



**Groundwater Sample Results,
Combined Level 2 and Level 4 Laboratory Report,
Electronic Data Deliverable,
and the Sample Location Report, SDG 1800643**

*Naval Weapons Industrial Reserve Plant Calverton
Riverhead, New York*

August 2019



April 17, 2018

Vista Work Order No. 1800643

Ms. Kristi Francisco
Tetra Tech
5700 Lake Wright Drive, Suite 309
Norfolk, VA 23502

Dear Ms. Francisco,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on April 10, 2018. This sample set was analyzed on a rush turn-around time, under your Project Name '112G08005-WE05'. The SDG Number is WE05.

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,

A handwritten signature in black ink that reads "Martha Maier" with a stylized flourish at the end.

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 WE05

Vista Work Order No. 1800643

Case Narrative

Sample Condition on Receipt:

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

Analytical Notes:

PFAS Isotope Dilution Method

The aqueous sample was extracted and analyzed for a selected list of PFAS using Vista's PFAS Isotope Dilution Method. This method is listed on Vista's NELAP certificate as Modified EPA Method 537.

Holding Times

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

Quality Control

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

A Method Blank and Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD) were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 of the LOQ concentrations. The LCS/LCSD recoveries were within the acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the 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: Jules Ann Title: QA Manager Date: 04/16/2018

Revision 9
ISG
08/18/16

TABLE OF CONTENTS

Case Narrative.....	1
Signed Attestation Statement.....	3
Table of Contents.....	4
Sample Inventory.....	5
Analytical Results.....	6
Qualifiers.....	10
Certifications.....	11
Sample Receipt.....	12
Extraction Information.....	14
Sample Data - PFAS Isotope Dilution Method.....	18
IIS Areas, IBs and CCVs.....	51
ICAL with ICV and IB.....	75
PFAS Standards.....	214

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1800643-01	CA-AQIDW01-20180409	09-Apr-18 16:15	10-Apr-18 09:32	HDPE Bottle, 250 mL HDPE Bottle, 250 mL

ANALYTICAL RESULTS

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

Client Data				Laboratory Data						
Name:	Tetra Tech	Matrix:	Aqueous	Lab Sample:	B8D0070-BLK1	Column:	BEH C18			
Project:	112G08005-WE05									

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.895	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFHxA	ND	1.09	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFHpA	ND	0.296	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFHxS	0.483	0.474	2.50	4.00	J	B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFOA	ND	0.326	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFOS	ND	0.404	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFNA	ND	0.405	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFDA	ND	0.745	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
MeFOSAA	ND	0.825	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFOA	ND	0.525	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
EtFOSAA	ND	0.685	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFDaA	ND	0.396	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFTDA	ND	0.247	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
PFTeDA	ND	0.378	2.50	4.00		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	121	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C2-PFHxA	IS	88.6	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C4-PFHpA	IS	96.5	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
18O2-PFHxS	IS	102	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C2-PFOA	IS	77.5	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C8-PFOS	IS	93.8	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C5-PFNA	IS	79.3	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C2-PFDA	IS	68.2	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
d3-MeFOSAA	IS	72.6	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C2-PFOA	IS	80.9	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
d5-EtFOSAA	IS	80.8	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C2-PFDaA	IS	77.8	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1
13C2-PFTeDA	IS	71.8	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 21:53	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.

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

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

Name: Tetra Tech	Lab Sample: B8D0070-BS1/B8D0070-BSD1	Date Extracted: 11-Apr-18	
Project: 112G08005-WE05	QC Batch: B8D0070	Column: BEH C18	
Matrix: Aqueous	Samp Size: 0.250/0.250 L		

Analyte	LCS (ng/L)	LCS Spike Amt	LCS % Rec	LCS Quals	LCSD (ng/L)	LCSD Spike Amt	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	41.2	40.0	103		40.5	40.0	101	1.85		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFHxA	41.0	40.0	103		42.5	40.0	106	3.64		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFHpA	39.4	40.0	98.5		40.6	40.0	101	2.88		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFHxS	41.8	40.0	105	B	43.3	40.0	108	3.29	B	70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFOA	43.9	40.0	110		46.3	40.0	116	5.43		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFOS	44.4	40.0	111		39.9	40.0	99.7	10.6		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFNA	38.8	40.0	97.1		40.6	40.0	101	4.44		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFDA	44.3	40.0	111		45.7	40.0	114	3.20		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
MeFOSAA	40.0	40.0	100		44.9	40.0	112	11.5		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFUnA	35.0	40.0	87.5		42.7	40.0	107	19.9		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
EtFOSAA	43.4	40.0	109		38.8	40.0	97.1	11.2		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFDoA	39.2	40.0	97.9		43.2	40.0	108	9.74		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFTrDA	33.3	40.0	83.1		37.7	40.0	94.2	12.5		60-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1
PFTeDA	43.1	40.0	108		51.7	40.0	129	18.1		70-130	200	12-Apr-18 21:30	1	12-Apr-18 21:42	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBS	IS	113		111		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C2-PFHxA	IS	89.0		90.0		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C4-PFHpA	IS	102		99.2		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
18O2-PFHxS	IS	95.4		101		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C2-PFOA	IS	84.4		83.1		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C8-PFOS	IS	87.0		100		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C5-PFNA	IS	89.7		80.4		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C2-PFDA	IS	72.0		72.6		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
d3-MeFOSAA	IS	81.3		76.9		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C2-PFUnA	IS	80.6		73.9		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
d5-EtFOSAA	IS	86.5		81.7		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C2-PFDoA	IS	88.4		73.2		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1
13C2-PFTeDA	IS	83.8		66.7		50-150	12-Apr-18 21:30	1	12-Apr-18 21:42	1

Sample ID: CA-AQIDW01-20180409

PFAS Isotope Dilution Method

Client Data				Laboratory Data			
Name:	Tetra Tech	Matrix:	Groundwater	Lab Sample:	1800643-01	Column:	BEH C18
Project:	112G08005-WE05	Date Collected:	09-Apr-18 16:15	Date Received:	10-Apr-18 09:32		
SDG:	WE05						

Analyte	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	ND	0.894	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFHxA	ND	1.09	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFHpA	ND	0.295	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFHxS	ND	0.473	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFOA	ND	0.325	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFOS	ND	0.403	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFNA	0.768	0.404	2.50	3.99	J	B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFDA	ND	0.744	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
MeFOSAA	ND	0.824	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFOA	0.540	0.524	2.50	3.99	J	B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
EtFOSAA	ND	0.684	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFOA	ND	0.395	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFOA	ND	0.247	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
PFOA	ND	0.377	2.50	3.99		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	104	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C2-PFHxA	IS	89.1	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C4-PFHpA	IS	91.5	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
18O2-PFHxS	IS	98.3	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C2-PFOA	IS	81.8	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C8-PFOS	IS	90.3	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C5-PFNA	IS	88.2	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C2-PFDA	IS	75.6	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
d3-MeFOSAA	IS	83.3	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C2-PFOA	IS	73.3	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
d5-EtFOSAA	IS	85.5	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C2-PFOA	IS	79.6	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1
13C2-PFOA	IS	66.2	50 - 150		B8D0070	11-Apr-18	0.250 L	12-Apr-18 22:05	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

LCL-UCL- Lower control limit - upper control limit
Results reported to the DL.

When reported, 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
U	Not Detected (specific projects only)

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

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

CHAIN OF CUSTODY

NO. 001

1800643

0.2°C

Project No: 112G08005-WE05		Facility: NWIRP Calverton		Project Manger: Kristi Francisco			Phone: 757-466-4902		Laboratory Name and Contact: Vista Karen Volpendesta				
Samplers: Jacob Birkett Brad Sweeney				Field Ops. Leader: Jacob Birkett			Phone: 757-814-9916		Address: 1104 Windfield Way				
				Fed Ex Airbill Number: 8102-9107-1072					City, State, Zip: El Dorado Hills, CA 95762				
				Container Type: Plastic (P) or Glass (G)		P							
				Preservative Used:		--							

Date Year:	Time	Sample ID	Location ID	Top Depth (FT)	Bottom Depth (FT)	Matrix (GW, SO, SW, QC)	Grab, Composite (G, C)	Total No. of Containers	ANALYSIS				Comments
									PFAS				
4/9	1615	CA-AQIDW01-20180409	-	-	-	GW	G	2	X				5 day TAT

1. Relinquished By: Jacob Birkett <i>J. Birkett</i>	Date: 04/09/18	Time: 1845	1. Received By: <i>USP...</i>	Date: 04/10/18	Time: 0941
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:

Comments:

Sample Log-in Checklist

Vista Work Order #: 1800643 TAT 7

Samples Arrival:	Date/Time 04/10/18 0932	Initials: WWS	Location: WR-2
Logged In:	Date/Time 04/10/18 0958	Initials: YBB	Location: WR-2 Shelf/Rack: E3
Delivered By:	<input checked="" type="checkbox"/> FedEx	<input type="checkbox"/> UPS	<input type="checkbox"/> On Trac
	<input type="checkbox"/> GSO	<input type="checkbox"/> DHL	<input type="checkbox"/> Hand Delivered
	<input type="checkbox"/> Other		
Preservation:	<input checked="" type="checkbox"/> Ice	<input type="checkbox"/> Blue Ice	<input type="checkbox"/> Dry Ice
	<input type="checkbox"/> None		
Temp °C: 0.3 (uncorrected)	Time: 0940	Thermometer ID: IR-4	
Temp °C: 0.2 (corrected)	Probe used: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

	YES	NO	NA
Adequate Sample Volume Received?	<input checked="" type="checkbox"/>		
Holding Time Acceptable?	<input checked="" type="checkbox"/>		
Shipping Container(s) Intact?	<input checked="" type="checkbox"/>		
Shipping Custody Seals Intact?	<input checked="" type="checkbox"/>		
Shipping Documentation Present?	<input checked="" type="checkbox"/>		
Airbill	<input checked="" type="checkbox"/>		
Trk # 810291071072			
Sample Container Intact?	<input checked="" type="checkbox"/>		
Sample Custody Seals Intact?			<input checked="" type="checkbox"/>
Chain of Custody / Sample Documentation Present?	<input checked="" type="checkbox"/>		
COC Anomaly/Sample Acceptance Form completed?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			<input checked="" type="checkbox"/>
Preservation Documented:	<input type="checkbox"/> Na ₂ S ₂ O ₃	<input type="checkbox"/> Trizma	<input type="checkbox"/> None
	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> NA
Shipping Container	<input type="checkbox"/> Vista	<input checked="" type="checkbox"/> Client	<input type="checkbox"/> Retain
	<input checked="" type="checkbox"/> Return	<input type="checkbox"/> Dispose	

Comments:

EXTRACTION INFORMATION



Process Sheet

Workorder: 1800643

Prep Expiration: 2018-Apr-23
Client: Tetra Tech

Workorder Due: 17-Apr-18 00:00
TAT: 7

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

Prep Batch: B8D0070

Version: 537 (14 Analyte)
DoD: DoD QSM 5.1

Prep Data Entered: HN 4/12/18
Date and Initials

Initial Sequence: S4 D0028

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
1800643-01	A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	CA-AQIDW01-20180409		WR-2 E-3	HDPE Bottle, 250 mL

WO Comments: Provide all analytical runs.
MS/MSD per batch, if MS/MSD is not provided - LCS/LCSD.

Pre-Prep Check Out: MA 04/11/18
Pre-Prep Check In: N/A

Prep Check Out: N/A
Prep Check In: N/A

Prep Reconciled Initials/Date: MA 04/11/18
Spike Reconciled Initials/Date: HN 4/11/18
VialBoxID: Psyduck

PREPARATION BENCH SHEET

Matrix: Aqueous

Method: 537M PFAS DOD (LOQ as mL)

B8D0070

Chemist: HN

Prep Date/Time: 11-Apr-18 08:23
 HN 4/11/18
 9:56

Prepared using: LCMS - SPE Extraction-LCMS

Date/Initials: 04/11/18 MA BalanceID: HRMS-8

Cen	VISTA Sample ID	pH Before	pH After	Chlorine (Cl)	Drops HCl Added	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE	RS CHEM/WIT DATE
<input type="checkbox"/>	B8D0070-BLK1 (A)	5	2	0	3	NA	NA	(0.250)	HN MA 4/11/18	MA 4/11/18	HN MA 4/11/18
<input type="checkbox"/>	B8D0070-BS1	5	2	0	3	↓	↓	↓	↓	↓	↓
<input type="checkbox"/>	B8D0070-BSD1	5	2	0	3	↓	↓	↓	↓	↓	↓
<input type="checkbox"/>	1800643-01	5	2	0	3	278.07	27.66	0.25041	↓	↓	↓

IS: 18B2203, 10mL (V4)	SPE Chem: Strata X-AW 33um ^{200mg} / _{6mL}	Notes: (A) Samples run through Envi-Carb (Supelco Lot 9129303) MA 04/11/18
IS SUP: N/A	Ele SOLV: 0.5% NH4OH in MeOH, MeOH	
NS: 18C1302, 10mL (V5)	Final Volume(s) 1 mL	
RS: 18B2206, 10mL (V4)		

Comments: Assume 1 g = 1 mL
 Cen = Centrifuged

Batch: B8D0070

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
1800643-01	0.25041	N/A	N/A	1000	11-Apr-18 09:50	HN			Groundwater	537M PFAS DOD (LOQ as
B8D0070-BLK1	0.25	↓	↓	1000	11-Apr-18 09:50	HN				QC
B8D0070-BS1	0.25	↓	↓	1000	11-Apr-18 09:50	HN	18C1302	10		QC
B8D0070-BSD1	0.25	↓	↓	1000	11-Apr-18 09:50	HN	18C1302	10		QC

HN 4/12/18

Sample Data – PFAS Isotope Dilution Method

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:24:52 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	3	PFBS	299.0 > 79.7		1.84e3	0.250		2.81				
2	5	PFHxA	313.2 > 268.9		3.27e3	0.250		3.30				
3	7	PFHpA	363.0 > 318.9		9.23e3	0.250		3.92				
4	8	L-PFHxS	398.9 > 79.6	1.25e1	1.33e3	0.250		4.06	3.91	0.117	0.4832	
5	11	L-PFOA	413 > 368.7		1.26e4	0.250		4.30				
6	14	PFNA	463.0 > 418.8		1.11e4	0.250		4.87				
7	16	L-PFOS	499 > 79.9		3.26e3	0.250		4.90				
8	18	PFDA	513 > 468.8		8.65e3	0.250		5.24				
9	21	N-MeFOSAA	570.1 > 419		4.89e3	0.250		5.39				
10	22	N-EtFOSAA	584.2 > 419		5.97e3	0.250		5.55				
11	23	PFUdA	563.0 > 518.9		1.11e4	0.250		5.56				

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	25	PFDa	612.9 > 569.0	9.34e3	0.250		5.84					
2	27	PFTDA	662.9 > 618.9	9.34e3	0.250		6.10					
3	28	PFTeDA	712.9 > 668.8	5.24e3	0.250		6.30					
4	36	13C3-PFBS	302. > 98.8	1.84e3	1.26e4	0.250	0.121	2.81	2.65	1.83	60.6284	121.3
5	37	13C2-PFHxA	315 > 269.8	3.27e3	1.26e4	0.250	0.733	3.30	3.14	3.25	17.7262	88.6
6	38	13C4-PFHpA	367.2 > 321.8	9.23e3	1.26e4	0.250	0.761	3.92	3.76	9.18	48.2281	96.5
7	39	18O2-PFHxS	403.0 > 102.6	1.33e3	3.03e3	0.250	0.431	4.06	3.91	5.48	50.8490	101.7
8	40	13C2-6:2 FTS	429.1 > 408.9	3.82e3	1.41e4	0.250	0.333	4.38	4.22	3.38	40.6407	81.3
9	41	13C2-PFOA	414.9 > 369.7	1.26e4	1.41e4	0.250	1.150	4.43	4.28	11.1	38.7663	77.5
10	42	13C5-PFNA	468.2 > 422.9	1.11e4	1.43e4	0.250	0.979	4.87	4.71	9.70	39.6331	79.3
11	43	13C8-PFOA	506.1 > 77.7	1.67e3	1.43e4	0.250	0.218	4.93	4.78	1.46	26.7274	53.5
12	44	13C8-PFOS	507.0 > 79.9	3.26e3	3.33e3	0.250	1.047	4.95	4.79	12.3	46.8959	93.8
13	45	13C2-PFDA	515.1 > 469.9	8.65e3	1.32e4	0.250	0.958	5.24	5.08	8.17	34.1088	68.2
14	46	13C2-8:2 FTS	529.1 > 508.7	2.66e3	1.26e4	0.250	0.226	5.21	5.05	2.64	46.7152	93.4
15	47	d3-N-MeFOSAA	573.3 > 419	4.89e3	1.43e4	0.250	0.471	5.39	5.23	4.28	36.3107	72.6
16	48	d5-N-EtFOSAA	589.3 > 419	5.97e3	1.43e4	0.250	0.517	5.55	5.38	5.22	40.3994	80.8
17	49	13C2-PFUdA	565 > 519.8	1.11e4	1.43e4	0.250	0.960	5.56	5.40	9.71	40.4570	80.9
18	50	13C2-PFDoA	615.0 > 569.7	9.34e3	1.43e4	0.250	0.840	5.84	5.68	8.17	38.9052	77.8
19	51	d3-N-MeFOSA	515.2 > 168.9		1.43e4	0.250	0.097	6.00				
20	52	13C2-PFTeDA	714.8 > 669.6	5.24e3	1.43e4	0.250	0.510	6.30	6.15	4.58	35.8989	71.8
21	53	d5-N-ETFOSA	531.1 > 168.9		1.43e4	0.250	0.138	6.40				
22	54	13C2-PFHxDA	815 > 769.7	5.27e3	1.43e4	0.250	1.118	6.62	6.47	4.61	16.5044	82.5
23	55	d7-N-MeFOSE	623.1 > 58.9		1.43e4	0.250	0.169	6.50				
24	56	d9-N-EtFOSE	639.2 > 58.8		1.43e4	0.250	0.161	6.65				
25	57	13C4-PFBA	217. > 171.8	9.33e3	9.33e3	0.250	1.000	1.56	1.44	12.5	50.0000	100.0
26	58	13C5-PFHxA	318 > 272.9	1.26e4	1.26e4	0.250	1.000	3.30	3.14	12.5	50.0000	100.0
27	59	13C3-PFHxS	401.9 > 79.9	3.03e3	3.03e3	0.250	1.000	4.04	3.91	12.5	50.0000	100.0
28	60	13C8-PFOA	421.3 > 376	1.41e4	1.41e4	0.250	1.000	4.43	4.28	12.5	50.0000	100.0
29	61	13C9-PFNA	472.2 > 426.9	1.43e4	1.43e4	0.250	1.000	4.87	4.71	12.5	50.0000	100.0
30	62	13C4-PFOS	503 > 79.9	3.33e3	3.33e3	0.250	1.000	4.95	4.79	12.5	50.0000	100.0
31	63	13C6-PFDA	519.1 > 473.7	1.32e4	1.32e4	0.250	1.000	5.24	5.08	12.5	50.0000	100.0
32	64	13C7-PFUdA	570.1 > 524.8	1.43e4	1.43e4	0.250	1.000	5.56	5.40	12.5	50.0000	100.0

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	65 Total PFHxS	398.9 > 79.6	1.25e1	1.33e3	0.250		4.05		0.117	0.4832	
34	66 Total PFOA	413 > 368.7	0.00e0	1.26e4	0.250		4.30		0.000		
35	67 Total PFOS	499 > 79.9	0.00e0	3.26e3	0.250		4.90		0.000		
36	68 Total N-MeFOSAA	570.1 > 419	0.00e0	4.89e3	0.250		5.55		0.000		
37	69 Total N-EtFOSAA	584.2 > 419	0.00e0	5.97e3	0.250		5.70		0.000		

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

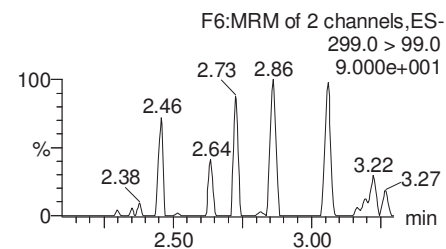
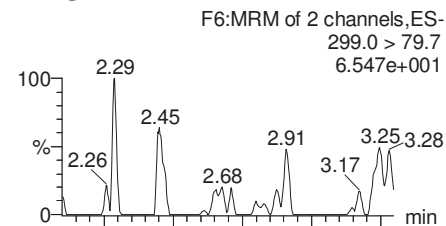
Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

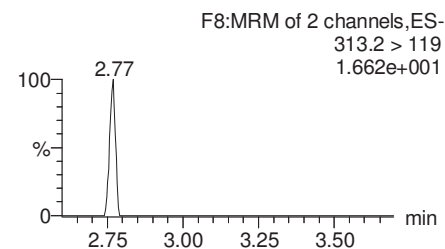
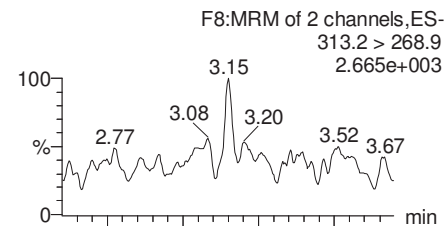
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

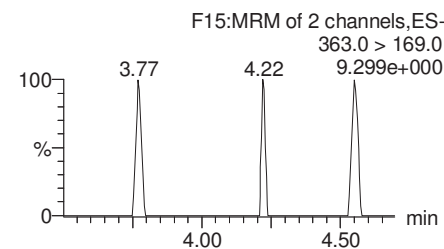
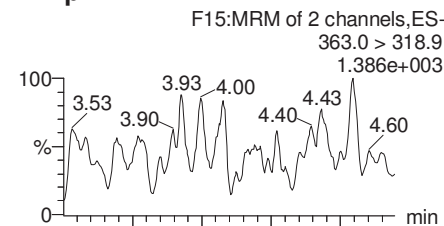
PFBS



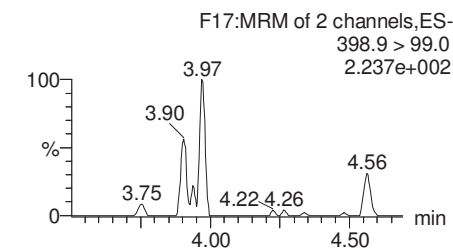
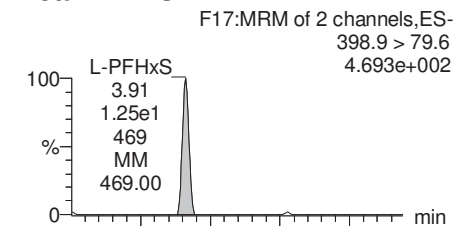
PFHxA



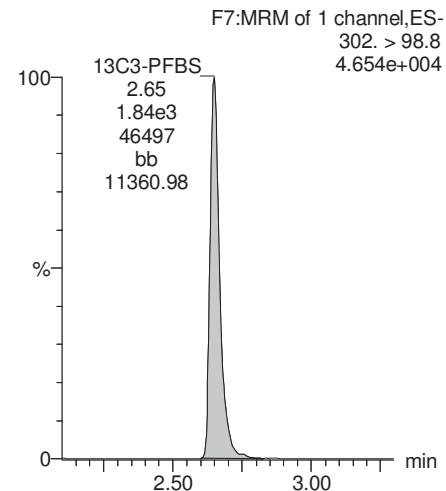
PFHpA



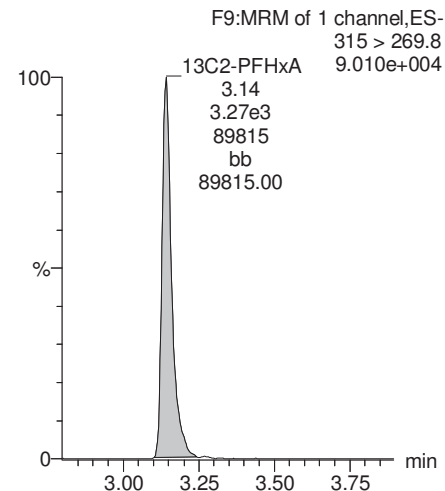
Total PFHxS



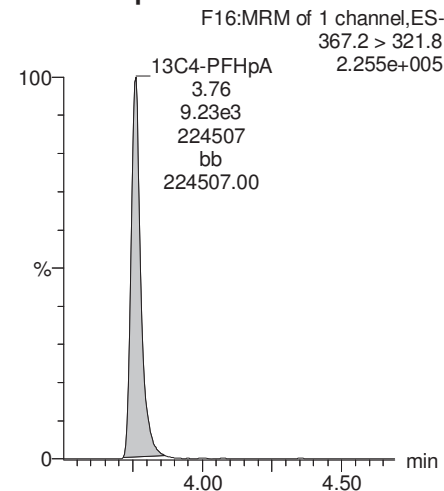
13C3-PFBS



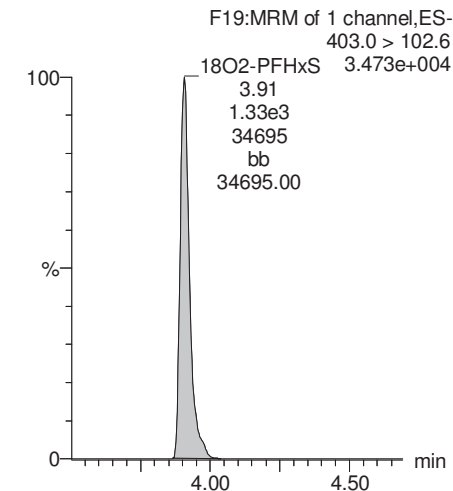
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

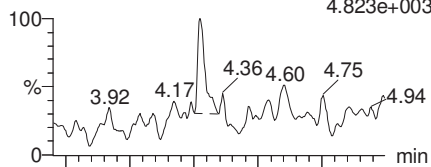
Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

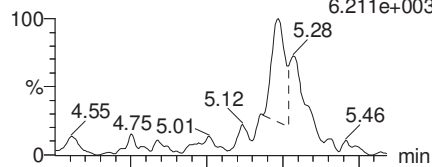
Total PFOA

F20:MRM of 2 channels,ES-
413 > 368.7
4.823e+003



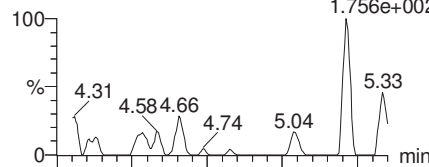
PFNA

F26:MRM of 2 channels,ES-
463.0 > 418.8
6.211e+003



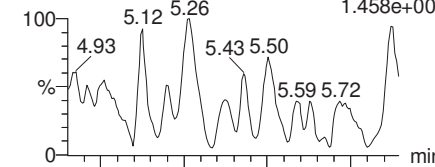
Total PFOS

F31:MRM of 2 channels,ES-
499 > 79.9
1.756e+002

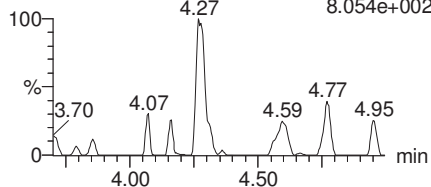


PFDA

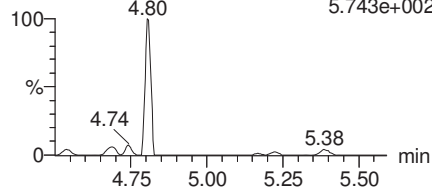
F36:MRM of 2 channels,ES-
513 > 468.8
1.458e+003



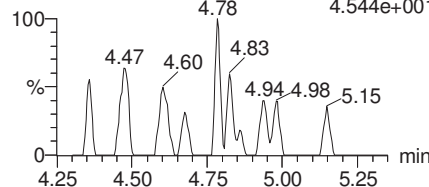
F20:MRM of 2 channels,ES-
413 > 169
8.054e+002



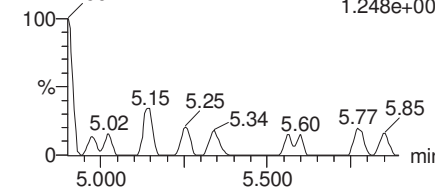
F26:MRM of 2 channels,ES-
463.0 > 219.0
5.743e+002



F31:MRM of 2 channels,ES-
499 > 99
4.544e+001

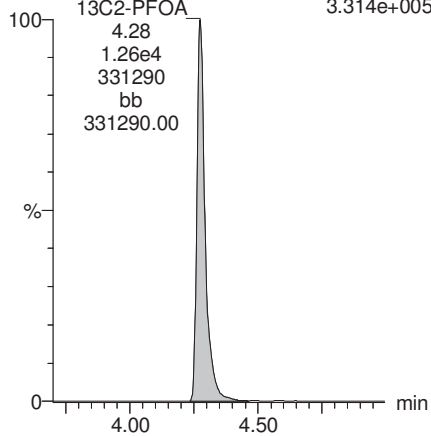


F36:MRM of 2 channels,ES-
513 > 219
1.248e+002



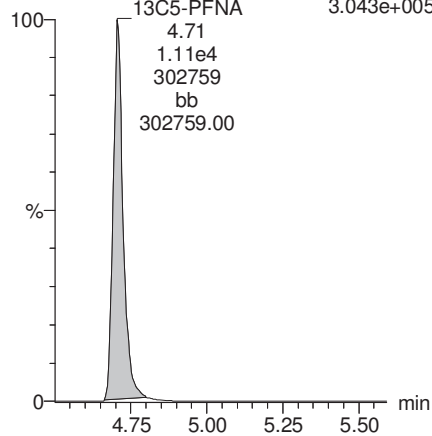
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
3.314e+005



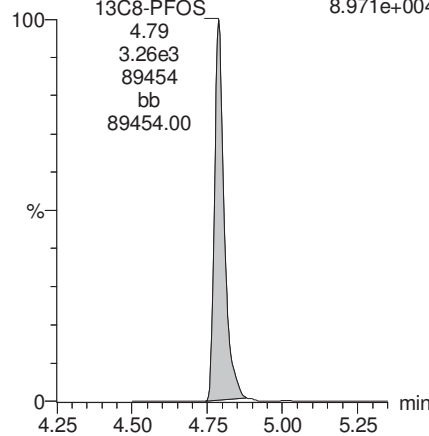
13C5-PFNA

F27:MRM of 1 channel,ES-
468.2 > 422.9
3.043e+005



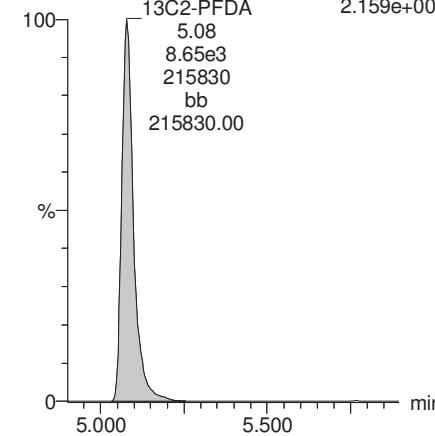
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
8.971e+004



13C2-PFDA

F37:MRM of 1 channel,ES-
515.1 > 469.9
2.159e+005



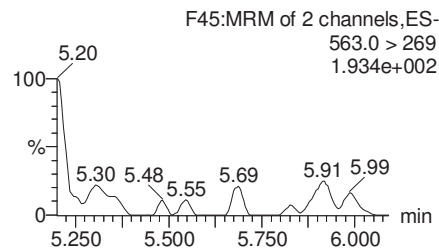
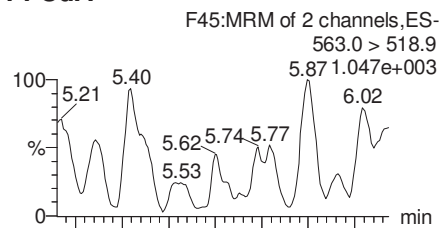
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

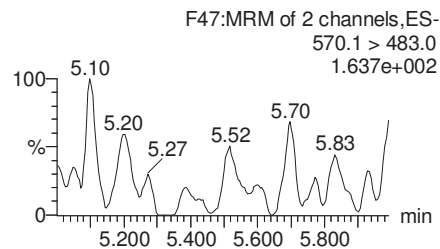
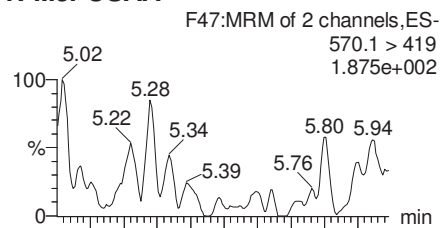
Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

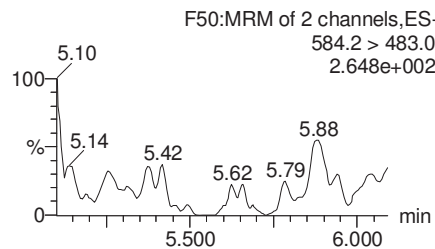
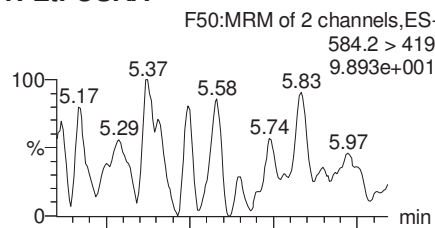
PFUdA



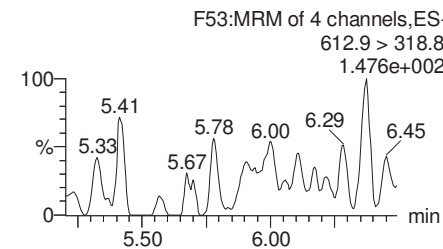
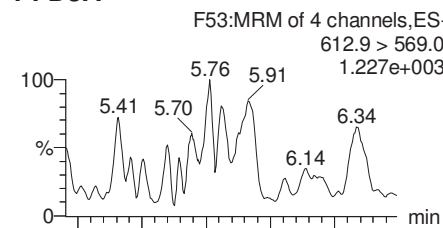
N-MeFOSAA



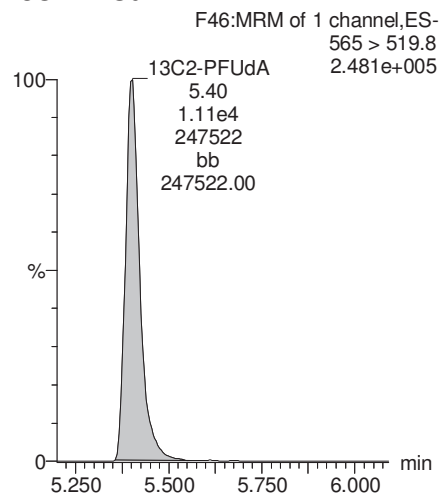
N-EtFOSAA



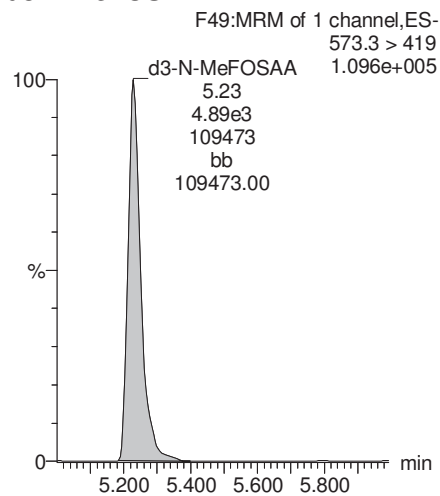
PFDoA



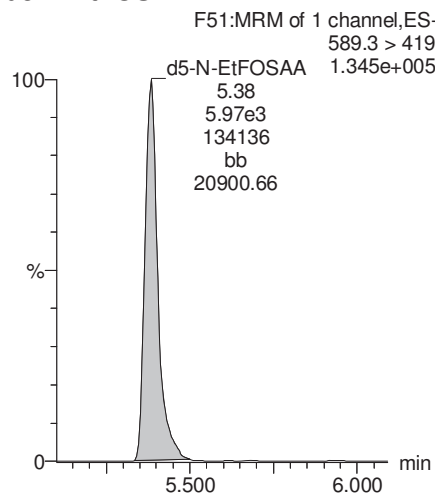
13C2-PFUdA



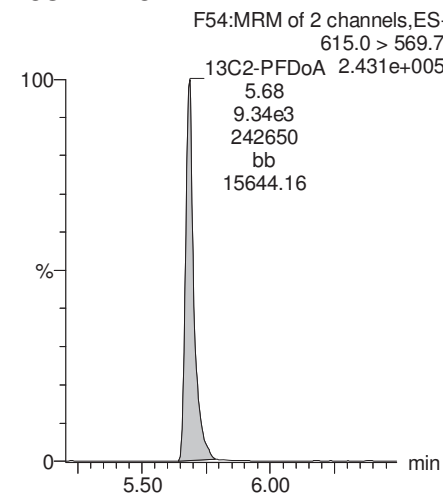
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDoA



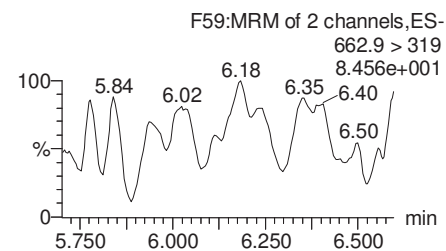
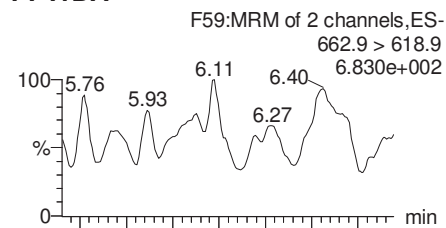
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

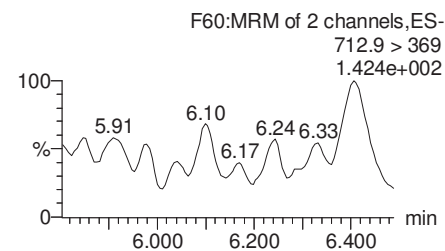
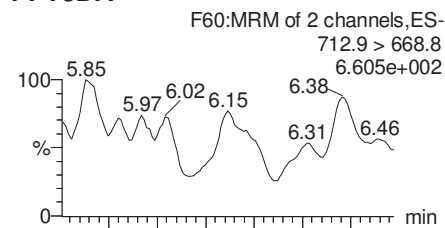
Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

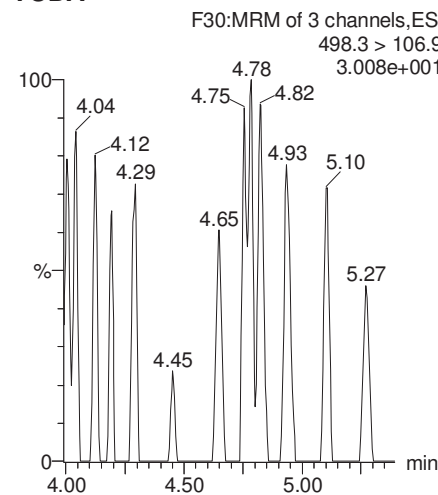
PFTrDA



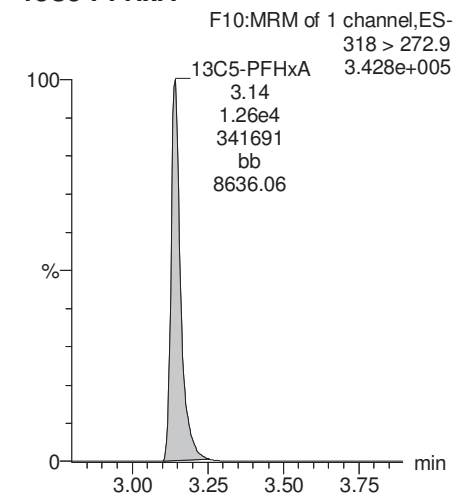
PFTeDA



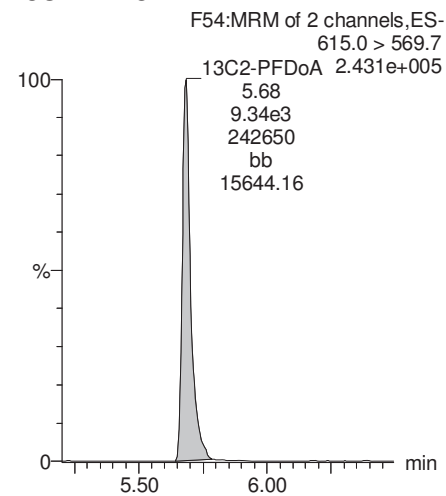
TCDA



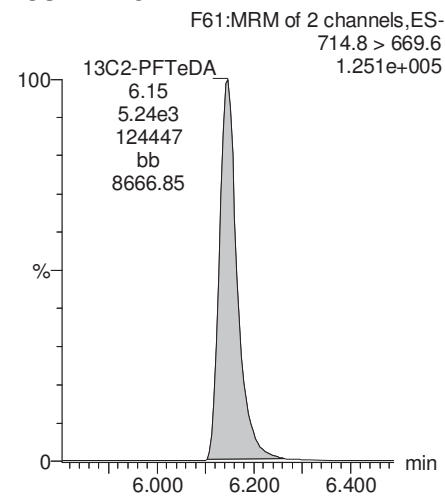
13C5-PFHxA



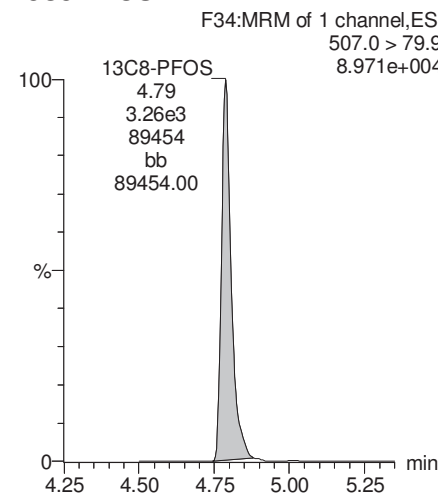
13C2-PFDoA



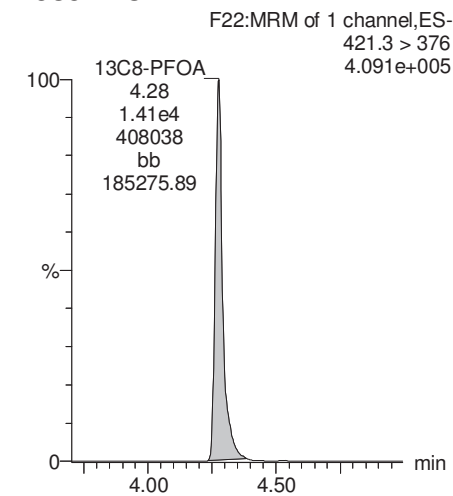
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-22.qld

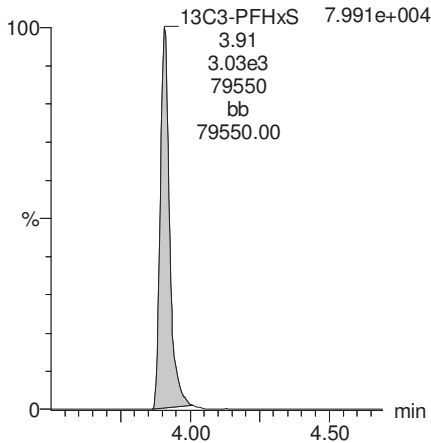
Last Altered: Saturday, April 14, 2018 17:23:18 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:25:06 Pacific Daylight Time

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

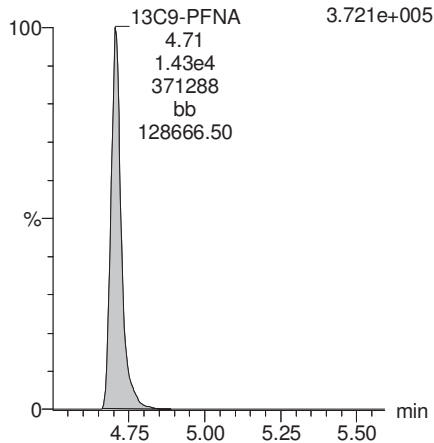
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9



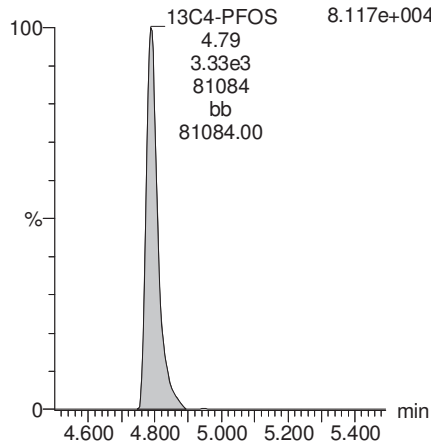
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9



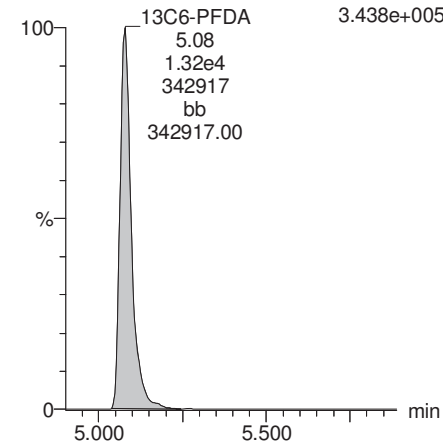
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9



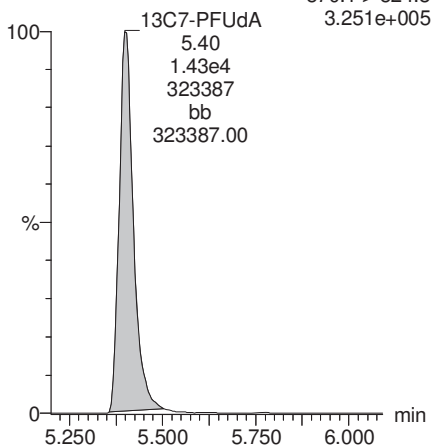
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7



13C7-PFudA

F48:MRM of 1 channel,ES-
570.1 > 524.8



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:14:22 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	3 PFBS	299.0 > 79.7	2.47e3	1.59e3	0.250		2.81	2.65	19.5	41.2216	103.1
2	5 PFHxA	313.2 > 268.9	1.04e4	3.03e3	0.250		3.30	3.14	17.2	41.0067	102.5
3	7 PFHpA	363.0 > 318.9	8.62e3	9.03e3	0.250		3.92	3.76	11.9	39.4086	98.5
4	8 L-PFHxS	398.9 > 79.6	2.09e3	1.34e3	0.250		4.06	3.91	19.5	41.8483	104.6
5	11 L-PFOA	413 > 368.7	1.05e4	1.27e4	0.250		4.30	4.28	10.3	43.8802	109.7
6	14 PFNA	463.0 > 418.8	9.79e3	1.06e4	0.250		4.87	4.71	11.6	38.8220	97.1
7	16 L-PFOS	499 > 79.9	2.84e3	3.04e3	0.250		4.90	4.79	11.7	44.3501	110.9
8	18 PFDA	513 > 468.8	9.56e3	8.04e3	0.250		5.24	5.08	14.9	44.2732	110.7
9	21 N-MeFOSAA	570.1 > 419	5.79e3	5.10e3	0.250		5.39	5.23	14.2	39.9880	100.0
10	22 N-EtFOSAA	584.2 > 419	5.21e3	5.96e3	0.250		5.55	5.39	10.9	43.4170	108.5
11	23 PFUdA	563.0 > 518.9	7.47e3	1.03e4	0.250		5.56	5.40	9.08	35.0035	87.5

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	25 PFDoA	612.9 > 569.0	1.00e4	9.89e3	0.250		5.84	5.68	12.7	39.1795	97.9
2	27 PFTTrDA	662.9 > 618.9	9.09e3	9.89e3	0.250		6.10	5.93	11.5	33.2506	83.1
3	28 PFTeDA	712.9 > 668.8	7.83e3	5.69e3	0.250		6.30	6.15	17.2	43.0682	107.7
4	36 13C3-PFBS	302. > 98.8	1.59e3	1.16e4	0.250	0.121	2.81	2.65	1.71	56.5658	113.1
5	37 13C2-PFHxA	315 > 269.8	3.03e3	1.16e4	0.250	0.733	3.30	3.14	3.26	17.7990	89.0
6	38 13C4-PFHpA	367.2 > 321.8	9.03e3	1.16e4	0.250	0.761	3.92	3.76	9.72	51.0728	102.1
7	39 18O2-PFHxS	403.0 > 102.6	1.34e3	3.25e3	0.250	0.431	4.06	3.90	5.14	47.7163	95.4
8	40 13C2-6:2 FTS	429.1 > 408.9	3.62e3	1.31e4	0.250	0.333	4.38	4.22	3.46	41.6425	83.3
9	41 13C2-PFOA	414.9 > 369.7	1.27e4	1.31e4	0.250	1.150	4.43	4.27	12.1	42.1800	84.4
10	42 13C5-PFNA	468.2 > 422.9	1.06e4	1.21e4	0.250	0.979	4.87	4.71	11.0	44.8638	89.7
11	43 13C8-PFOA	506.1 > 77.7	1.75e3	1.33e4	0.250	0.218	4.93	4.78	1.65	30.1500	60.3
12	44 13C8-PFOS	507.0 > 79.9	3.04e3	3.34e3	0.250	1.047	4.95	4.79	11.4	43.5137	87.0
13	45 13C2-PFDA	515.1 > 469.9	8.04e3	1.17e4	0.250	0.958	5.24	5.08	8.63	36.0025	72.0
14	46 13C2-8:2 FTS	529.1 > 508.7	2.67e3	1.16e4	0.250	0.226	5.21	5.05	2.87	50.7961	101.6
15	47 d3-N-MeFOSAA	573.3 > 419	5.10e3	1.33e4	0.250	0.471	5.39	5.23	4.79	40.6297	81.3
16	48 d5-N-EtFOSAA	589.3 > 419	5.96e3	1.33e4	0.250	0.517	5.55	5.38	5.59	43.2579	86.5
17	49 13C2-PFUdA	565 > 519.8	1.03e4	1.33e4	0.250	0.960	5.56	5.40	9.67	40.2761	80.6
18	50 13C2-PFDoA	615.0 > 569.7	9.89e3	1.33e4	0.250	0.840	5.84	5.68	9.28	44.1987	88.4
19	51 d3-N-MeFOSA	515.2 > 168.9		1.33e4	0.250	0.097	6.00				
20	52 13C2-PFTeDA	714.8 > 669.6	5.69e3	1.33e4	0.250	0.510	6.30	6.15	5.35	41.9210	83.8
21	53 d5-N-ETFOSA	531.1 > 168.9		1.33e4	0.250	0.138	6.40				
22	54 13C2-PFHxDA	815 > 769.7	5.42e3	1.33e4	0.250	1.118	6.62	6.47	5.09	18.1949	91.0
23	55 d7-N-MeFOSE	623.1 > 58.9		1.33e4	0.250	0.169	6.50				
24	56 d9-N-EtFOSE	639.2 > 58.8		1.33e4	0.250	0.161	6.65				
25	57 13C4-PFBA	217. > 171.8	9.01e3	9.01e3	0.250	1.000	1.56	1.44	12.5	50.0000	100.0
26	58 13C5-PFHxA	318 > 272.9	1.16e4	1.16e4	0.250	1.000	3.30	3.14	12.5	50.0000	100.0
27	59 13C3-PFHxS	401.9 > 79.9	3.25e3	3.25e3	0.250	1.000	4.04	3.91	12.5	50.0000	100.0
28	60 13C8-PFOA	421.3 > 376	1.31e4	1.31e4	0.250	1.000	4.43	4.27	12.5	50.0000	100.0
29	61 13C9-PFNA	472.2 > 426.9	1.21e4	1.21e4	0.250	1.000	4.87	4.71	12.5	50.0000	100.0
30	62 13C4-PFOS	503 > 79.9	3.34e3	3.34e3	0.250	1.000	4.95	4.79	12.5	50.0000	100.0
31	63 13C6-PFDA	519.1 > 473.7	1.17e4	1.17e4	0.250	1.000	5.24	5.08	12.5	50.0000	100.0
32	64 13C7-PFUdA	570.1 > 524.8	1.33e4	1.33e4	0.250	1.000	5.56	5.40	12.5	50.0000	100.0

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	65 Total PFHxS	398.9 > 79.6	2.09e3	1.34e3	0.250		4.05		19.5	41.8483	
34	66 Total PFOA	413 > 368.7	1.05e4	1.27e4	0.250		4.30		10.3	43.8802	
35	67 Total PFOS	499 > 79.9	2.84e3	3.04e3	0.250		4.90		11.7	44.3501	
36	68 Total N-MeFOSAA	570.1 > 419	5.79e3	5.10e3	0.250		5.55		14.2	39.9880	
37	69 Total N-EtFOSAA	584.2 > 419	5.21e3	5.96e3	0.250		5.70		10.9	43.4170	

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

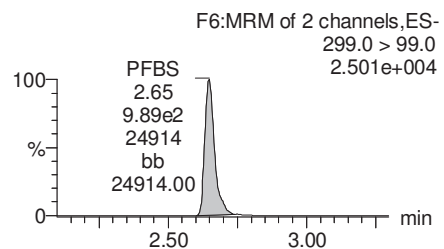
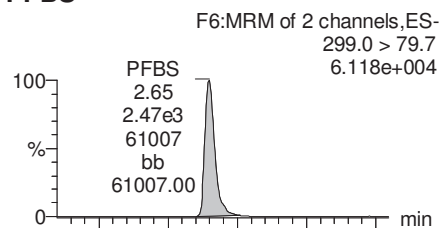
Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

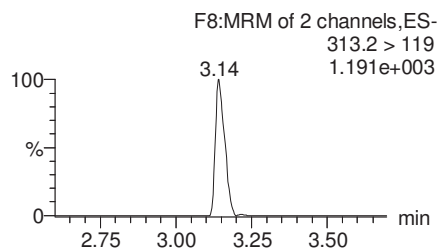
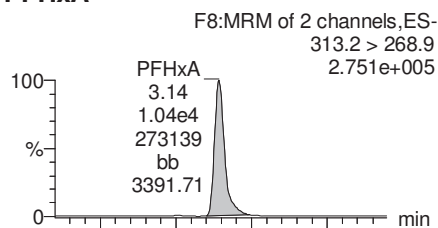
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

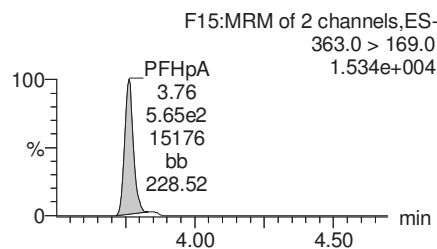
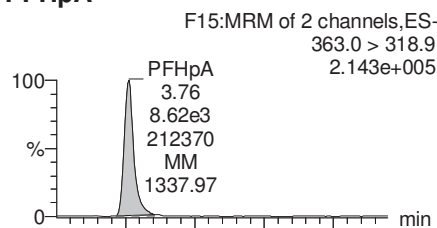
PFBS



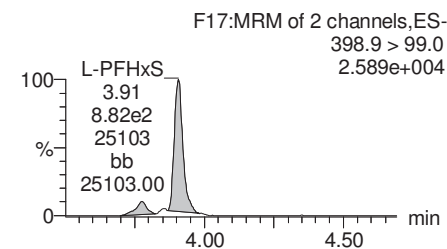
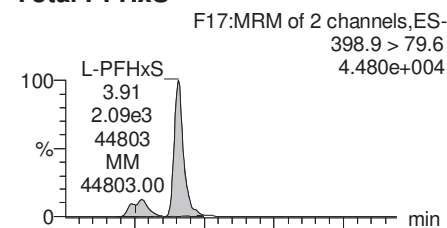
PFHxA



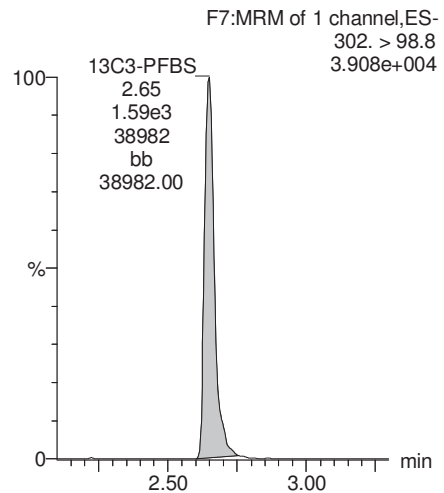
PFHpA



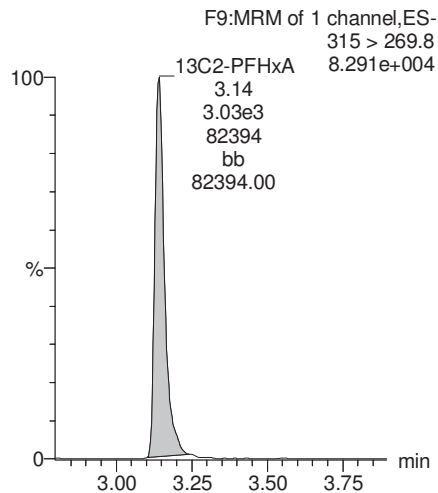
Total PFHxS



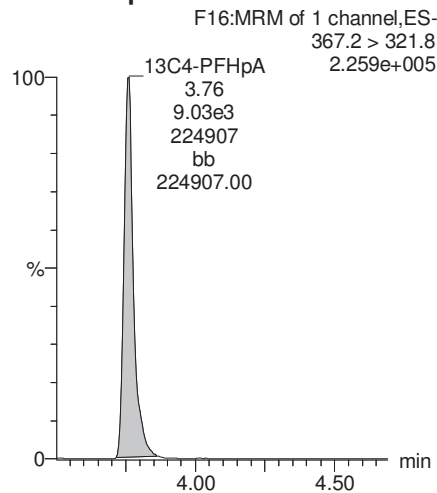
13C3-PFBS



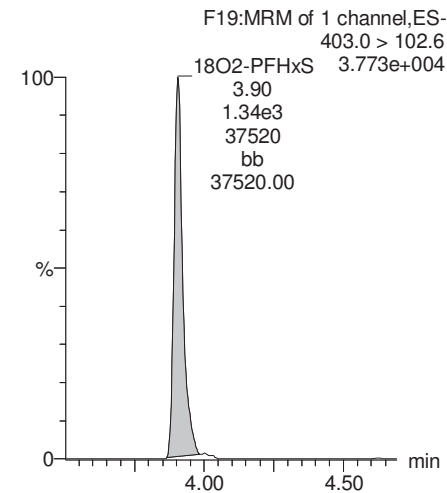
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



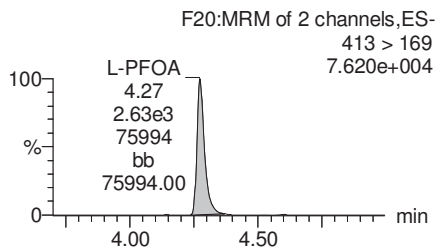
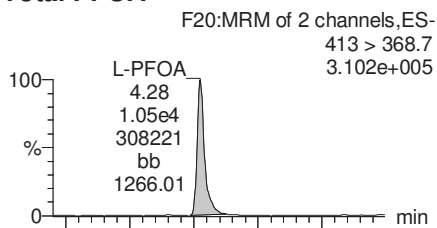
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

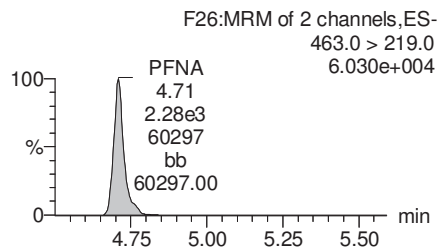
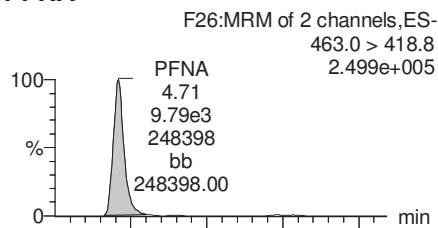
Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

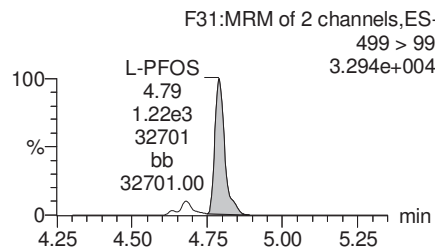
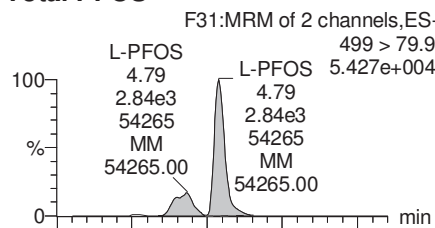
Total PFOA



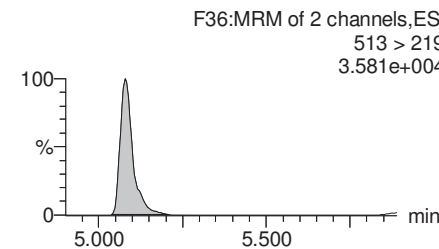
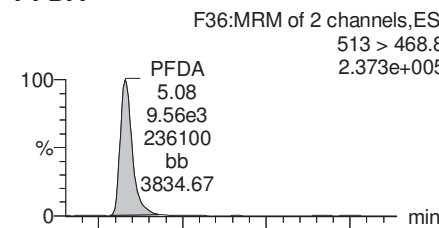
PFNA



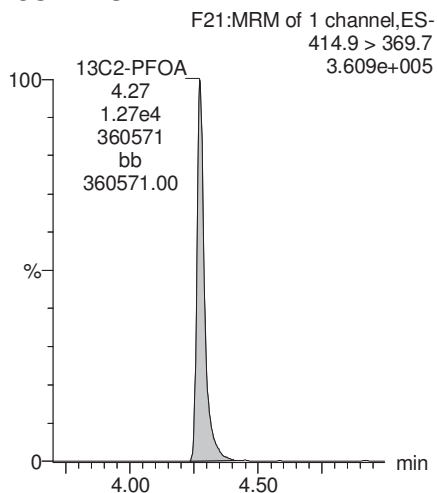
Total PFOS



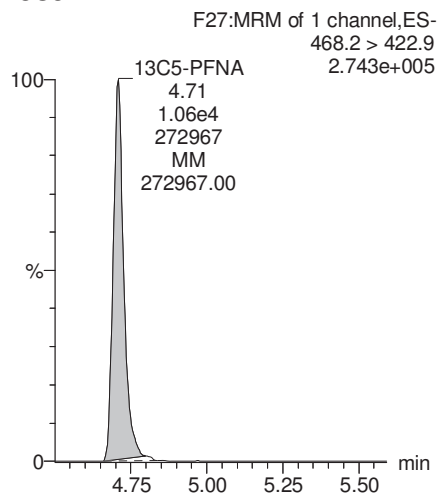
PFDA



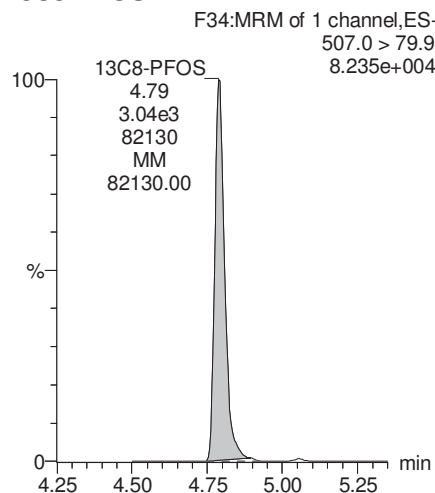
13C2-PFOA



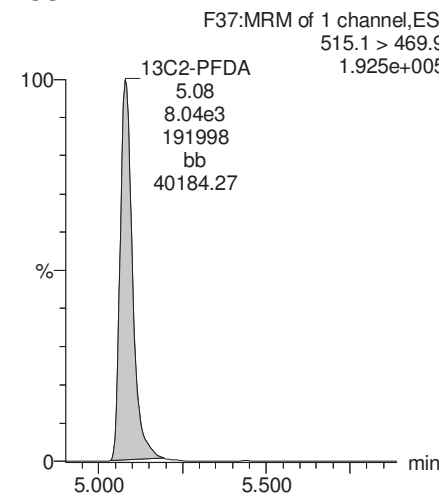
13C5-PFNA



13C8-PFOS



13C2-PFDA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

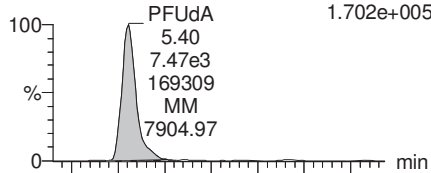
Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

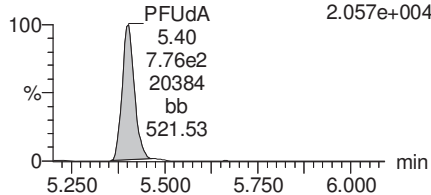
Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

PFUdA

F45:MRM of 2 channels,ES-
563.0 > 518.9
1.702e+005

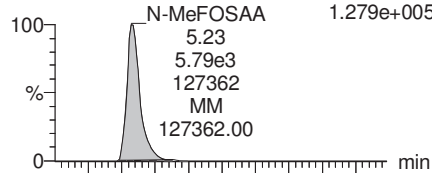


F45:MRM of 2 channels,ES-
563.0 > 269
2.057e+004

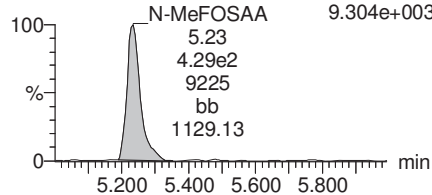


N-MeFOSAA

F47:MRM of 2 channels,ES-
570.1 > 419
1.279e+005

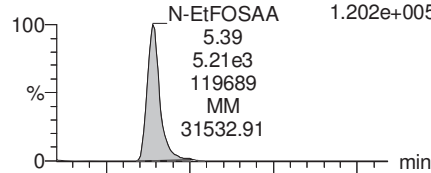


F47:MRM of 2 channels,ES-
570.1 > 483.0
9.304e+003

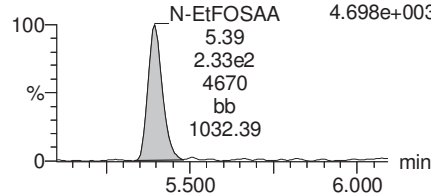


N-EtFOSAA

F50:MRM of 2 channels,ES-
584.2 > 419
1.202e+005

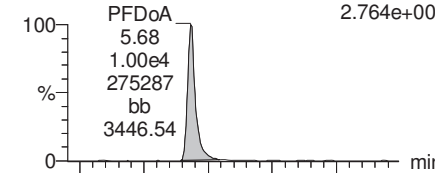


F50:MRM of 2 channels,ES-
584.2 > 483.0
4.698e+003

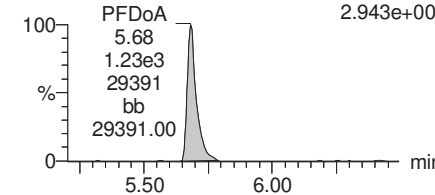


PFDaA

F53:MRM of 4 channels,ES-
612.9 > 569.0
2.764e+005

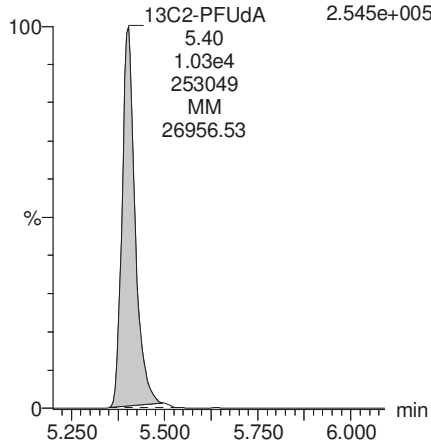


F53:MRM of 4 channels,ES-
612.9 > 318.8
2.943e+004



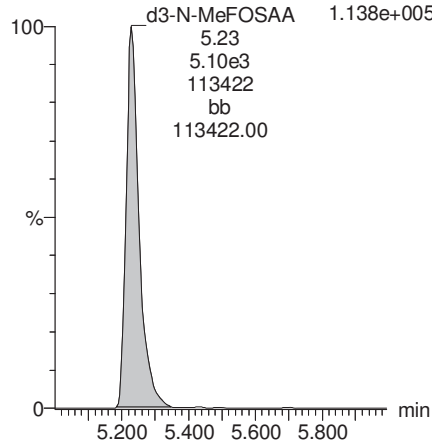
13C2-PFUdA

F46:MRM of 1 channel,ES-
565 > 519.8
2.545e+005



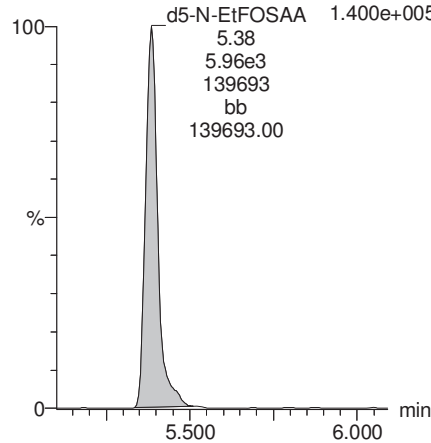
d3-N-MeFOSAA

F49:MRM of 1 channel,ES-
573.3 > 419
1.138e+005



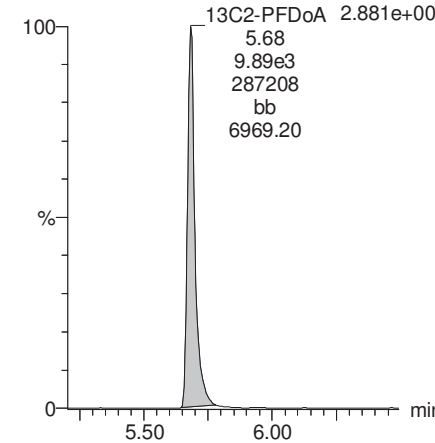
d5-N-EtFOSAA

F51:MRM of 1 channel,ES-
589.3 > 419
1.400e+005



13C2-PFDaA

F54:MRM of 2 channels,ES-
615.0 > 569.7
2.881e+005



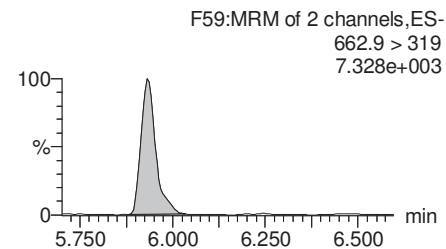
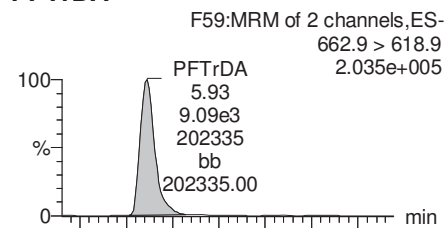
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

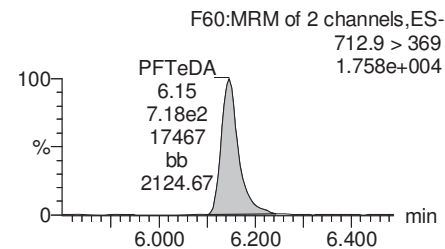
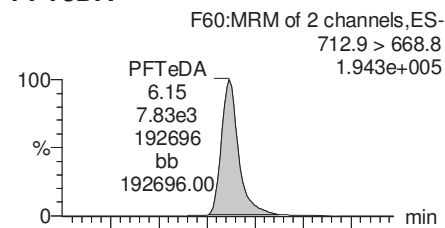
Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

