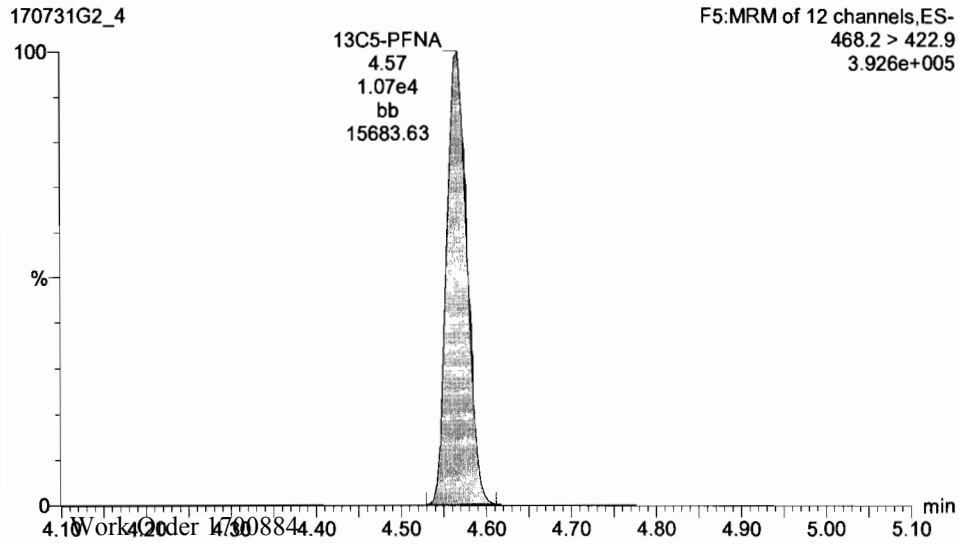


PFDA

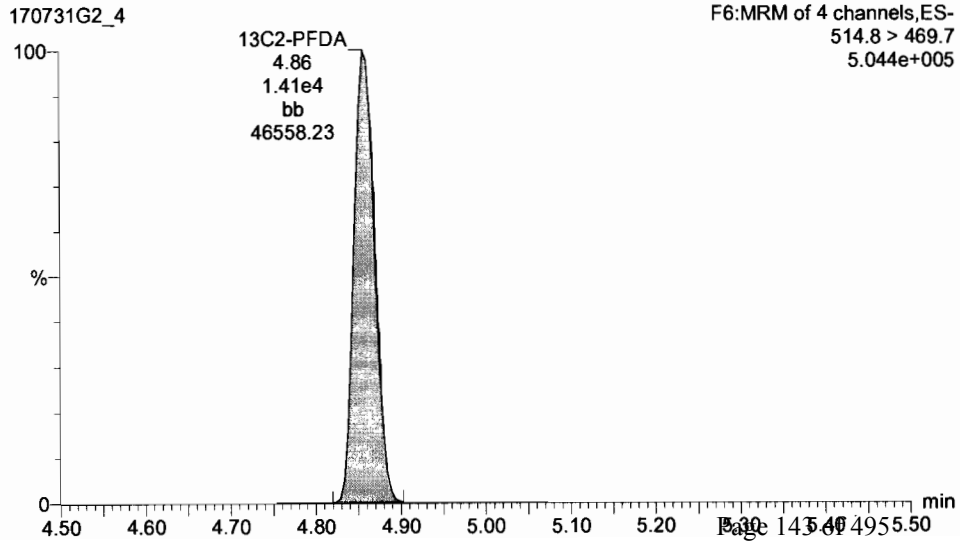




13C5-PFNA



13C2-PFDA

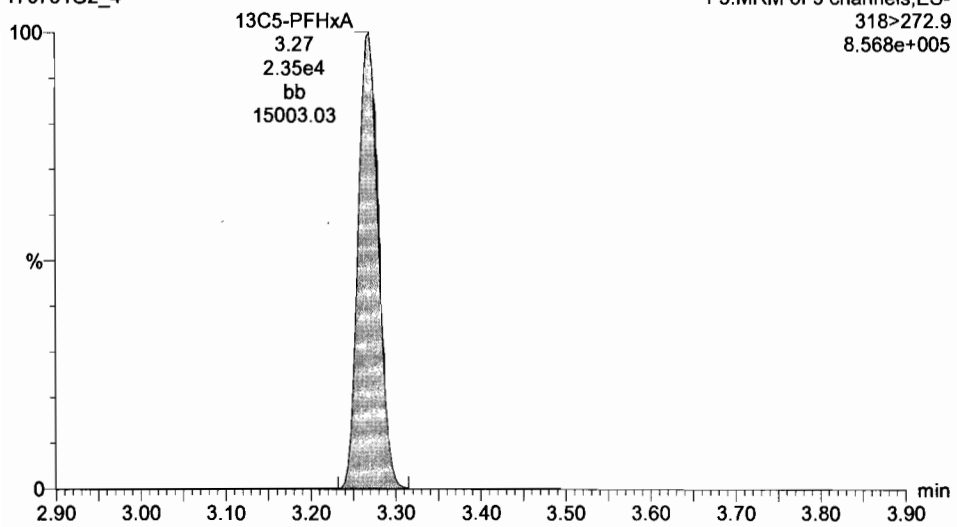


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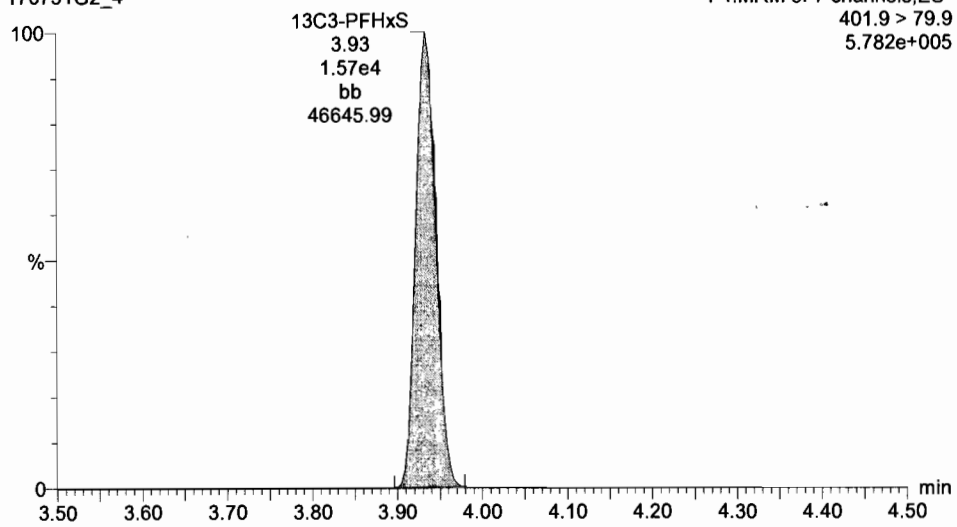
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ID: ST170731G2-2 PFC CS0 17G2609, Description: PFC CS0 17G2609 A, Name: 170731G2_4, Date: 31-Jul-2017, Time: 10:12:39, Instrument: , Lab: , User:

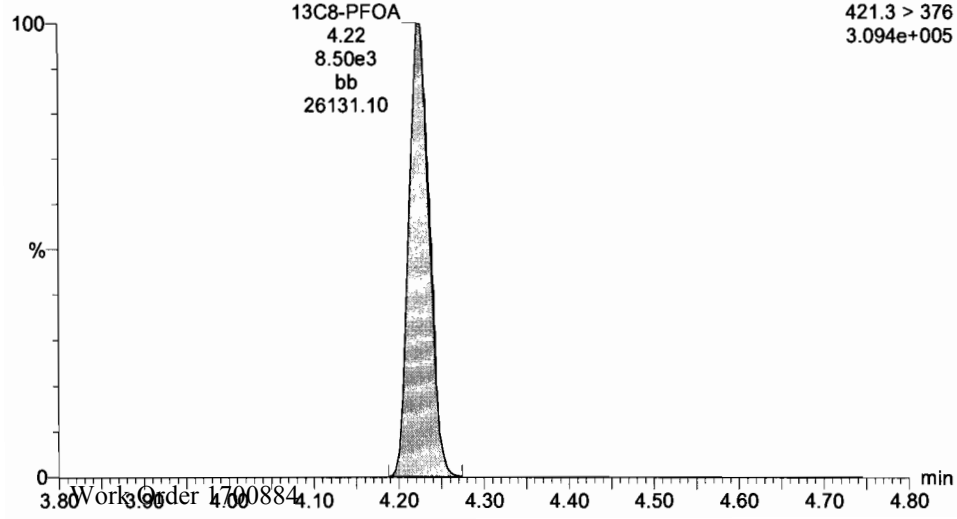
13C5-PFHxA



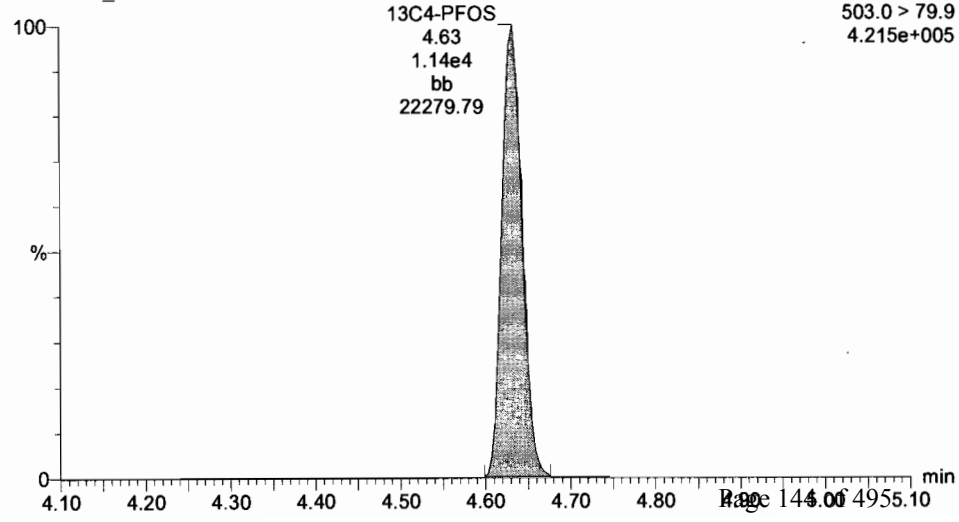
13C3-PFHxS



13C8-PFOA



13C4-PFOS

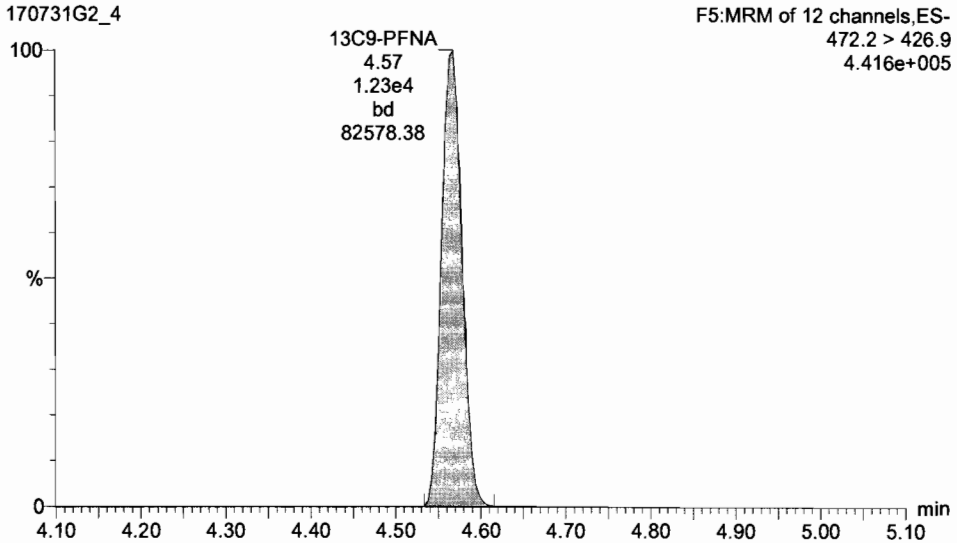


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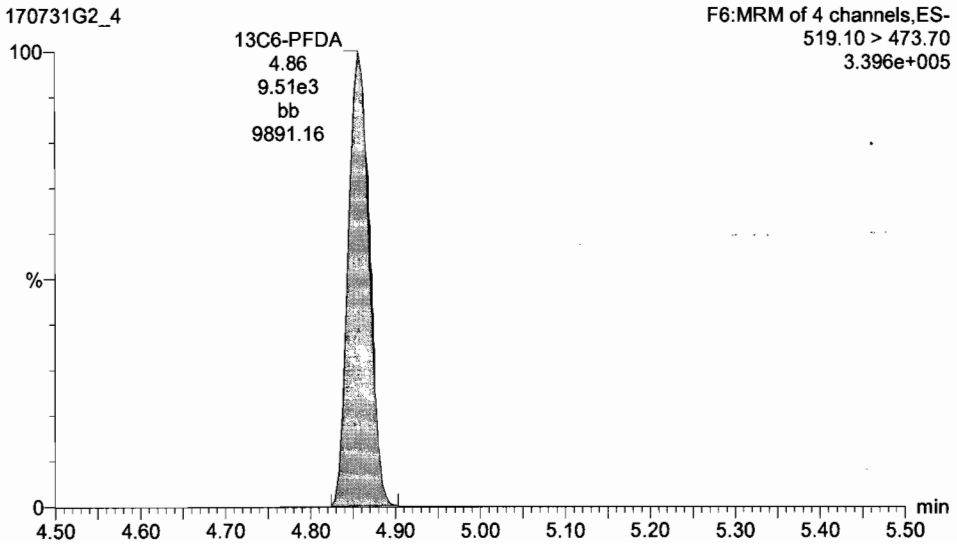
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ID: ST170731G2-2 PFC CS0 17G2609, Description: PFC CS0 17G2609 A, Name: 170731G2_4, Date: 31-Jul-2017, Time: 10:12:39, Instrument: , Lab: , User:

13C9-PFNA



13C6-PFDA



Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-18.qld

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Printed: Monday, July 31, 2017 16:59:22 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170731G2_18, Date: 31-Jul-2017, Time: 13:08:18, ID: ST170731G2-3 PFC CS3 17G3104, Description: PFC CS3 17G3104 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.58e4	2.75e4		1.000	1.65	9.51	95.1
2	2	PFPeA	263.0 > 218.8	7.67e3	9.65e3		1.000	2.61	8.98	89.8
3	3	PFBS	299.0 > 79.7	7.98e3	5.93e3		1.000	2.89	10.1	100.9
4	4	PFHxA	312.9 > 268.9	1.18e4	9.05e3		1.000	3.27	8.51	85.1
5	5	PFHpA	363 > 318.9	1.70e4	1.11e4		1.000	3.81	9.73	97.3
6	6	PFHxS	398.9 > 79.6	8.10e3	6.04e3		1.000	3.94	9.36	93.6
7	7	PFOA	413.0 > 368.7	1.57e4	2.40e4		1.000	4.23	10.2	101.7
8	8	PFNA	463.0 > 418.8	1.73e4	1.05e4		1.000	4.57	8.85	88.5
9	9	PFOS	499.0 >79.9	3.95e3	1.26e4		1.000	4.63	8.24	82.4
10	10	PFDA	512.7 > 219.0	2.93e3	2.04e4		1.000	4.86	8.98	89.8
11	11	13C3-PFBA	215.9 > 171.8	2.75e4	1.93e4	1.183	1.000	1.64	15.1	121.0
12	12	13C3-PFBS	302.0 > 98.8	5.93e3	1.93e4	0.263	1.000	2.89	14.6	116.8
13	13	13C3-PFPeA	266.0 > 221.8	9.65e3	1.93e4	0.446	1.000	2.61	14.0	111.9
14	14	13C2-PFHxA	315.0 > 269.8	9.05e3	1.93e4	0.361	1.000	3.27	16.3	130.1
15	15	13C4-PFHpA	367.2 > 321.8	1.11e4	1.93e4	0.475	1.000	3.81	15.1	120.5
16	16	18O2-PFHxS	403 > 102.6	6.04e3	1.20e4	0.411	1.000	3.94	15.3	122.7
17	17	13C2-PFOA	414.9 > 369.7	2.40e4	6.61e3	2.843	1.000	4.23	16.0	127.7
18	18	13C5-PFNA	468.2 > 422.9	1.05e4	9.53e3	0.854	1.000	4.57	16.2	129.5
19	19	13C2-PFDA	514.8 > 469.7	2.04e4	1.05e4	1.742	1.000	4.86	14.0	111.9
20	20	13C8-PFOS	507.0 > 79.9	1.26e4	1.12e4	0.927	1.000	4.63	15.2	121.6
21	21	13C4-PFBA	216.9 > 171.8	1.93e4	1.93e4	1.000	1.000	1.64	12.5	100.0
22	22	13C5-PFHxA	318>272.9	1.93e4	1.93e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.20e4	1.20e4	1.000	1.000	3.94	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	6.61e3	6.61e3	1.000	1.000	4.23	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	9.53e3	9.53e3	1.000	1.000	4.57	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	1.12e4	1.12e4	1.000	1.000	4.63	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	1.05e4	1.05e4	1.000	1.000	4.86	12.5	100.0

70-130

50-150

7/31/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

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Printed: Monday, July 31, 2017 17:00:55 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170731G2_1	IPA	31-Jul-17	09:32:17
2	170731G2_2	(A) ST170731G2-1 PFC CS-1 17G3103	31-Jul-17	09:44:30
3	170731G2_3	IPA	31-Jul-17	09:57:00
4	170731G2_4	ST170731G2-2 PFC CS0 17G2609	31-Jul-17	10:12:39
5	170731G2_5	IPA	31-Jul-17	10:24:52
6	170731G2_6	B7G0079-BS1 OPR 0.125	31-Jul-17	10:37:29
7	170731G2_7	IPA	31-Jul-17	10:50:03
8	170731G2_8	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	11:02:39
9	170731G2_9	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	11:15:11
10	170731G2_10	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	11:27:45
11	170731G2_11	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	11:40:15
12	170731G2_12	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	11:52:47
13	170731G2_13	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	12:05:21
14	170731G2_14	IPA	31-Jul-17	12:17:54
15	170731G2_15	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	12:30:29
16	170731G2_16	1700887-05@5X Building 110-GW-110GW01-...	31-Jul-17	12:43:01
17	170731G2_17	IPA	31-Jul-17	12:55:34
18	170731G2_18	ST170731G2-3 PFC CS3 17G3104	31-Jul-17	13:08:18
19	170731G2_19	IPA	31-Jul-17	13:20:57

(A) INJECTION NOT USED. KM 7/31/17

Vista Analytical Laboratory Q1

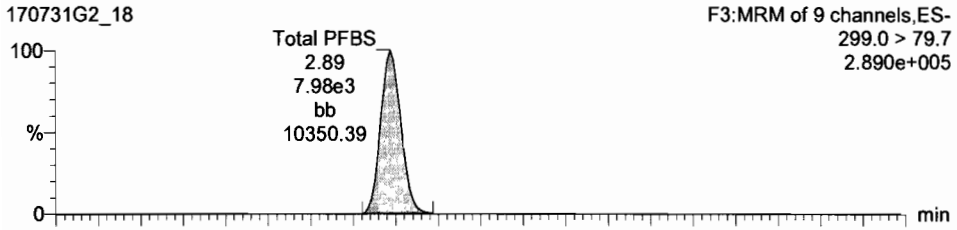
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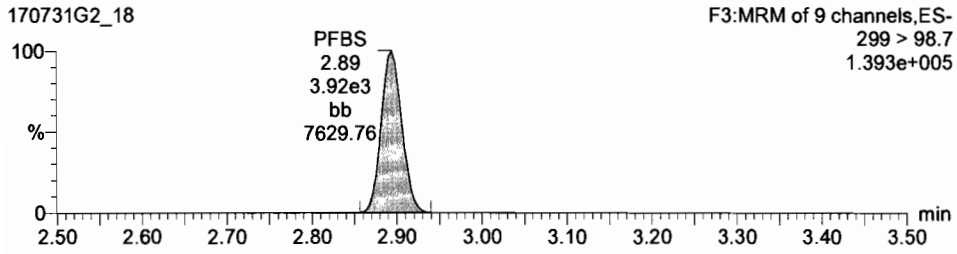
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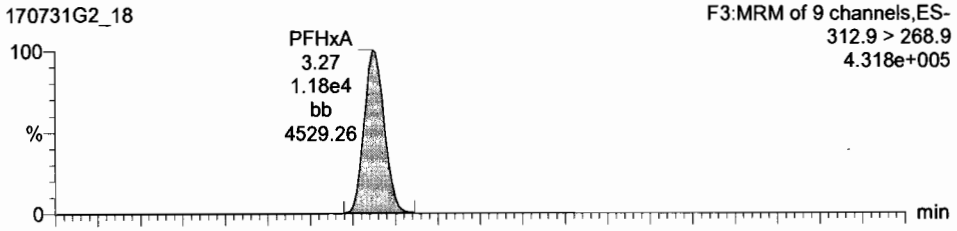
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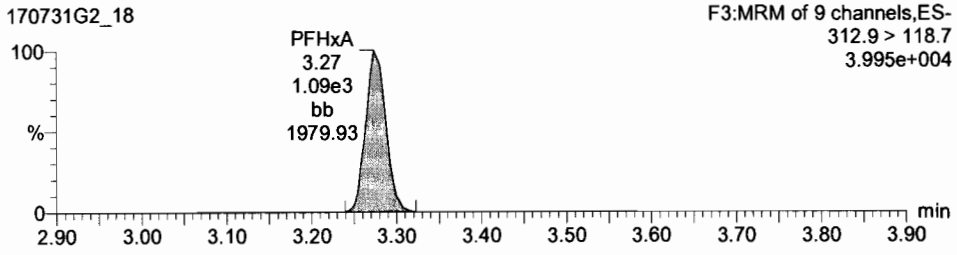
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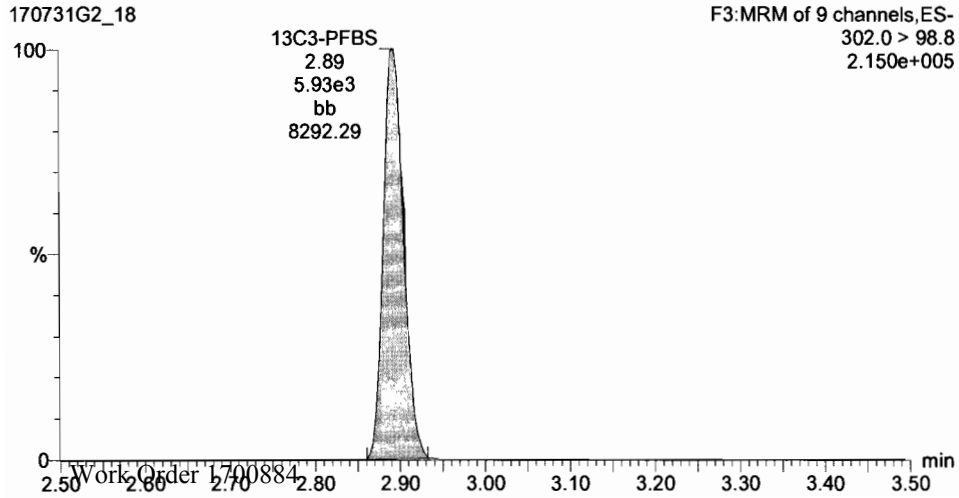


PFHxA

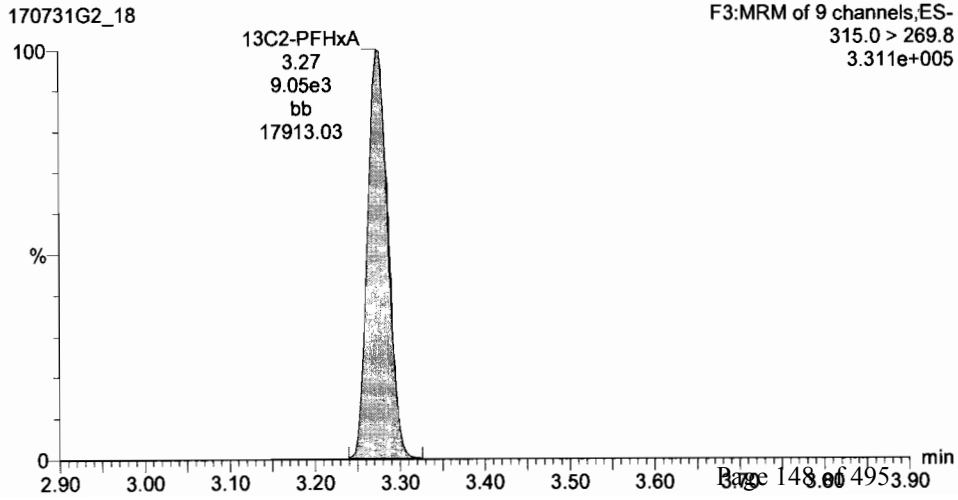




13C3-PFBS



13C2-PFHxA

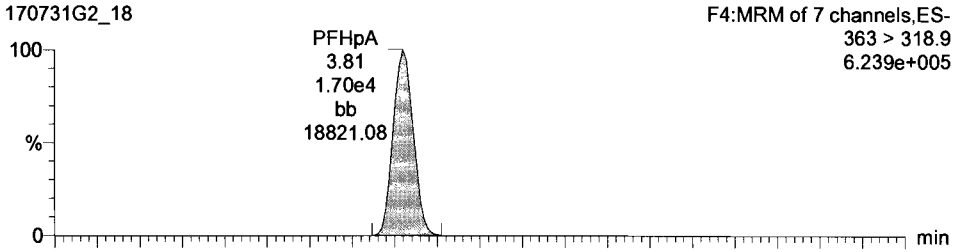


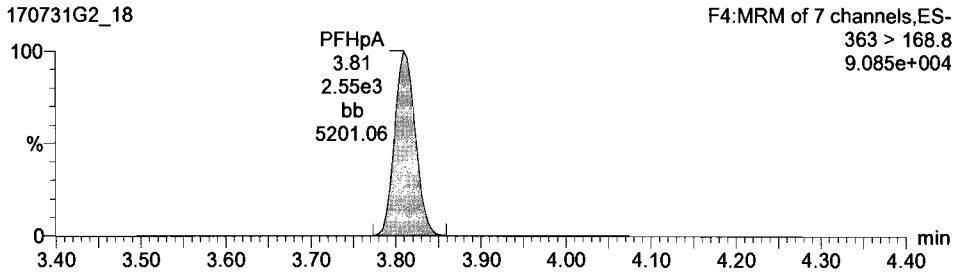
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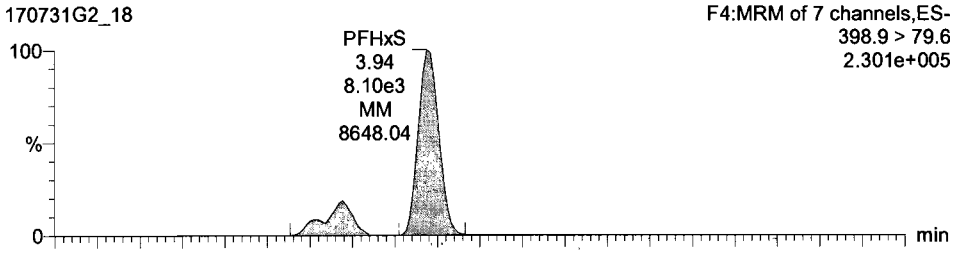
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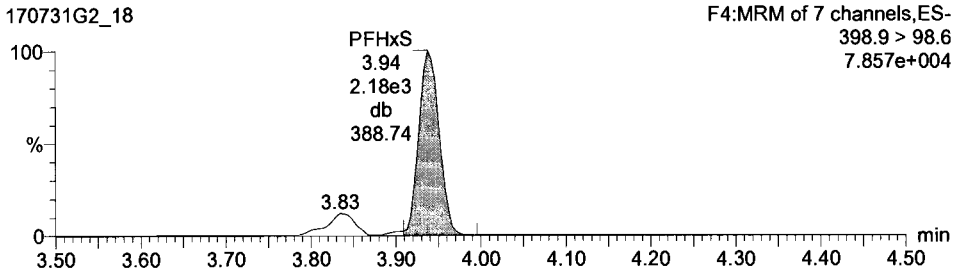
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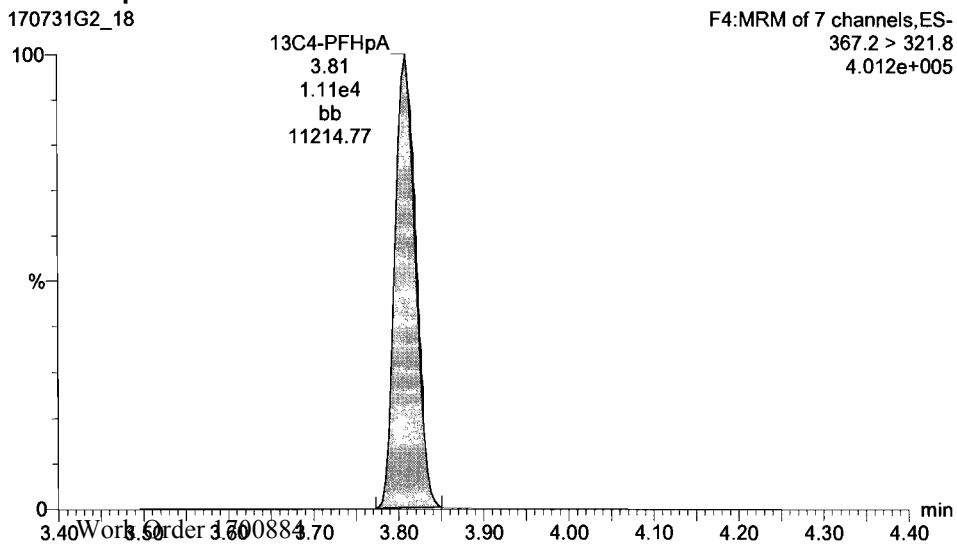


Total PFHxS

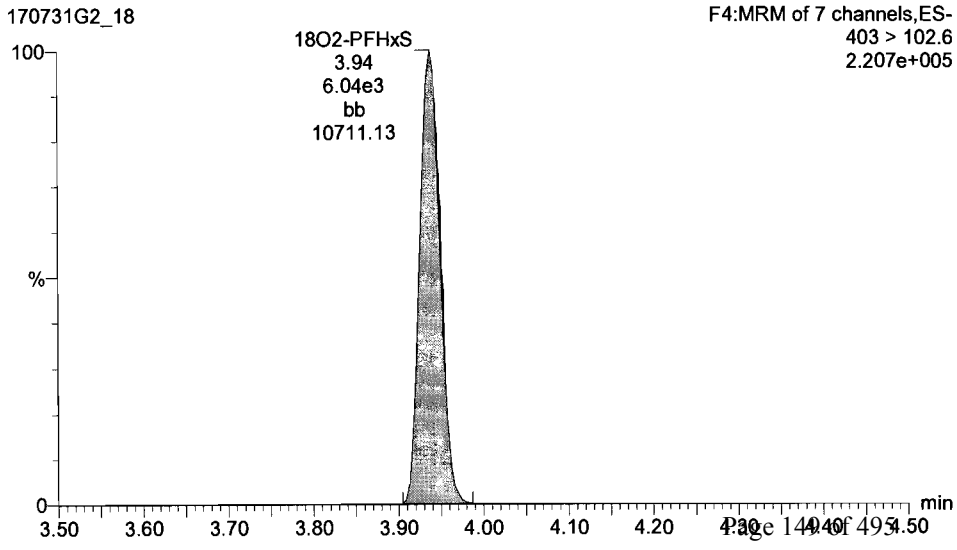




13C4-PFHpA



18O2-PFHxS

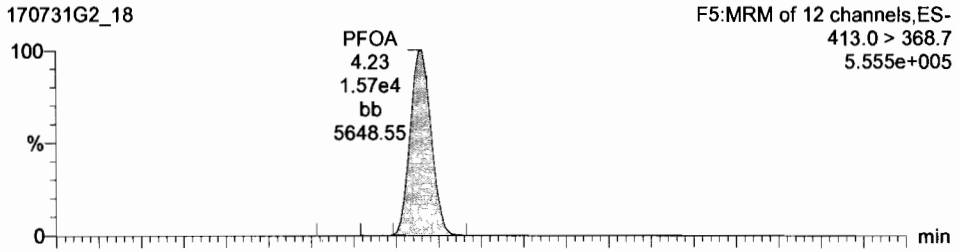


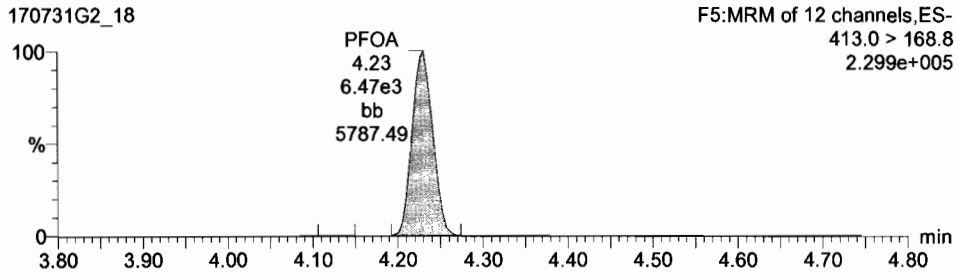
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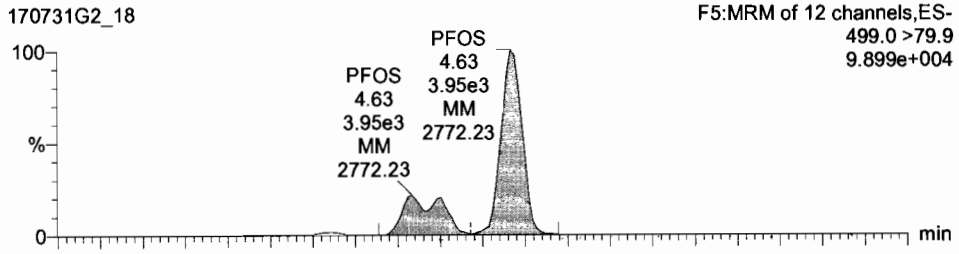
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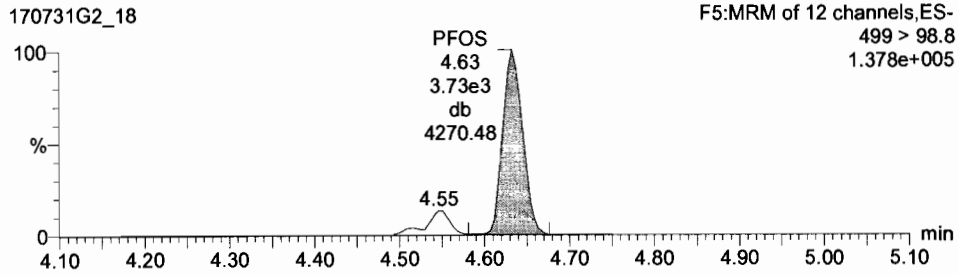
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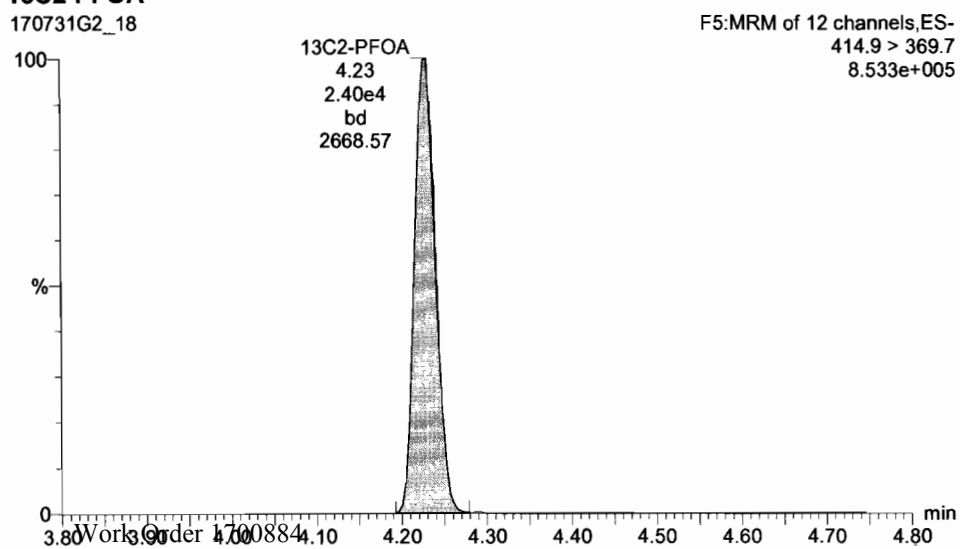


Total PFOS

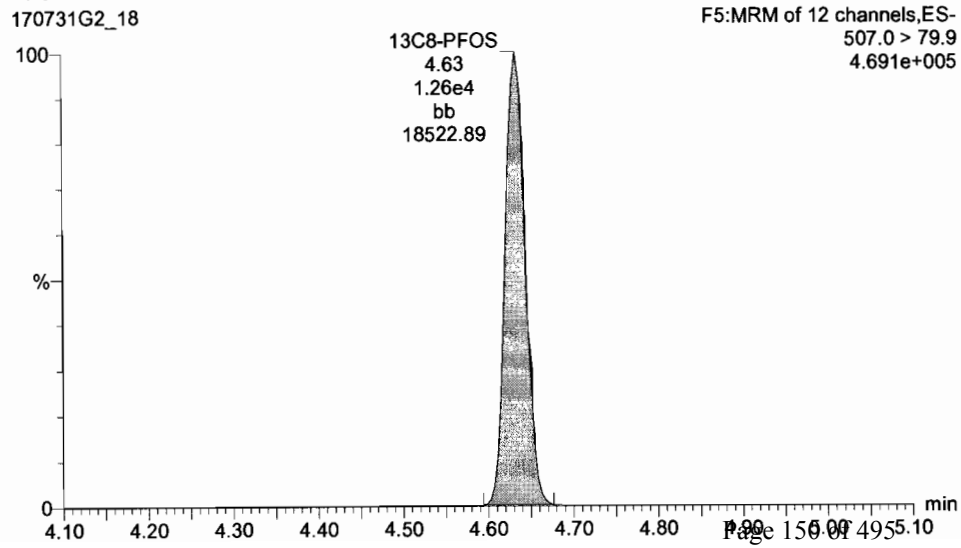




13C2-PFOA



13C8-PFOS

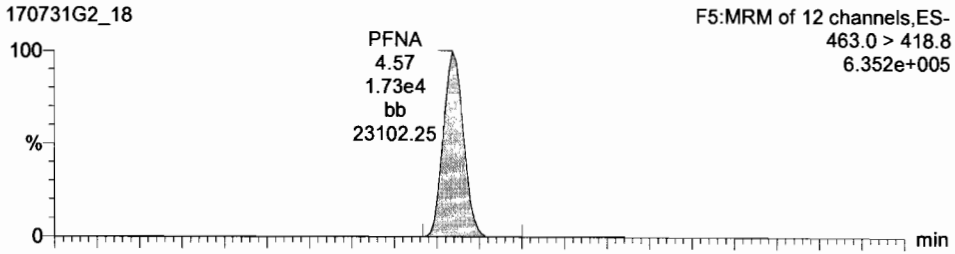


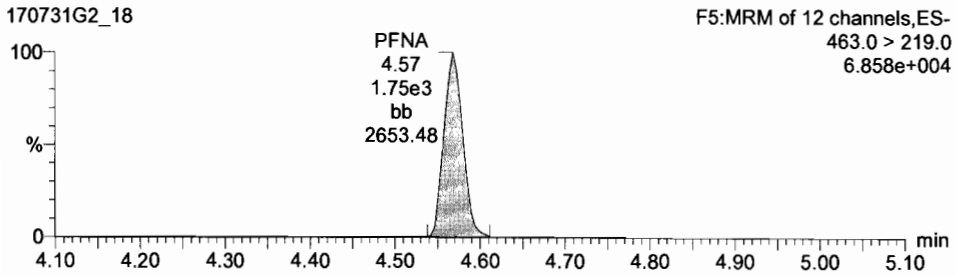
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Printed: Monday, July 31, 2017 16:59:33 Pacific Daylight Time

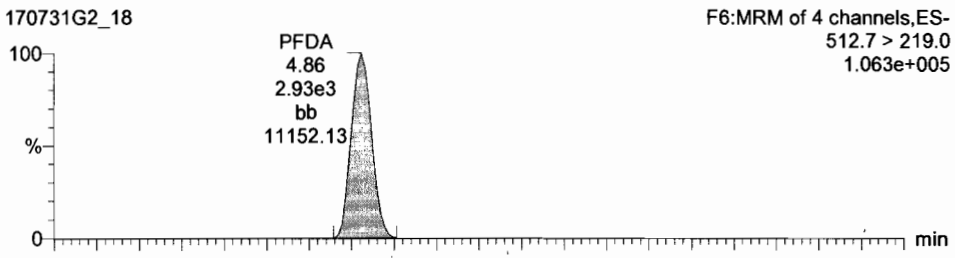
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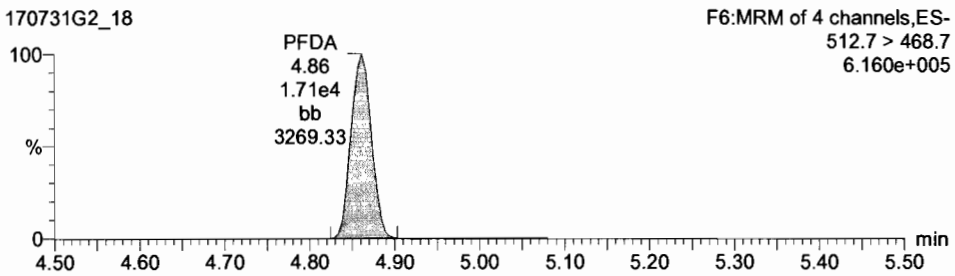
PFNA



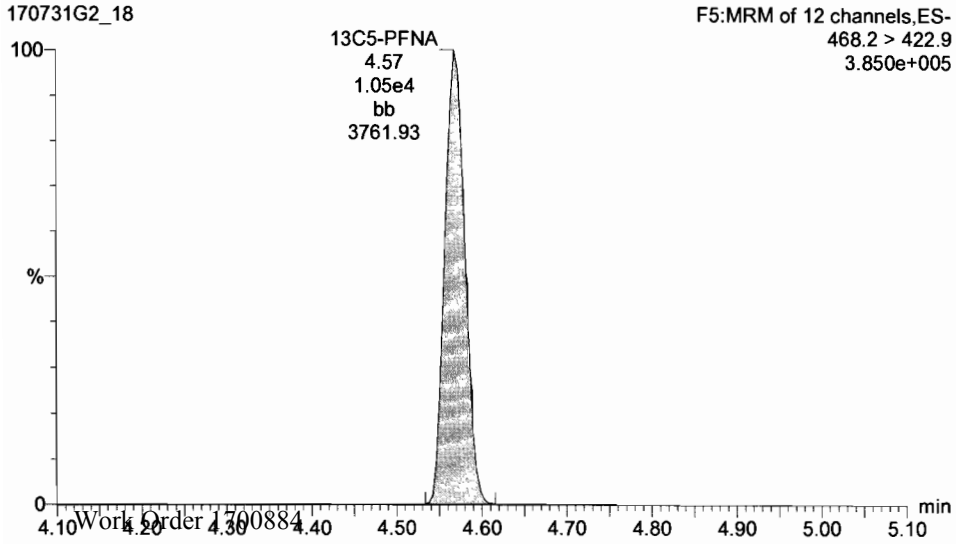


PFDA

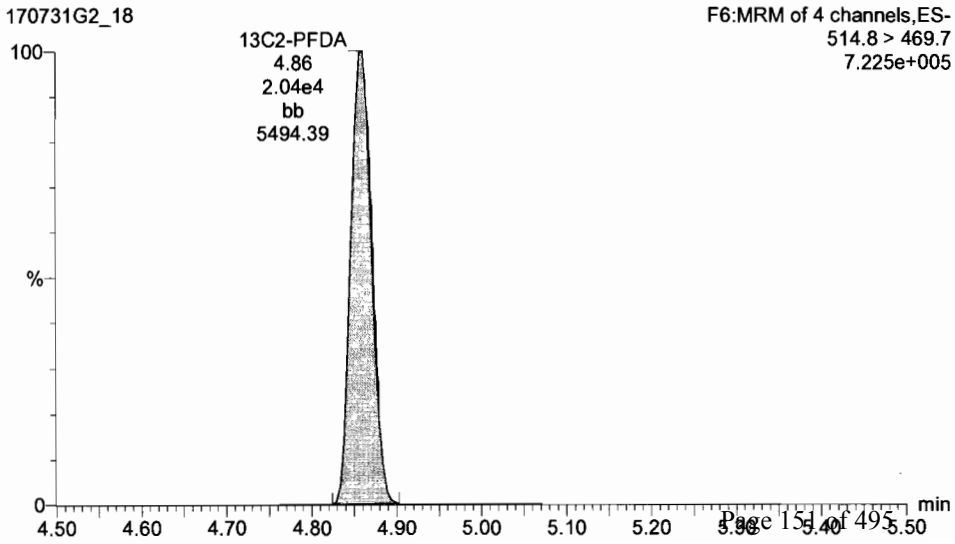




13C5-PFNA



13C2-PFDA

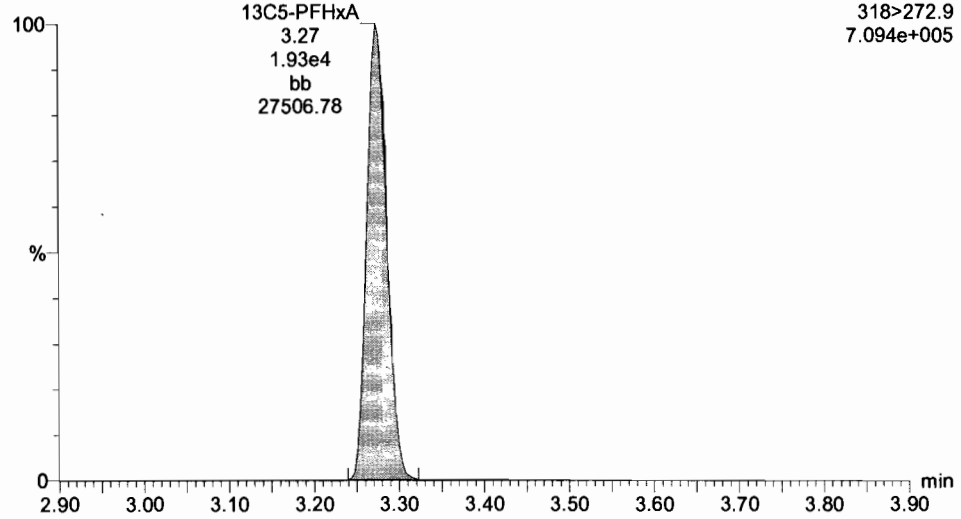


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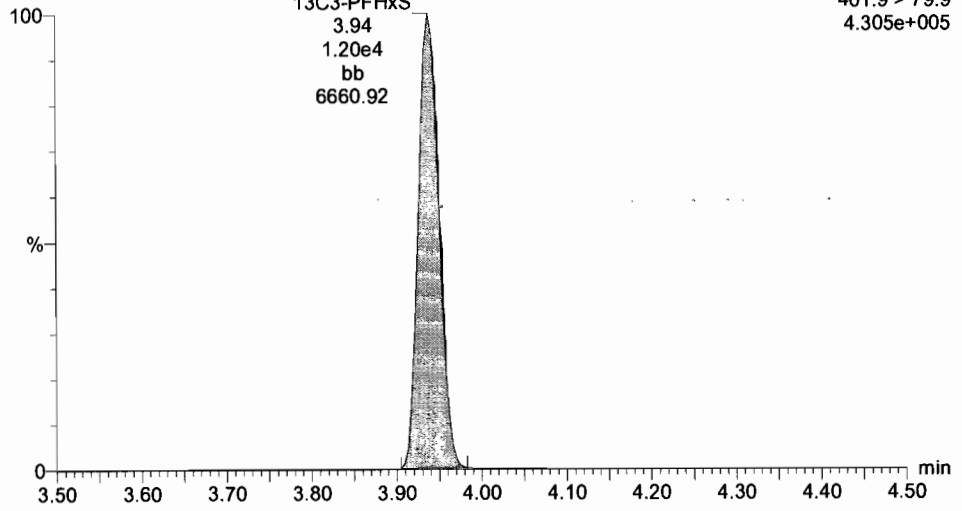
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Printed: Monday, July 31, 2017 16:59:33 Pacific Daylight Time

ID: ST170731G2-3 PFC CS3 17G3104, Description: PFC CS3 17G3104 A, Name: 170731G2_18, Date: 31-Jul-2017, Time: 13:08:18, Instrument: , Lab: , User:

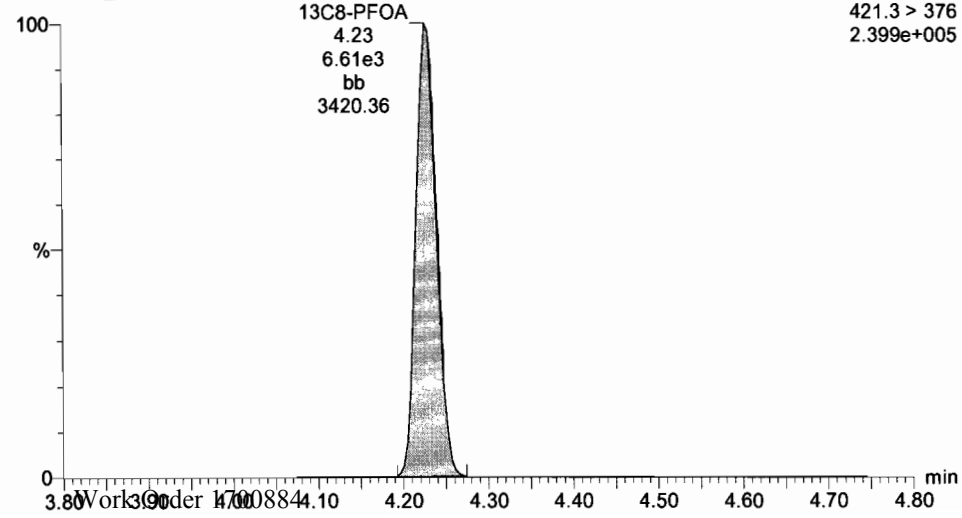
13C5-PFHxA



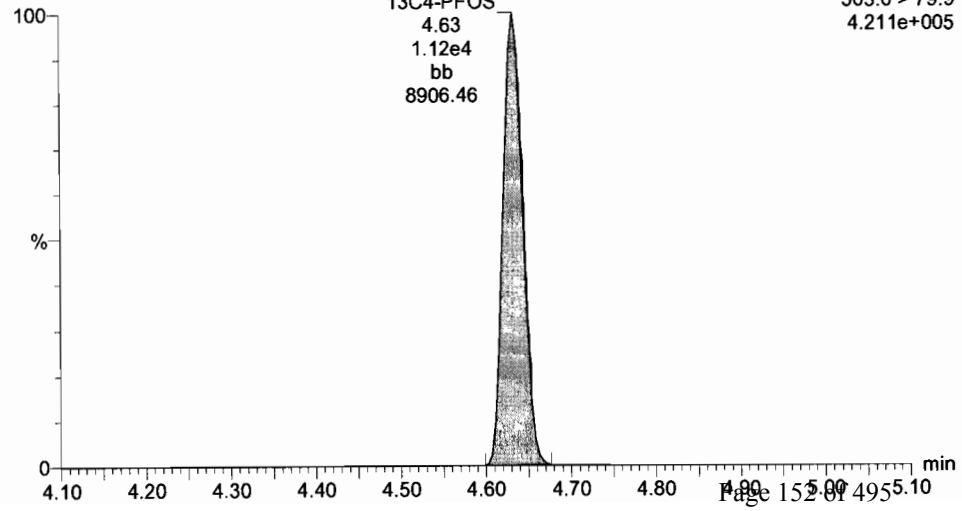
13C3-PFHxS



13C8-PFOA



13C4-PFOS

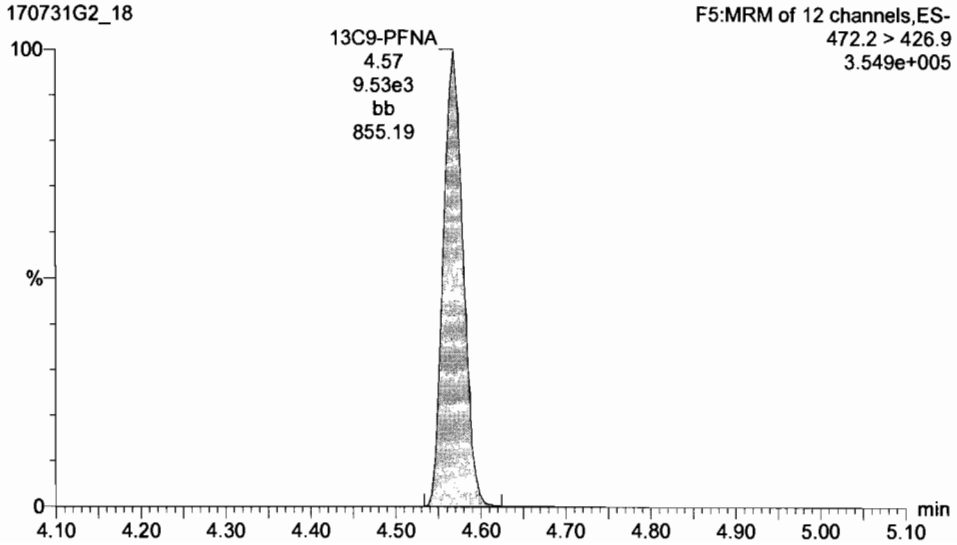


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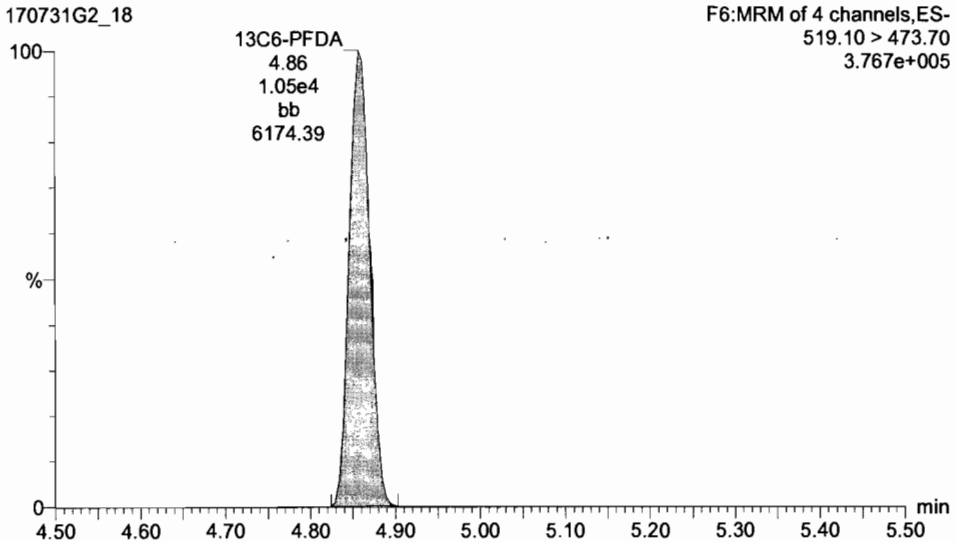
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13C9-PFNA



13C6-PFDA



Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-2.qld

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170803G2_2, Date: 03-Aug-2017, Time: 17:07:10, ID: ST170803G2-1 PFC CS3 17H0329, Description: PFC CS3 17H0329 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.49e4	2.48e4		1.000	1.63	10.0	100.1
2	2	PFPeA	263.0 > 218.8	7.14e3	8.84e3		1.000	2.60	9.13	91.3
3	3	PFBS	299.0 > 79.7	6.90e3	5.32e3		1.000	2.89	9.73	97.3
4	4	PFHxA	312.9 > 268.9	1.09e4	7.71e3		1.000	3.27	9.19	91.9
5	5	PFHpA	363 > 318.9	1.34e4	8.88e3		1.000	3.80	9.55	95.5
6	6	PFHxS	398.9 > 79.6	6.66e3	4.90e3		1.000	3.93	9.49	94.9
7	7	PFOA	413.0 > 368.7	1.16e4	1.80e4		1.000	4.23	10.0	100.1
8	8	PFNA	463.0 > 418.8	1.23e4	8.18e3		1.000	4.57	8.12	81.2
9	9	PFOS	499.0 >79.9	3.08e3	8.64e3		1.000	4.64	9.41	94.1
10	10	PFDA	512.7 > 219.0	1.64e3	1.18e4		1.000	4.87	8.68	86.8
11	11	13C3-PFBA	215.9 > 171.8	2.48e4	1.77e4	1.183	1.000	1.63	14.8	118.1
12	12	13C3-PFBS	302.0 > 98.8	5.32e3	1.68e4	0.263	1.000	2.89	15.1	120.8
13	13	13C3-PFPeA	266.0 > 221.8	8.84e3	1.68e4	0.446	1.000	2.60	14.8	118.1
14	14	13C2-PFHxA	315.0 > 269.8	7.71e3	1.68e4	0.361	1.000	3.27	16.0	127.6
15	15	13C4-PFHpA	367.2 > 321.8	8.88e3	1.68e4	0.475	1.000	3.80	13.9	111.5
16	16	18O2-PFHxS	403 > 102.6	4.90e3	9.18e3	0.411	1.000	3.93	16.3	130.1
17	17	13C2-PFOA	414.9 > 369.7	1.80e4	5.51e3	2.843	1.000	4.23	14.4	115.1
18	18	13C5-PFNA	468.2 > 422.9	8.18e3	7.16e3	0.854	1.000	4.57	16.7	133.8
19	19	13C2-PFDA	514.8 > 469.7	1.18e4	6.57e3	1.742	1.000	4.86	12.9	103.4
20	20	13C8-PFOS	507.0 > 79.9	8.64e3	7.83e3	0.927	1.000	4.64	14.9	119.0
21	21	13C4-PFBA	216.9 > 171.8	1.77e4	1.77e4	1.000	1.000	1.63	12.5	100.0
22	22	13C5-PFHxA	318>272.9	1.68e4	1.68e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	9.18e3	9.18e3	1.000	1.000	3.93	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	5.51e3	5.51e3	1.000	1.000	4.23	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	7.16e3	7.16e3	1.000	1.000	4.57	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	7.83e3	7.83e3	1.000	1.000	4.64	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	6.57e3	6.57e3	1.000	1.000	4.86	12.5	100.0

70-130

50-150

8/4/17

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
1	170803G2_1	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
2	170803G2_2	ST170803G2-1 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
3	170803G2_3	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
4	170803G2_4	B7H0015-BS1 OPR 1	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:1
5	170803G2_5	B7H0018-BS1 OPR 0.125	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:2
6	170803G2_6	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
7	170803G2_7	B7H0015-BLK1 Method Blank 1	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:3
8	170803G2_8	B7H0018-BLK1 Method Blank 0.125	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:4
9	170803G2_9	1700884-01 MW-37BR-20170714 0.11935	MW-37BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:5
10	170803G2_10	1700884-02 MW-32BR-20170714 0.11989	MW-32BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:6
11	170803G2_11	1700884-03 MW-35S-20170714 0.11984	MW-35S-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:7
12	170803G2_12	1700884-04 FRB-02-20170714 0.11984	FRB-02-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:8
13	170803G2_13	1700942-02@5X BANGR-05-SB03-10-12 1	BANGR-05-SB03-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:9
14	170803G2_14	1700942-03@5X BANGR-07-SB02-2-4 1	BANGR-07-SB02-2-4	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:10
15	170803G2_15	1700942-04@5X BANGR-07-SB02-8-9 1	BANGR-07-SB02-8-9	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:11
16	170803G2_16	1700942-07@5X BANGR-08-SB03-0-2 1	BANGR-08-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:12
17	170803G2_17	1700955-01 BANGR-05-SB01-0-2 1	BANGR-05-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:13
18	170803G2_18	1700955-02 BANGR-05-SB01-10-12 1	BANGR-05-SB01-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:14
19	170803G2_19	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
20	170803G2_20	ST170803G2-2 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
21	170803G2_21	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
22	170803G2_22	1700955-03 BANGR-05-SB02-0-2 1	BANGR-05-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:15
23	170803G2_23	B7H0015-MS1 Matrix Spike 1	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:16
24	170803G2_24	B7H0015-MSD1 Matrix Spike Dup 1	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:17
25	170803G2_25	1700955-04 BANGR-05-SB02-10-11 1	BANGR-05-SB02-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:18
26	170803G2_26	1700955-05 BANGR-05-SO-DUP05-072717 1	BANGR-05-SO-DUP05-072717	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:19
27	170803G2_27	1700955-06 BANGR-06-SB03-0-2 1	BANGR-06-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:20
28	170803G2_28	1700955-07 BANGR-06-SB03-9-10 1	BANGR-06-SB03-9-10	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:21
29	170803G2_29	1700955-08 BANGR-08-SB01-0-2 1	BANGR-08-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:22
30	170803G2_30	1700955-09 BANGR-08-SB01-13-15 1	BANGR-08-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:23
31	170803G2_31	1700955-10 BANGR-08-SB02-0-2 1	BANGR-08-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:24
32	170803G2_32	1700955-11 BANGR-08-SB02-13-15 1	BANGR-08-SB02-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:25
33	170803G2_33	1700955-13 BANGR-03-SB03-0-2 1	BANGR-03-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:26
34	170803G2_34	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
35	170803G2_35	ST170803G2-3 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
36	170803G2_36	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
37	170803G2_37	1700955-14 BANGR-03-SB03-10-11 1	BANGR-03-SB03-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:27
38	170803G2_38	1700955-15 BANGR-03-SO-DUP03-072817 1	BANGR-03-SO-DUP03-072817	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:28
39	170803G2_39	1700955-16 BANGR-06-SB01-0-2 1	BANGR-06-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:29
40	170803G2_40	1700955-17 BANGR-06-SB01-13-15 1	BANGR-06-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:30

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
41	170803G2_41	1700925-04RE1 I001MW52S-170724 0.1192	I001MW52S-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:31
42	170803G2_42	B7H0018-MSD1 Matrix Spike Dup 0.125	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:32
43	170803G2_43	B7H0018-MS1 Matrix Spike 0.125	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:33
44	170803G2_44	1700925-05RE1 I001MW52X-170724 0.1174	I001MW52X-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:34
45	170803G2_45	1700962-01 East Tank 0.125	East Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:35
46	170803G2_46	1700962-02 West Tank 0.125	West Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:36
47	170803G2_47	1700962-03 MiddleTank 0.125	MiddleTank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:37
48	170803G2_48	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
49	170803G2_49	ST170803G2-4 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
50	170803G2_50	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47

✓ KEL 8/4/17

LC Calibration Standards Review Checklist Q1

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	ST170803G2-1	L (M) H	NA	☑	☑	☑	☑	☑	☐
Calibration ID:	-2	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID:	-3	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID:	-4	L (M) H	☐	☑	☑	☑	☑	☑	☐
Calibration ID:		L M H	☐	☐	☐	☑	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 4/5/17

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Reviewed By: DM 8/4/17
Initials/Date

Comments:

A L16_2TRANS

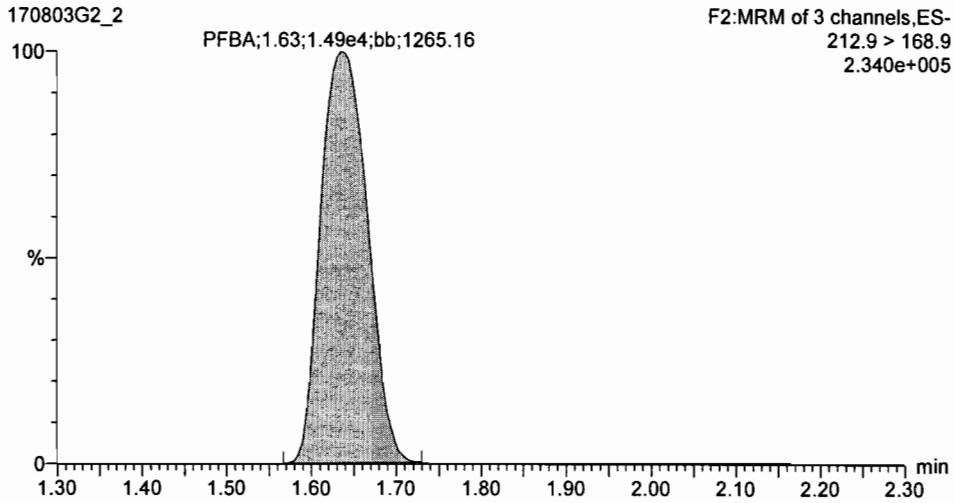
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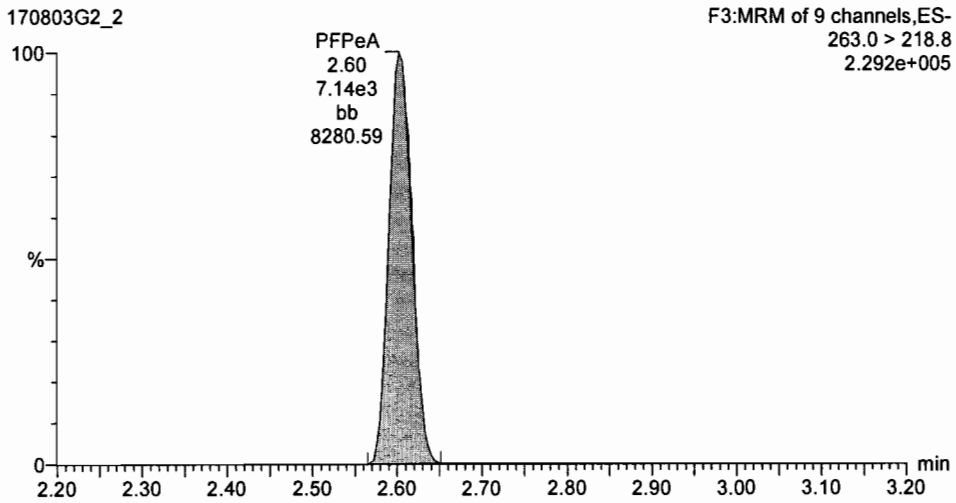
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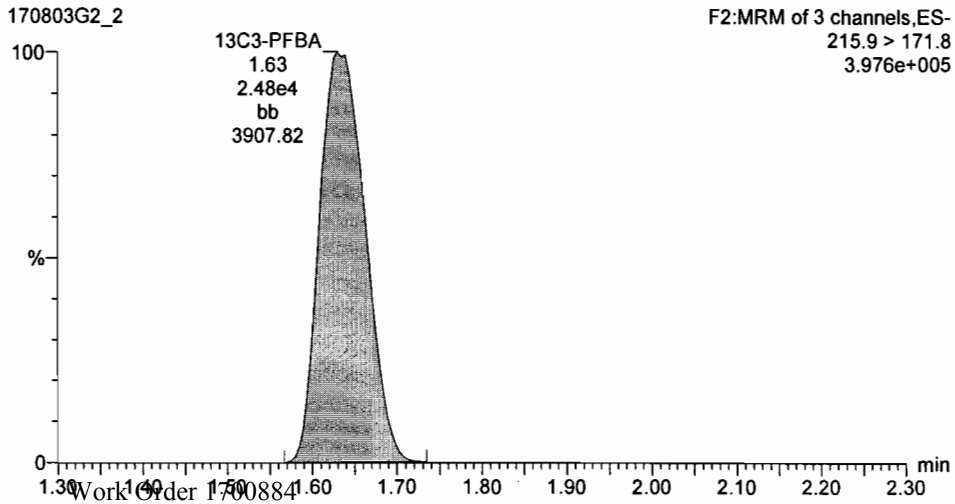
PFBA



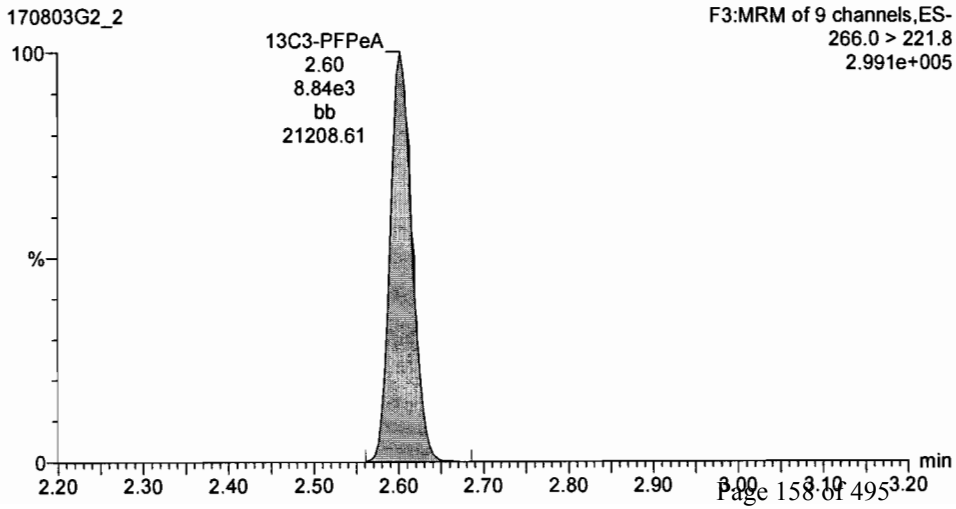
PFPeA



13C3-PFBA



13C3-PFPeA

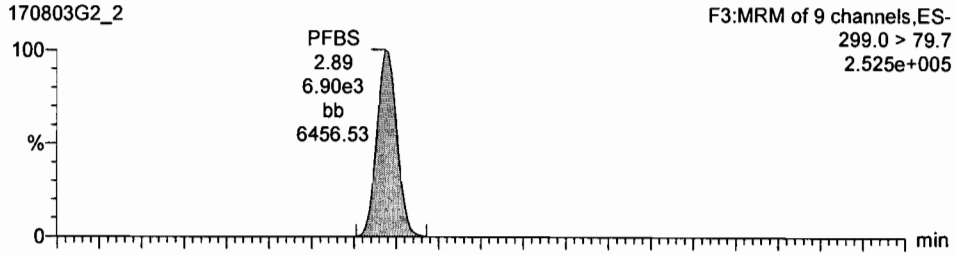


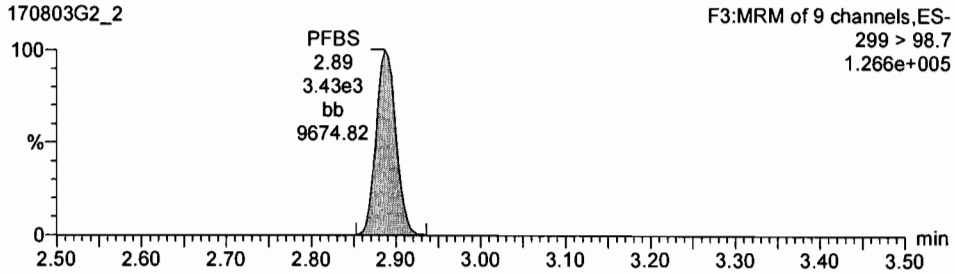
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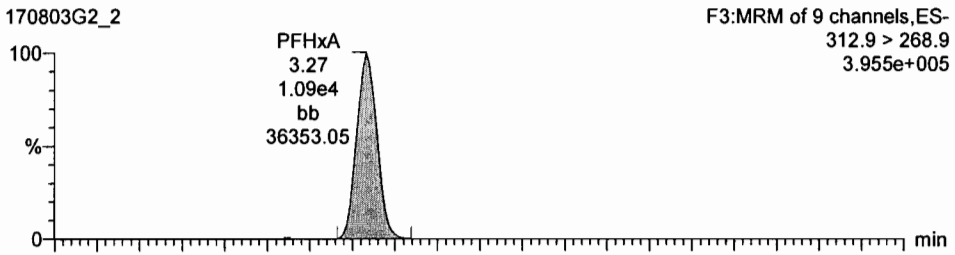
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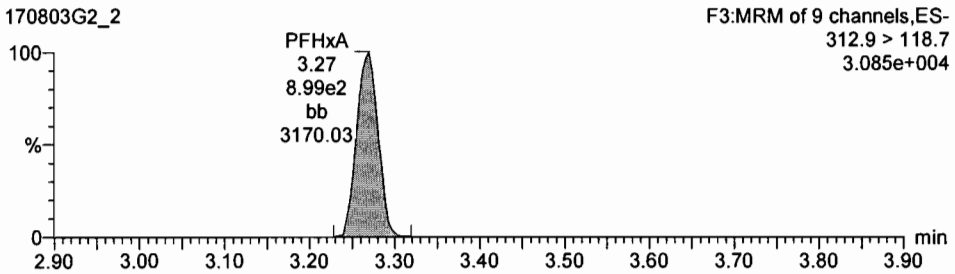
Total PFBS



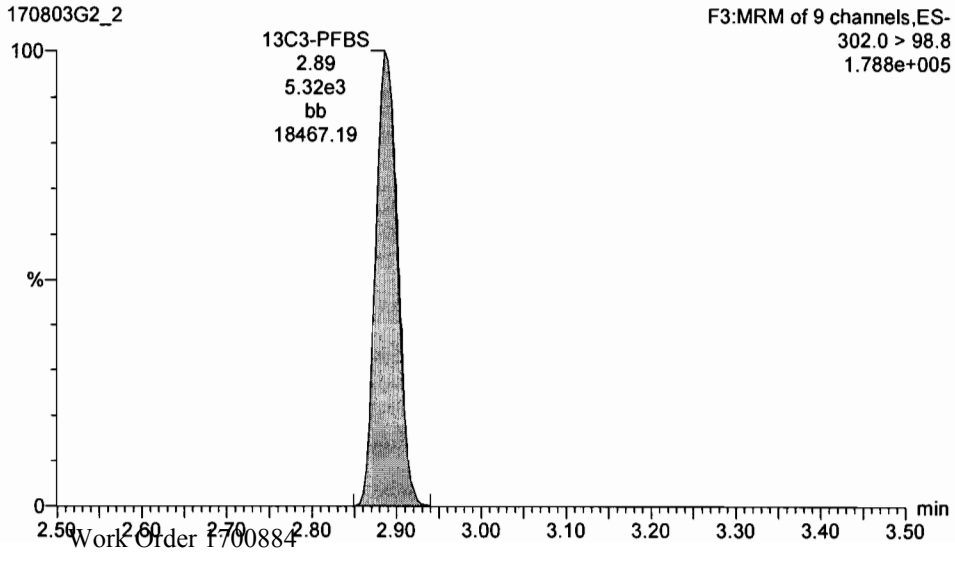


PFHxA

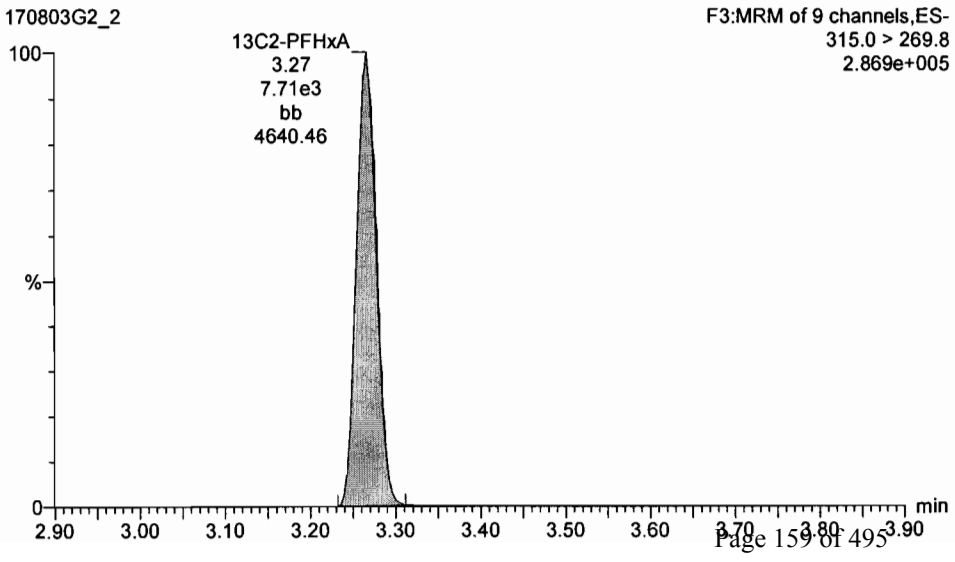




13C3-PFBS



13C2-PFHxA

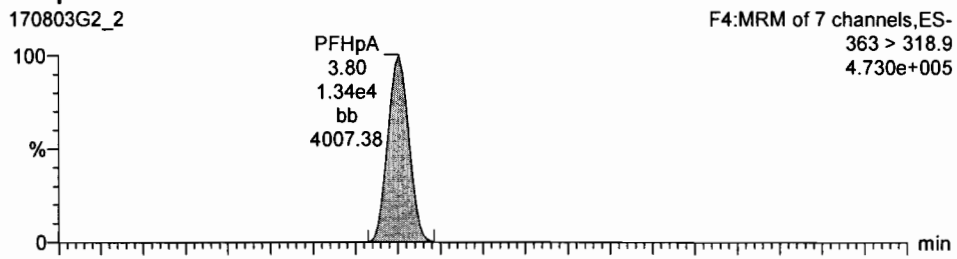


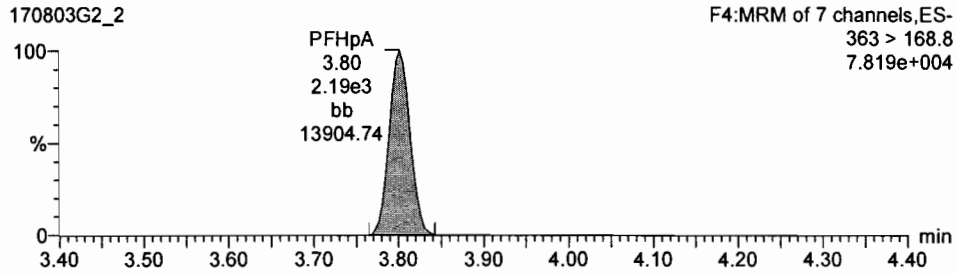
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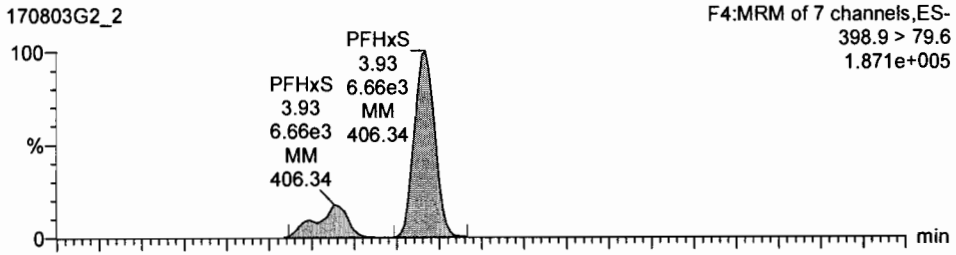
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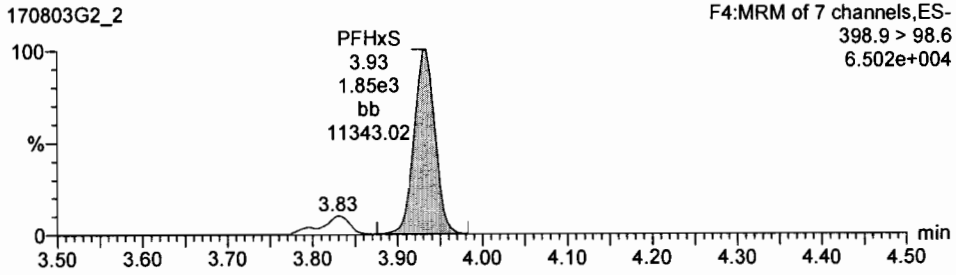
PFHpA



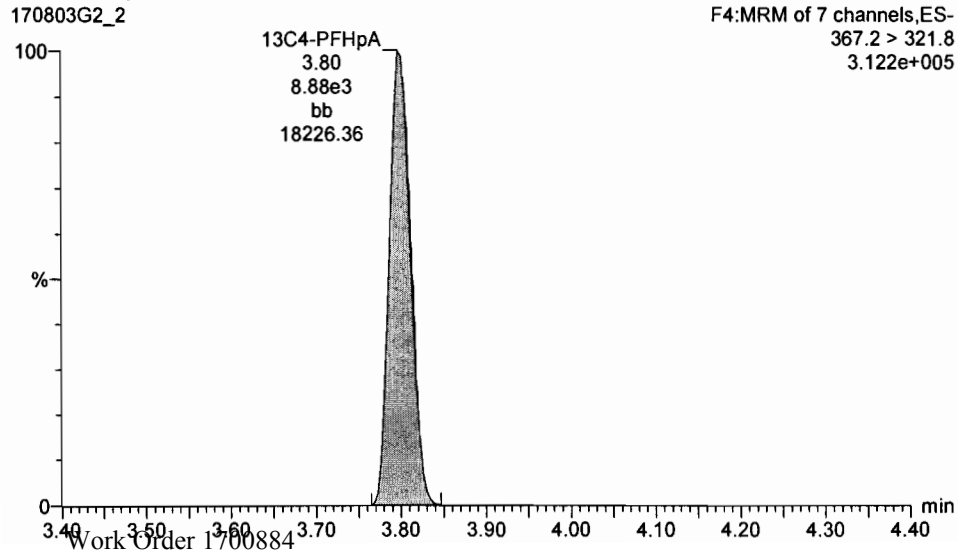


Total PFHxS

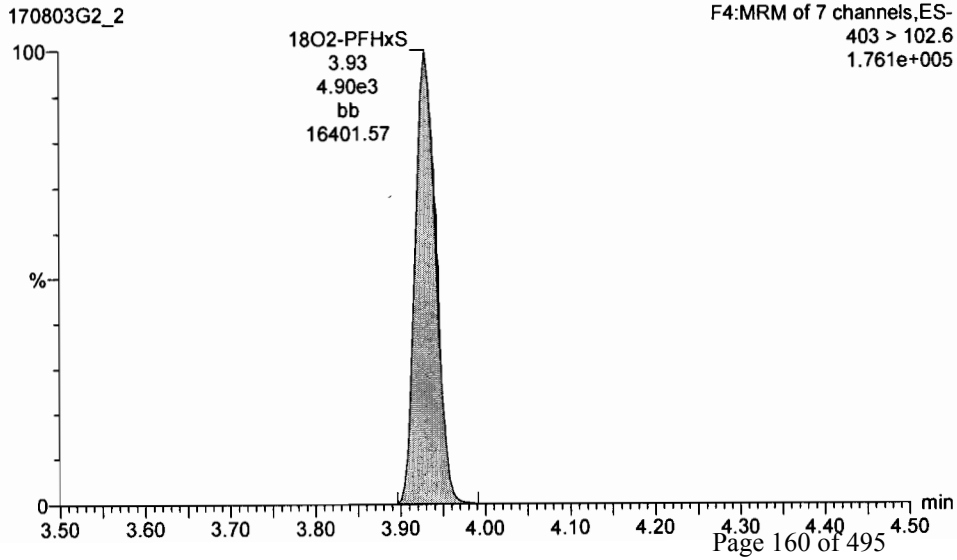




13C4-PFHpA



18O2-PFHxS

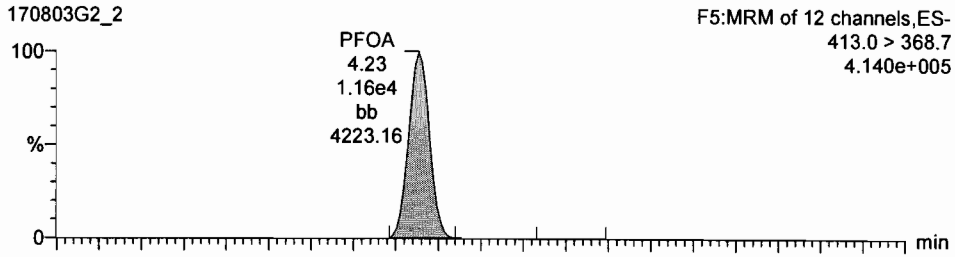


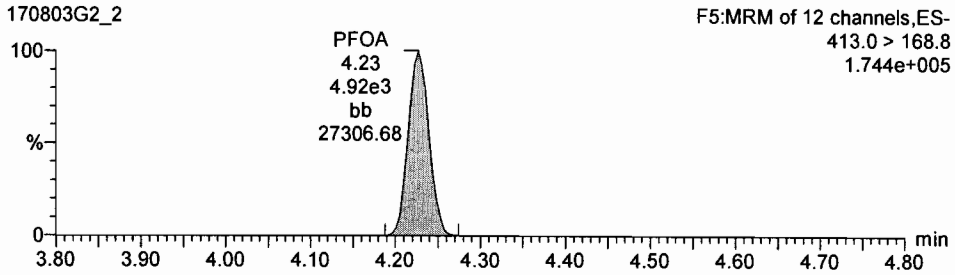
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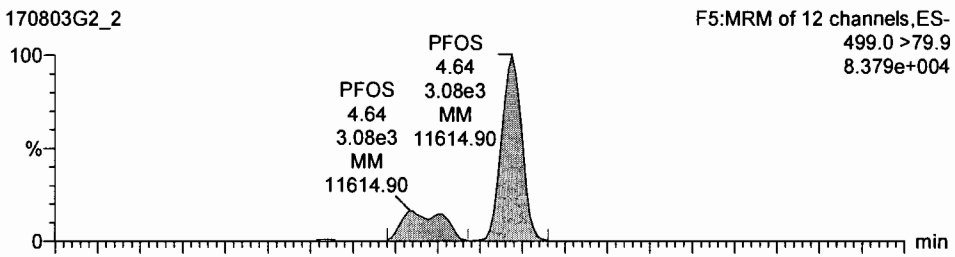
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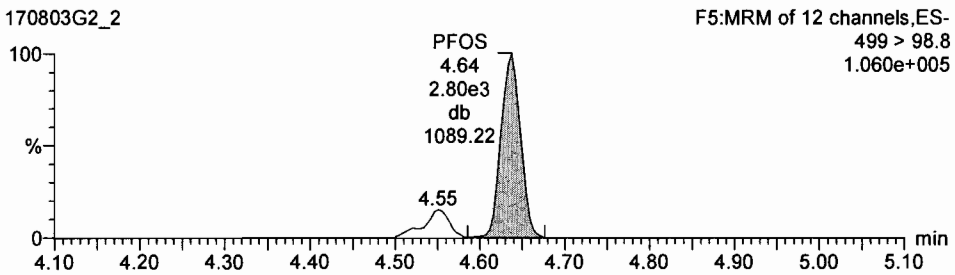
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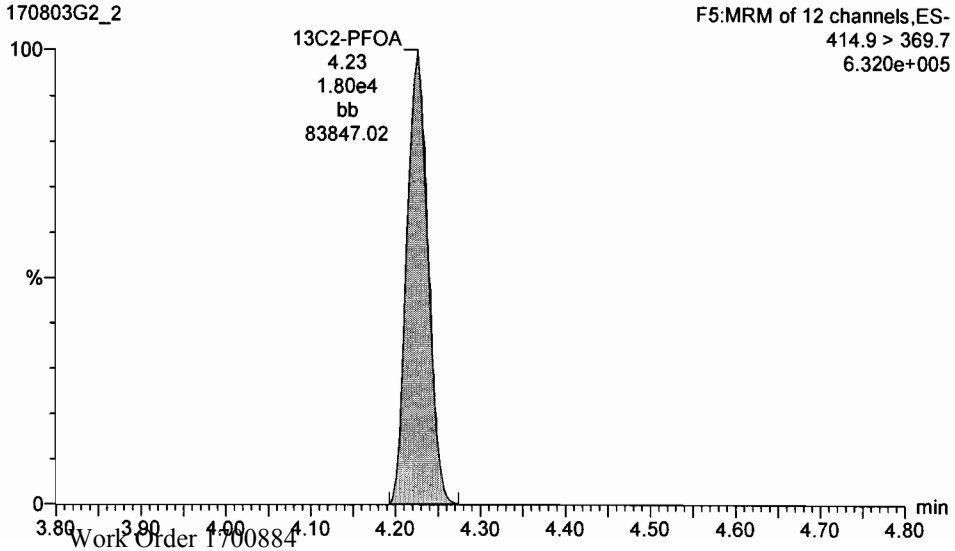


Total PFOS

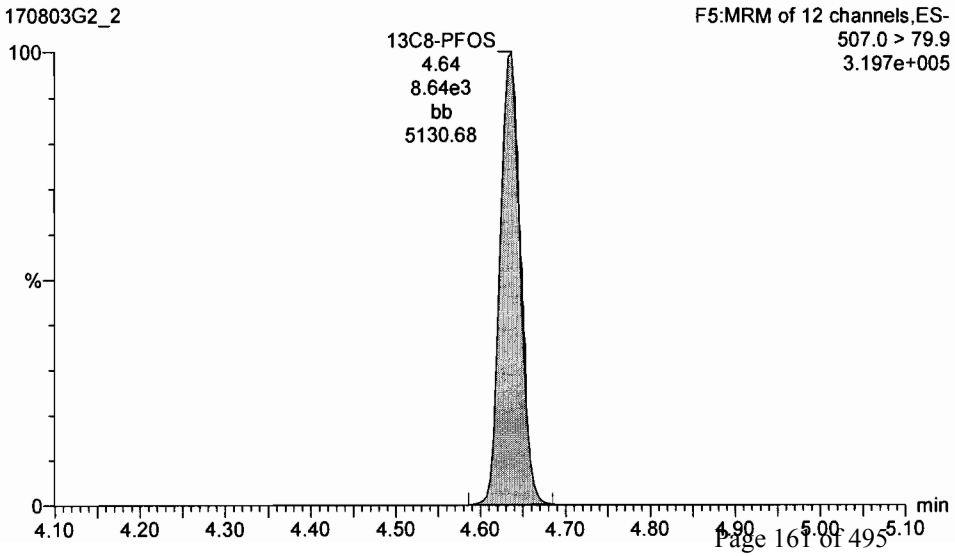




13C2-PFOA



13C8-PFOS

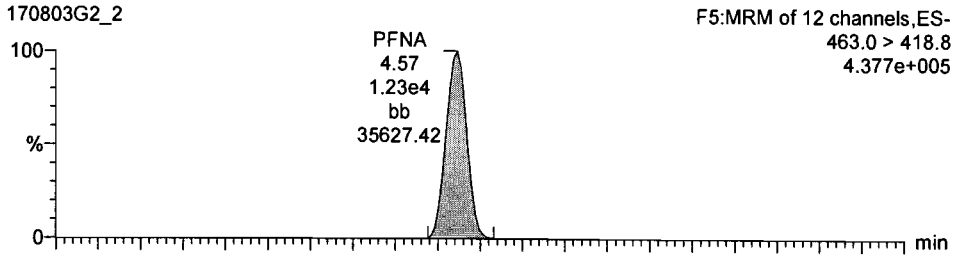


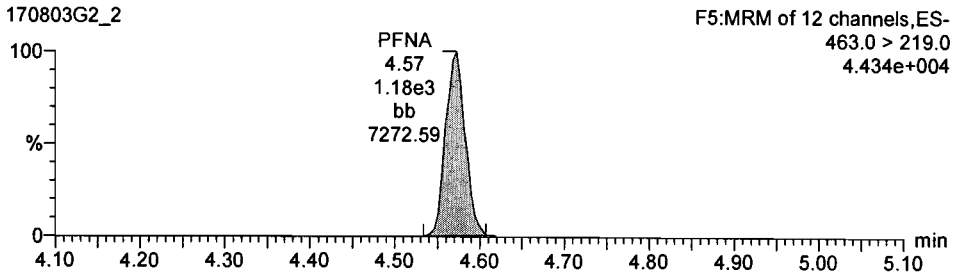
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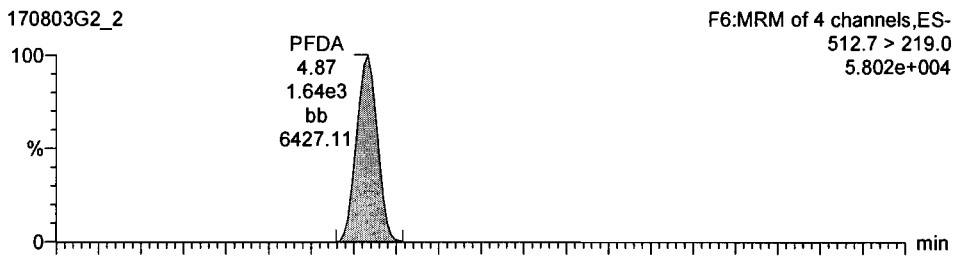
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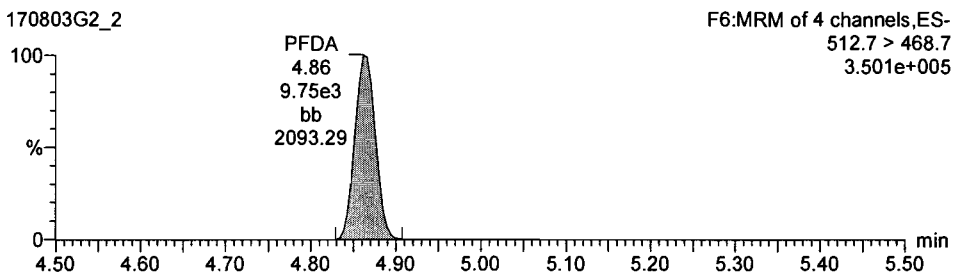
PFNA



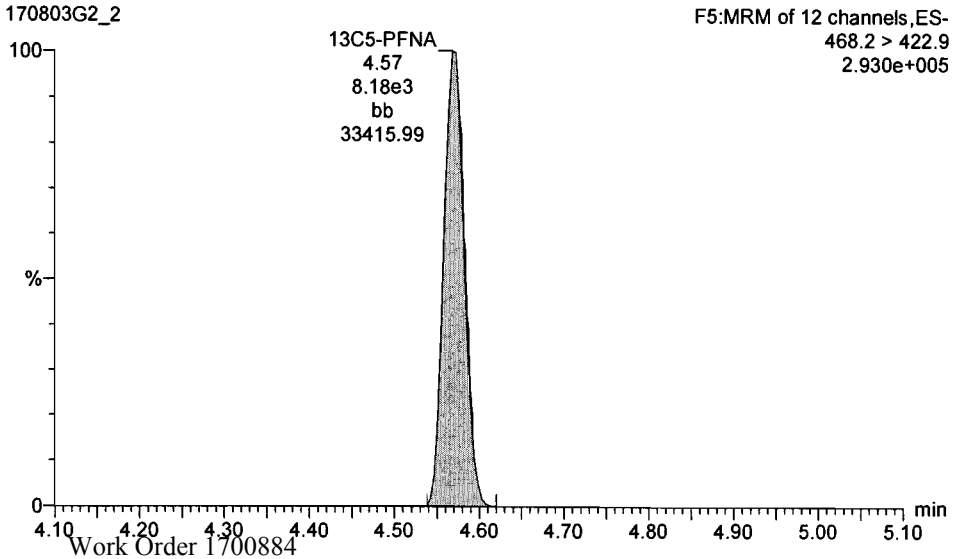


PFDA

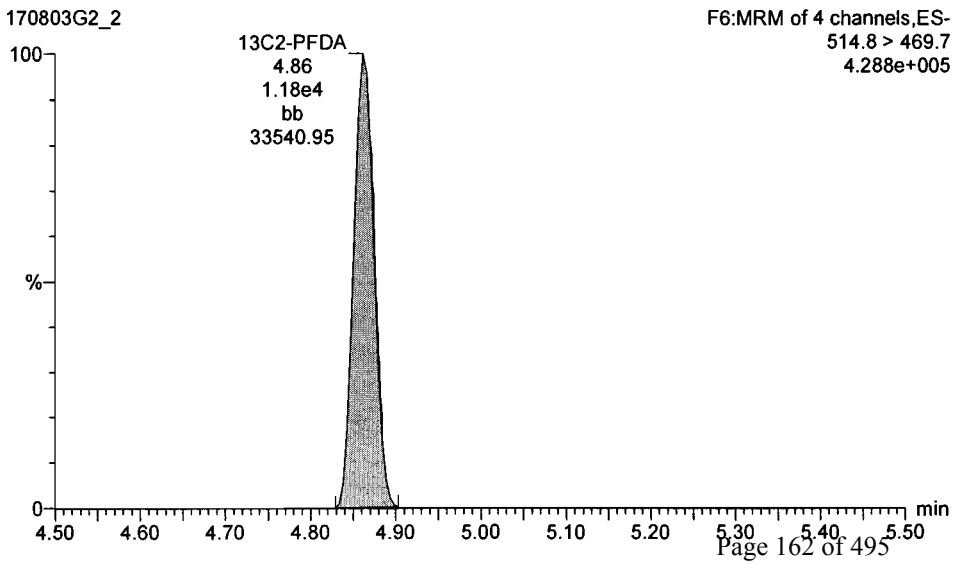




13C5-PFNA



13C2-PFDA

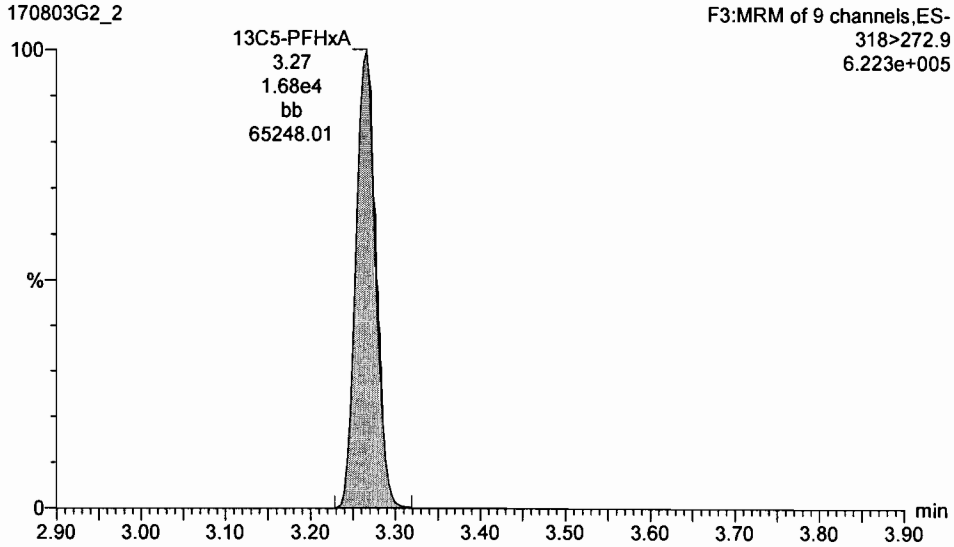


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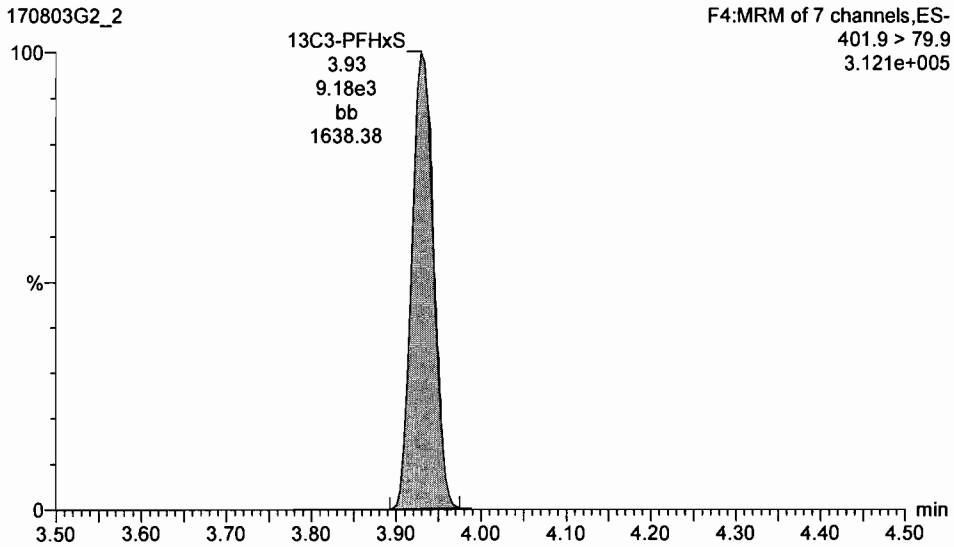
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ID: ST170803G2-1 PFC CS3 17H0329, Description: PFC CS3 17H0329 A, Name: 170803G2_2, Date: 03-Aug-2017, Time: 17:07:10, Instrument: , Lab: , User:

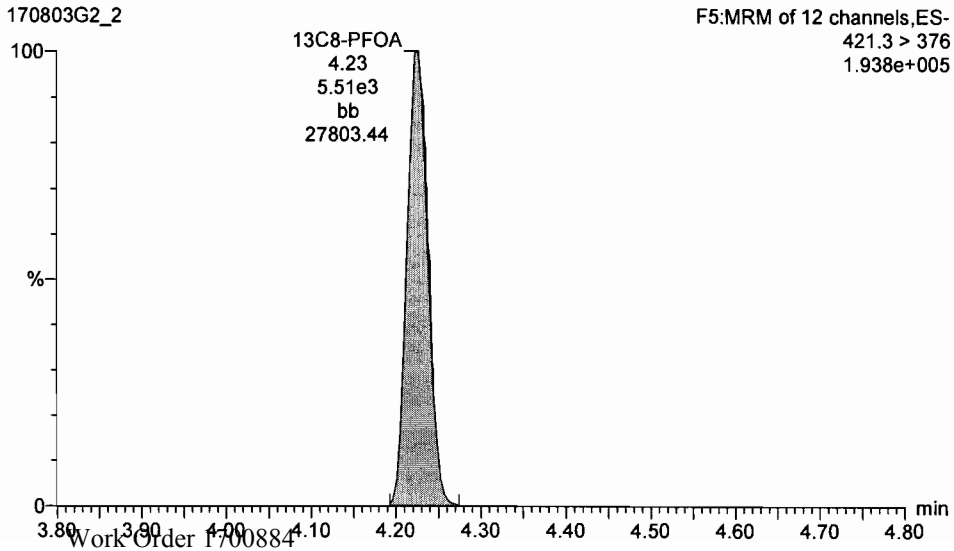
13C5-PFHxA



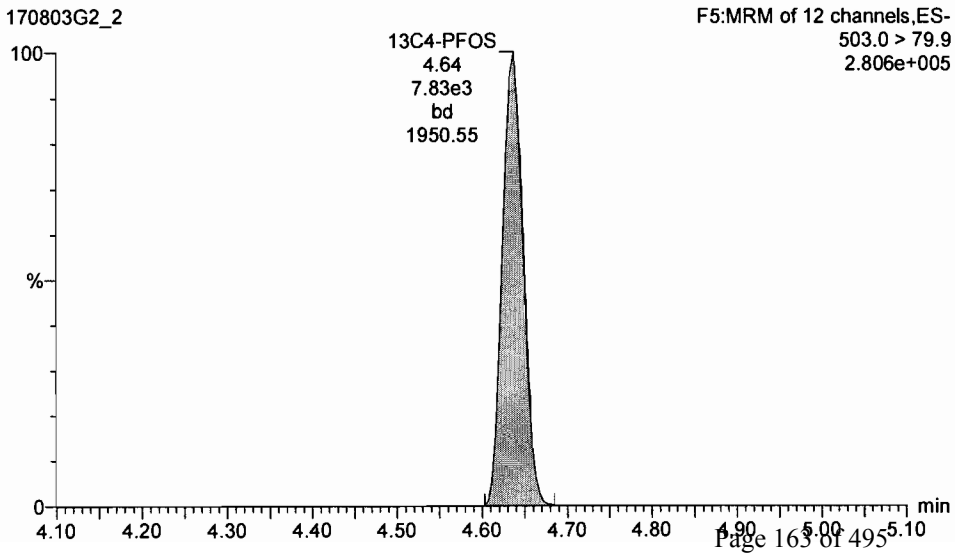
13C3-PFHxS



13C8-PFOA



13C4-PFOS

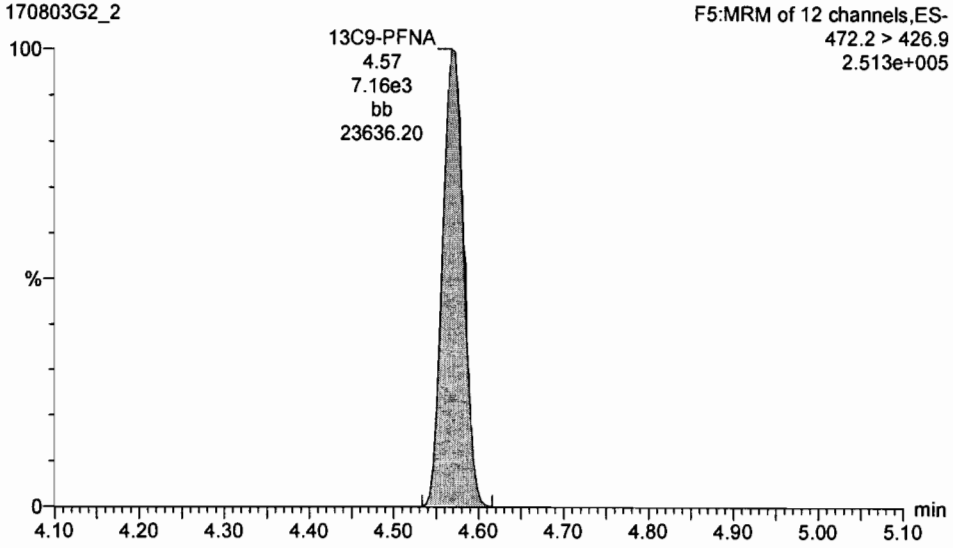


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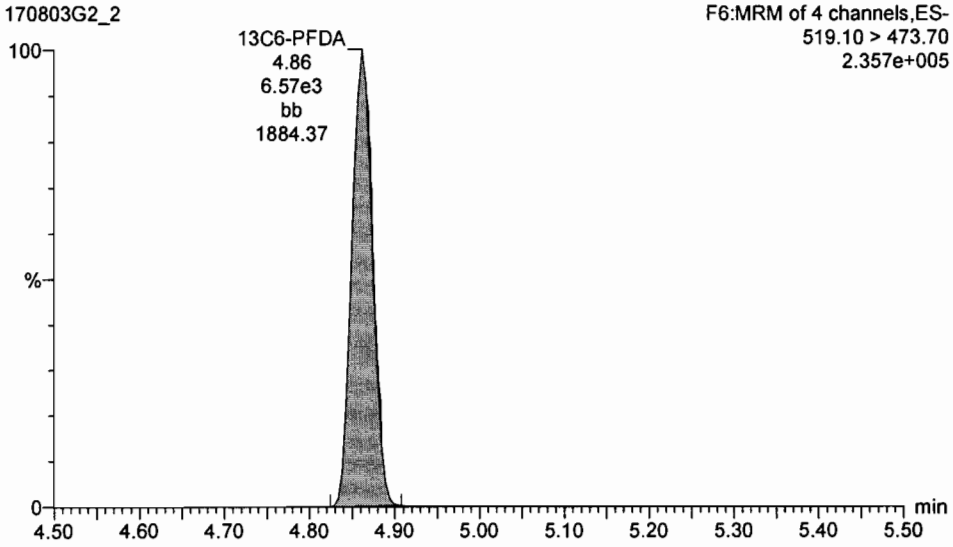
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ID: ST170803G2-1 PFC CS3 17H0329, Description: PFC CS3 17H0329 A, Name: 170803G2_2, Date: 03-Aug-2017, Time: 17:07:10, Instrument: , Lab: , User:

13C9-PFNA



13C6-PFDA



Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-20.qld

Last Altered: Friday, August 04, 2017 11:30:16 Pacific Daylight Time
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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170803G2_20, Date: 03-Aug-2017, Time: 20:53:06, ID: ST170803G2-2 PFC CS3 17H0329, Description: PFC CS3 17H0329 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.59e4	3.28e4		1.000	1.63	8.02	80.2
2	2	PFPeA	263.0 > 218.8	8.73e3	1.12e4		1.000	2.61	8.81	88.1
3	3	PFBS	299.0 > 79.7	8.12e3	5.75e3		1.000	2.89	10.6	106.1
4	4	PFHxA	312.9 > 268.9	1.35e4	9.23e3		1.000	3.27	9.56	95.6
5	5	PFHpA	363 > 318.9	1.75e4	1.09e4		1.000	3.81	10.2	101.7
6	6	PFHxS	398.9 > 79.6	8.21e3	6.03e3		1.000	3.93	9.50	95.0
7	7	PFOA	413.0 > 368.7	1.60e4	2.51e4		1.000	4.23	9.87	98.7
8	8	PFNA	463.0 > 418.8	1.75e4	9.79e3		1.000	4.57	9.64	96.4
9	9	PFOS	499.0 >79.9	4.30e3	1.15e4		1.000	4.64	9.88	98.8
10	10	PFDA	512.7 > 219.0	2.76e3	1.88e4		1.000	4.87	9.17	91.7
11	11	13C3-PFBA	215.9 > 171.8	3.28e4	1.97e4	1.183	1.000	1.63	17.6	140.7
12	12	13C3-PFBS	302.0 > 98.8	5.75e3	2.01e4	0.263	1.000	2.89	13.6	108.8
13	13	13C3-PFPeA	266.0 > 221.8	1.12e4	2.01e4	0.446	1.000	2.61	15.6	124.8
14	14	13C2-PFHxA	315.0 > 269.8	9.23e3	2.01e4	0.361	1.000	3.27	15.9	127.3
15	15	13C4-PFHpA	367.2 > 321.8	1.09e4	2.01e4	0.475	1.000	3.80	14.3	114.1
16	16	18O2-PFHxS	403 > 102.6	6.03e3	1.14e4	0.411	1.000	3.93	16.1	128.4
17	17	13C2-PFOA	414.9 > 369.7	2.51e4	6.31e3	2.843	1.000	4.23	17.5	139.8
18	18	13C5-PFNA	468.2 > 422.9	9.79e3	9.08e3	0.854	1.000	4.58	15.8	126.4
19	19	13C2-PFDA	514.8 > 469.7	1.88e4	9.93e3	1.742	1.000	4.87	13.6	109.0
20	20	13C8-PFOS	507.0 > 79.9	1.15e4	1.08e4	0.927	1.000	4.64	14.4	114.9
21	21	13C4-PFBA	216.9 > 171.8	1.97e4	1.97e4	1.000	1.000	1.63	12.5	100.0
22	22	13C5-PFHxA	318>272.9	2.01e4	2.01e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.14e4	1.14e4	1.000	1.000	3.93	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	6.31e3	6.31e3	1.000	1.000	4.23	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	9.08e3	9.08e3	1.000	1.000	4.58	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	1.08e4	1.08e4	1.000	1.000	4.64	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	9.93e3	9.93e3	1.000	1.000	4.87	12.5	100.0

70-130

50-150

8/4/17

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
1	170803G2_1	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
2	170803G2_2	ST170803G2-1 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
3	170803G2_3	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
4	170803G2_4	B7H0015-BS1 OPR 1	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:1
5	170803G2_5	B7H0018-BS1 OPR 0.125	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:2
6	170803G2_6	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
7	170803G2_7	B7H0015-BLK1 Method Blank 1	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:3
8	170803G2_8	B7H0018-BLK1 Method Blank 0.125	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:4
9	170803G2_9	1700884-01 MW-37BR-20170714 0.11935	MW-37BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:5
10	170803G2_10	1700884-02 MW-32BR-20170714 0.11989	MW-32BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:6
11	170803G2_11	1700884-03 MW-35S-20170714 0.11984	MW-35S-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:7
12	170803G2_12	1700884-04 FRB-02-20170714 0.11984	FRB-02-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:8
13	170803G2_13	1700942-02@5X BANGR-05-SB03-10-12 1	BANGR-05-SB03-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:9
14	170803G2_14	1700942-03@5X BANGR-07-SB02-2-4 1	BANGR-07-SB02-2-4	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:10
15	170803G2_15	1700942-04@5X BANGR-07-SB02-8-9 1	BANGR-07-SB02-8-9	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:11
16	170803G2_16	1700942-07@5X BANGR-08-SB03-0-2 1	BANGR-08-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:12
17	170803G2_17	1700955-01 BANGR-05-SB01-0-2 1	BANGR-05-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:13
18	170803G2_18	1700955-02 BANGR-05-SB01-10-12 1	BANGR-05-SB01-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:14
19	170803G2_19	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
20	170803G2_20	ST170803G2-2 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
21	170803G2_21	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
22	170803G2_22	1700955-03 BANGR-05-SB02-0-2 1	BANGR-05-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:15
23	170803G2_23	B7H0015-MS1 Matrix Spike 1	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:16
24	170803G2_24	B7H0015-MSD1 Matrix Spike Dup 1	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:17
25	170803G2_25	1700955-04 BANGR-05-SB02-10-11 1	BANGR-05-SB02-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:18
26	170803G2_26	1700955-05 BANGR-05-SO-DUP05-072717 1	BANGR-05-SO-DUP05-072717	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:19
27	170803G2_27	1700955-06 BANGR-06-SB03-0-2 1	BANGR-06-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:20
28	170803G2_28	1700955-07 BANGR-06-SB03-9-10 1	BANGR-06-SB03-9-10	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:21
29	170803G2_29	1700955-08 BANGR-08-SB01-0-2 1	BANGR-08-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:22
30	170803G2_30	1700955-09 BANGR-08-SB01-13-15 1	BANGR-08-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:23
31	170803G2_31	1700955-10 BANGR-08-SB02-0-2 1	BANGR-08-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:24
32	170803G2_32	1700955-11 BANGR-08-SB02-13-15 1	BANGR-08-SB02-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:25
33	170803G2_33	1700955-13 BANGR-03-SB03-0-2 1	BANGR-03-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:26
34	170803G2_34	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
35	170803G2_35	ST170803G2-3 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
36	170803G2_36	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
37	170803G2_37	1700955-14 BANGR-03-SB03-10-11 1	BANGR-03-SB03-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:27
38	170803G2_38	1700955-15 BANGR-03-SO-DUP03-072817 1	BANGR-03-SO-DUP03-072817	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:28
39	170803G2_39	1700955-16 BANGR-06-SB01-0-2 1	BANGR-06-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:29
40	170803G2_40	1700955-17 BANGR-06-SB01-13-15 1	BANGR-06-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:30

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
41	170803G2_41	1700925-04RE1 I001MW52S-170724 0.1192	I001MW52S-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:31
42	170803G2_42	B7H0018-MSD1 Matrix Spike Dup 0.125	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:32
43	170803G2_43	B7H0018-MS1 Matrix Spike 0.125	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:33
44	170803G2_44	1700925-05RE1 I001MW52X-170724 0.1174	I001MW52X-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:34
45	170803G2_45	1700962-01 East Tank 0.125	East Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:35
46	170803G2_46	1700962-02 West Tank 0.125	West Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:36
47	170803G2_47	1700962-03 MiddleTank 0.125	MiddleTank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:37
48	170803G2_48	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
49	170803G2_49	ST170803G2-4 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
50	170803G2_50	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47

✓ KW 8/4/17

Vista Analytical Laboratory Q1

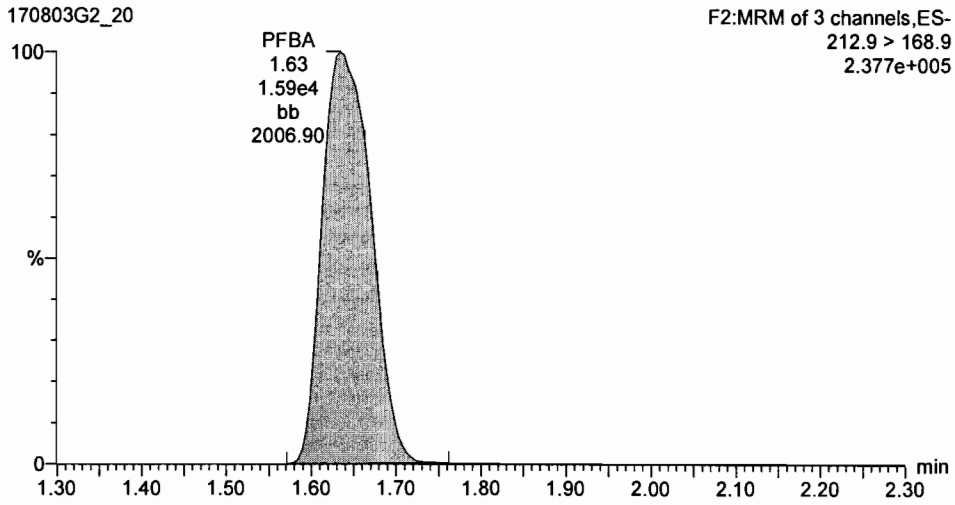
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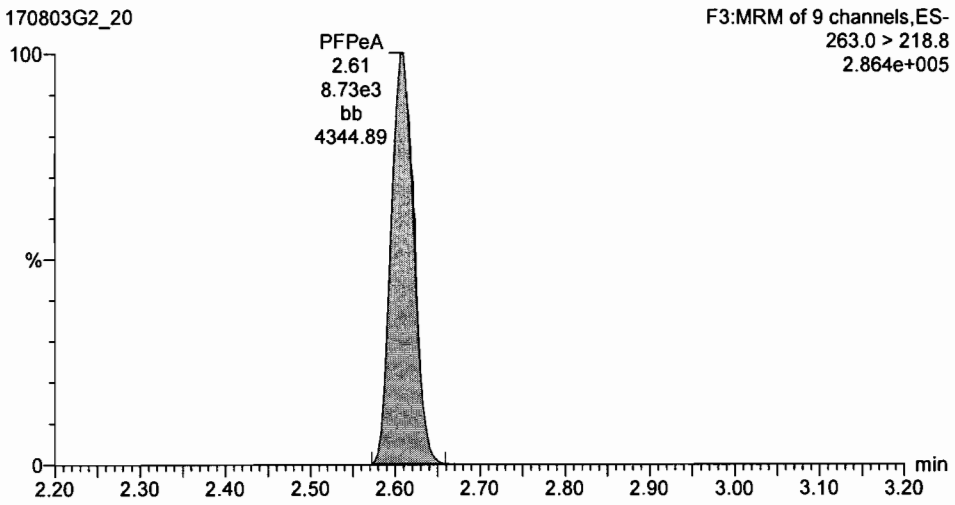
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ID: ST170803G2-2 PFC CS3 17H0329, Description: PFC CS3 17H0329 A, Name: 170803G2_20, Date: 03-Aug-2017, Time: 20:53:06, Instrument: , Lab: , User:

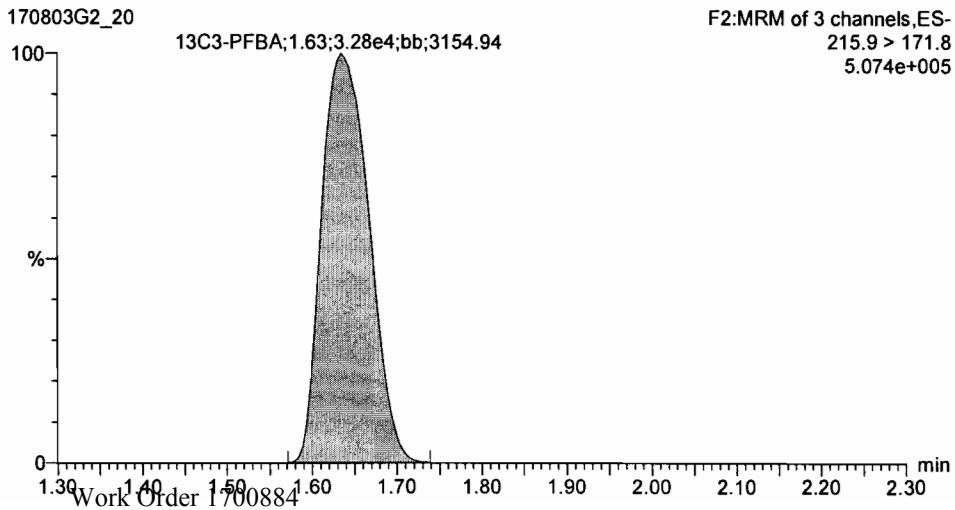
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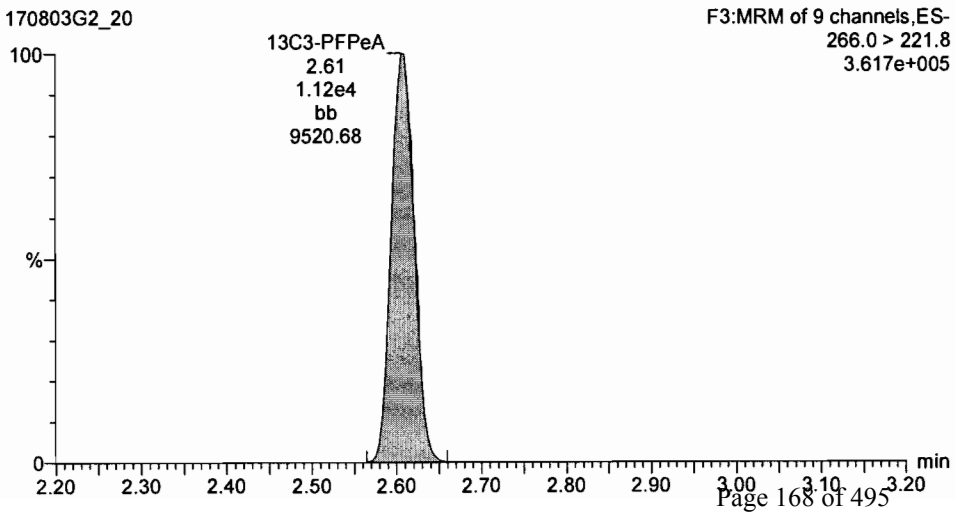
PFPeA



13C3-PFBA



13C3-PFPeA

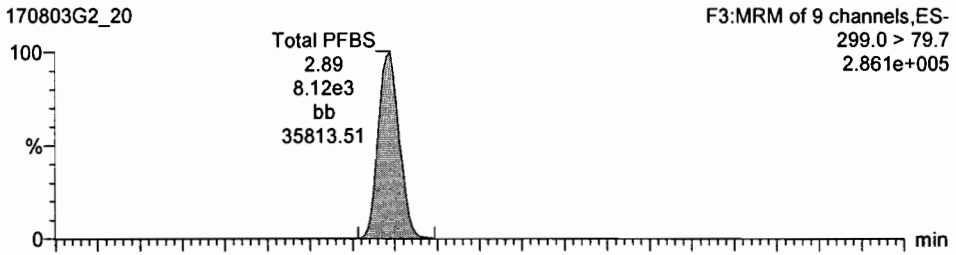


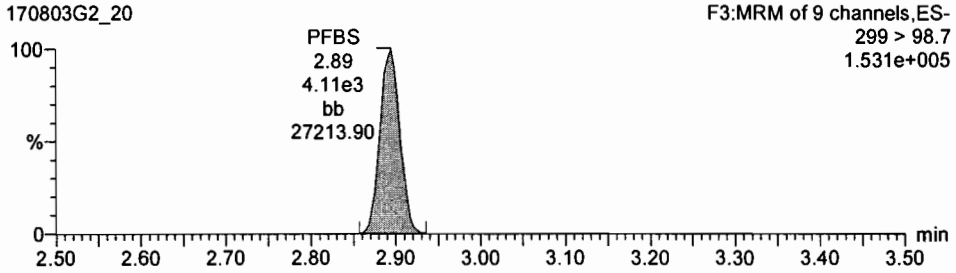
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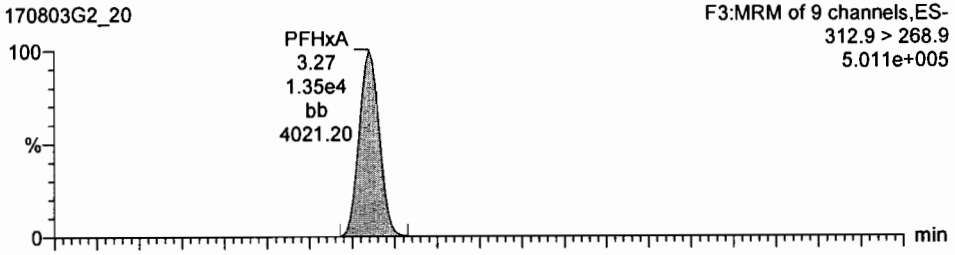
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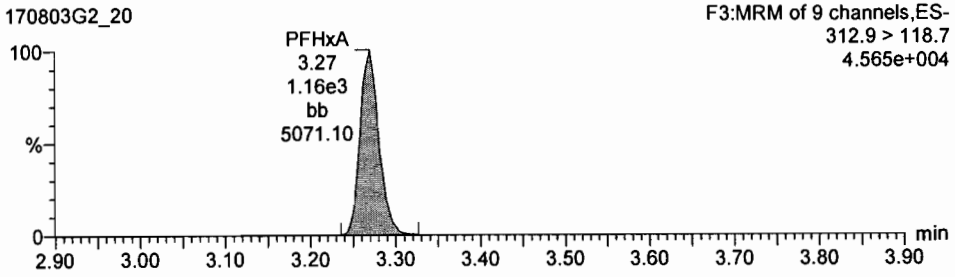
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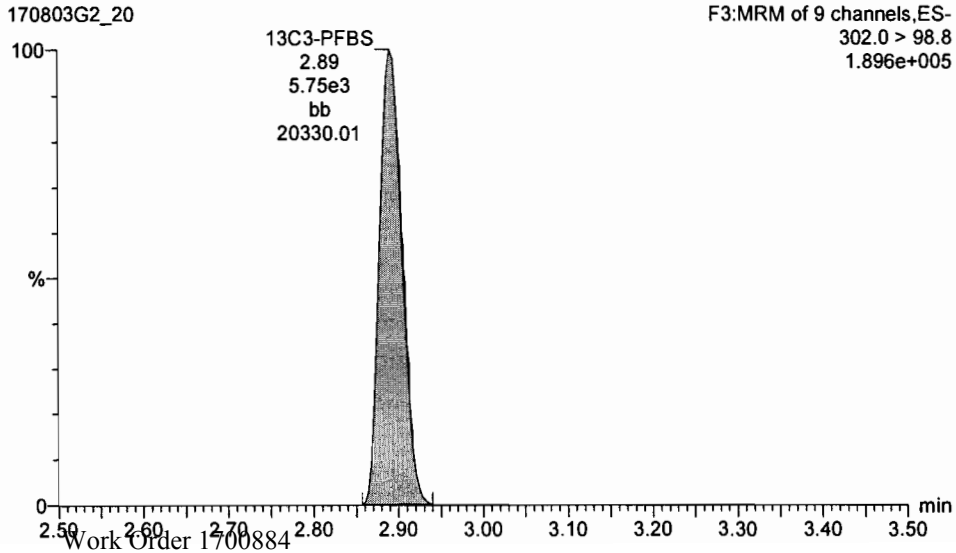


PFHxA

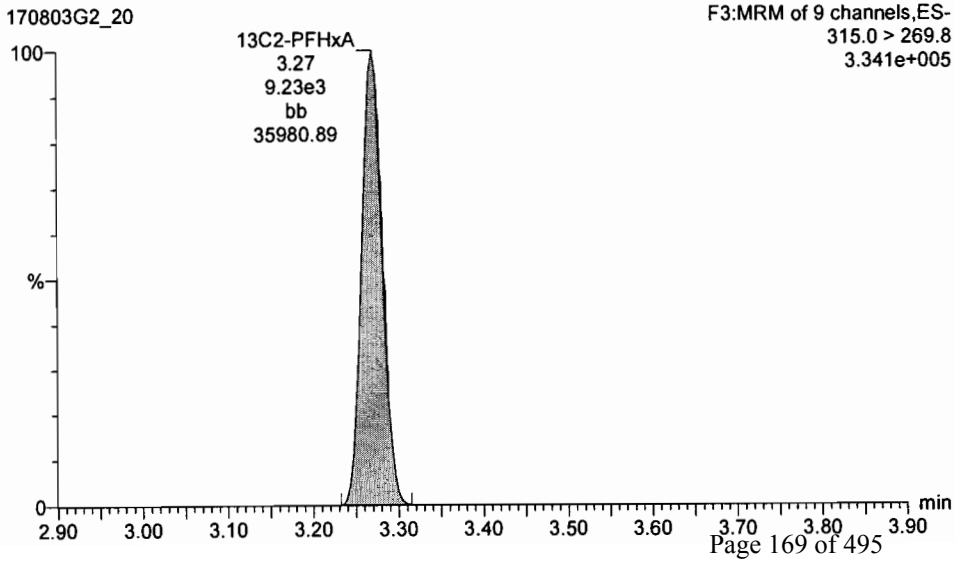




13C3-PFBS



13C2-PFHxA

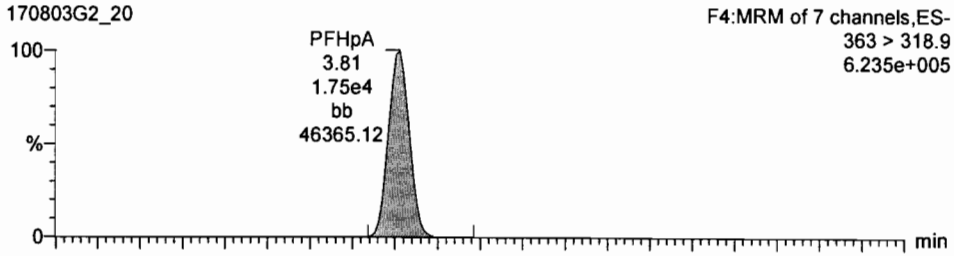


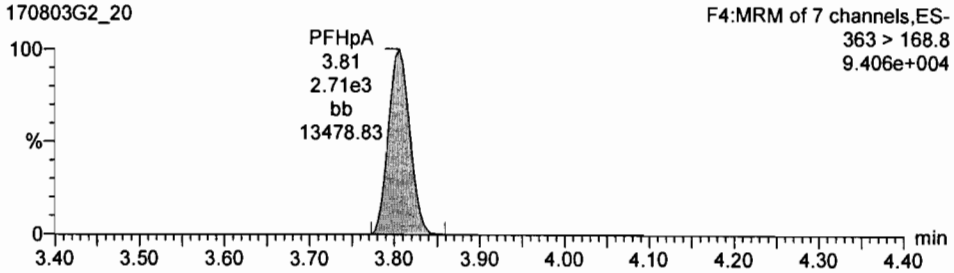
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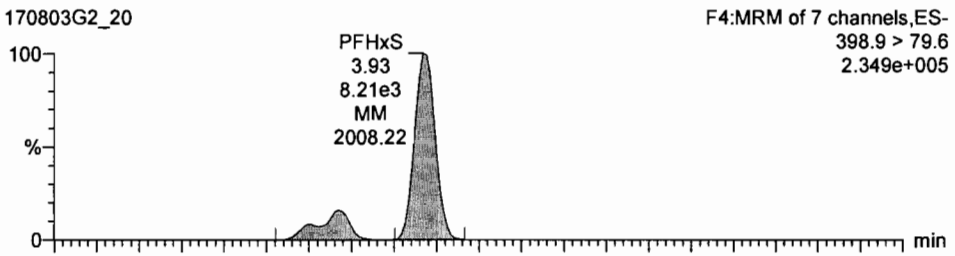
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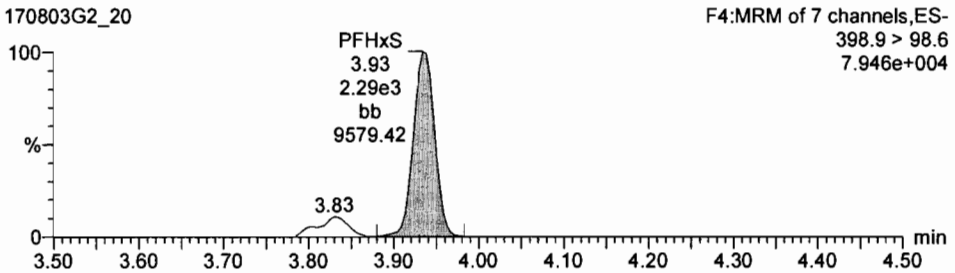
PFHpA



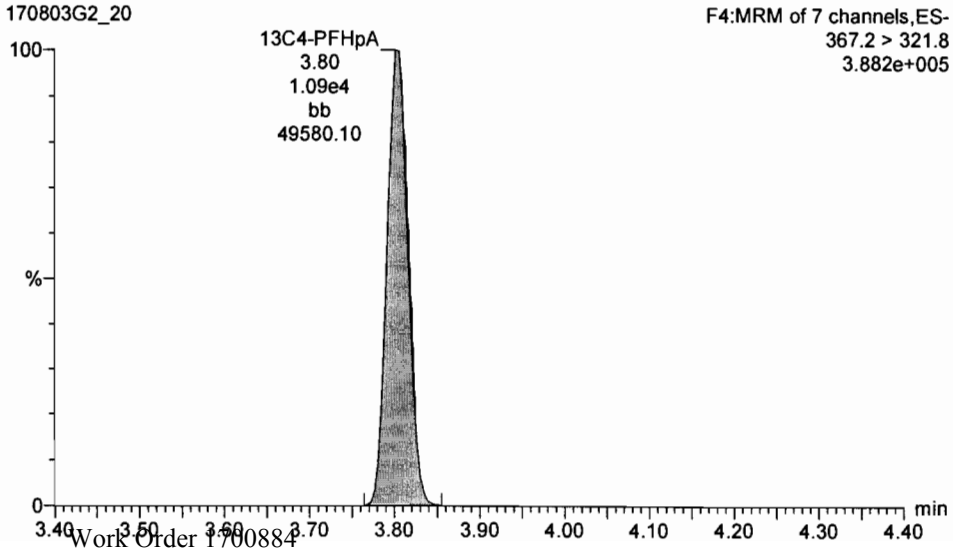


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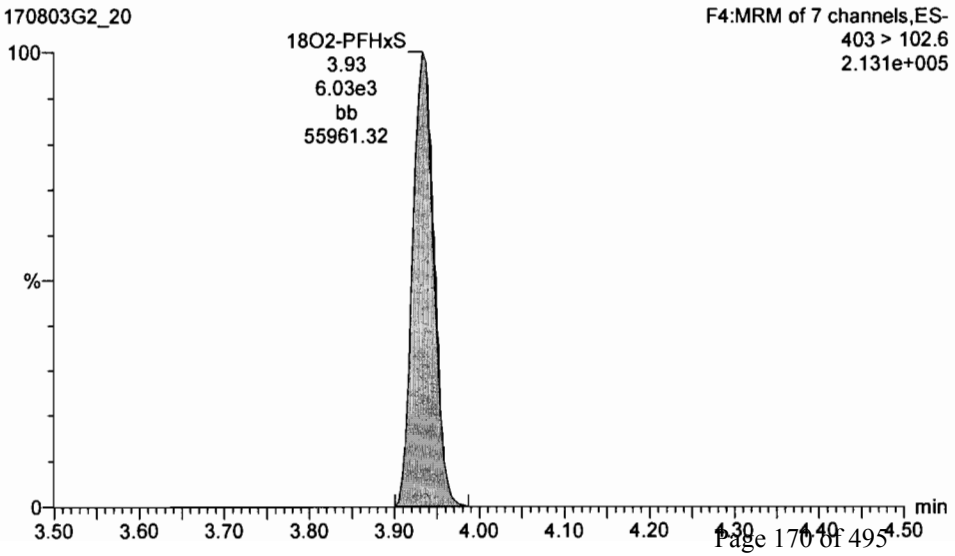




13C4-PFHpA



18O2-PFHxS



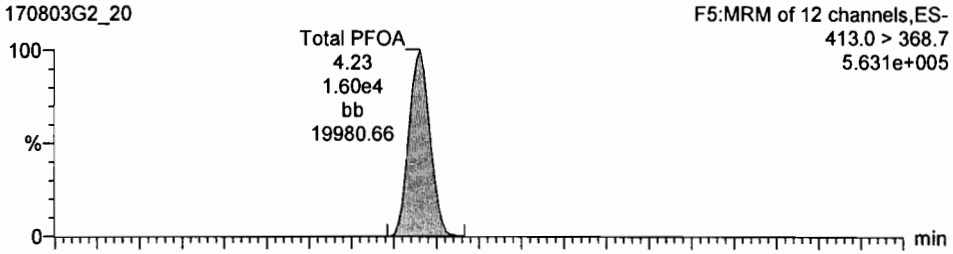
Vista Analytical Laboratory Q1

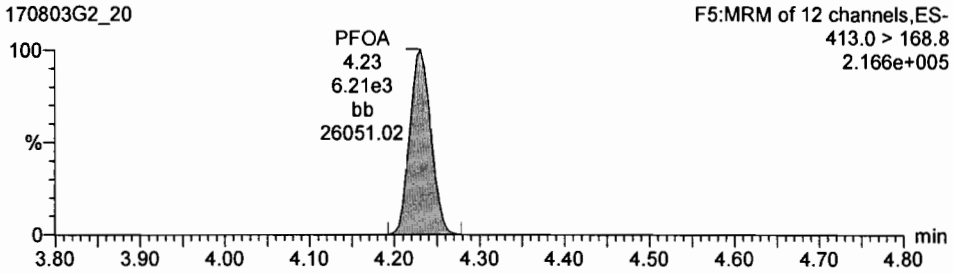
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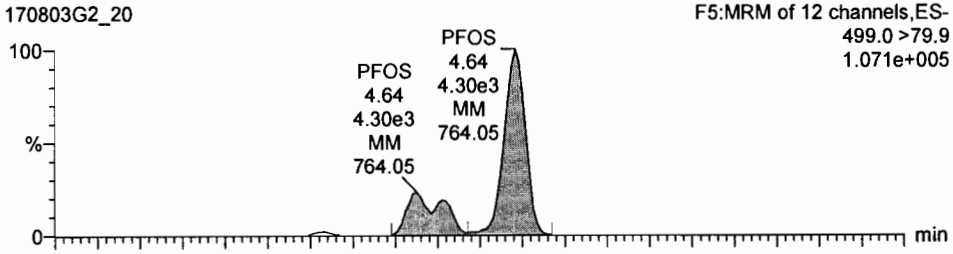
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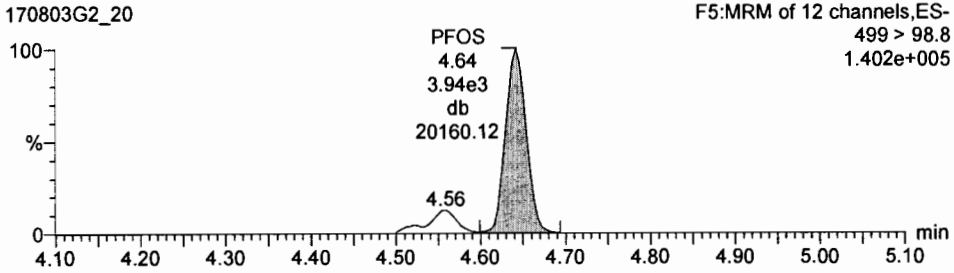
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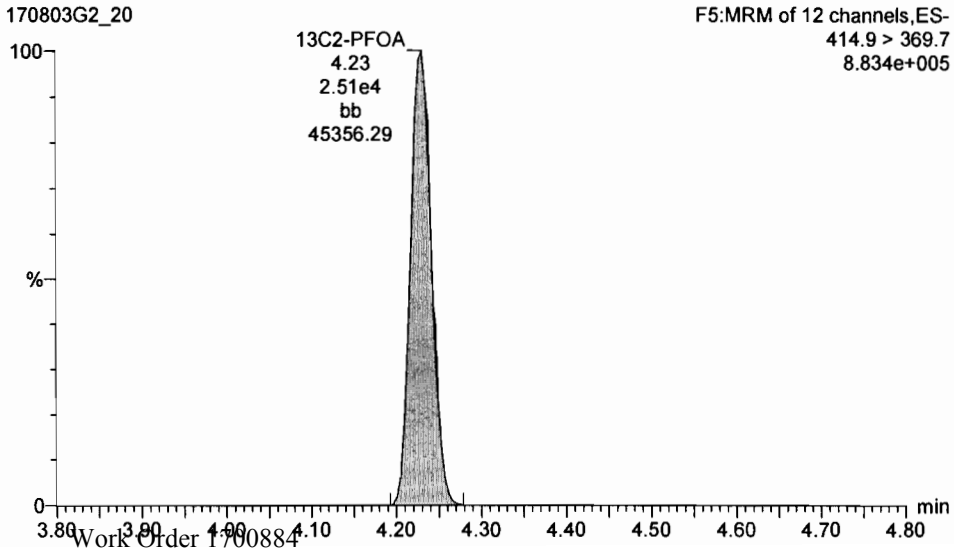


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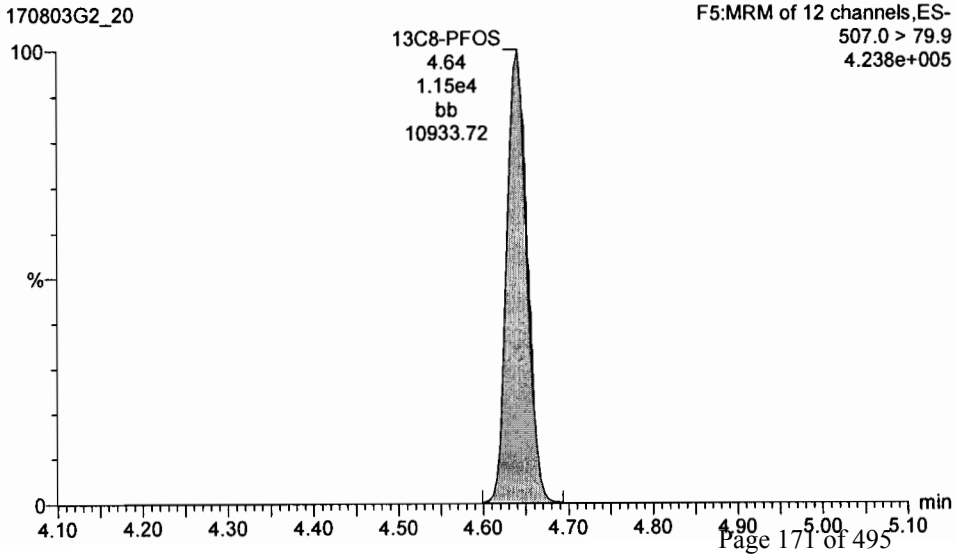




13C2-PFOA



13C8-PFOS

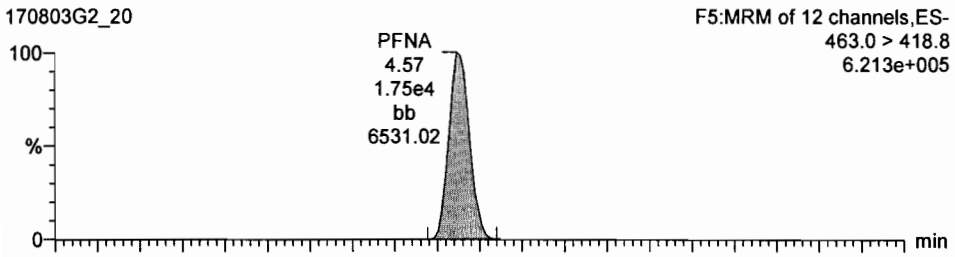


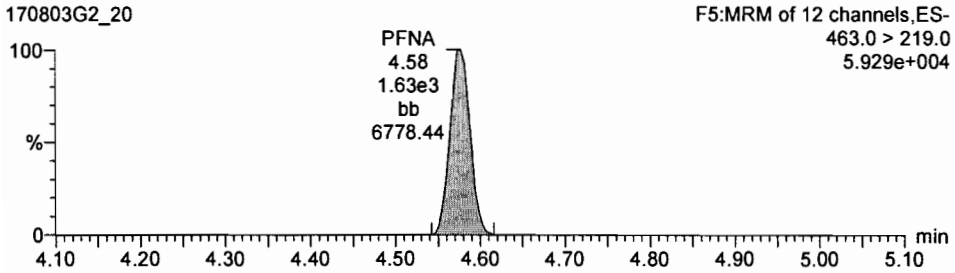
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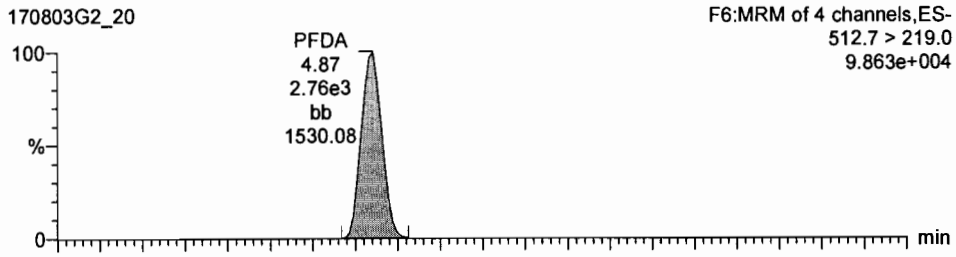
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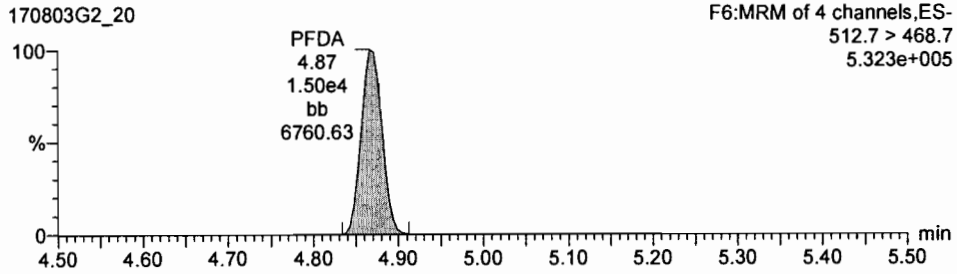
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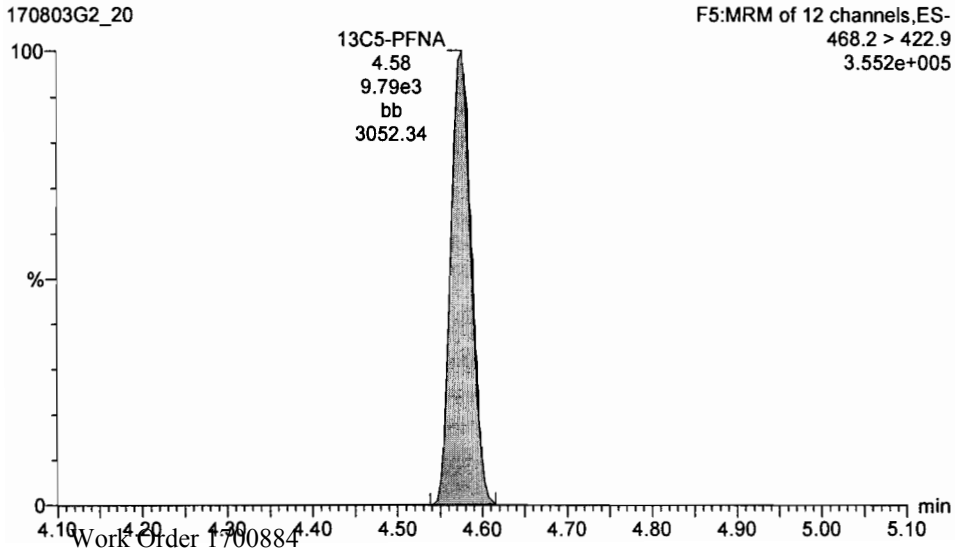


PFDA

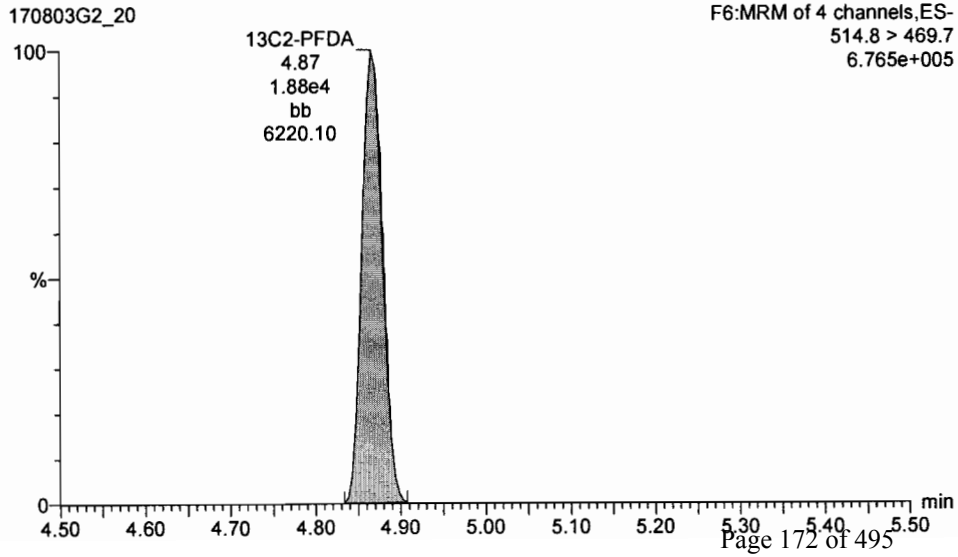




13C5-PFNA



13C2-PFDA

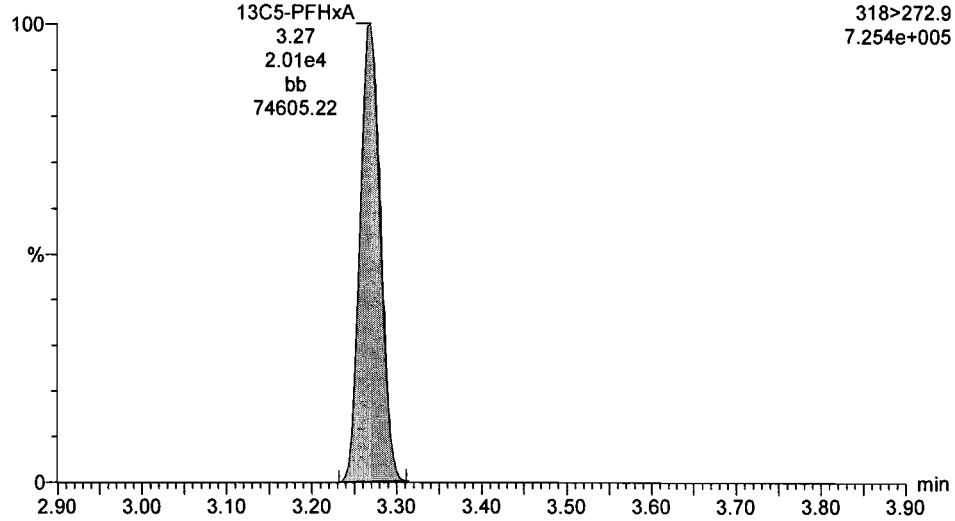


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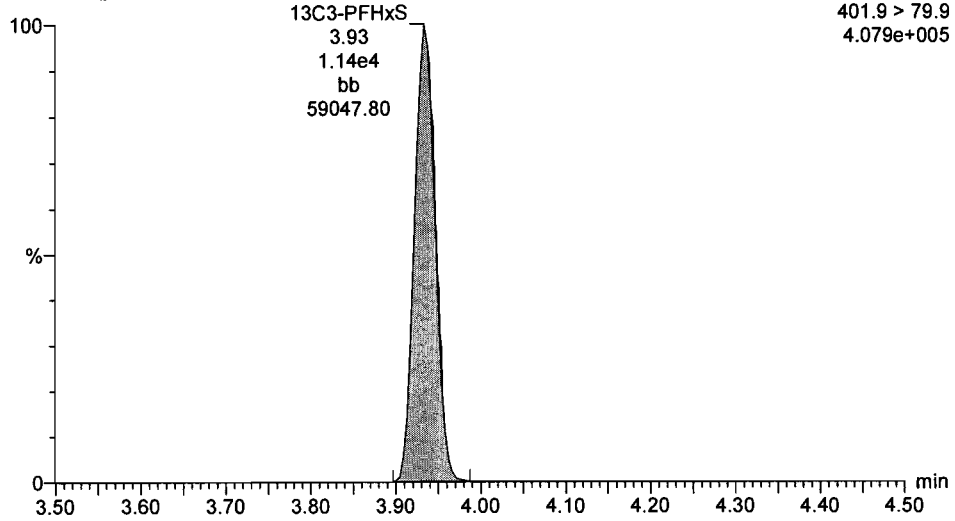
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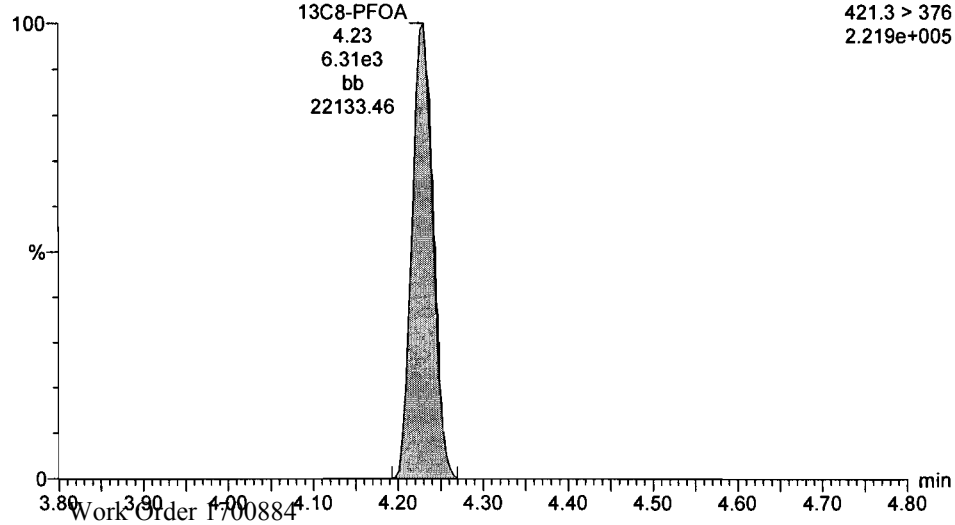
13C5-PFHxA



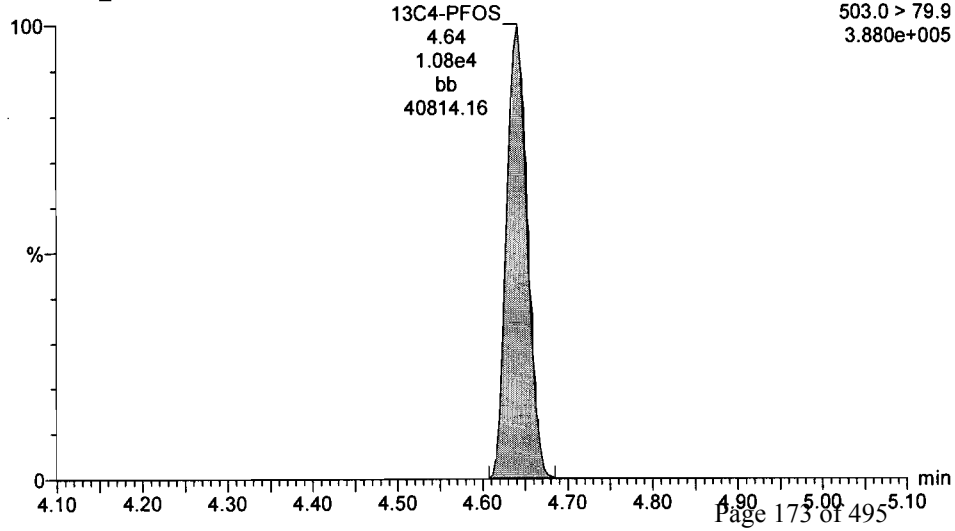
13C3-PFHxS



13C8-PFOA



13C4-PFOS

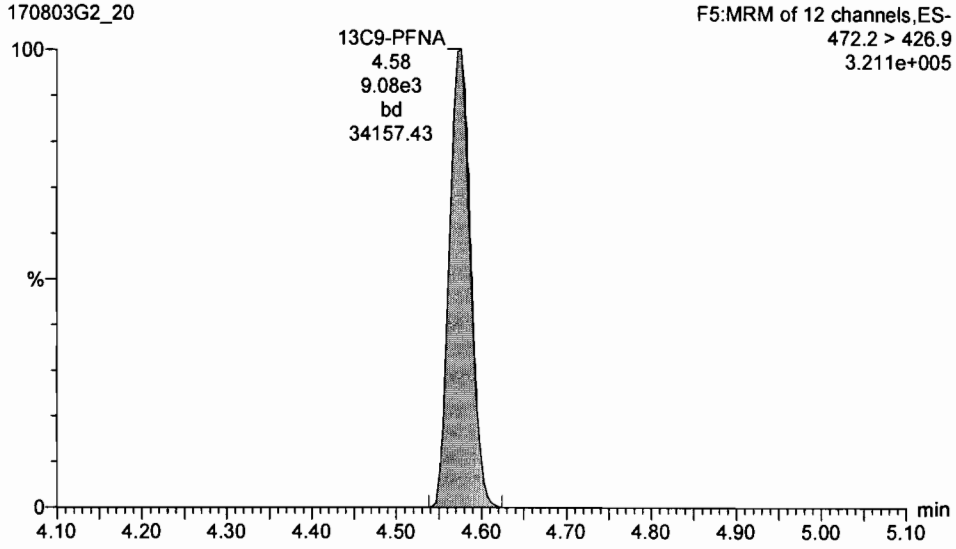


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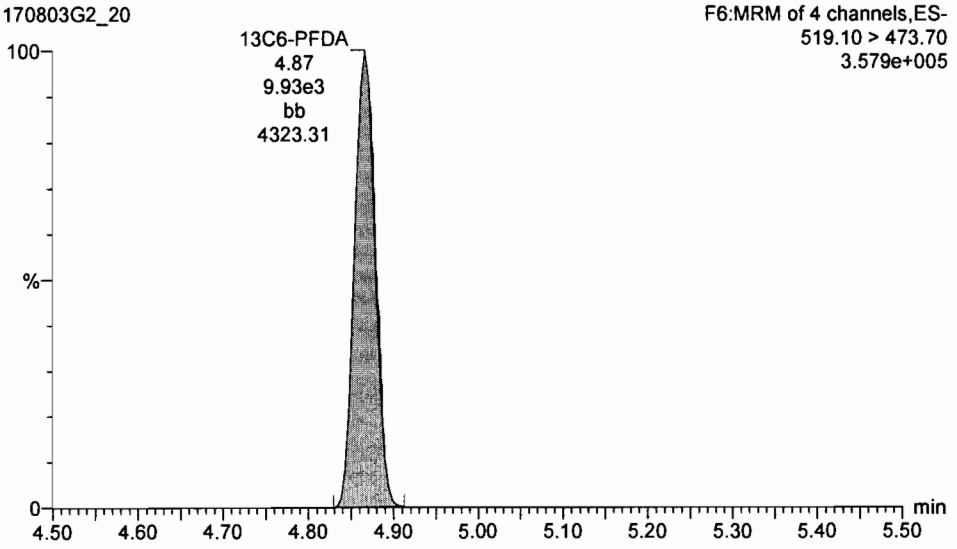
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13C9-PFNA



13C6-PFDA



INITIAL CALIBRATION

Vista Analytical Laboratory Q2

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA
Correlation coefficient: r = 0.999923, r^2 = 0.999847
Calibration curve: 1.21764 * x + 0.142512
Response type: Internal Std (Ref 9), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	4.60	8.11e2	2.39e4	0.231	-7.4	1.70
2	2	170728G1_3	0.500	4.60	1.43e3	2.42e4	0.489	-2.3	1.47
3	3	170728G1_4	1.00	4.59	2.68e3	2.52e4	0.976	-2.4	1.33
4	4	170728G1_5	2.00	4.60	3.04e3	1.39e4	2.14	6.9	1.37
5	5	170728G1_6	5.00	4.60	1.20e4	2.31e4	5.22	4.3	1.30
6	6	170728G1_7	10.0	4.60	2.24e4	2.24e4	10.1	1.5	1.25
7	7	170728G1_8	50.0	4.60	9.72e4	2.00e4	49.9	-0.3	1.22
8	8	170728G1_9	100	4.60	1.68e5	1.73e4	99.7	-0.3	1.22

kel 7/31/17

am 7/31/17

Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999599
Calibration curve: -0.0288624 * x^2 + 29.2151 * x + 0.0851315
Response type: Internal Std (Ref 10), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	4.97	4.35e2	7.62e3	0.315	25.8	37.1
2	2	170728G1_3	0.500	4.97	4.93e2	6.79e3	0.401	-19.8	23.6
3	3	170728G1_4	1.00	4.97	1.20e3	7.24e3	0.920	-8.0	26.9
4	4	170728G1_5	2.00	4.97	1.56e3	4.15e3	2.09	4.6	30.5
5	5	170728G1_6	5.00	4.98	5.72e3	6.62e3	4.82	-3.5	28.1
6	6	170728G1_7	10.0	4.98	1.13e4	6.31e3	10.0	0.5	29.1
7	7	170728G1_8	50.0	4.97	5.31e4	6.17e3	50.3	0.6	27.9
8	8	170728G1_9	100	4.97	9.12e4	5.64e3	99.8	-0.2	26.3

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: PFDS
Coefficient of Determination: R^2 = 0.999845
Calibration curve: 0.00050466 * x^2 + 0.454912 * x + -0.0161039
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.14	2.55e2	3.18e4	0.256	2.3	0.401
2	2	170728G1_3	0.500	5.14	5.53e2	3.12e4	0.522	4.4	0.443
3	3	170728G1_4	1.00	5.13	1.10e3	3.15e4	0.992	-0.8	0.436
4	4	170728G1_5	2.00	5.14	1.16e3	1.71e4	1.89	-5.3	0.423
5	5	170728G1_6	5.00	5.14	5.41e3	3.10e4	4.80	-4.0	0.436
6	6	170728G1_7	10.0	5.14	1.16e4	3.06e4	10.4	3.7	0.475
7	7	170728G1_8	50.0	5.14	4.81e4	2.51e4	49.9	-0.2	0.479
8	8	170728G1_9	100	5.14	8.47e4	2.10e4	100	0.0	0.505

Compound name: PFUnA
Correlation coefficient: r = 0.999740, r^2 = 0.999481
Calibration curve: 0.950369 * x + 0.261679
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.10	1.12e3	3.18e4	0.187	-25.2	1.76
2	2	170728G1_3	0.500	5.10	1.99e3	3.12e4	0.563	12.6	1.59
3	3	170728G1_4	1.00	5.10	3.01e3	3.15e4	0.982	-1.8	1.19
4	4	170728G1_5	2.00	5.10	3.37e3	1.71e4	2.32	16.0	1.23
5	5	170728G1_6	5.00	5.11	1.25e4	3.10e4	5.03	0.5	1.01
6	6	170728G1_7	10.0	5.11	2.34e4	3.06e4	9.78	-2.2	0.956
7	7	170728G1_8	50.0	5.11	9.65e4	2.51e4	50.3	0.6	0.961
8	8	170728G1_9	100	5.11	1.59e5	2.10e4	99.6	-0.4	0.949

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999066
Calibration curve: -0.0319951 * x^2 + 17.7619 * x + -1.1299
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.10	1.67e2	9.15e3	0.230	-7.9	11.8
2	2	170728G1_3	0.500	5.10	4.69e2	8.77e3	0.554	10.7	17.4
3	3	170728G1_4	1.00	5.10	9.50e2	8.60e3	1.08	7.7	18.0
4	4	170728G1_5	2.00	5.10	1.01e3	5.41e3	1.78	-11.0	15.2
5	5	170728G1_6	5.00	5.10	4.06e3	8.08e3	4.70	-6.0	16.3
6	6	170728G1_7	10.0	5.10	8.84e3	7.73e3	10.7	7.4	18.6
7	7	170728G1_8	50.0	5.10	3.22e4	6.56e3	49.4	-1.3	16.0
8	8	170728G1_9	100	5.10	5.05e4	5.62e3	100	0.3	14.6

Compound name: PFDoA
Correlation coefficient: r = 0.999801, r^2 = 0.999601
Calibration curve: 0.121673 * x + 0.000589951
Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.34	1.06e2	4.00e4	0.268	7.4	0.133
2	2	170728G1_3	0.500	5.34	1.68e2	3.98e4	0.429	-14.2	0.106
3	3	170728G1_4	1.00	5.33	3.50e2	3.87e4	0.924	-7.6	0.113
4	4	170728G1_5	2.00	5.34	4.94e2	2.34e4	2.17	8.3	0.132
5	5	170728G1_6	5.00	5.34	2.00e3	4.03e4	5.09	1.7	0.124
6	6	170728G1_7	10.0	5.34	3.90e3	3.82e4	10.5	4.9	0.128
7	7	170728G1_8	50.0	5.34	1.59e4	3.26e4	50.2	0.4	0.122
8	8	170728G1_9	100	5.34	2.62e4	2.71e4	99.2	-0.8	0.121

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: PFTrDA
Correlation coefficient: r = 0.999657, r^2 = 0.999315
Calibration curve: 1.21286 * x + -0.015692
Response type: Internal Std (Ref Multiple), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.54	9.84e2	0.00e0	0.261	4.3	1.20
2	2	170728G1_3	0.500	5.54	2.09e3	0.00e0	0.536	7.3	1.27
3	3	170728G1_4	1.00	5.54	3.83e3	0.00e0	0.970	-3.0	1.16
4	4	170728G1_5	2.00	5.54	4.37e3	0.00e0	1.98	-1.0	1.19
5	5	170728G1_6	5.00	5.55	2.00e4	0.00e0	5.06	1.3	1.23
6	6	170728G1_7	10.0	5.54	3.43e4	0.00e0	9.02	-9.8	1.09
7	7	170728G1_8	50.0	5.54	1.63e5	0.00e0	50.0	0.0	1.21
8	8	170728G1_9	100	5.54	2.78e5	0.00e0	101	0.9	1.22

Compound name: PFTeDA
Correlation coefficient: r = 0.998269, r^2 = 0.996541
Calibration curve: 0.904178 * x + 0.15515
Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.72	1.15e3	4.19e4	0.208	-17.0	1.37
2	2	170728G1_3	0.500	5.72	2.48e3	4.23e4	0.637	27.4	1.46
3	3	170728G1_4	1.00	5.72	4.25e3	4.37e4	1.17	17.3	1.22
4	4	170728G1_5	2.00	5.72	4.03e3	2.24e4	2.32	15.8	1.12
5	5	170728G1_6	5.00	5.72	1.83e4	4.14e4	5.94	18.9	1.11
6	6	170728G1_7	10.0	5.72	3.20e4	4.03e4	10.8	8.1	0.993
7	7	170728G1_8	50.0	5.72	1.27e5	3.47e4	50.4	0.9	0.915
8	8	170728G1_9	100	5.72	2.08e5	2.96e4	97.2	-2.8	0.881

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: 13C8-PFOSA
Response Factor: 1.14586
RRF SD: 0.0797179, Relative SD: 6.95702
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	12.5	4.59	2.39e4	2.03e4	12.9	2.9	1.18
2	2	170728G1_3	12.5	4.59	2.42e4	2.24e4	11.8	-5.7	1.08
3	3	170728G1_4	12.5	4.59	2.52e4	2.02e4	13.6	8.8	1.25
4	4	170728G1_5	12.5	4.59	1.39e4	1.26e4	12.0	-3.7	1.10
5	5	170728G1_6	12.5	4.60	2.31e4	2.24e4	11.3	-9.9	1.03
6	6	170728G1_7	12.5	4.60	2.24e4	1.91e4	12.8	2.4	1.17
7	7	170728G1_8	12.5	4.60	2.00e4	1.82e4	12.0	-4.0	1.10
8	8	170728G1_9	12.5	4.60	1.73e4	1.38e4	13.7	9.3	1.25

Compound name: d3-N-MeFOSAA
Response Factor: 0.0263732
RRF SD: 0.0028797, Relative SD: 10.919
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	163	4.97	7.62e3	2.03e4	178	9.6	0.0289
2	2	170728G1_3	163	4.97	6.79e3	2.24e4	144	-11.7	0.0233
3	3	170728G1_4	163	4.97	7.24e3	2.02e4	170	4.4	0.0275
4	4	170728G1_5	163	4.97	4.15e3	1.26e4	157	-3.6	0.0254
5	5	170728G1_6	163	4.97	6.62e3	2.24e4	140	-13.6	0.0228
6	6	170728G1_7	163	4.97	6.31e3	1.91e4	157	-3.6	0.0254
7	7	170728G1_8	163	4.97	6.17e3	1.82e4	161	-0.8	0.0262
8	8	170728G1_9	163	4.97	5.64e3	1.38e4	194	19.4	0.0315

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: 13C2-PFUnA
Response Factor: 1.47077
RRF SD: 0.0998621, Relative SD: 6.78977
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	12.5	5.10	3.18e4	2.03e4	13.3	6.6	1.57
2	2	170728G1_3	12.5	5.10	3.12e4	2.24e4	11.8	-5.5	1.39
3	3	170728G1_4	12.5	5.10	3.15e4	2.02e4	13.2	5.9	1.56
4	4	170728G1_5	12.5	5.10	1.71e4	1.26e4	11.5	-7.6	1.36
5	5	170728G1_6	12.5	5.11	3.10e4	2.24e4	11.8	-5.6	1.39
6	6	170728G1_7	12.5	5.10	3.06e4	1.91e4	13.6	8.8	1.60
7	7	170728G1_8	12.5	5.10	2.51e4	1.82e4	11.7	-6.0	1.38
8	8	170728G1_9	12.5	5.11	2.10e4	1.38e4	12.9	3.4	1.52

Compound name: d5-N-EtFOSAA
Response Factor: 0.0310895
RRF SD: 0.00247479, Relative SD: 7.96021
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	163	5.09	9.15e3	2.03e4	182	11.7	0.0347
2	2	170728G1_3	163	5.09	8.77e3	2.24e4	157	-3.2	0.0301
3	3	170728G1_4	163	5.09	8.60e3	2.02e4	171	5.2	0.0327
4	4	170728G1_5	163	5.09	5.41e3	1.26e4	173	6.5	0.0331
5	5	170728G1_6	163	5.10	8.08e3	2.24e4	145	-10.6	0.0278
6	6	170728G1_7	163	5.09	7.73e3	1.91e4	163	0.1	0.0311
7	7	170728G1_8	163	5.09	6.56e3	1.82e4	145	-10.6	0.0278
8	8	170728G1_9	163	5.09	5.62e3	1.38e4	164	0.9	0.0314

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: 13C2-PFDoA
Response Factor: 1.88683
RRF SD: 0.0900852, Relative SD: 4.77443
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	12.5	5.34	4.00e4	2.03e4	13.1	4.6	1.97
2	2	170728G1_3	12.5	5.34	3.98e4	2.24e4	11.8	-5.9	1.77
3	3	170728G1_4	12.5	5.34	3.87e4	2.02e4	12.7	1.5	1.91
4	4	170728G1_5	12.5	5.34	2.34e4	1.26e4	12.3	-1.4	1.86
5	5	170728G1_6	12.5	5.34	4.03e4	2.24e4	11.9	-4.5	1.80
6	6	170728G1_7	12.5	5.33	3.82e4	1.91e4	13.3	6.1	2.00
7	7	170728G1_8	12.5	5.33	3.26e4	1.82e4	11.9	-4.7	1.80
8	8	170728G1_9	12.5	5.33	2.71e4	1.38e4	13.1	4.4	1.97