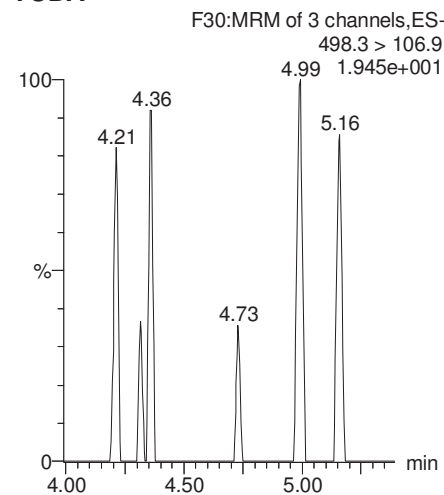
PFTrDA



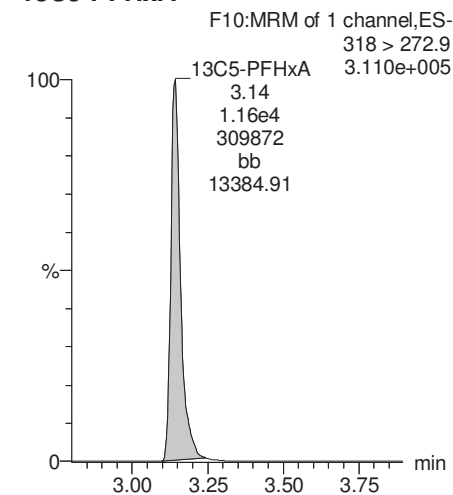
PFTeDA



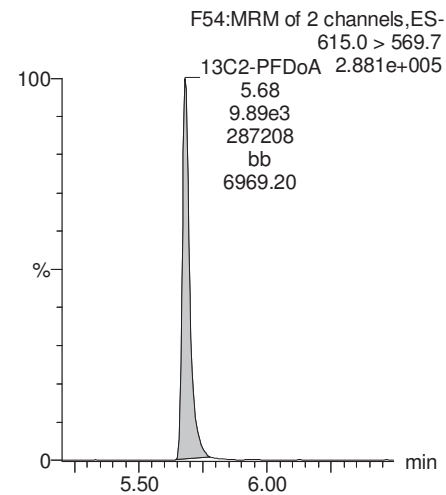
TCDA



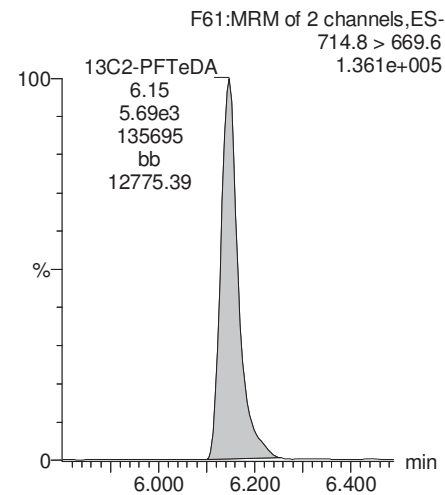
13C5-PFHxA



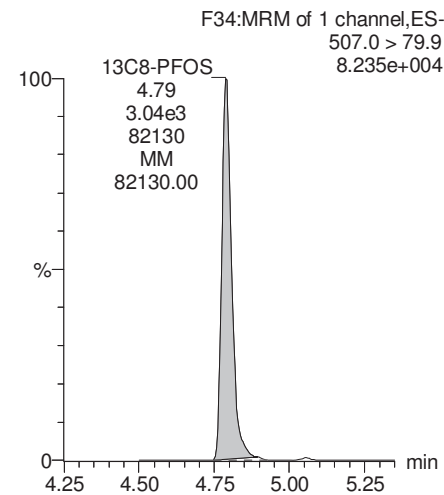
13C2-PFDoA



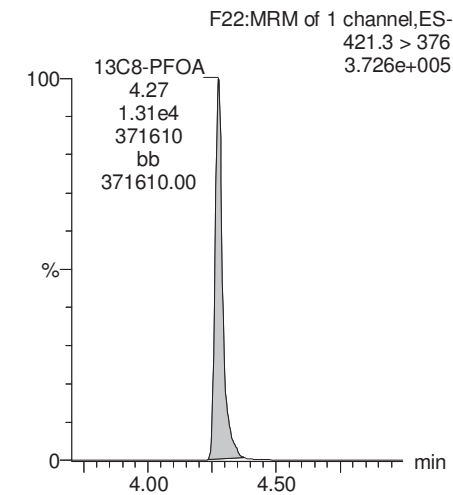
13C2-PFTeDA



13C8-PFOS



13C8-PFOA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-20.qld

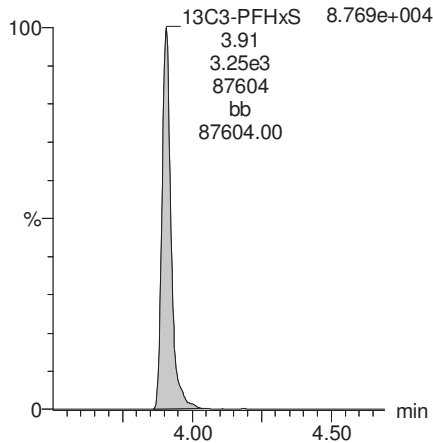
Last Altered: Saturday, April 14, 2018 17:11:41 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:14:34 Pacific Daylight Time

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

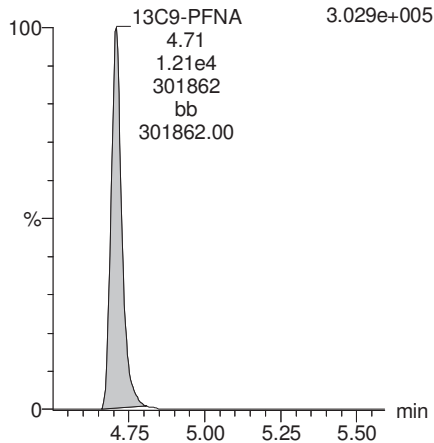
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
8.769e+004



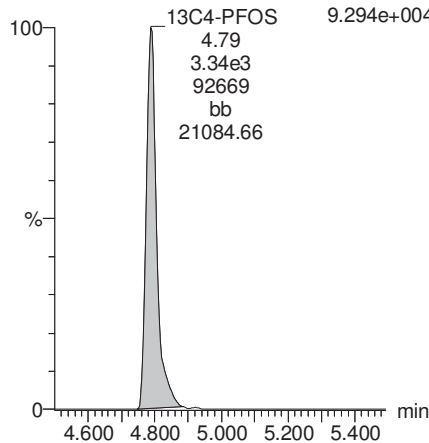
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.029e+005



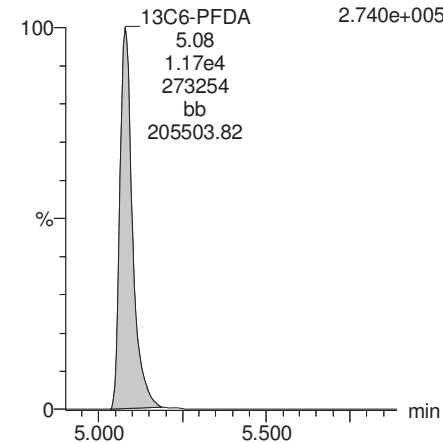
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
9.294e+004



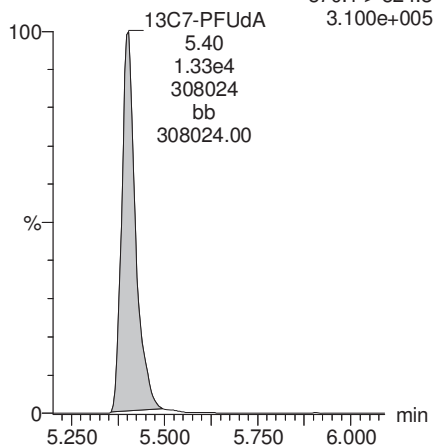
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
2.740e+005



13C7-PFUDa

F48:MRM of 1 channel,ES-
570.1 > 524.8
3.100e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:21:19 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	3 PFBS	299.0 > 79.7	2.86e3	1.87e3	0.250		2.81	2.65	19.1	40.4641	101.2
2	5 PFHxA	313.2 > 268.9	1.31e4	3.69e3	0.250		3.30	3.14	17.8	42.5251	106.3
3	7 PFHpA	363.0 > 318.9	1.04e4	1.05e4	0.250		3.92	3.76	12.3	40.5597	101.4
4	8 L-PFHxS	398.9 > 79.6	2.43e3	1.50e3	0.250		4.06	3.90	20.2	43.2501	108.1
5	11 L-PFOA	413 > 368.7	1.22e4	1.40e4	0.250		4.30	4.27	10.9	46.3309	115.8
6	14 PFNA	463.0 > 418.8	1.15e4	1.19e4	0.250		4.87	4.71	12.1	40.5860	101.5
7	16 L-PFOS	499 > 79.9	3.05e3	3.64e3	0.250		4.90	4.79	10.5	39.8663	99.7
8	18 PFDA	513 > 468.8	1.14e4	9.31e3	0.250		5.24	5.08	15.3	45.7117	114.3
9	21 N-MeFOSAA	570.1 > 419	7.45e3	5.85e3	0.250		5.39	5.23	15.9	44.8704	112.2
10	22 N-EtFOSAA	584.2 > 419	5.33e3	6.81e3	0.250		5.55	5.39	9.78	38.8243	97.1
11	23 PFUdA	563.0 > 518.9	1.01e4	1.14e4	0.250		5.56	5.40	11.1	42.7474	106.9

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	25 PFDoA	612.9 > 569.0	1.11e4	9.92e3	0.250		5.84	5.68	14.0	43.1893	108.0
2	27 PFTTrDA	662.9 > 618.9	1.03e4	9.92e3	0.250		6.10	5.93	13.0	37.6972	94.2
3	28 PFTTeDA	712.9 > 668.8	9.03e3	5.49e3	0.250		6.30	6.15	20.6	51.6630	129.2
4	36 13C3-PFBS	302. > 98.8	1.87e3	1.40e4	0.250	0.121	2.81	2.65	1.67	55.5416	111.1
5	37 13C2-PFHxA	315 > 269.8	3.69e3	1.40e4	0.250	0.733	3.30	3.14	3.30	18.0070	90.0
6	38 13C4-PFHpA	367.2 > 321.8	1.05e4	1.40e4	0.250	0.761	3.92	3.76	9.44	49.5980	99.2
7	39 18O2-PFHxS	403.0 > 102.6	1.50e3	3.47e3	0.250	0.431	4.06	3.91	5.42	50.3313	100.7
8	40 13C2-6:2 FTS	429.1 > 408.9	3.99e3	1.47e4	0.250	0.333	4.38	4.22	3.40	40.8652	81.7
9	41 13C2-PFOA	414.9 > 369.7	1.40e4	1.47e4	0.250	1.150	4.43	4.27	11.9	41.5642	83.1
10	42 13C5-PFNA	468.2 > 422.9	1.19e4	1.51e4	0.250	0.979	4.87	4.71	9.84	40.2017	80.4
11	43 13C8-PFOA	506.1 > 77.7	1.97e3	1.61e4	0.250	0.218	4.93	4.78	1.52	27.9006	55.8
12	44 13C8-PFOS	507.0 > 79.9	3.64e3	3.47e3	0.250	1.047	4.95	4.79	13.1	50.1297	100.3
13	45 13C2-PFDA	515.1 > 469.9	9.31e3	1.34e4	0.250	0.958	5.24	5.08	8.70	36.3190	72.6
14	46 13C2-8:2 FTS	529.1 > 508.7	2.86e3	1.40e4	0.250	0.226	5.21	5.05	2.56	45.2669	90.5
15	47 d3-N-MeFOSAA	573.3 > 419	5.85e3	1.61e4	0.250	0.471	5.39	5.23	4.53	38.4581	76.9
16	48 d5-N-EtFOSAA	589.3 > 419	6.81e3	1.61e4	0.250	0.517	5.55	5.38	5.28	40.8401	81.7
17	49 13C2-PFUdA	565 > 519.8	1.14e4	1.61e4	0.250	0.960	5.56	5.40	8.87	36.9507	73.9
18	50 13C2-PFDoA	615.0 > 569.7	9.92e3	1.61e4	0.250	0.840	5.84	5.68	7.68	36.5870	73.2
19	51 d3-N-MeFOSA	515.2 > 168.9		1.61e4	0.250	0.097	6.00				
20	52 13C2-PFTTeDA	714.8 > 669.6	5.49e3	1.61e4	0.250	0.510	6.30	6.15	4.25	33.3327	66.7
21	53 d5-N-ETFOSA	531.1 > 168.9		1.61e4	0.250	0.138	6.40				
22	54 13C2-PFHxDA	815 > 769.7	5.82e3	1.61e4	0.250	1.118	6.62	6.47	4.51	16.1316	80.7
23	55 d7-N-MeFOSE	623.1 > 58.9		1.61e4	0.250	0.169	6.50				
24	56 d9-N-EtFOSE	639.2 > 58.8		1.61e4	0.250	0.161	6.65				
25	57 13C4-PFBA	217. > 171.8	1.16e4	1.16e4	0.250	1.000	1.56	1.44	12.5	50.0000	100.0
26	58 13C5-PFHxA	318 > 272.9	1.40e4	1.40e4	0.250	1.000	3.30	3.14	12.5	50.0000	100.0
27	59 13C3-PFHxS	401.9 > 79.9	3.47e3	3.47e3	0.250	1.000	4.04	3.90	12.5	50.0000	100.0
28	60 13C8-PFOA	421.3 > 376	1.47e4	1.47e4	0.250	1.000	4.43	4.27	12.5	50.0000	100.0
29	61 13C9-PFNA	472.2 > 426.9	1.51e4	1.51e4	0.250	1.000	4.87	4.71	12.5	50.0000	100.0
30	62 13C4-PFOS	503 > 79.9	3.47e3	3.47e3	0.250	1.000	4.95	4.79	12.5	50.0000	100.0
31	63 13C6-PFDA	519.1 > 473.7	1.34e4	1.34e4	0.250	1.000	5.24	5.08	12.5	50.0000	100.0
32	64 13C7-PFUdA	570.1 > 524.8	1.61e4	1.61e4	0.250	1.000	5.56	5.40	12.5	50.0000	100.0

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	65 Total PFHxS	398.9 > 79.6	2.43e3	1.50e3	0.250		4.05		20.2	43.2501	
34	66 Total PFOA	413 > 368.7	1.22e4	1.40e4	0.250		4.30		10.9	46.3309	
35	67 Total PFOS	499 > 79.9	3.05e3	3.64e3	0.250		4.90		10.5	39.8663	
36	68 Total N-MeFOSAA	570.1 > 419	7.45e3	5.85e3	0.250		5.55		15.9	44.8704	
37	69 Total N-EtFOSAA	584.2 > 419	5.33e3	6.81e3	0.250		5.70		9.78	38.8243	

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

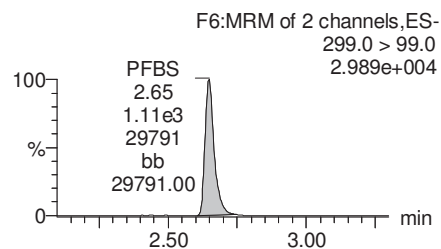
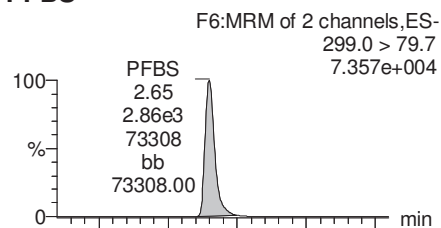
Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

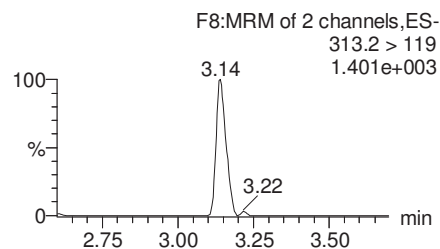
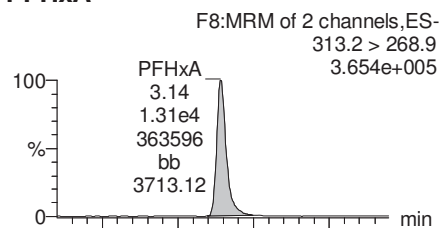
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

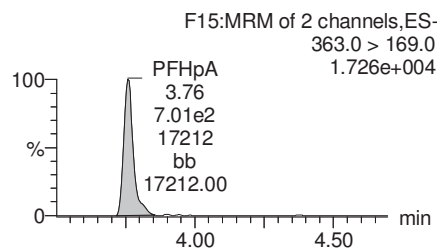
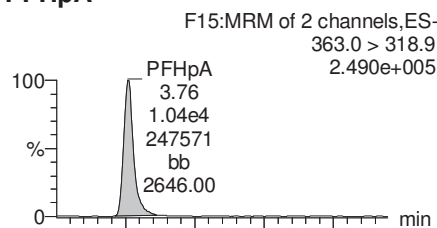
PFBS



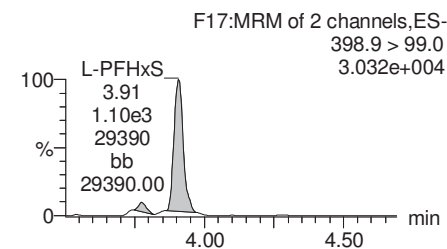
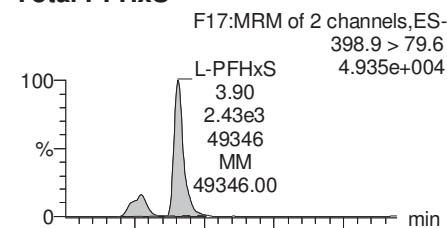
PFHxA



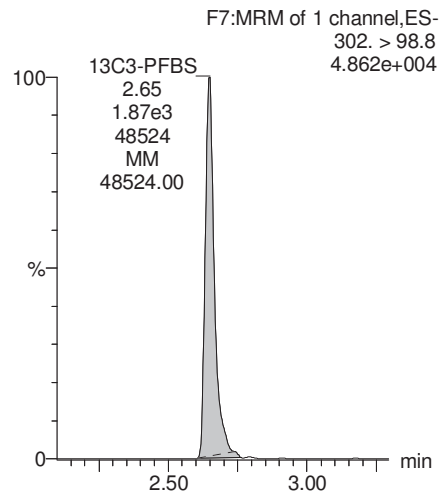
PFHpA



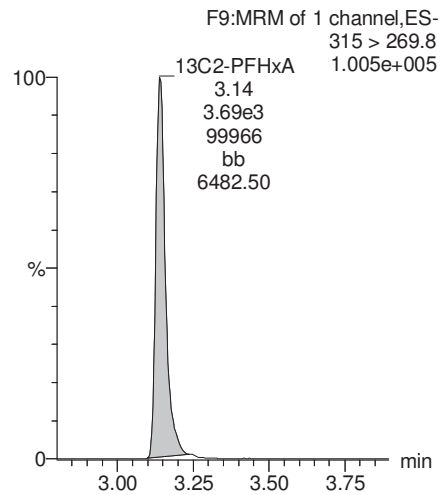
Total PFHxS



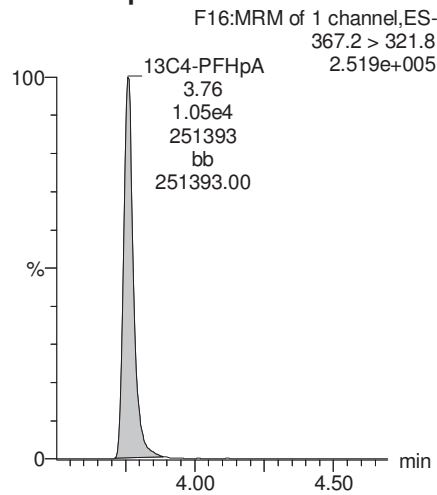
13C3-PFBS



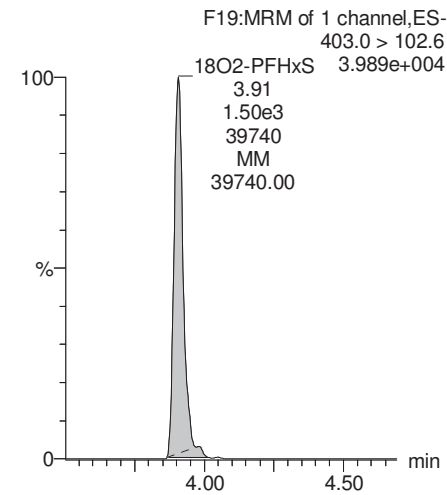
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



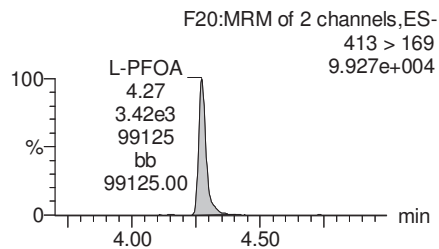
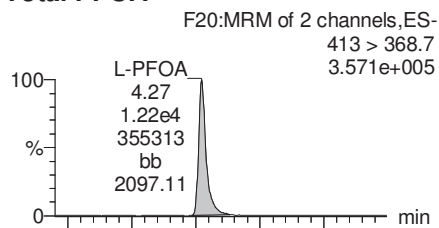
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

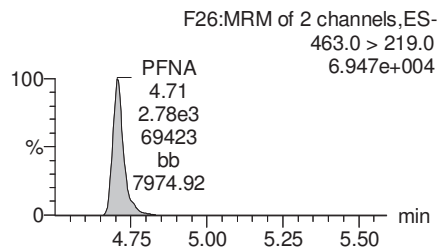
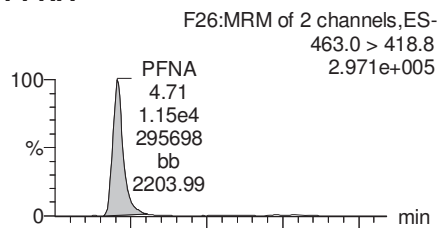
Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

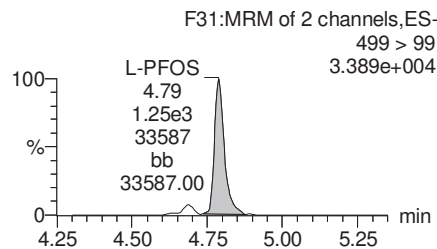
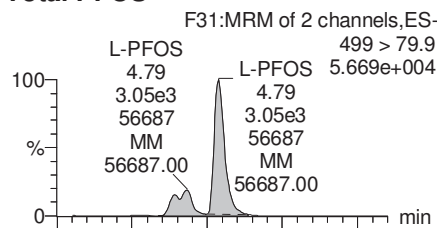
Total PFOA



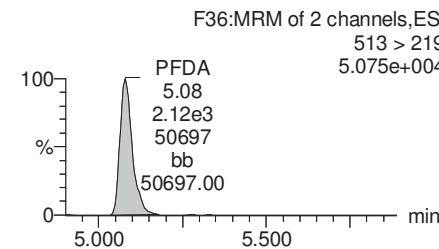
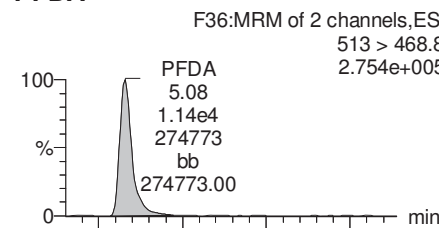
PFNA



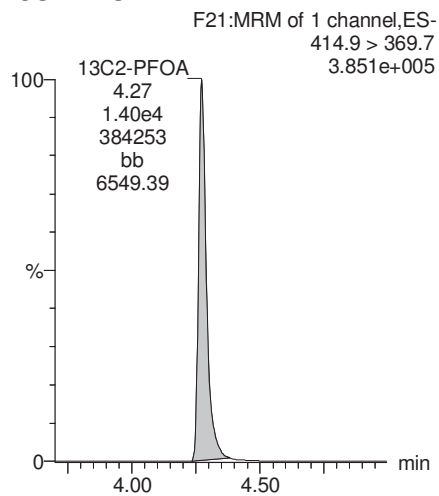
Total PFOS



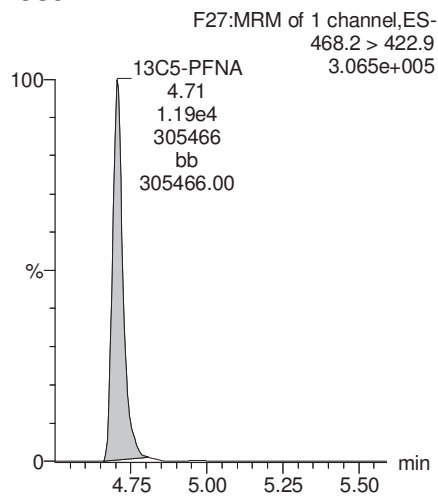
PFDA



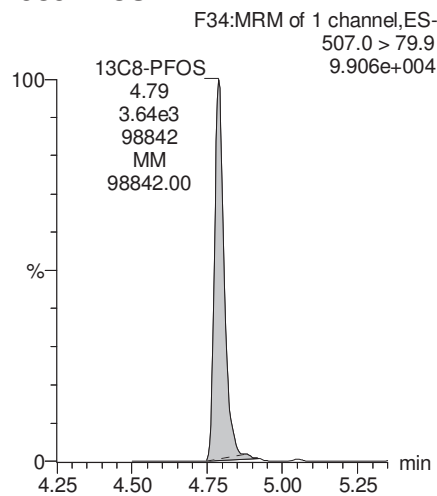
13C2-PFOA



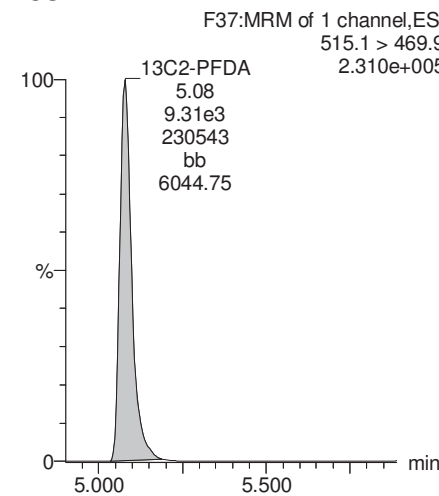
13C5-PFNA



13C8-PFOS



13C2-PFDA



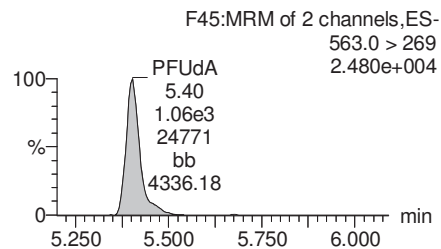
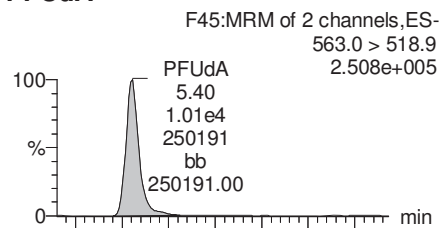
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

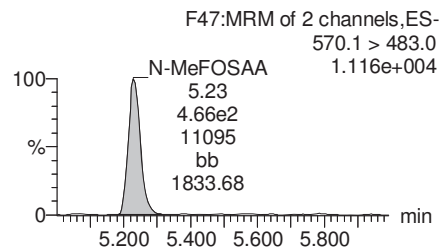
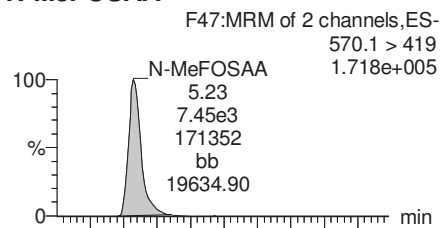
Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

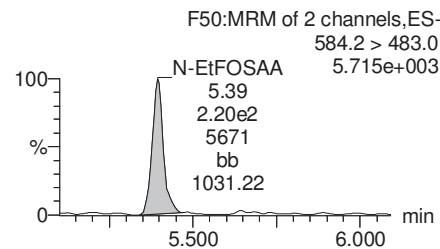
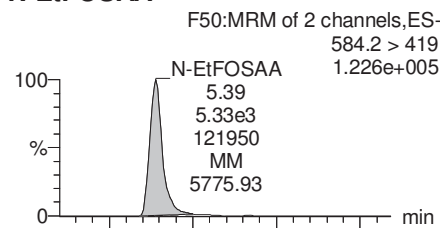
PFUdA



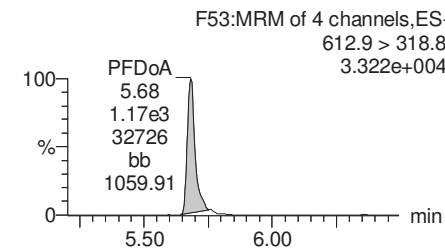
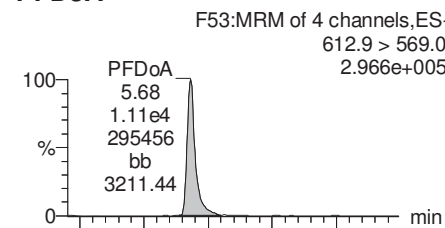
N-MeFOSAA



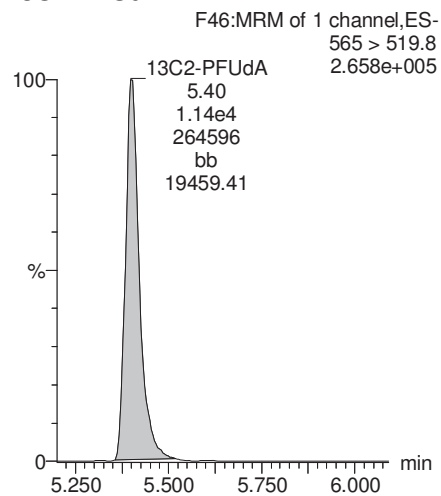
N-EtFOSAA



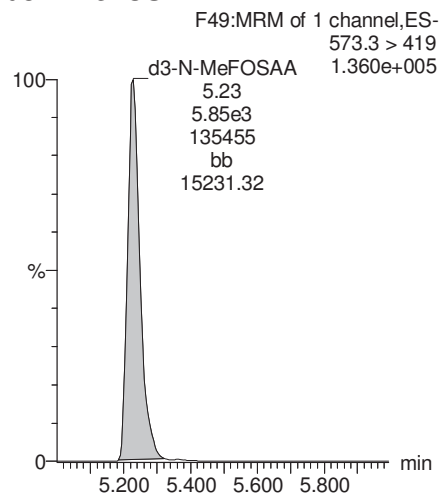
PFDaA



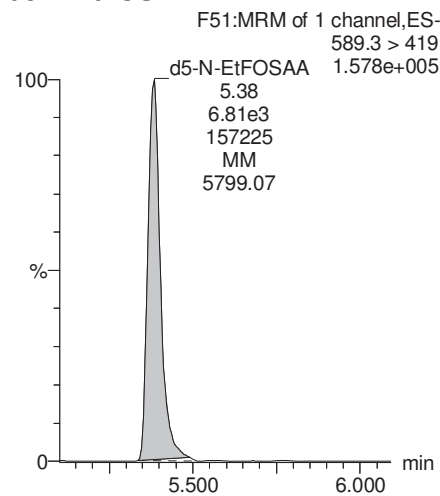
13C2-PFUdA



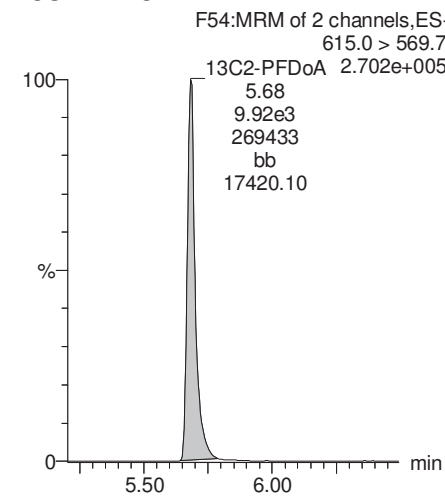
d3-N-MeFOSAA



d5-N-EtFOSAA



13C2-PFDaA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

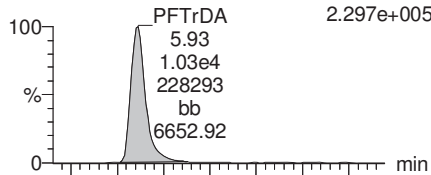
Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

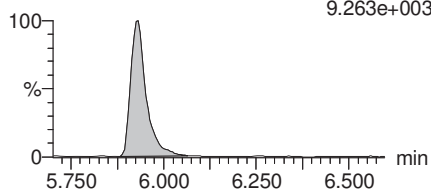
Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

PFTrDA

F59:MRM of 2 channels,ES-
662.9 > 618.9
2.297e+005

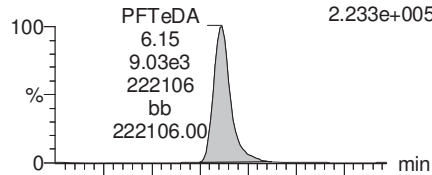


F59:MRM of 2 channels,ES-
662.9 > 319
9.263e+003

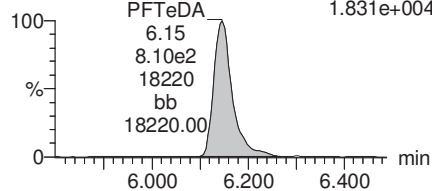


PFTeDA

F60:MRM of 2 channels,ES-
712.9 > 668.8
2.233e+005

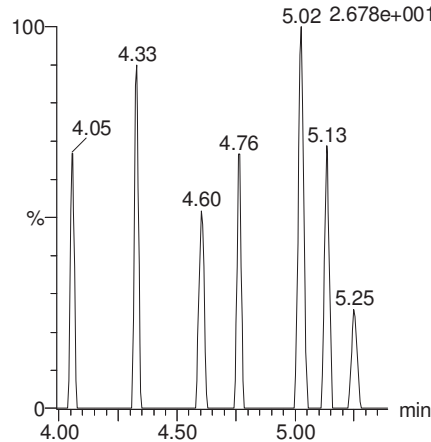


F60:MRM of 2 channels,ES-
712.9 > 369
1.831e+004



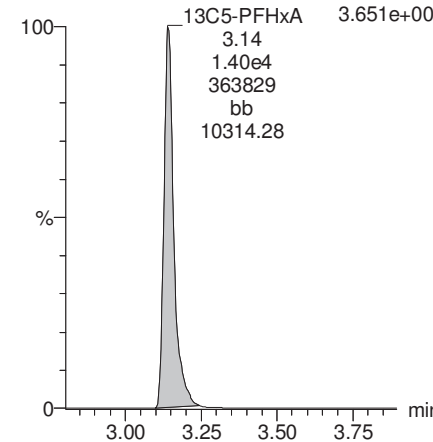
TCDA

F30:MRM of 3 channels,ES-
498.3 > 106.9
2.678e+001



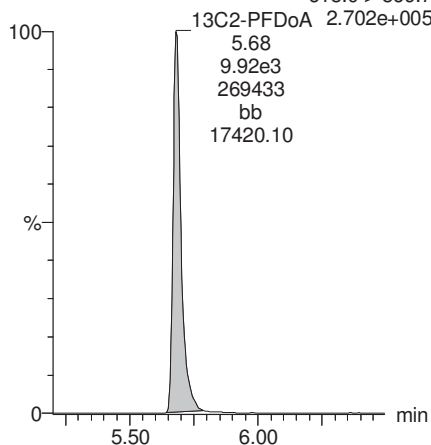
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
3.651e+005



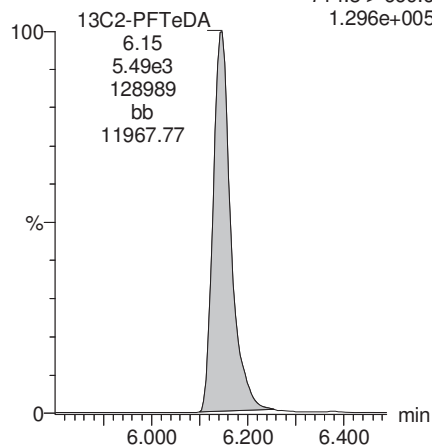
13C2-PFDoA

F54:MRM of 2 channels,ES-
615.0 > 569.7
2.702e+005



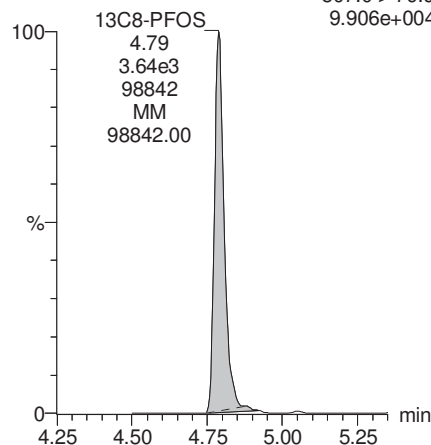
13C2-PFTeDA

F61:MRM of 2 channels,ES-
714.8 > 669.6
1.296e+005



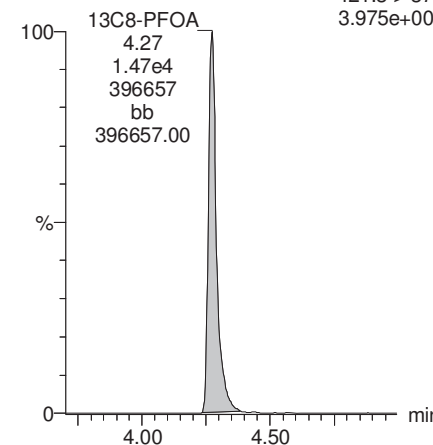
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
9.906e+004



13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
3.975e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-21.qld

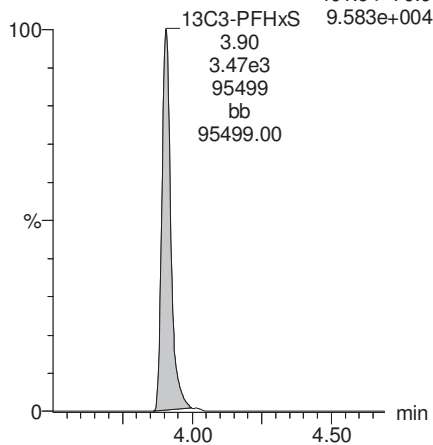
Last Altered: Saturday, April 14, 2018 17:20:50 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:21:33 Pacific Daylight Time

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

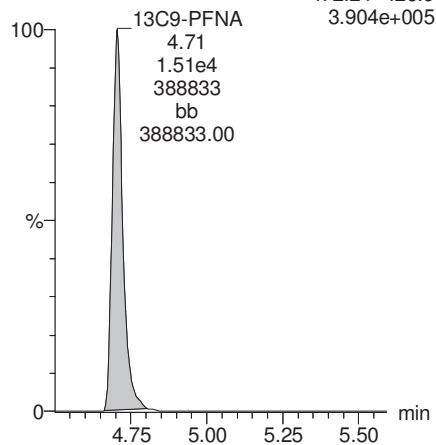
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
9.583e+004