Compound name: 13C2-PFTeDA
Response Factor: 1.9899
RRF SD: 0.148011, Relative SD: 7.43812
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	12.5	5.72	4.19e4	2.03e4	13.0	3.8	2.07
2	2	170728G1_3	12.5	5.72	4.23e4	2.24e4	11.9	-5.1	1.89
3	3	170728G1_4	12.5	5.72	4.37e4	2.02e4	13.6	8.5	2.16
4	4	170728G1_5	12.5	5.72	2.24e4	1.26e4	11.2	-10.5	1.78
5	5	170728G1_6	12.5	5.72	4.14e4	2.24e4	11.6	-6.9	1.85
6	6	170728G1_7	12.5	5.72	4.03e4	1.91e4	13.3	6.2	2.11
7	7	170728G1_8	12.5	5.72	3.47e4	1.82e4	12.0	-3.8	1.91
8	8	170728G1_9	12.5	5.72	2.96e4	1.38e4	13.5	7.9	2.15

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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Compound name: 13C7-PFUnA
Response Factor: 1
RRF SD: 4.19625e-017, Relative SD: 4.19625e-015
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	12.5	5.10	2.03e4	2.03e4	12.5	0.0	1.00
2	2	170728G1_3	12.5	5.10	2.24e4	2.24e4	12.5	0.0	1.00
3	3	170728G1_4	12.5	5.10	2.02e4	2.02e4	12.5	0.0	1.00
4	4	170728G1_5	12.5	5.10	1.26e4	1.26e4	12.5	0.0	1.00
5	5	170728G1_6	12.5	5.11	2.24e4	2.24e4	12.5	0.0	1.00
6	6	170728G1_7	12.5	5.10	1.91e4	1.91e4	12.5	0.0	1.00
7	7	170728G1_8	12.5	5.10	1.82e4	1.82e4	12.5	0.0	1.00
8	8	170728G1_9	12.5	5.10	1.38e4	1.38e4	12.5	-0.0	1.00

Vista Analytical Laboratory VG-11

Dataset: Untitled

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Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

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2	170728G1_2	ST170728G1-1 PFC CS-2 17G2824	28-Jul-17	16:18:24
3	170728G1_3	ST170728G1-2 PFC CS-1 17G2825	28-Jul-17	16:30:58
4	170728G1_4	ST170728G1-3 PFC CS0 17G2826	28-Jul-17	16:43:33
5	170728G1_5	ST170728G1-4 PFC CS1 17G2827	28-Jul-17	16:56:09
6	170728G1_6	ST170728G1-5 PFC CS2 17G2828	28-Jul-17	17:09:04
7	170728G1_7	ST170728G1-6 PFC CS3 17G2829	28-Jul-17	17:21:42
8	170728G1_8	ST170728G1-7 PFC CS4 17G2830	28-Jul-17	17:34:20
9	170728G1_9	ST170728G1-8 PFC CS5 17G2831	28-Jul-17	17:47:02
10	170728G1_10	IPA	28-Jul-17	17:59:40
11	170728G1_11	SS170728G1-1 PFC SSS 17G2823	28-Jul-17	18:12:17
12	170728G1_12	IPA	28-Jul-17	18:24:50

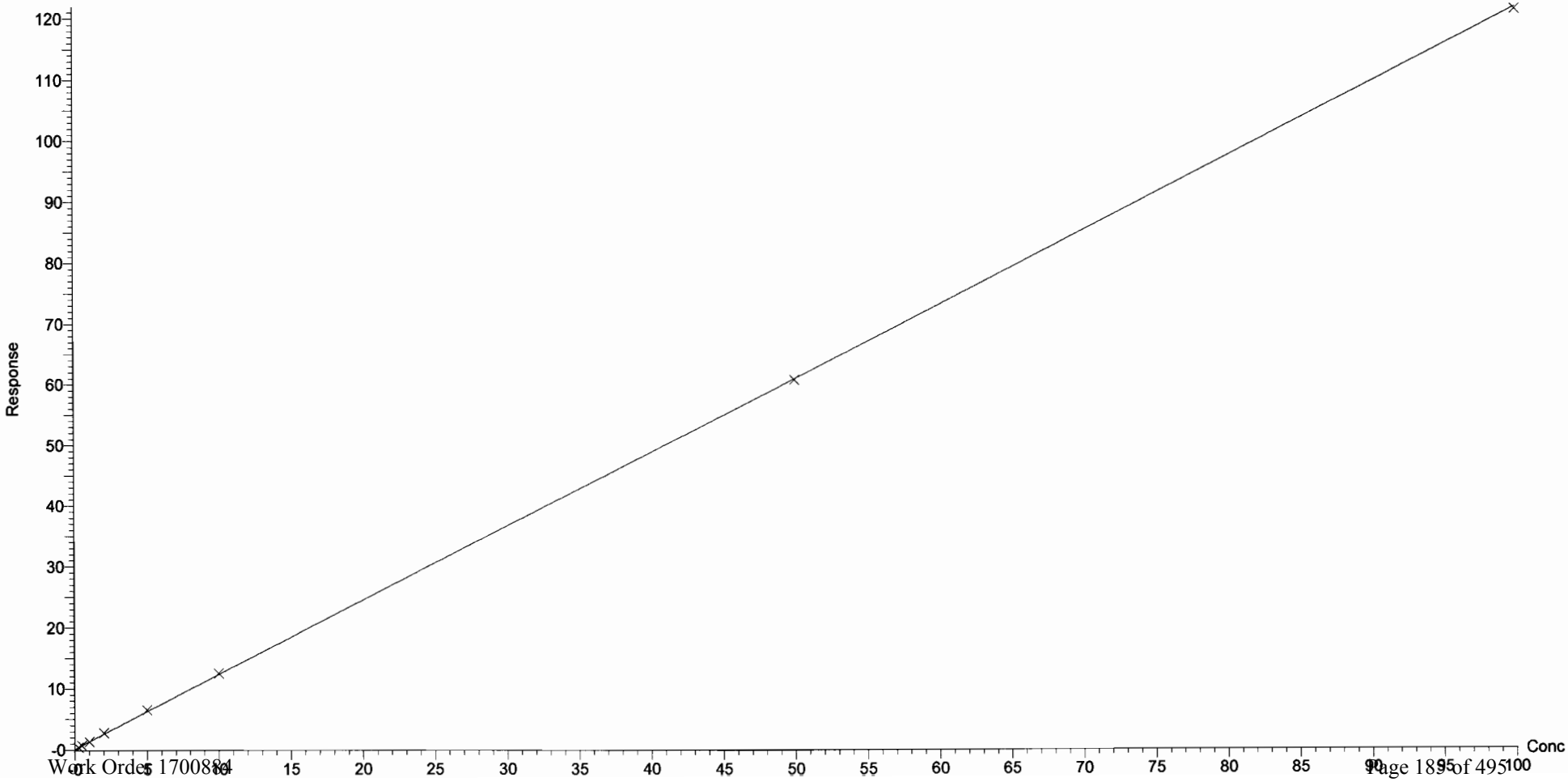
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
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Method: U:\G1.PRO\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

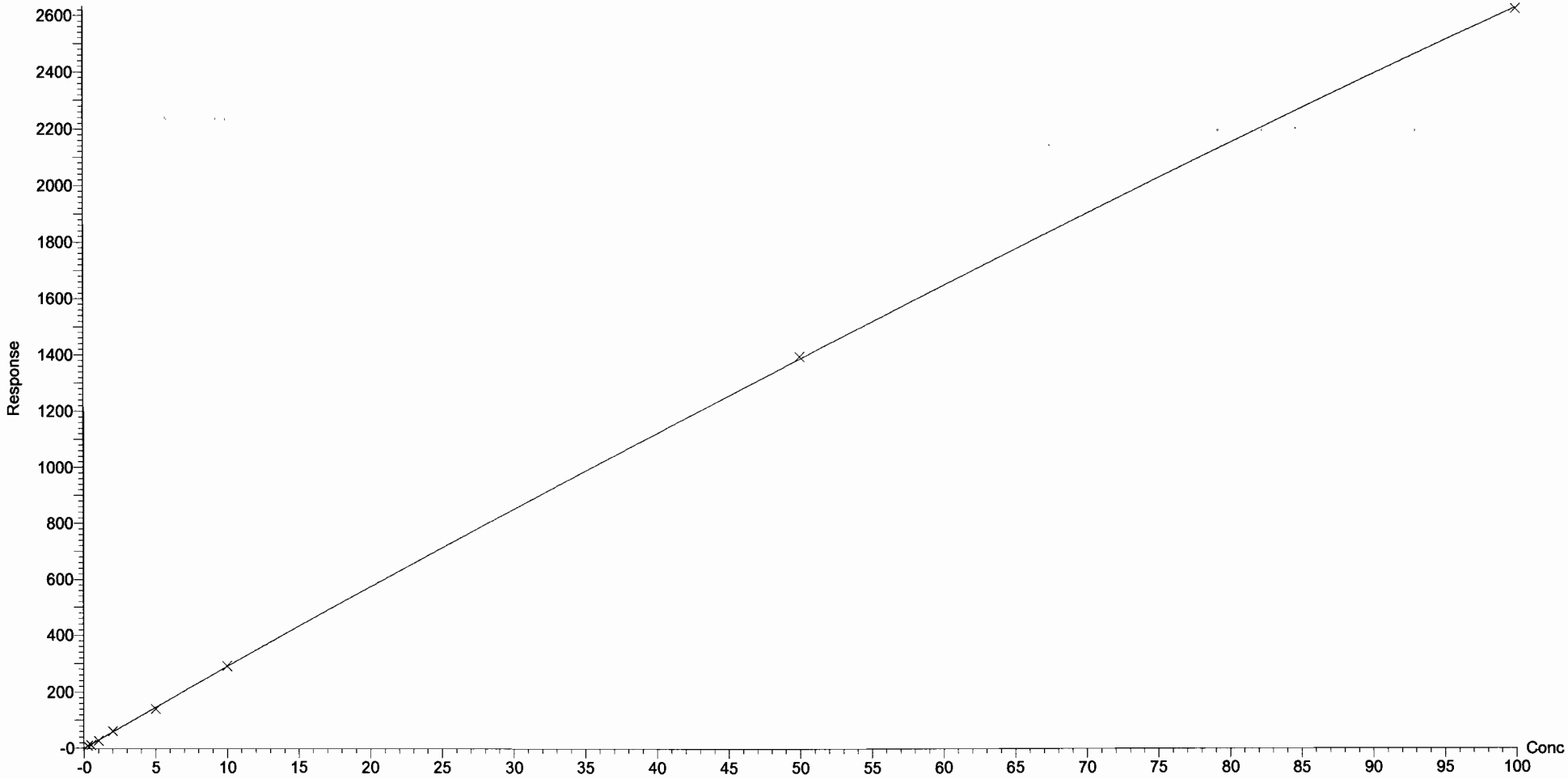
Compound name: PFOSA
Correlation coefficient: r = 0.999923, r^2 = 0.999847
Calibration curve: 1.21764 * x + 0.142512
Response type: Internal Std (Ref 9), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:49:44 Pacific Daylight Time

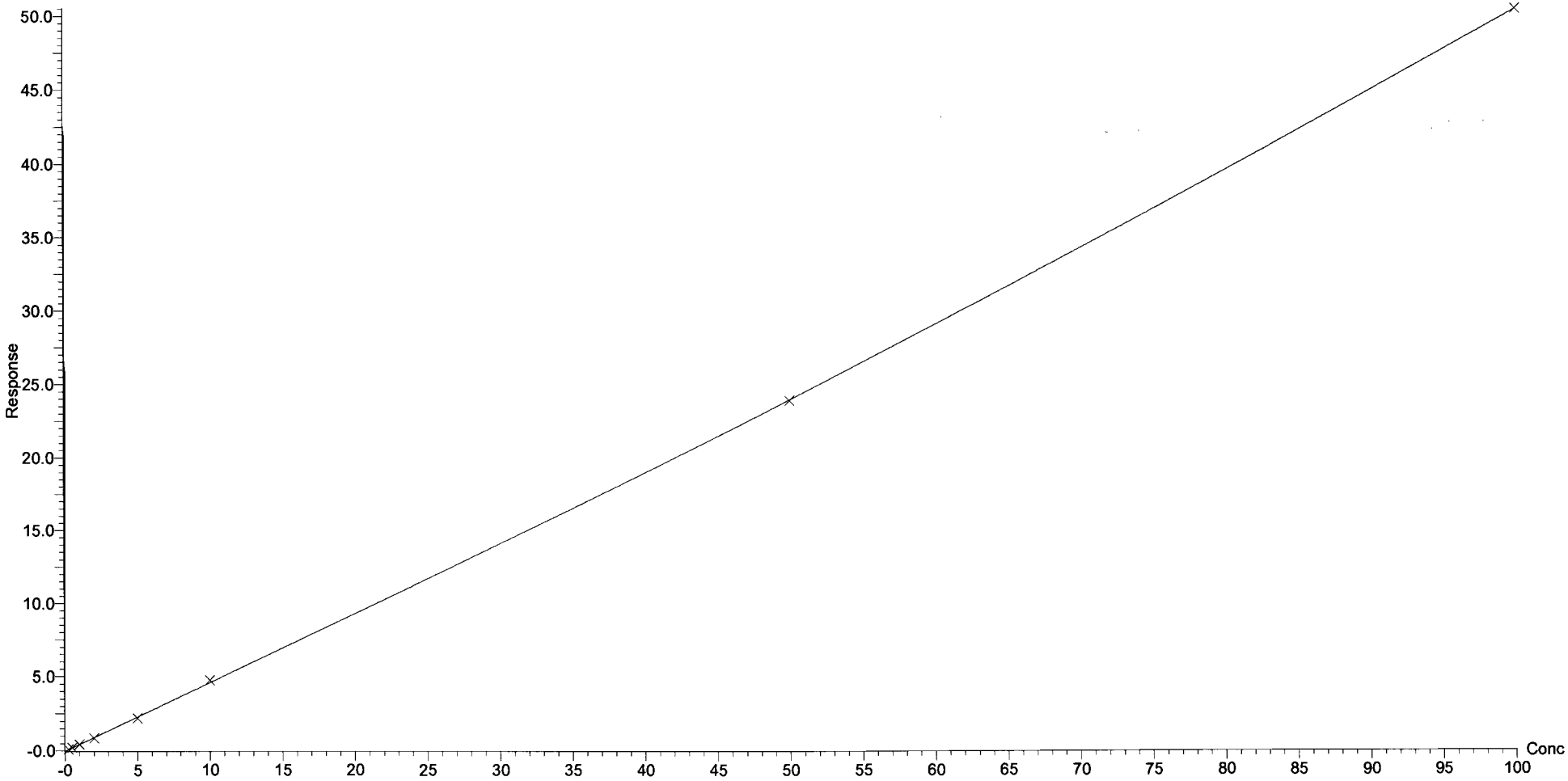
Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999599
Calibration curve: -0.0288624 * x^2 + 29.2151 * x + 0.0851315
Response type: Internal Std (Ref 10), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

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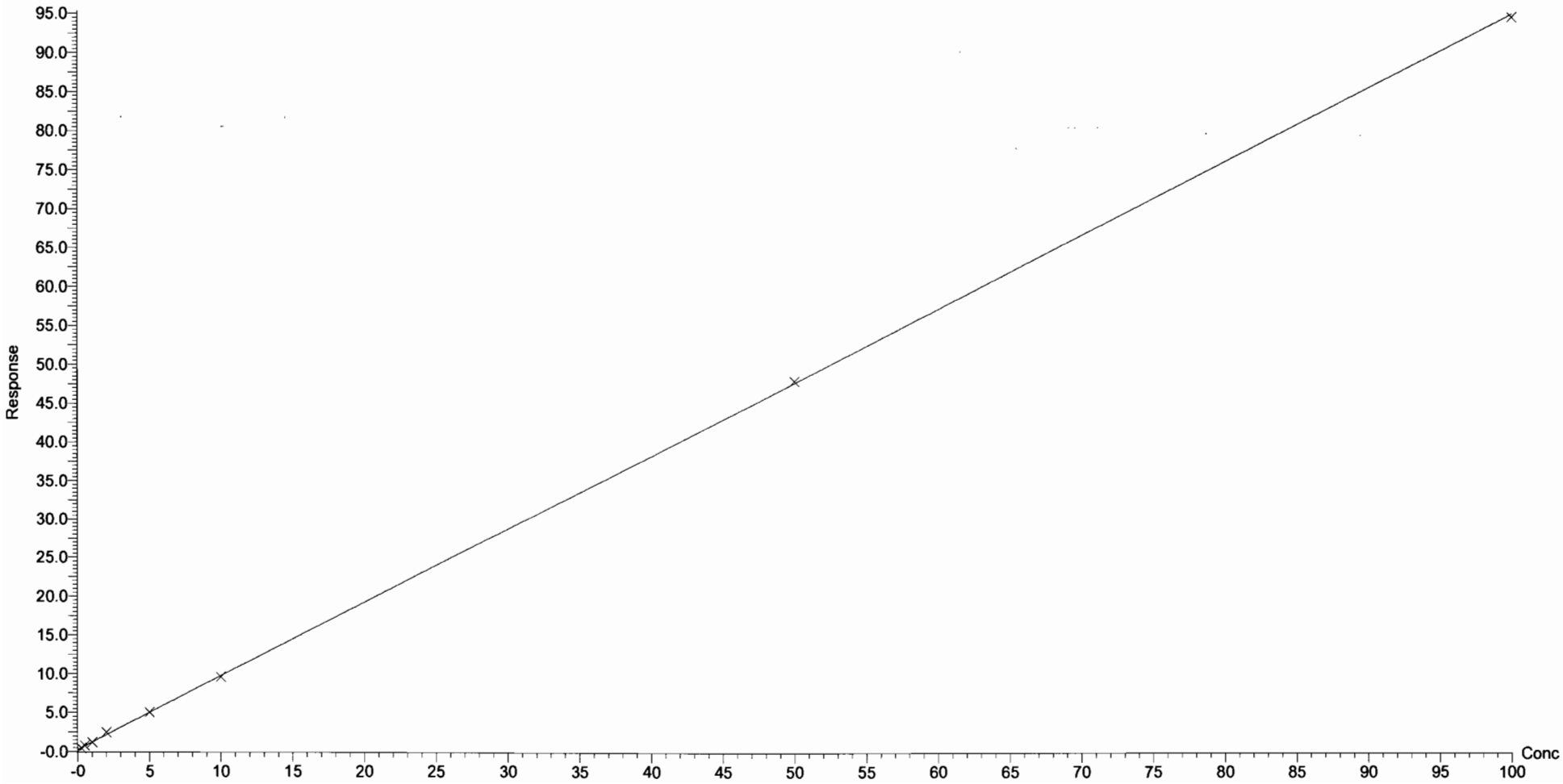
Compound name: PFDS
Coefficient of Determination: R^2 = 0.999845
Calibration curve: 0.00050466 * x^2 + 0.454912 * x + -0.0161039
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



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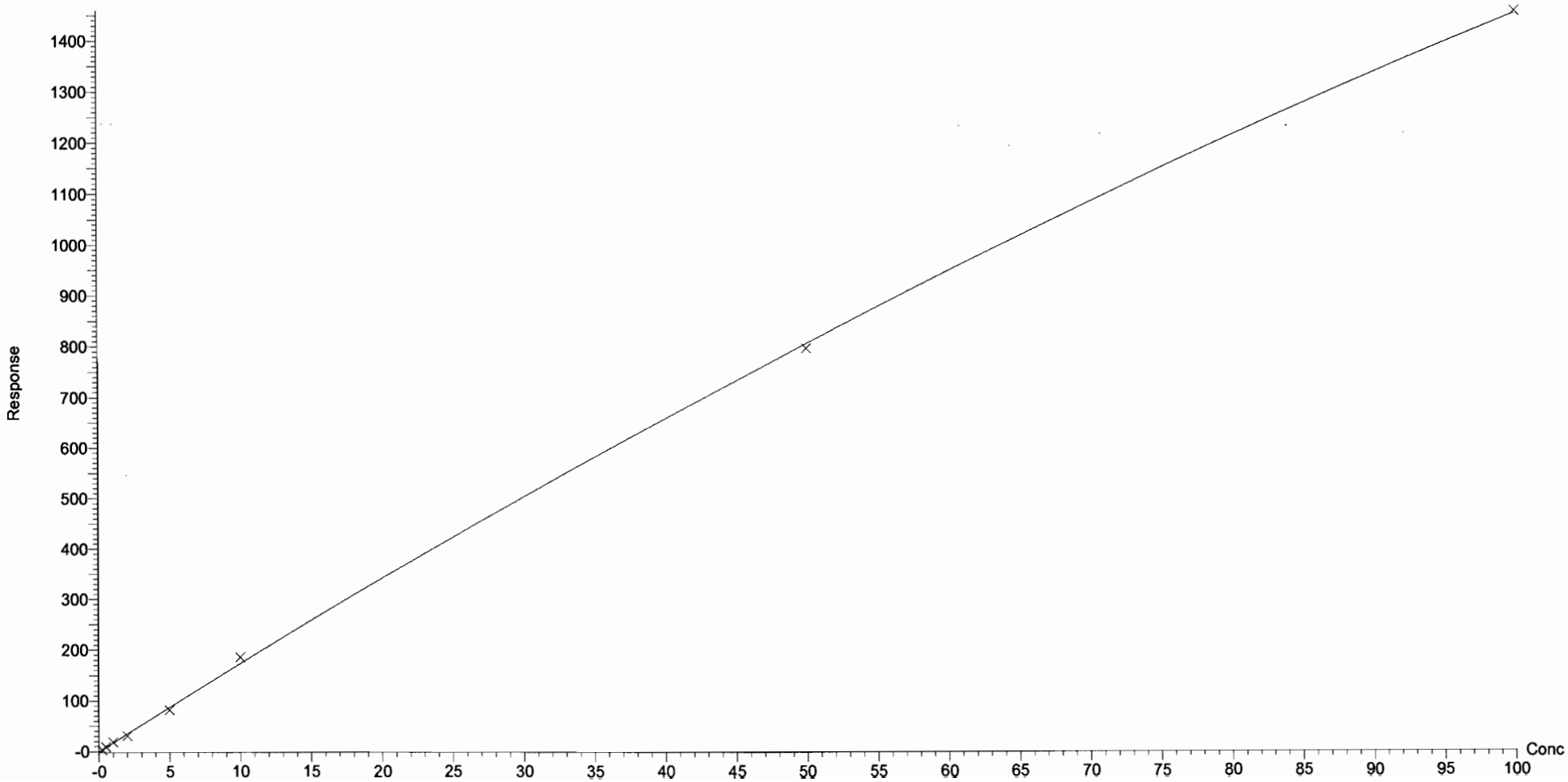
Compound name: PFUnA
Correlation coefficient: r = 0.999740, r^2 = 0.999481
Calibration curve: 0.950369 * x + 0.261679
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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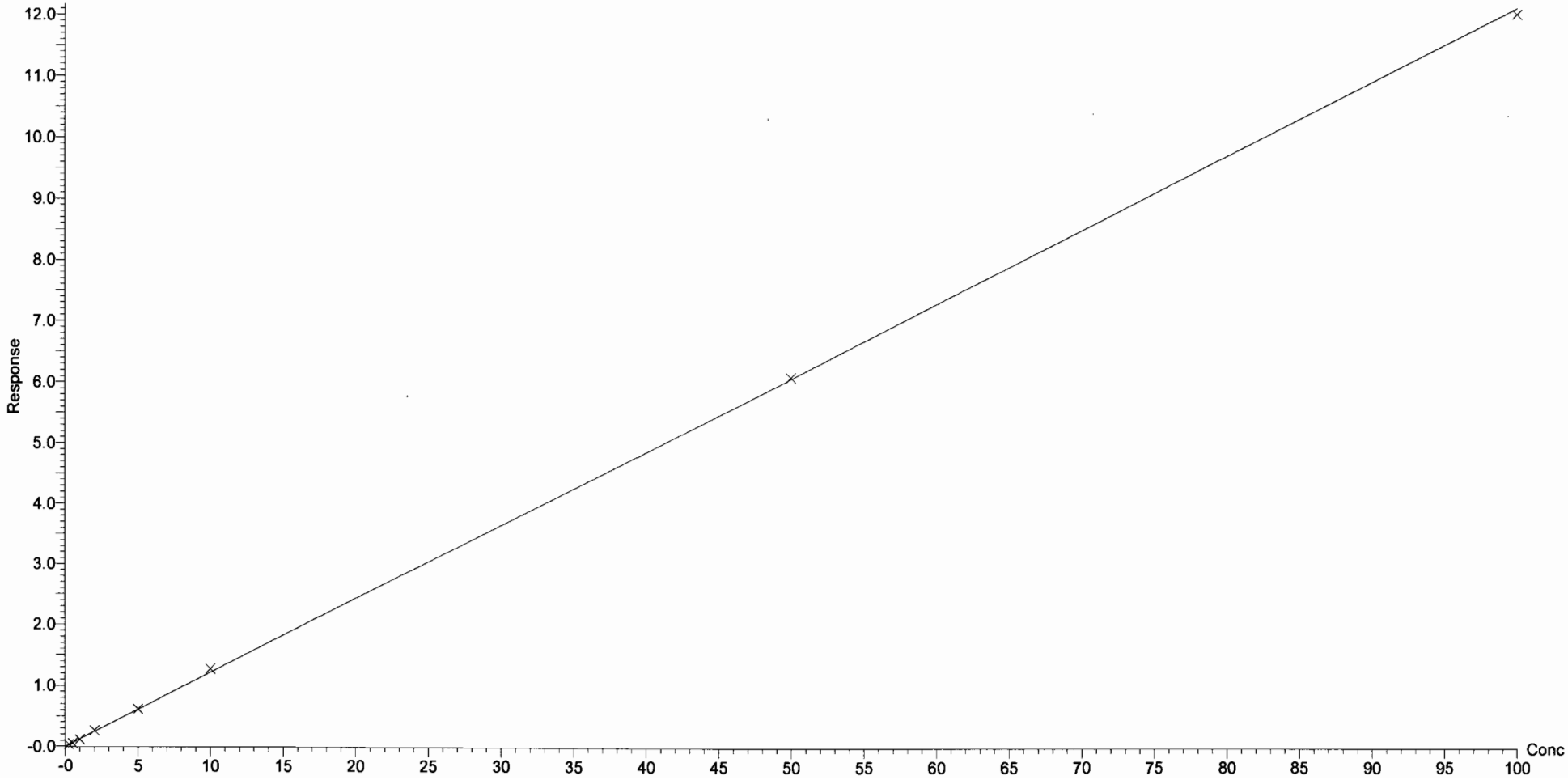
Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999066
Calibration curve: -0.0319951 * x^2 + 17.7619 * x + -1.1299
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



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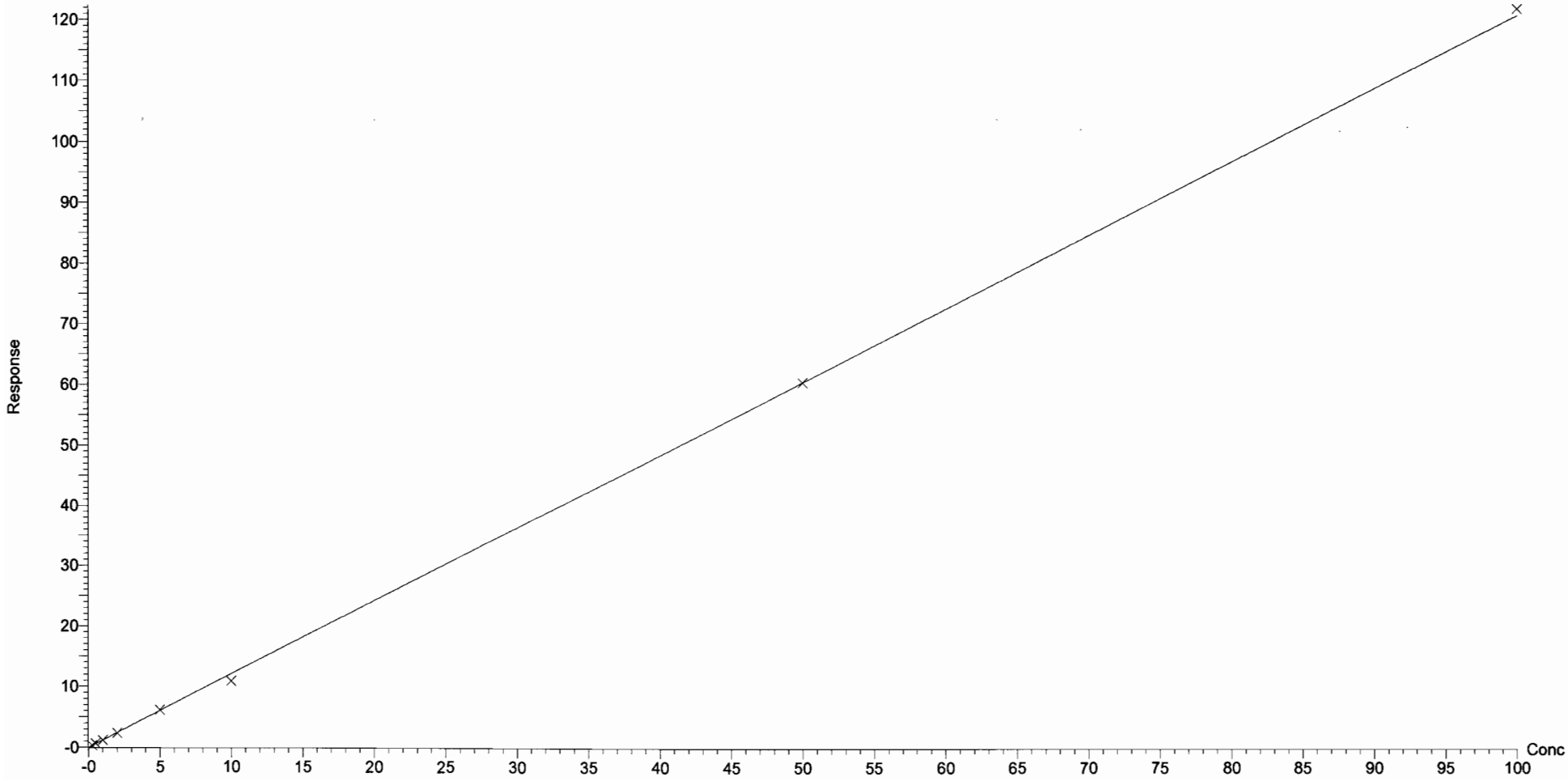
Compound name: PFDoA
Correlation coefficient: r = 0.999801, r^2 = 0.999601
Calibration curve: 0.121673 * x + 0.000589951
Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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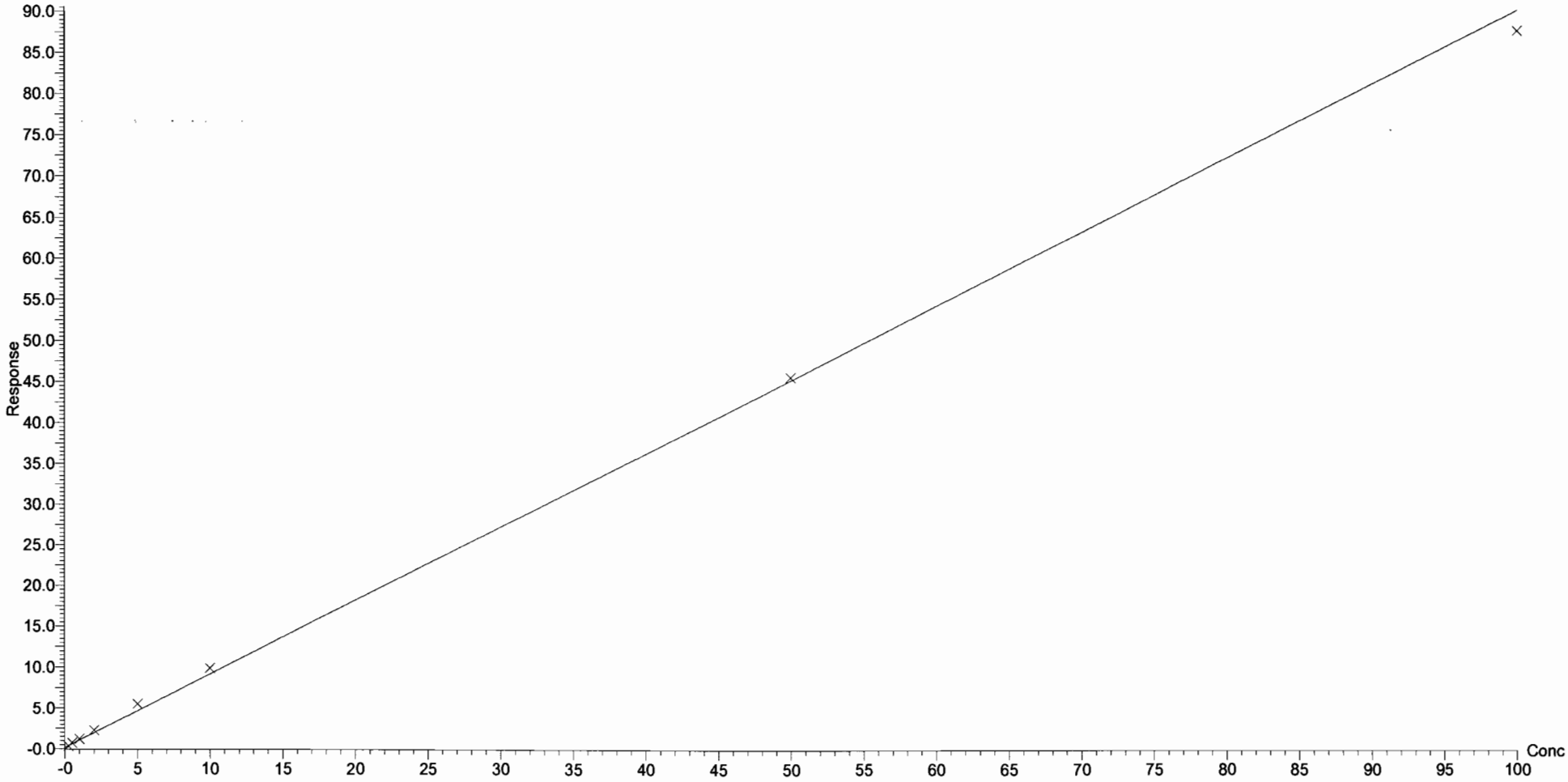
Compound name: PFTrDA
Correlation coefficient: r = 0.999657, r^2 = 0.999315
Calibration curve: 1.21286 * x + -0.015692
Response type: Internal Std (Ref Multiple), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
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Compound name: PFTeDA
Correlation coefficient: r = 0.998269, r^2 = 0.996541
Calibration curve: 0.904178 * x + 0.15515
Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Vista Analytical Laboratory Q1

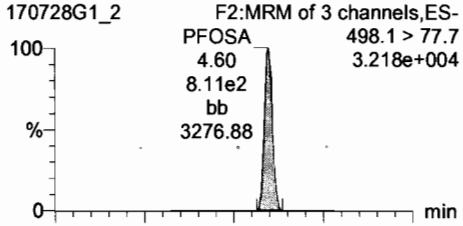
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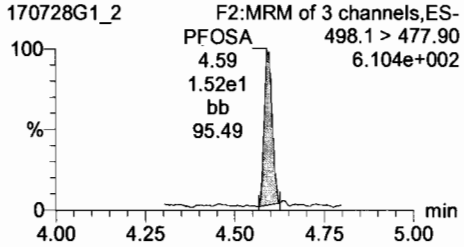
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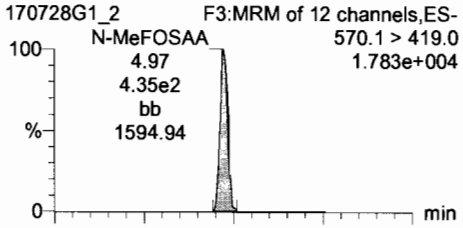
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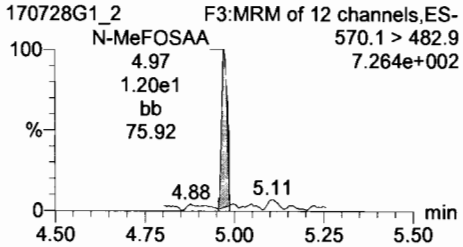
PFOSA



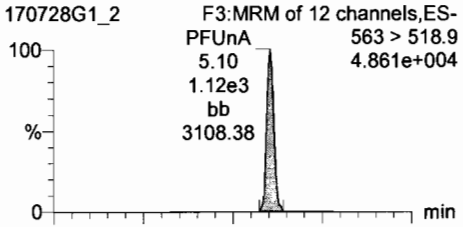


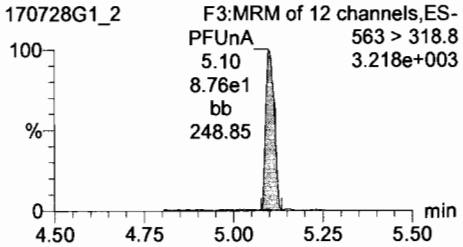
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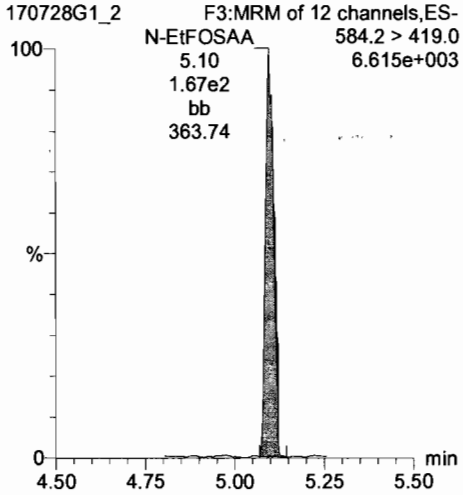


PFUnA

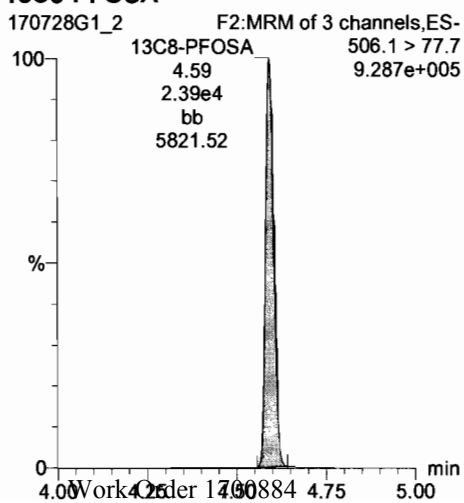




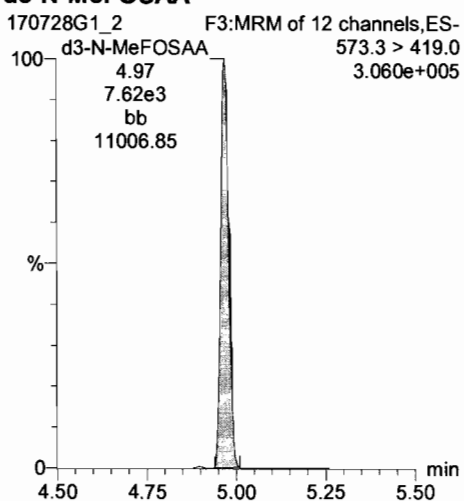
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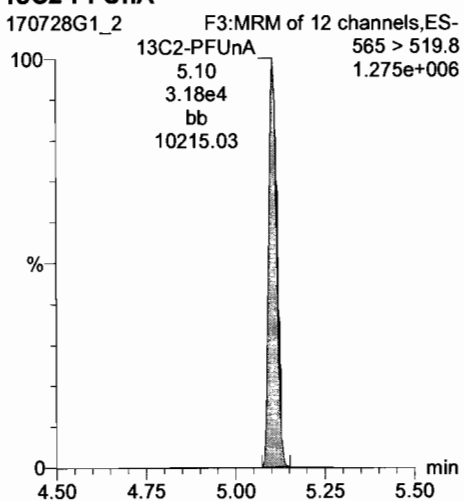
13C8-PFOSA



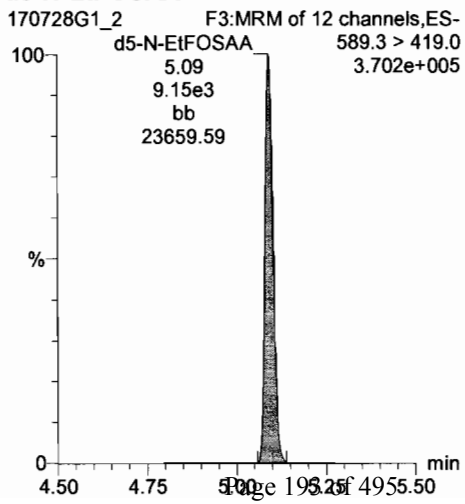
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

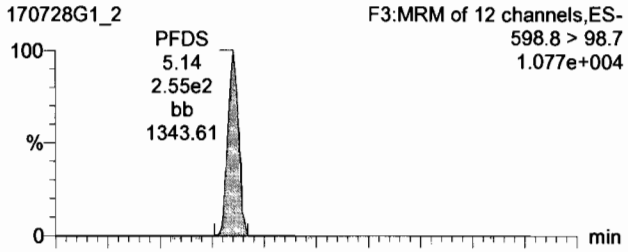


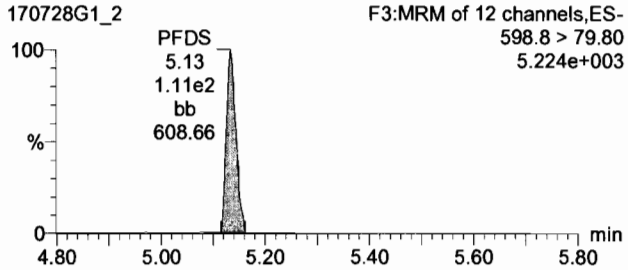
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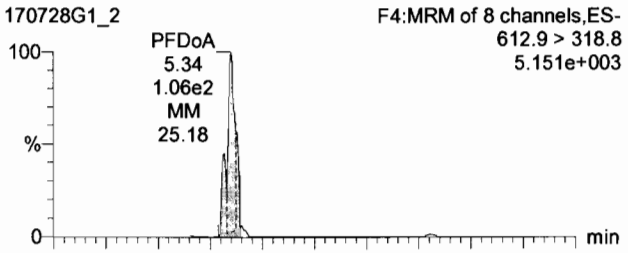
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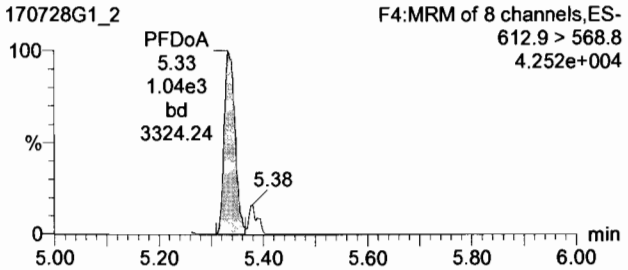
PFDS



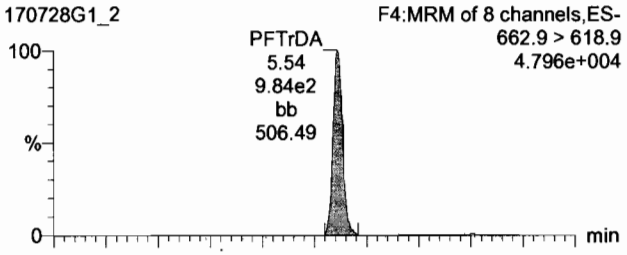


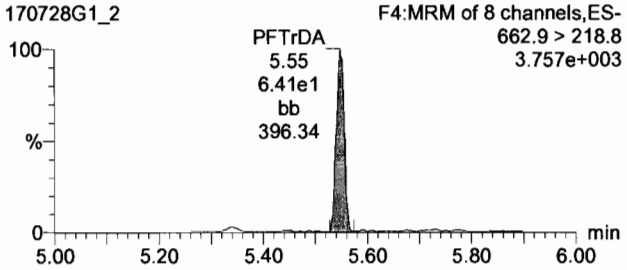
PFDoA



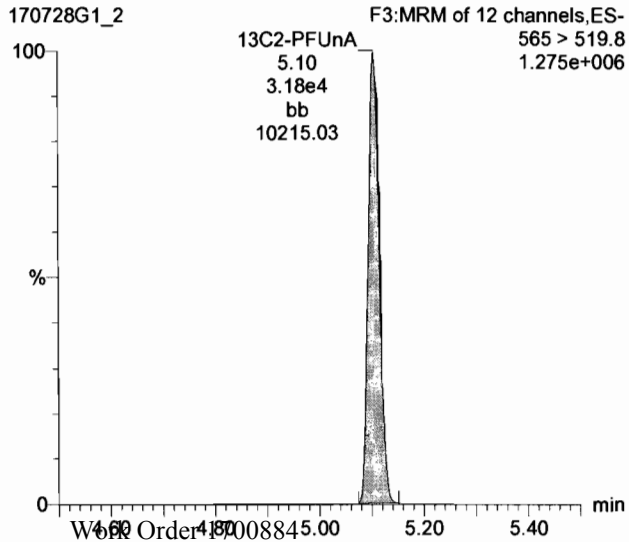


PFTrDA

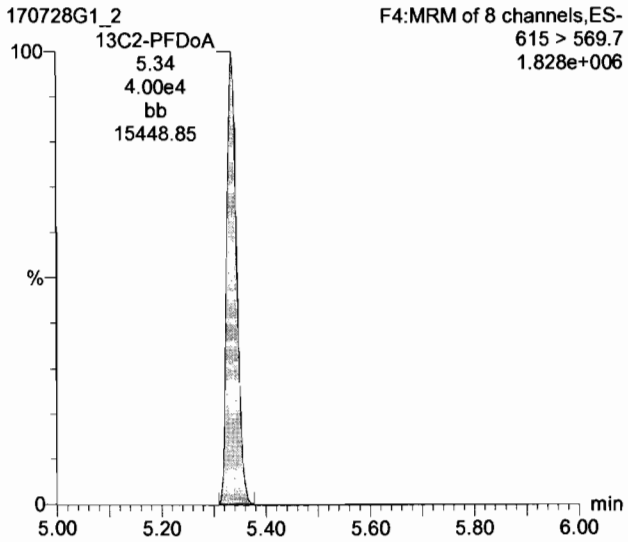




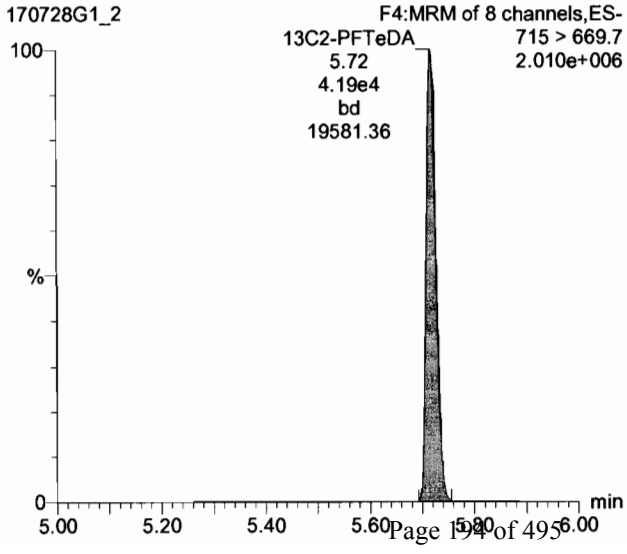
13C2-PFUnA



13C2-PFDoA



13C2-PFTeDA

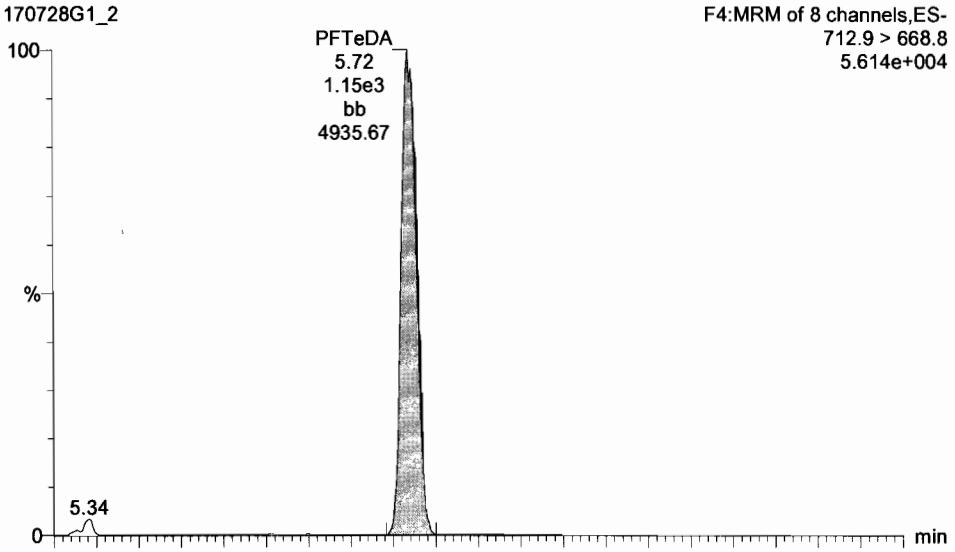


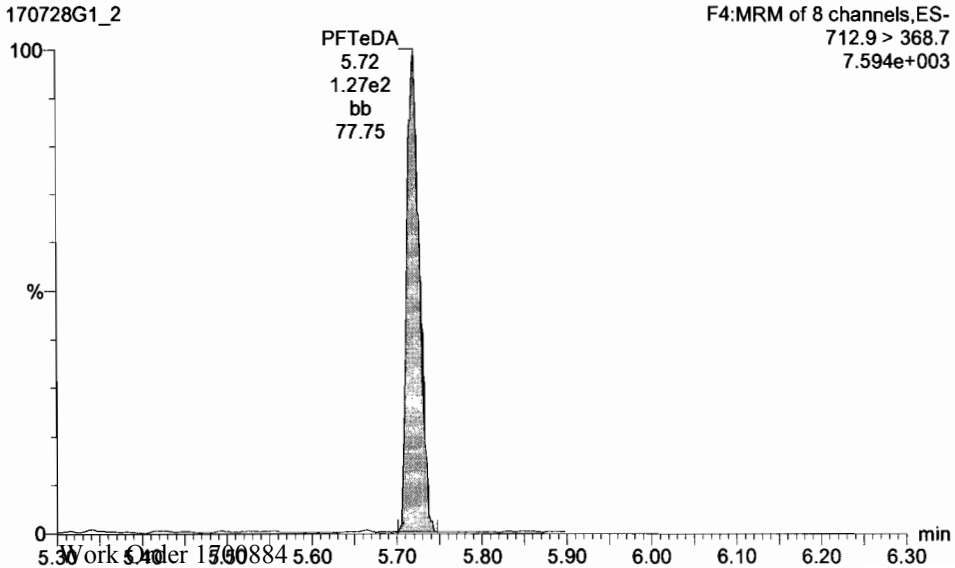
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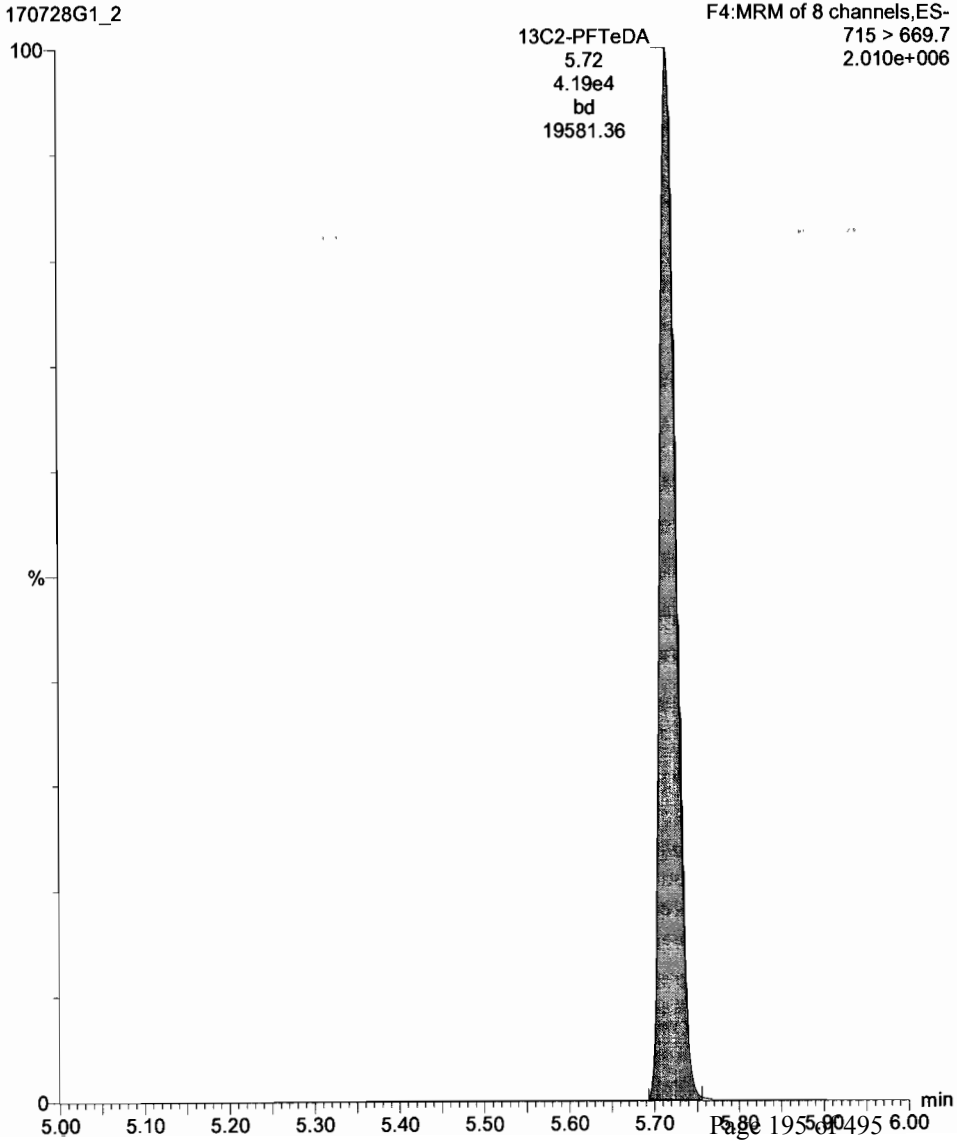
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PFTeDA





13C2-PFTeDA

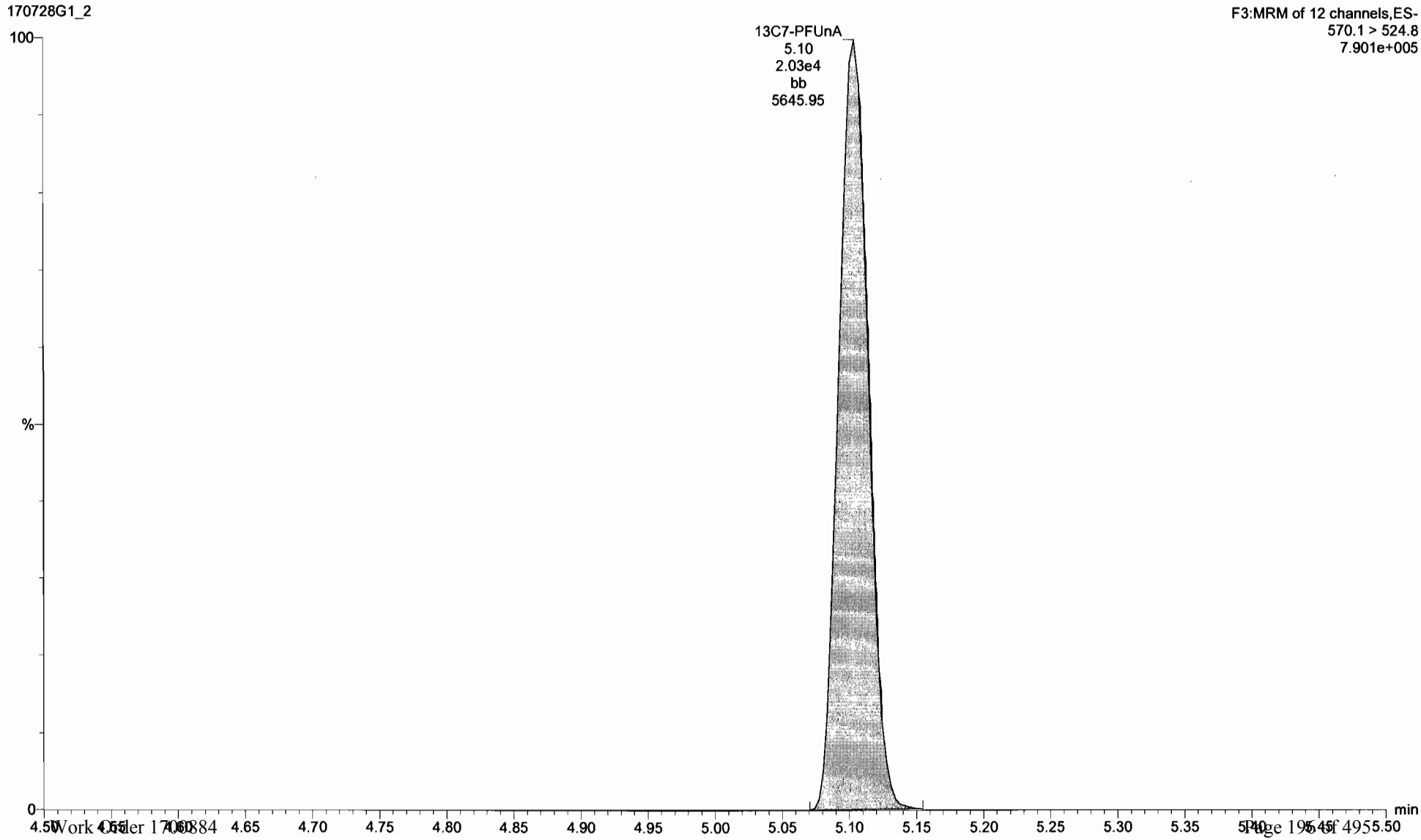


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13C7-PFUnA

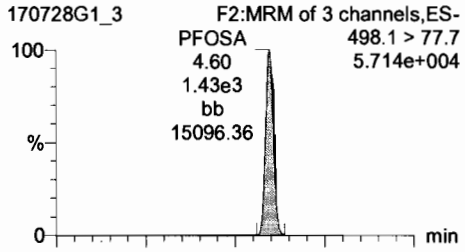


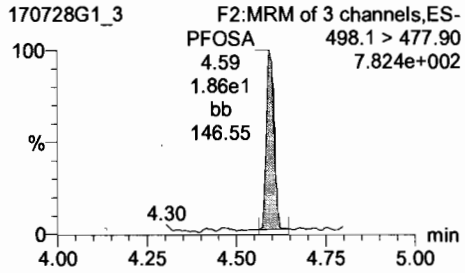
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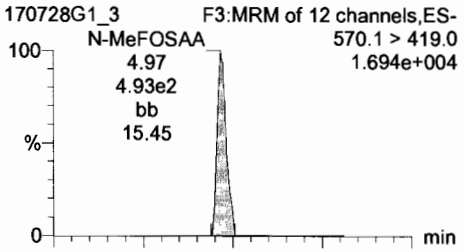
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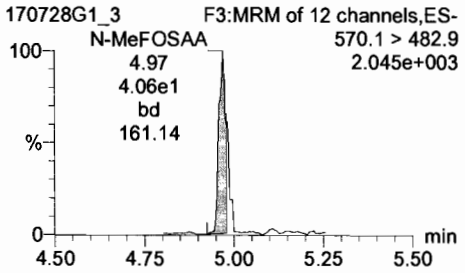
PFOSA



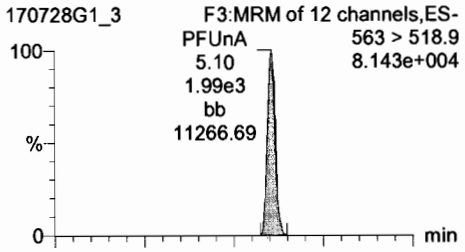


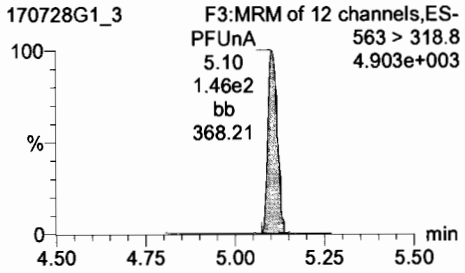
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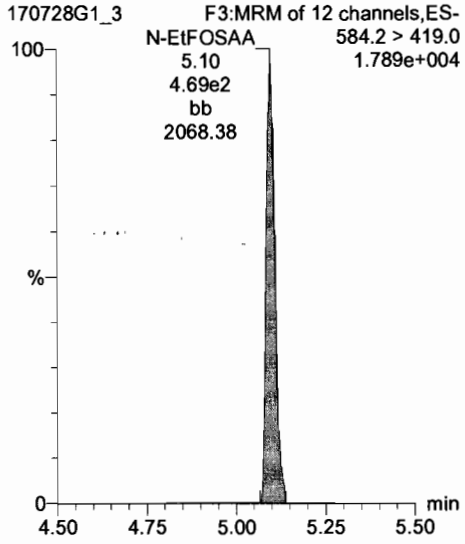


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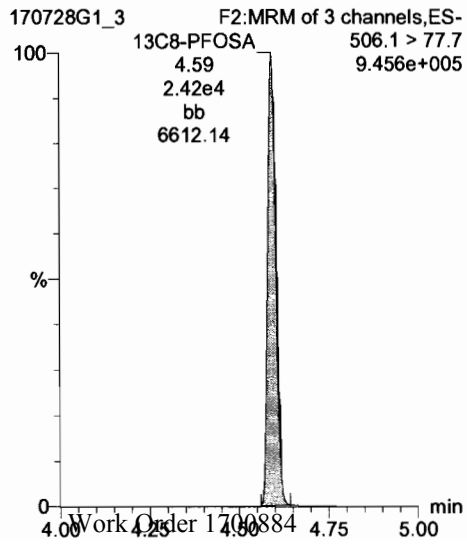




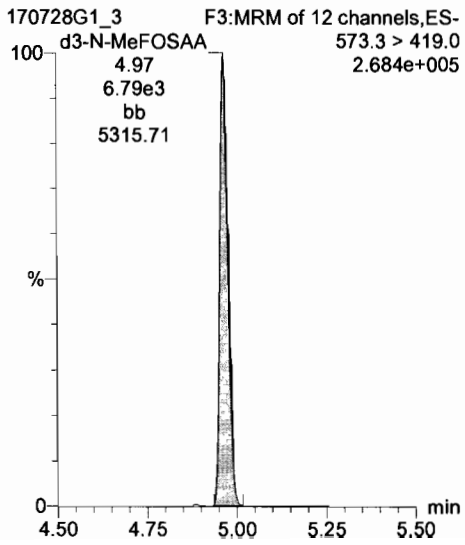
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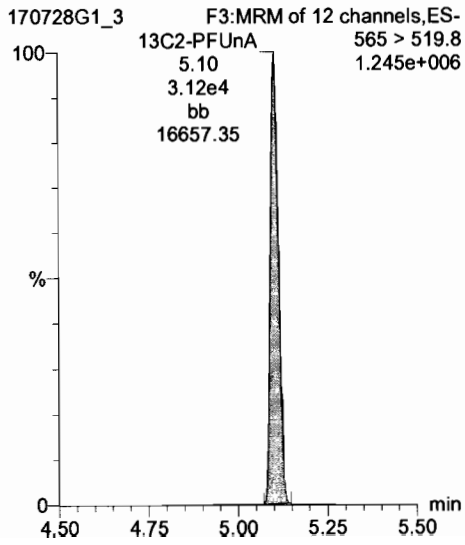
13C8-PFOSA



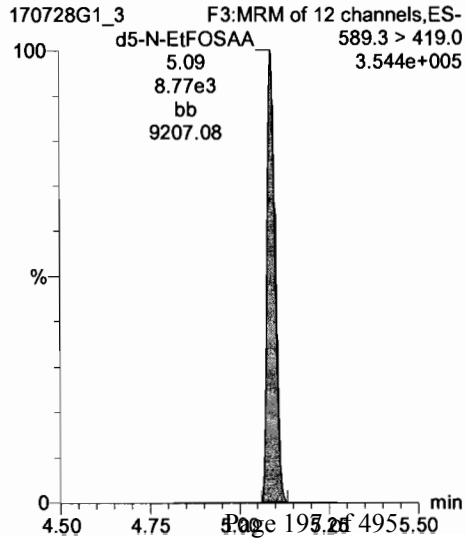
d3-N-MeFOSAA



13C2-PFUnA



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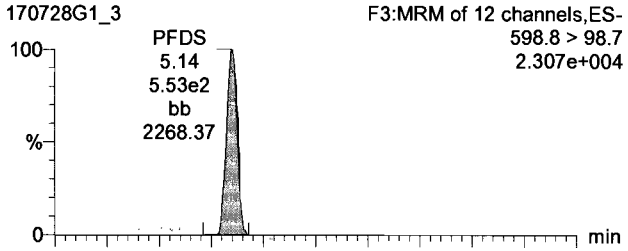


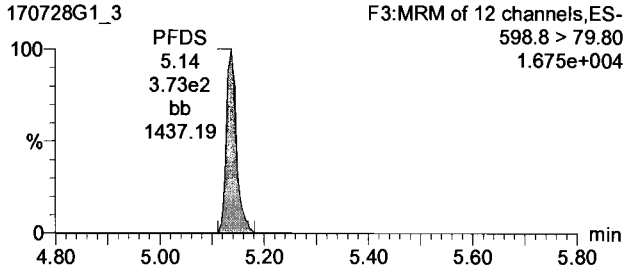
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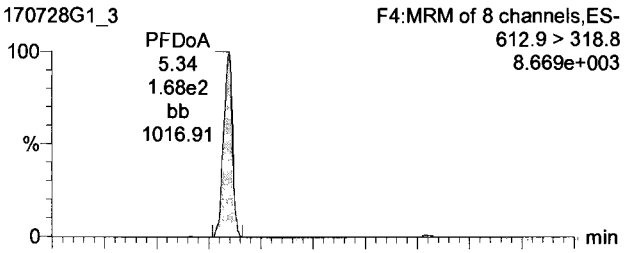
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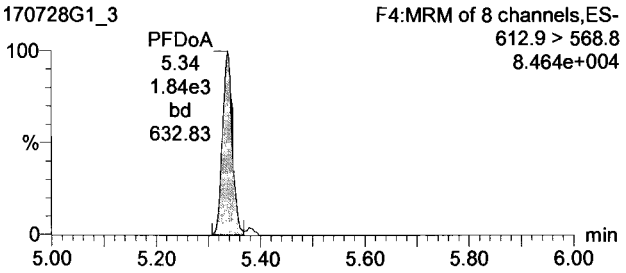
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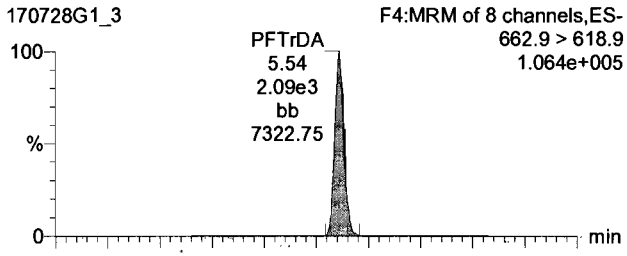


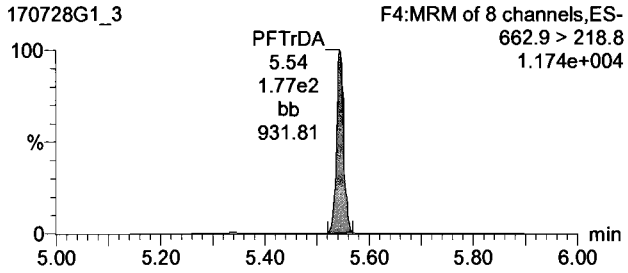
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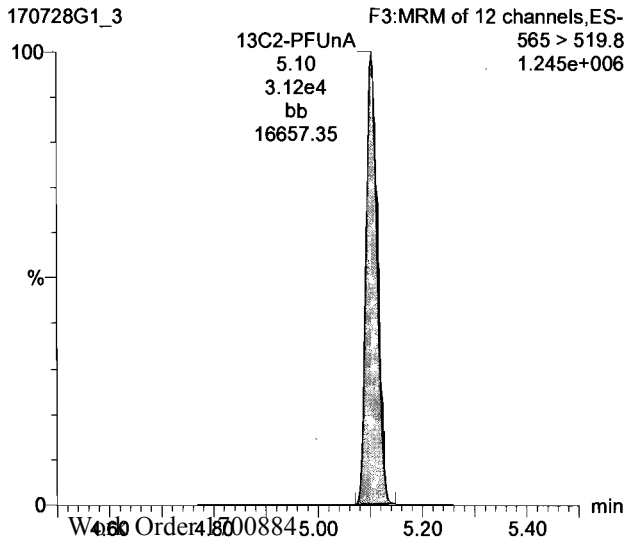


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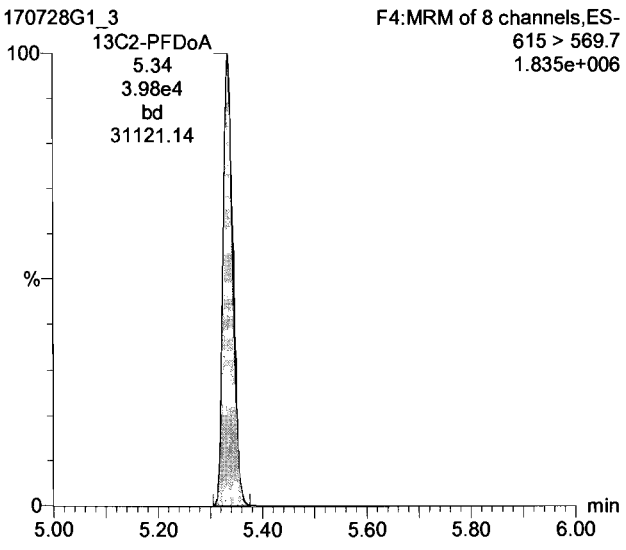




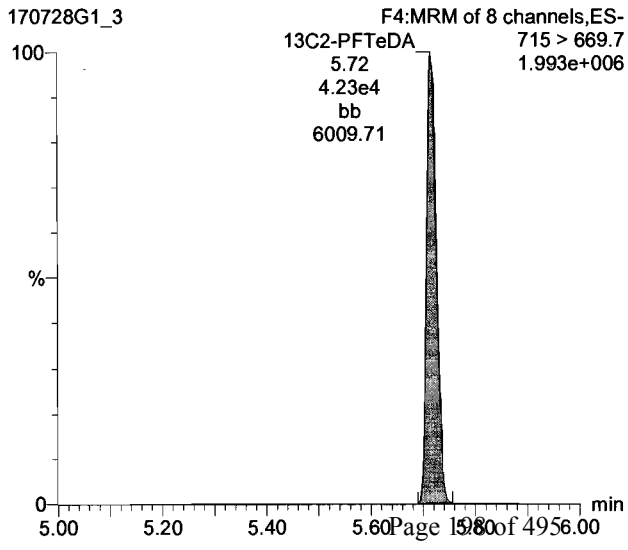
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13C2-PFDoA



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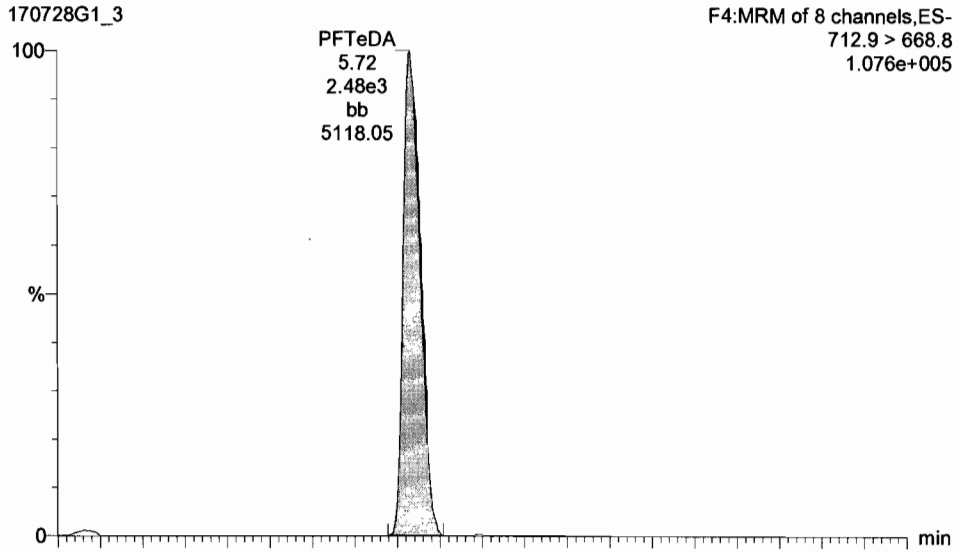


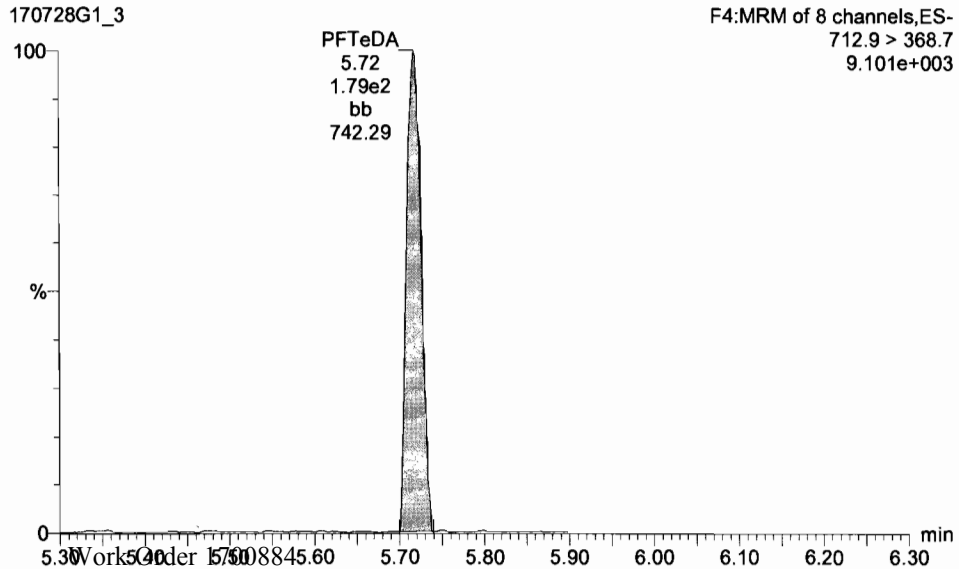
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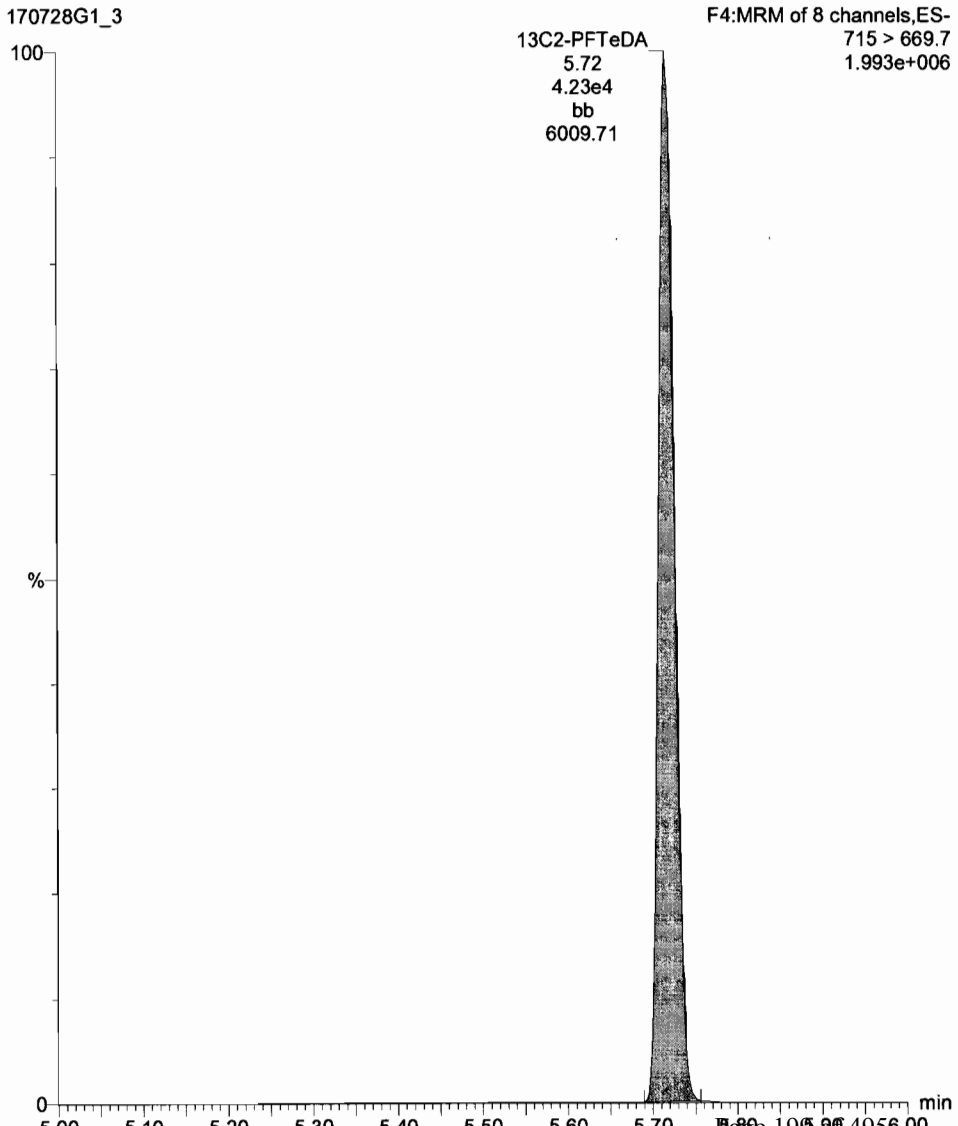
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PFTeDA





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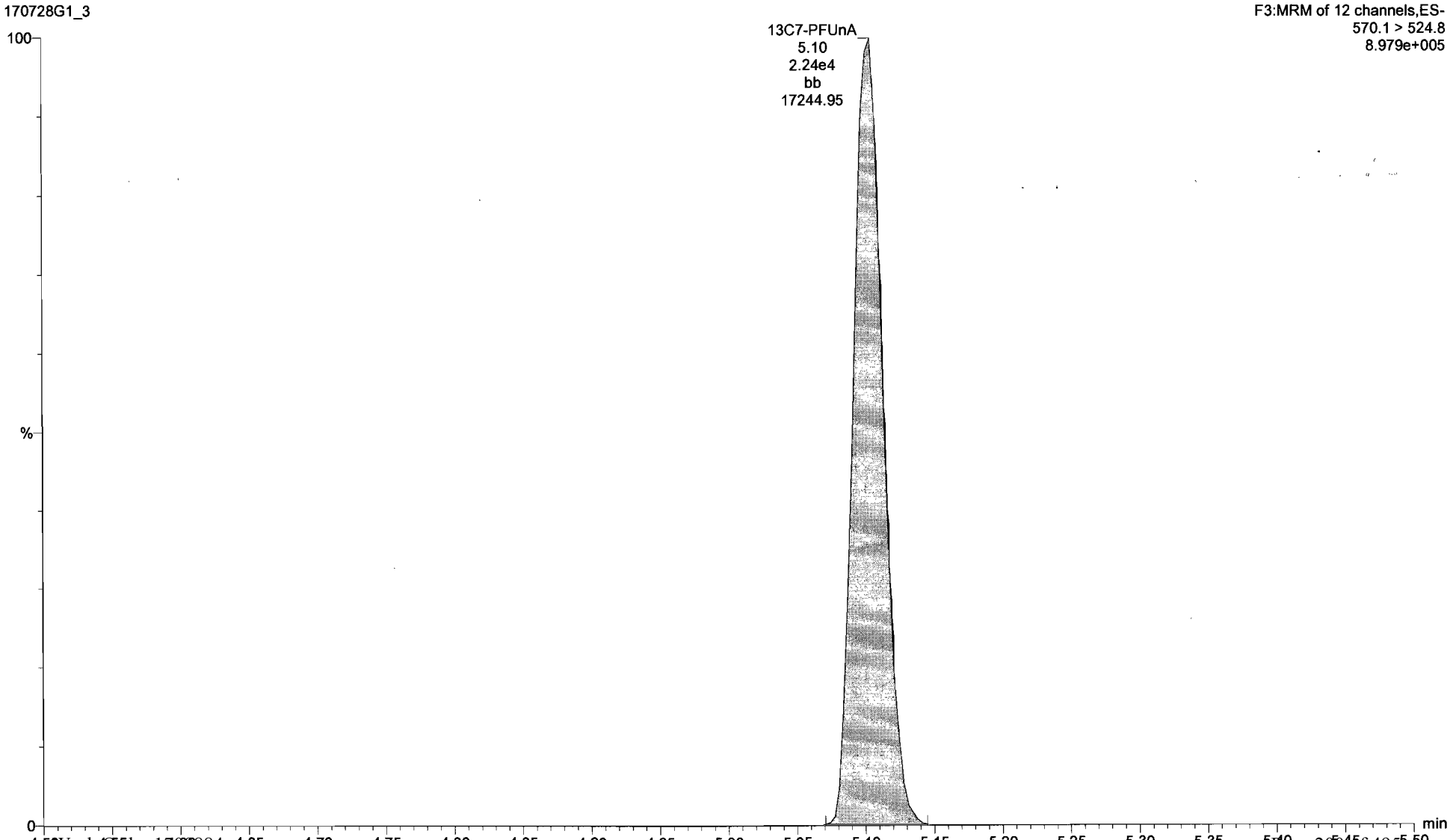


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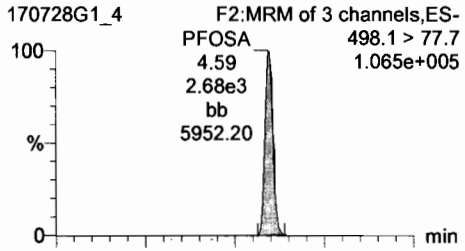


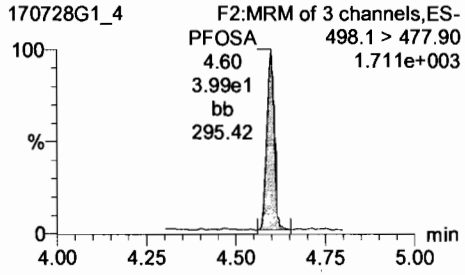
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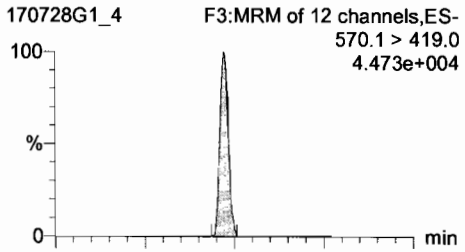
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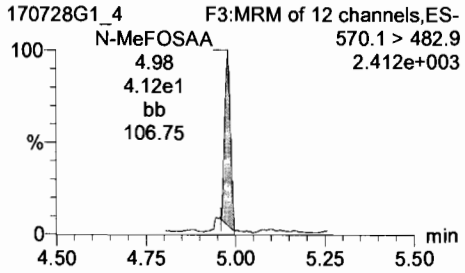
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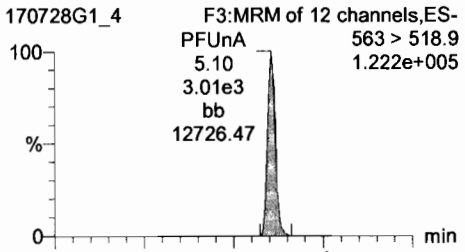


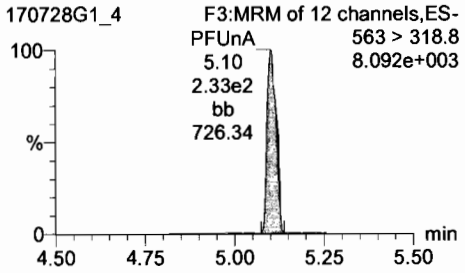
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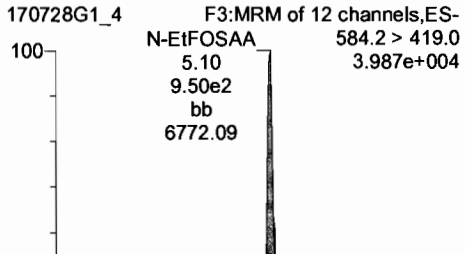


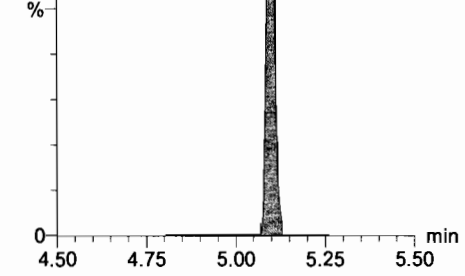
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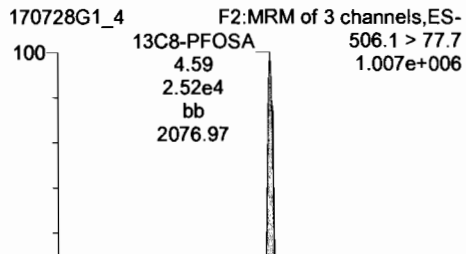


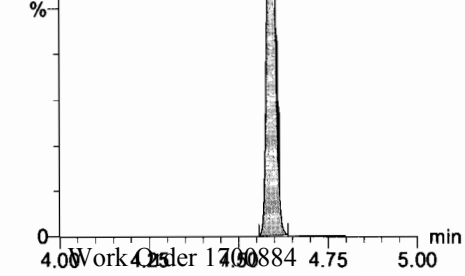
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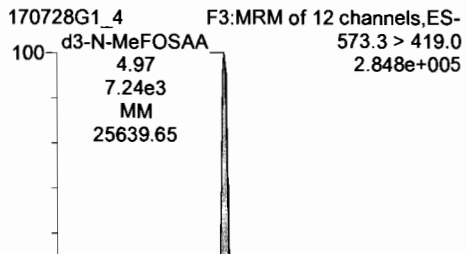


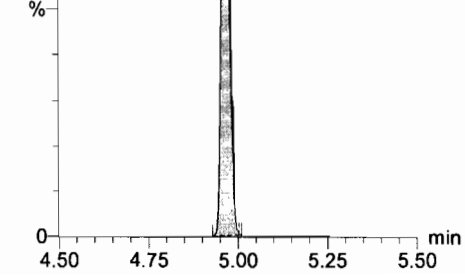
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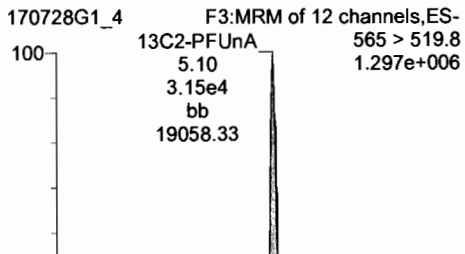


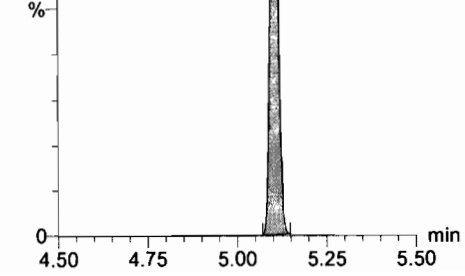
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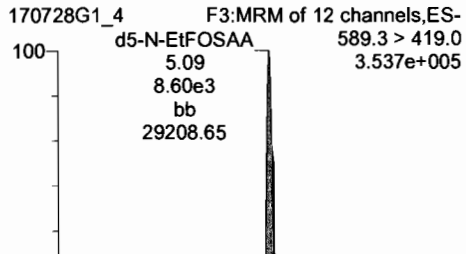


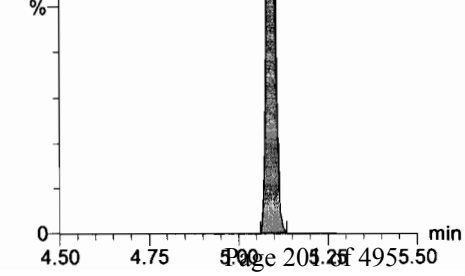
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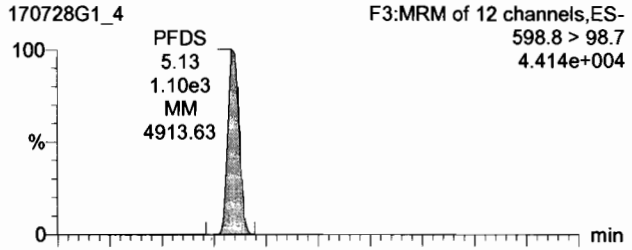


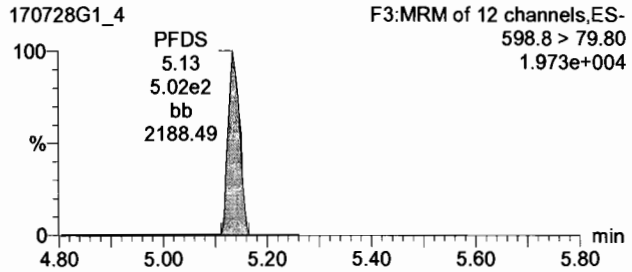
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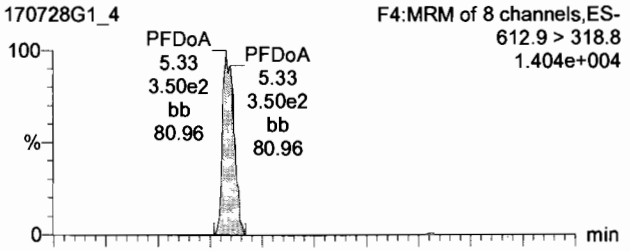
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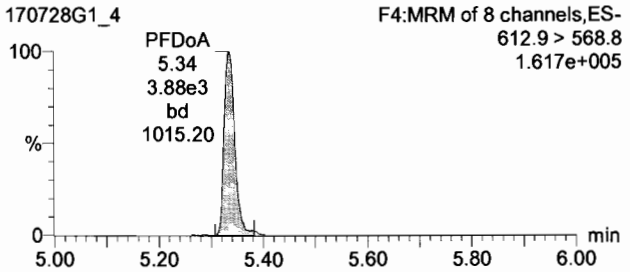
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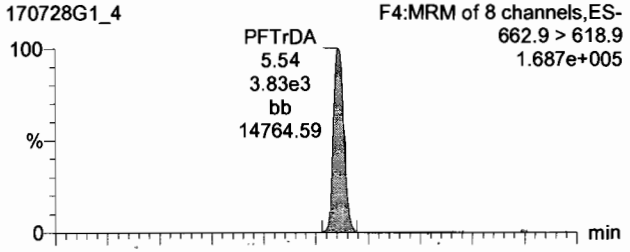


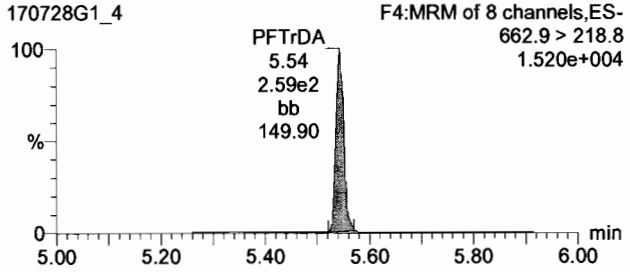
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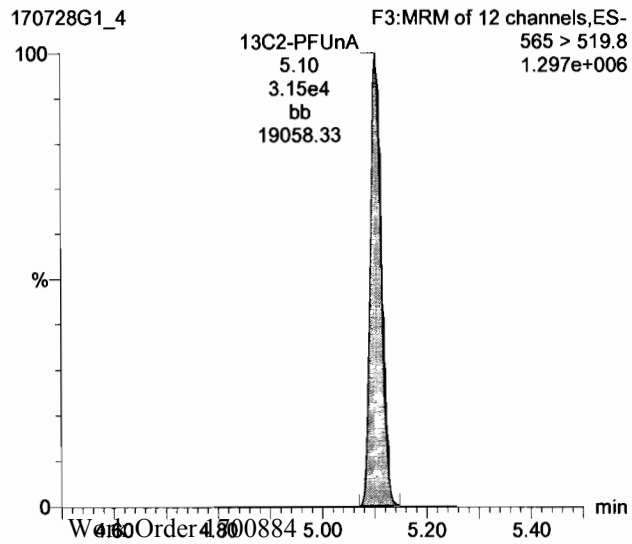


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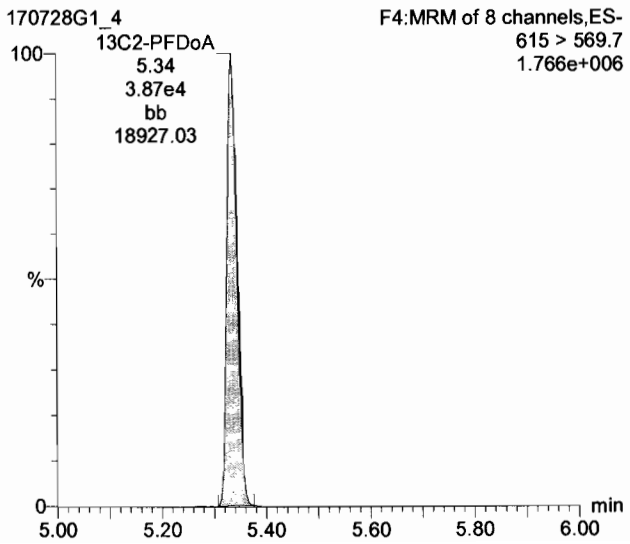




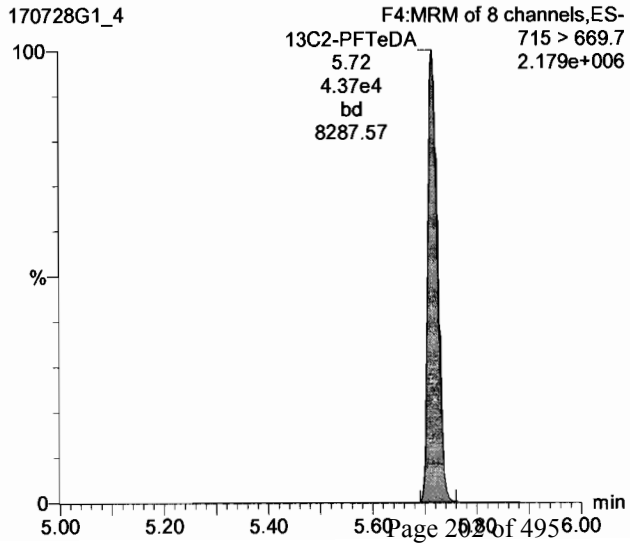
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13C2-PFDoA



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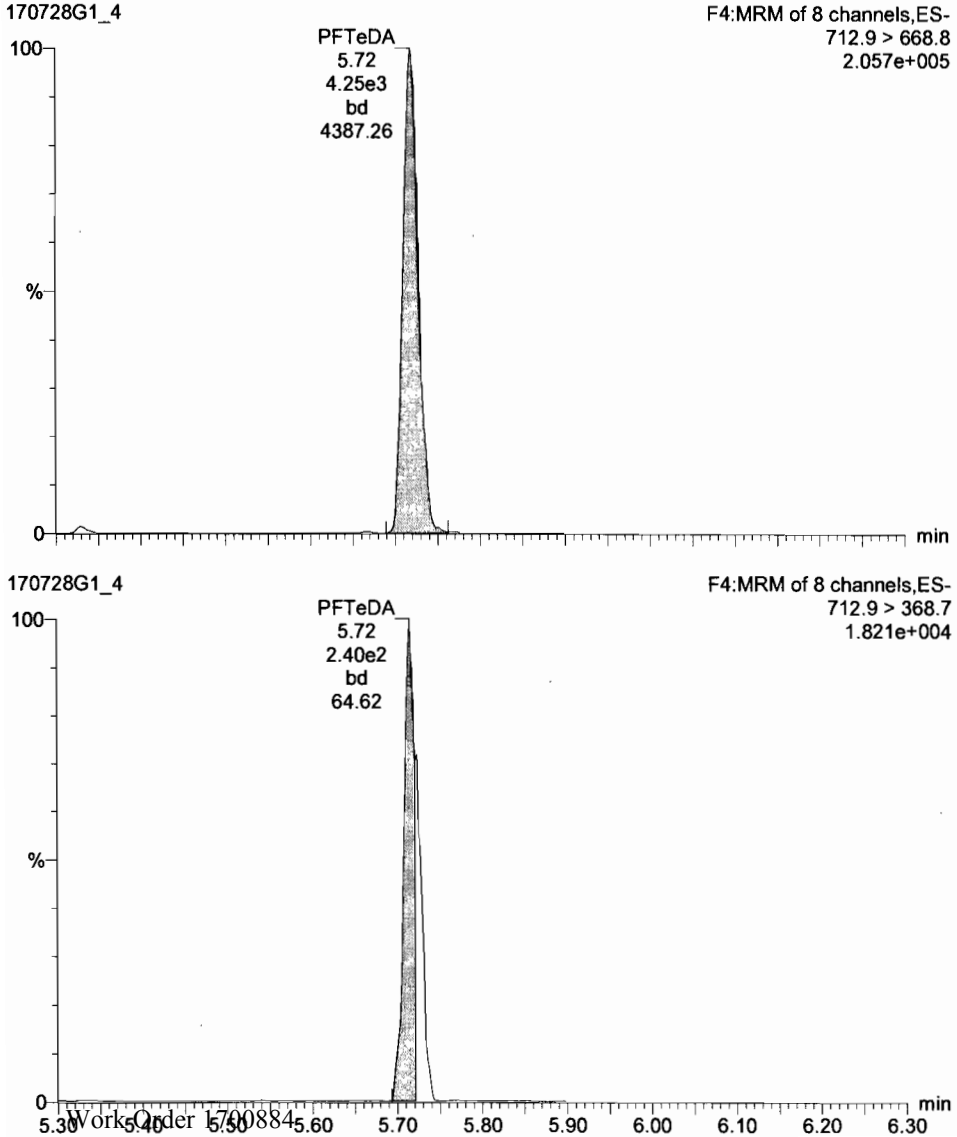


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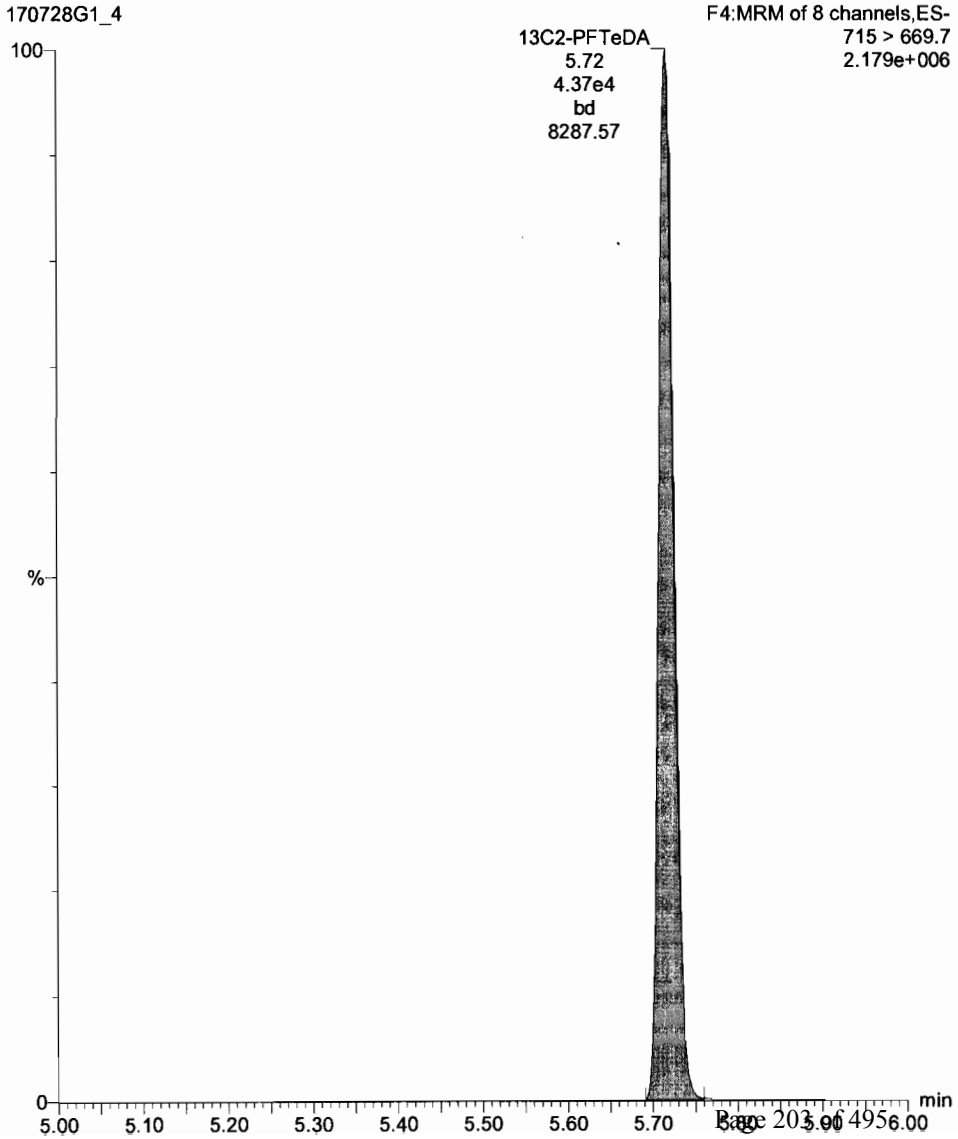
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PFTeDA



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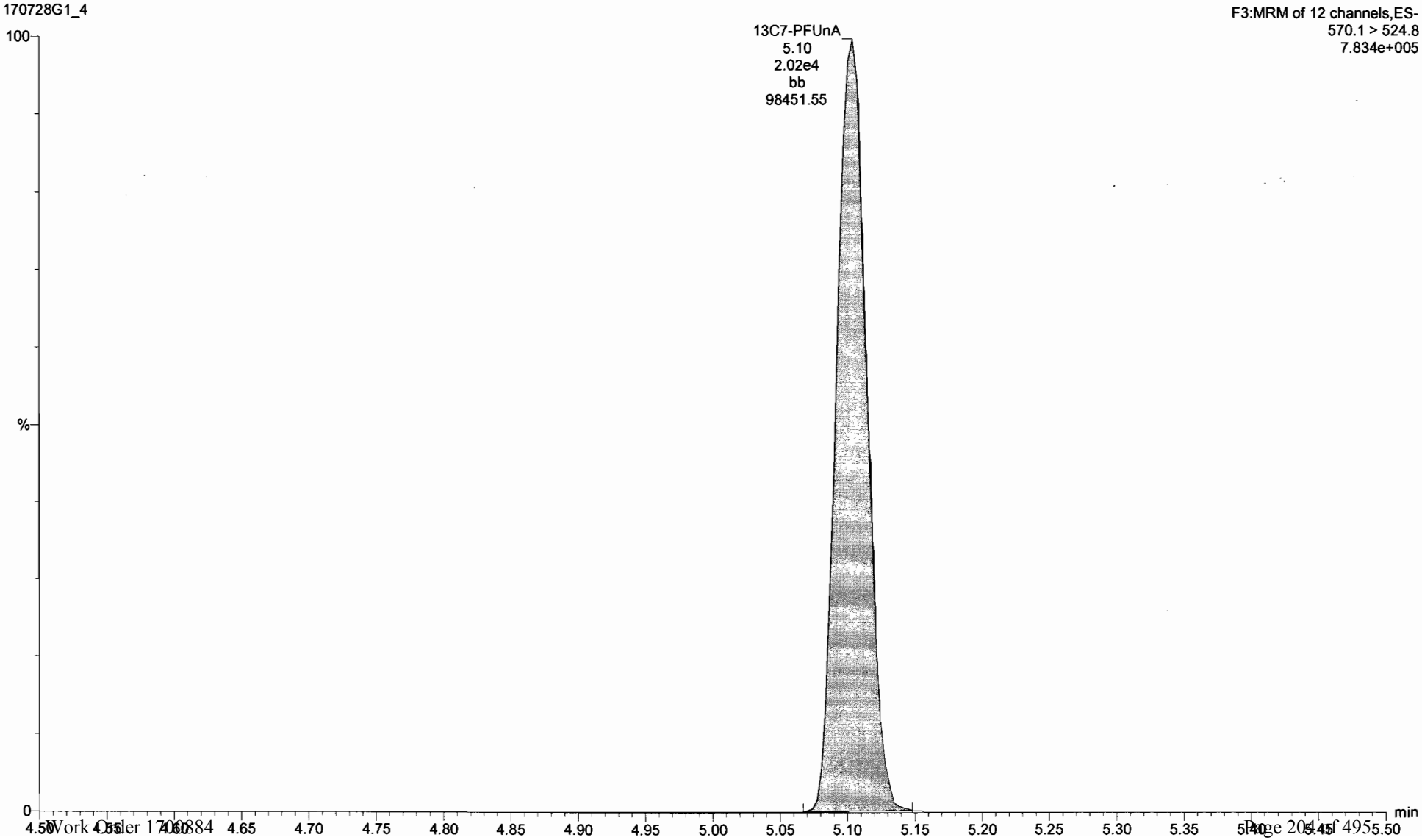


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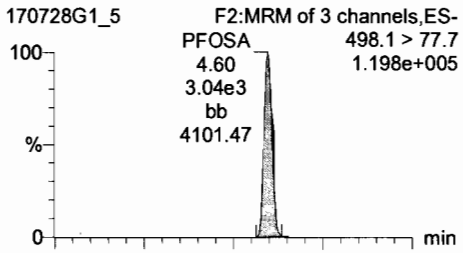


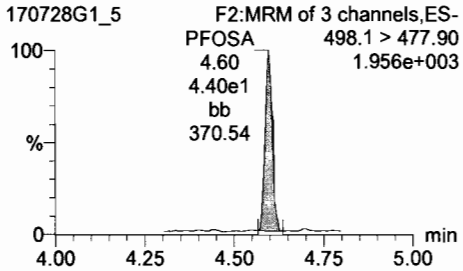
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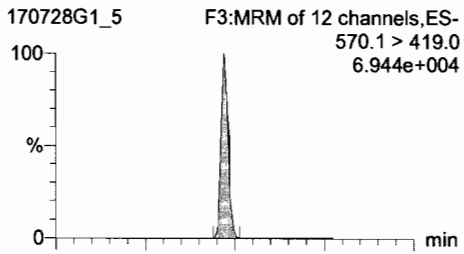
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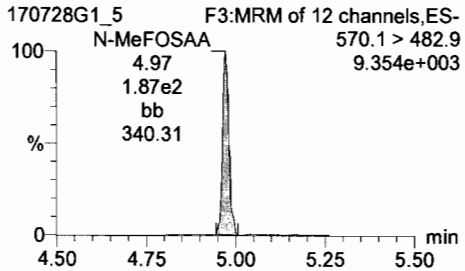
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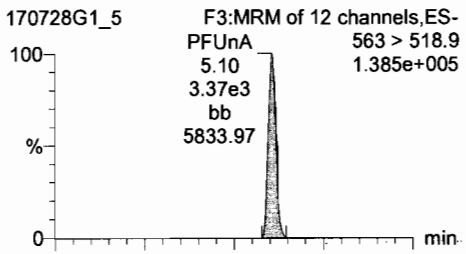


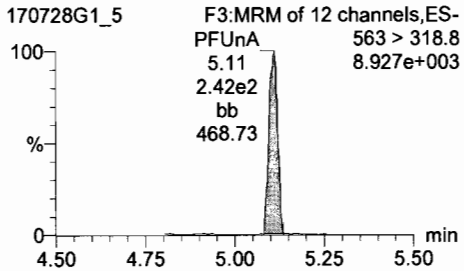
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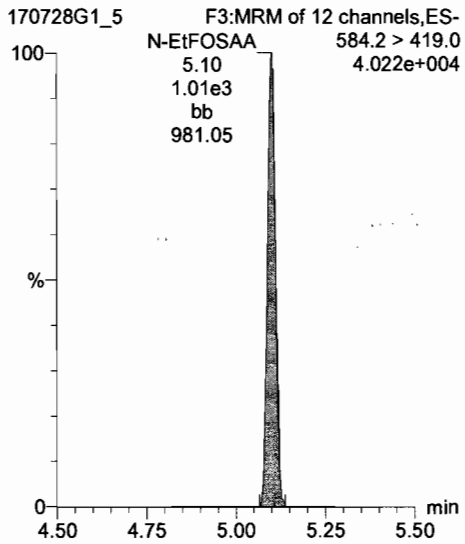


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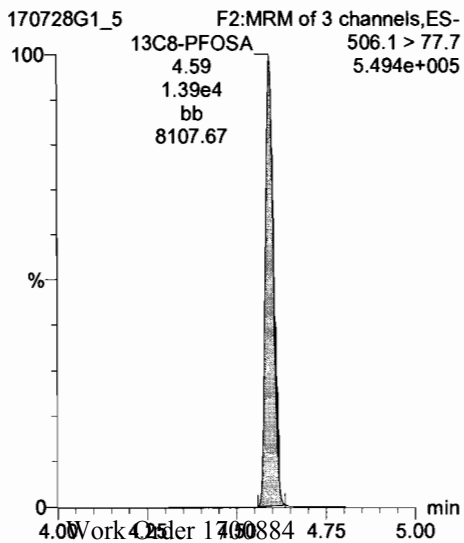




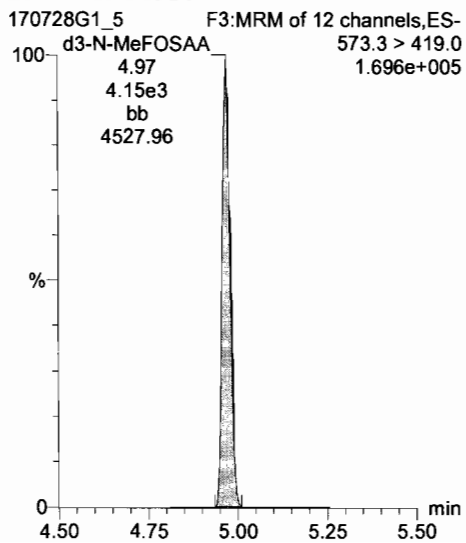
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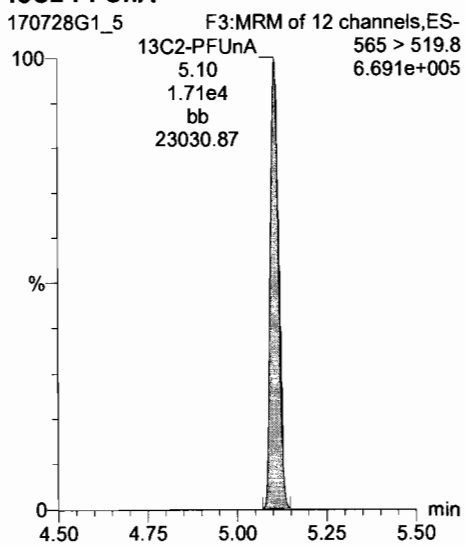
13C8-PFOSA



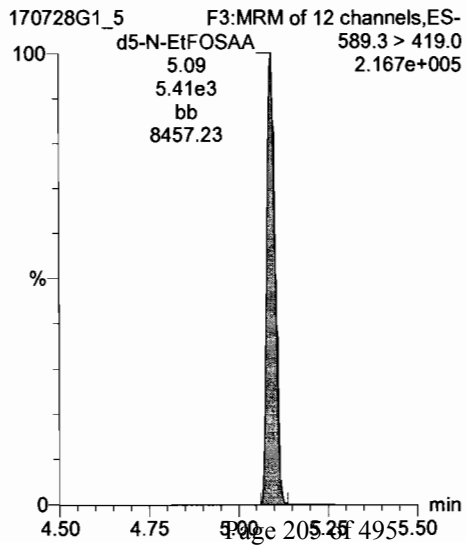
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

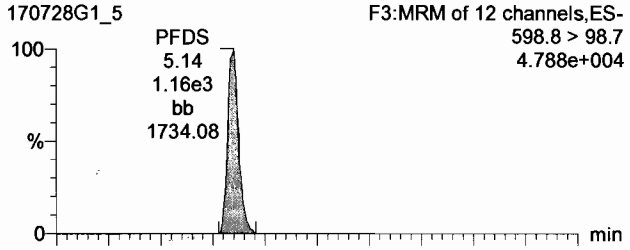


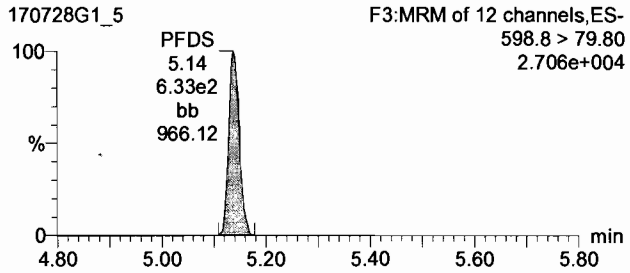
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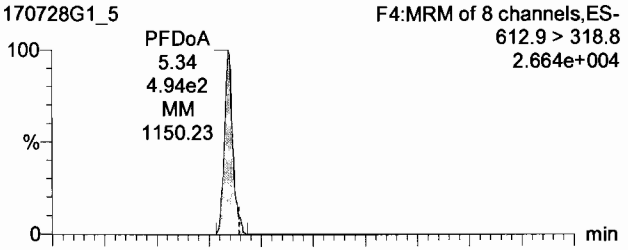
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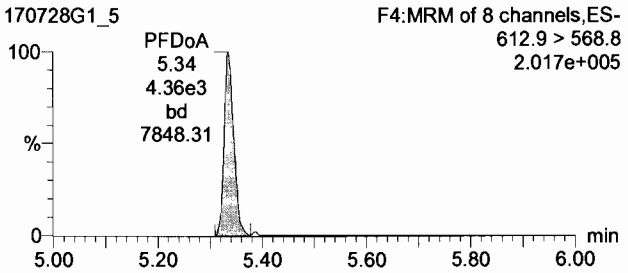
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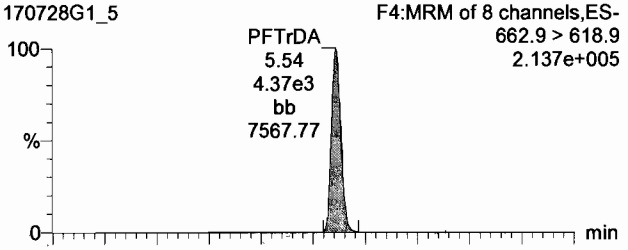


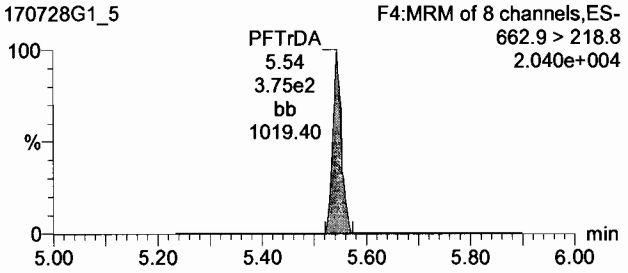
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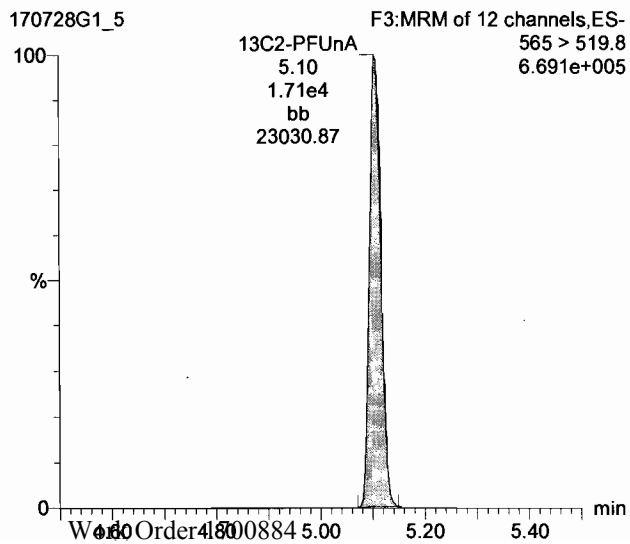


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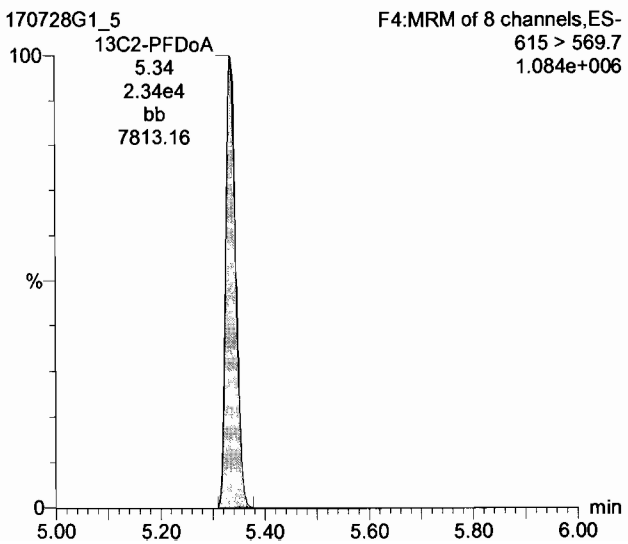




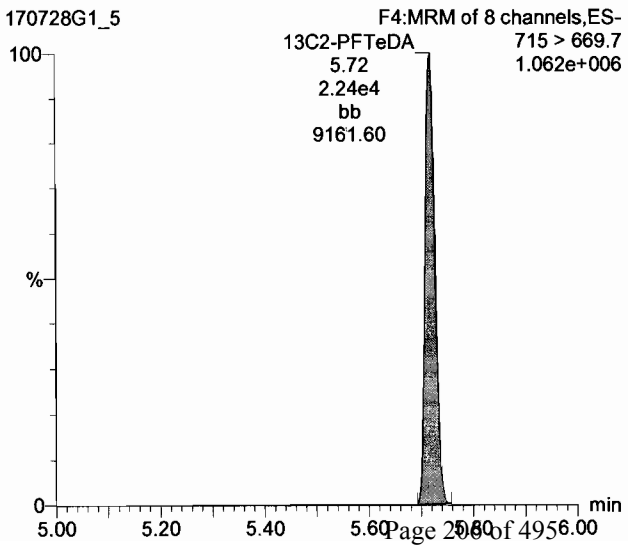
13C2-PFUnA



13C2-PFDoA



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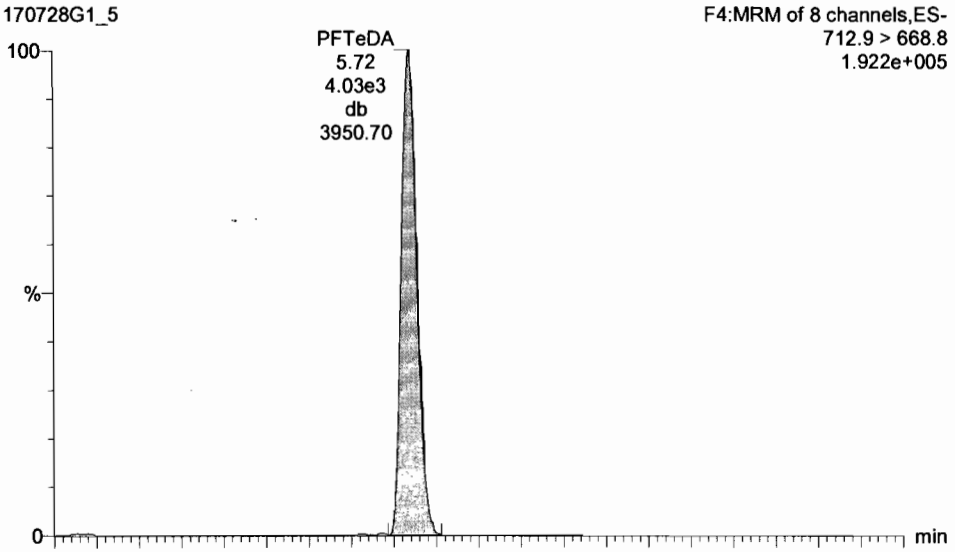


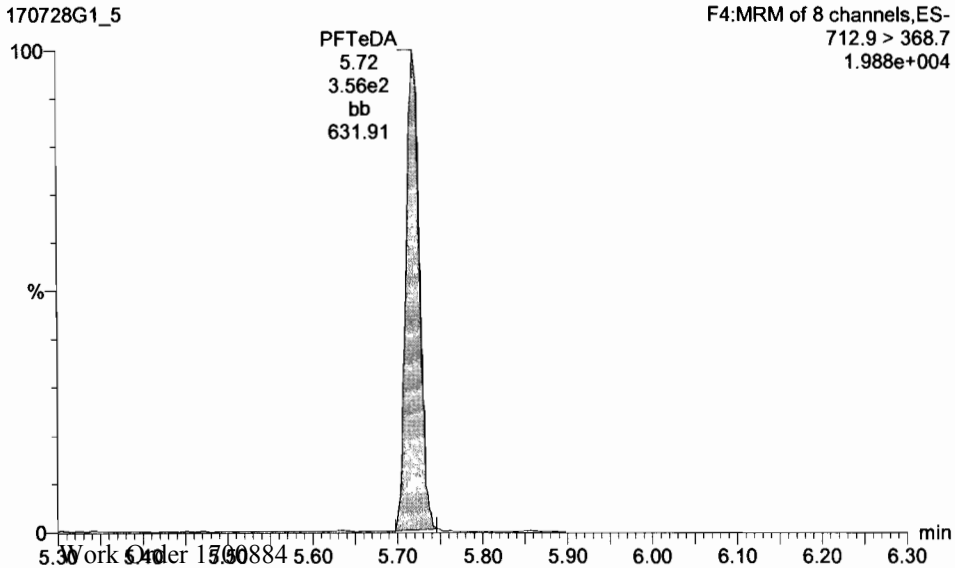
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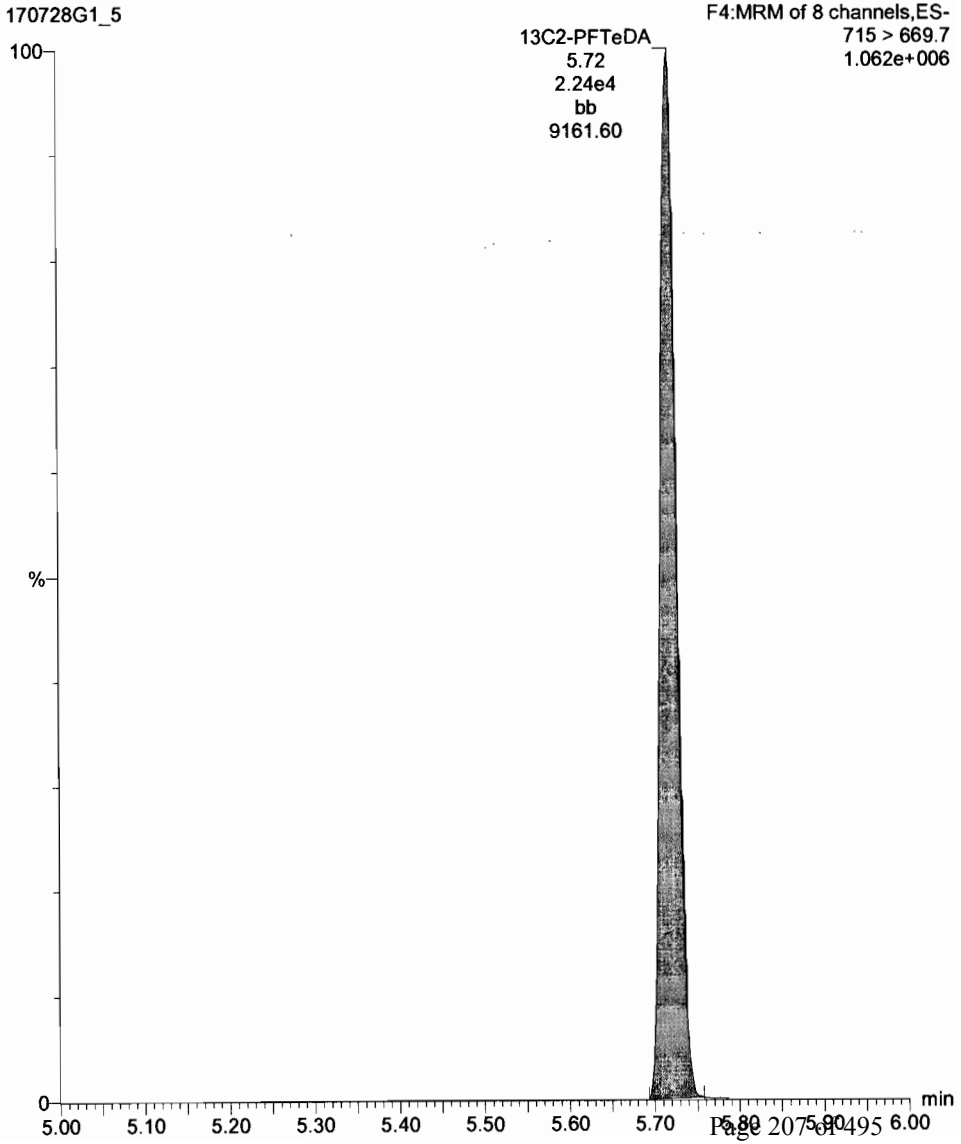
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PFTeDA





13C2-PFTeDA

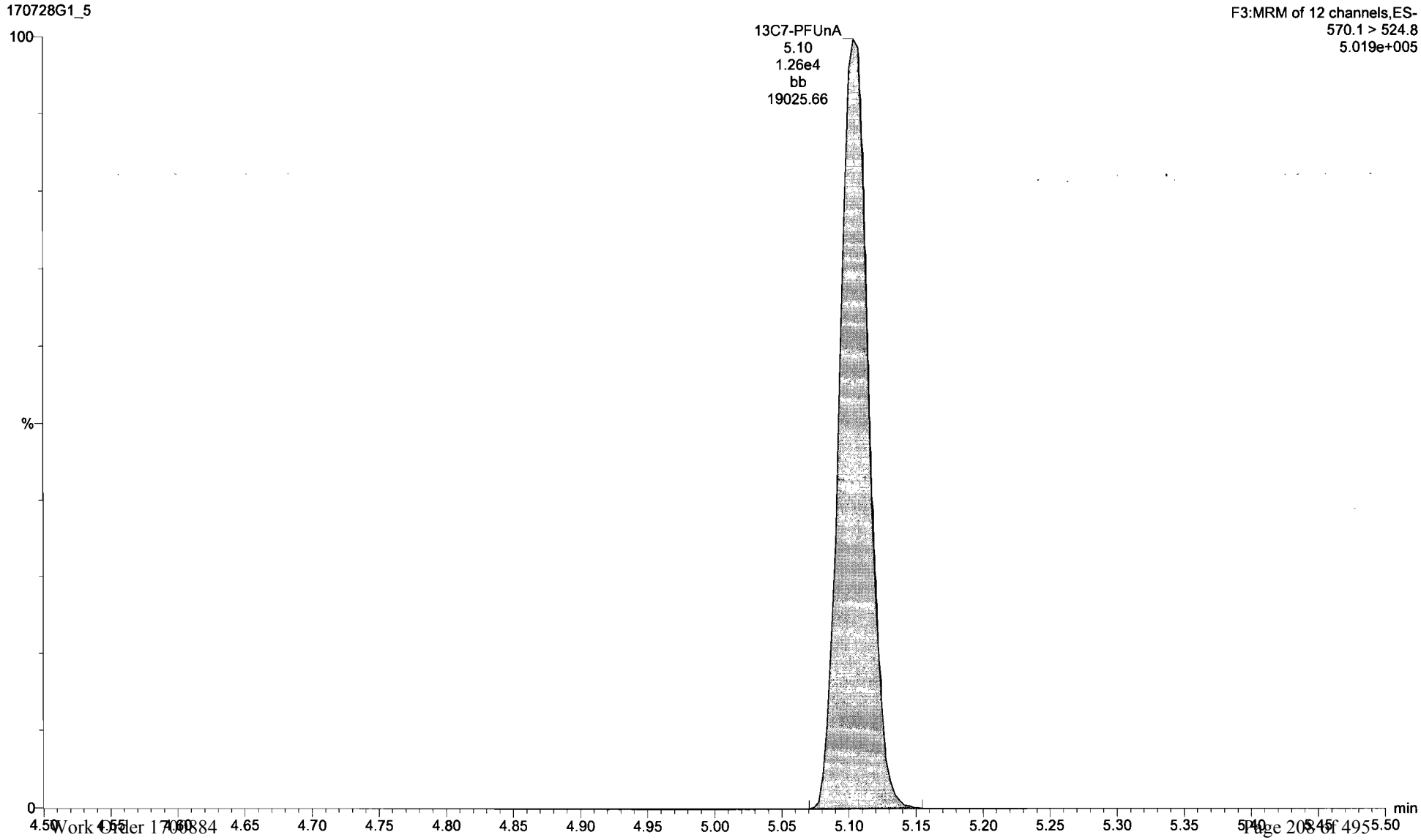


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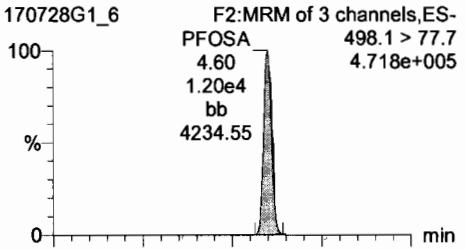


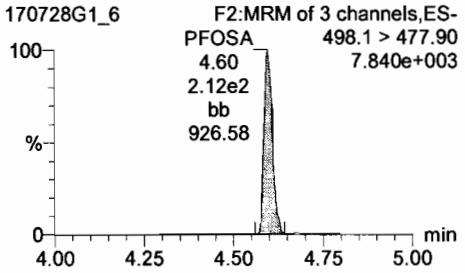
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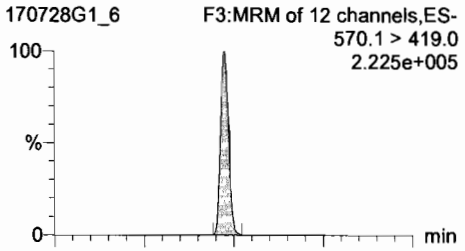
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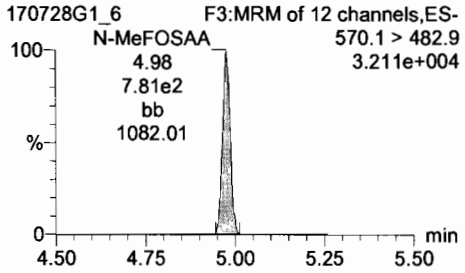
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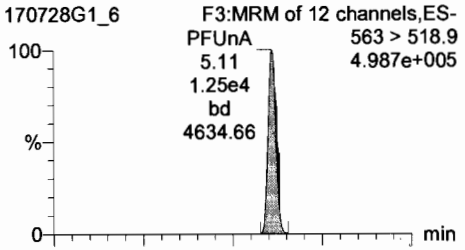


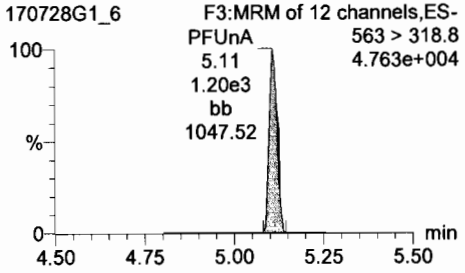
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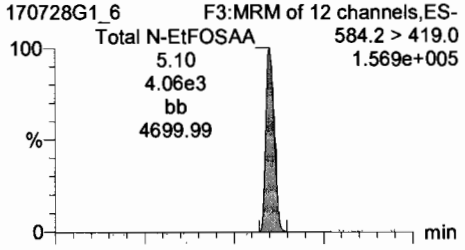


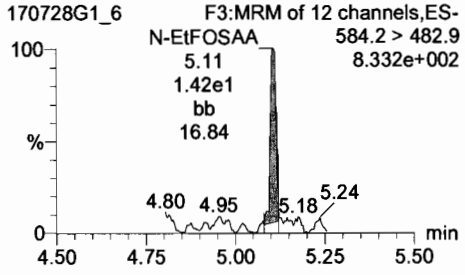
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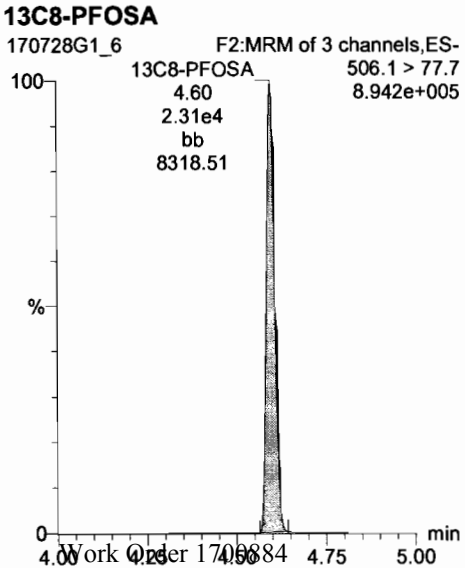


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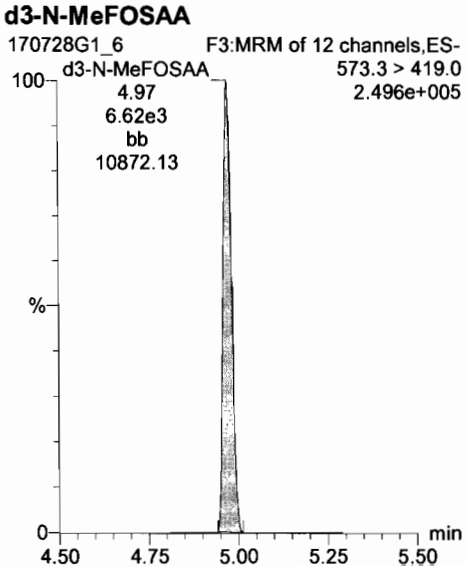




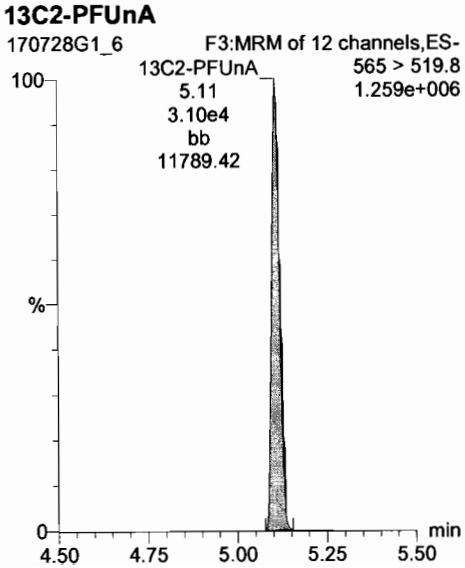
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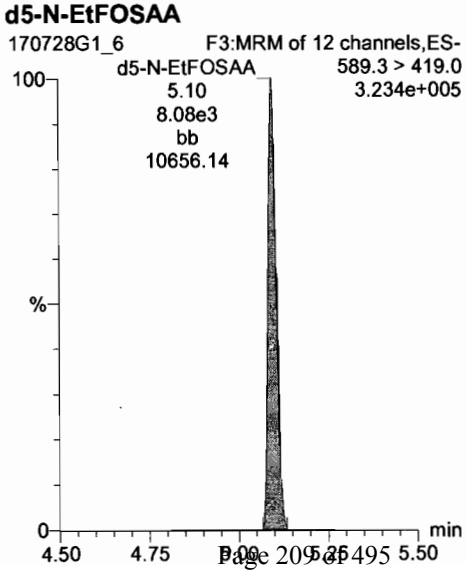
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

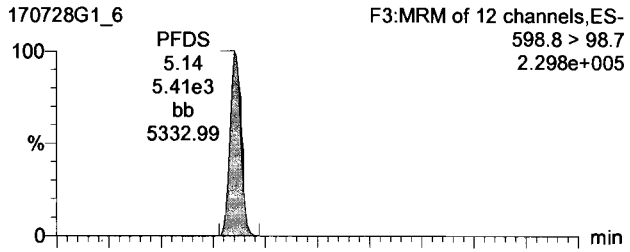


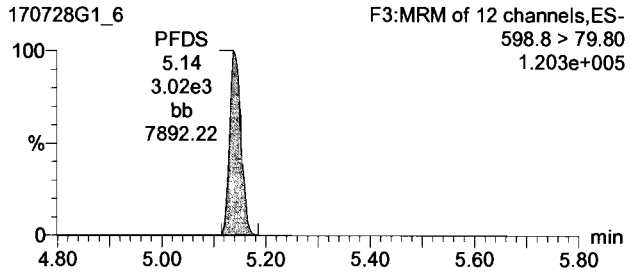
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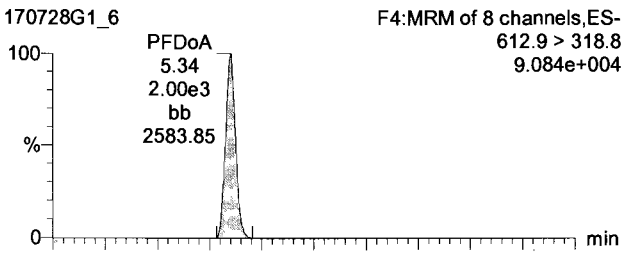
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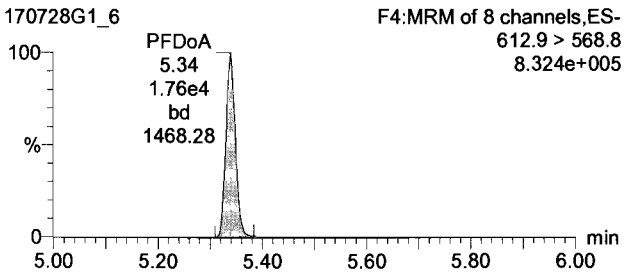
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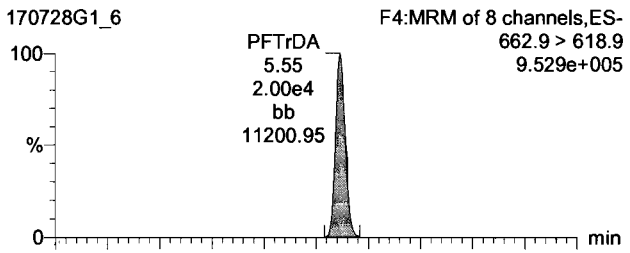


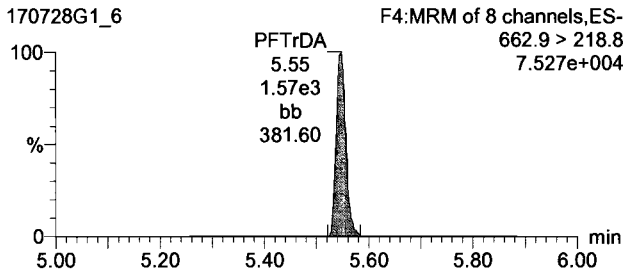
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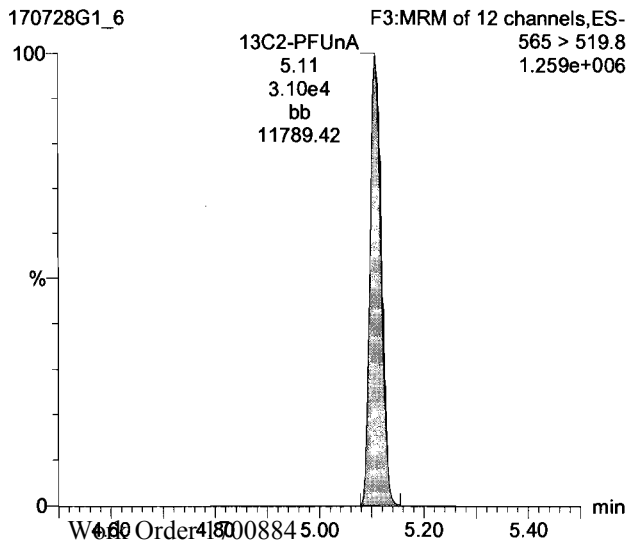


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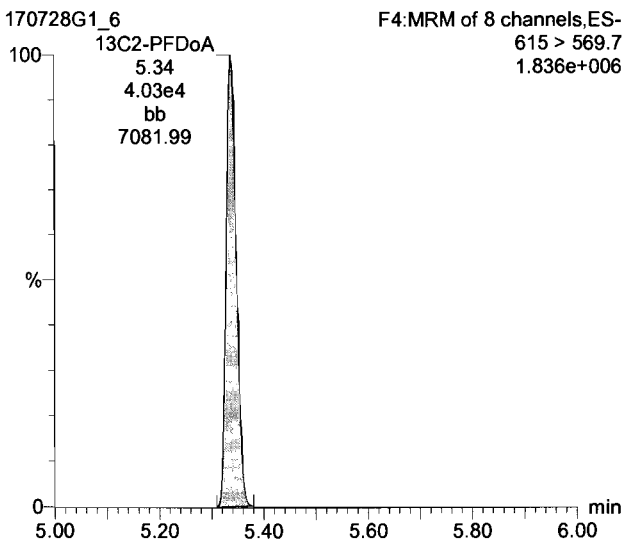




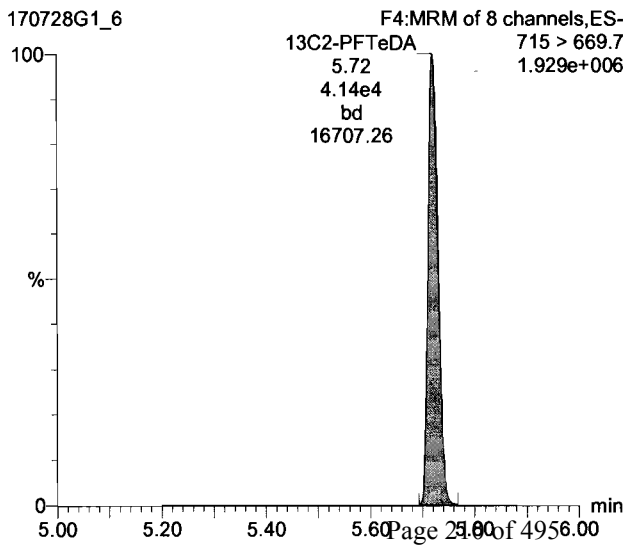
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13C2-PFDoA



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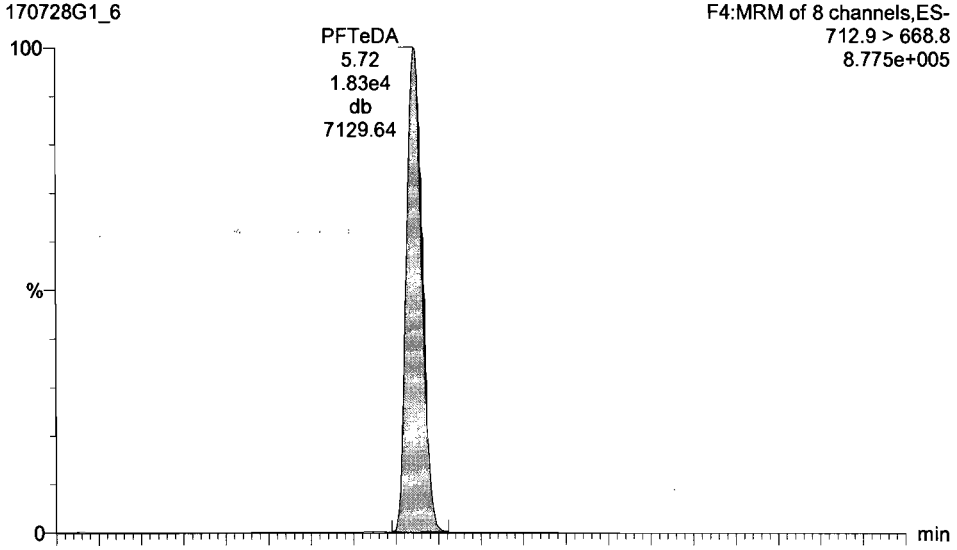


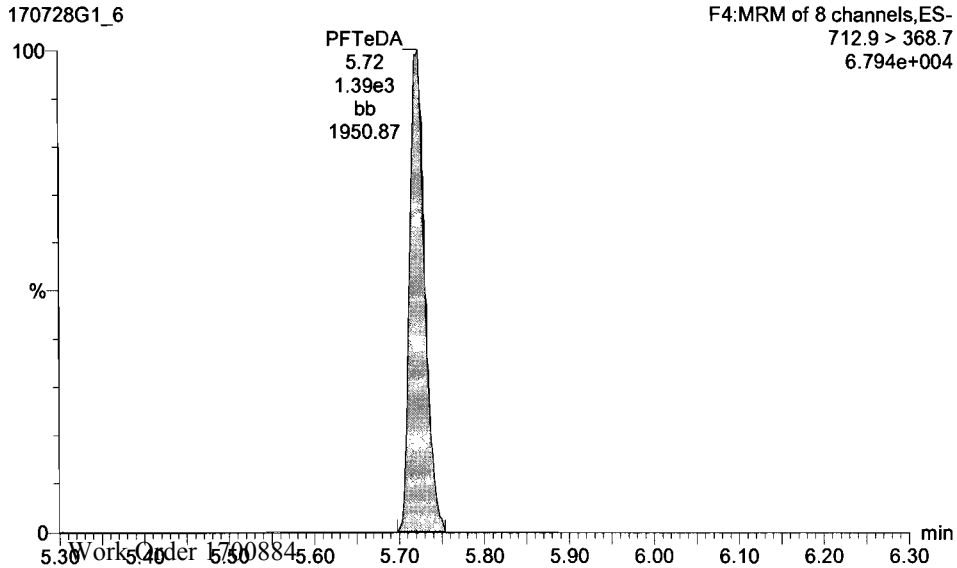
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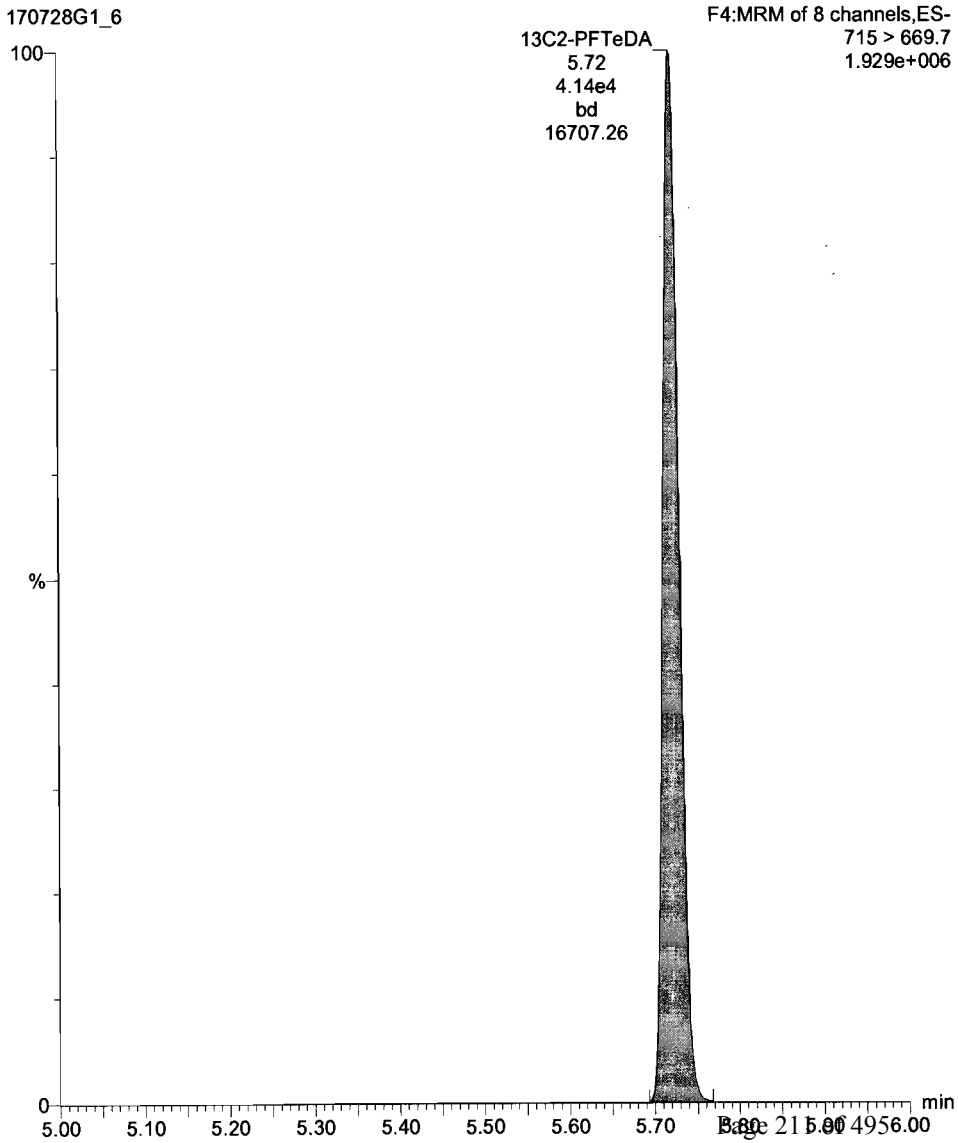
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PFTeDA





13C2-PFTeDA



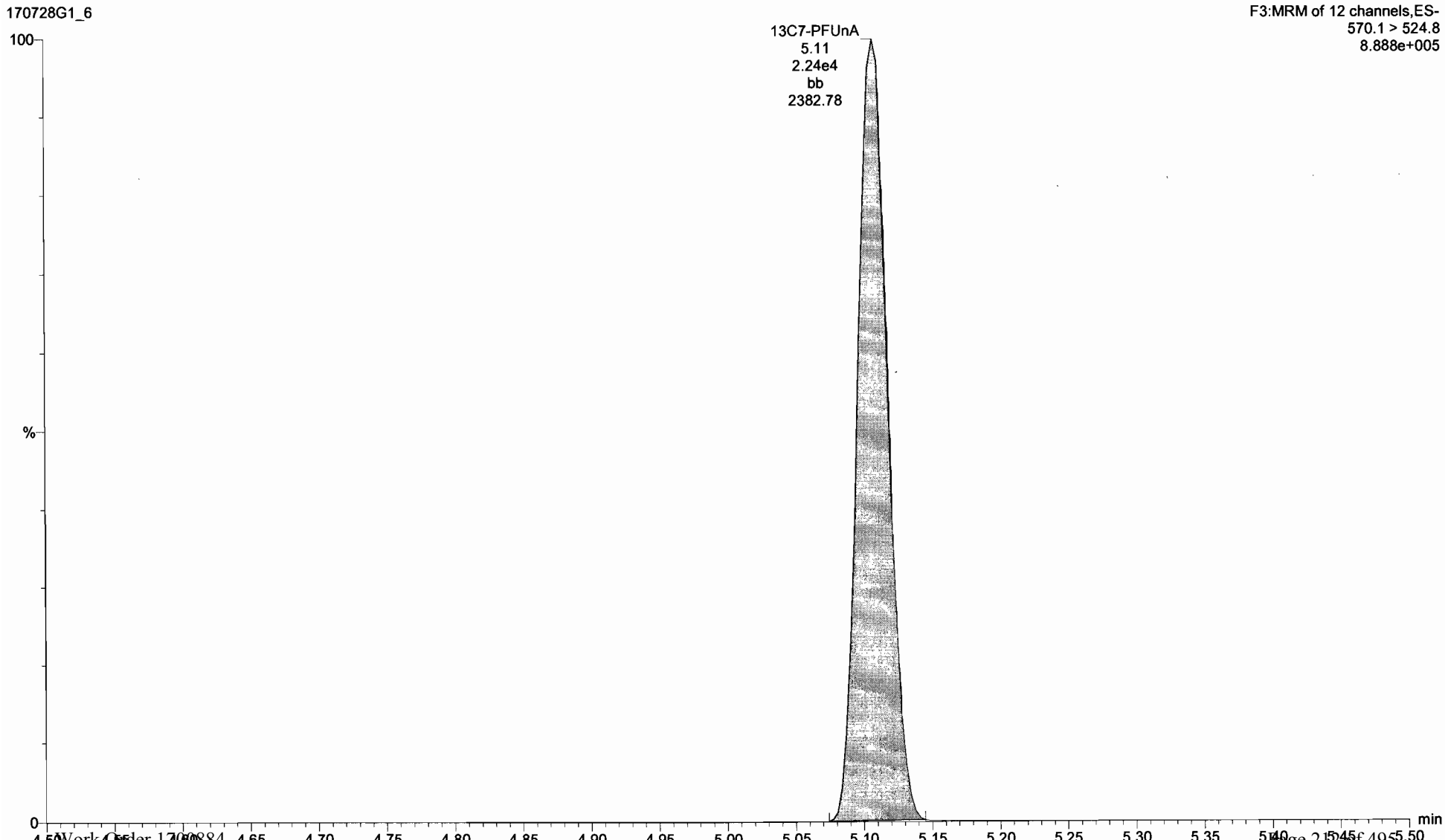
Vista Analytical Laboratory Q1

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13C7-PFUnA

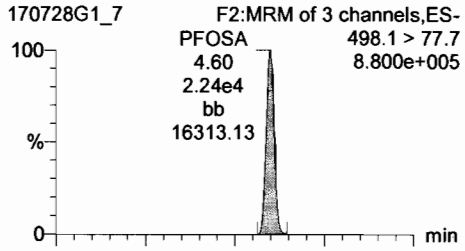


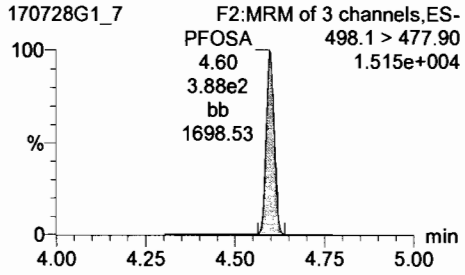
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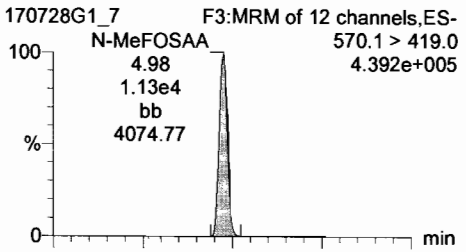
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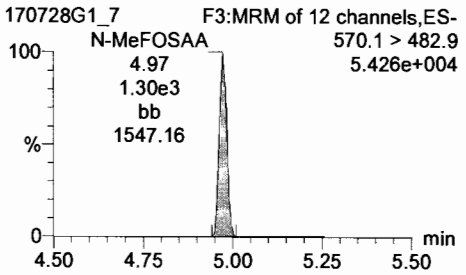
PFOSA



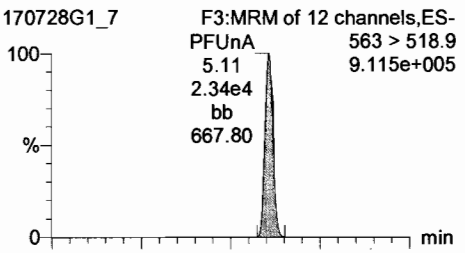


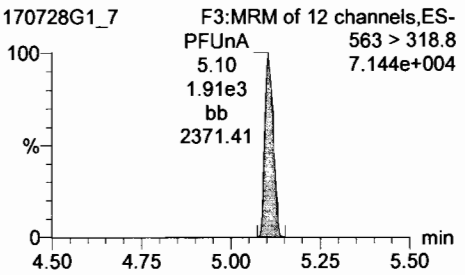
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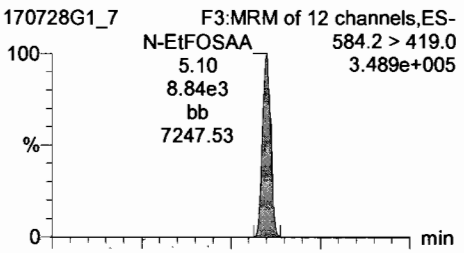


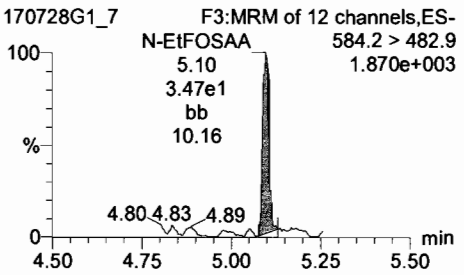
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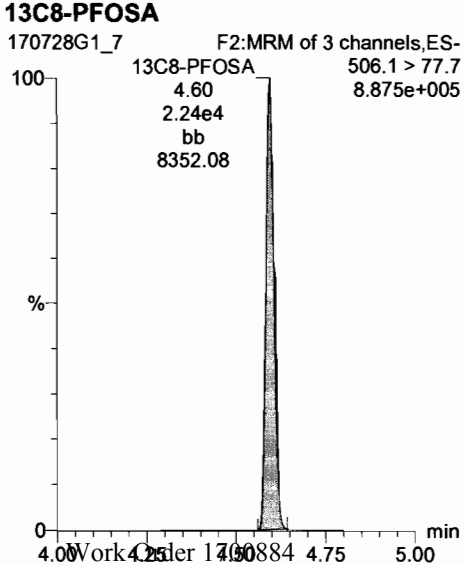


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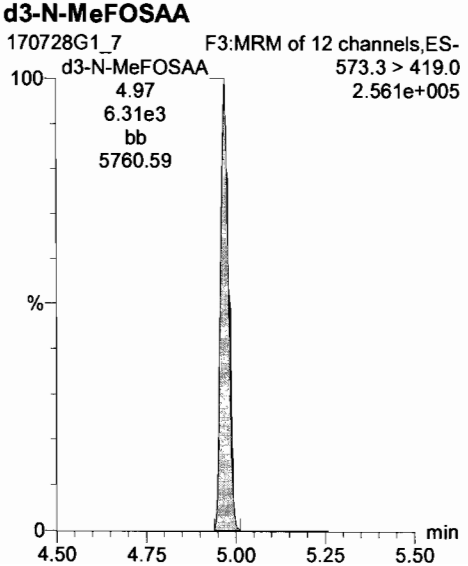




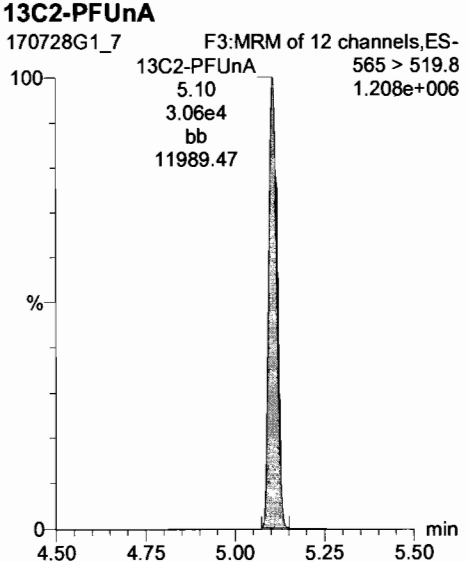
13C8-PFOSA



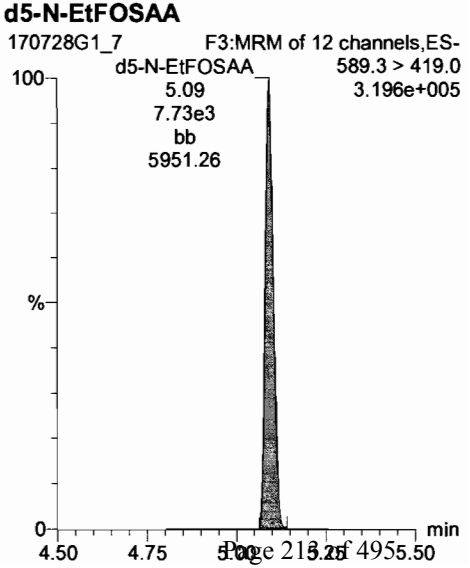
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

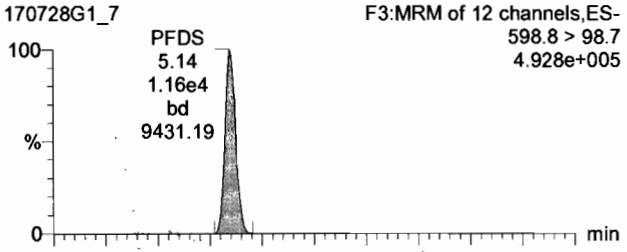


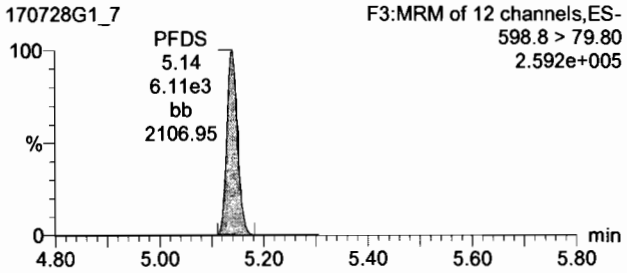
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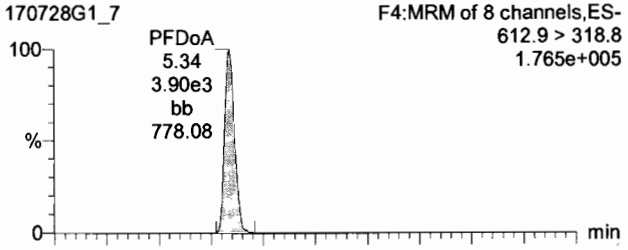
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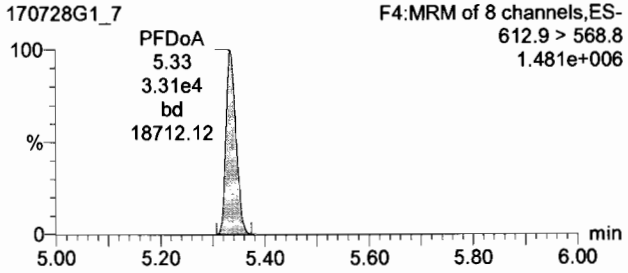
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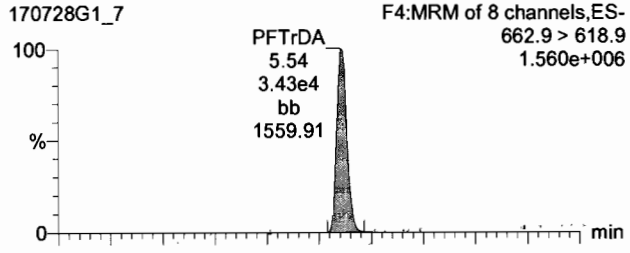


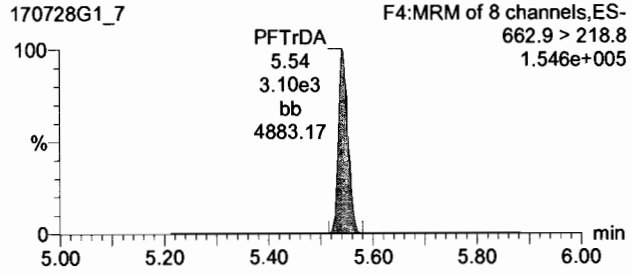
PFDoA



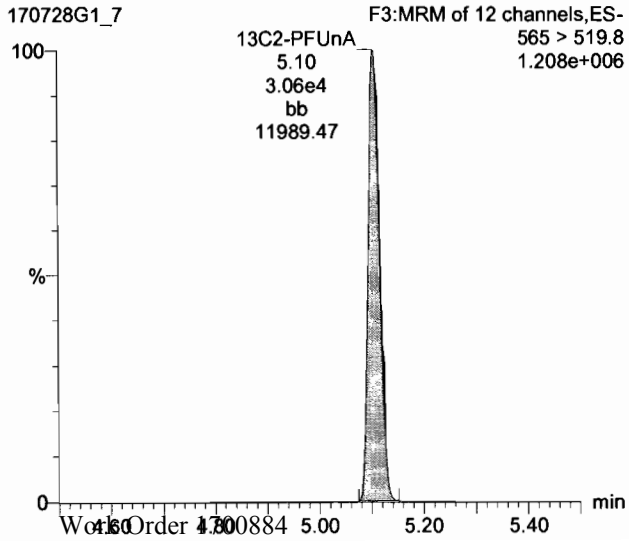


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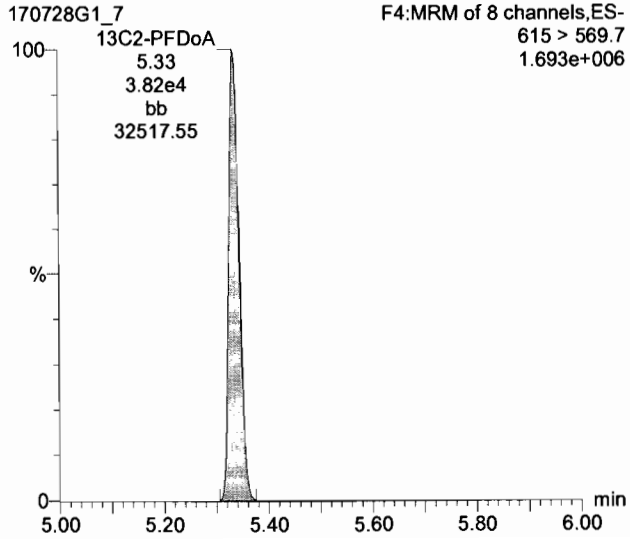




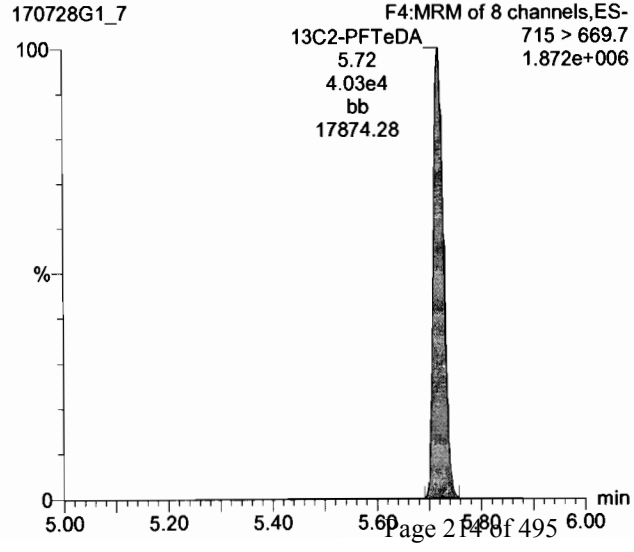
13C2-PFUnA



13C2-PFDoA



13C2-PFTeDA

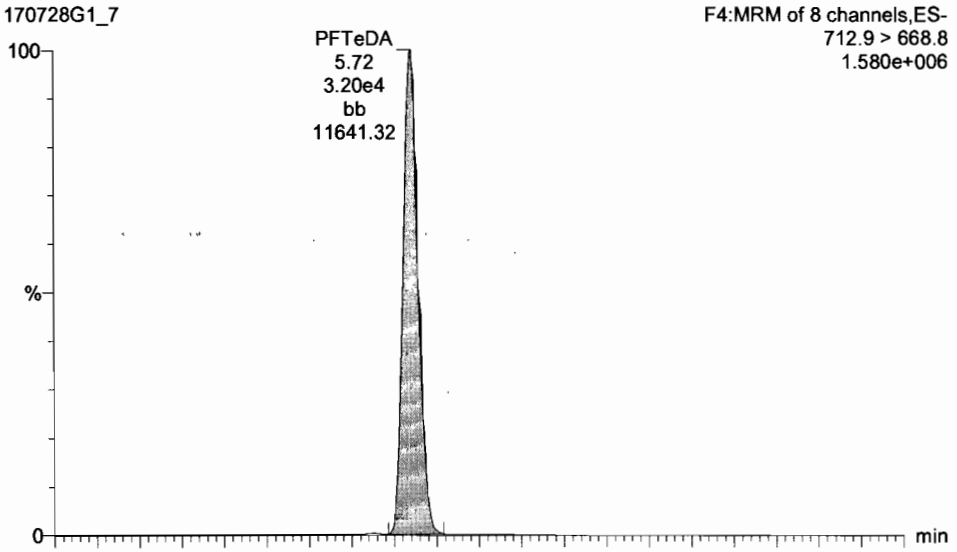


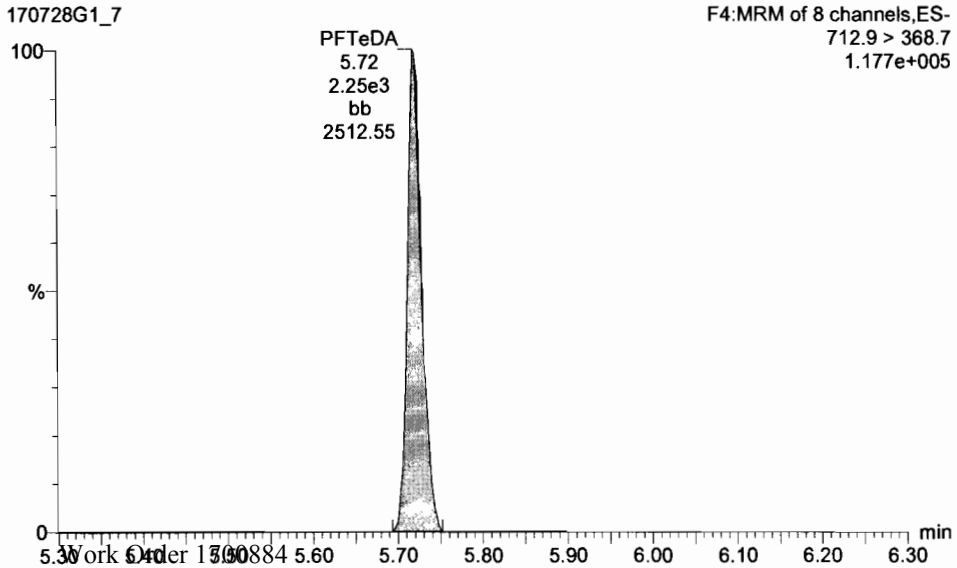
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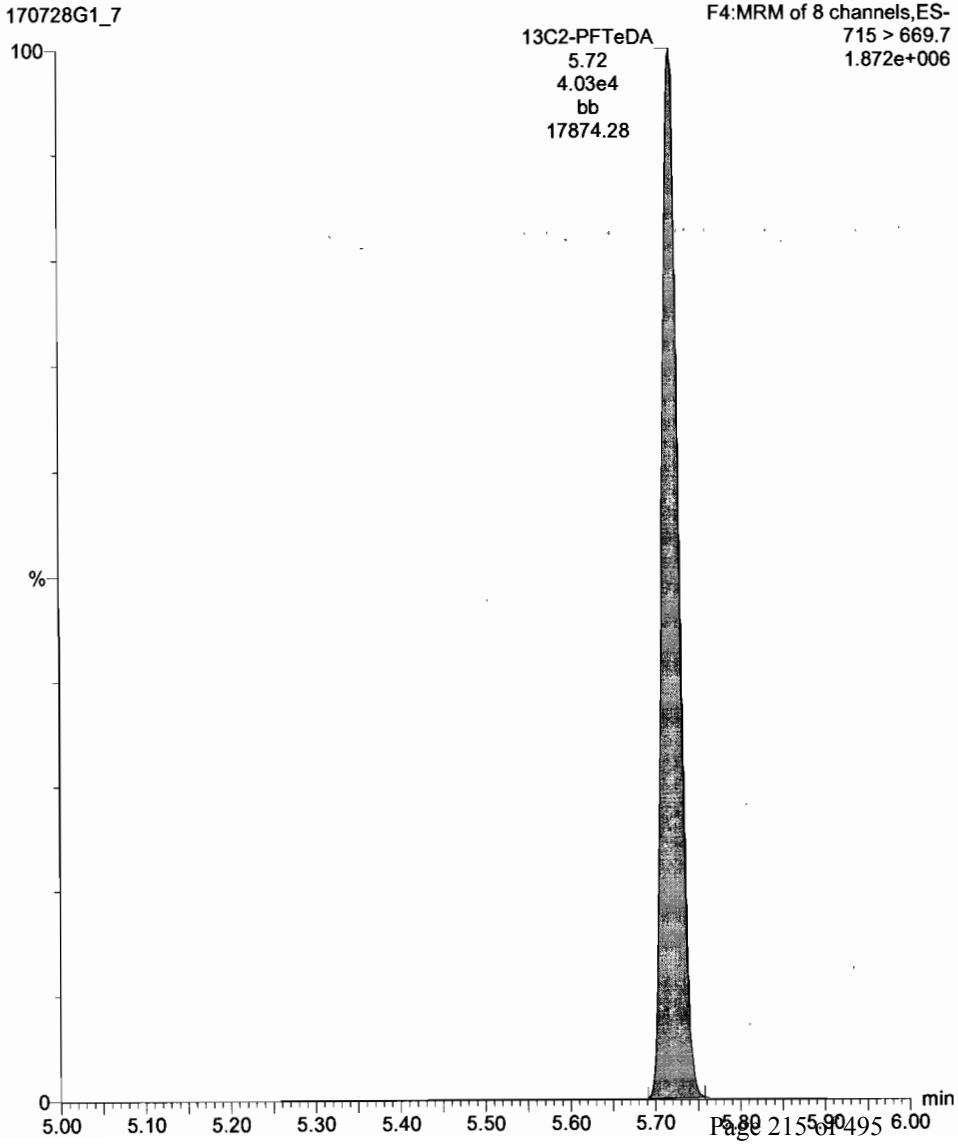
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PFTeDA





13C2-PFTeDA

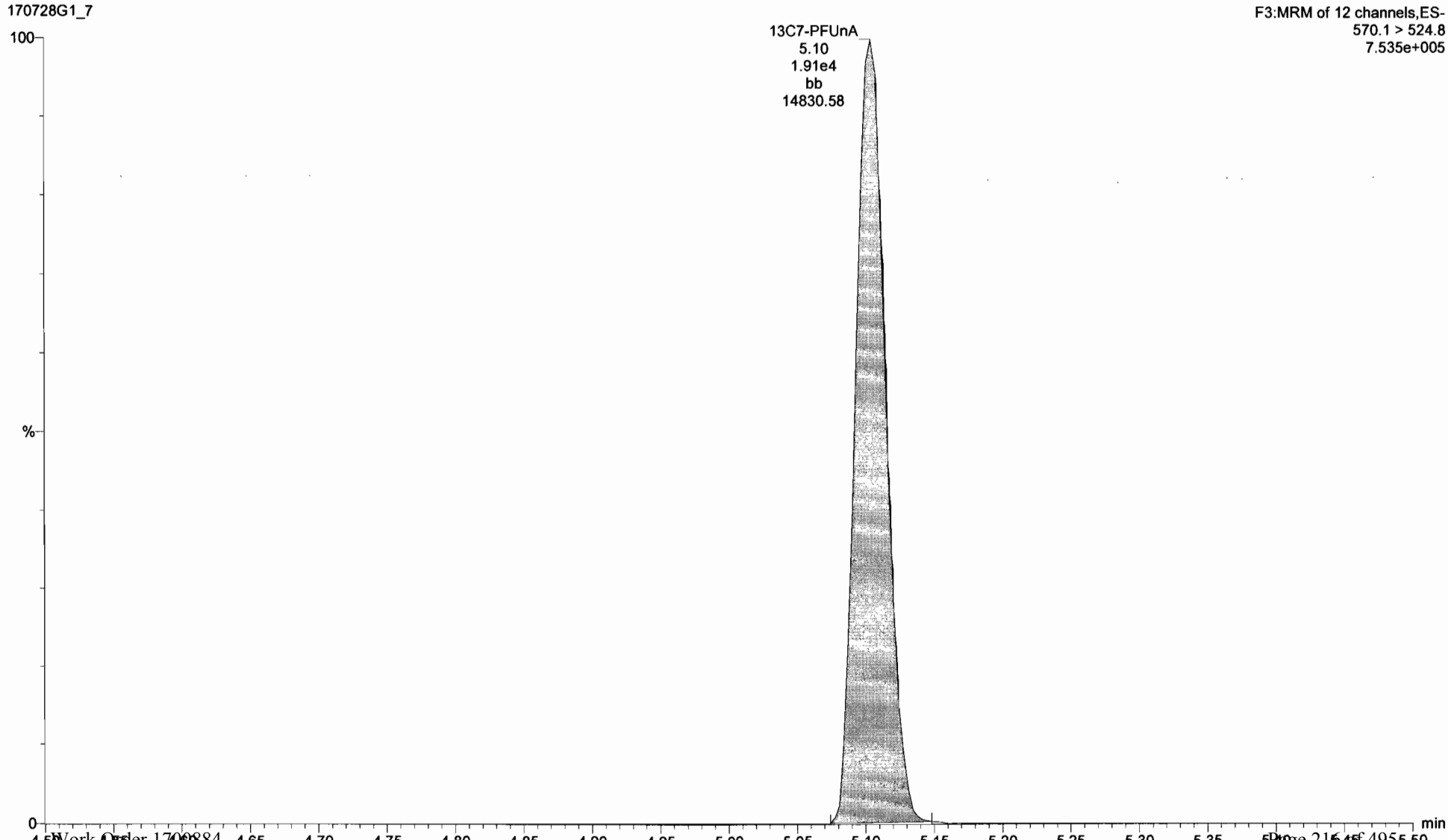


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13C7-PFUnA

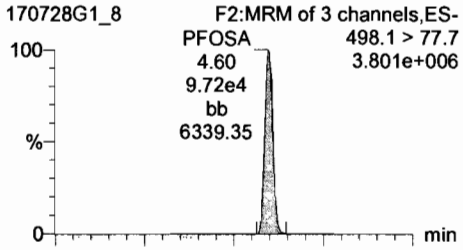


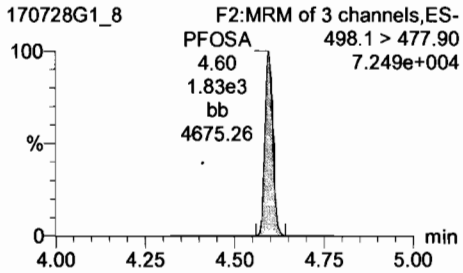
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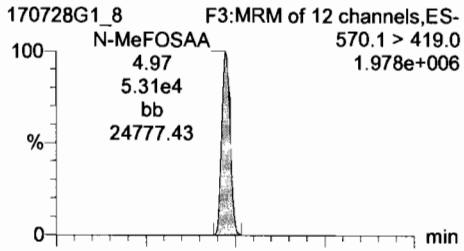
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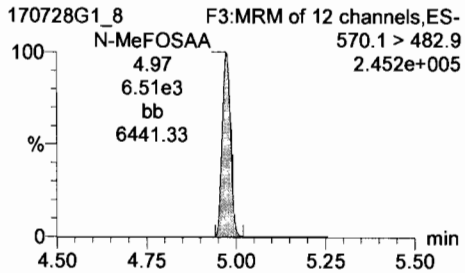
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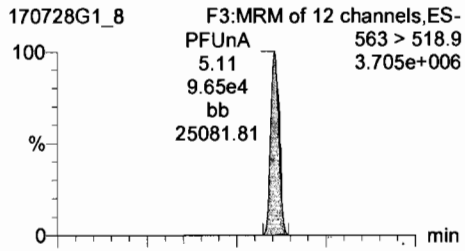


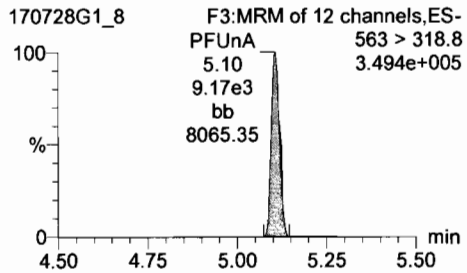
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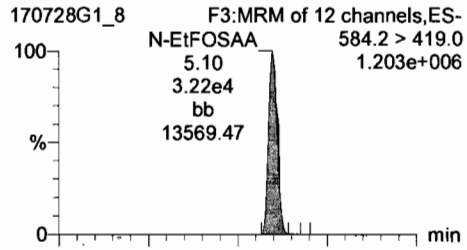


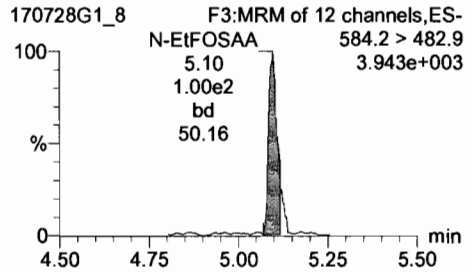
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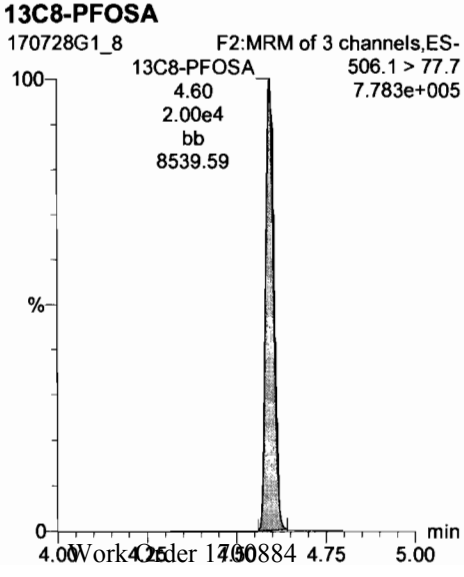


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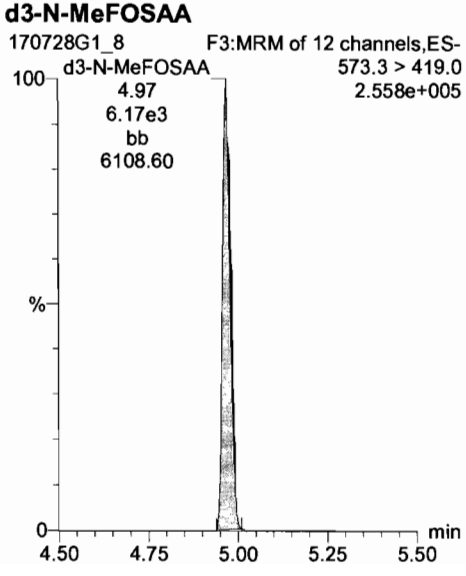




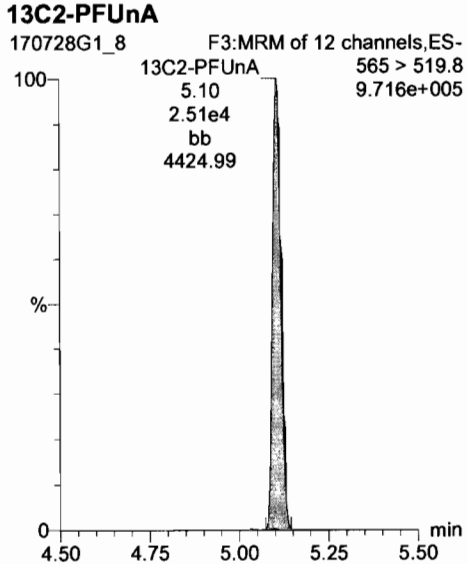
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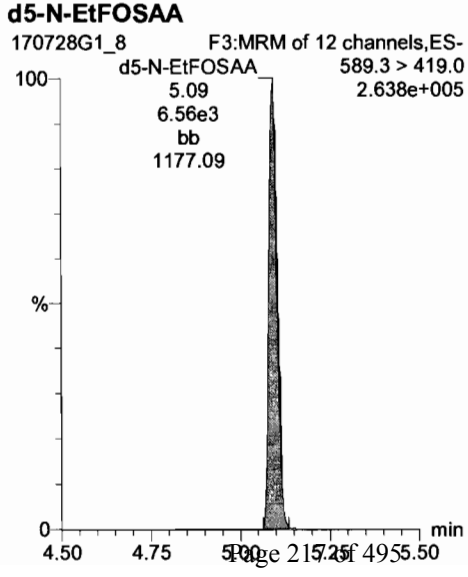
d3-N-MeFOSAA



13C2-PFUnA



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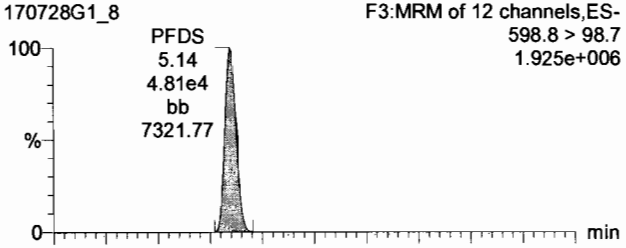


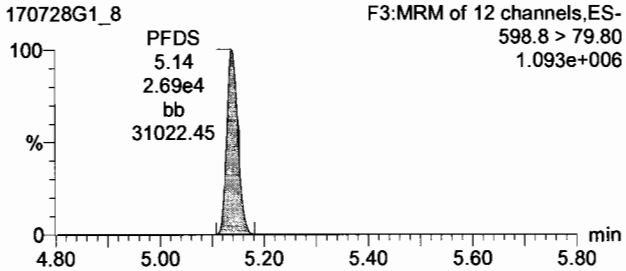
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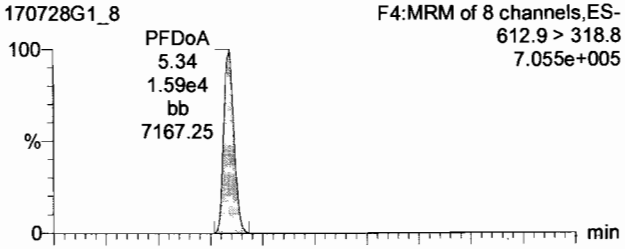
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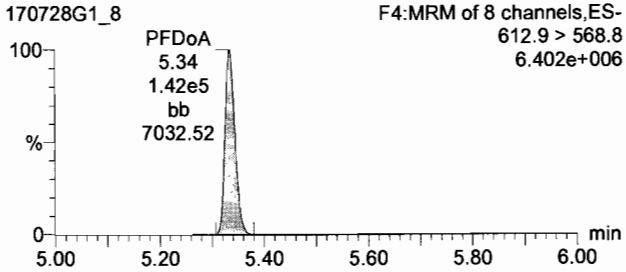
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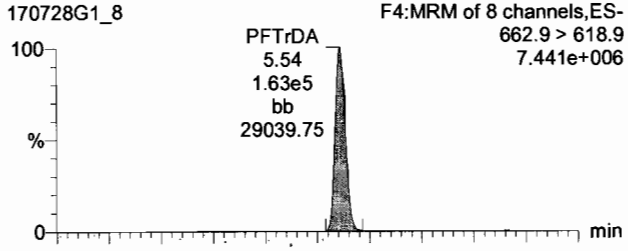


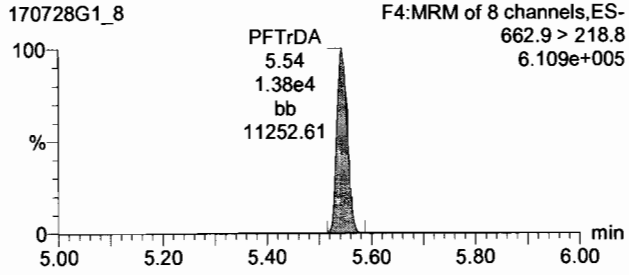
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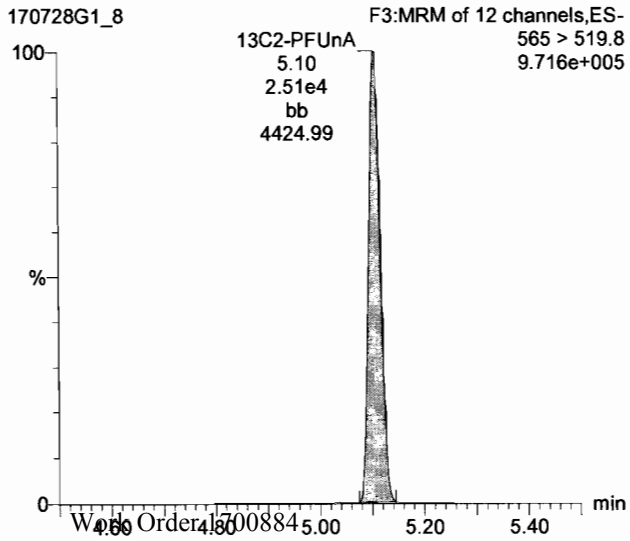


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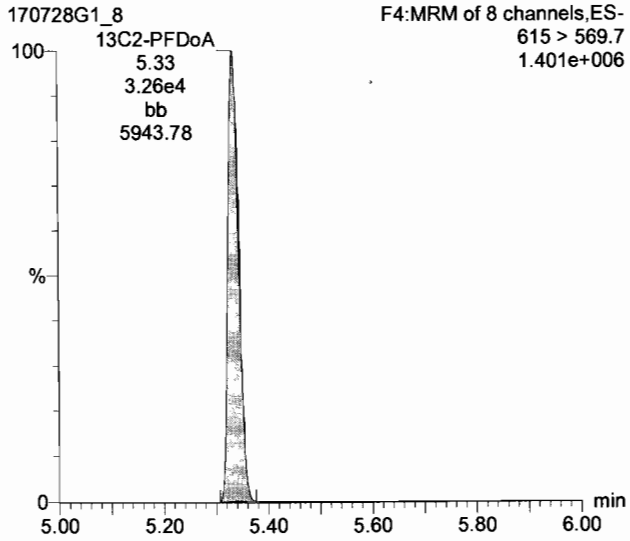




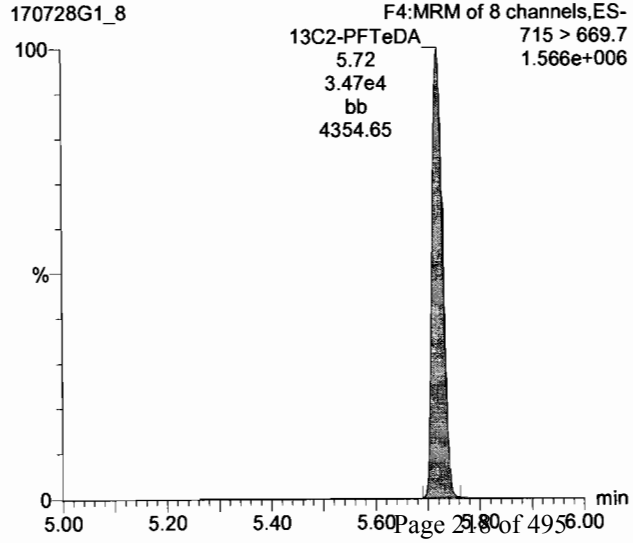
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13C2-PFDoA



13C2-PFTeDA

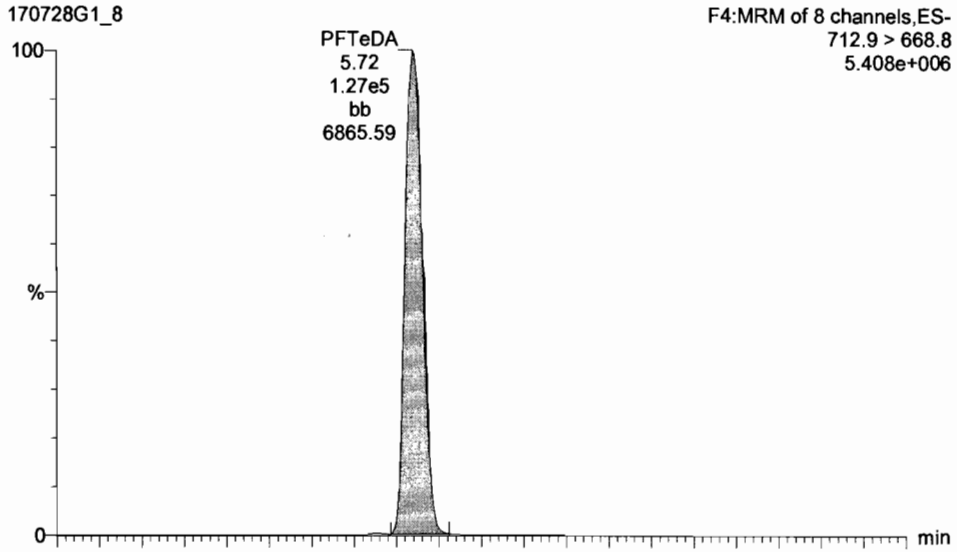


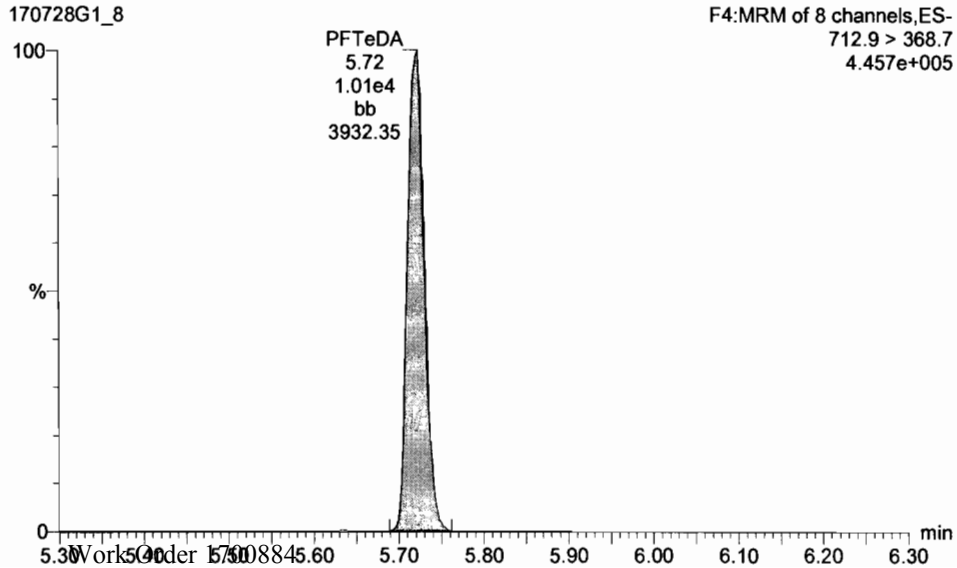
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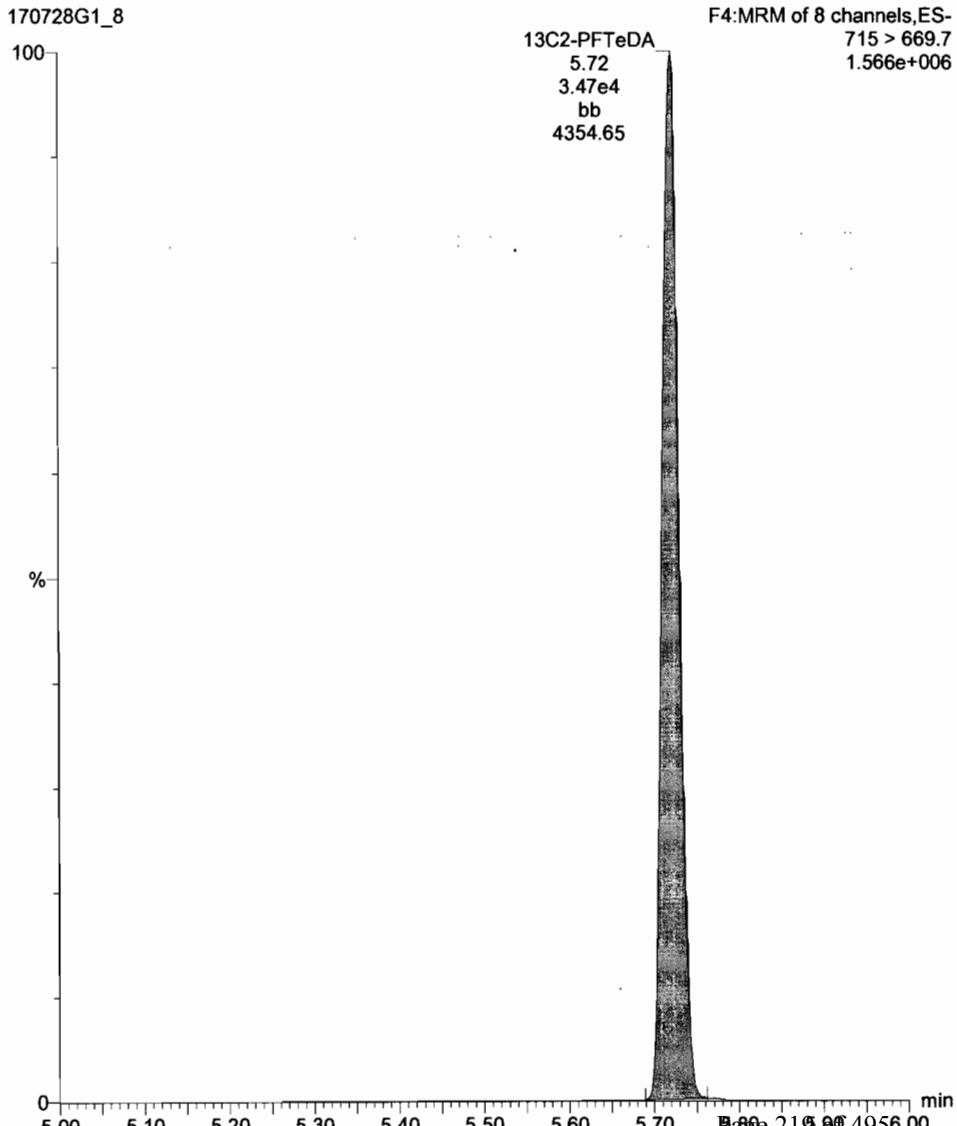
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PFTeDA





13C2-PFTeDA

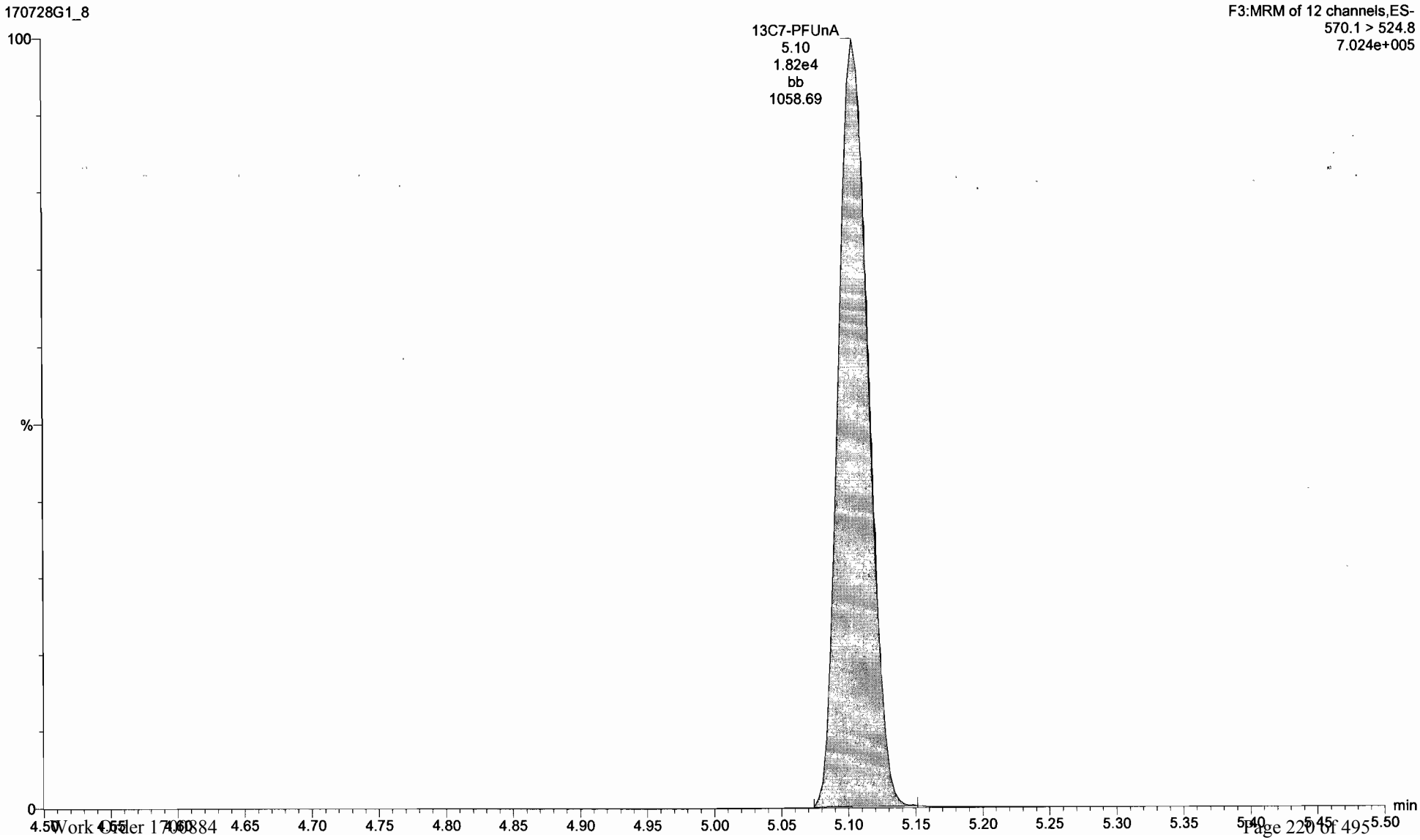


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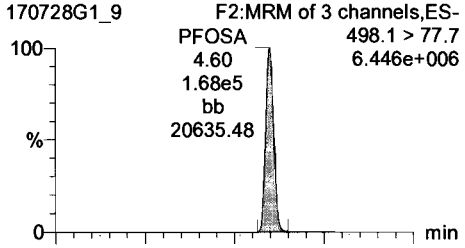


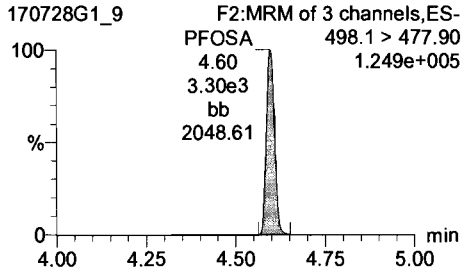
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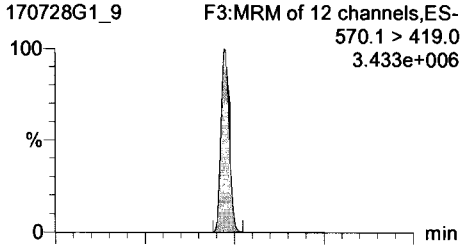
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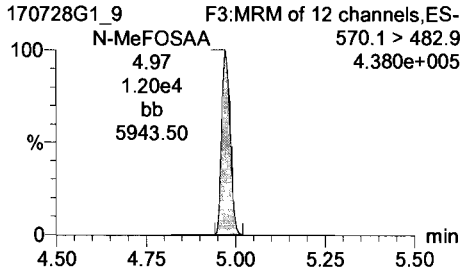
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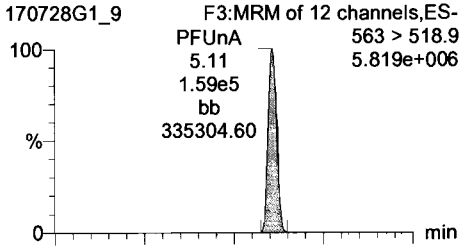


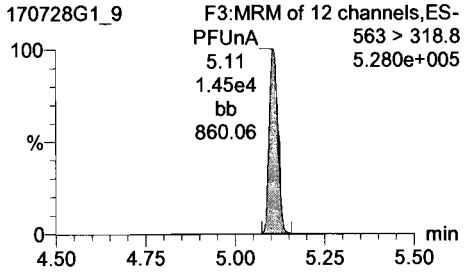
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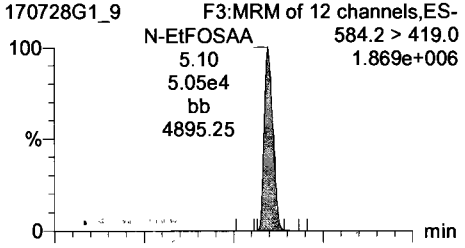


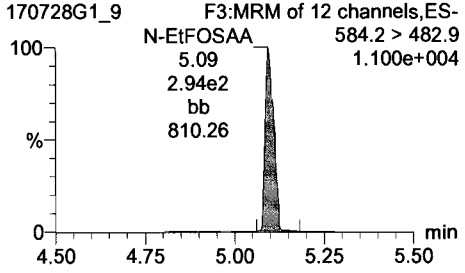
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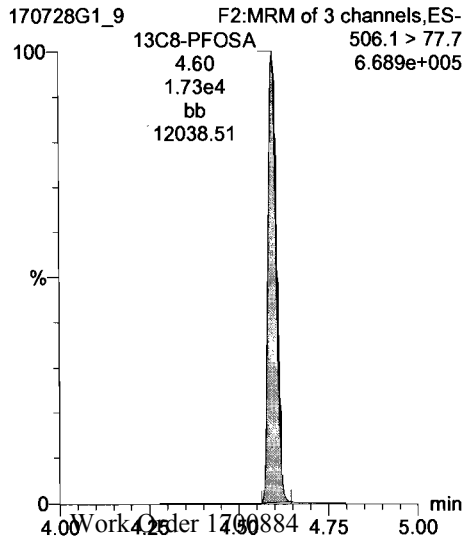


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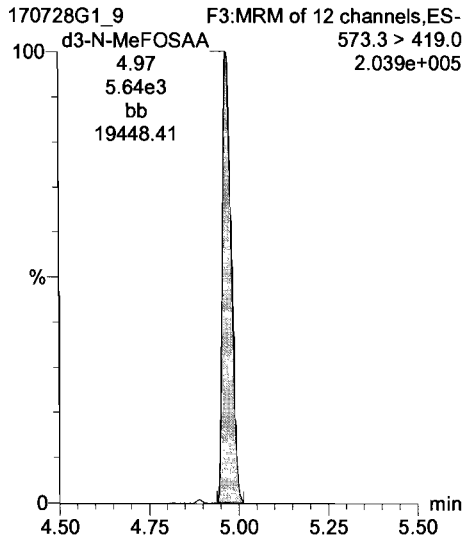




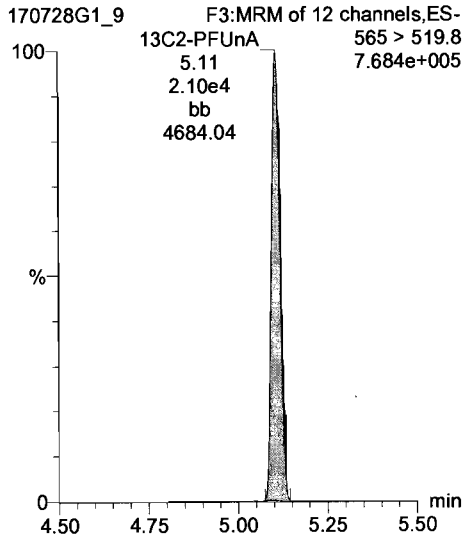
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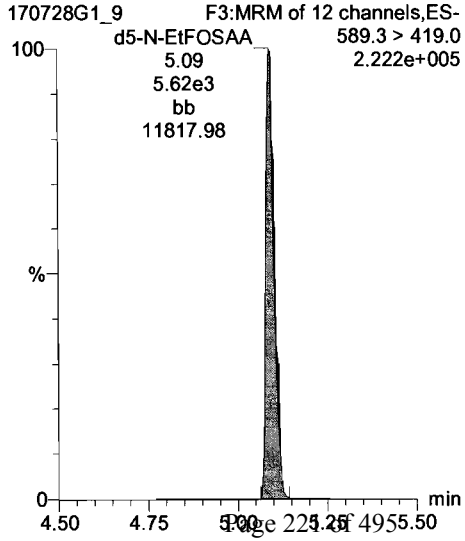
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

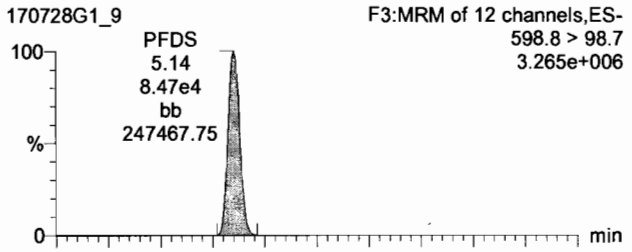


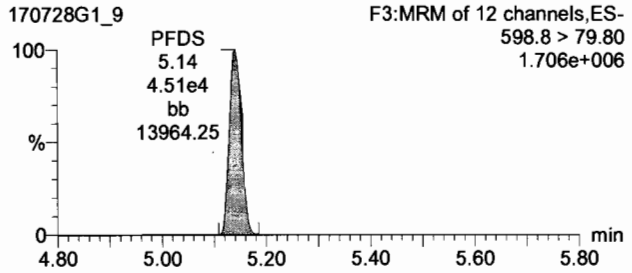
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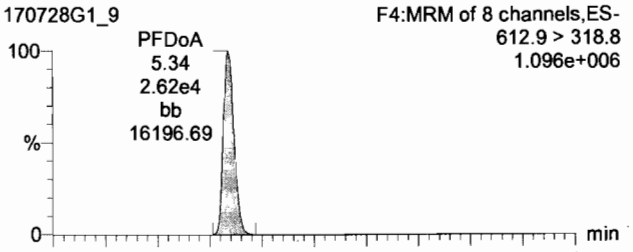
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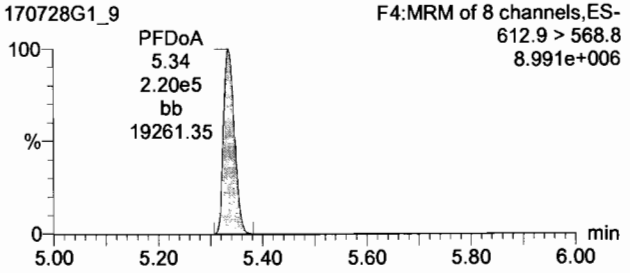
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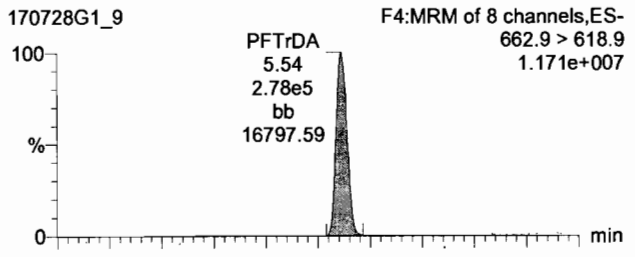


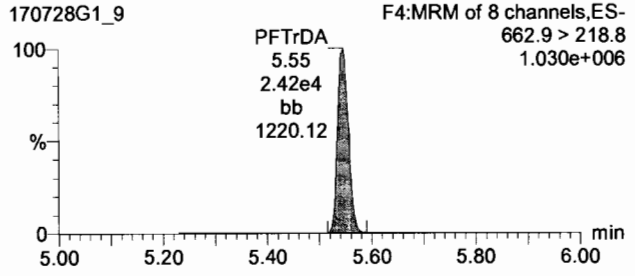
PFDoA



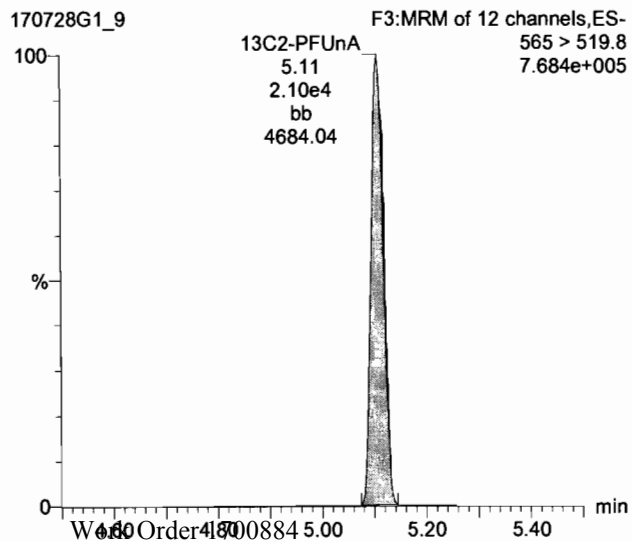


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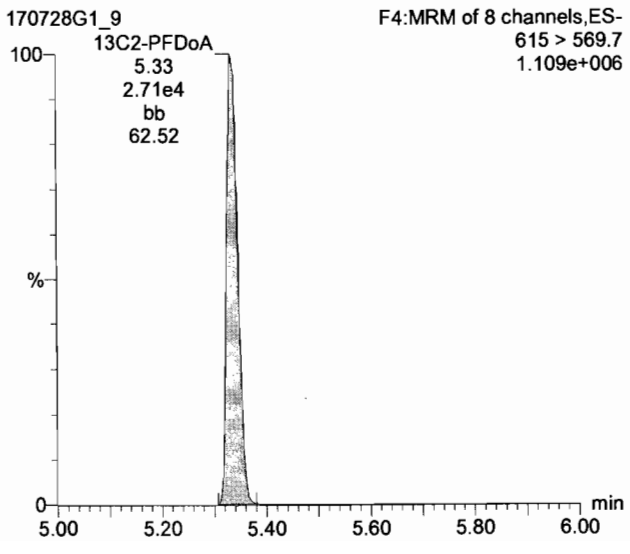




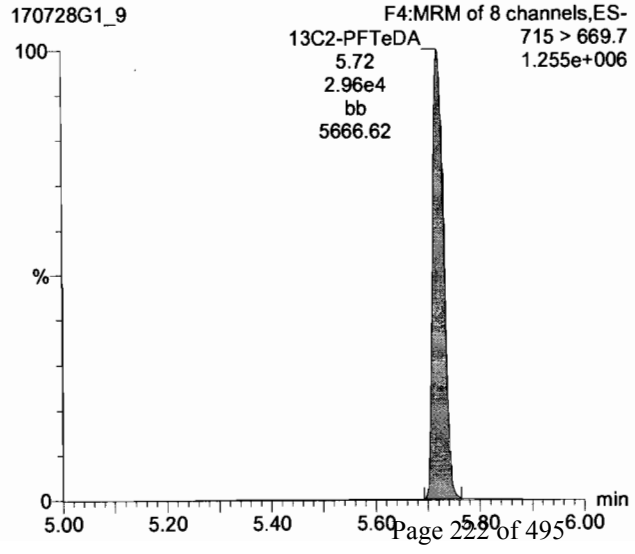
13C2-PFUnA



13C2-PFDoA



13C2-PFTeDA

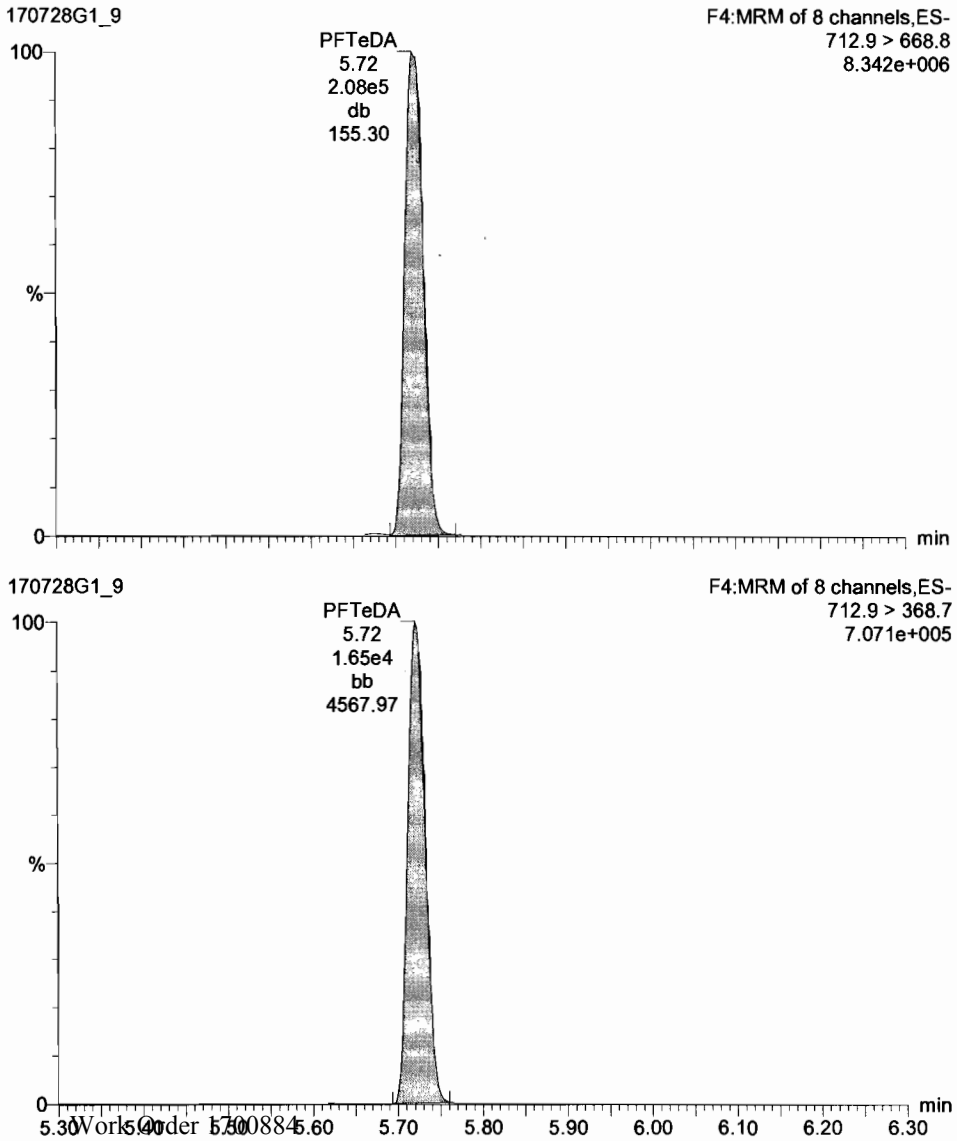


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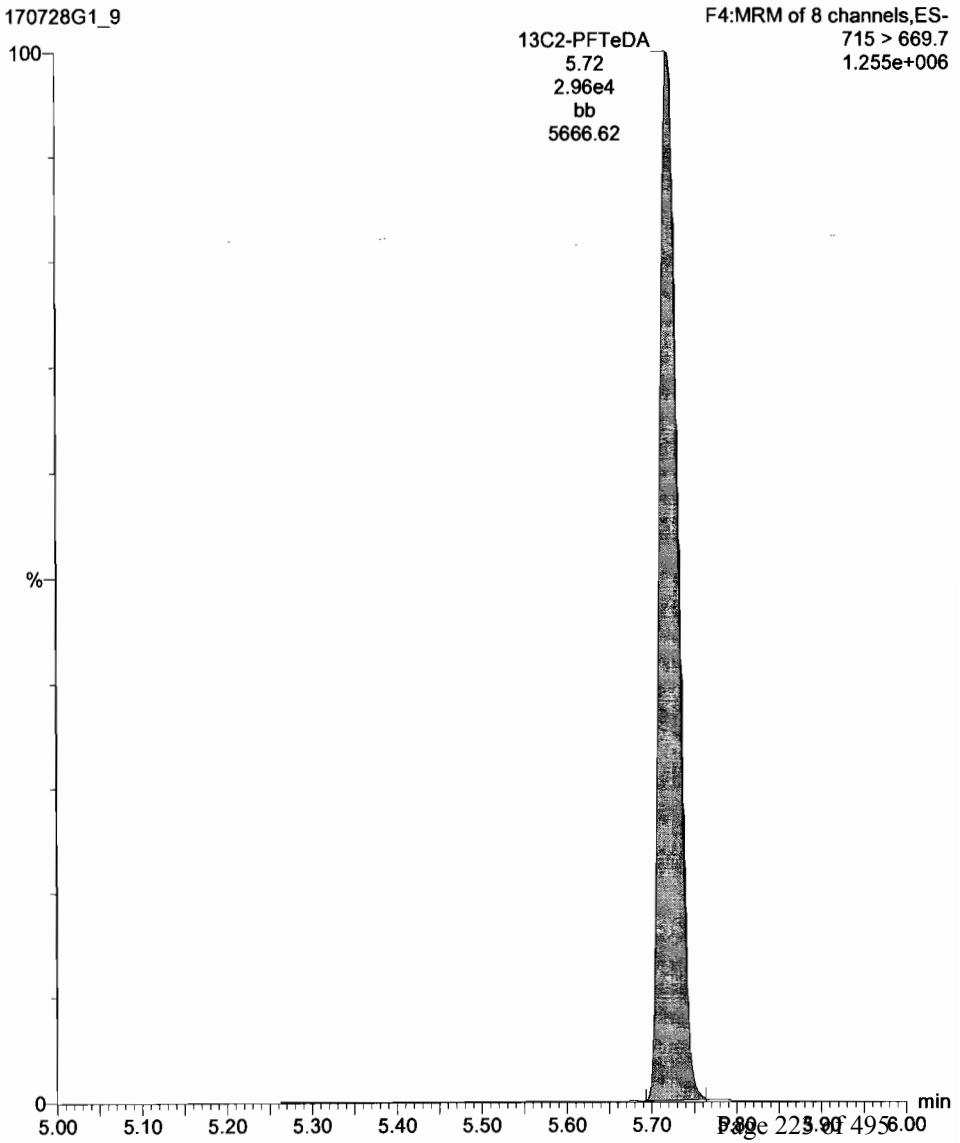
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PFTeDA



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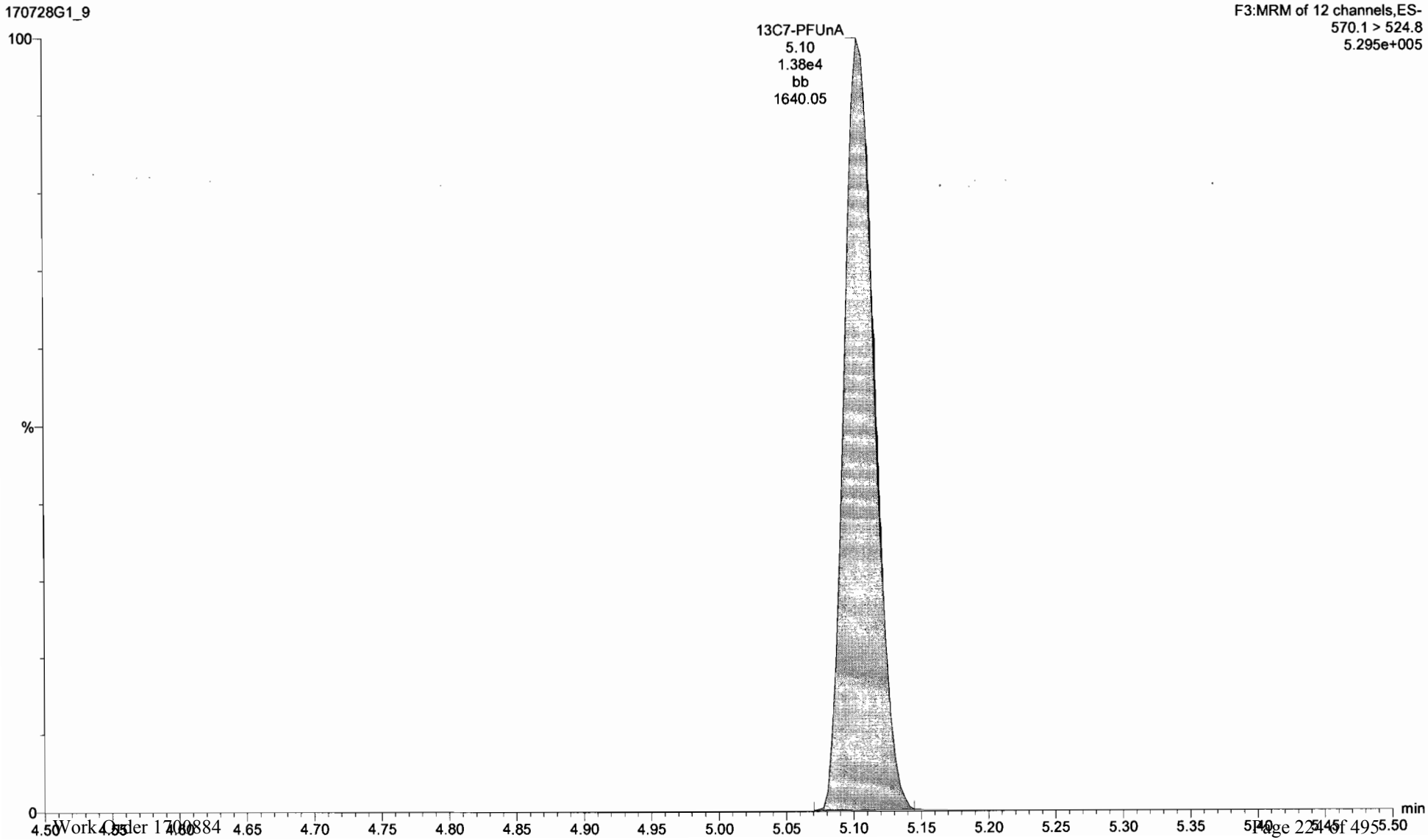


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13C7-PFUnA



Vista Analytical Laboratory Q1

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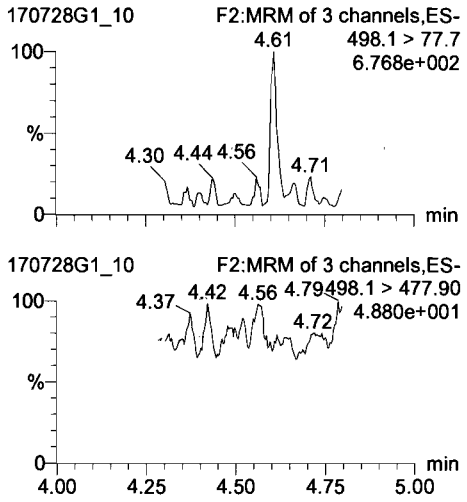
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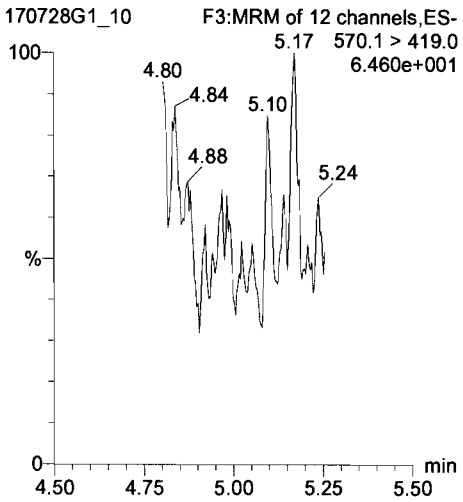
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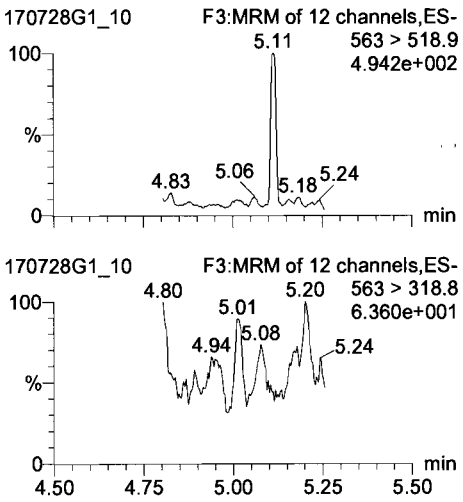
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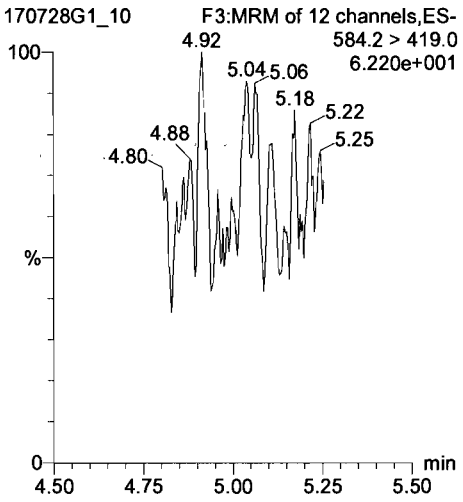
Total N-MeFOSAA



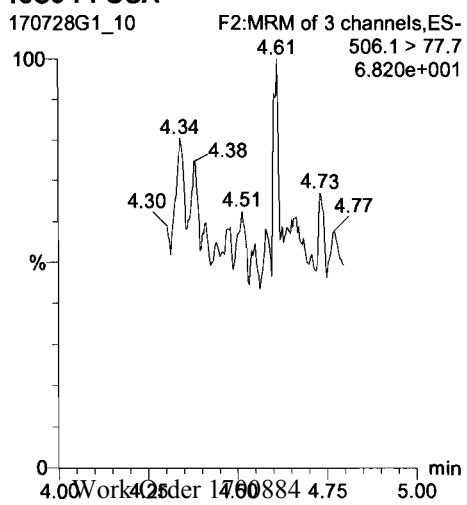
PFUnA



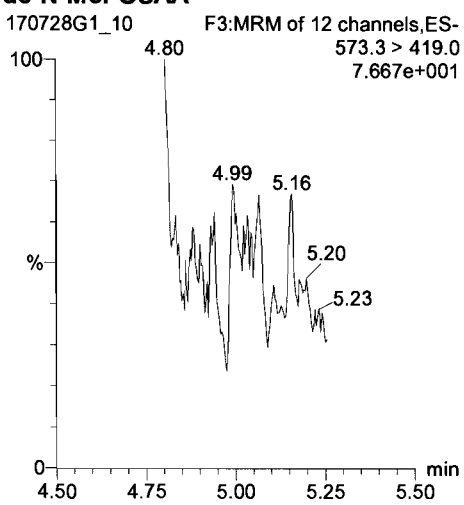
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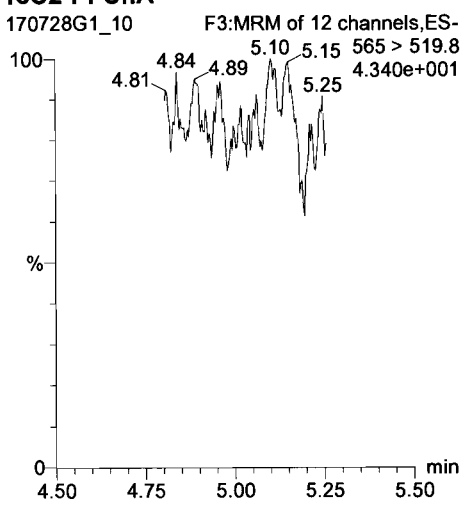
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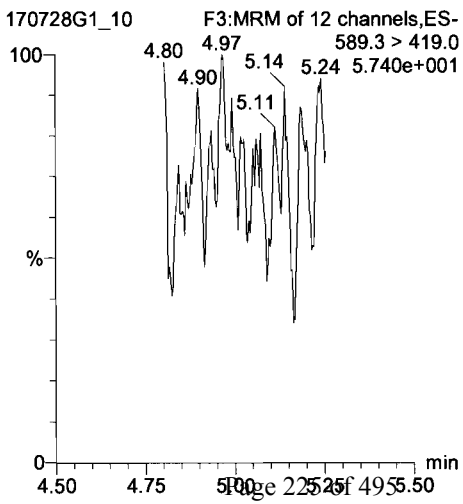
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

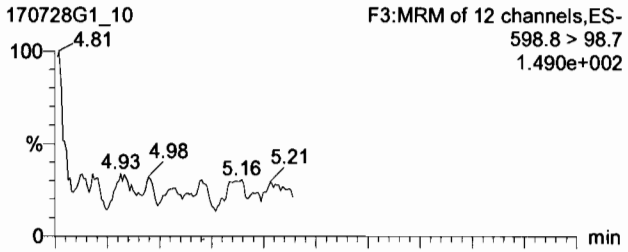


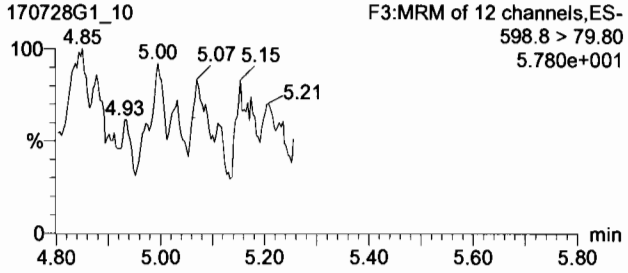
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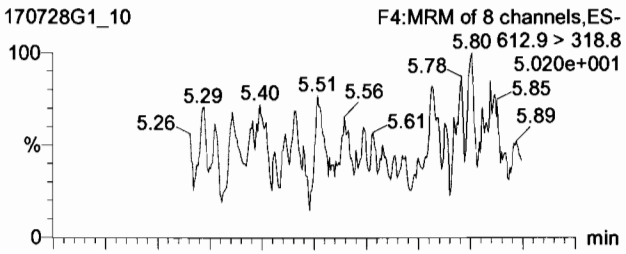
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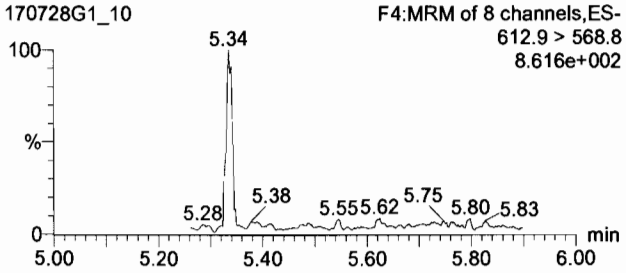
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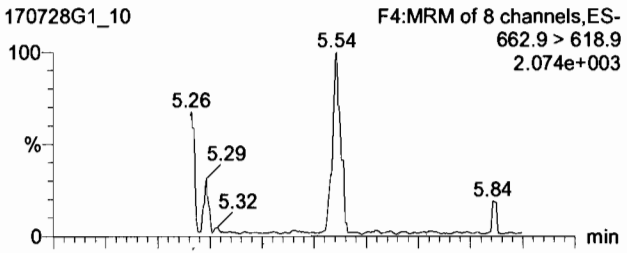


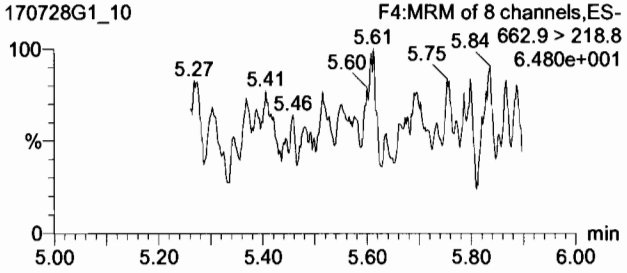
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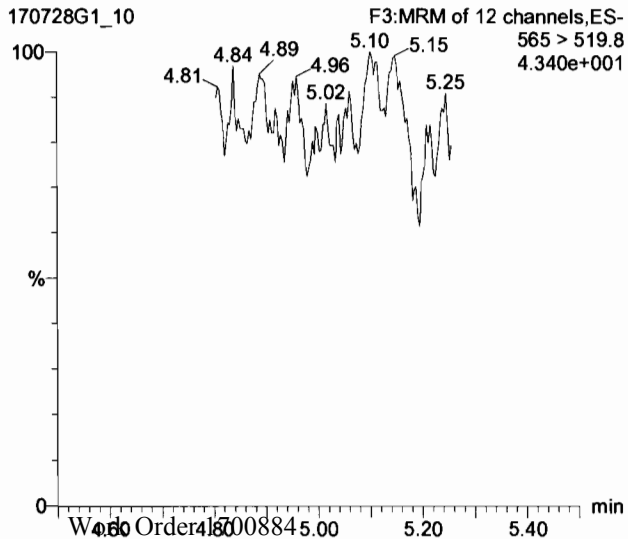


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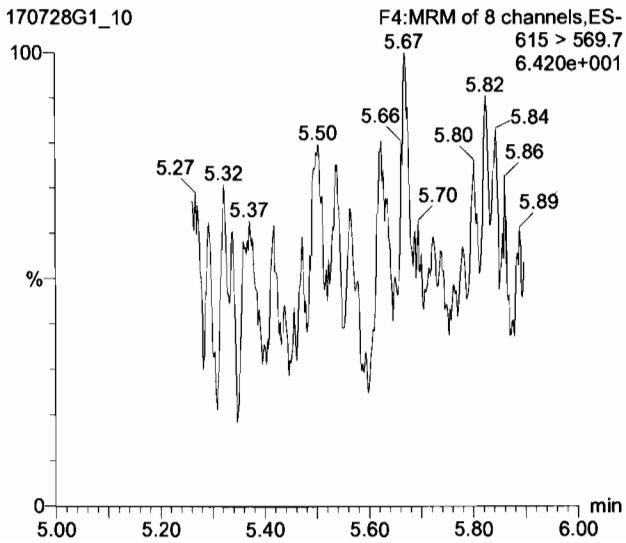




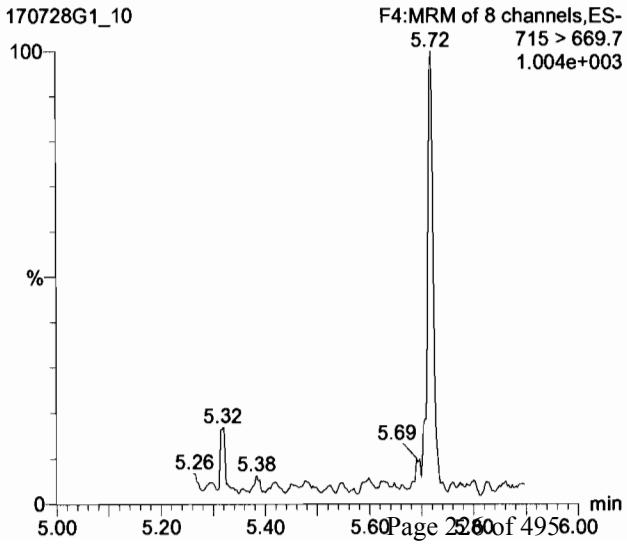
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13C2-PFDoA



13C2-PFTeDA

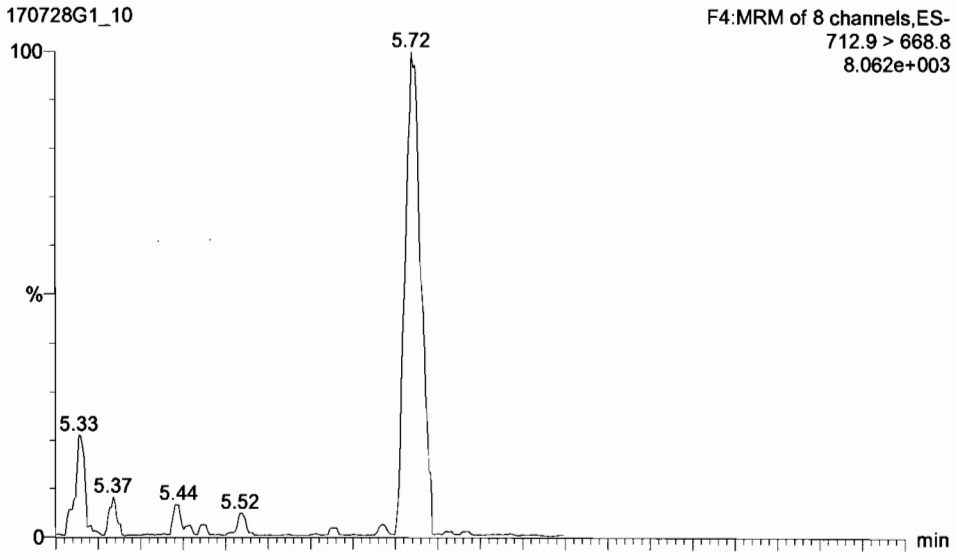


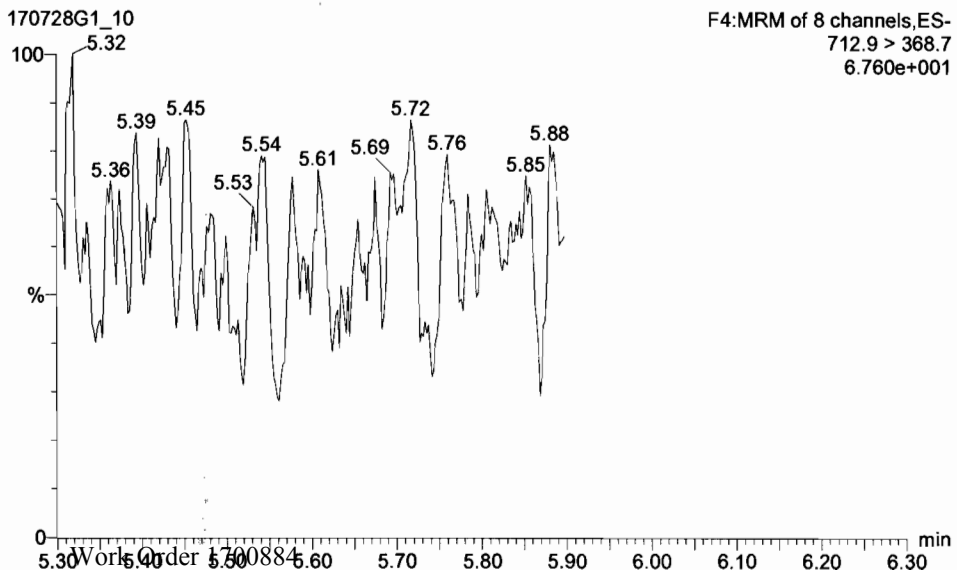
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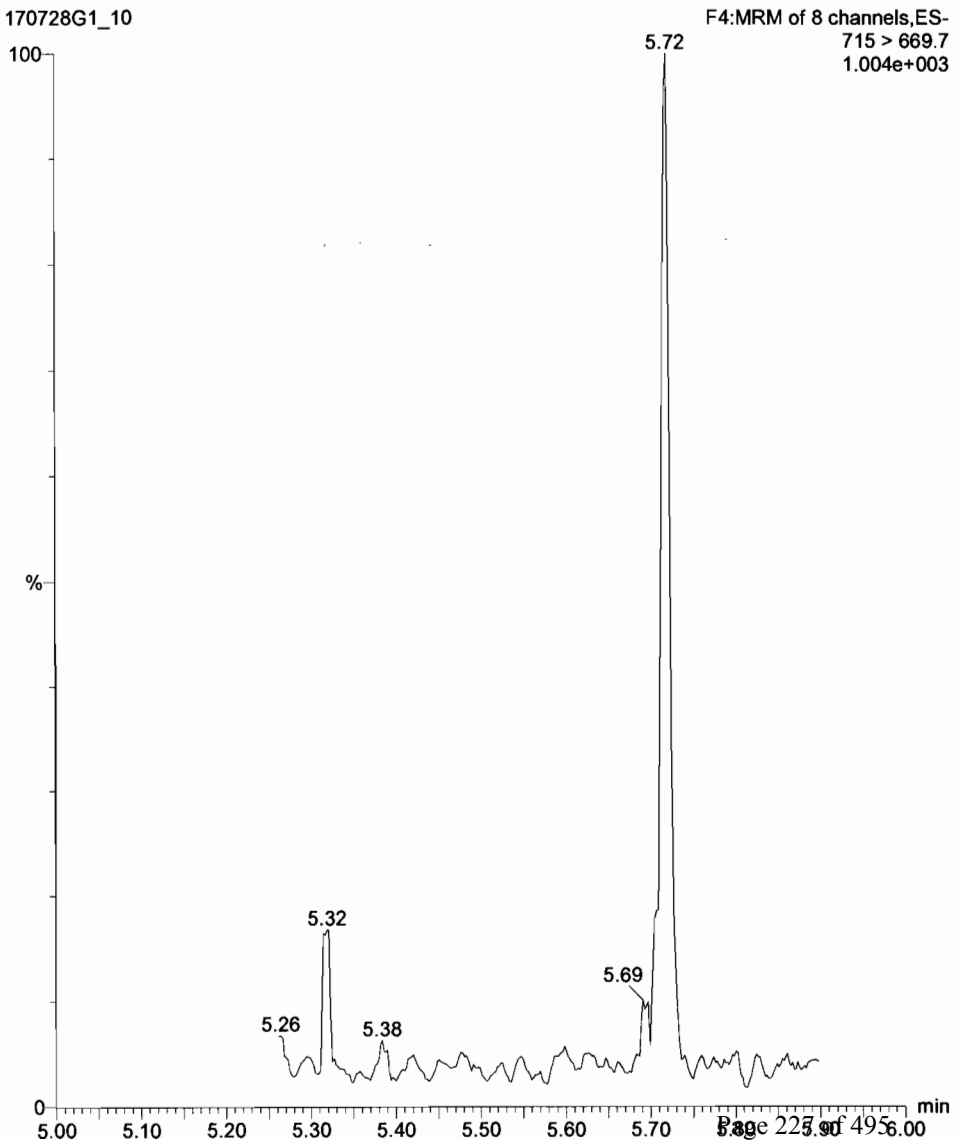
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PFTeDA





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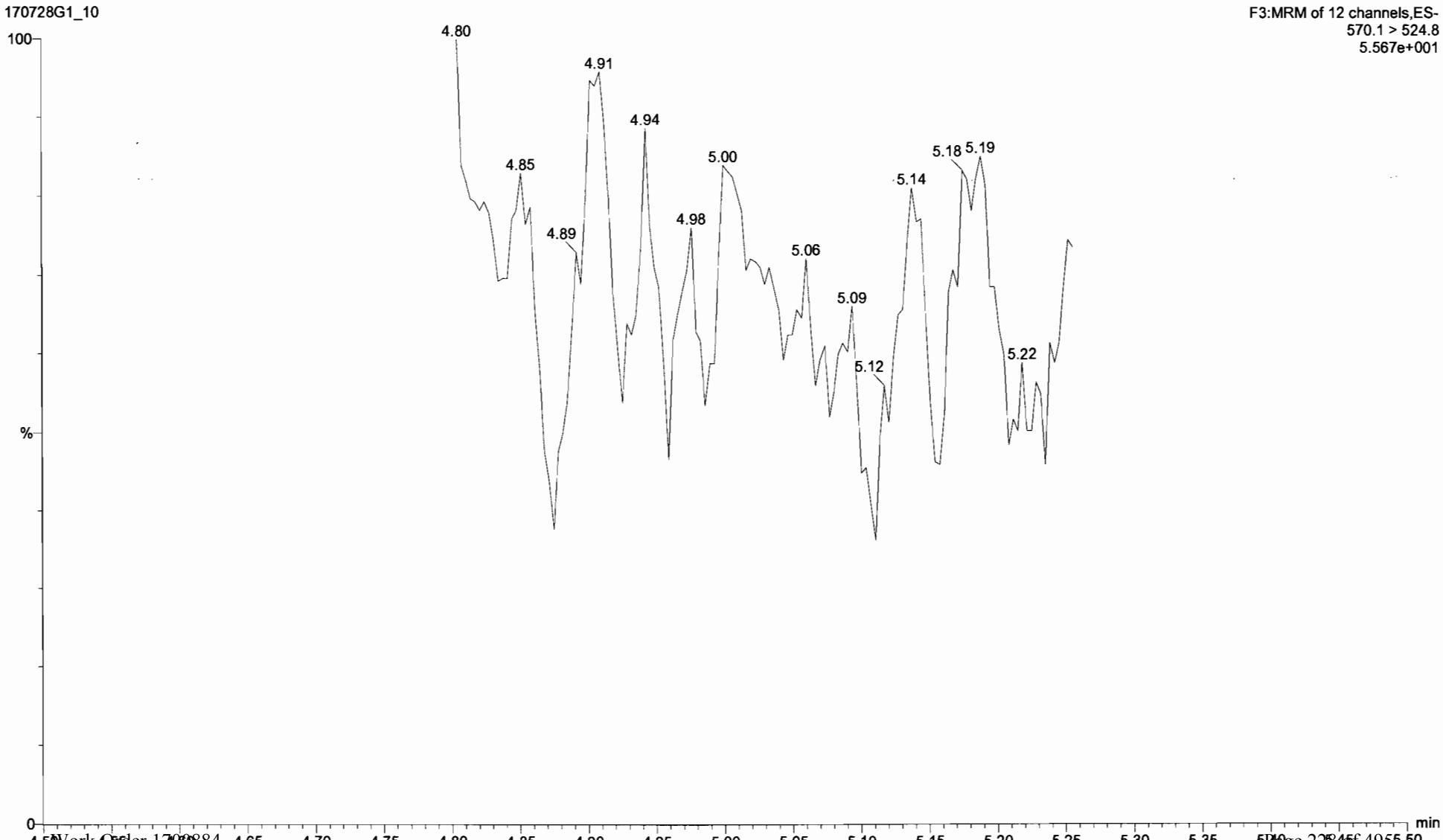
Vista Analytical Laboratory Q1

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13C7-PFUnA



Vista Analytical Laboratory Q1

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170728G1_11, Date: 28-Jul-2017, Time: 18:12:17, ID: SS170728G1-1 PFC SSS 17G2823, Description: PFC SSS 17G2823 B

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1	1	PFOSA	498.1 > 77.7	2.03e4	2.21e4		1.000	4.60	9.32	93.2
2	2	N-MeFOSAA	570.1 > 419.0	1.00e4	6.76e3		1.000	4.98	8.33	83.3
3	3	PFDS	598.8 > 98.7	9.53e3	2.79e4		1.000	5.14	9.34	93.4
4	4	PFUnA	563 > 518.9	2.08e4	2.79e4		1.000	5.11	9.55	95.5
5	5	N-EtFOSAA	584.2 > 419.0	7.19e3	7.64e3		1.000	5.10	8.82	88.2
6	6	PFDoA	612.9 > 318.8	3.57e3	3.74e4		1.000	5.34	9.79	97.9
7	7	PFTrDA	662.9 > 618.9	3.40e4	0.00e0		1.000	5.54	9.17	91.7
8	8	PFTeDA	712.9 > 668.8	3.05e4	3.91e4		1.000	5.72	10.6	106.3
9	9	13C8-PFOSA	506.1 > 77.7	2.21e4	1.86e4	1.146	1.000	4.60	13.0	103.8
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.76e3	1.86e4	0.026	1.000	4.97	172	106.1
11	11	13C2-PFUnA	565 > 519.8	2.79e4	1.86e4	1.471	1.000	5.11	12.7	101.9
12	12	d5-N-EtFOSAA	589.3 > 419.0	7.64e3	1.86e4	0.031	1.000	5.09	165	101.8
13	13	13C2-PFDoA	615 > 569.7	3.74e4	1.86e4	1.887	1.000	5.34	13.3	106.7
14	14	13C2-PFTeDA	715 > 669.7	3.91e4	1.86e4	1.990	1.000	5.72	13.2	105.6
15	15	13C7-PFUnA	570.1 > 524.8	1.86e4	1.86e4	1.000	1.000	5.10	12.5	100.0

70-130

7/31/17

Vista Analytical Laboratory Q1

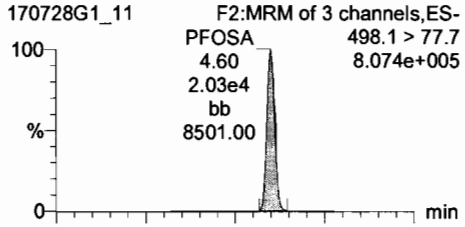
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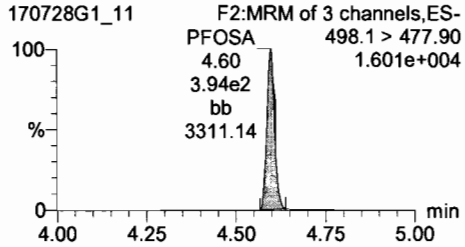
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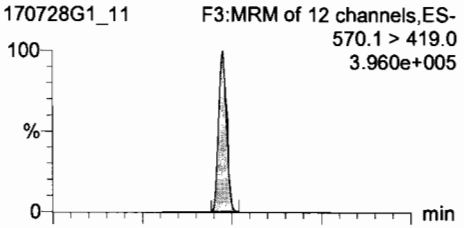
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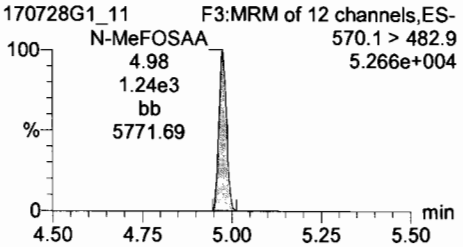
PFOSA



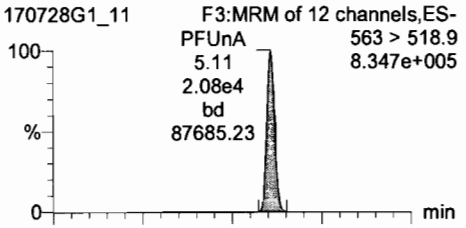


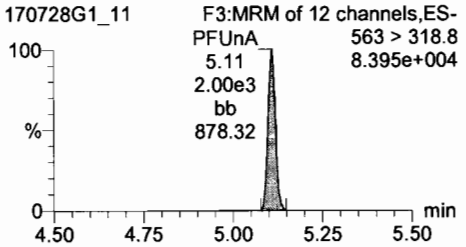
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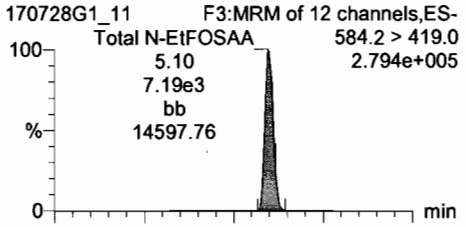


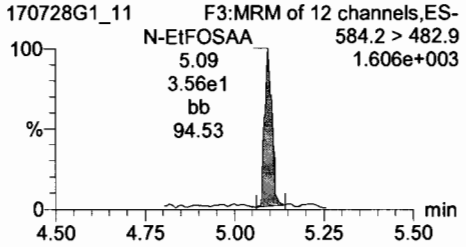
PFUnA



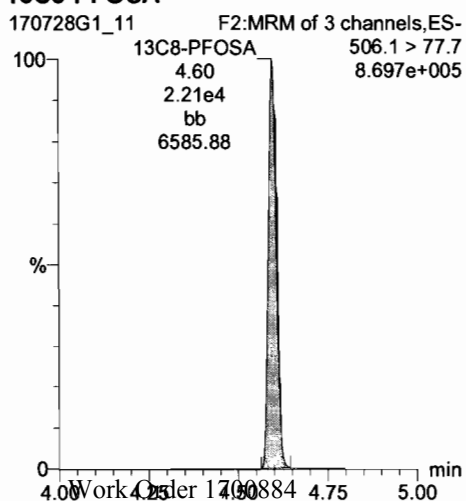


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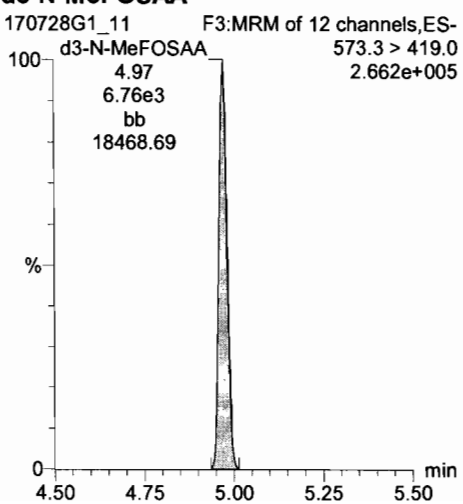




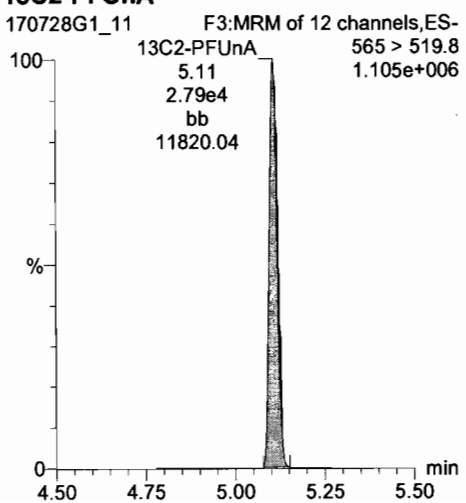
13C8-PFOSA



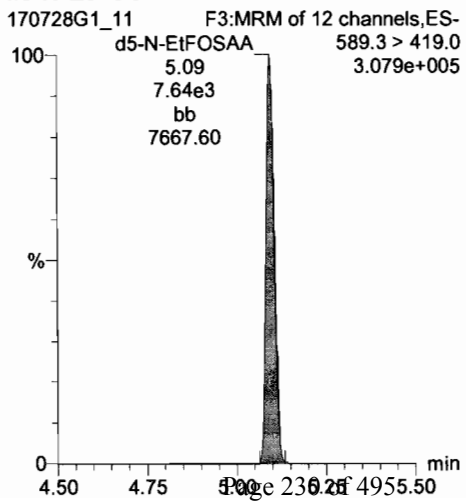
d3-N-MeFOSAA



13C2-PFUnA



d5-N-EtFOSAA

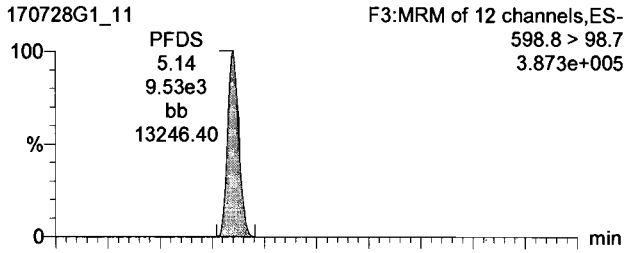


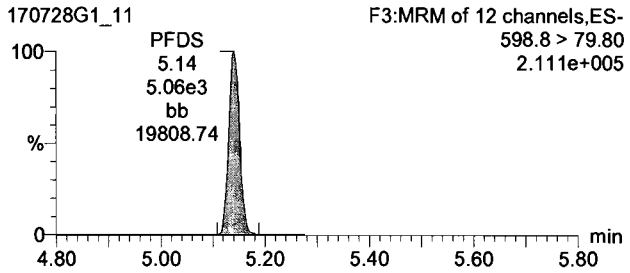
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Printed: Monday, July 31, 2017 08:58:38 Pacific Daylight Time

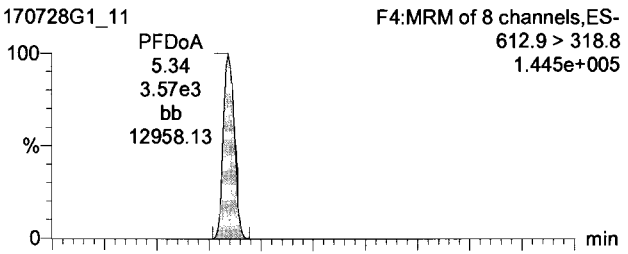
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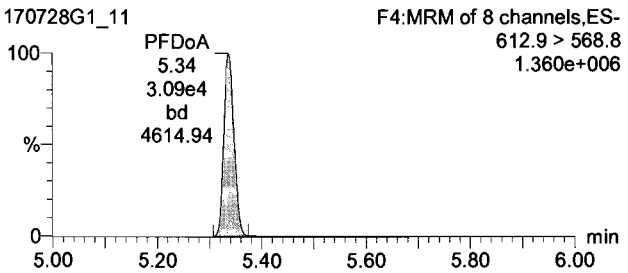
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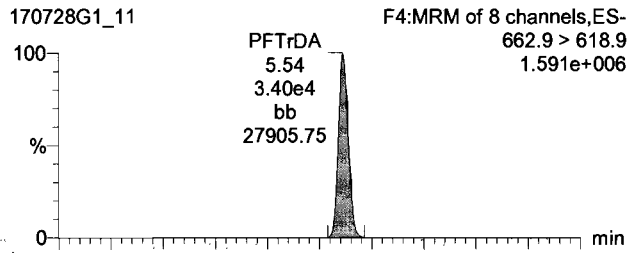


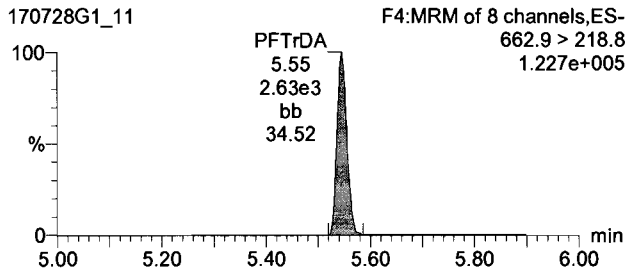
PFDoA



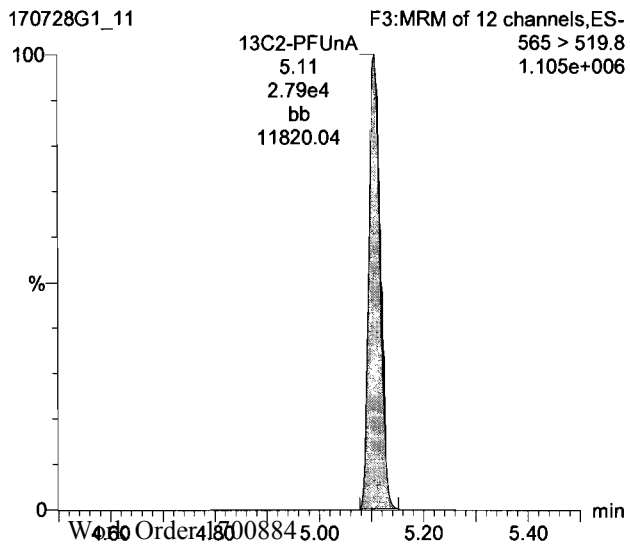


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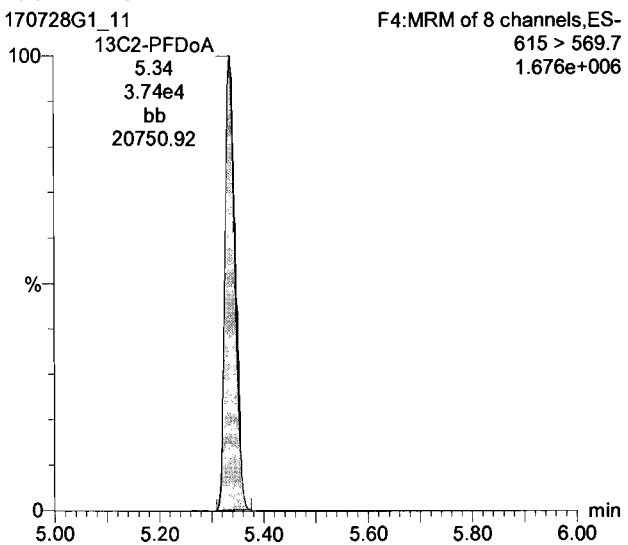




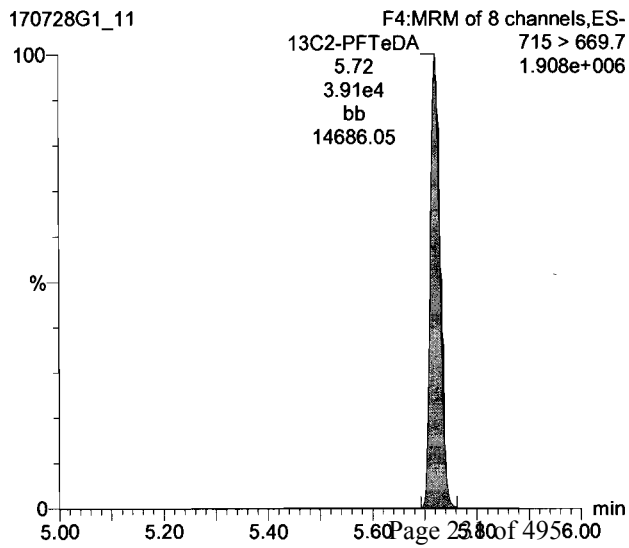
13C2-PFUnA



13C2-PFDoA



13C2-PFTeDA

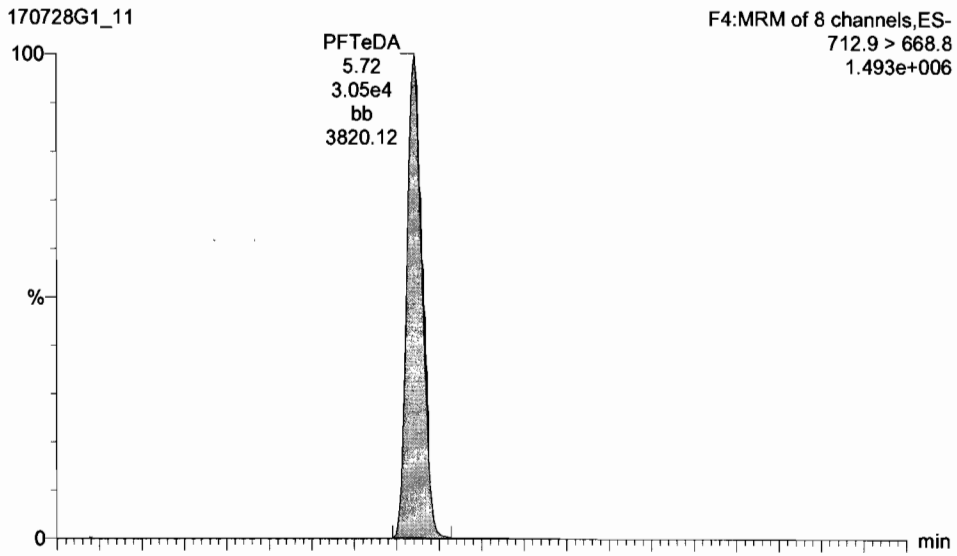


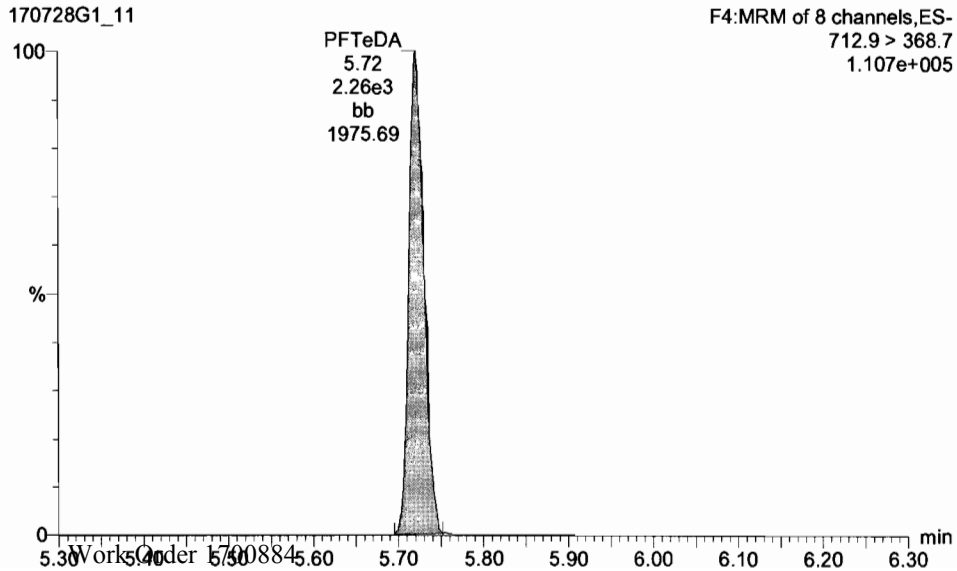
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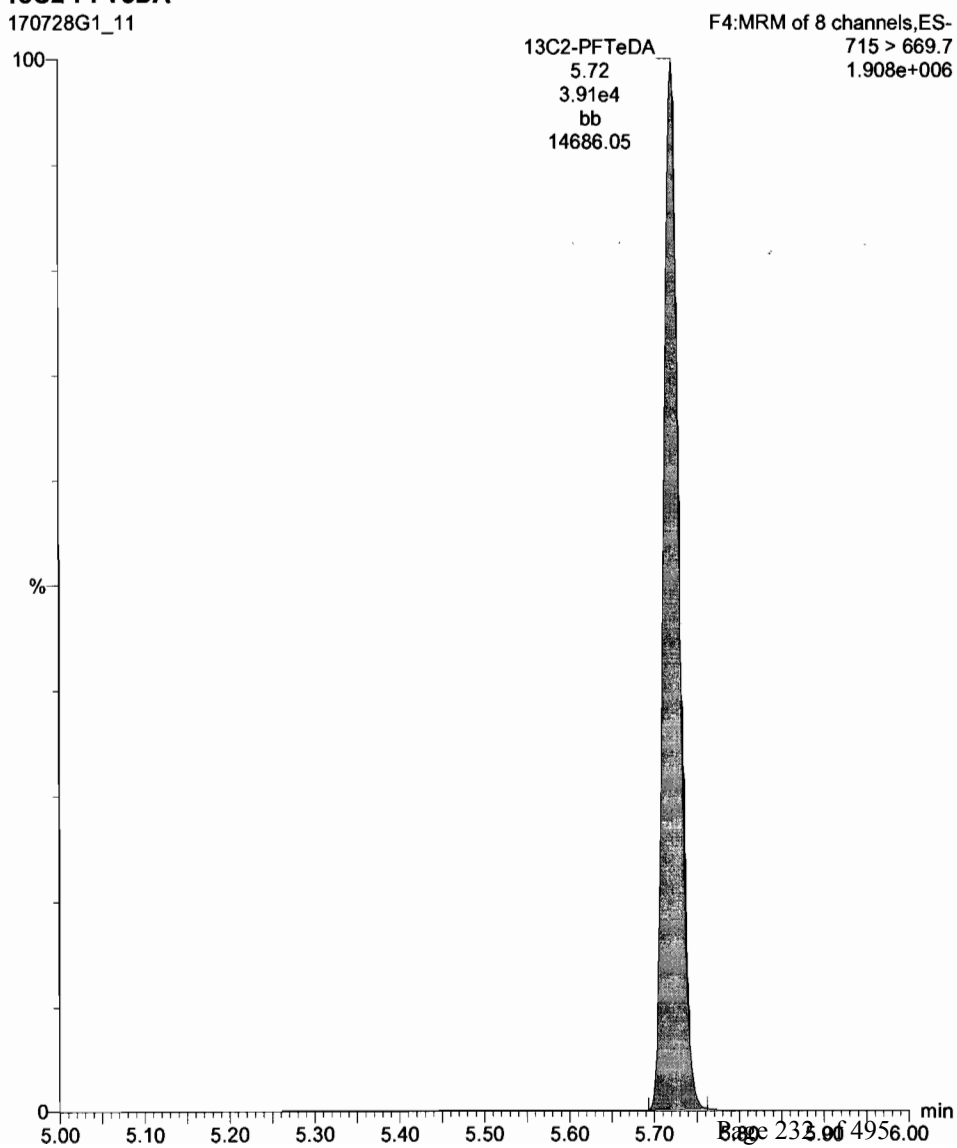
ID: SS170728G1-1 PFC SSS 17G2823, Description: PFC SSS 17G2823 B, Name: 170728G1_11, Date: 28-Jul-2017, Time: 18:12:17, Instrument: , Lab: , User:

PFTeDA





13C2-PFTeDA

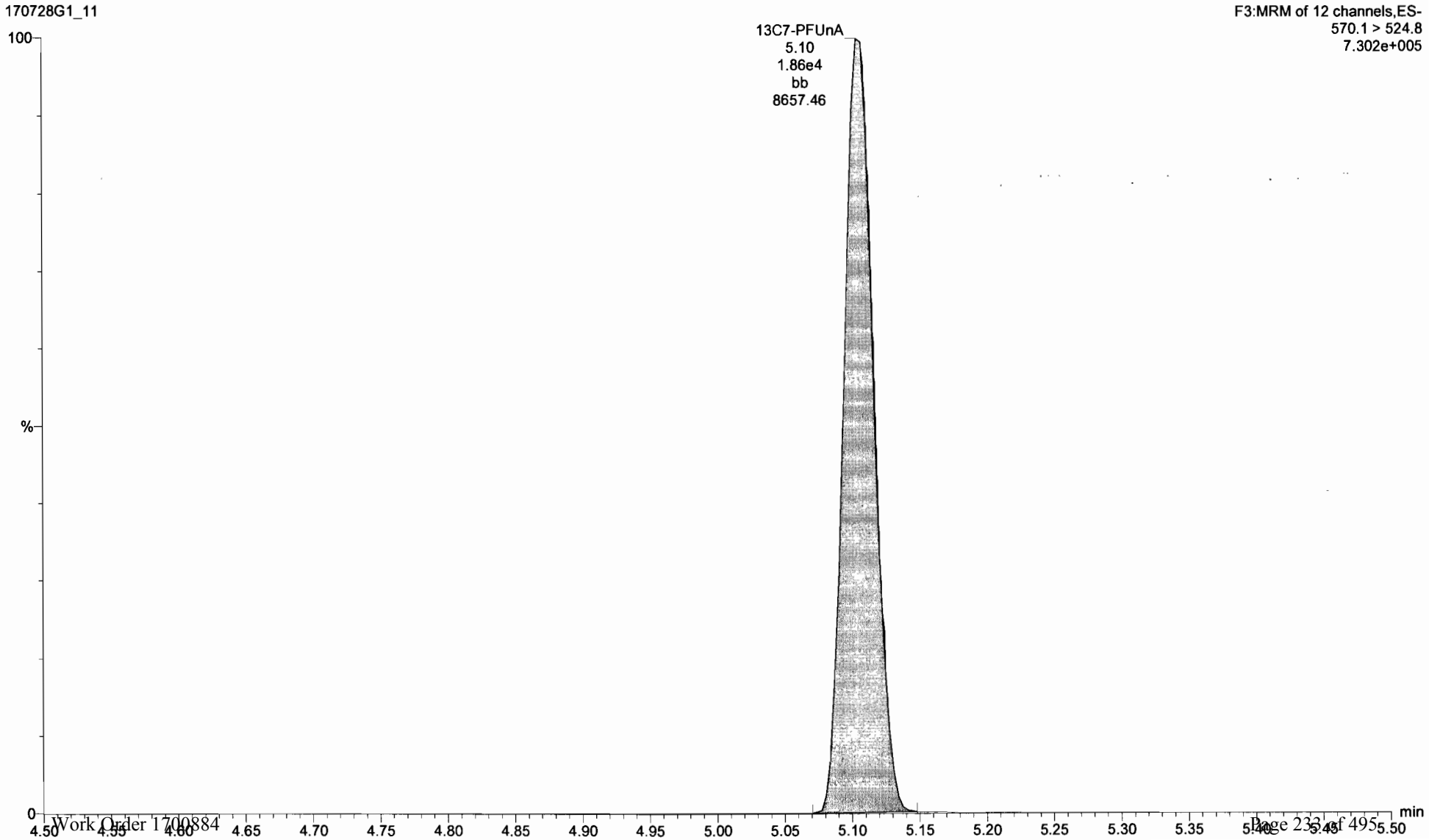


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ID: SS170728G1-1 PFC SSS 17G2823, Description: PFC SSS 17G2823 B, Name: 170728G1_11, Date: 28-Jul-2017, Time: 18:12:17, Instrument: , Lab: , User:

13C7-PFUnA



Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA
Correlation coefficient: r = 0.999824, r^2 = 0.999647
Calibration curve: 0.747533 * x + 0.048007
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	1.67	3.78e2	2.10e4	0.238	-5.0	0.903
2	2	170727G1_3	0.500	1.68	7.43e2	2.27e4	0.483	-3.4	0.818
3	3	170727G1_4	1.00	1.68	1.40e3	2.13e4	1.04	3.7	0.823
4	4	170727G1_5	2.00	1.67	2.90e3	2.25e4	2.09	4.3	0.804
5	5	170727G1_6	5.00	1.68	6.65e3	2.07e4	5.30	5.9	0.801
6	6	170727G1_7	10.0	1.67	1.45e4	2.55e4	9.44	-5.6	0.710
7	7	170727G1_8	50.0	1.68	6.31e4	2.11e4	49.9	-0.2	0.747
8	8	170727G1_9	100	1.68	1.32e5	2.19e4	100	0.3	0.750

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AC 7/27/17

Compound name: PFPeA
Correlation coefficient: r = 0.999667, r^2 = 0.999334
Calibration curve: 1.10054 * x + 0.0486908
Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	2.62	1.86e2	7.64e3	0.233	-6.8	1.22
2	2	170727G1_3	0.500	2.63	3.85e2	8.33e3	0.481	-3.8	1.16
3	3	170727G1_4	1.00	2.63	7.66e2	7.75e3	1.08	7.8	1.23
4	4	170727G1_5	2.00	2.63	1.54e3	8.54e3	2.01	0.5	1.13
5	5	170727G1_6	5.00	2.63	3.71e3	7.82e3	5.34	6.8	1.18
6	6	170727G1_7	10.0	2.63	7.58e3	9.10e3	9.42	-5.8	1.04
7	7	170727G1_8	50.0	2.63	3.27e4	7.23e3	51.2	2.5	1.13
8	8	170727G1_9	100	2.62	6.37e4	7.31e3	98.9	-1.1	1.09

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Compound name: PFBS
Correlation coefficient: r = 0.999365, r^2 = 0.998731
Calibration curve: 1.60766 * x + 0.593256
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	2.91	1.56e2	4.70e3			1.66
2	2	170727G1_3	0.500	2.91	5.18e2	4.48e3	0.531	6.1	2.89
3	3	170727G1_4	1.00	2.91	7.48e2	4.63e3	0.886	-11.4	2.02
4	4	170727G1_5	2.00	2.91	1.51e3	5.33e3	1.83	-8.6	1.77
5	5	170727G1_6	5.00	2.91	3.40e3	4.48e3	5.53	10.7	1.90
6	6	170727G1_7	10.0	2.91	7.34e3	5.40e3	10.2	1.9	1.70
7	7	170727G1_8	50.0	2.91	2.94e4	4.38e3	51.7	3.4	1.67
8	8	170727G1_9	100	2.91	5.18e4	4.10e3	97.8	-2.2	1.58

Compound name: PFHxA
Correlation coefficient: r = 0.999065, r^2 = 0.998131
Calibration curve: 1.89981 * x + 0.153363
Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	3.28	2.81e2	5.77e3	0.240	-4.0	2.44
2	2	170727G1_3	0.500	3.28	5.54e2	7.04e3	0.436	-12.7	1.97
3	3	170727G1_4	1.00	3.28	1.13e3	6.35e3	1.09	8.6	2.22
4	4	170727G1_5	2.00	3.28	2.22e3	6.86e3	2.04	2.2	2.02
5	5	170727G1_6	5.00	3.28	5.20e3	5.84e3	5.78	15.6	2.23
6	6	170727G1_7	10.0	3.28	1.11e4	7.89e3	9.21	-7.9	1.77
7	7	170727G1_8	50.0	3.28	4.46e4	6.09e3	48.2	-3.7	1.83
8	8	170727G1_9	100	3.29	8.84e4	5.71e3	102	1.8	1.94

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Compound name: PFHpA
Correlation coefficient: r = 0.999666, r^2 = 0.999332
Calibration curve: 1.94658 * x + 0.2548
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	3.81	3.78e2	7.45e3	0.195	-22.1	2.54
2	2	170727G1_3	0.500	3.82	8.08e2	8.06e3	0.513	2.6	2.51
3	3	170727G1_4	1.00	3.81	1.65e3	8.77e3	1.08	7.5	2.35
4	4	170727G1_5	2.00	3.81	3.13e3	8.92e3	2.13	6.3	2.20
5	5	170727G1_6	5.00	3.81	7.12e3	8.20e3	5.45	9.0	2.17
6	6	170727G1_7	10.0	3.81	1.60e4	1.05e4	9.60	-4.0	1.89
7	7	170727G1_8	50.0	3.81	6.42e4	8.09e3	50.8	1.7	1.98
8	8	170727G1_9	100	3.81	1.21e5	7.84e3	99.0	-1.0	1.93

Compound name: PFHxS
Correlation coefficient: r = 0.999617, r^2 = 0.999233
Calibration curve: 1.77848 * x + 0.109682
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	3.94	1.62e2	3.88e3	0.232	-7.1	2.09
2	2	170727G1_3	0.500	3.95	4.30e2	4.68e3	0.584	16.7	2.30
3	3	170727G1_4	1.00	3.94	6.02e2	4.35e3	0.911	-8.9	1.73
4	4	170727G1_5	2.00	3.94	1.37e3	4.63e3	2.02	1.2	1.85
5	5	170727G1_6	5.00	3.94	3.35e3	4.52e3	5.15	3.0	1.85
6	6	170727G1_7	10.0	3.94	7.31e3	5.48e3	9.31	-6.9	1.67
7	7	170727G1_8	50.0	3.94	3.04e4	4.15e3	51.4	2.8	1.83
8	8	170727G1_9	100	3.94	5.94e4	4.21e3	99.1	-0.9	1.76

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
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Compound name: PFOA
Correlation coefficient: r = 0.998786, r^2 = 0.997574
Calibration curve: 0.797511 * x + 0.0924786
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.24	3.42e2	1.63e4	0.213	-15.0	1.05
2	2	170727G1_3	0.500	4.24	7.66e2	1.67e4	0.602	20.4	1.14
3	3	170727G1_4	1.00	4.23	1.34e3	1.73e4	1.10	10.0	0.969
4	4	170727G1_5	2.00	4.24	2.75e3	1.86e4	2.21	10.3	0.926
5	5	170727G1_6	5.00	4.24	7.23e3	1.80e4	6.16	23.3	1.00
6	6	170727G1_7	10.0	4.24	1.44e4	2.24e4	9.96	-0.4	0.804
7	7	170727G1_8	50.0	4.24	5.59e4	1.77e4	49.4	-1.3	0.789
8	8	170727G1_9	100	4.24	1.14e5	1.80e4	99.2	-0.8	0.792

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999639
Calibration curve: -0.00237877 * x^2 + 2.32641 * x + 0.0752635
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.58	2.70e2	4.96e3	0.260	4.1	2.72
2	2	170727G1_3	0.500	4.58	6.08e2	6.55e3	0.466	-6.7	2.32
3	3	170727G1_4	1.00	4.58	1.08e3	5.92e3	0.954	-4.6	2.29
4	4	170727G1_5	2.00	4.58	2.72e3	6.93e3	2.08	4.0	2.45
5	5	170727G1_6	5.00	4.58	6.11e3	6.11e3	5.37	7.3	2.50
6	6	170727G1_7	10.0	4.58	1.31e4	7.36e3	9.60	-4.0	2.22
7	7	170727G1_8	50.0	4.58	6.15e4	6.96e3	50.0	-0.0	2.21
8	8	170727G1_9	100	4.58	1.22e5	7.32e3	100	0.0	2.09

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Compound name: PFOS
Correlation coefficient: r = 0.999145, r^2 = 0.998292
Calibration curve: 0.470087 * x + 0.0287104
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.64	6.12e1	5.46e3	0.237	-5.3	0.560
2	2	170727G1_3	0.500	4.64	1.27e2	6.34e3	0.472	-5.5	0.502
3	3	170727G1_4	1.00	4.64	2.59e2	6.56e3	0.990	-1.0	0.494
4	4	170727G1_5	2.00	4.64	5.73e2	7.61e3	1.94	-2.9	0.471
5	5	170727G1_6	5.00	4.64	1.51e3	7.06e3	5.61	12.2	0.533
6	6	170727G1_7	10.0	4.64	3.08e3	8.09e3	10.1	0.6	0.476
7	7	170727G1_8	50.0	4.64	1.54e4	7.84e3	52.4	4.7	0.493
8	8	170727G1_9	100	4.64	3.11e4	8.50e3	97.1	-2.9	0.457

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999346
Calibration curve: -0.000179878 * x^2 + 0.198072 * x + 0.02746
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.87	4.13e1	8.28e3	0.176	-29.6	0.249
2	2	170727G1_3	0.500	4.87	1.24e2	1.08e4	0.592	18.3	0.289
3	3	170727G1_4	1.00	4.87	1.85e2	1.06e4	0.967	-3.3	0.219
4	4	170727G1_5	2.00	4.87	4.71e2	1.25e4	2.24	11.8	0.235
5	5	170727G1_6	5.00	4.87	9.70e2	1.15e4	5.23	4.5	0.212
6	6	170727G1_7	10.0	4.87	1.93e3	1.22e4	9.95	-0.5	0.198
7	7	170727G1_8	50.0	4.87	1.03e4	1.38e4	49.2	-1.7	0.187
8	8	170727G1_9	100	4.87	2.06e4	1.42e4	100	0.5	0.181

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Compound name: 13C3-PFBA
Response Factor: 1.18261
RRF SD: 0.0351574, Relative SD: 2.97286
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	1.67	2.10e4	1.77e4	12.5	0.2	1.18
2	2	170727G1_3	12.5	1.67	2.27e4	1.84e4	13.1	4.6	1.24
3	3	170727G1_4	12.5	1.67	2.13e4	1.76e4	12.8	2.6	1.21
4	4	170727G1_5	12.5	1.67	2.25e4	1.91e4	12.5	-0.2	1.18
5	5	170727G1_6	12.5	1.67	2.07e4	1.79e4	12.3	-1.9	1.16
6	6	170727G1_7	12.5	1.67	2.55e4	2.11e4	12.8	2.0	1.21
7	7	170727G1_8	12.5	1.67	2.11e4	1.85e4	12.1	-3.5	1.14
8	8	170727G1_9	12.5	1.67	2.19e4	1.93e4	12.0	-3.8	1.14

Compound name: 13C3-PFBS
Response Factor: 0.262761
RRF SD: 0.0164175, Relative SD: 6.24805
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	2.91	4.70e3	1.73e4	12.9	3.2	0.271
2	2	170727G1_3	12.5	2.91	4.48e3	1.90e4	11.2	-10.1	0.236
3	3	170727G1_4	12.5	2.91	4.63e3	1.62e4	13.6	8.6	0.285
4	4	170727G1_5	12.5	2.91	5.33e3	1.95e4	13.0	4.2	0.274
5	5	170727G1_6	12.5	2.91	4.48e3	1.70e4	12.5	0.1	0.263
6	6	170727G1_7	12.5	2.91	5.40e3	2.04e4	12.6	0.8	0.265
7	7	170727G1_8	12.5	2.91	4.38e3	1.64e4	12.7	1.4	0.266
8	8	170727G1_9	12.5	2.91	4.10e3	1.70e4	11.5	-8.1	0.241

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Compound name: 13C3-PFPeA
Response Factor: 0.446443
RRF SD: 0.0151073, Relative SD: 3.38392
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	2.63	7.64e3	1.73e4	12.3	-1.2	0.441
2	2	170727G1_3	12.5	2.63	8.33e3	1.90e4	12.3	-1.6	0.439
3	3	170727G1_4	12.5	2.63	7.75e3	1.62e4	13.4	7.0	0.478
4	4	170727G1_5	12.5	2.63	8.54e3	1.95e4	12.3	-1.6	0.439
5	5	170727G1_6	12.5	2.63	7.82e3	1.70e4	12.9	2.9	0.459
6	6	170727G1_7	12.5	2.63	9.10e3	2.04e4	12.5	-0.1	0.446
7	7	170727G1_8	12.5	2.63	7.23e3	1.64e4	12.3	-1.5	0.440
8	8	170727G1_9	12.5	2.62	7.31e3	1.70e4	12.0	-3.7	0.430

Compound name: 13C2-PFHxA
Response Factor: 0.360561
RRF SD: 0.0226683, Relative SD: 6.28695
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	3.28	5.77e3	1.73e4	11.5	-7.6	0.333
2	2	170727G1_3	12.5	3.28	7.04e3	1.90e4	12.9	3.0	0.372
3	3	170727G1_4	12.5	3.28	6.35e3	1.62e4	13.6	8.6	0.391
4	4	170727G1_5	12.5	3.28	6.86e3	1.95e4	12.2	-2.2	0.353
5	5	170727G1_6	12.5	3.28	5.84e3	1.70e4	11.9	-5.0	0.343
6	6	170727G1_7	12.5	3.28	7.89e3	2.04e4	13.4	7.3	0.387
7	7	170727G1_8	12.5	3.28	6.09e3	1.64e4	12.8	2.7	0.370
8	8	170727G1_9	12.5	3.28	5.71e3	1.70e4	11.6	-6.8	0.336

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Compound name: 13C4-PFHpA
Response Factor: 0.475457
RRF SD: 0.0400935, Relative SD: 8.43262
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	3.81	7.45e3	1.73e4	11.3	-9.6	0.430
2	2	170727G1_3	12.5	3.81	8.06e3	1.90e4	11.2	-10.6	0.425
3	3	170727G1_4	12.5	3.81	8.77e3	1.62e4	14.2	13.6	0.540
4	4	170727G1_5	12.5	3.81	8.92e3	1.95e4	12.0	-3.6	0.458
5	5	170727G1_6	12.5	3.81	8.20e3	1.70e4	12.7	1.2	0.481
6	6	170727G1_7	12.5	3.81	1.05e4	2.04e4	13.6	8.5	0.516
7	7	170727G1_8	12.5	3.81	8.09e3	1.64e4	12.9	3.4	0.492
8	8	170727G1_9	12.5	3.81	7.84e3	1.70e4	12.1	-3.0	0.461

Compound name: 18O2-PFHxS
Response Factor: 0.41062
RRF SD: 0.0152633, Relative SD: 3.71715
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	3.94	3.88e3	9.33e3	12.7	1.3	0.416
2	2	170727G1_3	12.5	3.94	4.68e3	1.09e4	13.1	4.9	0.431
3	3	170727G1_4	12.5	3.94	4.35e3	1.09e4	12.1	-3.3	0.397
4	4	170727G1_5	12.5	3.94	4.63e3	1.19e4	11.8	-5.4	0.388
5	5	170727G1_6	12.5	3.94	4.52e3	1.07e4	12.8	2.7	0.422
6	6	170727G1_7	12.5	3.94	5.48e3	1.30e4	12.8	2.5	0.421
7	7	170727G1_8	12.5	3.94	4.15e3	1.05e4	12.0	-3.9	0.395
8	8	170727G1_9	12.5	3.94	4.21e3	1.01e4	12.6	1.1	0.415

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Compound name: 13C2-PFOA
Response Factor: 2.84292
RRF SD: 0.169045, Relative SD: 5.94617
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.23	1.63e4	5.56e3	12.9	3.2	2.94
2	2	170727G1_3	12.5	4.24	1.67e4	6.24e3	11.8	-5.6	2.68
3	3	170727G1_4	12.5	4.24	1.73e4	6.06e3	12.5	0.3	2.85
4	4	170727G1_5	12.5	4.24	1.86e4	6.19e3	13.2	5.6	3.00
5	5	170727G1_6	12.5	4.23	1.80e4	5.76e3	13.8	10.1	3.13
6	6	170727G1_7	12.5	4.24	2.24e4	8.45e3	11.6	-7.0	2.64
7	7	170727G1_8	12.5	4.24	1.77e4	6.39e3	12.2	-2.5	2.77
8	8	170727G1_9	12.5	4.24	1.80e4	6.59e3	12.0	-4.1	2.73

Compound name: 13C5-PFNA
Response Factor: 0.853546
RRF SD: 0.0383372, Relative SD: 4.49152
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.58	4.96e3	5.69e3	12.8	2.1	0.872
2	2	170727G1_3	12.5	4.58	6.55e3	7.13e3	13.5	7.6	0.919
3	3	170727G1_4	12.5	4.58	5.92e3	7.07e3	12.3	-1.9	0.838
4	4	170727G1_5	12.5	4.58	6.93e3	8.26e3	12.3	-1.7	0.839
5	5	170727G1_6	12.5	4.57	6.11e3	6.89e3	13.0	3.8	0.886
6	6	170727G1_7	12.5	4.58	7.36e3	9.28e3	11.6	-7.0	0.794
7	7	170727G1_8	12.5	4.58	6.96e3	8.18e3	12.5	-0.3	0.851
8	8	170727G1_9	12.5	4.58	7.32e3	8.82e3	12.2	-2.8	0.830

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Compound name: 13C2-PFDA
Response Factor: 1.74189
RRF SD: 0.0344803, Relative SD: 1.97948
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.87	8.28e3	4.70e3	12.6	1.0	1.76
2	2	170727G1_3	12.5	4.87	1.08e4	6.26e3	12.3	-1.4	1.72
3	3	170727G1_4	12.5	4.87	1.06e4	6.00e3	12.7	1.3	1.76
4	4	170727G1_5	12.5	4.87	1.25e4	7.21e3	12.5	-0.1	1.74
5	5	170727G1_6	12.5	4.87	1.15e4	6.64e3	12.4	-0.8	1.73
6	6	170727G1_7	12.5	4.87	1.22e4	7.25e3	12.0	-3.7	1.68
7	7	170727G1_8	12.5	4.87	1.38e4	7.73e3	12.8	2.8	1.79
8	8	170727G1_9	12.5	4.87	1.42e4	8.08e3	12.6	0.9	1.76

Compound name: 13C8-PFOS
Response Factor: 0.927146
RRF SD: 0.0309514, Relative SD: 3.33836
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.64	5.46e3	6.02e3	12.2	-2.1	0.907
2	2	170727G1_3	12.5	4.64	6.34e3	6.85e3	12.5	-0.1	0.927
3	3	170727G1_4	12.5	4.64	6.56e3	7.35e3	12.0	-3.7	0.893
4	4	170727G1_5	12.5	4.64	7.61e3	8.50e3	12.1	-3.4	0.895
5	5	170727G1_6	12.5	4.64	7.06e3	7.46e3	12.8	2.1	0.947
6	6	170727G1_7	12.5	4.64	8.09e3	8.74e3	12.5	-0.2	0.925
7	7	170727G1_8	12.5	4.64	7.84e3	8.39e3	12.6	0.7	0.934
8	8	170727G1_9	12.5	4.64	8.50e3	8.61e3	13.3	6.6	0.988

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Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 21), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	1.66	1.77e4	1.77e4	12.5	0.0	1.00
2	2	170727G1_3	12.5	1.67	1.84e4	1.84e4	12.5	0.0	1.00
3	3	170727G1_4	12.5	1.67	1.76e4	1.76e4	12.5	0.0	1.00
4	4	170727G1_5	12.5	1.67	1.91e4	1.91e4	12.5	0.0	1.00
5	5	170727G1_6	12.5	1.68	1.79e4	1.79e4	12.5	0.0	1.00
6	6	170727G1_7	12.5	1.67	2.11e4	2.11e4	12.5	0.0	1.00
7	7	170727G1_8	12.5	1.67	1.85e4	1.85e4	12.5	0.0	1.00
8	8	170727G1_9	12.5	1.67	1.93e4	1.93e4	12.5	0.0	1.00

Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 22), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	3.28	1.73e4	1.73e4	12.5	0.0	1.00
2	2	170727G1_3	12.5	3.28	1.90e4	1.90e4	12.5	0.0	1.00
3	3	170727G1_4	12.5	3.28	1.62e4	1.62e4	12.5	0.0	1.00
4	4	170727G1_5	12.5	3.28	1.95e4	1.95e4	12.5	0.0	1.00
5	5	170727G1_6	12.5	3.28	1.70e4	1.70e4	12.5	0.0	1.00
6	6	170727G1_7	12.5	3.28	2.04e4	2.04e4	12.5	0.0	1.00
7	7	170727G1_8	12.5	3.28	1.64e4	1.64e4	12.5	0.0	1.00
8	8	170727G1_9	12.5	3.28	1.70e4	1.70e4	12.5	0.0	1.00

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Compound name: 13C3-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 23), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	3.94	9.33e3	9.33e3	12.5	0.0	1.00
2	2	170727G1_3	12.5	3.94	1.09e4	1.09e4	12.5	0.0	1.00
3	3	170727G1_4	12.5	3.94	1.09e4	1.09e4	12.5	0.0	1.00
4	4	170727G1_5	12.5	3.94	1.19e4	1.19e4	12.5	0.0	1.00
5	5	170727G1_6	12.5	3.94	1.07e4	1.07e4	12.5	0.0	1.00
6	6	170727G1_7	12.5	3.94	1.30e4	1.30e4	12.5	0.0	1.00
7	7	170727G1_8	12.5	3.94	1.05e4	1.05e4	12.5	0.0	1.00
8	8	170727G1_9	12.5	3.94	1.01e4	1.01e4	12.5	0.0	1.00

Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 24), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.23	5.56e3	5.56e3	12.5	0.0	1.00
2	2	170727G1_3	12.5	4.24	6.24e3	6.24e3	12.5	0.0	1.00
3	3	170727G1_4	12.5	4.23	6.06e3	6.06e3	12.5	0.0	1.00
4	4	170727G1_5	12.5	4.23	6.19e3	6.19e3	12.5	0.0	1.00
5	5	170727G1_6	12.5	4.23	5.76e3	5.76e3	12.5	0.0	1.00
6	6	170727G1_7	12.5	4.24	8.45e3	8.45e3	12.5	0.0	1.00
7	7	170727G1_8	12.5	4.24	6.39e3	6.39e3	12.5	0.0	1.00
8	8	170727G1_9	12.5	4.24	6.59e3	6.59e3	12.5	0.0	1.00

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

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Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 4.19625e-017, Relative SD: 4.19625e-015
Response type: Internal Std (Ref 25), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.57	5.69e3	5.69e3	12.5	0.0	1.00
2	2	170727G1_3	12.5	4.58	7.13e3	7.13e3	12.5	0.0	1.00
3	3	170727G1_4	12.5	4.58	7.07e3	7.07e3	12.5	0.0	1.00
4	4	170727G1_5	12.5	4.58	8.26e3	8.26e3	12.5	0.0	1.00
5	5	170727G1_6	12.5	4.57	6.89e3	6.89e3	12.5	-0.0	1.00
6	6	170727G1_7	12.5	4.58	9.28e3	9.28e3	12.5	0.0	1.00
7	7	170727G1_8	12.5	4.58	8.18e3	8.18e3	12.5	0.0	1.00
8	8	170727G1_9	12.5	4.57	8.82e3	8.82e3	12.5	0.0	1.00

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 5.93439e-017, Relative SD: 5.93439e-015
Response type: Internal Std (Ref 26), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.64	6.02e3	6.02e3	12.5	0.0	1.00
2	2	170727G1_3	12.5	4.64	6.85e3	6.85e3	12.5	0.0	1.00
3	3	170727G1_4	12.5	4.64	7.35e3	7.35e3	12.5	0.0	1.00
4	4	170727G1_5	12.5	4.64	8.50e3	8.50e3	12.5	0.0	1.00
5	5	170727G1_6	12.5	4.64	7.46e3	7.46e3	12.5	0.0	1.00
6	6	170727G1_7	12.5	4.64	8.74e3	8.74e3	12.5	-0.0	1.00
7	7	170727G1_8	12.5	4.64	8.39e3	8.39e3	12.5	-0.0	1.00
8	8	170727G1_9	12.5	4.64	8.61e3	8.61e3	12.5	0.0	1.00

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
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Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 27), Area * (IS Conc. / IS Area)
Curve type: RF

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	12.5	4.87	4.70e3	4.70e3	12.5	0.0	1.00
2	2	170727G1_3	12.5	4.87	6.26e3	6.26e3	12.5	0.0	1.00
3	3	170727G1_4	12.5	4.87	6.00e3	6.00e3	12.5	0.0	1.00
4	4	170727G1_5	12.5	4.87	7.21e3	7.21e3	12.5	0.0	1.00
5	5	170727G1_6	12.5	4.87	6.64e3	6.64e3	12.5	0.0	1.00
6	6	170727G1_7	12.5	4.87	7.25e3	7.25e3	12.5	0.0	1.00
7	7	170727G1_8	12.5	4.87	7.73e3	7.73e3	12.5	0.0	1.00
8	8	170727G1_9	12.5	4.87	8.08e3	8.08e3	12.5	0.0	1.00

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Thursday, July 27, 2017 15:00:56 Pacific Daylight Time
Printed: Thursday, July 27, 2017 15:01:11 Pacific Daylight Time

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170727G1_1	IPA	27-Jul-17	11:32:09
2	170727G1_2	ST170727G1-1 PFC CS-2 17G2714	27-Jul-17	11:44:22
3	170727G1_3	ST170727G1-2 PFC CS-1 17G2715	27-Jul-17	11:56:54
4	170727G1_4	ST170727G1-3 PFC CS0 17G2716	27-Jul-17	12:09:31
5	170727G1_5	ST170727G1-4 PFC CS1 17G2717	27-Jul-17	12:21:58
6	170727G1_6	ST170727G1-5 PFC CS2 17G2718	27-Jul-17	12:34:32
7	170727G1_7	ST170727G1-6 PFC CS3 17G2719	27-Jul-17	12:47:11
8	170727G1_8	ST170727G1-7 PFC CS4 17G2720	27-Jul-17	12:59:35
9	170727G1_9	ST170727G1-8 PFC CS5 17G2721	27-Jul-17	13:12:08
10	170727G1_10	IPA	27-Jul-17	13:24:41
11	170727G1_11	SS170727G1-1 PFC SSS 17G2713	27-Jul-17	13:37:14
12	170727G1_12	IPA	27-Jul-17	13:49:43

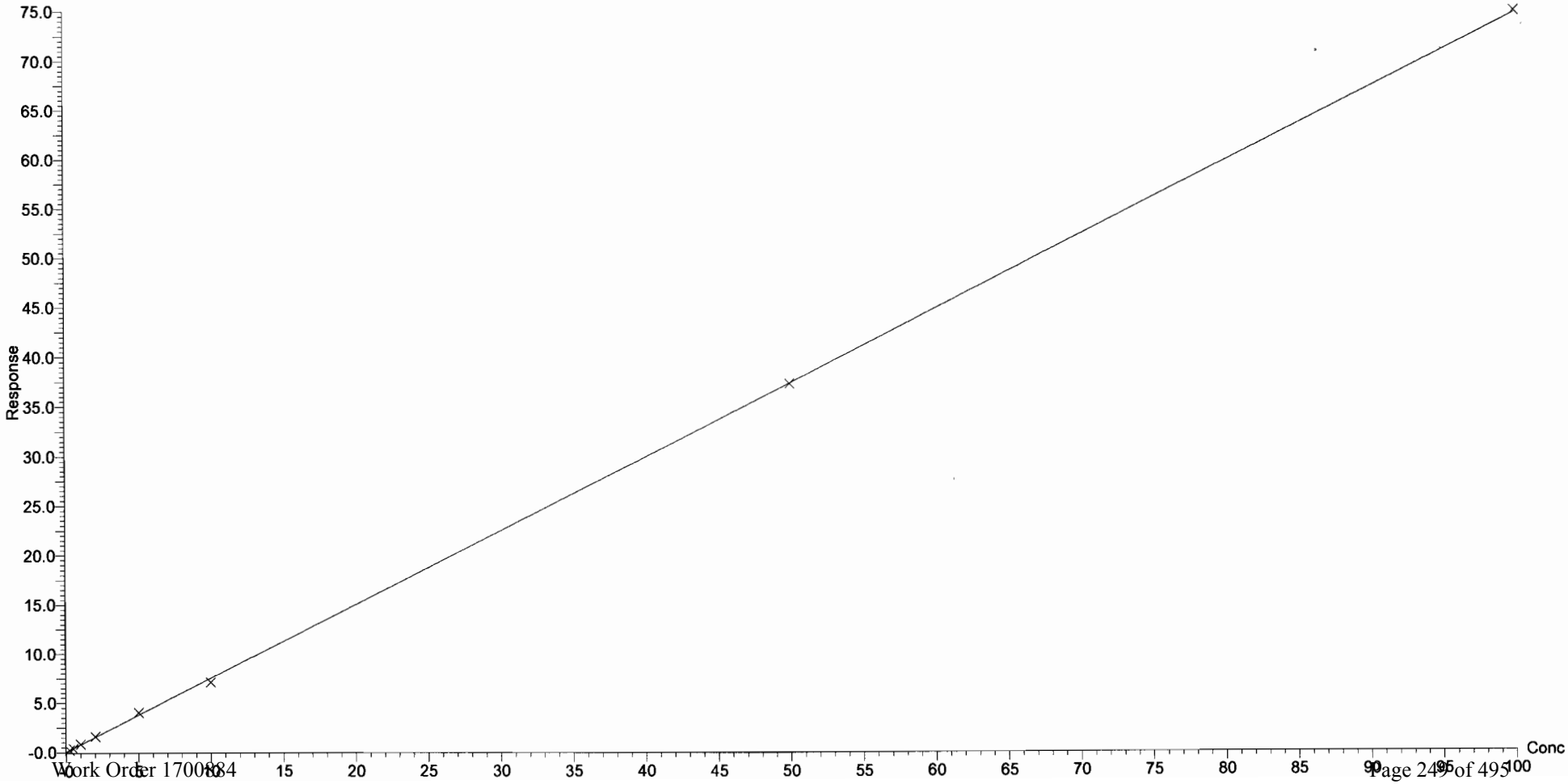
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
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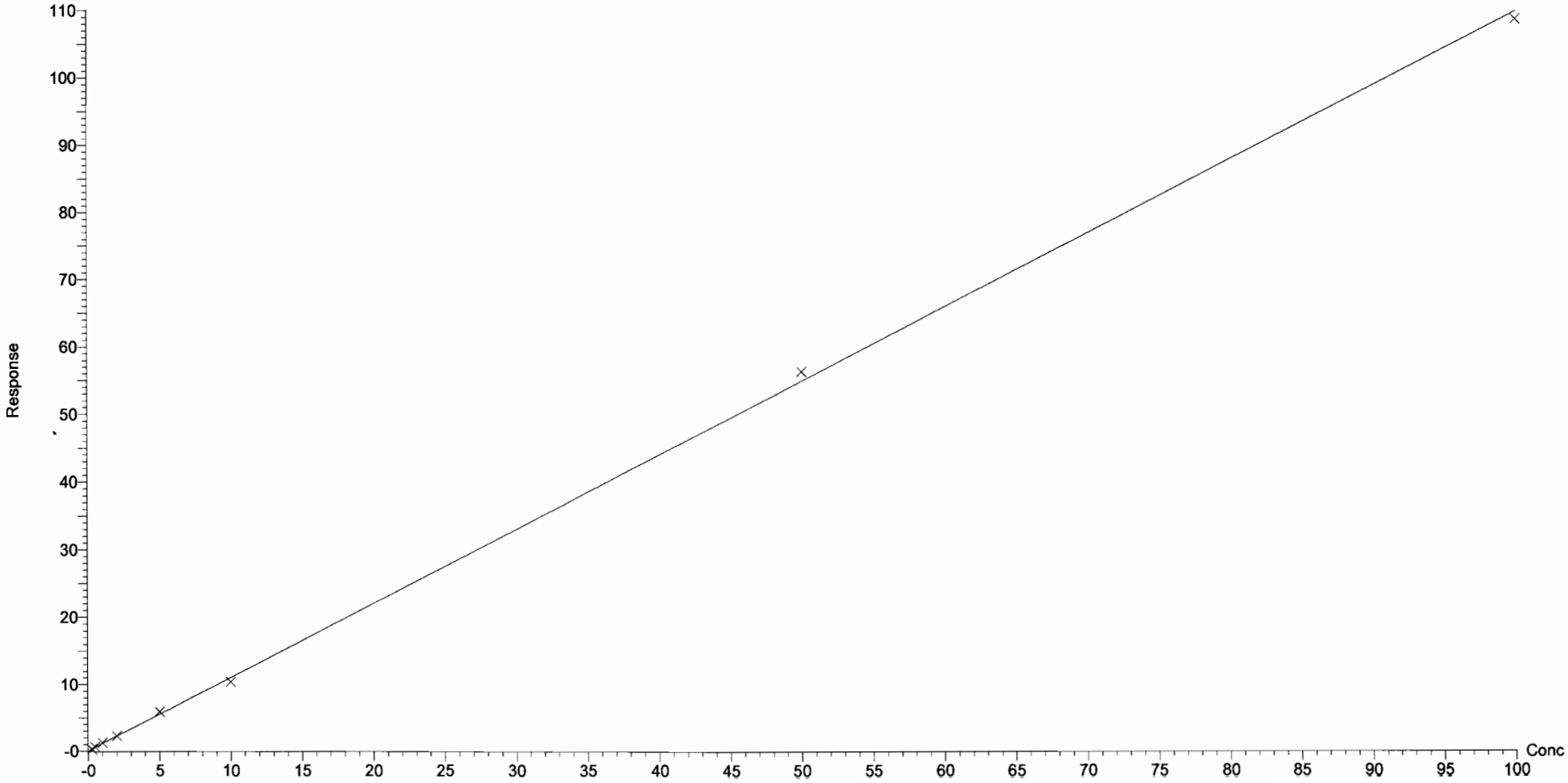
Compound name: PFBA
Correlation coefficient: r = 0.999824, r^2 = 0.999647
Calibration curve: 0.747533 * x + 0.048007
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

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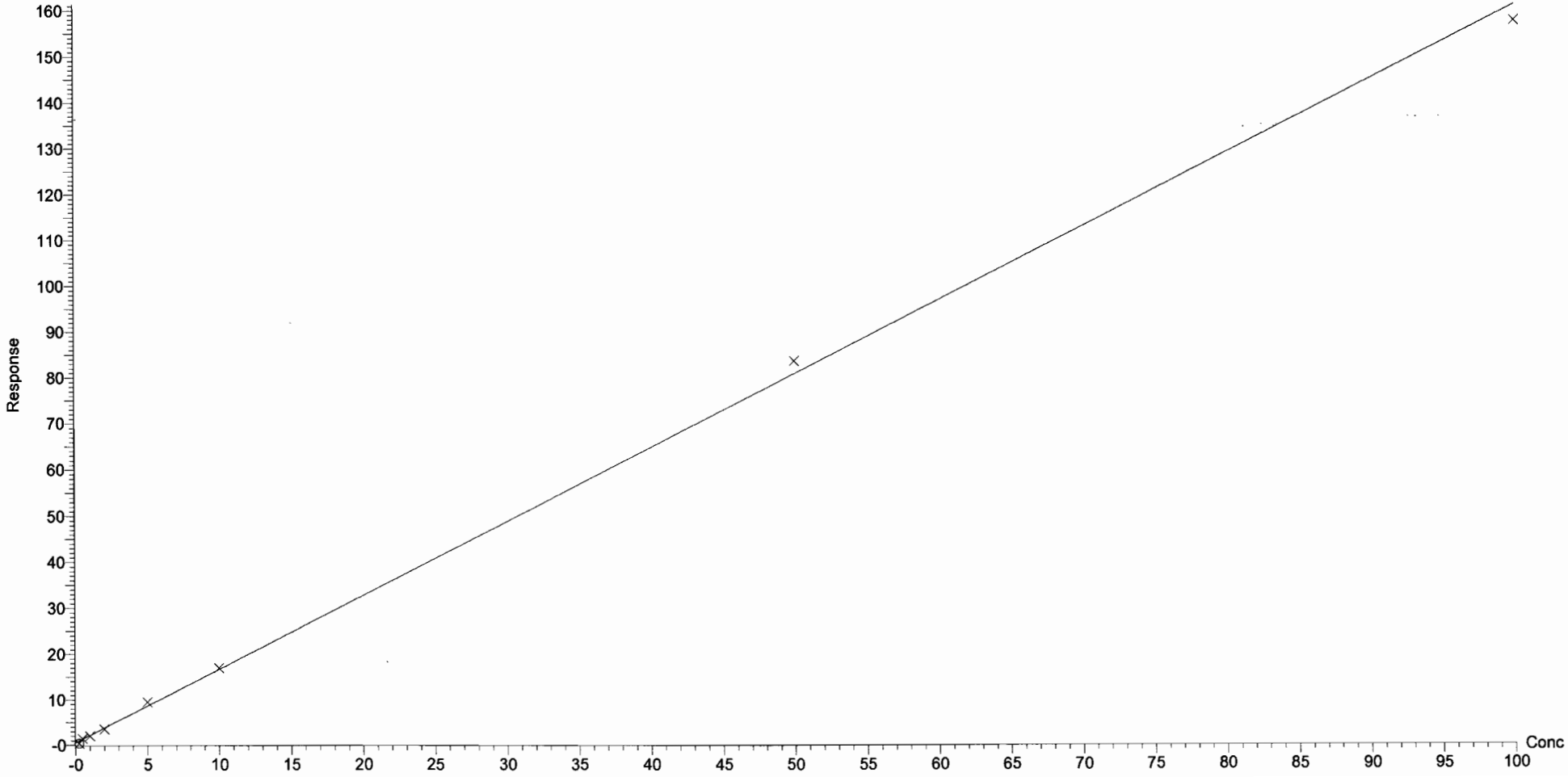
Compound name: PFPeA
Correlation coefficient: r = 0.999667, r^2 = 0.999334
Calibration curve: 1.10054 * x + 0.0486908
Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

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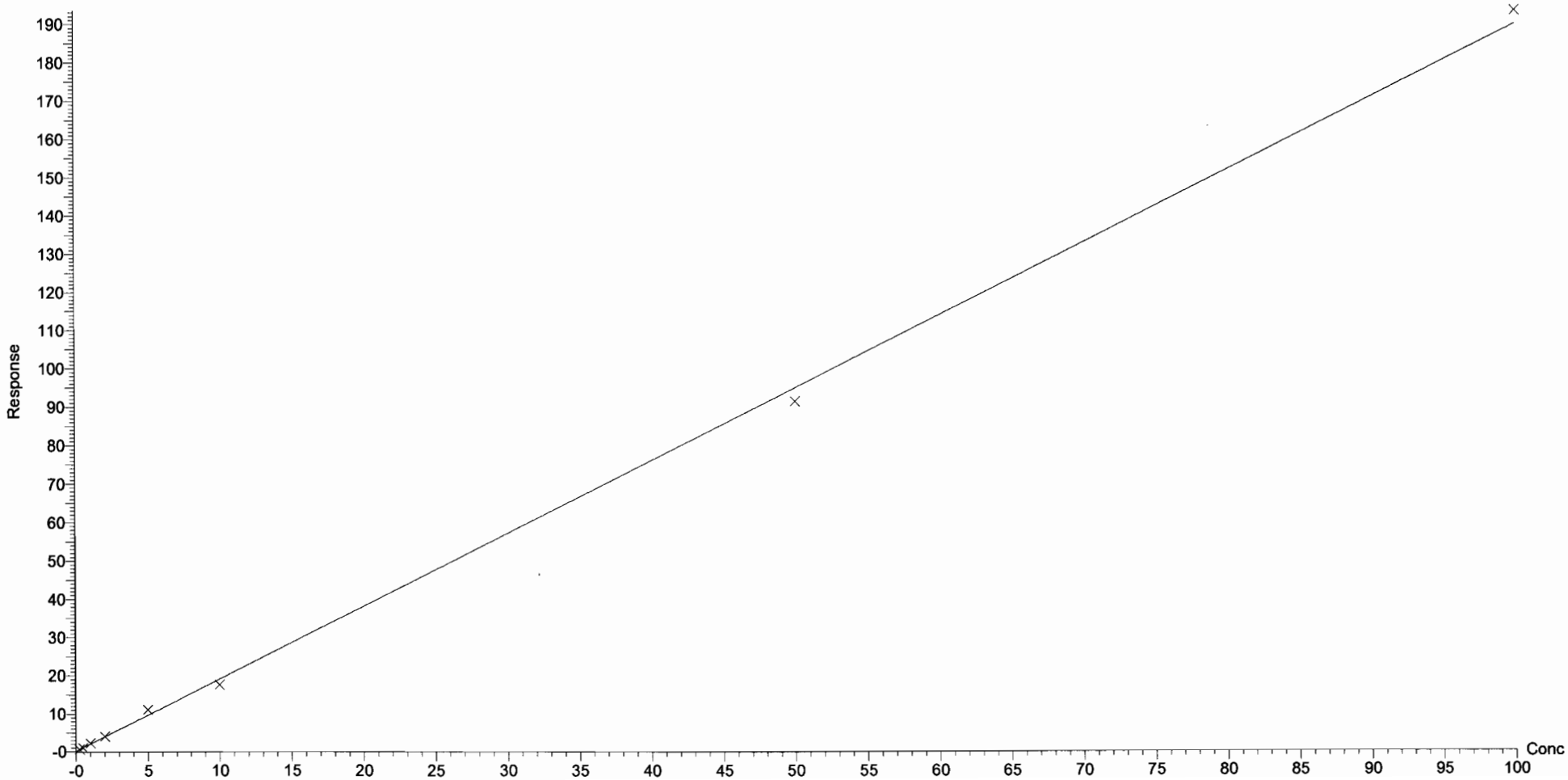
Compound name: PFBS
Correlation coefficient: r = 0.999365, r^2 = 0.998731
Calibration curve: 1.60766 * x + 0.593256
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

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Printed: Thursday, July 27, 2017 14:52:38 Pacific Daylight Time

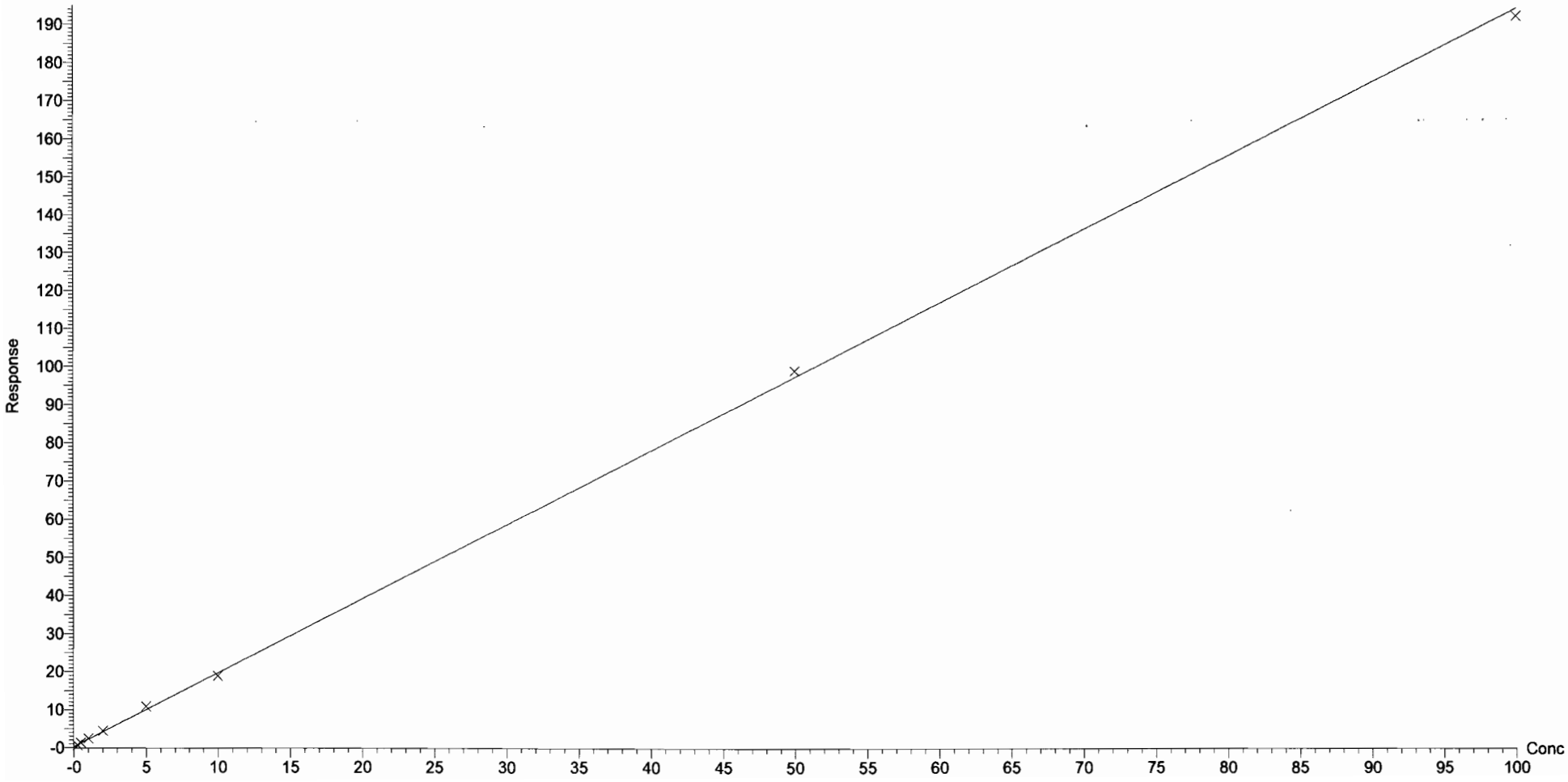
Compound name: PFHxA
Correlation coefficient: r = 0.999065, r^2 = 0.998131
Calibration curve: 1.89981 * x + 0.153363
Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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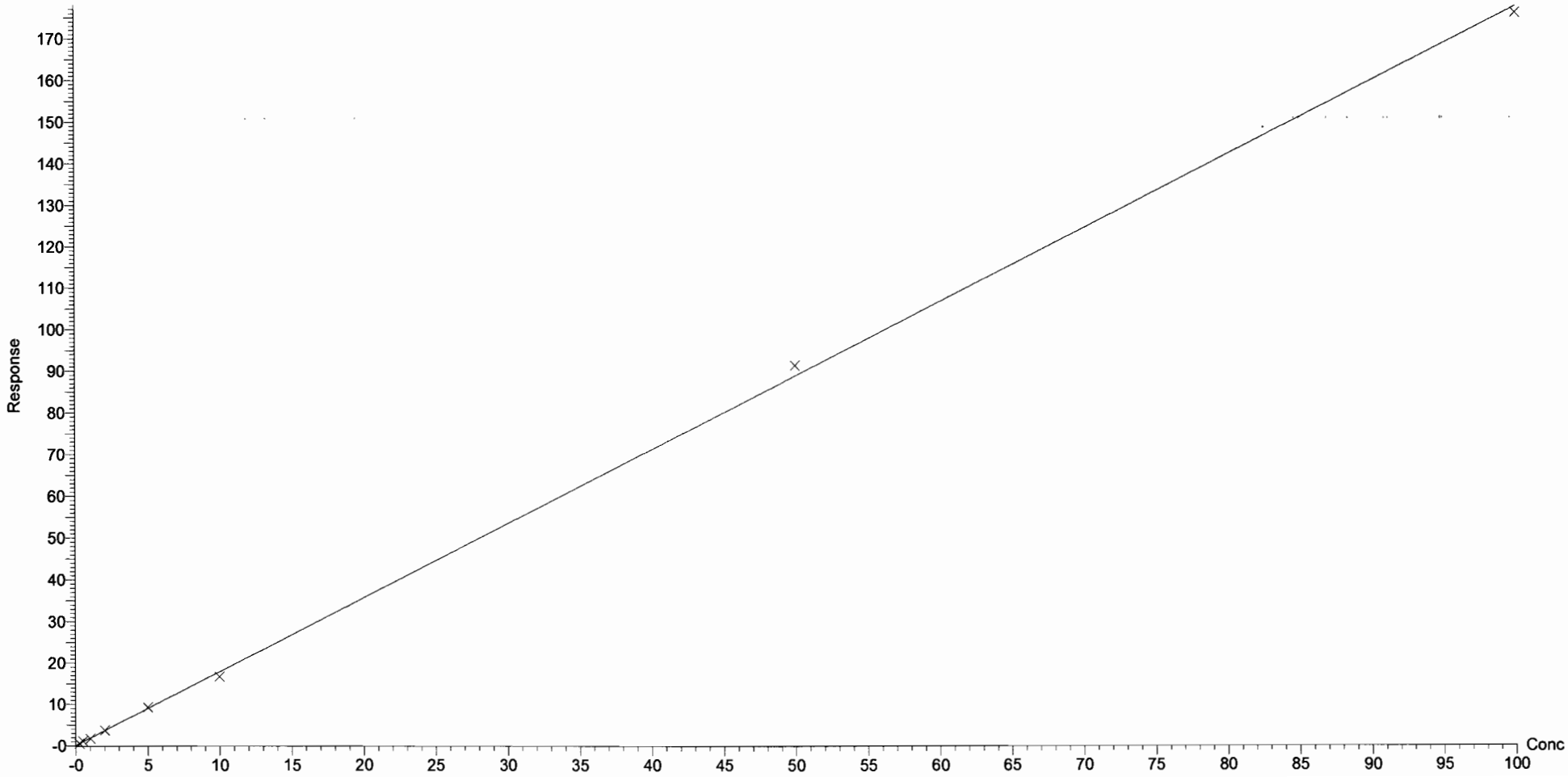
Compound name: PFHpA
Correlation coefficient: r = 0.999666, r^2 = 0.999332
Calibration curve: 1.94658 * x + 0.2548
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Printed: Thursday, July 27, 2017 14:52:38 Pacific Daylight Time

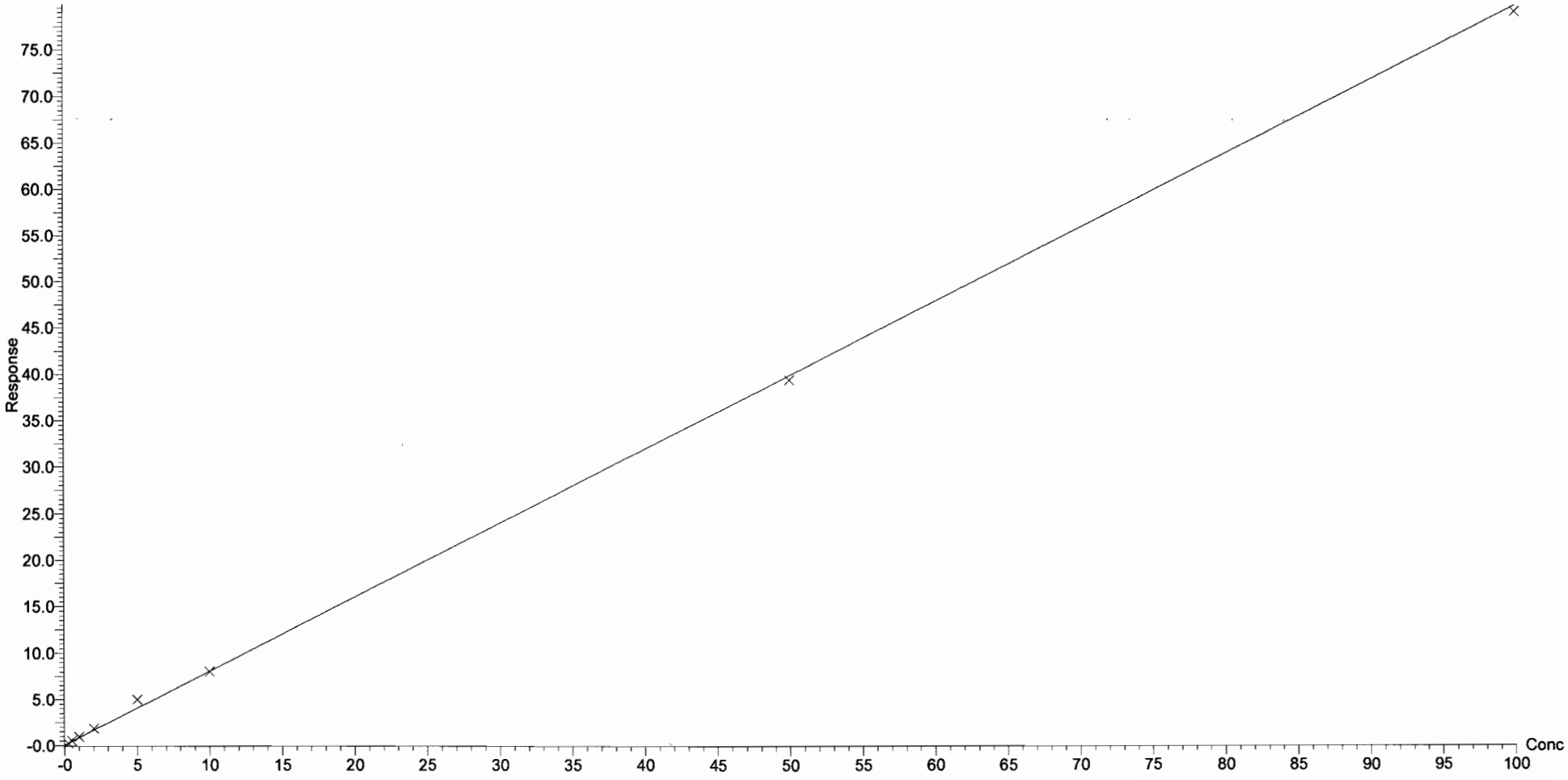
Compound name: PFHxS
Correlation coefficient: r = 0.999617, r^2 = 0.999233
Calibration curve: 1.77848 * x + 0.109682
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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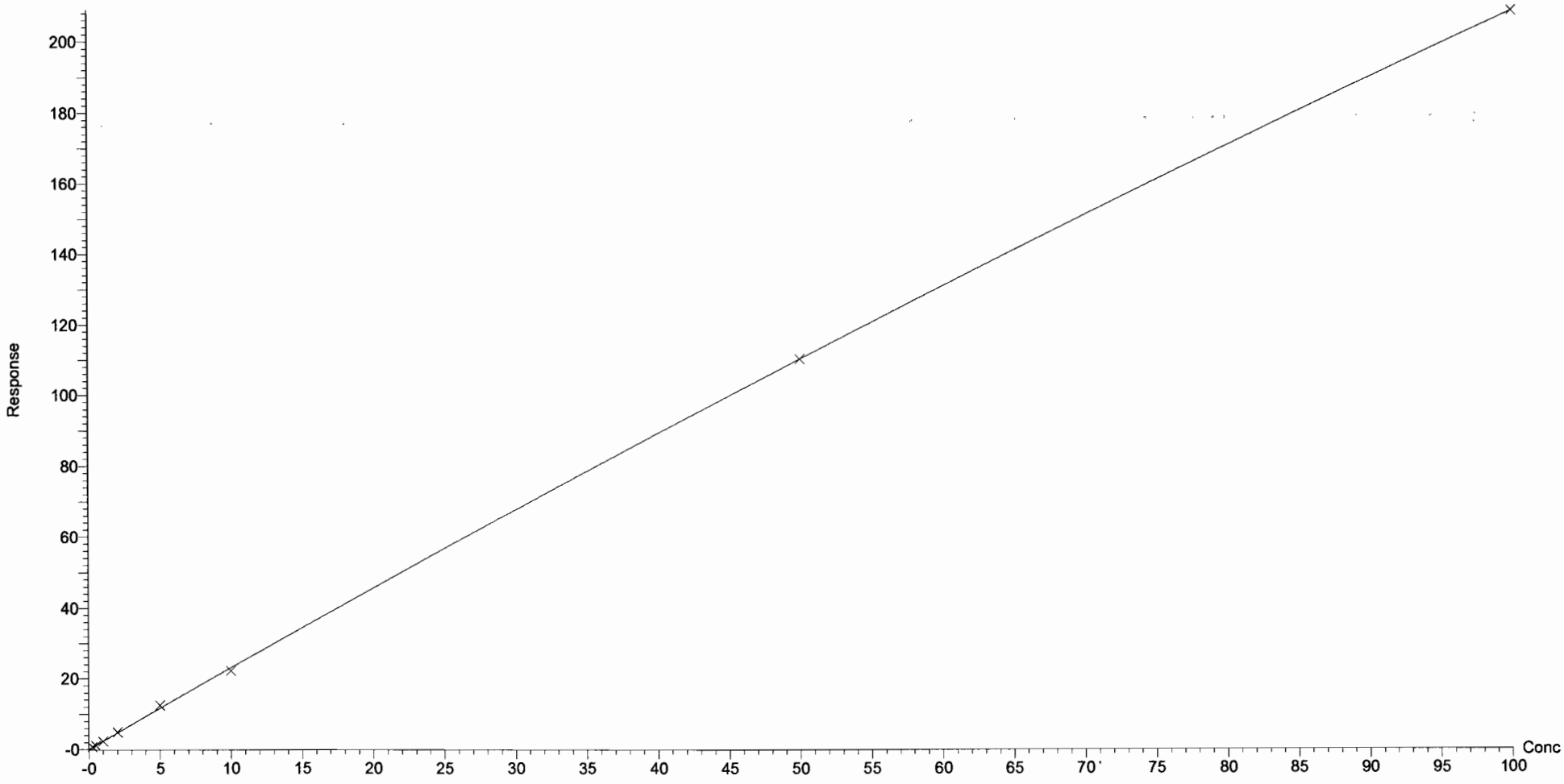
Compound name: PFOA
Correlation coefficient: r = 0.998786, r^2 = 0.997574
Calibration curve: 0.797511 * x + 0.0924786
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

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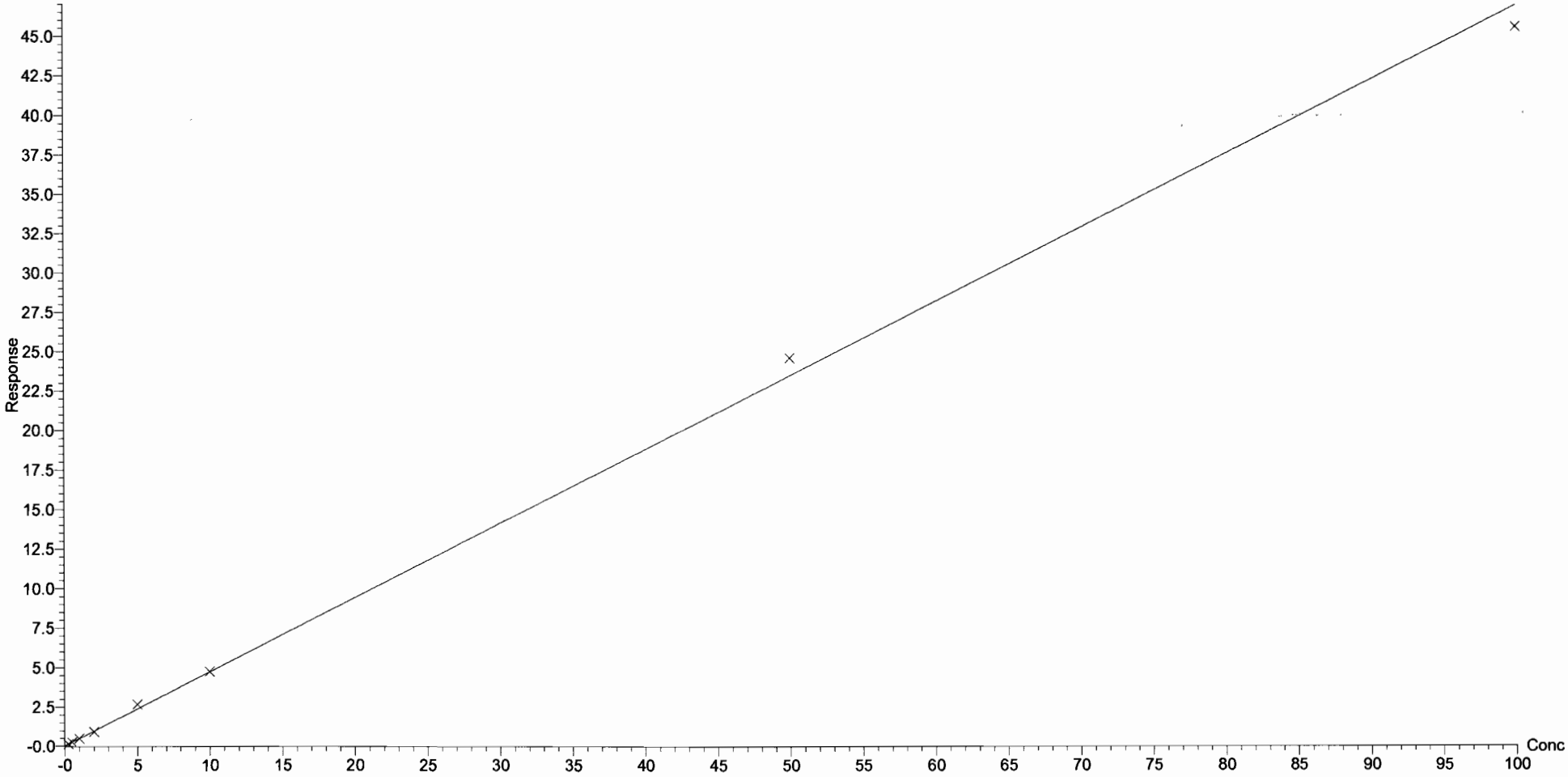
Compound name: PFNA
Coefficient of Determination: R^2 = 0.999639
Calibration curve: -0.00237877 * x^2 + 2.32641 * x + 0.0752635
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



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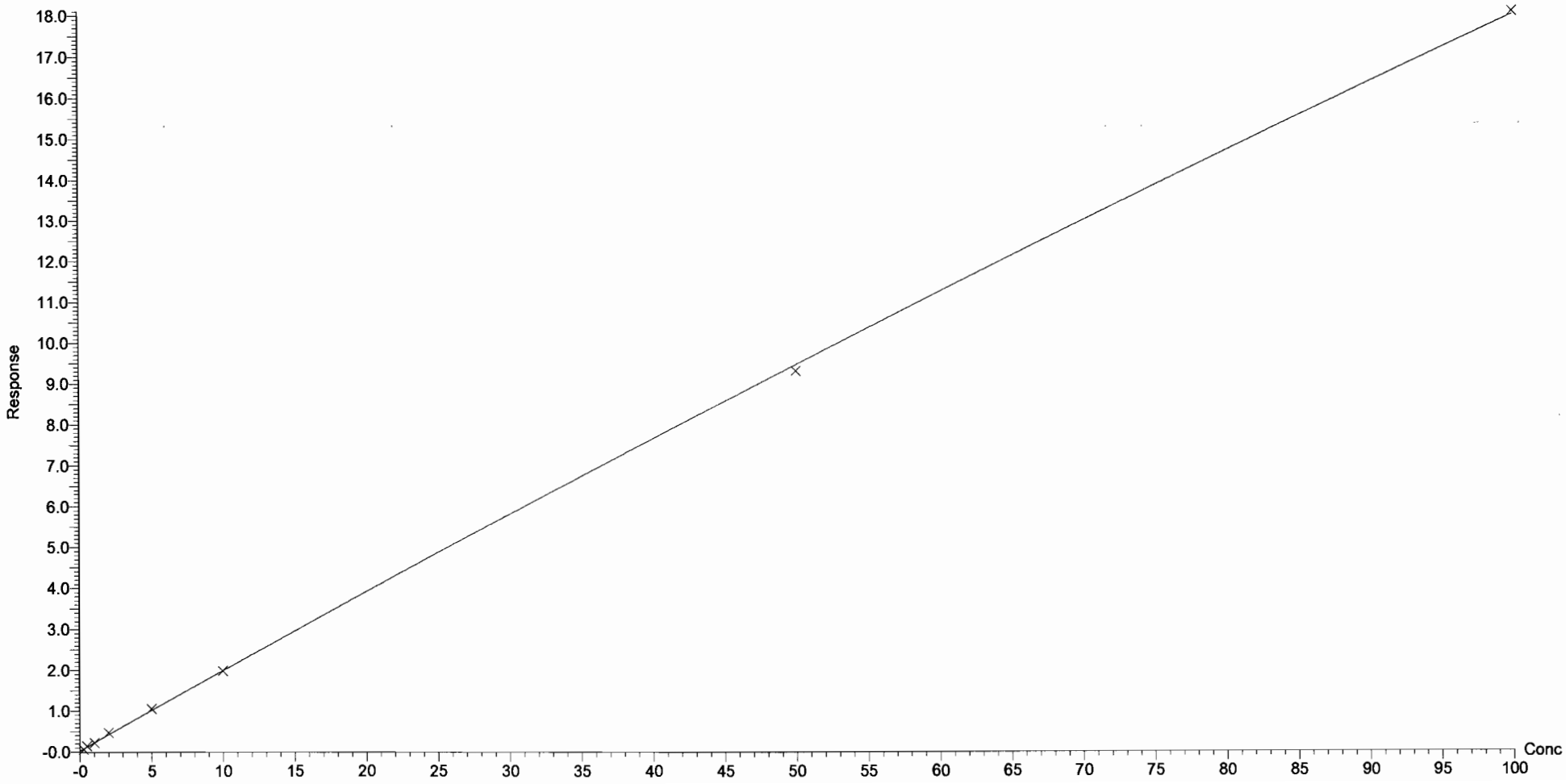
Compound name: PFOS
Correlation coefficient: r = 0.999145, r^2 = 0.998292
Calibration curve: 0.470087 * x + 0.0287104
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



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Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999346
Calibration curve: -0.000179878 * x^2 + 0.198072 * x + 0.02746
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



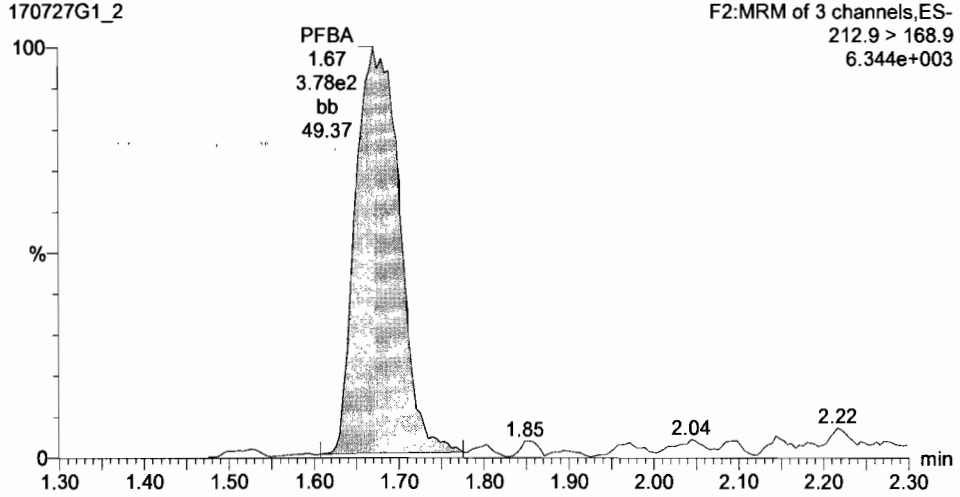
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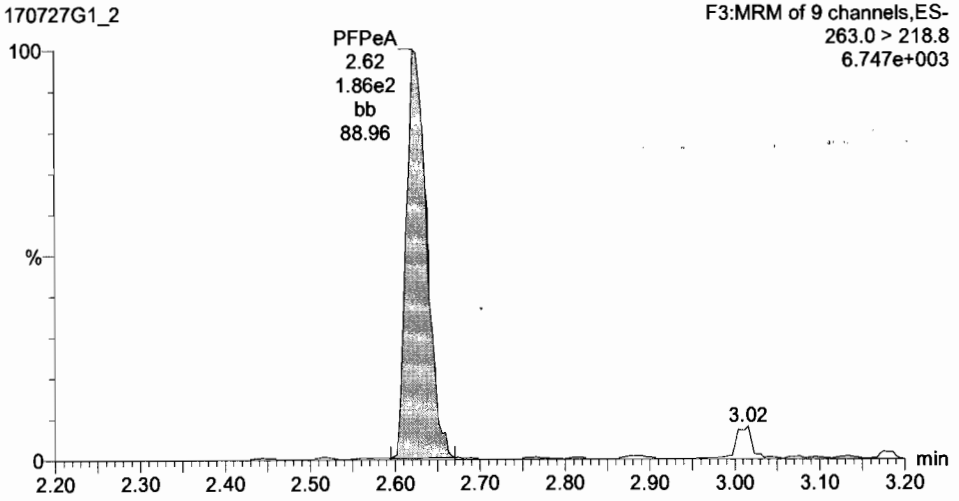
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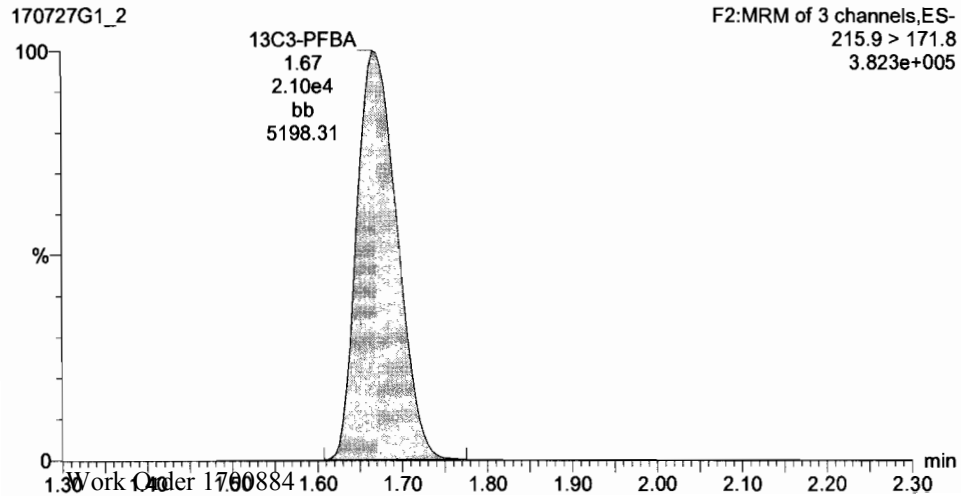
PFBA