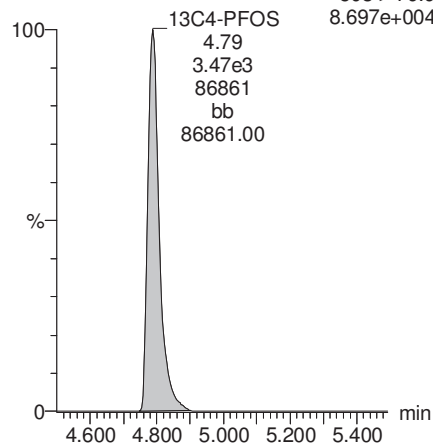
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.904e+005



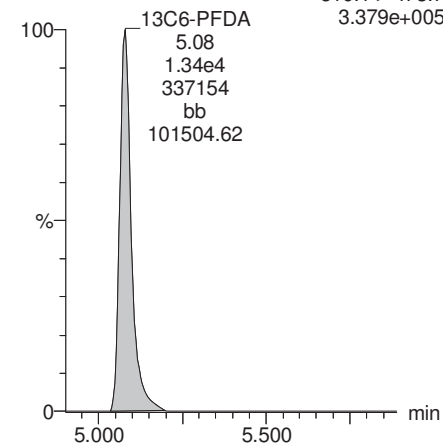
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
8.697e+004



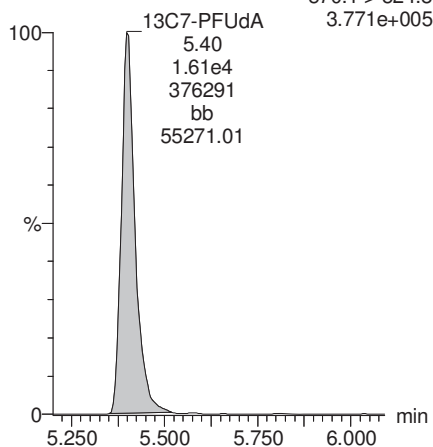
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.379e+005



13C7-PFudA

F48:MRM of 1 channel,ES-
570.1 > 524.8
3.771e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:29:29 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
1	3 PFBS	299.0 > 79.7		1.85e3	0.250		2.81				
2	5 PFHxA	313.2 > 268.9		3.84e3	0.250		3.30				
3	7 PFHpA	363.0 > 318.9		1.02e4	0.250		3.92				
4	8 L-PFHxS	398.9 > 79.6	1.15e1	1.49e3	0.250		4.06	3.92	0.0964	0.4386	
5	11 L-PFOA	413 > 368.7	1.61e2	1.39e4	0.250		4.30	4.28	0.145	0.2030	
6	14 PFNA	463.0 > 418.8	2.49e2	1.19e4	0.250		4.87	4.71	0.261	0.7683	
7	16 L-PFOS	499 > 79.9	1.47e0	3.40e3	0.250		4.90	4.80	0.00539	0.1901	
8	18 PFDA	513 > 468.8		9.67e3	0.250		5.24				
9	21 N-MeFOSAA	570.1 > 419		6.16e3	0.250		5.39				
10	22 N-EtFOSAA	584.2 > 419		6.94e3	0.250		5.55				
11	23 PFUdA	563.0 > 518.9	1.87e2	1.10e4	0.250		5.56	5.40	0.212	0.5402	

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

#	Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	
1	25	PFDa	612.9 > 569.0	1.05e4	0.250		5.84					
2	27	PFTDA	662.9 > 618.9	1.05e4	0.250		6.10					
3	28	PFTeDA	712.9 > 668.8	5.30e3	0.250		6.30					
4	36	13C3-PFBS	302. > 98.8	1.85e3	1.47e4	0.250	0.121	2.81	2.65	1.57	52.0242	104.2
5	37	13C2-PFHxA	315 > 269.8	3.84e3	1.47e4	0.250	0.733	3.30	3.14	3.26	17.7872	89.1
6	38	13C4-PFHpA	367.2 > 321.8	1.02e4	1.47e4	0.250	0.761	3.92	3.76	8.70	45.6733	91.5
7	39	18O2-PFHxS	403.0 > 102.6	1.49e3	3.53e3	0.250	0.431	4.06	3.91	5.30	49.0576	98.3
8	40	13C2-6:2 FTS	429.1 > 408.9	4.07e3	1.48e4	0.250	0.333	4.38	4.22	3.44	41.2672	82.7
9	41	13C2-PFOA	414.9 > 369.7	1.39e4	1.48e4	0.250	1.150	4.43	4.28	11.8	40.8207	81.8
10	42	13C5-PFNA	468.2 > 422.9	1.19e4	1.38e4	0.250	0.979	4.87	4.71	10.8	44.0103	88.2
11	43	13C8-PFOA	506.1 > 77.7	2.29e3	1.57e4	0.250	0.218	4.93	4.78	1.82	33.3351	66.8
12	44	13C8-PFOS	507.0 > 79.9	3.40e3	3.60e3	0.250	1.047	4.95	4.79	11.8	45.0914	90.3
13	45	13C2-PFDA	515.1 > 469.9	9.67e3	1.33e4	0.250	0.958	5.24	5.08	9.06	37.7348	75.6
14	46	13C2-8:2 FTS	529.1 > 508.7	2.97e3	1.47e4	0.250	0.226	5.21	5.05	2.53	44.5981	89.3
15	47	d3-N-MeFOSAA	573.3 > 419	6.16e3	1.57e4	0.250	0.471	5.39	5.23	4.91	41.5928	83.3
16	48	d5-N-EtFOSAA	589.3 > 419	6.94e3	1.57e4	0.250	0.517	5.55	5.38	5.53	42.6943	85.5
17	49	13C2-PFUdA	565 > 519.8	1.10e4	1.57e4	0.250	0.960	5.56	5.40	8.79	36.5776	73.3
18	50	13C2-PFDoA	615.0 > 569.7	1.05e4	1.57e4	0.250	0.840	5.84	5.68	8.36	39.7539	79.6
19	51	d3-N-MeFOSA	515.2 > 168.9		1.57e4	0.250	0.097	6.00				
20	52	13C2-PFTeDA	714.8 > 669.6	5.30e3	1.57e4	0.250	0.510	6.30	6.15	4.22	33.0628	66.2
21	53	d5-N-ETFOSA	531.1 > 168.9		1.57e4	0.250	0.138	6.40				
22	54	13C2-PFHxDA	815 > 769.7	4.75e3	1.57e4	0.250	1.118	6.62	6.47	3.79	13.5281	67.8
23	55	d7-N-MeFOSE	623.1 > 58.9		1.57e4	0.250	0.169	6.50				
24	56	d9-N-EtFOSE	639.2 > 58.8		1.57e4	0.250	0.161	6.65				
25	57	13C4-PFBA	217. > 171.8	1.22e4	1.22e4	0.250	1.000	1.56	1.44	12.5	49.9181	100.0
26	58	13C5-PFHxA	318 > 272.9	1.47e4	1.47e4	0.250	1.000	3.30	3.14	12.5	49.9181	100.0
27	59	13C3-PFHxS	401.9 > 79.9	3.53e3	3.53e3	0.250	1.000	4.04	3.91	12.5	49.9181	100.0
28	60	13C8-PFOA	421.3 > 376	1.48e4	1.48e4	0.250	1.000	4.43	4.28	12.5	49.9181	100.0
29	61	13C9-PFNA	472.2 > 426.9	1.38e4	1.38e4	0.250	1.000	4.87	4.71	12.5	49.9181	100.0
30	62	13C4-PFOS	503 > 79.9	3.60e3	3.60e3	0.250	1.000	4.95	4.79	12.5	49.9181	100.0
31	63	13C6-PFDA	519.1 > 473.7	1.33e4	1.33e4	0.250	1.000	5.24	5.08	12.5	49.9181	100.0
32	64	13C7-PFUdA	570.1 > 524.8	1.57e4	1.57e4	0.250	1.000	5.56	5.40	12.5	49.9181	100.0

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

	# Name	Trace	Area	IS Area	Wt./Vol.	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec
33	65 Total PFHxS	398.9 > 79.6	1.15e1	1.49e3	0.250		4.05		0.0964	0.4386	
34	66 Total PFOA	413 > 368.7	1.61e2	1.39e4	0.250		4.30		0.145	0.2030	
35	67 Total PFOS	499 > 79.9	1.47e0	3.40e3	0.250		4.90		0.00539	0.1901	
36	68 Total N-MeFOSAA	570.1 > 419	0.00e0	6.16e3	0.250		5.55		0.000		
37	69 Total N-EtFOSAA	584.2 > 419	0.00e0	6.94e3	0.250		5.70		0.000		

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

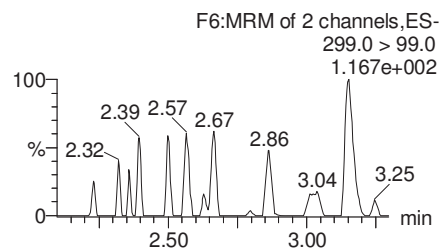
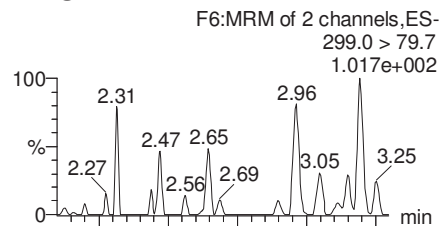
Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

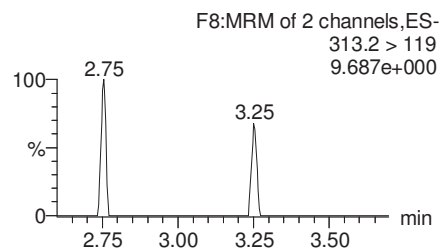
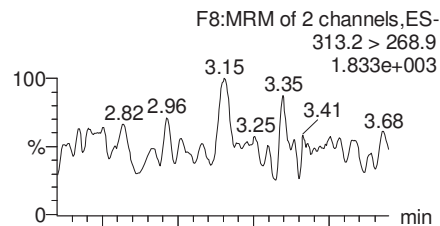
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

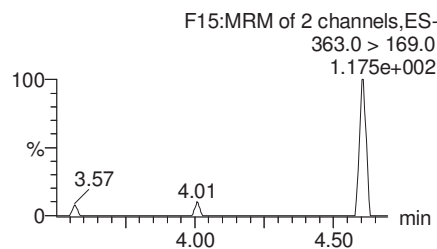
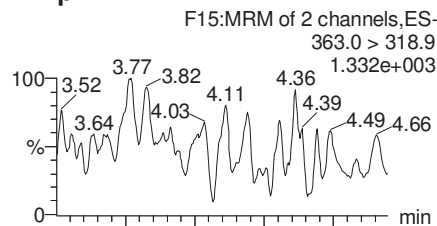
PFBS



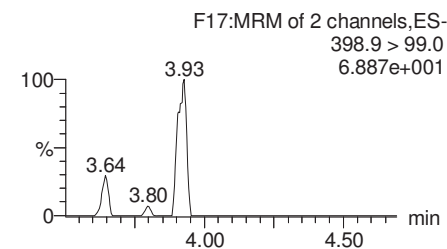
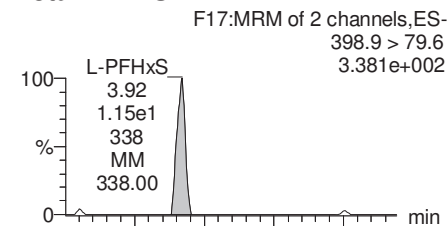
PFHxA



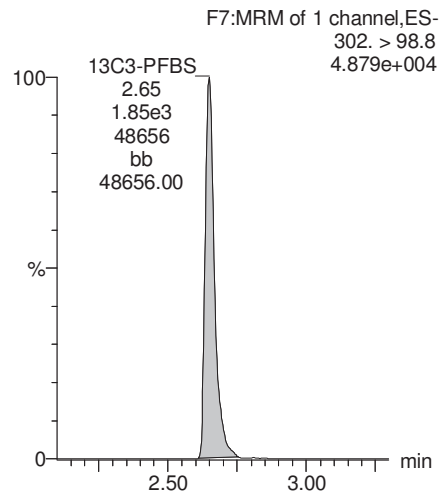
PFHpA



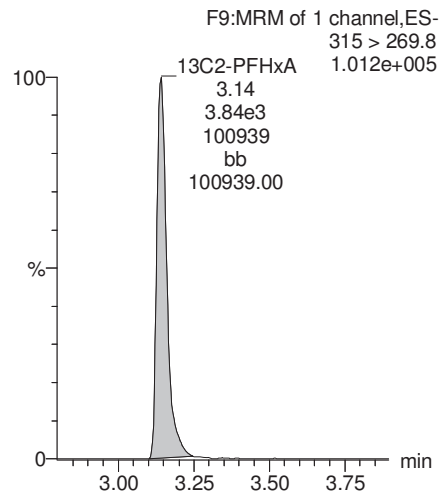
Total PFHxS



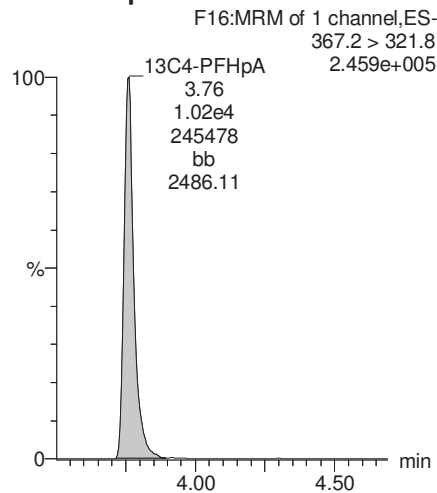
13C3-PFBS



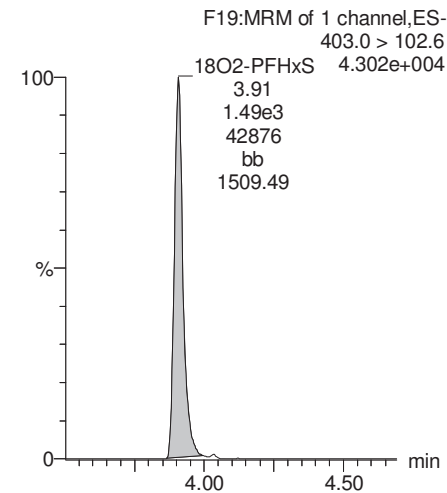
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

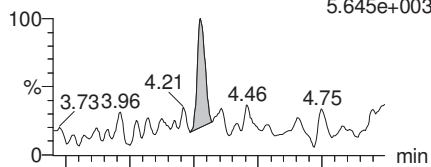
Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

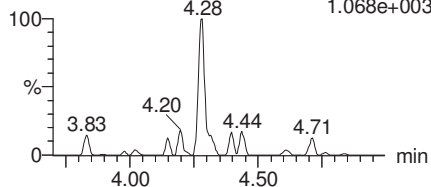
Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

Total PFOA

F20:MRM of 2 channels,ES-
413 > 368.7
5.645e+003

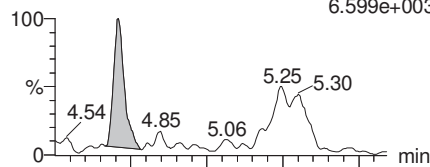


F20:MRM of 2 channels,ES-
413 > 169
1.068e+003

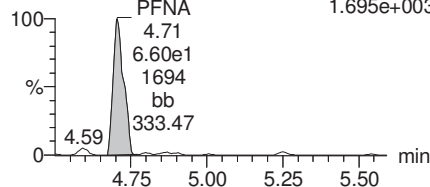


PFNA

F26:MRM of 2 channels,ES-
463.0 > 418.8
6.599e+003

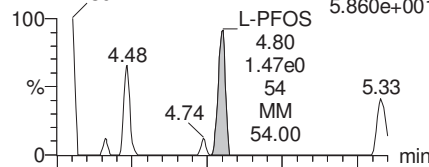


F26:MRM of 2 channels,ES-
463.0 > 219.0
1.695e+003

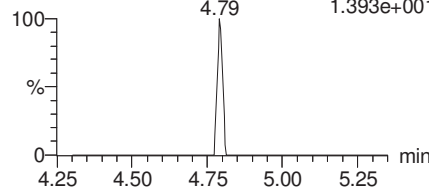


Total PFOS

F31:MRM of 2 channels,ES-
499 > 79.9
5.860e+001

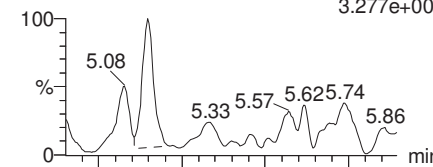


F31:MRM of 2 channels,ES-
499 > 99
1.393e+001

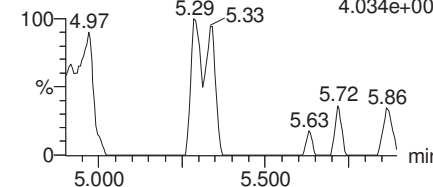


PFDA

F36:MRM of 2 channels,ES-
513 > 468.8
3.277e+003

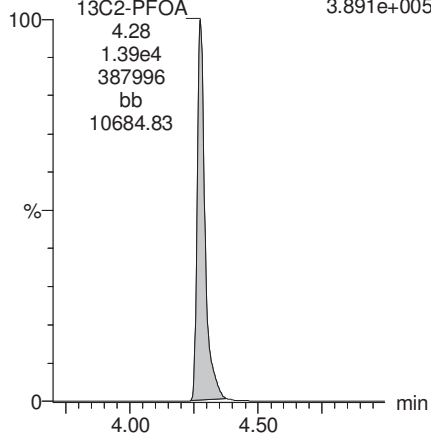


F36:MRM of 2 channels,ES-
513 > 219
4.034e+001



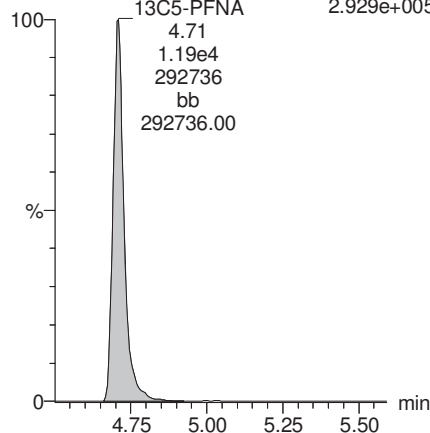
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
3.891e+005



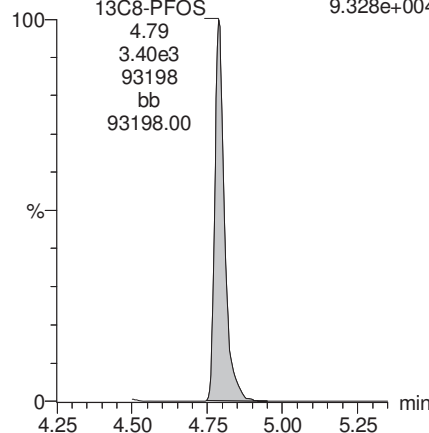
13C5-PFNA

F27:MRM of 1 channel,ES-
468.2 > 422.9
2.929e+005



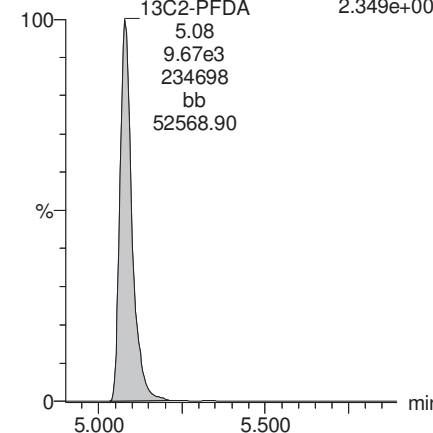
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
9.328e+004



13C2-PFDA

F37:MRM of 1 channel,ES-
515.1 > 469.9
2.349e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

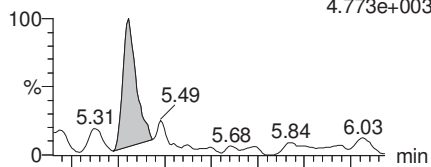
Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

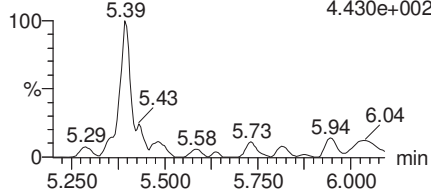
Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

PFUdA

F45:MRM of 2 channels,ES-
563.0 > 518.9
4.773e+003

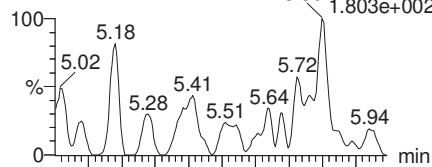


F45:MRM of 2 channels,ES-
563.0 > 269
4.430e+002

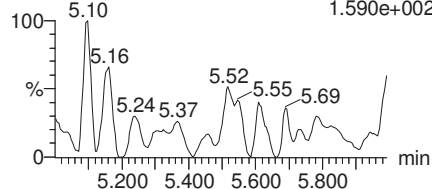


N-MeFOSAA

F47:MRM of 2 channels,ES-
570.1 > 419
1.803e+002

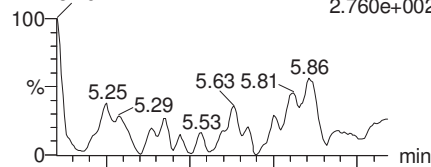


F47:MRM of 2 channels,ES-
570.1 > 483.0
1.590e+002

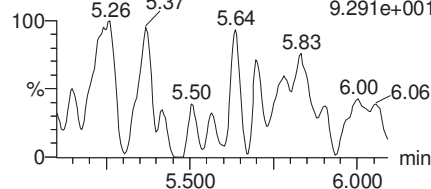


N-EtFOSAA

F50:MRM of 2 channels,ES-
584.2 > 419
2.760e+002

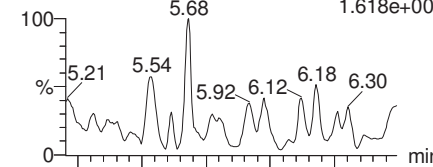


F50:MRM of 2 channels,ES-
584.2 > 483.0
9.291e+001

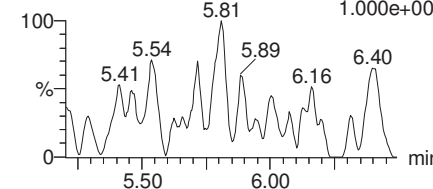


PFDaA

F53:MRM of 4 channels,ES-
612.9 > 569.0
1.618e+003

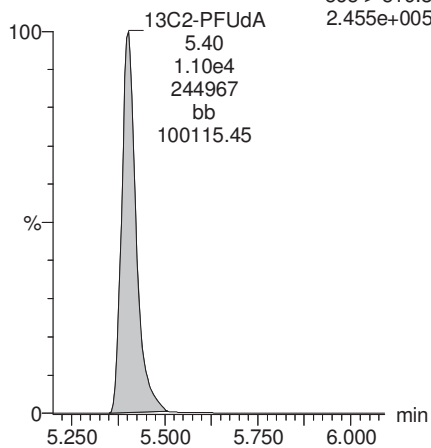


F53:MRM of 4 channels,ES-
612.9 > 318.8
1.000e+002



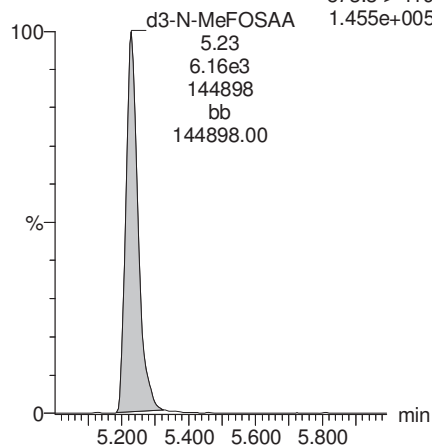
13C2-PFUdA

F46:MRM of 1 channel,ES-
565 > 519.8
2.455e+005



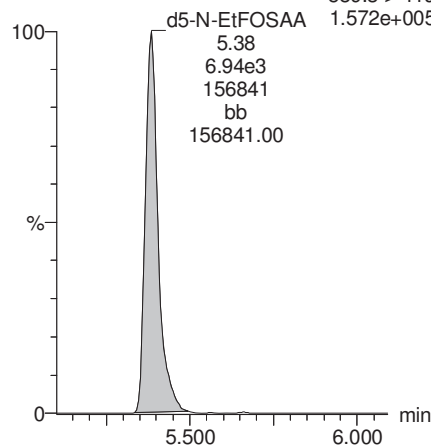
d3-N-MeFOSAA

F49:MRM of 1 channel,ES-
573.3 > 419
1.455e+005



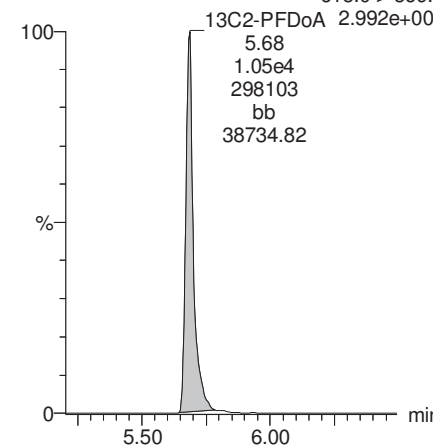
d5-N-EtFOSAA

F51:MRM of 1 channel,ES-
589.3 > 419
1.572e+005



13C2-PFDaA

F54:MRM of 2 channels,ES-
615.0 > 569.7
2.992e+005



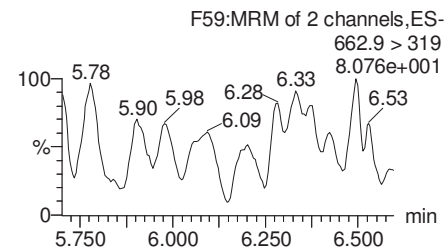
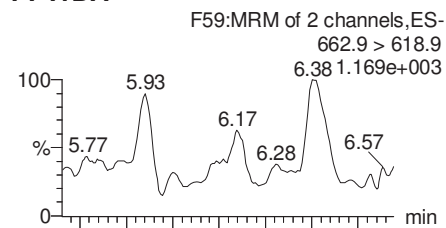
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

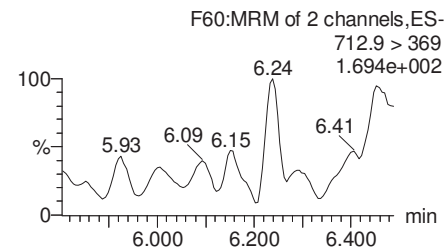
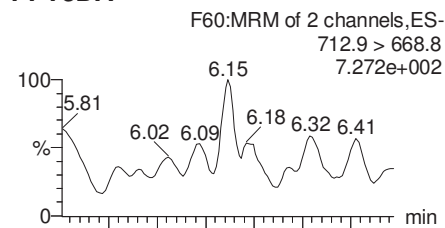
Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

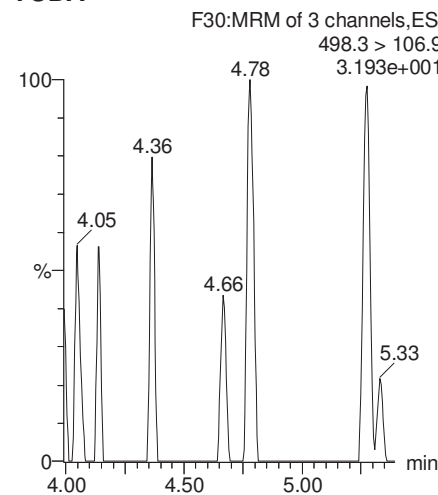
PFTrDA



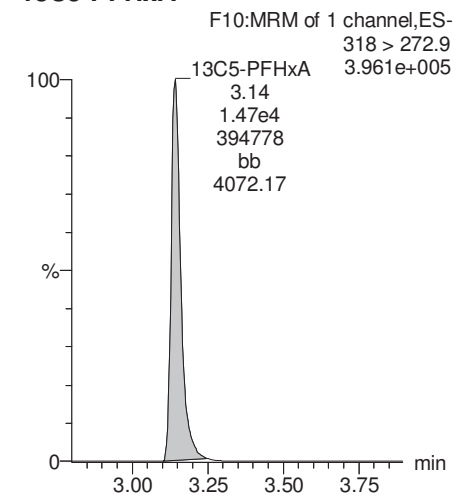
PFTeDA



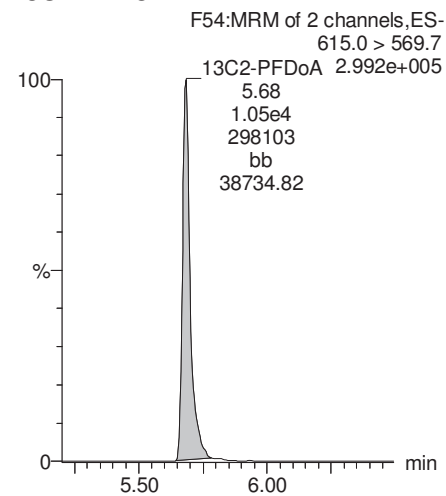
TCDA



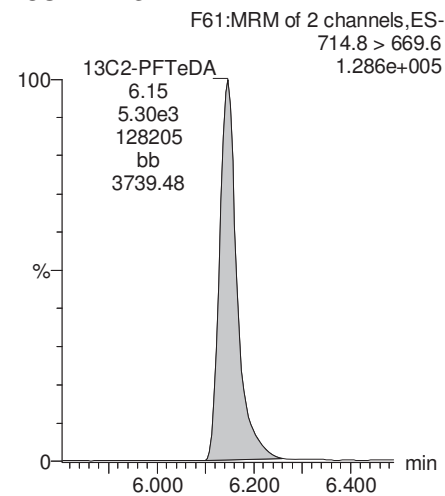
13C5-PFHxA



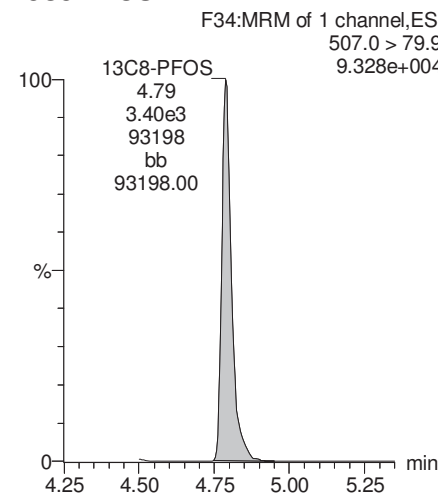
13C2-PFDoA



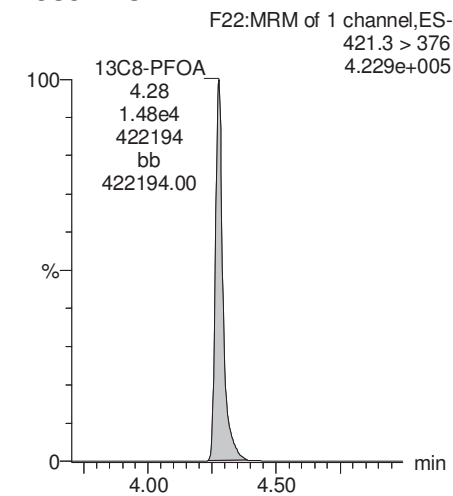
13C2-PFTeDA



13C8-PFOS



13C8-PFOA

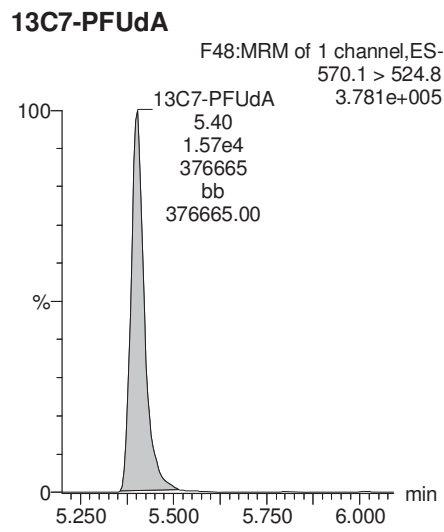
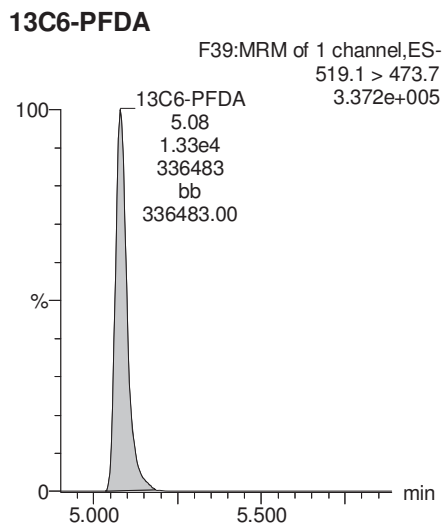
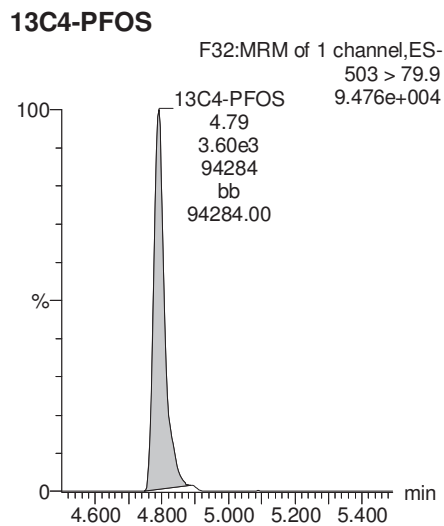
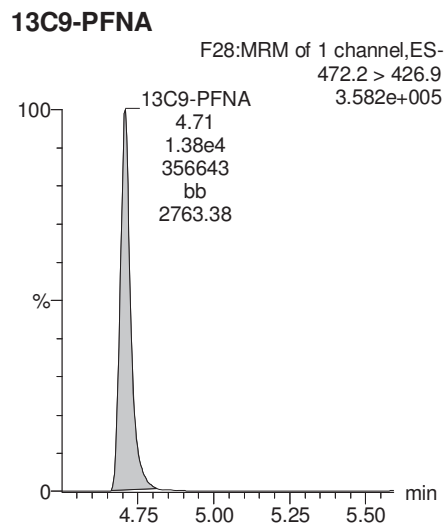
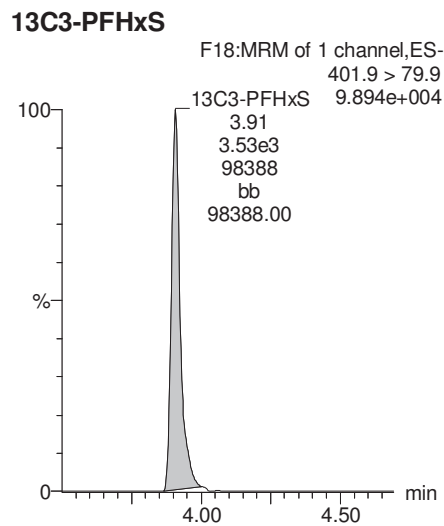


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-23.qld

Last Altered: Saturday, April 14, 2018 17:27:52 Pacific Daylight Time

Printed: Saturday, April 14, 2018 17:29:45 Pacific Daylight Time

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409



**INJECTION INTERNAL STANDARD (IIS) AREAS,
INSTRUMENT BLANKS (IB)
AND
CONTINUING CALIBRATION VERIFICATIONS (CCV)**

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_RS-3-20-18.mdb 20 Mar 2018 13:05:28

Calibration: 13 Apr 2018 14:30:10

Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-3 PFC CS0 18D0204	1.43e4	100.0	NO
2	2 13C5-PFHxA	ST180412M1-3 PFC CS0 18D0204	1.66e4	100.0	NO
3	3 13C3-PFHxS	ST180412M1-3 PFC CS0 18D0204	3.79e3	100.0	NO
4	4 13C8-PFOA	ST180412M1-3 PFC CS0 18D0204	1.57e4	100.0	NO
5	5 13C9-PFNA	ST180412M1-3 PFC CS0 18D0204	1.54e4	100.0	NO
6	6 13C4-PFOS	ST180412M1-3 PFC CS0 18D0204	3.58e3	100.0	NO
7	7 13C6-PFDA	ST180412M1-3 PFC CS0 18D0204	1.50e4	100.0	NO
8	8 13C7-PFUDa	ST180412M1-3 PFC CS0 18D0204	1.76e4	100.0	NO

Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-4 PFC CS1 18D0205	1.40e4	97.4	NO
2	2 13C5-PFHxA	ST180412M1-4 PFC CS1 18D0205	1.62e4	98.0	NO
3	3 13C3-PFHxS	ST180412M1-4 PFC CS1 18D0205	3.70e3	97.6	NO
4	4 13C8-PFOA	ST180412M1-4 PFC CS1 18D0205	1.52e4	96.8	NO
5	5 13C9-PFNA	ST180412M1-4 PFC CS1 18D0205	1.52e4	98.4	NO
6	6 13C4-PFOS	ST180412M1-4 PFC CS1 18D0205	3.51e3	98.1	NO
7	7 13C6-PFDA	ST180412M1-4 PFC CS1 18D0205	1.45e4	96.9	NO
8	8 13C7-PFUDa	ST180412M1-4 PFC CS1 18D0205	1.82e4	103.5	NO

Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-5 PFC CS2 18D0206	1.38e4	96.3	NO
2	2 13C5-PFHxA	ST180412M1-5 PFC CS2 18D0206	1.70e4	102.6	NO
3	3 13C3-PFHxS	ST180412M1-5 PFC CS2 18D0206	3.69e3	97.4	NO
4	4 13C8-PFOA	ST180412M1-5 PFC CS2 18D0206	1.61e4	102.7	NO
5	5 13C9-PFNA	ST180412M1-5 PFC CS2 18D0206	1.42e4	92.2	NO
6	6 13C4-PFOS	ST180412M1-5 PFC CS2 18D0206	3.53e3	98.6	NO
7	7 13C6-PFDA	ST180412M1-5 PFC CS2 18D0206	1.44e4	96.4	NO
8	8 13C7-PFUDa	ST180412M1-5 PFC CS2 18D0206	1.81e4	103.2	NO

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-6 PFC CS3 18D0207	1.43e4	99.5	NO
2	2 13C5-PFHxA	ST180412M1-6 PFC CS3 18D0207	1.68e4	101.6	NO
3	3 13C3-PFHxS	ST180412M1-6 PFC CS3 18D0207	3.77e3	99.6	NO
4	4 13C8-PFOA	ST180412M1-6 PFC CS3 18D0207	1.55e4	98.7	NO
5	5 13C9-PFNA	ST180412M1-6 PFC CS3 18D0207	1.73e4	112.3	NO
6	6 13C4-PFOS	ST180412M1-6 PFC CS3 18D0207	3.81e3	106.4	NO
7	7 13C6-PFDA	ST180412M1-6 PFC CS3 18D0207	1.47e4	98.5	NO
8	8 13C7-PFUDa	ST180412M1-6 PFC CS3 18D0207	1.76e4	99.8	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-7 PFC CS4 18D0208	1.47e4	102.9	NO
2	2 13C5-PFHxA	ST180412M1-7 PFC CS4 18D0208	1.65e4	99.6	NO
3	3 13C3-PFHxS	ST180412M1-7 PFC CS4 18D0208	3.49e3	91.9	NO
4	4 13C8-PFOA	ST180412M1-7 PFC CS4 18D0208	1.52e4	97.1	NO
5	5 13C9-PFNA	ST180412M1-7 PFC CS4 18D0208	1.70e4	110.0	NO
6	6 13C4-PFOS	ST180412M1-7 PFC CS4 18D0208	3.74e3	104.5	NO
7	7 13C6-PFDA	ST180412M1-7 PFC CS4 18D0208	1.51e4	101.3	NO
8	8 13C7-PFUDa	ST180412M1-7 PFC CS4 18D0208	1.73e4	98.5	NO

Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-8 PFC CS5 18D0209	1.47e4	102.6	NO
2	2 13C5-PFHxA	ST180412M1-8 PFC CS5 18D0209	1.70e4	102.3	NO
3	3 13C3-PFHxS	ST180412M1-8 PFC CS5 18D0209	3.83e3	101.1	NO
4	4 13C8-PFOA	ST180412M1-8 PFC CS5 18D0209	1.56e4	99.4	NO
5	5 13C9-PFNA	ST180412M1-8 PFC CS5 18D0209	1.55e4	100.9	NO
6	6 13C4-PFOS	ST180412M1-8 PFC CS5 18D0209	3.84e3	107.3	NO
7	7 13C6-PFDA	ST180412M1-8 PFC CS5 18D0209	1.52e4	101.4	NO
8	8 13C7-PFUDa	ST180412M1-8 PFC CS5 18D0209	1.76e4	100.4	NO

Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-9 PFC CS6 18D0210	1.40e4	97.9	NO
2	2 13C5-PFHxA	ST180412M1-9 PFC CS6 18D0210	1.63e4	98.5	NO
3	3 13C3-PFHxS	ST180412M1-9 PFC CS6 18D0210	3.67e3	96.9	NO
4	4 13C8-PFOA	ST180412M1-9 PFC CS6 18D0210	1.58e4	100.7	NO
5	5 13C9-PFNA	ST180412M1-9 PFC CS6 18D0210	1.47e4	95.1	NO
6	6 13C4-PFOS	ST180412M1-9 PFC CS6 18D0210	3.81e3	106.5	NO
7	7 13C6-PFDA	ST180412M1-9 PFC CS6 18D0210	1.44e4	96.6	NO
8	8 13C7-PFUDa	ST180412M1-9 PFC CS6 18D0210	1.66e4	94.3	NO

Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-10 PFC CS7 18D0211	1.39e4	97.3	NO
2	2 13C5-PFHxA	ST180412M1-10 PFC CS7 18D0211	1.57e4	94.6	NO
3	3 13C3-PFHxS	ST180412M1-10 PFC CS7 18D0211	3.57e3	94.2	NO
4	4 13C8-PFOA	ST180412M1-10 PFC CS7 18D0211	1.51e4	96.5	NO
5	5 13C9-PFNA	ST180412M1-10 PFC CS7 18D0211	1.40e4	90.8	NO
6	6 13C4-PFOS	ST180412M1-10 PFC CS7 18D0211	3.48e3	97.4	NO
7	7 13C6-PFDA	ST180412M1-10 PFC CS7 18D0211	1.29e4	86.3	NO
8	8 13C7-PFUDa	ST180412M1-10 PFC CS7 18D0211	1.54e4	87.4	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

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

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ICV180412M1-1 PFC ICV 18D0201	1.41e4	98.2	NO
2	2 13C5-PFHxA	ICV180412M1-1 PFC ICV 18D0201	1.68e4	101.1	NO
3	3 13C3-PFHxS	ICV180412M1-1 PFC ICV 18D0201	3.88e3	102.3	NO
4	4 13C8-PFOA	ICV180412M1-1 PFC ICV 18D0201	1.64e4	104.7	NO
5	5 13C9-PFNA	ICV180412M1-1 PFC ICV 18D0201	1.60e4	104.0	NO
6	6 13C4-PFOS	ICV180412M1-1 PFC ICV 18D0201	3.78e3	105.8	NO
7	7 13C6-PFDA	ICV180412M1-1 PFC ICV 18D0201	1.41e4	94.5	NO
8	8 13C7-PFUDa	ICV180412M1-1 PFC ICV 18D0201	1.68e4	95.7	NO

Name: 180412M1_14, Date: 12-Apr-2018, Time: 20:22:00, ID: IPA, Description: IPA

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

Name: 180412M1_15, Date: 12-Apr-2018, Time: 20:33:30, ID: B8C0190-BS1 OPR 0.25, Description: OPR

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	B8C0190-BS1 OPR 0.25	1.08e4	75.1	NO
2	2 13C5-PFHxA	B8C0190-BS1 OPR 0.25	1.28e4	77.5	NO
3	3 13C3-PFHxS	B8C0190-BS1 OPR 0.25	3.02e3	79.6	NO
4	4 13C8-PFOA	B8C0190-BS1 OPR 0.25	1.26e4	80.2	NO
5	5 13C9-PFNA	B8C0190-BS1 OPR 0.25	1.28e4	82.8	NO
6	6 13C4-PFOS	B8C0190-BS1 OPR 0.25	3.11e3	86.9	NO
7	7 13C6-PFDA	B8C0190-BS1 OPR 0.25	1.11e4	74.3	NO
8	8 13C7-PFUDa	B8C0190-BS1 OPR 0.25	1.36e4	77.5	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Name: 180412M1_16, Date: 12-Apr-2018, Time: 20:44:59, ID: B8C0190-BLK1 Method Blank 0.25, Description: Method Blank

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	B8C0190-BLK1 Method Blank 0.25	1.06e4	73.9	NO
2	2 13C5-PFHxA	B8C0190-BLK1 Method Blank 0.25	1.23e4	74.3	NO
3	3 13C3-PFHxS	B8C0190-BLK1 Method Blank 0.25	2.93e3	77.3	NO
4	4 13C8-PFOA	B8C0190-BLK1 Method Blank 0.25	1.18e4	75.3	NO
5	5 13C9-PFNA	B8C0190-BLK1 Method Blank 0.25	1.27e4	82.7	NO
6	6 13C4-PFOS	B8C0190-BLK1 Method Blank 0.25	2.71e3	75.8	NO
7	7 13C6-PFDA	B8C0190-BLK1 Method Blank 0.25	1.20e4	80.4	NO
8	8 13C7-PFUdA	B8C0190-BLK1 Method Blank 0.25	1.46e4	83.2	NO

Name: 180412M1_17, Date: 12-Apr-2018, Time: 20:56:29, ID: 1800562-01 CA-06781 0.24584, Description: CA-06781

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	1800562-01 CA-06781 0.24584	1.01e4	70.2	NO
2	2 13C5-PFHxA	1800562-01 CA-06781 0.24584	1.18e4	71.2	NO
3	3 13C3-PFHxS	1800562-01 CA-06781 0.24584	2.90e3	76.6	NO
4	4 13C8-PFOA	1800562-01 CA-06781 0.24584	1.23e4	78.2	NO
5	5 13C9-PFNA	1800562-01 CA-06781 0.24584	1.16e4	75.0	NO
6	6 13C4-PFOS	1800562-01 CA-06781 0.24584	3.12e3	87.4	NO
7	7 13C6-PFDA	1800562-01 CA-06781 0.24584	1.05e4	70.1	NO
8	8 13C7-PFUdA	1800562-01 CA-06781 0.24584	1.31e4	74.6	NO

Name: 180412M1_18, Date: 12-Apr-2018, Time: 21:07:56, ID: 1800562-02 CA-06782 0.2563, Description: CA-06782

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	1800562-02 CA-06782 0.2563	1.03e4	72.2	NO
2	2 13C5-PFHxA	1800562-02 CA-06782 0.2563	1.17e4	70.4	NO
3	3 13C3-PFHxS	1800562-02 CA-06782 0.2563	3.00e3	79.1	NO
4	4 13C8-PFOA	1800562-02 CA-06782 0.2563	1.20e4	76.3	NO
5	5 13C9-PFNA	1800562-02 CA-06782 0.2563	1.24e4	80.3	NO
6	6 13C4-PFOS	1800562-02 CA-06782 0.2563	3.14e3	87.9	NO
7	7 13C6-PFDA	1800562-02 CA-06782 0.2563	1.18e4	78.7	NO
8	8 13C7-PFUdA	1800562-02 CA-06782 0.2563	1.18e4	67.3	NO

Name: 180412M1_19, Date: 12-Apr-2018, Time: 21:19:25, ID: 1800562-03 CA-06783 0.2566, Description: CA-06783

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	1800562-03 CA-06783 0.2566	1.04e4	73.0	NO
2	2 13C5-PFHxA	1800562-03 CA-06783 0.2566	1.29e4	77.8	NO
3	3 13C3-PFHxS	1800562-03 CA-06783 0.2566	3.04e3	80.1	NO
4	4 13C8-PFOA	1800562-03 CA-06783 0.2566	1.37e4	87.1	NO
5	5 13C9-PFNA	1800562-03 CA-06783 0.2566	1.21e4	78.5	NO
6	6 13C4-PFOS	1800562-03 CA-06783 0.2566	3.31e3	92.5	NO
7	7 13C6-PFDA	1800562-03 CA-06783 0.2566	1.19e4	79.4	NO
8	8 13C7-PFUdA	1800562-03 CA-06783 0.2566	1.36e4	77.3	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Name: 180412M1_20, Date: 12-Apr-2018, Time: 21:30:55, ID: B8D0070-BS1 OPR 0.25, Description: OPR

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	B8D0070-BS1 OPR 0.25	9.01e3	62.9	NO
2	2 13C5-PFHxA	B8D0070-BS1 OPR 0.25	1.16e4	70.1	NO
3	3 13C3-PFHxS	B8D0070-BS1 OPR 0.25	3.13e3	82.6	NO
4	4 13C8-PFOA	B8D0070-BS1 OPR 0.25	1.31e4	83.2	NO
5	5 13C9-PFNA	B8D0070-BS1 OPR 0.25	1.21e4	78.2	NO
6	6 13C4-PFOS	B8D0070-BS1 OPR 0.25	3.34e3	93.3	NO
7	7 13C6-PFDA	B8D0070-BS1 OPR 0.25	1.17e4	77.9	NO
8	8 13C7-PFUDa	B8D0070-BS1 OPR 0.25	1.33e4	75.7	NO

Name: 180412M1_21, Date: 12-Apr-2018, Time: 21:42:24, ID: B8D0070-BSD1 LCSD 0.25, Description: LCSD

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	B8D0070-BSD1 LCSD 0.25	1.16e4	81.2	NO
2	2 13C5-PFHxA	B8D0070-BSD1 LCSD 0.25	1.40e4	84.3	NO
3	3 13C3-PFHxS	B8D0070-BSD1 LCSD 0.25	3.47e3	91.4	NO
4	4 13C8-PFOA	B8D0070-BSD1 LCSD 0.25	1.47e4	93.6	NO
5	5 13C9-PFNA	B8D0070-BSD1 LCSD 0.25	1.51e4	97.7	NO
6	6 13C4-PFOS	B8D0070-BSD1 LCSD 0.25	3.47e3	97.0	NO
7	7 13C6-PFDA	B8D0070-BSD1 LCSD 0.25	1.34e4	89.4	NO
8	8 13C7-PFUDa	B8D0070-BSD1 LCSD 0.25	1.61e4	91.8	NO

Name: 180412M1_22, Date: 12-Apr-2018, Time: 21:53:54, ID: B8D0070-BLK1 Method Blank 0.25, Description: Method Blank

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	B8D0070-BLK1 Method Blank 0.25	9.33e3	65.2	NO
2	2 13C5-PFHxA	B8D0070-BLK1 Method Blank 0.25	1.26e4	75.9	NO
3	3 13C3-PFHxS	B8D0070-BLK1 Method Blank 0.25	3.03e3	79.8	NO
4	4 13C8-PFOA	B8D0070-BLK1 Method Blank 0.25	1.41e4	90.1	NO
5	5 13C9-PFNA	B8D0070-BLK1 Method Blank 0.25	1.42e4	92.3	NO
6	6 13C4-PFOS	B8D0070-BLK1 Method Blank 0.25	3.33e3	93.0	NO
7	7 13C6-PFDA	B8D0070-BLK1 Method Blank 0.25	1.31e4	87.8	NO
8	8 13C7-PFUDa	B8D0070-BLK1 Method Blank 0.25	1.43e4	81.3	NO

Name: 180412M1_23, Date: 12-Apr-2018, Time: 22:05:24, ID: 1800643-01 CA-AQIDW01-20180409 0.25041, Description: CA-AQIDW01-20180409

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	1800643-01 CA-AQIDW01-20180409 0....	1.22e4	85.4	NO
2	2 13C5-PFHxA	1800643-01 CA-AQIDW01-20180409 0....	1.47e4	88.7	NO
3	3 13C3-PFHxS	1800643-01 CA-AQIDW01-20180409 0....	3.53e3	93.0	NO
4	4 13C8-PFOA	1800643-01 CA-AQIDW01-20180409 0....	1.48e4	94.3	NO
5	5 13C9-PFNA	1800643-01 CA-AQIDW01-20180409 0....	1.38e4	89.6	NO
6	6 13C4-PFOS	1800643-01 CA-AQIDW01-20180409 0....	3.60e3	100.6	NO
7	7 13C6-PFDA	1800643-01 CA-AQIDW01-20180409 0....	1.33e4	89.2	NO
8	8 13C7-PFUDa	1800643-01 CA-AQIDW01-20180409 0....	1.57e4	89.2	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Name: 180412M1_24, Date: 12-Apr-2018, Time: 22:16:51, ID: IPA, Description: IPA

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

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	ST180412M1-11 PFC CS3 18D0207	1.48e4	103.1	NO
2	2 13C5-PFHxA	ST180412M1-11 PFC CS3 18D0207	1.76e4	106.4	NO
3	3 13C3-PFHxS	ST180412M1-11 PFC CS3 18D0207	3.82e3	100.9	NO
4	4 13C8-PFOA	ST180412M1-11 PFC CS3 18D0207	1.74e4	110.7	NO
5	5 13C9-PFNA	ST180412M1-11 PFC CS3 18D0207	1.85e4	119.9	NO
6	6 13C4-PFOS	ST180412M1-11 PFC CS3 18D0207	4.06e3	113.5	NO
7	7 13C6-PFDA	ST180412M1-11 PFC CS3 18D0207	1.46e4	97.3	NO
8	8 13C7-PFUdA	ST180412M1-11 PFC CS3 18D0207	1.84e4	104.7	NO

Name: 180412M1_26, Date: 12-Apr-2018, Time: 22:39:45, ID: IPA, Description: IPA

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

Name: 180412M1_27, Date: 12-Apr-2018, Time: 22:51:12, ID: 180411_DODS1, Description: IPA

	# Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	180411_DODS1	1.13e4	78.9	NO
2	2 13C5-PFHxA	180411_DODS1	1.39e4	83.7	NO
3	3 13C3-PFHxS	180411_DODS1	3.82e3	100.8	NO
4	4 13C8-PFOA	180411_DODS1	1.32e4	84.3	NO
5	5 13C9-PFNA	180411_DODS1	1.53e4	99.5	NO
6	6 13C4-PFOS	180411_DODS1	3.52e3	98.4	NO
7	7 13C6-PFDA	180411_DODS1	1.34e4	89.7	NO
8	8 13C7-PFUdA	180411_DODS1	1.60e4	91.1	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-IIS AREAS.qld

Last Altered: Friday, April 13, 2018 14:31:53 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:32:34 Pacific Daylight Time

Name: 180412M1_28, Date: 12-Apr-2018, Time: 23:02:42, ID: 180411_DODS2, Description: IPA

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	180411_DODS2	1.13e4	79.2	NO
2	2 13C5-PFHxA	180411_DODS2	1.37e4	82.5	NO
3	3 13C3-PFHxS	180411_DODS2	3.09e3	81.4	NO
4	4 13C8-PFOA	180411_DODS2	1.35e4	86.4	NO
5	5 13C9-PFNA	180411_DODS2	1.50e4	97.3	NO
6	6 13C4-PFOS	180411_DODS2	3.35e3	93.6	NO
7	7 13C6-PFDA	180411_DODS2	1.20e4	80.2	NO
8	8 13C7-PFUDa	180411_DODS2	1.52e4	86.7	NO

Name: 180412M1_29, Date: 12-Apr-2018, Time: 23:14:12, ID: 180411_EC1, Description: IPA

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	180411_EC1	1.14e4	79.8	NO
2	2 13C5-PFHxA	180411_EC1	1.38e4	83.1	NO
3	3 13C3-PFHxS	180411_EC1	3.40e3	89.7	NO
4	4 13C8-PFOA	180411_EC1	1.43e4	91.3	NO
5	5 13C9-PFNA	180411_EC1	1.47e4	95.7	NO
6	6 13C4-PFOS	180411_EC1	3.41e3	95.5	NO
7	7 13C6-PFDA	180411_EC1	1.24e4	83.1	NO
8	8 13C7-PFUDa	180411_EC1	1.66e4	94.4	NO

Name: 180412M1_30, Date: 12-Apr-2018, Time: 23:25:39, ID: 180411_EC2, Description: IPA

#	Name	ID	Area	%Rec	Area Out
1	1 13C4-PFBA	180411_EC2	1.31e4	91.5	NO
2	2 13C5-PFHxA	180411_EC2	1.53e4	92.6	NO
3	3 13C3-PFHxS	180411_EC2	3.79e3	100.1	NO
4	4 13C8-PFOA	180411_EC2	1.59e4	101.1	NO
5	5 13C9-PFNA	180411_EC2	1.53e4	99.5	NO
6	6 13C4-PFOS	180411_EC2	3.91e3	109.5	NO
7	7 13C6-PFDA	180411_EC2	1.35e4	90.5	NO
8	8 13C7-PFUDa	180411_EC2	1.63e4	92.8	NO

Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

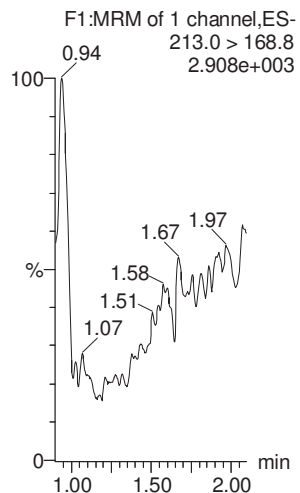
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

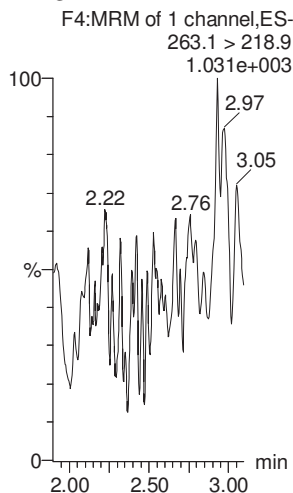
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

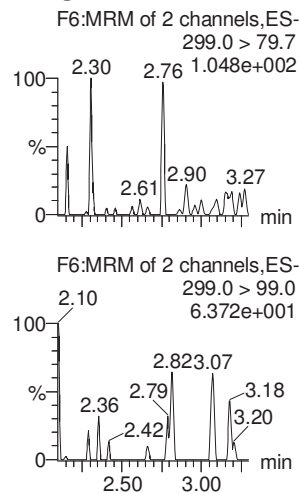
PFBA



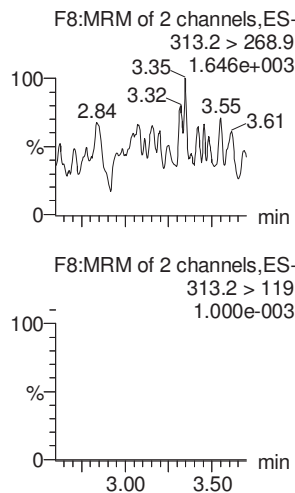
PFPeA



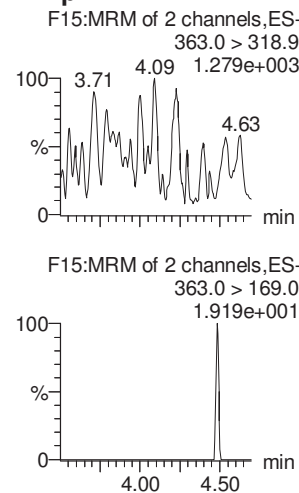
PFBS



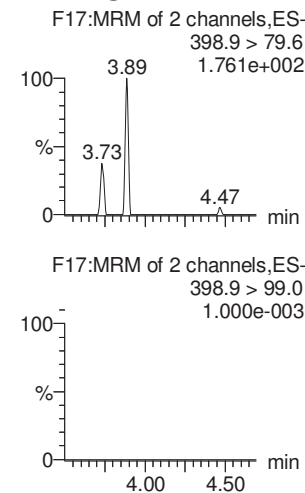
PFHxA



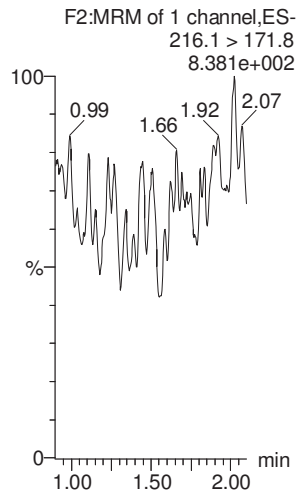
PFHpA



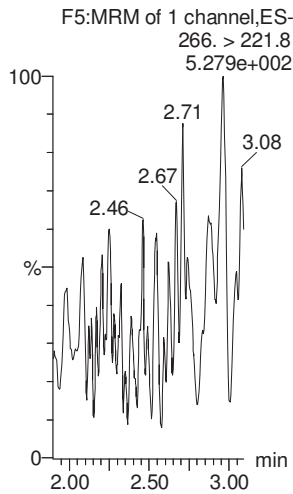
L-PFHxS



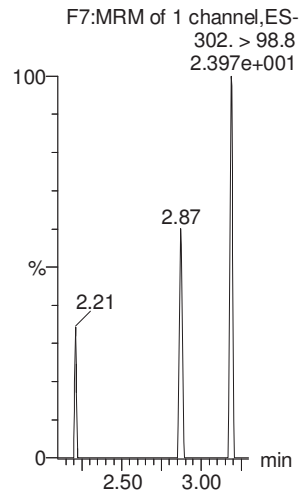
13C3-PFBA



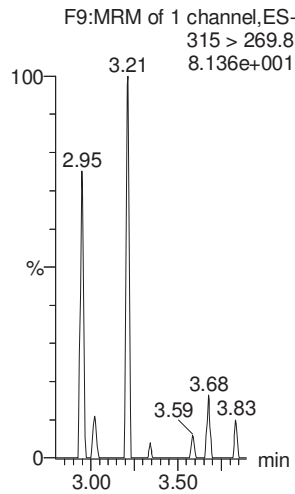
13C3-PFPeA



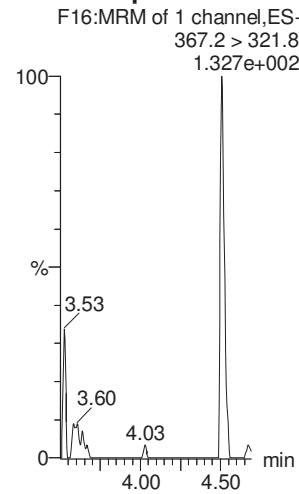
13C3-PFBS



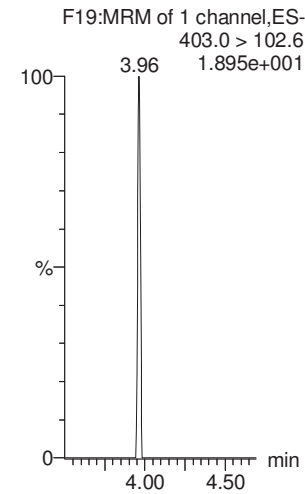
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



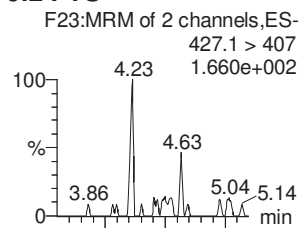
Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

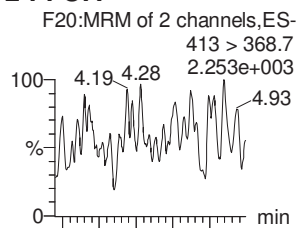
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

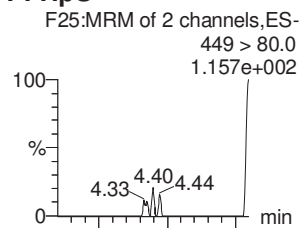
6:2 FTS



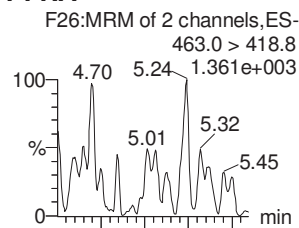
L-PFOA



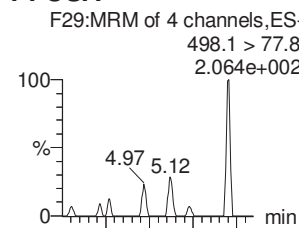
PFHpS



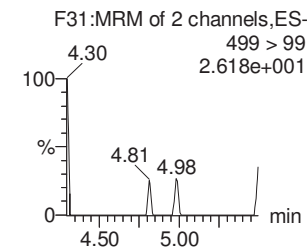
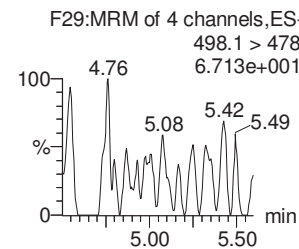
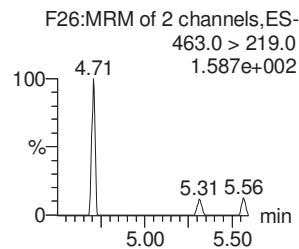
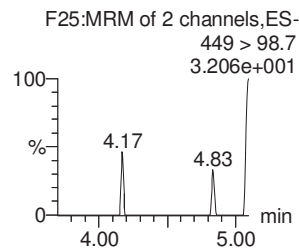
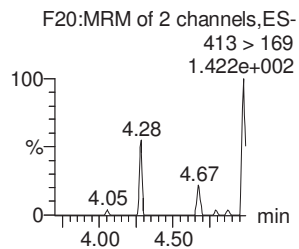
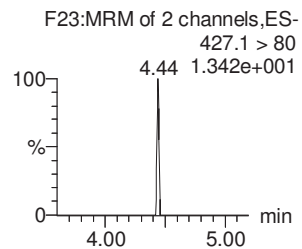
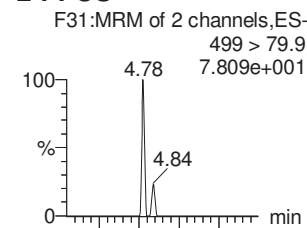
PFNA



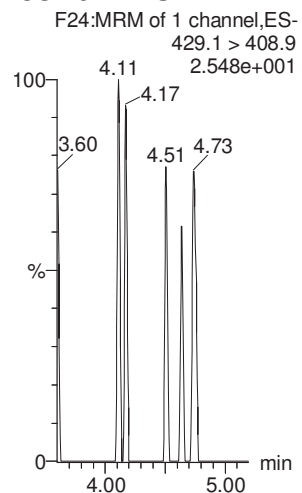
PFOSA



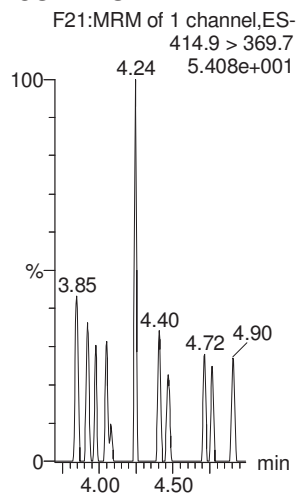
L-PFOS



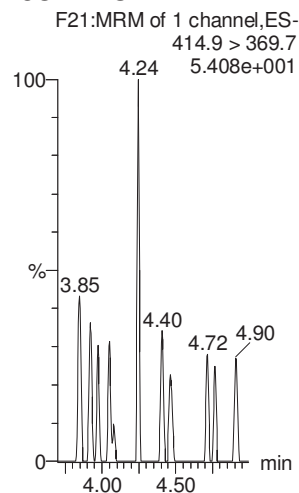
13C2-6:2 FTS



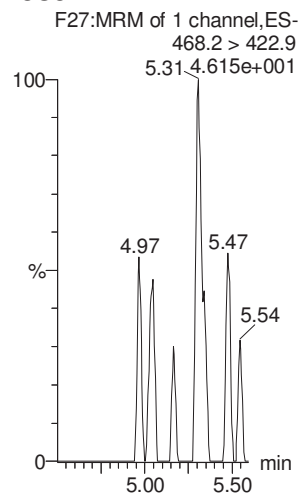
13C2-PFOA



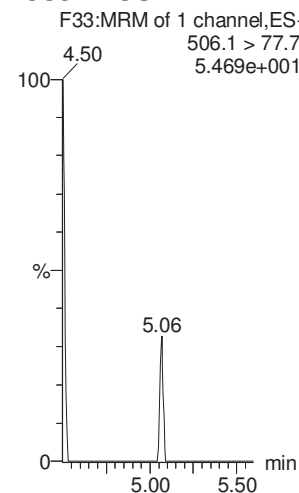
13C2-PFOA



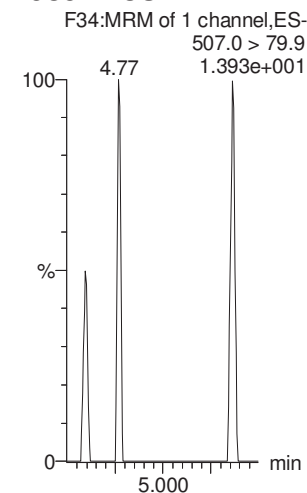
13C5-PFNA



13C8-PFOA



13C8-PFOS



Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

PFDA

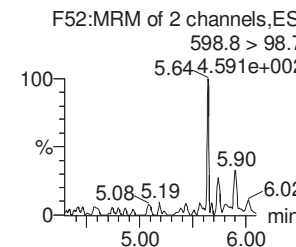
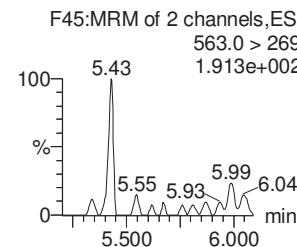
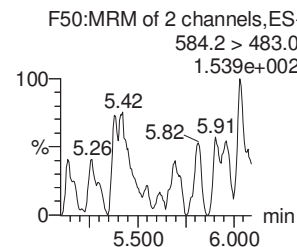
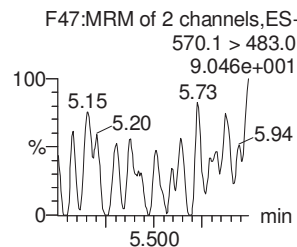
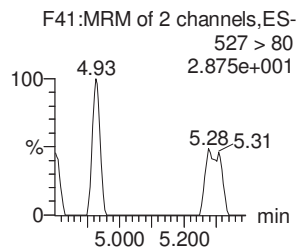
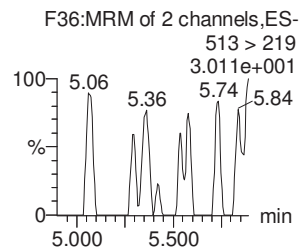
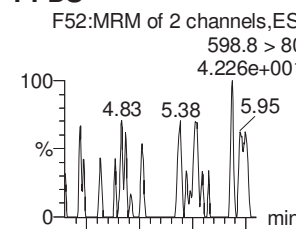
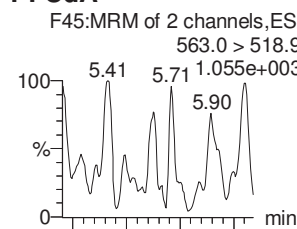
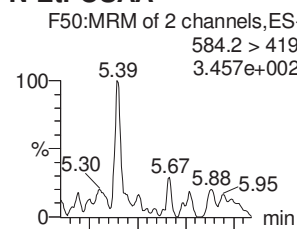
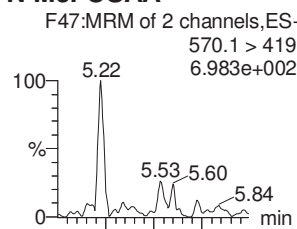
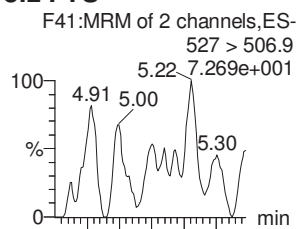
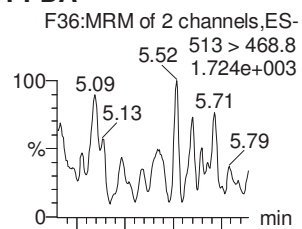
8:2 FTS