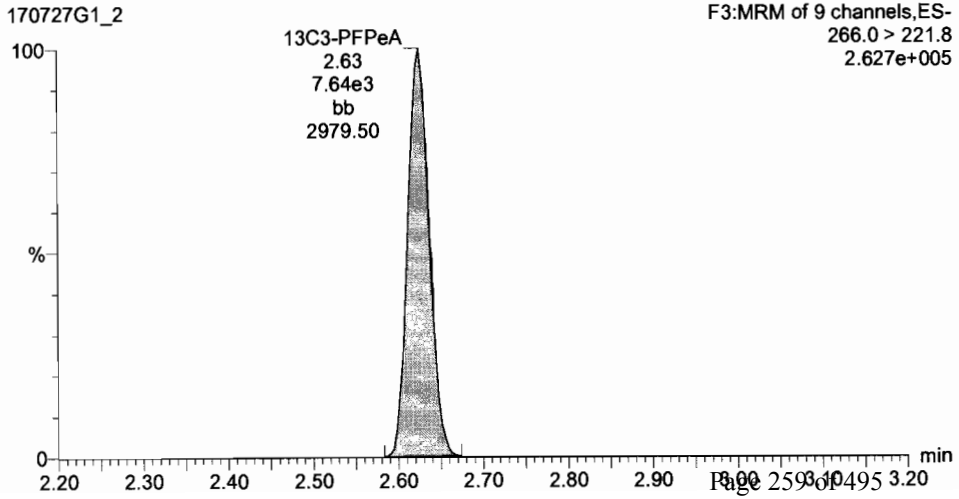
PFPeA



13C3-PFBA



13C3-PFPeA

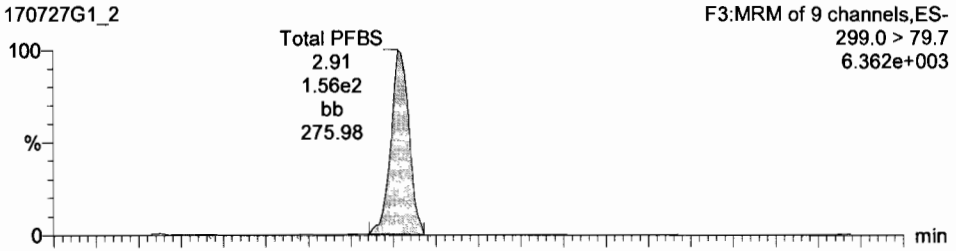


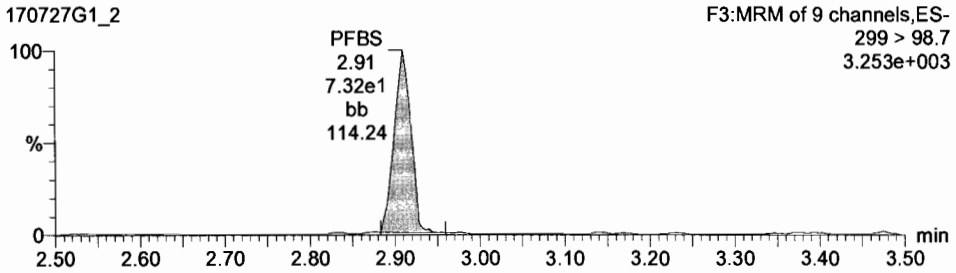
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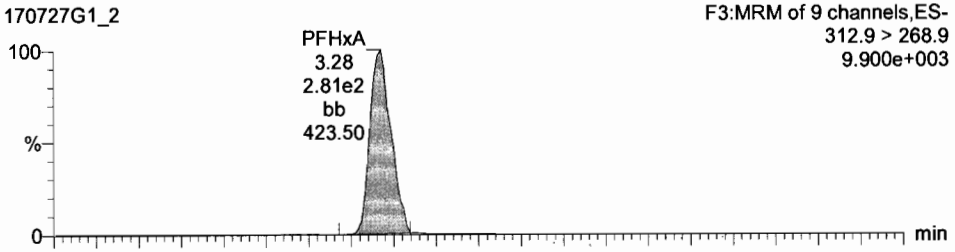
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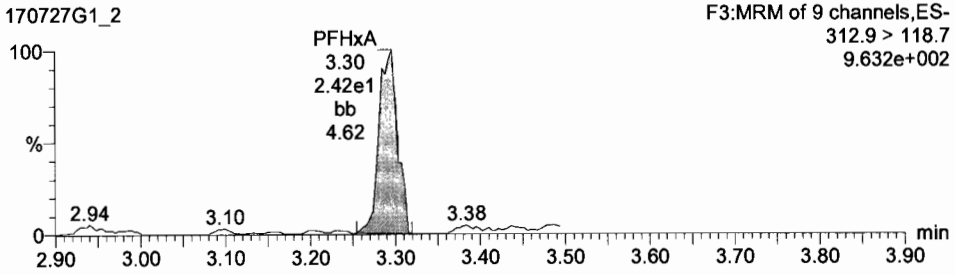
Total PFBS



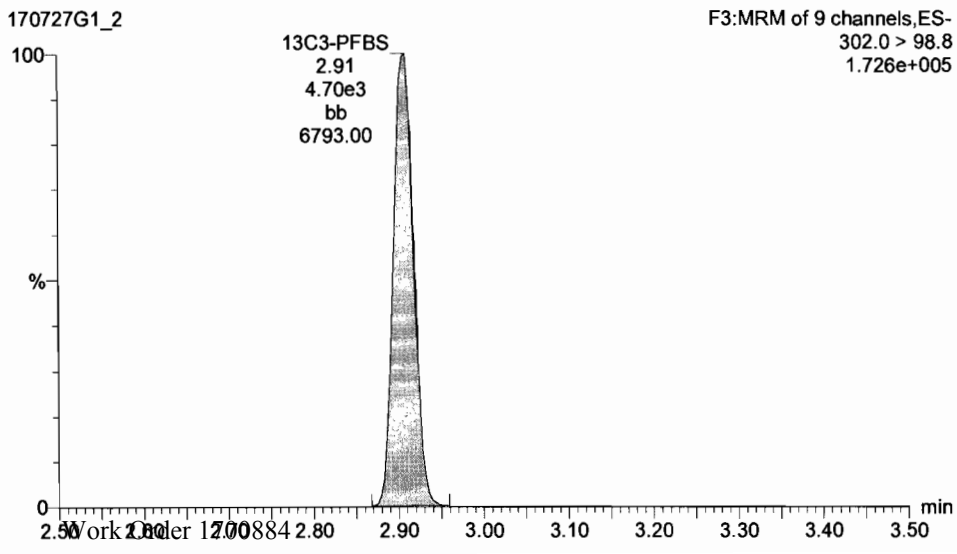


PFHxA

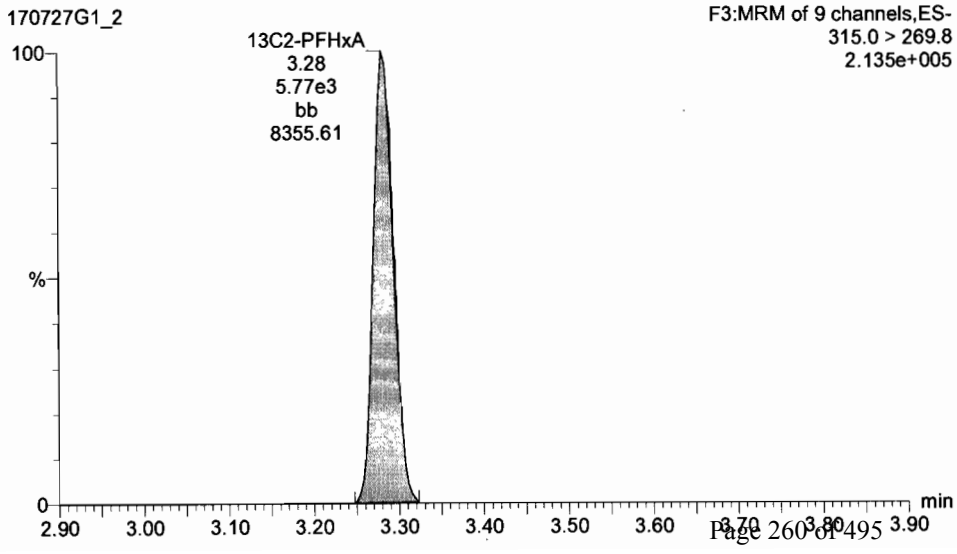




13C3-PFBS



13C2-PFHxA

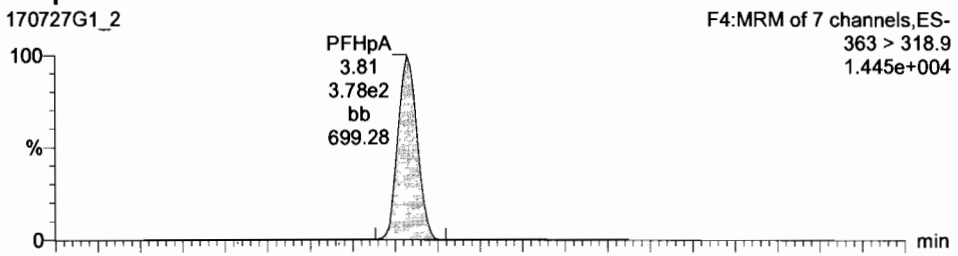


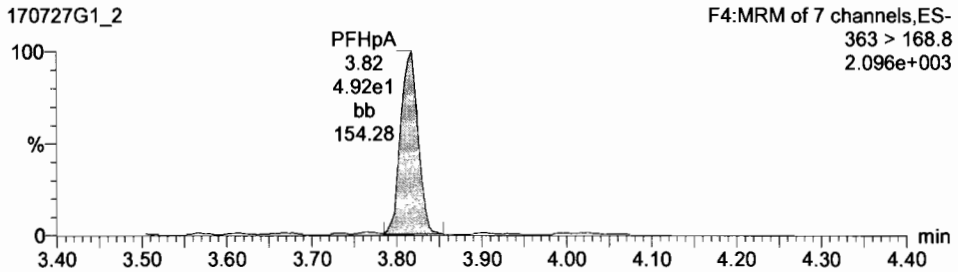
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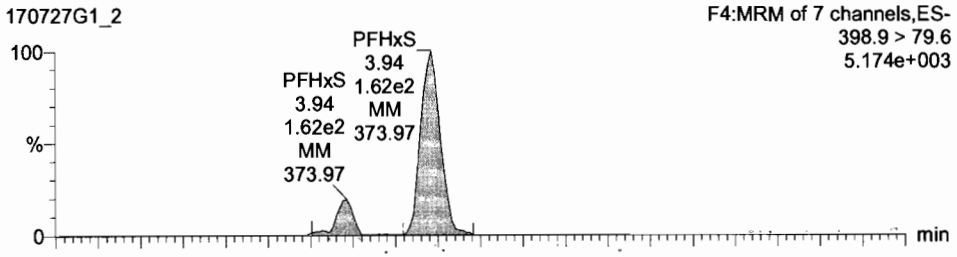
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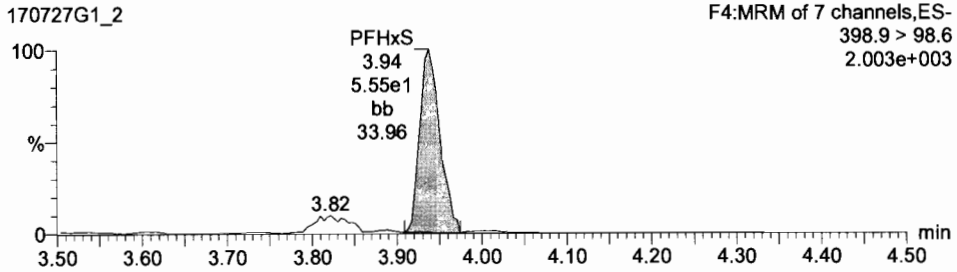
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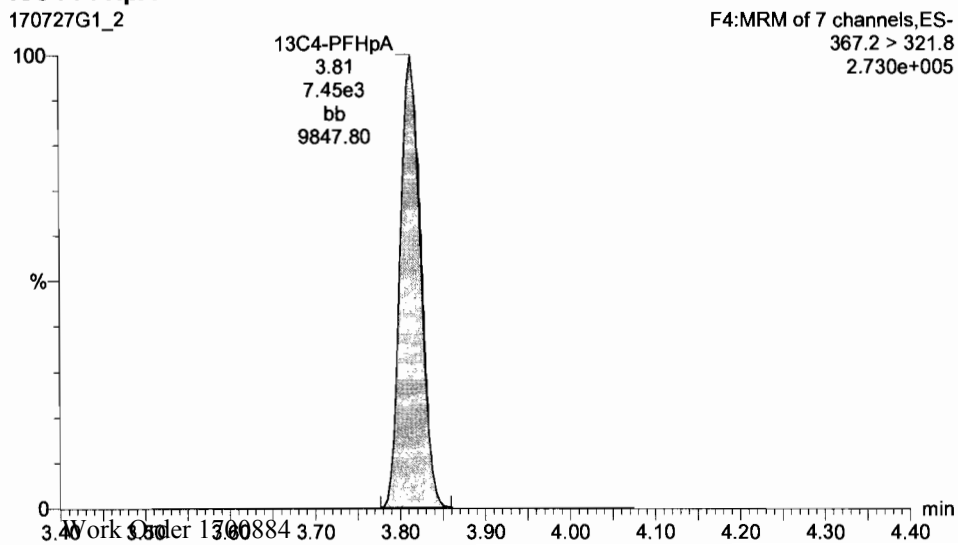


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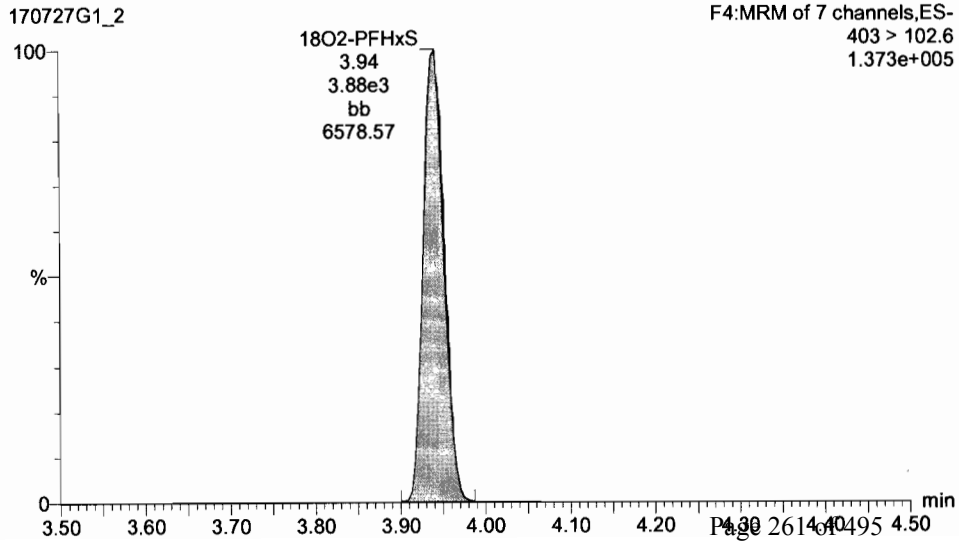




13C4-PFHpA



18O2-PFHxS

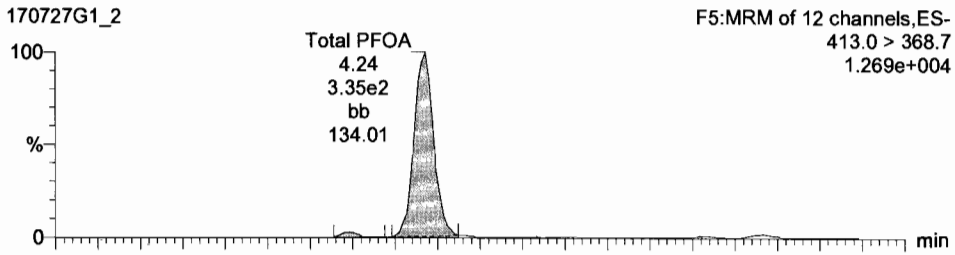


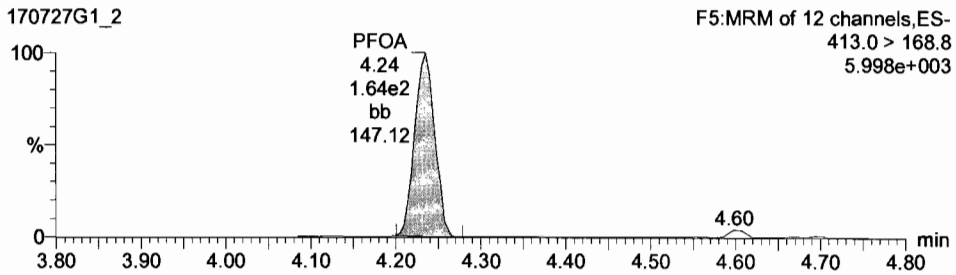
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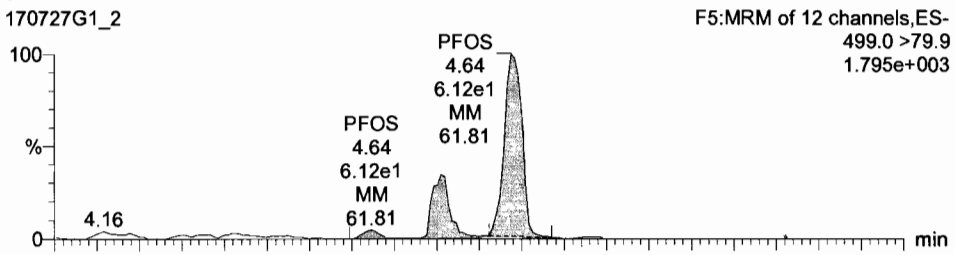
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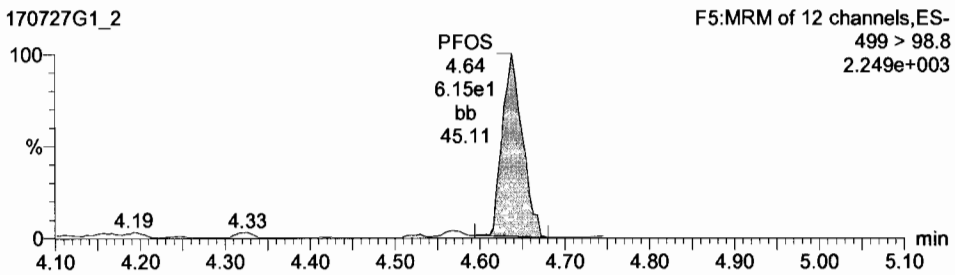
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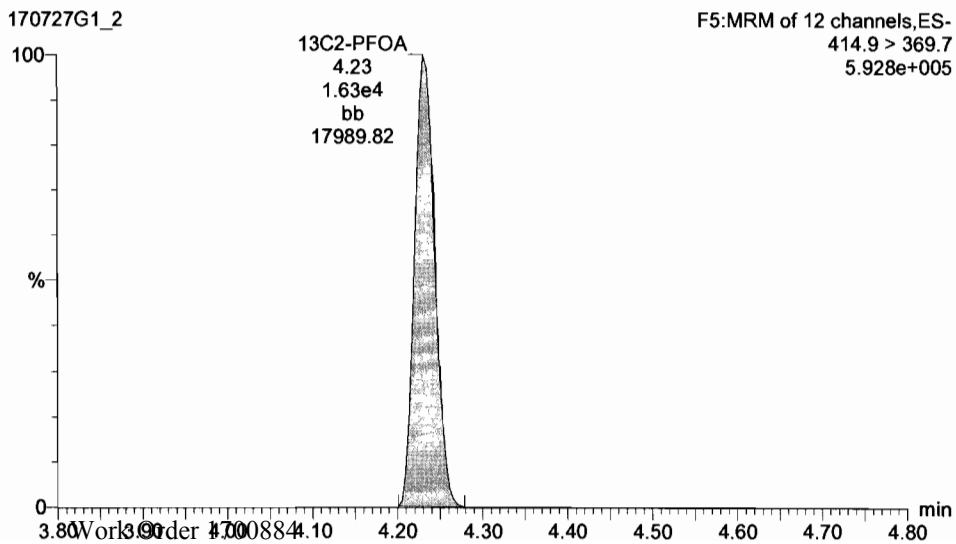


Total PFOS

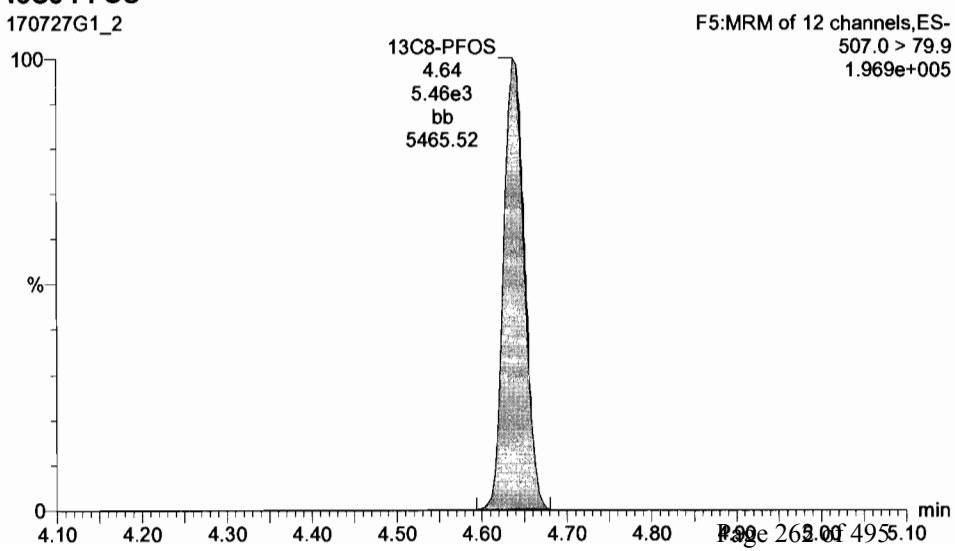




13C2-PFOA



13C8-PFOS

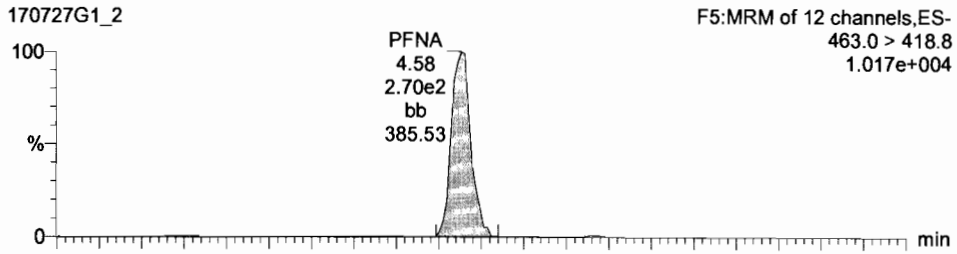


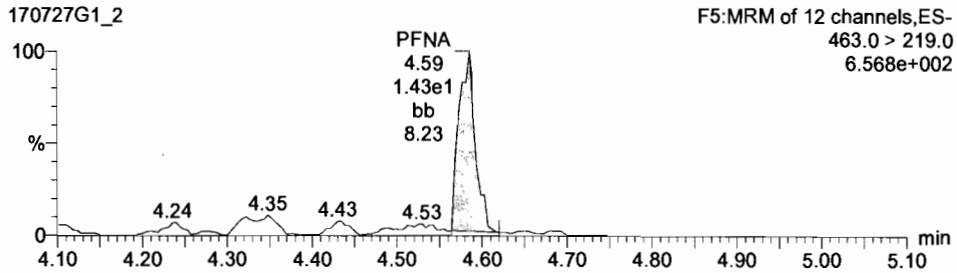
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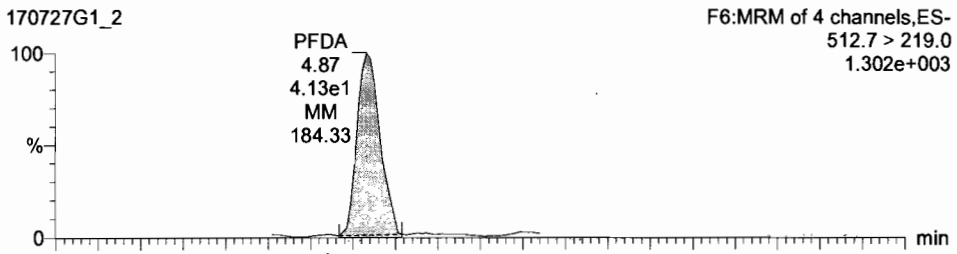
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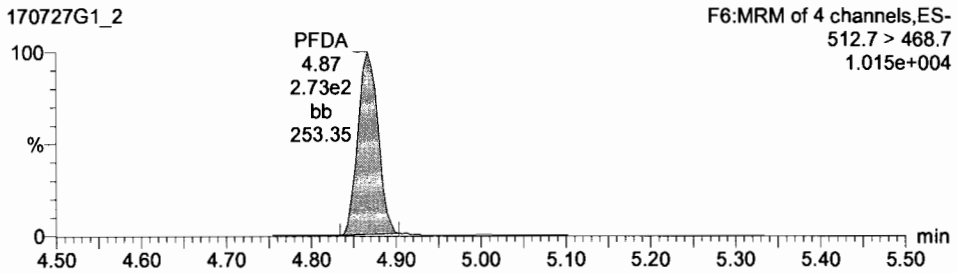
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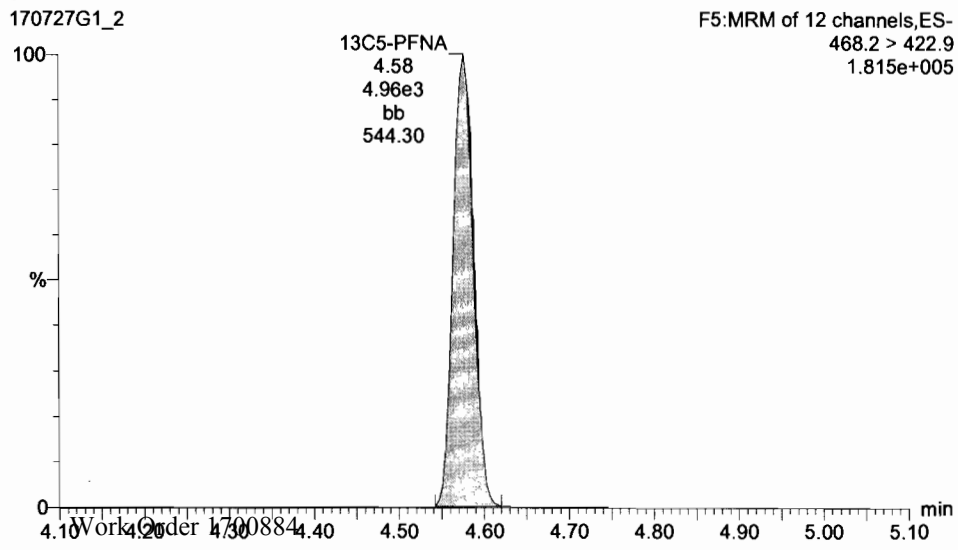


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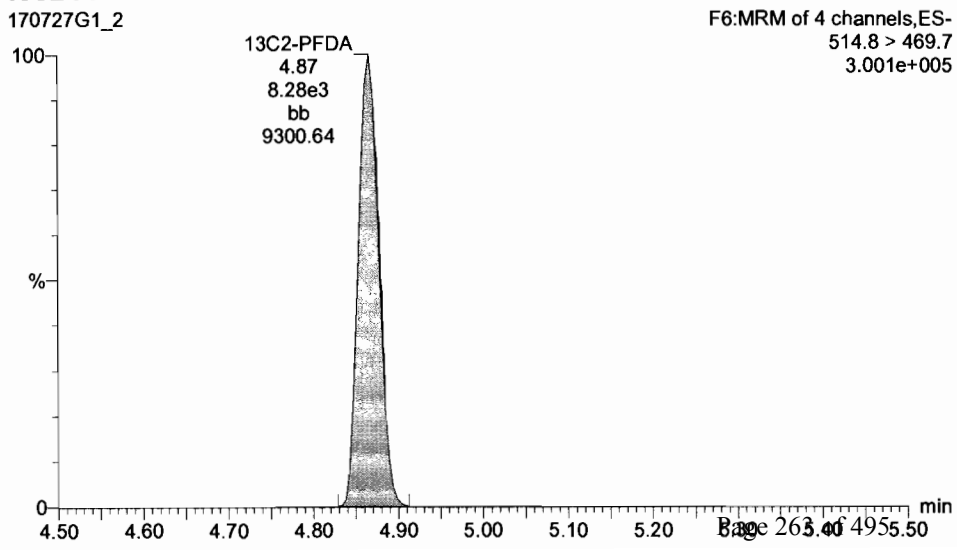




13C5-PFNA



13C2-PFDA

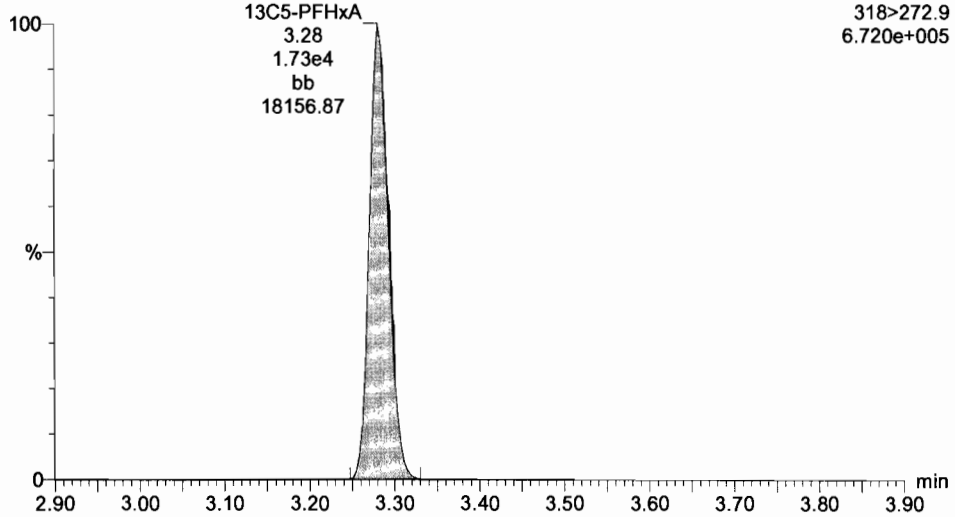


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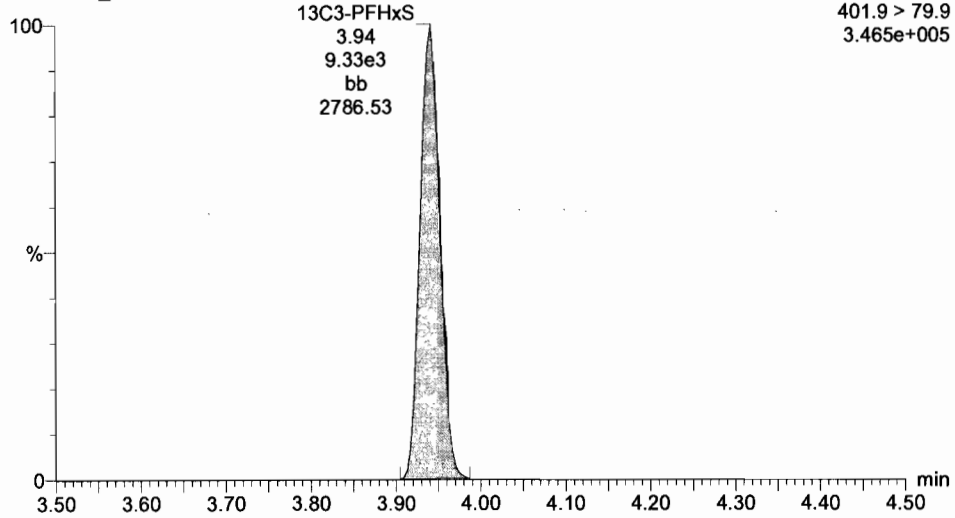
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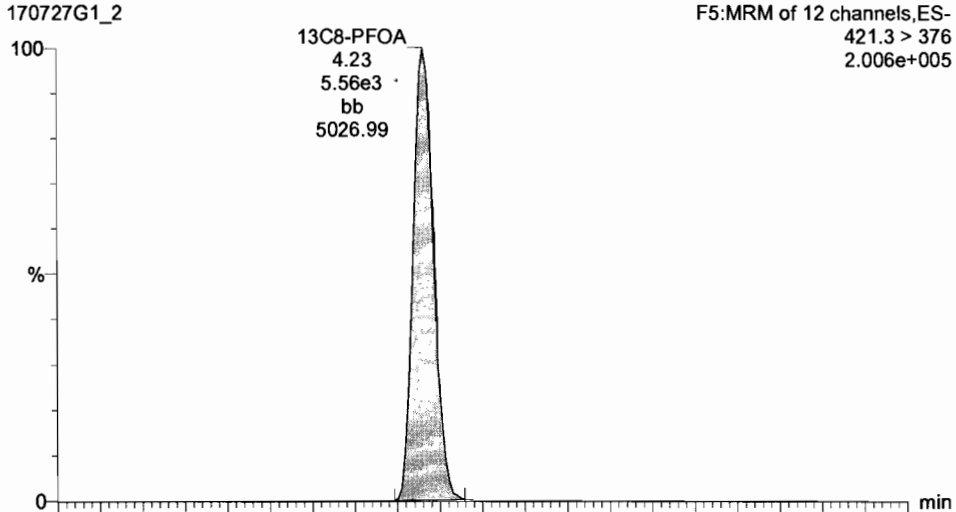
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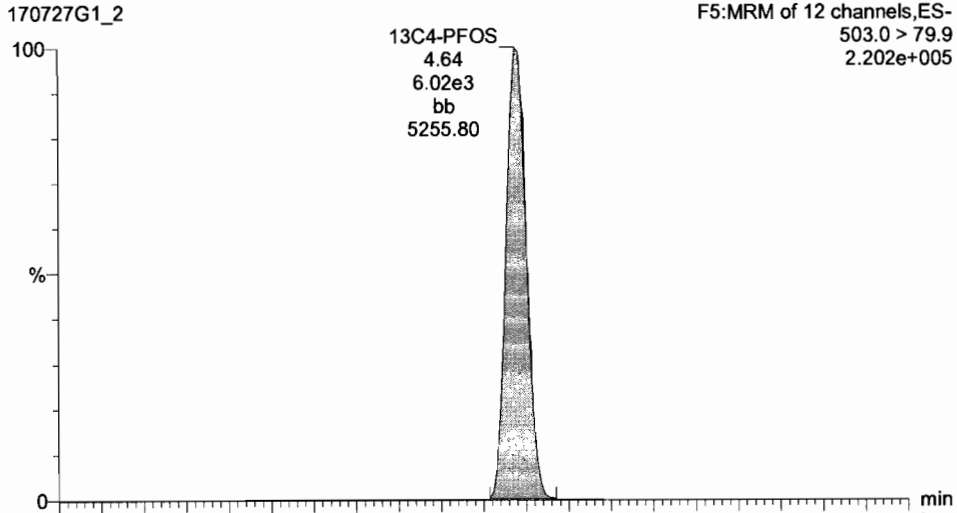
13C3-PFHxS



13C8-PFOA



13C4-PFOS

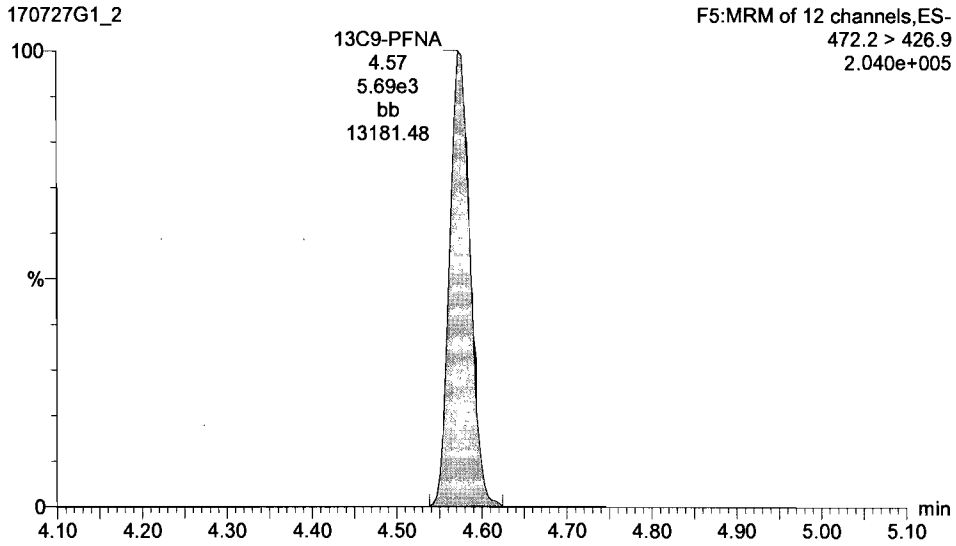


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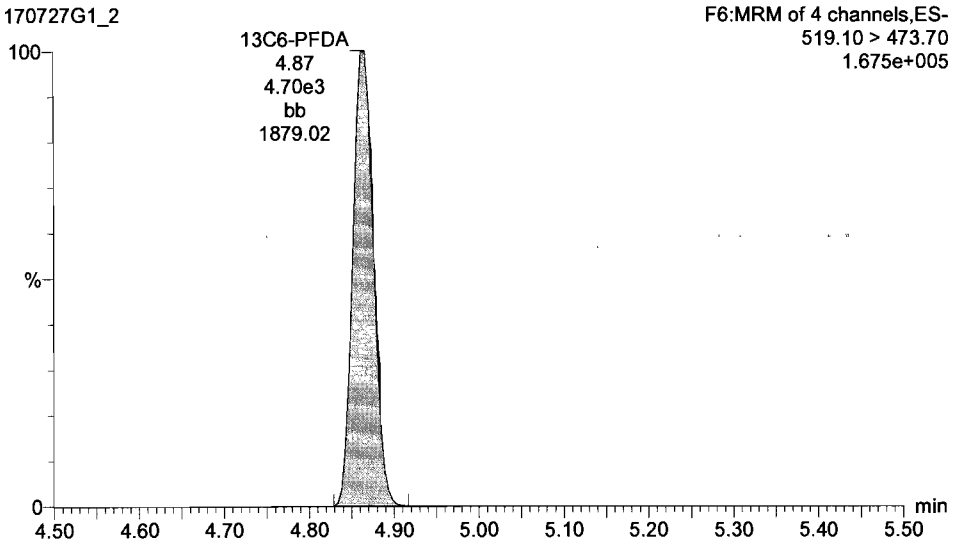
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13C9-PFNA



13C6-PFDA

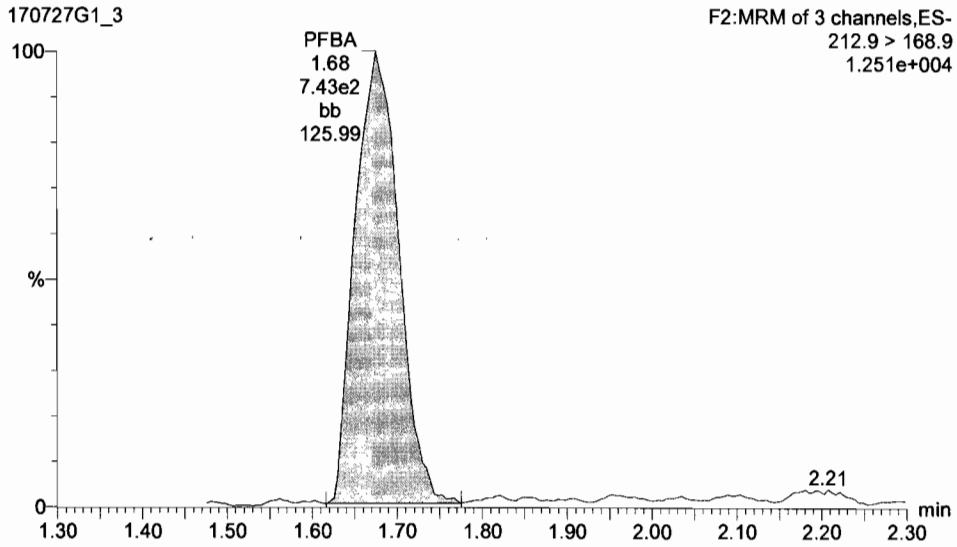


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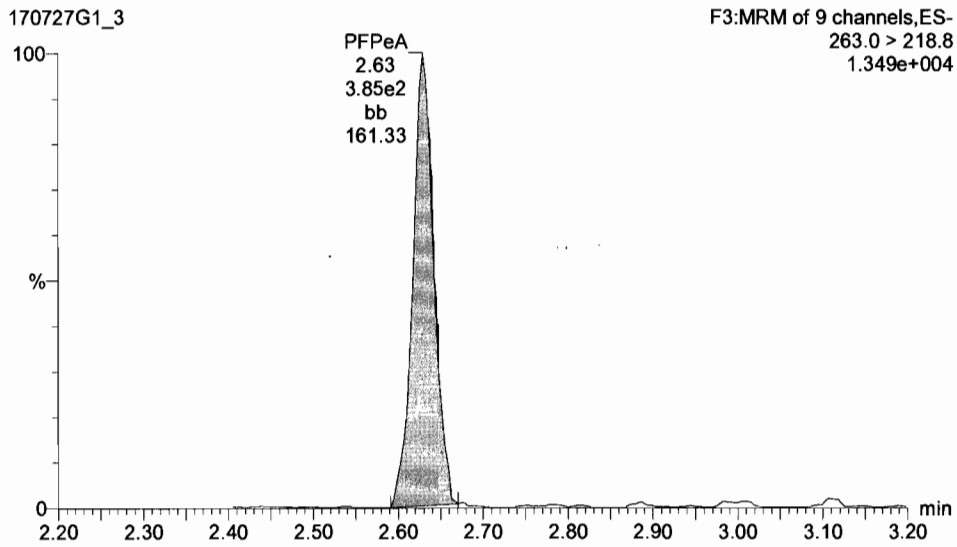
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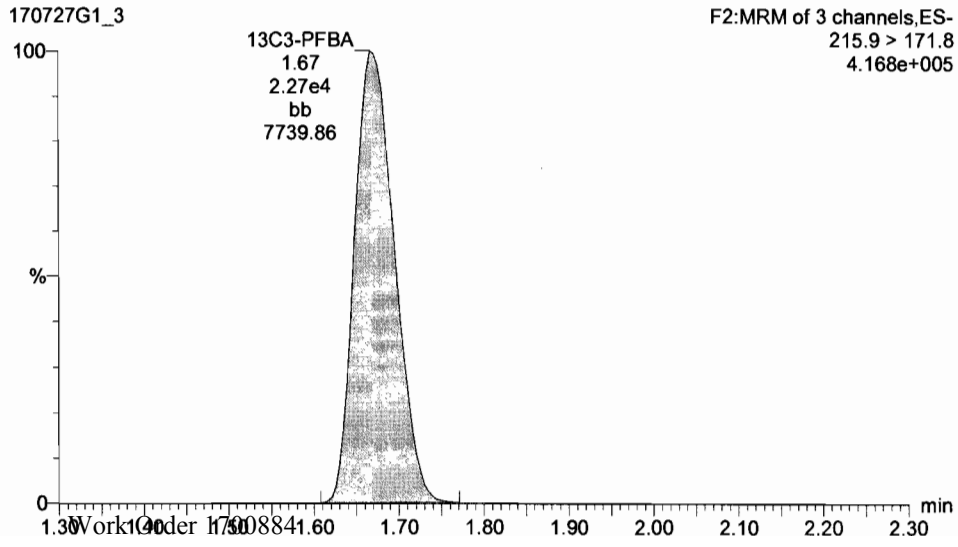
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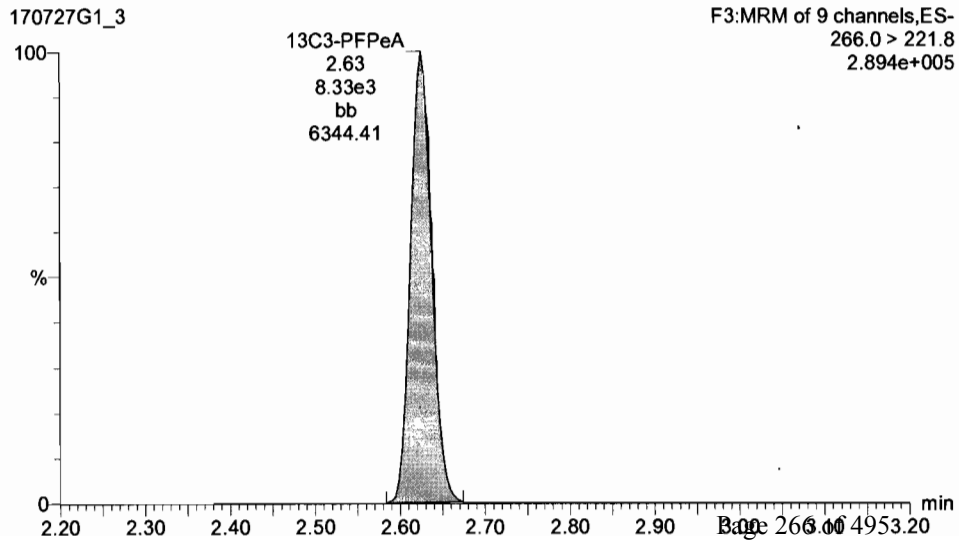
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13C3-PFBA



13C3-PFPeA

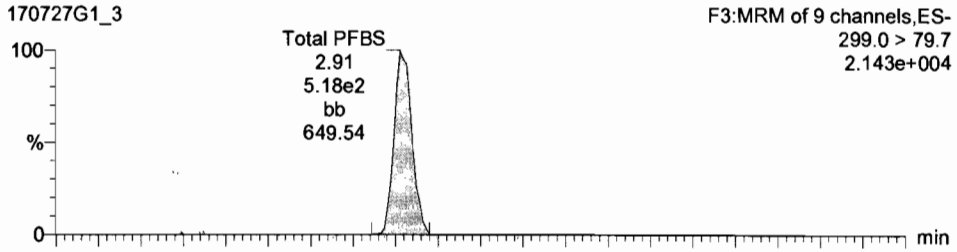


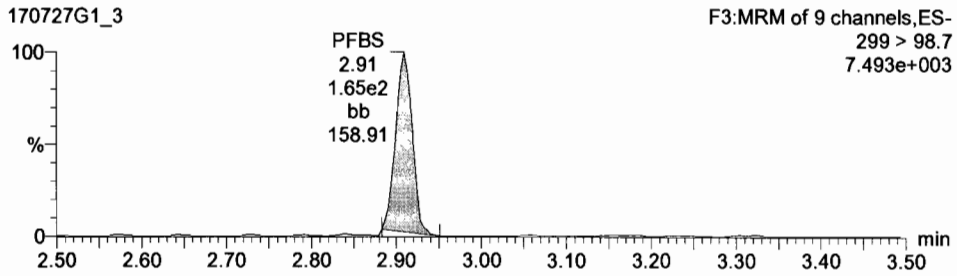
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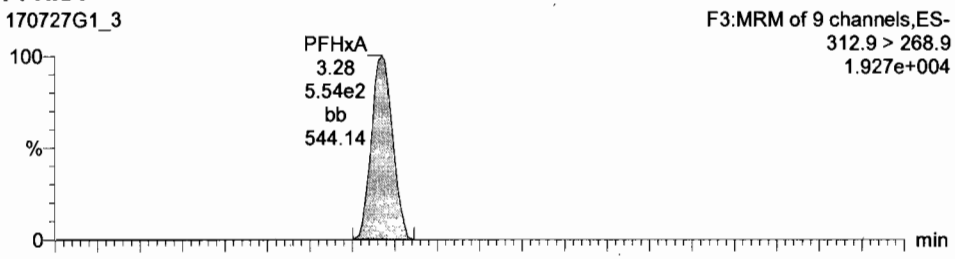
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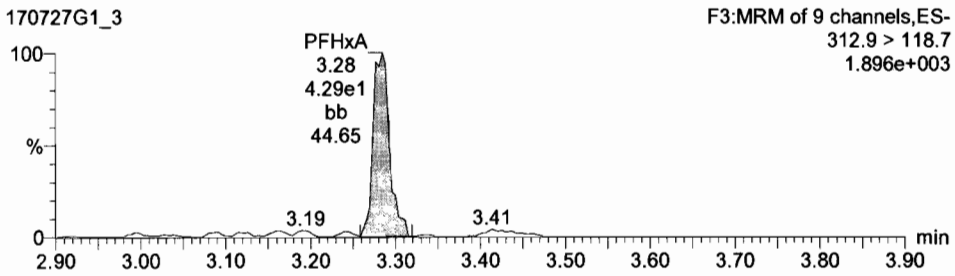
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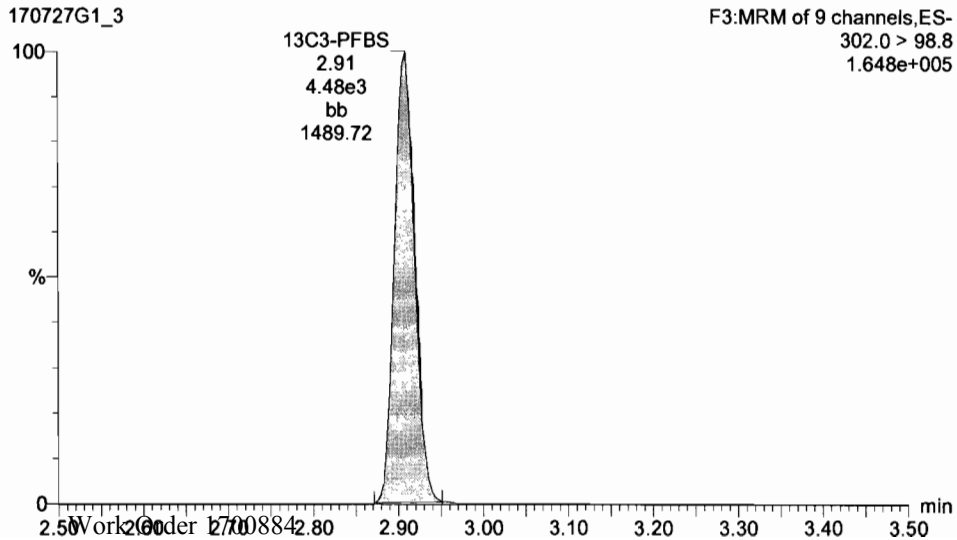


PFHxA

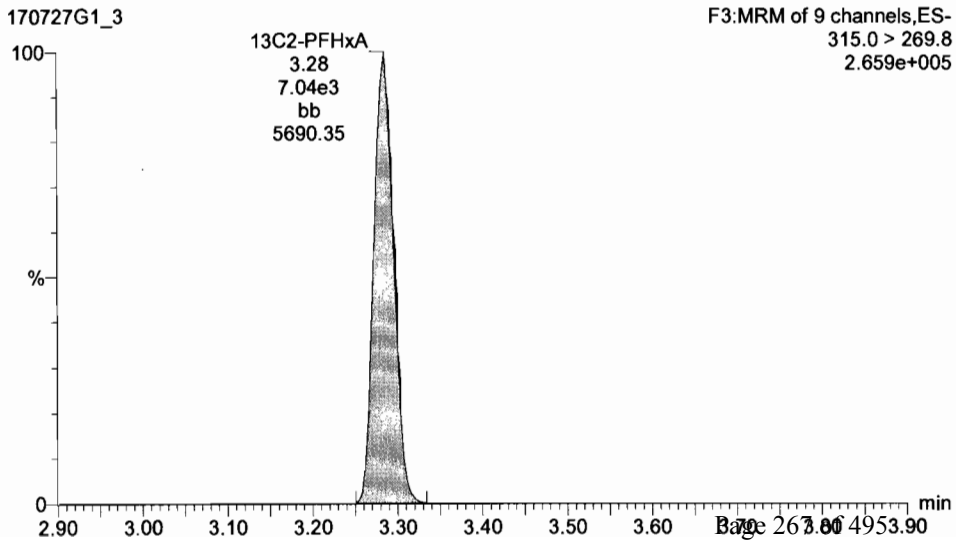




13C3-PFBS



13C2-PFHxA

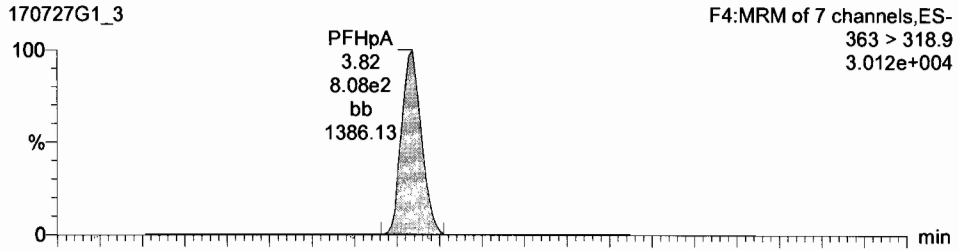


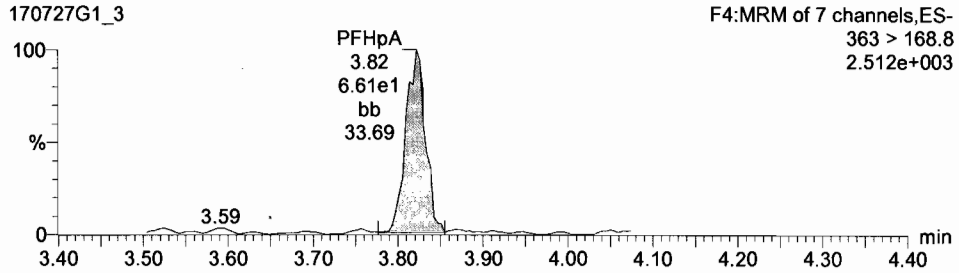
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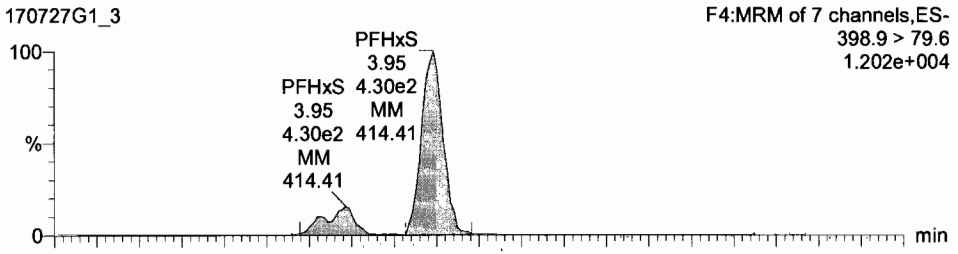
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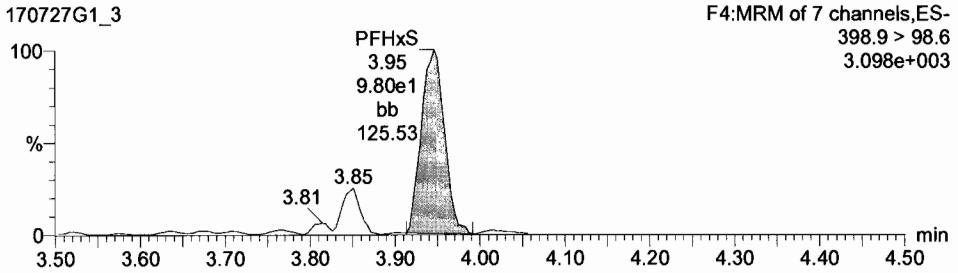
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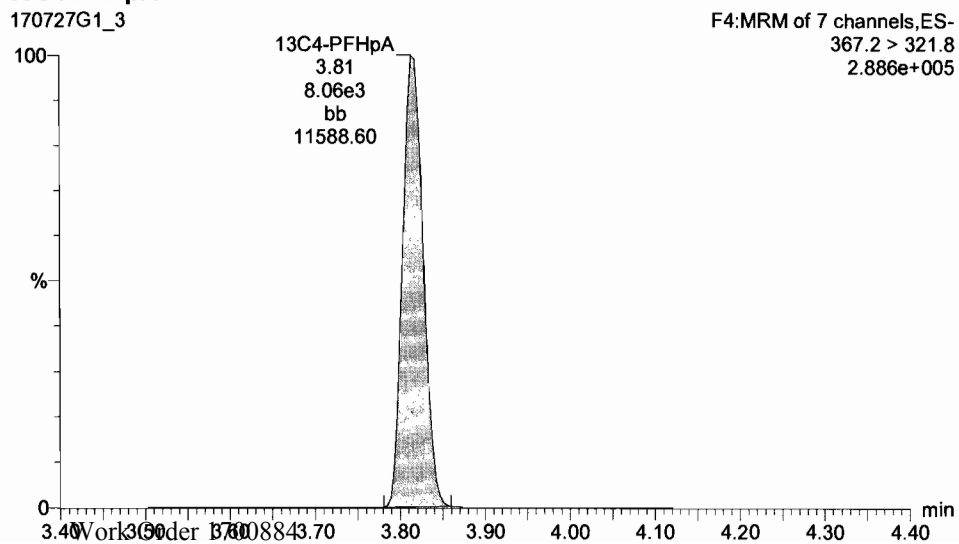


Total PFHxS

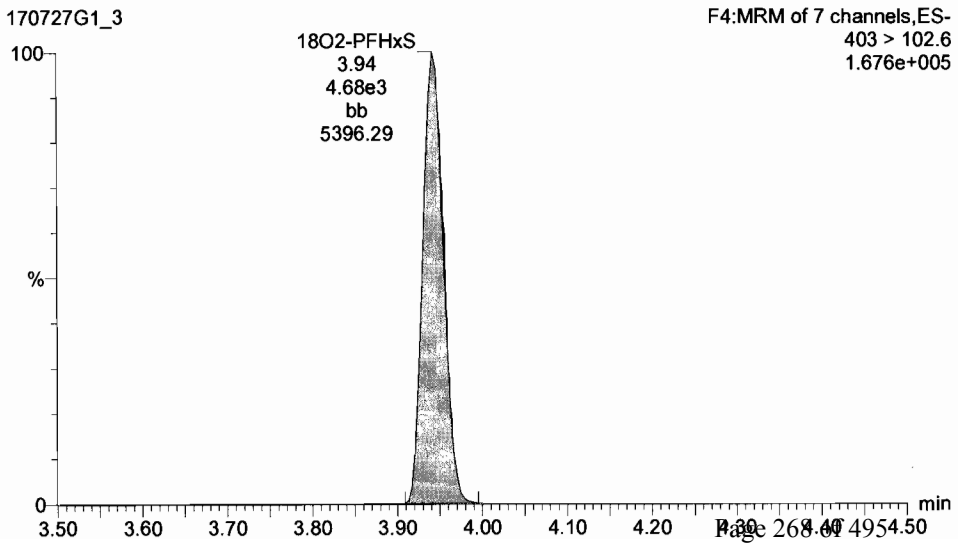




13C4-PFHpA



18O2-PFHxS

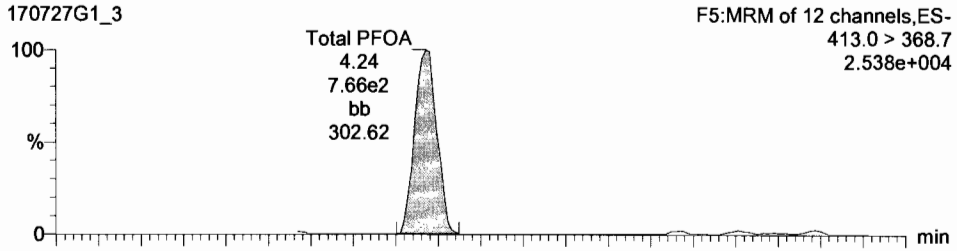


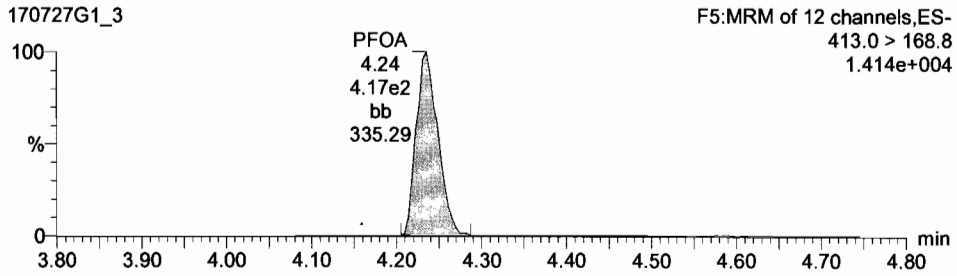
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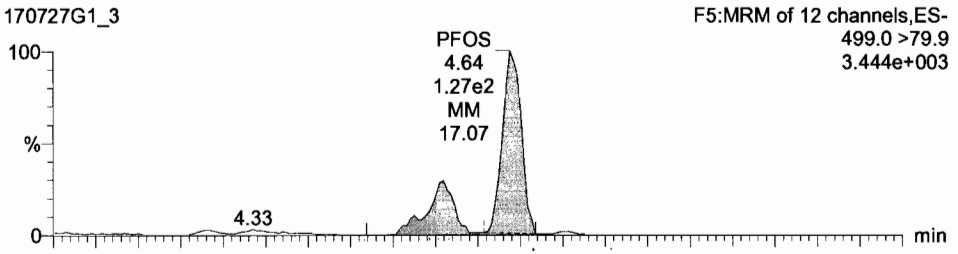
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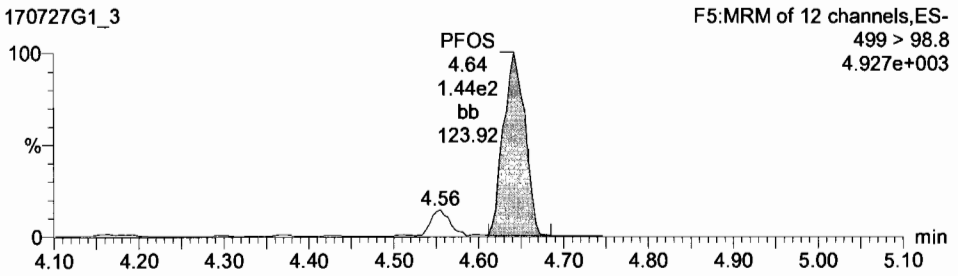
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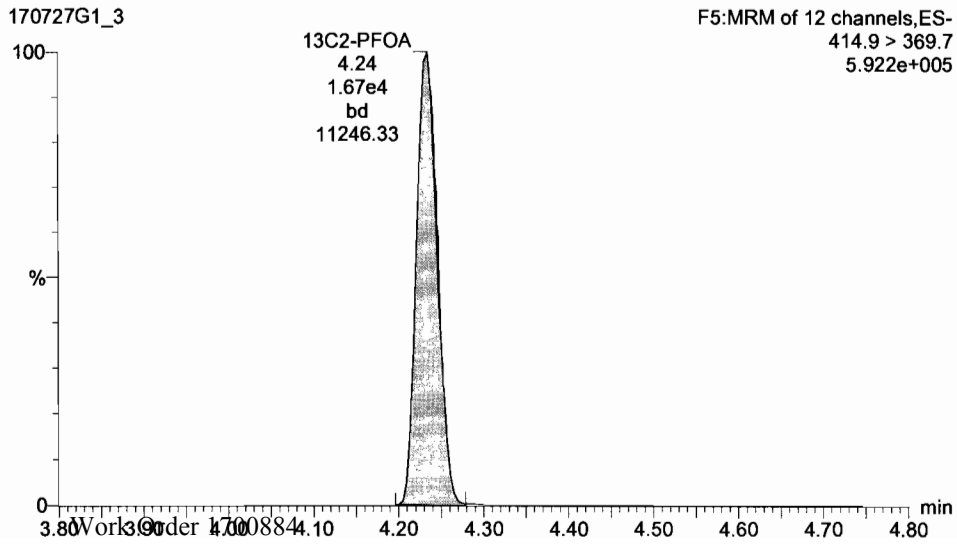


Total PFOS

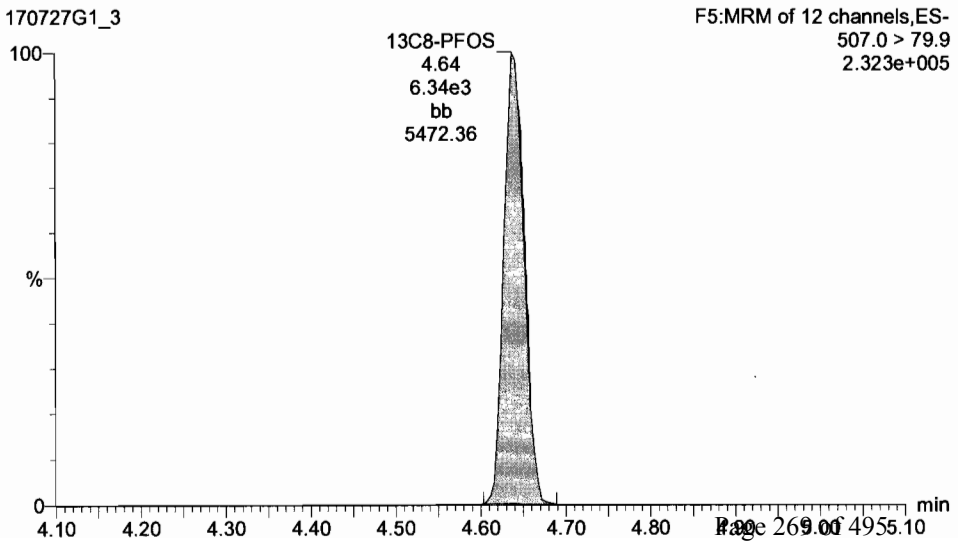




13C2-PFOA



13C8-PFOS

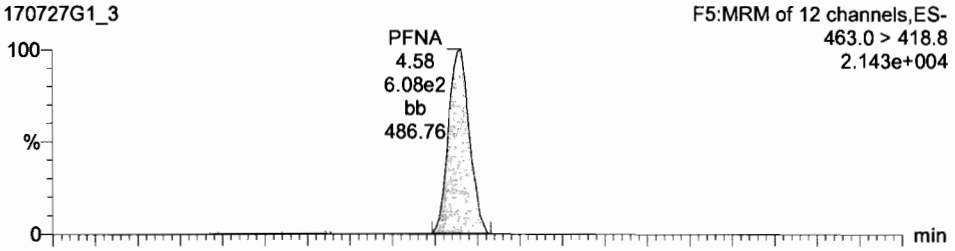


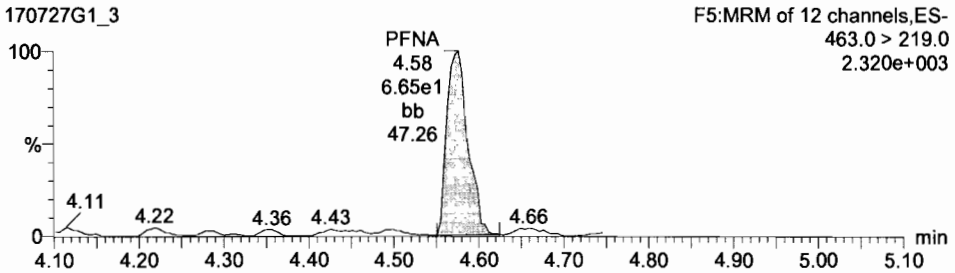
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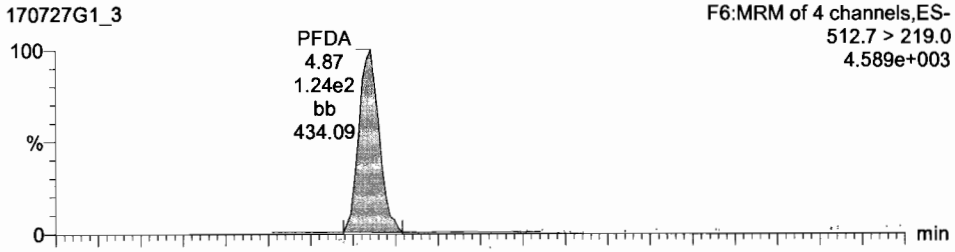
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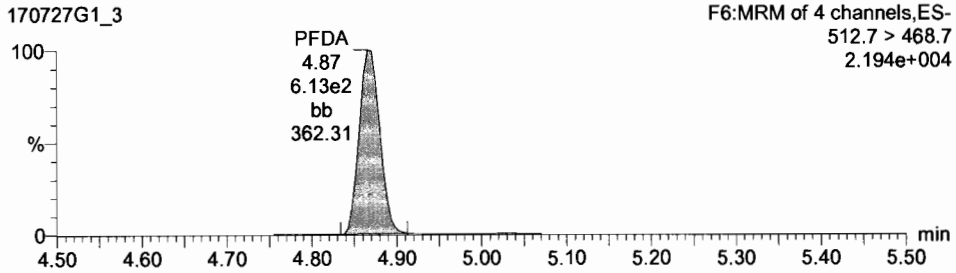
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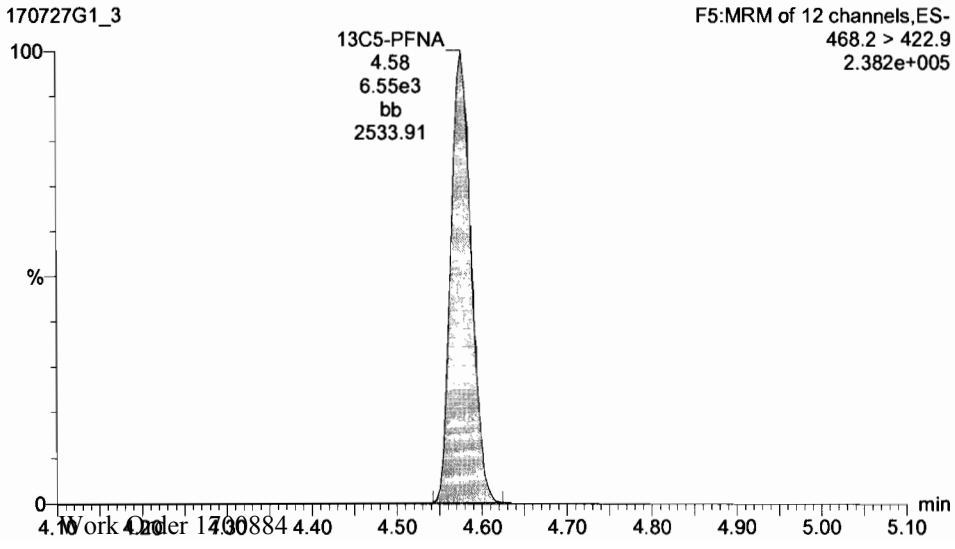


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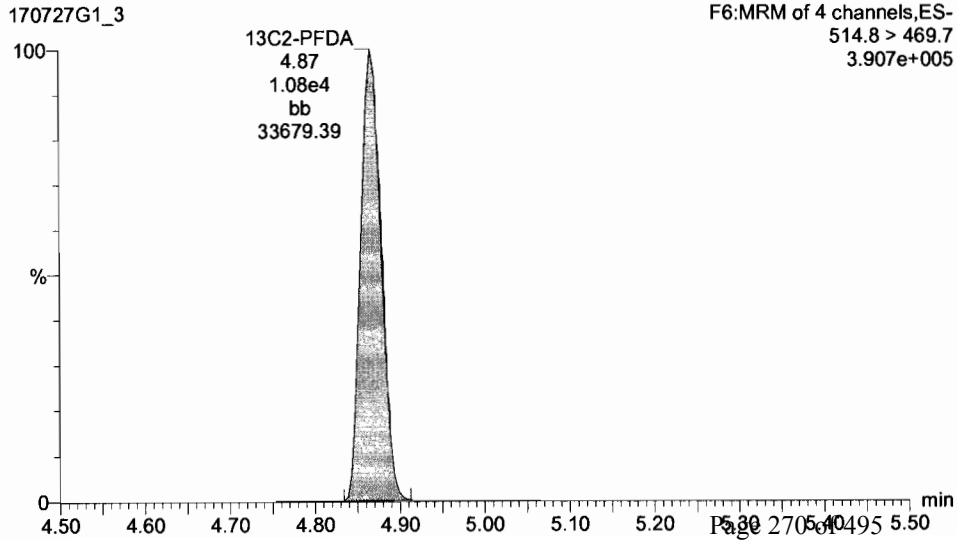




13C5-PFNA



13C2-PFDA

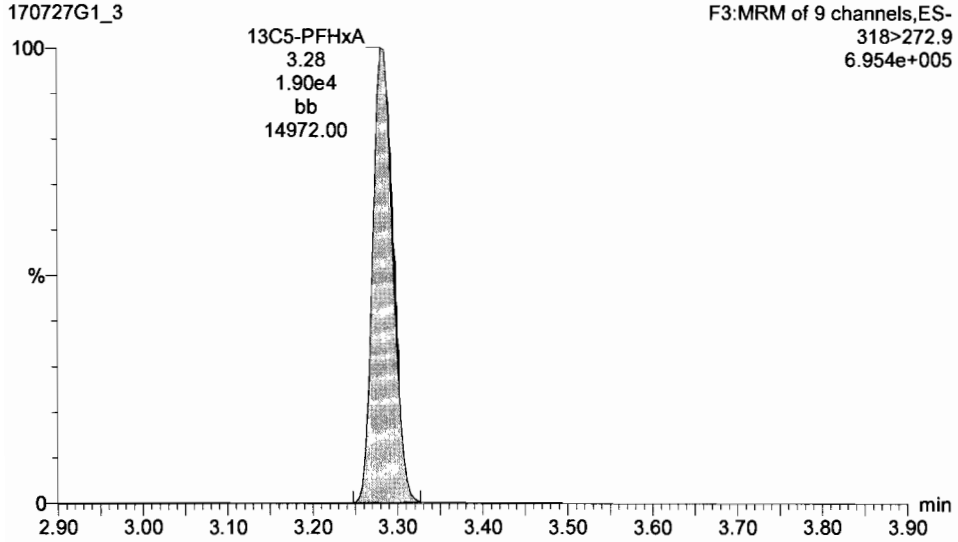


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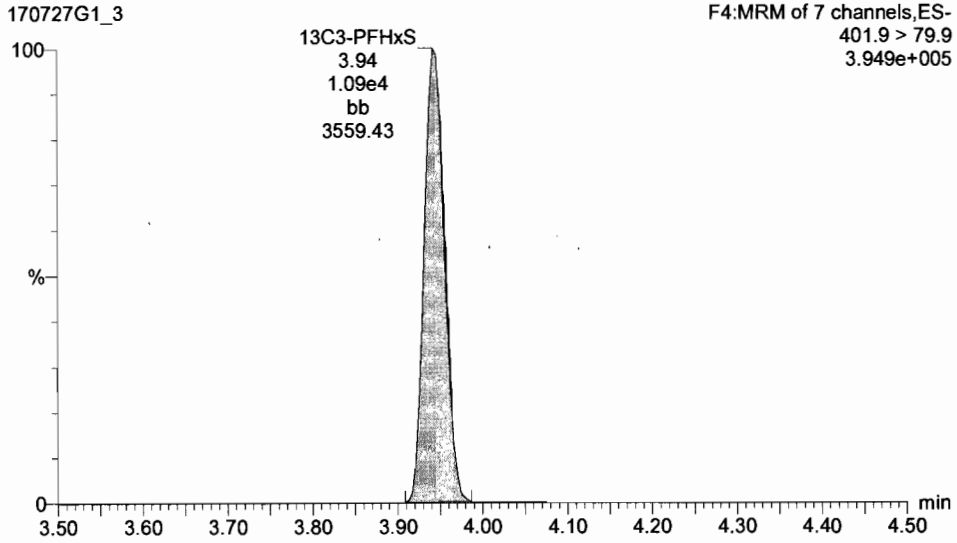
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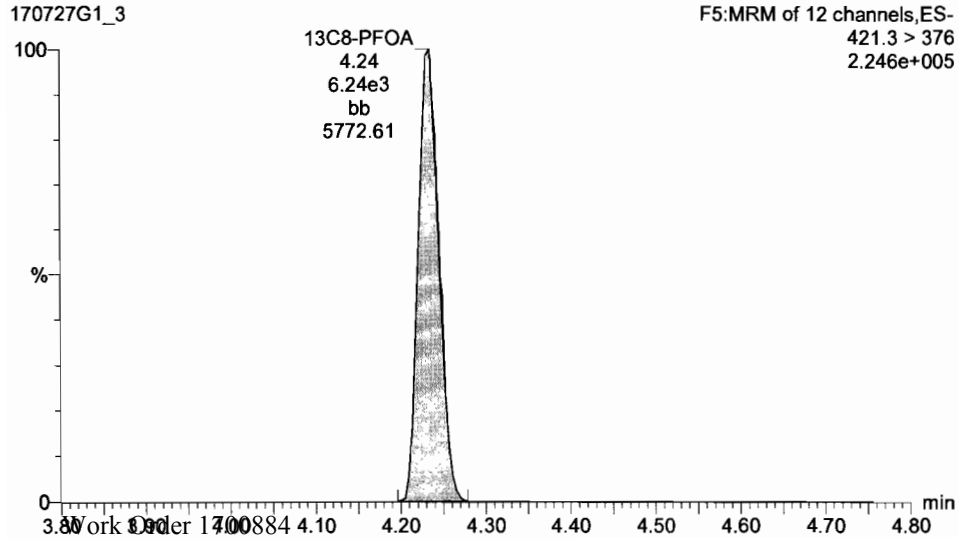
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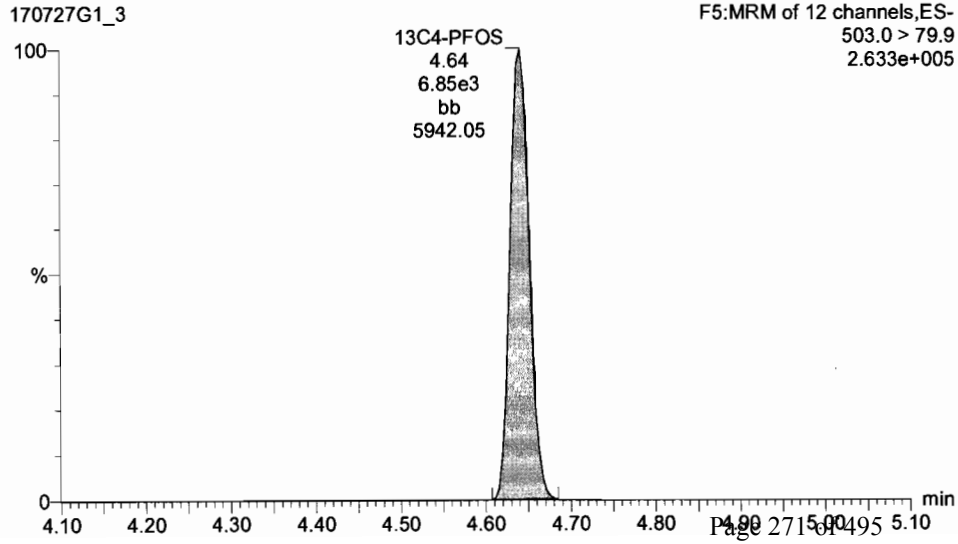
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13C8-PFOA



13C4-PFOS

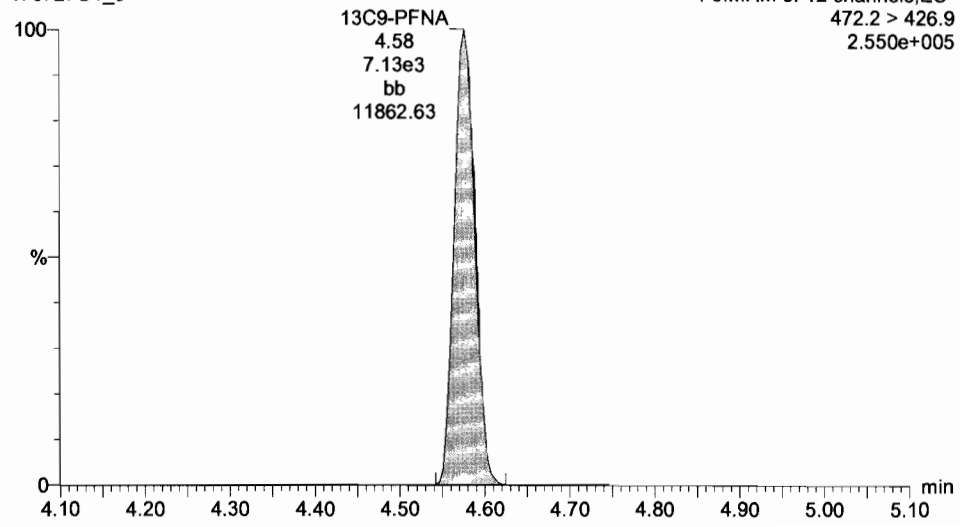


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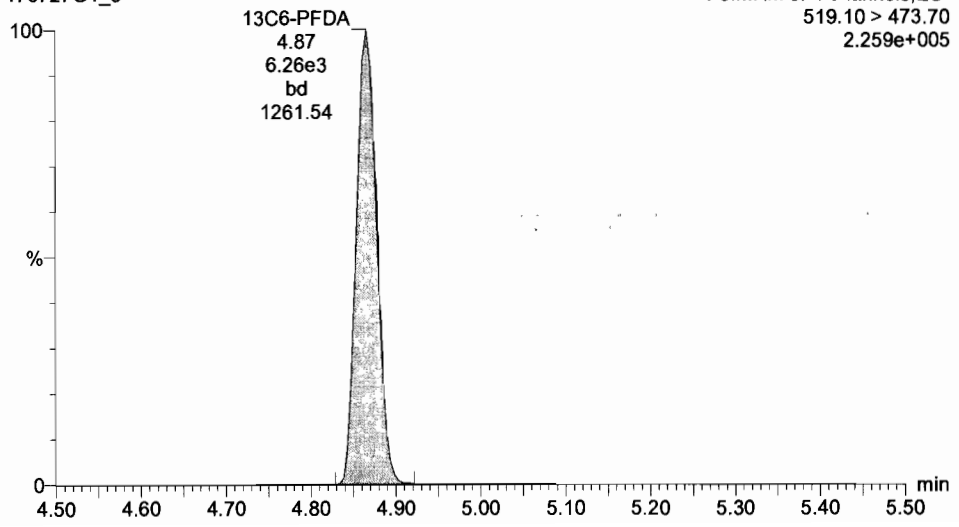
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13C9-PFNA



13C6-PFDA

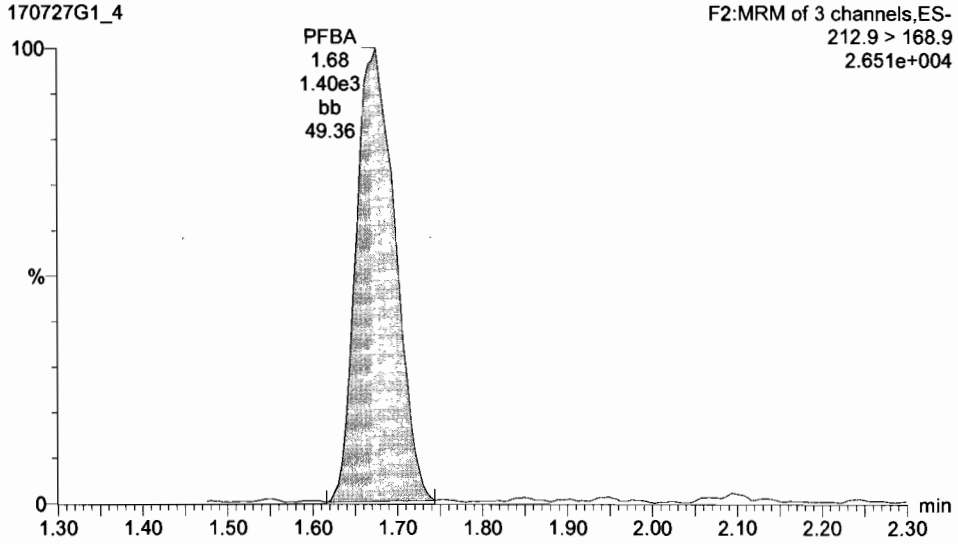


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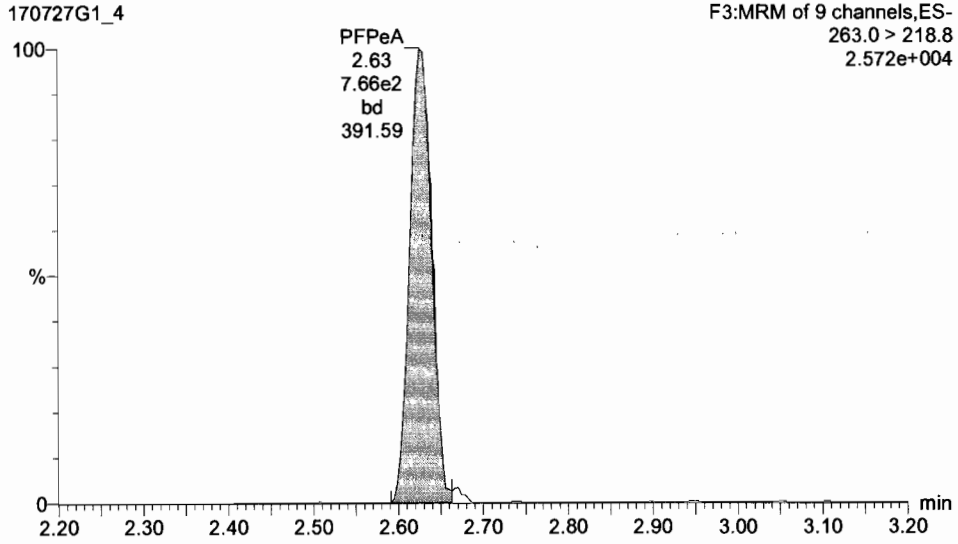
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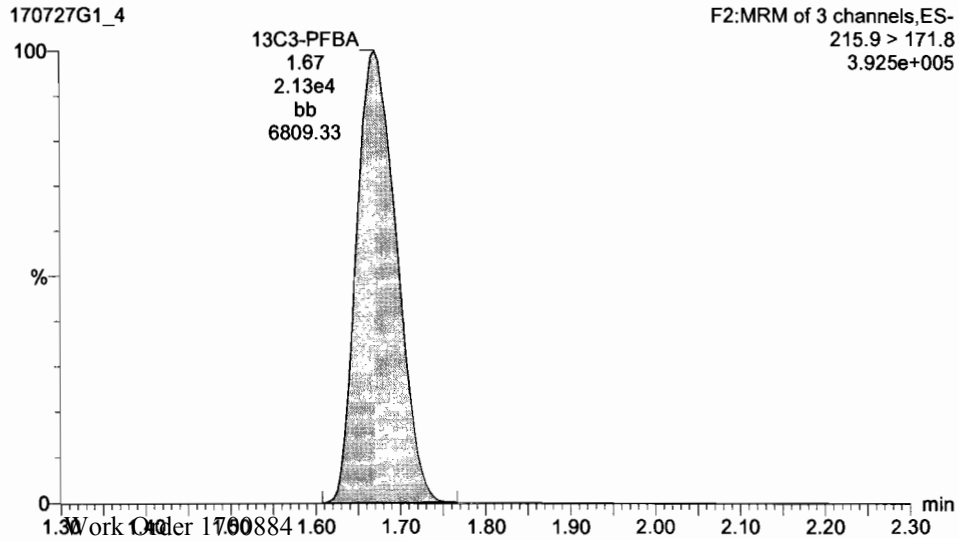
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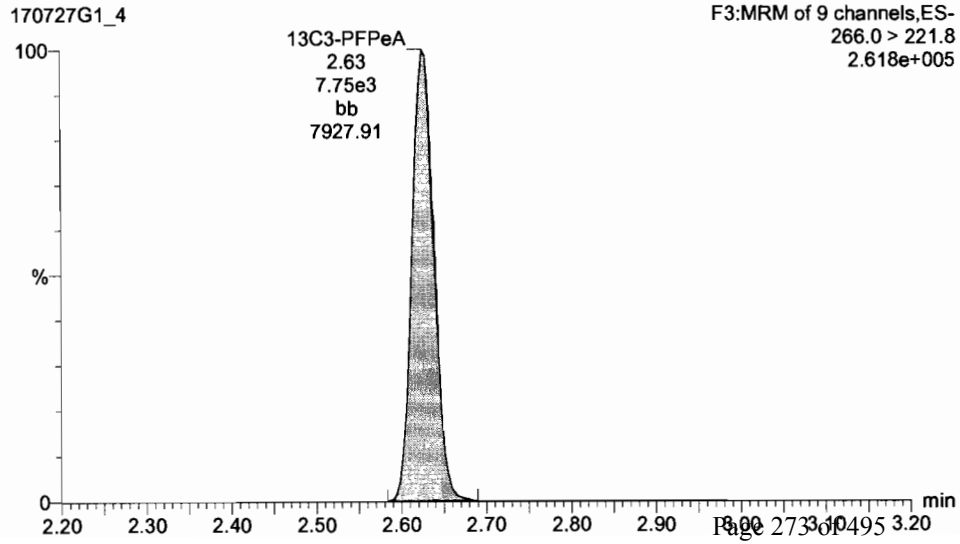
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13C3-PFBA



13C3-PFPeA

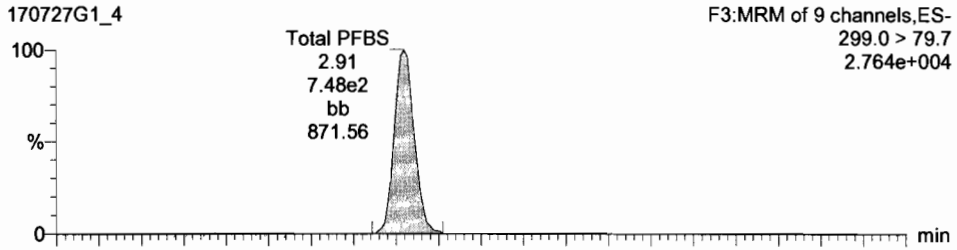


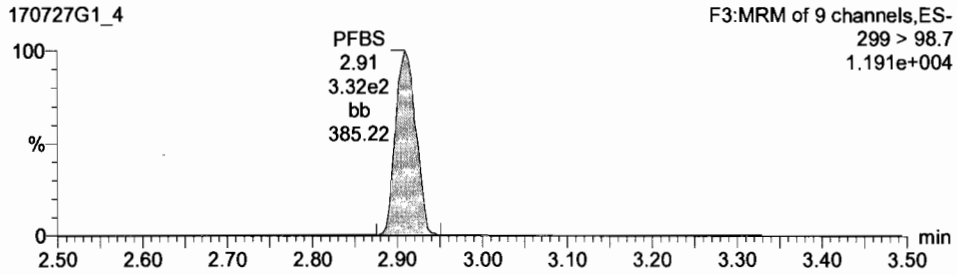
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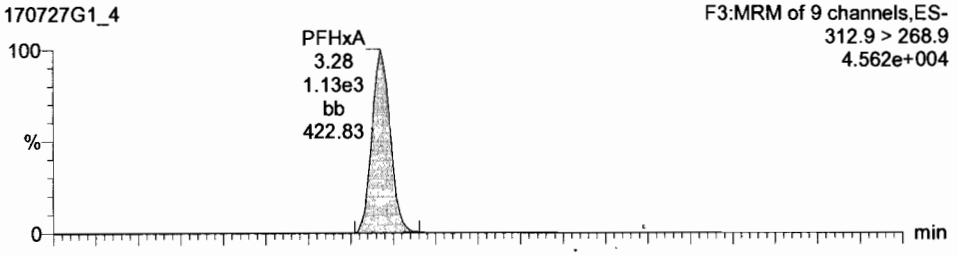
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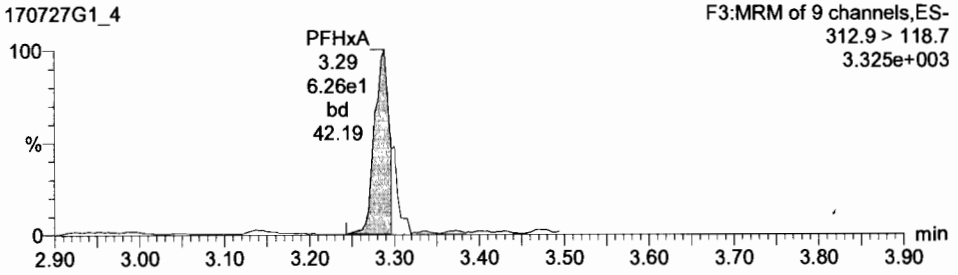
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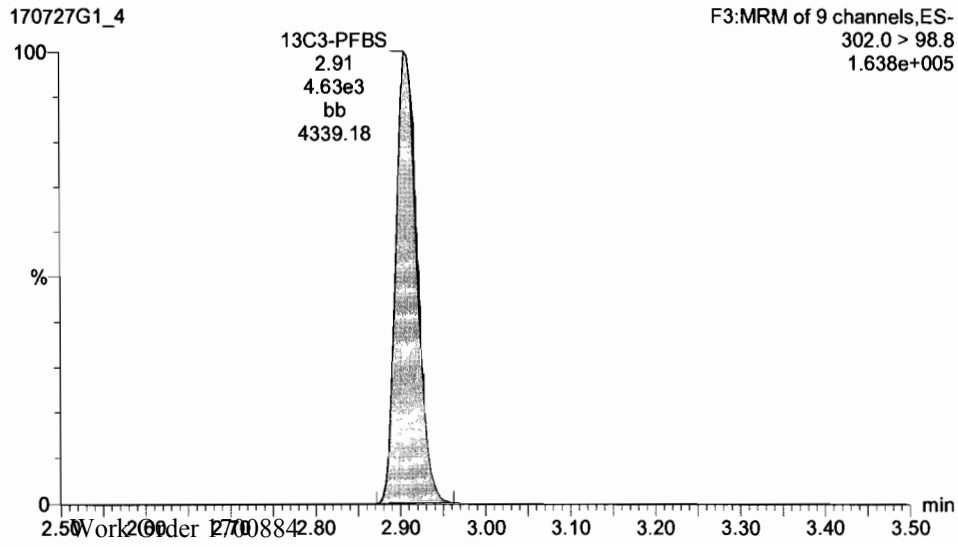


PFHxA

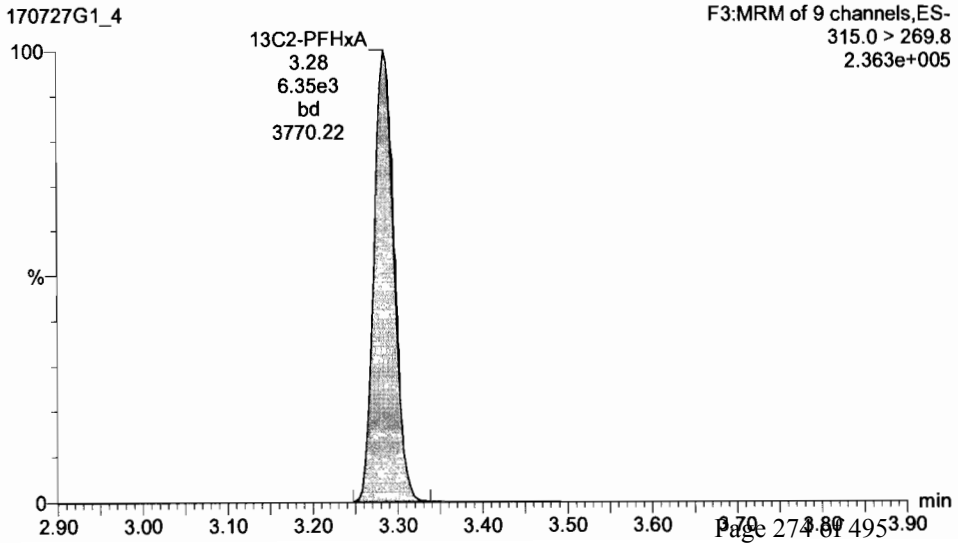




13C3-PFBS



13C2-PFHxA

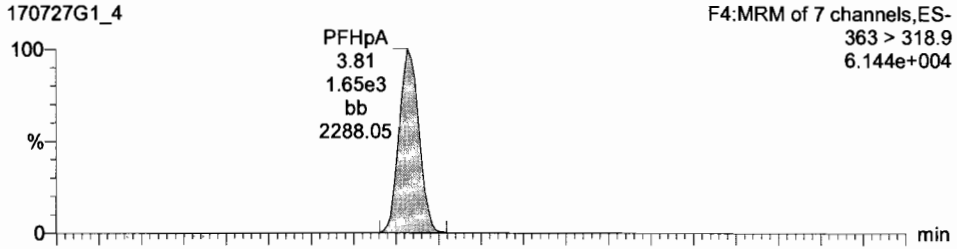


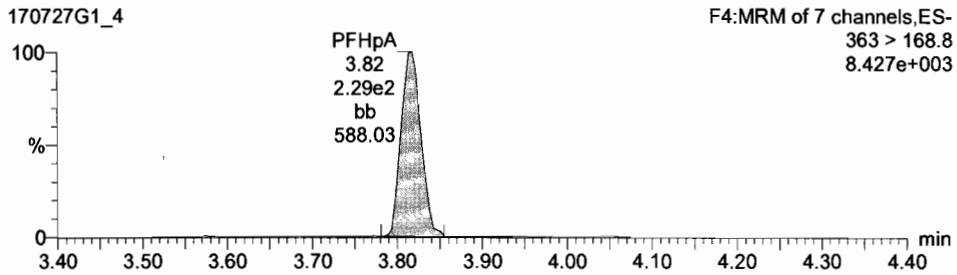
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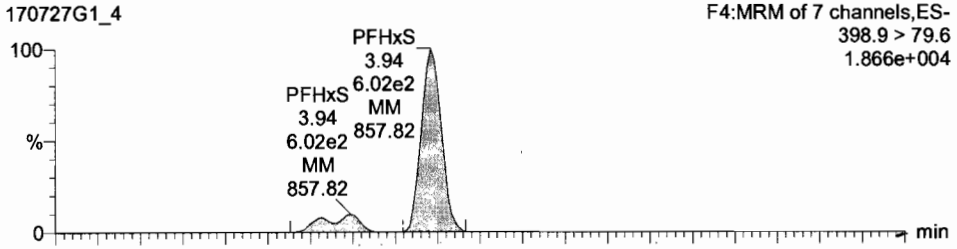
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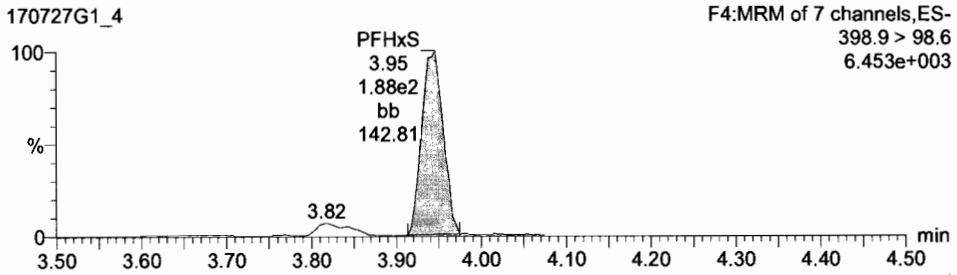
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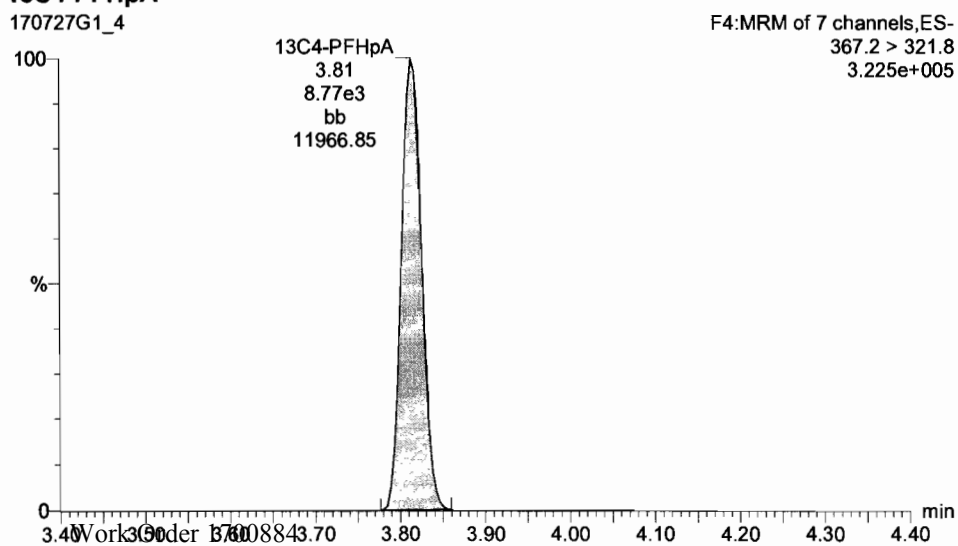


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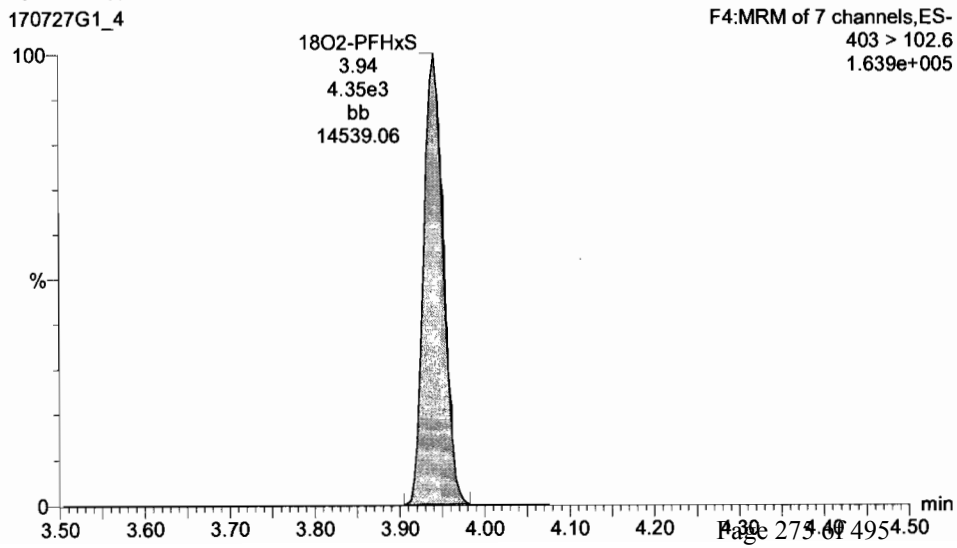




13C4-PFHpA



18O2-PFHxS

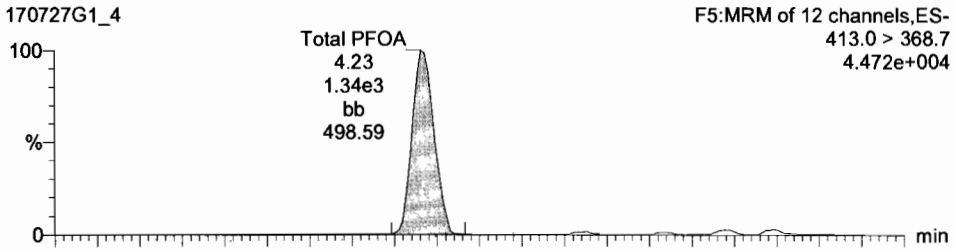


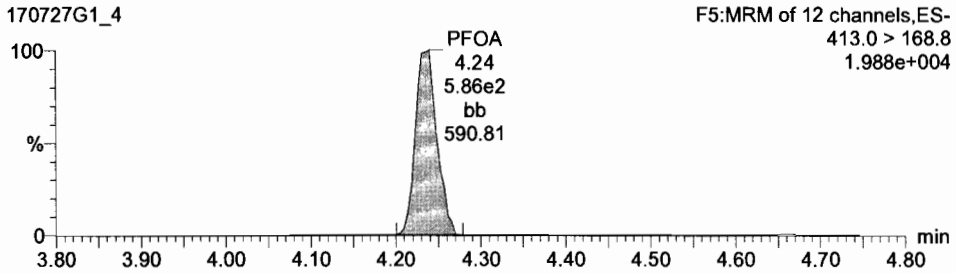
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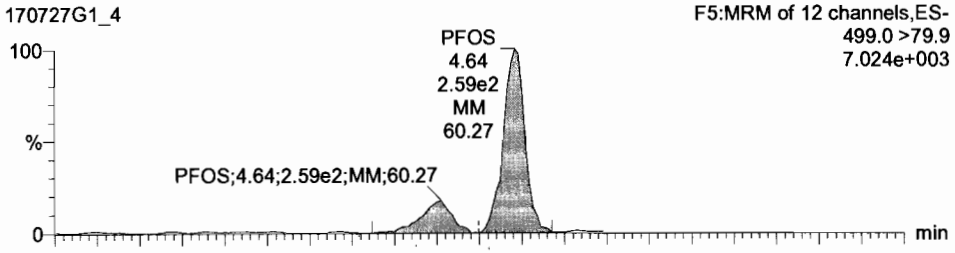
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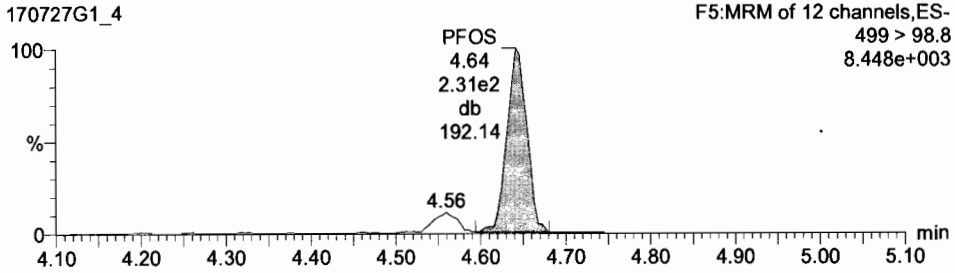
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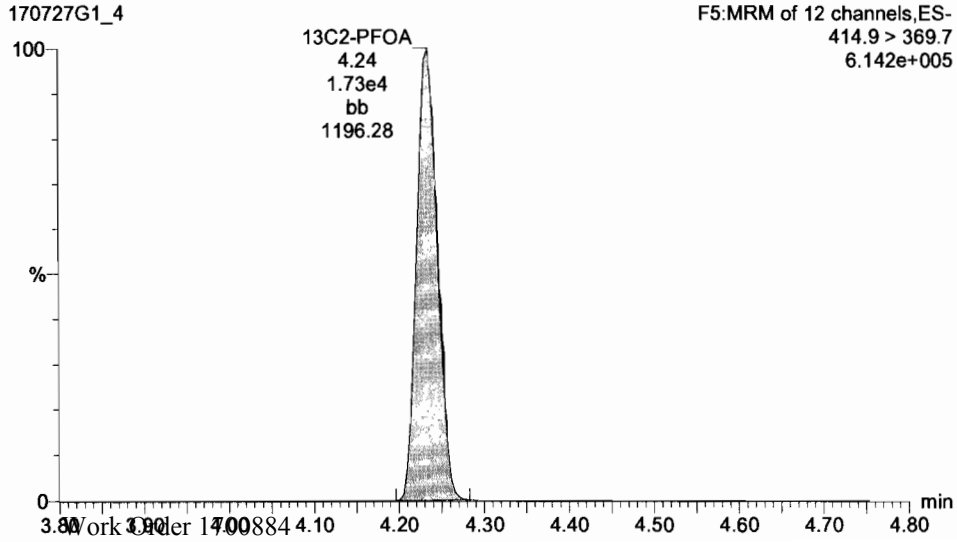


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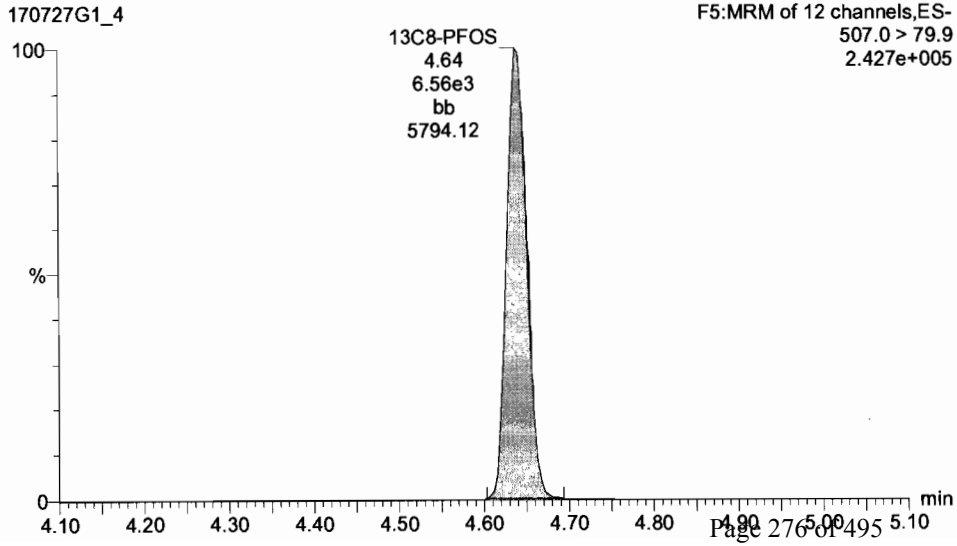




13C2-PFOA



13C8-PFOS

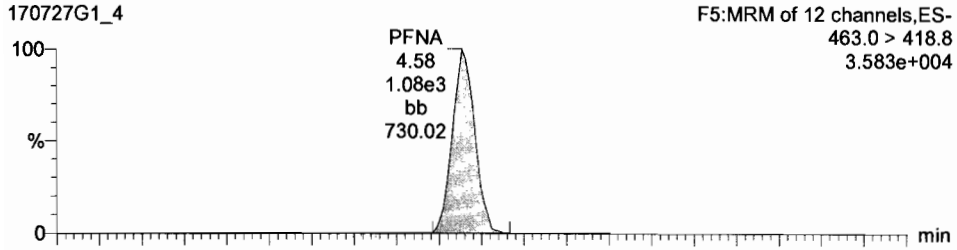


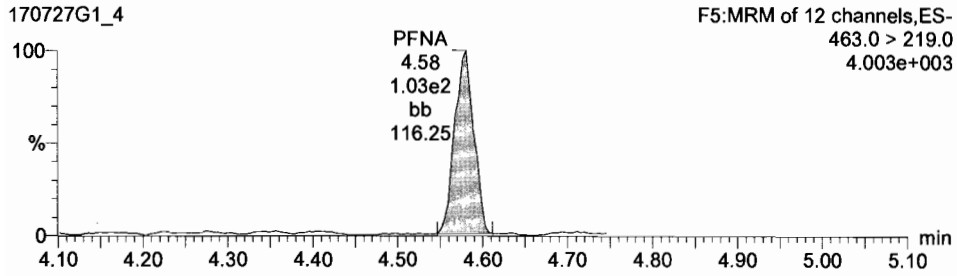
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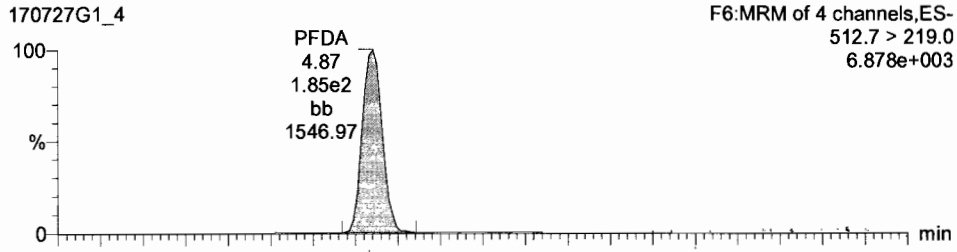
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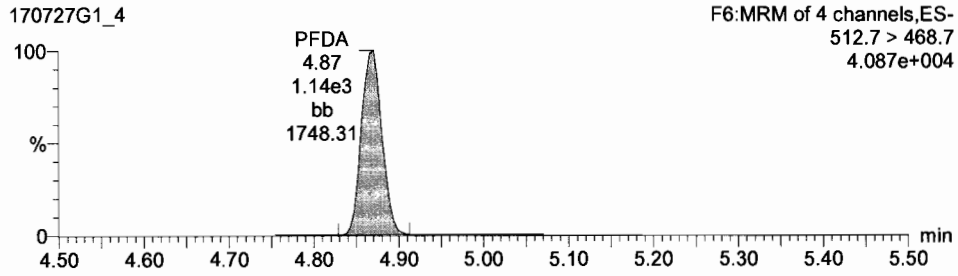
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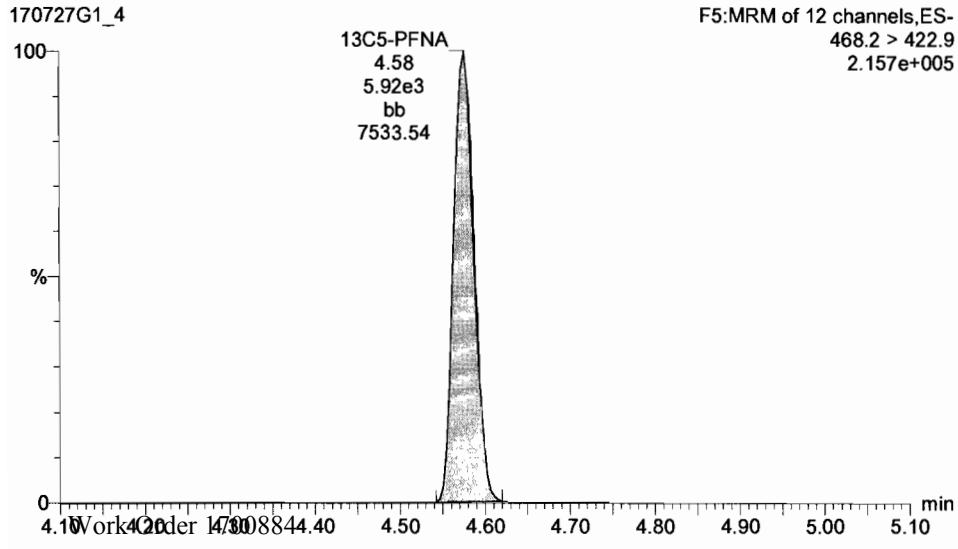


PFDA

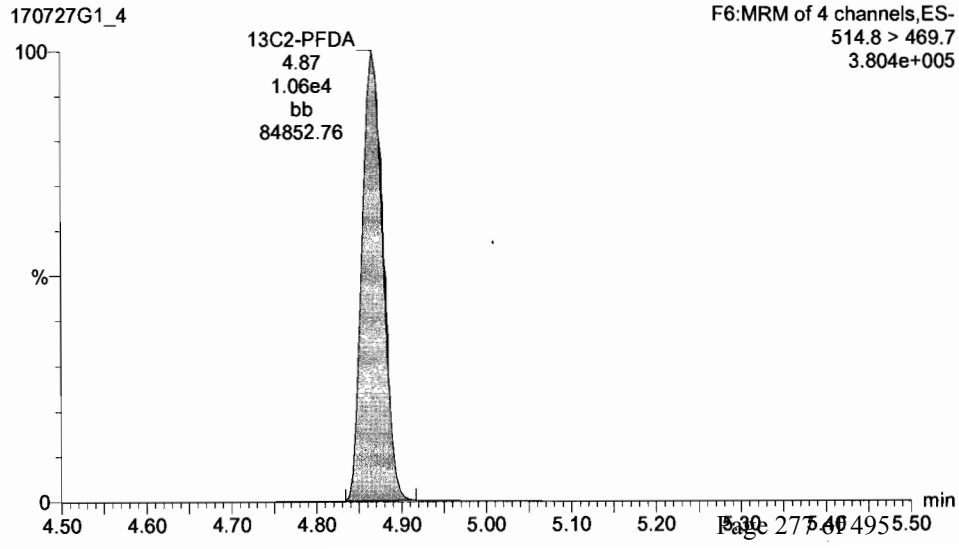




13C5-PFNA



13C2-PFDA

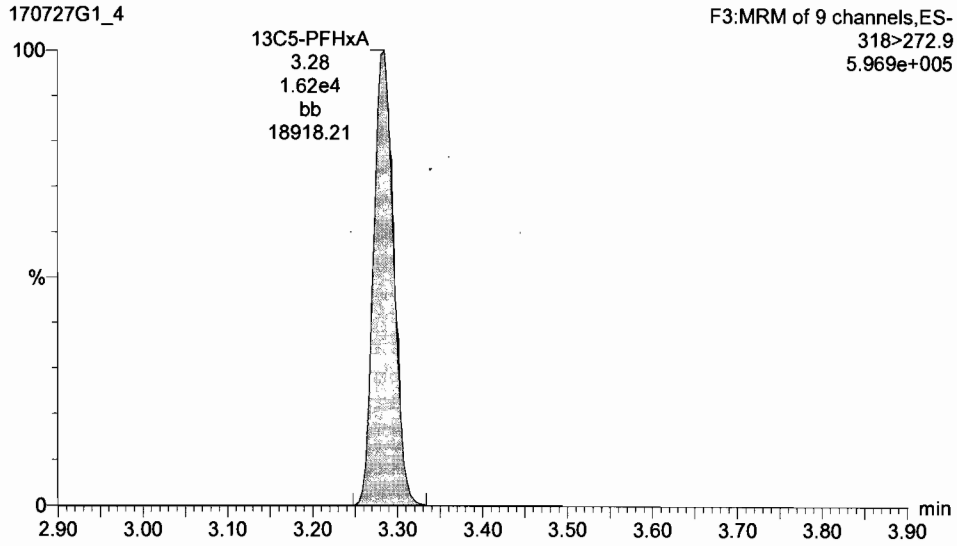


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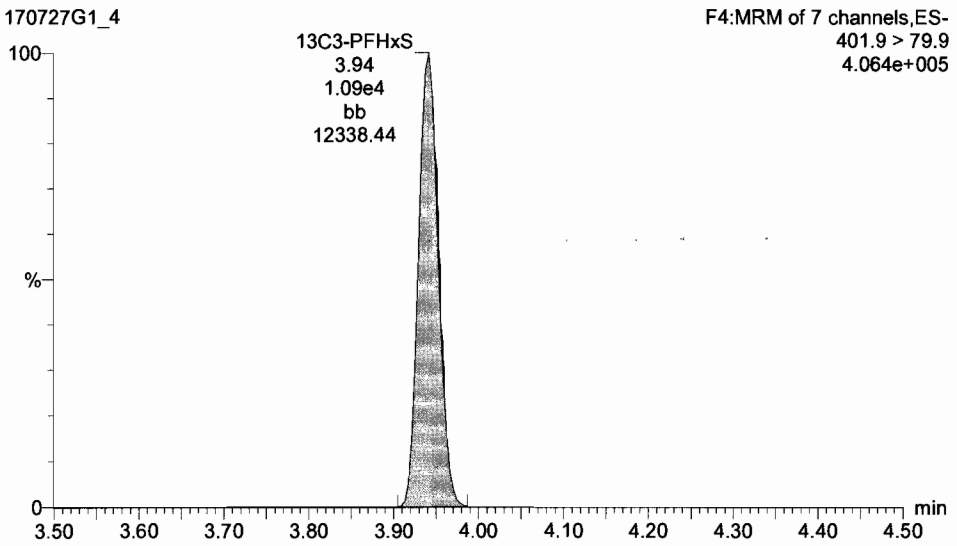
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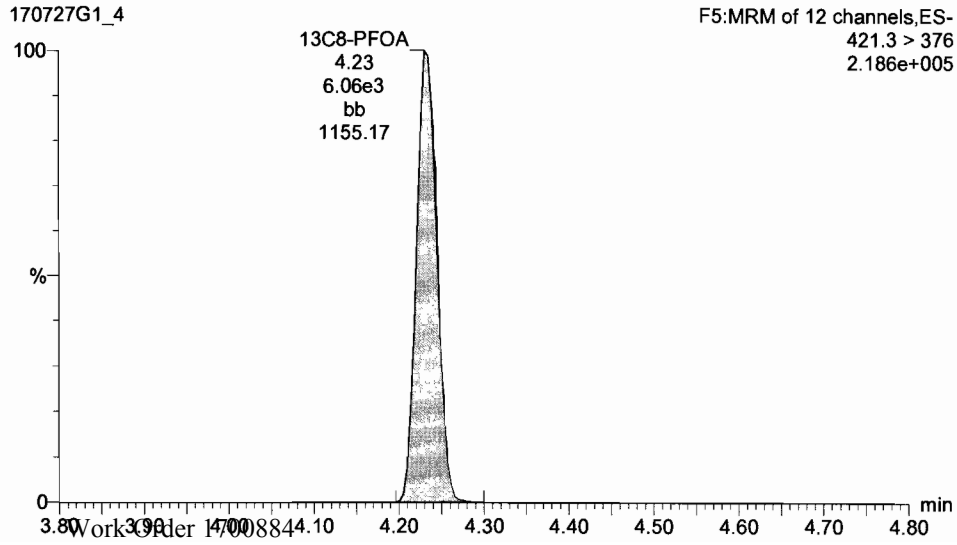
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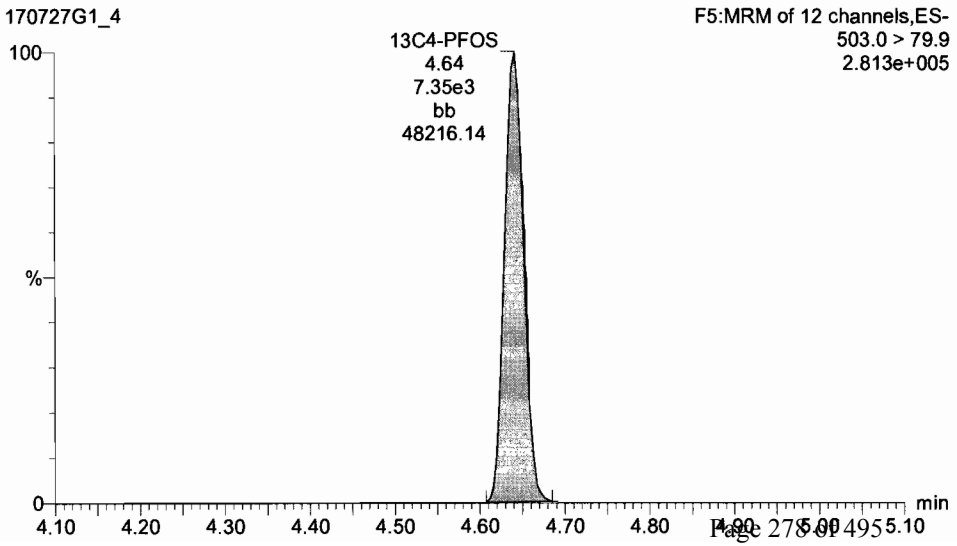
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13C8-PFOA



13C4-PFOS

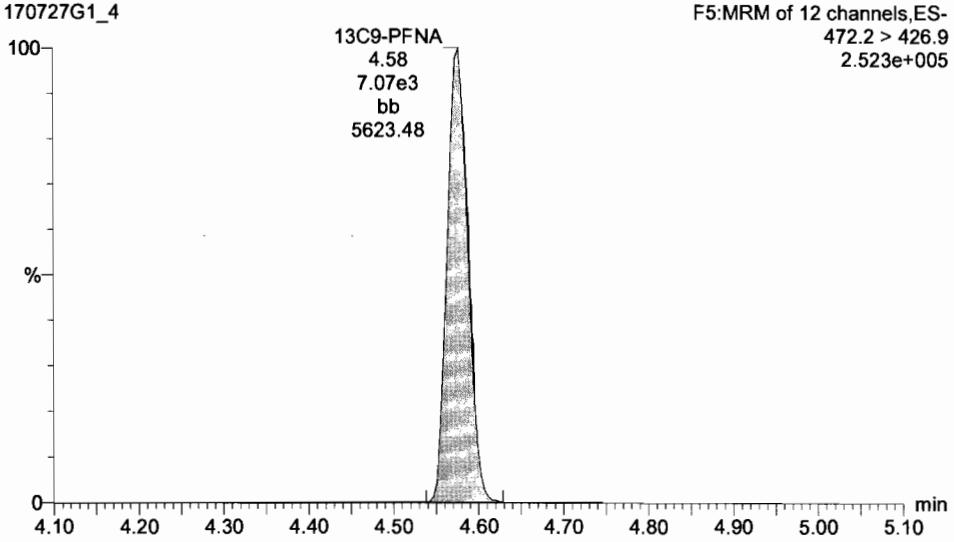


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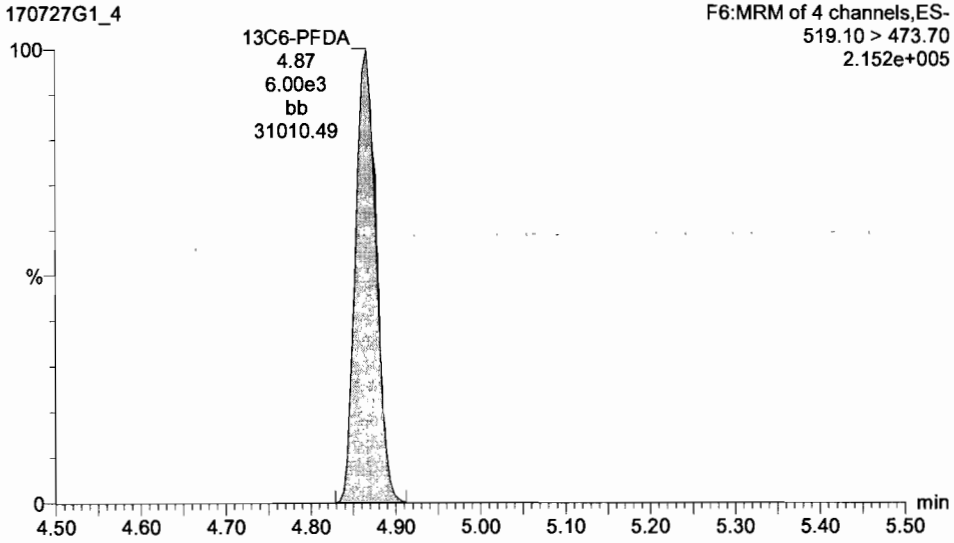
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13C9-PFNA



13C6-PFDA

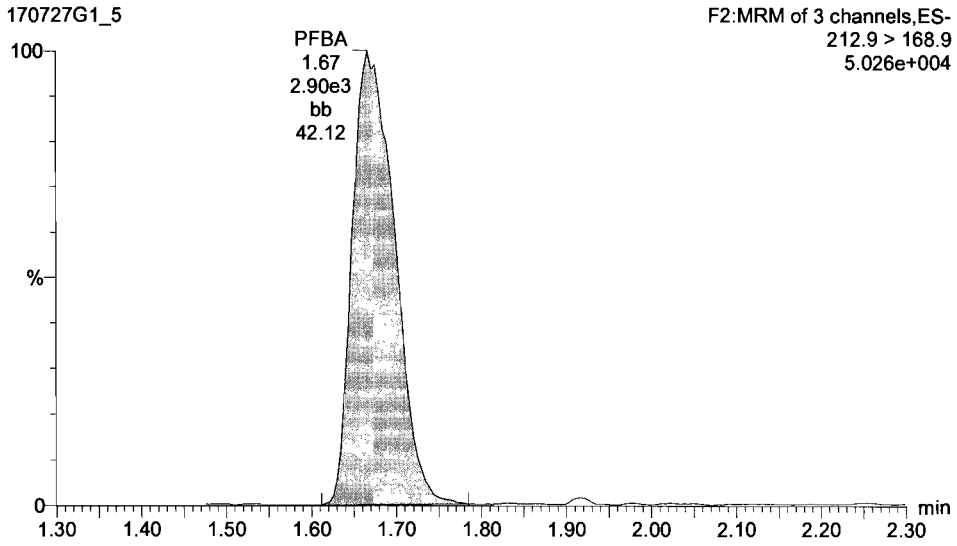


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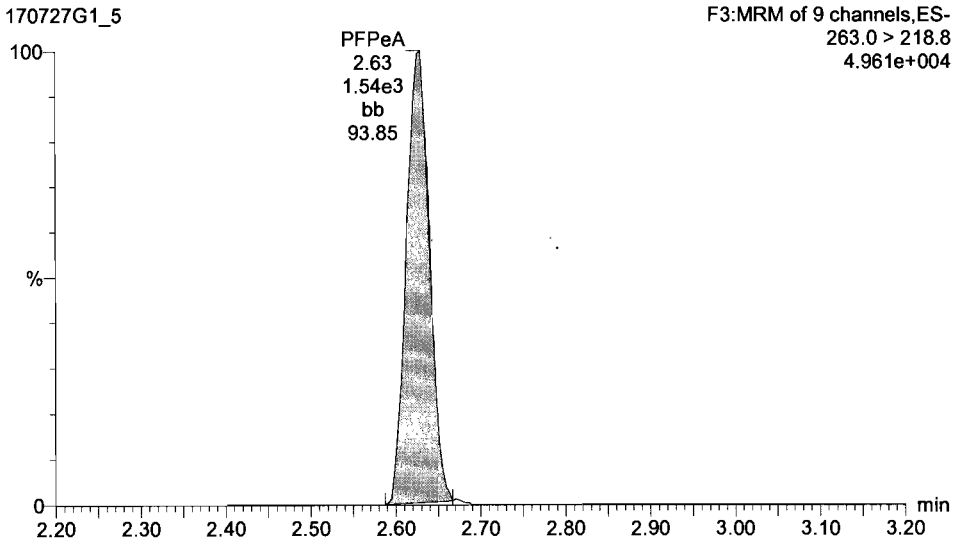
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ID: ST170727G1-4 PFC CS1 17G2717, Description: PFC CS1 17G2717 A, Name: 170727G1_5, Date: 27-Jul-2017, Time: 12:21:58, Instrument: , Lab: , User:

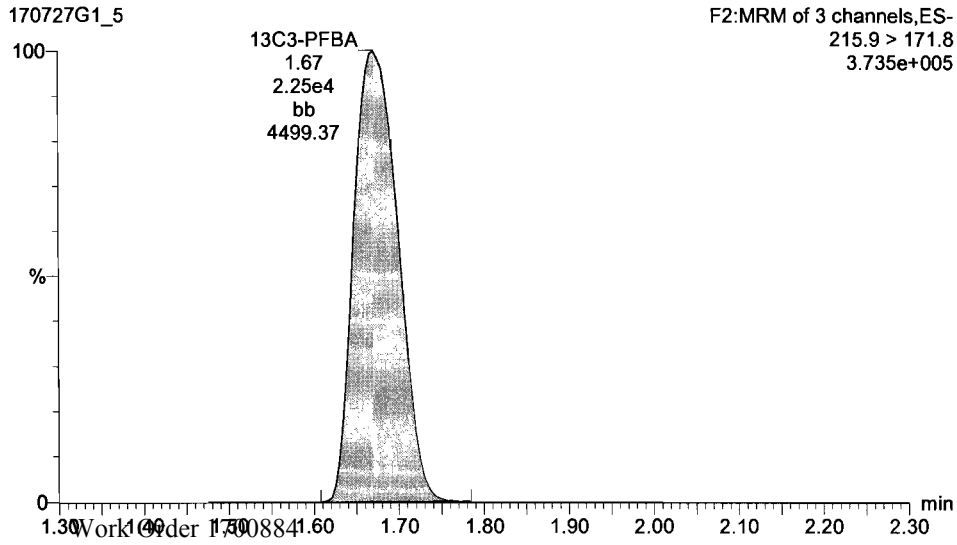
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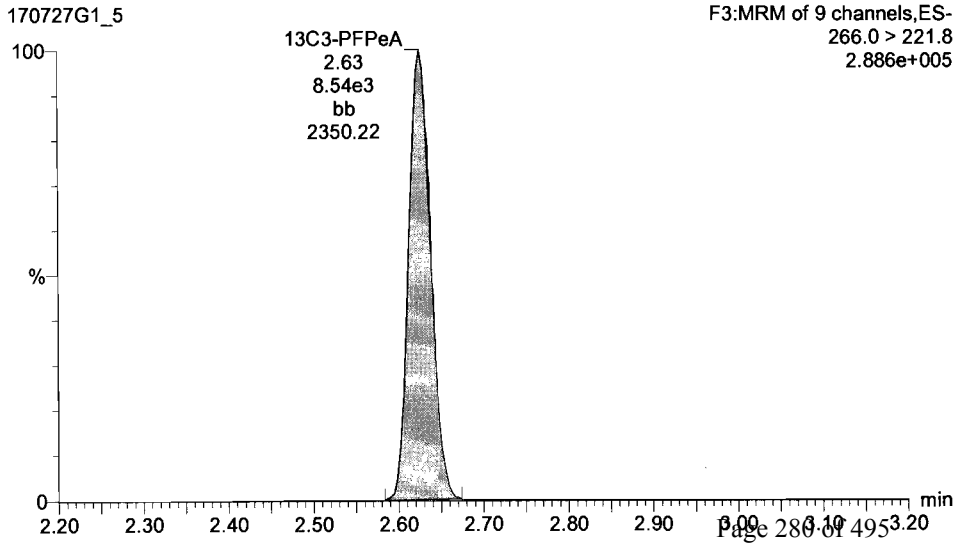
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13C3-PFBA



13C3-PFPeA

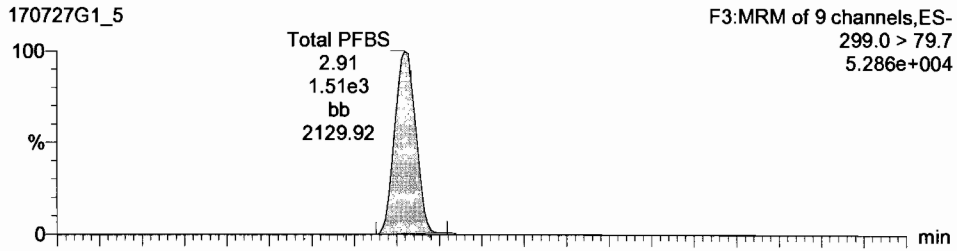


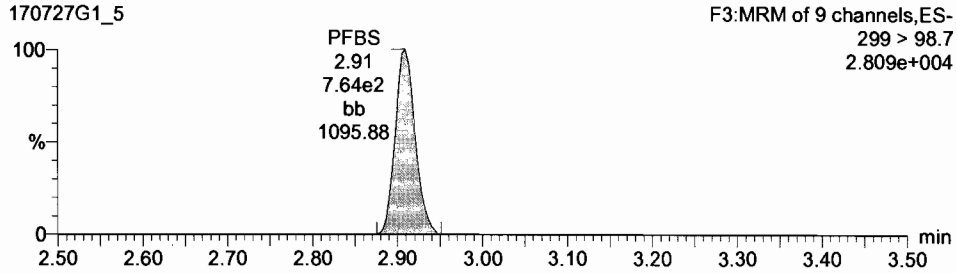
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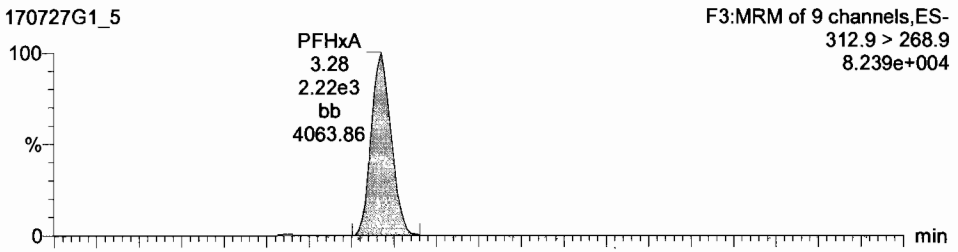
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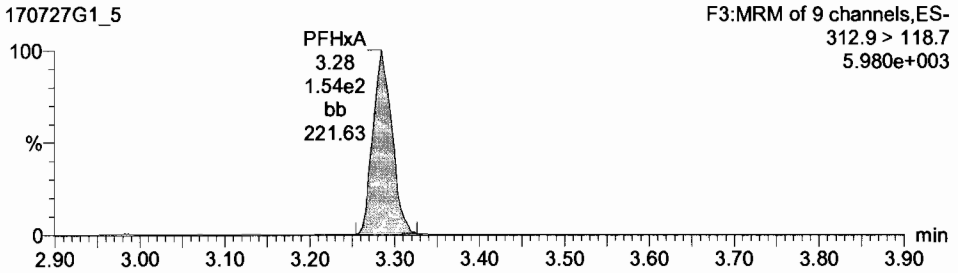
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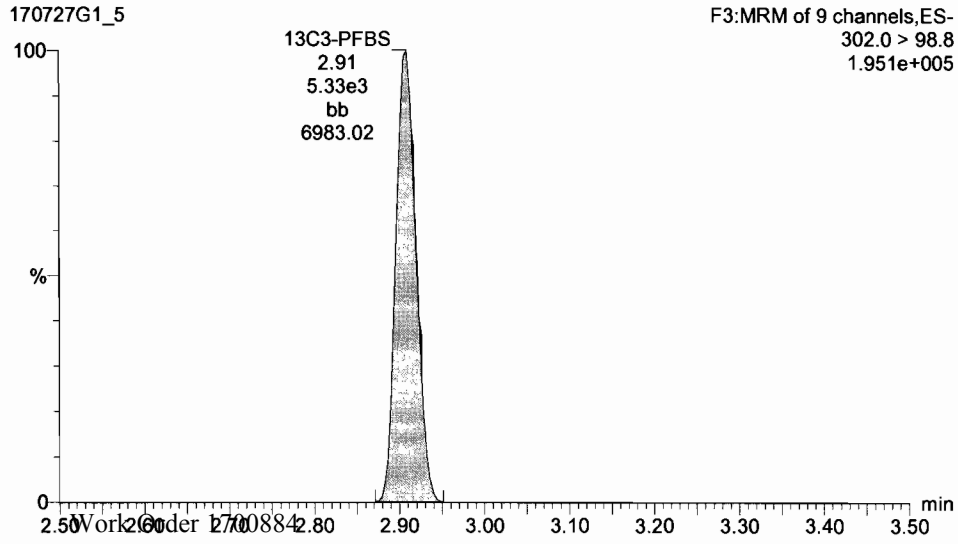


PFHxA

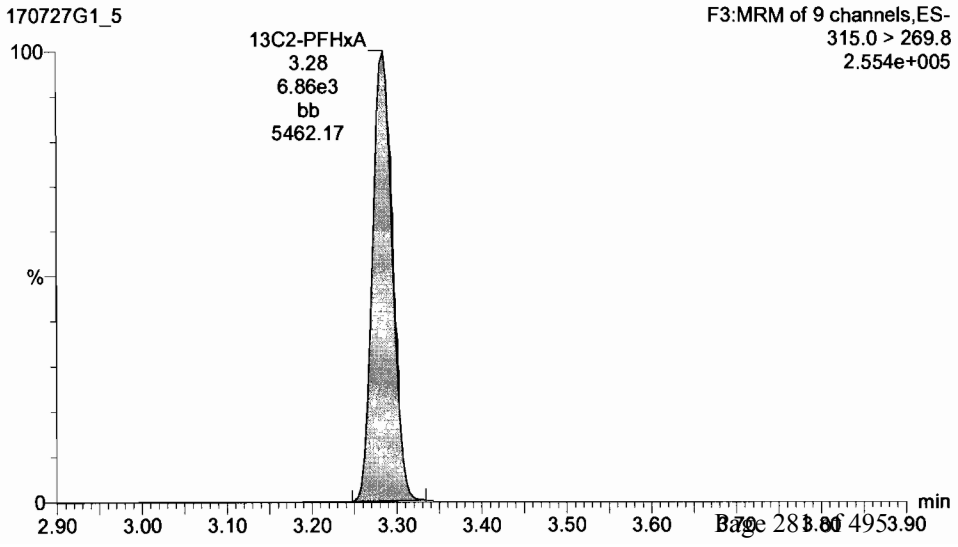




13C3-PFBS



13C2-PFHxA

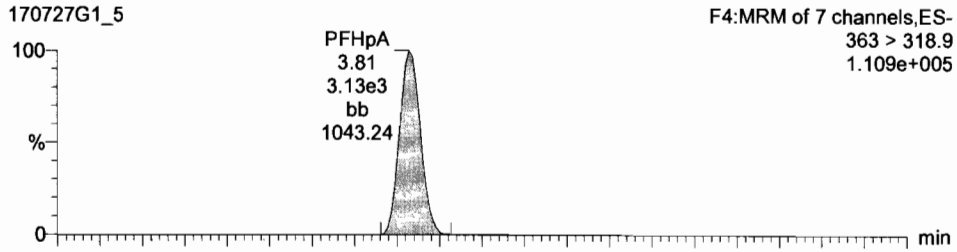


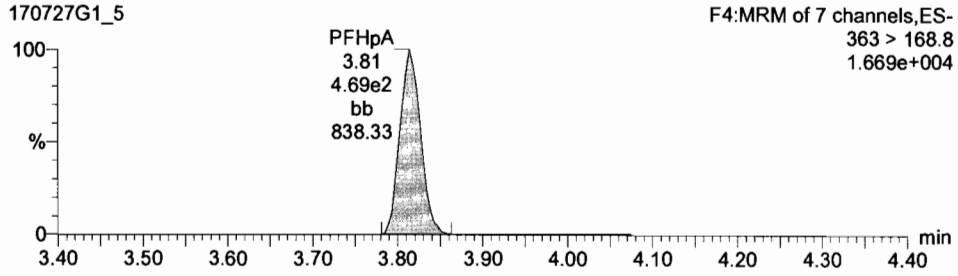
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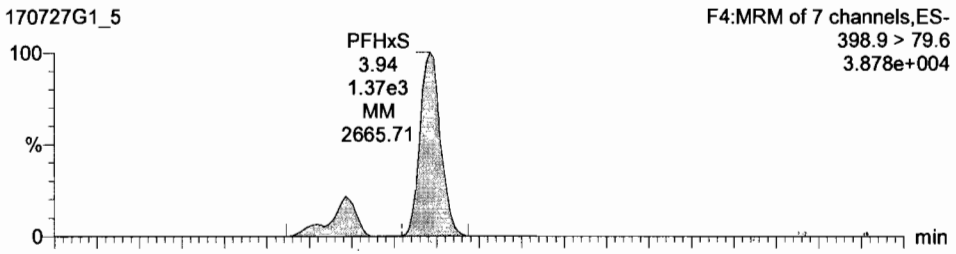
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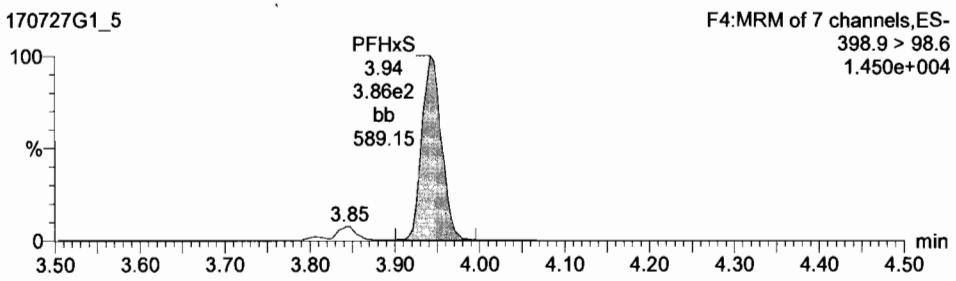
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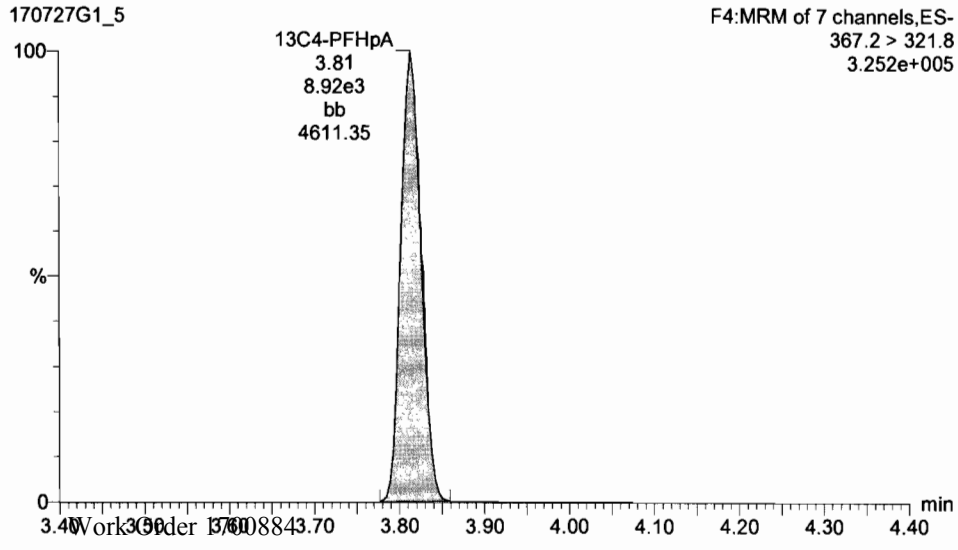


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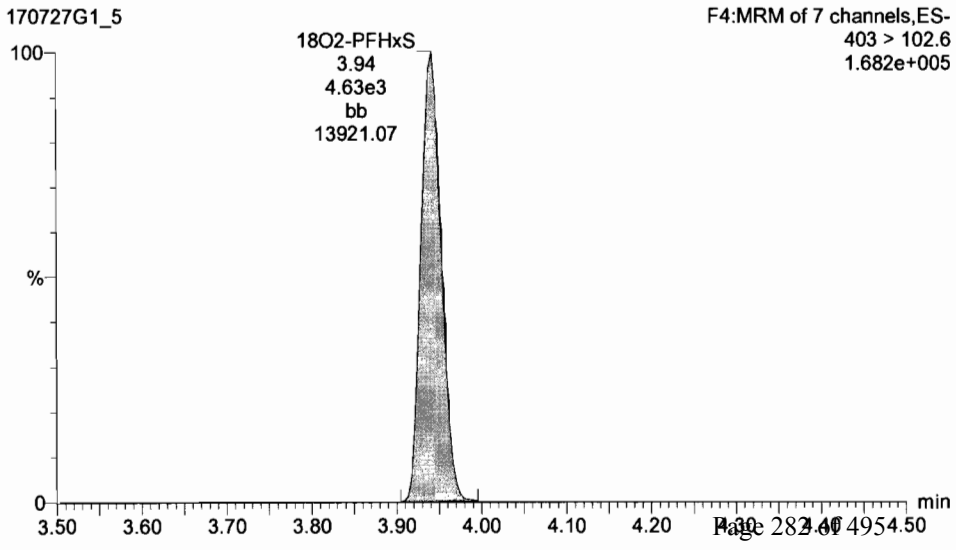




13C4-PFHpA



18O2-PFHxS

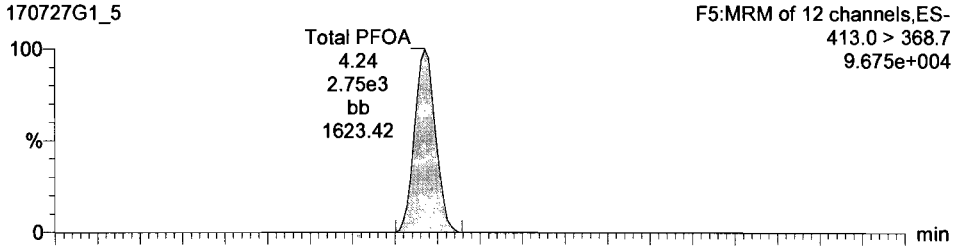


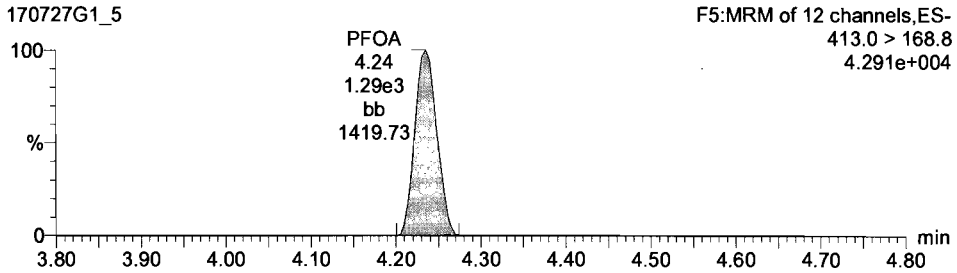
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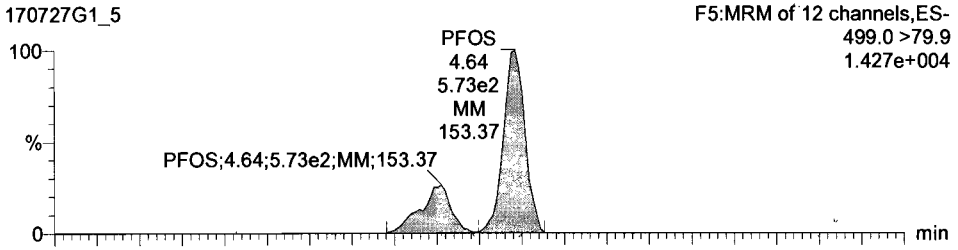
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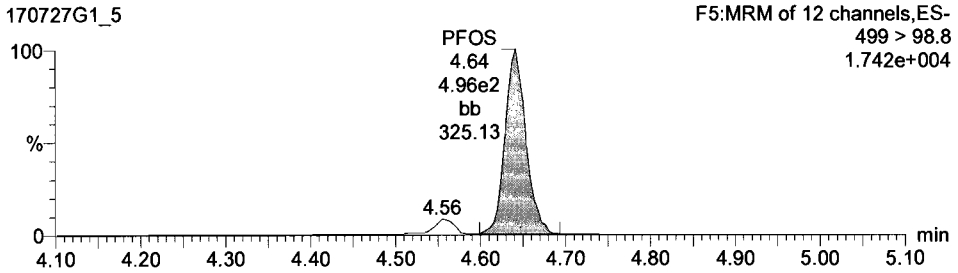
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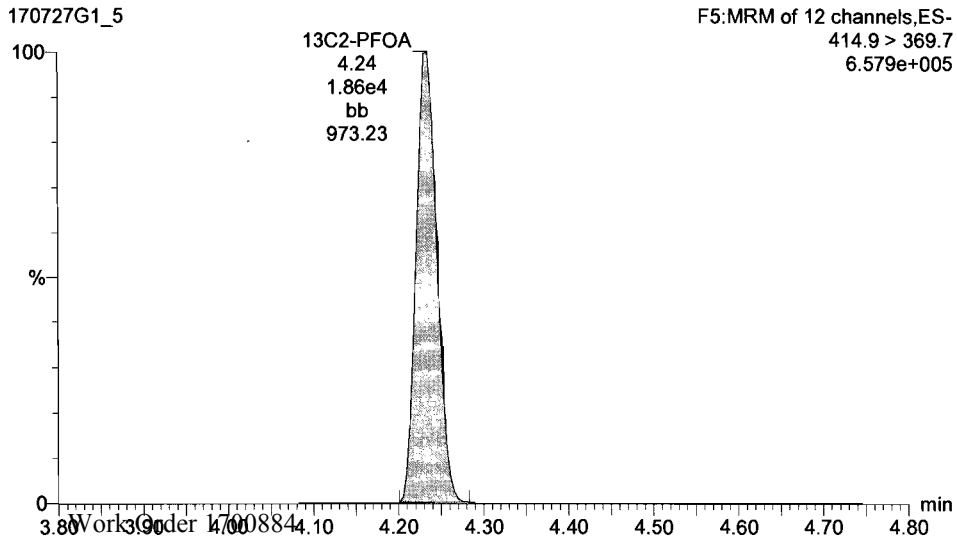


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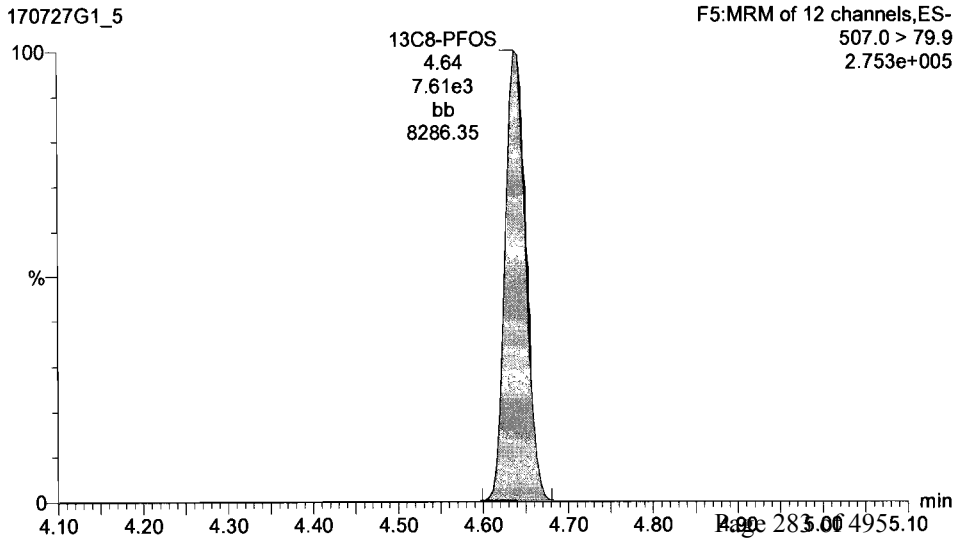




13C2-PFOA



13C8-PFOS

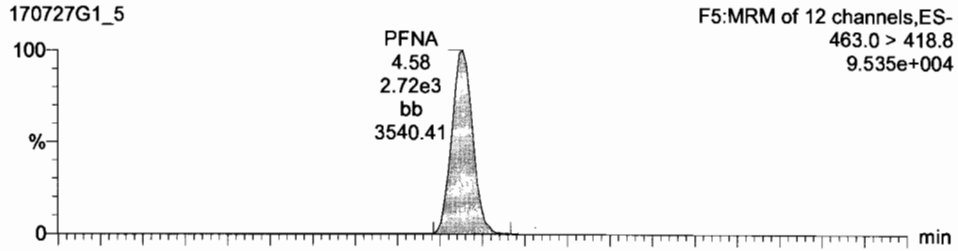


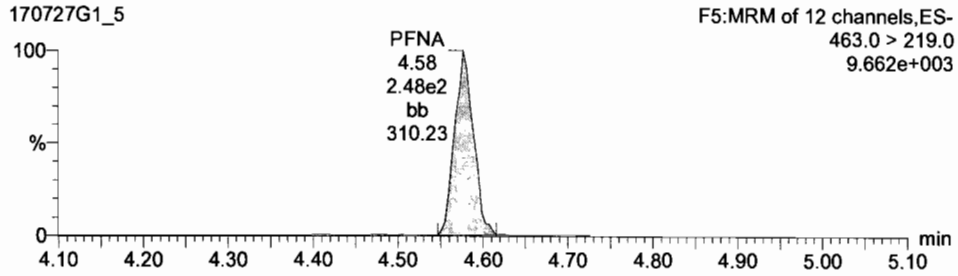
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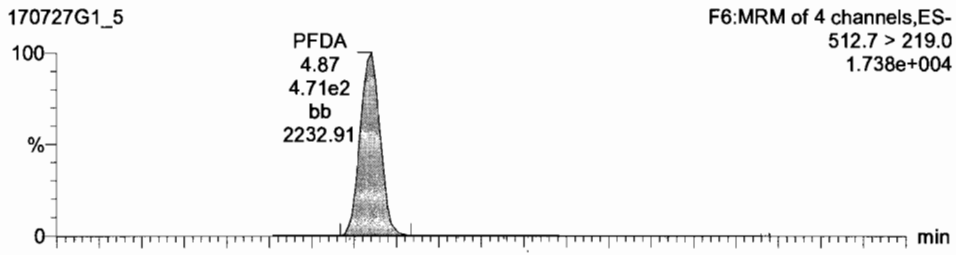
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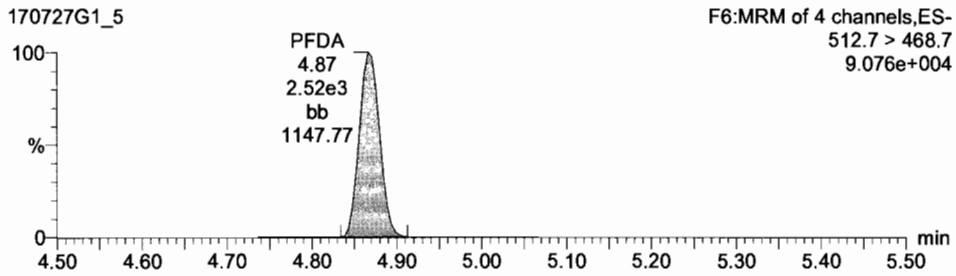
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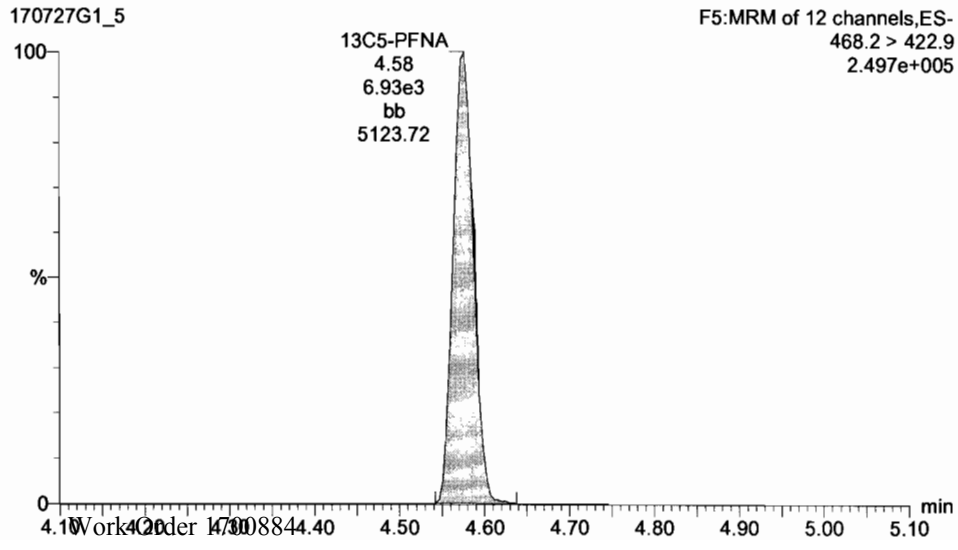


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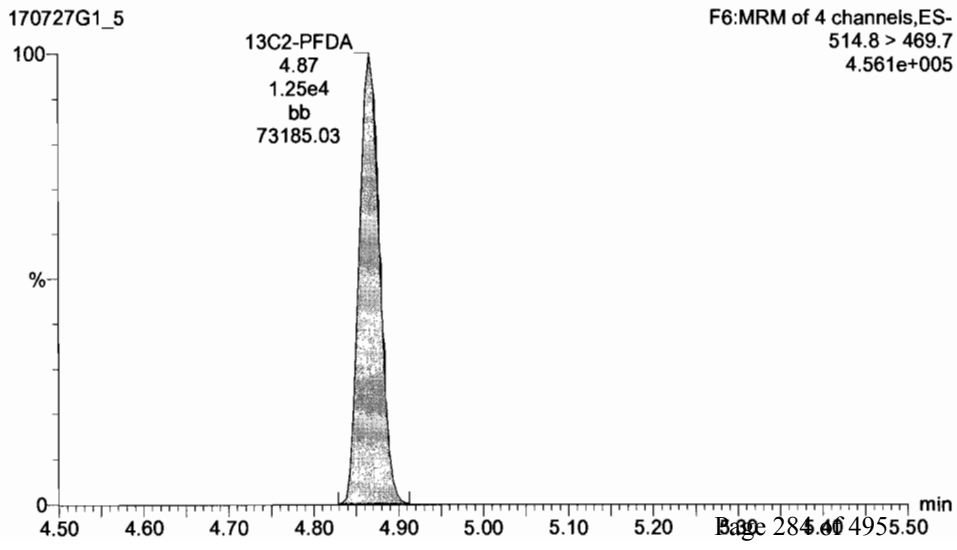




13C5-PFNA



13C2-PFDA

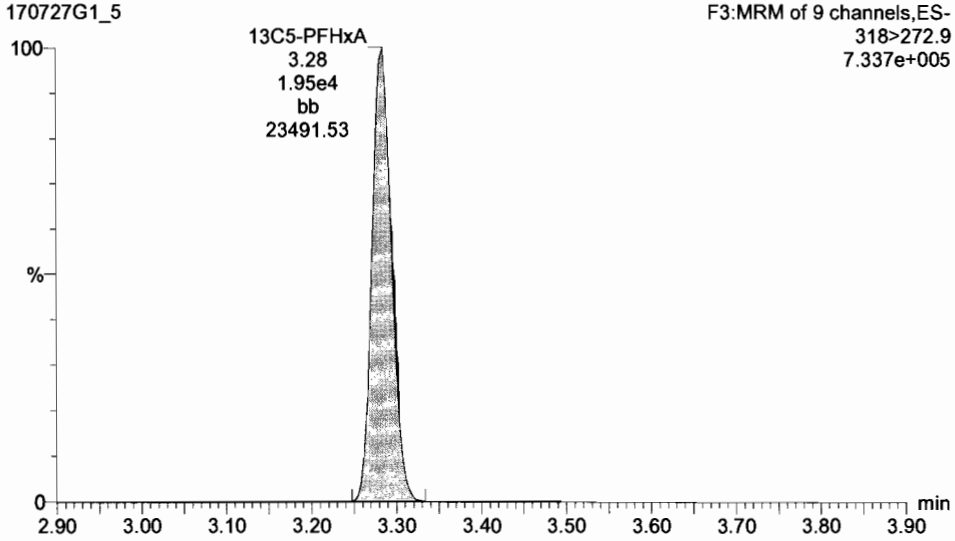


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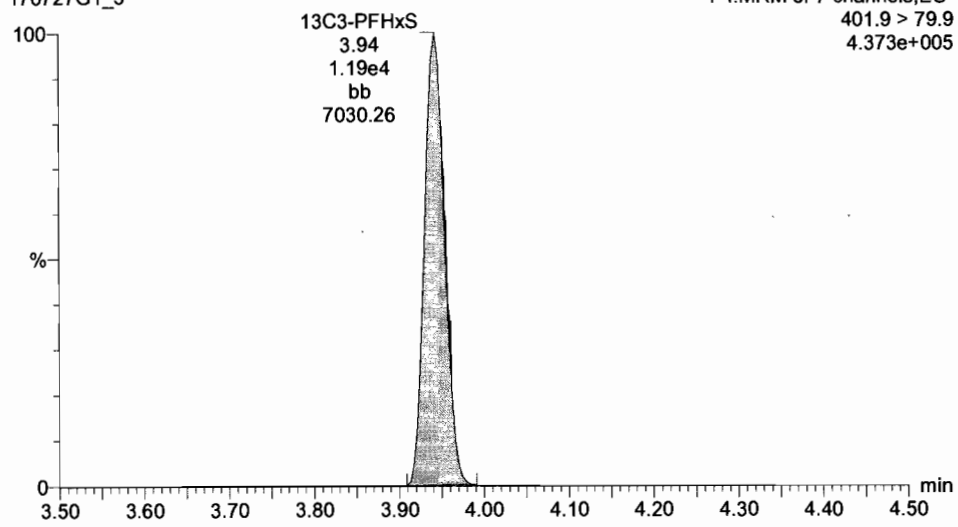
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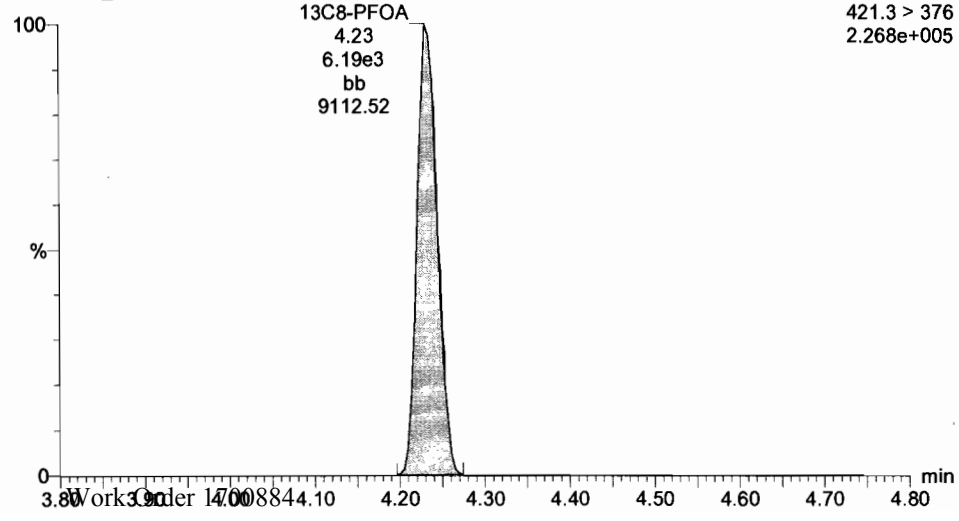
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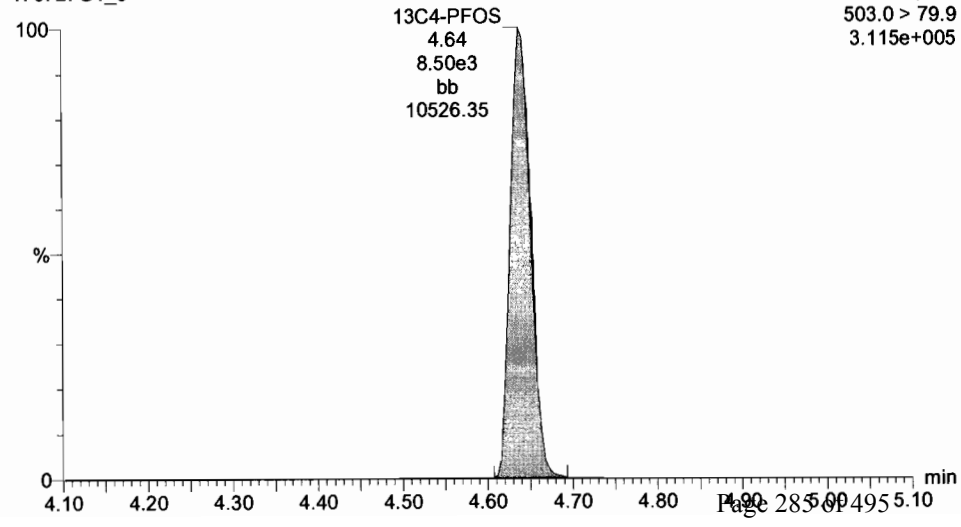
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13C8-PFOA



13C4-PFOS

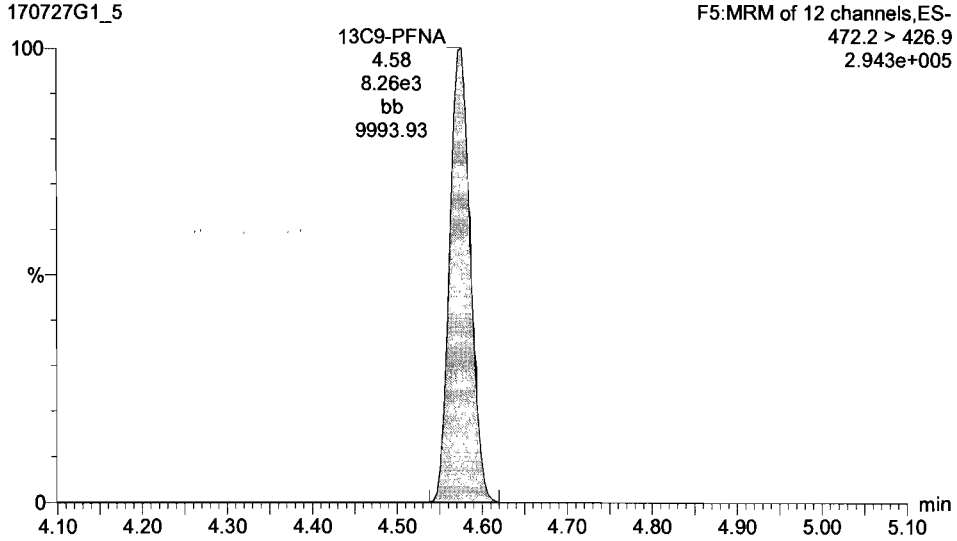


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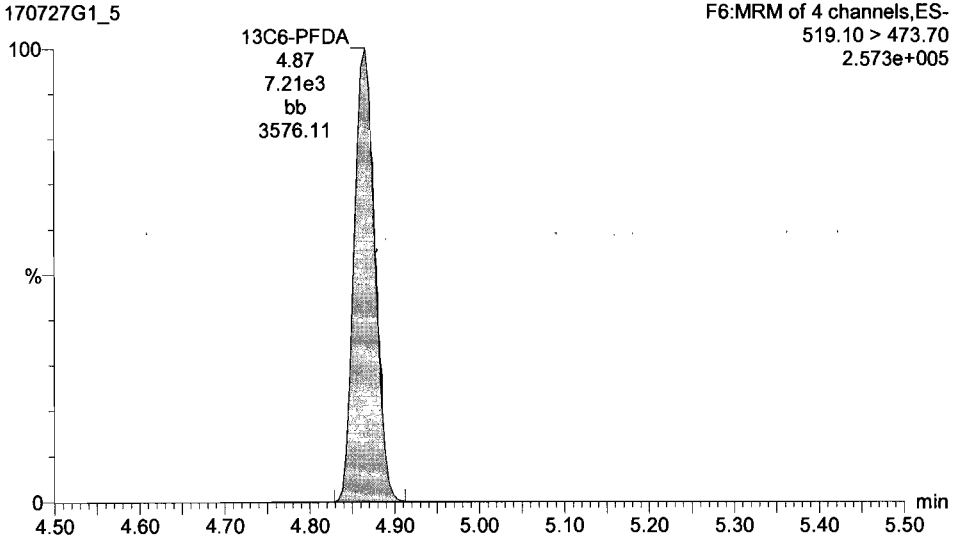
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13C9-PFNA