N-MeFOSAA

N-EtFOSAA

PFUdA

PFDS



13C2-PFDA

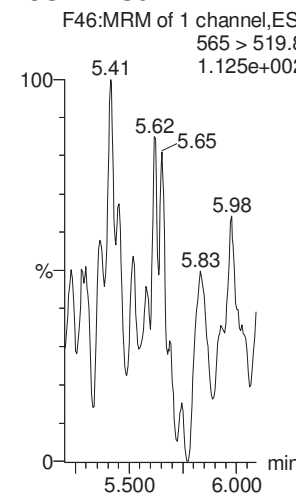
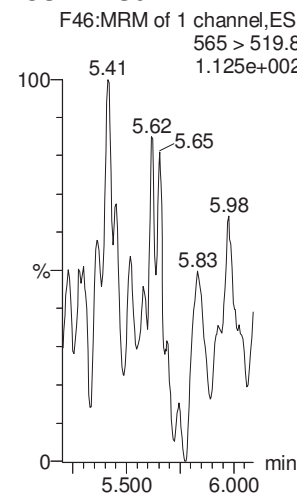
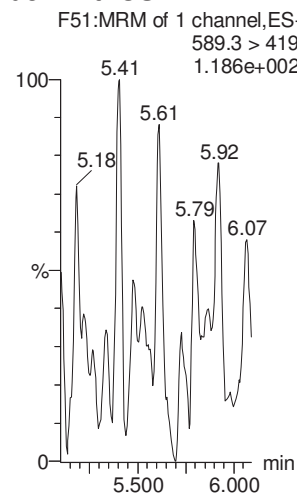
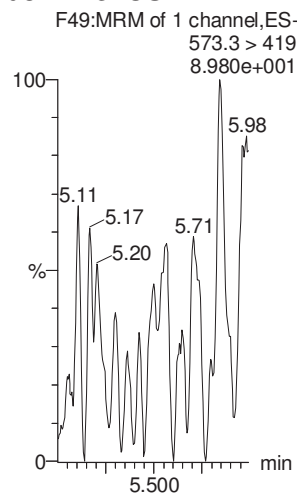
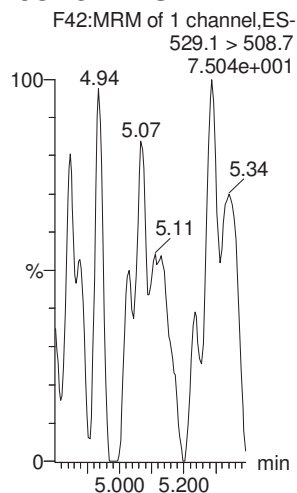
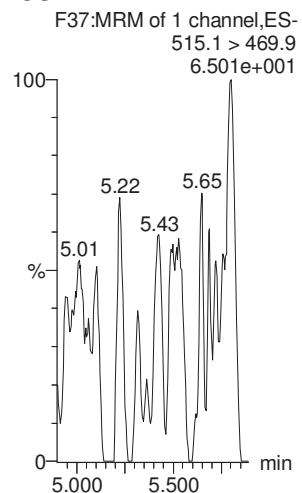
13C2-8:2 FTS

d3-N-MeFOSAA

d5-N-EtFOSAA

13C2-PFUdA

13C2-PFUdA



Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

PFDoA

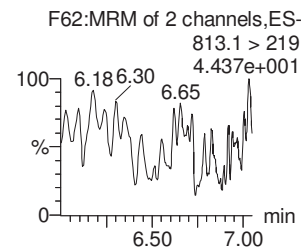
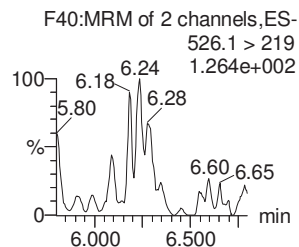
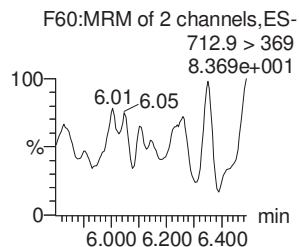
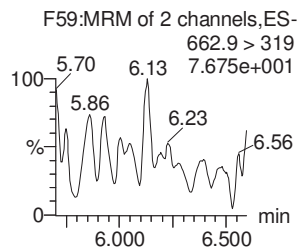
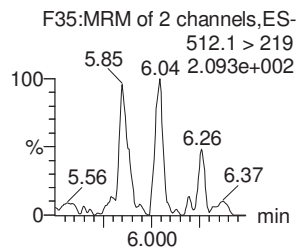
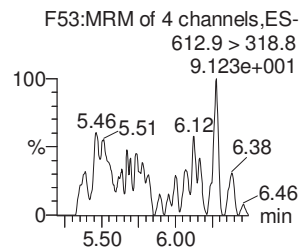
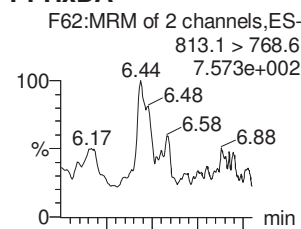
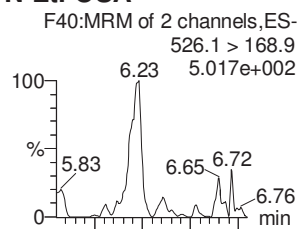
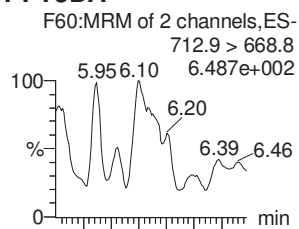
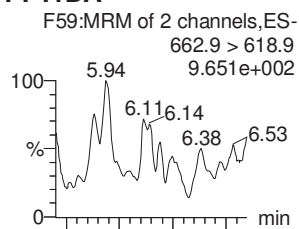
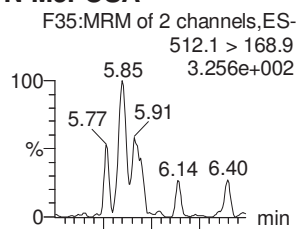
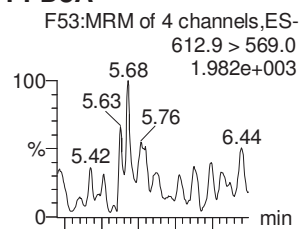
N-MeFOSA

PFTrDA

PFTeDA

N-EtFOSA

PFHxDA



13C2-PFDoA

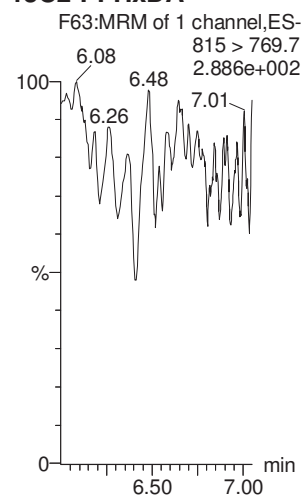
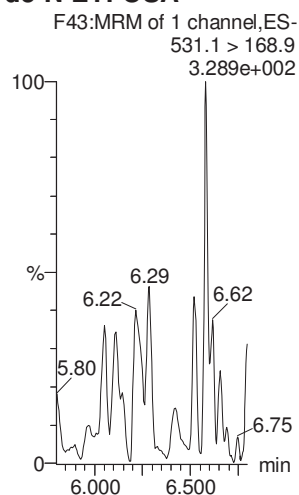
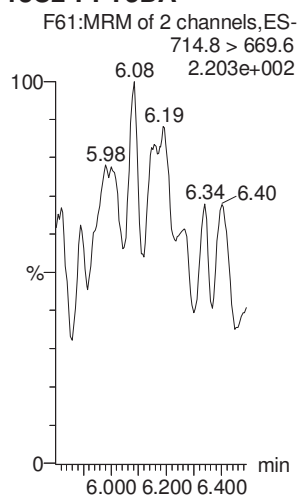
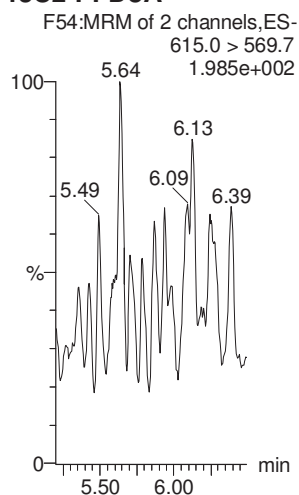
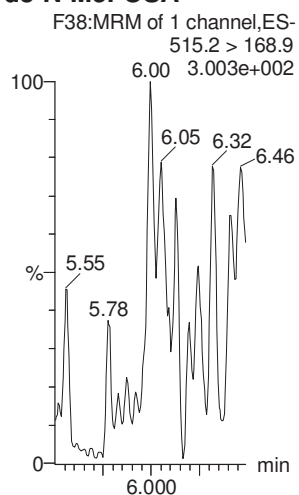
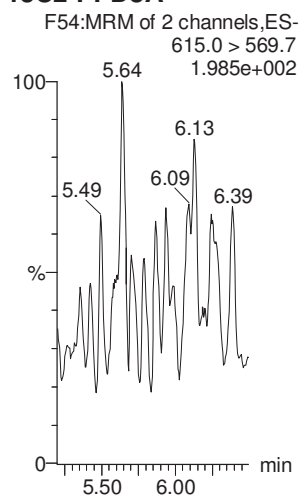
d3-N-MeFOSA

13C2-PFDoA

13C2-PFTeDA

d5-N-ETFOSA

13C2-PFHxDA



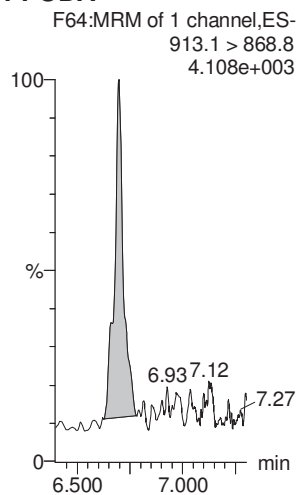
Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

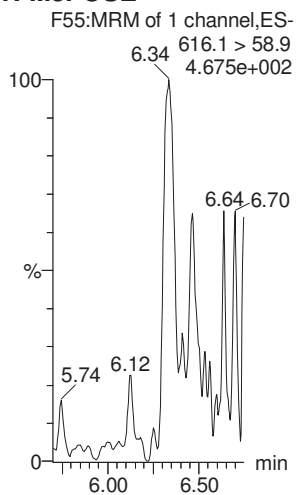
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

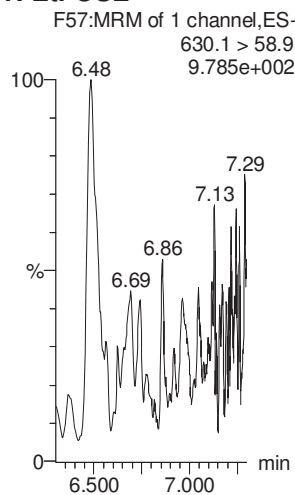
PFODA



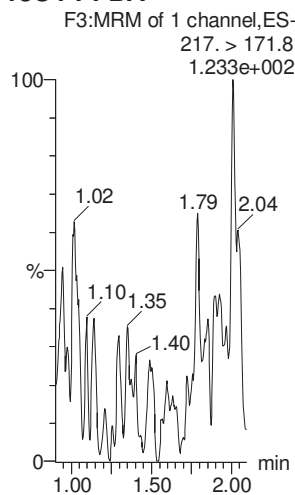
N-MeFOSE



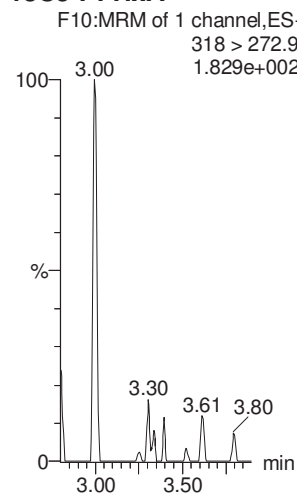
N-EtFOSE



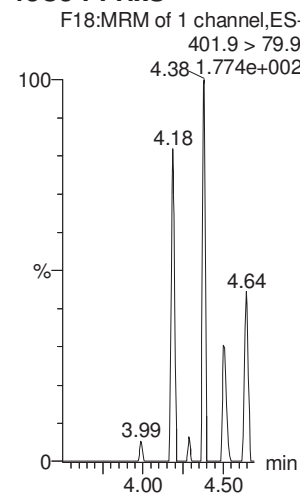
13C4-PFBA



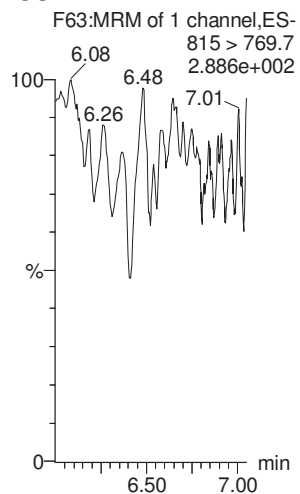
13C5-PFHxA



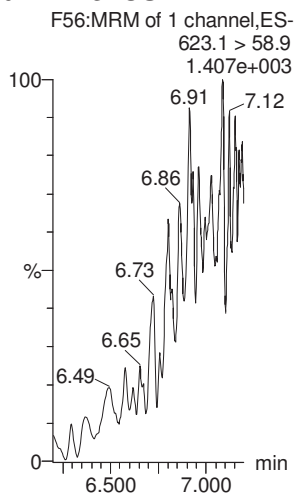
13C3-PFHxS



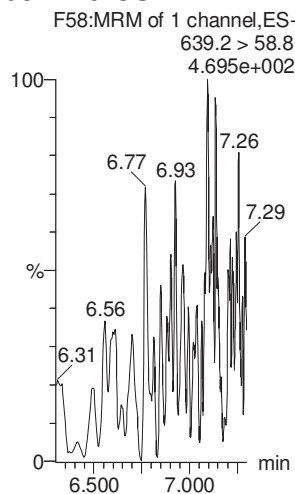
13C2-PFHxDA



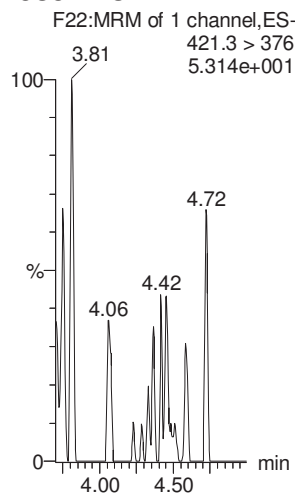
d7-N-MeFOSE



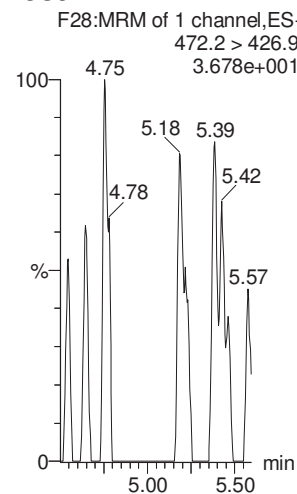
d9-N-EtFOSE



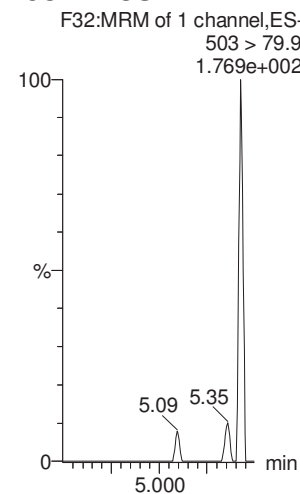
13C8-PFOA



13C9-PFNA



13C4-PFOS



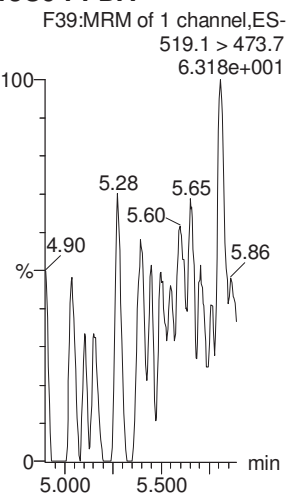
Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

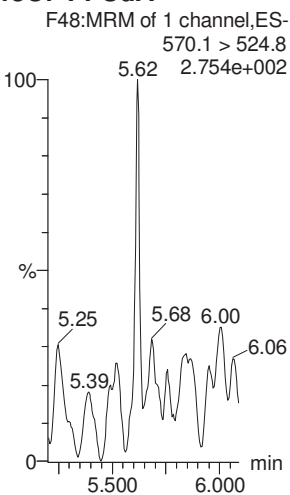
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

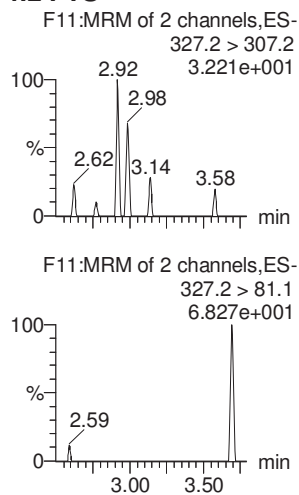
13C6-PFDA



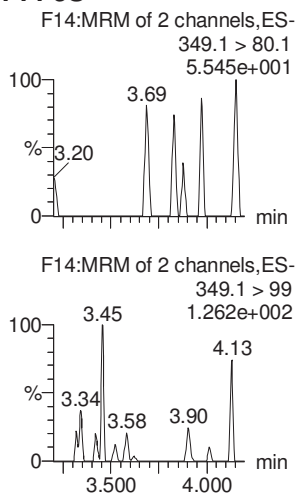
13C7-PFUdA



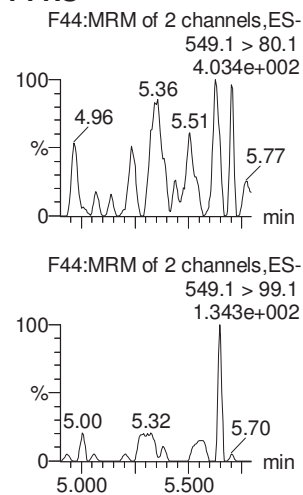
4:2 FTS



PFPeS



PFNS



LC Calibration Standards Review Checklist

Q4

		ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	
Calibration ID: <u>ST180412M1-11</u>	<u>(M)H</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calibration ID: _____	L M H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Full Mass Cal. Date: 4/2/18

- Run Log Present:
- # of Samples per Sequence Checked:
- Instrument Blank Saved
- IIS Area Saved
- Reviewed By: MJT 4/17/18
Initials/Date

Comments:

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

MT
4/17/18

#	Name	Trace	Area	IS Area	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	Recovery Out
1	1 PFBA	213.0 > 168.8	1.25e4	1.30e4		1.56	1.44	12.0	10.2	102.3	NO
2	2 PFPeA	263.1 > 218.9	1.27e4	1.43e4		2.54	2.38	11.1	10.3	103.2	NO
3	3 PFBS	299.0 > 79.7	3.28e3	2.14e3		2.81	2.65	19.2	10.1	101.4	NO
4	4 4:2 FTS	327.2>307.2	4.45e3	2.14e3		3.21	3.05	26.0	11.0	109.8	NO
5	5 PFHxA	313.2 > 268.9	1.63e4	4.76e3		3.30	3.14	17.2	10.2	102.5	NO
6	6 PFPeS	349.1>80.1	2.70e3	2.14e3		3.50	3.34	15.8	9.78	97.8	NO
7	7 PFHpA	363.0 > 318.9	1.25e4	1.31e4		3.92	3.76	12.0	9.88	98.8	NO
8	8 L-PFHxS	398.9 > 79.6	2.55e3	1.65e3		4.06	3.91	19.4	10.4	103.8	NO
9	10 6:2 FTS	427.1 > 407	4.44e3	4.86e3		4.38	4.22	11.4	10.5	104.7	NO
10	11 L-PFOA	413 > 368.7	1.47e4	1.81e4		4.30	4.27	10.1	10.7	107.4	NO
11	13 PFHpS	449 > 80.0	3.19e3	1.81e4		4.54	4.38	2.20	10.9	109.0	NO
12	14 PFNA	463.0 > 418.8	1.52e4	1.64e4		4.87	4.71	11.6	9.71	97.1	NO
13	15 PFOSA	498.1 > 77.8	3.22e3	3.92e3		4.93	4.78	10.3	10.2	102.0	NO
14	16 L-PFOS	499 > 79.9	3.50e3	3.88e3		4.90	4.79	11.3	10.7	107.3	NO
15	18 PFDA	513 > 468.8	1.53e4	1.35e4		5.24	5.08	14.1	10.5	105.2	NO
16	19 8:2 FTS	527 > 506.9	4.25e3	3.39e3		5.21	5.05	15.7	9.16	91.6	NO
17	20 PFNS	549.1>80.1	2.31e3	3.88e3		5.30	5.14	7.43	9.59	95.9	NO
18	21 N-MeFOSAA	570.1 > 419	1.04e4	7.94e3		5.39	5.23	16.4	11.6	115.6	NO
19	22 N-EiFOSAA	584.2 > 419	8.81e3	9.81e3		5.55	5.39	11.2	11.1	111.5	NO
20	23 PFUdA	563.0 > 518.9	1.38e4	1.54e4		5.56	5.40	11.2	10.8	108.4	NO
21	24 PFDS	598.8 > 80	3.01e3	1.54e4		5.61	5.45	2.44	10.4	103.6	NO
22	25 PFDaA	612.9 > 569.0	1.59e4	1.37e4		5.84	5.68	14.5	11.2	112.0	NO
23	26 N-MeFOSA	512.1 > 168.9	6.79e3	2.07e4		6.00	5.85	49.3	54.6	109.2	NO
24	27 PFTTrDA	662.9 > 618.9	1.38e4	1.37e4		6.10	5.93	12.6	9.11	91.1	NO
25	28 PFTeDA	712.9 > 668.8	1.10e4	6.99e3		6.30	6.14	19.7	12.4	123.8	NO
26	29 N-EiFOSA	526.1 > 168.9	8.40e3	2.90e4		6.38	6.23	43.4	49.8	99.5	NO
27	30 PFHxDA	813.1 > 768.6	6.97e3	6.50e3		6.62	6.47	5.36	9.68	96.8	NO
28	31 PFODA	913.1 > 868.8	1.60e4	6.50e3		6.85	6.70	12.3	11.1	111.1	NO
29	32 N-MeFOSE	616.1 > 58.9	1.15e4	3.61e4		6.50	6.35	47.9	51.0	102.0	NO
30	33 N-EiFOSE	630.1 > 58.9	1.38e4	3.85e4		6.65	6.50	53.9	47.9	95.8	NO
31	34 13C3-PFBA	216.1 > 171.8	1.30e4	1.48e4	0.887	1.56	1.44	11.0	12.4	99.5	NO

KBF
4/17/18

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

#	Name	Trace	Area	IS Area	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	Recovery Out
32	35 13C3-PFPeA	266. > 221.8	1.43e4	1.76e4	0.859	2.54	2.38	10.2	11.8	94.7	NO
33	36 13C3-PFBS	302. > 98.8	2.14e3	1.76e4	0.121	2.81	2.65	1.52	12.6	100.6	NO
34	37 13C2-PFHxA	315 > 269.8	4.76e3	1.76e4	0.733	3.30	3.14	3.37	4.60	92.1	NO
35	38 13C4-PFHpA	367.2 > 321.8	1.31e4	1.76e4	0.761	3.92	3.76	9.29	12.2	97.7	NO
36	39 18O2-PFHxS	403.0 > 102.6	1.65e3	3.82e3	0.431	4.06	3.90	5.39	12.5	100.0	NO
37	40 13C2-6:2 FTS	429.1 > 408.9	4.86e3	1.74e4	0.333	4.38	4.22	3.50	10.5	84.1	NO
38	41 13C2-PFOA	414.9 > 369.7	1.81e4	1.74e4	1.150	4.43	4.27	13.0	11.3	90.7	NO
39	42 13C5-PFNA	468.2 > 422.9	1.64e4	1.85e4	0.979	4.87	4.71	11.1	11.4	90.9	NO
40	43 13C8-PFOA	506.1 > 77.7	3.92e3	1.84e4	0.218	4.93	4.78	2.66	12.2	97.5	NO
41	44 13C8-PFOS	507.0 > 79.9	3.88e3	3.96e3	1.047	4.95	4.79	12.2	11.7	93.6	NO
42	45 13C2-PFDA	515.1 > 469.9	1.35e4	1.43e4	0.958	5.24	5.08	11.8	12.4	98.9	NO
43	46 13C2-8:2 FTS	529.1 > 508.7	3.39e3	1.76e4	0.226	5.21	5.05	2.40	10.6	85.0	NO
44	47 d3-N-MeFOSAA	573.3 > 419	7.94e3	1.84e4	0.471	5.39	5.23	5.39	11.4	91.5	NO
45	48 d5-N-EtFOSAA	589.3 > 419	9.81e3	1.84e4	0.517	5.55	5.38	6.66	12.9	103.1	NO
46	49 13C2-PFUdA	565 > 519.8	1.54e4	1.84e4	0.960	5.56	5.40	10.5	10.9	87.2	NO
47	50 13C2-PFDoA	615.0 > 569.7	1.37e4	1.84e4	0.840	5.84	5.68	9.29	11.1	88.5	NO
48	51 d3-N-MeFOSA	515.2 > 168.9	2.07e4	1.84e4	0.097	6.00	5.87	14.0	145	96.5	NO
49	52 13C2-PFTeDA	714.8 > 669.6	6.99e3	1.84e4	0.510	6.30	6.14	4.75	9.30	74.4	NO
50	53 d5-N-ETFOSA	531.1 > 168.9	2.90e4	1.84e4	0.138	6.40	6.25	19.7	143	95.5	NO
51	54 13C2-PFHxDA	815 > 769.7	6.50e3	1.84e4	1.118	6.62	6.47	4.42	3.95	79.0	NO
52	55 d7-N-MeFOSE	623.1 > 58.9	3.61e4	1.84e4	0.169	6.50	6.34	24.5	145	96.9	NO
53	56 d9-N-EtFOSE	639.2 > 58.8	3.85e4	1.84e4	0.161	6.65	6.49	26.1	162	108.3	NO
54	57 13C4-PFBA	217. > 171.8	1.48e4	1.48e4	1.000	1.56	1.44	12.5	12.5	100.0	NO
55	58 13C5-PFHxA	318 > 272.9	1.76e4	1.76e4	1.000	3.30	3.14	12.5	12.5	100.0	NO
56	59 13C3-PFHxS	401.9 > 79.9	3.82e3	3.82e3	1.000	4.04	3.90	12.5	12.5	100.0	NO
57	60 13C8-PFOA	421.3 > 376	1.74e4	1.74e4	1.000	4.43	4.27	12.5	12.5	100.0	NO
58	61 13C9-PFNA	472.2 > 426.9	1.85e4	1.85e4	1.000	4.87	4.71	12.5	12.5	100.0	NO
59	62 13C4-PFOS	503 > 79.9	3.96e3	3.96e3	1.000	4.95	4.79	12.5	12.5	100.0	NO
60	63 13C6-PFDA	519.1 > 473.7	1.43e4	1.43e4	1.000	5.24	5.08	12.5	12.5	100.0	NO
61	64 13C7-PFUdA	570.1 > 524.8	1.84e4	1.84e4	1.000	5.56	5.40	12.5	12.5	100.0	NO

Dataset: Untitled

Last Altered: Friday, April 13, 2018 14:36:00 Pacific Daylight Time

Printed: Friday, April 13, 2018 14:36:34 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	180412M1_1	IPA	12-Apr-18	17:52:26 ✓
2	180412M1_2	ST180412M1-1 PFC CS-2 18D0202	12-Apr-18	18:04:04
3	180412M1_3	ST180412M1-2 PFC CS-1 18D0203	12-Apr-18	18:15:35
4	180412M1_4	ST180412M1-3 PFC CS0 18D0204	12-Apr-18	18:27:04
5	180412M1_5	ST180412M1-4 PFC CS1 18D0205	12-Apr-18	18:38:34
6	180412M1_6	ST180412M1-5 PFC CS2 18D0206	12-Apr-18	18:50:03
7	180412M1_7	ST180412M1-6 PFC CS3 18D0207	12-Apr-18	19:01:32
8	180412M1_8	ST180412M1-7 PFC CS4 18D0208	12-Apr-18	19:13:02
9	180412M1_9	ST180412M1-8 PFC CS5 18D0209	12-Apr-18	19:24:31
10	180412M1_10	ST180412M1-9 PFC CS6 18D0210	12-Apr-18	19:36:01
11	180412M1_11	ST180412M1-10 PFC CS7 18D0211	12-Apr-18	19:47:30
12	180412M1_12	IPA	12-Apr-18	19:59:00
13	180412M1_13	ICV180412M1-1 PFC ICV 18D0201	12-Apr-18	20:10:30
14	180412M1_14	IPA	12-Apr-18	20:22:00
15	180412M1_15	B8C0190-BS1 OPR 0.25	12-Apr-18	20:33:30
16	180412M1_16	B8C0190-BLK1 Method Blank 0.25	12-Apr-18	20:44:59
17	180412M1_17	1800562-01 CA-06781 0.24584	12-Apr-18	20:56:29
18	180412M1_18	1800562-02 CA-06782 0.2563	12-Apr-18	21:07:56
19	180412M1_19	1800562-03 CA-06783 0.2566	12-Apr-18	21:19:25
20	180412M1_20	B8D0070-BS1 OPR 0.25	12-Apr-18	21:30:55
21	180412M1_21	B8D0070-BSD1 LCSD 0.25	12-Apr-18	21:42:24
22	180412M1_22	B8D0070-BLK1 Method Blank 0.25	12-Apr-18	21:53:54
23	180412M1_23	1800643-01 CA-AQIDW01-20180409 0.25041	12-Apr-18	22:05:24
24	180412M1_24	IPA	12-Apr-18	22:16:51
25	180412M1_25	ST180412M1-11 PFC CS3 18D0207 ✓	12-Apr-18	22:28:17 ✓
26	180412M1_26	IPA	12-Apr-18	22:39:45
27	180412M1_27	180411_DODS1	12-Apr-18	22:51:12
28	180412M1_28	180411_DODS2	12-Apr-18	23:02:42
29	180412M1_29	180411_EC1	12-Apr-18	23:14:12
30	180412M1_30	180411_EC2	12-Apr-18	23:25:39

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

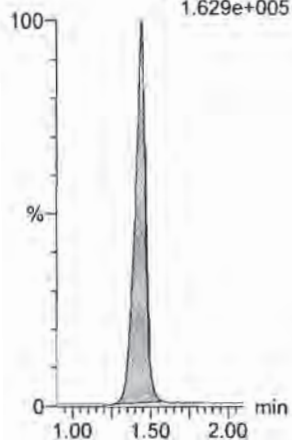
Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 13 Apr 2018 14:51:41

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

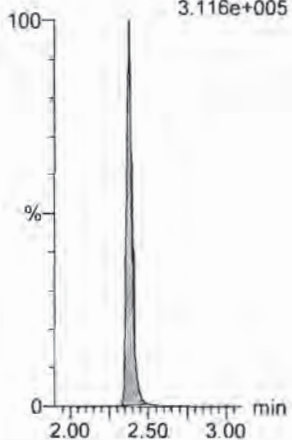
PFBA

F1:MRM of 1 channel,ES-
213.0 > 168.8
1.629e+005



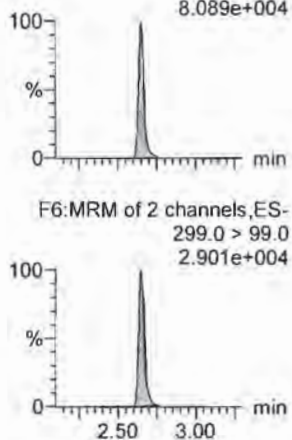
PFPeA

F4:MRM of 1 channel,ES-
263.1 > 218.9
3.116e+005



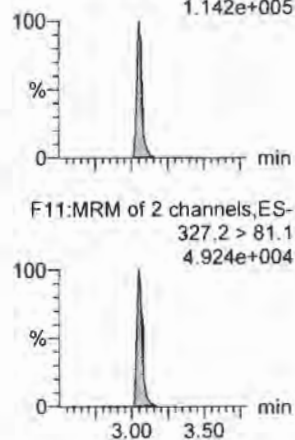
PFBS

F6:MRM of 2 channels,ES-
299.0 > 79.7
8.089e+004



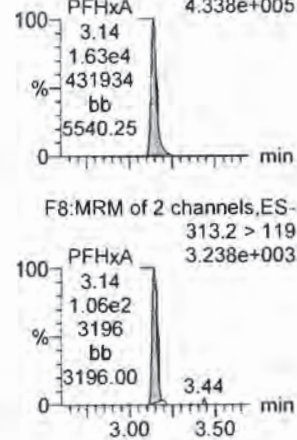
4:2 FTS

F11:MRM of 2 channels,ES-
327.2 > 307.2
1.142e+005



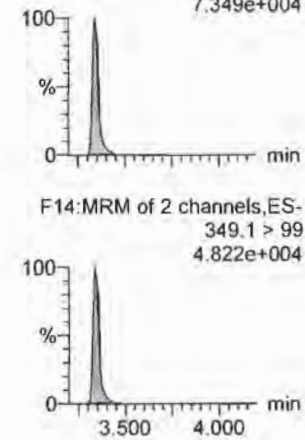
PFHxA

F8:MRM of 2 channels,ES-
313.2 > 268.9
4.338e+005



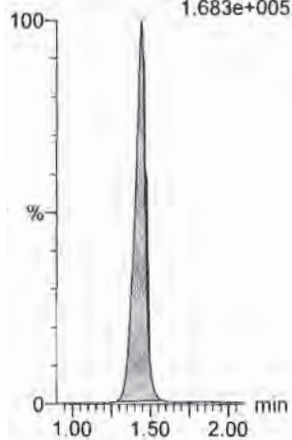
PFPeS

F14:MRM of 2 channels,ES-
349.1 > 80.1
7.349e+004



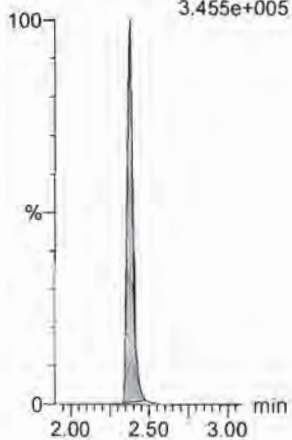
13C3-PFBA

F2:MRM of 1 channel,ES-
216.1 > 171.8
1.683e+005



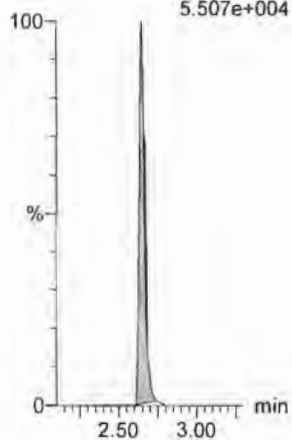
13C3-PFPeA

F5:MRM of 1 channel,ES-
266. > 221.8
3.455e+005



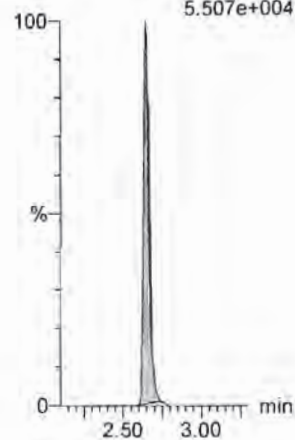
13C3-PFBS

F7:MRM of 1 channel,ES-
302. > 98.8
5.507e+004



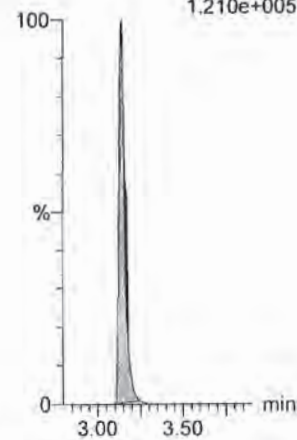
13C3-PFBS

F7:MRM of 1 channel,ES-
302. > 98.8
5.507e+004



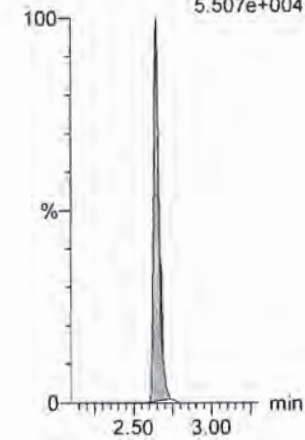
13C2-PFHxA

F9:MRM of 1 channel,ES-
315 > 269.8
1.210e+005



13C3-PFBS

F7:MRM of 1 channel,ES-
302. > 98.8
5.507e+004



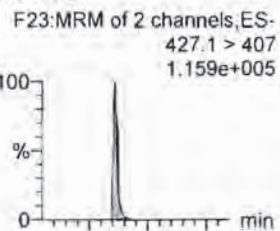
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

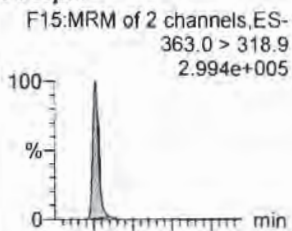
Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