13C6-PFDA

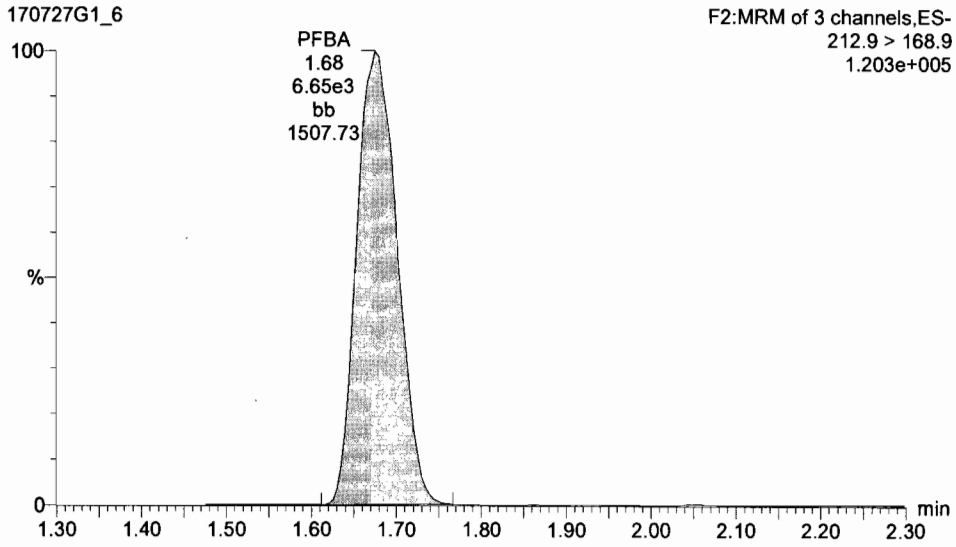


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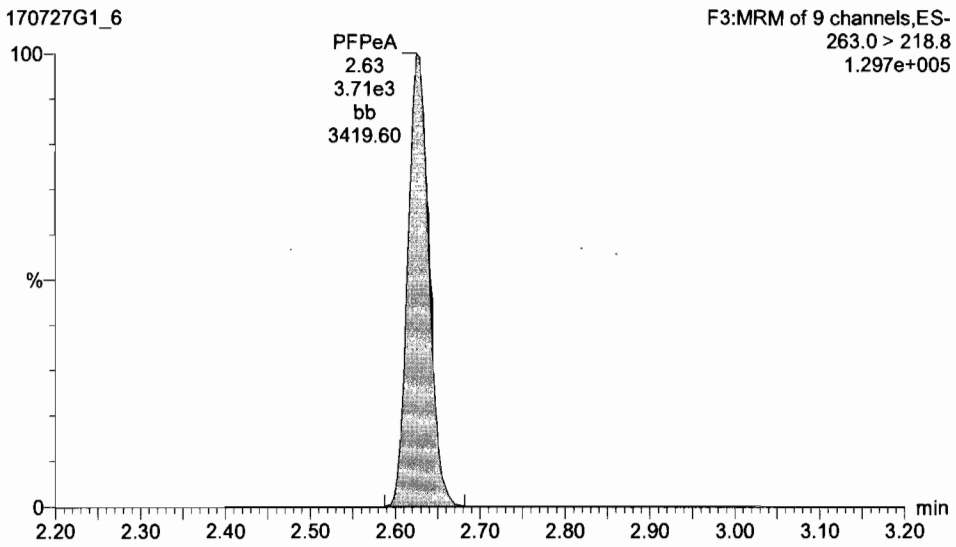
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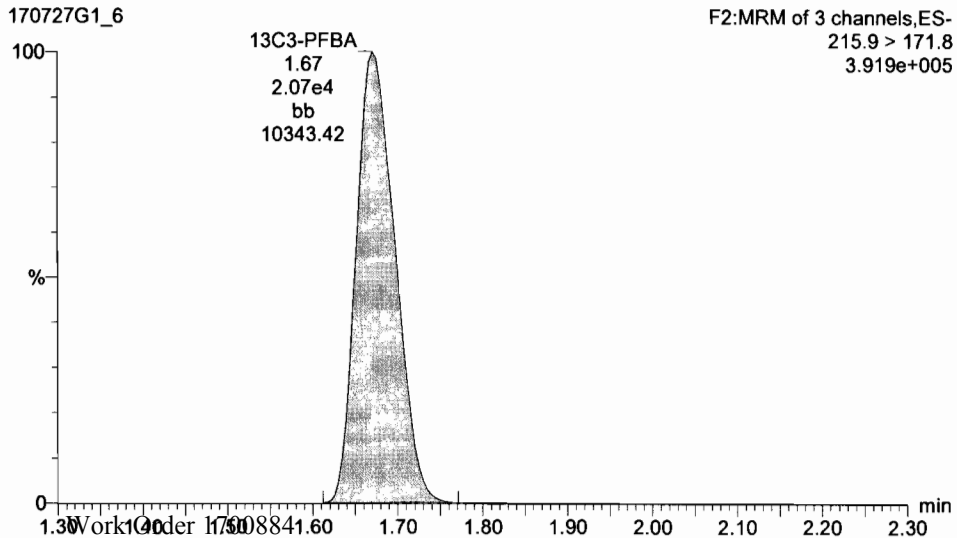
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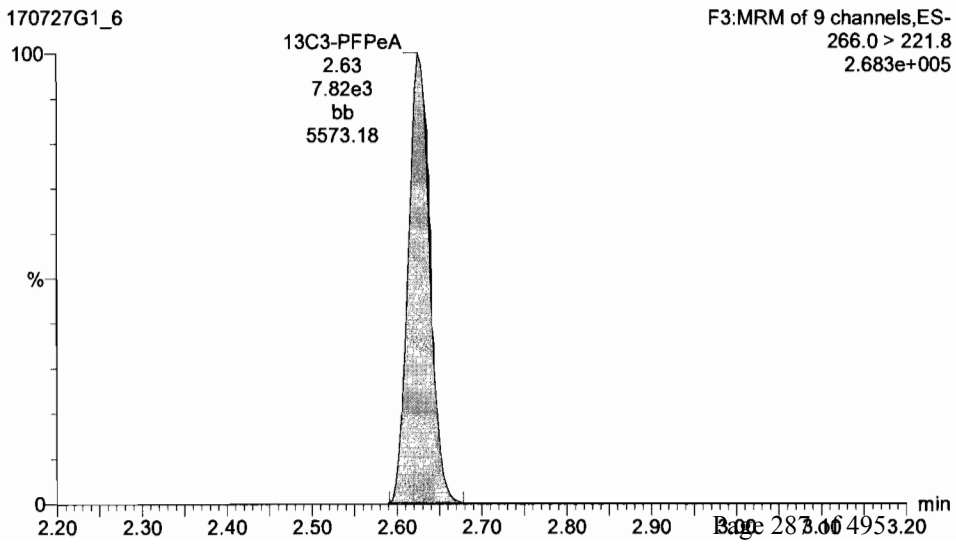
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13C3-PFBA



13C3-PFPeA

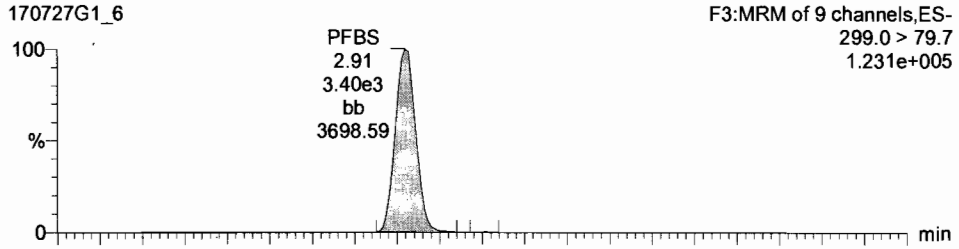


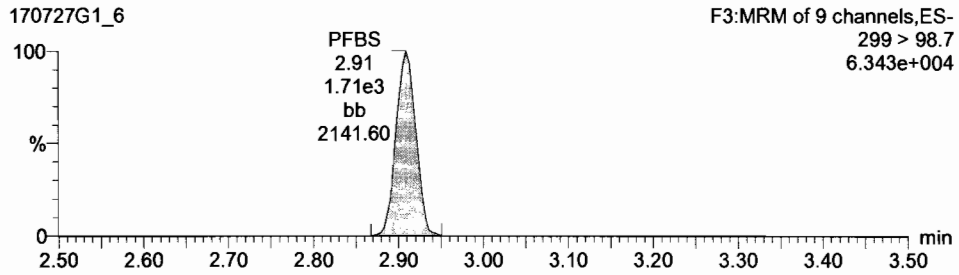
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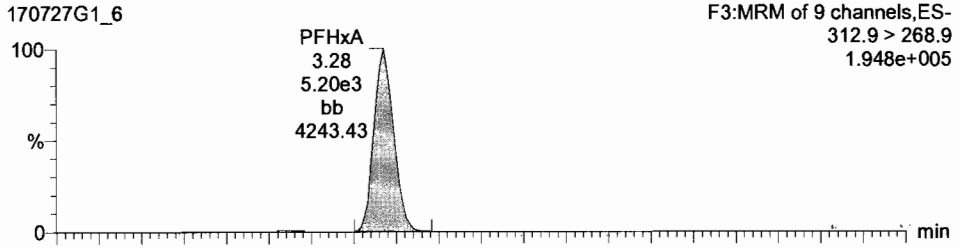
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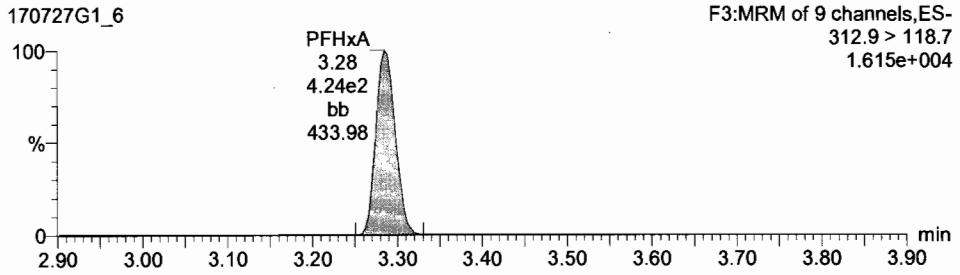
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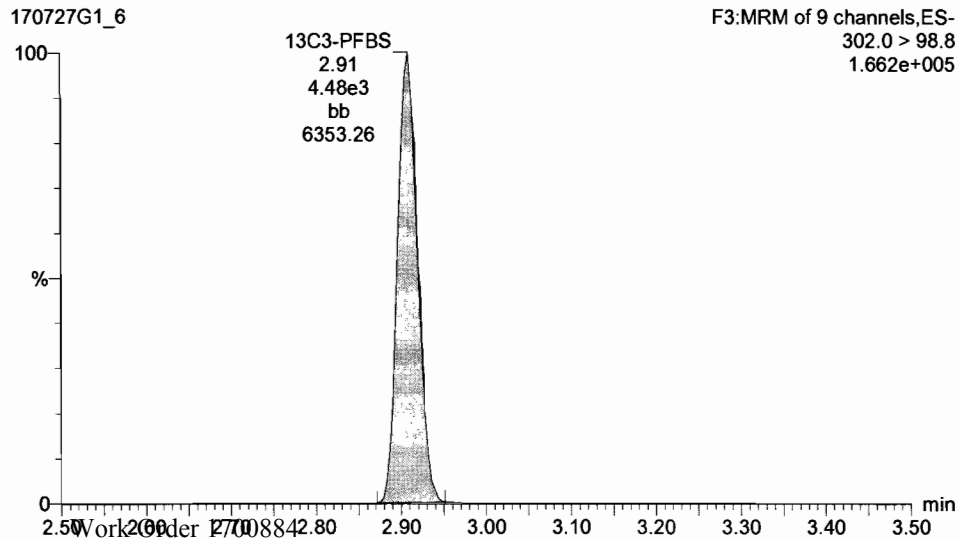


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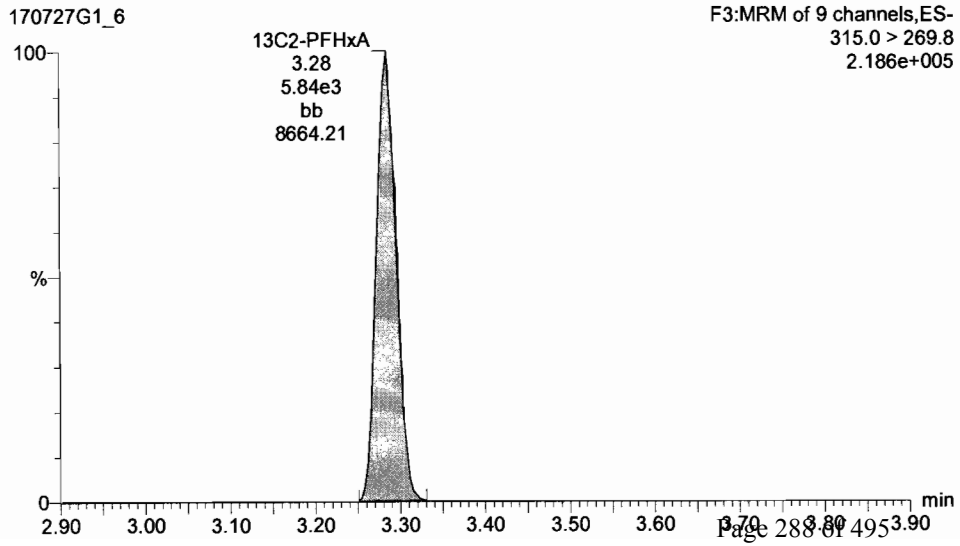




13C3-PFBS



13C2-PFHxA

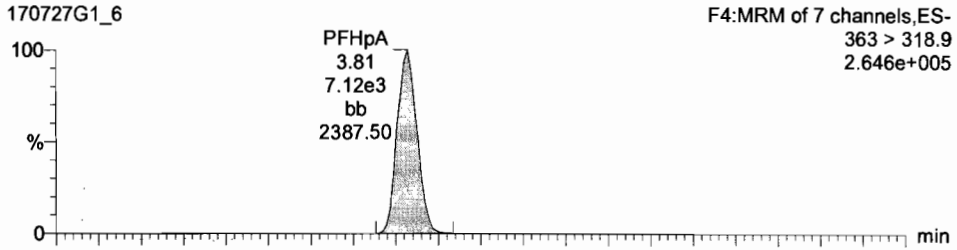


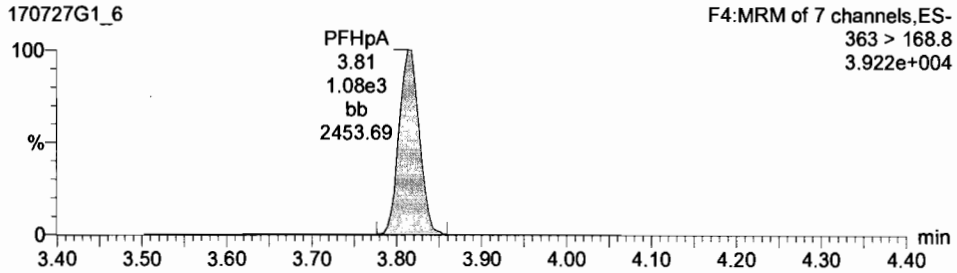
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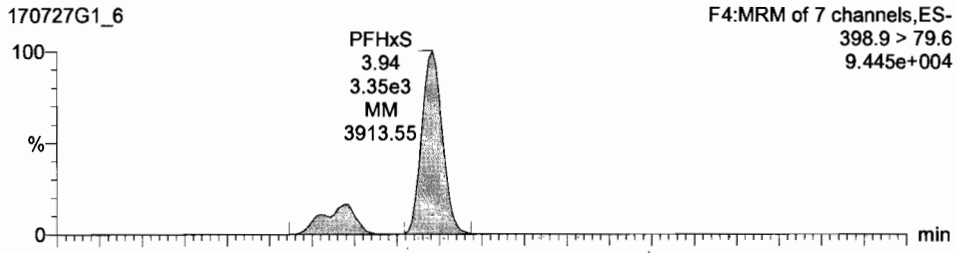
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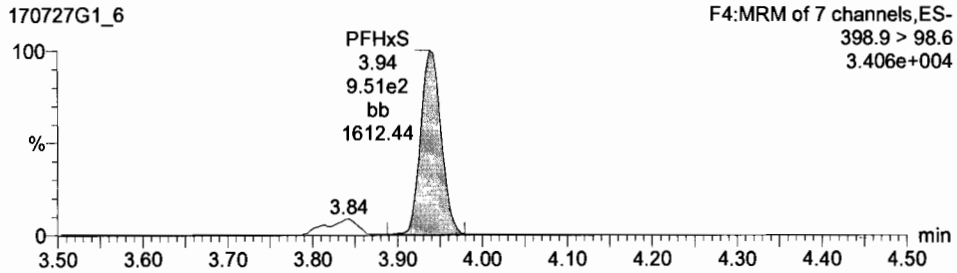
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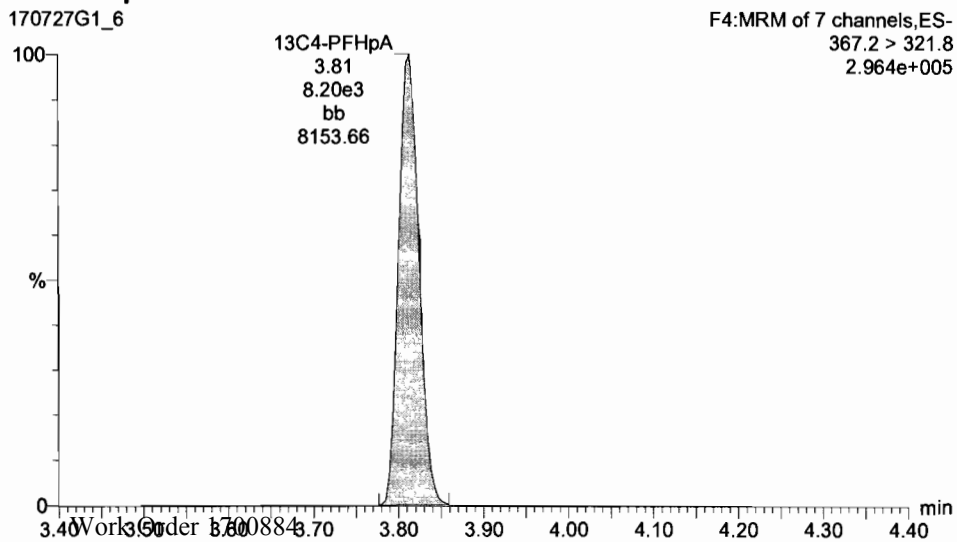


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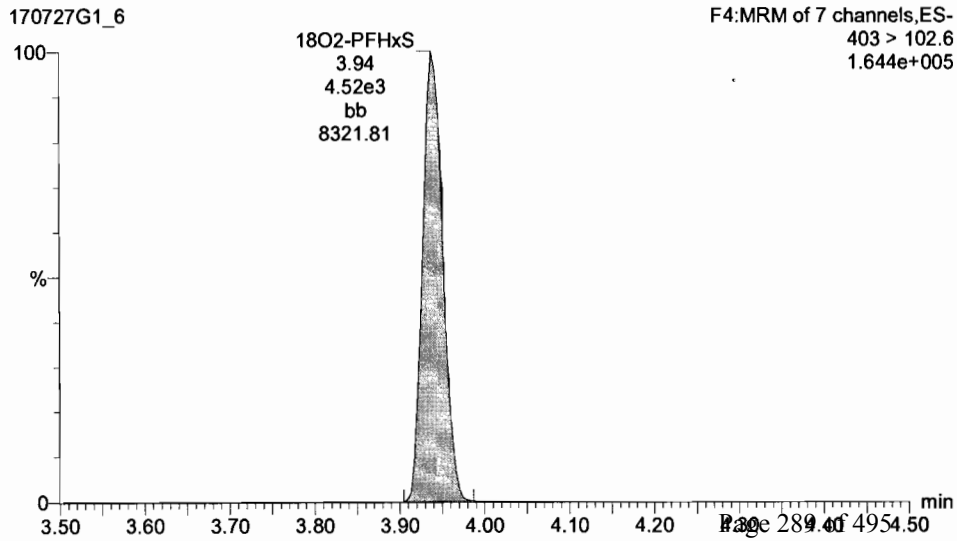




13C4-PFHpA



18O2-PFHxS

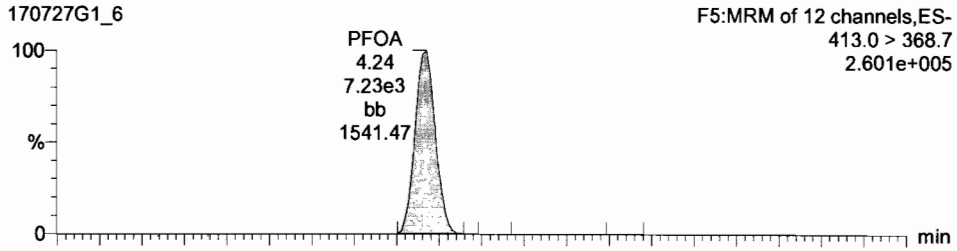


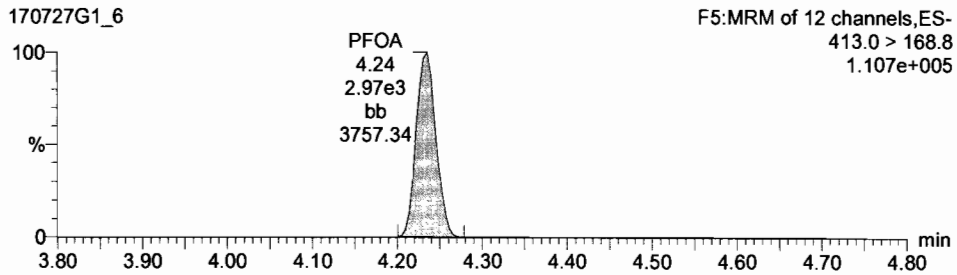
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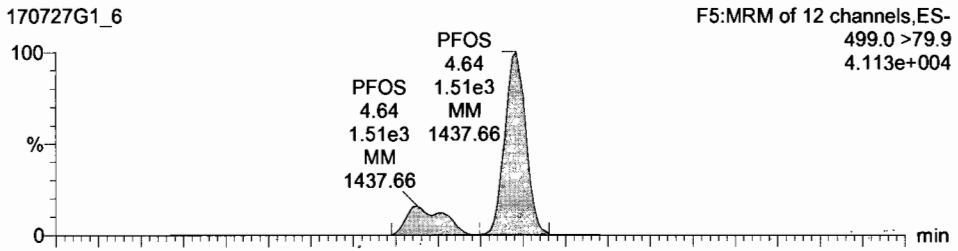
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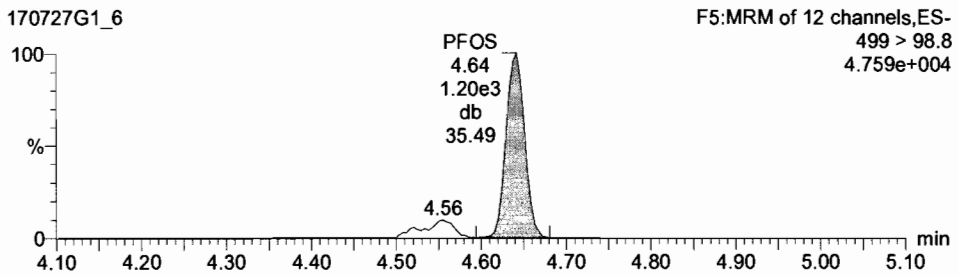
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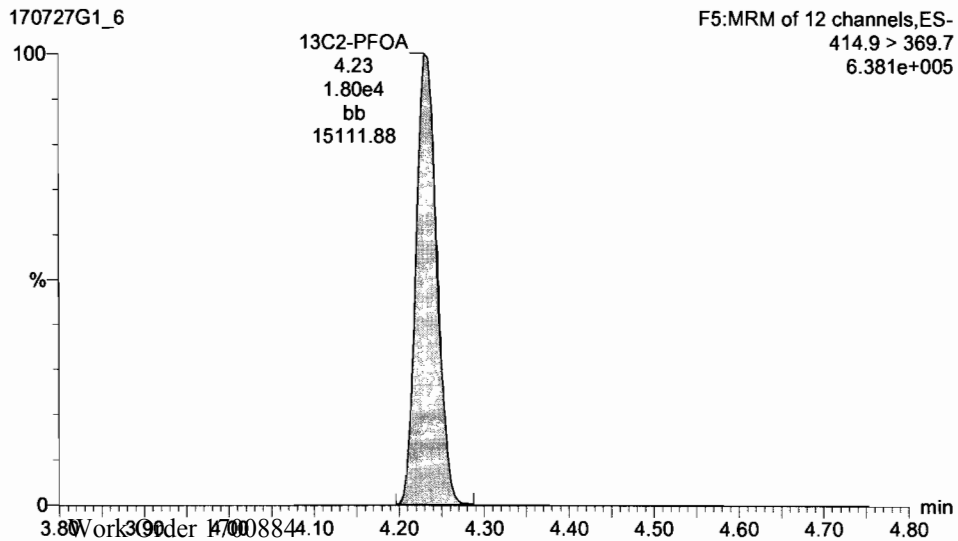


Total PFOS

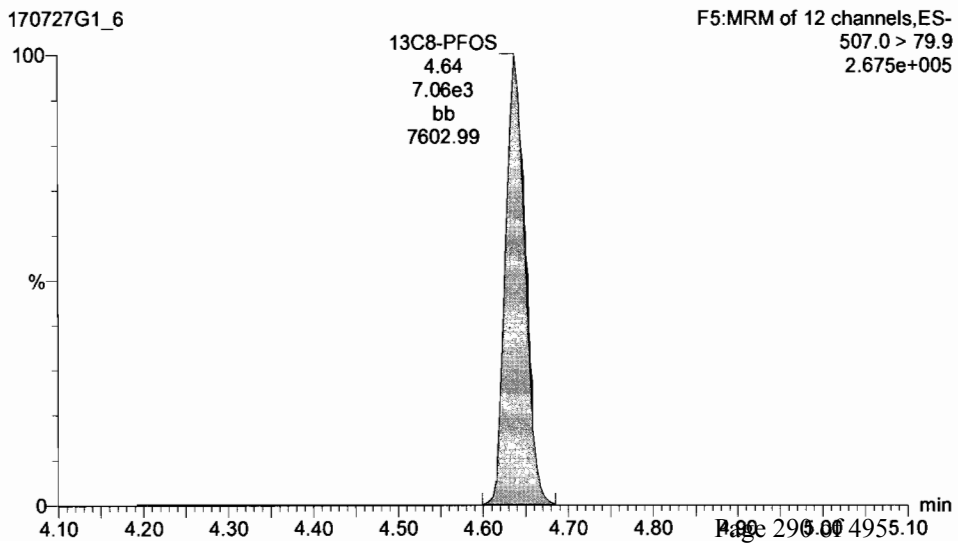




13C2-PFOA



13C8-PFOS

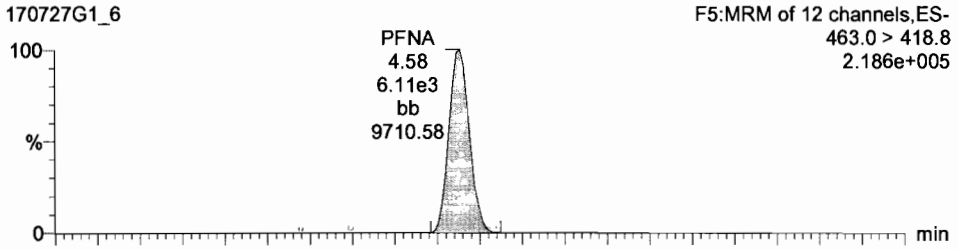


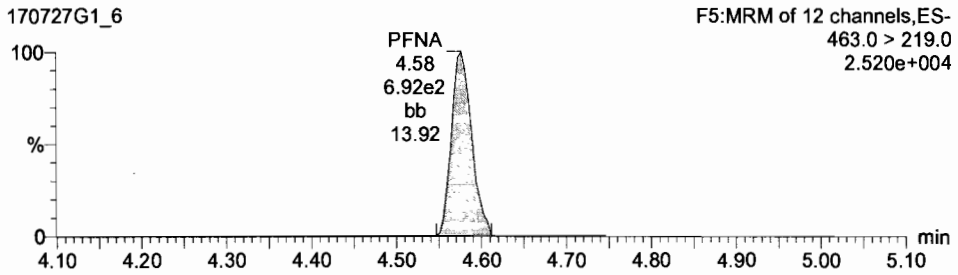
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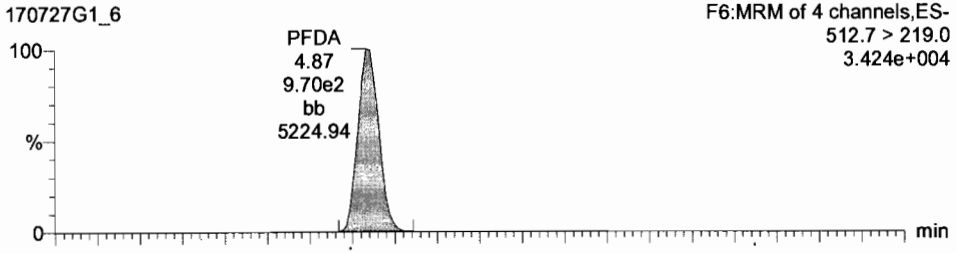
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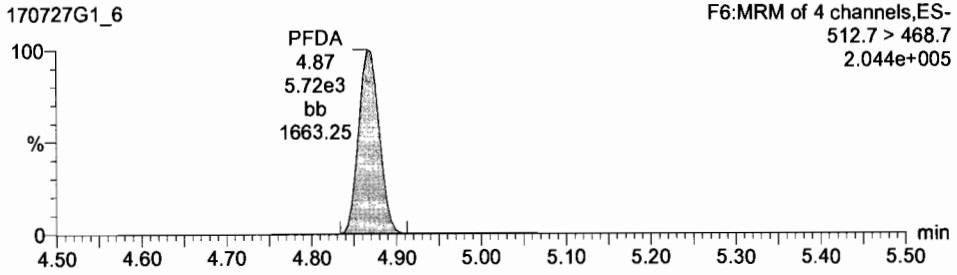
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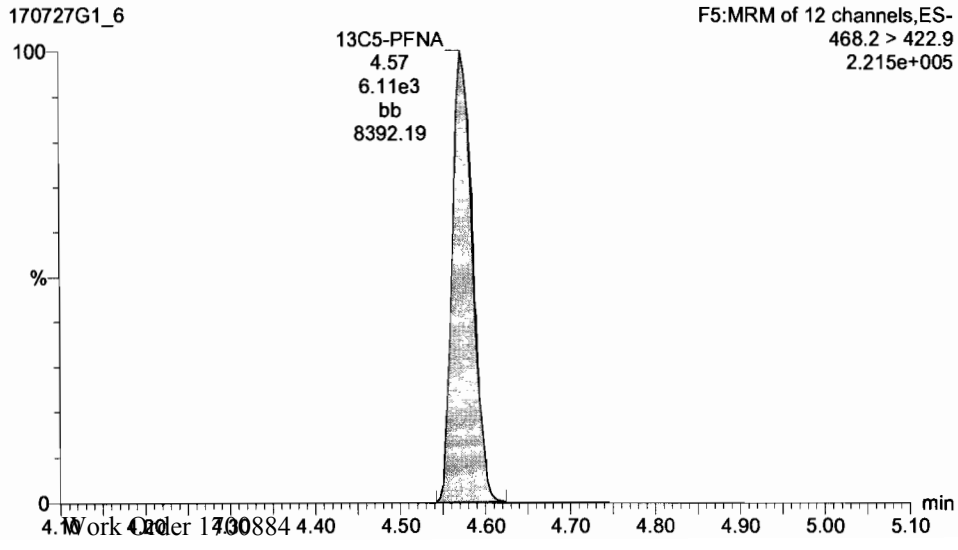


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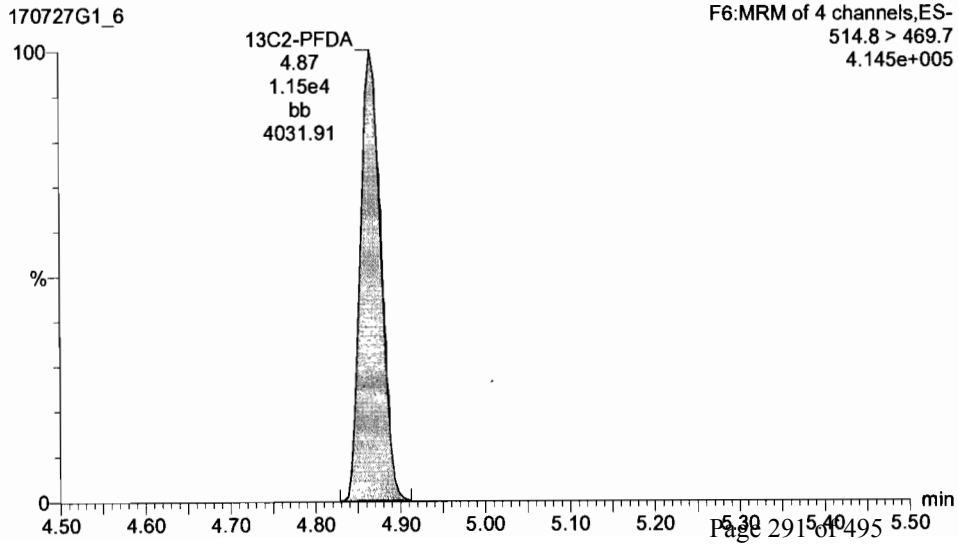




13C5-PFNA



13C2-PFDA

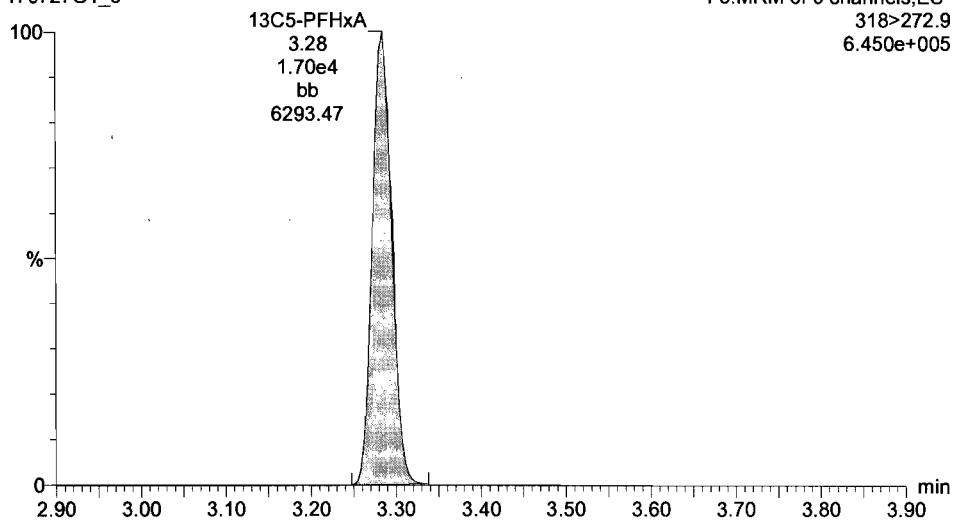


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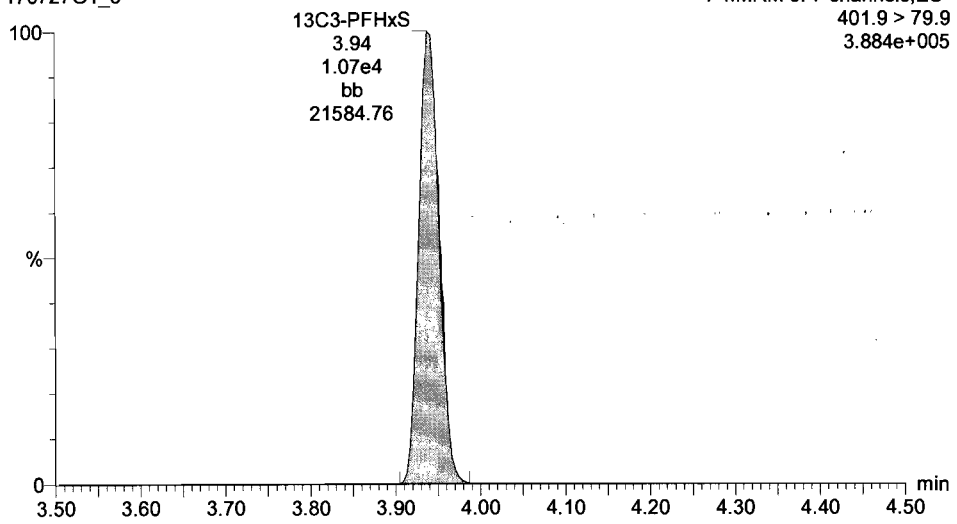
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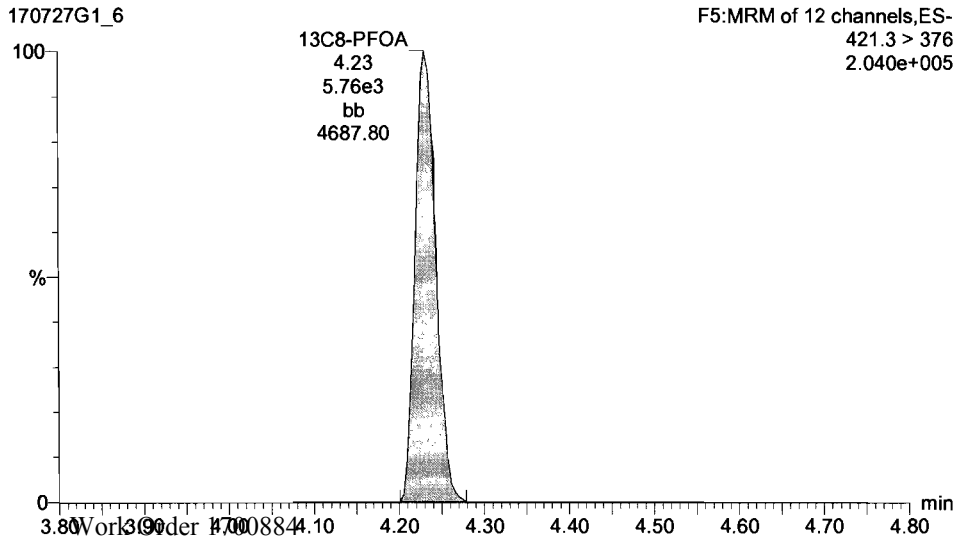
13C5-PFHxA



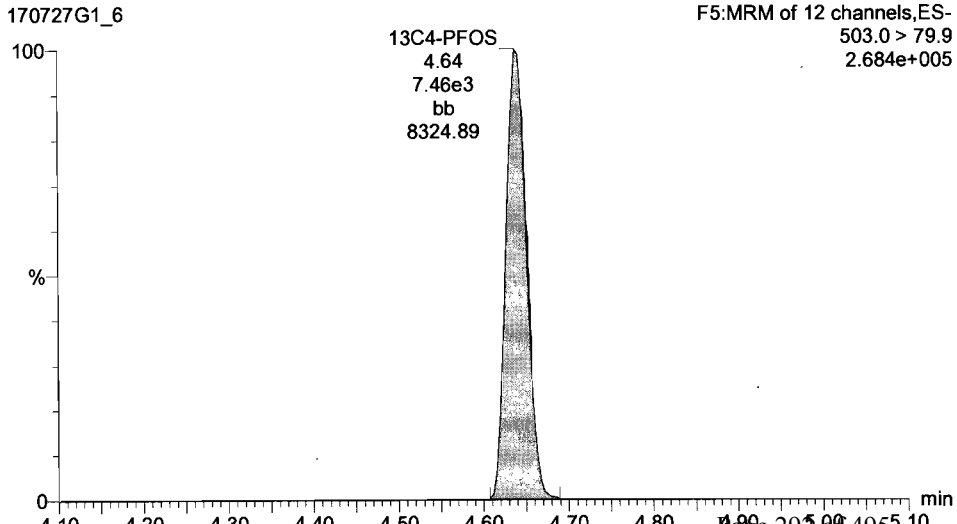
13C3-PFHxS



13C8-PFOA



13C4-PFOS

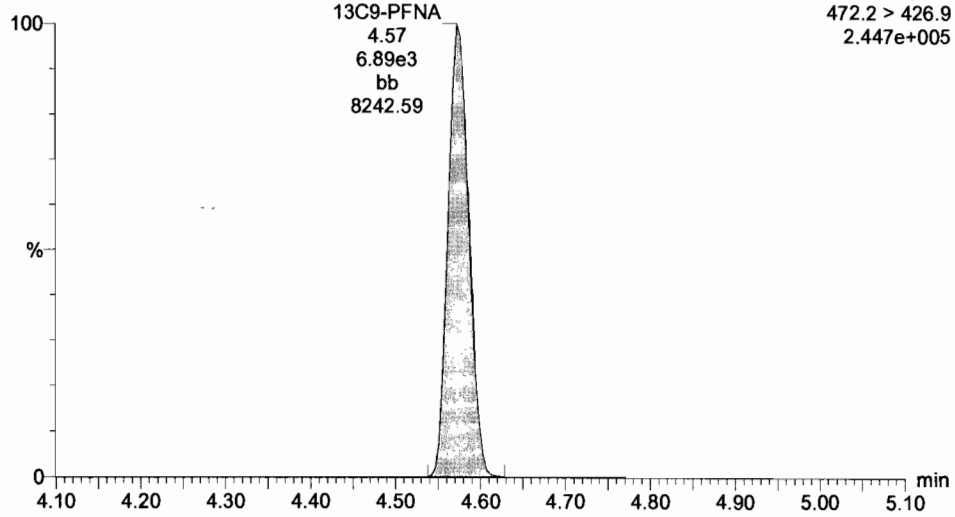


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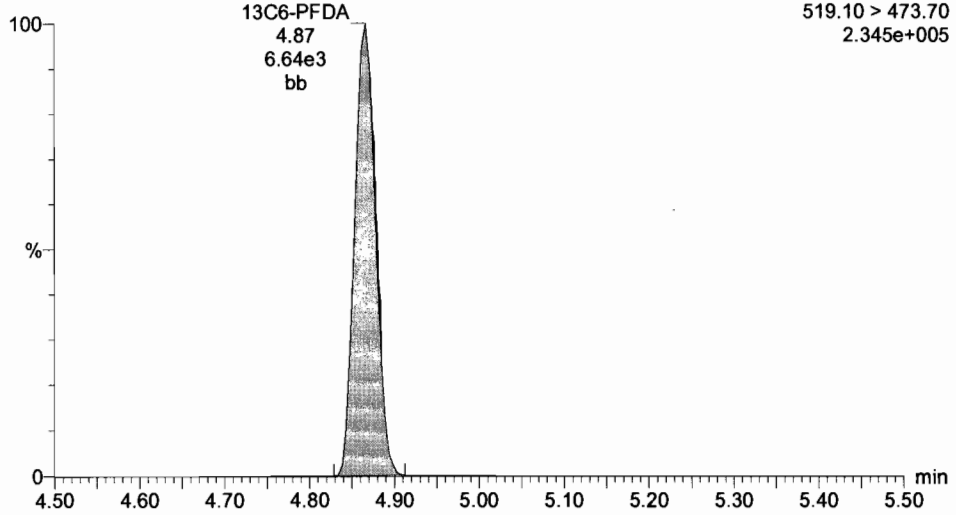
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13C9-PFNA



13C6-PFDA

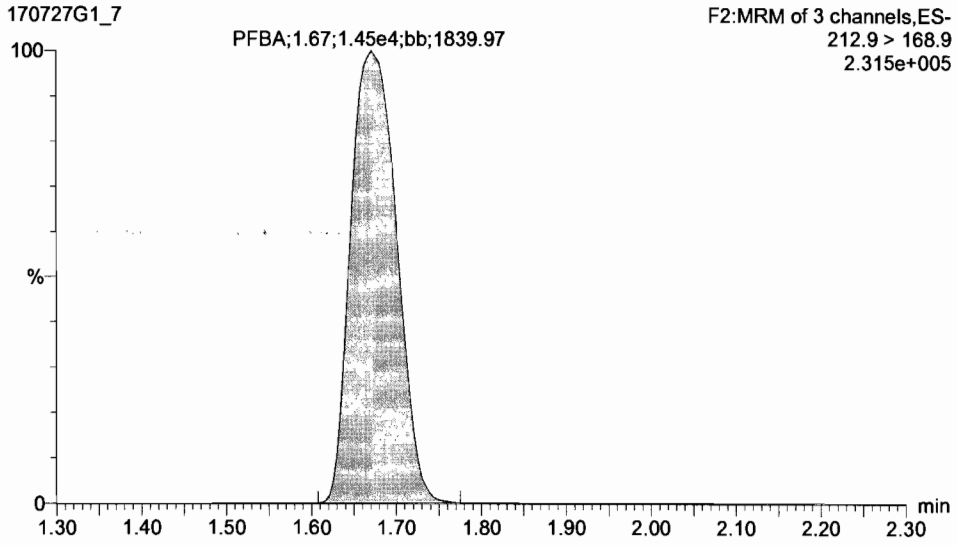


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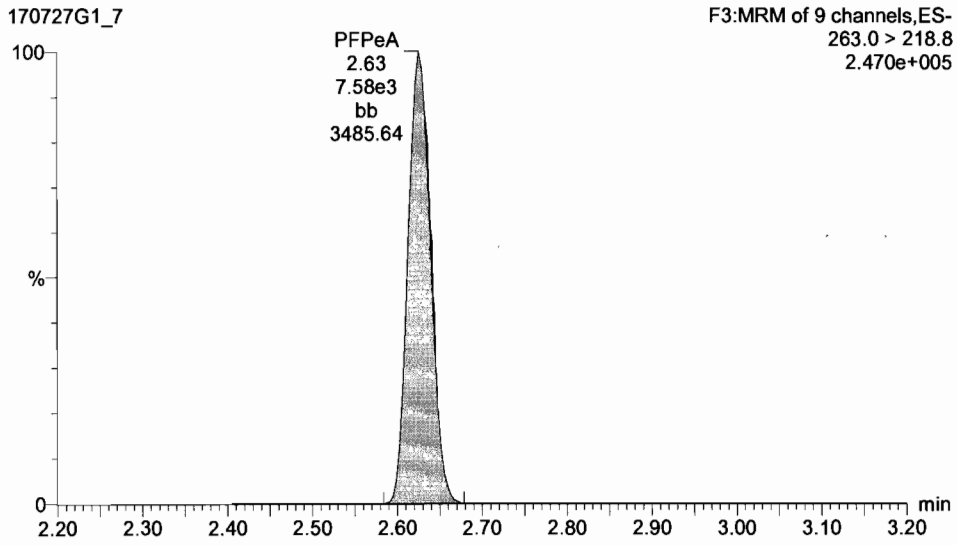
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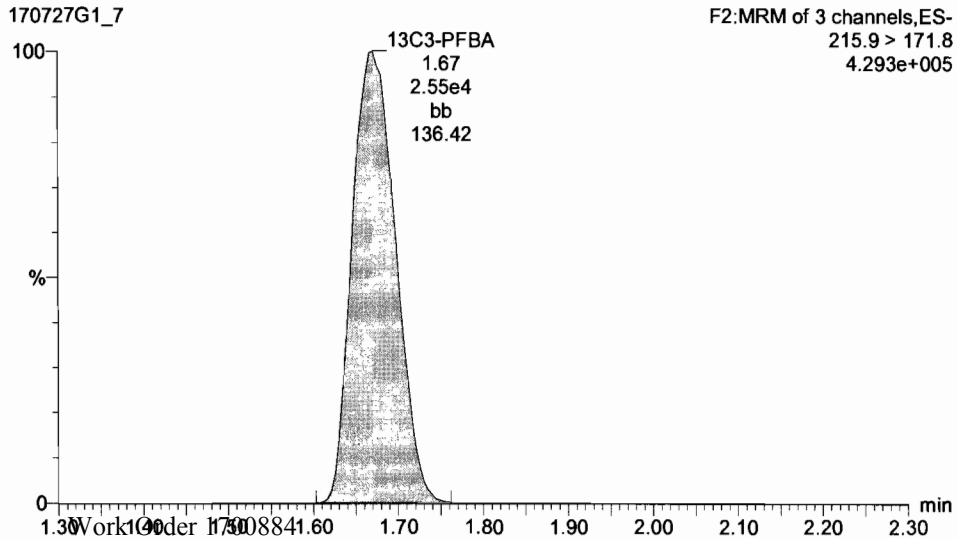
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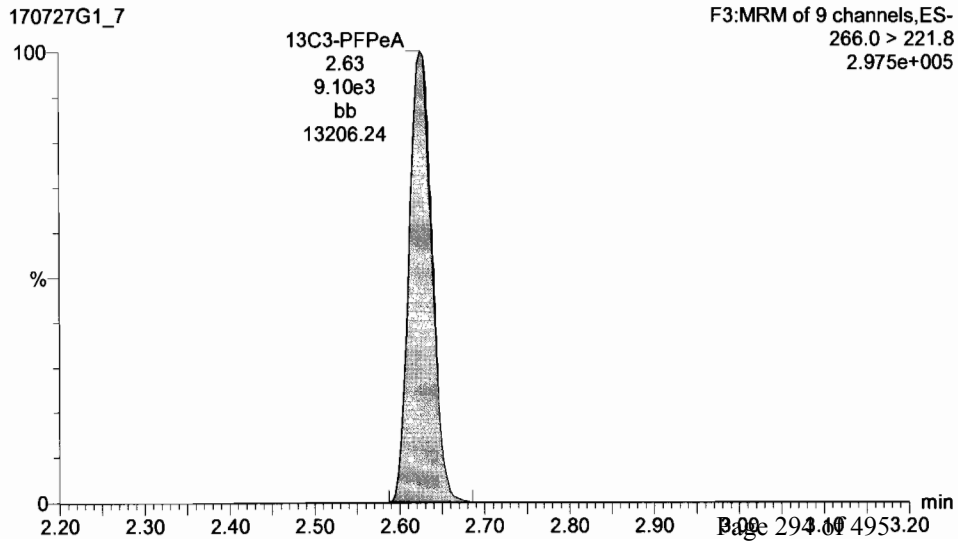
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13C3-PFBA



13C3-PFPeA

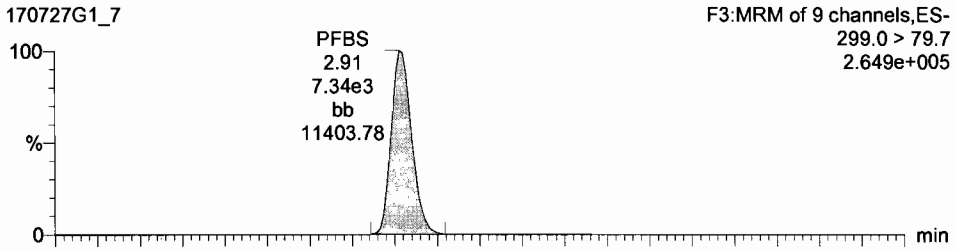


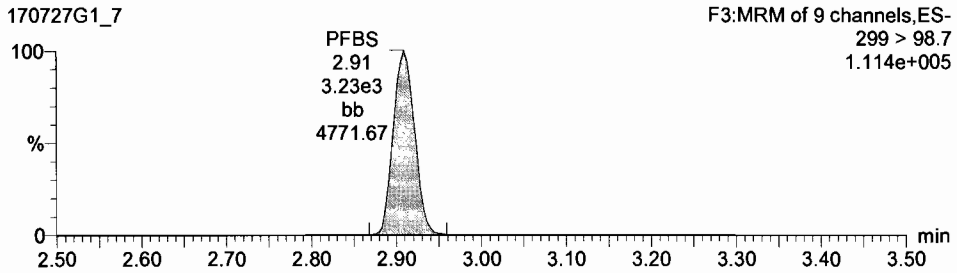
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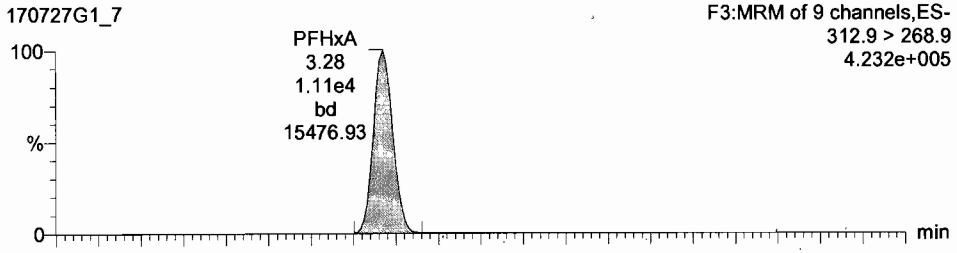
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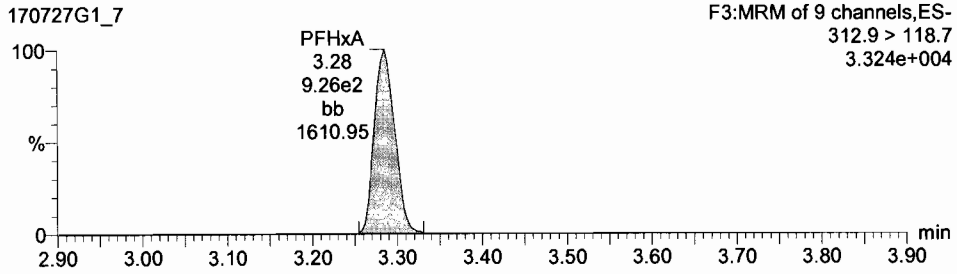
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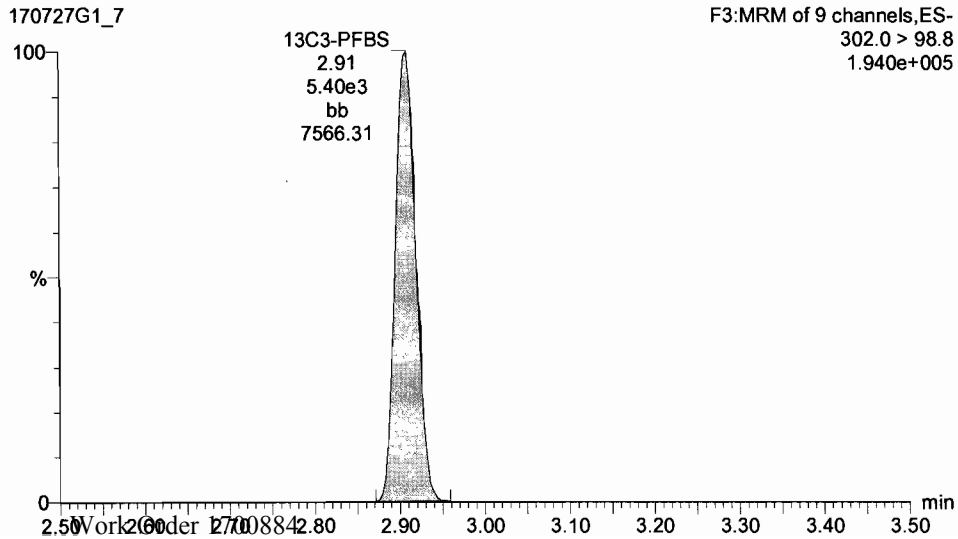


PFHxA

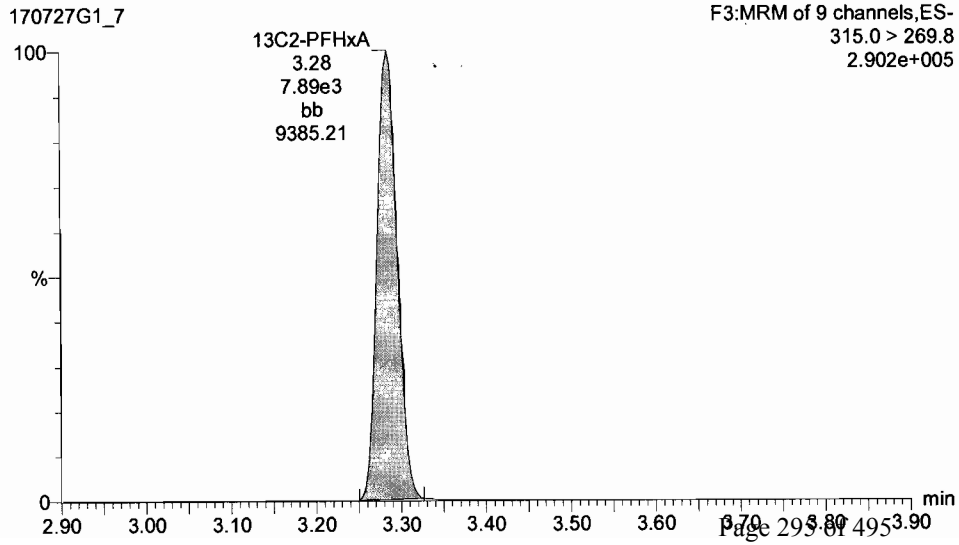




13C3-PFBS



13C2-PFHxA

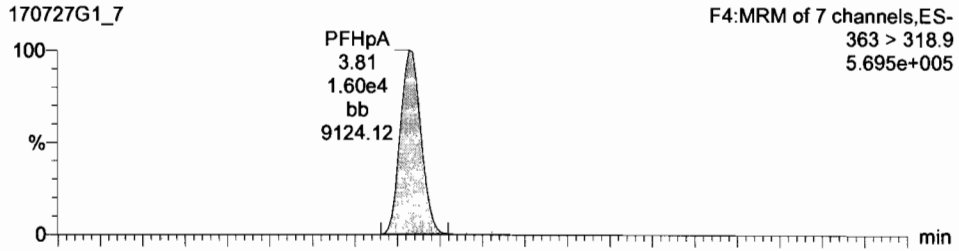


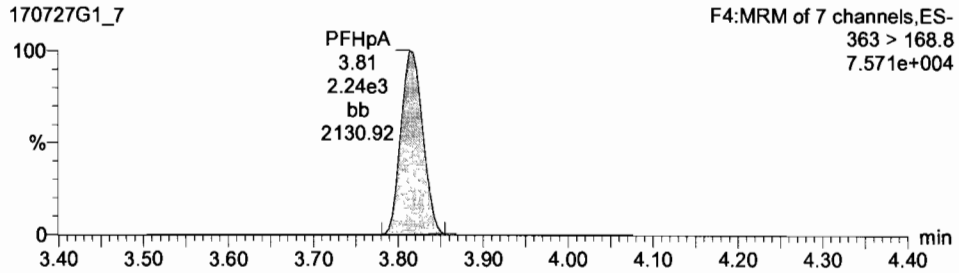
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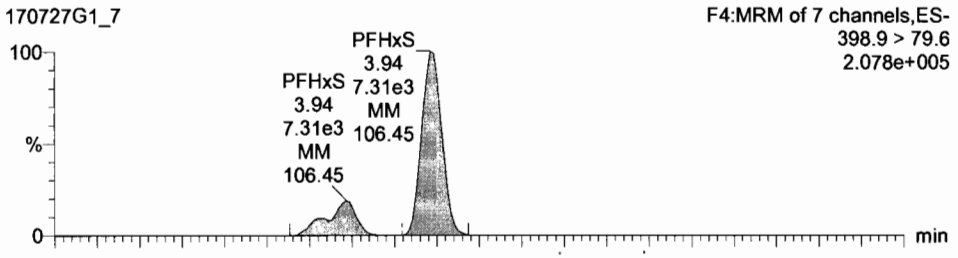
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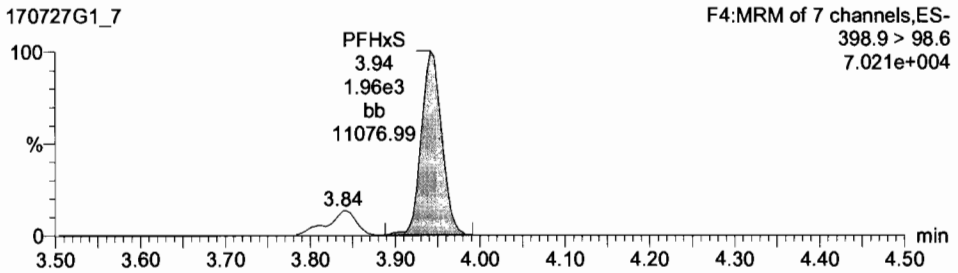
PFHpA



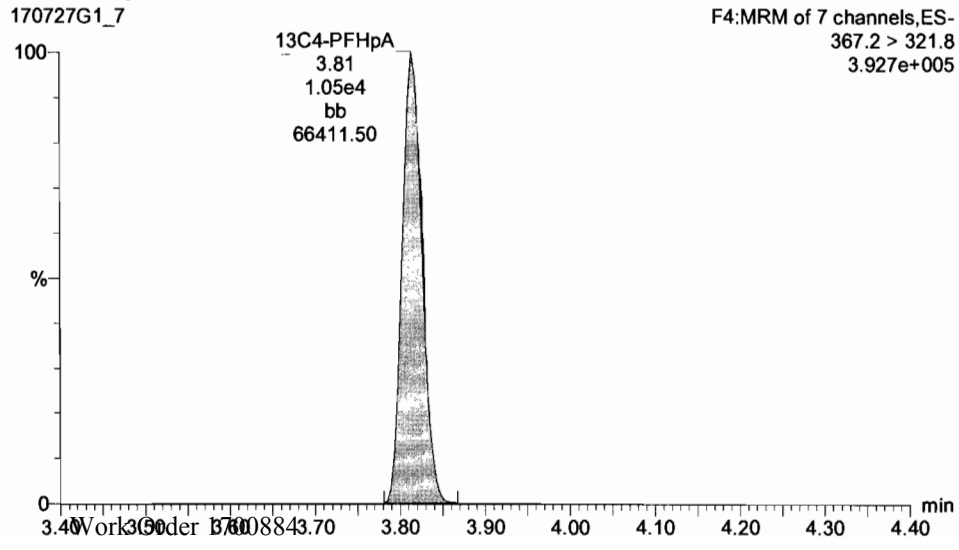


Total PFHxS

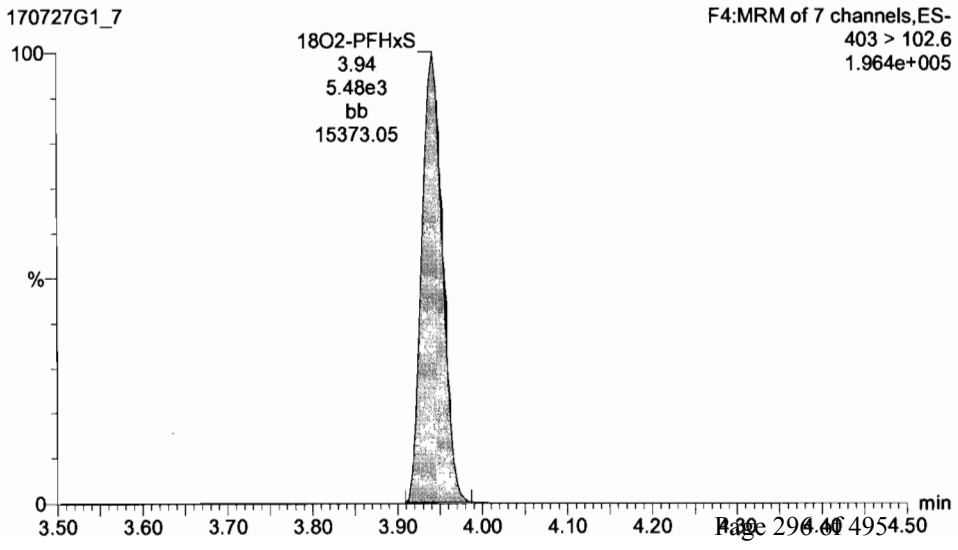




13C4-PFHpA



18O2-PFHxS

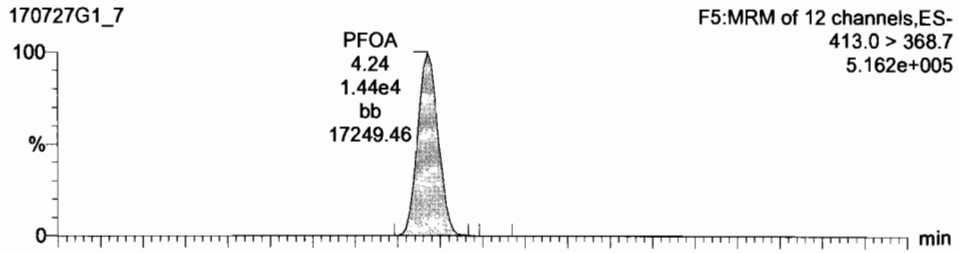


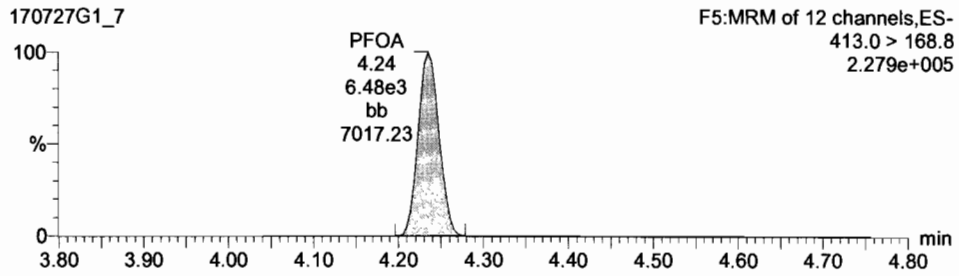
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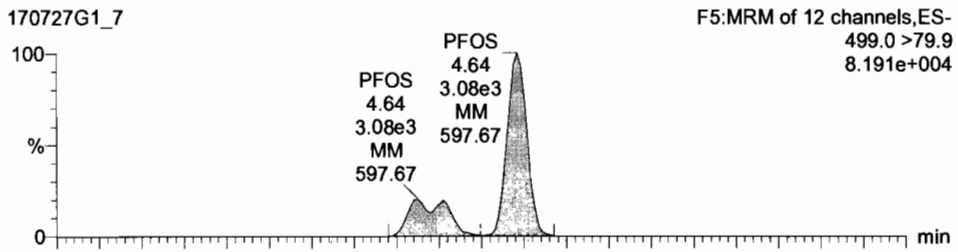
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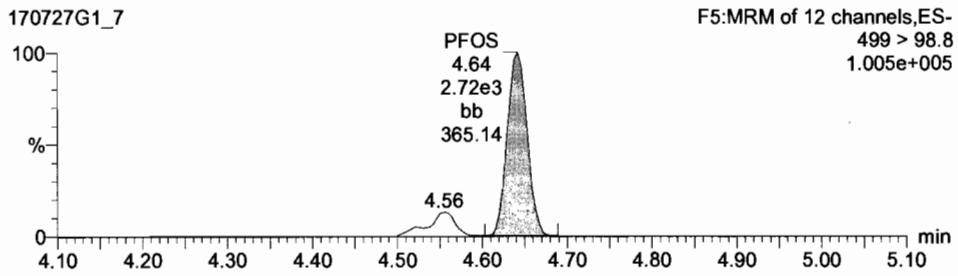
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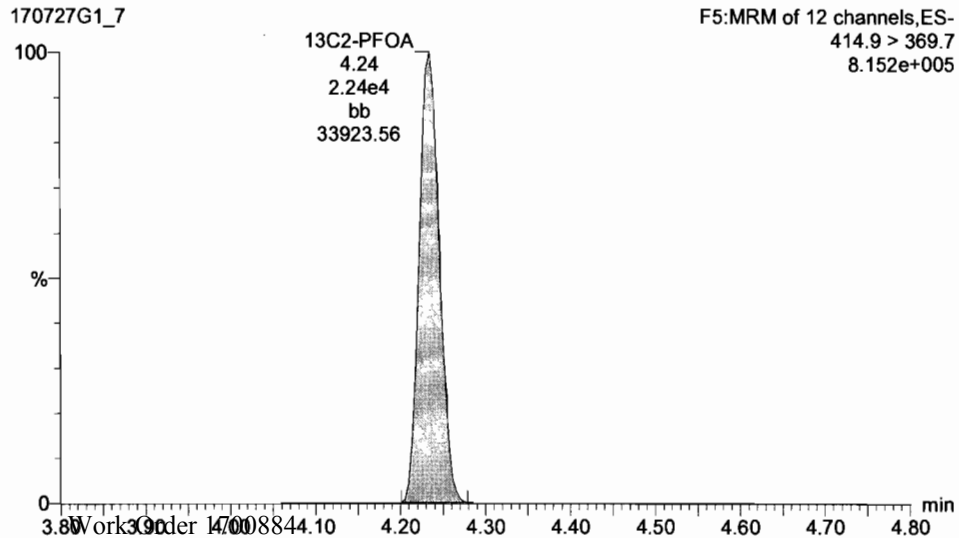


Total PFOS

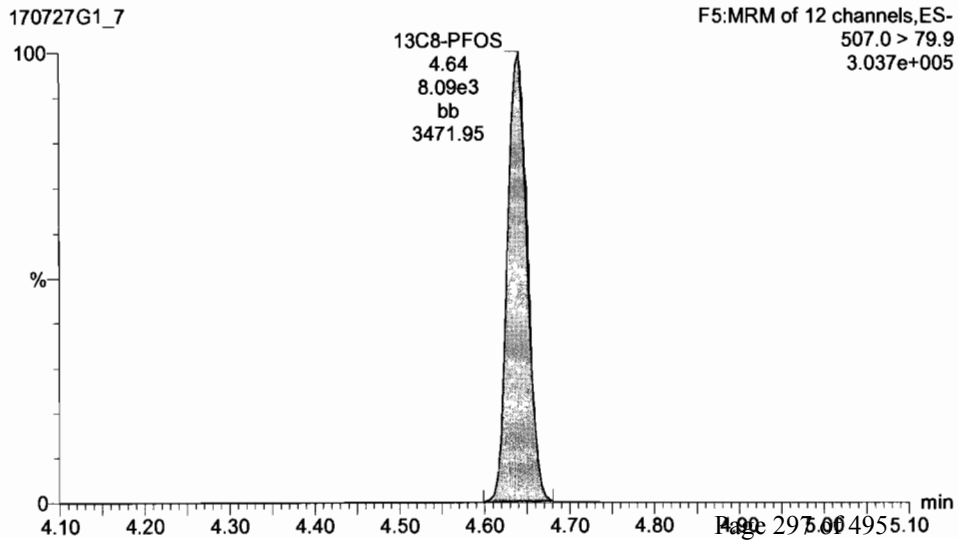




13C2-PFOA



13C8-PFOS

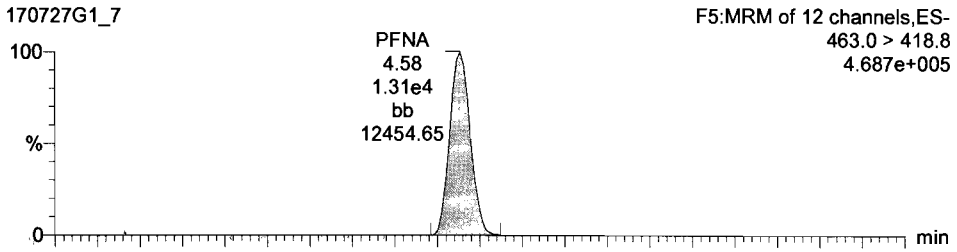


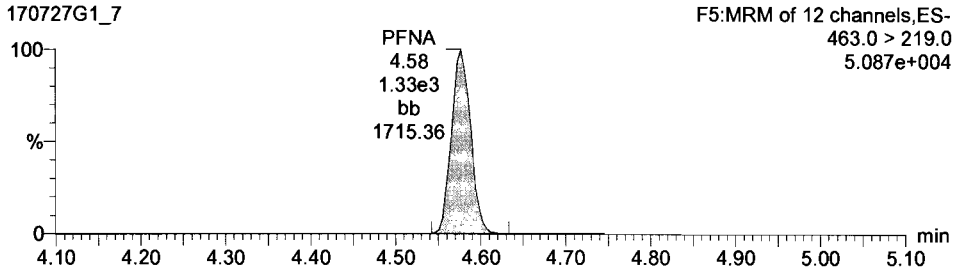
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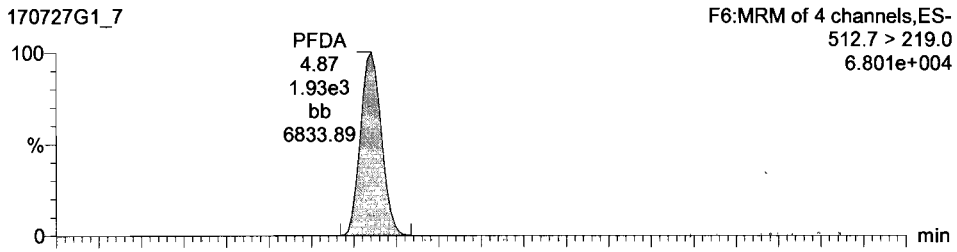
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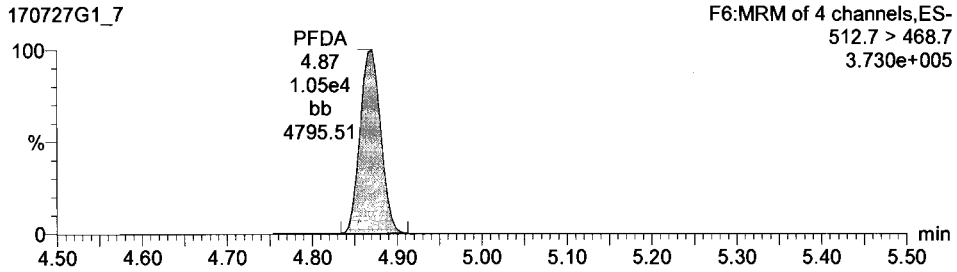
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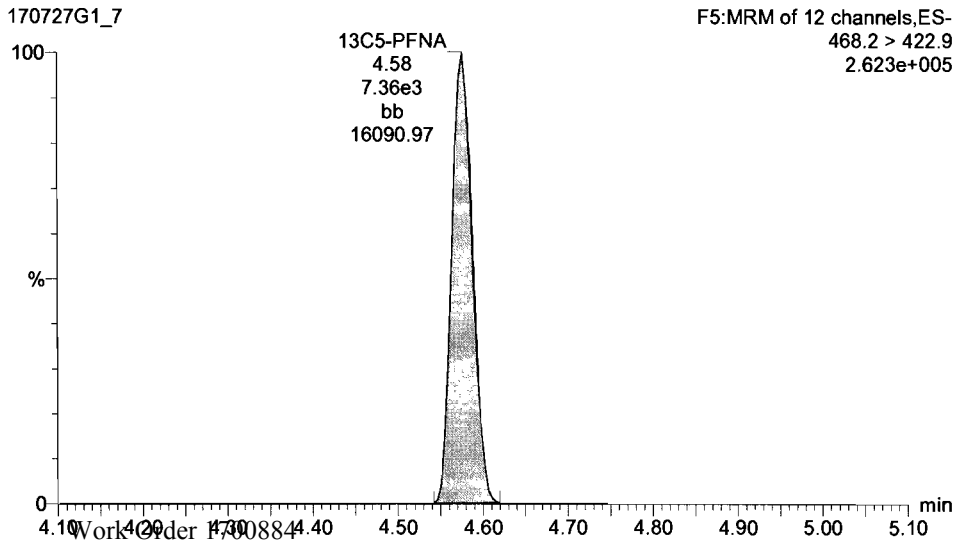


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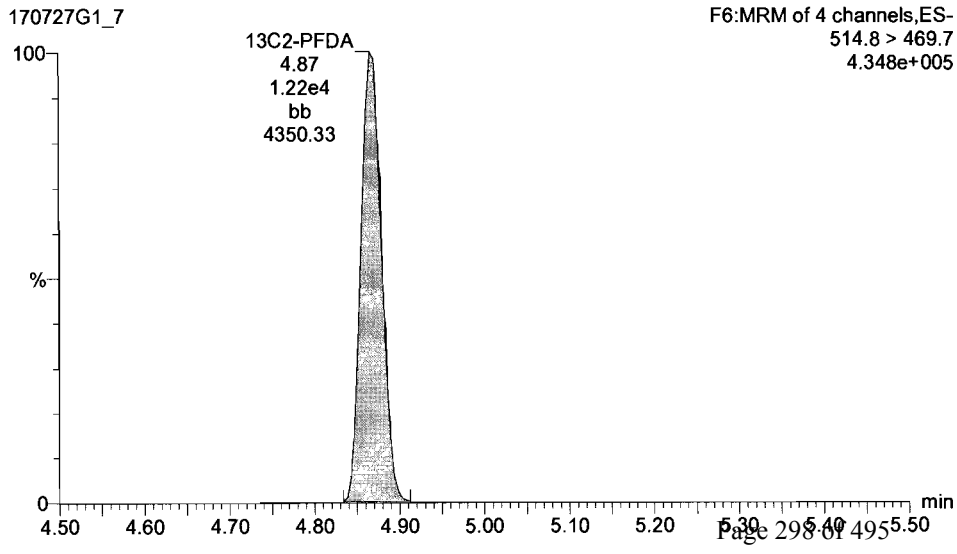




13C5-PFNA



13C2-PFDA

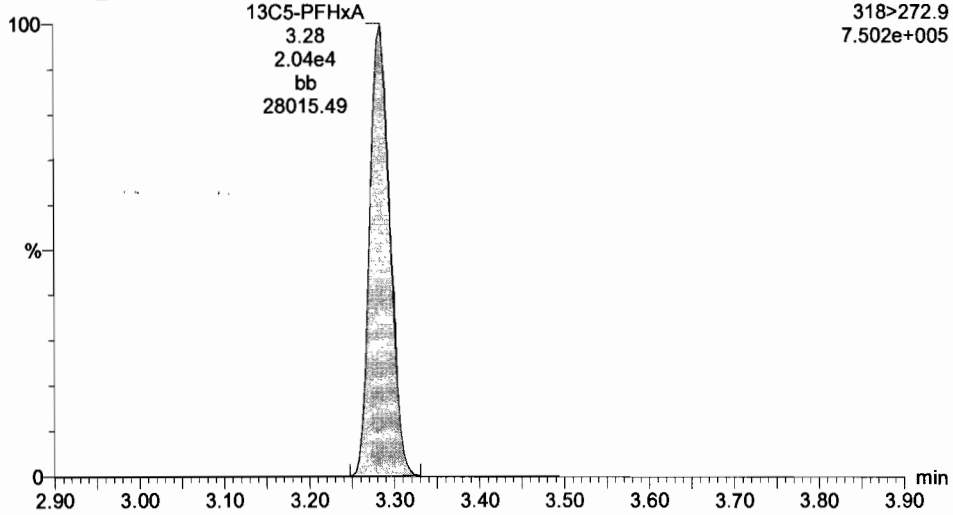


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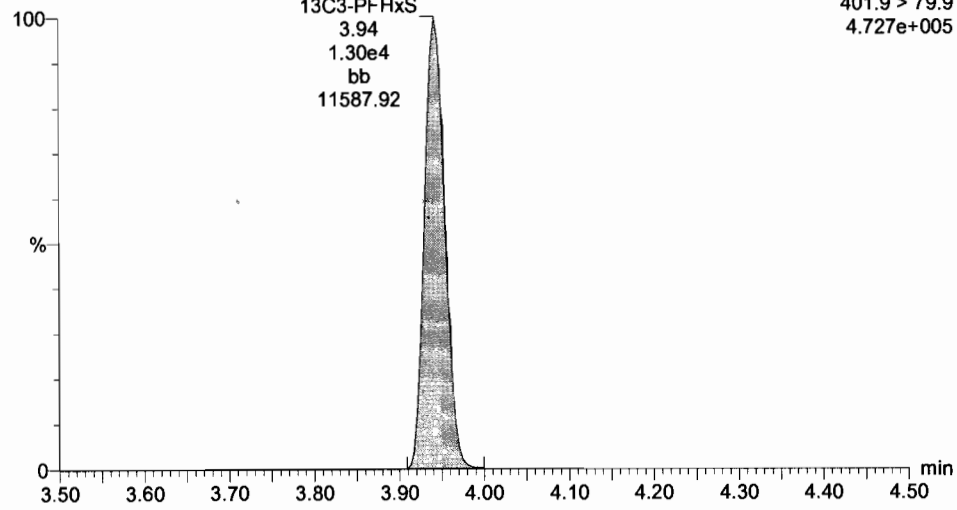
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ID: ST170727G1-6 PFC CS3 17G2719, Description: PFC CS3 17G2719 A, Name: 170727G1_7, Date: 27-Jul-2017, Time: 12:47:11, Instrument: , Lab: , User:

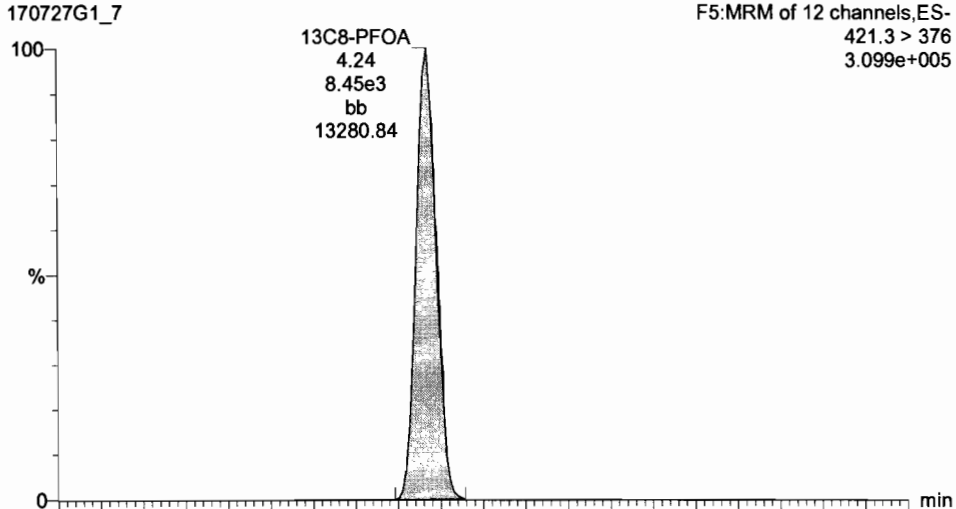
13C5-PFHxA



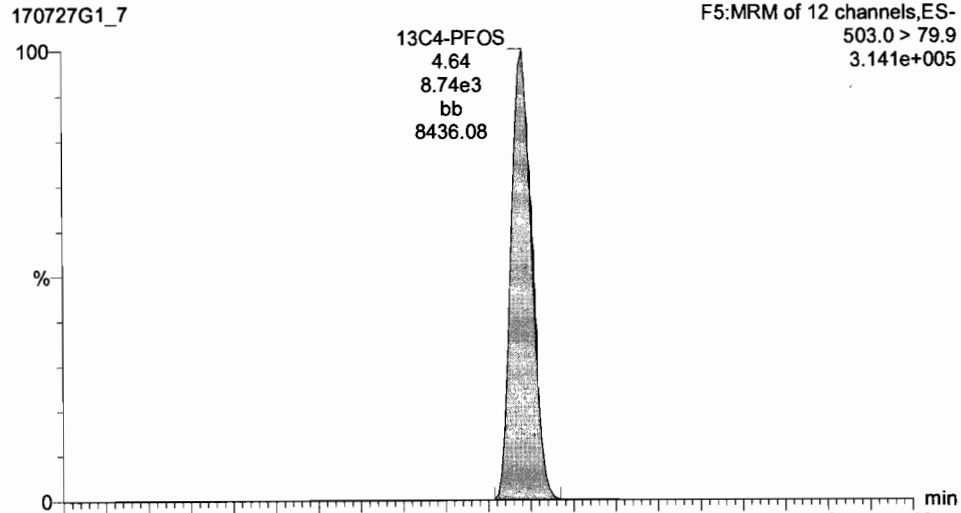
13C3-PFHxS



13C8-PFOA



13C4-PFOS

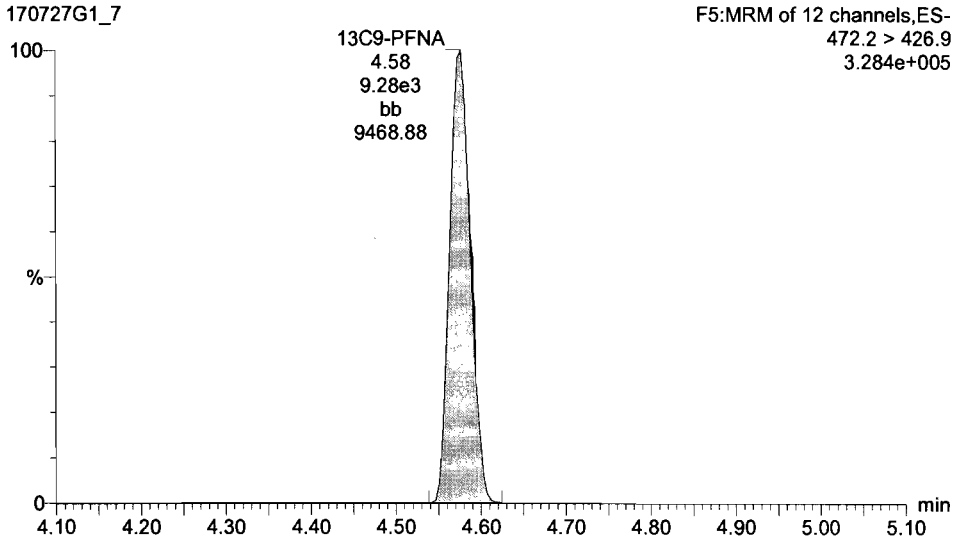


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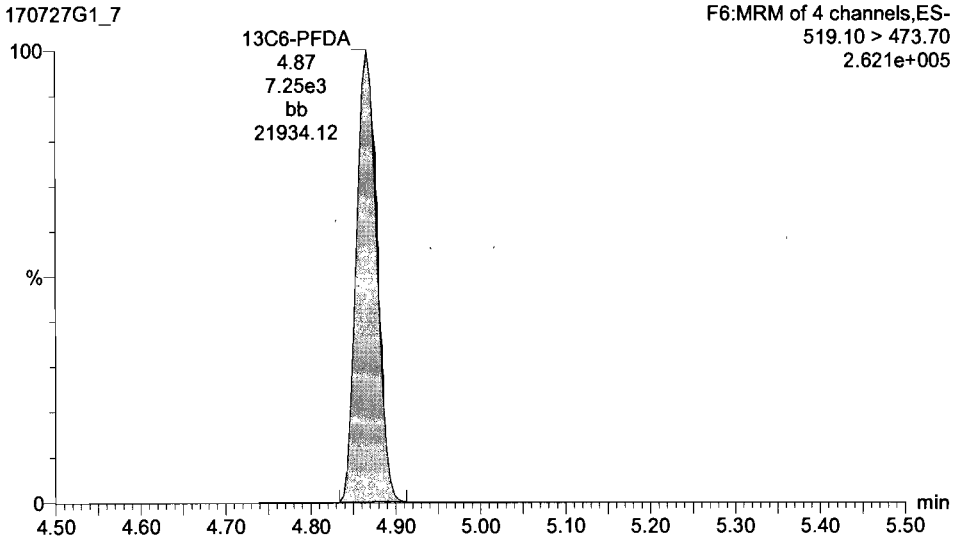
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13C9-PFNA



13C6-PFDA

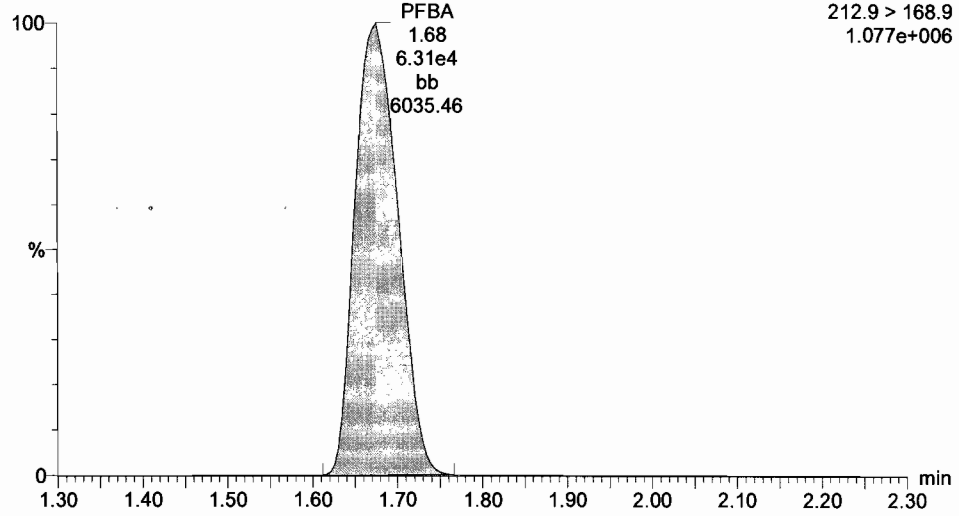


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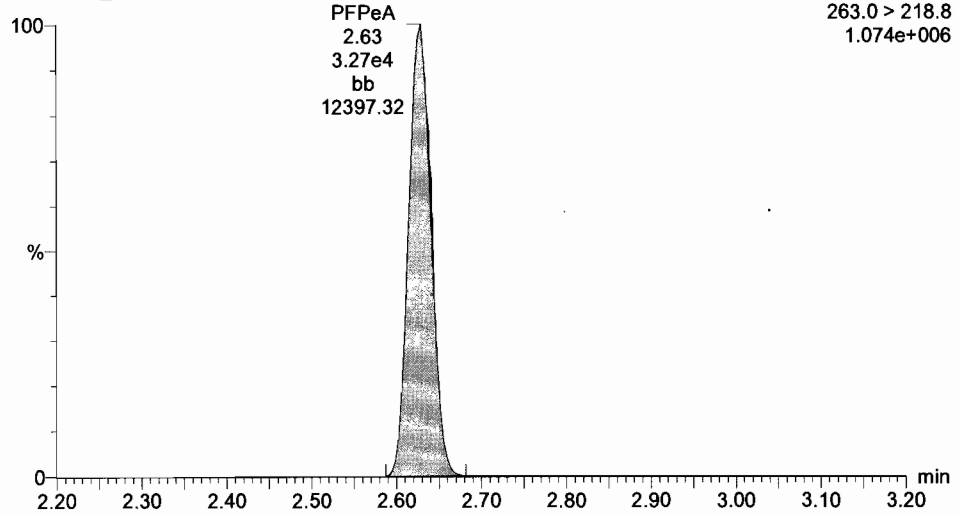
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ID: ST170727G1-7 PFC CS4 17G2720, Description: PFC CS4 17G2720 A, Name: 170727G1_8, Date: 27-Jul-2017, Time: 12:59:35, Instrument: , Lab: , User:

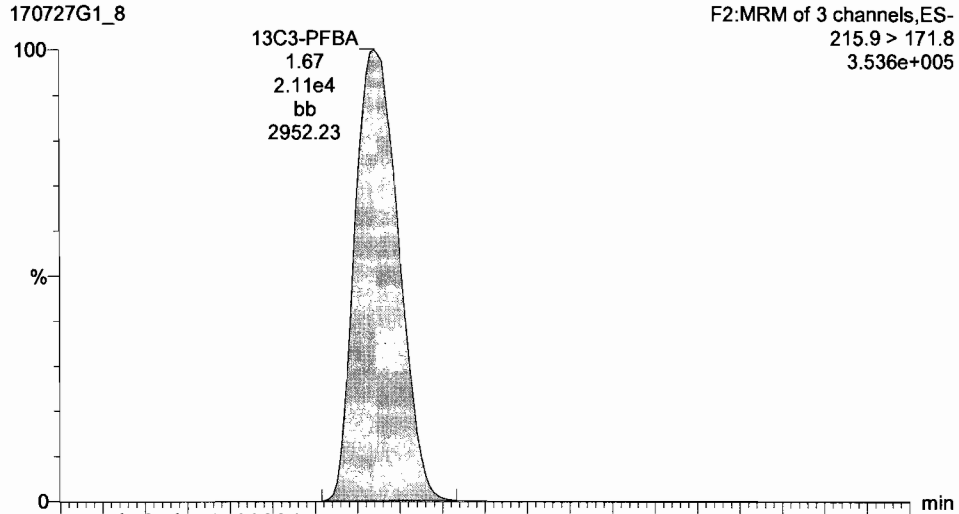
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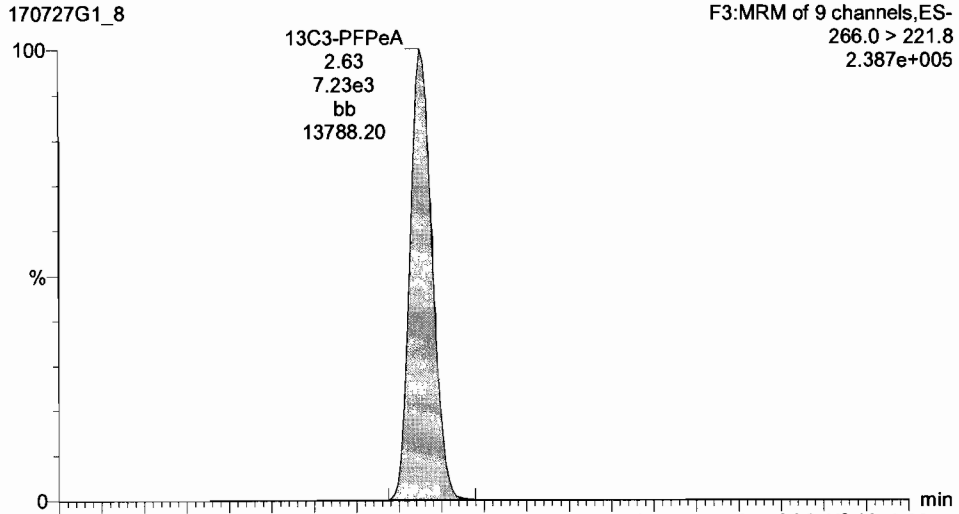
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13C3-PFBA



13C3-PFPeA

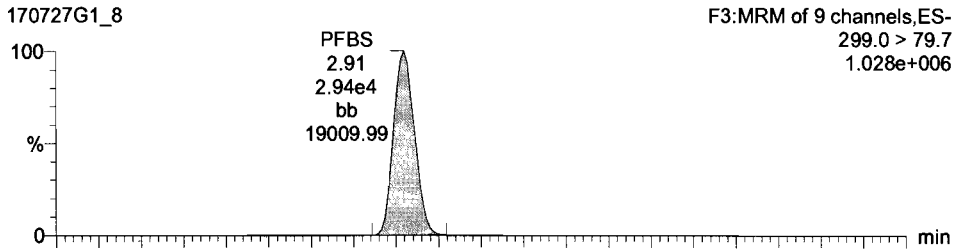


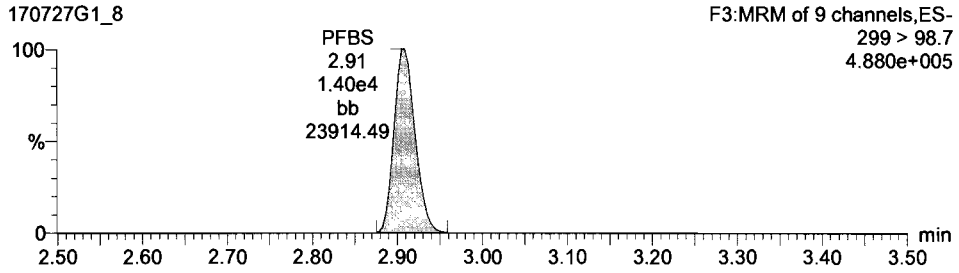
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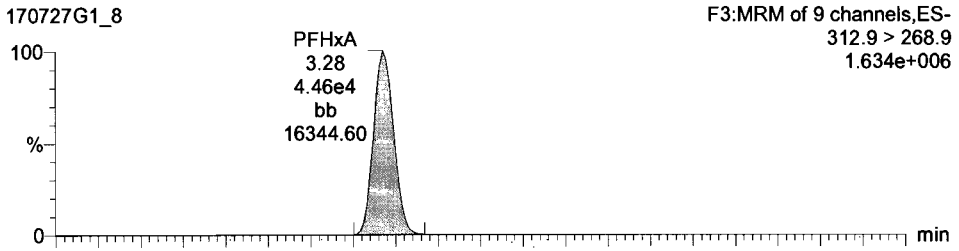
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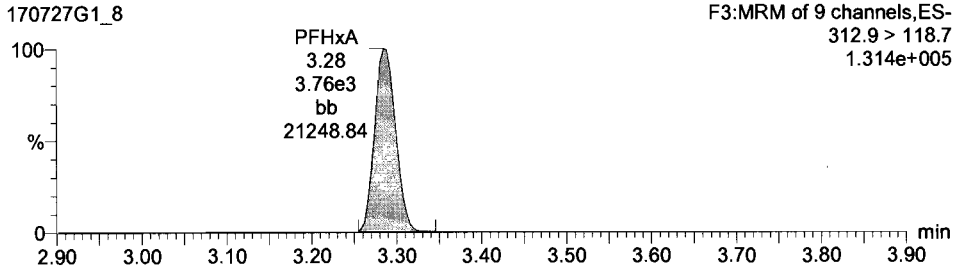
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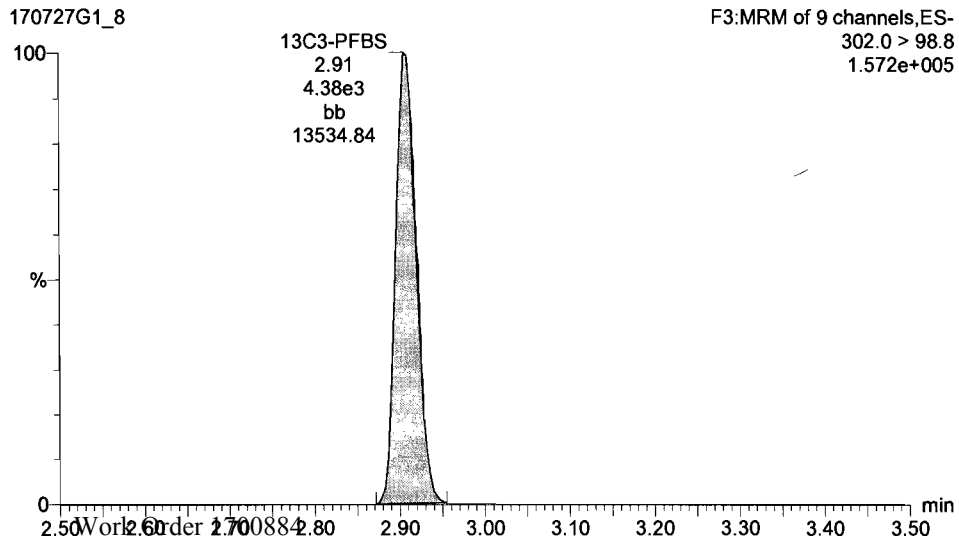


PFHxA

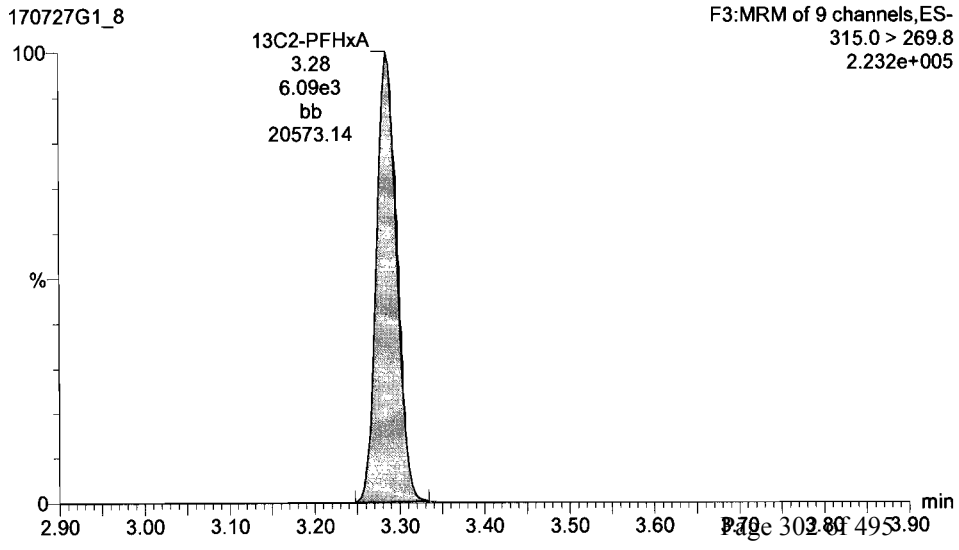




13C3-PFBS



13C2-PFHxA

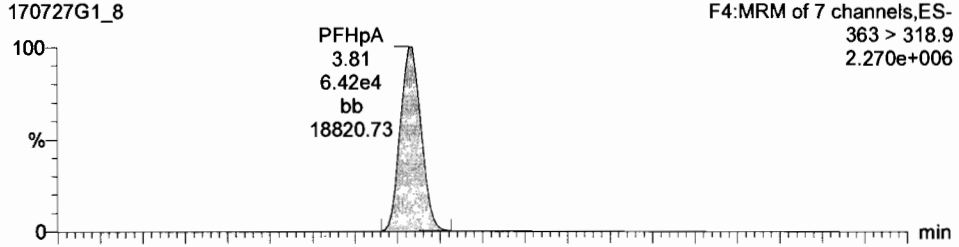


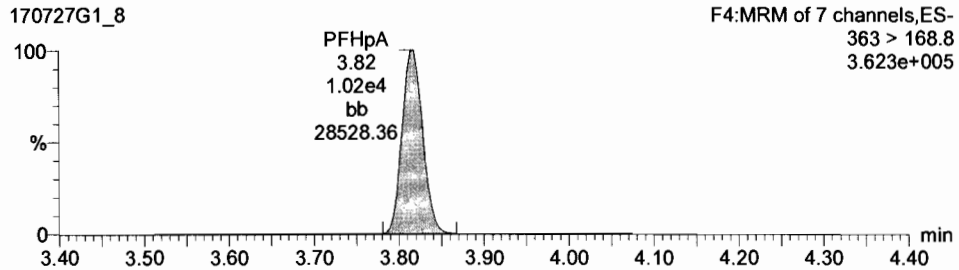
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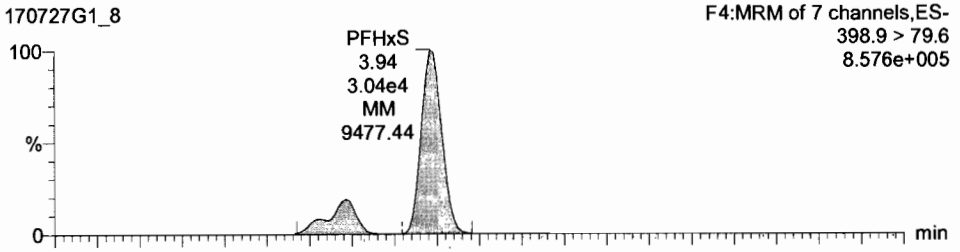
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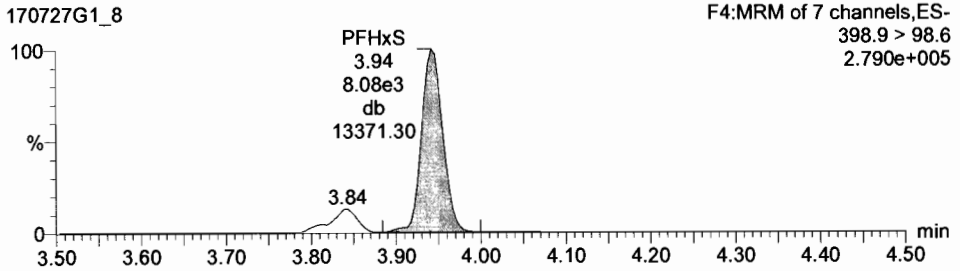
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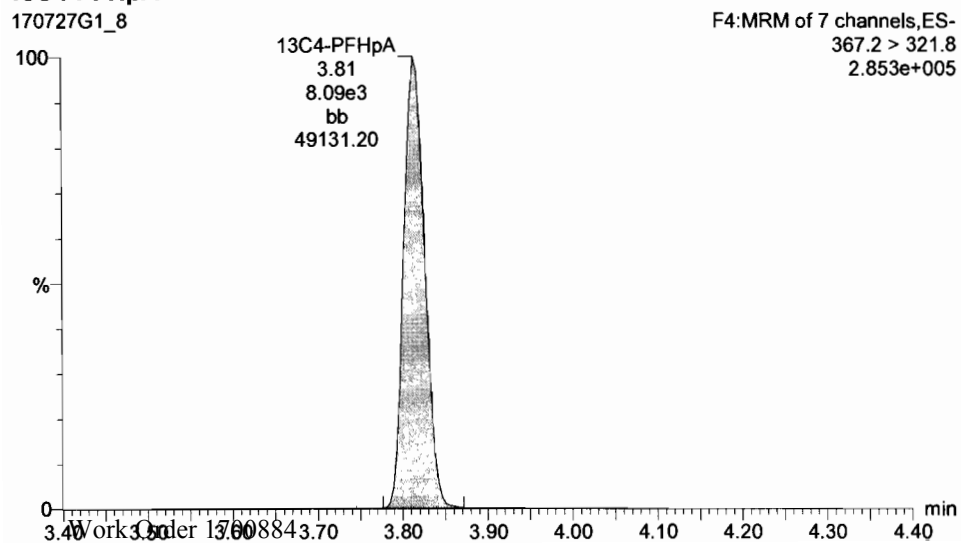


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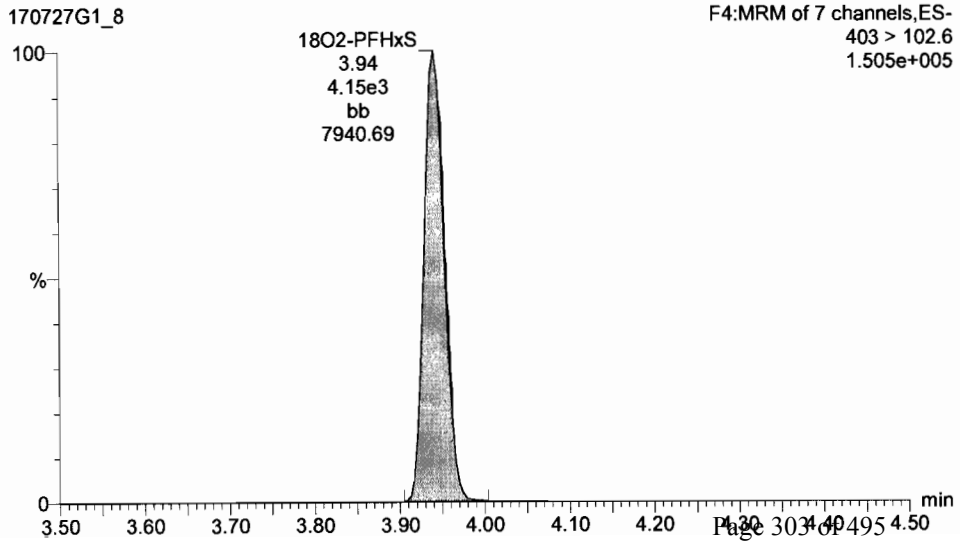




13C4-PFHpA



18O2-PFHxS

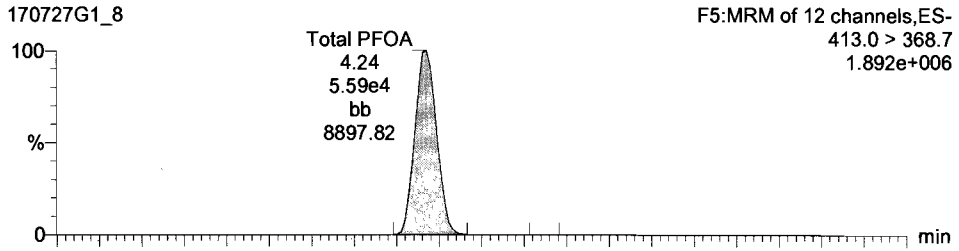


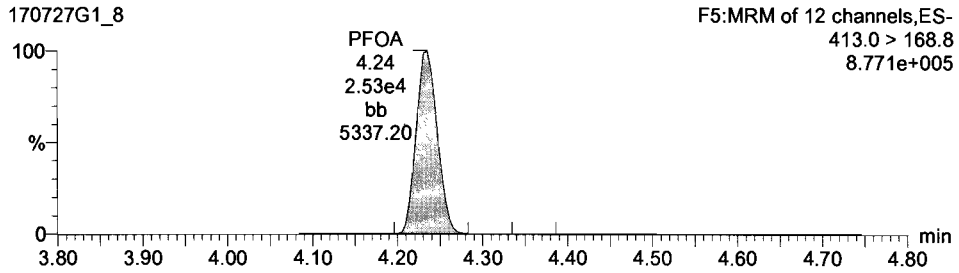
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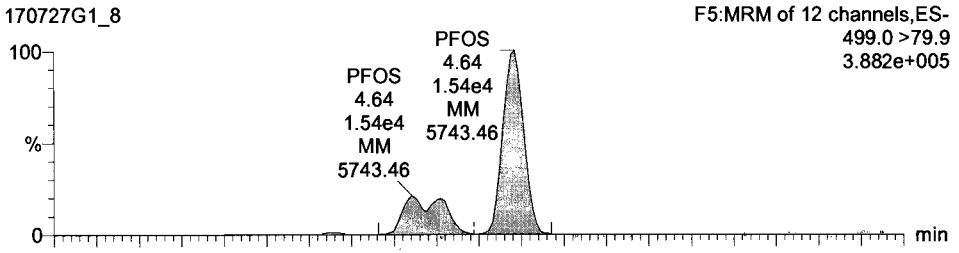
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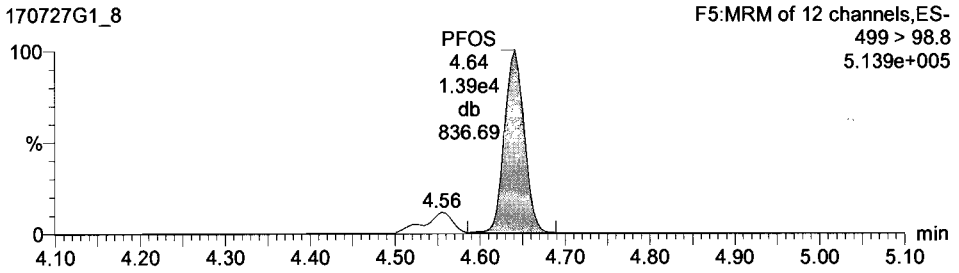
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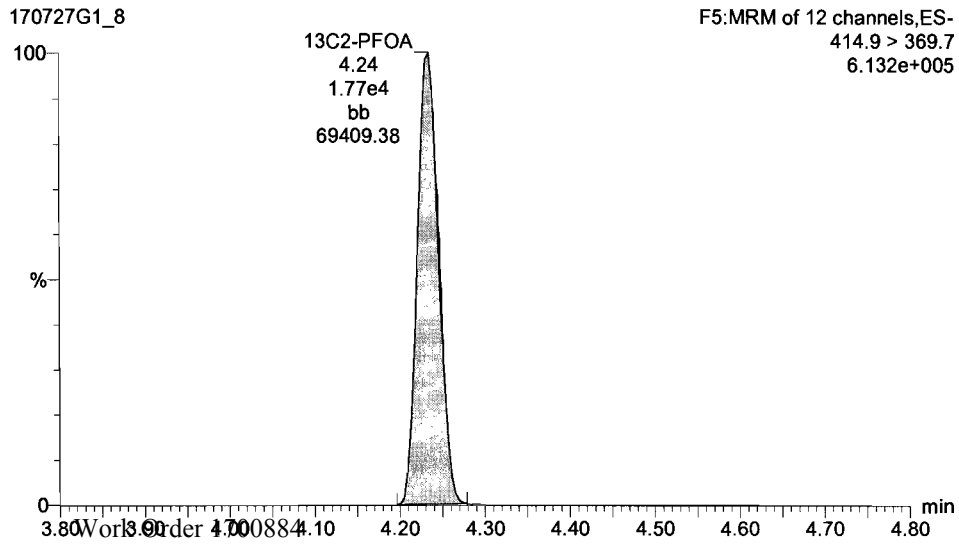


Total PFOS

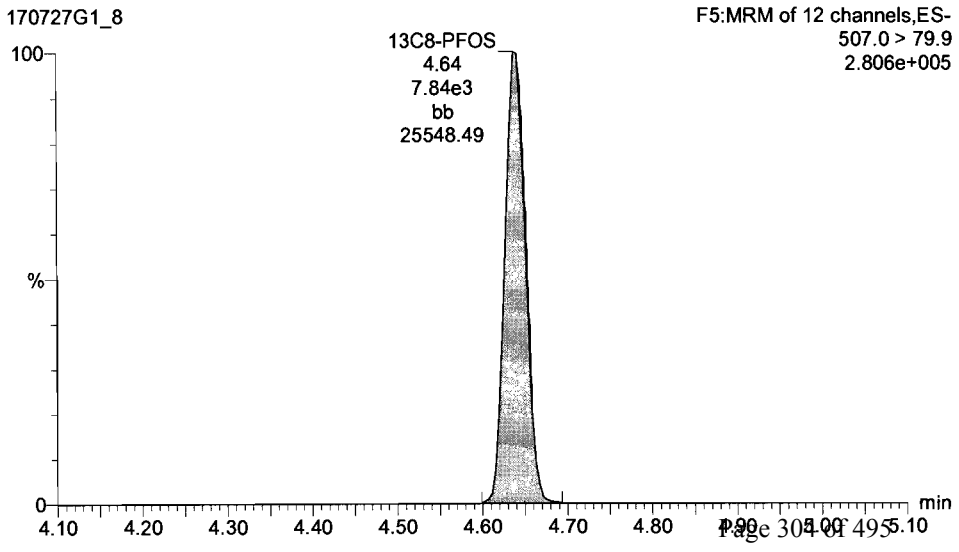




13C2-PFOA



13C8-PFOS

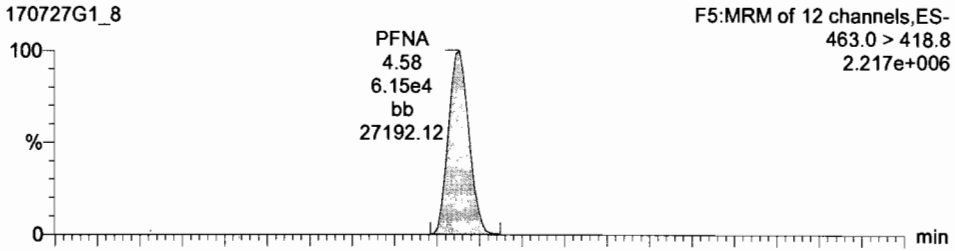


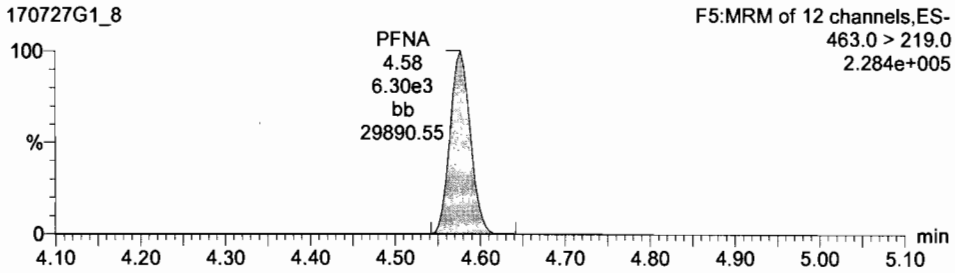
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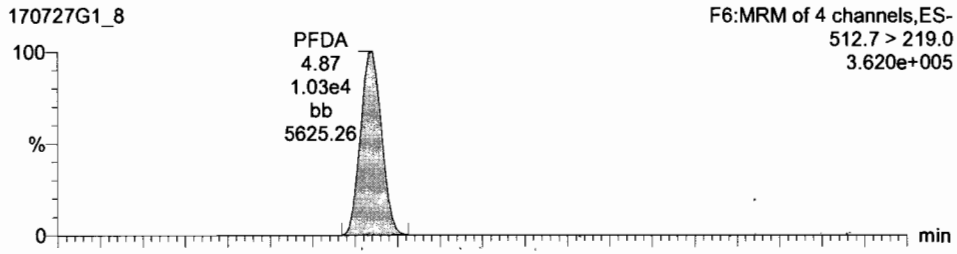
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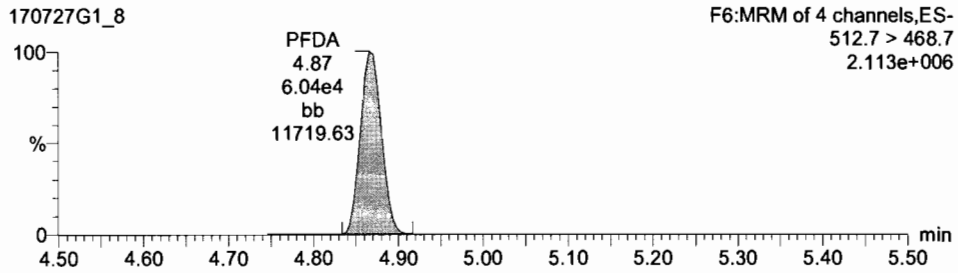
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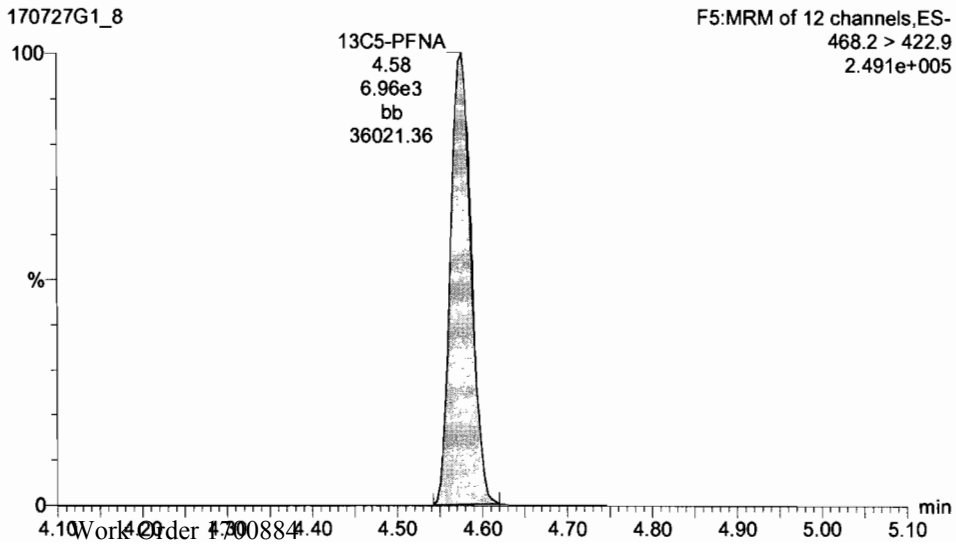


PFDA

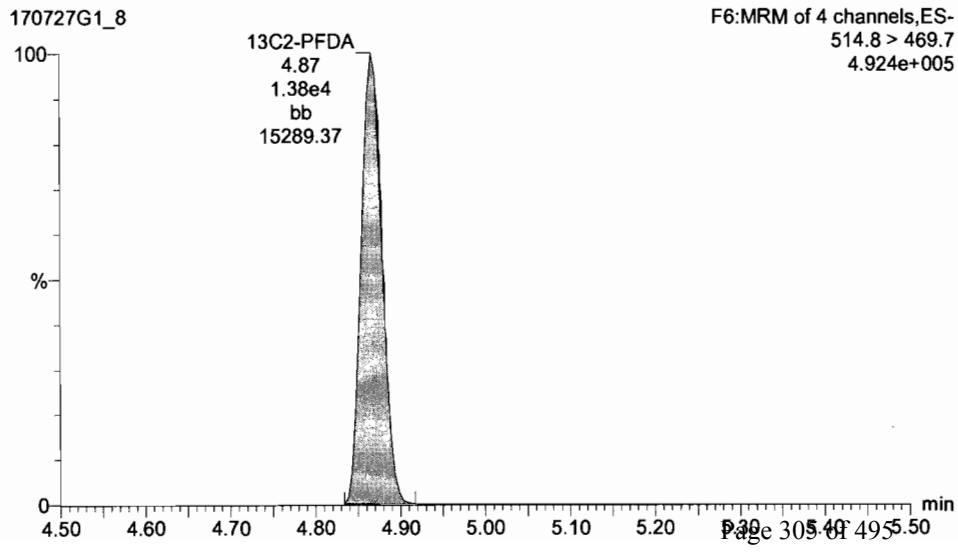




13C5-PFNA



13C2-PFDA

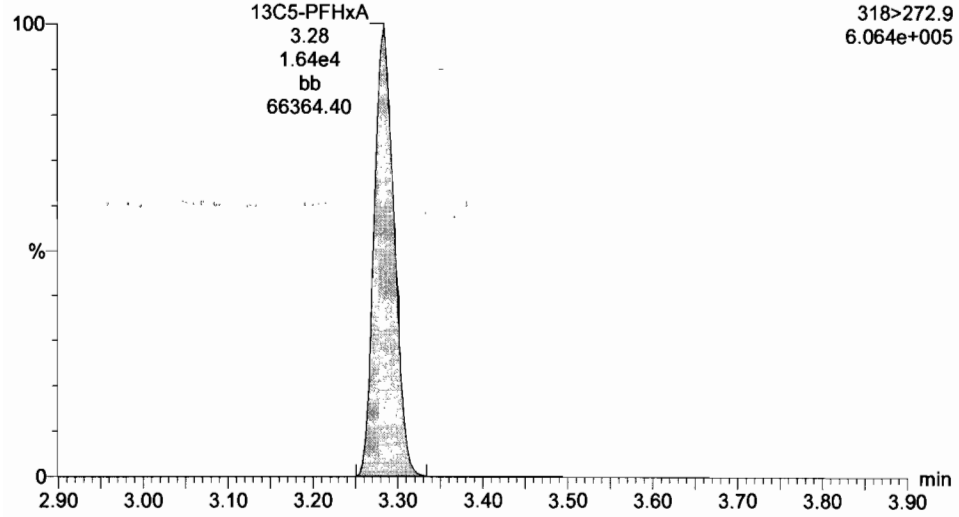


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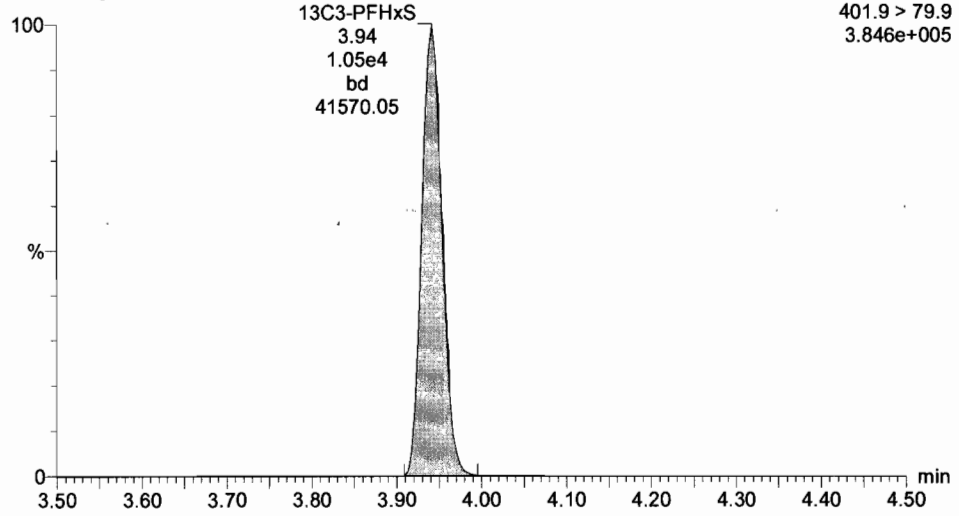
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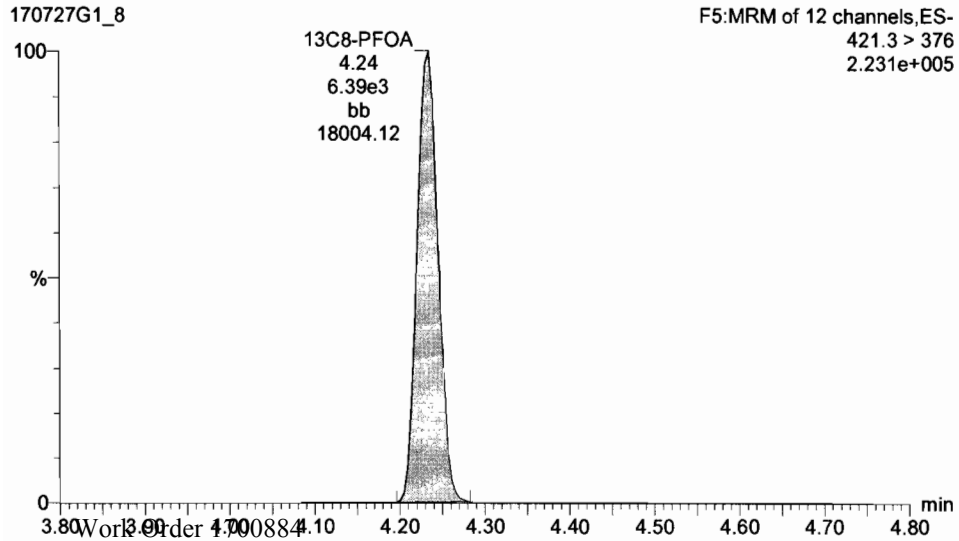
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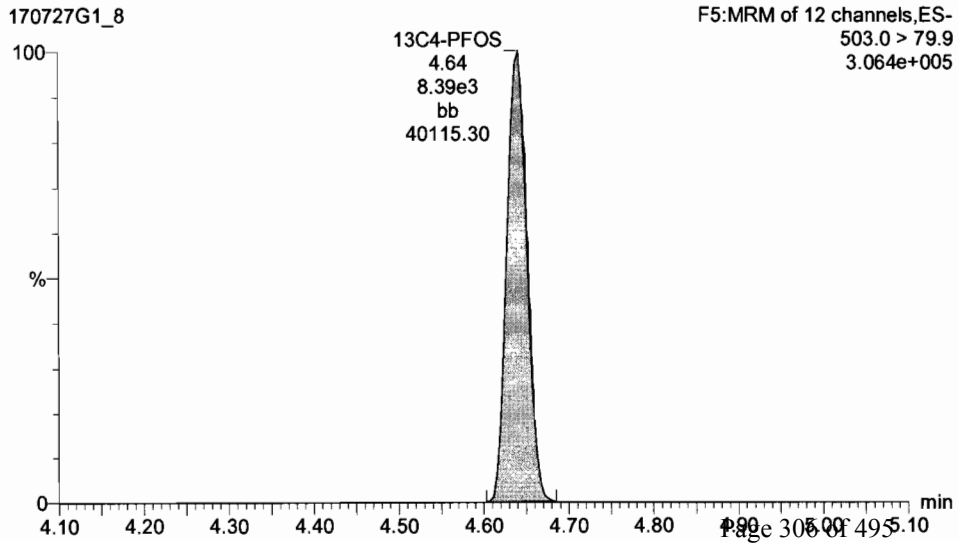
13C3-PFHxS



13C8-PFOA



13C4-PFOS

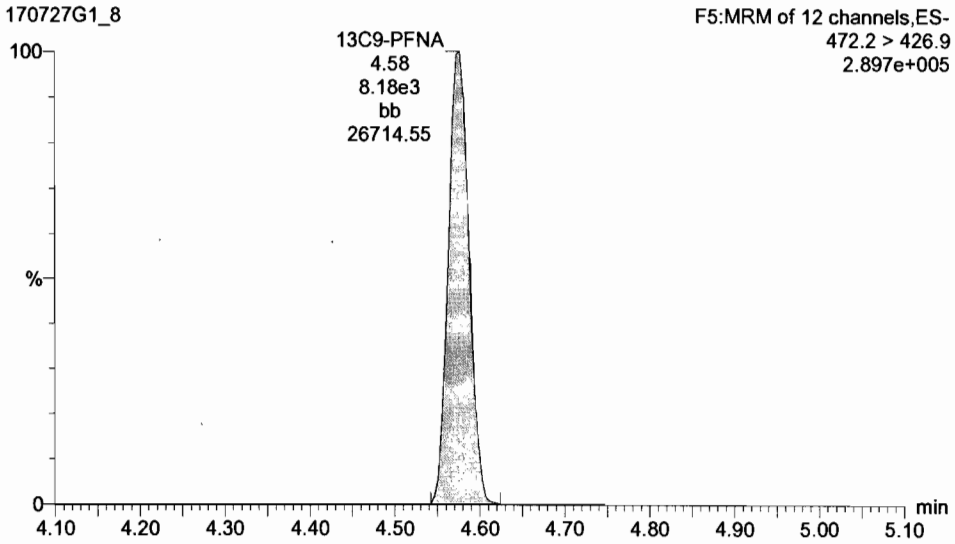


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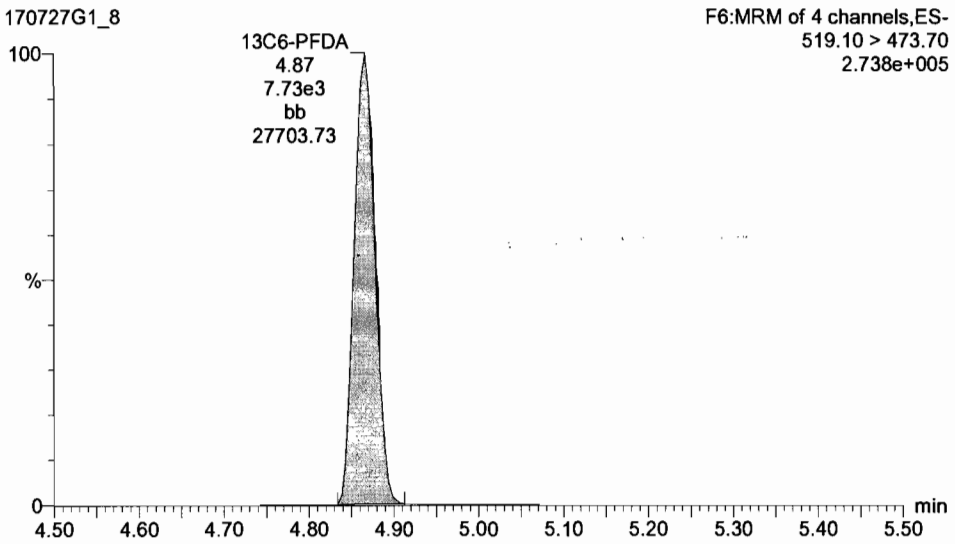
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13C9-PFNA



13C6-PFDA

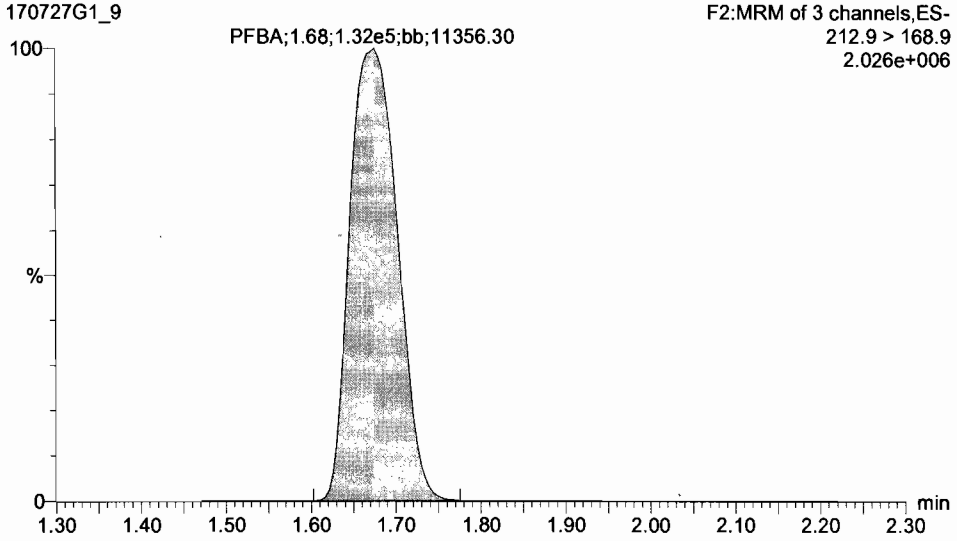


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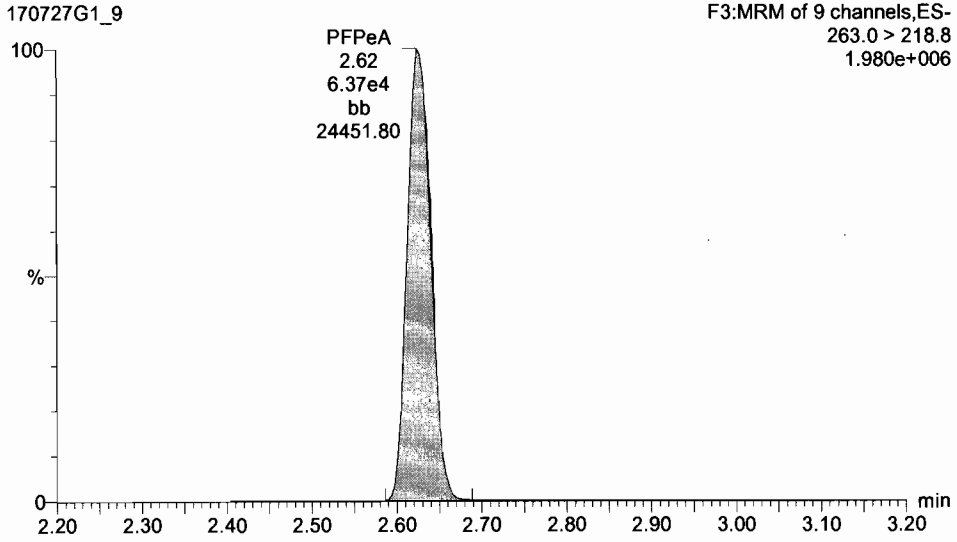
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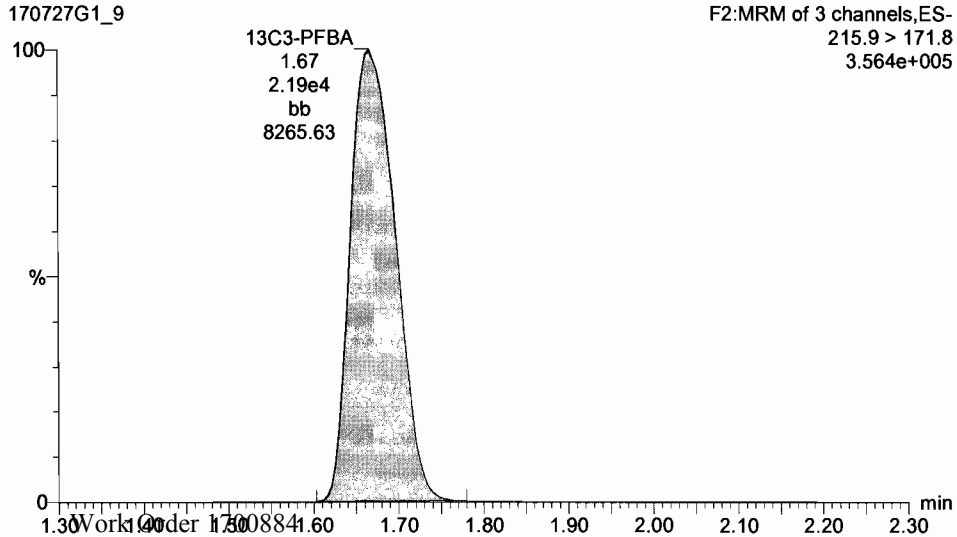
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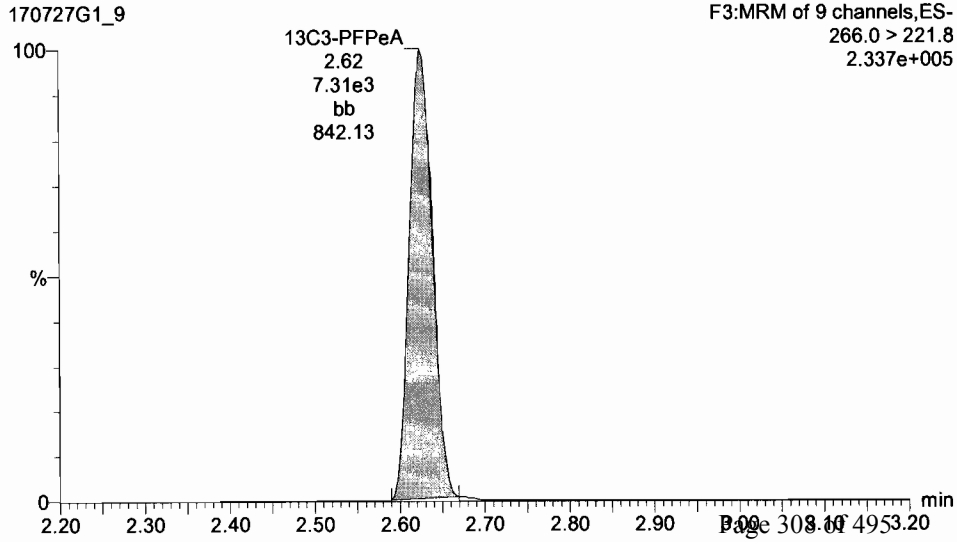
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13C3-PFBA



13C3-PFPeA

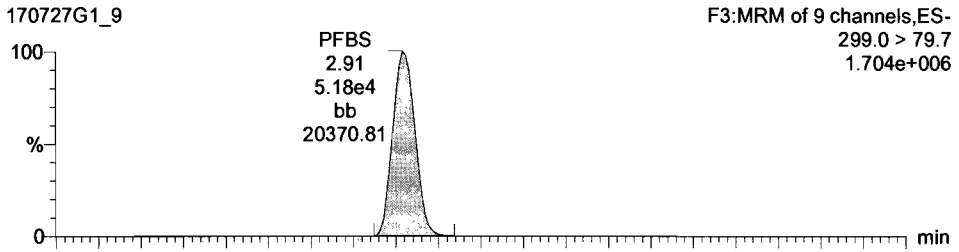


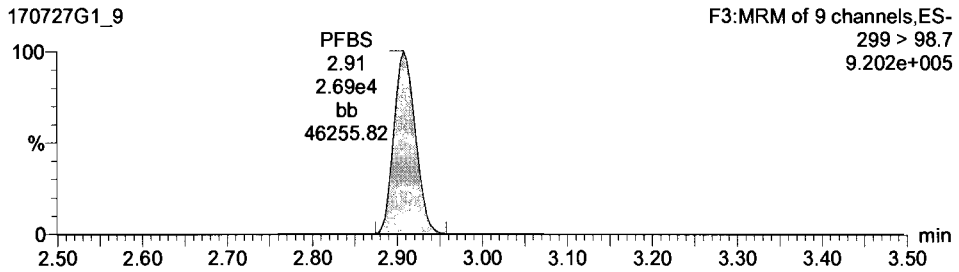
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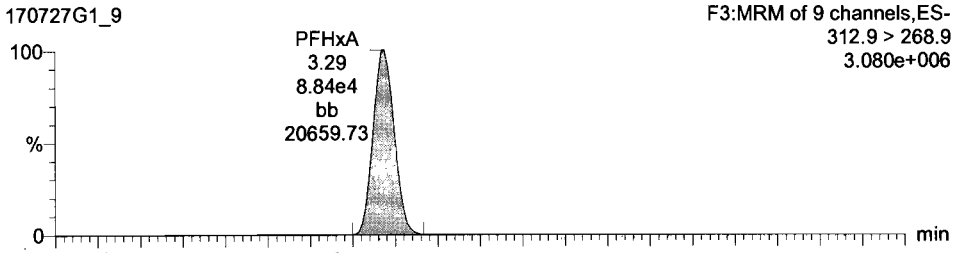
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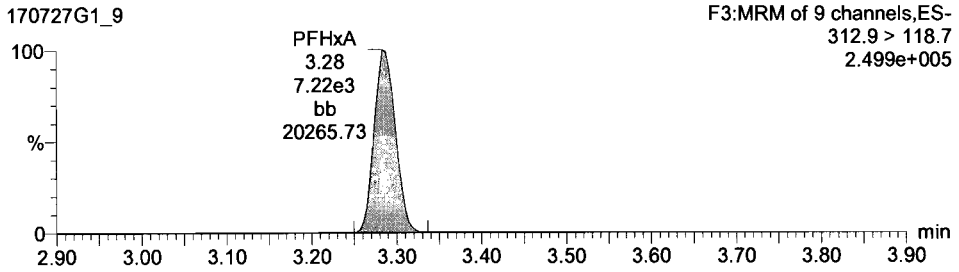
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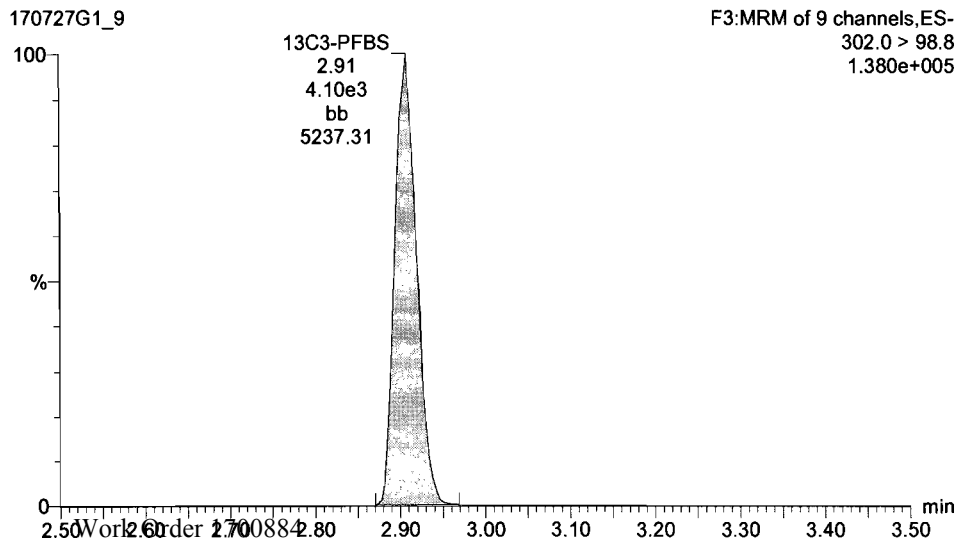


PFHxA

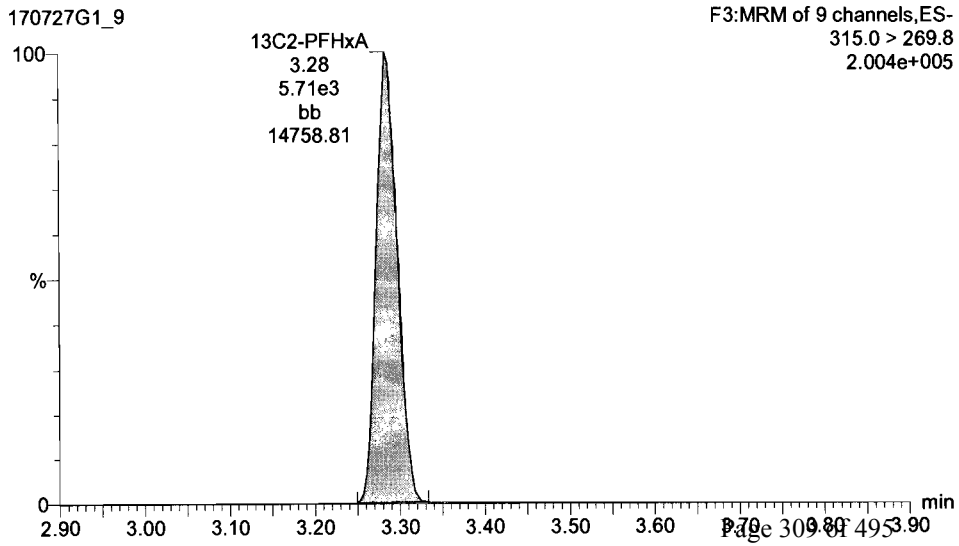




13C3-PFBS



13C2-PFHxA

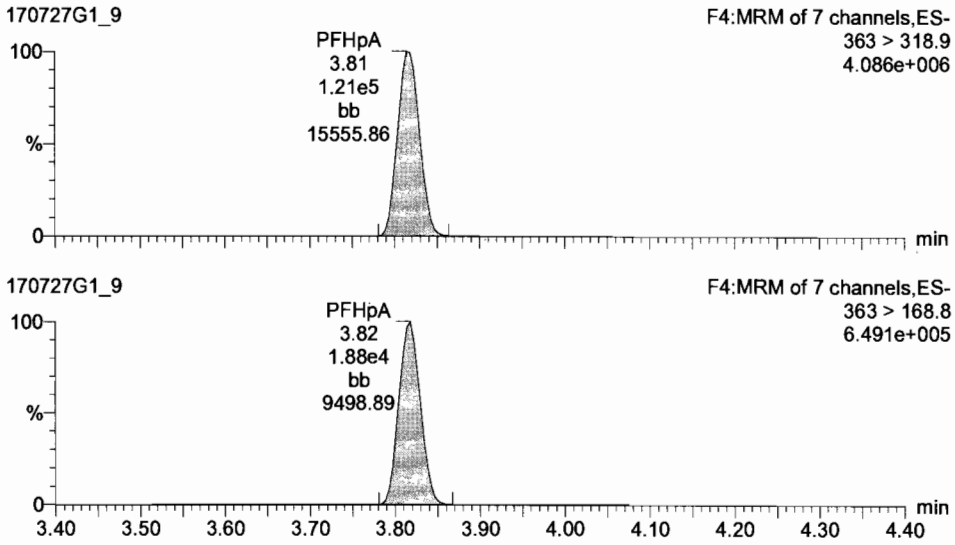


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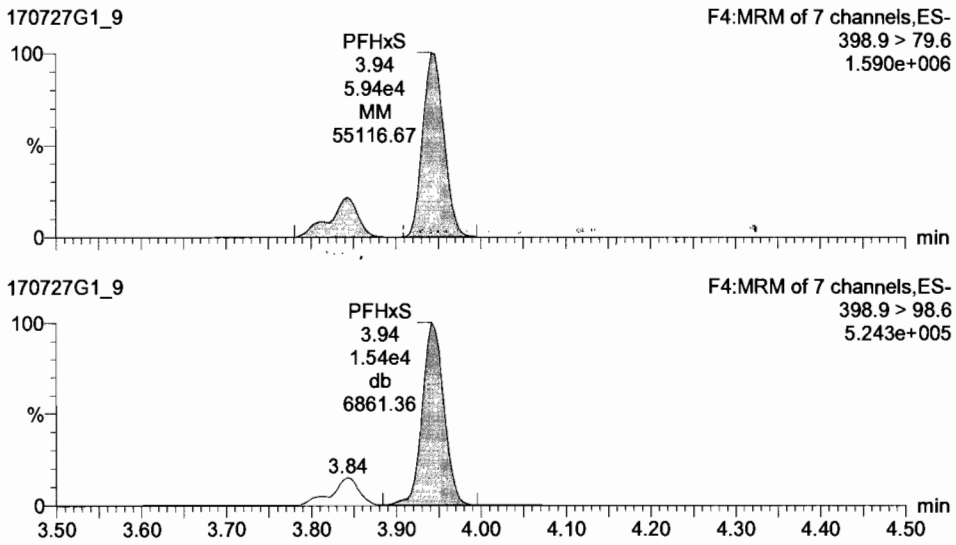
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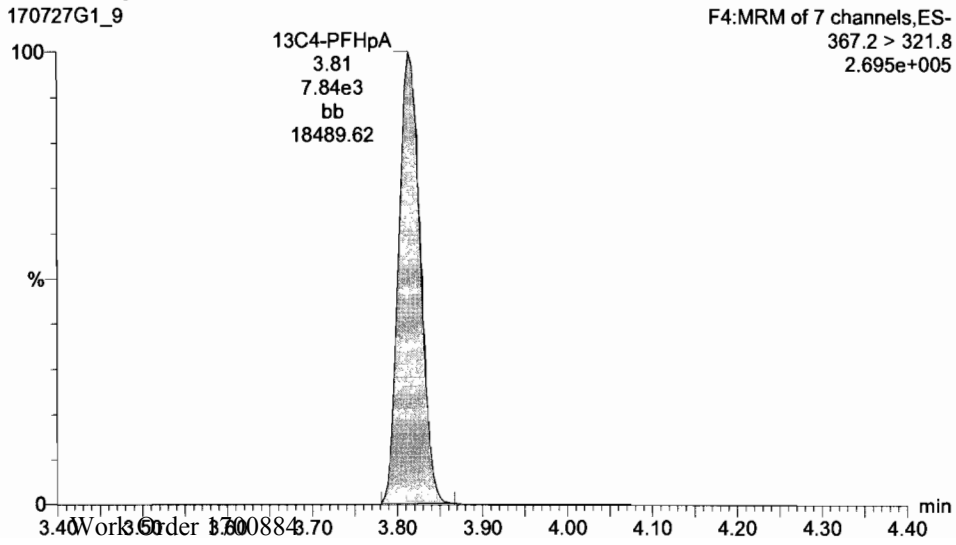
PFHpA



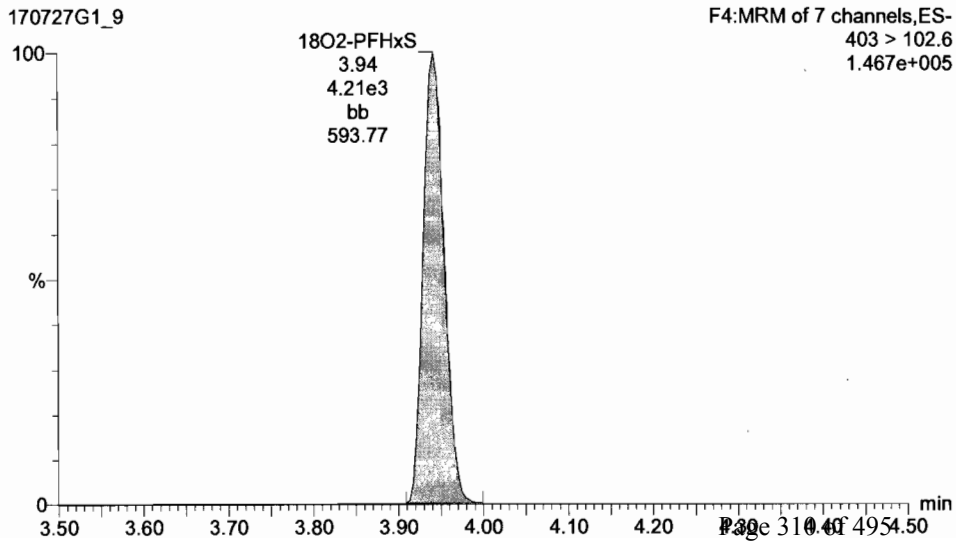
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13C4-PFHpA



18O2-PFHxS

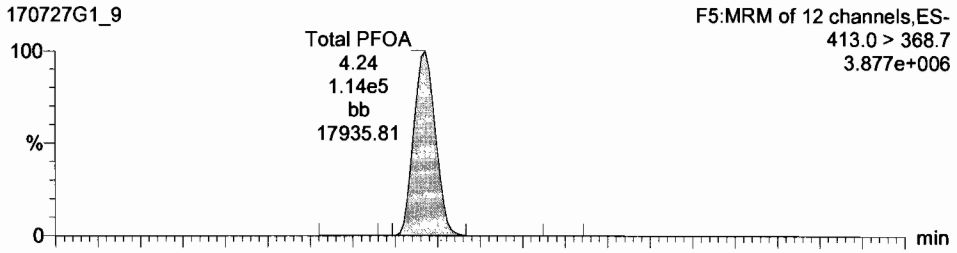


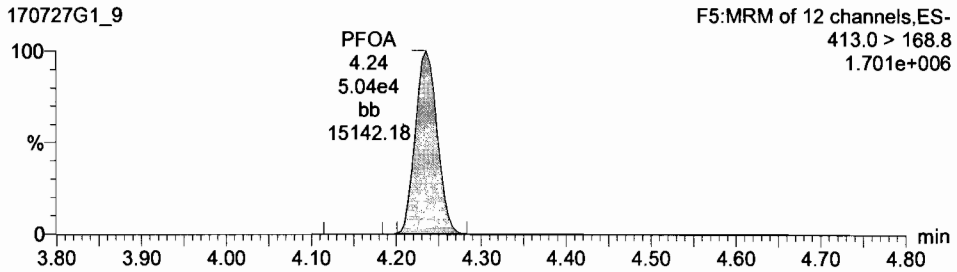
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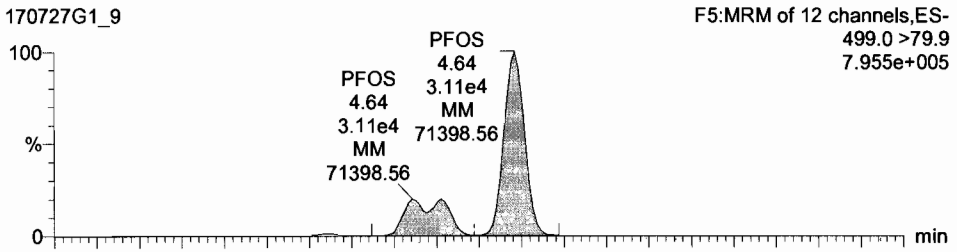
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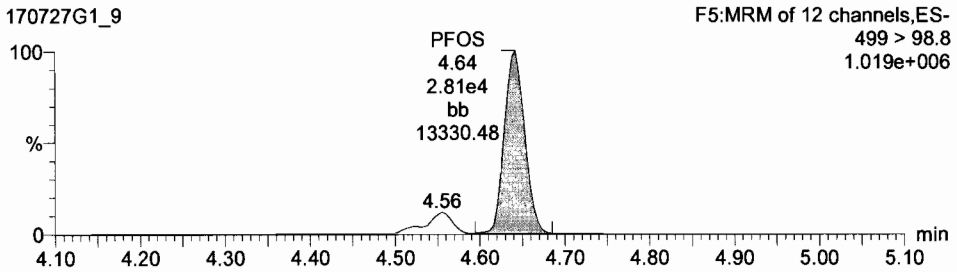
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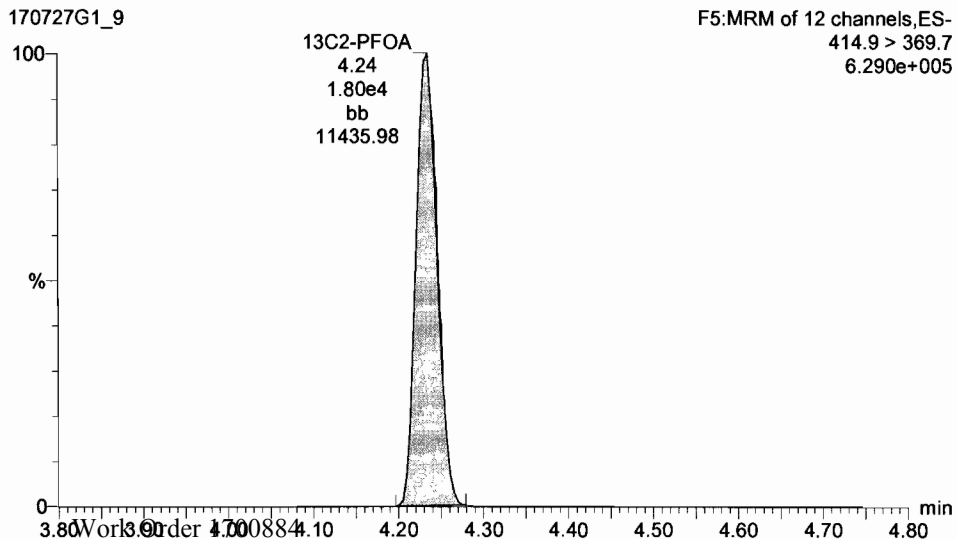


Total PFOS

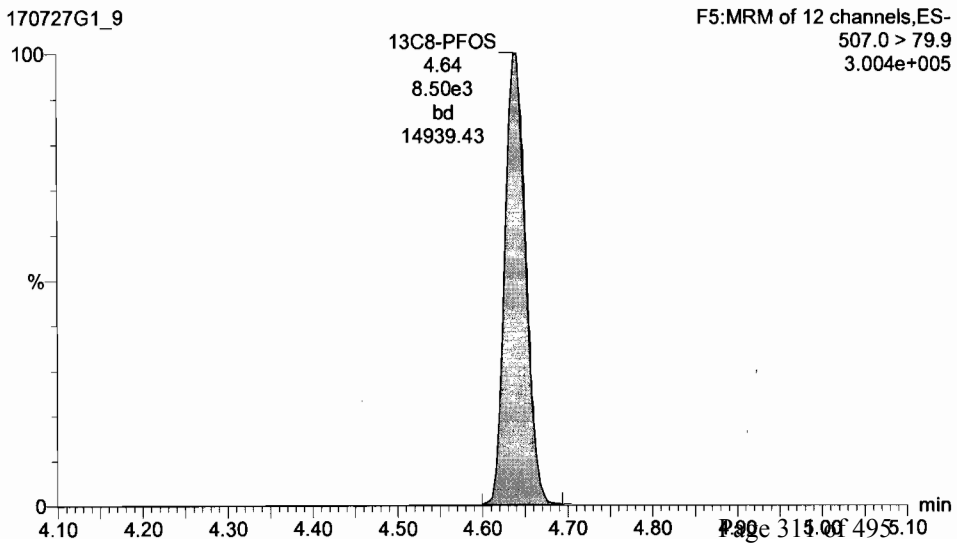




13C2-PFOA



13C8-PFOS

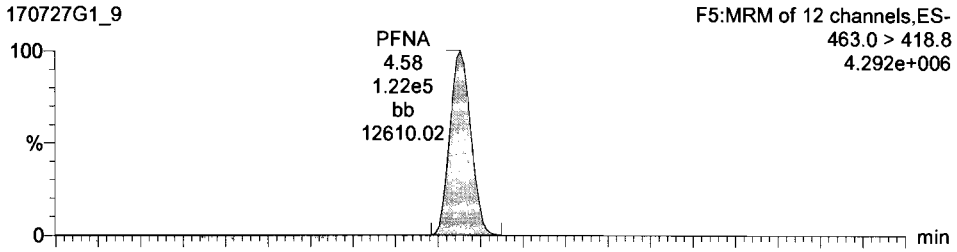


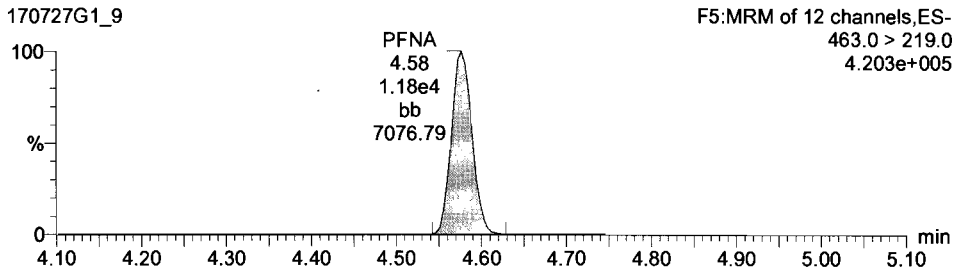
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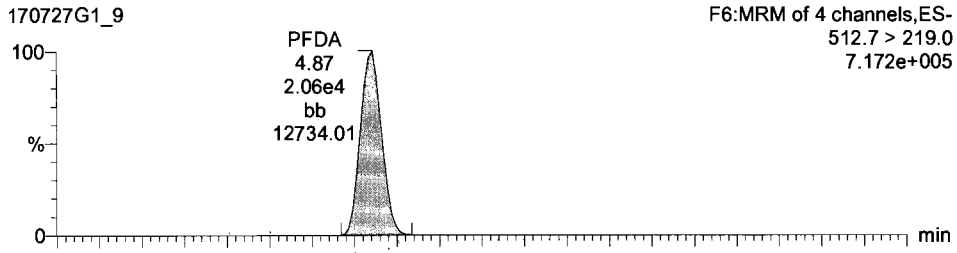
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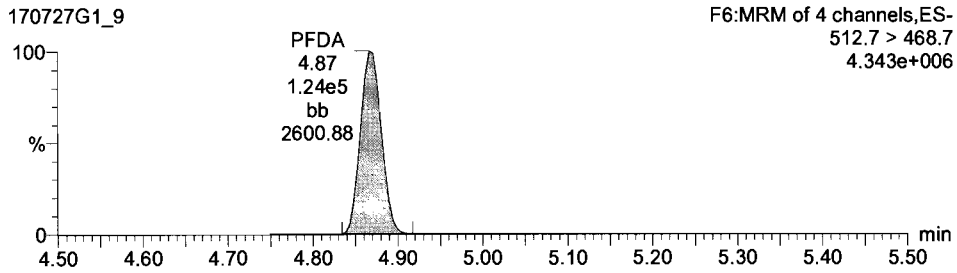
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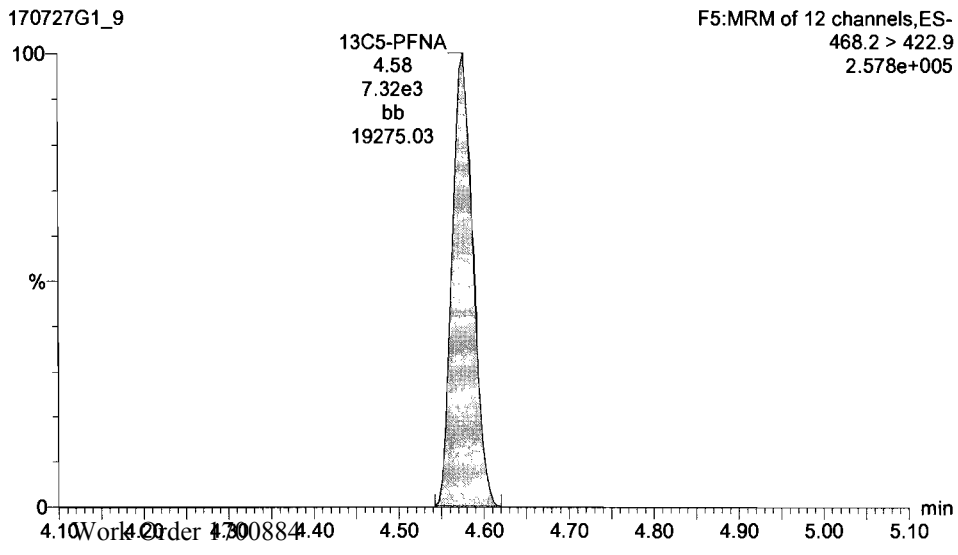


PFDA

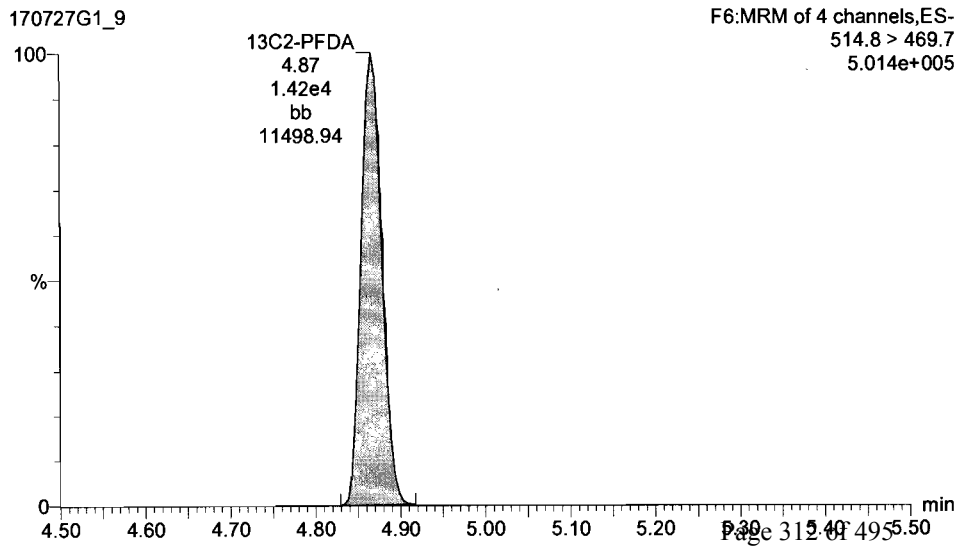




13C5-PFNA



13C2-PFDA

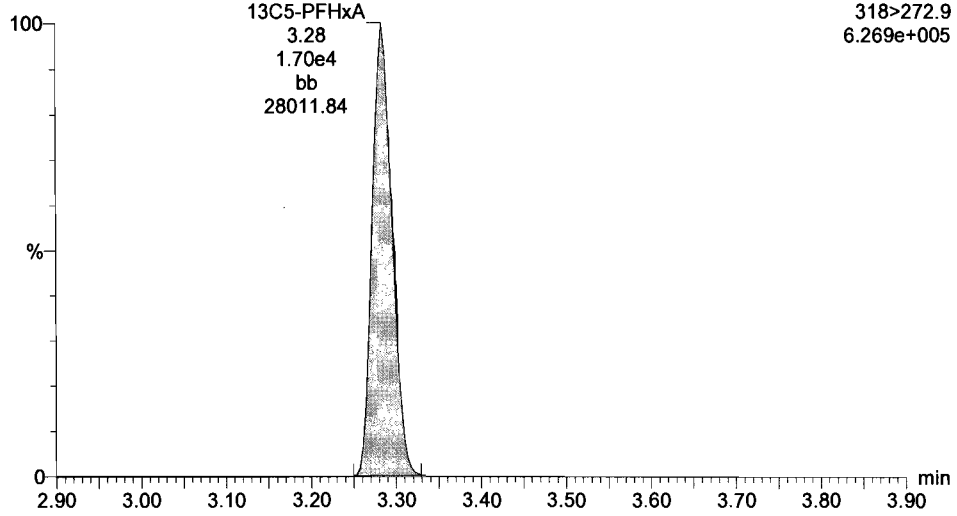


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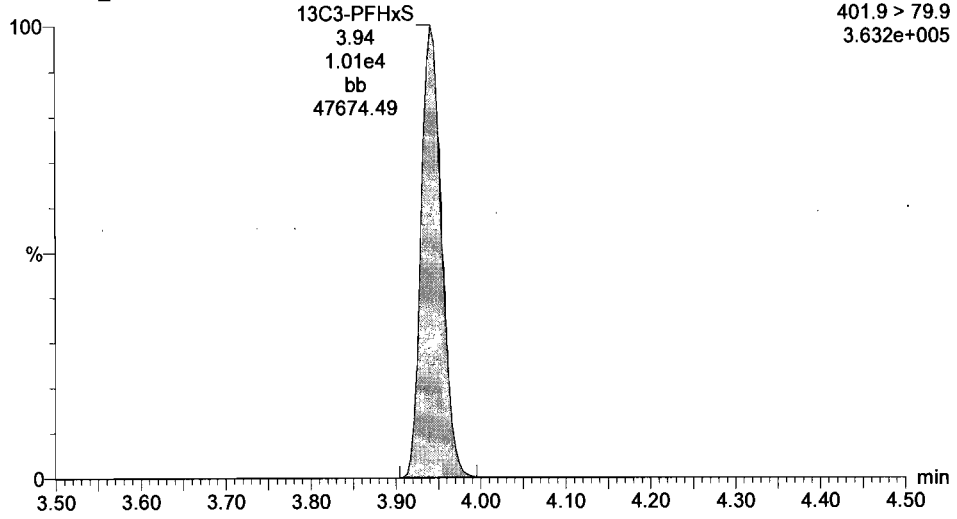
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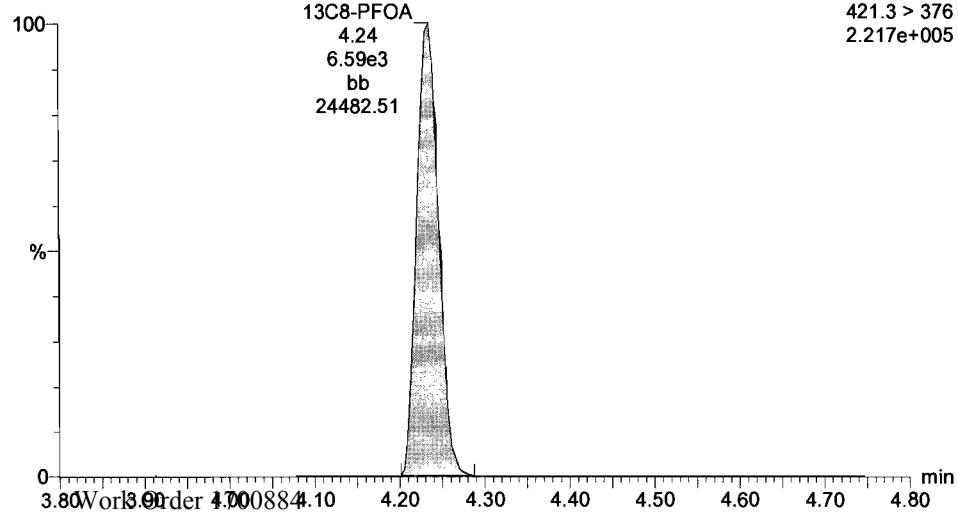
13C5-PFHxA



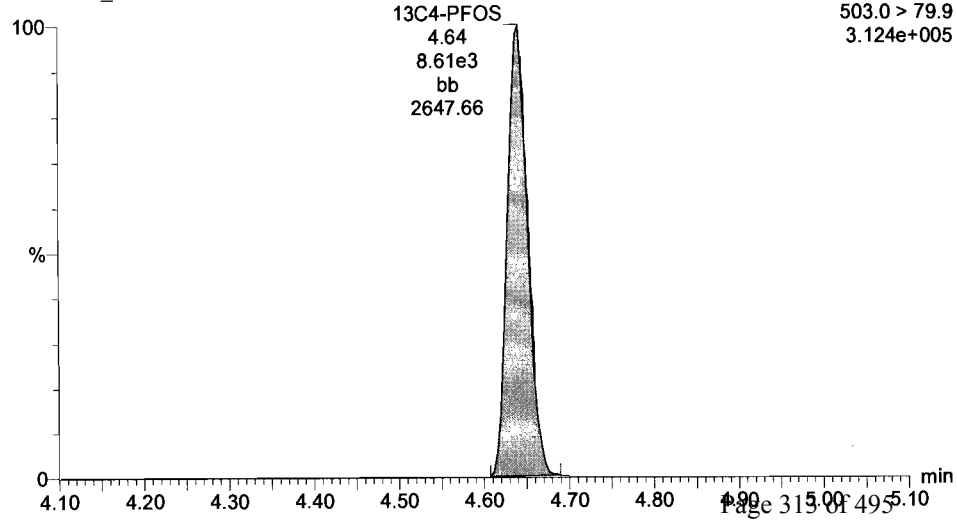
13C3-PFHxS



13C8-PFOA



13C4-PFOS

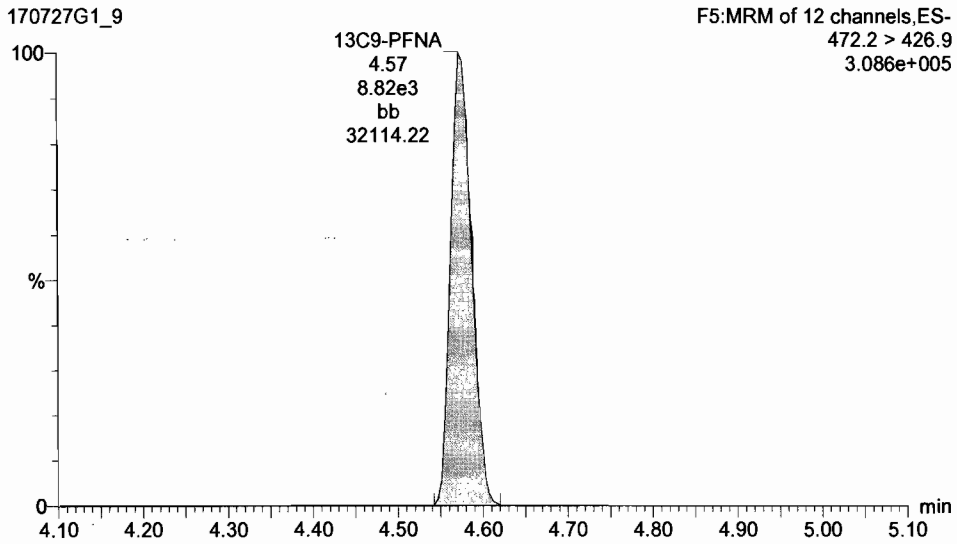


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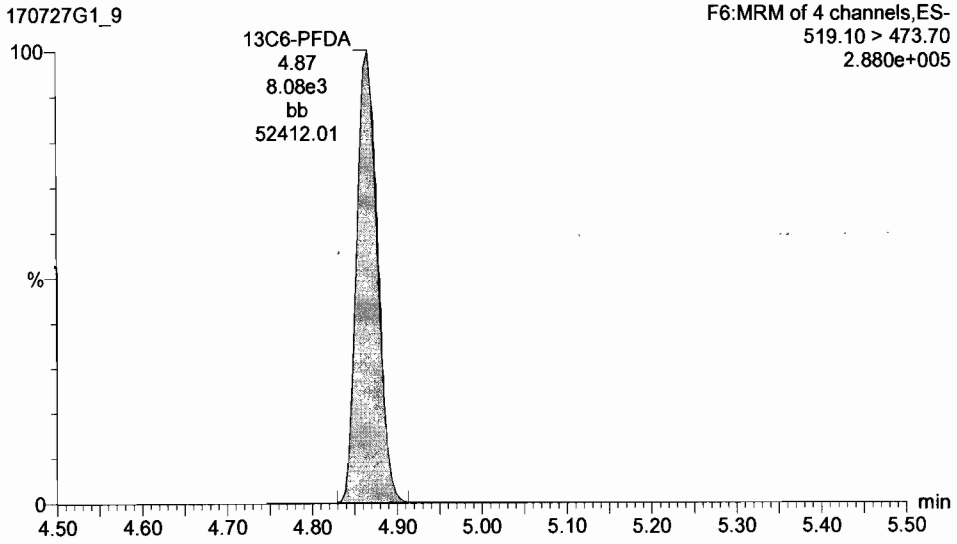
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13C9-PFNA



13C6-PFDA



Vista Analytical Laboratory Q1

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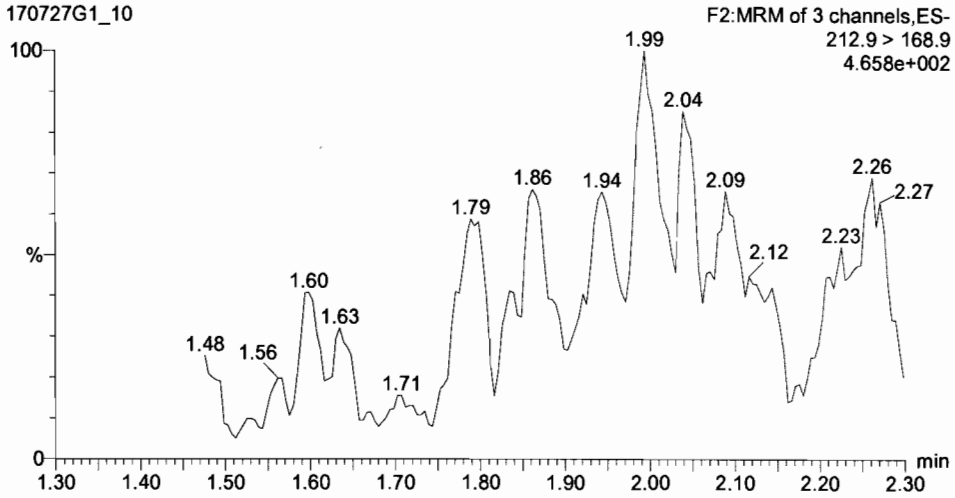
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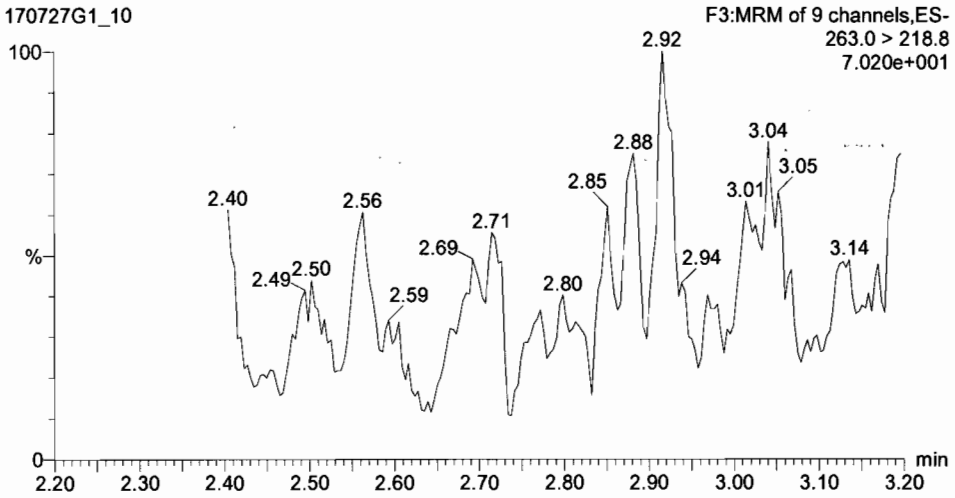
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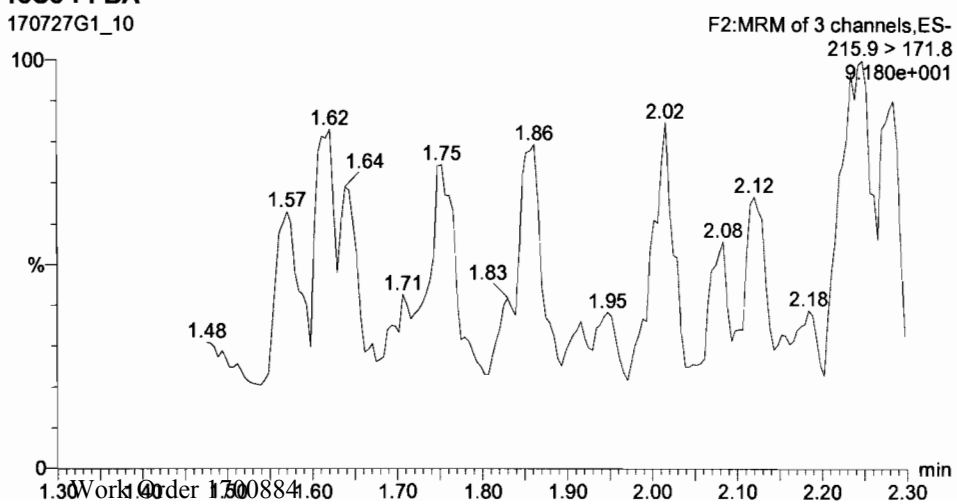
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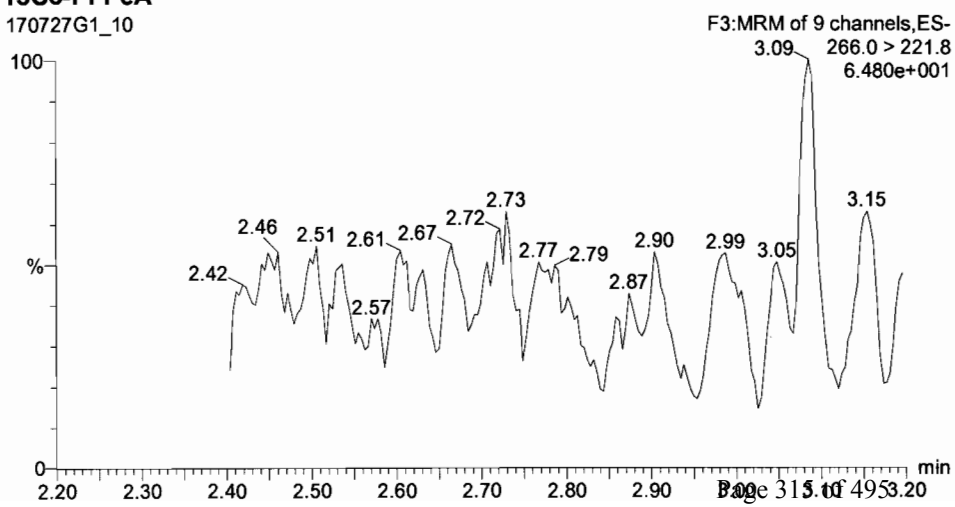
PFPeA



13C3-PFBA



13C3-PFPeA



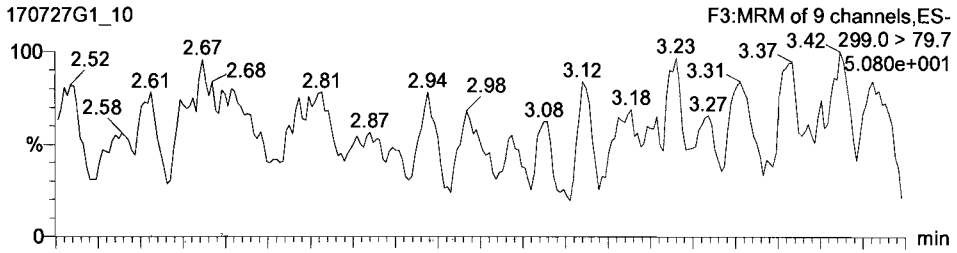
Vista Analytical Laboratory Q1

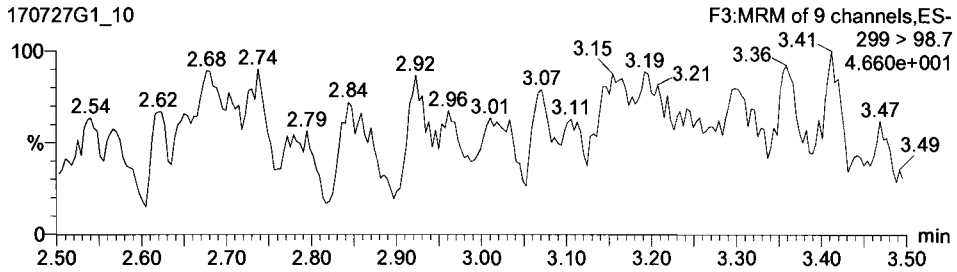
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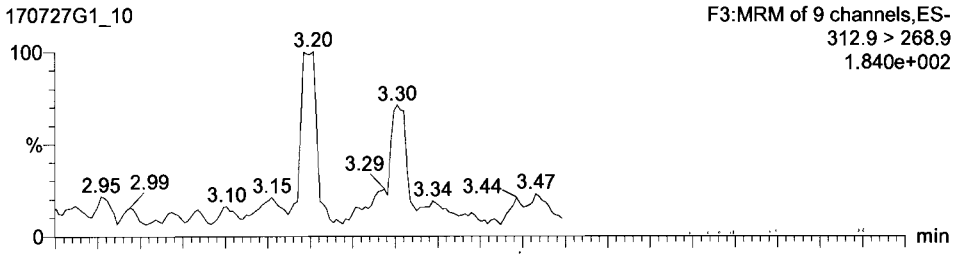
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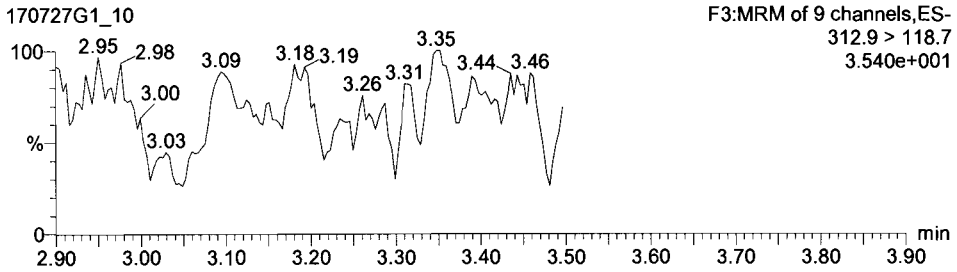
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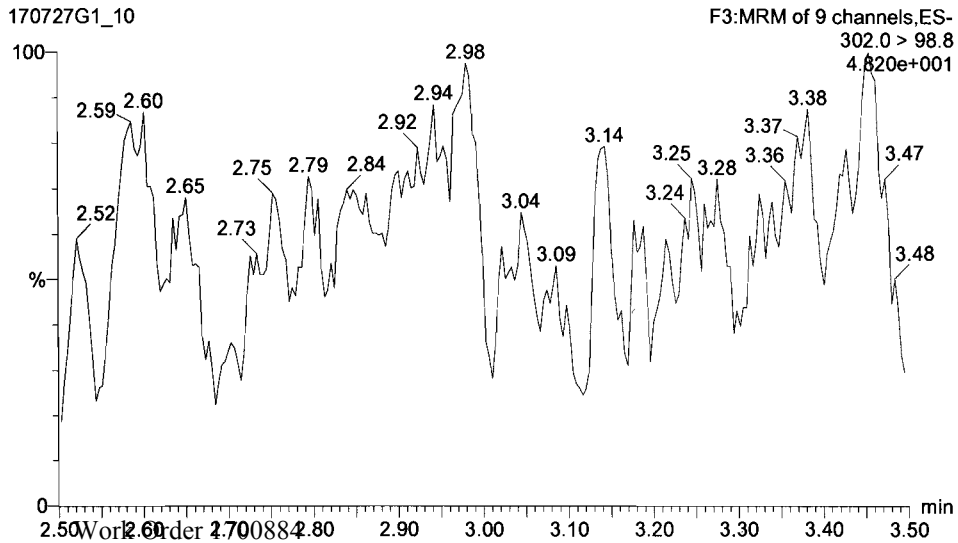


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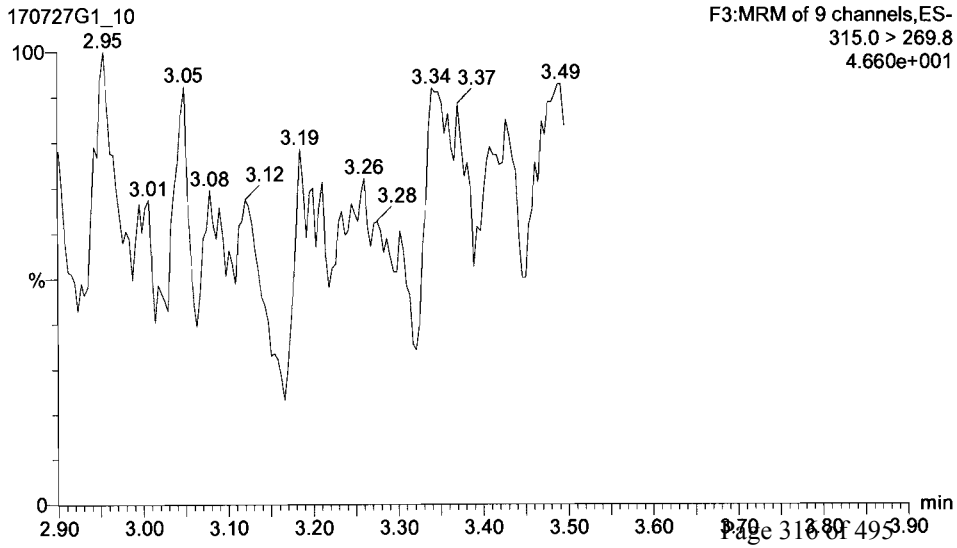




13C3-PFBS



13C2-PFHxA



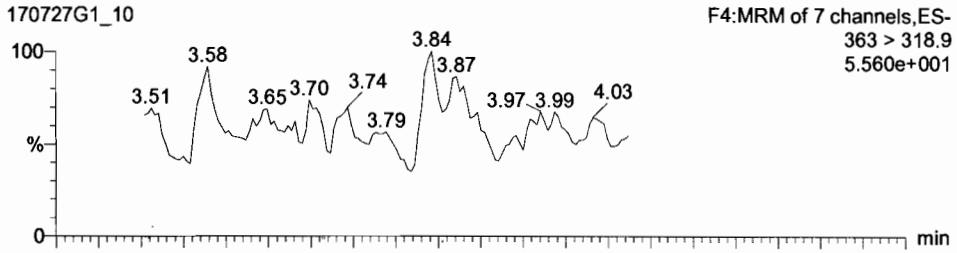
Vista Analytical Laboratory Q1

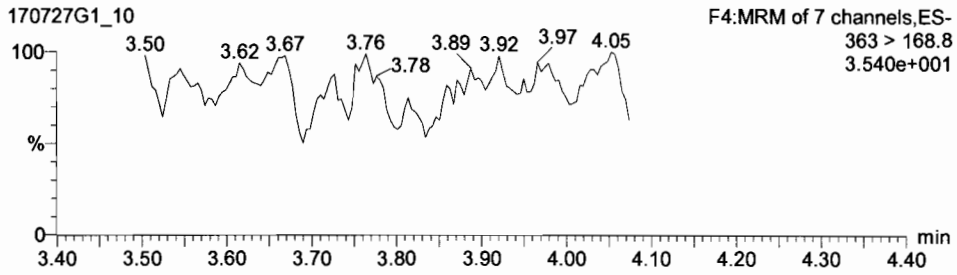
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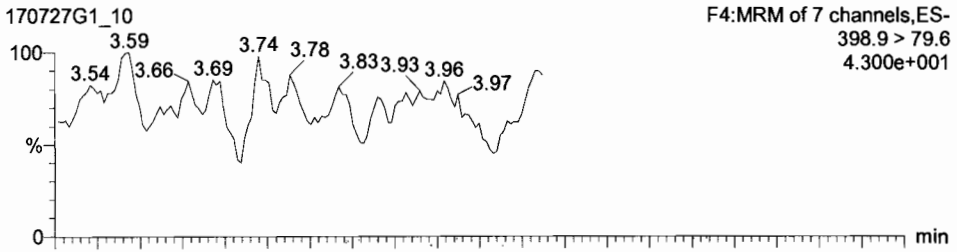
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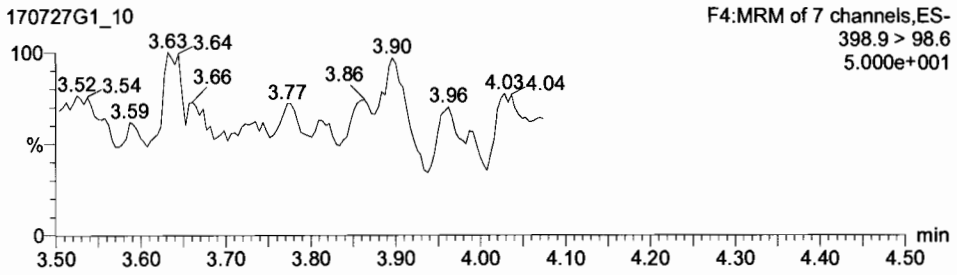
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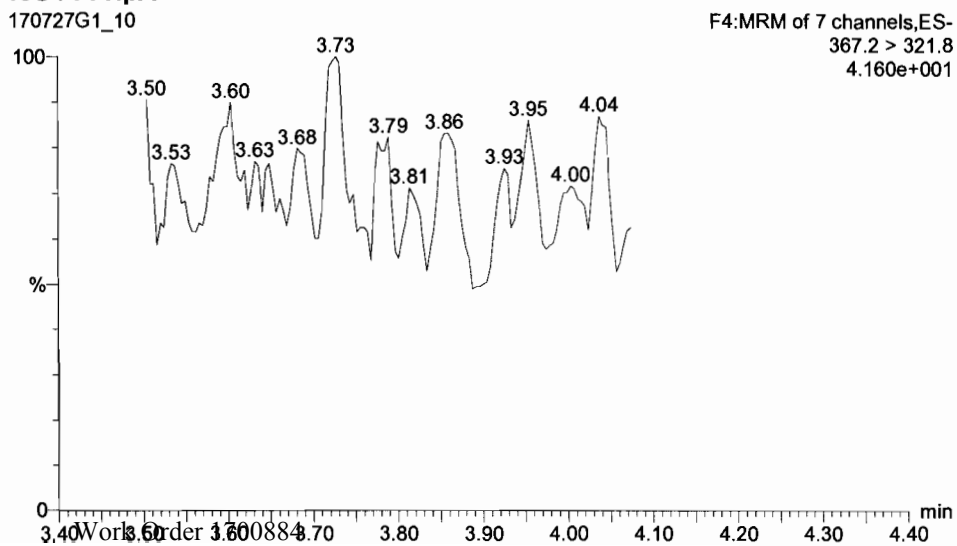


Total PFHxS

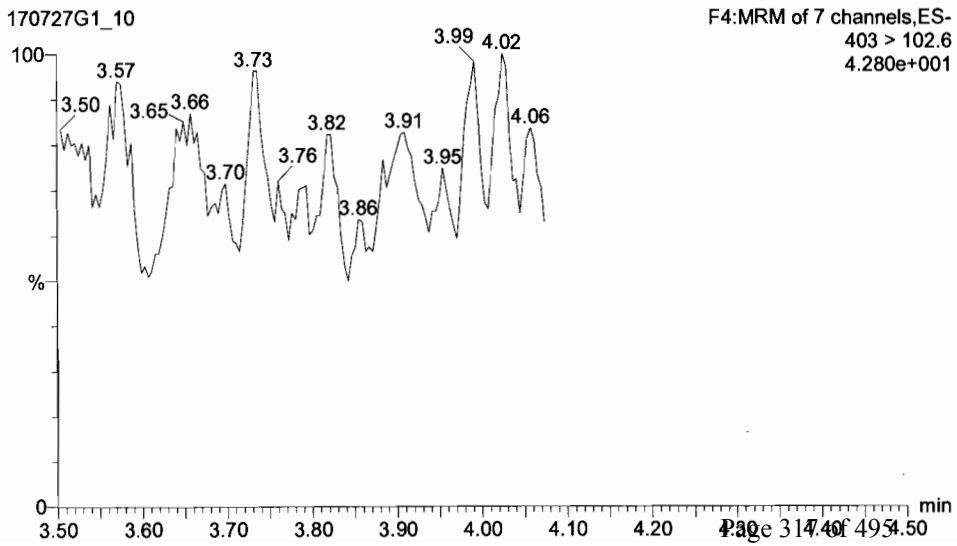




13C4-PFHpA



18O2-PFHxS

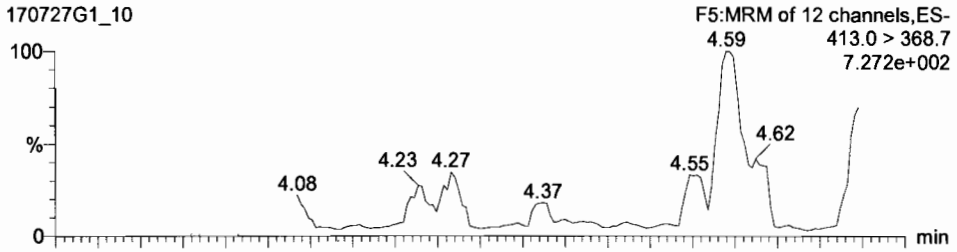


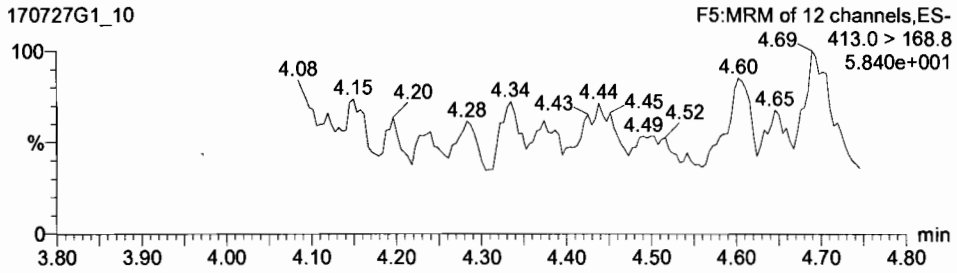
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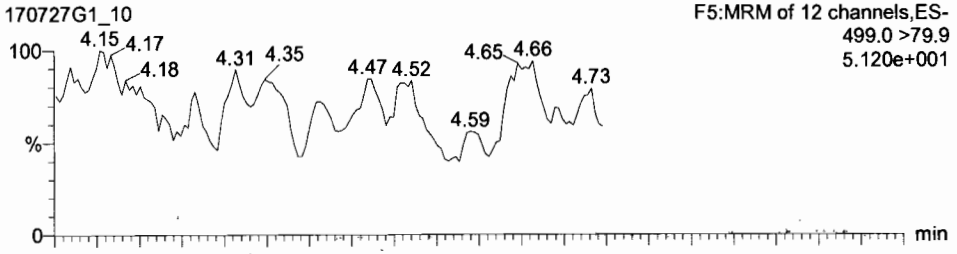
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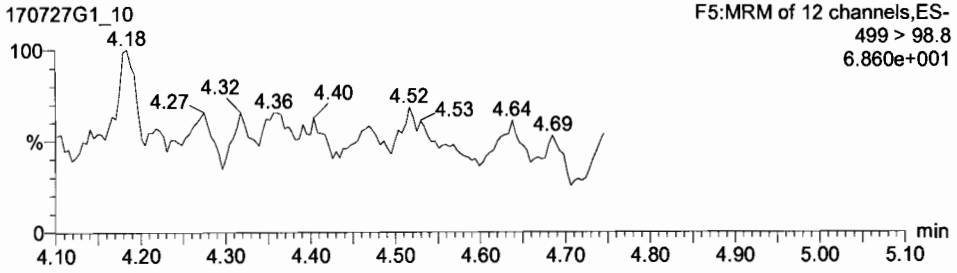
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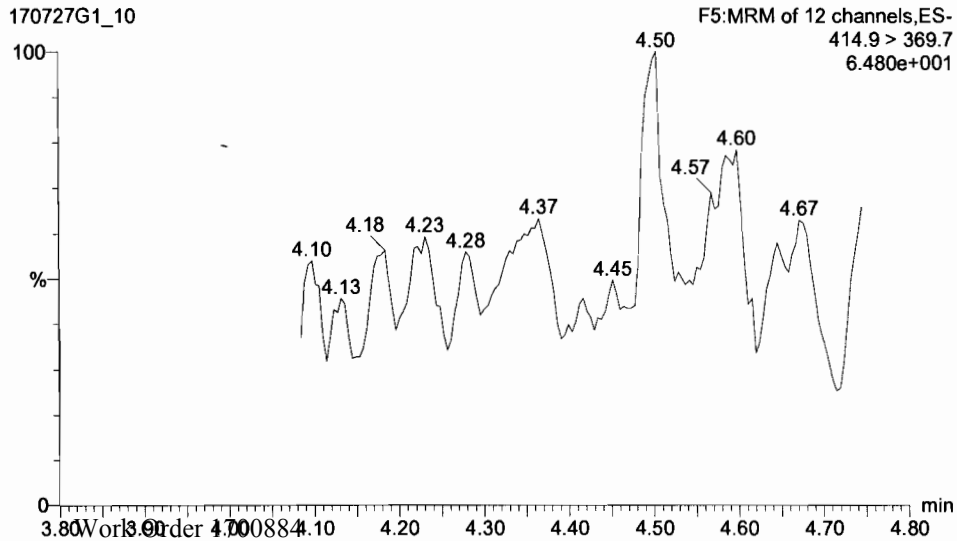


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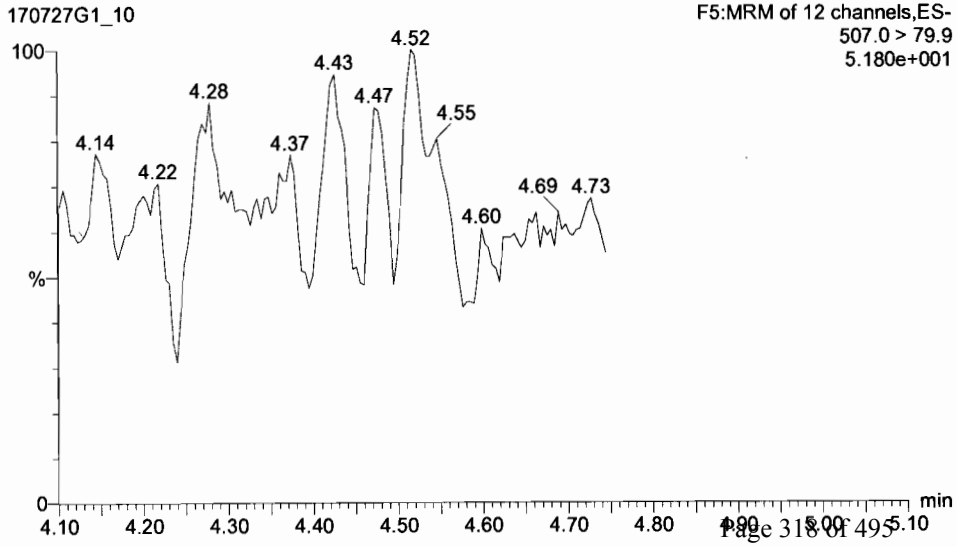




13C2-PFOA



13C8-PFOS

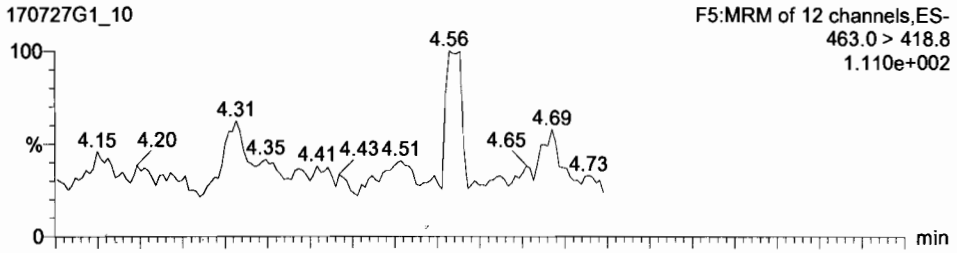


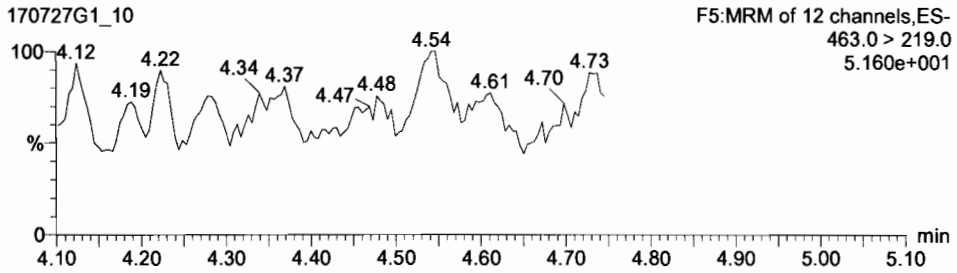
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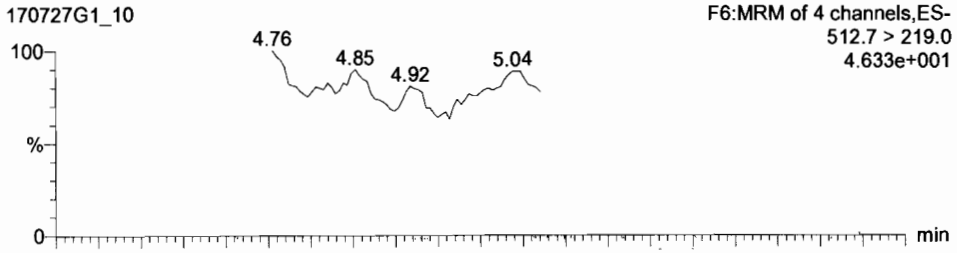
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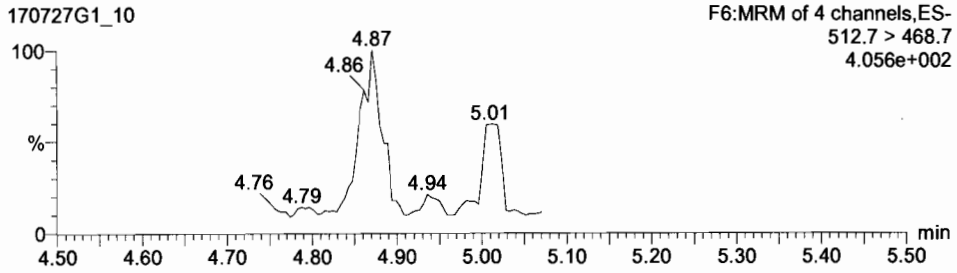
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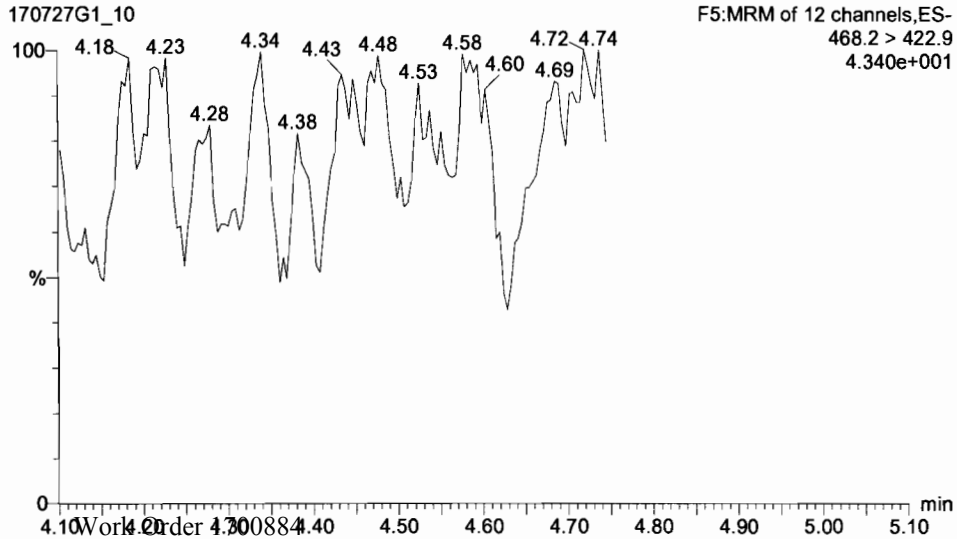


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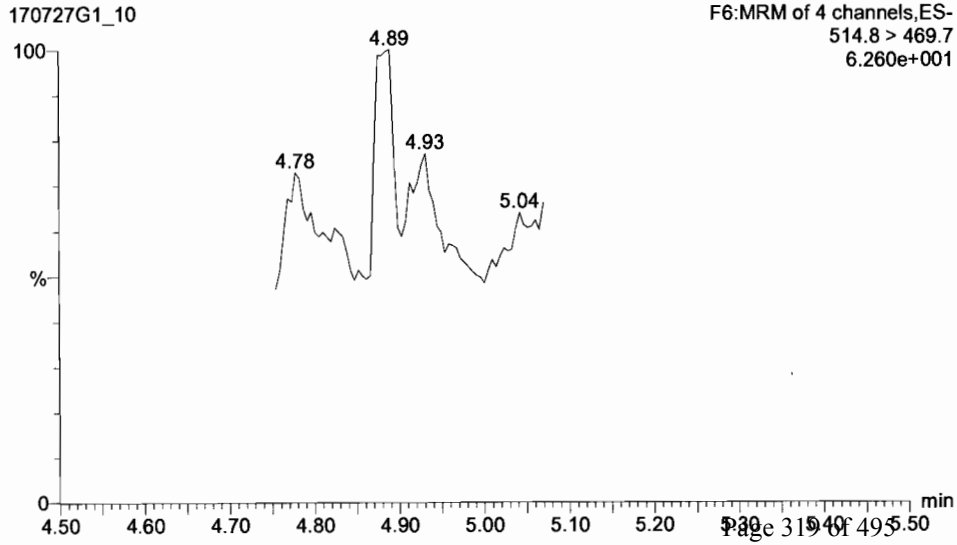




13C5-PFNA



13C2-PFDA

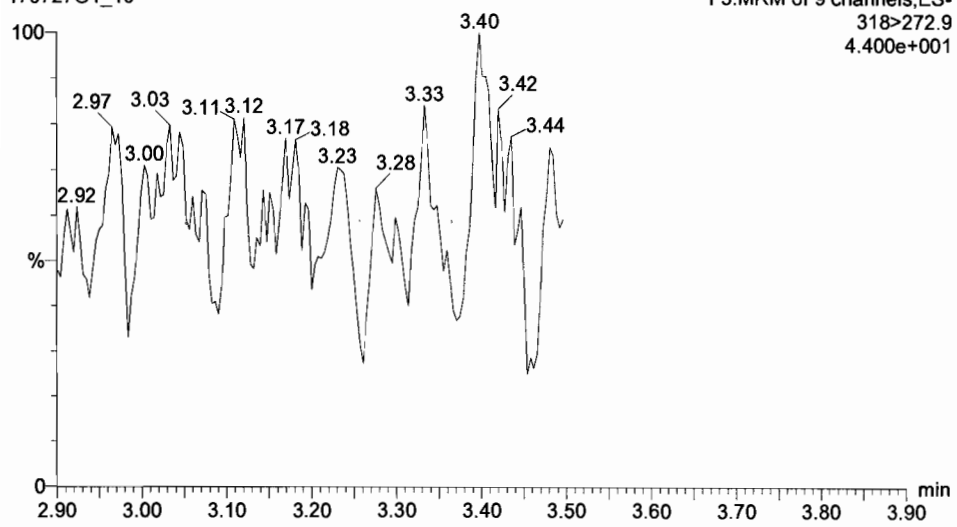


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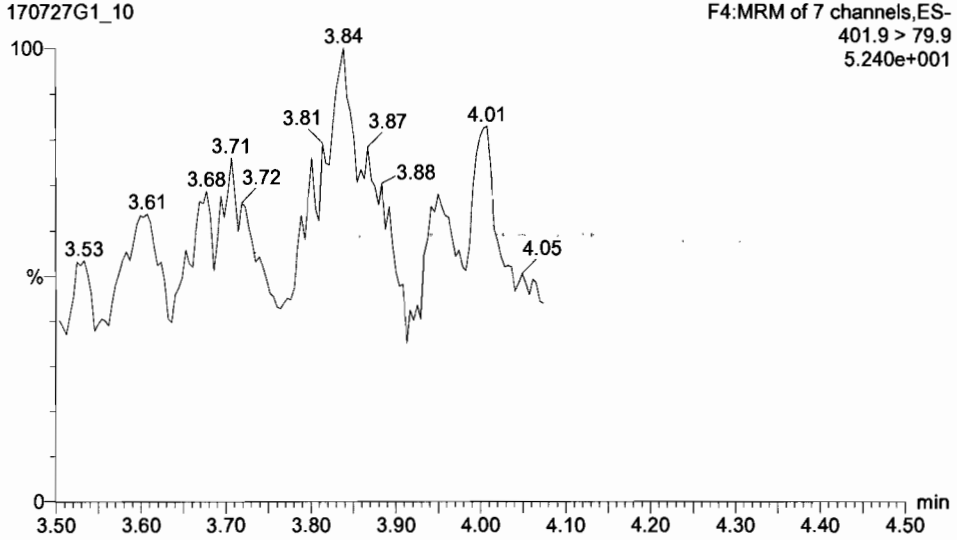
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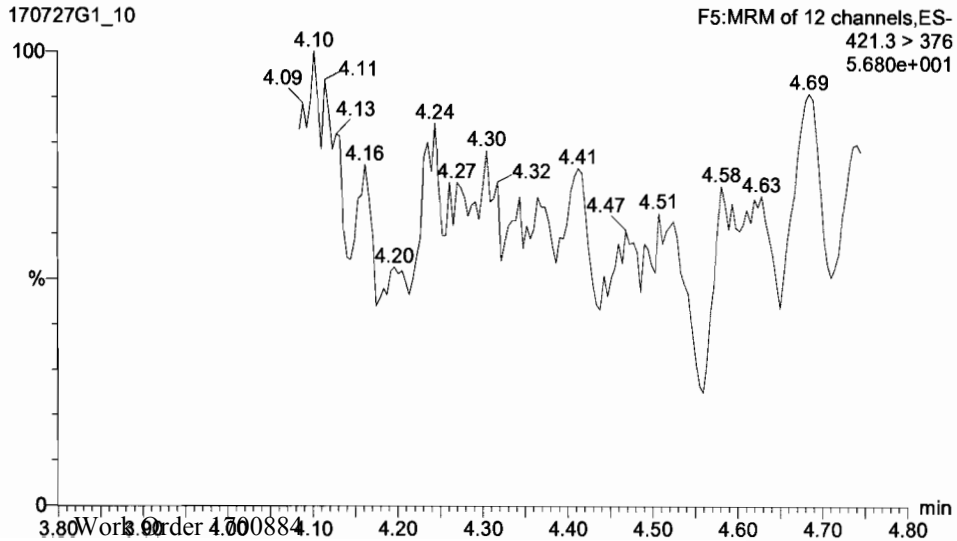
13C5-PFHxA



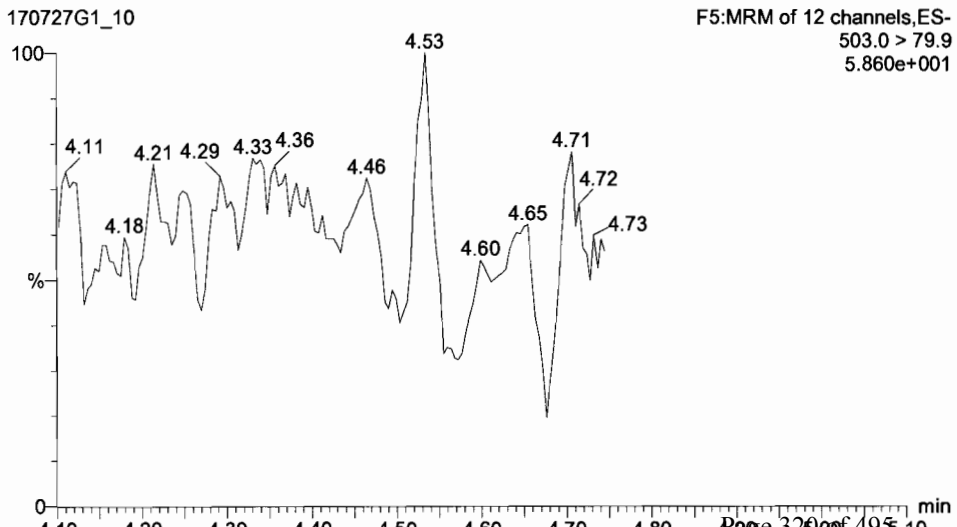
13C3-PFHxS



13C8-PFOA



13C4-PFOS

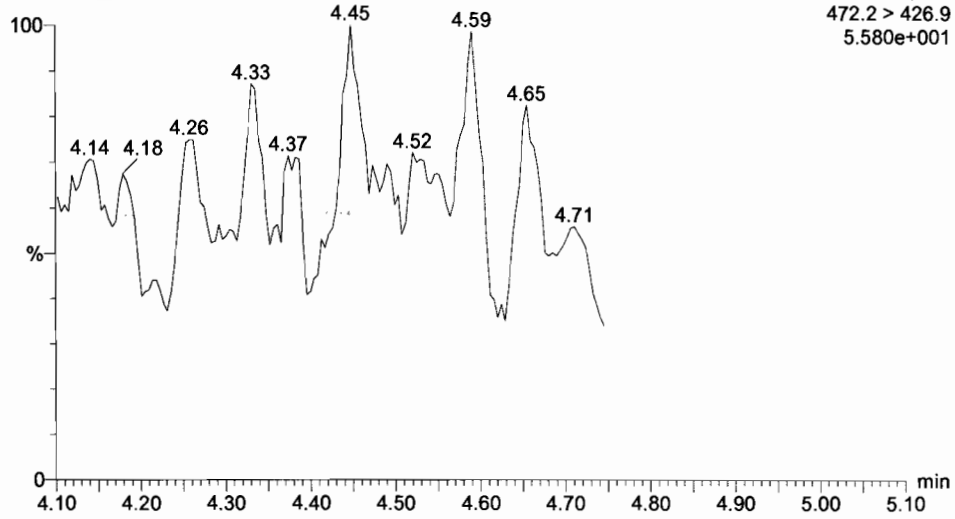


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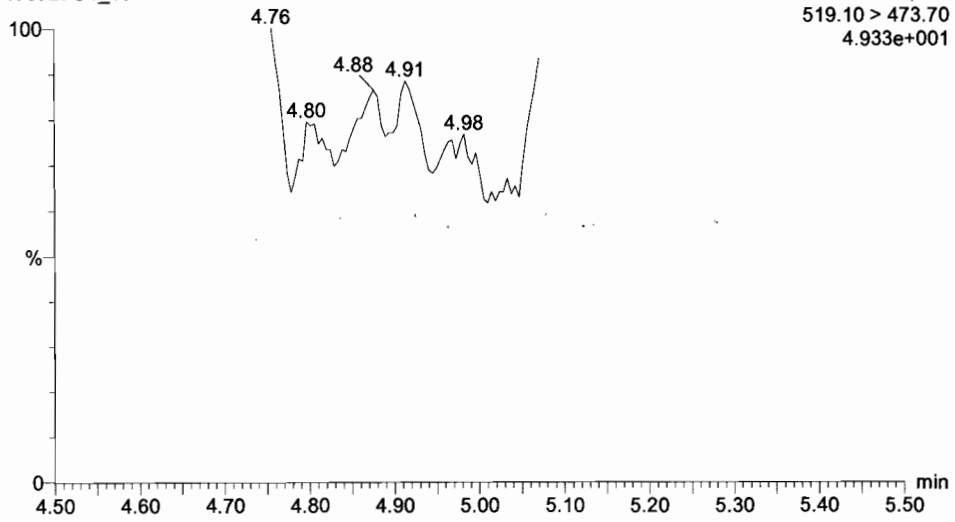
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ID: IPA, Description: IPA, Name: 170727G1_10, Date: 27-Jul-2017, Time: 13:24:41, Instrument: , Lab: , User:

13C9-PFNA



13C6-PFDA



Quantify Sample Summary Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-11.qld

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Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170727G1_11, Date: 27-Jul-2017, Time: 13:37:14, ID: SS170727G1-1 PFC SSS 17G2713, Description: PFC SSS 17G2713

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.32e4	2.05e4		1.000	1.67	10.7	107.1
2	2	PFPeA	263.0 > 218.8	7.15e3	7.69e3		1.000	2.63	10.5	105.2
3	3	PFBS	299.0 > 79.7	5.63e3	4.75e3		1.000	2.91	8.84	88.4
4	4	PFHxA	312.9 > 268.9	1.00e4	6.50e3		1.000	3.29	10.1	101.0
5	5	PFHpA	363 > 318.9	1.41e4	8.41e3		1.000	3.82	10.7	106.6
6	6	PFHxS	398.9 > 79.6	6.09e3	4.53e3		1.000	3.95	9.38	93.8
7	7	PFOA	413.0 > 368.7	1.28e4	1.85e4		1.000	4.24	10.7	107.3
8	8	PFNA	463.0 > 418.8	1.13e4	5.97e3		1.000	4.58	10.3	102.8
9	9	PFOS	499.0 >79.9	2.54e3	7.28e3		1.000	4.64	9.20	92.0
10	10	PFDA	512.7 > 219.0	1.65e3	1.13e4		1.000	4.87	9.14	91.4
11	11	13C3-PFBA	215.9 > 171.8	2.05e4	1.93e4	1.183	1.000	1.67	11.3	90.1
12	12	13C3-PFBS	302.0 > 98.8	4.75e3	1.63e4	0.263	1.000	2.91	13.8	110.7
13	13	13C3-PFPeA	266.0 > 221.8	7.69e3	1.63e4	0.446	1.000	2.63	13.2	105.3
14	14	13C2-PFHxA	315.0 > 269.8	6.50e3	1.63e4	0.361	1.000	3.29	13.8	110.2
15	15	13C4-PFHpA	367.2 > 321.8	8.41e3	1.63e4	0.475	1.000	3.82	13.5	108.3
16	16	18O2-PFHxS	403 > 102.6	4.53e3	1.12e4	0.411	1.000	3.95	12.3	98.2
17	17	13C2-PFOA	414.9 > 369.7	1.85e4	6.32e3	2.843	1.000	4.24	12.9	103.1
18	18	13C5-PFNA	468.2 > 422.9	5.97e3	7.44e3	0.854	1.000	4.58	11.7	94.0
19	19	13C2-PFDA	514.8 > 469.7	1.13e4	6.36e3	1.742	1.000	4.87	12.8	102.1
20	20	13C8-PFOS	507.0 > 79.9	7.28e3	7.78e3	0.927	1.000	4.64	12.6	100.9
21	21	13C4-PFBA	216.9 > 171.8	1.93e4	1.93e4	1.000	1.000	1.67	12.5	100.0
22	22	13C5-PFHxA	318>272.9	1.63e4	1.63e4	1.000	1.000	3.28	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.12e4	1.12e4	1.000	1.000	3.95	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	6.32e3	6.32e3	1.000	1.000	4.24	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	7.44e3	7.44e3	1.000	1.000	4.58	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	7.78e3	7.78e3	1.000	1.000	4.64	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	6.36e3	6.36e3	1.000	1.000	4.87	12.5	100.0

70-130

KM 7/27/17

✓ AC
7/27/17

Vista Analytical Laboratory Q1

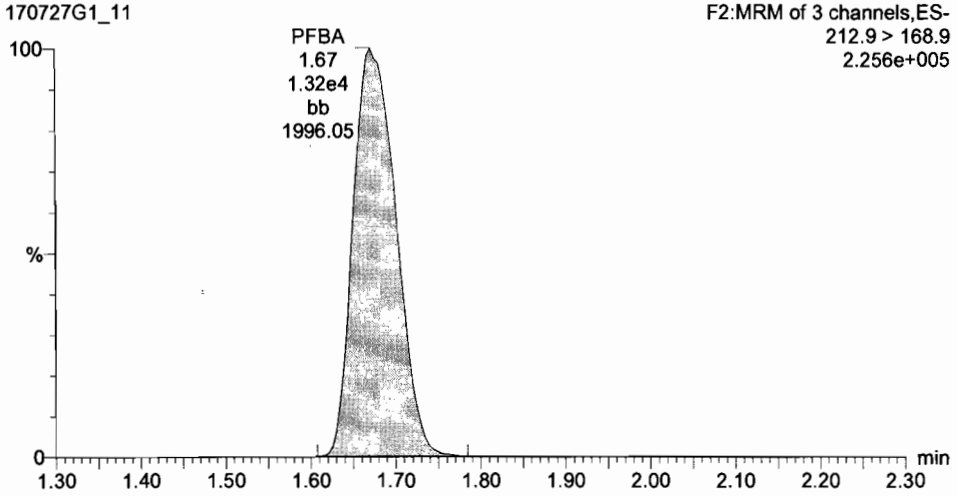
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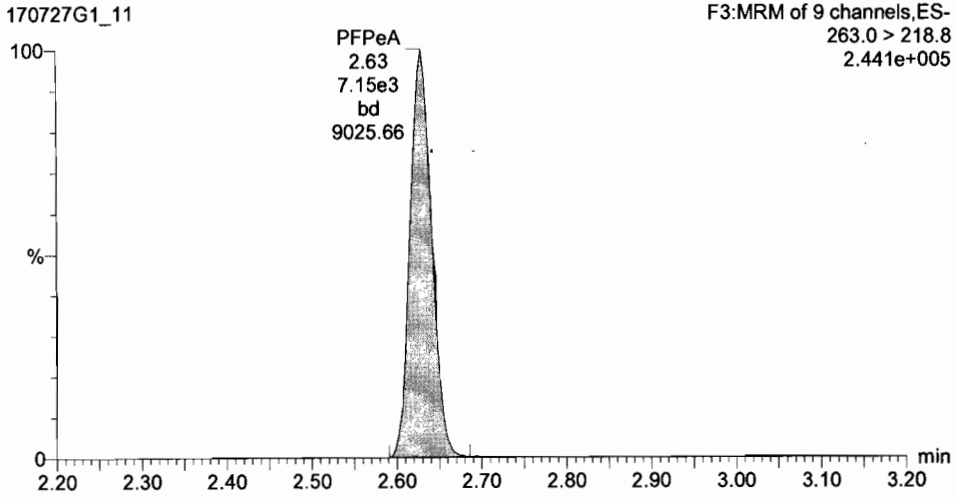
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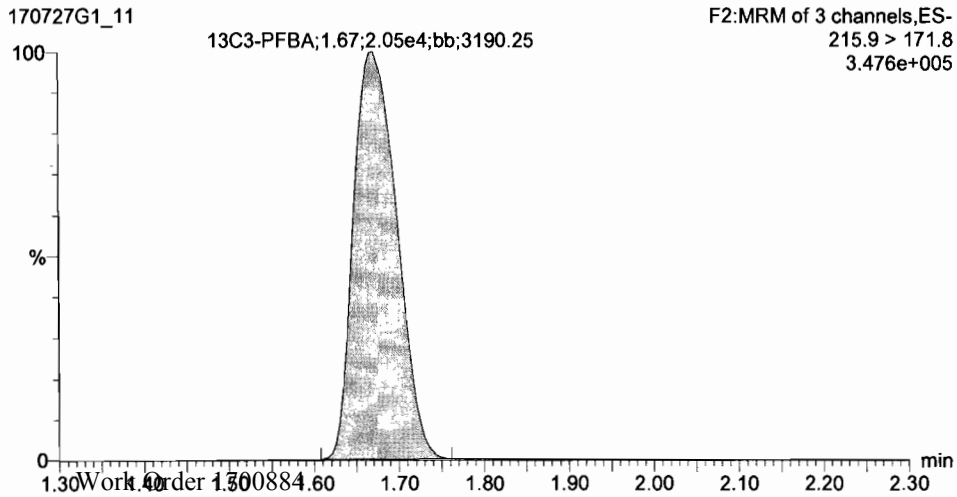
PFBA



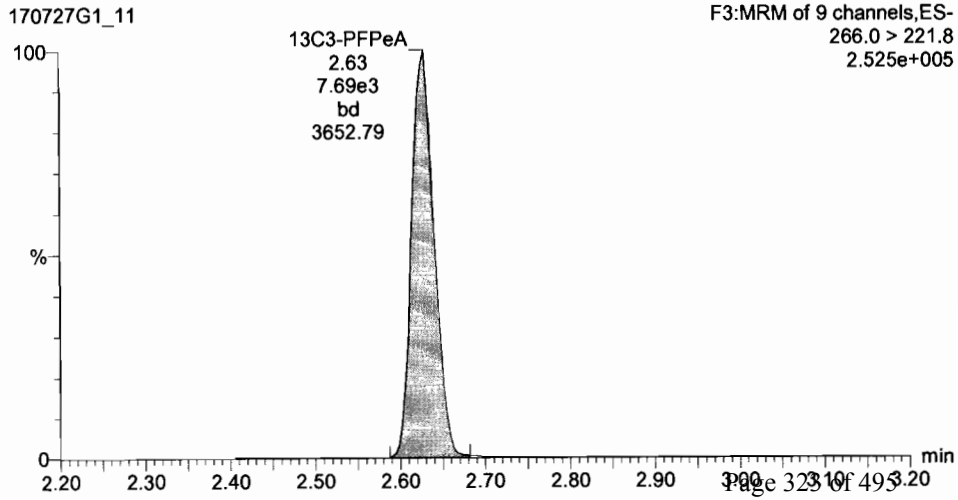
PFPeA



13C3-PFBA



13C3-PFPeA

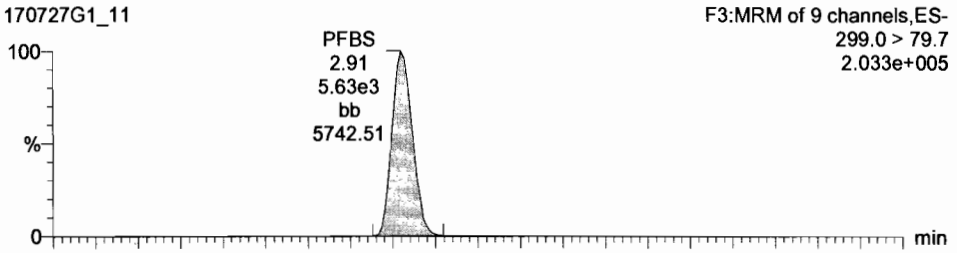


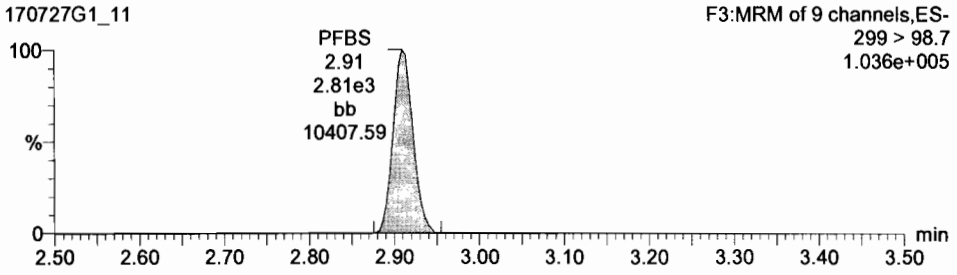
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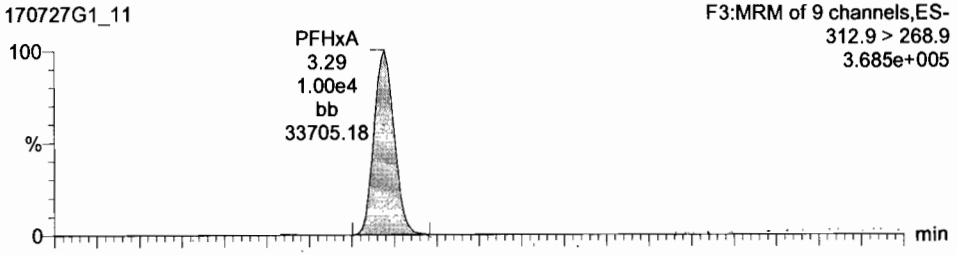
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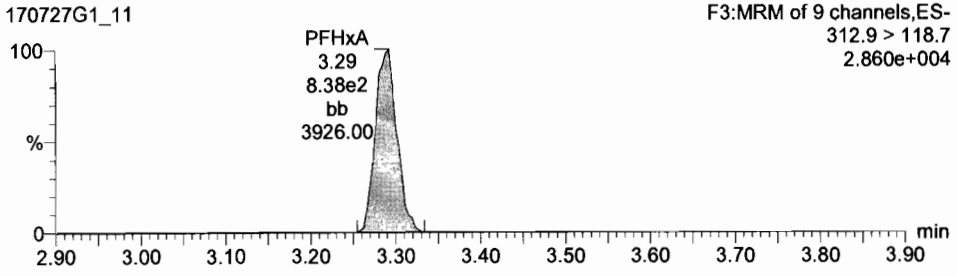
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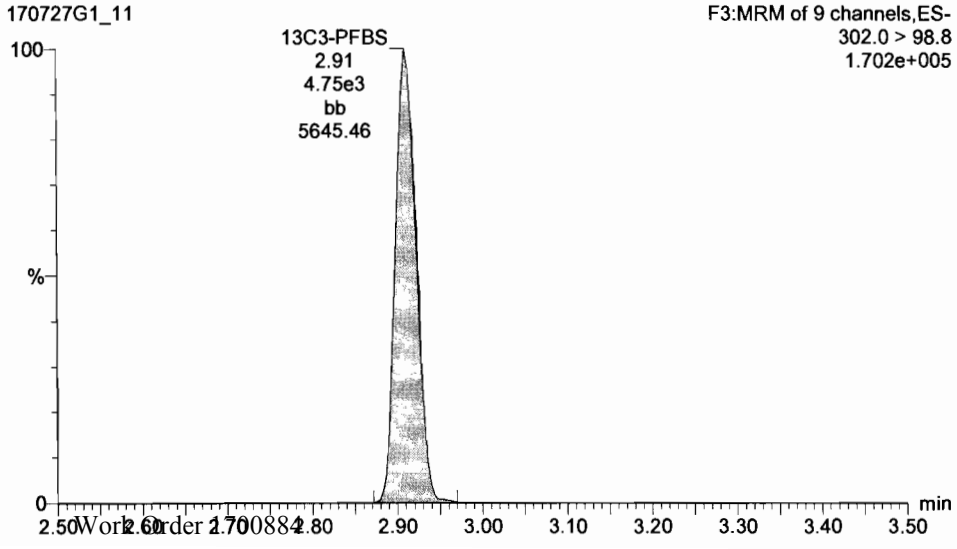


PFHxA

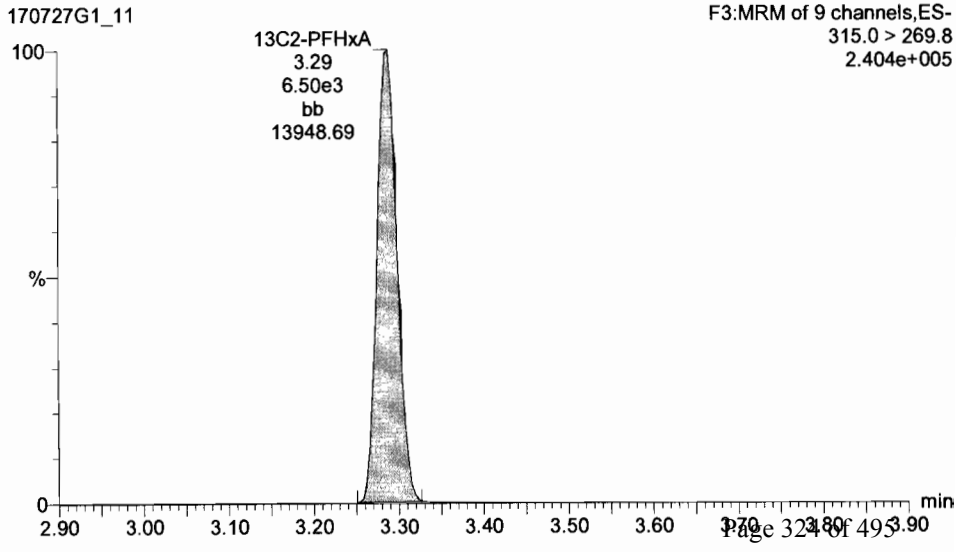




13C3-PFBS



13C2-PFHxA

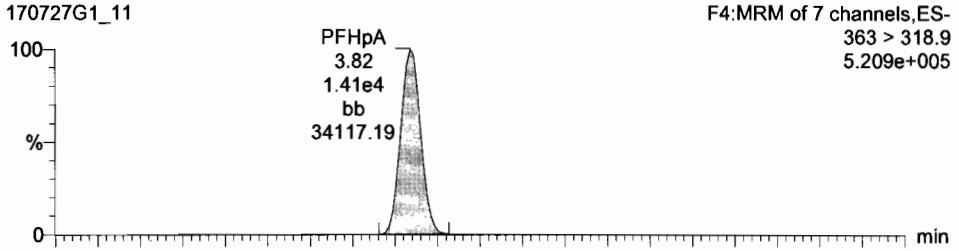


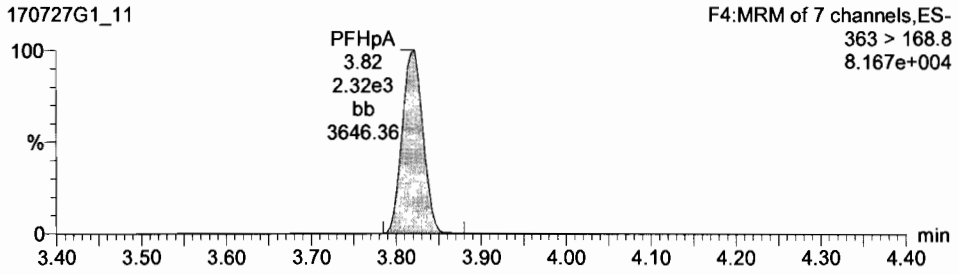
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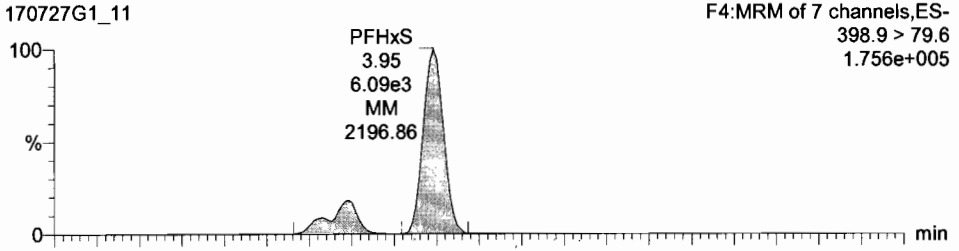
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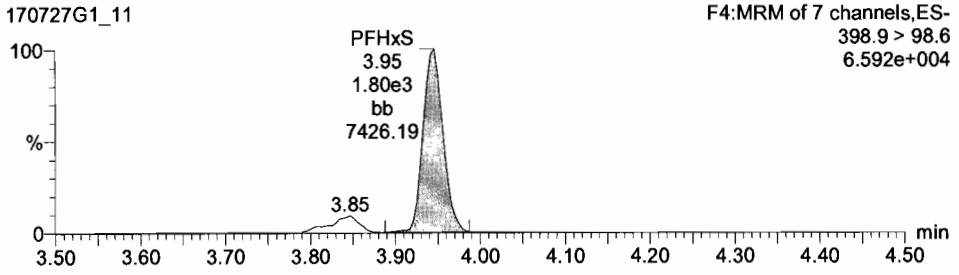
PFHpA



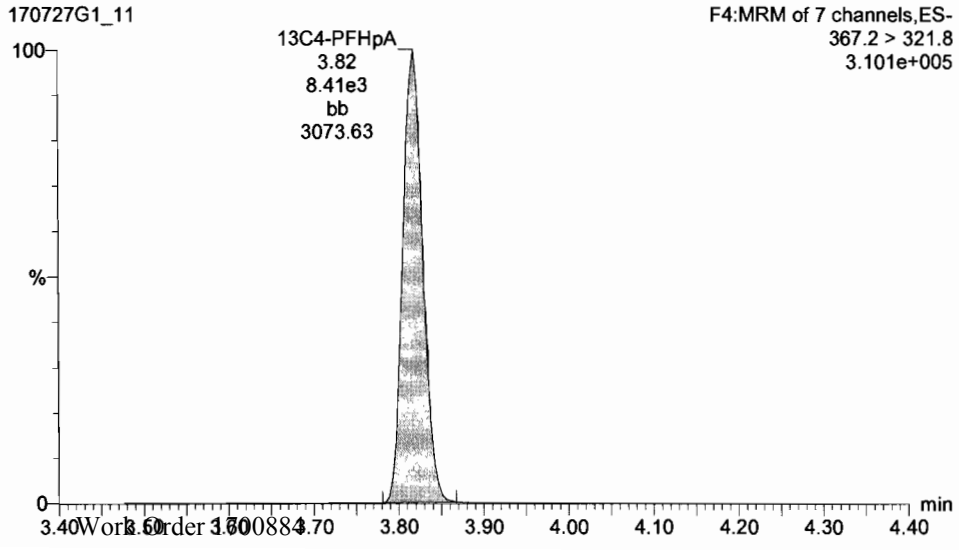


Total PFHxS

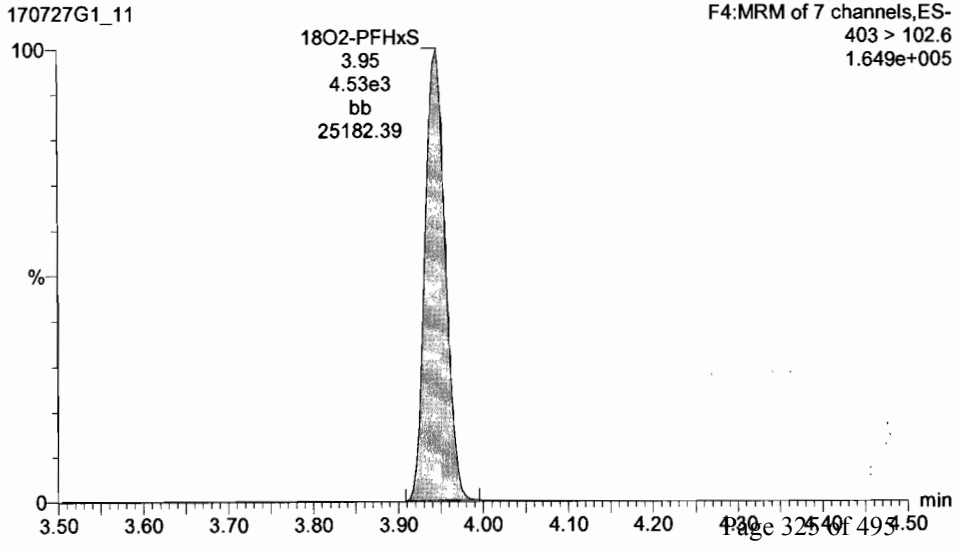




13C4-PFHpA



18O2-PFHxS

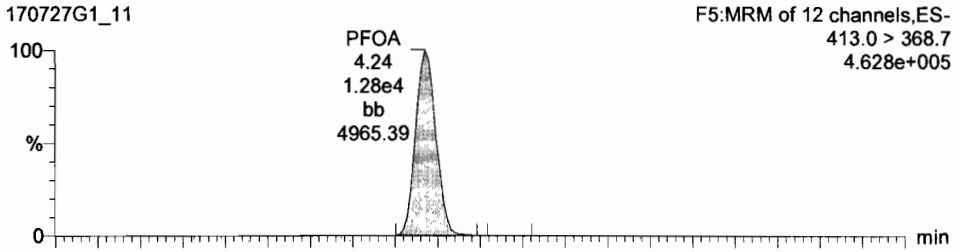


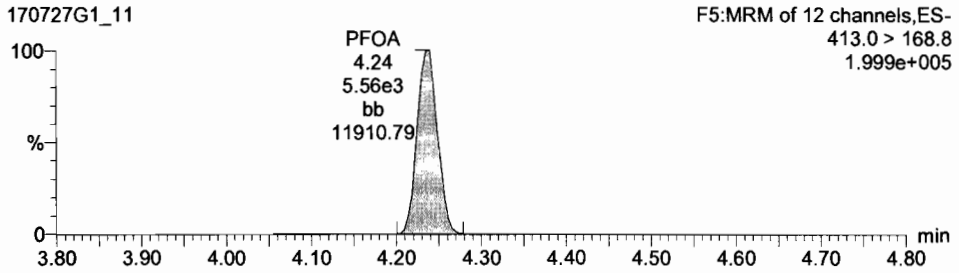
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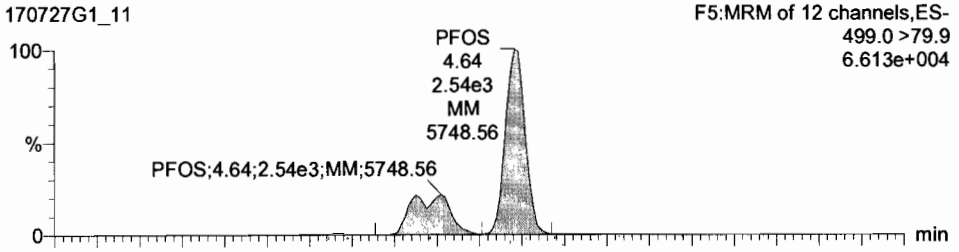
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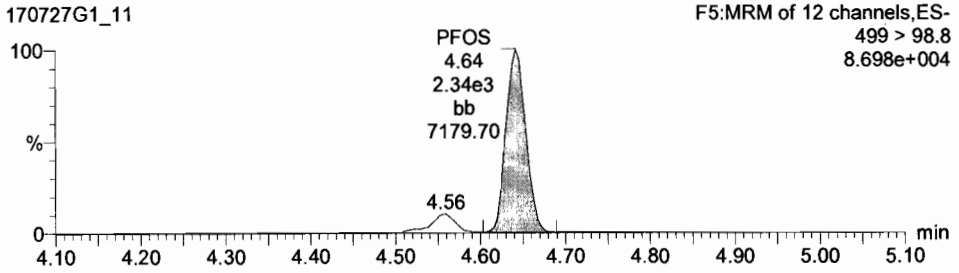
Total PFOA



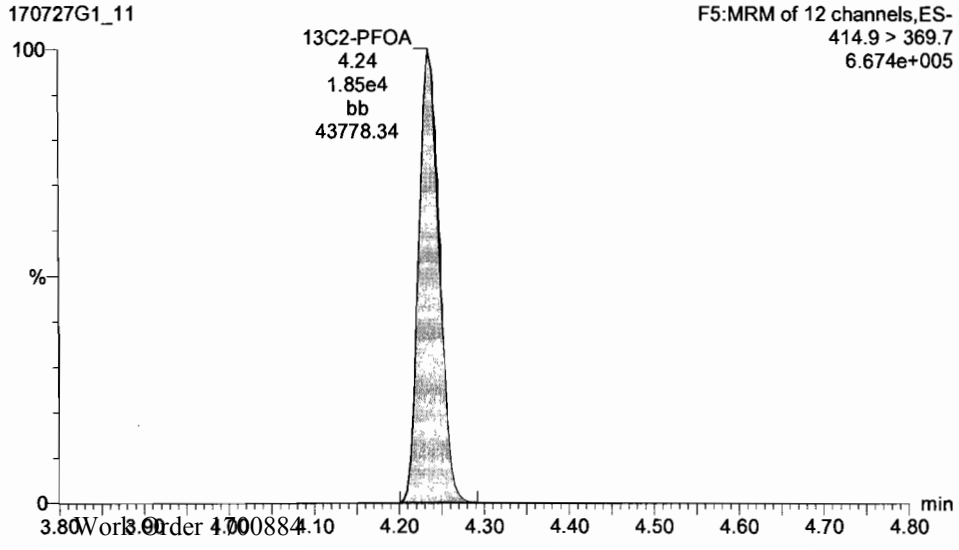


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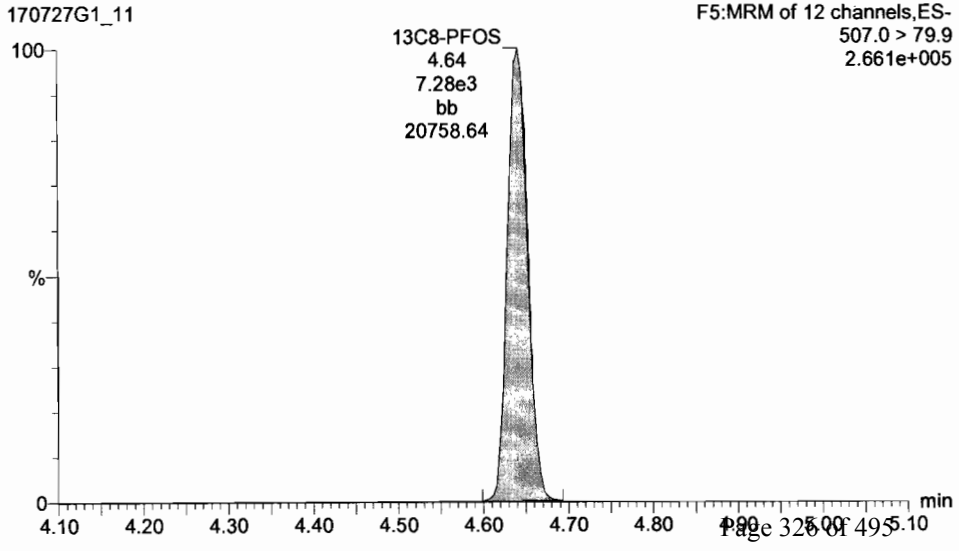




13C2-PFOA



13C8-PFOS

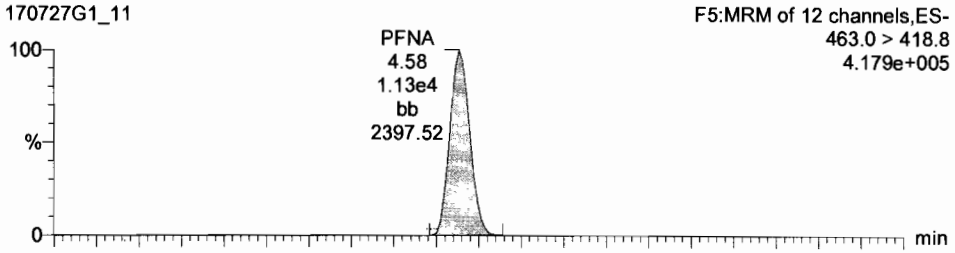


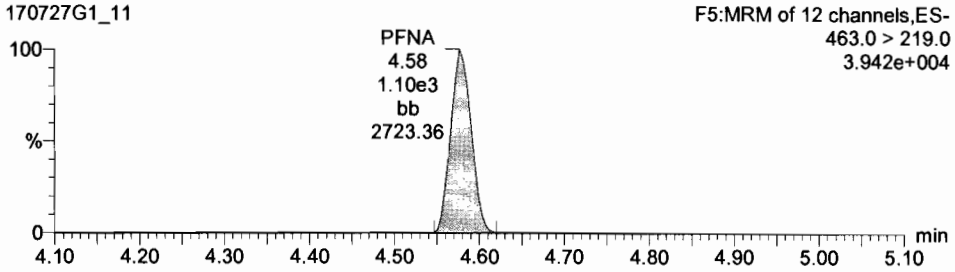
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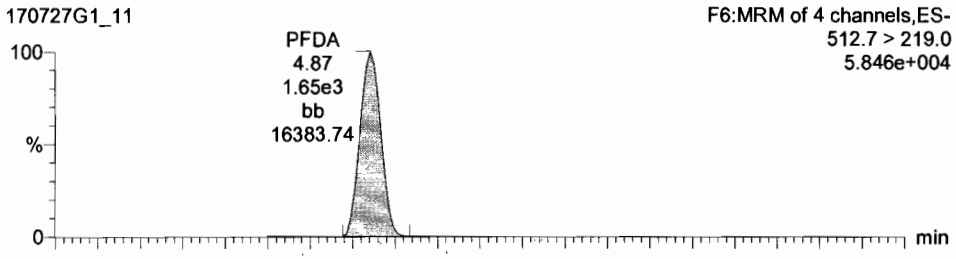
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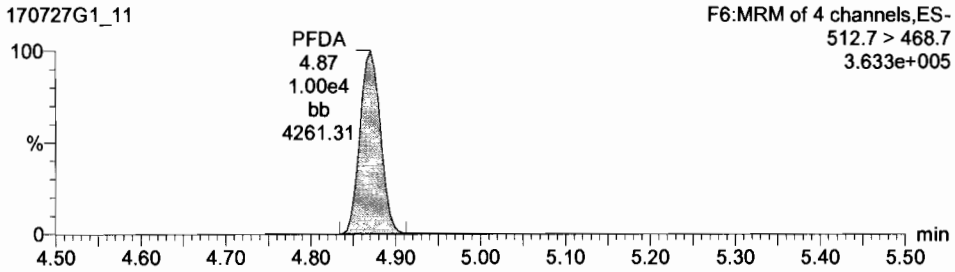
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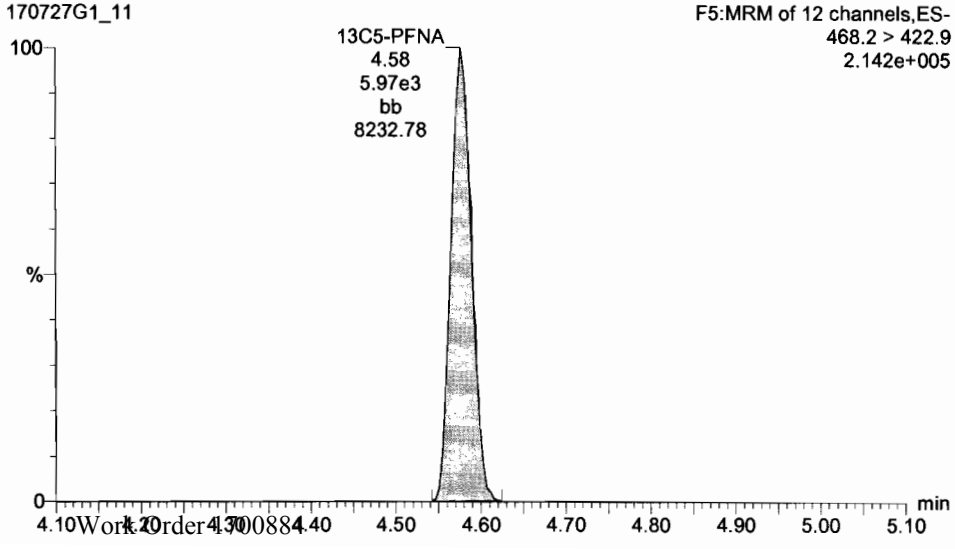


PFDA

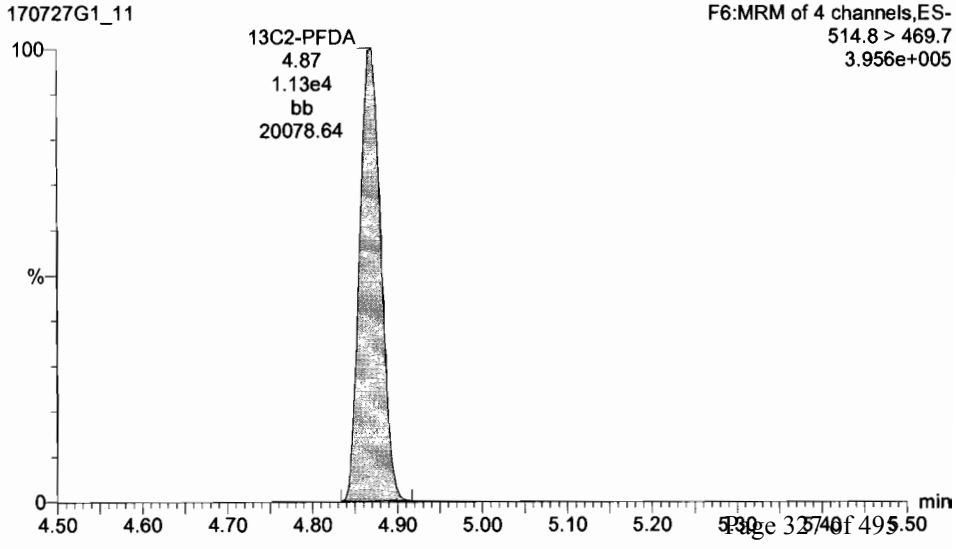




13C5-PFNA



13C2-PFDA

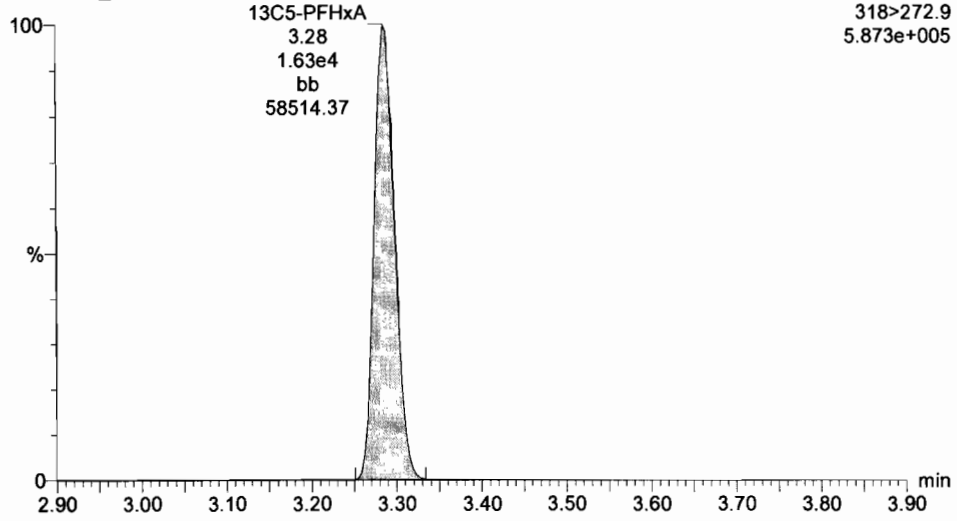


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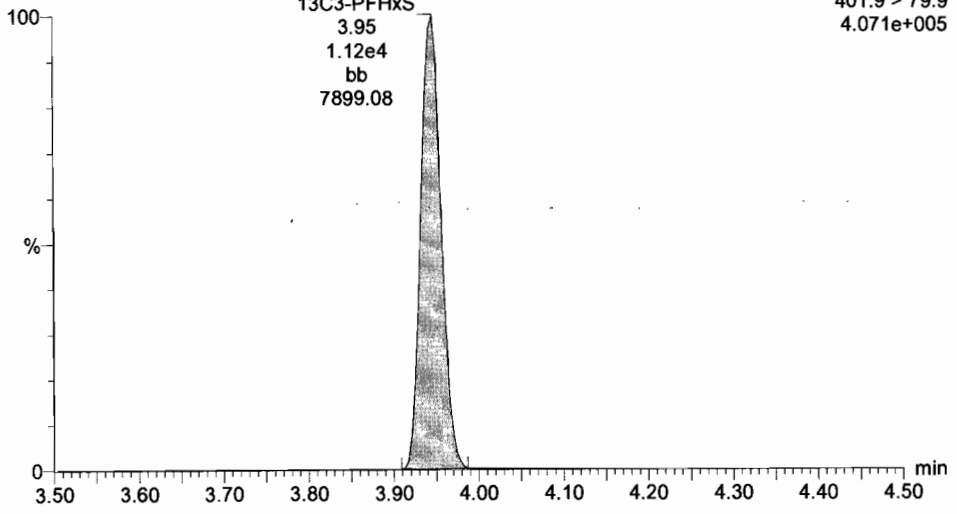
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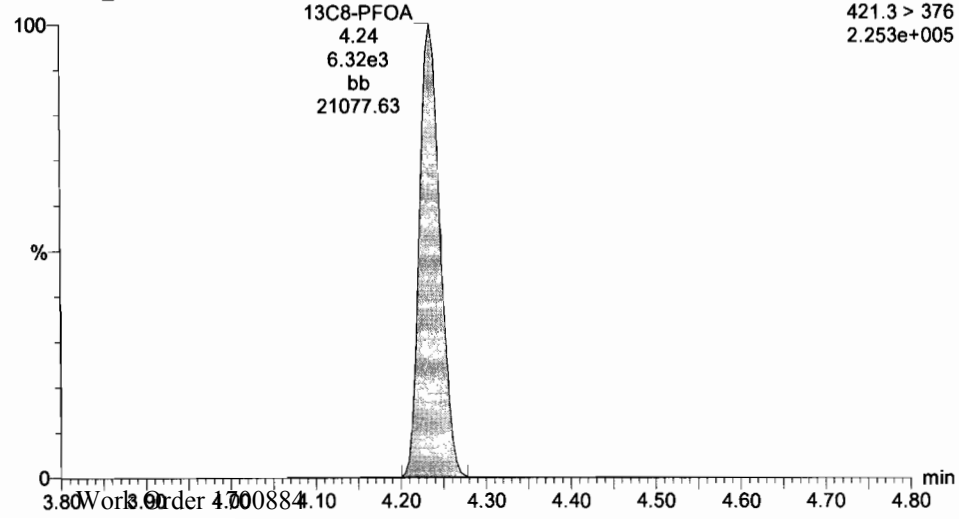
13C5-PFHxA



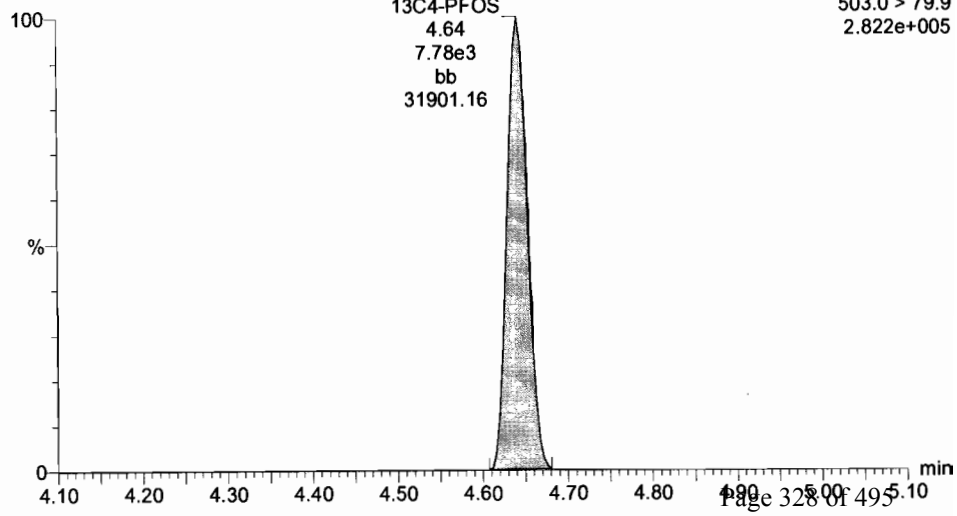
13C3-PFHxS



13C8-PFOA



13C4-PFOS

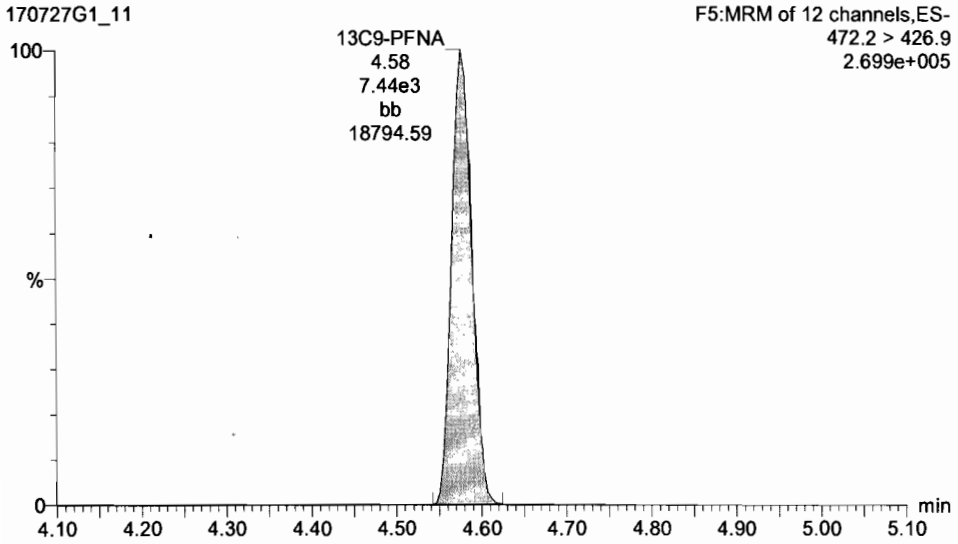


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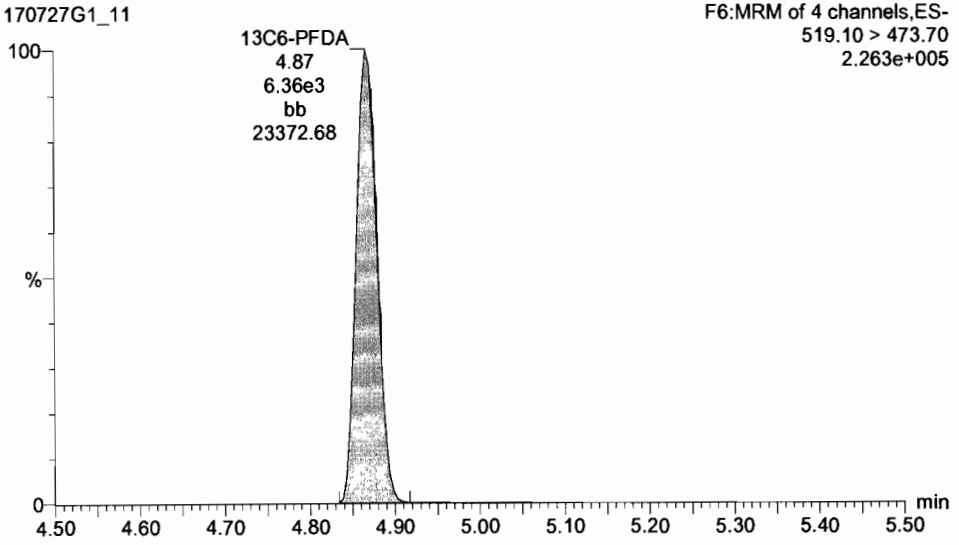
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13C9-PFNA



13C6-PFDA



Analytical Standard Record

Vista Analytical Laboratory

17G1307

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1432	13C2-PFHxDA	14-Sep-16	** Vendor **	07-Jan-21	14-Sep-16 14:19 by TLD	0.2
16I1433	13C2-PFHxA	14-Sep-16	** Vendor **	08-Apr-21	14-Sep-16 14:22 by TLD	0.2
17B2809	d3-N-Me-FOSAA	28-Feb-17	** Vendor **	28-Feb-18	28-Feb-17 13:24 by EMS	0.5
17B2811	d5-N-EtFOSAA	28-Feb-17	** Vendor **	22-Nov-21	28-Feb-17 13:33 by EMS	0.5
17E1718	18O2-PFHxS	17-May-17	** Vendor **	17-Feb-22	17-May-17 12:46 by INJ	0.529
17E2412	13C8-PFOS	24-May-17	** Vendor **	30-Sep-21	24-May-17 11:19 by INJ	0.539
17E2413	13C3-PFBS	24-May-17	** Vendor **	02-Aug-21	24-May-17 11:20 by INJ	0.538
17E2414	13C3-PFBA	24-May-17	** Vendor **	27-May-21	24-May-17 11:20 by INJ	0.5
17E2415	13C2-8:2 FTS	24-May-17	** Vendor **	22-Aug-21	24-May-17 11:21 by INJ	0.522
17E2416	13C2-6:2 FTS	24-May-17	** Vendor **	17-Feb-22	24-May-17 11:21 by INJ	0.526
17E2417	13C5-PFNA	24-May-17	** Vendor **	30-Sep-21	24-May-17 11:22 by INJ	0.5
17E2418	13C2-PFTeDA	24-May-17	** Vendor **	01-Mar-22	24-May-17 11:22 by INJ	0.5
17E2419	13C2-PFUdA	24-May-17	** Vendor **	22-Nov-21	24-May-17 11:23 by INJ	0.5
17E2420	13C4-PFHpA	24-May-17	** Vendor **	27-May-21	24-May-17 11:23 by INJ	0.5
17E2421	13C2-PFDoA	24-May-17	** Vendor **	08-Apr-21	24-May-17 11:24 by INJ	0.5
17G1303	13C3-PFPeA	13-Jul-17	** Vendor **	20-Apr-22	13-Jul-17 09:18 by INJ	0.5
17G1304	13C2-PFOA	13-Jul-17	** Vendor **	12-Feb-21	13-Jul-17 09:25 by INJ	0.5
17G1305	13C8-FOSA-I	13-Jul-17	** Vendor **	20-Apr-22	13-Jul-17 09:33 by INJ	0.5
17G1306	13C2-PFDA	13-Jul-17	** Vendor **	30-Sep-21	13-Jul-17 09:36 by INJ	0.5

Description:	PFC - IS	Expires:	28-Feb-18
Standard Type:	Reagent	Prepared:	13-Jul-17
Solvent:	MEOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	13-Jul-17 09:58 by INJ

Analyte	CAS Number	Concentration	Units
13C3-PFBS		1.25	ug/mL
13C2-8:2 FTS		1.25	ug/mL
13C2-PFDA		1.25	ug/mL
13C2-PFDoA		1.25	ug/mL
13C2-PFHxA		0.5	ug/mL
13C2-PFHxDA		0.5	ug/mL
13C2-PFOA		1.25	ug/mL
13C2-PFTeDA		1.25	ug/mL
13C2-6:2 FTS		1.25	ug/mL
13C3-PFBA		1.25	ug/mL
d5-EtFOSAA		1.25	ug/mL
13C3-PFPeA		1.25	ug/mL
13C4-PFHpA		1.25	ug/mL
13C5-PFNA		1.25	ug/mL
13C8-PFOS		1.25	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17G1307

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1432	13C2-PFHxDA	14-Sep-16	** Vendor **	07-Jan-21	14-Sep-16 14:19 by TLD	0.2
16I1433	13C2-PFHxA	14-Sep-16	** Vendor **	08-Apr-21	14-Sep-16 14:22 by TLD	0.2
17B2809	d3-N-Me-FOSAA	28-Feb-17	** Vendor **	28-Feb-18	28-Feb-17 13:24 by EMS	0.5
17B2811	d5-N-EtFOSAA	28-Feb-17	** Vendor **	22-Nov-21	28-Feb-17 13:33 by EMS	0.5
17E1718	18O2-PFHxS	17-May-17	** Vendor **	17-Feb-22	17-May-17 12:46 by INJ	0.529
17E2412	13C8-PFOS	24-May-17	** Vendor **	30-Sep-21	24-May-17 11:19 by INJ	0.539
17E2413	13C3-PFBS	24-May-17	** Vendor **	02-Aug-21	24-May-17 11:20 by INJ	0.538
17E2414	13C3-PFBA	24-May-17	** Vendor **	27-May-21	24-May-17 11:20 by INJ	0.5
17E2415	13C2-8:2 FTS	24-May-17	** Vendor **	22-Aug-21	24-May-17 11:21 by INJ	0.522
17E2416	13C2-6:2 FTS	24-May-17	** Vendor **	17-Feb-22	24-May-17 11:21 by INJ	0.526
17E2417	13C5-PFNA	24-May-17	** Vendor **	30-Sep-21	24-May-17 11:22 by INJ	0.5
17E2418	13C2-PFTeDA	24-May-17	** Vendor **	01-Mar-22	24-May-17 11:22 by INJ	0.5
17E2419	13C2-PFUdA	24-May-17	** Vendor **	22-Nov-21	24-May-17 11:23 by INJ	0.5
17E2420	13C4-PFHpA	24-May-17	** Vendor **	27-May-21	24-May-17 11:23 by INJ	0.5
17E2421	13C2-PFDoA	24-May-17	** Vendor **	08-Apr-21	24-May-17 11:24 by INJ	0.5
17G1303	13C3-PFPeA	13-Jul-17	** Vendor **	20-Apr-22	13-Jul-17 09:18 by INJ	0.5
17G1304	13C2-PFOA	13-Jul-17	** Vendor **	12-Feb-21	13-Jul-17 09:25 by INJ	0.5
17G1305	13C8-FOSA-I	13-Jul-17	** Vendor **	20-Apr-22	13-Jul-17 09:33 by INJ	0.5
17G1306	13C2-PFDA	13-Jul-17	** Vendor **	30-Sep-21	13-Jul-17 09:36 by INJ	0.5

Description:	PFC - IS	Expires:	28-Feb-18
Standard Type:	Reagent	Prepared:	13-Jul-17
Solvent:	MEOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	13-Jul-17 09:58 by INJ

Analyte	CAS Number	Concentration	Units
13C8-PFOSA		1.25	ug/mL
18O2-PFHxS		1.25	ug/mL
d3-MeFOSAA		1.25	ug/mL
13C2-PFUnA		1.25	ug/mL

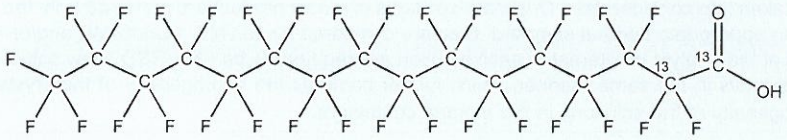
16I1432

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

$^{13}C_2$-PFHxDA

PRODUCT CODE:	M2PFHxDA	**LOT NUMBER:**	M2PFHxDA1112
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2$-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/07/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/07/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/11/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

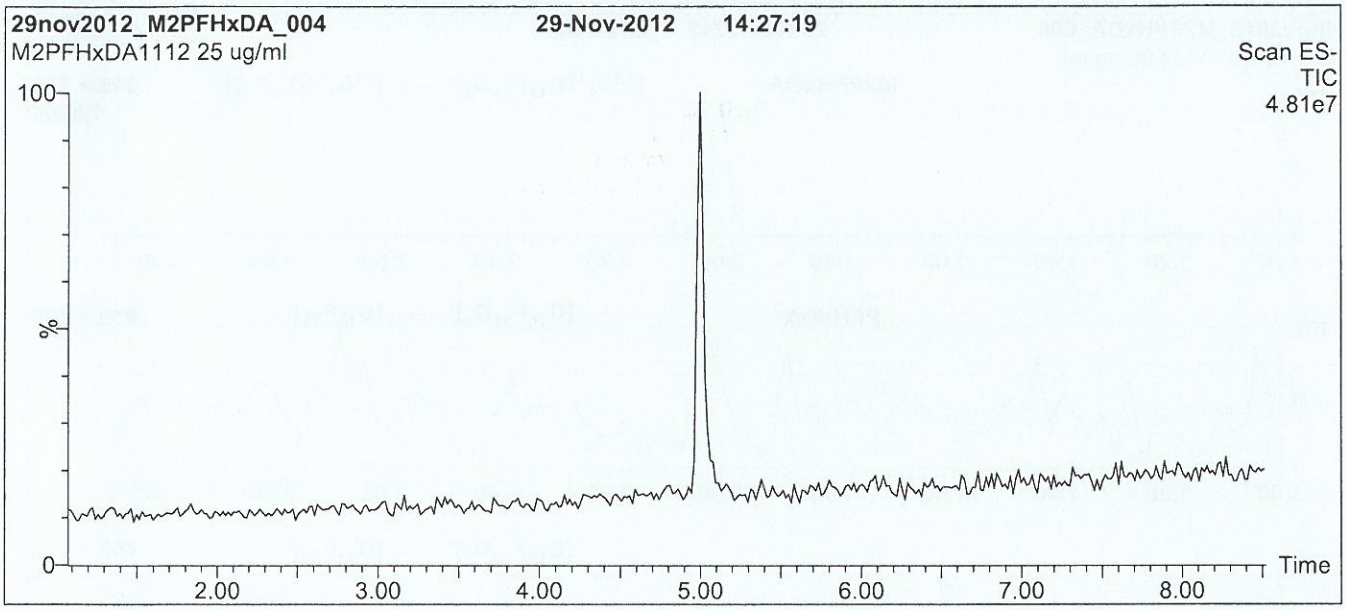
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

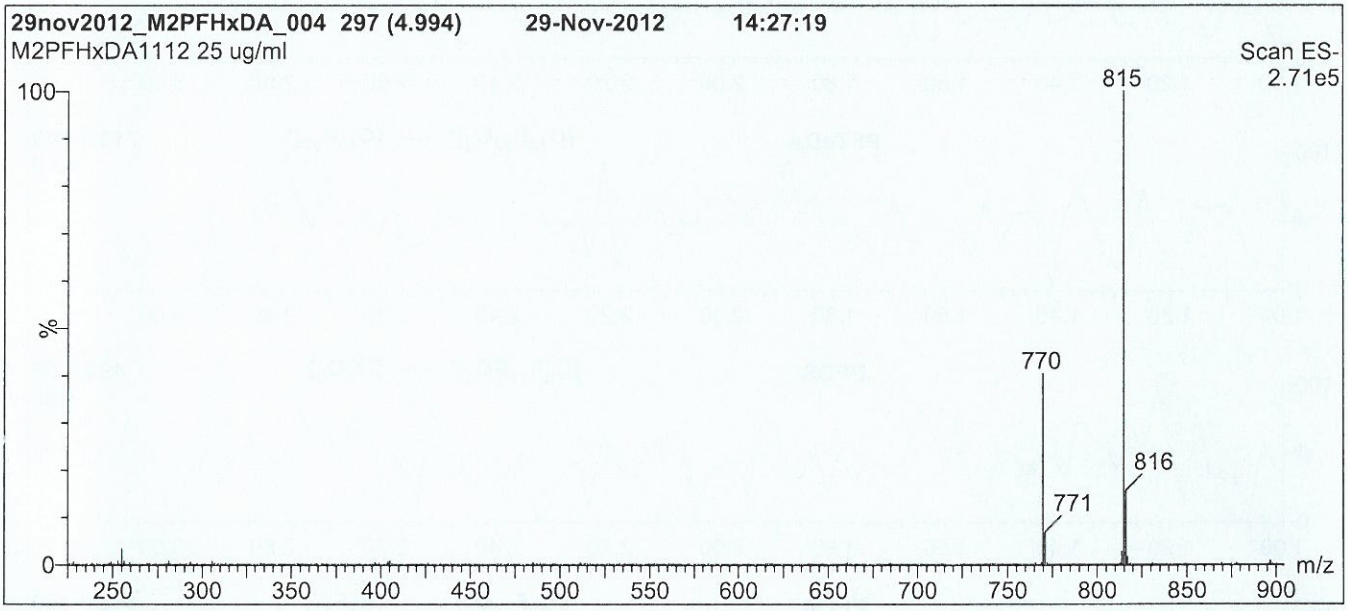
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

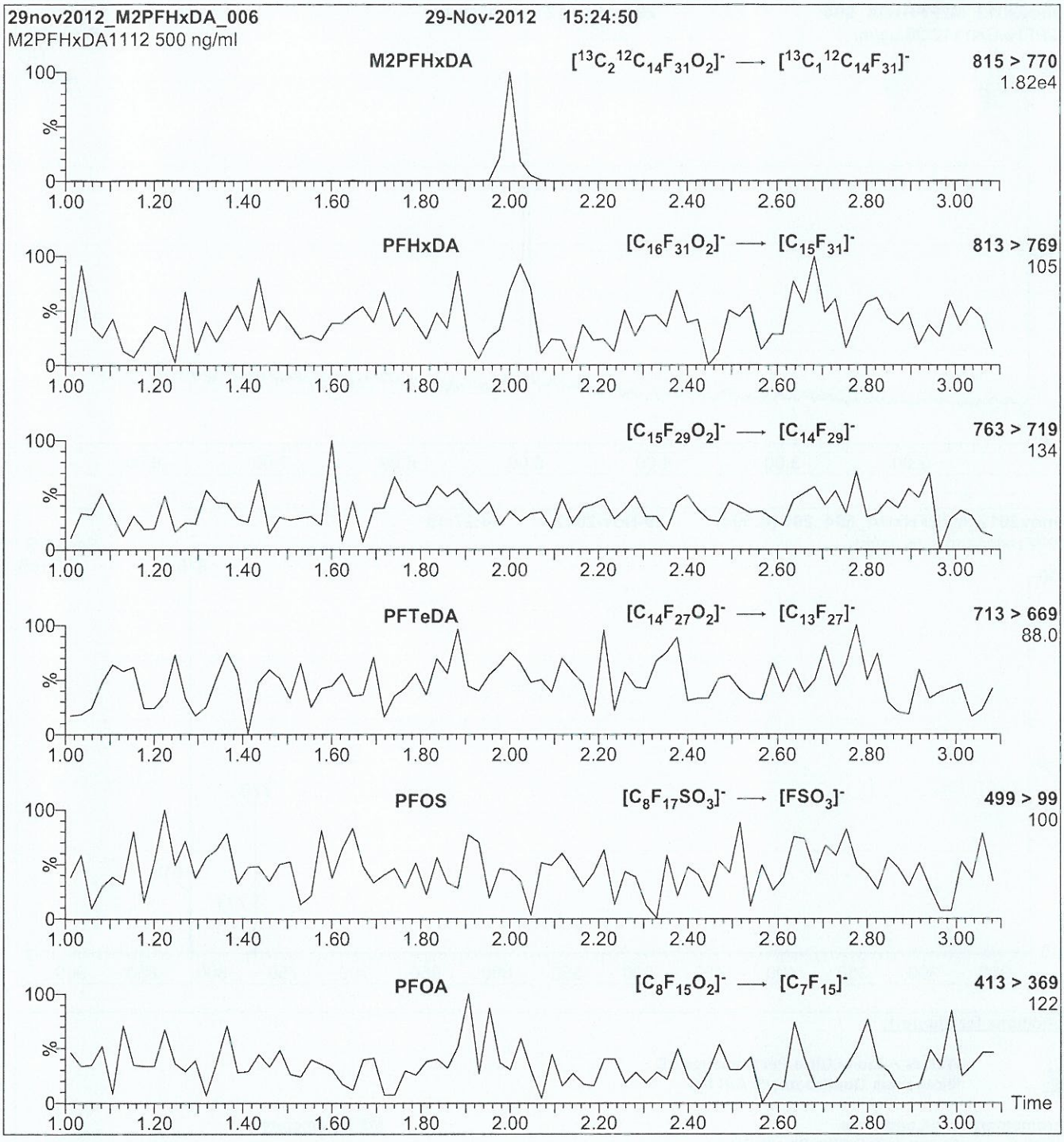
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M2PFHxDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

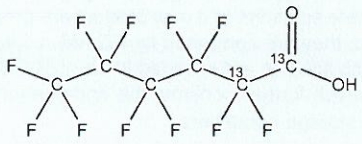
16I1433

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

13C2-PFHxA

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and ~ 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/29/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

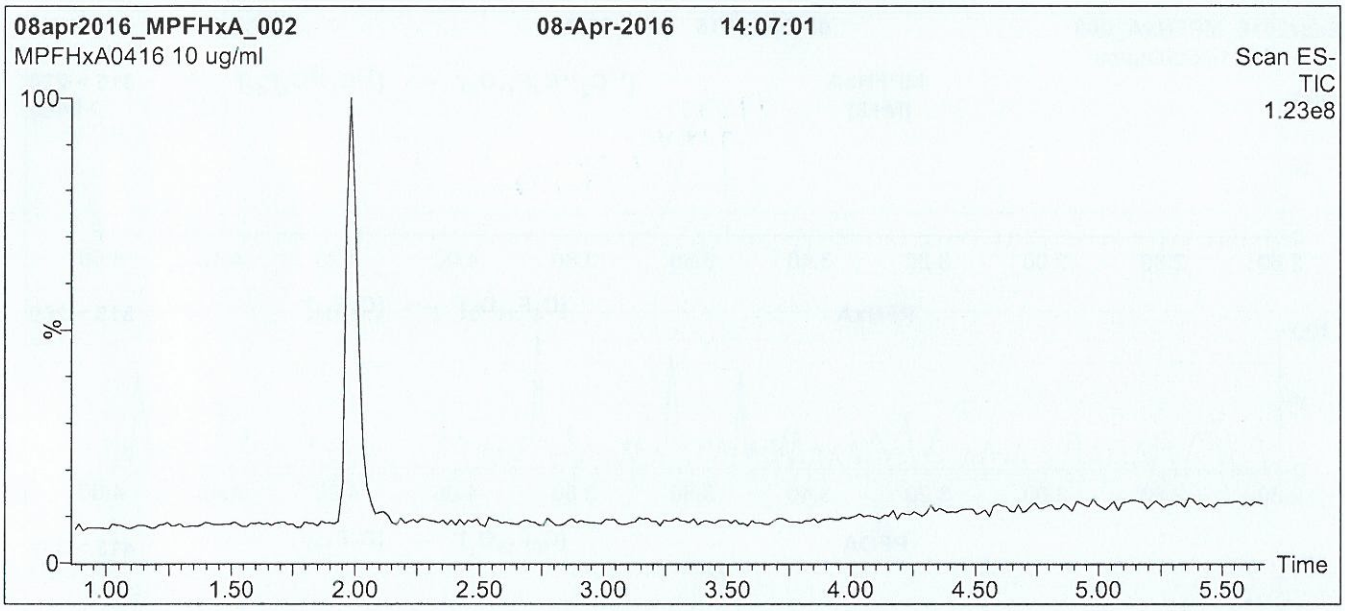
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

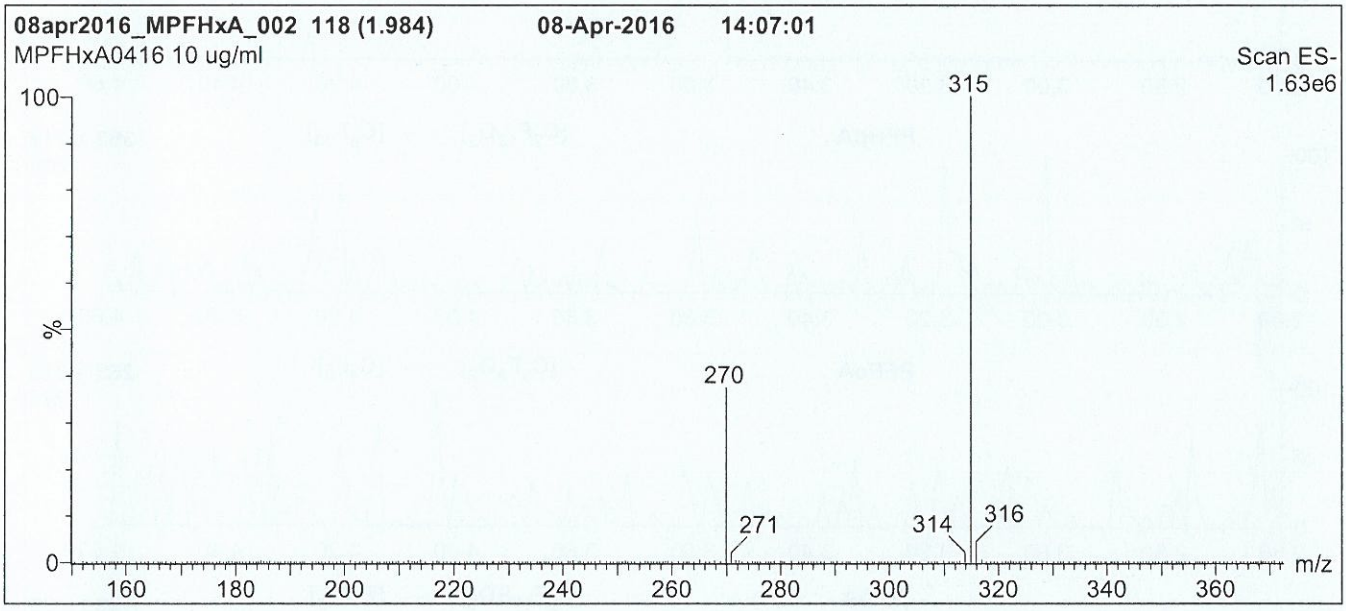
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

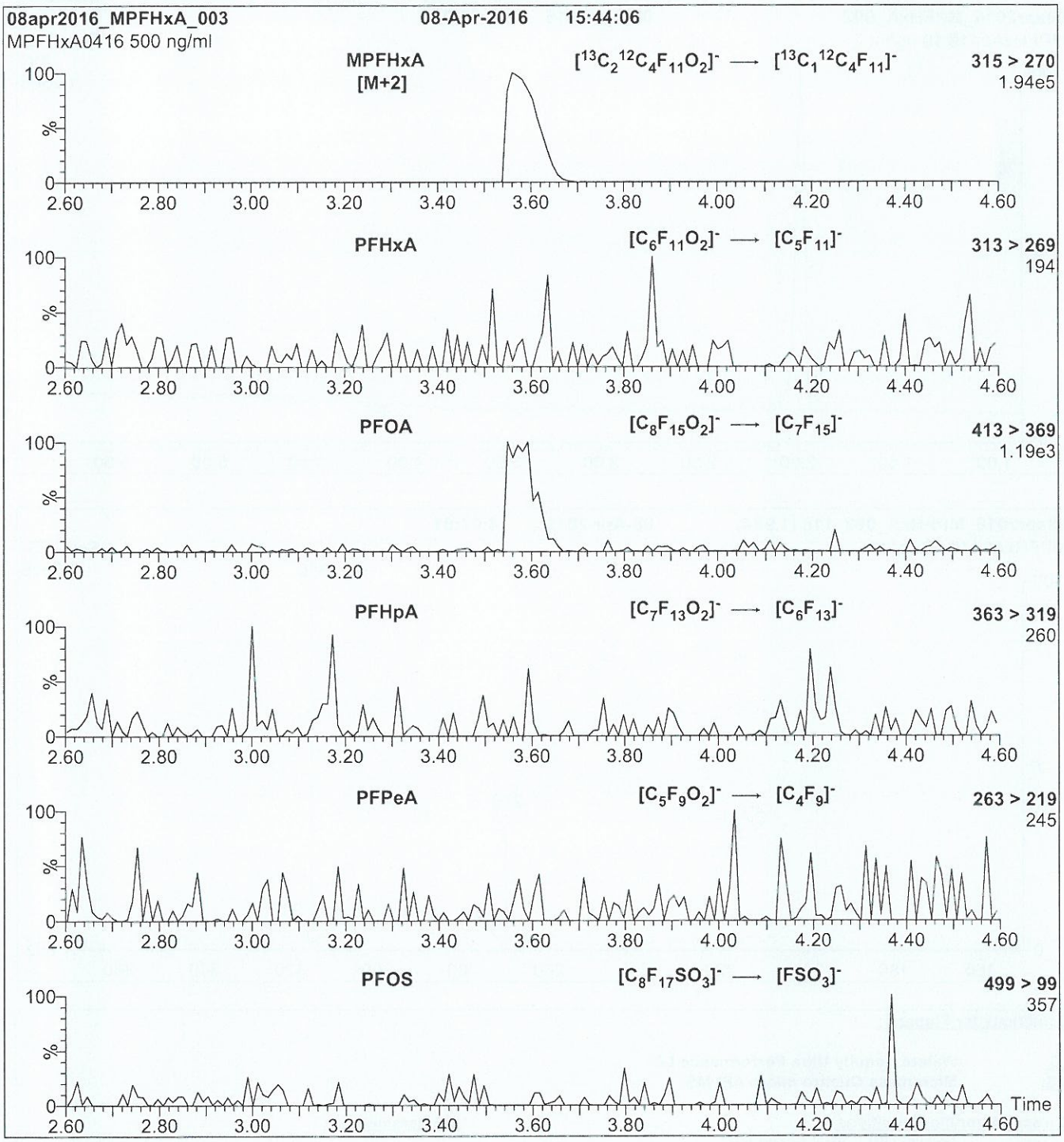
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFHxA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

17B 2809

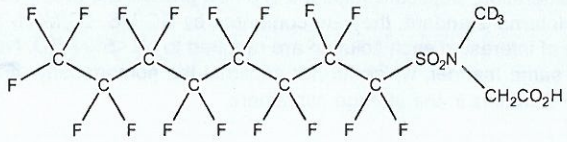
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1116

COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	11/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	11/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/07/2016 (mm/dd/yyyy)

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

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

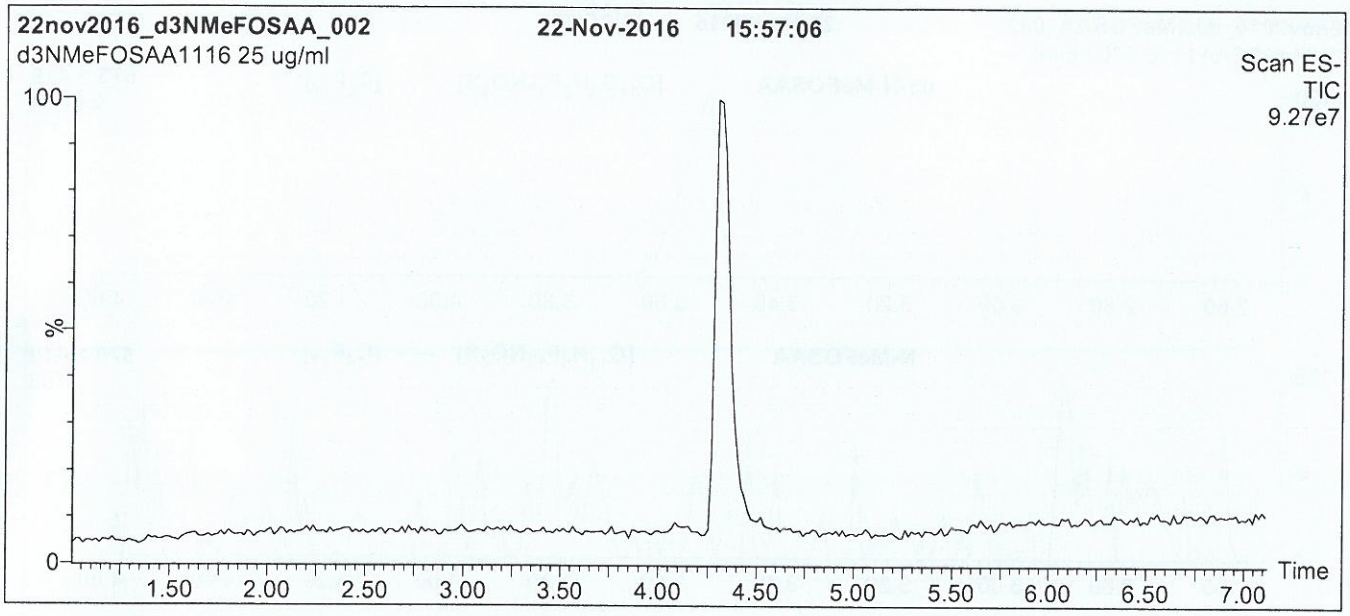
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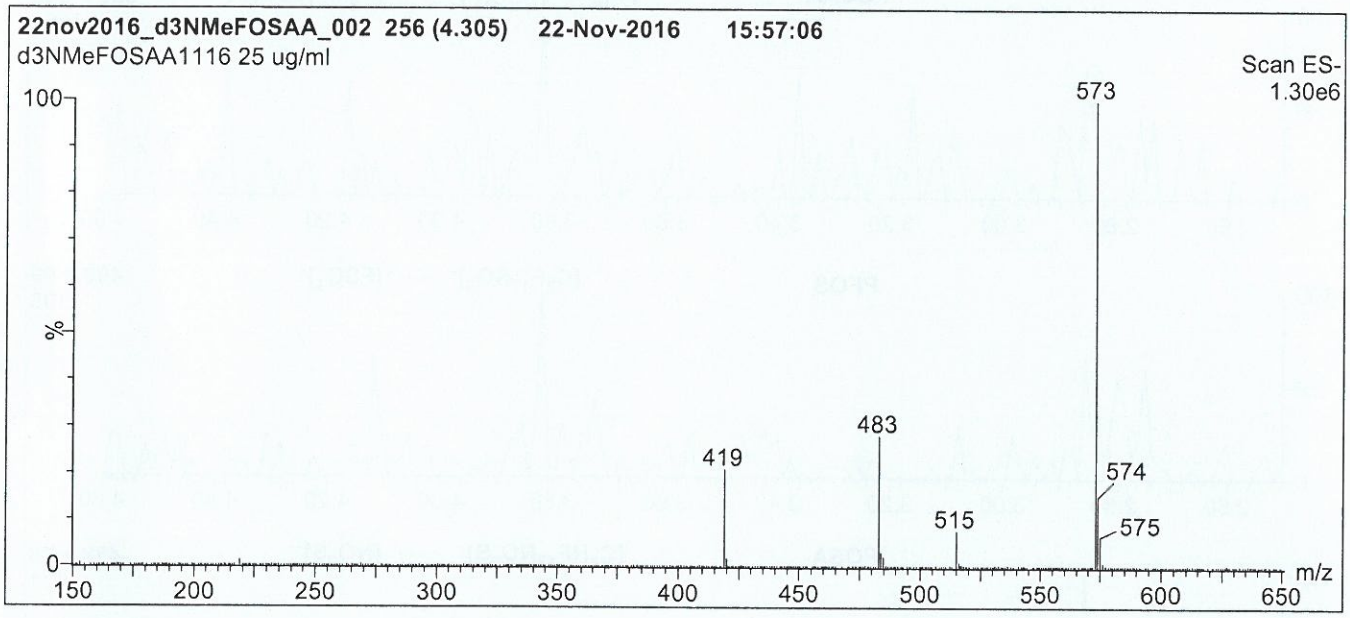
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

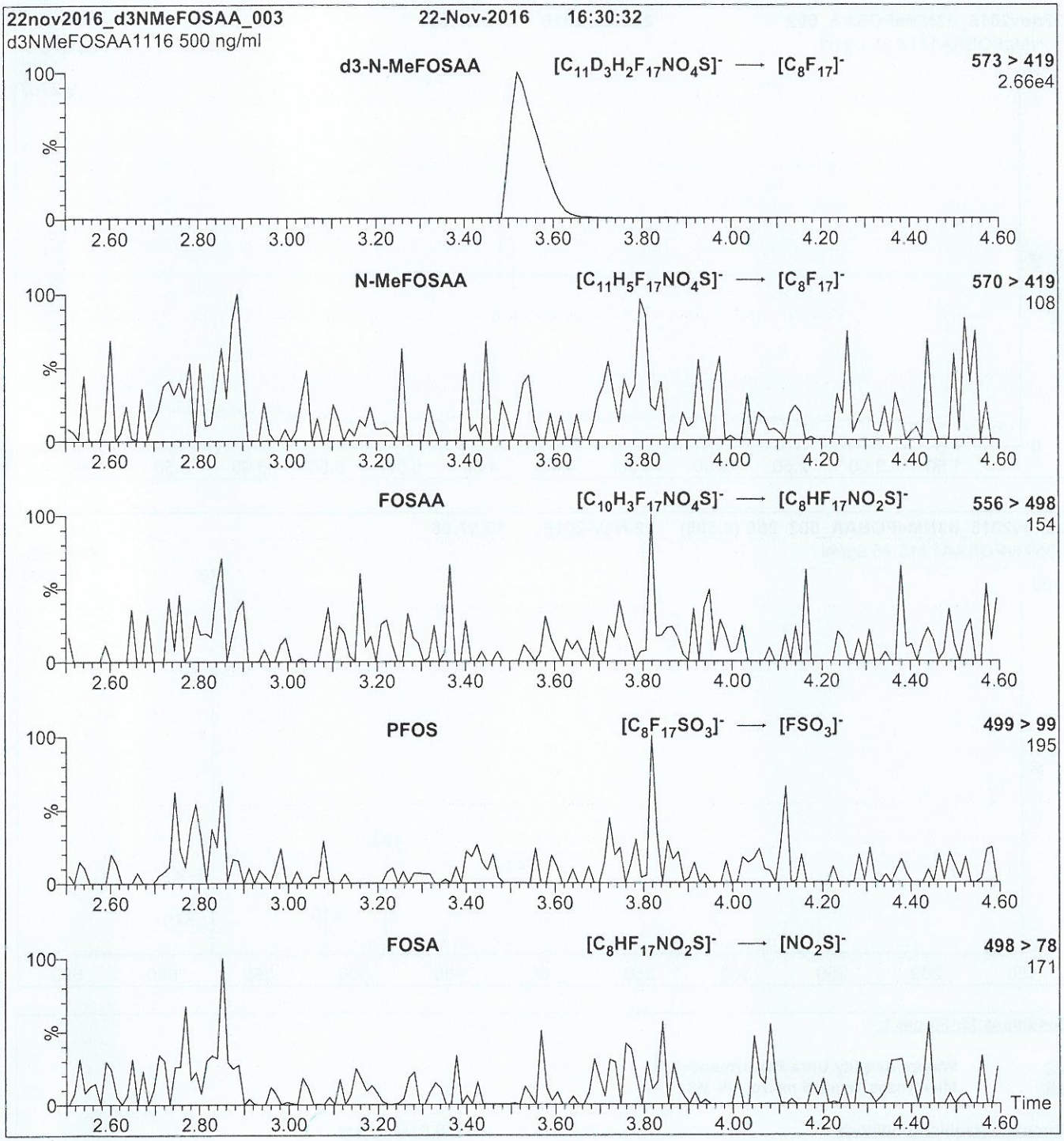
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d3-N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

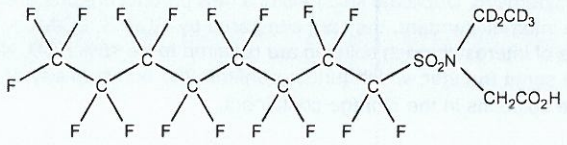
FTB2911

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA
LOT NUMBER: d5NEtFOSAA1116
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.26
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	11/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	11/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 12/01/2016 (mm/dd/yyyy)

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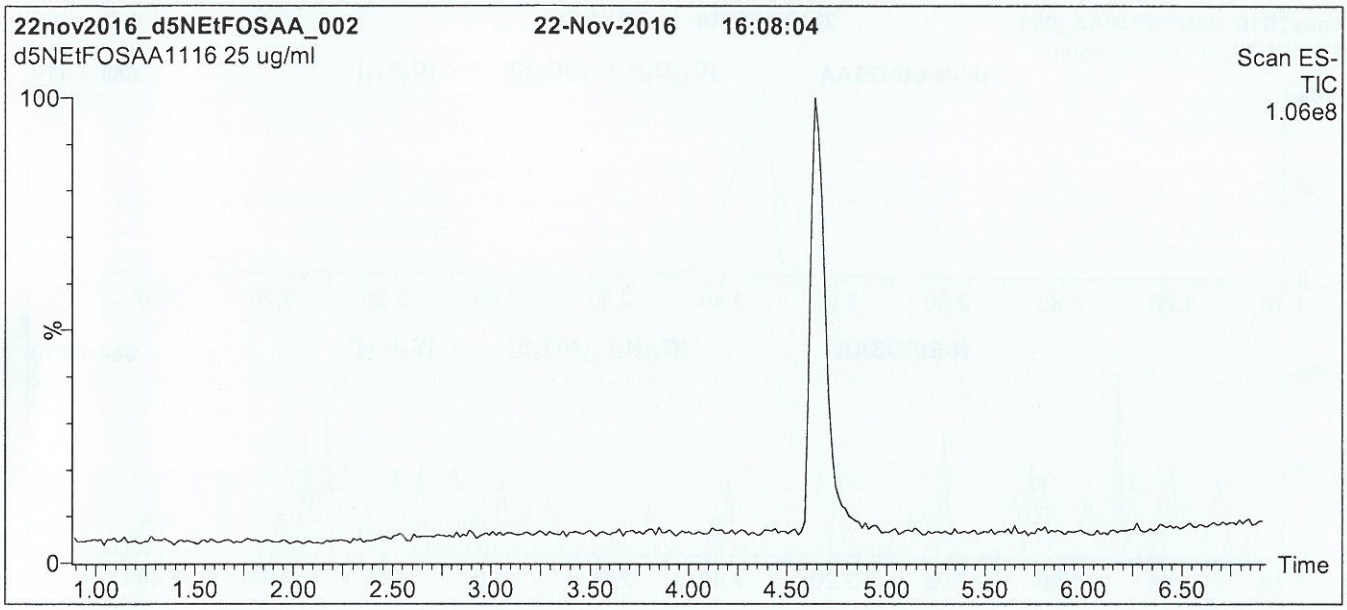
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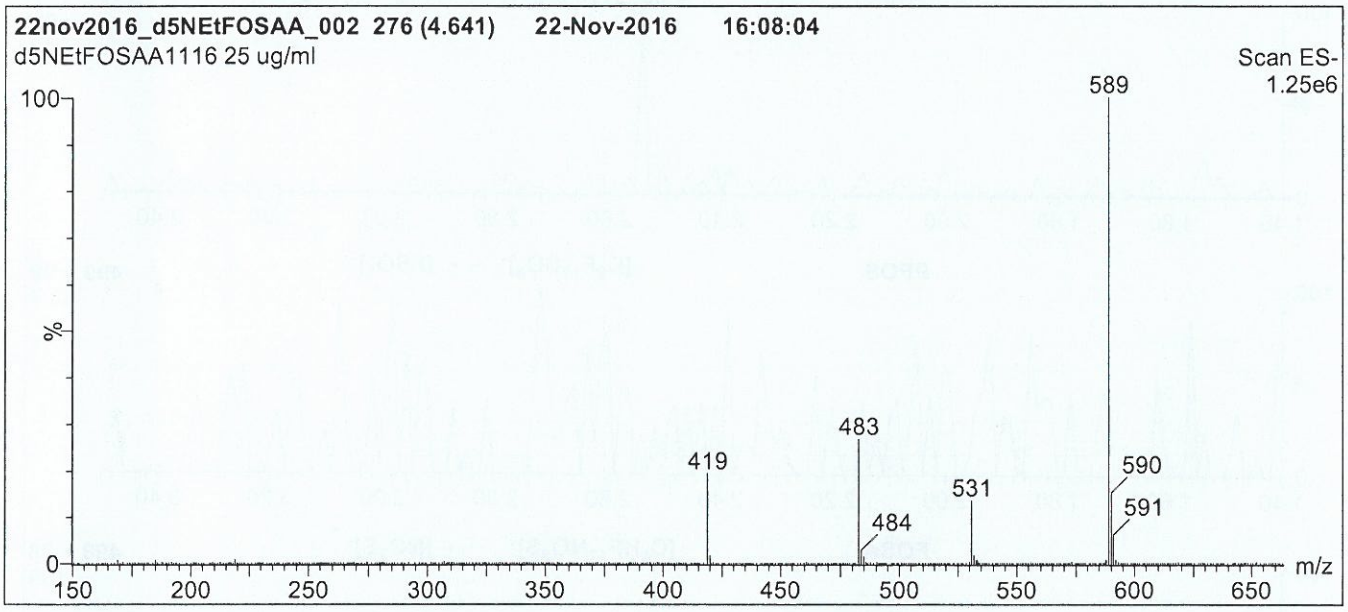
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

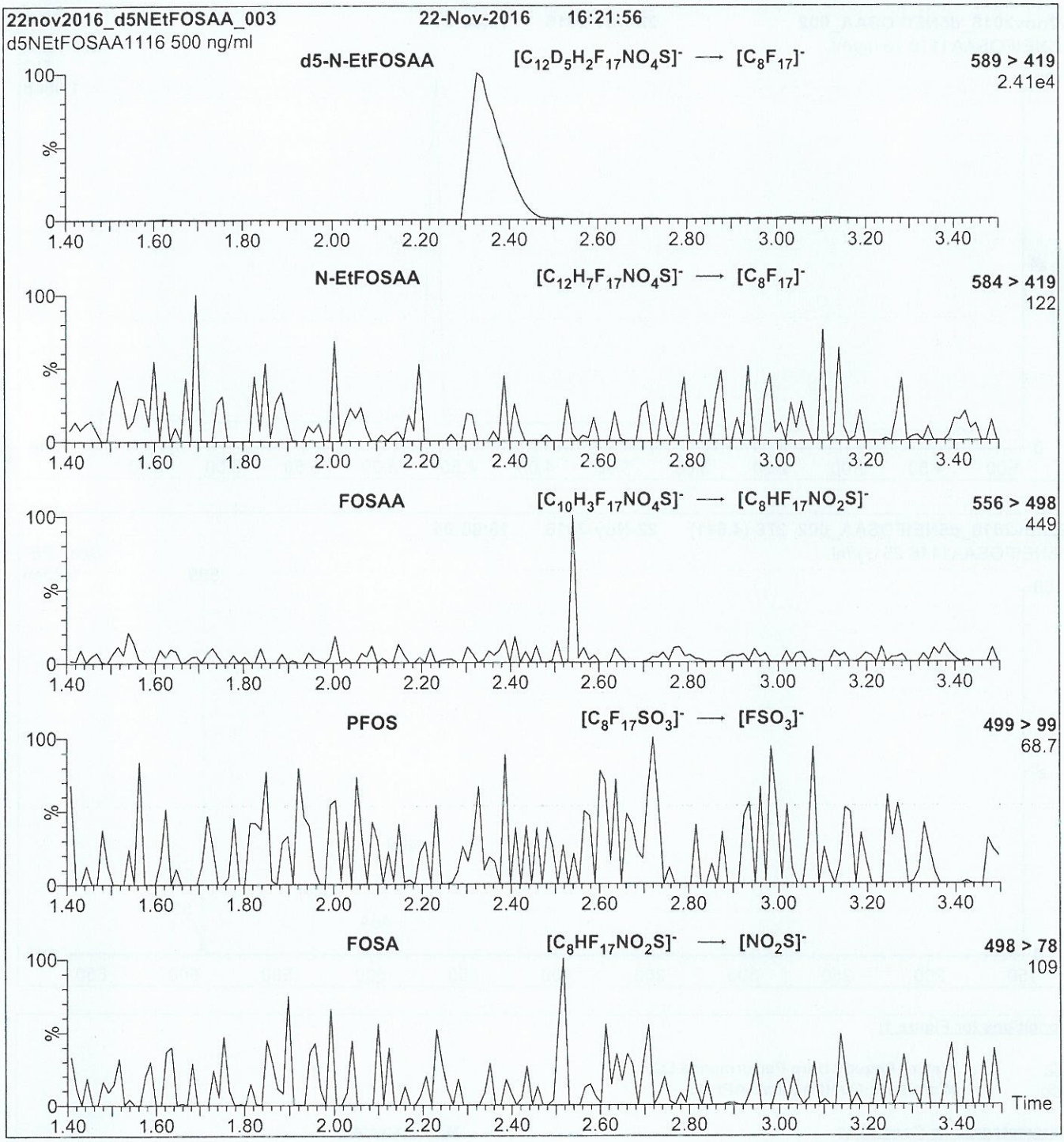
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d5-N-EtFOSAA)

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

Flow: 300 µl/min

MS Parameters

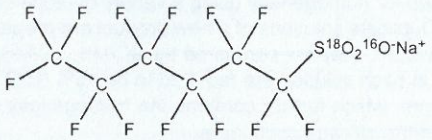
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

17E1718

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFHxS	**LOT NUMBER:**	MPFHxS0217
COMPOUND:	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFOS).
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/02/2017
B.G. Chittim (mm/dd/yyyy)

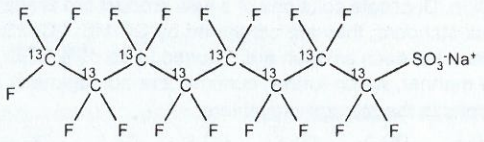
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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17E2412

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M8PFOS	**LOT NUMBER:**	M8PFOS0916
COMPOUND:	Sodium perfluoro-1-[$^{13}C_8$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	530.05
CONCENTRATION:	48.5 ± 2.4 µg/ml (Na salt) 46.4 ± 2.3 µg/ml (M8PFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>97%	**ISOTOPIC PURITY:**	>99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
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ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.6% of sodium perfluoro-1-[$^{13}C_7$]heptanesulfonate ($^{13}C_7$-PFHpS), ~ 1.0% of chlorohexadecafluoro-1-[$^{13}C_8$]octanesulfonate, and ~ 1.5% of sodium perfluoro-1-[$^{13}C_4$]octanesulfonate (MPFOS).

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Certified By: _____ **Date:** 10/11/2016 (mm/dd/yyyy)
B.G. Chittim

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17E2413

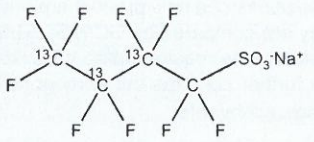
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0815

COMPOUND: Sodium perfluoro-1-[2,3,4-$^{13}C_3$]butanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CF_9SO_3Na$	**MOLECULAR WEIGHT:**	325.06
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($2,3,4\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	08/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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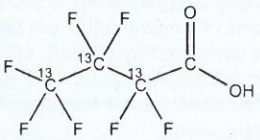
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M3PFBA	**LOT NUMBER:**	M3PFBA0516
COMPOUND:	Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CHF_7O_2$	**MOLECULAR WEIGHT:**	217.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($2,3,4\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-[$^{13}C_3$]propanoic acid and also contains ~ 1.0% of perfluoro-n-[$1,2,3,4\text{-}^{13}C_4$]butanoic acid due to the naturally occurring isotopic abundance of ^{13}C in the unlabelled carbon atom.

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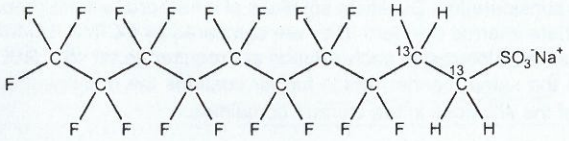
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0816

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/22/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/22/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By: B.G. Chittim **Date:** 09/02/2016 (mm/dd/yyyy)

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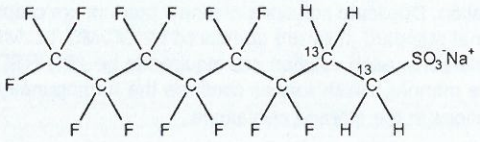
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0217

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.5 ± 2.4 µg/ml (M2-6:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By: B.G. Chittim **Date:** 02/24/2017 (mm/dd/yyyy)

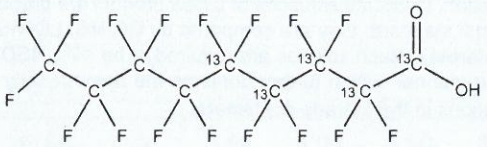
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17E2417

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFNA	**LOT NUMBER:**	MPFNA0916
COMPOUND:	Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 10/11/2016 (mm/dd/yyyy)
B.G. Chittim

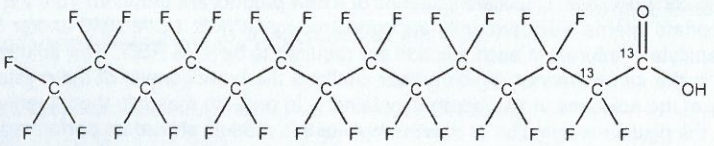
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA0217
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	03/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	03/01/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 03/07/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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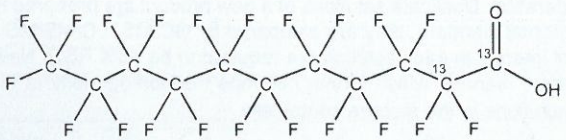
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid

LOT NUMBER: MPFUdA1116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_9HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 566.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

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Certified By: B.G. Chittim **Date:** 12/07/2016 (mm/dd/yyyy)

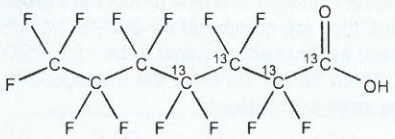
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17E2420

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M4PFHpA	**LOT NUMBER:**	M4PFHpA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ B.G. Chittim **Date:** 07/05/2016 (mm/dd/yyyy)

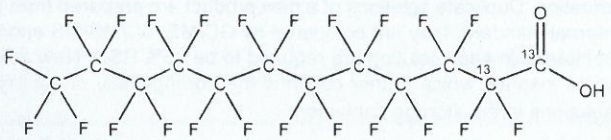
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFDoA	**LOT NUMBER:**	MPFDoA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ B.G. Chittim **Date:** 04/15/2016 (mm/dd/yyyy)

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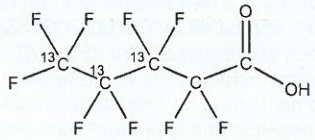
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFPeA
LOT NUMBER: M3PFPeA0417
COMPOUND: Perfluoro-n-[3,4,5-$^{13}C_3$]pentanoic acid

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_2HF_9O_2$	**MOLECULAR WEIGHT:**	267.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($3,4,5$-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	04/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/20/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.95% of perfluoro-n-[$^{13}C_3$]butanoic acid and 0.05% of perfluoro-1-pentanoic acid.

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Certified By: _____ **Date:** 04/24/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

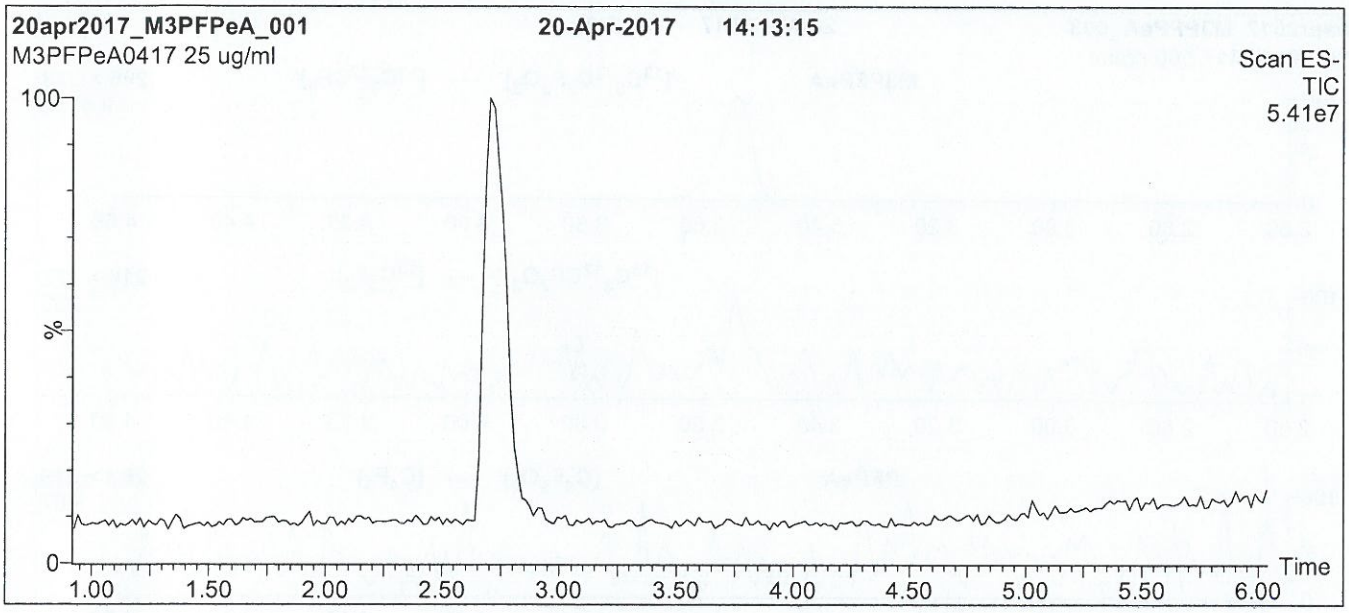
CALA Testing Accreditation No. A 1226

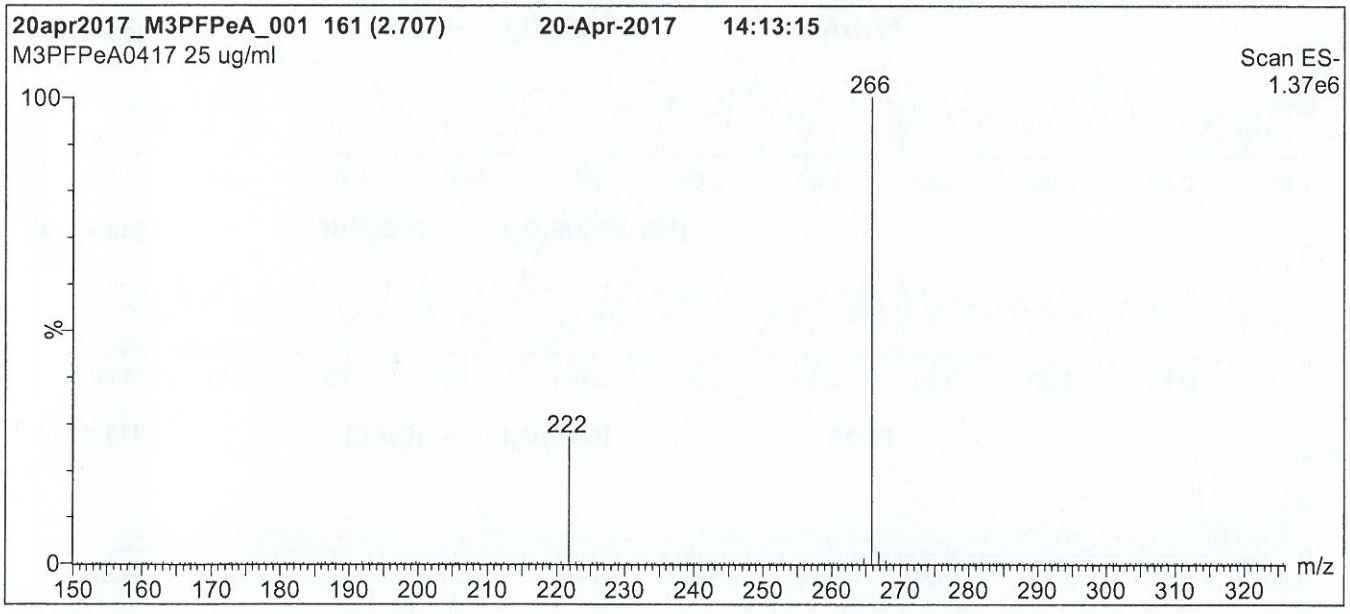
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17G1303

Figure 1: **M3PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

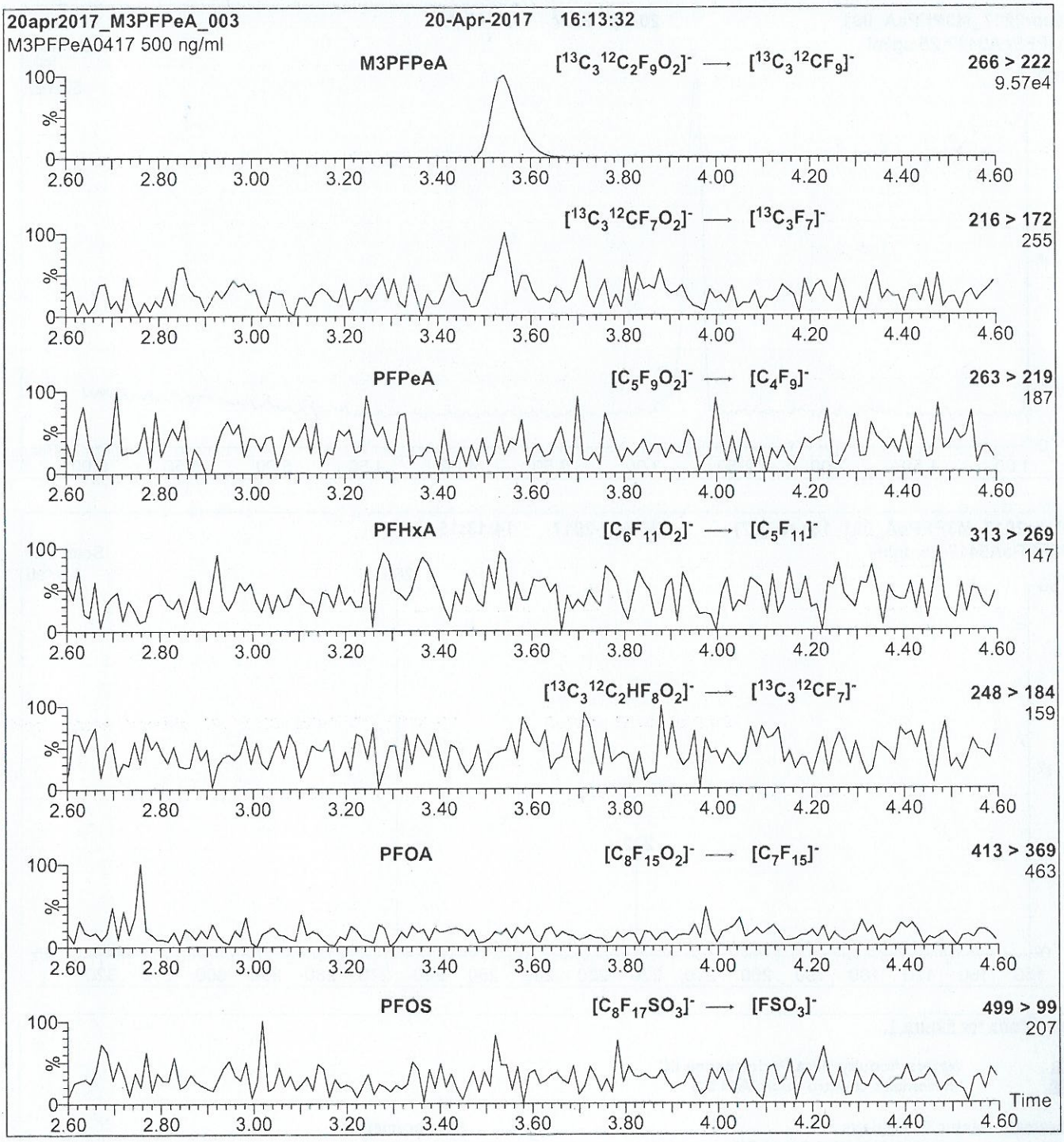
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

17G1303

Figure 2: **M3PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFPeA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 9

17G1304

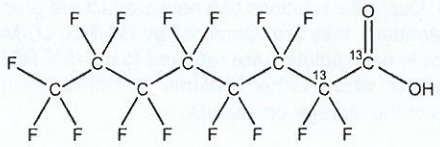
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA
LOT NUMBER: M2PFOA0216
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

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

17G1304

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

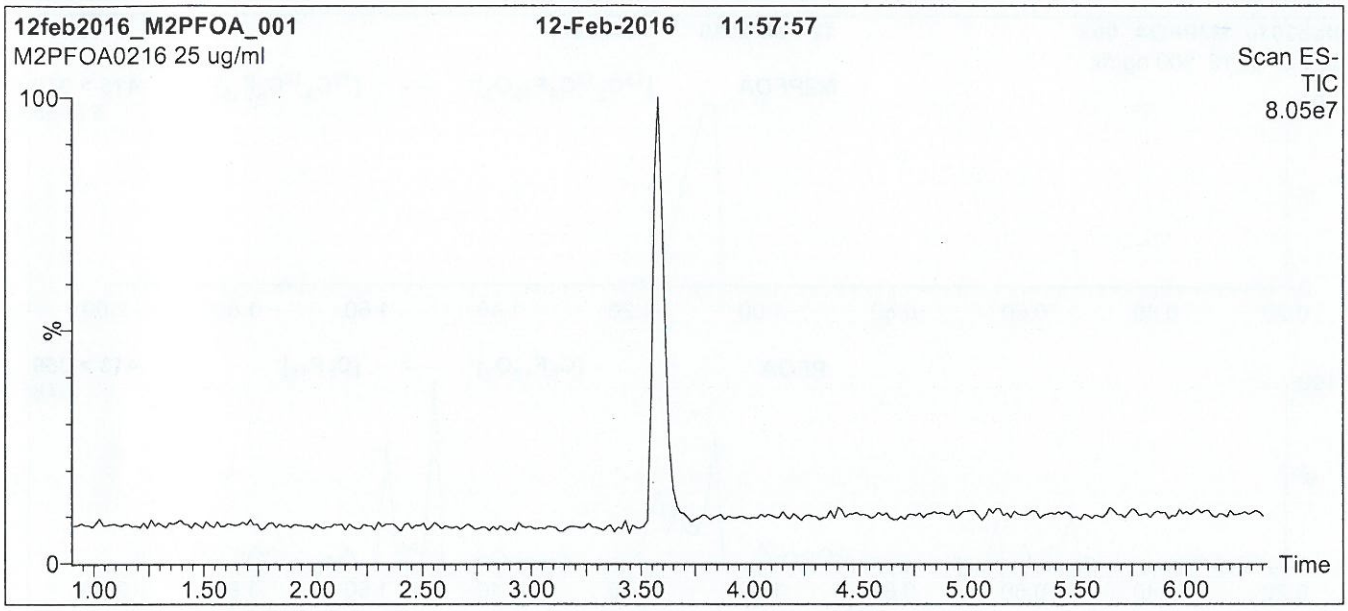
CALA Testing Accreditation No. A 1226

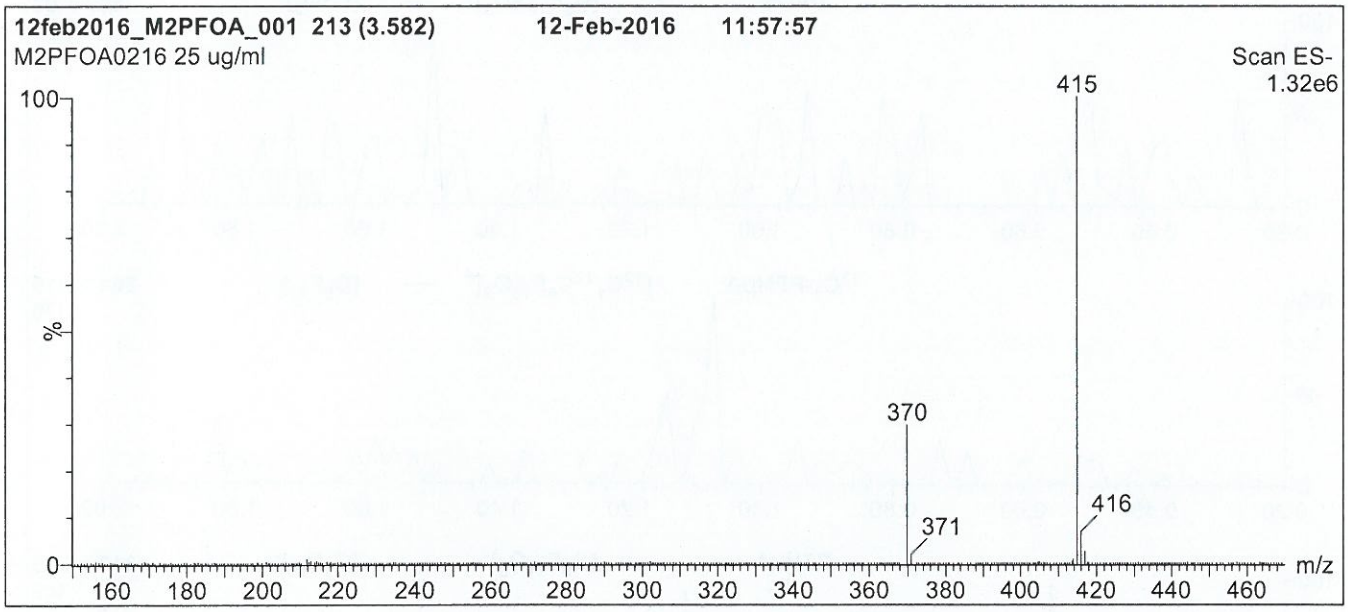
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

17G1304

Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

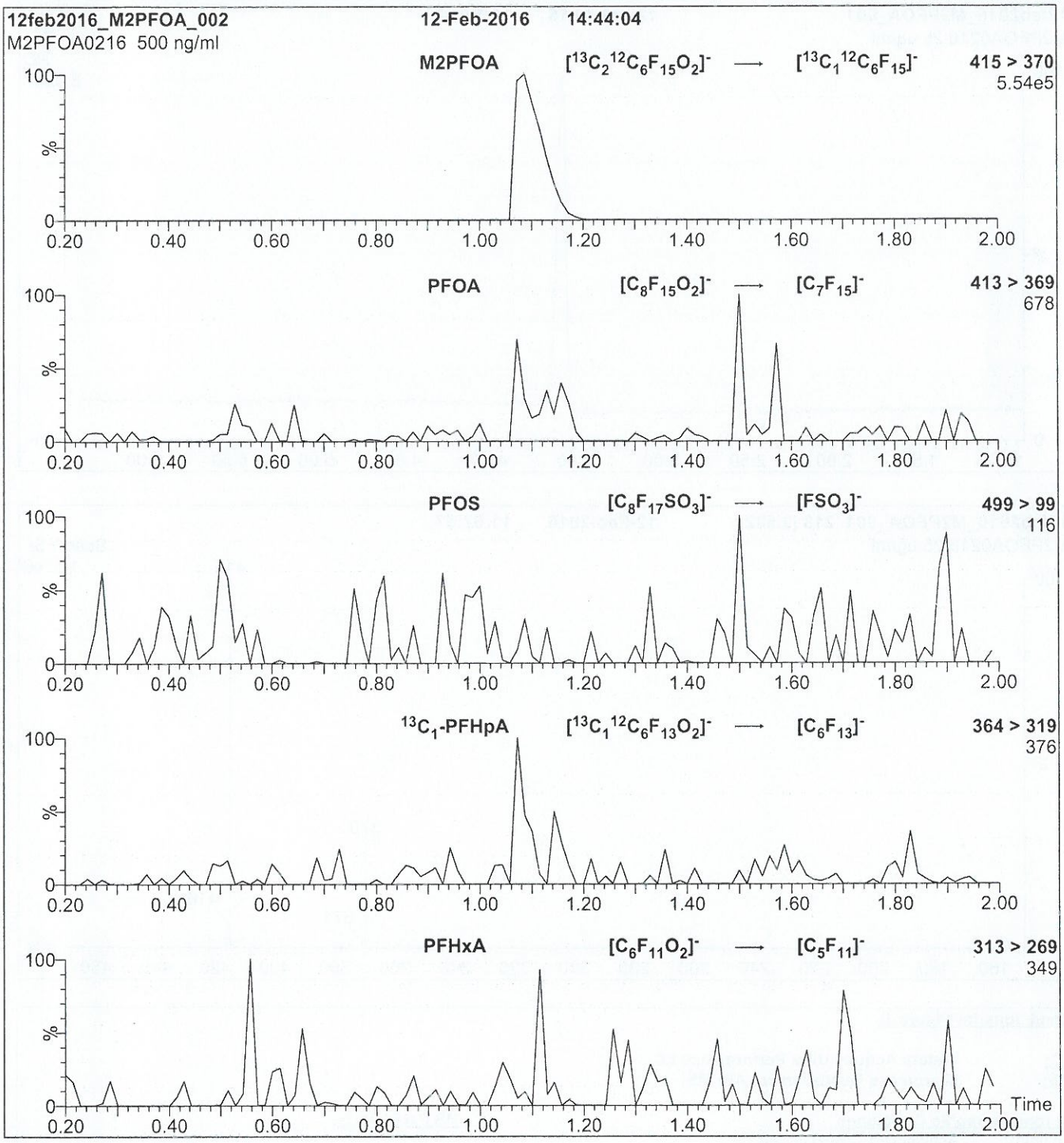
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

17G1304

Figure 2: **M2PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

17G1305

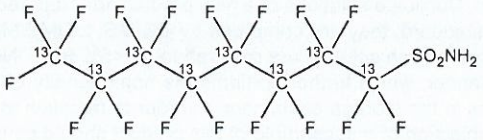
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
LOT NUMBER: M8FOSA0417I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	04/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/20/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[$^{13}C_4$]octanesulfonamide and ~ 0.01% of perfluoro-1-[$^{13}C_7$]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/04/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

17G1305

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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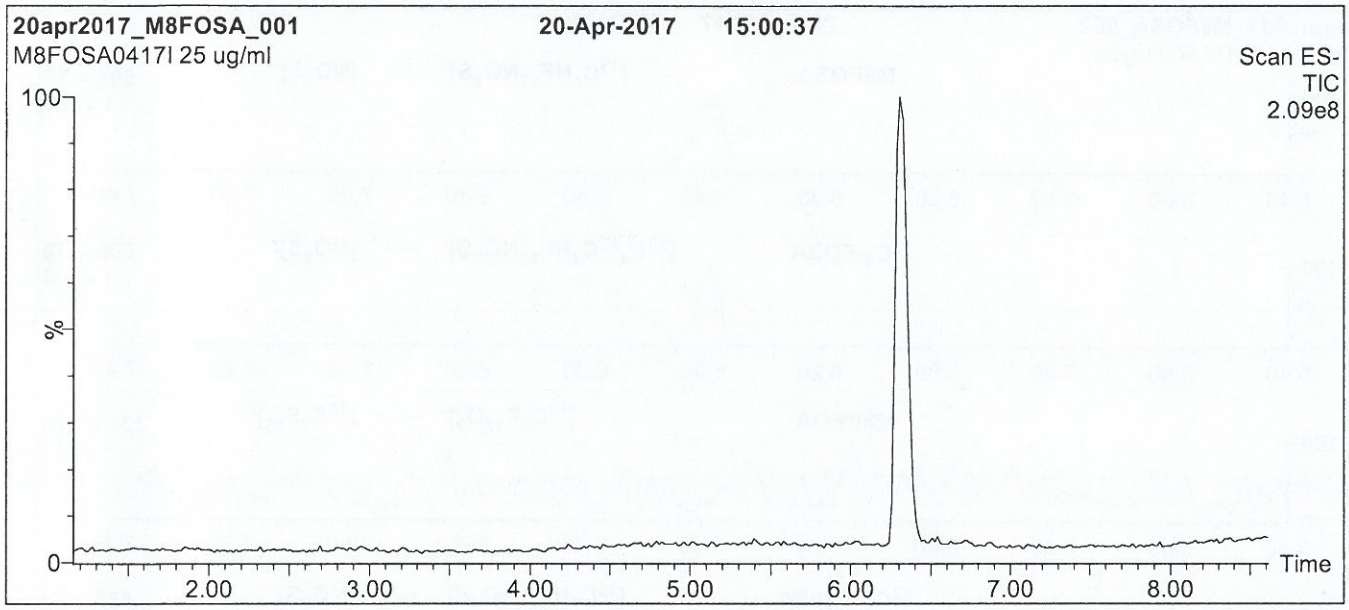
CALA Testing Accreditation No. A 1226

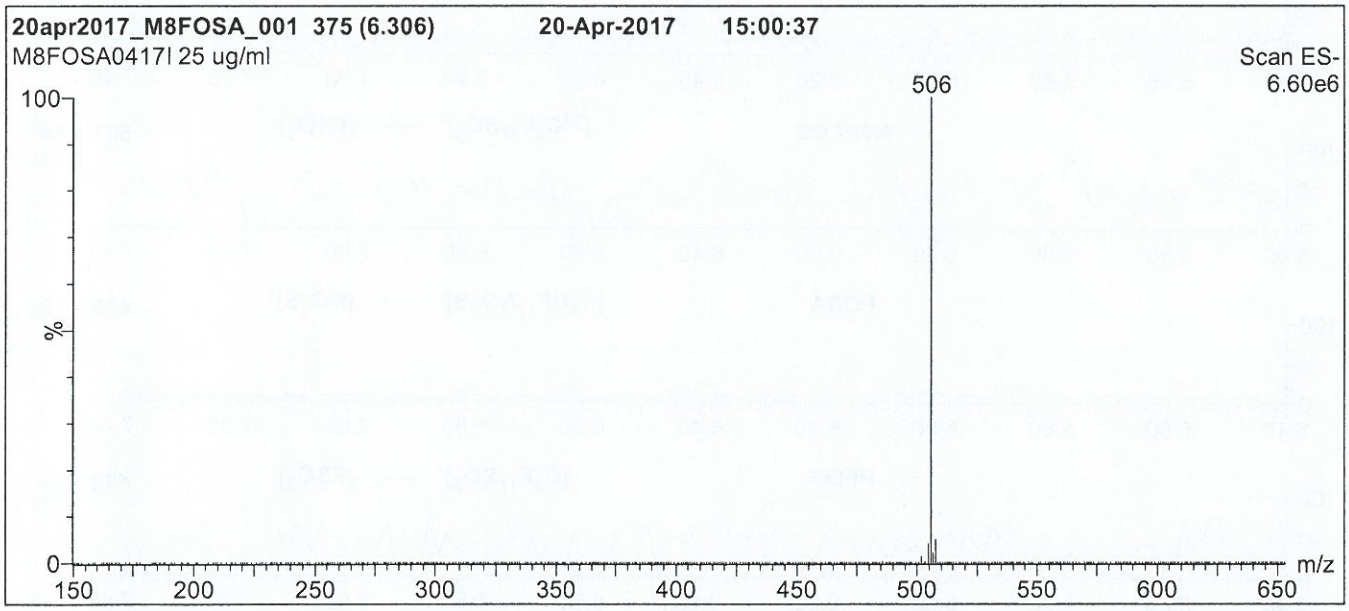
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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#2 17G1305

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

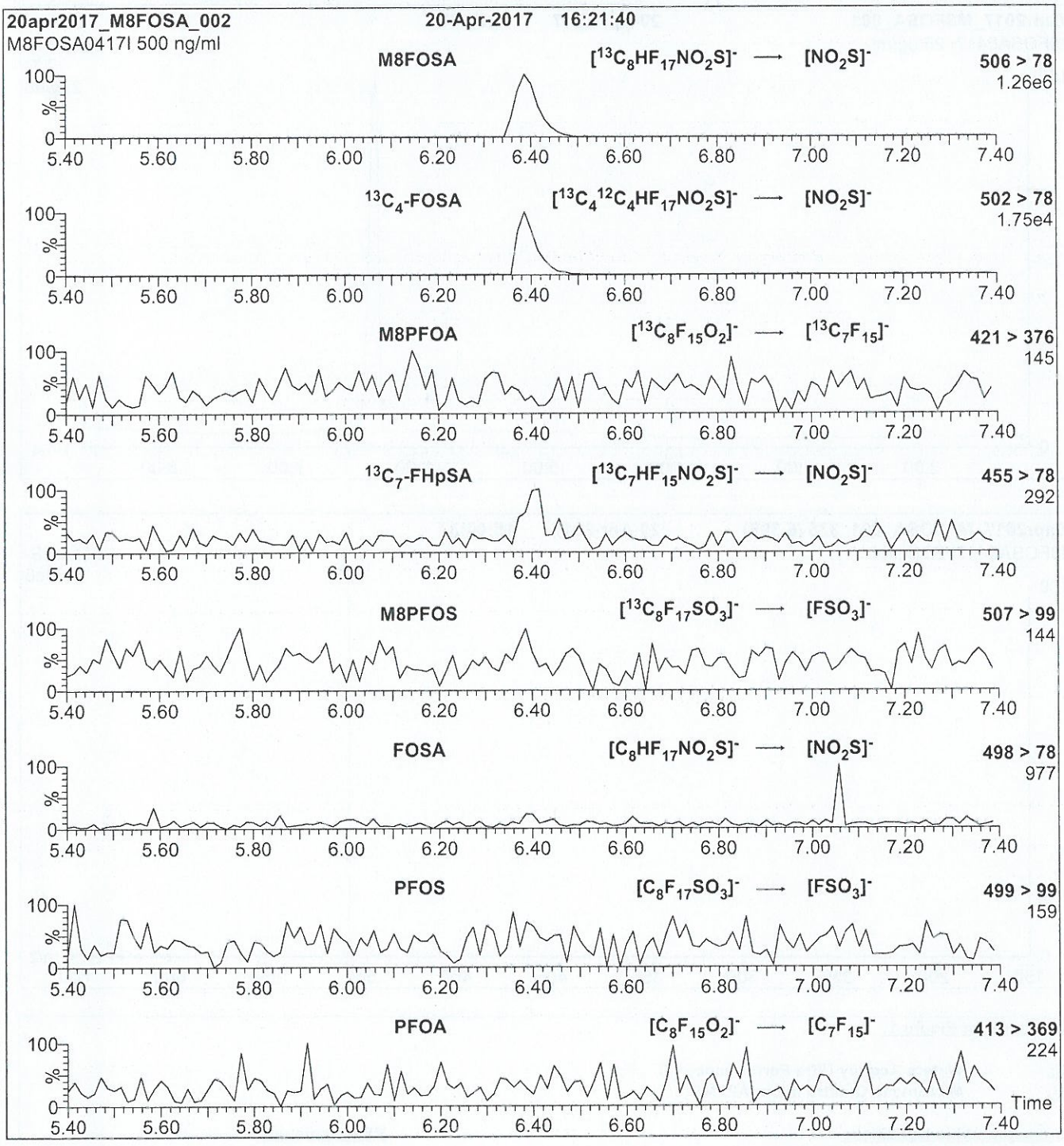
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

17G1305

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 30

17G1306

WELLINGTON LABORATORIES

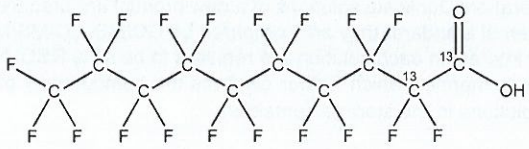
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

LOT NUMBER: MPFDA0916

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	09/30/2016		
EXPIRY DATE: (mm/dd/yyyy)	09/30/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/07/2016 (mm/dd/yyyy)

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

17G1306

INTENDED USE:

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

HAZARDS:

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

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

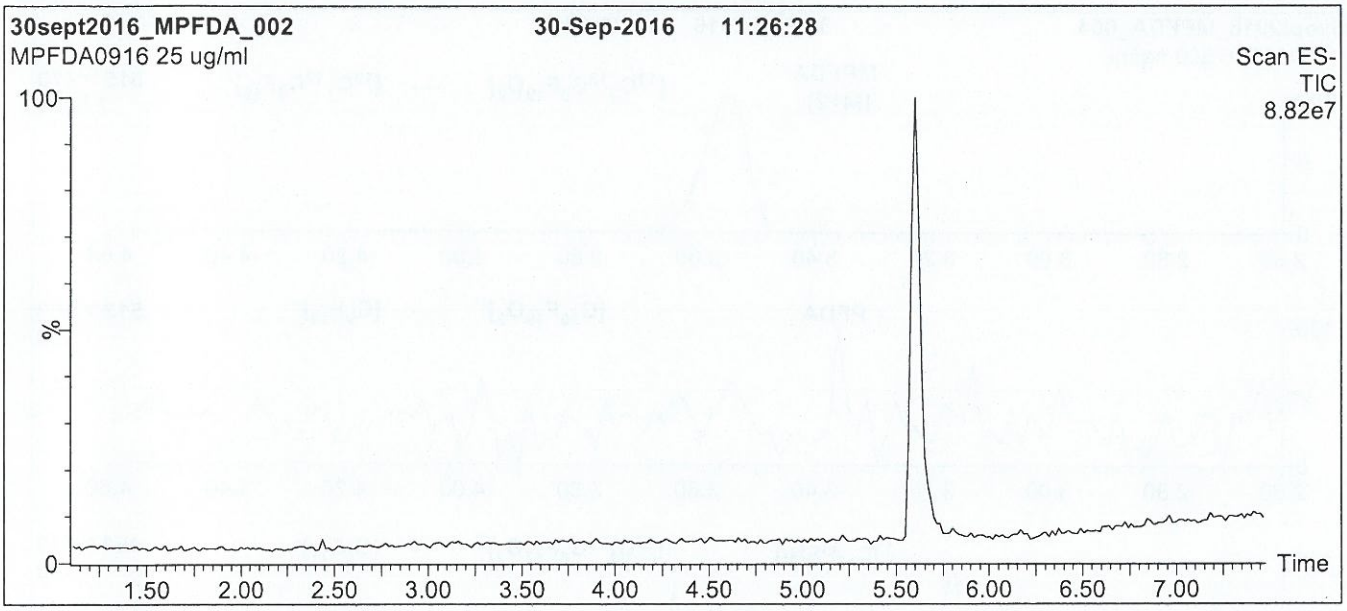
CALA Testing Accreditation No. A1226

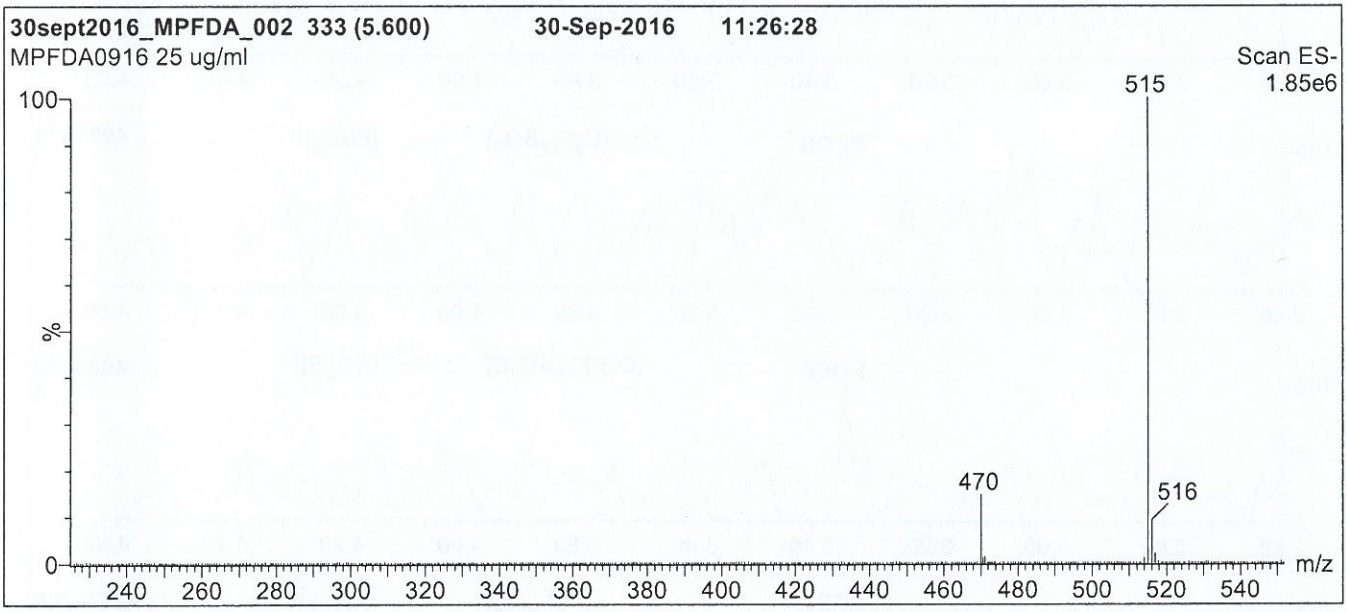
ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

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17G1306

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

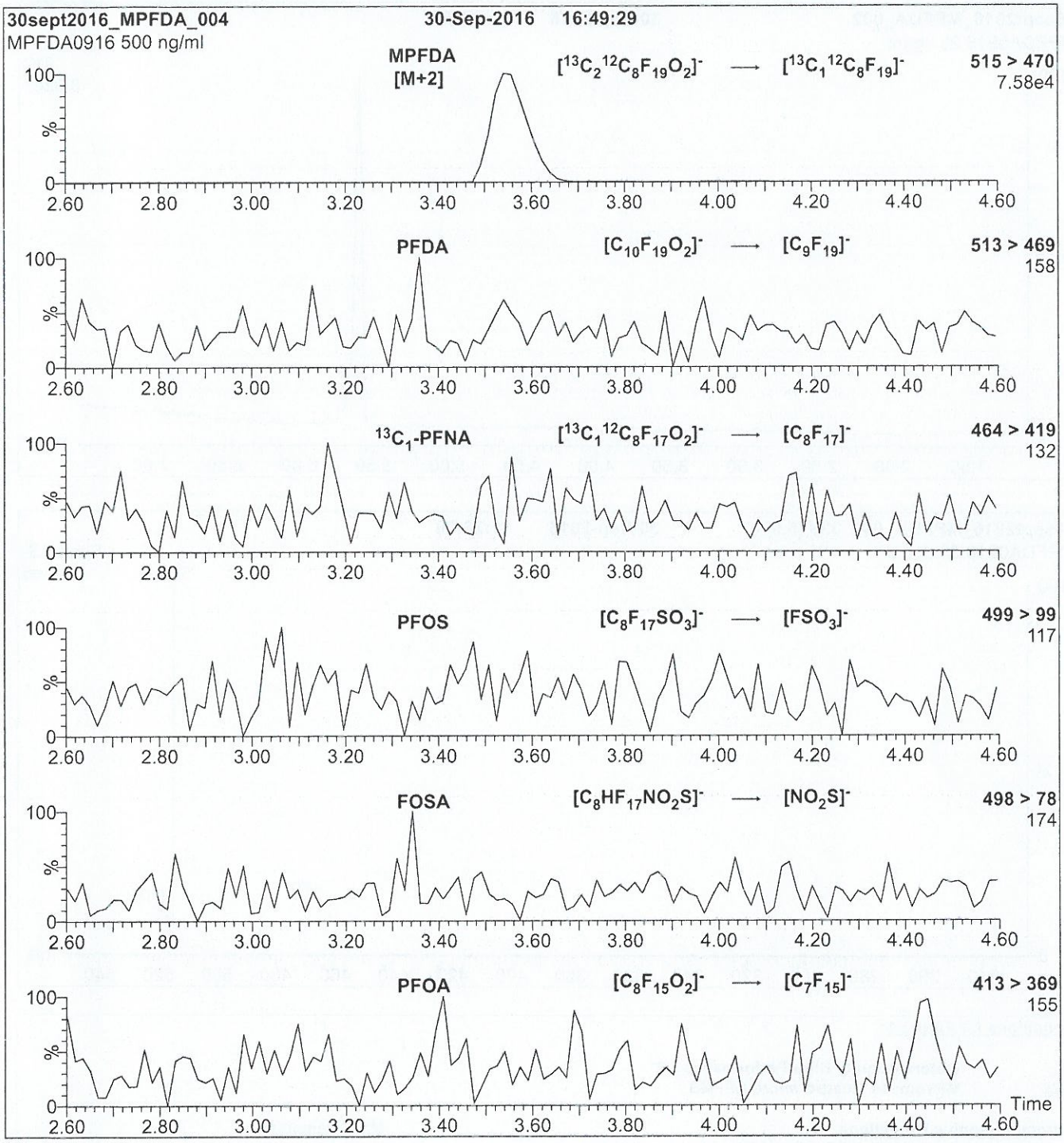
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

17G1306

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
L-PFDS		1	ug/mL
6:2 FTS	27619-97-2	1	ug/mL
L-PFTeDA		1	ug/mL
L-PFPeA		1	ug/mL
L-PFOSA		1	ug/mL
L-PFOS		0.788	ug/mL
L-PFODA		1	ug/mL
L-PFOA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
L-PFNA		1	ug/mL
L-PFHxS		0.812	ug/mL
L-PFHxDA		1	ug/mL
L-PFHxA		1	ug/mL
L-PFUnA		1	ug/mL
L-PFHpA		1	ug/mL
MeFOSA	31506-32-8	5	ug/mL
L-PFDoA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
L-PFDA		1	ug/mL
L-PFBS		1	ug/mL
L-PFBA		1	ug/mL
L-8:2FTS		1	ug/mL
L-6:2 FTS		1	ug/mL
EtFOSE	1691-99-2	5	ug/mL
EtFOSAA	2991-50-6	1	ug/mL
EtFOSA	4151-50-2	5	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
Br-PFHxS	3871-99-6	0.189	ug/mL
8:2 FTS	70887-84-2	1	ug/mL
L-PFHpS		1	ug/mL
PFHxS	355-46-4	1	ug/mL
Total PFHxS		1	ug/mL
Total PFHpS		1	ug/mL
Total PFDS		1	ug/mL
Total 6:2 FTS		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
PFUnA	2058-94-8	1	ug/mL
PFTrDA	72629-94-8	1	ug/mL
PFTeDA	376-06-7	1	ug/mL
PFPeA	2706-90-3	1	ug/mL
PFOSA	754-91-6	1	ug/mL
PFOS	1763-23-1	1	ug/mL
PFODA	16517-11-6	1	ug/mL
L-PFTrDA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
17D2715	6:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:01 by AEW	0.8
17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
17D2717	Br-PFOSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:46 by INJ	0.8
17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
PFNA	375-95-1	1	ug/mL
Total PFUnA		1	ug/mL
PFHxDA	67905-19-5	1	ug/mL
PFHxA	307-24-4	1	ug/mL
PFHpS	375-92-8	1	ug/mL
PFHpA	375-85-9	1	ug/mL
PFDS	335-77-3	1	ug/mL
PFDoA	307-55-1	1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

17D2705

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1414	PFDA	14-Sep-16	** Vendor **	31-May-21	15-Dec-16 08:38 by AEW	0.4
16I1415	PFHxA	14-Sep-16	** Vendor **	22-Dec-20	15-Dec-16 08:41 by AEW	0.4
16I1416	MeFOSAA	14-Sep-16	** Vendor **	20-Jan-21	04-Oct-16 08:25 by EMS	0.4
16I1417	EtFOSAA	14-Sep-16	** Vendor **	20-Jan-21	14-Sep-16 14:10 by TLD	0.4
16I1418	PFTeDA	14-Sep-16	** Vendor **	09-Dec-20	15-Dec-16 08:46 by AEW	0.4
16I3001	PFTrDA	30-Sep-16	** Vendor **	12-Feb-21	23-Jan-17 17:44 by AEW	0.4
16J0422	PFDoA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:22 by AEW	0.4
16J0423	FOSA-I	04-Oct-16	** Vendor **	02-Sep-17	23-Jan-17 17:49 by AEW	0.4
16J0424	PFNA	04-Oct-16	** Vendor **	23-Oct-20	23-Jan-17 17:40 by AEW	0.4
16J0425	PFPeA	04-Oct-16	** Vendor **	31-May-21	23-Jan-17 17:38 by AEW	0.4
16J0426	PFBA	04-Oct-16	** Vendor **	27-May-21	23-Jan-17 17:18 by AEW	0.4
16L0512	PFODA	05-Dec-16	** Vendor **	29-Apr-21	23-Jan-17 17:35 by AEW	0.4
17C1026	PFOA	10-Mar-17	Jamie C. Stockman	02-Feb-21	10-Mar-17 15:25 by JCS	0.4
17D2612	N-MeFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:56 by INJ	2
17D2613	N-EtFOSA-M	26-Apr-17	** Vendor **	24-May-21	27-Apr-17 10:54 by INJ	2
17D2614	N-EtFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:54 by INJ	2
17D2616	PFUdA	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:32 by AEW	0.4
17D2617	PFHxDA	26-Apr-17	** Vendor **	25-May-21	12-Jun-17 16:08 by AEW	0.4
17D2618	PFHpA	26-Apr-17	** Vendor **	02-Dec-21	09-Jun-17 14:56 by AEW	0.4
17D2621	N-MeFOSE-M	26-Apr-17	** Vendor **	10-Nov-20	27-Apr-17 10:47 by INJ	2
17D2706	L-PFBS anion DIL	27-Apr-17	Emilie Schneider	27-Apr-18	27-Apr-17 13:48 by EMS	0.8
17D2709	8:2 FTS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	27-Apr-17 14:28 by INJ	0.8
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17D2716	L-PFDS anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 09:34 by AEW	0.8
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17D2718	Br-PFHxSK anion DIL	27-Apr-17	Isaac N. Johnson	27-Apr-18	12-Jun-17 08:51 by AEW	0.8
17D2813	L-PFHpS anion DIL	28-Apr-17	Isaac N. Johnson	28-Apr-18	12-Jun-17 09:07 by AEW	0.8

Description:	PFC NS Stock	Expires:	27-Apr-18
Standard Type:	Analyte Spike	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 16:08 by AEW

PFOS and PFHxS branched components

Analyte	CAS Number	Concentration	Units
PFDA	335-76-2	1	ug/mL
PFBS	375-73-5	1	ug/mL
PFBA	375-22-4	1	ug/mL
MeFOSE	24448-09-7	5	ug/mL
MeFOSAA	2355-31-9	1	ug/mL
PFOA	335-67-1	1	ug/mL

16I1414

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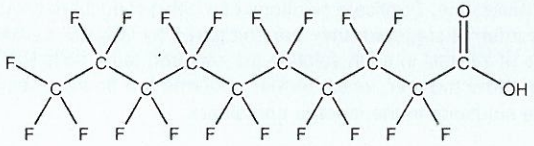
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA ✓
COMPOUND: Perfluoro-n-decanoic acid

LOT NUMBER: PFDA0516 ✓

STRUCTURE:

CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
MOLECULAR WEIGHT: 514.08
CONCENTRATION: 50 ± 2.5 µg/ml ✓
SOLVENT(S): Methanol ✓
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021 ✓
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/13/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

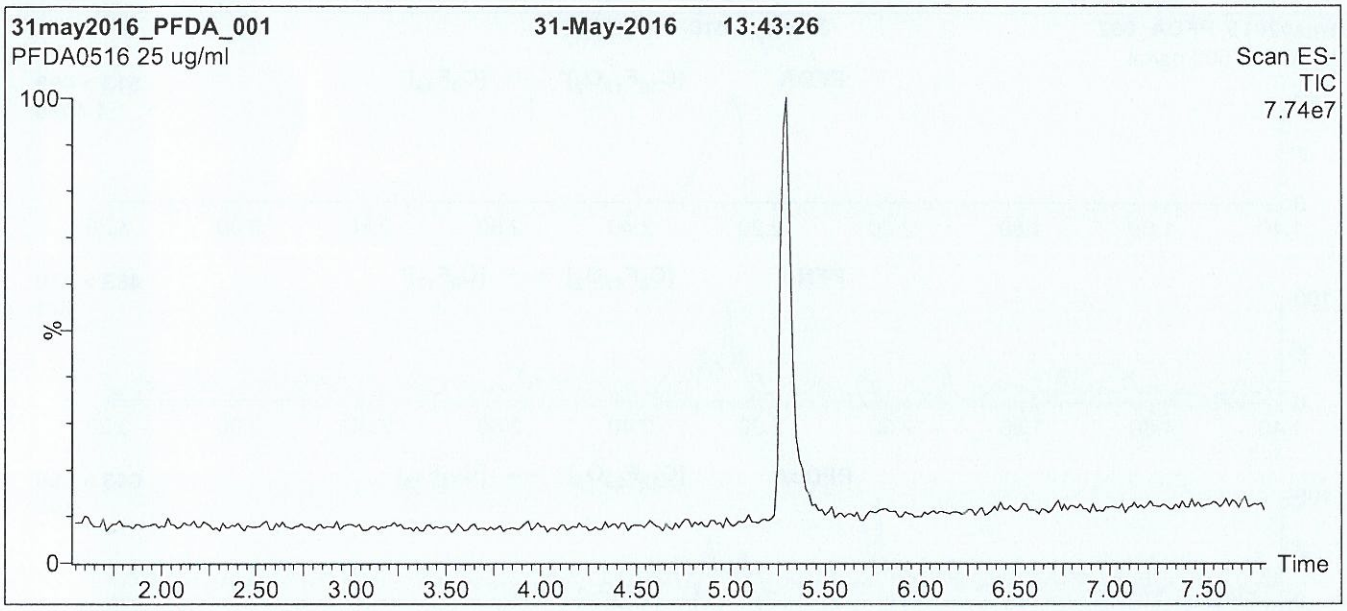
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

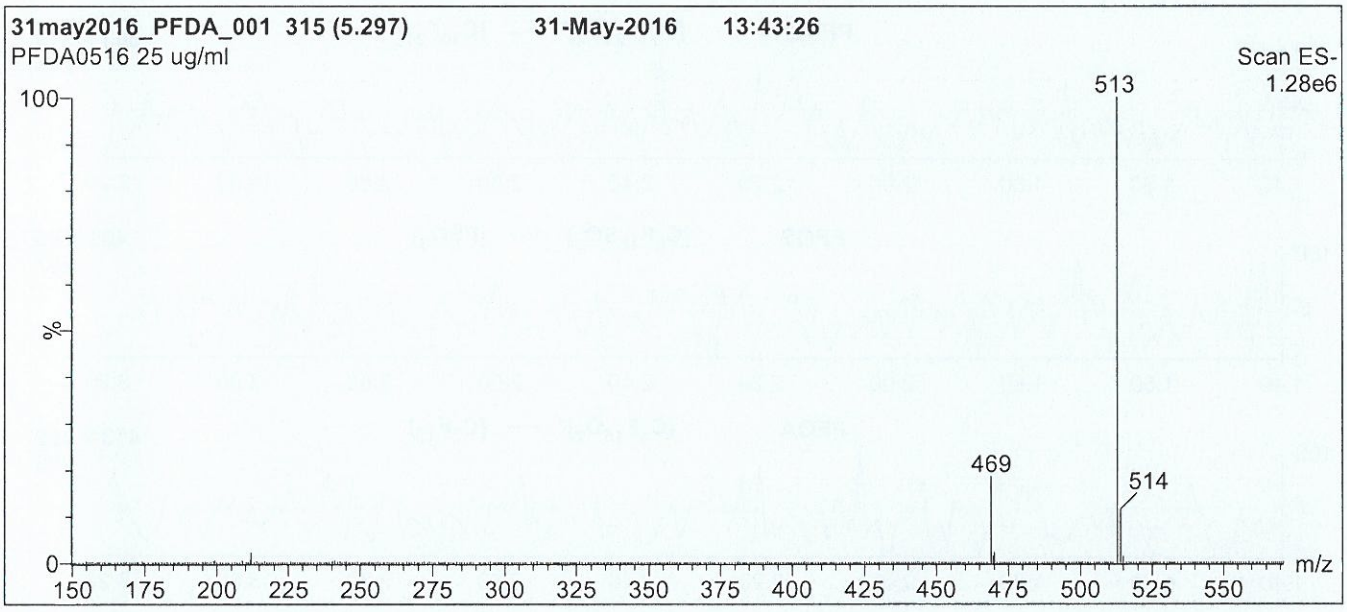
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 AR 1523 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

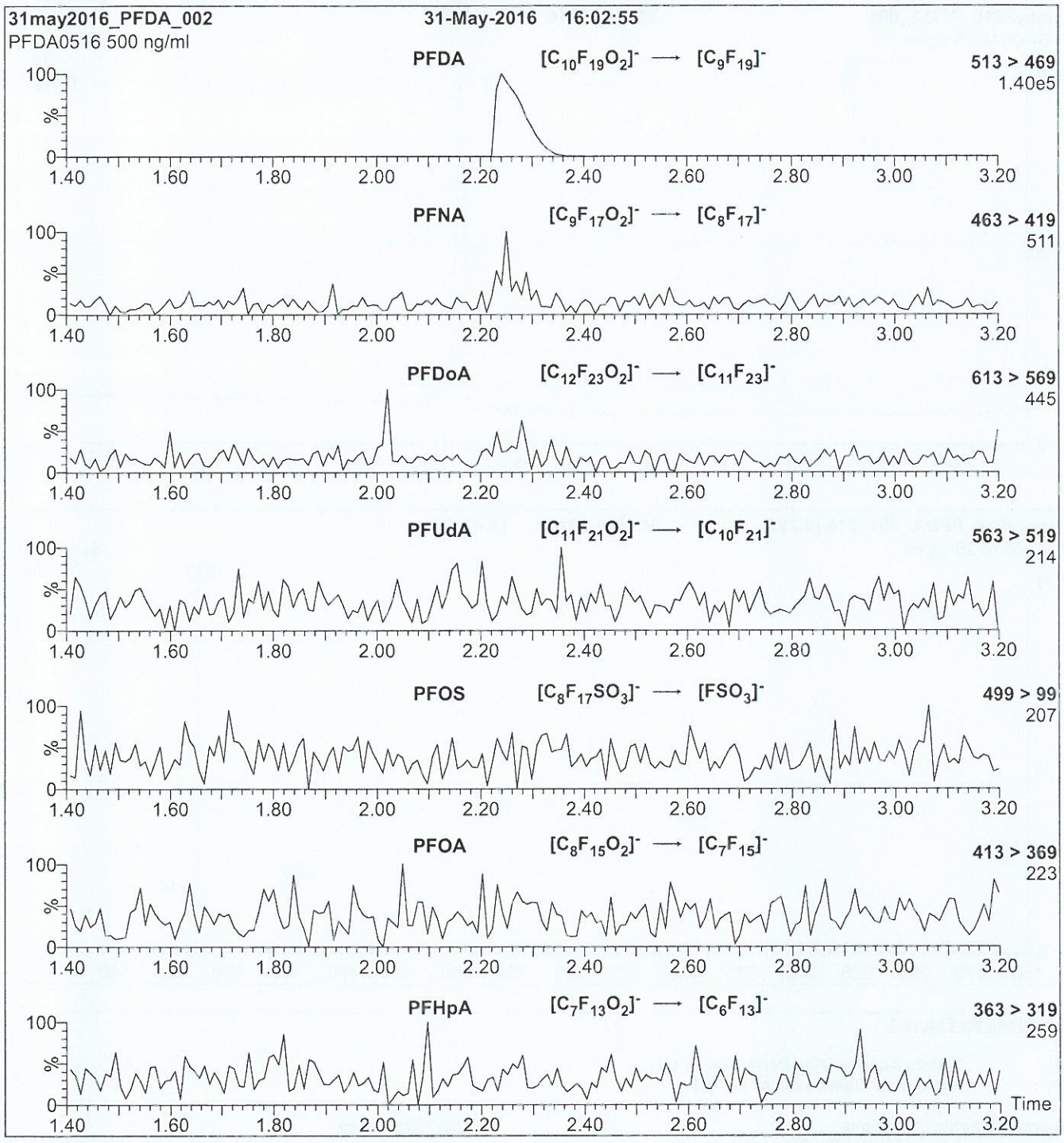
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

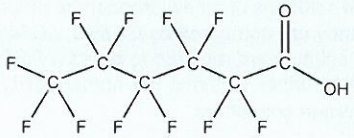
16I1415

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



MOLECULAR FORMULA: $C_6HF_{11}O_2$ **MOLECULAR WEIGHT:** 314.05
CONCENTRATION: 50 ± 2.5 µg/ml ✓ **SOLVENT(S):** Methanol ✓
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020 ✓
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/23/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

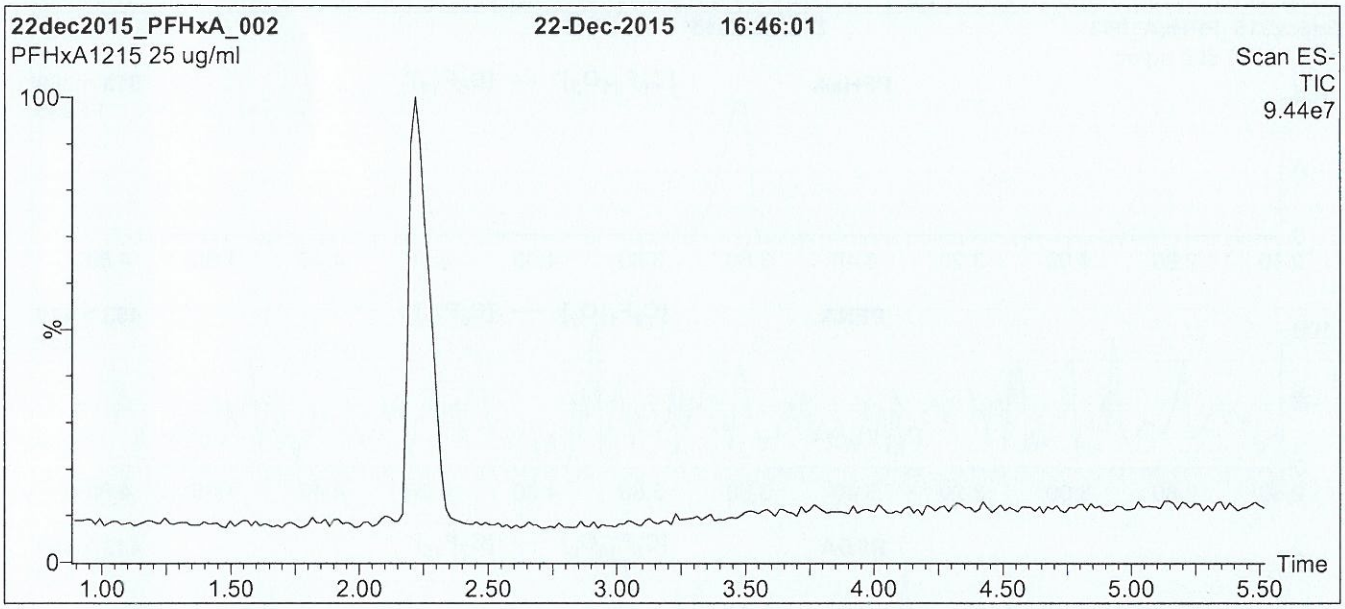
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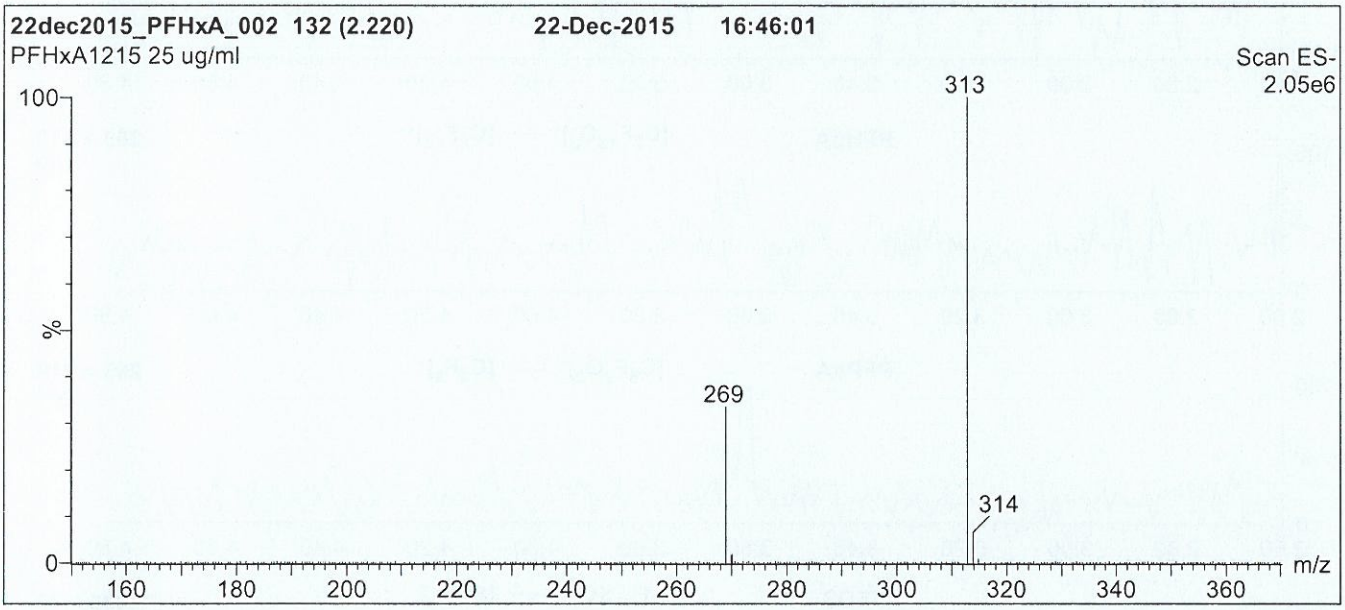
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

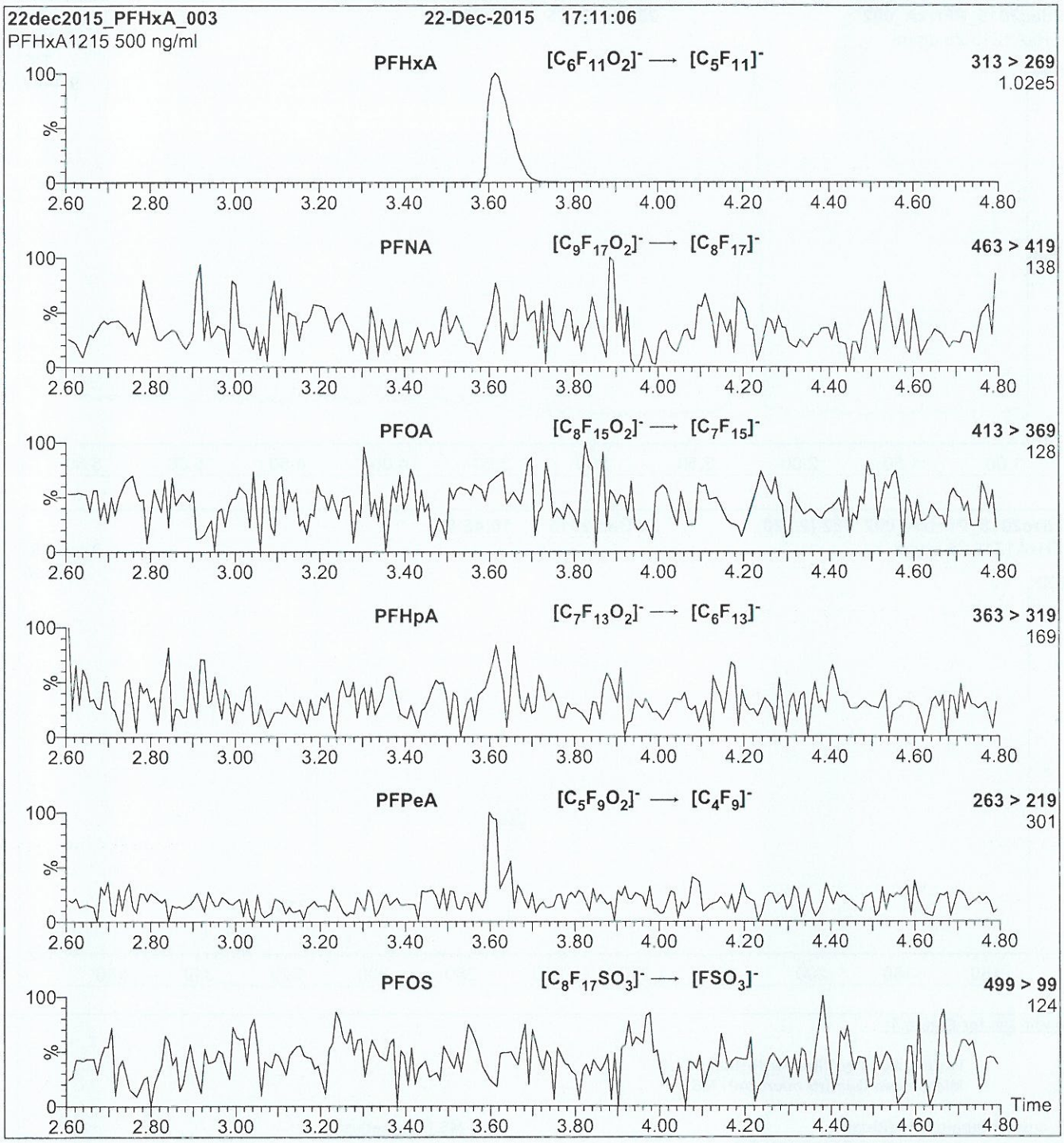
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

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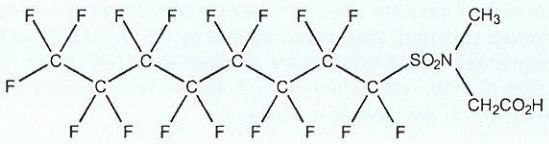
CERTIFICATE OF ANALYSIS DOCUMENTATION

MeFOSAA

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{11}H_6F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

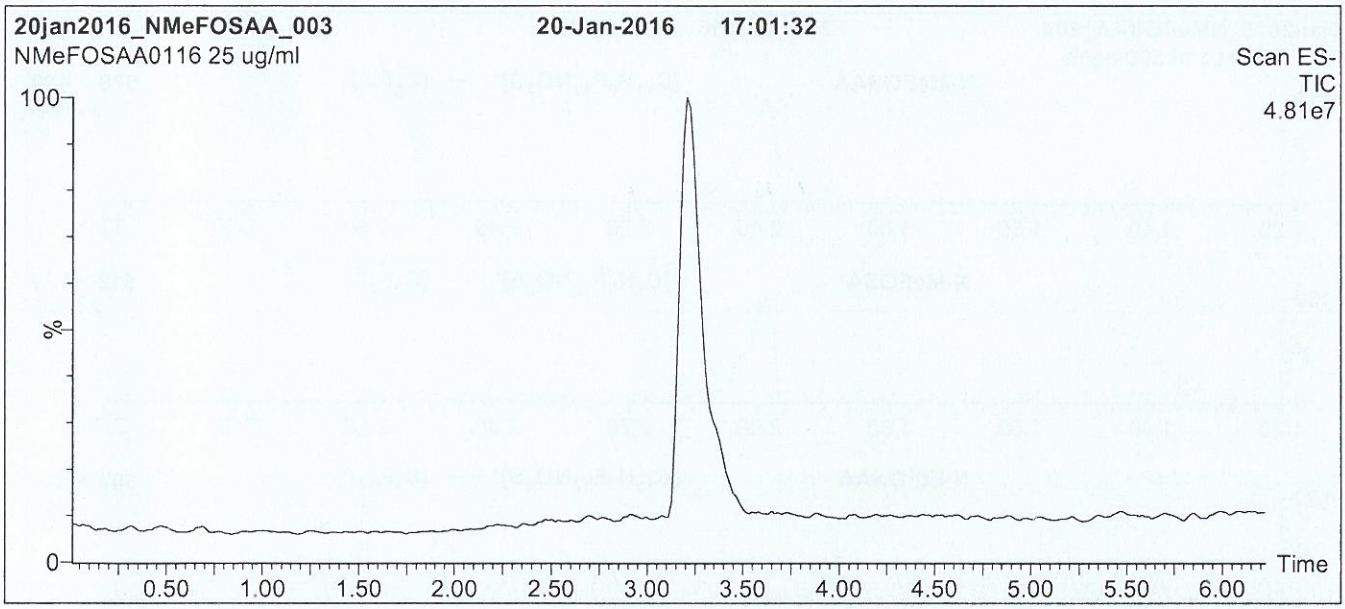
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

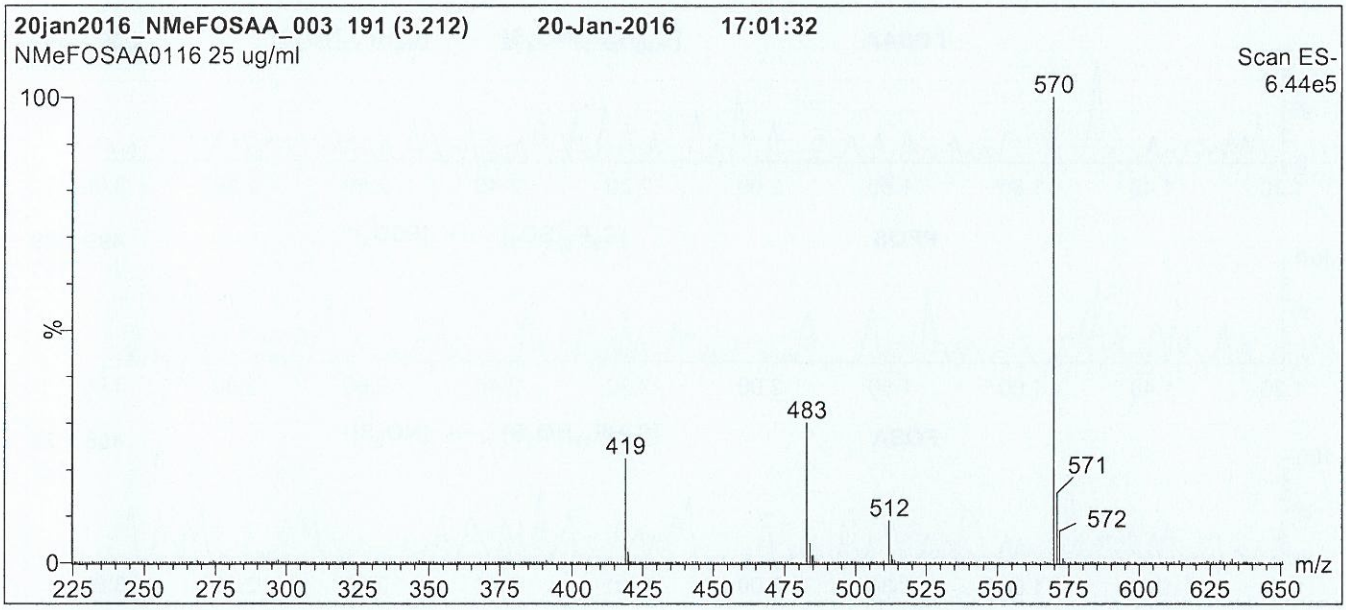
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

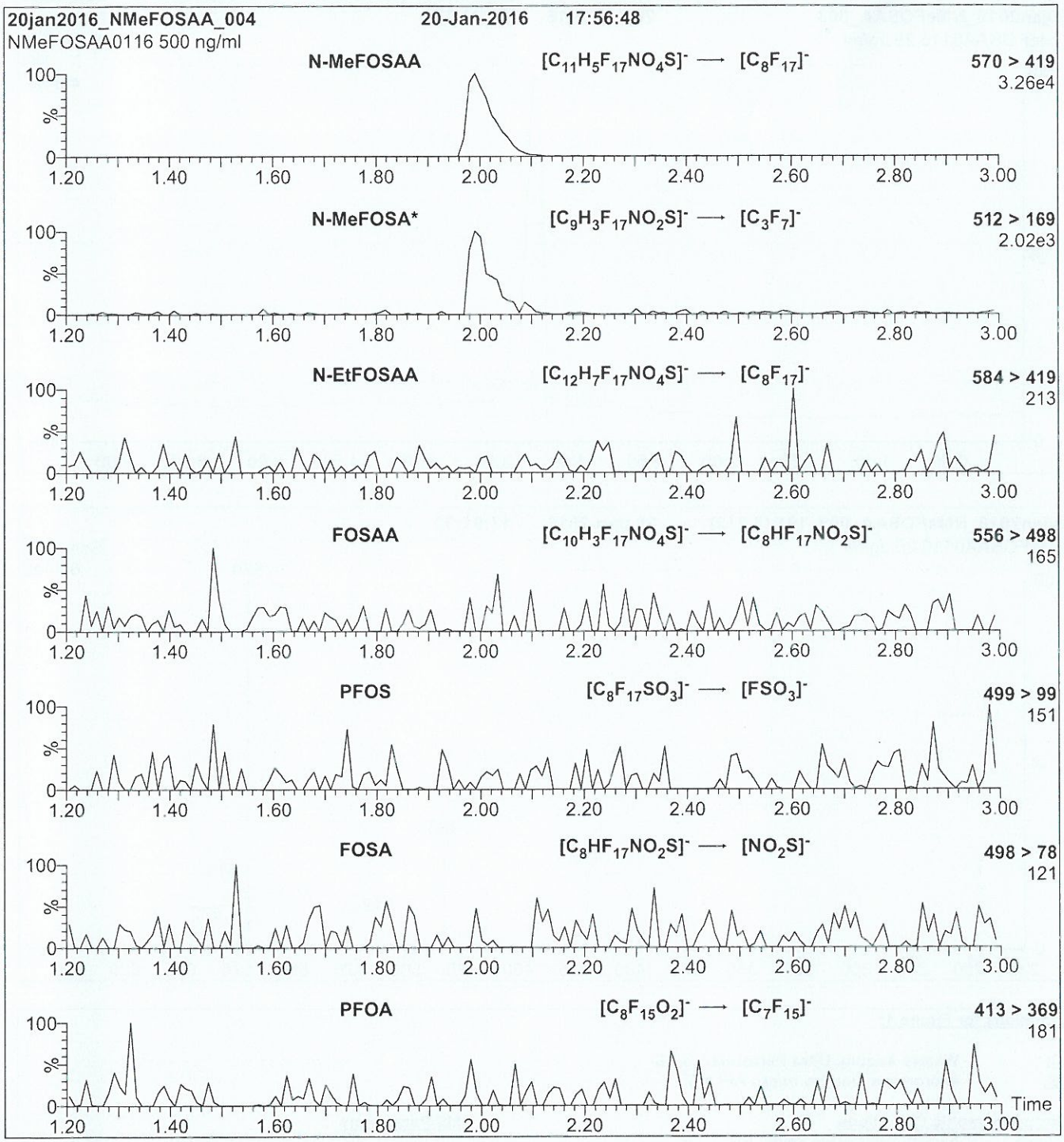
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



***Note**: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

16I1417

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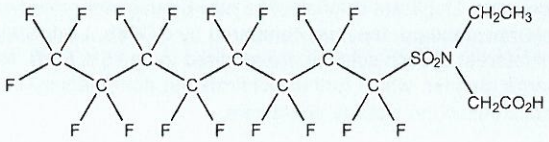
CERTIFICATE OF ANALYSIS DOCUMENTATION

EtFOSAA

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

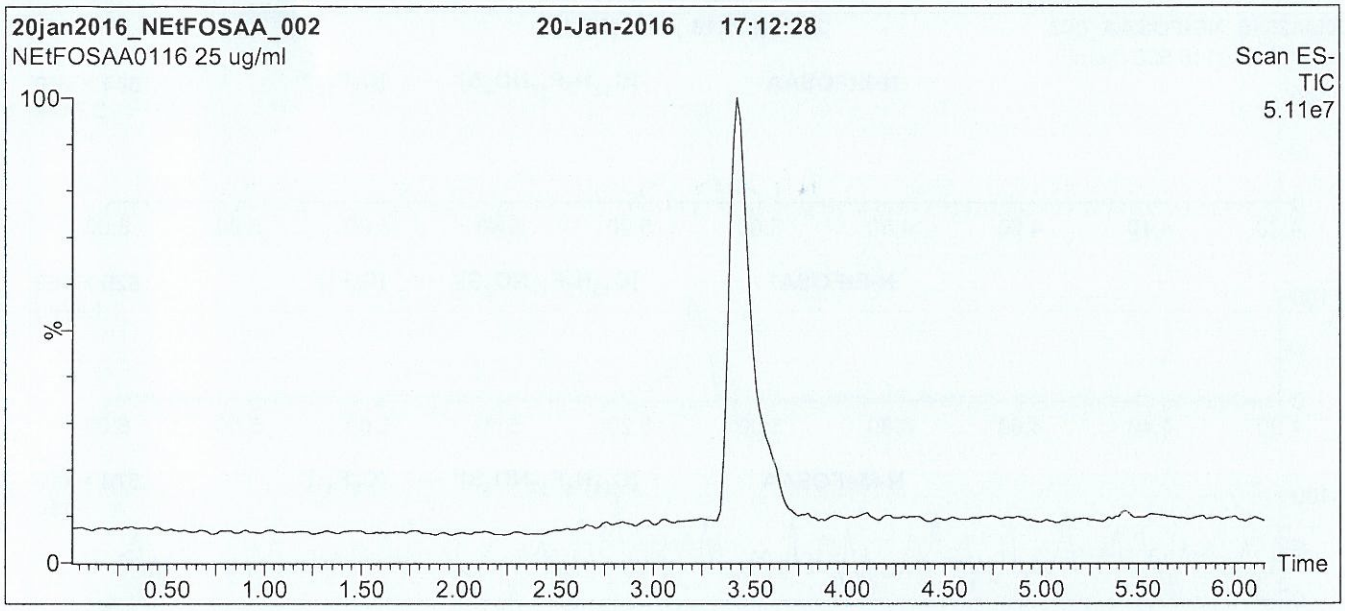
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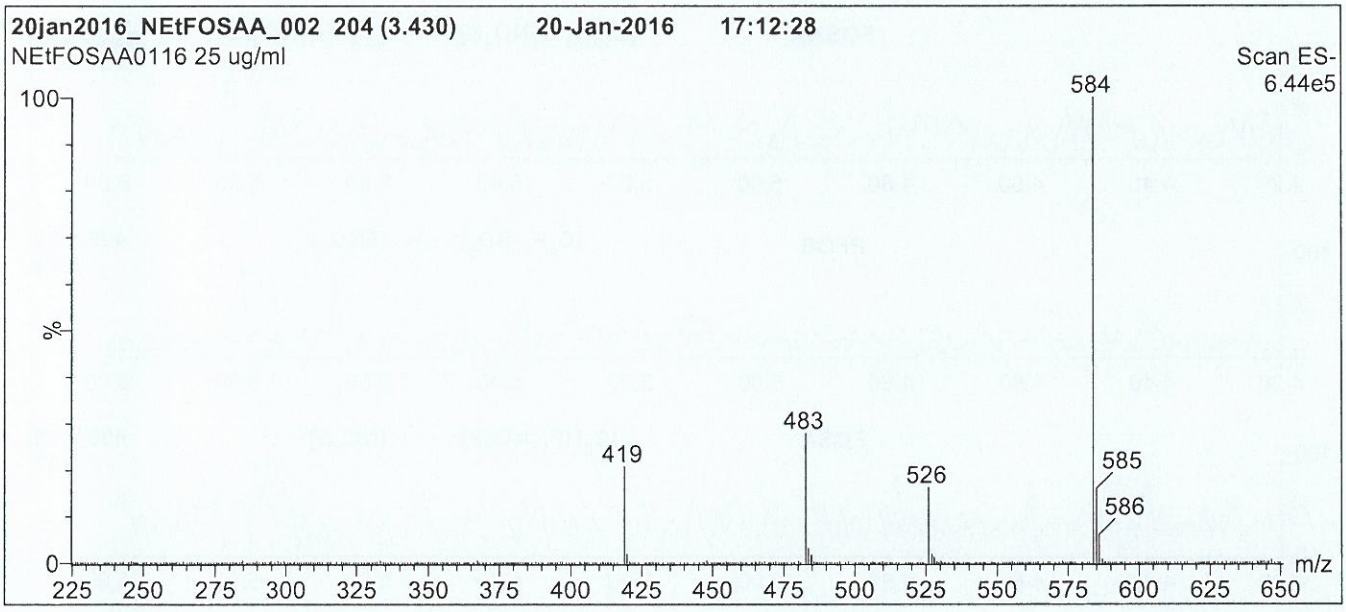
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

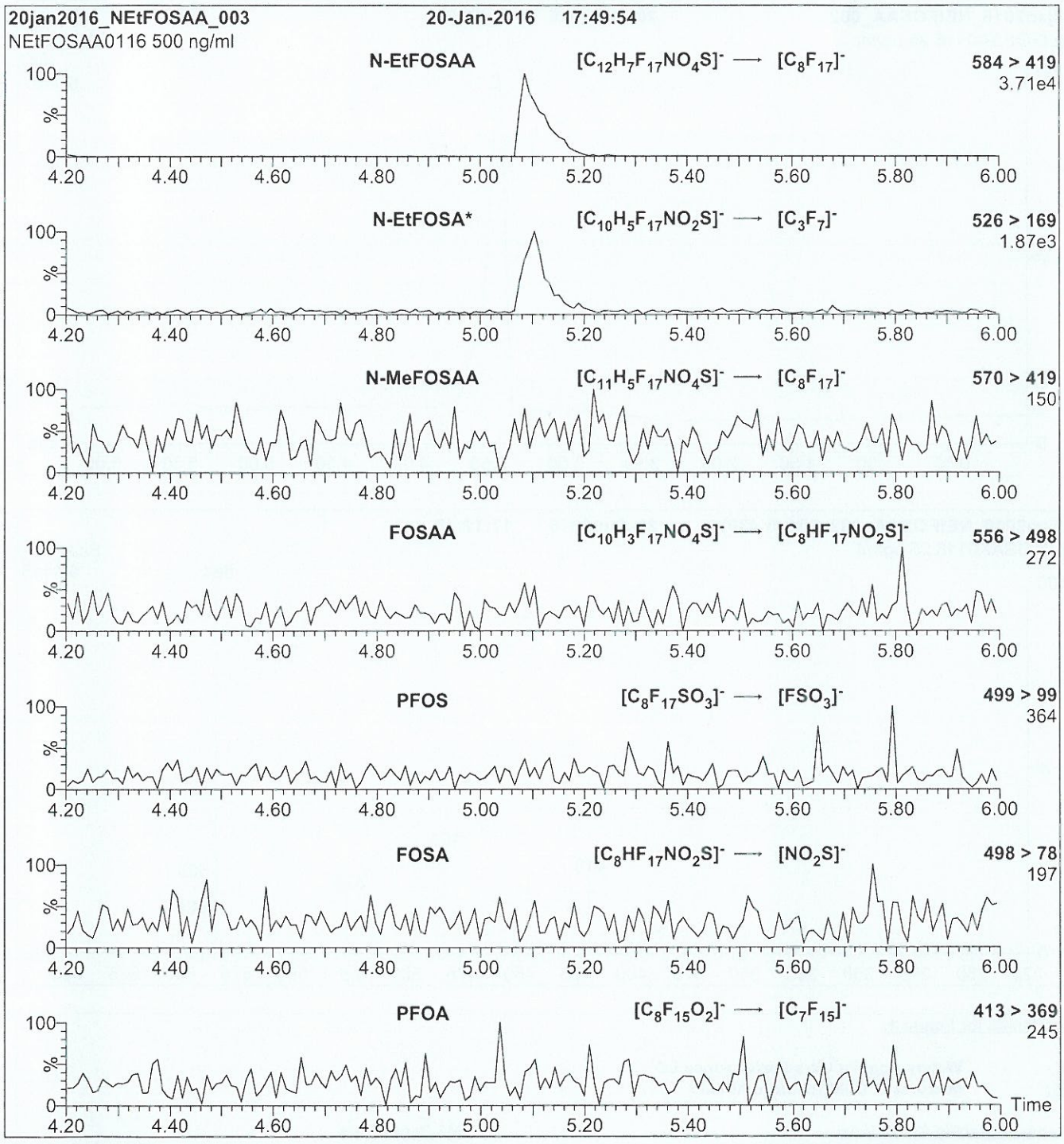
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml N-EtFOSAA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

16I1418

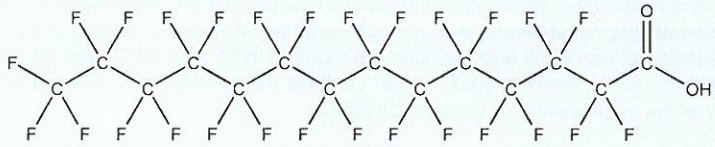
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFTeDA

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/09/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

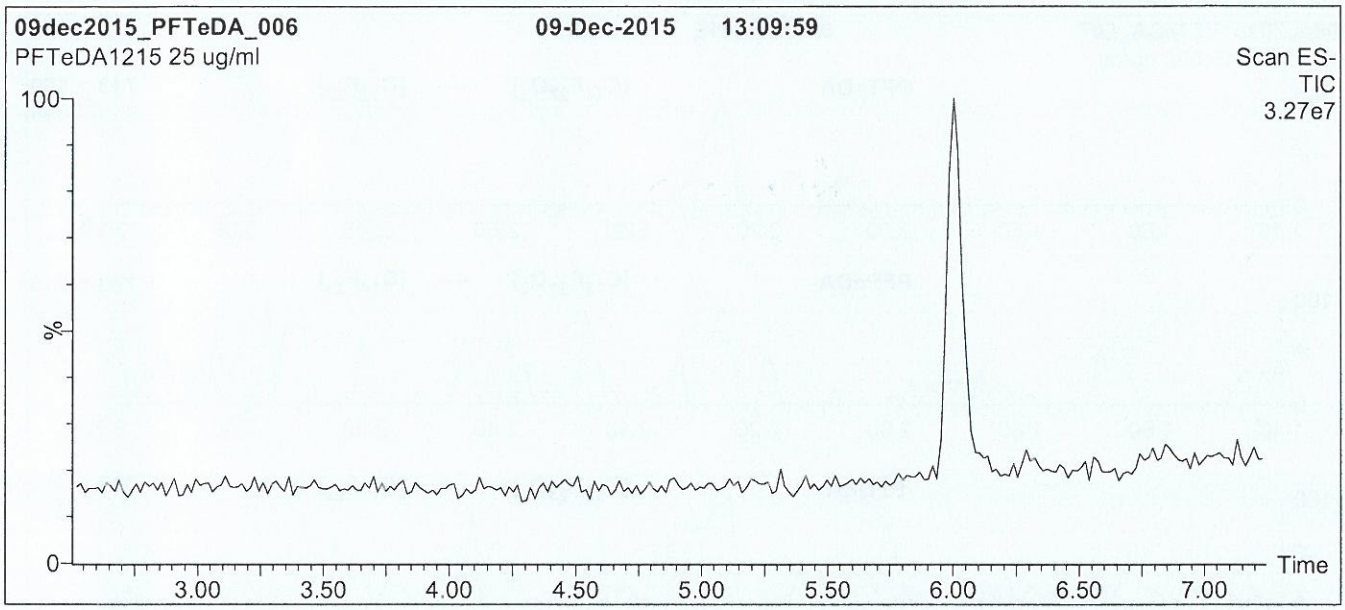
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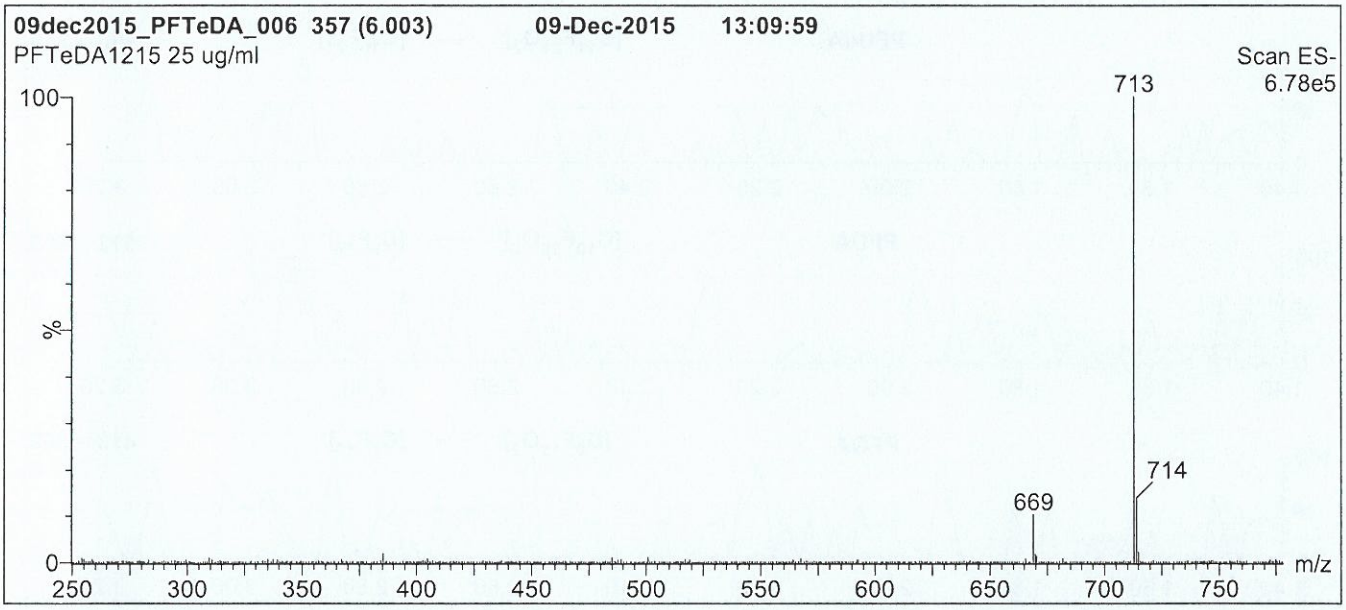
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

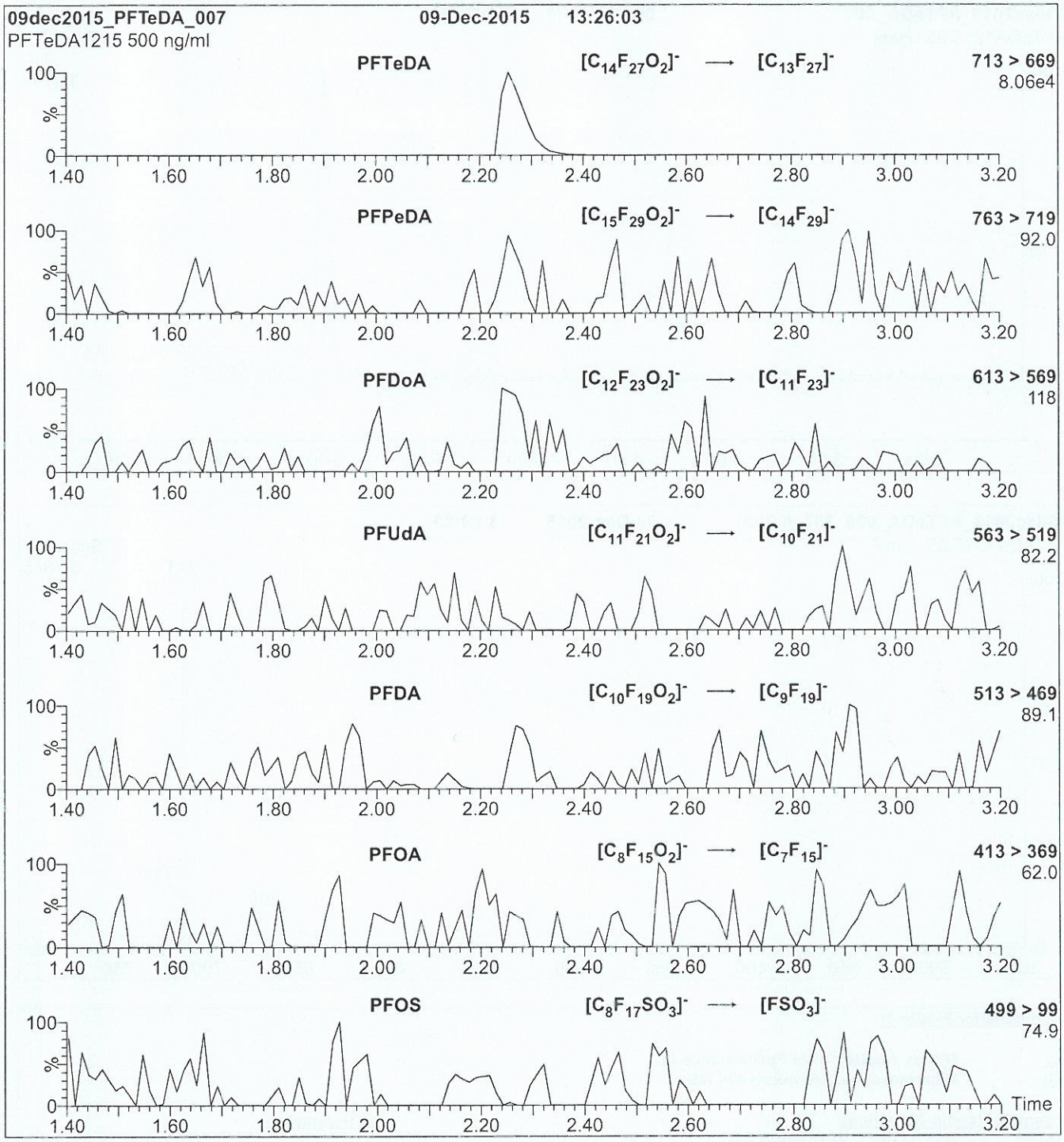
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

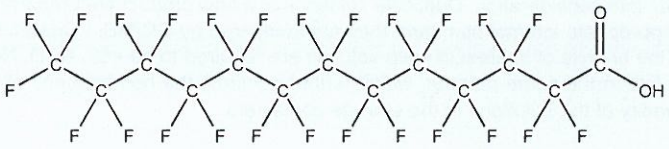
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

16I3001

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFTrDA	**LOT NUMBER:**	PFTrDA0216
COMPOUND:	Perfluoro-n-tridecanoic acid		
STRUCTURE:		**CAS #:**	72629-94-8



MOLECULAR FORMULA:	$C_{13}HF_{25}O_2$	**MOLECULAR WEIGHT:**	664.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/16/2016 (mm/dd/yyyy)

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

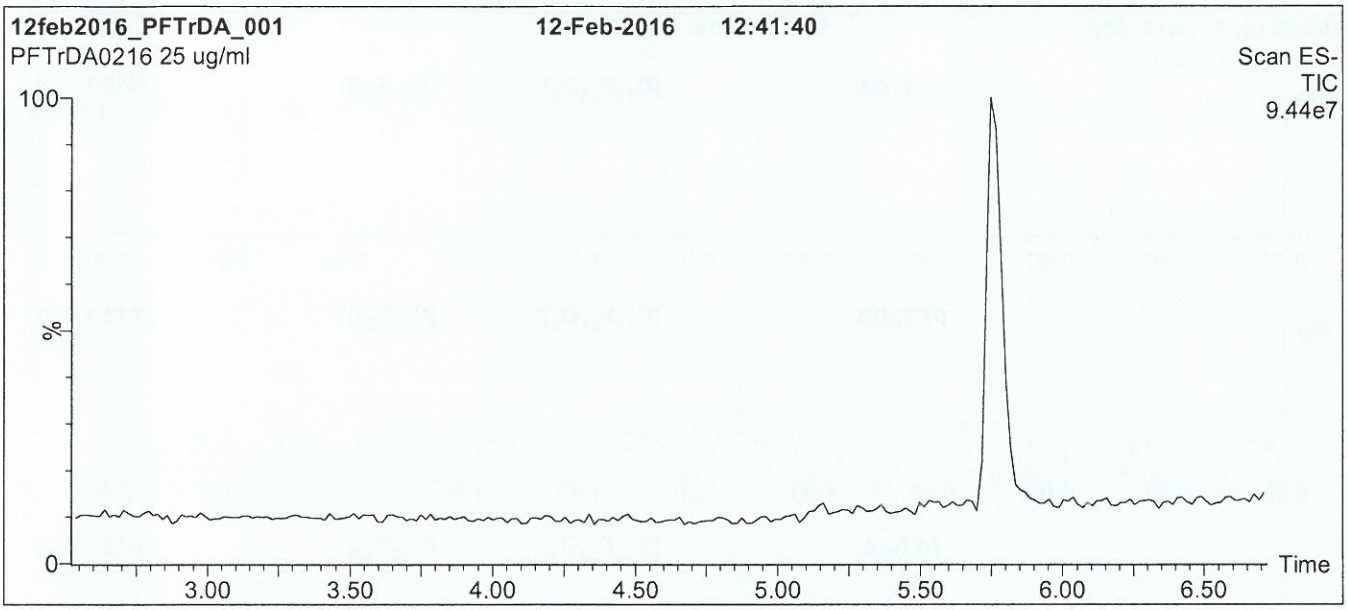
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

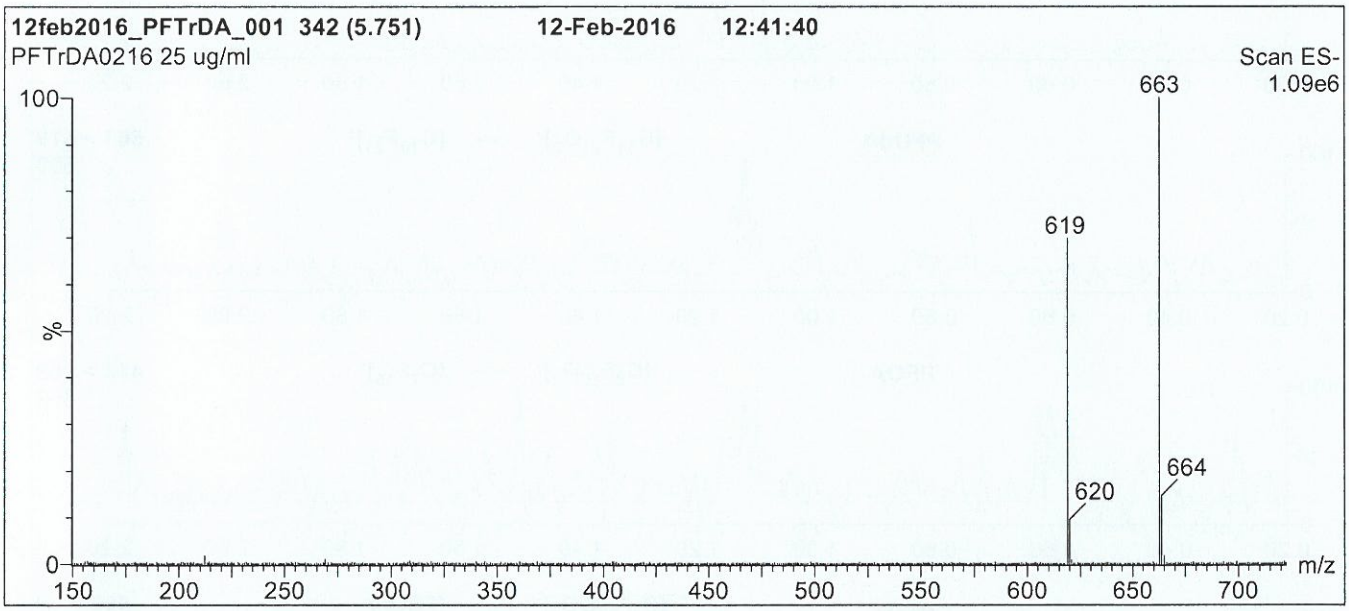
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

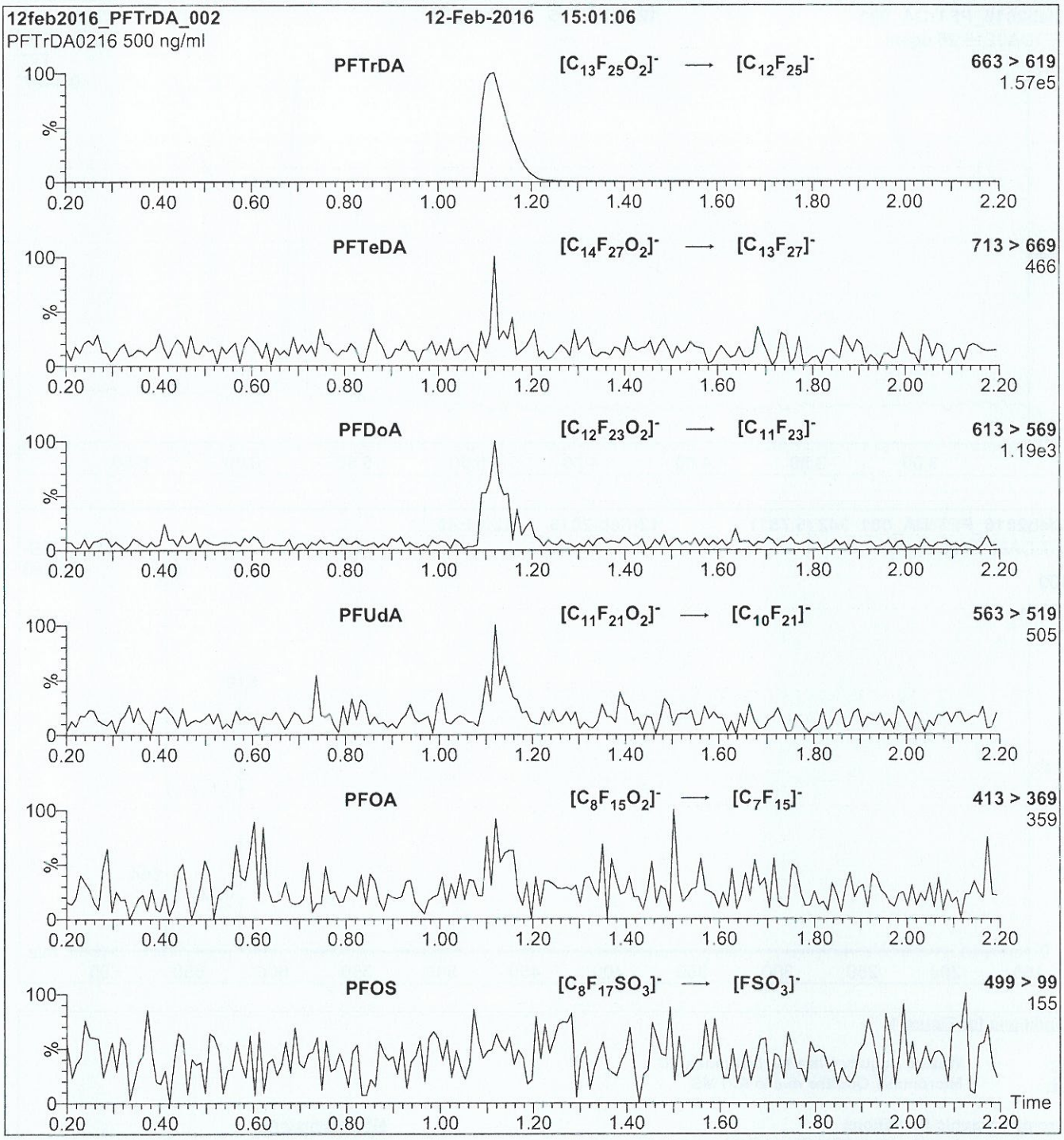
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

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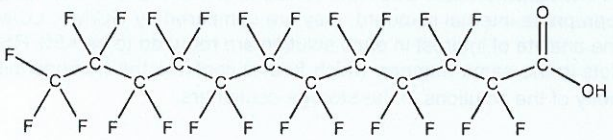
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDoA
LOT NUMBER: PFDoA0516
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
MOLECULAR WEIGHT: 614.10
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/02/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

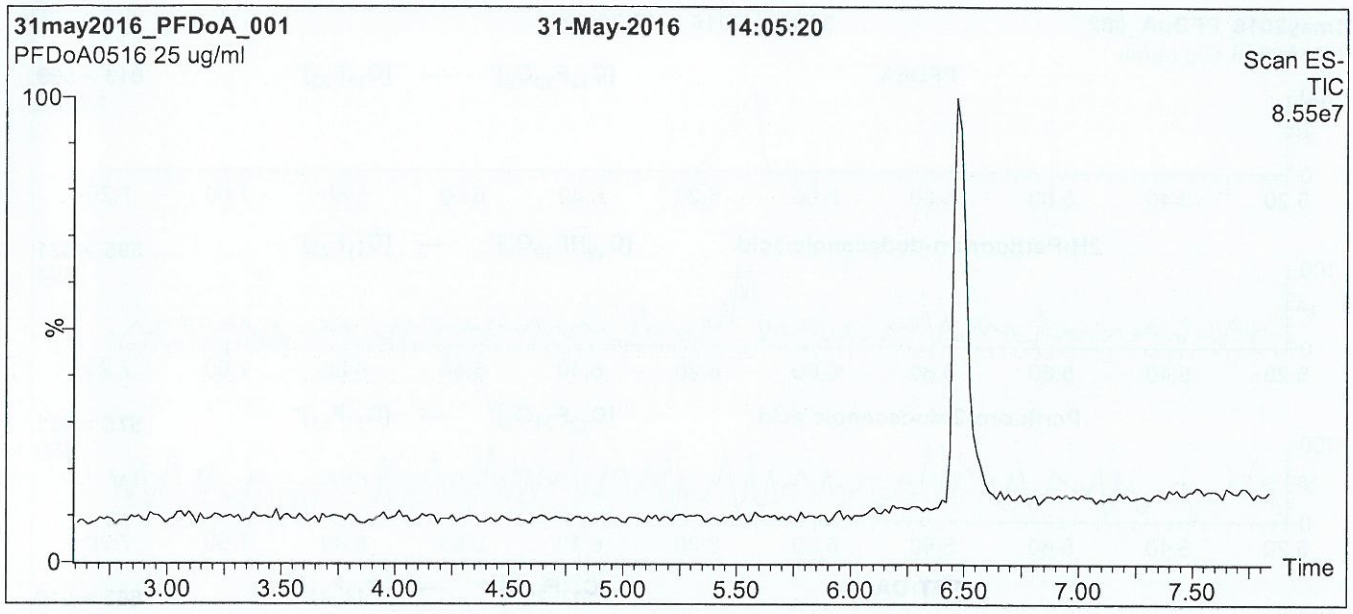
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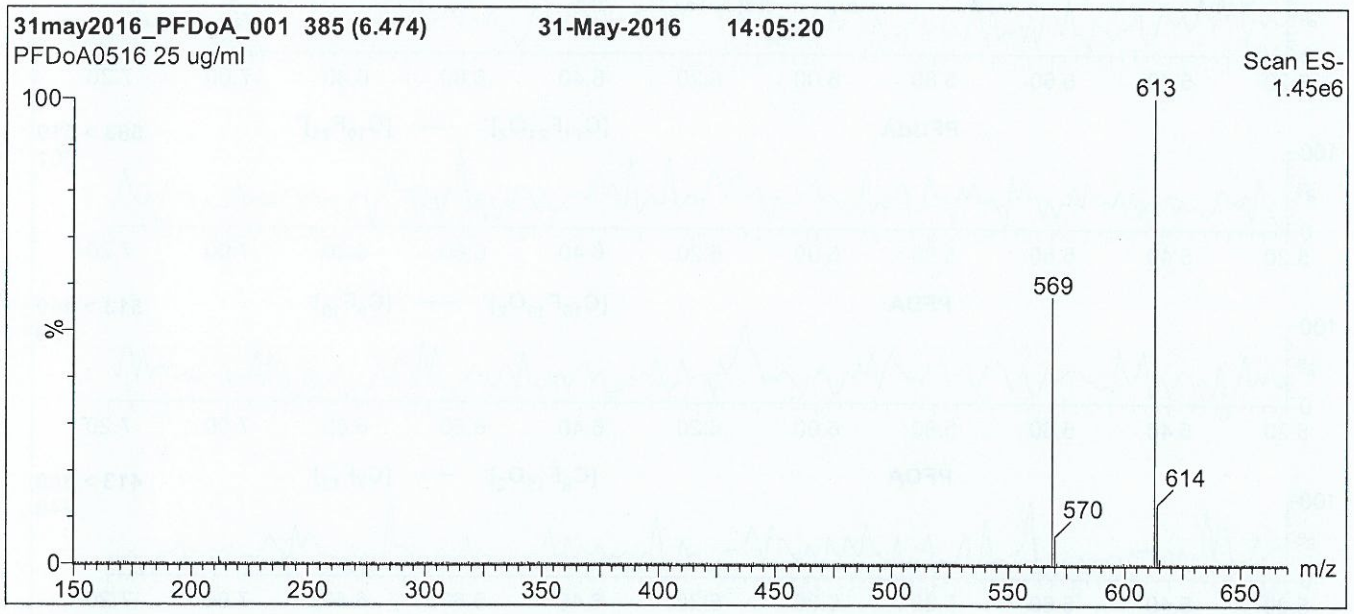
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

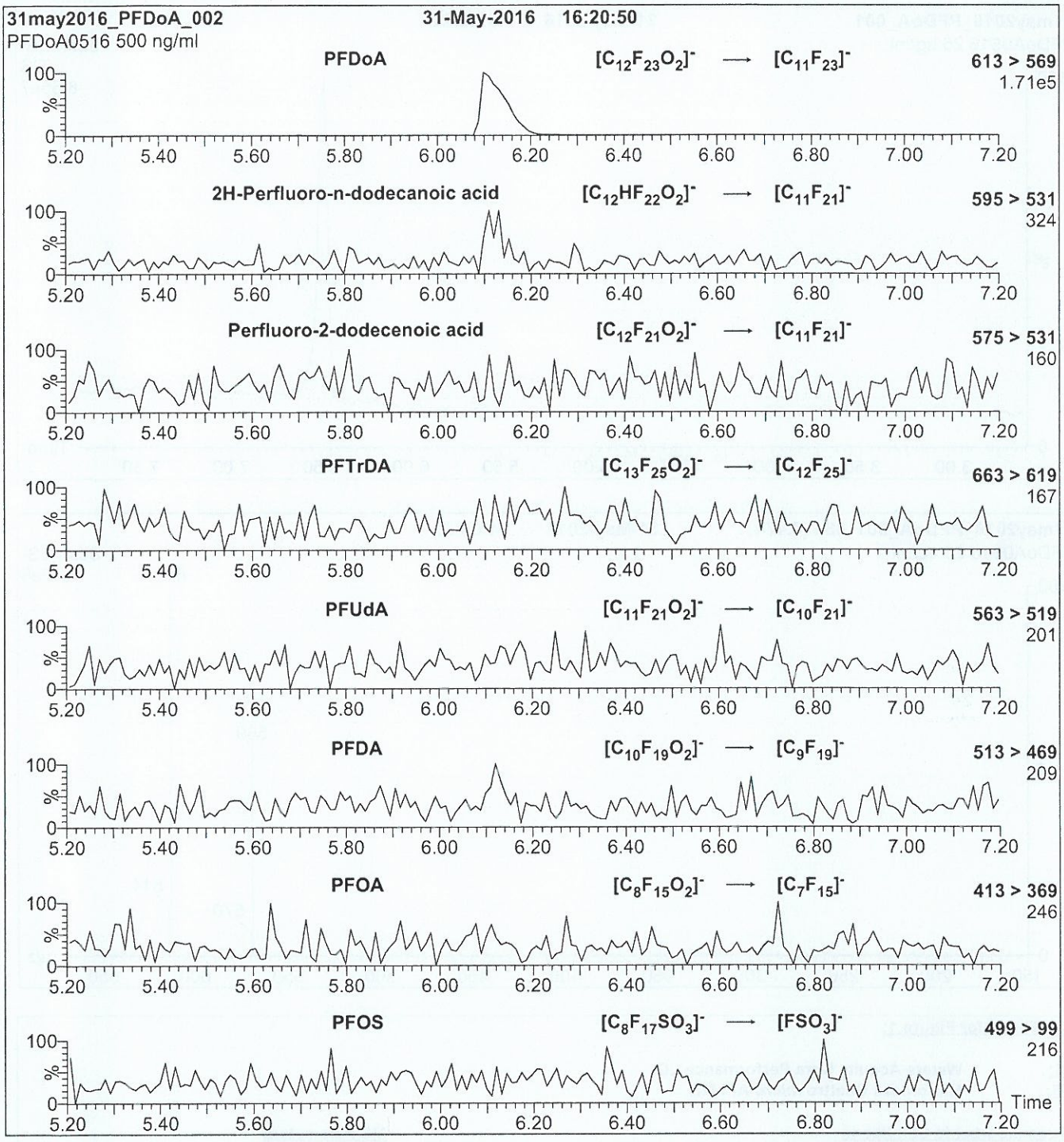
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

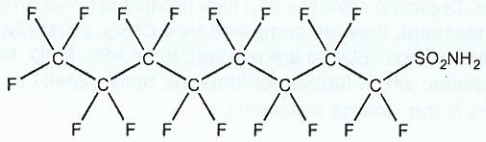
Injection:	Direct loop injection 10 µl (500 ng/ml PFDoA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 13
Flow:	300 µl/min	

16J0423

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0815I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	09/02/2017		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

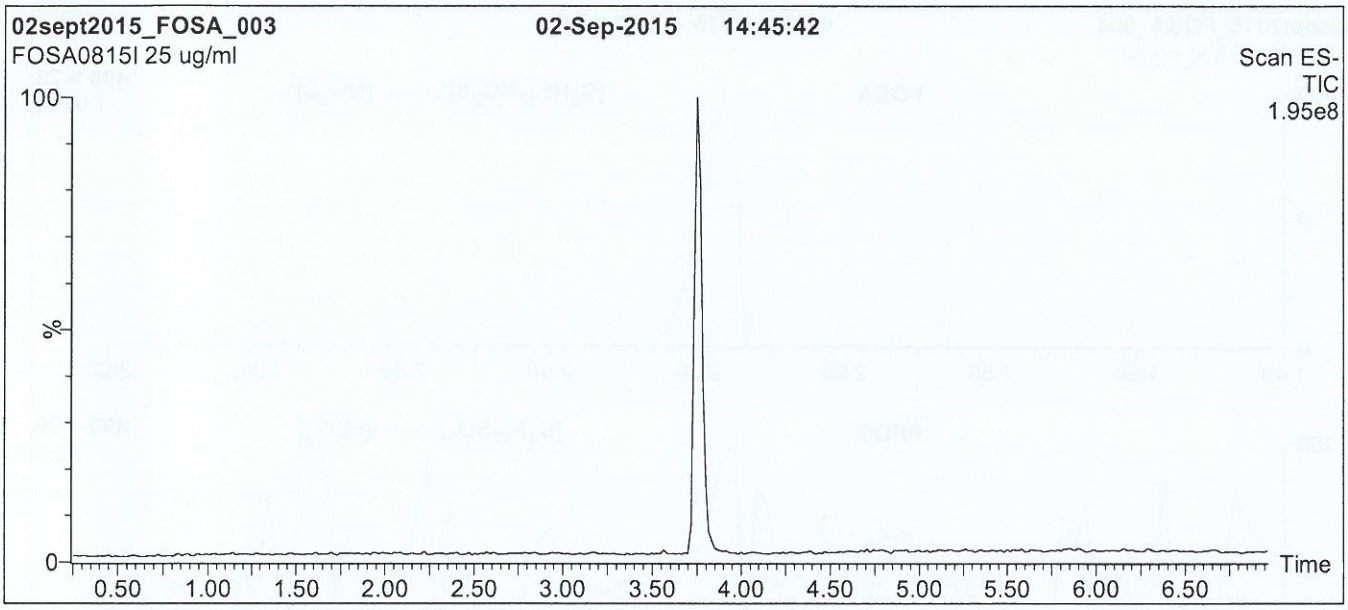
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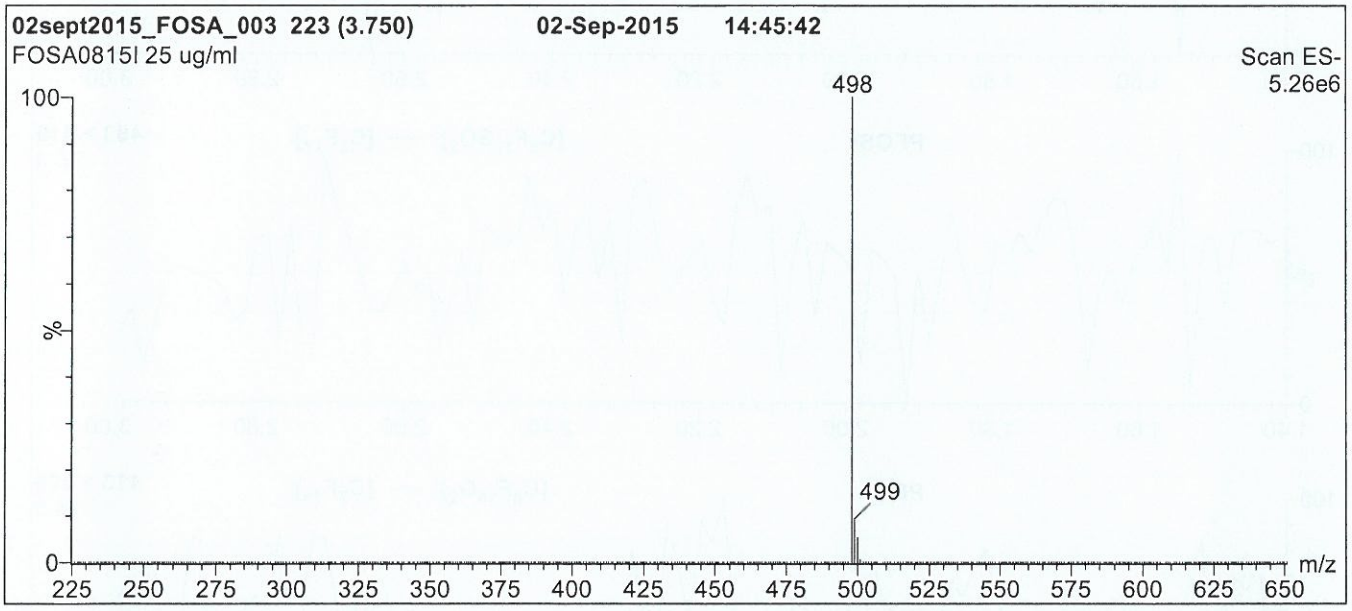
CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

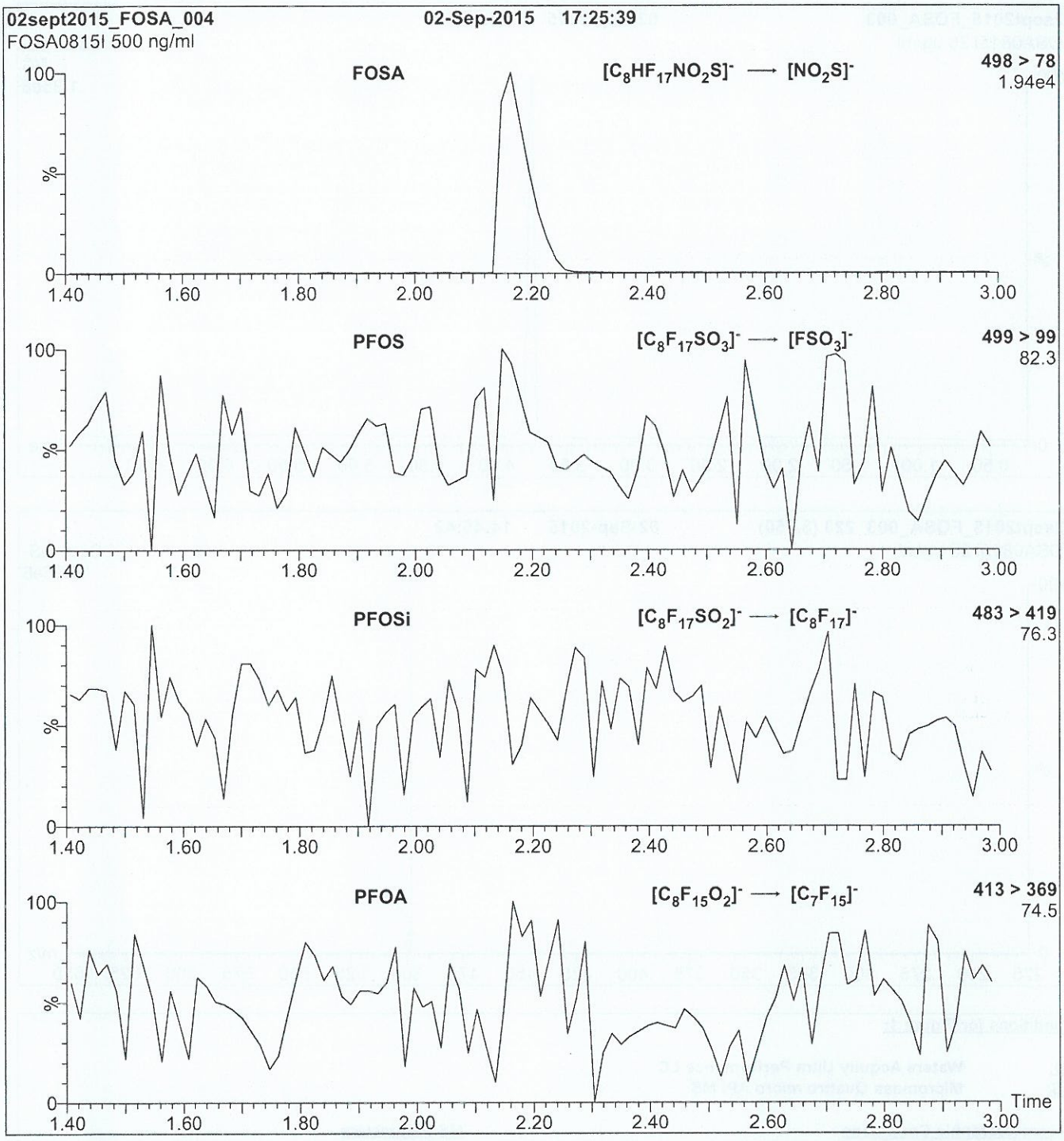
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml FOSA-I)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

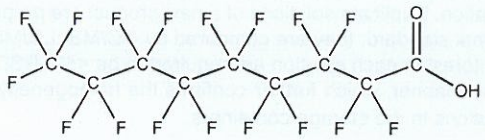
Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

16J0424

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFNA	**LOT NUMBER:**	PFNA1015
COMPOUND:	Perfluoro-n-nonanoic acid		
STRUCTURE:		**CAS #:**	375-95-1



MOLECULAR FORMULA:	$C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	464.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/30/2015 (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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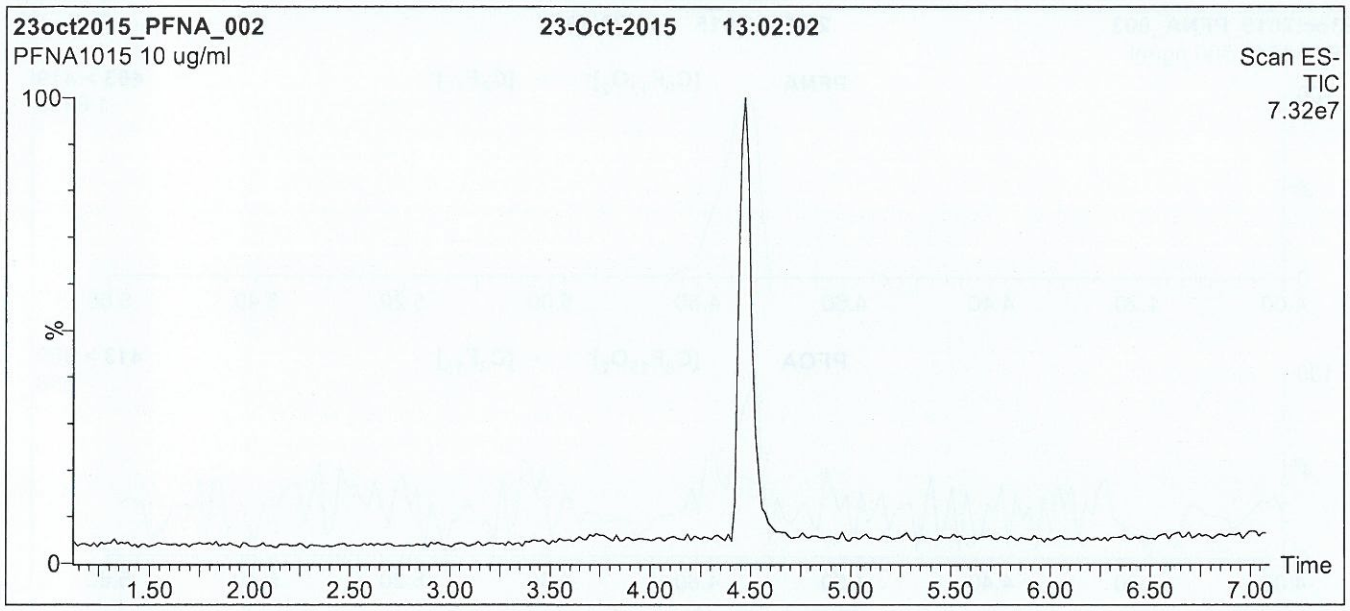
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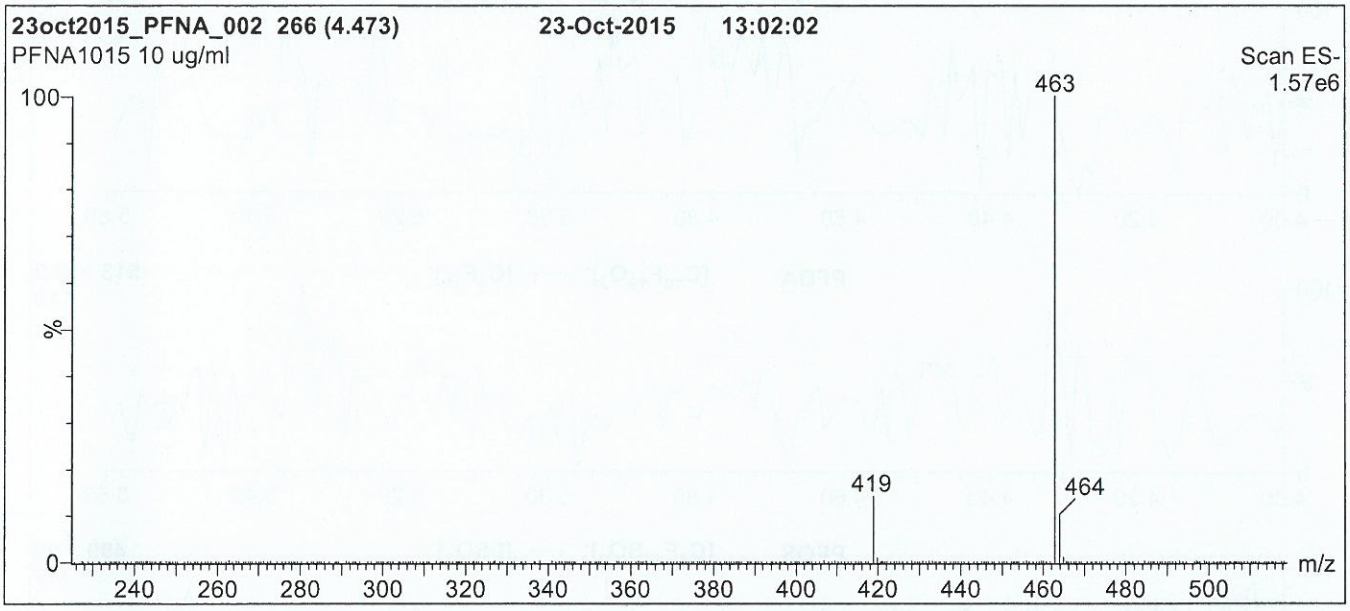
CALA Testing Accreditation No. A1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

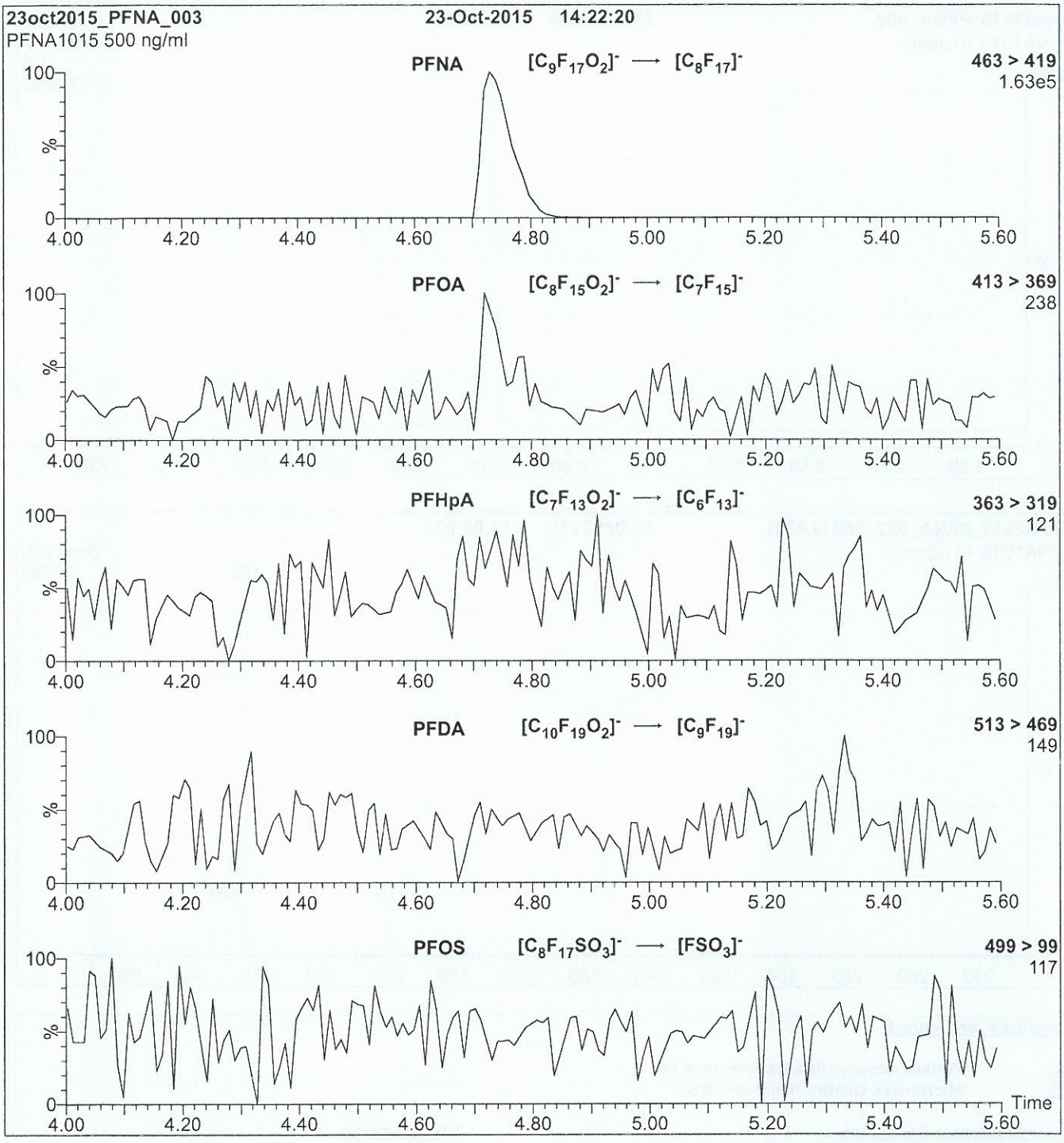
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

16 JUN 25

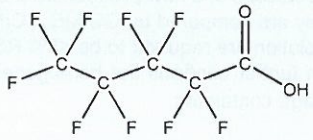
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid
LOT NUMBER: PFPeA0516

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
MOLECULAR WEIGHT: 264.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/31/2016
EXPIRY DATE: (mm/dd/yyyy) 05/31/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/02/2016 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

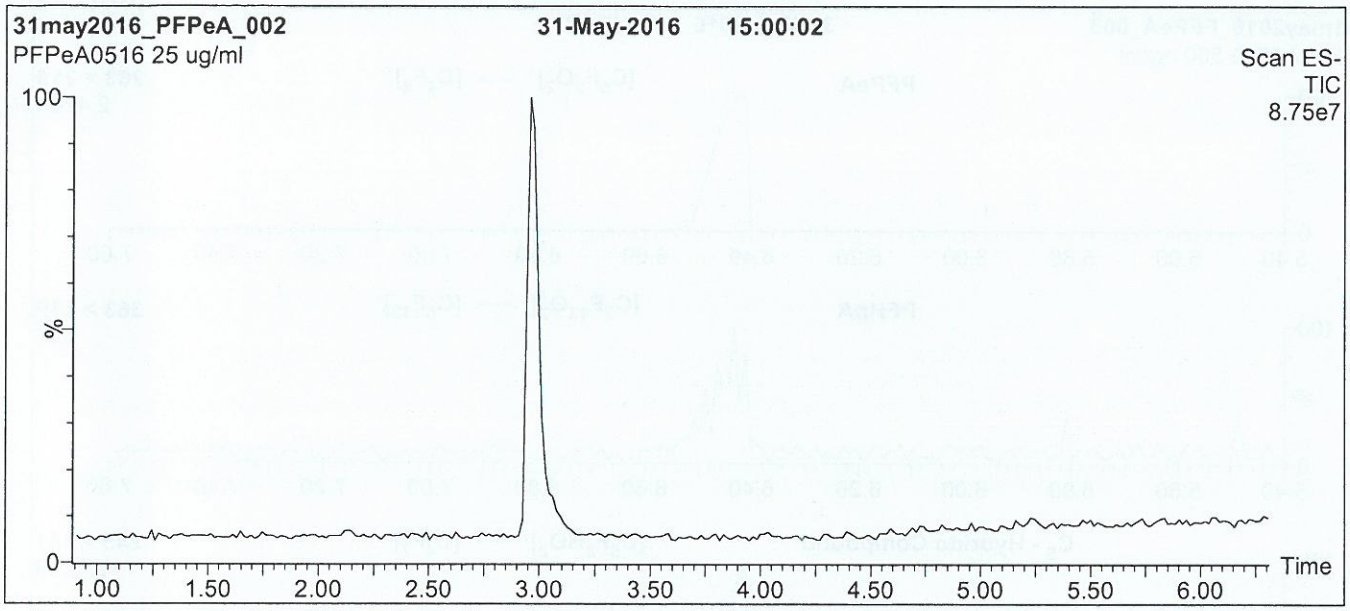
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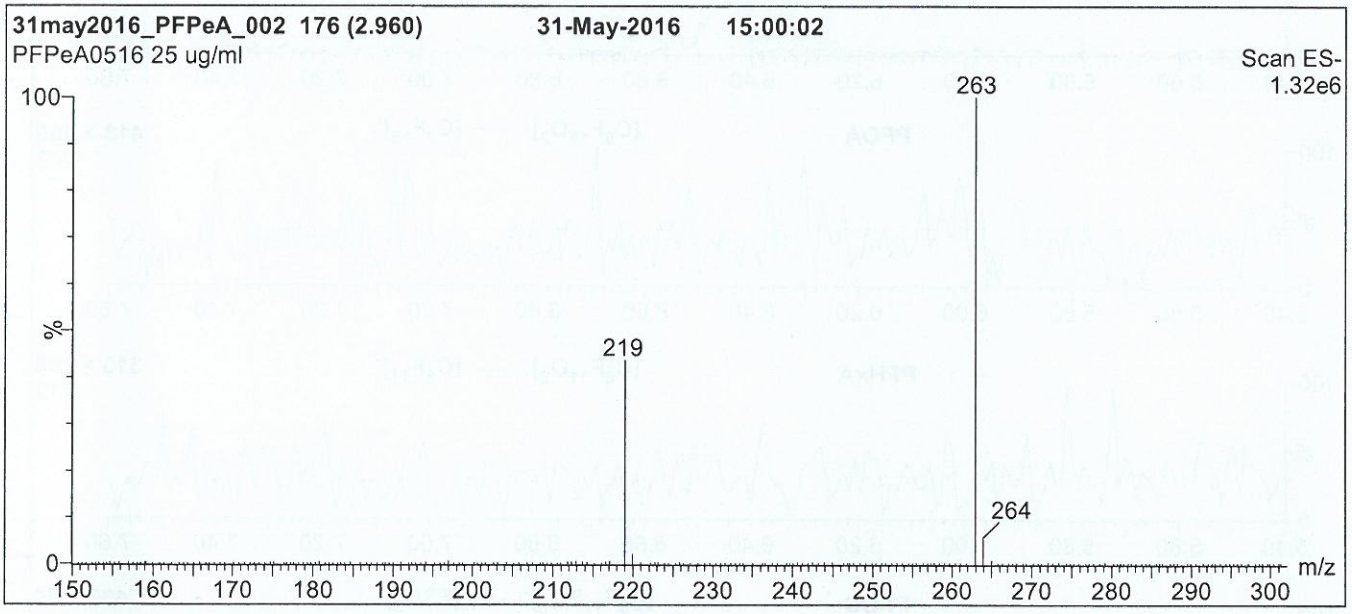
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

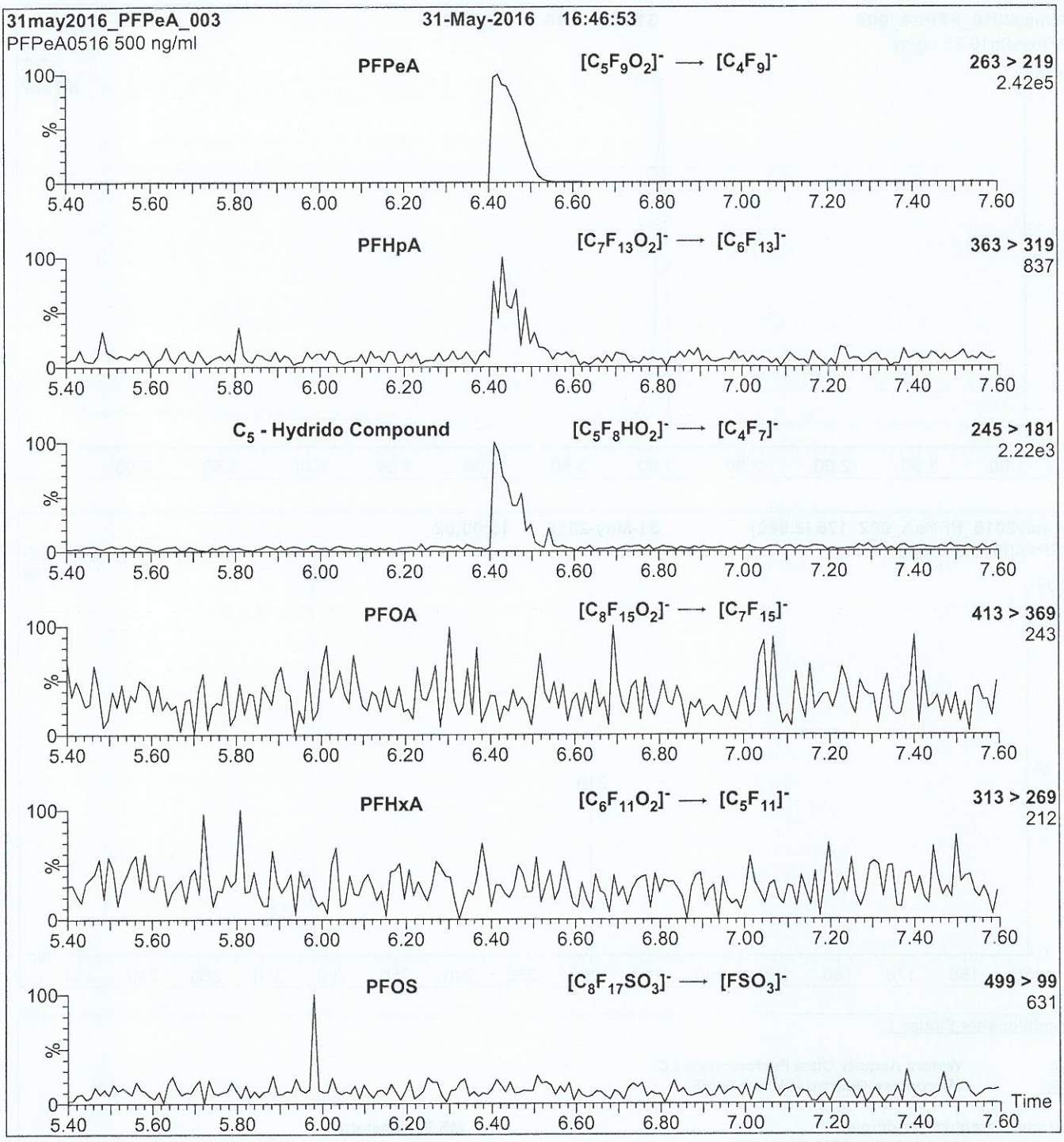
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

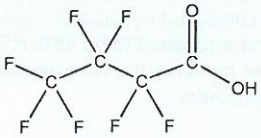
Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 9

16J0426

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0516
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 05/31/2016 (mm/dd/yyyy)

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

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QUALITY MANAGEMENT:

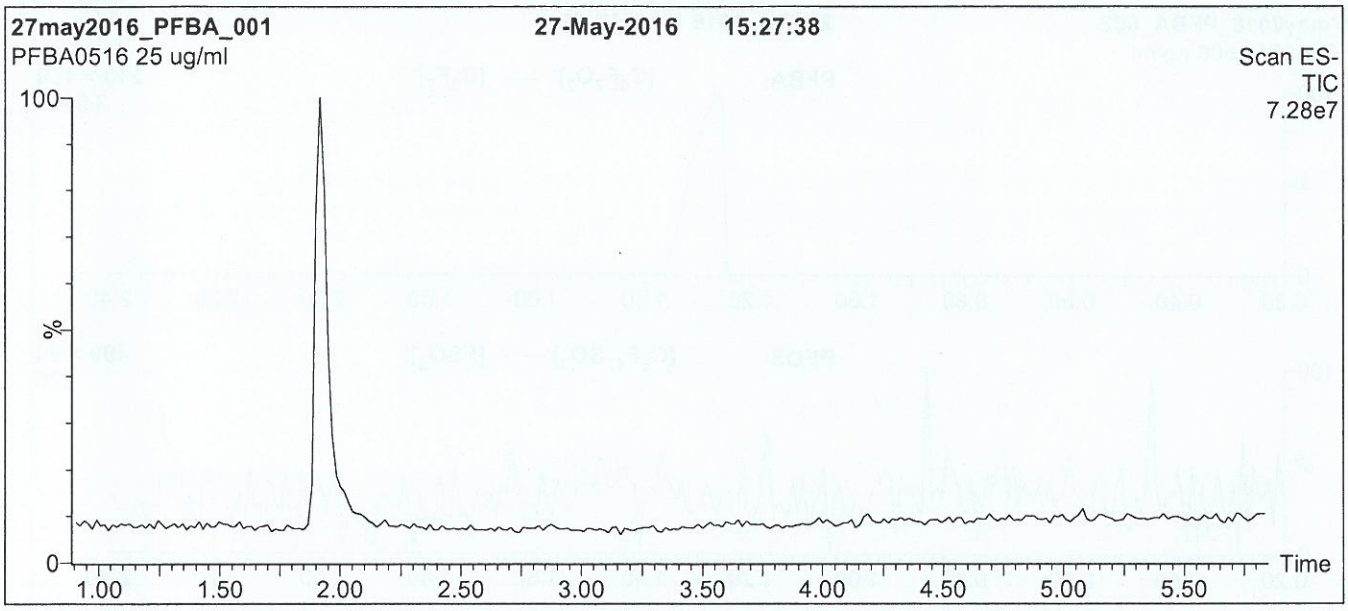
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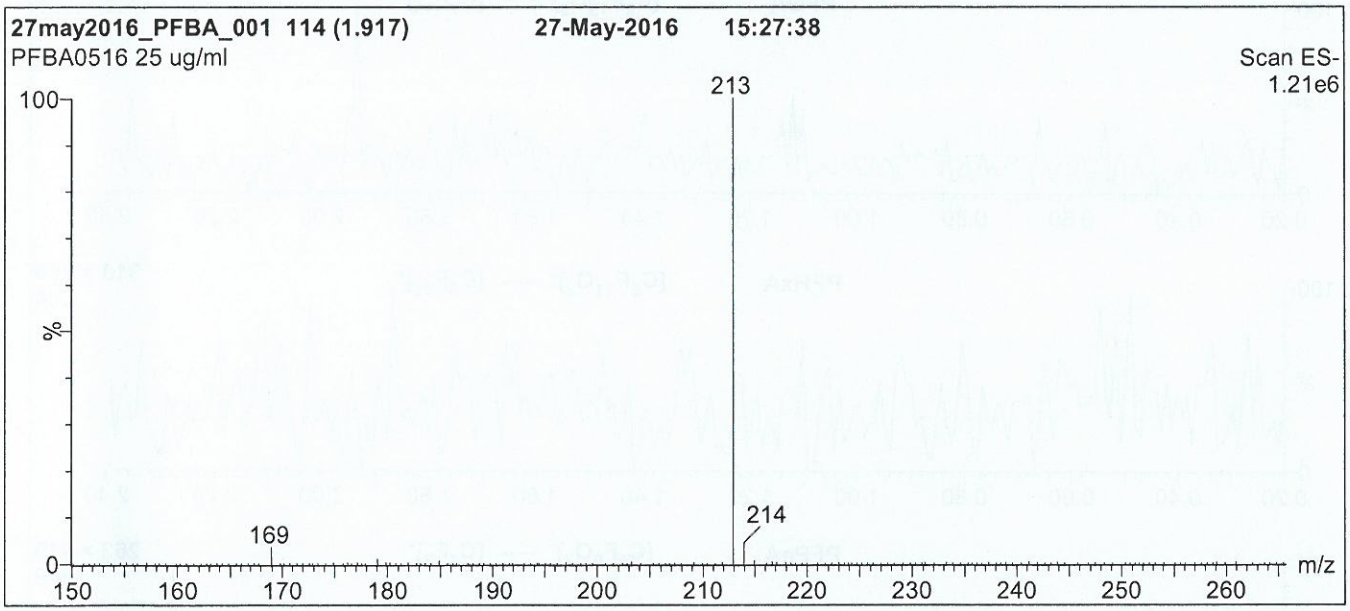
CALA Testing Accreditation No. A1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

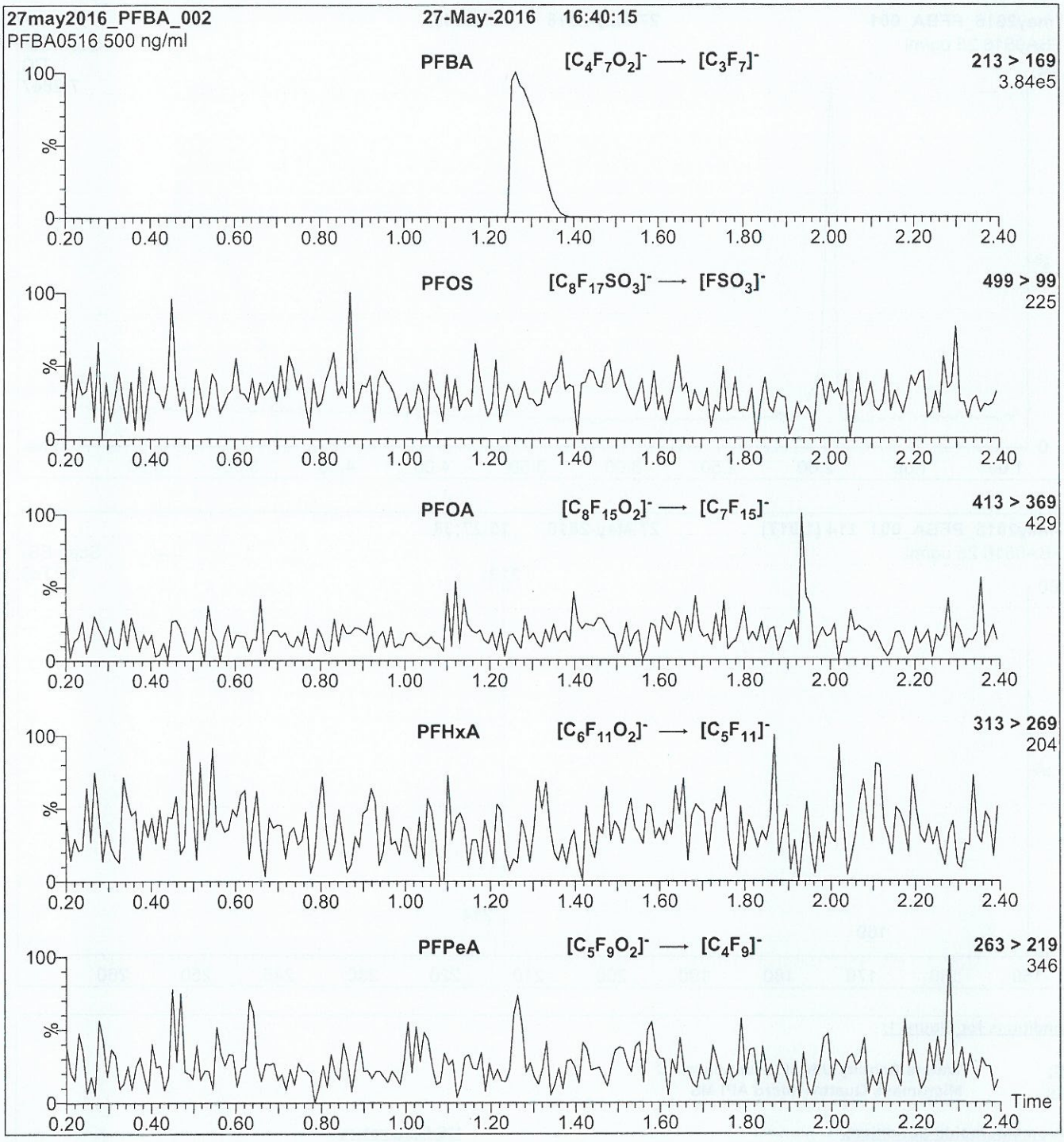
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFBA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

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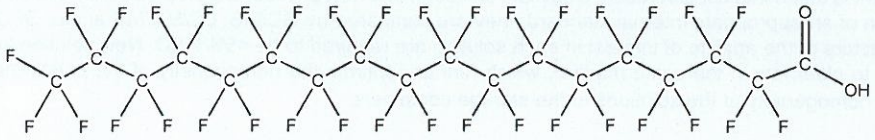
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid

LOT NUMBER: PFODA0416

STRUCTURE:

CAS #: 16517-11-6



MOLECULAR FORMULA:	$C_{18}HF_{35}O_2$	**MOLECULAR WEIGHT:**	914.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/29/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/29/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 05/20/2016 (mm/dd/yyyy)

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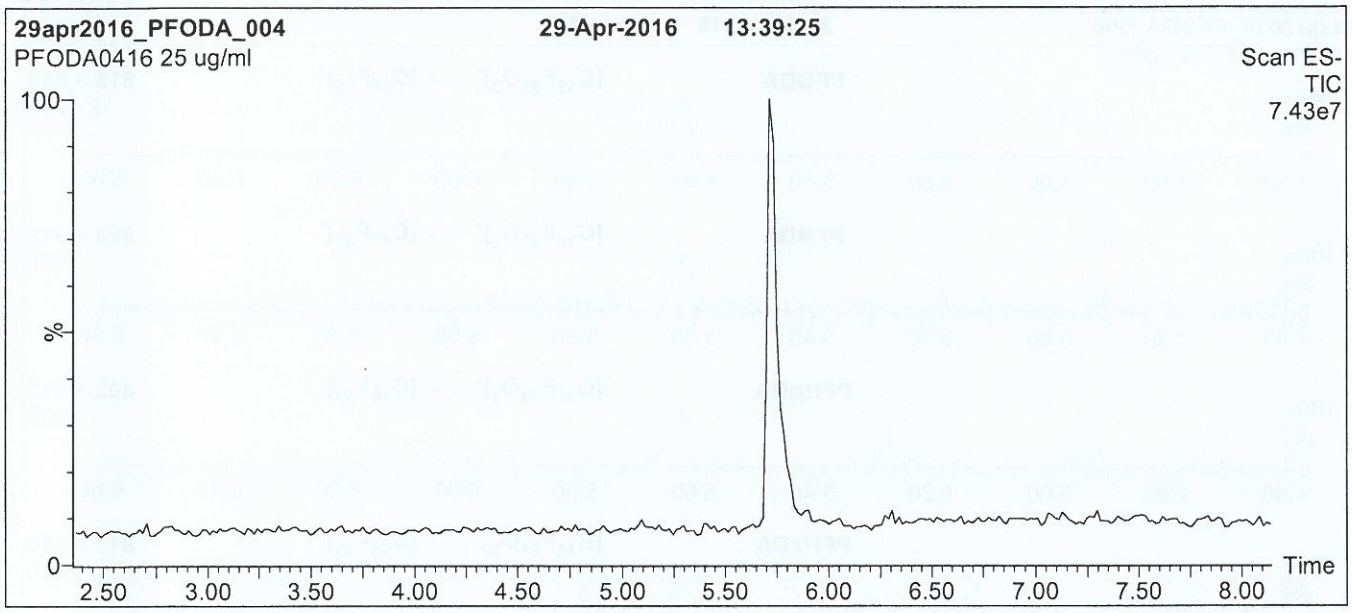
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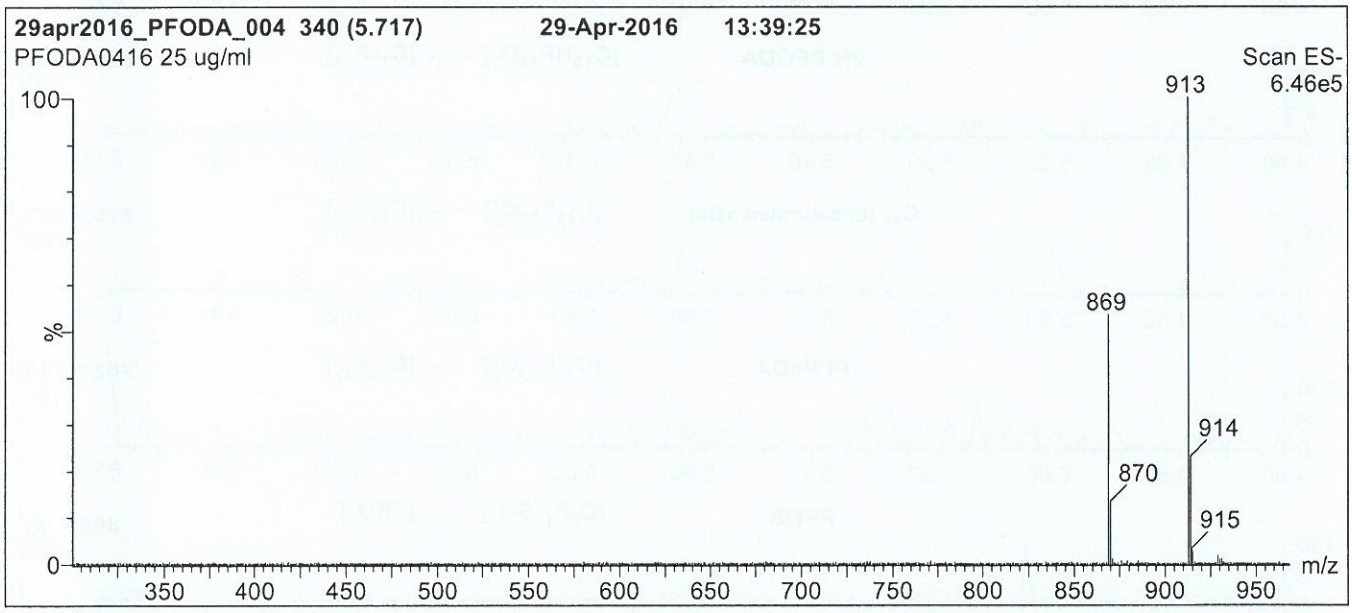
CALA Testing Accreditation No. A 1226

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

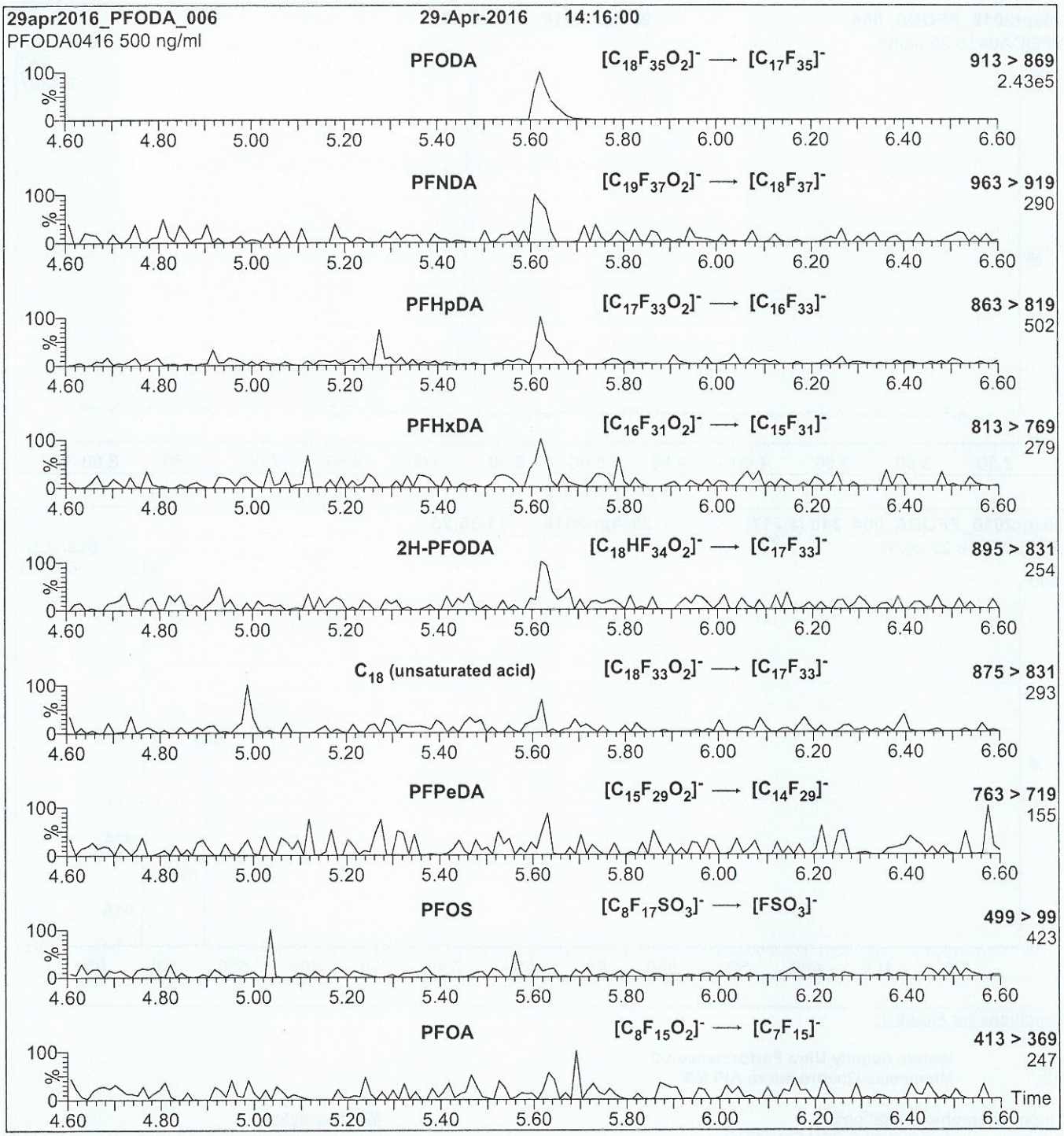
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

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

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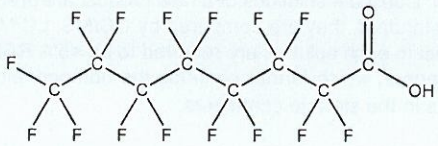
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0716

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/02/2016
EXPIRY DATE: (mm/dd/yyyy) 08/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
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Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

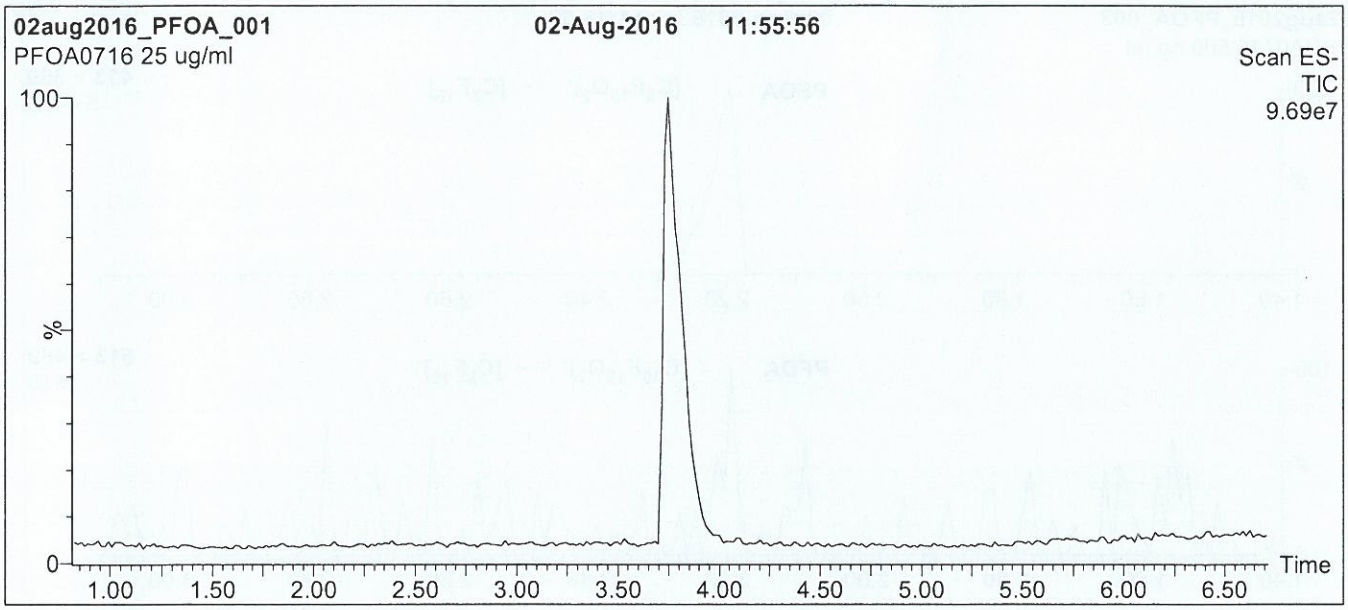
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

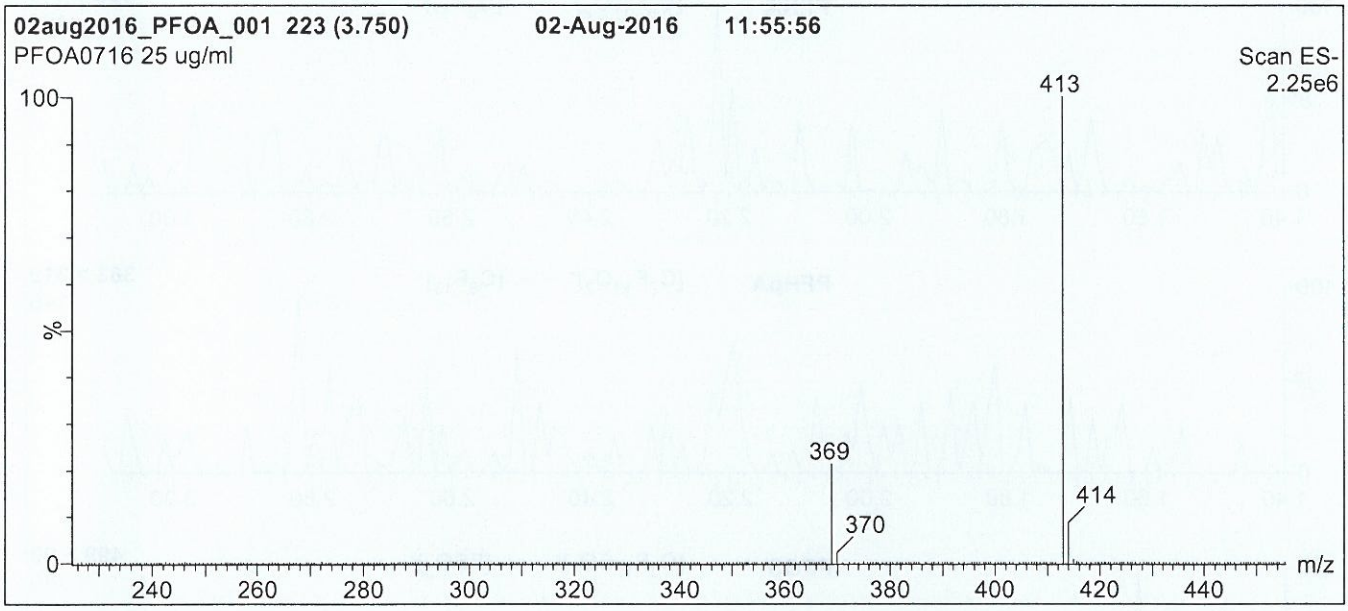
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

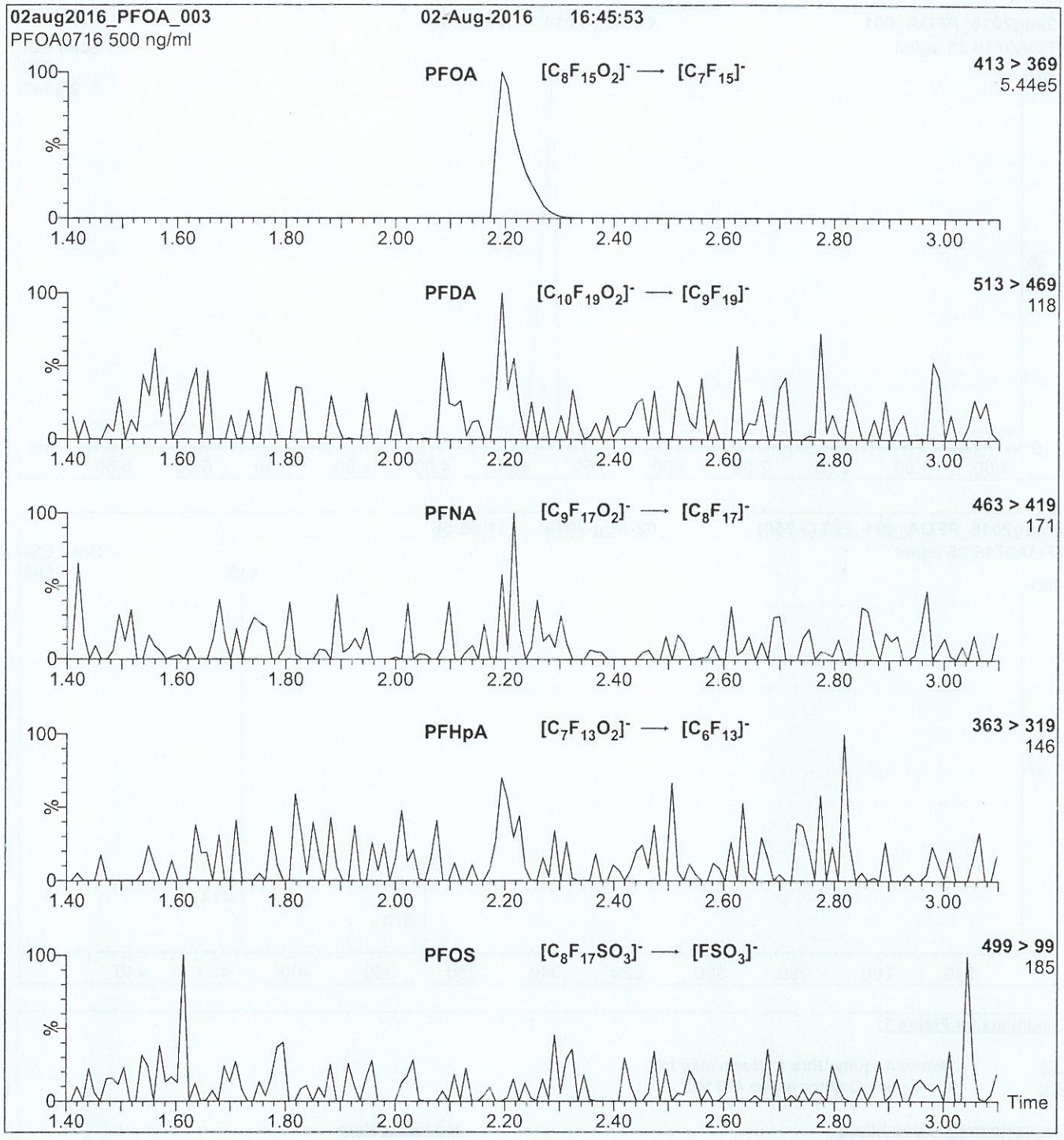
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFOA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

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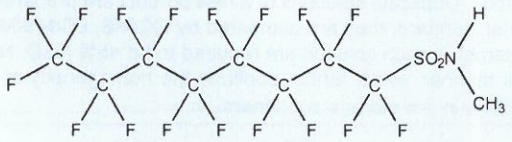
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
LOT NUMBER: NMeFOSA0516M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/26/2016 (mm/dd/yyyy)

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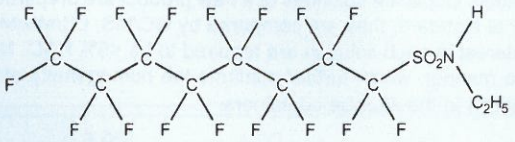
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
LOT NUMBER: NEtFOSA0516M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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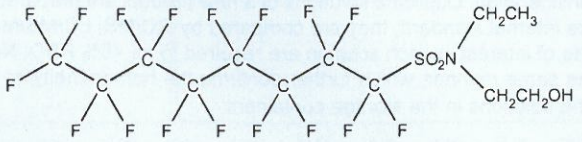
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE1115M

COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA:	$C_{12}H_{10}F_{17}NO_3S$	**MOLECULAR WEIGHT:**	571.25
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/10/2015 (HRGC/LRMS) 11/09/2015 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	11/10/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (TIC and Mass Spectrum)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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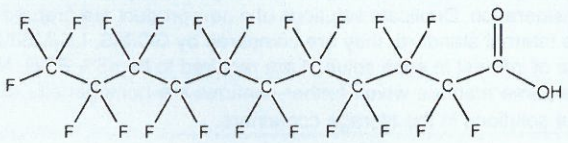
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: PFUdA1016

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 564.09
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/18/2016
EXPIRY DATE: (mm/dd/yyyy) 10/18/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

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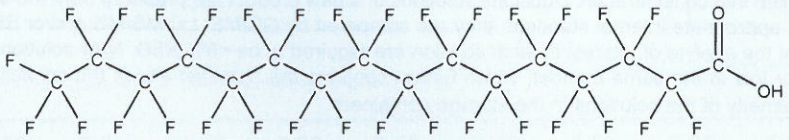
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA
LOT NUMBER: PFHxDA0516
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE:
CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
MOLECULAR WEIGHT: 814.13
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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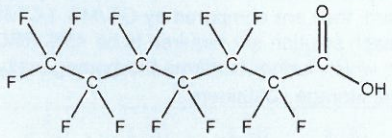
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: PFHpA1216

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/02/2016
EXPIRY DATE: (mm/dd/yyyy) 12/02/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/12/2016 (mm/dd/yyyy)

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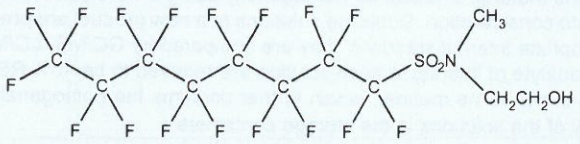
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE1115M

COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 24448-09-7



MOLECULAR FORMULA:	$C_{11}H_8F_{17}NO_3S$	**MOLECULAR WEIGHT:**	557.22
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/10/2015 (HRGC/LRMS) 11/09/2015 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	11/10/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (TIC and Mass Spectrum)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/16/2015 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17D2706

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17C1027	PFBS anion	10-Mar-17	Jamie C. Stockman	02-Dec-21	10-Mar-17 15:27 by JCS	0.75

Description:	L-PFBS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	Methanol	Prepared By:	Emilie Schneider
Final Volume (mls):	1.326	Department:	LCMS
Vials:	1	Last Edit:	27-Apr-17 13:48 by EMS

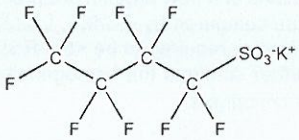
Analyte	CAS Number	Concentration	Units
PFBS	375-73-5	25	ug/mL
L-PFBS		25	ug/mL

17C1027

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	L-PFBS	**LOT NUMBER:**	LPFBS1116
COMPOUND:	Potassium perfluoro-1-butanesulfonate		
STRUCTURE:		**CAS #:**	29420-49-3



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 44.2 ± 2.2 µg/ml (PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/02/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/05/2016 (mm/dd/yyyy)

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

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

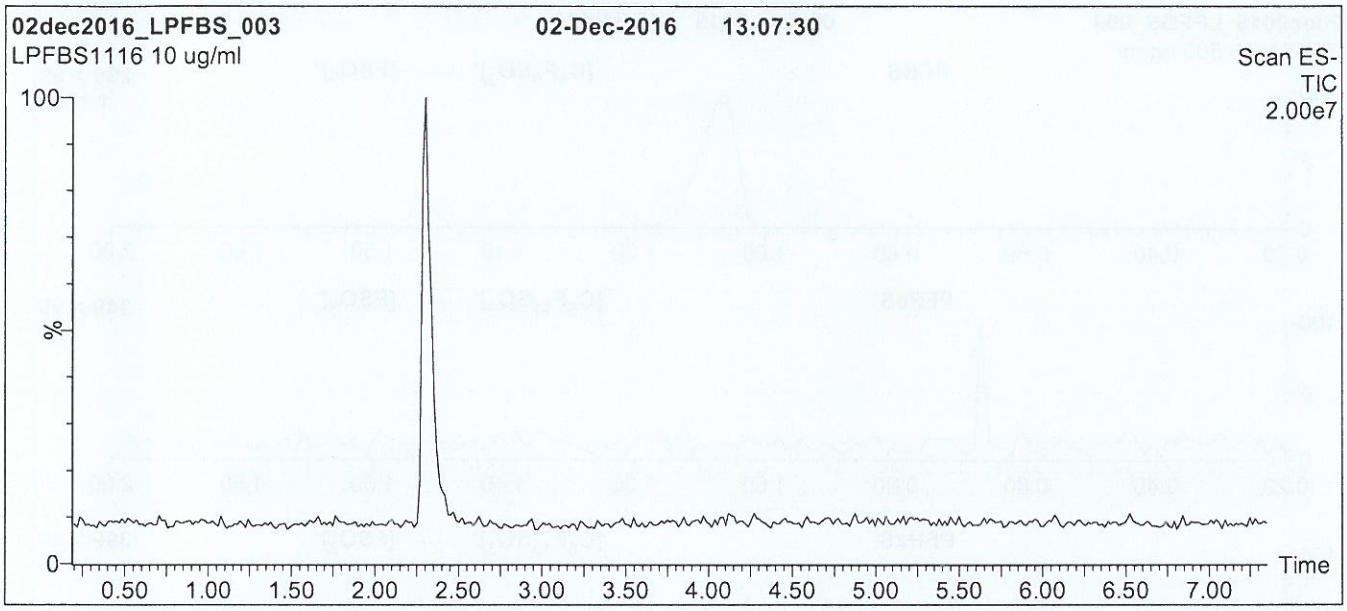
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

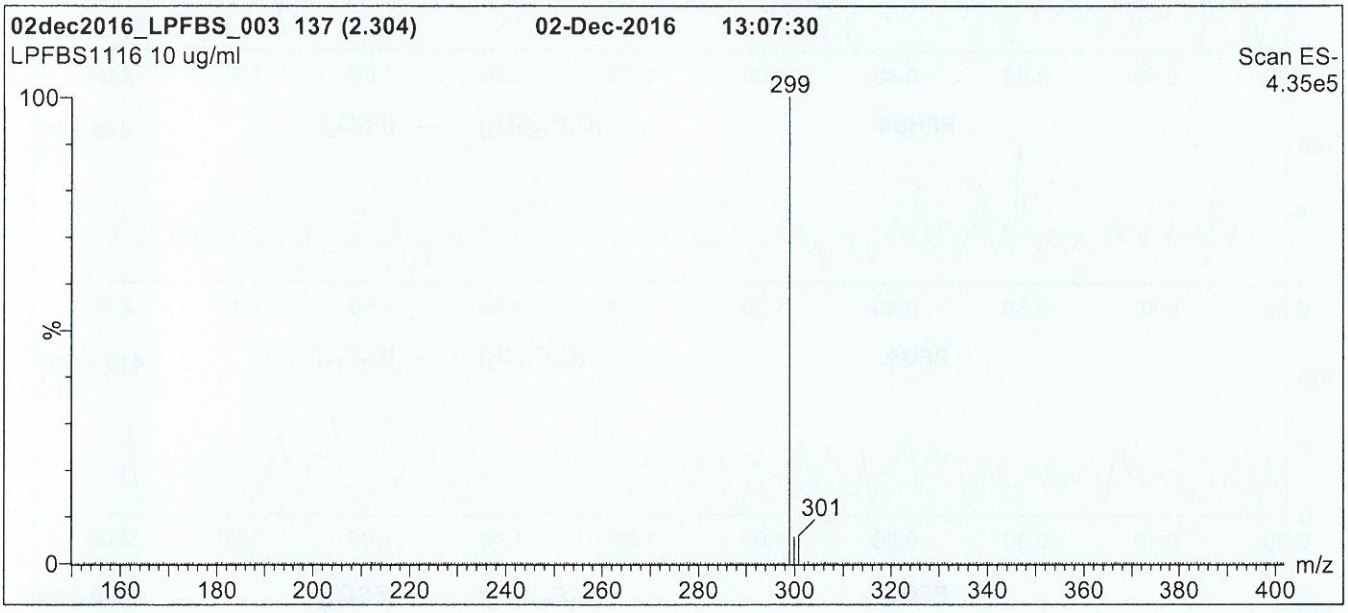
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

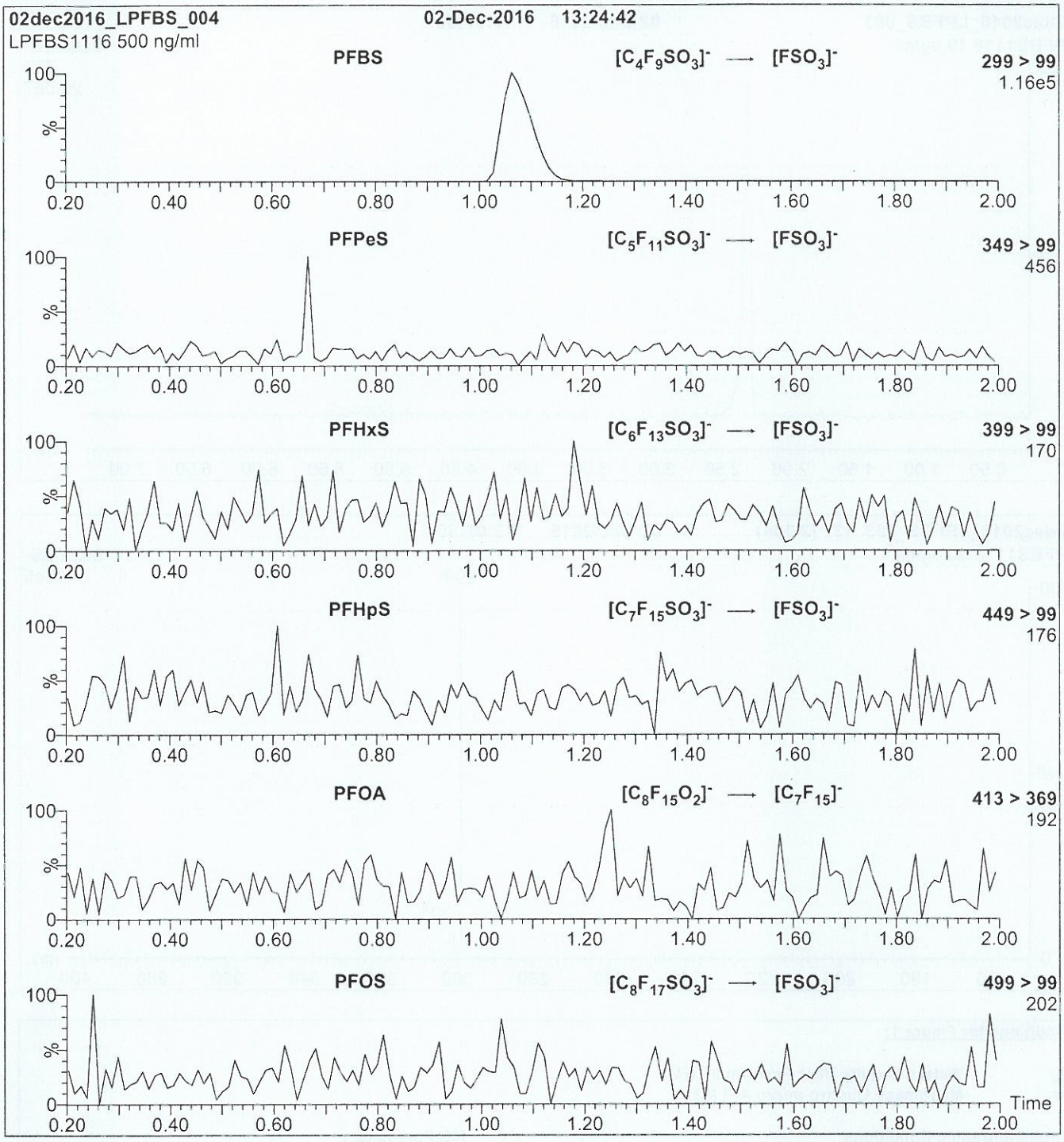
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml L-PFBS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Analytical Standard Record

Vista Analytical Laboratory

17D2709

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16I1427	8:2 FTS anion	14-Sep-16	** Vendor **	22-Aug-21	15-Dec-16 08:53 by AEW	0.5

Description:	8:2 FTS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.958	Department:	LCMS
Vials:	1	Last Edit:	27-Apr-17 14:28 by INJ

Analyte	CAS Number	Concentration	Units
L-8:2FTS		25	ug/mL
8:2 FTS	70887-84-2	25	ug/mL

16I1427

WELLINGTON LABORATORIES

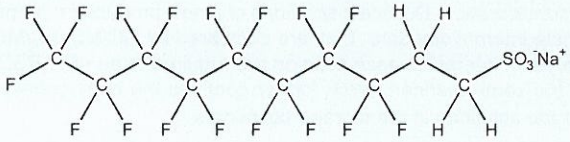
CERTIFICATE OF ANALYSIS DOCUMENTATION

8:2FTS

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0816

COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$		**MOLECULAR WEIGHT:**	550.16
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml	(8:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	08/22/2016			
EXPIRY DATE: (mm/dd/yyyy)	08/22/2021			
RECOMMENDED STORAGE:	Refrigerate ampoule			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/25/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

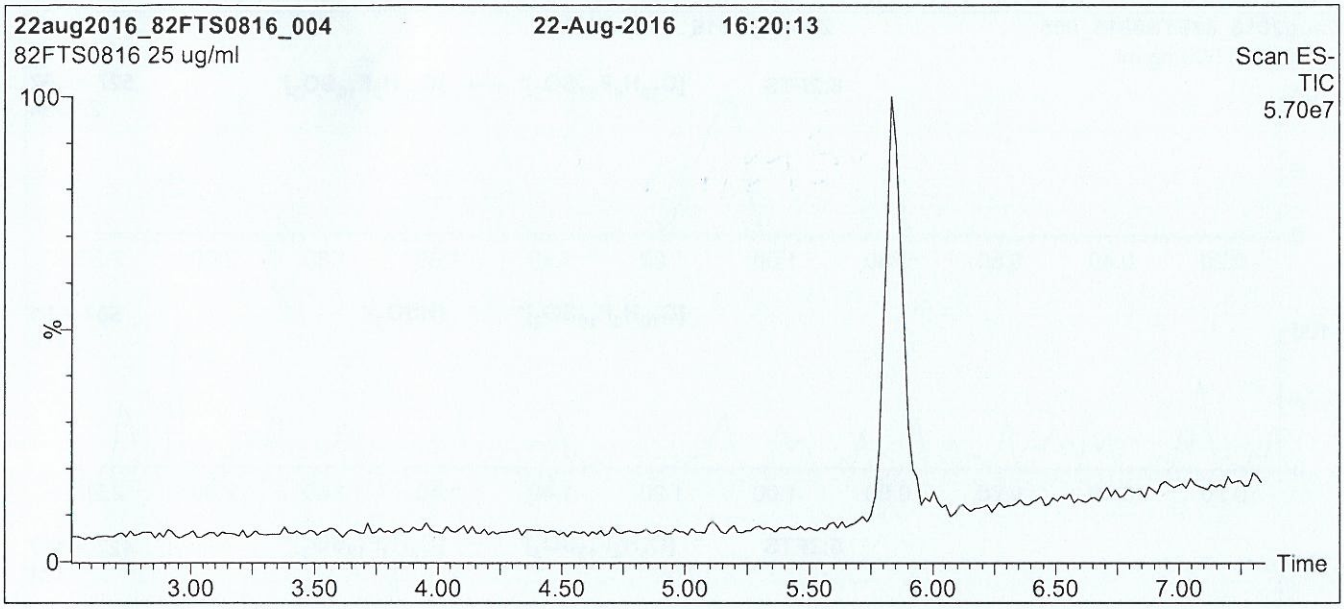
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

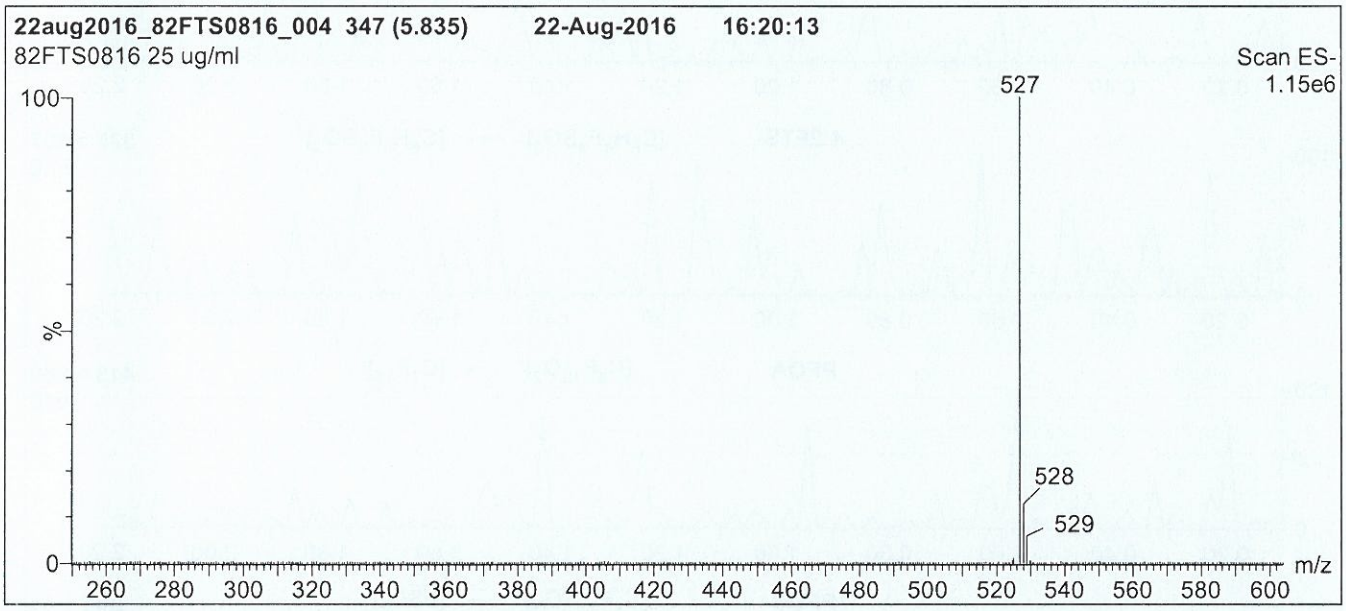
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Agilent Zorbax Bonus-RP
1.8 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH/ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

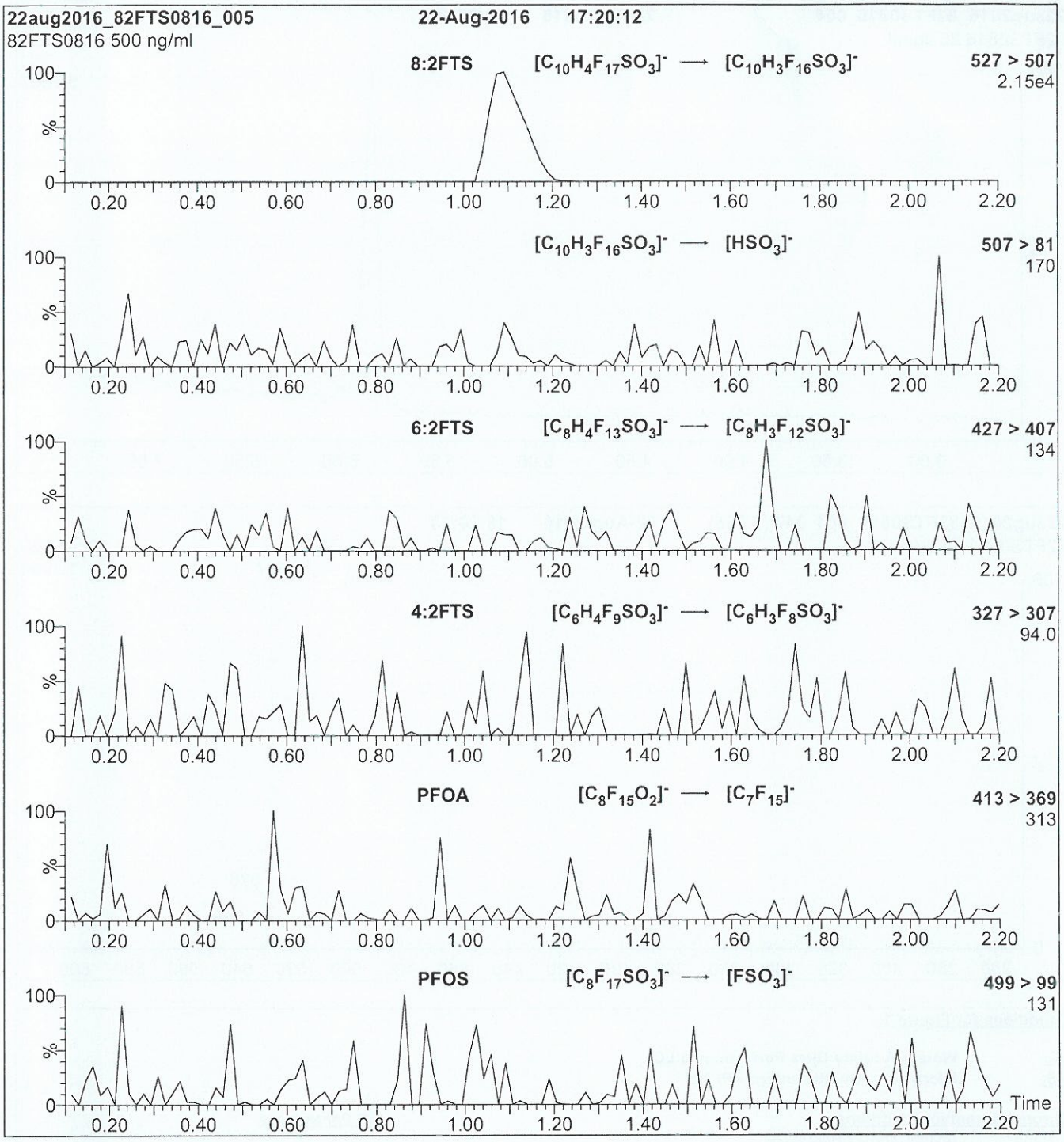
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250- 850 amu)

Source:Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 8:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Analytical Standard Record

Vista Analytical Laboratory

17D2715

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D2622	6:2FTS	26-Apr-17	** Vendor **	25-Jun-21	12-Jun-17 09:01 by AEW	0.5

Description:	6:2 FTS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.948	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 09:01 by AEW

Analyte	CAS Number	Concentration	Units
Total 6:2 FTS		25	ug/mL
L-6:2 FTS		25	ug/mL
6:2 FTS	27619-97-2	25	ug/mL

1702622

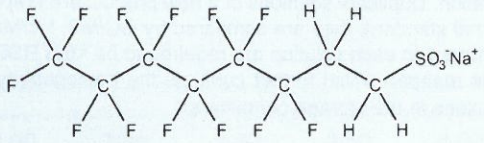
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0616

COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_8H_4F_{13}SO_3Na$		**MOLECULAR WEIGHT:**	450.15
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.4 ± 2.4 µg/ml	(6:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	06/25/2016			
EXPIRY DATE: (mm/dd/yyyy)	06/25/2021			
RECOMMENDED STORAGE:	Refrigerate ampoule			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/29/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17D2716

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D2620	L-PFDS	26-Apr-17	** Vendor **	17-Feb-22	12-Jun-17 09:34 by AEW	0.5

Description:	L-PFDS anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.964	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 09:34 by AEW

Analyte	CAS Number	Concentration	Units
Total PFDS		25	ug/mL
PFDS	335-77-3	25	ug/mL
L-PFDS		25	ug/mL

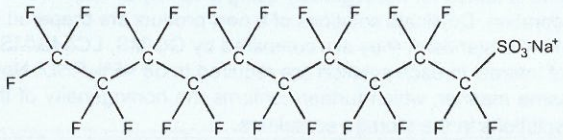
17D2620

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0217
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:



CAS #: 2806-15-7

MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	02/17/2017		
EXPIRY DATE: (mm/dd/yyyy)	02/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 02/22/2017 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17D2717

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
16J0431	br-PFOSK	04-Oct-16	** Vendor **	14-Oct-20	03-Feb-17 13:33 by AEW	0.5

Description:	Br-PFOSK anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.928	Department:	LCMS
Vials:	1	Last Edit:	27-Apr-17 14:46 by INJ

Analyte	CAS Number	Concentration	Units
PFOS	1763-23-1	25	ug/mL
L-PFOS		19.7	ug/mL

16J0431

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK1015
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/13/2015
LAST TESTED: (mm/dd/yyyy)	10/14/2015
EXPIRY DATE: (mm/dd/yyyy)	10/14/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

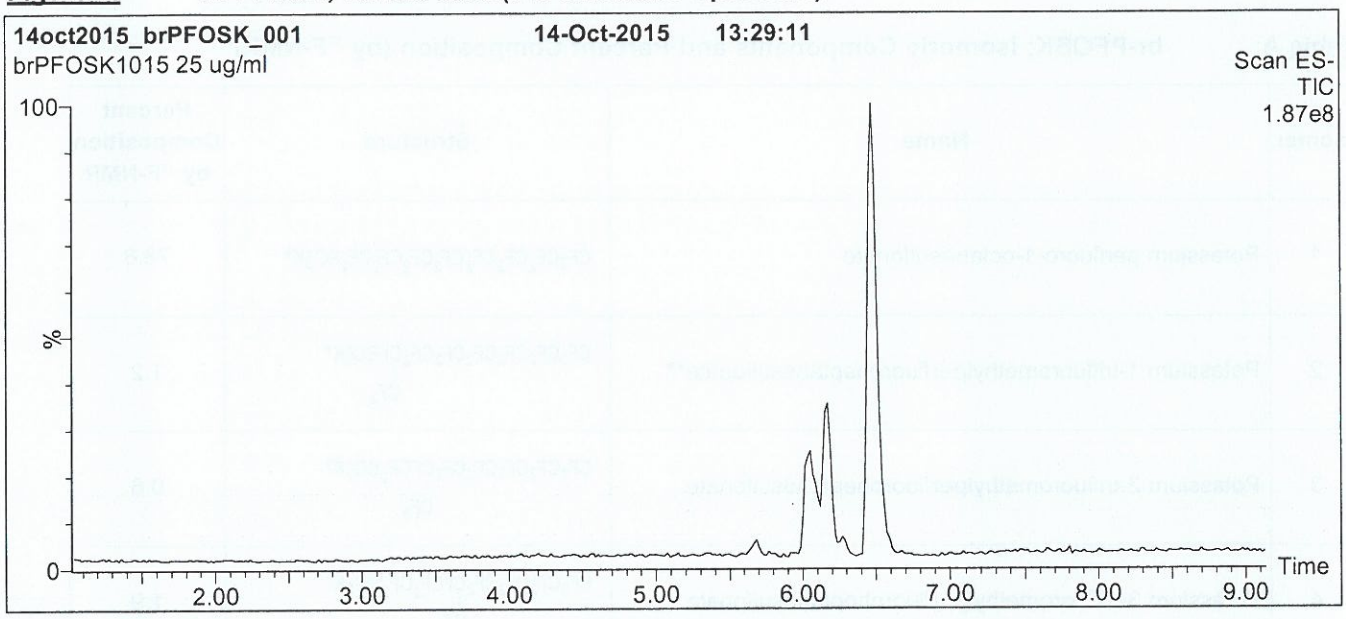
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

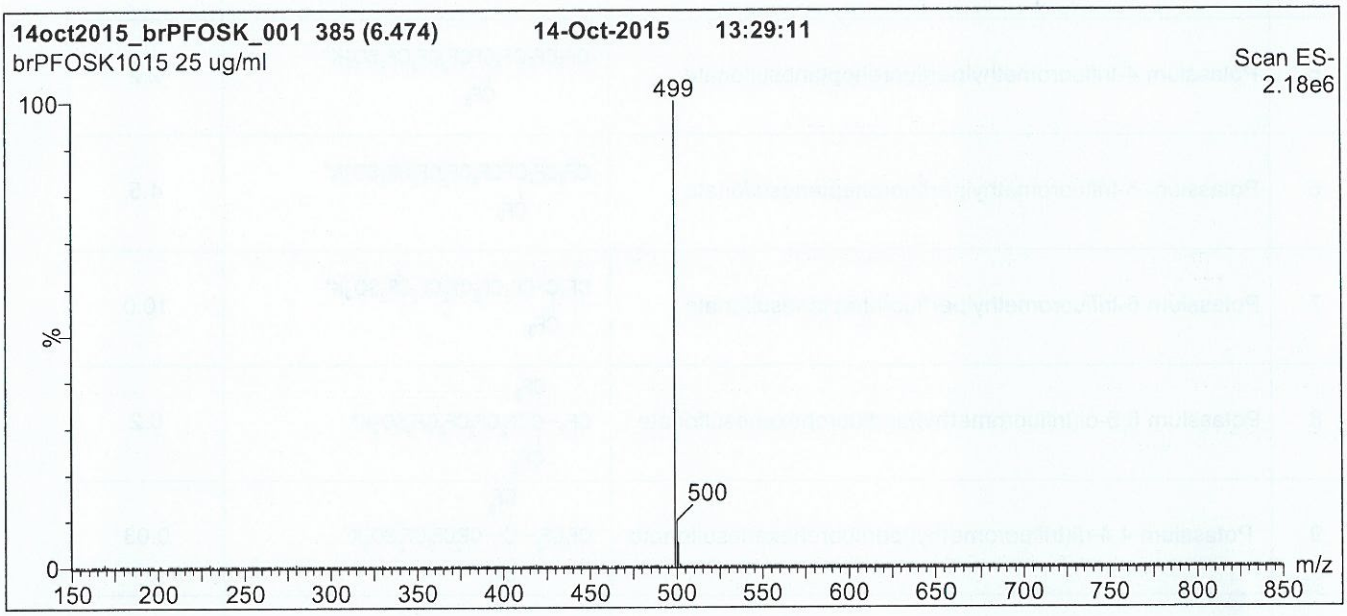
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-C(CF_3)(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: _____ **Date:** 10/15/2015
B.G. Chittim (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

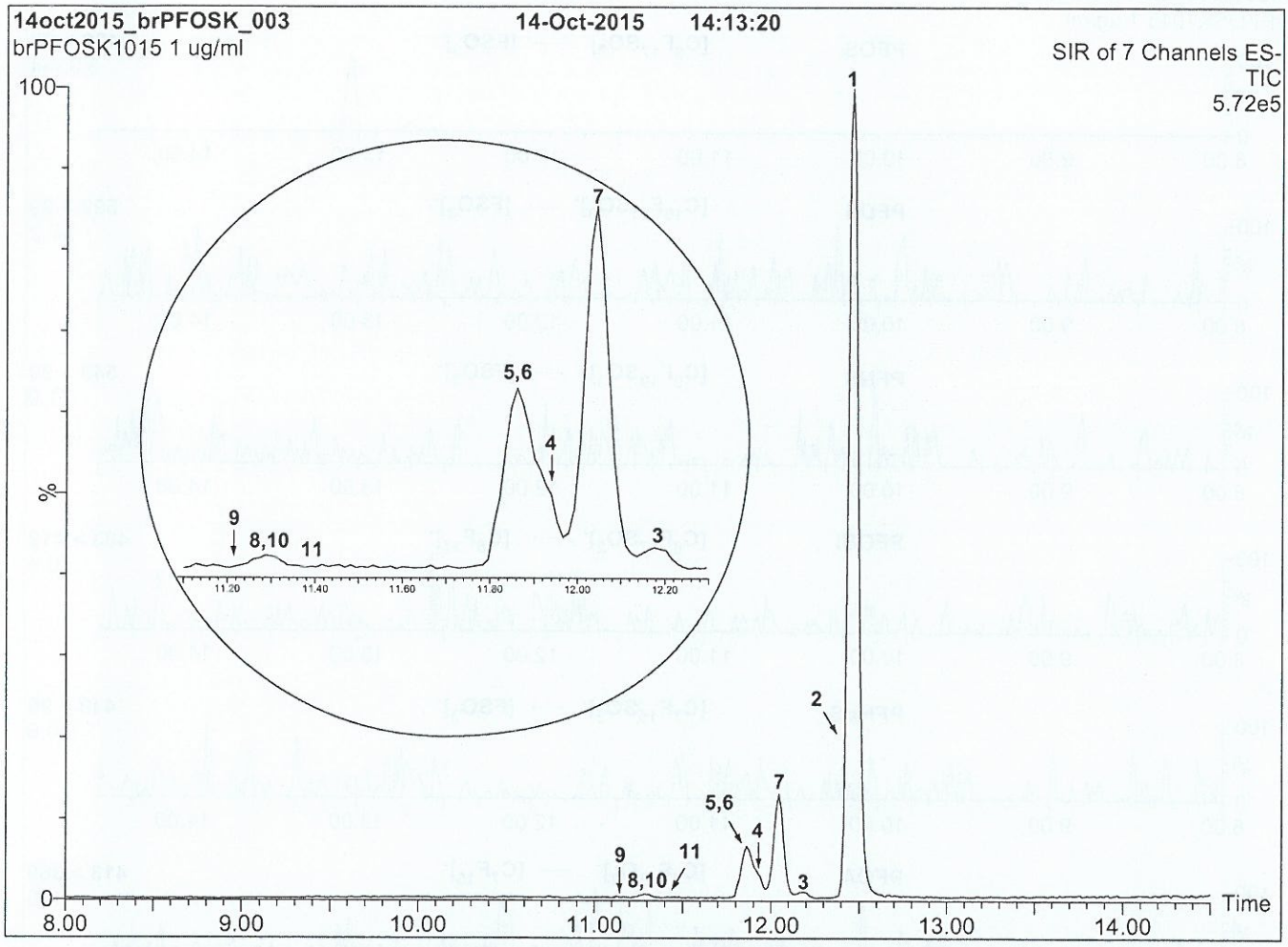
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)

Injection: 1.0 µg/ml of br-PFOSK

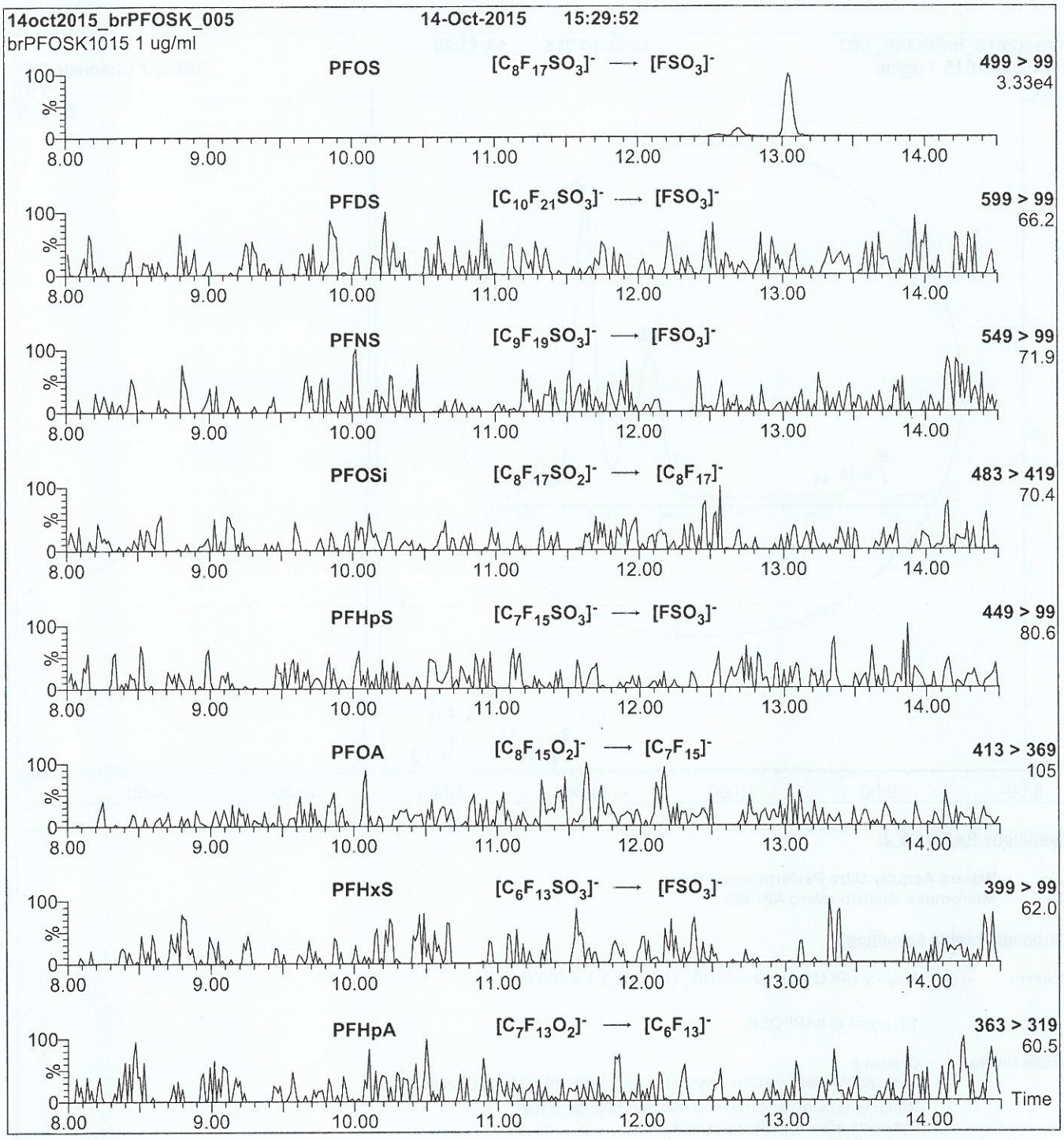
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

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



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

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

Analytical Standard Record

Vista Analytical Laboratory

17D2718

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D2615	br-PFHxSK	26-Apr-17	** Vendor **	04-Jan-22	12-Jun-17 08:51 by AEW	0.5

Description:	Br-PFHxSK anion DIL	Expires:	27-Apr-18
Standard Type:	Other	Prepared:	27-Apr-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.91	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 08:51 by AEW

Analyte	CAS Number	Concentration	Units
Total PFHxS		25	ug/mL
PFHxS	355-46-4	25	ug/mL
L-PFHxS		20.3	ug/mL
Br-PFHxS	3871-99-6	4.72	ug/mL

17D2615

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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

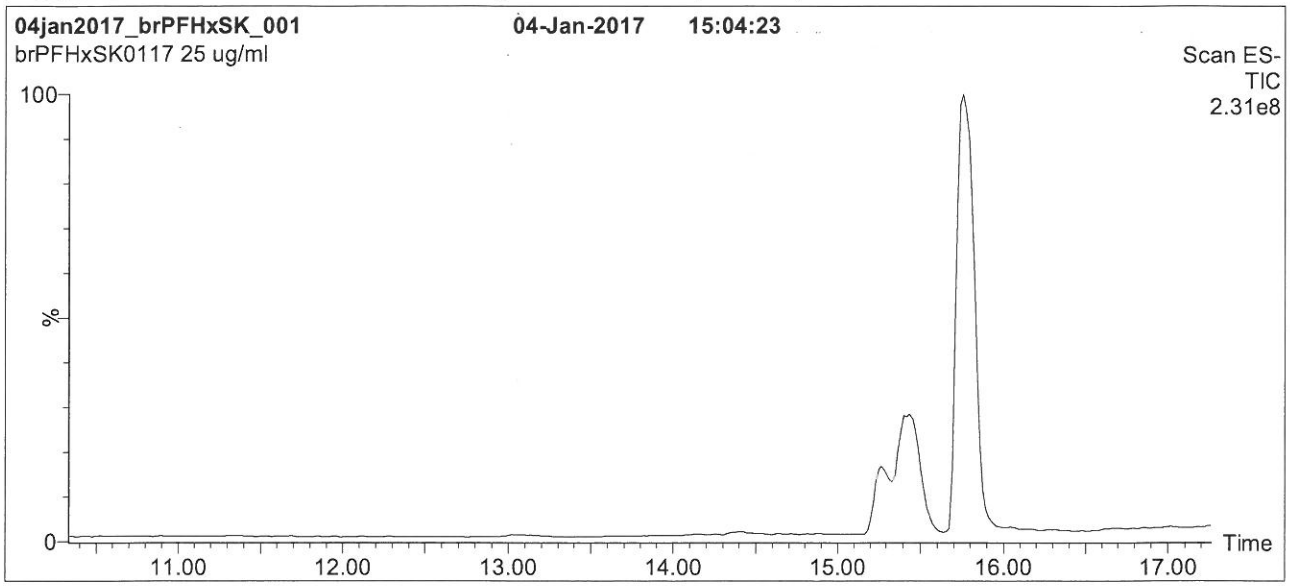
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

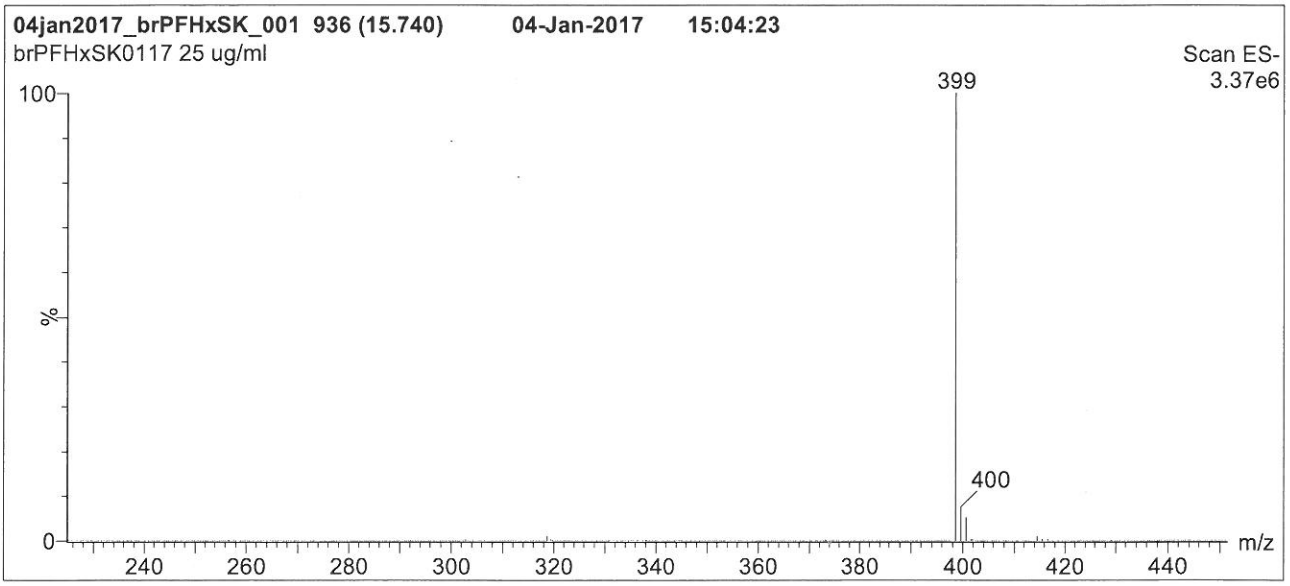
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

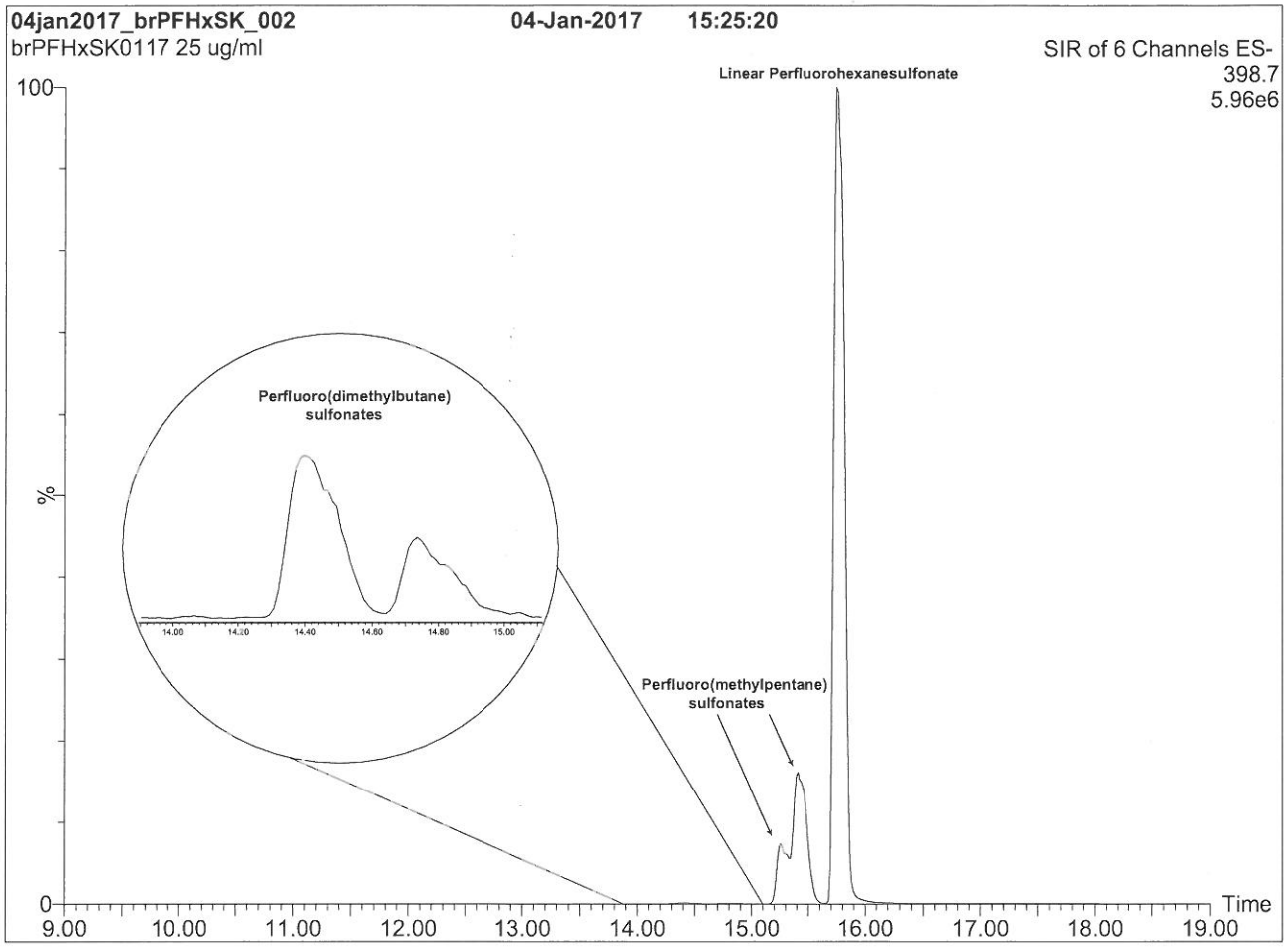
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

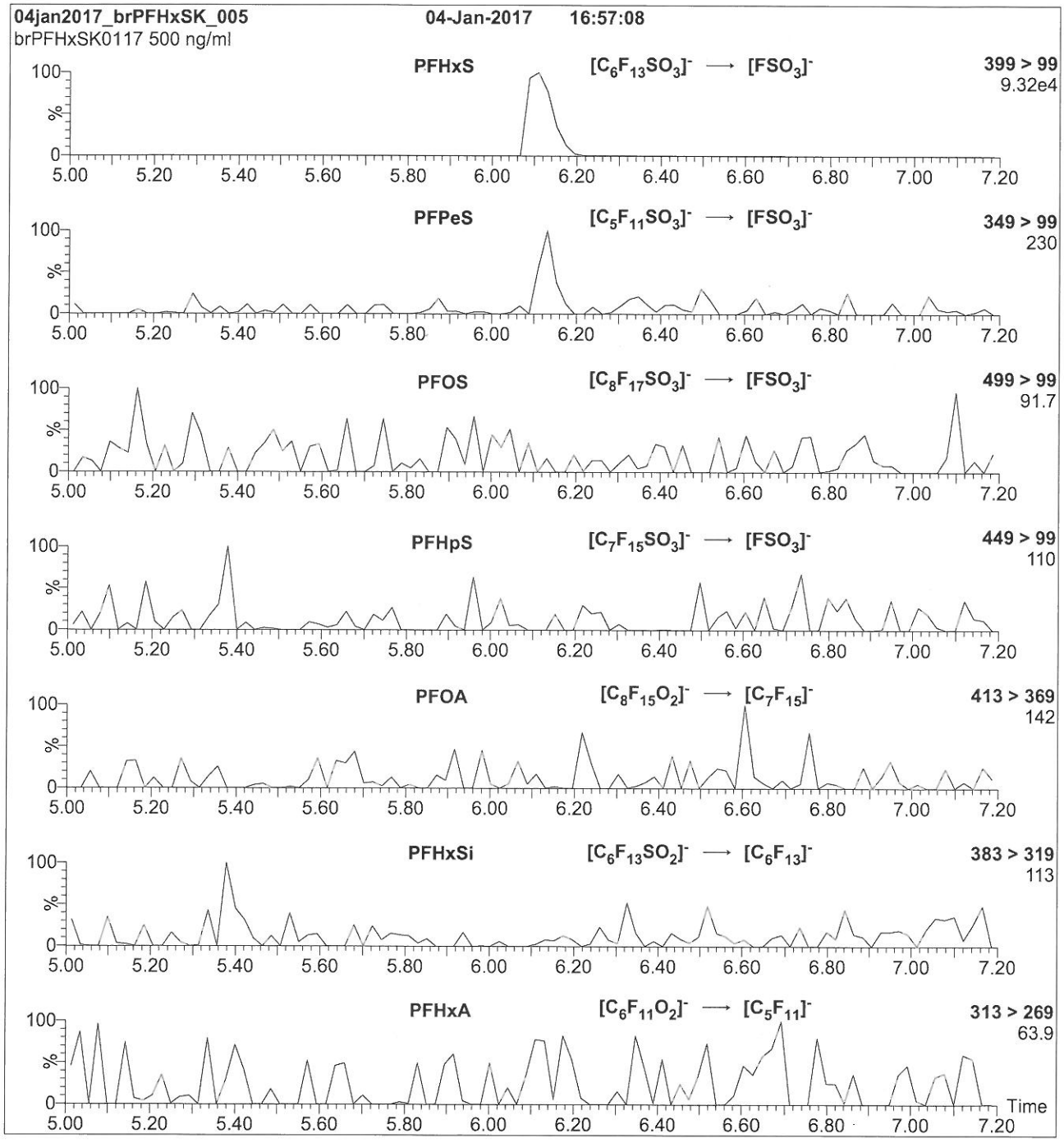
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 3:

Injection:	Direct loop injection 10 µl (500 ng/ml br-PFHxSK)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Analytical Standard Record

Vista Analytical Laboratory

17D2813

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D2619	L-PFHpS	26-Apr-17	** Vendor **	18-Oct-21	12-Jun-17 09:07 by AEW	0.5

Description:	L-PFHpS anion DIL	Expires:	28-Apr-18
Standard Type:	Other	Prepared:	28-Apr-17
Solvent:	Methanol/	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.952	Department:	LCMS
Vials:	1	Last Edit:	12-Jun-17 09:07 by AEW

Analyte	CAS Number	Concentration	Units
Total PFHpS		25	ug/mL
PFHpS	375-92-8	25	ug/mL
L-PFHpS		25	ug/mL

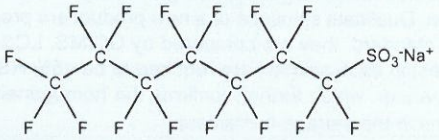
1702619

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
LOT NUMBER: LPFHpS1016
COMPOUND: Sodium perfluoro-1-heptanesulfonate

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/18/2016		
EXPIRY DATE: (mm/dd/yyyy)	10/18/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

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Certified By: B.G. Chittim **Date:** 10/20/2016 (mm/dd/yyyy)

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

Analytical Standard Record

Vista Analytical Laboratory

17F3038

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17D0605	13C6-PFDA	06-Apr-17	Jamie C. Stockman	06-May-21	06-Apr-17 09:43 by JCS	0.375
17E1717	13C2-FOUEA	17-May-17	** Vendor **	02-Aug-18	17-May-17 12:46 by INJ	0.375
17E2411	13C5-PFHxA	24-May-17	** Vendor **	27-Aug-19	24-May-17 11:19 by INJ	0.375
17F3031	13C4-PFOS dil.	30-Jun-17	Isaac N. Johnson	30-Jun-18	30-Jun-17 13:31 by INJ	0.468
17F3032	13C3-PFHxS DIL.	30-Jun-17	Isaac N. Johnson	30-Jun-18	30-Jun-17 13:35 by INJ	0.416
17F3034	13C8-PFOA dil.	30-Jun-17	Isaac N. Johnson	30-Jun-18	30-Jun-17 13:40 by INJ	0.468
17F3035	13C9-PFNA	30-Jun-17	** Vendor **	27-Aug-19	03-Jul-17 13:07 by INJ	0.375
17F3036	13C4-PFBA	30-Jun-17	** Vendor **	12-Apr-22	03-Jul-17 13:08 by INJ	0.375
17F3037	13C7-PFUdA	30-Jun-17	** Vendor **	22-Jan-21	03-Jul-17 13:09 by INJ	0.375

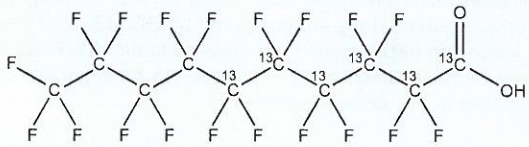
Description:	PFC-RS	Expires:	19-May-18
Standard Type:	Reagent	Prepared:	30-Jun-17
Solvent:	MEOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	15	Department:	LCMS
Vials:	1	Last Edit:	03-Jul-17 13:09 by INJ

Analyte	CAS Number	Concentration	Units
13C9-PFNA		1.25	ug/mL
13C8-PFOA		1.25	ug/mL
13C7-PFUnA		1.25	ug/mL
13C6-PFDA		1.25	ug/mL
13C5-PFHxA		1.25	ug/mL
13C4-PFOS		1.25	ug/mL
13C4-PFBA		1.25	ug/mL
13C3-PFHxS		1.25	ug/mL
13C2-FOUEA		1.25	ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M6PFDA	**LOT NUMBER:**	M6PFDA0516
COMPOUND:	Perfluoro-n-[1,2,3,4,5,6-$^{13}C_6$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_6{}^{12}C_4HF_{19}O_2$	**MOLECULAR WEIGHT:**	520.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5,6-$^{13}C_6$)
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/13/2016 (mm/dd/yyyy)

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

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

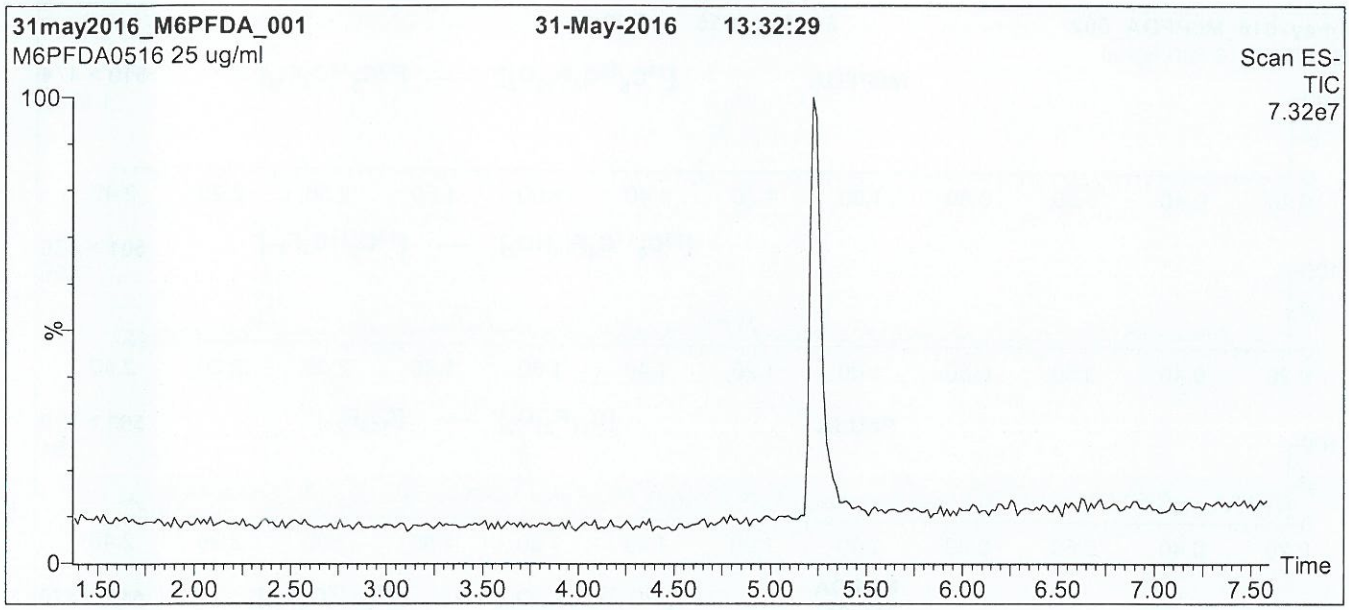
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

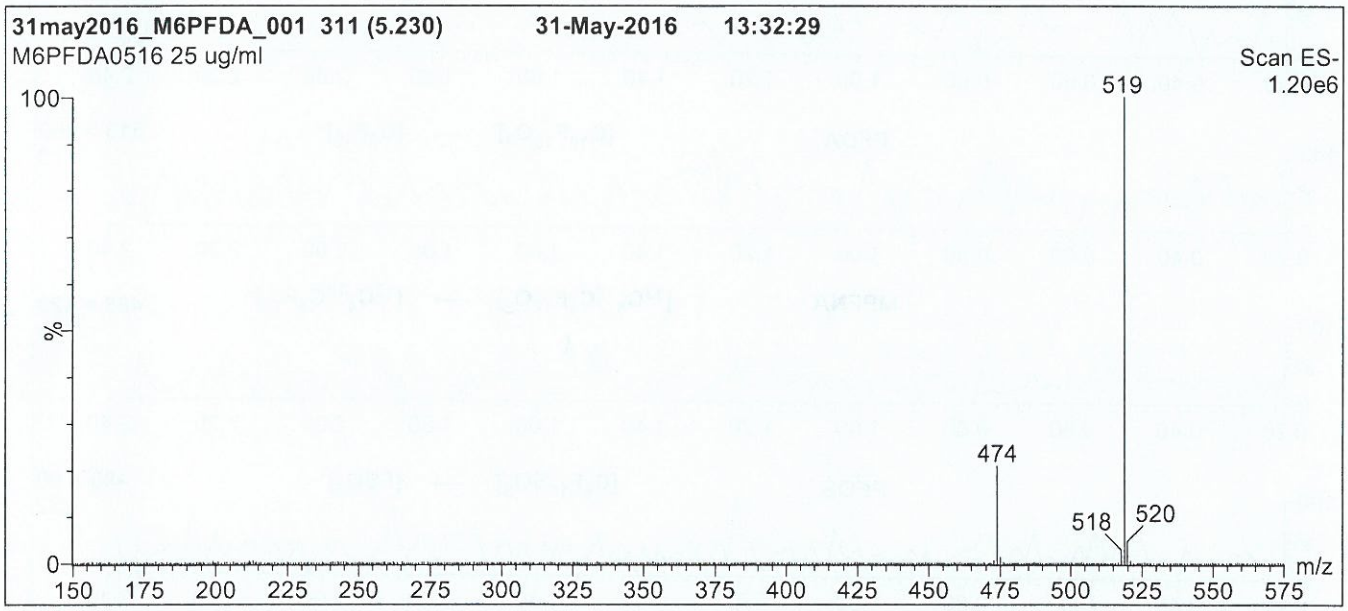
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Figure 1: **M6PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

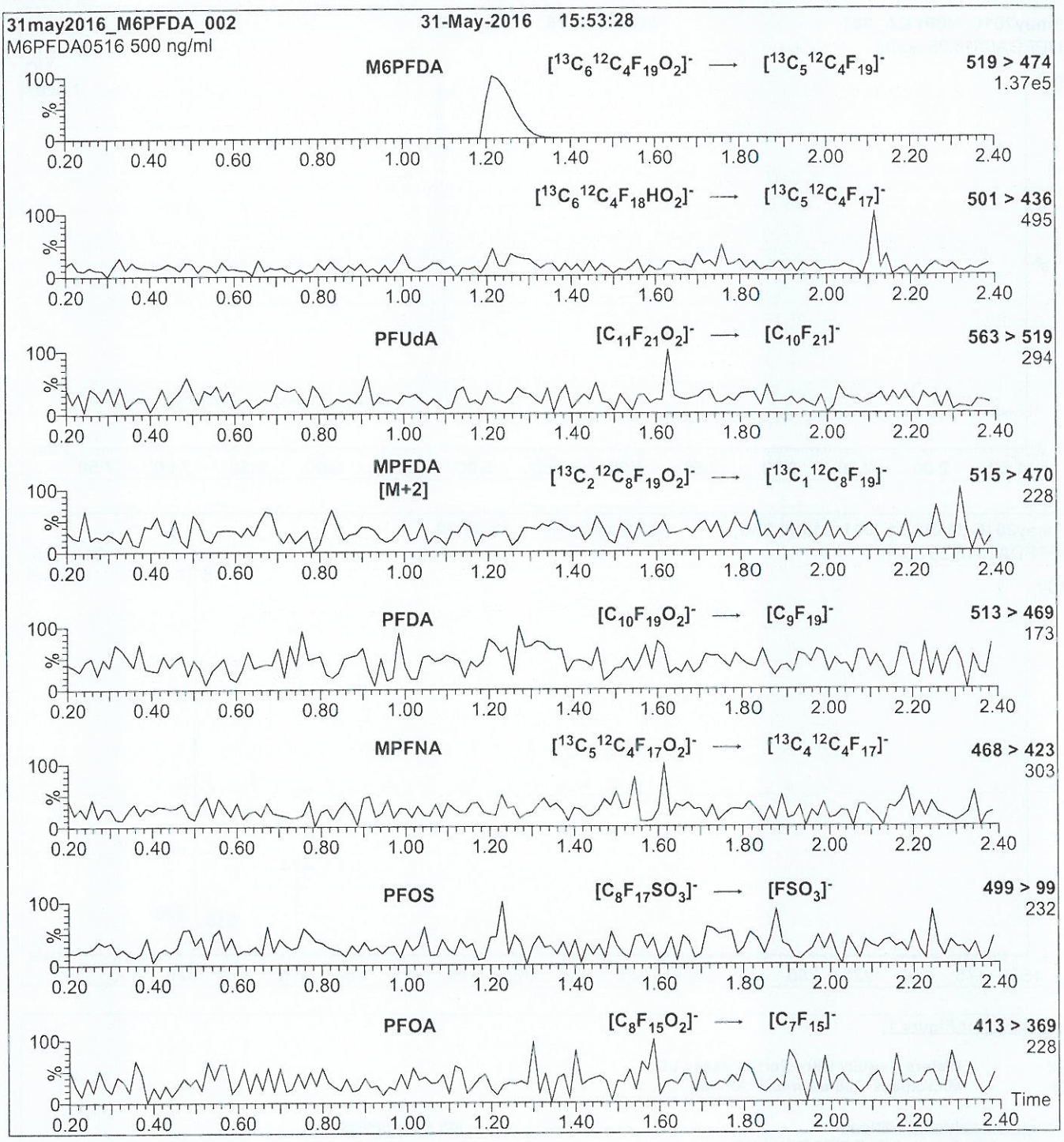
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **M6PFDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M6PFDA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 13

17E1717

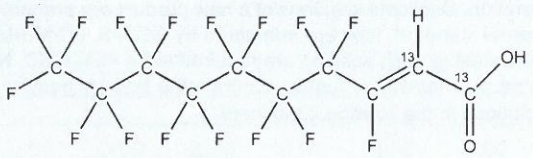
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MFOUEA
COMPOUND: 2H-Perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid

LOT NUMBER: MFOUEA0716
CAS #: Not available

STRUCTURE:



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_2F_{16}O_2$	**MOLECULAR WEIGHT:**	460.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Anhydrous Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/02/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/02/2018		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Dilution of this standard in methanol may lead to the formation of 2H-3-methoxy-perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid. This reaction can be catalyzed by the presence of acid or base. All dilutions should be routinely checked for degradation.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 08/19/2016 (mm/dd/yyyy)

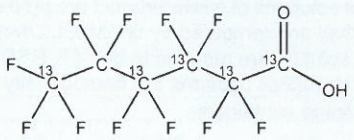
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17E2411

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M5PFHxA	**LOT NUMBER:**	M5PFHxA0814
COMPOUND:	Perfluoro-n-[1,2,3,4,6-$^{13}C_5$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_1HF_{11}O_2$	**MOLECULAR WEIGHT:**	319.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,6-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	08/27/2014		
EXPIRY DATE: (mm/dd/yyyy)	08/27/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 03/31/2015 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17F3031

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E1719	13C4-PFOS	17-May-17	** Vendor **	12-Dec-21	17-May-17 12:47 by INJ	0.6

Description:	13C4-PFOS dil.	Expires:	30-Jun-18
Standard Type:	Other	Prepared:	30-Jun-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.717	Department:	LCMS
Vials:	1	Last Edit:	30-Jun-17 13:31 by INJ

Analyte	CAS Number	Concentration	Units
13C4-PFOS		40	ug/mL

17E1719

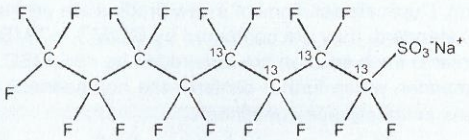
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	12/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/14/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17F3032

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2410	13C3-PFHxS	24-May-17	** Vendor **	31-May-21	24-May-17 11:18 by INJ	0.45

Description:	13C3-PFHxS DIL.	Expires:	30-Jun-18
Standard Type:	Reagent	Prepared:	30-Jun-17
Solvent:	MeOH	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.473	Department:	LCMS
Vials:	1	Last Edit:	30-Jun-17 13:35 by INJ

Analyte	CAS Number	Concentration	Units
13C3-PFHxS		45	ug/mL

17E2410

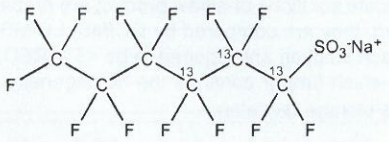
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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFHxS **LOT NUMBER:** M3PFHxS0516

COMPOUND: Sodium perfluoro-1-[1,2,3-$^{13}C_3$]hexanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	425.07
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (M3PFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3$-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	05/31/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/31/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: B.G. Chittim **Date:** 07/05/2016 (mm/dd/yyyy)

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Analytical Standard Record

Vista Analytical Laboratory

17F3034

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	Last Edit	(mls)
17E2406	13C8-PFOA	24-May-17	** Vendor **	12-Feb-21	24-May-17 11:16 by INJ	0.5

Description:	13C8-PFOA dil.	Expires:	30-Jun-18
Standard Type:	Other	Prepared:	30-Jun-17
Solvent:	Methanol	Prepared By:	Isaac N. Johnson
Final Volume (mls):	0.612	Department:	LCMS
Vials:	1	Last Edit:	30-Jun-17 13:40 by INJ

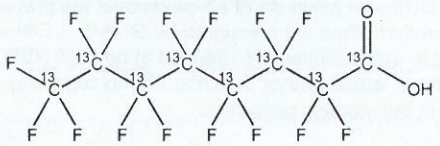
Analyte	CAS Number	Concentration	Units
13C8-PFOA		40	ug/mL

17E2406

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M8PFOA	**LOT NUMBER:**	M8PFOA0216
COMPOUND:	Perfluoro-n-[$^{13}C_8$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	422.01
CONCENTRATION:	49 ± 2.45 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	97.9% (M8PFOA) 2.1% (MPFOA [M+4])	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of native perfluoro-n-octanoic acid (PFOA) and ~ 2.1% of [M+4] perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 02/24/2016 (mm/dd/yyyy)
B.G. Chittim

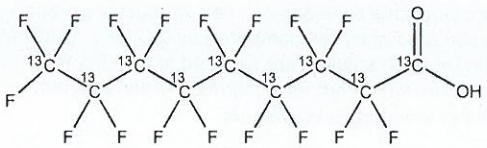
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17F3035

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M9PFNA	**LOT NUMBER:**	M9PFNA0814
COMPOUND:	Perfluoro-n-[$^{13}C_9$]nonanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	473.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_9$)
LAST TESTED: (mm/dd/yyyy)	08/27/2014		
EXPIRY DATE: (mm/dd/yyyy)	08/27/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.9% of $^{13}C_5{}^{12}C_4HF_{17}O_2$ (MPFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/01/2015 (mm/dd/yyyy)

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17F3035

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

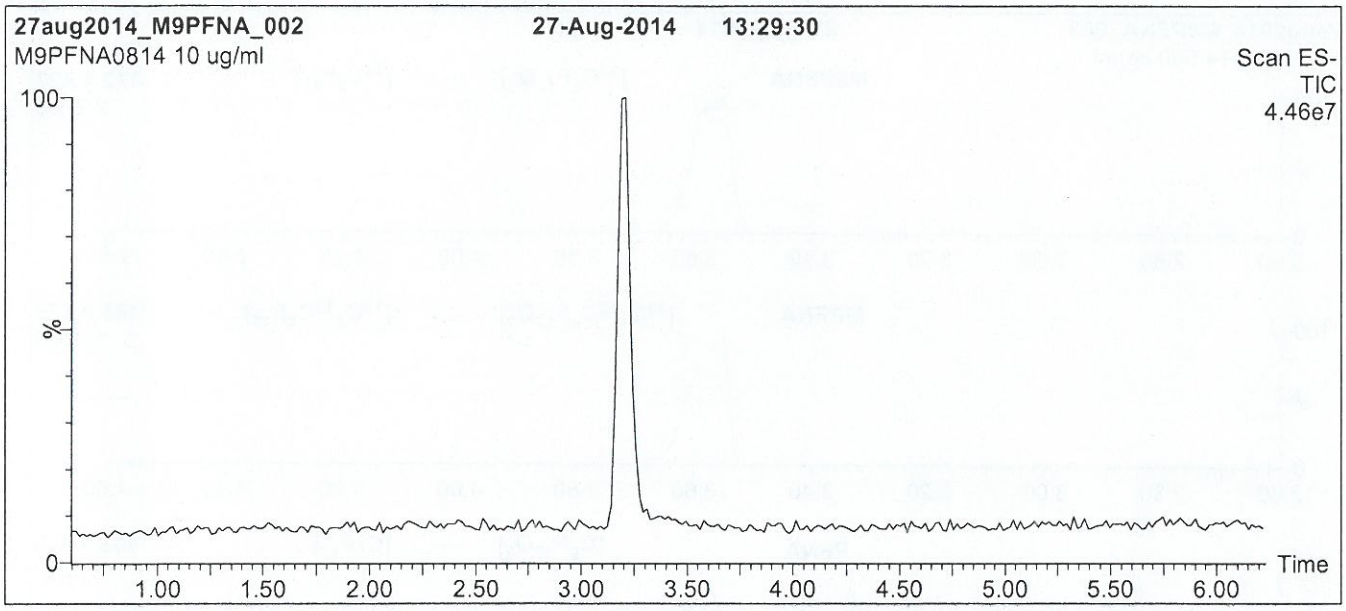
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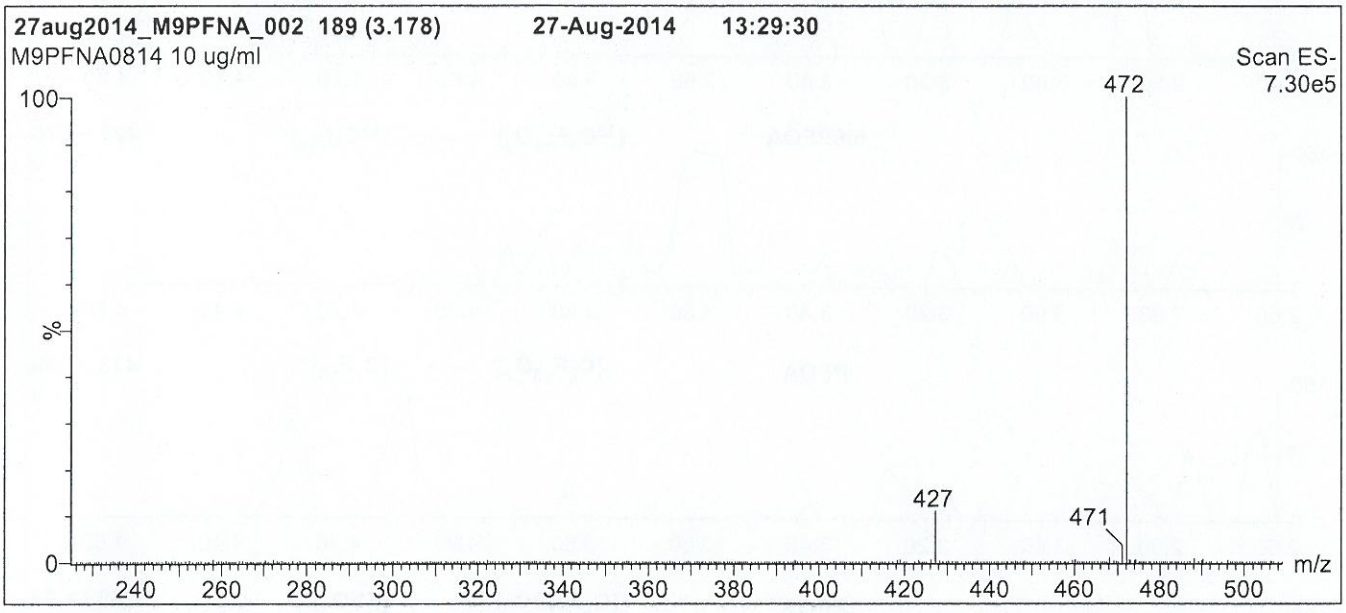
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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17F3035

Figure 1: **M9PFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

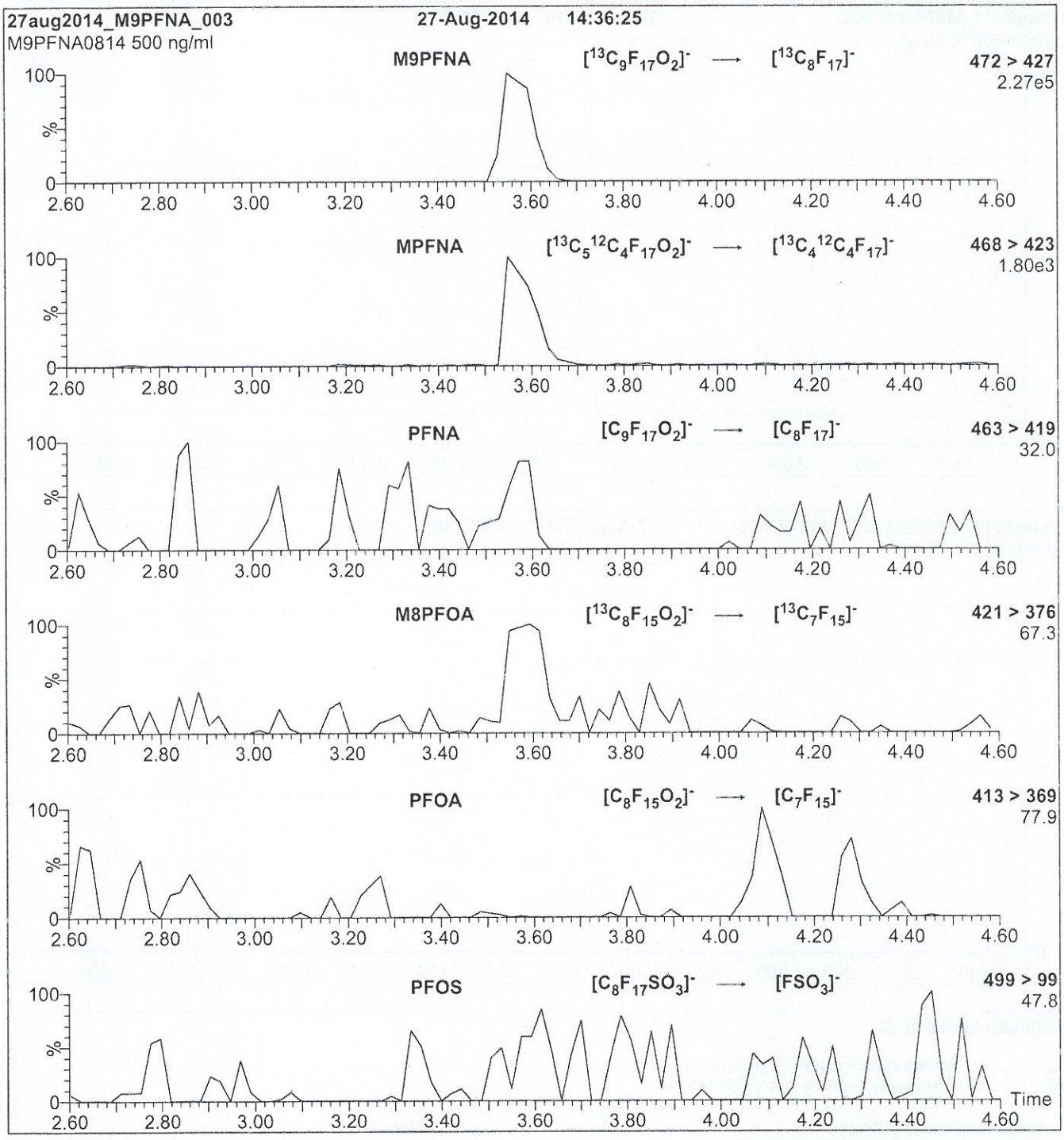
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

17F3035

Figure 2: **M9PFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M9PFNA)

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

Flow: 300 µl/min

MS Parameters

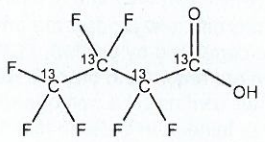
Collision Gas (mbar) = 3.74e-3
Collision Energy (eV) = 11

17F3036

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA0417
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	04/12/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/12/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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~~17F3037~~ SNJ 7/3/17
17F3036

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

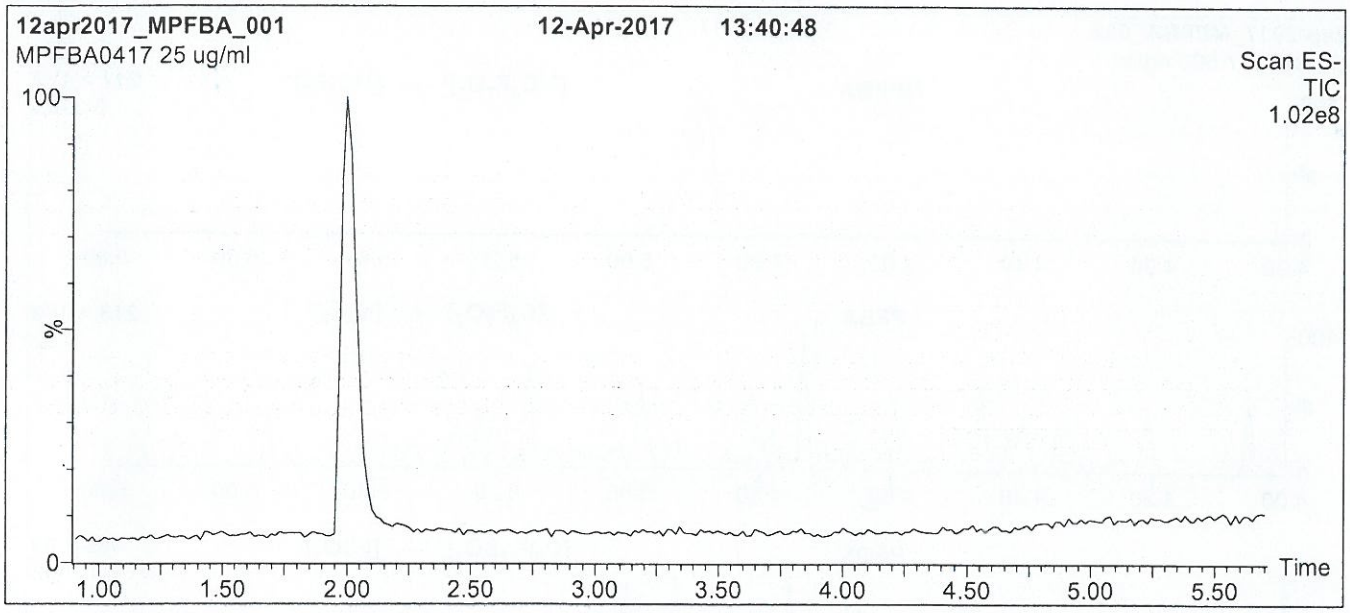
CALA Testing Accreditation No. A 1226

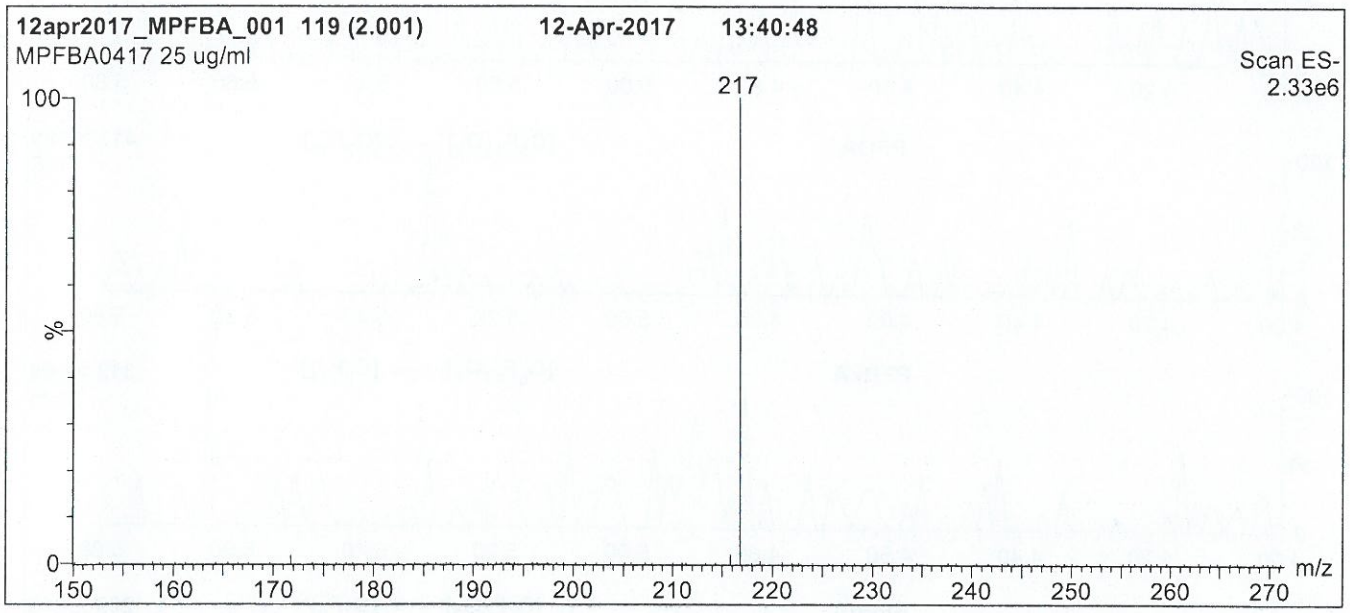
ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

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17F3036

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

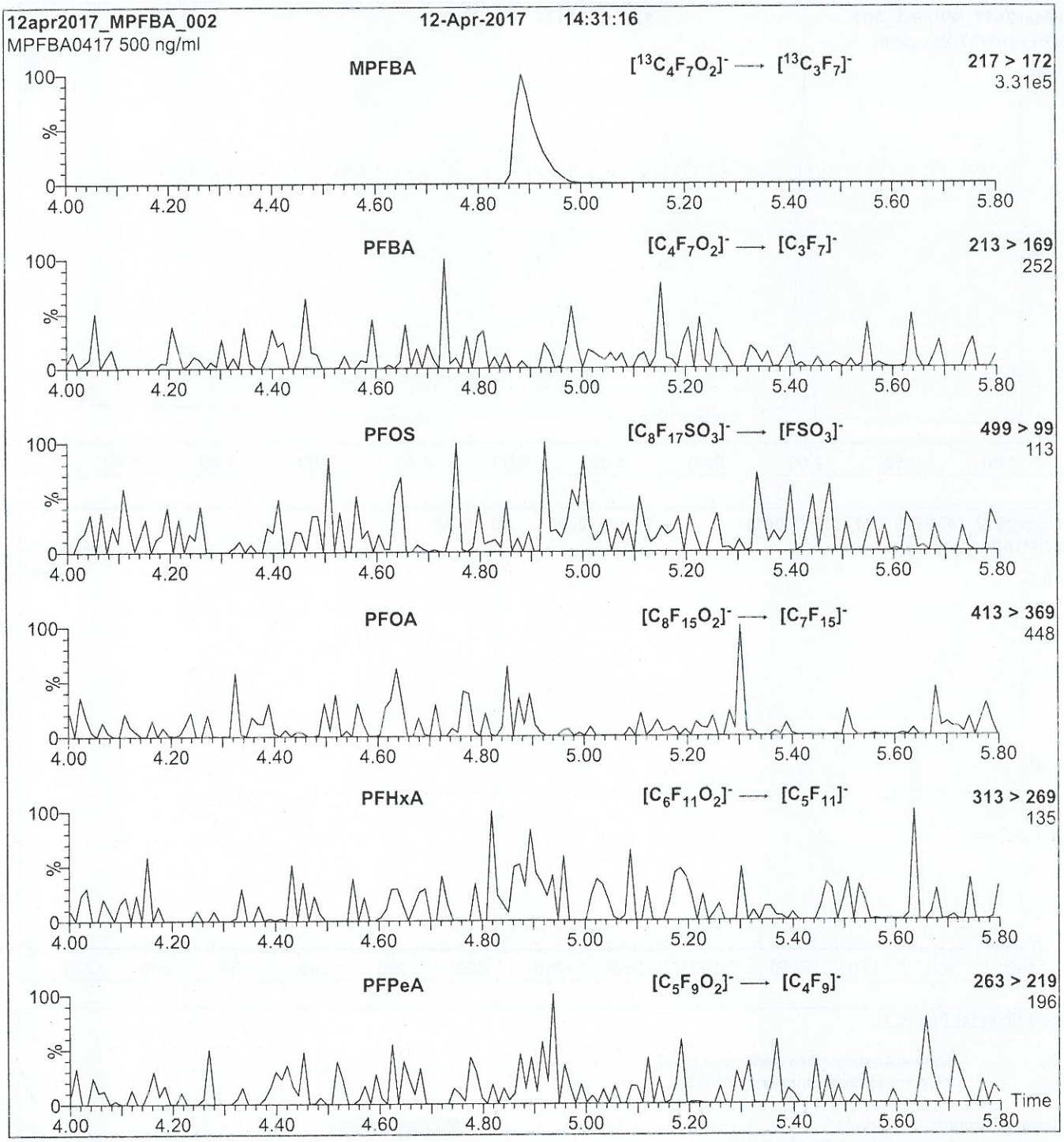
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

17F3036

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

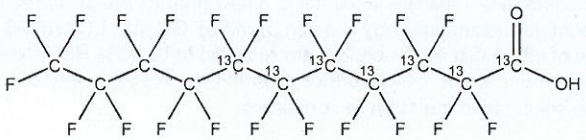
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

17F3037

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M7PFUdA	**LOT NUMBER:**	M7PFUdA0116
COMPOUND:	Perfluoro-n-[1,2,3,4,5,6,7-$^{13}C_7$]undecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_7{}^{12}C_4HF_{21}O_2$	**MOLECULAR WEIGHT:**	571.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C
LAST TESTED: (mm/dd/yyyy)	01/22/2016		(1,2,3,4,5,6,7-$^{13}C_7$)
EXPIRY DATE: (mm/dd/yyyy)	01/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 01/26/2016 (mm/dd/yyyy)
B.G. Chittim

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

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INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

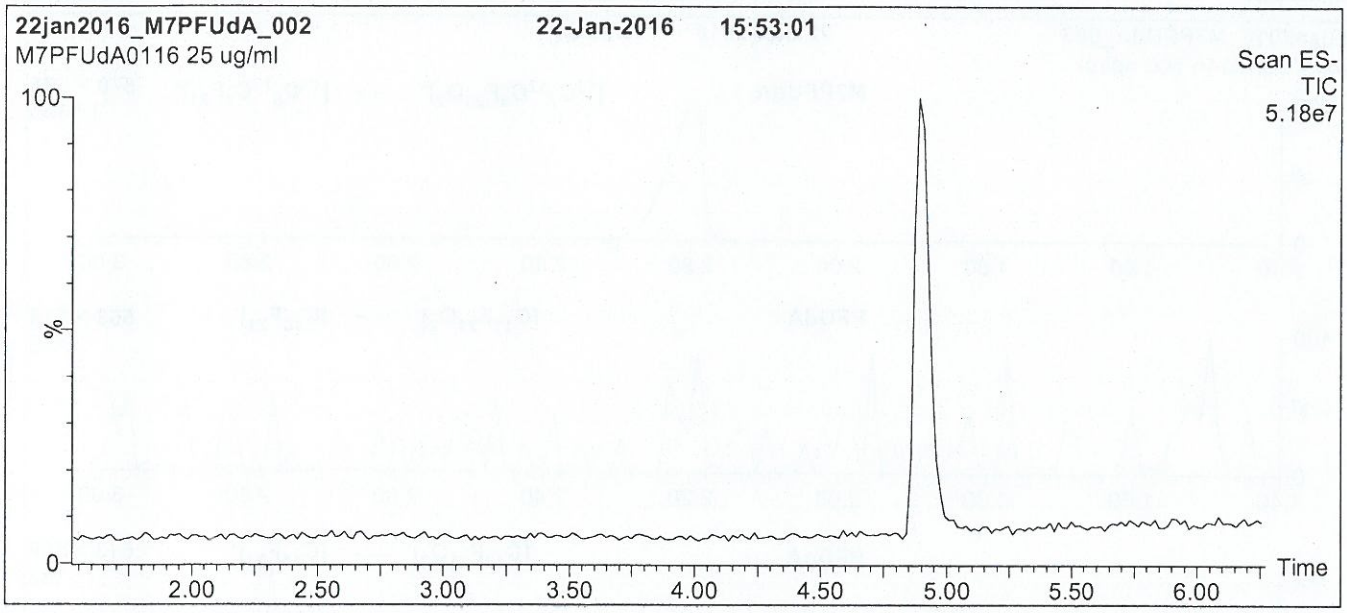
CALA Testing Accreditation No. A 1226

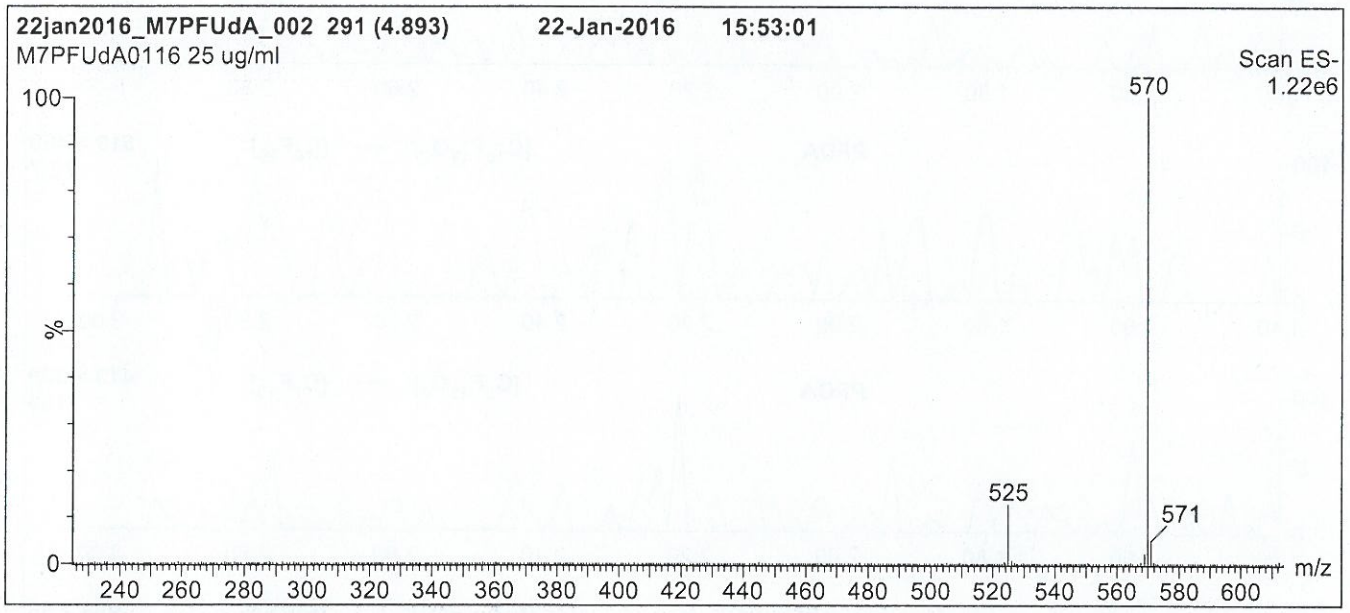
ANAB ACCREDITED AR-1523 REFERENCE MATERIAL PRODUCER

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

17F3037

Figure 1: **M7PFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

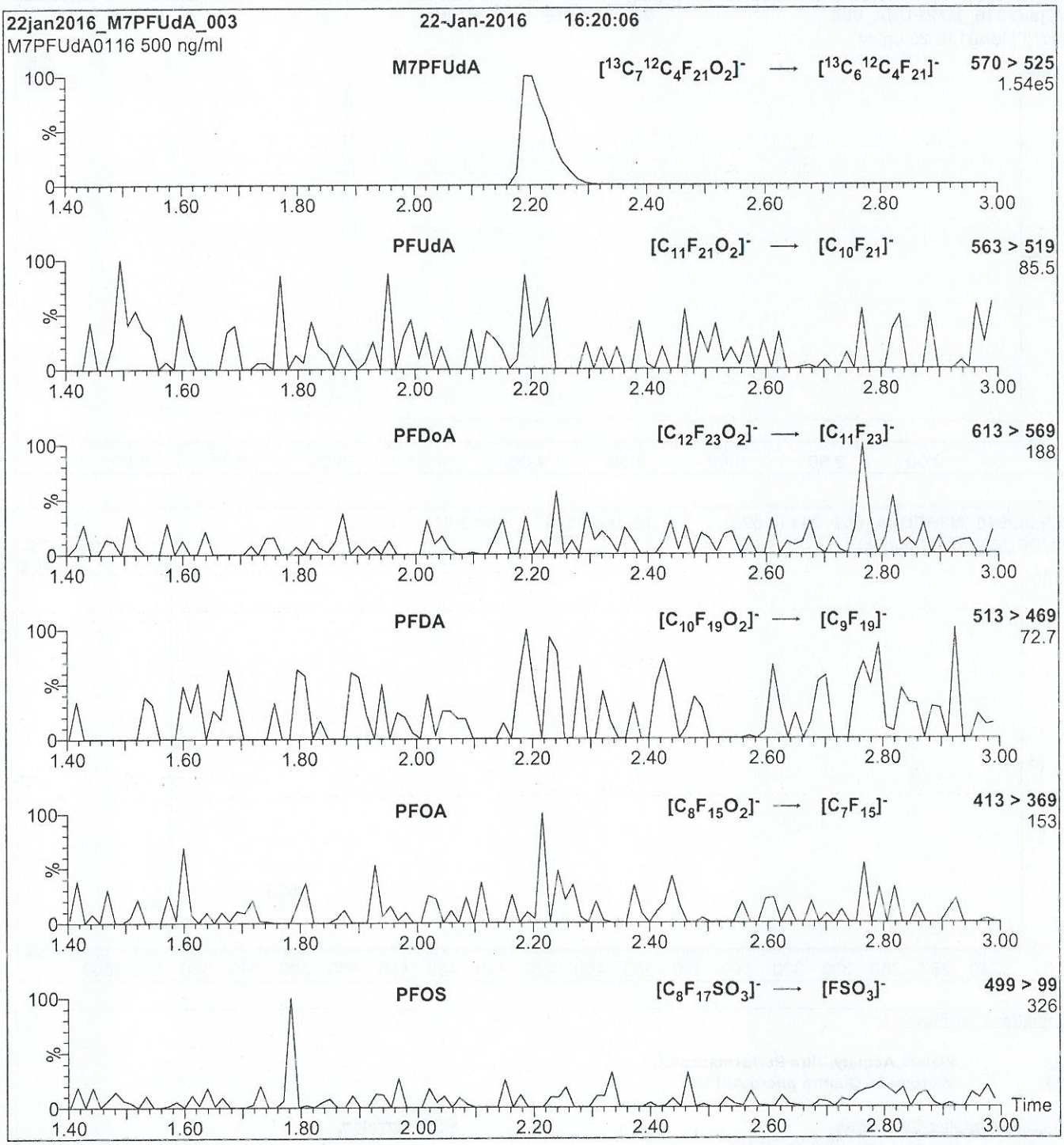
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

17F3037

Figure 2: **M7PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M7PFUdA)

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

Flow: 300 µl/min

MS Parameters

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

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2","PFDA","5.21","ng/L","U","1.55","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","2355-31-
9","MeFOSAA","5.21","ng/L","U","1.72","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21
","",
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","2058-94-
8","PFUnA","5.21","ng/L","U","1.10","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","2991-50-
6","EtFOSAA","5.21","ng/L","U","1.43","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",
""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","307-55-
1","PFDoA","5.21","ng/L","U","0.826","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","72629-94-
8","PFTrDA","5.21","ng/L","U","0.515","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21","
"
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","376-06-
7","PFTeDA","5.21","ng/L","U","0.788","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",
""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C3-PFBS","13C3-
PFBS","124","%R","","-99","NA","","IS","124","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C2-PFHxA","13C2-
PFHxA","102","%R","","-99","NA","","IS","102","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C4-PFHpA","13C4-
PFHpA","92.6","%R","","-99","NA","","IS","92.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","18O2-PFHxS","18O2-
PFHxS","96.3","%R","","-99","NA","","IS","96.3","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C2-PFOA","13C2-
PFOA","97.3","%R","","-99","NA","","IS","97.3","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C8-PFOS","13C8-
PFOS","82.3","%R","","-99","NA","","IS","82.3","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C5-PFNA","13C5-

PFNA","71.4","%R","","-99","NA","","IS","71.4","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C2-PFDA","13C2-
PFDA","70.6","%R","","-99","NA","","IS","70.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","d3-MeFOSAA","d3-
MeFOSAA","63.4","%R","","-99","NA","","IS","63.4","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C2-PFUnA","13C2-
PFUnA","61.6","%R","","-99","NA","","IS","61.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","d5-EtFOSAA","d5-
EtFOSAA","54.4","%R","","-99","NA","","IS","54.4","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C2-PFDoA","13C2-
PFDoA","67.6","%R","","-99","NA","","IS","67.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"MW-35S-20170714","Modified EPA Method 537","Initial","1700884-03","Vista","13C2-PFTeDA","13C2-
PFTeDA","66.5","%R","","-99","NA","","IS","66.5","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","375-73-
5","PFBS","5.21","ng/L","U","1.87","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","307-24-
4","PFHxA","5.21","ng/L","U","2.27","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","375-85-
9","PFHpA","5.21","ng/L","U","0.616","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","355-46-
4","PFHxS","5.21","ng/L","U","0.988","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","335-67-
1","PFOA","5.21","ng/L","U","0.679","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","1763-23-
1","PFOS","5.21","ng/L","U","0.842","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","375-95-
1","PFNA","5.21","ng/L","U","0.845","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","335-76-
2","PFDA","5.21","ng/L","U","1.55","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","2355-31-
9","MeFOSAA","5.21","ng/L","U","1.72","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21
","",
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","2058-94-
8","PFUnA","5.21","ng/L","U","1.10","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","2991-50-
6","EtFOSAA","5.21","ng/L","U","1.43","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",
""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","307-55-
1","PFDoA","5.21","ng/L","U","0.826","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","72629-94-
8","PFTrDA","5.21","ng/L","U","0.515","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21","
"
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","376-06-
7","PFTeDA","5.21","ng/L","U","0.788","LOD","","TRG","","","8.34","LOQ","YES","-99","","0.120","0.001","5.21",
""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C3-PFBS","13C3-
PFBS","105","%R","","-99","NA","","IS","105","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C2-PFHxA","13C2-
PFHxA","101","%R","","-99","NA","","IS","101","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C4-PFHpA","13C4-
PFHpA","81.6","%R","","-99","NA","","IS","81.6","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","18O2-PFHxS","18O2-
PFHxS","96.7","%R","","-99","NA","","IS","96.7","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C2-PFOA","13C2-

PFOA","107","%R","","-99","NA","","IS","107","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C8-PFOS","13C8-
PFOS","101","%R","","-99","NA","","IS","101","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C5-PFNA","13C5-
PFNA","101","%R","","-99","NA","","IS","101","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C2-PFDA","13C2-
PFDA","77.4","%R","","-99","NA","","IS","77.4","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","d3-MeFOSAA","d3-
MeFOSAA","65.4","%R","","-99","NA","","IS","65.4","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C2-PFUnA","13C2-
PFUnA","70.5","%R","","-99","NA","","IS","70.5","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","d5-EtFOSAA","d5-
EtFOSAA","58.7","%R","","-99","NA","","IS","58.7","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C2-PFDoA","13C2-
PFDoA","67.8","%R","","-99","NA","","IS","67.8","","-99","NA","YES","100","","0.120","0.001","-99",""
"FRB-02-20170714","Modified EPA Method 537","Initial","1700884-04","Vista","13C2-PFTeDA","13C2-
PFTeDA","66.9","%R","","-99","NA","","IS","66.9","","-99","NA","YES","100","","0.120","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","375-73-
5","PFBS","5.00","ng/L","U","1.79","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","307-24-
4","PFHxA","5.00","ng/L","U","2.18","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","375-85-
9","PFHpA","5.00","ng/L","U","0.591","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","355-46-
4","PFHxS","5.00","ng/L","U","0.947","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","335-67-
1","PFOA","5.00","ng/L","U","0.651","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","1763-23-
1","PFOS","5.00","ng/L","U","0.807","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","375-95-
1","PFNA","5.00","ng/L","U","0.810","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","335-76-
2","PFDA","5.00","ng/L","U","1.49","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","2355-31-
9","MeFOSAA","5.00","ng/L","U","1.65","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00
","",
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","2058-94-
8","PFUnA","5.00","ng/L","U","1.05","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","2991-50-
6","EtFOSAA","5.00","ng/L","U","1.37","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",
""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","307-55-
1","PFDoA","5.00","ng/L","U","0.792","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","72629-94-
8","PFTrDA","5.00","ng/L","U","0.494","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00","
"
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","376-06-
7","PFTeDA","5.00","ng/L","U","0.755","LOD","","TRG","","","8.00","LOQ","YES","-99","","0.125","0.001","5.00",
""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C3-PFBS","13C3-
PFBS","106","%R","","-99","NA","","IS","106","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C2-PFHxA","13C2-
PFHxA","87.3","%R","","-99","NA","","IS","87.3","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C4-PFHpA","13C4-

PFHpA","86.9","%R","","-99","NA","","IS","86.9","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","18O2-PFHxS","18O2-
PFHxS","92.3","%R","","-99","NA","","IS","92.3","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C2-PFOA","13C2-
PFOA","85.3","%R","","-99","NA","","IS","85.3","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C8-PFOS","13C8-
PFOS","89.5","%R","","-99","NA","","IS","89.5","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C5-PFNA","13C5-
PFNA","91.2","%R","","-99","NA","","IS","91.2","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C2-PFDA","13C2-
PFDA","76.5","%R","","-99","NA","","IS","76.5","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","d3-MeFOSAA","d3-
MeFOSAA","50.5","%R","","-99","NA","","IS","50.5","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C2-PFUnA","13C2-
PFUnA","59.0","%R","","-99","NA","","IS","59.0","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","d5-EtFOSAA","d5-
EtFOSAA","50.3","%R","","-99","NA","","IS","50.3","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C2-PFDoA","13C2-
PFDoA","56.4","%R","","-99","NA","","IS","56.4","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BLK1","Modified EPA Method 537","Initial","B7G0079-BLK1","Vista","13C2-PFTeDA","13C2-
PFTeDA","45.1","%R","H","-99","NA","","IS","45.1","","-99","NA","YES","100","","0.125","0.001","-99",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","375-73-
5","PFBS","74.1","ng/L","","1.79","LOD","","TRG","92.6","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","
"
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","307-24-
4","PFHxA","86.7","ng/L","","2.18","LOD","","TRG","108","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","375-85-
9","PFHpA","87.0","ng/L","","0.591","LOD","","TRG","109","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00"
,""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","355-46-
4","PFHxS","83.0","ng/L","","0.947","LOD","","TRG","104","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00"
,""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","335-67-
1","PFOA","90.3","ng/L","","0.651","LOD","","TRG","113","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","1763-23-
1","PFOS","76.5","ng/L","","0.807","LOD","","TRG","95.7","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","375-95-
1","PFNA","77.6","ng/L","","0.810","LOD","","TRG","97.0","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","335-76-
2","PFDA","77.5","ng/L","","1.49","LOD","","TRG","96.9","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","
"
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","2355-31-
9","MeFOSAA","94.5","ng/L","","1.65","LOD","","TRG","118","","8.00","LOQ","YES","80.0","","0.125","0.001","5.
00",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","2058-94-
8","PFUnA","87.6","ng/L","","1.05","LOD","","TRG","110","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00",
""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","2991-50-
6","EtFOSAA","82.3","ng/L","","1.37","LOD","","TRG","103","","8.00","LOQ","YES","80.0","","0.125","0.001","5.0
0",""

"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","307-55-1","PFDoA","79.7","ng/L","","0.792","LOD","","TRG","99.7","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","72629-94-8","PFTrDA","75.3","ng/L","","0.494","LOD","","TRG","94.1","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","376-06-7","PFTeDA","95.3","ng/L","","0.755","LOD","","TRG","119","","8.00","LOQ","YES","80.0","","0.125","0.001","5.00","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C3-PFBS","13C3-PFBS","107","%R","","-99","NA","","IS","107","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C2-PFHxA","13C2-PFHxA","93.6","%R","","-99","NA","","IS","93.6","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C4-PFHpA","13C4-PFHpA","86.2","%R","","-99","NA","","IS","86.2","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","18O2-PFHxS","18O2-PFHxS","88.3","%R","","-99","NA","","IS","88.3","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C2-PFOA","13C2-PFOA","90.4","%R","","-99","NA","","IS","90.4","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C8-PFOS","13C8-PFOS","92.9","%R","","-99","NA","","IS","92.9","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C5-PFNA","13C5-PFNA","91.2","%R","","-99","NA","","IS","91.2","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C2-PFDA","13C2-PFDA","76.4","%R","","-99","NA","","IS","76.4","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","d3-MeFOSAA","d3-MeFOSAA","52.0","%R","","-99","NA","","IS","52.0","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C2-PFUnA","13C2-PFUnA","61.6","%R","","-99","NA","","IS","61.6","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","d5-EtFOSAA","d5-EtFOSAA","56.7","%R","","-99","NA","","IS","56.7","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C2-PFDoA","13C2-PFDoA","57.7","%R","","-99","NA","","IS","57.7","","-99","NA","YES","100","","0.125","0.001","-99","",""
"B7G0079-BS1","Modified EPA Method 537","Initial","B7G0079-BS1","Vista","13C2-PFTeDA","13C2-PFTeDA","36.3","%R","H","-99","NA","","IS","36.3","","-99","NA","YES","100","","0.125","0.001","-99","",""
"NAWC Trenton","NAWC Trenton","MW-37BR-20170714","07/14/2017 10:50","AQ","1700884-01","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","08/03/2017 18:35","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MW-37BR-20170714","07/14/2017 10:50","AQ","1700884-01","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017 18:50","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MW-32BR-20170714","07/14/2017 11:30","AQ","1700884-02","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","08/03/2017 18:47","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MW-32BR-20170714","07/14/2017 11:30","AQ","1700884-02","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017 19:02","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MW-35S-20170714","07/14/2017 12:20","AQ","1700884-03","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","08/03/2017 19:00","Vista","COA","WET","NA","1","NA","NA","01/01/1900

00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","MW-35S-20170714","07/14/2017 12:20","AQ","1700884-
03","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017
19:15","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","FRB-02-20170714","07/14/2017 09:00","AQ","1700884-
04","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","08/03/2017
19:12","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","FRB-02-20170714","07/14/2017 09:00","AQ","1700884-
04","NM","","3.80","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017
19:28","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","07/15/2017 09:16","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7G0079-BLK1","01/01/1900 00:00","AQ","B7G0079-
BLK1","MB","","-99","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017
14:54","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","01/01/1900 00:00","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7G0079-BLK1","01/01/1900 00:00","AQ","B7G0079-
BLK1","MB","","-99","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017
11:02","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","01/01/1900 00:00","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7G0079-BS1","01/01/1900 00:00","AQ","B7G0079-
BS1","LCS","","-99","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017
14:11","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","01/01/1900 00:00","01/01/1900 00:00",""
"NAWC Trenton","NAWC Trenton","B7G0079-BS1","01/01/1900 00:00","AQ","B7G0079-
BS1","LCS","","-99","Modified EPA Method 537","METHOD","Initial","07/20/2017 11:18","07/31/2017
10:37","Vista","COA","WET","NA","1","NA","NA","01/01/1900
00:00","100","B7G0079","B7G0079","NA","S7G0062","1700884","01/01/1900 00:00","01/01/1900 00:00",""

TETRA TECH

INTERNAL CORRESPONDENCE

TO: **MARY MANG** **DATE:** **SEPTEMBER 15, 2017**

FROM: **MEGAN RITCHIE** **COPIES:** **DV FILE/**

SUBJECT: **ORGANIC DATA VALIDATION – POLYFLUOROAKLYL SUBSTANCES (PFAS)**
CTO WE08 - FORMER NAWC TRENTON
SDG 1700884

SAMPLES: 4 / Groundwater / PFAS

MW-32BR-20170714	MW-37BR-20170714
MW-35S-20170714	FRB-02-20170714

Overview

The sample set for NAWC Trenton, SDG 1700884 consists of three (3) groundwater environmental samples and one field reagent blank (designated FRB-). No field duplicate pairs were included in this SDG. The samples were analyzed for polyfluoroalkyl substances (PFAS).

The samples were collected by Tetra Tech on July 14, 2017 and analyzed by Vista Analytical. The analysis was conducted in accordance with modified EPA Method 537 Rev. 1.1 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

* Data Completeness
* Holding Times/Sample Preservation
* GC/MS Instrument Tuning and System Performance
* Initial and Continuing Calibration Verification Results
* Laboratory Method/Preparation Blank Analyses
* Surrogate Recoveries
* Ongoing Precision and Recovery (OPR) Results
* Matrix Spike/Matrix Spike Duplicate Results
* Laboratory Duplicate Sample Results
  Internal Standard Results
* Field Duplicate Precision
* Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Issues affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

PFAS

Detected results reported below the Limit of Quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated (J).

Notes

The recoveries of internal standard 13C2-PFTeDA was below the lower QC limit for the method blank and OPR. No action was taken because the OPR recoveries of associated analytes PFTrDA and PFTeDA were within the QC recovery limits.

Samples MW-37BR-20170714 and MW-32BR-20170714 were centrifuged to remove particulates prior to extraction.

All analyses were conducted within the hold times specified by the site specific Sampling and Analysis Plan (SAP) and the analytical method.

Non-detected results were reported to the Limit of Detection (LOD).

Executive Summary

Laboratory Performance: Internal standard recoveries for were below the lower QC limits in several samples.

Other Factors Affecting Data Quality: Positive results below the LOQ were qualified as estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Superfund Organic Methods Data Review" (January 2017). The text of this report has been formulated to address only those areas affecting data quality.

Megan Ritchie

Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator

Joseph A. Samchuck

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Appendix A

Qualified Analytical Results

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-WE08	NSAMPLE	FRB-02-20170714			MW-32BR-20170714			MW-35S-20170714			MW-37BR-20170714		
SDG: 1700884	LAB_ID	1700884-04			1700884-02			1700884-03			1700884-01		
FRACTION: PFAS	SAMP_DATE	7/14/2017			7/14/2017			7/14/2017			7/14/2017		
MEDIA: WATER	QC_TYPE	FB			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	
N-METHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	
PENTADECAFLUOROOCTANOIC ACID		5.21	U		35			21.6			120		
PERFLUOROBUTANESULFONIC ACID		5.21	U		47.5			26.4			20.7		
PERFLUORODECANOIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	
PERFLUORODODECANOIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	
PERFLUOROHEPTANOIC ACID		5.21	U		58.4			34.7			9.49		
PERFLUOROHEXANESULFONIC ACID		5.21	U		330			170			230		
PERFLUOROHEXANOIC ACID		5.21	U		169			101			41.7		
PERFLUORONONANOIC ACID		5.21	U		4.44	J	P	5.21	U		5.25	U	
PERFLUOROOCTANE SULFONIC ACID		5.21	U		321			156			570		
PERFLUOROTETRADECANOIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	
PERFLUOROTRIDECANOIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	
PERFLUOROUNDECANOIC ACID		5.21	U		5.25	U		5.21	U		5.25	U	

Appendix B

Results as Reported by the Laboratory

Sample ID: MW-37BR-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 10:50
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.119 L

Laboratory Data

Lab Sample: 1700884-01 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 18:35 Column: BEH C18
31-Jul-17 18:50 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	20.7	1.87	5.25	8.38	
PFHxA	41.7	2.28	5.25	8.38	
PFHpA	9.49	0.619	5.25	8.38	
PFHxS	230	0.992	5.25	8.38	
PFOA	120	0.682	5.25	8.38	
PFOS	570	0.845	5.25	8.38	
PFNA	ND	0.848	5.25	8.38	
PFDA	ND	1.56	5.25	8.38	
MeFOSAA	ND	1.73	5.25	8.38	
PFUnA	ND	1.10	5.25	8.38	
EtFOSAA	ND	1.43	5.25	8.38	
PFDoA	ND	0.829	5.25	8.38	
PFTrDA	ND	0.517	5.25	8.38	
PFTeDA	ND	0.791	5.25	8.38	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	113	50 - 150	
IS	13C2-PFHxA	100	50 - 150	
IS	13C4-PFHpA	92.0	50 - 150	
IS	18O2-PFHxS	108	50 - 150	
IS	13C2-PFOA	100	50 - 150	
IS	13C8-PFOS	94.7	50 - 150	
IS	13C5-PFNA	82.5	50 - 150	
IS	13C2-PFDA	70.5	50 - 150	
IS	d3-MeFOSAA	60.9	50 - 150	
IS	13C2-PFUnA	70.7	50 - 150	
IS	d5-EtFOSAA	63.6	50 - 150	
IS	13C2-PFDoA	66.8	50 - 150	
IS	13C2-PFTeDA	66.3	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: MW-32BR-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 11:30
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.119 L

Laboratory Data

Lab Sample: 1700884-02 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 18:47 Column: BEH C18
31-Jul-17 19:02 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	47.5	1.88	5.25	8.40	
PFHxA	169	2.29	5.25	8.40	
PFHpA	58.4	0.621	5.25	8.40	
PFHxS	330	0.995	5.25	8.40	
PFOA	35.0	0.684	5.25	8.40	
PFOS	321	0.848	5.25	8.40	
PFNA	4.44	0.851	5.25	8.40	J
PFDA	ND	1.57	5.25	8.40	
MeFOSAA	ND	1.73	5.25	8.40	
PFUnA	ND	1.10	5.25	8.40	
EtFOSAA	ND	1.44	5.25	8.40	
PFDoA	ND	0.832	5.25	8.40	
PFTrDA	ND	0.519	5.25	8.40	
PFTeDA	ND	0.793	5.25	8.40	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	104	50 - 150	
IS	13C2-PFHxA	92.2	50 - 150	
IS	13C4-PFHpA	82.3	50 - 150	
IS	18O2-PFHxS	97.7	50 - 150	
IS	13C2-PFOA	98.0	50 - 150	
IS	13C8-PFOS	89.1	50 - 150	
IS	13C5-PFNA	91.7	50 - 150	
IS	13C2-PFDA	76.9	50 - 150	
IS	d3-MeFOSAA	64.5	50 - 150	
IS	13C2-PFUnA	70.0	50 - 150	
IS	d5-EtFOSAA	69.0	50 - 150	
IS	13C2-PFDoA	67.5	50 - 150	
IS	13C2-PFTeDA	55.1	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: MW-35S-20170714

Modified EPA Method 537

Client Data

Name:	Tetra Tech
Project:	NAWC Trenton
Date Collected:	14-Jul-2017 12:20
Location:	NAWC Trenton

Sample Data

Matrix:	Aqueous
Sample Size:	0.120 L

Laboratory Data

Lab Sample:	1700884-03	Date Received:	15-Jul-2017 9:16
QC Batch:	B7G0079	Date Extracted:	20-Jul-2017 11:18
Date Analyzed:	03-Aug-17 19:00 Column: BEH C18		
	31-Jul-17 19:15 Column: BEH C18		

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	26.4	1.87	5.21	8.34	
PFHxA	101	2.27	5.21	8.34	
PFHpA	34.7	0.616	5.21	8.34	
PFHxS	170	0.988	5.21	8.34	
PFOA	21.6	0.679	5.21	8.34	
PFOS	156	0.842	5.21	8.34	
PFNA	ND	0.845	5.21	8.34	
PFDA	ND	1.55	5.21	8.34	
MeFOSAA	ND	1.72	5.21	8.34	
PFUnA	ND	1.10	5.21	8.34	
EtFOSAA	ND	1.43	5.21	8.34	
PFDoA	ND	0.826	5.21	8.34	
PFTrDA	ND	0.515	5.21	8.34	
PFTeDA	ND	0.788	5.21	8.34	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	124	50 - 150	
IS	13C2-PFHxA	102	50 - 150	
IS	13C4-PFHpA	92.6	50 - 150	
IS	18O2-PFHxS	96.3	50 - 150	
IS	13C2-PFOA	97.3	50 - 150	
IS	13C8-PFOS	82.3	50 - 150	
IS	13C5-PFNA	71.4	50 - 150	
IS	13C2-PFDA	70.6	50 - 150	
IS	d3-MeFOSAA	63.4	50 - 150	
IS	13C2-PFUnA	61.6	50 - 150	
IS	d5-EtFOSAA	54.4	50 - 150	
IS	13C2-PFDoA	67.6	50 - 150	
IS	13C2-PFTeDA	66.5	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: FRB-02-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 9:00
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.120 L

Laboratory Data

Lab Sample: 1700884-04 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 19:12 Column: BEH C18
31-Jul-17 19:28 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.87	5.21	8.34	
PFHxA	ND	2.27	5.21	8.34	
PFHpA	ND	0.616	5.21	8.34	
PFHxS	ND	0.988	5.21	8.34	
PFOA	ND	0.679	5.21	8.34	
PFOS	ND	0.842	5.21	8.34	
PFNA	ND	0.845	5.21	8.34	
PFDA	ND	1.55	5.21	8.34	
MeFOSAA	ND	1.72	5.21	8.34	
PFUnA	ND	1.10	5.21	8.34	
EtFOSAA	ND	1.43	5.21	8.34	
PFDoA	ND	0.826	5.21	8.34	
PFTrDA	ND	0.515	5.21	8.34	
PFTeDA	ND	0.788	5.21	8.34	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	105	50 - 150	
IS	13C2-PFHxA	101	50 - 150	
IS	13C4-PFHpA	81.6	50 - 150	
IS	18O2-PFHxS	96.7	50 - 150	
IS	13C2-PFOA	107	50 - 150	
IS	13C8-PFOS	101	50 - 150	
IS	13C5-PFNA	101	50 - 150	
IS	13C2-PFDA	77.4	50 - 150	
IS	d3-MeFOSAA	65.4	50 - 150	
IS	13C2-PFUnA	70.5	50 - 150	
IS	d5-EtFOSAA	58.7	50 - 150	
IS	13C2-PFDoA	67.8	50 - 150	
IS	13C2-PFTeDA	66.9	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Appendix C

Support Documentation

Vista Analytical Laboratory

CHAIN OF CUSTODY

For Laboratory Use Only
Work Order #: 1700884 Temp: 3.8 °C
Storage ID: WR-2 Storage Secured: Yes ☑ No ☐

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

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

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

Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time
Charles Meyer	7/14/17	16:00	B. Benedict	07/15/17	0922
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and signature)	Date	Time

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

ATTN: Sample Custodian

Method of Shipment: Fed Ex

Tracking No.: 6612 1492 7058

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 PFOS-14				EPA Method 537(DW only): PFOA/PFOS	UCMR3 PFAS List:6	PFAS List: 14	Comments
MW-37BR-20170714	7/14/17	10:50	NAWC Trenton	2	PJ	AQ					2							
MW-32BR-20170714	7/14/17	11:30	NAWC Trenton	2	PJ	AQ					2							
MW-35S-20170714	7/14/17	12:20	NAWC Trenton	2	PJ	AQ					2							
FRB-02-20170714	7/14/17	09:00	NAWC Trenton	2	PJ	AQ					2							

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:

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

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

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

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

SDG Number WE08
Vista Work Order No. 1700884
Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

Modified EPA Method 537

Samples "MW-37BR-20170714" and "MW-32BR-20170714" contained particulate and were centrifuged prior to extraction.

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

Holding Times

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

Quality Control

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

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

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

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
B7G0079-BLK1	B7G0079-BLK1	Modified EPA Method 537	13C2-PFTeDA	H	45.1
B7G0079-BS1	B7G0079-BS1	Modified EPA Method 537	13C2-PFTeDA	H	36.3

H = Recovery was outside laboratory acceptance criteria.

FORMER NAWC TRENTON
1700884

SAMPLE IDENTIFICATION	MW-37BR-20170714
COMPOUND	PFOS
COMPOUND AREA	12481.934
INTERNAL STANDARD AMOUNT (ng/ml)	99.1
DILUTION FACTOR	1
INTERNAL STANDARD AREA	4873.246
AVERAGE RRF	0.927
SAMPLE VOLUME (ml)	119.35
VOLUME EXTRACT (ml)	0.05
VOLUME INJECTED (µl)	5
ml to L	1000
CONCENTRATION =	574 ng/L

12481.934 x 99.1ng/ml x 5 uL x 1000ml x 1/(4873.246 x 0.05 x119.35ml x 1L)

Sample ID: Method Blank

Modified EPA Method 537

Matrix: Aqueous
Sample Size: 0.125 L

QC Batch: B7G0079
Date Extracted: 20-Jul-2017 11:18

Lab Sample: B7G0079-BLK1
Date Analyzed: 31-Jul-17 11:02 Column: BEH C18
31-Jul-17 14:54 Column: BEH C18

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

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	106	50 - 150	
IS	13C2-PFHxA	87.3	50 - 150	
IS	13C4-PFHpA	86.9	50 - 150	
IS	18O2-PFHxS	92.3	50 - 150	
IS	13C2-PFOA	85.3	50 - 150	
IS	13C8-PFOS	89.5	50 - 150	
IS	13C5-PFNA	91.2	50 - 150	
IS	13C2-PFDA	76.5	50 - 150	
IS	d3-MeFOSAA	50.5	50 - 150	
IS	13C2-PFUnA	59.0	50 - 150	
IS	d5-EtFOSAA	50.3	50 - 150	
IS	13C2-PFDoA	56.4	50 - 150	
IS	13C2-PFTeDA	45.1	50 - 150	H

DL - Detection limit
RL - Reporting limit

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

Sample ID: OPR **Modified EPA Method 537**

Matrix: Aqueous	QC Batch: B7G0079	Lab Sample: B7G0079-BS1
Sample Size: 0.125 L	Date Extracted: 20-Jul-2017 11:18	Date Analyzed: 31-Jul-17 10:37 Column: BEH C18
		31-Jul-17 14:11 Column: BEH C18

Analyte	Amt Found (ng/L)	Spike Amt	%R	Limits
PFBS	74.1	80.0	92.6	70 - 130
PFHxA	86.7	80.0	108	70 - 130
PFHpA	87.0	80.0	109	70 - 130
PFHxS	83.0	80.0	104	70 - 130
PFOA	90.3	80.0	113	70 - 130
PFOS	76.5	80.0	95.7	70 - 130
PFNA	77.6	80.0	97.0	70 - 130
PFDA	77.5	80.0	96.9	70 - 130
MeFOSAA	94.5	80.0	118	70 - 130
PFUnA	87.6	80.0	110	70 - 130
EtFOSAA	82.3	80.0	103	70 - 130
PFDoA	79.7	80.0	99.7	70 - 130
PFTrDA	75.3	80.0	94.1	60 - 130
PFTeDA	95.3	80.0	119	70 - 130

	Labeled Standard	%R	LCL-UCL
IS	13C3-PFBS	107	50 - 150
IS	13C2-PFHxA	93.6	50 - 150
IS	13C4-PFHpA	86.2	50 - 150
IS	18O2-PFHxS	88.3	50 - 150
IS	13C2-PFOA	90.4	50 - 150
IS	13C8-PFOS	92.9	50 - 150
IS	13C5-PFNA	91.2	50 - 150
IS	13C2-PFDA	76.4	50 - 150
IS	d3-MeFOSAA	52.0	50 - 150
IS	13C2-PFUnA	61.6	50 - 150
IS	d5-EtFOSAA	56.7	50 - 150
IS	13C2-PFDoA	57.7	50 - 150
IS	13C2-PFTeDA	36.3	50 - 150

LCL-UCL - Lower control limit - upper control limit

Sample ID: MW-37BR-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 10:50
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.119 L

Laboratory Data

Lab Sample: 1700884-01 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 18:35 Column: BEH C18
31-Jul-17 18:50 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	20.7	1.87	5.25	8.38	
PFHxA	41.7	2.28	5.25	8.38	
PFHpA	9.49	0.619	5.25	8.38	
PFHxS	230	0.992	5.25	8.38	
PFOA	120	0.682	5.25	8.38	
PFOS	570	0.845	5.25	8.38	
PFNA	ND	0.848	5.25	8.38	
PFDA	ND	1.56	5.25	8.38	
MeFOSAA	ND	1.73	5.25	8.38	
PFUnA	ND	1.10	5.25	8.38	
EtFOSAA	ND	1.43	5.25	8.38	
PFDoA	ND	0.829	5.25	8.38	
PFTrDA	ND	0.517	5.25	8.38	
PFTeDA	ND	0.791	5.25	8.38	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	113	50 - 150	
IS	13C2-PFHxA	100	50 - 150	
IS	13C4-PFHpA	92.0	50 - 150	
IS	18O2-PFHxS	108	50 - 150	
IS	13C2-PFOA	100	50 - 150	
IS	13C8-PFOS	94.7	50 - 150	
IS	13C5-PFNA	82.5	50 - 150	
IS	13C2-PFDA	70.5	50 - 150	
IS	d3-MeFOSAA	60.9	50 - 150	
IS	13C2-PFUnA	70.7	50 - 150	
IS	d5-EtFOSAA	63.6	50 - 150	
IS	13C2-PFDoA	66.8	50 - 150	
IS	13C2-PFTeDA	66.3	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: MW-32BR-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 11:30
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.119 L

Laboratory Data

Lab Sample: 1700884-02 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 18:47 Column: BEH C18
31-Jul-17 19:02 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	47.5	1.88	5.25	8.40	
PFHxA	169	2.29	5.25	8.40	
PFHpA	58.4	0.621	5.25	8.40	
PFHxS	330	0.995	5.25	8.40	
PFOA	35.0	0.684	5.25	8.40	
PFOS	321	0.848	5.25	8.40	
PFNA	4.44	0.851	5.25	8.40	J
PFDA	ND	1.57	5.25	8.40	
MeFOSAA	ND	1.73	5.25	8.40	
PFUnA	ND	1.10	5.25	8.40	
EtFOSAA	ND	1.44	5.25	8.40	
PFDoA	ND	0.832	5.25	8.40	
PFTrDA	ND	0.519	5.25	8.40	
PFTeDA	ND	0.793	5.25	8.40	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	104	50 - 150	
IS	13C2-PFHxA	92.2	50 - 150	
IS	13C4-PFHpA	82.3	50 - 150	
IS	18O2-PFHxS	97.7	50 - 150	
IS	13C2-PFOA	98.0	50 - 150	
IS	13C8-PFOS	89.1	50 - 150	
IS	13C5-PFNA	91.7	50 - 150	
IS	13C2-PFDA	76.9	50 - 150	
IS	d3-MeFOSAA	64.5	50 - 150	
IS	13C2-PFUnA	70.0	50 - 150	
IS	d5-EtFOSAA	69.0	50 - 150	
IS	13C2-PFDoA	67.5	50 - 150	
IS	13C2-PFTeDA	55.1	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Sample ID: MW-35S-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 12:20
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.120 L

Laboratory Data

Lab Sample: 1700884-03 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 19:00 Column: BEH C18
31-Jul-17 19:15 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	26.4	1.87	5.21	8.34	
PFHxA	101	2.27	5.21	8.34	
PFHpA	34.7	0.616	5.21	8.34	
PFHxS	170	0.988	5.21	8.34	
PFOA	21.6	0.679	5.21	8.34	
PFOS	156	0.842	5.21	8.34	
PFNA	ND	0.845	5.21	8.34	
PFDA	ND	1.55	5.21	8.34	
MeFOSAA	ND	1.72	5.21	8.34	
PFUnA	ND	1.10	5.21	8.34	
EtFOSAA	ND	1.43	5.21	8.34	
PFDoA	ND	0.826	5.21	8.34	
PFTrDA	ND	0.515	5.21	8.34	
PFTeDA	ND	0.788	5.21	8.34	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	124	50 - 150	
IS	13C2-PFHxA	102	50 - 150	
IS	13C4-PFHpA	92.6	50 - 150	
IS	18O2-PFHxS	96.3	50 - 150	
IS	13C2-PFOA	97.3	50 - 150	
IS	13C8-PFOS	82.3	50 - 150	
IS	13C5-PFNA	71.4	50 - 150	
IS	13C2-PFDA	70.6	50 - 150	
IS	d3-MeFOSAA	63.4	50 - 150	
IS	13C2-PFUnA	61.6	50 - 150	
IS	d5-EtFOSAA	54.4	50 - 150	
IS	13C2-PFDoA	67.6	50 - 150	
IS	13C2-PFTeDA	66.5	50 - 150	

DL - Detection limit

RL - Reporting limit

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

Sample ID: FRB-02-20170714

Modified EPA Method 537

Client Data

Name: Tetra Tech
Project: NAWC Trenton
Date Collected: 14-Jul-2017 9:00
Location: NAWC Trenton

Sample Data

Matrix: Aqueous
Sample Size: 0.120 L

Laboratory Data

Lab Sample: 1700884-04 Date Received: 15-Jul-2017 9:16
QC Batch: B7G0079 Date Extracted: 20-Jul-2017 11:18
Date Analyzed: 03-Aug-17 19:12 Column: BEH C18
31-Jul-17 19:28 Column: BEH C18

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers
PFBS	ND	1.87	5.21	8.34	
PFHxA	ND	2.27	5.21	8.34	
PFHpA	ND	0.616	5.21	8.34	
PFHxS	ND	0.988	5.21	8.34	
PFOA	ND	0.679	5.21	8.34	
PFOS	ND	0.842	5.21	8.34	
PFNA	ND	0.845	5.21	8.34	
PFDA	ND	1.55	5.21	8.34	
MeFOSAA	ND	1.72	5.21	8.34	
PFUnA	ND	1.10	5.21	8.34	
EtFOSAA	ND	1.43	5.21	8.34	
PFDoA	ND	0.826	5.21	8.34	
PFTrDA	ND	0.515	5.21	8.34	
PFTeDA	ND	0.788	5.21	8.34	

	Labeled Standard	%R	LCL-UCL	Qualifiers
IS	13C3-PFBS	105	50 - 150	
IS	13C2-PFHxA	101	50 - 150	
IS	13C4-PFHpA	81.6	50 - 150	
IS	18O2-PFHxS	96.7	50 - 150	
IS	13C2-PFOA	107	50 - 150	
IS	13C8-PFOS	101	50 - 150	
IS	13C5-PFNA	101	50 - 150	
IS	13C2-PFDA	77.4	50 - 150	
IS	d3-MeFOSAA	65.4	50 - 150	
IS	13C2-PFUnA	70.5	50 - 150	
IS	d5-EtFOSAA	58.7	50 - 150	
IS	13C2-PFDoA	67.8	50 - 150	
IS	13C2-PFTeDA	66.9	50 - 150	

DL - Detection limit

RL - Reporting limit

LCL-UCL - Lower control limit - upper control limit

Results reported to DL.

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

Only the linear isomer is reported for all other analytes.

Process Sheet

Workorder: 1700884

Prep Expiration: 2017-Jul-28

Client: Tetra Tech

Workorder Due: 07-Aug-17 00:00

TAT: 23

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

Matrix: **Aqueous**

Prep Batch: _____

Prep Data Entered: HB 7/21/17
Date and Initials

Version: 537 (14 Analyte)

Initial Sequence: _____

LabSampleID	Recon	ClientSampleID	Date Received	Location	Comments
1700884-01	☑	MW-37BR-20170714	15-Jul-17 09:16	WR-2 E-5	
1700884-02	☐	MW-32BR-20170714	15-Jul-17 09:16	WR-2 E-5	
1700884-03	☐	MW-35S-20170714	15-Jul-17 09:16	WR-2 E-5	
1700884-04	☐	FRB-02-20170714	15-Jul-17 09:16	WR-2 E-5	

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

Vista PM:Martha Maier

Vial Box ID: Save US

Sample Reconciled By: _____ /__/____

Page 1 of 1

BALANCE CALIBRATION CHECK

Weights # 22370 and 7718

	Date	☑ for Weight # verification	Weight 1 1 g (0.9900 – 1.0100)	Weight 2 100 g (99.00 – 101.00)	Weight 3 2000 g (1980 – 2020)	Initials	Acceptable? (Y/N)
	7/19/17	✓	1.00	100.00	2000.00	KBF	Y
	7/20/17	✓	1.01	100.01	2000.04	BSS	Y
	7/21/17	✓	0.99	100.00	2000.00	EL	Y
	7.24.17	✓	1.00	100.01	2000.01	BP	Y
	7/24/17	✓	1.00	100.01	2000.00	EL	Y
	7/25/17	✓	1.00	99.99	2000.02	HB	Y
	7.26.17	✓	1.00	100.00	2000.01	BP	Y
	7/27/17	✓	1.00	99.99	2000.00	HB	Y
	7/28/17	✓	0.99	100.00	2000.02	KBF	Y
	7/31/17	✓	1.00	100.01	2000.04	HB	Y
	8/1/17	✓	1.00	100.00	2000.00	HB	Y
	8/2/17	✓	0.99	100.00	2000.01	HB	Y
Ⓐ	8/3/17	✓	1.00	100.00	2000.05	HB	Y
	8/4/17	✓	1.00	100.04	2000.06	EL	Y
Ⓐ	8/7/17		1.00	100.00	1999.99	KBF	Y

Comments: Ⓐ calibration weights from air lab used because soil lab weights sent out for calibration. HB 8/3/17

Batch: B7G0079

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1700875-01	0.11821	NA	NA	1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-02	0.11912			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-03	0.11822			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-04	0.11793			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700875-05	0.11994			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-01	0.11935			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-02	0.11989			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-03	0.11984			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700884-04	0.11984			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-01	0.08342			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-02	0.09939			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-03	0.11445			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-04	0.12081			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-05	0.11776			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
1700887-06	0.10593			1000	20-Jul-17 11:18	BAP			Aqueous	537M PFAS DOD (LOQ as
B7G0079-BLK1	0.125			1000	20-Jul-17 11:18	BAP				QC
B7G0079-BS1	0.125			1000	20-Jul-17 11:18	BAP	17D2705	10		QC

HB 7/21/17

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOO as mRL)

B7G0079

Chemist: BP

Prep Date/Time: ~~18~~ 20-Jul-17 11:18

BP 7.20.17

Prepared using: LCMS - SPE Extraction-LCMS

C	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE B7G0079	RS CHEM/WIT DATE
☐	B7G0079-BLK1	5	2	0	~~HB 7/18/17~~ 2	NA	NA	(0.125)	BP 7.20.17	7.20.17	BP 7.20.17
☐	B7G0079-BS1	5	2	0	~~HB 7/18/17~~ 2	↓	↓	↓	↓	↓	↓
☐	1700875-01 (A)	6	2	0	3	144.93	26.72	0.11821			
☐	1700875-02 (A)	6	2	0	3	145.83	26.71	0.11912			
☐	1700875-03 (A)	6	2	0	3	144.94	26.72	0.11822			
☐	1700875-04	6	2	0	3	144.96	27.03	0.11793			
☐	1700875-05	5	2	0	2	146.55	26.61	0.11994			
☐	1700884-01 (A)	6	2	0	3	146.09	26.74	0.11935			
☐	1700884-02 (A)	5	2	0	2	145.69	26.71	0.11898			
☐	1700884-03	5	2	0	2	146.55	26.71	0.11984			
☐	1700884-04	5	2	0	2	146.70	26.86	0.11964			
☐	1700887-01 (A) (B) (C)	5	2	0	2	109.95	26.53	0.8342			
☐	1700887-02 (A) (B) (C)	6	2	0	3	125.99	26.60	0.09939			
☐	1700887-03	5	2	0	2	141.87	26.92	0.11945			
☐	1700887-04 (A) (B)	5	2	0	2	147.43	26.62	0.12081			
☐	1700887-05 (A) (B)	5	2	0	2	144.36	26.66	0.11776			

IS Name	NS Name	RS Name		
17G1307, 10uL (V6)	1702705, 10uL (V1)	17F3038, 10µL (V3)	SPE Chem: Strata X-AW 33µm 200mg 6mL Ele SOLV: 0.5% NH4OH in MeOH/MeOH Final Volume(s) 1mL	Check Out: Chemist/Date: HB 7/18/17 Check In: HB 7/18/17 ~~empty~~ HB 7/18/17 Balance ID: HRMS-8 pH Adjusted: Chemist/Date: HB 7/18/17

Comments: Assume 1 g = 1 mL (A) samples were centrifuged to remove particulate. HB 7/18/17 (B) samples had thick layer of particulate. HB 7/18/17
(C) limited sample amount after centrifuging particulate out. HB 7/18/17

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOO as mRL)

B7G0079

Chemist: BP

Prep Date/Time: 19 Jul-17 11:18

BP 7.20.17

Prepared using: LCMS - SPE Extraction-LCMS

C7G0079

C	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE	RS CHEM/WIT DATE
☐	1700887-06 (A)(B)	5	2	0	2	132.52	26.59	0.10593	BP 7.20.17	7.20.17	BP 7.20.17

IS Name	NS Name	RS Name		
1761307, 10uL (V6)	1702705, 10uL (V1)	17-7638, 10µL (V3)	SPE Chem: Strata XAW 33µ 200mg 6mL Ele SOLV: 0.5% NH4OH in MeOH/MeOH Final Volume(s) 1mL	Check Out: Chemist/Date: HB 7/18/17 Check In: HB 7/18/17 HB 7/18/17 Chemist/Date: empty Balance ID: HRMS-8 pH Adjusted: Chemist/Date: HB 7/18/17

Comments: Assume 1 g = 1 mL (A) sample was centrifuged to remove particulate. HB 7/18/17 (B) sample had thick layer of particulate. HB 7/18/17

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-2.qld

Last Altered: Monday, July 31, 2017 14:37:21 Pacific Daylight Time
Printed: Monday, July 31, 2017 14:39:02 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G1_2, Date: 31-Jul-2017, Time: 13:46:30, ID: ST170731G1-1 PFC CS-1 17G3102, Description: PFC CS-1 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	1.28e3	2.20e4		1.000	4.61	0.479	95.9
2	2	N-MeFOSAA	570.1 > 419.0	4.90e2	6.46e3		1.000	4.99	0.419	83.7
3	3	PFDS	598.8 > 98.7	6.36e2	2.91e4		1.000	5.15	0.636	127.1
4	4	PFUnA	563 > 518.9	1.88e3	2.91e4		1.000	5.12	0.572	114.4
5	5	N-EtFOSAA	584.2 > 419.0	2.71e2	8.21e3		1.000	5.12	0.366	73.2
6	6	PFDoA	612.9 > 318.8	1.45e2	3.92e4		1.000	5.35	0.375	75.1
7	7	PFTrDA	662.9 > 618.9	1.94e3	0.00e0		1.000	5.56	0.517	103.4
8	8	PFTeDA	712.9 > 668.8	2.22e3	4.01e4		1.000	5.73	0.595	118.9
9	9	13C8-PFOSA	506.1 > 77.7	2.20e4	2.13e4	1.146	1.000	4.61	11.2	90.0
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.46e3	2.13e4	0.026	1.000	4.98	144	88.5
11	11	13C2-PFUnA	565 > 519.8	2.91e4	2.13e4	1.471	1.000	5.12	11.6	93.0
12	12	d5-N-EtFOSAA	589.3 > 419.0	8.21e3	2.13e4	0.031	1.000	5.11	155	95.3
13	13	13C2-PFDoA	615 > 569.7	3.92e4	2.13e4	1.887	1.000	5.35	12.2	97.5
14	14	13C2-PFTeDA	715 > 669.7	4.01e4	2.13e4	1.990	1.000	5.73	11.8	94.6
15	15	13C7-PFUnA	570.1 > 524.8	2.13e4	2.13e4	1.000	1.000	5.12	12.5	100.0

70-130

50-150

7/31/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 16:53:40 Pacific Daylight Time
Printed: Monday, July 31, 2017 16:53:54 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G1_1	IPA	31-Jul-17	13:33:35
2	170731G1_2	ST170731G1-1 PFC CS-1 17G3102	31-Jul-17	13:46:30
3	170731G1_3	IPA	31-Jul-17	13:59:06
4	170731G1_4	B7G0079-BS1 OPR 0.125	31-Jul-17	14:11:43
5	170731G1_5	IPA	31-Jul-17	14:24:17
6	170731G1_6	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	14:54:16
7	170731G1_7	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	15:06:51
8	170731G1_8	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	15:19:26
9	170731G1_9	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	15:32:02
10	170731G1_10	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	15:44:39
11	170731G1_11	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	15:57:16
12	170731G1_12	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	16:09:57
13	170731G1_13	IPA	31-Jul-17	16:22:30
14	170731G1_14	ST170731G1-2 PFC CS3 17G3102	31-Jul-17	16:35:07
15	170731G1_15			

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G1\170731G1-14.qld

Last Altered: Monday, July 31, 2017 16:52:30 Pacific Daylight Time
Printed: Monday, July 31, 2017 16:53:26 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G1_14, Date: 31-Jul-2017, Time: 16:35:07, ID: ST170731G1-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	2.05e4	2.00e4		1.000	4.61	10.4	103.8
2	2	N-MeFOSAA	570.1 > 419.0	1.06e4	6.65e3		1.000	4.99	8.91	89.1
3	3	PFDS	598.8 > 98.7	1.10e4	2.77e4		1.000	5.15	10.8	107.8
4	4	PFUnA	563 > 518.9	2.12e4	2.77e4		1.000	5.12	9.79	97.9
5	5	N-EtFOSAA	584.2 > 419.0	7.43e3	5.76e3		1.000	5.11	12.1	121.3
6	6	PFDoA	612.9 > 318.8	3.63e3	3.50e4		1.000	5.35	10.7	106.6
7	7	PFTrDA	662.9 > 618.9	3.48e4	0.00e0		1.000	5.56	9.63	96.3
8	8	PFTeDA	712.9 > 668.8	2.96e4	3.97e4		1.000	5.73	10.1	101.2
9	9	13C8-PFOSA	506.1 > 77.7	2.00e4	1.93e4	1.146	1.000	4.61	11.3	90.6
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.65e3	1.93e4	0.026	1.000	4.98	163	100.5
11	11	13C2-PFUnA	565 > 519.8	2.77e4	1.93e4	1.471	1.000	5.12	12.2	97.8
12	12	d5-N-EtFOSAA	589.3 > 419.0	5.76e3	1.93e4	0.031	1.000	5.11	120	73.9
13	13	13C2-PFDoA	615 > 569.7	3.50e4	1.93e4	1.887	1.000	5.35	12.0	96.1
14	14	13C2-PFTeDA	715 > 669.7	3.97e4	1.93e4	1.990	1.000	5.73	12.9	103.5
15	15	13C7-PFUnA	570.1 > 524.8	1.93e4	1.93e4	1.000	1.000	5.12	12.5	100.0

70-130

50-150

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Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 16:53:40 Pacific Daylight Time
Printed: Monday, July 31, 2017 16:53:54 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G1_1	IPA	31-Jul-17	13:33:35
2	170731G1_2	ST170731G1-1 PFC CS-1 17G3102	31-Jul-17	13:46:30
3	170731G1_3	IPA	31-Jul-17	13:59:06
4	170731G1_4	B7G0079-BS1 OPR 0.125	31-Jul-17	14:11:43
5	170731G1_5	IPA	31-Jul-17	14:24:17
6	170731G1_6	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	14:54:16
7	170731G1_7	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	15:06:51
8	170731G1_8	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	15:19:26
9	170731G1_9	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	15:32:02
10	170731G1_10	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	15:44:39
11	170731G1_11	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	15:57:16
12	170731G1_12	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	16:09:57
13	170731G1_13	IPA	31-Jul-17	16:22:30
14	170731G1_14	ST170731G1-2 PFC CS3 17G3102	31-Jul-17	16:35:07
15	170731G1_15			

Quantify Sample Summary Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-2.qld

Last Altered: Tuesday, August 01, 2017 13:07:42 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 13:09:20 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G3_2, Date: 31-Jul-2017, Time: 17:22:07, ID: ST170731G3-1 PFC CS3 17G3102, Description: PFC CS3 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	1.98e4	1.99e4		1.000	4.61	10.1	101.0
2	2	N-MeFOSAA	570.1 > 419.0	1.07e4	6.23e3		1.000	4.99	9.66	96.6
3	3	PFDS	598.8 > 98.7	1.05e4	2.87e4		1.000	5.15	10.0	100.1
4	4	PFUnA	563 > 518.9	2.17e4	2.87e4		1.000	5.12	9.70	97.0
5	5	N-EtFOSAA	584.2 > 419.0	7.40e3	8.06e3		1.000	5.11	8.60	86.0
6	6	PFDoA	612.9 > 318.8	3.53e3	3.72e4		1.000	5.35	9.74	97.4
7	7	PFTrDA	662.9 > 618.9	3.42e4	0.00e0		1.000	5.56	9.44	94.4
8	8	PFTeDA	712.9 > 668.8	2.97e4	3.76e4		1.000	5.73	10.8	107.6
9	9	13C8-PFOSA	506.1 > 77.7	1.99e4	1.92e4	1.146	1.000	4.61	11.3	90.7
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.23e3	1.92e4	0.026	1.000	4.98	154	94.8
11	11	13C2-PFUnA	565 > 519.8	2.87e4	1.92e4	1.471	1.000	5.12	12.7	101.6
12	12	d5-N-EtFOSAA	589.3 > 419.0	8.06e3	1.92e4	0.031	1.000	5.11	169	103.9
13	13	13C2-PFDoA	615 > 569.7	3.72e4	1.92e4	1.887	1.000	5.35	12.9	102.9
14	14	13C2-PFTeDA	715 > 669.7	3.76e4	1.92e4	1.990	1.000	5.73	12.3	98.5
15	15	13C7-PFUnA	570.1 > 524.8	1.92e4	1.92e4	1.000	1.000	5.12	12.5	100.0

70-130

50-150

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8/2/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Tuesday, August 01, 2017 13:19:59 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 13:20:16 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G3_1	IPA	31-Jul-17	17:09:02
2	170731G3_2	ST170731G3-1 PFC CS3 17G3102	31-Jul-17	17:22:07
3	170731G3_3	IPA	31-Jul-17	17:34:40
4	170731G3_4	1700875-01 MW-42S-20170713 0.11821	31-Jul-17	17:47:16
5	170731G3_5	1700875-02 MW-14BR-20170713 0.11912	31-Jul-17	17:59:53
6	170731G3_6	1700875-03 MW-51BR-20170713 0.11822	31-Jul-17	18:12:28
7	170731G3_7	1700875-04 DUP-06-20170713 0.11793	31-Jul-17	18:25:03
8	170731G3_8	1700875-05 MW-11S-20170713 0.11994	31-Jul-17	18:37:39
9	170731G3_9	1700884-01 MW-37BR-20170714 0.11935	31-Jul-17	18:50:15
10	170731G3_10	1700884-02 MW-32BR-20170714 0.11989	31-Jul-17	19:02:54
11	170731G3_11	1700884-03 MW-35S-20170714 0.11984	31-Jul-17	19:15:28
12	170731G3_12	1700884-04 FRB-02-20170714 0.11984	31-Jul-17	19:28:02
13	170731G3_13	IPA	31-Jul-17	19:40:37
14	170731G3_14	ST170731G3-2 PFC CS3 17G3102	31-Jul-17	19:53:14
15	170731G3_15	IPA	31-Jul-17	20:05:47

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G3\170731G3-14.qld

Last Altered: Tuesday, August 01, 2017 13:15:50 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 13:16:56 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170731G3_14, Date: 31-Jul-2017, Time: 19:53:14, ID: ST170731G3-2 PFC CS3 17G3102, Description: PFC CS3 17G3102 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	1.94e4	1.99e4		1.000	4.62	9.87	98.7
2	2	N-MeFOSAA	570.1 > 419.0	1.01e4	6.80e3		1.000	4.99	8.34	83.4
3	3	PFDS	598.8 > 98.7	1.08e4	2.88e4		1.000	5.16	10.2	101.9
4	4	PFUnA	563 > 518.9	2.09e4	2.88e4		1.000	5.12	9.28	92.8
5	5	N-EtFOSAA	584.2 > 419.0	7.36e3	7.29e3		1.000	5.11	9.46	94.6
6	6	PFDoA	612.9 > 318.8	3.61e3	3.51e4		1.000	5.36	10.6	105.6
7	7	PFTrDA	662.9 > 618.9	3.52e4	0.00e0		1.000	5.56	9.97	99.7
8	8	PFTeDA	712.9 > 668.8	3.11e4	3.79e4		1.000	5.74	11.2	111.7
9	9	13C8-PFOSA	506.1 > 77.7	1.99e4	2.07e4	1.146	1.000	4.62	10.5	84.1
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.80e3	2.07e4	0.026	1.000	4.99	156	96.0
11	11	13C2-PFUnA	565 > 519.8	2.88e4	2.07e4	1.471	1.000	5.12	11.9	94.9
12	12	d5-N-EtFOSAA	589.3 > 419.0	7.29e3	2.07e4	0.031	1.000	5.11	142	87.3
13	13	13C2-PFDoA	615 > 569.7	3.51e4	2.07e4	1.887	1.000	5.36	11.2	89.9
14	14	13C2-PFTeDA	715 > 669.7	3.79e4	2.07e4	1.990	1.000	5.73	11.5	92.2
15	15	13C7-PFUnA	570.1 > 524.8	2.07e4	2.07e4	1.000	1.000	5.12	12.5	100.0

70-130

50-130

8/1/17

AC 8/2/17

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Tuesday, August 01, 2017 13:19:59 Pacific Daylight Time
Printed: Tuesday, August 01, 2017 13:20:16 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170731G3_1	IPA	31-Jul-17	17:09:02
2	170731G3_2	ST170731G3-1 PFC CS3 17G3102	31-Jul-17	17:22:07
3	170731G3_3	IPA	31-Jul-17	17:34:40
4	170731G3_4	1700875-01 MW-42S-20170713 0.11821	31-Jul-17	17:47:16
5	170731G3_5	1700875-02 MW-14BR-20170713 0.11912	31-Jul-17	17:59:53
6	170731G3_6	1700875-03 MW-51BR-20170713 0.11822	31-Jul-17	18:12:28
7	170731G3_7	1700875-04 DUP-06-20170713 0.11793	31-Jul-17	18:25:03
8	170731G3_8	1700875-05 MW-11S-20170713 0.11994	31-Jul-17	18:37:39
9	170731G3_9	1700884-01 MW-37BR-20170714 0.11935	31-Jul-17	18:50:15
10	170731G3_10	1700884-02 MW-32BR-20170714 0.11989	31-Jul-17	19:02:54
11	170731G3_11	1700884-03 MW-35S-20170714 0.11984	31-Jul-17	19:15:28
12	170731G3_12	1700884-04 FRB-02-20170714 0.11984	31-Jul-17	19:28:02
13	170731G3_13	IPA	31-Jul-17	19:40:37
14	170731G3_14	ST170731G3-2 PFC CS3 17G3102	31-Jul-17	19:53:14
15	170731G3_15	IPA	31-Jul-17	20:05:47

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-4.qld

Last Altered: Monday, July 31, 2017 10:38:20 Pacific Daylight Time
Printed: Monday, July 31, 2017 16:59:08 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170731G2_4, Date: 31-Jul-2017, Time: 10:12:39, ID: ST170731G2-2 PFC CS0 17G2609, Description: PFC CS0 17G2609 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	2.04e3	2.71e4		1.000	1.72	1.20	119.5
2	2	PFPeA	263.0 > 218.8	9.76e2	1.04e4		1.000	2.61	1.02	102.1
3	3	PFBS	299.0 > 79.7	1.05e3	6.54e3		1.000	2.88	0.876	87.6
4	4	PFHxA	312.9 > 268.9	1.47e3	8.61e3		1.000	3.27	1.04	104.2
5	5	PFHpA	363 > 318.9	2.10e3	1.12e4		1.000	3.81	1.07	107.2
6	6	PFHxS	398.9 > 79.6	1.01e3	6.09e3		1.000	3.94	1.10	110.0
7	7	PFOA	413.0 > 368.7	2.05e3	2.27e4		1.000	4.23	1.30	129.6
8	8	PFNA	463.0 > 418.8	1.88e3	1.07e4		1.000	4.57	0.914	91.4
9	9	PFOS	499.0 >79.9	3.63e2	1.03e4		1.000	4.63	0.872	87.2
10	10	PFDA	512.7 > 219.0	2.82e2	1.41e4		1.000	4.86	1.13	112.7
11	11	13C3-PFBA	215.9 > 171.8	2.71e4	2.54e4	1.183	1.000	1.71	11.3	90.3
12	12	13C3-PFBS	302.0 > 98.8	6.54e3	2.35e4	0.263	1.000	2.88	13.2	105.7
13	13	13C3-PFPeA	266.0 > 221.8	1.04e4	2.35e4	0.446	1.000	2.61	12.4	99.0
14	14	13C2-PFHxA	315.0 > 269.8	8.61e3	2.35e4	0.361	1.000	3.27	12.7	101.4
15	15	13C4-PFHpA	367.2 > 321.8	1.12e4	2.35e4	0.475	1.000	3.81	12.5	100.0
16	16	18O2-PFHxS	403 > 102.6	6.09e3	1.57e4	0.411	1.000	3.93	11.8	94.4
17	17	13C2-PFOA	414.9 > 369.7	2.27e4	8.50e3	2.843	1.000	4.23	11.7	94.0
18	18	13C5-PFNA	468.2 > 422.9	1.07e4	1.23e4	0.854	1.000	4.57	12.7	101.9
19	19	13C2-PFDA	514.8 > 469.7	1.41e4	9.51e3	1.742	1.000	4.86	10.6	84.8
20	20	13C8-PFOS	507.0 > 79.9	1.03e4	1.14e4	0.927	1.000	4.63	12.2	97.6
21	21	13C4-PFBA	216.9 > 171.8	2.54e4	2.54e4	1.000	1.000	1.71	12.5	100.0
22	22	13C5-PFHxA	318>272.9	2.35e4	2.35e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.57e4	1.57e4	1.000	1.000	3.93	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	8.50e3	8.50e3	1.000	1.000	4.22	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	1.23e4	1.23e4	1.000	1.000	4.57	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	1.14e4	1.14e4	1.000	1.000	4.63	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	9.51e3	9.51e3	1.000	1.000	4.86	12.5	100.0

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7/31/17

Quantify Compound Summary Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 17:00:48 Pacific Daylight Time
Printed: Monday, July 31, 2017 17:00:55 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170731G2_1	IPA	31-Jul-17	09:32:17
2	170731G2_2	(A) ST170731G2-1 PFC CS-1 17G3103	31-Jul-17	09:44:30
3	170731G2_3	IPA	31-Jul-17	09:57:00
4	170731G2_4	ST170731G2-2 PFC CS0 17G2609	31-Jul-17	10:12:39
5	170731G2_5	IPA	31-Jul-17	10:24:52
6	170731G2_6	B7G0079-BS1 OPR 0.125	31-Jul-17	10:37:29
7	170731G2_7	IPA	31-Jul-17	10:50:03
8	170731G2_8	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	11:02:39
9	170731G2_9	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	11:15:11
10	170731G2_10	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	11:27:45
11	170731G2_11	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	11:40:15
12	170731G2_12	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	11:52:47
13	170731G2_13	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	12:05:21
14	170731G2_14	IPA	31-Jul-17	12:17:54
15	170731G2_15	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	12:30:29
16	170731G2_16	1700887-05@5X Building 110-GW-110GW01-...	31-Jul-17	12:43:01
17	170731G2_17	IPA	31-Jul-17	12:55:34
18	170731G2_18	ST170731G2-3 PFC CS3 17G3104	31-Jul-17	13:08:18
19	170731G2_19	IPA	31-Jul-17	13:20:57

(A) INJECTION NOT USED. KM 7/31/17

Dataset: U:\G1.PRO\Results\2017\170731G2\170731G2-18.qld

Last Altered: Monday, July 31, 2017 13:41:38 Pacific Daylight Time
Printed: Monday, July 31, 2017 16:59:22 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170731G2_18, Date: 31-Jul-2017, Time: 13:08:18, ID: ST170731G2-3 PFC CS3 17G3104, Description: PFC CS3 17G3104 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.58e4	2.75e4		1.000	1.65	9.51	95.1
2	2	PFPeA	263.0 > 218.8	7.67e3	9.65e3		1.000	2.61	8.98	89.8
3	3	PFBS	299.0 > 79.7	7.98e3	5.93e3		1.000	2.89	10.1	100.9
4	4	PFHxA	312.9 > 268.9	1.18e4	9.05e3		1.000	3.27	8.51	85.1
5	5	PFHpA	363 > 318.9	1.70e4	1.11e4		1.000	3.81	9.73	97.3
6	6	PFHxS	398.9 > 79.6	8.10e3	6.04e3		1.000	3.94	9.36	93.6
7	7	PFOA	413.0 > 368.7	1.57e4	2.40e4		1.000	4.23	10.2	101.7
8	8	PFNA	463.0 > 418.8	1.73e4	1.05e4		1.000	4.57	8.85	88.5
9	9	PFOS	499.0 >79.9	3.95e3	1.26e4		1.000	4.63	8.24	82.4
10	10	PFDA	512.7 > 219.0	2.93e3	2.04e4		1.000	4.86	8.98	89.8
11	11	13C3-PFBA	215.9 > 171.8	2.75e4	1.93e4	1.183	1.000	1.64	15.1	121.0
12	12	13C3-PFBS	302.0 > 98.8	5.93e3	1.93e4	0.263	1.000	2.89	14.6	116.8
13	13	13C3-PFPeA	266.0 > 221.8	9.65e3	1.93e4	0.446	1.000	2.61	14.0	111.9
14	14	13C2-PFHxA	315.0 > 269.8	9.05e3	1.93e4	0.361	1.000	3.27	16.3	130.1
15	15	13C4-PFHpA	367.2 > 321.8	1.11e4	1.93e4	0.475	1.000	3.81	15.1	120.5
16	16	18O2-PFHxS	403 > 102.6	6.04e3	1.20e4	0.411	1.000	3.94	15.3	122.7
17	17	13C2-PFOA	414.9 > 369.7	2.40e4	6.61e3	2.843	1.000	4.23	16.0	127.7
18	18	13C5-PFNA	468.2 > 422.9	1.05e4	9.53e3	0.854	1.000	4.57	16.2	129.5
19	19	13C2-PFDA	514.8 > 469.7	2.04e4	1.05e4	1.742	1.000	4.86	14.0	111.9
20	20	13C8-PFOS	507.0 > 79.9	1.26e4	1.12e4	0.927	1.000	4.63	15.2	121.6
21	21	13C4-PFBA	216.9 > 171.8	1.93e4	1.93e4	1.000	1.000	1.64	12.5	100.0
22	22	13C5-PFHxA	318>272.9	1.93e4	1.93e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.20e4	1.20e4	1.000	1.000	3.94	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	6.61e3	6.61e3	1.000	1.000	4.23	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	9.53e3	9.53e3	1.000	1.000	4.57	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	1.12e4	1.12e4	1.000	1.000	4.63	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	1.05e4	1.05e4	1.000	1.000	4.86	12.5	100.0

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Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 17:00:48 Pacific Daylight Time
Printed: Monday, July 31, 2017 17:00:55 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170731G2_1	IPA	31-Jul-17	09:32:17
2	170731G2_2	(A) ST170731G2-1 PFC CS-1 17G3103	31-Jul-17	09:44:30
3	170731G2_3	IPA	31-Jul-17	09:57:00
4	170731G2_4	ST170731G2-2 PFC CS0 17G2609	31-Jul-17	10:12:39
5	170731G2_5	IPA	31-Jul-17	10:24:52
6	170731G2_6	B7G0079-BS1 OPR 0.125	31-Jul-17	10:37:29
7	170731G2_7	IPA	31-Jul-17	10:50:03
8	170731G2_8	B7G0079-BLK1 Method Blank 0.125	31-Jul-17	11:02:39
9	170731G2_9	1700887-01 IRPSite 6-GW-06GW01-2017071...	31-Jul-17	11:15:11
10	170731G2_10	1700887-02 IRPSite 6-GW-06GW02-2017071...	31-Jul-17	11:27:45
11	170731G2_11	1700887-03 IRPSite 6-GW-FRB01-20170712 ...	31-Jul-17	11:40:15
12	170731G2_12	1700887-04 Site 33-GW-33GW01-20170712 ...	31-Jul-17	11:52:47
13	170731G2_13	1700887-05 Building 110-GW-110GW01-2017...	31-Jul-17	12:05:21
14	170731G2_14	IPA	31-Jul-17	12:17:54
15	170731G2_15	1700887-06 IRPSite 6-GW-06FD01-20170712...	31-Jul-17	12:30:29
16	170731G2_16	1700887-05@5X Building 110-GW-110GW01-...	31-Jul-17	12:43:01
17	170731G2_17	IPA	31-Jul-17	12:55:34
18	170731G2_18	ST170731G2-3 PFC CS3 17G3104	31-Jul-17	13:08:18
19	170731G2_19	IPA	31-Jul-17	13:20:57

(A) INJECTION NOT USED. KM 7/31/17

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-2.qld

Last Altered: Friday, August 04, 2017 11:05:45 Pacific Daylight Time
Printed: Friday, August 04, 2017 11:06:28 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170803G2_2, Date: 03-Aug-2017, Time: 17:07:10, ID: ST170803G2-1 PFC CS3 17H0329, Description: PFC CS3 17H0329 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.49e4	2.48e4		1.000	1.63	10.0	100.1
2	2	PFPeA	263.0 > 218.8	7.14e3	8.84e3		1.000	2.60	9.13	91.3
3	3	PFBS	299.0 > 79.7	6.90e3	5.32e3		1.000	2.89	9.73	97.3
4	4	PFHxA	312.9 > 268.9	1.09e4	7.71e3		1.000	3.27	9.19	91.9
5	5	PFHpA	363 > 318.9	1.34e4	8.88e3		1.000	3.80	9.55	95.5
6	6	PFHxS	398.9 > 79.6	6.66e3	4.90e3		1.000	3.93	9.49	94.9
7	7	PFOA	413.0 > 368.7	1.16e4	1.80e4		1.000	4.23	10.0	100.1
8	8	PFNA	463.0 > 418.8	1.23e4	8.18e3		1.000	4.57	8.12	81.2
9	9	PFOS	499.0 >79.9	3.08e3	8.64e3		1.000	4.64	9.41	94.1
10	10	PFDA	512.7 > 219.0	1.64e3	1.18e4		1.000	4.87	8.68	86.8
11	11	13C3-PFBA	215.9 > 171.8	2.48e4	1.77e4	1.183	1.000	1.63	14.8	118.1
12	12	13C3-PFBS	302.0 > 98.8	5.32e3	1.68e4	0.263	1.000	2.89	15.1	120.8
13	13	13C3-PFPeA	266.0 > 221.8	8.84e3	1.68e4	0.446	1.000	2.60	14.8	118.1
14	14	13C2-PFHxA	315.0 > 269.8	7.71e3	1.68e4	0.361	1.000	3.27	16.0	127.6
15	15	13C4-PFHpA	367.2 > 321.8	8.88e3	1.68e4	0.475	1.000	3.80	13.9	111.5
16	16	18O2-PFHxS	403 > 102.6	4.90e3	9.18e3	0.411	1.000	3.93	16.3	130.1
17	17	13C2-PFOA	414.9 > 369.7	1.80e4	5.51e3	2.843	1.000	4.23	14.4	115.1
18	18	13C5-PFNA	468.2 > 422.9	8.18e3	7.16e3	0.854	1.000	4.57	16.7	133.8
19	19	13C2-PFDA	514.8 > 469.7	1.18e4	6.57e3	1.742	1.000	4.86	12.9	103.4
20	20	13C8-PFOS	507.0 > 79.9	8.64e3	7.83e3	0.927	1.000	4.64	14.9	119.0
21	21	13C4-PFBA	216.9 > 171.8	1.77e4	1.77e4	1.000	1.000	1.63	12.5	100.0
22	22	13C5-PFHxA	318>272.9	1.68e4	1.68e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	9.18e3	9.18e3	1.000	1.000	3.93	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	5.51e3	5.51e3	1.000	1.000	4.23	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	7.16e3	7.16e3	1.000	1.000	4.57	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	7.83e3	7.83e3	1.000	1.000	4.64	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	6.57e3	6.57e3	1.000	1.000	4.86	12.5	100.0

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	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
1	170803G2_1	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
2	170803G2_2	ST170803G2-1 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
3	170803G2_3	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
4	170803G2_4	B7H0015-BS1 OPR 1	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:1
5	170803G2_5	B7H0018-BS1 OPR 0.125	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:2
6	170803G2_6	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
7	170803G2_7	B7H0015-BLK1 Method Blank 1	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:3
8	170803G2_8	B7H0018-BLK1 Method Blank 0.125	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:4
9	170803G2_9	1700884-01 MW-37BR-20170714 0.11935	MW-37BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:5
10	170803G2_10	1700884-02 MW-32BR-20170714 0.11989	MW-32BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:6
11	170803G2_11	1700884-03 MW-35S-20170714 0.11984	MW-35S-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:7
12	170803G2_12	1700884-04 FRB-02-20170714 0.11984	FRB-02-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:8
13	170803G2_13	1700942-02@5X BANGR-05-SB03-10-12 1	BANGR-05-SB03-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:9
14	170803G2_14	1700942-03@5X BANGR-07-SB02-2-4 1	BANGR-07-SB02-2-4	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:10
15	170803G2_15	1700942-04@5X BANGR-07-SB02-8-9 1	BANGR-07-SB02-8-9	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:11
16	170803G2_16	1700942-07@5X BANGR-08-SB03-0-2 1	BANGR-08-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:12
17	170803G2_17	1700955-01 BANGR-05-SB01-0-2 1	BANGR-05-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:13
18	170803G2_18	1700955-02 BANGR-05-SB01-10-12 1	BANGR-05-SB01-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:14
19	170803G2_19	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
20	170803G2_20	ST170803G2-2 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
21	170803G2_21	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
22	170803G2_22	1700955-03 BANGR-05-SB02-0-2 1	BANGR-05-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:15
23	170803G2_23	B7H0015-MS1 Matrix Spike 1	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:16
24	170803G2_24	B7H0015-MSD1 Matrix Spike Dup 1	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:17
25	170803G2_25	1700955-04 BANGR-05-SB02-10-11 1	BANGR-05-SB02-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:18
26	170803G2_26	1700955-05 BANGR-05-SO-DUP05-072717 1	BANGR-05-SO-DUP05-072717	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:19
27	170803G2_27	1700955-06 BANGR-06-SB03-0-2 1	BANGR-06-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:20
28	170803G2_28	1700955-07 BANGR-06-SB03-9-10 1	BANGR-06-SB03-9-10	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:21
29	170803G2_29	1700955-08 BANGR-08-SB01-0-2 1	BANGR-08-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:22
30	170803G2_30	1700955-09 BANGR-08-SB01-13-15 1	BANGR-08-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:23
31	170803G2_31	1700955-10 BANGR-08-SB02-0-2 1	BANGR-08-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:24
32	170803G2_32	1700955-11 BANGR-08-SB02-13-15 1	BANGR-08-SB02-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:25
33	170803G2_33	1700955-13 BANGR-03-SB03-0-2 1	BANGR-03-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:26
34	170803G2_34	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
35	170803G2_35	ST170803G2-3 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
36	170803G2_36	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
37	170803G2_37	1700955-14 BANGR-03-SB03-10-11 1	BANGR-03-SB03-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:27
38	170803G2_38	1700955-15 BANGR-03-SO-DUP03-072817 1	BANGR-03-SO-DUP03-072817	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:28
39	170803G2_39	1700955-16 BANGR-06-SB01-0-2 1	BANGR-06-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:29
40	170803G2_40	1700955-17 BANGR-06-SB01-13-15 1	BANGR-06-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:30

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
41	170803G2_41	1700925-04RE1 I001MW52S-170724 0.1192	I001MW52S-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:31
42	170803G2_42	B7H0018-MSD1 Matrix Spike Dup 0.125	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:32
43	170803G2_43	B7H0018-MS1 Matrix Spike 0.125	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:33
44	170803G2_44	1700925-05RE1 I001MW52X-170724 0.1174	I001MW52X-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:34
45	170803G2_45	1700962-01 East Tank 0.125	East Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:35
46	170803G2_46	1700962-02 West Tank 0.125	West Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:36
47	170803G2_47	1700962-03 MiddleTank 0.125	MiddleTank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:37
48	170803G2_48	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
49	170803G2_49	ST170803G2-4 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
50	170803G2_50	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47

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Quantify Sample Summary Report **MassLynx 4.1 SCN815**
Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170803G2\170803G2-20.qld

Last Altered: Friday, August 04, 2017 11:30:16 Pacific Daylight Time
Printed: Friday, August 04, 2017 11:30:35 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170803G2_20, Date: 03-Aug-2017, Time: 20:53:06, ID: ST170803G2-2 PFC CS3 17H0329, Description: PFC CS3 17H0329 A

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.59e4	3.28e4		1.000	1.63	8.02	80.2
2	2	PFPeA	263.0 > 218.8	8.73e3	1.12e4		1.000	2.61	8.81	88.1
3	3	PFBS	299.0 > 79.7	8.12e3	5.75e3		1.000	2.89	10.6	106.1
4	4	PFHxA	312.9 > 268.9	1.35e4	9.23e3		1.000	3.27	9.56	95.6
5	5	PFHpA	363 > 318.9	1.75e4	1.09e4		1.000	3.81	10.2	101.7
6	6	PFHxS	398.9 > 79.6	8.21e3	6.03e3		1.000	3.93	9.50	95.0
7	7	PFOA	413.0 > 368.7	1.60e4	2.51e4		1.000	4.23	9.87	98.7
8	8	PFNA	463.0 > 418.8	1.75e4	9.79e3		1.000	4.57	9.64	96.4
9	9	PFOS	499.0 >79.9	4.30e3	1.15e4		1.000	4.64	9.88	98.8
10	10	PFDA	512.7 > 219.0	2.76e3	1.88e4		1.000	4.87	9.17	91.7
11	11	13C3-PFBA	215.9 > 171.8	3.28e4	1.97e4	1.183	1.000	1.63	17.6	140.7
12	12	13C3-PFBS	302.0 > 98.8	5.75e3	2.01e4	0.263	1.000	2.89	13.6	108.8
13	13	13C3-PFPeA	266.0 > 221.8	1.12e4	2.01e4	0.446	1.000	2.61	15.6	124.8
14	14	13C2-PFHxA	315.0 > 269.8	9.23e3	2.01e4	0.361	1.000	3.27	15.9	127.3
15	15	13C4-PFHpA	367.2 > 321.8	1.09e4	2.01e4	0.475	1.000	3.80	14.3	114.1
16	16	18O2-PFHxS	403 > 102.6	6.03e3	1.14e4	0.411	1.000	3.93	16.1	128.4
17	17	13C2-PFOA	414.9 > 369.7	2.51e4	6.31e3	2.843	1.000	4.23	17.5	139.8
18	18	13C5-PFNA	468.2 > 422.9	9.79e3	9.08e3	0.854	1.000	4.58	15.8	126.4
19	19	13C2-PFDA	514.8 > 469.7	1.88e4	9.93e3	1.742	1.000	4.87	13.6	109.0
20	20	13C8-PFOS	507.0 > 79.9	1.15e4	1.08e4	0.927	1.000	4.64	14.4	114.9
21	21	13C4-PFBA	216.9 > 171.8	1.97e4	1.97e4	1.000	1.000	1.63	12.5	100.0
22	22	13C5-PFHxA	318>272.9	2.01e4	2.01e4	1.000	1.000	3.27	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.14e4	1.14e4	1.000	1.000	3.93	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	6.31e3	6.31e3	1.000	1.000	4.23	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	9.08e3	9.08e3	1.000	1.000	4.58	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	1.08e4	1.08e4	1.000	1.000	4.64	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	9.93e3	9.93e3	1.000	1.000	4.87	12.5	100.0

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50-150

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Sample List Report **MassLynx 4.1 SCN815**

Sample List: U:\G1.PRO\SampleDB\170803G2.SPL
Last Modified: Friday, August 04, 2017 11:02:35 Pacific Daylight Time
Printed: Friday, August 04, 2017 11:04:50 Pacific Daylight Time

Page Position (1, 1)

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
1	170803G2_1	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
2	170803G2_2	ST170803G2-1 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
3	170803G2_3	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
4	170803G2_4	B7H0015-BS1 OPR 1	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:1
5	170803G2_5	B7H0018-BS1 OPR 0.125	OPR	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:2
6	170803G2_6	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
7	170803G2_7	B7H0015-BLK1 Method Blank 1	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:3
8	170803G2_8	B7H0018-BLK1 Method Blank 0.125	Method Blank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:4
9	170803G2_9	1700884-01 MW-37BR-20170714 0.11935	MW-37BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:5
10	170803G2_10	1700884-02 MW-32BR-20170714 0.11989	MW-32BR-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:6
11	170803G2_11	1700884-03 MW-35S-20170714 0.11984	MW-35S-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:7
12	170803G2_12	1700884-04 FRB-02-20170714 0.11984	FRB-02-20170714	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:8
13	170803G2_13	1700942-02@5X BANGR-05-SB03-10-12 1	BANGR-05-SB03-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:9
14	170803G2_14	1700942-03@5X BANGR-07-SB02-2-4 1	BANGR-07-SB02-2-4	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:10
15	170803G2_15	1700942-04@5X BANGR-07-SB02-8-9 1	BANGR-07-SB02-8-9	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:11
16	170803G2_16	1700942-07@5X BANGR-08-SB03-0-2 1	BANGR-08-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:12
17	170803G2_17	1700955-01 BANGR-05-SB01-0-2 1	BANGR-05-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:13
18	170803G2_18	1700955-02 BANGR-05-SB01-10-12 1	BANGR-05-SB01-10-12	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:14
19	170803G2_19	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
20	170803G2_20	ST170803G2-2 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
21	170803G2_21	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
22	170803G2_22	1700955-03 BANGR-05-SB02-0-2 1	BANGR-05-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:15
23	170803G2_23	B7H0015-MS1 Matrix Spike 1	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:16
24	170803G2_24	B7H0015-MSD1 Matrix Spike Dup 1	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:17
25	170803G2_25	1700955-04 BANGR-05-SB02-10-11 1	BANGR-05-SB02-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:18
26	170803G2_26	1700955-05 BANGR-05-SO-DUP05-072717 1	BANGR-05-SO-DUP05-072717	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:19
27	170803G2_27	1700955-06 BANGR-06-SB03-0-2 1	BANGR-06-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:20
28	170803G2_28	1700955-07 BANGR-06-SB03-9-10 1	BANGR-06-SB03-9-10	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:21
29	170803G2_29	1700955-08 BANGR-08-SB01-0-2 1	BANGR-08-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:22
30	170803G2_30	1700955-09 BANGR-08-SB01-13-15 1	BANGR-08-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:23
31	170803G2_31	1700955-10 BANGR-08-SB02-0-2 1	BANGR-08-SB02-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:24
32	170803G2_32	1700955-11 BANGR-08-SB02-13-15 1	BANGR-08-SB02-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:25
33	170803G2_33	1700955-13 BANGR-03-SB03-0-2 1	BANGR-03-SB03-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:26
34	170803G2_34	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47
35	170803G2_35	ST170803G2-3 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
36	170803G2_36	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
37	170803G2_37	1700955-14 BANGR-03-SB03-10-11 1	BANGR-03-SB03-10-11	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:27
38	170803G2_38	1700955-15 BANGR-03-SO-DUP03-072817 1	BANGR-03-SO-DUP03-072817	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:28
39	170803G2_39	1700955-16 BANGR-06-SB01-0-2 1	BANGR-06-SB01-0-2	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:29
40	170803G2_40	1700955-17 BANGR-06-SB01-13-15 1	BANGR-06-SB01-13-15	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:30

	File Name	Sample ID	File Text	MS File	Inlet File	Bottle
41	170803G2_41	1700925-04RE1 I001MW52S-170724 0.1192	I001MW52S-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:31
42	170803G2_42	B7H0018-MSD1 Matrix Spike Dup 0.125	Matrix Spike Dup	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:32
43	170803G2_43	B7H0018-MS1 Matrix Spike 0.125	Matrix Spike	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:33
44	170803G2_44	1700925-05RE1 I001MW52X-170724 0.1174	I001MW52X-170724	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:34
45	170803G2_45	1700962-01 East Tank 0.125	East Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:35
46	170803G2_46	1700962-02 West Tank 0.125	West Tank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:36
47	170803G2_47	1700962-03 MiddleTank 0.125	MiddleTank	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:37
48	170803G2_48	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:48
49	170803G2_49	ST170803G2-4 PFC CS3 17H0329	PFC CS3 17H0329 A	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:46
50	170803G2_50	IPA	IPA	PFAS_L14or16_2trans_0630	PFC_2010enviro_6	2:47

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Vista Analytical Laboratory Q2

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:51:45 Pacific Daylight Time

Method: U:\G1.PRO\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA
Correlation coefficient: r = 0.999923, r^2 = 0.999847
Calibration curve: 1.21764 * x + 0.142512
Response type: Internal Std (Ref 9), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	4.60	8.11e2	2.39e4	0.231	-7.4	1.70
2	2	170728G1_3	0.500	4.60	1.43e3	2.42e4	0.489	-2.3	1.47
3	3	170728G1_4	1.00	4.59	2.68e3	2.52e4	0.976	-2.4	1.33
4	4	170728G1_5	2.00	4.60	3.04e3	1.39e4	2.14	6.9	1.37
5	5	170728G1_6	5.00	4.60	1.20e4	2.31e4	5.22	4.3	1.30
6	6	170728G1_7	10.0	4.60	2.24e4	2.24e4	10.1	1.5	1.25
7	7	170728G1_8	50.0	4.60	9.72e4	2.00e4	49.9	-0.3	1.22
8	8	170728G1_9	100	4.60	1.68e5	1.73e4	99.7	-0.3	1.22

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Compound name: N-MeFOSAA
Coefficient of Determination: R^2 = 0.999599
Calibration curve: -0.0288624 * x^2 + 29.2151 * x + 0.0851315
Response type: Internal Std (Ref 10), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	4.97	4.35e2	7.62e3	0.315	25.8	37.1
2	2	170728G1_3	0.500	4.97	4.93e2	6.79e3	0.401	-19.8	23.6
3	3	170728G1_4	1.00	4.97	1.20e3	7.24e3	0.920	-8.0	26.9
4	4	170728G1_5	2.00	4.97	1.56e3	4.15e3	2.09	4.6	30.5
5	5	170728G1_6	5.00	4.98	5.72e3	6.62e3	4.82	-3.5	28.1
6	6	170728G1_7	10.0	4.98	1.13e4	6.31e3	10.0	0.5	29.1
7	7	170728G1_8	50.0	4.97	5.31e4	6.17e3	50.3	0.6	27.9
8	8	170728G1_9	100	4.97	9.12e4	5.64e3	99.8	-0.2	26.3

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:51:45 Pacific Daylight Time

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999845
Calibration curve: 0.00050466 * x^2 + 0.454912 * x + -0.0161039
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.14	2.55e2	3.18e4	0.256	2.3	0.401
2	2	170728G1_3	0.500	5.14	5.53e2	3.12e4	0.522	4.4	0.443
3	3	170728G1_4	1.00	5.13	1.10e3	3.15e4	0.992	-0.8	0.436
4	4	170728G1_5	2.00	5.14	1.16e3	1.71e4	1.89	-5.3	0.423
5	5	170728G1_6	5.00	5.14	5.41e3	3.10e4	4.80	-4.0	0.436
6	6	170728G1_7	10.0	5.14	1.16e4	3.06e4	10.4	3.7	0.475
7	7	170728G1_8	50.0	5.14	4.81e4	2.51e4	49.9	-0.2	0.479
8	8	170728G1_9	100	5.14	8.47e4	2.10e4	100	0.0	0.505

Compound name: PFUnA
Correlation coefficient: r = 0.999740, r^2 = 0.999481
Calibration curve: 0.950369 * x + 0.261679
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.10	1.12e3	3.18e4	0.187	-25.2	1.76
2	2	170728G1_3	0.500	5.10	1.99e3	3.12e4	0.563	12.6	1.59
3	3	170728G1_4	1.00	5.10	3.01e3	3.15e4	0.982	-1.8	1.19
4	4	170728G1_5	2.00	5.10	3.37e3	1.71e4	2.32	16.0	1.23
5	5	170728G1_6	5.00	5.11	1.25e4	3.10e4	5.03	0.5	1.01
6	6	170728G1_7	10.0	5.11	2.34e4	3.06e4	9.78	-2.2	0.956
7	7	170728G1_8	50.0	5.11	9.65e4	2.51e4	50.3	0.6	0.961
8	8	170728G1_9	100	5.11	1.59e5	2.10e4	99.6	-0.4	0.949

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:51:45 Pacific Daylight Time

Compound name: N-EtFOSAA
Coefficient of Determination: R^2 = 0.999066
Calibration curve: -0.0319951 * x^2 + 17.7619 * x + -1.1299
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.10	1.67e2	9.15e3	0.230	-7.9	11.8
2	2	170728G1_3	0.500	5.10	4.69e2	8.77e3	0.554	10.7	17.4
3	3	170728G1_4	1.00	5.10	9.50e2	8.60e3	1.08	7.7	18.0
4	4	170728G1_5	2.00	5.10	1.01e3	5.41e3	1.78	-11.0	15.2
5	5	170728G1_6	5.00	5.10	4.06e3	8.08e3	4.70	-6.0	16.3
6	6	170728G1_7	10.0	5.10	8.84e3	7.73e3	10.7	7.4	18.6
7	7	170728G1_8	50.0	5.10	3.22e4	6.56e3	49.4	-1.3	16.0
8	8	170728G1_9	100	5.10	5.05e4	5.62e3	100	0.3	14.6

Compound name: PFDoA
Correlation coefficient: r = 0.999801, r^2 = 0.999601
Calibration curve: 0.121673 * x + 0.000589951
Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.34	1.06e2	4.00e4	0.268	7.4	0.133
2	2	170728G1_3	0.500	5.34	1.68e2	3.98e4	0.429	-14.2	0.106
3	3	170728G1_4	1.00	5.33	3.50e2	3.87e4	0.924	-7.6	0.113
4	4	170728G1_5	2.00	5.34	4.94e2	2.34e4	2.17	8.3	0.132
5	5	170728G1_6	5.00	5.34	2.00e3	4.03e4	5.09	1.7	0.124
6	6	170728G1_7	10.0	5.34	3.90e3	3.82e4	10.5	4.9	0.128
7	7	170728G1_8	50.0	5.34	1.59e4	3.26e4	50.2	0.4	0.122
8	8	170728G1_9	100	5.34	2.62e4	2.71e4	99.2	-0.8	0.121

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-CRV.qld

Last Altered: Monday, July 31, 2017 08:37:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:51:45 Pacific Daylight Time

Compound name: PFTrDA
Correlation coefficient: r = 0.999657, r^2 = 0.999315
Calibration curve: 1.21286 * x + -0.015692
Response type: Internal Std (Ref Multiple), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.54	9.84e2	0.00e0	0.261	4.3	1.20
2	2	170728G1_3	0.500	5.54	2.09e3	0.00e0	0.536	7.3	1.27
3	3	170728G1_4	1.00	5.54	3.83e3	0.00e0	0.970	-3.0	1.16
4	4	170728G1_5	2.00	5.54	4.37e3	0.00e0	1.98	-1.0	1.19
5	5	170728G1_6	5.00	5.55	2.00e4	0.00e0	5.06	1.3	1.23
6	6	170728G1_7	10.0	5.54	3.43e4	0.00e0	9.02	-9.8	1.09
7	7	170728G1_8	50.0	5.54	1.63e5	0.00e0	50.0	0.0	1.21
8	8	170728G1_9	100	5.54	2.78e5	0.00e0	101	0.9	1.22

Compound name: PFTeDA
Correlation coefficient: r = 0.998269, r^2 = 0.996541
Calibration curve: 0.904178 * x + 0.15515
Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170728G1_2	0.250	5.72	1.15e3	4.19e4	0.208	-17.0	1.37
2	2	170728G1_3	0.500	5.72	2.48e3	4.23e4	0.637	27.4	1.46
3	3	170728G1_4	1.00	5.72	4.25e3	4.37e4	1.17	17.3	1.22
4	4	170728G1_5	2.00	5.72	4.03e3	2.24e4	2.32	15.8	1.12
5	5	170728G1_6	5.00	5.72	1.83e4	4.14e4	5.94	18.9	1.11
6	6	170728G1_7	10.0	5.72	3.20e4	4.03e4	10.8	8.1	0.993
7	7	170728G1_8	50.0	5.72	1.27e5	3.47e4	50.4	0.9	0.915
8	8	170728G1_9	100	5.72	2.08e5	2.96e4	97.2	-2.8	0.881

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Monday, July 31, 2017 08:52:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:56:26 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Compound name: PFOSA

	Name	ID	Acq.Date	Acq.Time
1	170728G1_1	IPA	28-Jul-17	16:05:47
2	170728G1_2	ST170728G1-1 PFC CS-2 17G2824	28-Jul-17	16:18:24
3	170728G1_3	ST170728G1-2 PFC CS-1 17G2825	28-Jul-17	16:30:58
4	170728G1_4	ST170728G1-3 PFC CS0 17G2826	28-Jul-17	16:43:33
5	170728G1_5	ST170728G1-4 PFC CS1 17G2827	28-Jul-17	16:56:09
6	170728G1_6	ST170728G1-5 PFC CS2 17G2828	28-Jul-17	17:09:04
7	170728G1_7	ST170728G1-6 PFC CS3 17G2829	28-Jul-17	17:21:42
8	170728G1_8	ST170728G1-7 PFC CS4 17G2830	28-Jul-17	17:34:20
9	170728G1_9	ST170728G1-8 PFC CS5 17G2831	28-Jul-17	17:47:02
10	170728G1_10	IPA	28-Jul-17	17:59:40
11	170728G1_11	SS170728G1-1 PFC SSS 17G2823	28-Jul-17	18:12:17
12	170728G1_12	IPA	28-Jul-17	18:24:50

Vista Analytical Laboratory Q1

Dataset: U:\G1.PRO\Results\2017\170728G1\170728G1-11.qld

Last Altered: Monday, July 31, 2017 08:57:52 Pacific Daylight Time
Printed: Monday, July 31, 2017 08:58:52 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_B_2TRAN_0714.mdb 14 Jul 2017 15:36:03
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-28-17_B_2Trans_NEW.cdb 31 Jul 2017 08:37:52

Name: 170728G1_11, Date: 28-Jul-2017, Time: 18:12:17, ID: SS170728G1-1 PFC SSS 17G2823, Description: PFC SSS 17G2823 B

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFOSA	498.1 > 77.7	2.03e4	2.21e4		1.000	4.60	9.32	93.2
2	2	N-MeFOSAA	570.1 > 419.0	1.00e4	6.76e3		1.000	4.98	8.33	83.3
3	3	PFDS	598.8 > 98.7	9.53e3	2.79e4		1.000	5.14	9.34	93.4
4	4	PFUnA	563 > 518.9	2.08e4	2.79e4		1.000	5.11	9.55	95.5
5	5	N-EtFOSAA	584.2 > 419.0	7.19e3	7.64e3		1.000	5.10	8.82	88.2
6	6	PFDoA	612.9 > 318.8	3.57e3	3.74e4		1.000	5.34	9.79	97.9
7	7	PFTrDA	662.9 > 618.9	3.40e4	0.00e0		1.000	5.54	9.17	91.7
8	8	PFTeDA	712.9 > 668.8	3.05e4	3.91e4		1.000	5.72	10.6	106.3
9	9	13C8-PFOSA	506.1 > 77.7	2.21e4	1.86e4	1.146	1.000	4.60	13.0	103.8
10	10	d3-N-MeFOSAA	573.3 > 419.0	6.76e3	1.86e4	0.026	1.000	4.97	172	106.1
11	11	13C2-PFUnA	565 > 519.8	2.79e4	1.86e4	1.471	1.000	5.11	12.7	101.9
12	12	d5-N-EtFOSAA	589.3 > 419.0	7.64e3	1.86e4	0.031	1.000	5.09	165	101.8
13	13	13C2-PFDoA	615 > 569.7	3.74e4	1.86e4	1.887	1.000	5.34	13.3	106.7
14	14	13C2-PFTeDA	715 > 669.7	3.91e4	1.86e4	1.990	1.000	5.72	13.2	105.6
15	15	13C7-PFUnA	570.1 > 524.8	1.86e4	1.86e4	1.000	1.000	5.10	12.5	100.0

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JEA 7/31/17

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.PRO\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA
Correlation coefficient: r = 0.999824, r^2 = 0.999647
Calibration curve: 0.747533 * x + 0.048007
Response type: Internal Std (Ref 11), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	1.67	3.78e2	2.10e4	0.238	-5.0	0.903
2	2	170727G1_3	0.500	1.68	7.43e2	2.27e4	0.483	-3.4	0.818
3	3	170727G1_4	1.00	1.68	1.40e3	2.13e4	1.04	3.7	0.823
4	4	170727G1_5	2.00	1.67	2.90e3	2.25e4	2.09	4.3	0.804
5	5	170727G1_6	5.00	1.68	6.65e3	2.07e4	5.30	5.9	0.801
6	6	170727G1_7	10.0	1.67	1.45e4	2.55e4	9.44	-5.6	0.710
7	7	170727G1_8	50.0	1.68	6.31e4	2.11e4	49.9	-0.2	0.747
8	8	170727G1_9	100	1.68	1.32e5	2.19e4	100	0.3	0.750

Compound name: PFPeA
Correlation coefficient: r = 0.999667, r^2 = 0.999334
Calibration curve: 1.10054 * x + 0.0486908
Response type: Internal Std (Ref 13), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	2.62	1.86e2	7.64e3	0.233	-6.8	1.22
2	2	170727G1_3	0.500	2.63	3.85e2	8.33e3	0.481	-3.8	1.16
3	3	170727G1_4	1.00	2.63	7.66e2	7.75e3	1.08	7.8	1.23
4	4	170727G1_5	2.00	2.63	1.54e3	8.54e3	2.01	0.5	1.13
5	5	170727G1_6	5.00	2.63	3.71e3	7.82e3	5.34	6.8	1.18
6	6	170727G1_7	10.0	2.63	7.58e3	9.10e3	9.42	-5.8	1.04
7	7	170727G1_8	50.0	2.63	3.27e4	7.23e3	51.2	2.5	1.13
8	8	170727G1_9	100	2.62	6.37e4	7.31e3	98.9	-1.1	1.09

7/27/17

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Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Compound name: PFBS
Correlation coefficient: r = 0.999365, r^2 = 0.998731
Calibration curve: 1.60766 * x + 0.593256
Response type: Internal Std (Ref 12), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	2.91	1.56e2	4.70e3			1.66
2	2	170727G1_3	0.500	2.91	5.18e2	4.48e3	0.531	6.1	2.89
3	3	170727G1_4	1.00	2.91	7.48e2	4.63e3	0.886	-11.4	2.02
4	4	170727G1_5	2.00	2.91	1.51e3	5.33e3	1.83	-8.6	1.77
5	5	170727G1_6	5.00	2.91	3.40e3	4.48e3	5.53	10.7	1.90
6	6	170727G1_7	10.0	2.91	7.34e3	5.40e3	10.2	1.9	1.70
7	7	170727G1_8	50.0	2.91	2.94e4	4.38e3	51.7	3.4	1.67
8	8	170727G1_9	100	2.91	5.18e4	4.10e3	97.8	-2.2	1.58

Compound name: PFHxA
Correlation coefficient: r = 0.999065, r^2 = 0.998131
Calibration curve: 1.89981 * x + 0.153363
Response type: Internal Std (Ref 14), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	3.28	2.81e2	5.77e3	0.240	-4.0	2.44
2	2	170727G1_3	0.500	3.28	5.54e2	7.04e3	0.436	-12.7	1.97
3	3	170727G1_4	1.00	3.28	1.13e3	6.35e3	1.09	8.6	2.22
4	4	170727G1_5	2.00	3.28	2.22e3	6.86e3	2.04	2.2	2.02
5	5	170727G1_6	5.00	3.28	5.20e3	5.84e3	5.78	15.6	2.23
6	6	170727G1_7	10.0	3.28	1.11e4	7.89e3	9.21	-7.9	1.77
7	7	170727G1_8	50.0	3.28	4.46e4	6.09e3	48.2	-3.7	1.83
8	8	170727G1_9	100	3.29	8.84e4	5.71e3	102	1.8	1.94

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Compound name: PFHpA
Correlation coefficient: r = 0.999666, r^2 = 0.999332
Calibration curve: 1.94658 * x + 0.2548
Response type: Internal Std (Ref 15), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	3.81	3.78e2	7.45e3	0.195	-22.1	2.54
2	2	170727G1_3	0.500	3.82	8.08e2	8.06e3	0.513	2.6	2.51
3	3	170727G1_4	1.00	3.81	1.65e3	8.77e3	1.08	7.5	2.35
4	4	170727G1_5	2.00	3.81	3.13e3	8.92e3	2.13	6.3	2.20
5	5	170727G1_6	5.00	3.81	7.12e3	8.20e3	5.45	9.0	2.17
6	6	170727G1_7	10.0	3.81	1.60e4	1.05e4	9.60	-4.0	1.89
7	7	170727G1_8	50.0	3.81	6.42e4	8.09e3	50.8	1.7	1.98
8	8	170727G1_9	100	3.81	1.21e5	7.84e3	99.0	-1.0	1.93

Compound name: PFHxS
Correlation coefficient: r = 0.999617, r^2 = 0.999233
Calibration curve: 1.77848 * x + 0.109682
Response type: Internal Std (Ref 16), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	3.94	1.62e2	3.88e3	0.232	-7.1	2.09
2	2	170727G1_3	0.500	3.95	4.30e2	4.68e3	0.584	16.7	2.30
3	3	170727G1_4	1.00	3.94	6.02e2	4.35e3	0.911	-8.9	1.73
4	4	170727G1_5	2.00	3.94	1.37e3	4.63e3	2.02	1.2	1.85
5	5	170727G1_6	5.00	3.94	3.35e3	4.52e3	5.15	3.0	1.85
6	6	170727G1_7	10.0	3.94	7.31e3	5.48e3	9.31	-6.9	1.67
7	7	170727G1_8	50.0	3.94	3.04e4	4.15e3	51.4	2.8	1.83
8	8	170727G1_9	100	3.94	5.94e4	4.21e3	99.1	-0.9	1.76

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Compound name: PFOA
Correlation coefficient: r = 0.998786, r^2 = 0.997574
Calibration curve: 0.797511 * x + 0.0924786
Response type: Internal Std (Ref 17), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.24	3.42e2	1.63e4	0.213	-15.0	1.05
2	2	170727G1_3	0.500	4.24	7.66e2	1.67e4	0.602	20.4	1.14
3	3	170727G1_4	1.00	4.23	1.34e3	1.73e4	1.10	10.0	0.969
4	4	170727G1_5	2.00	4.24	2.75e3	1.86e4	2.21	10.3	0.926
5	5	170727G1_6	5.00	4.24	7.23e3	1.80e4	6.16	23.3	1.00
6	6	170727G1_7	10.0	4.24	1.44e4	2.24e4	9.96	-0.4	0.804
7	7	170727G1_8	50.0	4.24	5.59e4	1.77e4	49.4	-1.3	0.789
8	8	170727G1_9	100	4.24	1.14e5	1.80e4	99.2	-0.8	0.792

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999639
Calibration curve: -0.00237877 * x^2 + 2.32641 * x + 0.0752635
Response type: Internal Std (Ref 18), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.58	2.70e2	4.96e3	0.260	4.1	2.72
2	2	170727G1_3	0.500	4.58	6.08e2	6.55e3	0.466	-6.7	2.32
3	3	170727G1_4	1.00	4.58	1.08e3	5.92e3	0.954	-4.6	2.29
4	4	170727G1_5	2.00	4.58	2.72e3	6.93e3	2.08	4.0	2.45
5	5	170727G1_6	5.00	4.58	6.11e3	6.11e3	5.37	7.3	2.50
6	6	170727G1_7	10.0	4.58	1.31e4	7.36e3	9.60	-4.0	2.22
7	7	170727G1_8	50.0	4.58	6.15e4	6.96e3	50.0	-0.0	2.21
8	8	170727G1_9	100	4.58	1.22e5	7.32e3	100	0.0	2.09

Vista Analytical Laboratory Q2

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-CRV.qld

Last Altered: Thursday, July 27, 2017 14:48:06 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:52:25 Pacific Daylight Time

Compound name: PFOS
Correlation coefficient: r = 0.999145, r^2 = 0.998292
Calibration curve: 0.470087 * x + 0.0287104
Response type: Internal Std (Ref 20), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.64	6.12e1	5.46e3	0.237	-5.3	0.560
2	2	170727G1_3	0.500	4.64	1.27e2	6.34e3	0.472	-5.5	0.502
3	3	170727G1_4	1.00	4.64	2.59e2	6.56e3	0.990	-1.0	0.494
4	4	170727G1_5	2.00	4.64	5.73e2	7.61e3	1.94	-2.9	0.471
5	5	170727G1_6	5.00	4.64	1.51e3	7.06e3	5.61	12.2	0.533
6	6	170727G1_7	10.0	4.64	3.08e3	8.09e3	10.1	0.6	0.476
7	7	170727G1_8	50.0	4.64	1.54e4	7.84e3	52.4	4.7	0.493
8	8	170727G1_9	100	4.64	3.11e4	8.50e3	97.1	-2.9	0.457

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999346
Calibration curve: -0.000179878 * x^2 + 0.198072 * x + 0.02746
Response type: Internal Std (Ref 19), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Std. Conc	RT	Resp	IS Resp	Conc.	%Dev	RRF
1	1	170727G1_2	0.250	4.87	4.13e1	8.28e3	0.176	-29.6	0.249
2	2	170727G1_3	0.500	4.87	1.24e2	1.08e4	0.592	18.3	0.289
3	3	170727G1_4	1.00	4.87	1.85e2	1.06e4	0.967	-3.3	0.219
4	4	170727G1_5	2.00	4.87	4.71e2	1.25e4	2.24	11.8	0.235
5	5	170727G1_6	5.00	4.87	9.70e2	1.15e4	5.23	4.5	0.212
6	6	170727G1_7	10.0	4.87	1.93e3	1.22e4	9.95	-0.5	0.198
7	7	170727G1_8	50.0	4.87	1.03e4	1.38e4	49.2	-1.7	0.187
8	8	170727G1_9	100	4.87	2.06e4	1.42e4	100	0.5	0.181

Vista Analytical Laboratory VG-11

Dataset: Untitled

Last Altered: Thursday, July 27, 2017 15:00:56 Pacific Daylight Time
Printed: Thursday, July 27, 2017 15:01:11 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	170727G1_1	IPA	27-Jul-17	11:32:09
2	170727G1_2	ST170727G1-1 PFC CS-2 17G2714	27-Jul-17	11:44:22
3	170727G1_3	ST170727G1-2 PFC CS-1 17G2715	27-Jul-17	11:56:54
4	170727G1_4	ST170727G1-3 PFC CS0 17G2716	27-Jul-17	12:09:31
5	170727G1_5	ST170727G1-4 PFC CS1 17G2717	27-Jul-17	12:21:58
6	170727G1_6	ST170727G1-5 PFC CS2 17G2718	27-Jul-17	12:34:32
7	170727G1_7	ST170727G1-6 PFC CS3 17G2719	27-Jul-17	12:47:11
8	170727G1_8	ST170727G1-7 PFC CS4 17G2720	27-Jul-17	12:59:35
9	170727G1_9	ST170727G1-8 PFC CS5 17G2721	27-Jul-17	13:12:08
10	170727G1_10	IPA	27-Jul-17	13:24:41
11	170727G1_11	SS170727G1-1 PFC SSS 17G2713	27-Jul-17	13:37:14
12	170727G1_12	IPA	27-Jul-17	13:49:43

Dataset: U:\G1.PRO\Results\2017\170727G1\170727G1-11.qld

Last Altered: Thursday, July 27, 2017 14:54:17 Pacific Daylight Time
Printed: Thursday, July 27, 2017 14:55:09 Pacific Daylight Time

Method: U:\G1.pro\MethDB\PFAS_14or16_2trans_0712.mdb 12 Jul 2017 13:38:17
Calibration: U:\G1.pro\CurveDB\C18_VAL-PFC_Q1_7-27-17_L16_2Trans_A_NEW.cdb 27 Jul 2017 14:48:06

Name: 170727G1_11, Date: 27-Jul-2017, Time: 13:37:14, ID: SS170727G1-1 PFC SSS 17G2713, Description: PFC SSS 17G2713

	#	Name	Trace	Response	IS Resp	RRF	Wt/Vol	RT	Conc.	%Rec
1	1	PFBA	212.9 > 168.9	1.32e4	2.05e4		1.000	1.67	10.7	107.1
2	2	PFPeA	263.0 > 218.8	7.15e3	7.69e3		1.000	2.63	10.5	105.2
3	3	PFBS	299.0 > 79.7	5.63e3	4.75e3		1.000	2.91	8.84	88.4
4	4	PFHxA	312.9 > 268.9	1.00e4	6.50e3		1.000	3.29	10.1	101.0
5	5	PFHpA	363 > 318.9	1.41e4	8.41e3		1.000	3.82	10.7	106.6
6	6	PFHxS	398.9 > 79.6	6.09e3	4.53e3		1.000	3.95	9.38	93.8
7	7	PFOA	413.0 > 368.7	1.28e4	1.85e4		1.000	4.24	10.7	107.3
8	8	PFNA	463.0 > 418.8	1.13e4	5.97e3		1.000	4.58	10.3	102.8
9	9	PFOS	499.0 >79.9	2.54e3	7.28e3		1.000	4.64	9.20	92.0
10	10	PFDA	512.7 > 219.0	1.65e3	1.13e4		1.000	4.87	9.14	91.4
11	11	13C3-PFBA	215.9 > 171.8	2.05e4	1.93e4	1.183	1.000	1.67	11.3	90.1
12	12	13C3-PFBS	302.0 > 98.8	4.75e3	1.63e4	0.263	1.000	2.91	13.8	110.7
13	13	13C3-PFPeA	266.0 > 221.8	7.69e3	1.63e4	0.446	1.000	2.63	13.2	105.3
14	14	13C2-PFHxA	315.0 > 269.8	6.50e3	1.63e4	0.361	1.000	3.29	13.8	110.2
15	15	13C4-PFHpA	367.2 > 321.8	8.41e3	1.63e4	0.475	1.000	3.82	13.5	108.3
16	16	18O2-PFHxS	403 > 102.6	4.53e3	1.12e4	0.411	1.000	3.95	12.3	98.2
17	17	13C2-PFOA	414.9 > 369.7	1.85e4	6.32e3	2.843	1.000	4.24	12.9	103.1
18	18	13C5-PFNA	468.2 > 422.9	5.97e3	7.44e3	0.854	1.000	4.58	11.7	94.0
19	19	13C2-PFDA	514.8 > 469.7	1.13e4	6.36e3	1.742	1.000	4.87	12.8	102.1
20	20	13C8-PFOS	507.0 > 79.9	7.28e3	7.78e3	0.927	1.000	4.64	12.6	100.9
21	21	13C4-PFBA	216.9 > 171.8	1.93e4	1.93e4	1.000	1.000	1.67	12.5	100.0
22	22	13C5-PFHxA	318>272.9	1.63e4	1.63e4	1.000	1.000	3.28	12.5	100.0
23	23	13C3-PFHxS	401.9 > 79.9	1.12e4	1.12e4	1.000	1.000	3.95	12.5	100.0
24	24	13C8-PFOA	421.3 > 376	6.32e3	6.32e3	1.000	1.000	4.24	12.5	100.0
25	25	13C9-PFNA	472.2 > 426.9	7.44e3	7.44e3	1.000	1.000	4.58	12.5	100.0
26	26	13C4-PFOS	503.0 > 79.9	7.78e3	7.78e3	1.000	1.000	4.64	12.5	100.0
27	27	13C6-PFDA	519.10 > 47...	6.36e3	6.36e3	1.000	1.000	4.87	12.5	100.0

70-130

KM 7/27/17
✓ AC
7/27/17

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	TRENTON_NAWC	1700884	EBS PHASE2	EBS PHASE2	35S	Monitoring well	405998.82	523131.38	N6247016D9008	WE08	TETRA TECH, INC.	MW-35S-20170714	Ground water	Normal (Regular)	14-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	TRENTON_NAWC	1700884	EBS PHASE2	EBS PHASE2	32BR	Monitoring well	405993.42	523118.35	N6247016D9008	WE08	TETRA TECH, INC.	MW-32BR-20170714	Ground water	Normal (Regular)	14-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	TRENTON_NAWC	1700884	EBS PHASE2	EBS PHASE2	37BR	Monitoring well	405873.23	522700.37	N6247016D9008	WE08	TETRA TECH, INC.	MW-37BR-20170714	Ground water	Normal (Regular)	14-Jul-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	TRENTON_NAWC	1700884							N6247016D9008	WE08	TETRA TECH, INC.	FRB-02-20170714	Water for QC samples	Field Reagent Blank	14-Jul-17	537	Perfluoroalkyl Compounds