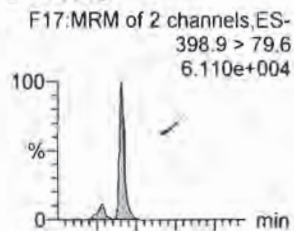
6:2 FTS



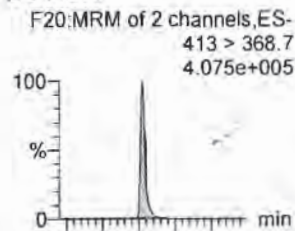
PFHpA



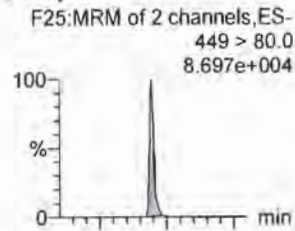
L-PFHxS



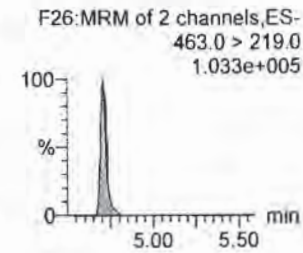
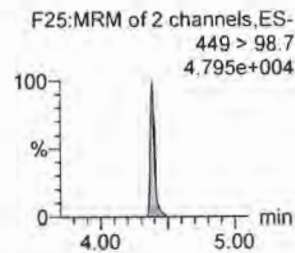
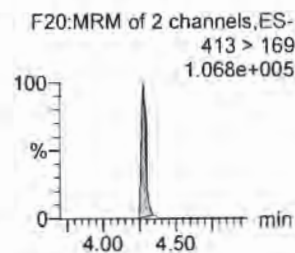
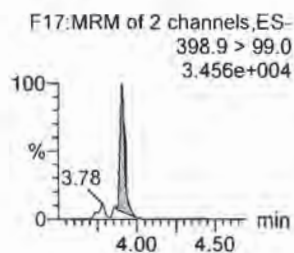
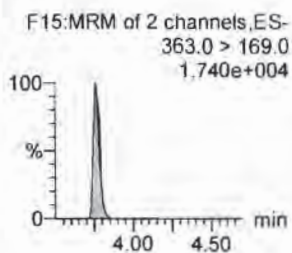
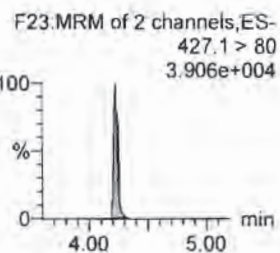
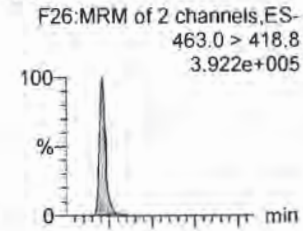
L-PFOA



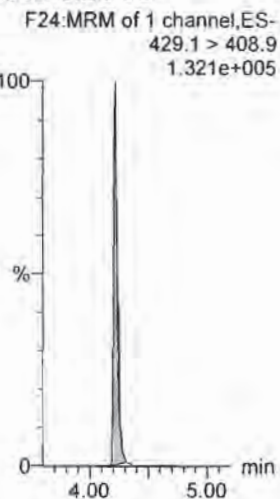
PFHpS



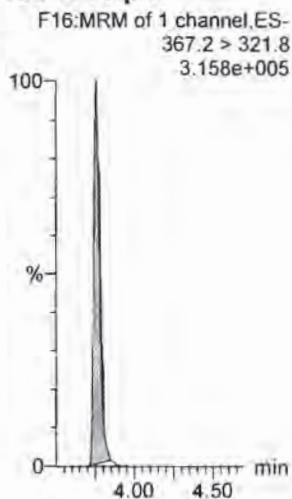
PFNA



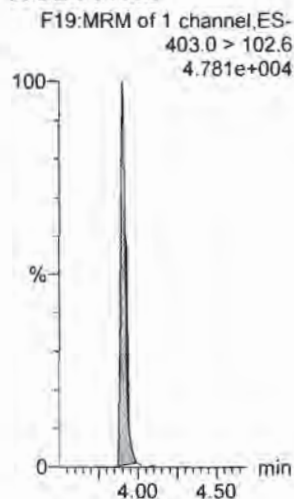
13C2-6:2 FTS



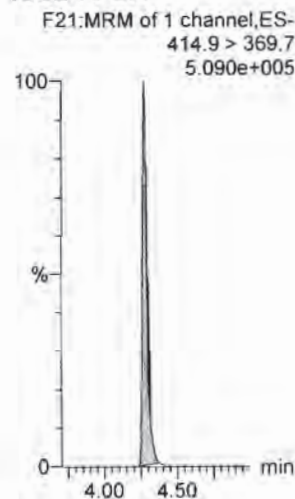
13C4-PFHpA



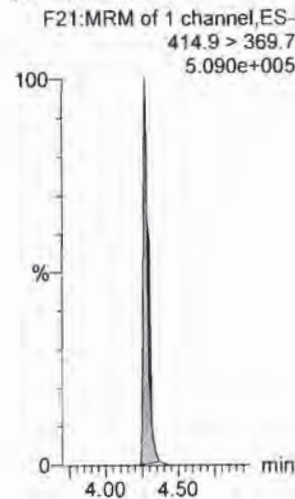
18O2-PFHxS



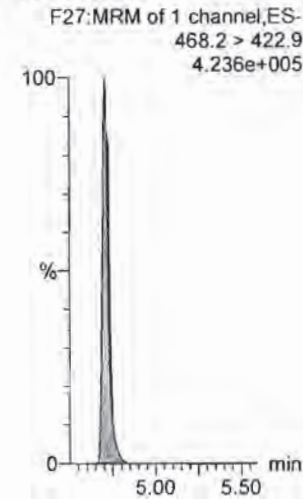
13C2-PFOA



13C2-PFOA



13C5-PFNA



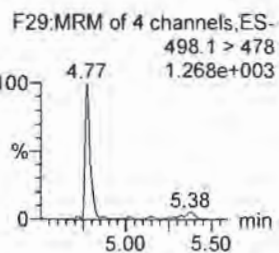
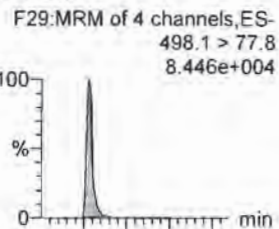
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

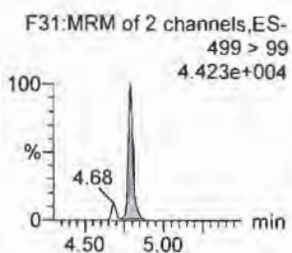
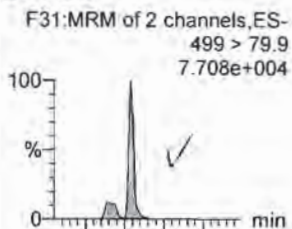
Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

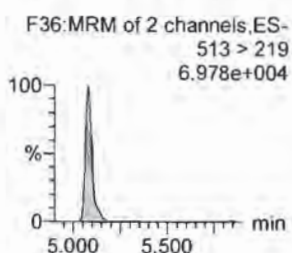
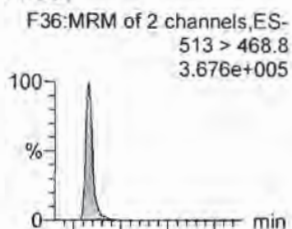
PFOSA



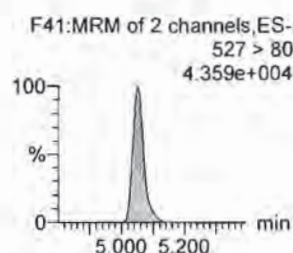
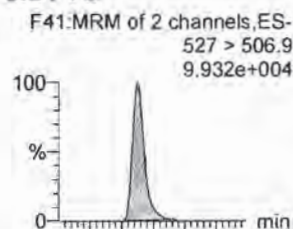
L-PFOS



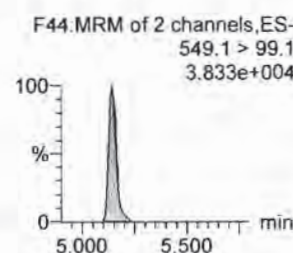
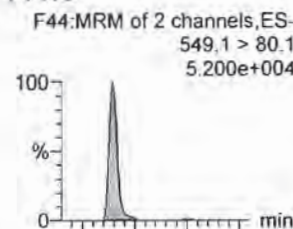
PFDA



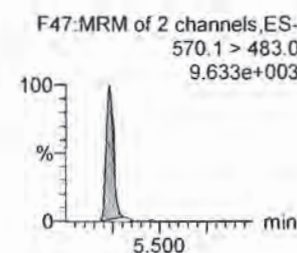
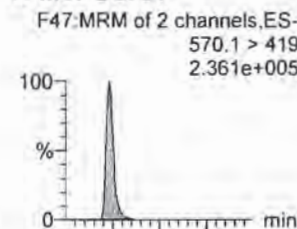
8:2 FTS



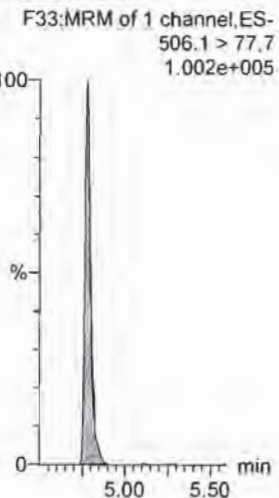
PFNS



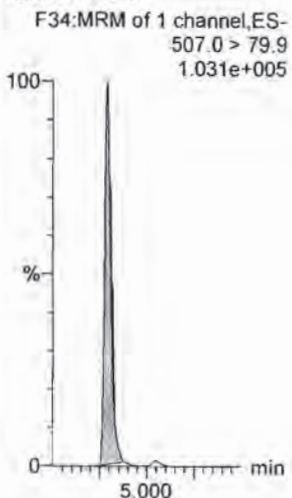
N-MeFOSAA



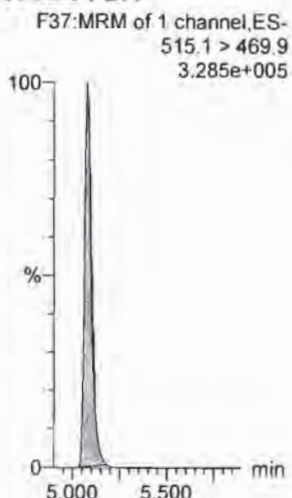
13C8-PFOSA



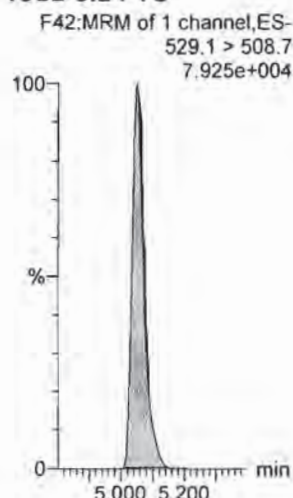
13C8-PFOS



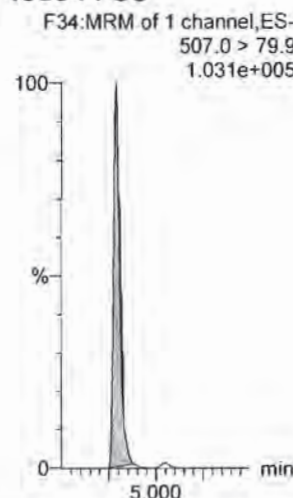
13C2-PFDA



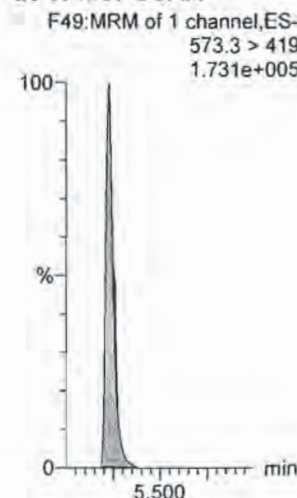
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA

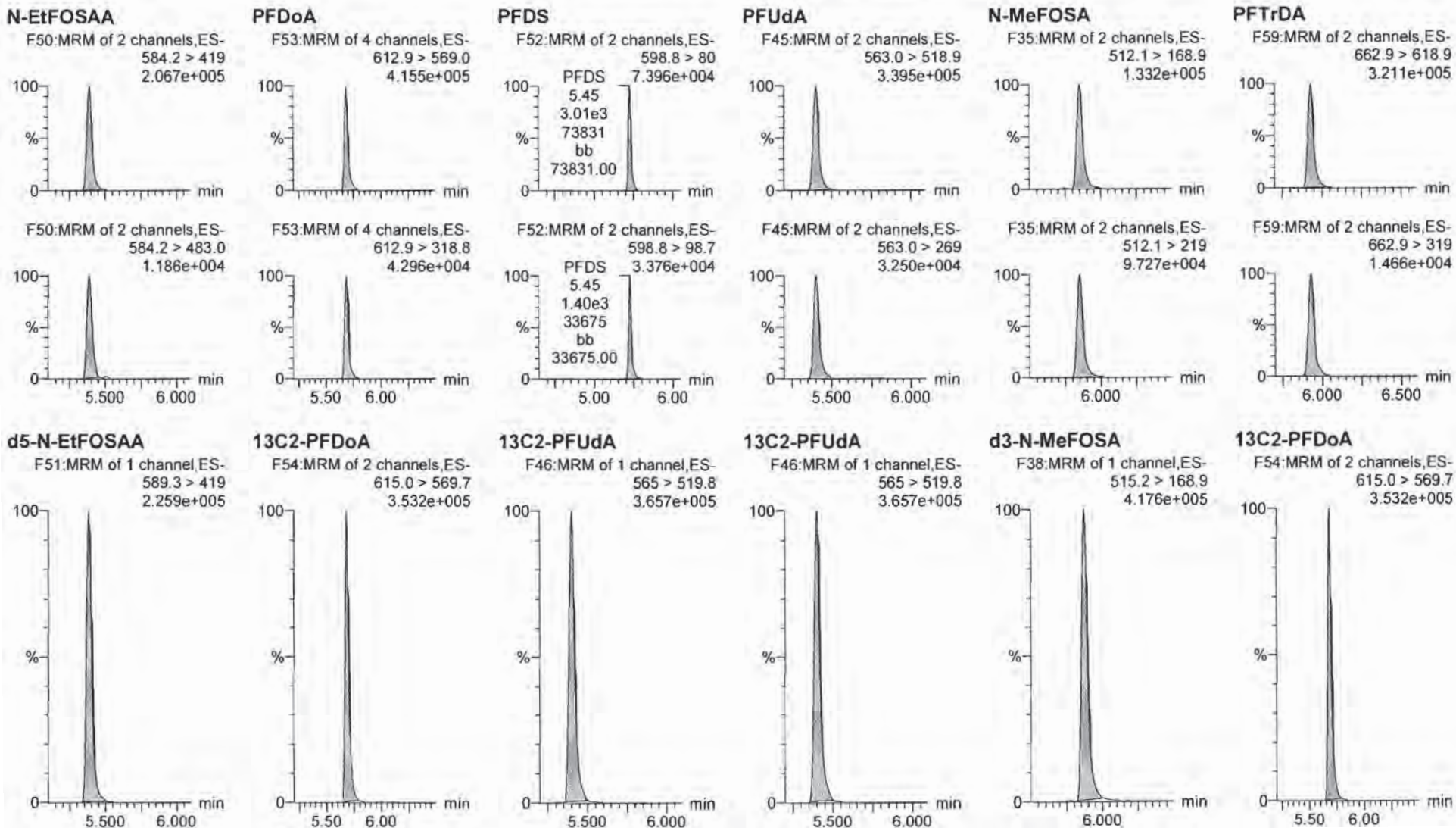


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207



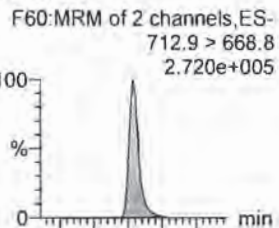
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

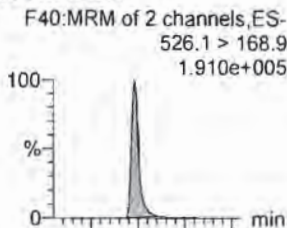
Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

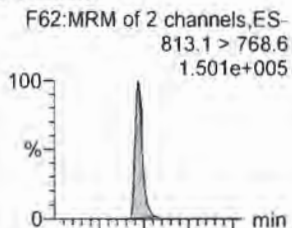
PFTeDA



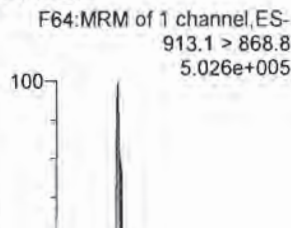
N-EtFOSA



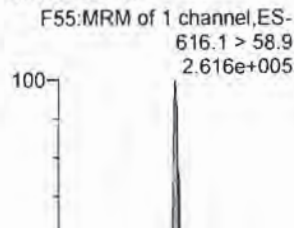
PFHxDA



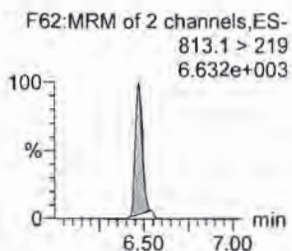
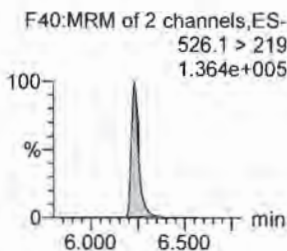
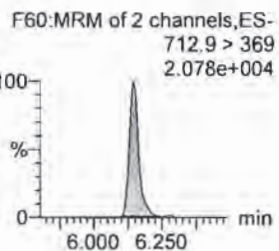
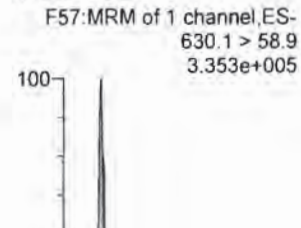
PFODA



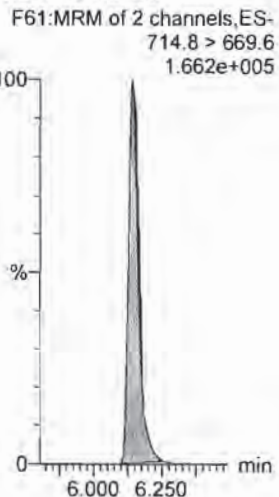
N-MeFOSE



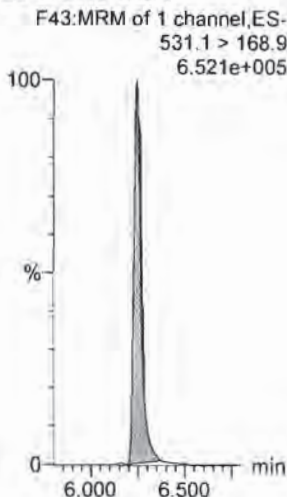
N-EtFOSE



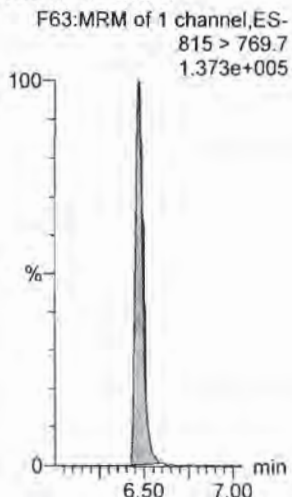
13C2-PFTeDA



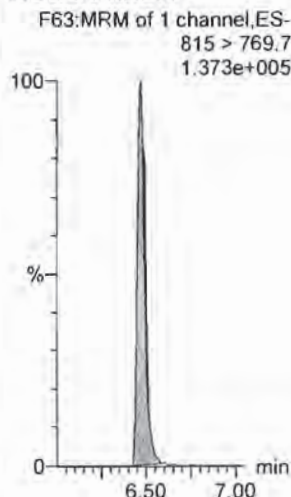
d5-N-ETFOSA



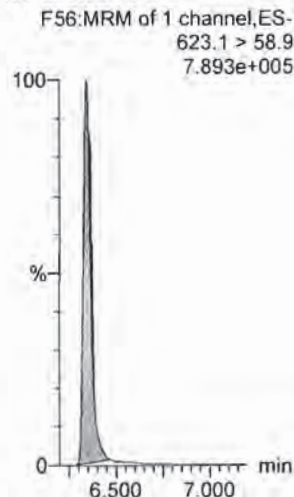
13C2-PFHxDA



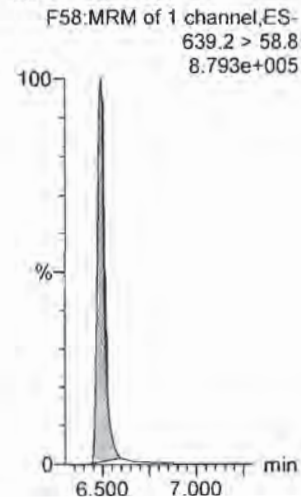
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-25.qld

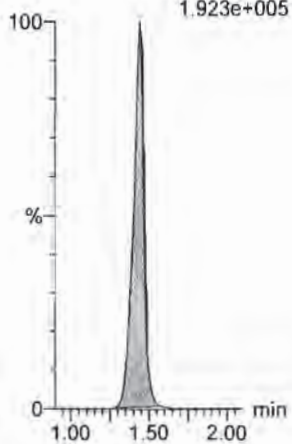
Last Altered: Tuesday, April 17, 2018 11:24:47 Pacific Daylight Time

Printed: Tuesday, April 17, 2018 11:25:31 Pacific Daylight Time

Name: 180412M1_25, Date: 12-Apr-2018, Time: 22:28:17, ID: ST180412M1-11 PFC CS3 18D0207, Description: PFC CS3 18D0207

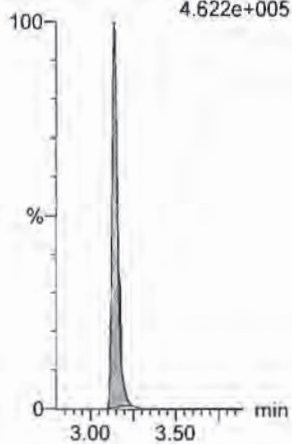
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
1.923e+005



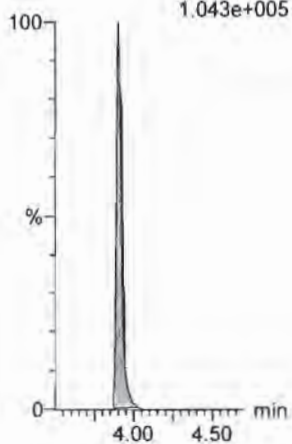
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.622e+005



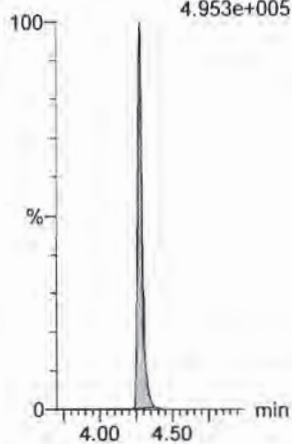
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
1.043e+005



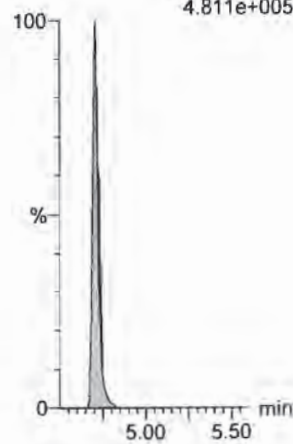
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
4.953e+005



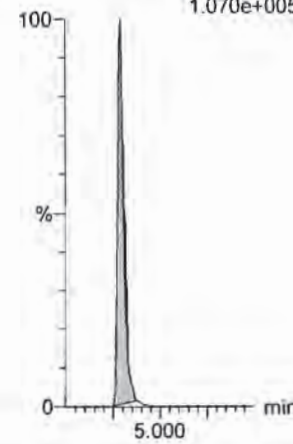
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
4.811e+005



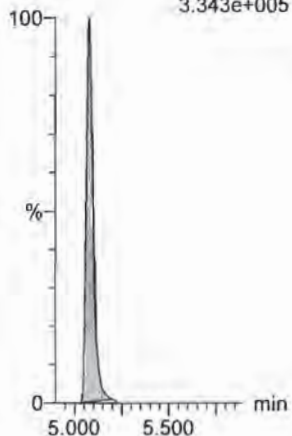
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
1.070e+005



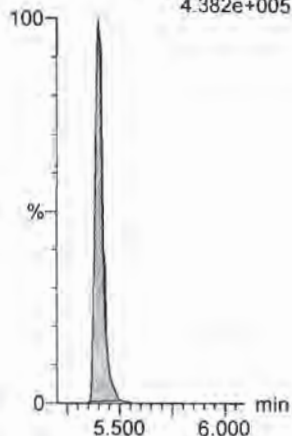
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.343e+005



13C7-PFUdA

F48:MRM of 1 channel,ES-
570.1 > 524.8
4.382e+005



INITIAL CALIBRATION (ICAL)
INCLUDING ASSOCIATED
INITIAL CALIBRATION VERIFICATION (ICV) AND INSTRUMENT BLANK (IB)

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld
 Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
 Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

high pt
 $\frac{6:2\text{Fts}}{8:2\text{Fts}} = \frac{100}{500}$
Linear fit for L6
 $\text{PFNS} = \frac{\text{low point}}{.500}$
KBF 4/13/18
MTT 4/13/18

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59
 Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Compound name: PFBA
 Correlation coefficient: $r = 0.999917$, $r^2 = 0.999835$
 Calibration curve: $1.17165 * x + 0.0472244$
 Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	1.44	364.997	12432.549	0.367	0.3	9.2	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	1.43	636.889	12303.614	0.647	0.5	2.4	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	1.44	1279.857	12704.602	1.259	1.0	3.4	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	1.44	2422.543	12340.111	2.454	2.1	2.7	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	1.42	5807.868	12532.276	5.793	4.9	-1.9	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	1.42	11659.345	12184.722	11.961	10.2	1.7	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	1.44	60514.754	13399.636	56.452	48.1	-3.7	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	1.44	121803.813	12672.241	120.148	102.5	2.5	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	1.44	297623.531	12689.992	293.168	250.2	0.1	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	1.44	567522.625	12133.231	584.678	499.0	-0.2	NO	1.000	NO	bb

Compound name: PFPeA
 Correlation coefficient: $r = 0.999842$, $r^2 = 0.999684$
 Calibration curve: $1.0664 * x + 0.0408351$
 Response type: Internal Std (Ref 35), Area * (IS Conc. / IS Area)
 Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	2.37	366.946	14101.146	0.325	0.3	6.7	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	2.37	623.442	14091.000	0.553	0.5	-3.9	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	2.37	1270.360	14287.353	1.111	1.0	0.4	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	2.37	2469.380	13929.757	2.216	2.0	2.0	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	2.37	5943.986	14097.635	5.270	4.9	-1.9	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	2.37	11838.929	14013.628	10.560	9.9	-1.4	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	2.37	63808.492	14901.154	53.526	50.2	0.3	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	2.37	121308.047	14379.800	105.450	98.8	-1.2	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	2.37	292273.219	14052.367	259.986	243.8	-2.5	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFPeA

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
10	10 180412M1_11	Standard	500.000	2.37	557556.438	12878.532	541.168	507.4	1.5	NO	1.000	NO	bb

Compound name: PFBS

Correlation coefficient: $r = 0.999598$, $r^2 = 0.999197$

Calibration curve: $1.89414 * x + -0.0288383$

Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	2.64	70.468	1976.932	0.446	0.3	0.2	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	2.64	146.920	2012.240	0.913	0.5	-0.6	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	2.65	318.879	2020.388	1.973	1.1	5.7	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	2.65	549.346	1981.108	3.466	1.8	-7.7	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	2.65	1460.189	1986.397	9.189	4.9	-2.7	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	2.64	3097.384	1990.742	19.449	10.3	2.8	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	2.65	15277.730	2041.284	93.555	49.4	-1.2	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	2.64	30229.295	2011.619	187.842	99.2	-0.8	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	2.65	70866.016	1950.802	454.083	239.7	-4.1	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	2.65	137914.219	1779.008	969.039	511.6	2.3	NO	0.999	NO	bb

Compound name: 4:2 FTS

Coefficient of Determination: $R^2 = 0.999470$

Calibration curve: $-0.000405212 * x^2 + 2.37556 * x + -0.0593719$

Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	3.05	97.068	1976.932	0.614	0.3	13.3	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	3.05	171.095	2012.240	1.063	0.5	-5.5	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	3.05	345.608	2020.388	2.138	0.9	-7.5	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	3.05	704.253	1981.108	4.444	1.9	-5.2	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	3.05	1966.585	1986.397	12.375	5.2	4.8	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	3.05	3674.837	1990.742	23.075	9.8	-2.5	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	3.05	19313.051	2041.284	118.265	50.2	0.5	NO	0.999	NO	bb

Vista Analytical Laboratory

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 4:2 FTS

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
8	8 180412M1_9	Standard	100.000	3.05	39204.988	2011.619	243.616	104.4	4.4	NO	0.999	NO	MM
9	9 180412M1_10	Standard	250.000	3.05	86156.164	1950.802	552.056	242.4	-3.0	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	3.05	155493.469	1779.008	1092.557	503.1	0.6	NO	0.999	NO	bb

Compound name: PFHxA

Coefficient of Determination: R² = 0.998763

Calibration curve: -0.000593566 * x² + 1.6809 * x + 0.0121769

Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	3.14	463.125	4687.334	0.494	0.3	14.7	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	3.14	765.279	4463.879	0.857	0.5	0.6	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	3.14	1581.613	4738.835	1.669	1.0	-1.4	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	3.14	3210.659	4830.748	3.323	2.0	-1.4	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	3.14	7798.987	4854.741	8.032	4.8	-4.4	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	3.14	15262.804	4995.104	15.278	9.1	-8.9	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	3.14	78490.391	4765.423	82.354	49.9	-0.3	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	3.14	162893.672	4690.850	173.629	107.4	7.4	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	3.14	365690.531	4957.260	368.843	239.7	-4.1	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	3.14	696492.313	4996.505	696.980	504.5	0.9	NO	0.999	NO	bb

Compound name: PFPeS

Correlation coefficient: r = 0.999947, r² = 0.999894

Calibration curve: 1.62535 * x + -0.117866

Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	3.33	38.342	1976.932	0.242	0.2	-11.3	NO	1.000	NO	MM
2	2 180412M1_3	Standard	0.500	3.34	114.567	2012.240	0.712	0.5	2.1	NO	1.000	NO	MM
3	3 180412M1_4	Standard	1.000	3.33	262.144	2020.388	1.622	1.1	7.0	NO	1.000	NO	MM
4	4 180412M1_5	Standard	2.000	3.34	504.098	1981.108	3.181	2.0	1.5	NO	1.000	NO	MM
5	5 180412M1_6	Standard	5.000	3.34	1264.059	1986.397	7.954	5.0	-0.7	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFPeS

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
6	6 180412M1_7	Standard	10.000	3.33	2534.784	1990.742	15.916	9.9	-1.4	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	3.34	13374.106	2041.284	81.898	50.5	0.9	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	3.33	26666.008	2011.619	165.700	102.0	2.0	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	3.34	63782.762	1950.802	408.696	251.5	0.6	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	3.34	114738.031	1779.008	806.194	496.1	-0.8	NO	1.000	NO	bb

Compound name: PFHpA

Correlation coefficient: $r = 0.999769$, $r^2 = 0.999538$

Calibration curve: $1.208 * x + 0.0277093$

Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	3.76	284.508	13278.581	0.268	0.2	-20.5	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	3.76	565.072	12454.534	0.567	0.4	-10.7	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	3.76	1400.455	12577.205	1.392	1.1	12.9	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	3.76	2403.280	11923.876	2.519	2.1	3.1	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	3.76	6050.102	11880.335	6.366	5.2	4.9	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	3.76	12731.982	11789.843	13.499	11.2	11.5	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	3.76	65339.383	13793.957	59.210	49.0	-2.0	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	3.76	119328.039	12409.241	120.201	99.5	-0.5	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	3.76	314558.313	12712.665	309.296	256.0	2.4	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	3.76	559204.750	11712.302	596.813	494.0	-1.2	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: L-PFHxS

Correlation coefficient: $r = 0.999641$, $r^2 = 0.999282$

Calibration curve: $1.87852 * x + -0.109873$

Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	3.91	35.864	1527.931	0.293	0.2	-14.1	NO	0.999	NO	MM
2	2 180412M1_3	Standard	0.500	3.90	108.738	1568.844	0.866	0.5	3.9	NO	0.999	NO	MM
3	3 180412M1_4	Standard	1.000	3.91	202.254	1405.909	1.798	1.0	1.6	NO	0.999	NO	MM
4	4 180412M1_5	Standard	2.000	3.91	499.336	1596.036	3.911	2.1	7.0	NO	0.999	NO	MM
5	5 180412M1_6	Standard	5.000	3.91	1196.678	1780.262	8.402	4.5	-9.4	NO	0.999	NO	MM
6	6 180412M1_7	Standard	10.000	3.90	2469.363	1597.028	19.328	10.3	3.5	NO	0.999	NO	MM
7	7 180412M1_8	Standard	50.000	3.90	13380.876	1630.157	102.604	54.7	9.4	NO	0.999	NO	MM
8	8 180412M1_9	Standard	100.000	3.90	25248.861	1675.668	188.349	100.3	0.3	NO	0.999	NO	MM
9	9 180412M1_10	Standard	250.000	3.91	57703.410	1573.319	458.453	244.1	-2.4	NO	0.999	NO	MM
10	10 180412M1_11	Standard	500.000	3.90	114696.273	1523.943	940.785	500.9	0.2	NO	0.999	NO	MM

Compound name: 6:2 FTS

Coefficient of Determination: $R^2 = 0.998553$

Calibration curve: $-0.00328829 * x^2 + 1.12459 * x + 0.0184508$

Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	4.22	101.374	4862.338	0.261	0.2	-13.8	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	4.21	217.377	4642.121	0.585	0.5	1.0	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	4.22	449.267	4656.256	1.206	1.1	5.9	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	4.22	872.331	4542.417	2.401	2.1	6.6	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	4.22	2073.924	4967.122	5.219	4.7	-6.2	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	4.22	4550.660	4786.033	11.885	10.9	9.0	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	4.22	21994.746	5898.290	46.613	48.2	-3.5	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	4.22	42210.234	6577.263	80.220	101.4	1.4	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	4.22	99767.063	8718.205	143.044			NO	0.999	NO	bbXI
10	10 180412M1_11	Standard	500.000	4.22	174352.000	11749.935	185.482			NO	0.999	NO	bbXI

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
 Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: L-PFOA

Correlation coefficient: $r = 0.998891$, $r^2 = 0.997784$

Calibration curve: $0.933217 * x + 0.0971148$

Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	4.28	384.317	17375.193	0.276	0.2	-23.1	NO	0.998	NO	bb
2	2 180412M1_3	Standard	0.500	4.27	697.162	16543.324	0.527	0.5	-7.9	NO	0.998	NO	MM
3	3 180412M1_4	Standard	1.000	4.27	1413.776	18351.223	0.963	0.9	-7.2	NO	0.998	NO	bb
4	4 180412M1_5	Standard	2.000	4.27	3203.281	17801.283	2.249	2.3	15.3	NO	0.998	NO	bb
5	5 180412M1_6	Standard	5.000	4.28	6892.519	17982.363	4.791	5.0	0.6	NO	0.998	NO	bb
6	6 180412M1_7	Standard	10.000	4.28	14698.662	18203.990	10.093	10.7	7.1	NO	0.998	NO	bb
7	7 180412M1_8	Standard	50.000	4.27	71717.000	17551.113	51.077	54.6	9.3	NO	0.998	NO	bb
8	8 180412M1_9	Standard	100.000	4.27	136588.047	17065.654	100.046	107.1	7.1	NO	0.998	NO	bb
9	9 180412M1_10	Standard	250.000	4.27	349747.094	18223.658	239.899	257.0	2.8	NO	0.998	NO	bb
10	10 180412M1_11	Standard	500.000	4.27	641636.500	17885.152	448.442	480.4	-3.9	NO	0.998	NO	bb

Compound name: PFHpS

Coefficient of Determination: $R^2 = 0.998356$

Calibration curve: $-5.04164e-005 * x^2 + 0.202804 * x + -0.00232181$

Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	4.39	74.211	17375.193	0.053	0.3	9.9	NO	0.998	NO	bb
2	2 180412M1_3	Standard	0.500	4.38	126.974	16543.324	0.096	0.5	-3.1	NO	0.998	NO	bb
3	3 180412M1_4	Standard	1.000	4.38	342.402	18351.223	0.233	1.2	16.2	NO	0.998	NO	bb
4	4 180412M1_5	Standard	2.000	4.38	485.557	17801.283	0.341	1.7	-15.3	NO	0.998	NO	bb
5	5 180412M1_6	Standard	5.000	4.38	1370.652	17982.363	0.953	4.7	-5.7	NO	0.998	NO	bb
6	6 180412M1_7	Standard	10.000	4.38	2712.310	18203.990	1.862	9.2	-7.8	NO	0.998	NO	bb
7	7 180412M1_8	Standard	50.000	4.38	14385.162	17551.113	10.245	51.2	2.4	NO	0.998	NO	bb
8	8 180412M1_9	Standard	100.000	4.38	28994.688	17065.654	21.238	107.6	7.6	NO	0.998	NO	bb
9	9 180412M1_10	Standard	250.000	4.38	65991.188	18223.658	45.265	237.2	-5.1	NO	0.998	NO	bb
10	10 180412M1_11	Standard	500.000	4.38	128236.742	17885.152	89.625	505.5	1.1	NO	0.998	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFNA

Correlation coefficient: $r = 0.999818$, $r^2 = 0.999637$

Calibration curve: $1.18721 * x + 0.0329161$

Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	4.71	357.421	15127.373	0.295	0.2	-11.6	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	4.71	758.965	16234.130	0.584	0.5	-7.1	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	4.71	1543.134	15074.372	1.280	1.1	5.0	NO	1.000	NO	MM
4	4 180412M1_5	Standard	2.000	4.71	3131.312	14679.378	2.666	2.2	10.9	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	4.71	7279.636	14545.366	6.256	5.2	4.8	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	4.71	15077.624	16043.838	11.747	9.9	-1.3	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	4.71	76930.313	16223.164	59.275	49.9	-0.2	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	4.71	149860.656	15595.168	120.118	101.1	1.1	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	4.71	343642.250	14896.119	288.366	242.9	-2.9	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	4.71	684276.313	14244.178	600.488	505.8	1.2	NO	1.000	NO	bb

Compound name: PFOSA

Correlation coefficient: $r = 0.999783$, $r^2 = 0.999565$

Calibration curve: $1.00842 * x + -0.0126412$

Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	4.78	76.340	3804.597	0.251	0.3	4.5	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	4.78	111.002	3927.791	0.353	0.4	-27.4	NO	1.000	NO	MM
3	3 180412M1_4	Standard	1.000	4.78	326.250	3791.337	1.076	1.1	7.9	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	4.78	619.273	3847.814	2.012	2.0	0.4	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	4.78	1593.754	3621.776	5.501	5.5	9.3	NO	1.000	NO	MM
6	6 180412M1_7	Standard	10.000	4.78	3109.311	3689.177	10.535	10.5	4.6	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	4.78	15434.711	3823.459	50.461	50.1	0.1	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	4.78	30839.771	3850.831	100.108	99.3	-0.7	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	4.78	69902.883	3374.944	258.904	256.8	2.7	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	4.78	130921.969	3291.725	497.163	493.0	-1.4	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: L-PFOS

Correlation coefficient: $r = 0.998367$, $r^2 = 0.996737$

Calibration curve: $1.05556 * x + -0.0448468$

Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	180412M1_2	Standard	0.250	4.79	58.925	3809.206	0.193	0.2	-9.7	NO	0.997	NO	MM
2	180412M1_3	Standard	0.500	4.79	121.180	3879.481	0.390	0.4	-17.5	NO	0.997	NO	MM
3	180412M1_4	Standard	1.000	4.79	347.011	3923.690	1.105	1.1	9.0	NO	0.997	NO	MM
4	180412M1_5	Standard	2.000	4.79	560.376	3905.613	1.793	1.7	-12.9	NO	0.997	NO	MM
5	180412M1_6	Standard	5.000	4.79	1614.469	3881.834	5.199	5.0	-0.6	NO	0.997	NO	MM
6	180412M1_7	Standard	10.000	4.79	3484.249	3794.469	11.478	10.9	9.2	NO	0.997	NO	MM
7	180412M1_8	Standard	50.000	4.79	17003.479	3867.217	54.960	52.1	4.2	NO	0.997	NO	MM
8	180412M1_9	Standard	100.000	4.79	32125.773	3914.104	102.596	97.2	-2.8	NO	0.997	NO	MM
9	180412M1_10	Standard	250.000	4.79	81269.891	3550.716	286.104	271.1	8.4	NO	0.997	NO	MM
10	180412M1_11	Standard	500.000	4.79	145749.031	3603.874	505.529	479.0	-4.2	NO	0.997	NO	MM

Compound name: PFDA

Coefficient of Determination: $R^2 = 0.999664$

Calibration curve: $-0.000114213 * x^2 + 1.33852 * x + 0.0655649$

Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	180412M1_2	Standard	0.250	5.08	407.581	12920.214	0.394	0.2	-1.8	NO	1.000	NO	MM
2	180412M1_3	Standard	0.500	5.08	736.883	12655.407	0.728	0.5	-1.0	NO	1.000	NO	bb
3	180412M1_4	Standard	1.000	5.07	1671.077	14661.358	1.425	1.0	1.6	NO	1.000	NO	bb
4	180412M1_5	Standard	2.000	5.08	2737.891	13153.102	2.602	1.9	-5.2	NO	1.000	NO	bb
5	180412M1_6	Standard	5.000	5.08	7558.297	13492.313	7.002	5.2	3.7	NO	1.000	NO	bb
6	180412M1_7	Standard	10.000	5.08	14816.645	13921.538	13.304	9.9	-1.0	NO	1.000	NO	MM
7	180412M1_8	Standard	50.000	5.08	73681.156	13226.847	69.632	52.2	4.4	NO	1.000	NO	bb
8	180412M1_9	Standard	100.000	5.08	153281.422	14238.182	134.569	101.4	1.4	NO	1.000	NO	bb
9	180412M1_10	Standard	250.000	5.08	369016.750	14439.042	319.461	243.7	-2.5	NO	1.000	NO	bb
10	180412M1_11	Standard	500.000	5.08	691678.625	13421.889	644.170	502.8	0.6	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 8:2 FTS

Coefficient of Determination: R² = 0.999393

Calibration curve: -0.00567628 * x² + 1.76645 * x + -0.0113749

Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.06	138.904	3500.403	0.496	0.3	15.0	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	5.05	218.987	3576.784	0.765	0.4	-11.9	NO	0.999	NO	MM
3	3 180412M1_4	Standard	1.000	5.05	499.526	3740.451	1.669	1.0	-4.6	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	5.05	949.750	3144.534	3.775	2.2	7.9	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	5.05	2188.277	3362.617	8.135	4.7	-6.4	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	5.05	4869.706	3606.306	16.879	9.9	-1.2	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	5.05	24040.430	3995.046	75.220	50.9	1.8	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	5.05	46739.695	4894.652	119.364	99.2	-0.8	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	5.05	101550.445	7147.697	177.593			NO	0.999	NO	bbXI
10	10 180412M1_11	Standard	500.000	5.05	176282.047	9654.647	228.235			NO	0.999	NO	bbXI

Compound name: PFNS

Coefficient of Determination: R² = 0.999574

Calibration curve: -8.16963e-005 * x² + 0.790266 * x + -0.141984

Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.14	61.952	3809.206	0.203	0.4	74.8	YES	1.000	NO	bbX ✓
2	2 180412M1_3	Standard	0.500	5.14	97.568	3879.481	0.314	0.6	15.5	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	5.14	163.255	3923.690	0.520	0.8	-16.2	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	5.14	456.663	3905.613	1.462	2.0	1.5	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	5.14	1069.611	3881.834	3.444	4.5	-9.2	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	5.14	2515.534	3794.469	8.287	10.7	6.8	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	5.14	12691.373	3867.217	41.022	52.4	4.7	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	5.14	23606.629	3914.104	75.390	96.5	-3.5	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	5.14	54829.375	3550.716	193.022	250.9	0.4	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	5.14	107988.844	3603.874	374.558	500.0	-0.0	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: N-MeFOSAA

Coefficient of Determination: R² = 0.998666

Calibration curve: -0.000163635 * x² + 1.41496 * x + 0.06191

Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.23	211.036	7381.724	0.357	0.2	-16.5	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	5.23	423.462	7562.005	0.700	0.5	-9.8	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	5.23	1034.134	8204.587	1.576	1.1	7.0	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	5.23	2097.229	8111.684	3.232	2.2	12.0	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	5.23	4347.618	7390.027	7.354	5.2	3.1	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	5.23	10402.759	7705.184	16.876	11.9	19.0	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	5.23	51694.258	8795.677	73.465	52.2	4.4	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	5.23	95992.328	8413.845	142.611	101.9	1.9	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	5.23	223400.188	8528.218	327.443	237.9	-4.8	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	5.23	420601.750	7802.813	673.798	505.7	1.1	NO	0.999	NO	bb

Compound name: N-EtFOSAA

Coefficient of Determination: R² = 0.999715

Calibration curve: -5.98261e-005 * x² + 1.00844 * x + -0.00487995

Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.39	174.800	8829.215	0.247	0.3	0.1	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	5.38	337.623	8445.769	0.500	0.5	0.1	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	5.39	700.175	9503.621	0.921	0.9	-8.2	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	5.39	1374.620	9130.507	1.882	1.9	-6.4	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	5.39	3744.009	8799.637	5.318	5.3	5.6	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	5.39	7642.281	8914.390	10.716	10.6	6.4	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	5.39	37709.867	9410.251	50.091	49.8	-0.4	NO	1.000	NO	bb
8	8 180412M1_9	Standard	100.000	5.39	74327.078	9038.717	102.790	102.6	2.6	NO	1.000	NO	bb
9	9 180412M1_10	Standard	250.000	5.39	158014.891	8121.366	243.209	244.7	-2.1	NO	1.000	NO	bb
10	10 180412M1_11	Standard	500.000	5.39	299272.656	7613.820	491.331	502.2	0.4	NO	1.000	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFUdA

Coefficient of Determination: R² = 0.998191

Calibration curve: $-9.75727e-005 * x^2 + 1.0298 * x + 0.0729832$

Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.40	445.840	18456.398	0.302	0.2	-11.1	NO	0.998	NO	bb
2	2 180412M1_3	Standard	0.500	5.40	755.414	14034.184	0.673	0.6	16.5	NO	0.998	NO	bb
3	3 180412M1_4	Standard	1.000	5.40	1322.961	17058.291	0.969	0.9	-12.9	NO	0.998	NO	bb
4	4 180412M1_5	Standard	2.000	5.40	2484.371	16486.967	1.884	1.8	-12.1	NO	0.998	NO	bb
5	5 180412M1_6	Standard	5.000	5.40	7729.228	16576.582	5.828	5.6	11.8	NO	0.998	NO	bb
6	6 180412M1_7	Standard	10.000	5.40	13860.523	15627.048	11.087	10.7	7.1	NO	0.998	NO	bb
7	7 180412M1_8	Standard	50.000	5.40	69178.578	17509.188	49.387	48.1	-3.8	NO	0.998	NO	bb
8	8 180412M1_9	Standard	100.000	5.40	133822.188	15124.238	110.602	108.4	8.4	NO	0.998	NO	MM
9	9 180412M1_10	Standard	250.000	5.40	319088.000	16669.102	239.281	237.6	-4.9	NO	0.998	NO	bb
10	10 180412M1_11	Standard	500.000	5.40	604941.063	15272.604	495.119	504.9	1.0	NO	0.998	NO	bb

Compound name: PFDS

Coefficient of Determination: R² = 0.999010

Calibration curve: $-5.80925e-005 * x^2 + 0.239142 * x + -0.0310009$

Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.45	31.340	18456.398	0.021	0.2	-12.6	NO	0.999	NO	MM
2	2 180412M1_3	Standard	0.500	5.45	125.062	14034.184	0.111	0.6	19.1	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	5.45	258.469	17058.291	0.189	0.9	-7.8	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	5.45	635.311	16486.967	0.482	2.1	7.2	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	5.45	1509.681	16576.582	1.138	4.9	-2.1	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	5.45	2777.114	15627.048	2.221	9.4	-5.6	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	5.45	16109.899	17509.188	11.501	48.8	-2.4	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	5.45	30081.768	15124.238	24.862	106.9	6.9	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	5.45	72516.555	16669.102	54.379	241.7	-3.3	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	5.45	129032.305	15272.604	105.608	503.3	0.7	NO	0.999	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFDoA

Coefficient of Determination: $R^2 = 0.999158$

Calibration curve: $9.73778e-005 * x^2 + 1.28783 * x + 0.059227$

Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc.	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.68	418.672	14303.356	0.366	0.2	-4.8	NO	0.999	NO	MM
2	2 180412M1_3	Standard	0.500	5.68	783.775	12595.369	0.778	0.6	11.6	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	5.68	1556.325	14580.861	1.334	1.0	-1.0	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	5.68	3159.567	14283.055	2.765	2.1	5.0	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	5.68	7726.447	15909.844	6.070	4.7	-6.7	NO	0.999	NO	MM
6	6 180412M1_7	Standard	10.000	5.68	13880.624	13710.530	12.655	9.8	-2.3	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	5.68	77584.523	16196.083	59.879	46.3	-7.4	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	5.68	152563.109	13777.638	138.416	106.6	6.6	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	5.68	352363.313	13590.670	324.086	247.0	-1.2	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	5.68	732721.875	13688.563	669.100	500.6	0.1	NO	0.999	NO	bb

Compound name: N-MeFOSA

Correlation coefficient: $r = 0.999089$, $r^2 = 0.998179$

Calibration curve: $0.896574 * x + 0.307732$

Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc.	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	1.250	5.85	187.892	19881.256	1.418	1.2	-1.0	NO	0.998	NO	bb
2	2 180412M1_3	Standard	2.500	5.85	275.726	19846.855	2.084	2.0	-20.8	NO	0.998	NO	bb
3	3 180412M1_4	Standard	5.000	5.85	677.041	19466.199	5.217	5.5	9.5	NO	0.998	NO	bb
4	4 180412M1_5	Standard	10.000	5.85	1294.534	19676.539	9.869	10.7	6.6	NO	0.998	NO	MM
5	5 180412M1_6	Standard	25.000	5.85	3184.469	19441.104	24.570	27.1	8.2	NO	0.998	NO	MM
6	6 180412M1_7	Standard	50.000	5.85	6334.603	19116.365	49.706	55.1	10.2	NO	0.998	NO	MM
7	7 180412M1_8	Standard	250.000	5.85	33141.617	20024.764	248.255	276.5	10.6	NO	0.998	NO	bb
8	8 180412M1_9	Standard	500.000	5.85	63958.742	20202.986	474.871	529.3	5.9	NO	0.998	NO	bb
9	9 180412M1_10	Standard	1250.000	5.85	151706.203	20035.076	1135.805	1266.5	1.3	NO	0.998	NO	bb
10	10 180412M1_11	Standard	2500.000	5.85	278336.719	19240.549	2169.923	2419.9	-3.2	NO	0.998	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFTrDA

Coefficient of Determination: $R^2 = 0.997791$

Calibration curve: $-0.00042286 * x^2 + 1.39176 * x + -0.0410811$

Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	5.93	432.429	14303.356	0.378	0.3	20.4	NO	0.998	NO	bb
2	2 180412M1_3	Standard	0.500	5.93	747.052	12595.369	0.741	0.6	12.5	NO	0.998	NO	bb
3	3 180412M1_4	Standard	1.000	5.93	1495.033	14580.861	1.282	1.0	-4.9	NO	0.998	NO	bb
4	4 180412M1_5	Standard	2.000	5.93	2915.304	14283.055	2.551	1.9	-6.8	NO	0.998	NO	bb
5	5 180412M1_6	Standard	5.000	5.93	7287.777	15909.844	5.726	4.1	-17.0	NO	0.998	NO	bb
6	6 180412M1_7	Standard	10.000	5.93	15854.216	13710.530	14.454	10.4	4.5	NO	0.998	NO	bb
7	7 180412M1_8	Standard	50.000	5.93	77235.820	16196.083	59.610	43.4	-13.1	NO	0.998	NO	bb
8	8 180412M1_9	Standard	100.000	5.93	149552.531	13777.638	135.684	100.6	0.6	NO	0.998	NO	bb
9	9 180412M1_10	Standard	250.000	5.93	366984.531	13590.670	337.534	263.7	5.5	NO	0.998	NO	bb
10	10 180412M1_11	Standard	500.000	5.93	638245.375	13688.563	582.827	492.5	-1.5	NO	0.998	NO	bb

Compound name: PFTeDA

Coefficient of Determination: $R^2 = 0.998549$

Calibration curve: $-0.000787853 * x^2 + 1.59226 * x + 0.135857$

Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	6.15	333.110	8693.006	0.479	0.2	-13.8	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	6.15	603.226	7635.941	0.987	0.5	7.0	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	6.15	1145.368	7897.562	1.813	1.1	5.4	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	6.15	2053.154	9385.261	2.735	1.6	-18.3	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	6.15	4987.198	7202.300	8.656	5.4	7.3	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	6.15	11230.134	8036.246	17.468	10.9	9.4	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	6.15	56873.531	8929.627	79.614	51.2	2.4	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	6.15	109822.539	8675.864	158.230	104.7	4.7	NO	0.999	NO	db
9	9 180412M1_10	Standard	250.000	6.14	261285.984	9843.813	331.790	235.8	-5.7	NO	0.999	NO	db
10	10 180412M1_11	Standard	500.000	6.15	482922.219	9955.998	606.321	508.8	1.8	NO	0.999	NO	db

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: N-EtFOSA

Coefficient of Determination: $R^2 = 0.999841$

Calibration curve: $-2.33649e-005 * x^2 + 0.872986 * x + 0.0461319$

Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	1.250	6.24	224.059	29596.826	1.136	1.2	-0.2	NO	1.000	NO	bb
2	2 180412M1_3	Standard	2.500	6.23	428.307	28715.805	2.237	2.5	0.4	NO	1.000	NO	MM
3	3 180412M1_4	Standard	5.000	6.23	792.441	28376.305	4.189	4.7	-5.1	NO	1.000	NO	bb
4	4 180412M1_5	Standard	10.000	6.23	1656.819	28227.439	8.804	10.0	0.4	NO	1.000	NO	MM
5	5 180412M1_6	Standard	25.000	6.24	4145.826	28324.021	21.956	25.1	0.5	NO	1.000	NO	bb
6	6 180412M1_7	Standard	50.000	6.23	8401.431	27769.570	45.381	52.0	4.0	NO	1.000	NO	bb
7	7 180412M1_8	Standard	250.000	6.23	41902.395	29344.453	214.192	246.9	-1.2	NO	1.000	NO	bb
8	8 180412M1_9	Standard	500.000	6.23	81628.180	27768.916	440.933	512.1	2.4	NO	1.000	NO	bb
9	9 180412M1_10	Standard	1250.000	6.23	186053.766	26837.293	1039.899	1231.8	-1.5	NO	1.000	NO	bb
10	10 180412M1_11	Standard	2500.000	6.23	338225.531	24843.971	2042.098	2507.4	0.3	NO	1.000	NO	bb

Compound name: PFHxDA

Coefficient of Determination: $R^2 = 0.999443$

Calibration curve: $-0.000280688 * x^2 + 0.550364 * x + 0.059562$

Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	6.47	265.581	7801.947	0.170	0.2	-19.6	NO	0.999	NO	bb
2	2 180412M1_3	Standard	0.500	6.47	516.791	7634.968	0.338	0.5	1.4	NO	0.999	NO	bb
3	3 180412M1_4	Standard	1.000	6.47	924.574	7524.094	0.614	1.0	0.9	NO	0.999	NO	bb
4	4 180412M1_5	Standard	2.000	6.47	1836.882	7732.711	1.188	2.1	2.6	NO	0.999	NO	bb
5	5 180412M1_6	Standard	5.000	6.47	4388.390	6890.001	3.185	5.7	13.9	NO	0.999	NO	bb
6	6 180412M1_7	Standard	10.000	6.47	7954.497	7051.974	5.640	10.2	1.9	NO	0.999	NO	bb
7	7 180412M1_8	Standard	50.000	6.47	41704.172	7985.996	26.111	48.5	-2.9	NO	0.999	NO	bb
8	8 180412M1_9	Standard	100.000	6.47	79342.914	7335.567	54.081	103.6	3.6	NO	0.999	NO	bb
9	9 180412M1_10	Standard	250.000	6.47	181806.094	7727.248	117.640	244.0	-2.4	NO	0.999	NO	bb
10	10 180412M1_11	Standard	500.000	6.47	326342.438	7920.329	206.016	503.5	0.7	NO	0.999	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: PFODA

Coefficient of Determination: $R^2 = 0.999575$

Calibration curve: $-0.000618242 * x^2 + 1.12274 * x + -0.0572034$

Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	0.250	6.70	332.516	7801.947	0.213	0.2	-3.7	NO	1.000	NO	bb
2	2 180412M1_3	Standard	0.500	6.70	660.510	7634.968	0.433	0.4	-12.7	NO	1.000	NO	bb
3	3 180412M1_4	Standard	1.000	6.70	1630.269	7524.094	1.083	1.0	1.6	NO	1.000	NO	bb
4	4 180412M1_5	Standard	2.000	6.70	3189.397	7732.711	2.062	1.9	-5.5	NO	1.000	NO	bb
5	5 180412M1_6	Standard	5.000	6.70	7611.561	6890.001	5.524	5.0	-0.3	NO	1.000	NO	bb
6	6 180412M1_7	Standard	10.000	6.70	15767.791	7051.974	11.180	10.1	0.6	NO	1.000	NO	bb
7	7 180412M1_8	Standard	50.000	6.70	84224.406	7985.996	52.733	48.3	-3.4	NO	1.000	NO	bd
8	8 180412M1_9	Standard	100.000	6.70	161758.031	7335.567	110.256	104.2	4.2	NO	1.000	NO	MM
9	9 180412M1_10	Standard	250.000	6.70	368963.125	7727.248	238.742	246.0	-1.6	NO	1.000	NO	MM
10	10 180412M1_11	Standard	500.000	6.70	645836.625	7920.329	407.708	501.9	0.4	NO	1.000	NO	bb

Compound name: N-MeFOSE

Correlation coefficient: $r = 0.999008$, $r^2 = 0.998018$

Calibration curve: $0.936978 * x + 0.0632936$

Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	1.250	6.36	283.741	34476.195	1.235	1.2	-0.0	NO	0.998	NO	bb
2	2 180412M1_3	Standard	2.500	6.35	560.371	34717.695	2.421	2.5	0.7	NO	0.998	NO	bb
3	3 180412M1_4	Standard	5.000	6.35	1096.947	34714.133	4.740	5.0	-0.2	NO	0.998	NO	bb
4	4 180412M1_5	Standard	10.000	6.35	2173.383	35988.875	9.059	9.6	-4.0	NO	0.998	NO	bb
5	5 180412M1_6	Standard	25.000	6.35	5757.574	34757.234	24.848	26.5	5.8	NO	0.998	NO	bb
6	6 180412M1_7	Standard	50.000	6.35	11089.436	33851.879	49.138	52.4	4.8	NO	0.998	NO	bb
7	7 180412M1_8	Standard	250.000	6.35	56662.008	36557.137	232.494	248.1	-0.8	NO	0.998	NO	bb
8	8 180412M1_9	Standard	500.000	6.35	101216.711	33758.895	449.734	479.9	-4.0	NO	0.998	NO	bb
9	9 180412M1_10	Standard	1250.000	6.35	249935.547	34044.660	1101.210	1175.2	-6.0	NO	0.998	NO	bb
10	10 180412M1_11	Standard	2500.000	6.35	488802.969	30173.070	2429.996	2593.4	3.7	NO	0.998	NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
 Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: N-EtFOSE

Correlation coefficient: $r = 0.997491$, $r^2 = 0.994989$

Calibration curve: $1.12141 * x + 0.244491$

Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	1.250	6.51	333.658	33555.383	1.492	1.1	-11.0	NO	0.995	NO	bb
2	2 180412M1_3	Standard	2.500	6.50	539.540	32262.832	2.508	2.0	-19.2	NO	0.995	NO	bb
3	3 180412M1_4	Standard	5.000	6.50	1226.286	35090.871	5.242	4.5	-10.9	NO	0.995	NO	bb
4	4 180412M1_5	Standard	10.000	6.50	2691.363	35000.305	11.534	10.1	0.7	NO	0.995	NO	bb
5	5 180412M1_6	Standard	25.000	6.50	6777.392	33232.809	30.591	27.1	8.2	NO	0.995	NO	MM
6	6 180412M1_7	Standard	50.000	6.50	13997.562	31771.980	66.084	58.7	17.4	NO	0.995	NO	MM
7	7 180412M1_8	Standard	250.000	6.50	67103.734	35079.051	286.939	255.7	2.3	NO	0.995	NO	bb
8	8 180412M1_9	Standard	500.000	6.50	134565.141	30306.809	666.014	593.7	18.7	NO	0.995	NO	bb
9	9 180412M1_10	Standard	1250.000	6.50	284219.219	31561.912	1350.770	1204.3	-3.7	NO	0.995	NO	bb
10	10 180412M1_11	Standard	2500.000	6.50	539275.688	29600.912	2732.732	2436.7	-2.5	NO	0.995	NO	bb

Compound name: 13C3-PFBA

Response Factor: 0.887034

RRF SD: 0.0198175, Relative SD: 2.23413

Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	1.44	12432.549	13744.884	11.307	12.7	2.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	1.44	12303.614	13951.613	11.023	12.4	-0.6	NO		NO	bb
3	3 180412M1_4	Standard	12.500	1.44	12704.602	14321.319	11.089	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	1.44	12340.111	13953.640	11.055	12.5	-0.3	NO		NO	bb
5	5 180412M1_6	Standard	12.500	1.42	12532.276	13788.243	11.361	12.8	2.5	NO		NO	bb
6	6 180412M1_7	Standard	12.500	1.42	12184.722	14250.937	10.688	12.0	-3.6	NO		NO	bb
7	7 180412M1_8	Standard	12.500	1.44	13399.636	14735.778	11.367	12.8	2.5	NO		NO	bb
8	8 180412M1_9	Standard	12.500	1.44	12672.241	14691.964	10.782	12.2	-2.8	NO		NO	bb
9	9 180412M1_10	Standard	12.500	1.44	12689.992	14013.995	11.319	12.8	2.1	NO		NO	bb
10	10 180412M1_11	Standard	12.500	1.44	12133.231	13927.561	10.890	12.3	-1.8	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C3-PFPeA

Response Factor: 0.859497

RRF SD: 0.027966, Relative SD: 3.25377

Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	2.38	14101.146	15950.809	11.050	12.9	2.9	NO		NO	bb
2	2 180412M1_3	Standard	12.500	2.37	14091.000	15716.074	11.207	13.0	4.3	NO		NO	bb
3	3 180412M1_4	Standard	12.500	2.37	14287.353	16573.172	10.776	12.5	0.3	NO		NO	bb
4	4 180412M1_5	Standard	12.500	2.38	13929.757	16234.261	10.726	12.5	-0.2	NO		NO	bb
5	5 180412M1_6	Standard	12.500	2.37	14097.635	17001.143	10.365	12.1	-3.5	NO		NO	bb
6	6 180412M1_7	Standard	12.500	2.37	14013.628	16840.588	10.402	12.1	-3.2	NO		NO	bb
7	7 180412M1_8	Standard	12.500	2.37	14901.154	16514.162	11.279	13.1	5.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	2.38	14379.800	16957.393	10.600	12.3	-1.3	NO		NO	bb
9	9 180412M1_10	Standard	12.500	2.37	14052.367	16326.897	10.759	12.5	0.1	NO		NO	bb
10	10 180412M1_11	Standard	12.500	2.38	12878.532	15670.275	10.273	12.0	-4.4	NO		NO	bb

Compound name: 13C3-PFBS

Response Factor: 0.120621

RRF SD: 0.00414022, Relative SD: 3.43241

Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	2.65	1976.932	15950.809	1.549	12.8	2.8	NO		NO	bb
2	2 180412M1_3	Standard	12.500	2.64	2012.240	15716.074	1.600	13.3	6.1	NO		NO	bb
3	3 180412M1_4	Standard	12.500	2.65	2020.388	16573.172	1.524	12.6	1.1	NO		NO	bb
4	4 180412M1_5	Standard	12.500	2.65	1981.108	16234.261	1.525	12.6	1.2	NO		NO	bb
5	5 180412M1_6	Standard	12.500	2.64	1986.397	17001.143	1.460	12.1	-3.1	NO		NO	bb
6	6 180412M1_7	Standard	12.500	2.64	1990.742	16840.588	1.478	12.3	-2.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	2.65	2041.284	16514.162	1.545	12.8	2.5	NO		NO	MM
8	8 180412M1_9	Standard	12.500	2.64	2011.619	16957.393	1.483	12.3	-1.7	NO		NO	bb
9	9 180412M1_10	Standard	12.500	2.64	1950.802	16326.897	1.494	12.4	-0.9	NO		NO	MM
10	10 180412M1_11	Standard	12.500	2.64	1779.008	15670.275	1.419	11.8	-5.9	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C2-PFHxA

Response Factor: 0.732807

RRF SD: 0.0299221, Relative SD: 4.08322

Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	5.000	3.14	4687.334	15950.809	3.673	5.0	0.3	NO		NO	bb
2	2 180412M1_3	Standard	5.000	3.14	4463.879	15716.074	3.550	4.8	-3.1	NO		NO	bb
3	3 180412M1_4	Standard	5.000	3.14	4738.835	16573.172	3.574	4.9	-2.5	NO		NO	bb
4	4 180412M1_5	Standard	5.000	3.14	4830.748	16234.261	3.720	5.1	1.5	NO		NO	bb
5	5 180412M1_6	Standard	5.000	3.14	4854.741	17001.143	3.569	4.9	-2.6	NO		NO	bb
6	6 180412M1_7	Standard	5.000	3.14	4995.104	16840.588	3.708	5.1	1.2	NO		NO	bb
7	7 180412M1_8	Standard	5.000	3.14	4765.423	16514.162	3.607	4.9	-1.6	NO		NO	bb
8	8 180412M1_9	Standard	5.000	3.14	4690.850	16957.393	3.458	4.7	-5.6	NO		NO	bb
9	9 180412M1_10	Standard	5.000	3.14	4957.260	16326.897	3.795	5.2	3.6	NO		NO	bb
10	10 180412M1_11	Standard	5.000	3.14	4996.505	15670.275	3.986	5.4	8.8	NO		NO	bb

Compound name: 13C4-PFHpA

Response Factor: 0.761033

RRF SD: 0.0485934, Relative SD: 6.3852

Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	3.76	13278.581	15950.809	10.406	13.7	9.4	NO		NO	bb
2	2 180412M1_3	Standard	12.500	3.76	12454.534	15716.074	9.906	13.0	4.1	NO		NO	bb
3	3 180412M1_4	Standard	12.500	3.76	12577.205	16573.172	9.486	12.5	-0.3	NO		NO	bb
4	4 180412M1_5	Standard	12.500	3.76	11923.876	16234.261	9.181	12.1	-3.5	NO		NO	bb
5	5 180412M1_6	Standard	12.500	3.76	11880.335	17001.143	8.735	11.5	-8.2	NO		NO	MM
6	6 180412M1_7	Standard	12.500	3.76	11789.843	16840.588	8.751	11.5	-8.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	3.76	13793.957	16514.162	10.441	13.7	9.8	NO		NO	bb
8	8 180412M1_9	Standard	12.500	3.76	12409.241	16957.393	9.147	12.0	-3.8	NO		NO	bb
9	9 180412M1_10	Standard	12.500	3.76	12712.665	16326.897	9.733	12.8	2.3	NO		NO	bb
10	10 180412M1_11	Standard	12.500	3.76	11712.302	15670.275	9.343	12.3	-1.8	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 18O2-PFHxS

Response Factor: 0.431068

RRF SD: 0.0295993, Relative SD: 6.8665

Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	3.90	1527.931	3674.084	5.198	12.1	-3.5	NO		NO	bb
2	2 180412M1_3	Standard	12.500	3.90	1568.844	3655.116	5.365	12.4	-0.4	NO		NO	bb
3	3 180412M1_4	Standard	12.500	3.90	1405.909	3790.588	4.636	10.8	-14.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	3.91	1596.036	3700.391	5.391	12.5	0.1	NO		NO	bb
5	5 180412M1_6	Standard	12.500	3.91	1780.262	3691.896	6.028	14.0	11.9	NO		NO	MM
6	6 180412M1_7	Standard	12.500	3.90	1597.028	3784.923	5.274	12.2	-2.1	NO		NO	bb
7	7 180412M1_8	Standard	12.500	3.90	1630.157	3493.132	5.833	13.5	8.3	NO		NO	bb
8	8 180412M1_9	Standard	12.500	3.90	1675.668	3832.103	5.466	12.7	1.4	NO		NO	bb
9	9 180412M1_10	Standard	12.500	3.91	1573.319	3671.971	5.356	12.4	-0.6	NO		NO	bb
10	10 180412M1_11	Standard	12.500	3.90	1523.943	3570.464	5.335	12.4	-1.0	NO		NO	bb

Compound name: 13C2-6:2 FTS

Response Factor: 0.332748

RRF SD: 0.049309, Relative SD: 14.8187

Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.22	4862.338	15239.889	3.988	12.0	-4.1	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.22	4642.121	14973.652	3.875	11.6	-6.8	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.22	4656.256	15684.143	3.711	11.2	-10.8	NO		NO	bb
4	4 180412M1_5	Standard	12.500	4.22	4542.417	15181.911	3.740	11.2	-10.1	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.22	4967.122	16161.127	3.842	11.5	-7.6	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.22	4786.033	15479.951	3.865	11.6	-7.1	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.22	5898.290	15077.326	4.890	14.7	17.6	NO		NO	MM
8	8 180412M1_9	Standard	12.500	4.22	6577.263	15327.687	5.364	16.1	29.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	4.22	8718.205	15791.204	6.901	20.7	65.9	NO		NO	bbX ✓
10	10 180412M1_11	Standard	12.500	4.22	11749.935	15058.353	9.754	29.3	134.5	NO		NO	bbX ✓

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
 Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C2-PFOA

Response Factor: 1.14954

RRF SD: 0.0299816, Relative SD: 2.60813

Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.27	17375.193	15239.889	14.251	12.4	-0.8	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.27	16543.324	14973.652	13.810	12.0	-3.9	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.27	18351.223	15684.143	14.626	12.7	1.8	NO		NO	bb
4	4 180412M1_5	Standard	12.500	4.27	17801.283	15181.911	14.657	12.8	2.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.28	17982.363	16161.127	13.909	12.1	-3.2	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.27	18203.990	15479.951	14.700	12.8	2.3	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.27	17551.113	15077.326	14.551	12.7	1.3	NO		NO	bb
8	8 180412M1_9	Standard	12.500	4.27	17065.654	15327.687	13.917	12.1	-3.1	NO		NO	bb
9	9 180412M1_10	Standard	12.500	4.27	18223.658	15791.204	14.425	12.5	0.4	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.27	17885.152	15058.353	14.847	12.9	3.3	NO		NO	bb

Compound name: 13C5-PFNA

Response Factor: 0.978803

RRF SD: 0.0304992, Relative SD: 3.11596

Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.71	15127.373	15895.429	11.896	12.2	-2.8	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.71	16234.130	16770.383	12.100	12.4	-1.1	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.71	15074.372	15385.251	12.247	12.5	0.1	NO		NO	bb
4	4 180412M1_5	Standard	12.500	4.71	14679.378	15157.203	12.106	12.4	-1.1	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.71	14545.366	14202.925	12.801	13.1	4.6	NO		NO	MM
6	6 180412M1_7	Standard	12.500	4.71	16043.838	17304.805	11.589	11.8	-5.3	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.71	16223.164	16956.936	11.959	12.2	-2.3	NO		NO	MM
8	8 180412M1_9	Standard	12.500	4.71	15595.168	15545.010	12.540	12.8	2.5	NO		NO	MM
9	9 180412M1_10	Standard	12.500	4.71	14896.119	14654.074	12.706	13.0	3.9	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.71	14244.178	14354.023	12.404	12.7	1.4	NO		NO	MM

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C8-PFOSA

Response Factor: 0.218482

RRF SD: 0.0169685, Relative SD: 7.76654

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.78	3804.597	16395.369	2.901	13.3	6.2	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.78	3927.791	15150.777	3.241	14.8	18.7	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.78	3791.337	17577.570	2.696	12.3	-1.3	NO		NO	MM
4	4 180412M1_5	Standard	12.500	4.78	3847.814	18186.605	2.645	12.1	-3.2	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.78	3621.776	18196.930	2.488	11.4	-8.9	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.78	3689.177	17550.332	2.628	12.0	-3.8	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.78	3823.459	17318.965	2.760	12.6	1.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	4.78	3850.831	17641.734	2.728	12.5	-0.1	NO		NO	MM
9	9 180412M1_10	Standard	12.500	4.78	3374.944	16574.436	2.545	11.6	-6.8	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.78	3291.725	15356.910	2.679	12.3	-1.9	NO		NO	bb

Compound name: 13C8-PFOS

Response Factor: 1.04665

RRF SD: 0.0562026, Relative SD: 5.36976

Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.79	3809.206	3603.819	13.212	12.6	1.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.79	3879.481	3730.520	12.999	12.4	-0.6	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.79	3923.690	3575.679	13.717	13.1	4.8	NO		NO	bb
4	4 180412M1_5	Standard	12.500	4.79	3905.613	3451.449	14.145	13.5	8.1	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.79	3881.834	3527.122	13.757	13.1	5.2	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.79	3794.469	3797.220	12.491	11.9	-4.5	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.79	3867.217	3736.533	12.937	12.4	-1.1	NO		NO	bb
8	8 180412M1_9	Standard	12.500	4.79	3914.104	3836.111	12.754	12.2	-2.5	NO		NO	bb
9	9 180412M1_10	Standard	12.500	4.79	3550.716	3798.137	11.686	11.2	-10.7	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.79	3603.874	3430.075	13.133	12.5	0.4	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C2-PFDA

Response Factor: 0.958432

RRF SD: 0.0511123, Relative SD: 5.3329

Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.08	12920.214	13809.248	11.695	12.2	-2.4	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.08	12655.407	12512.083	12.643	13.2	5.5	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.08	14661.358	14955.958	12.254	12.8	2.3	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.08	13153.102	14486.448	11.349	11.8	-5.3	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.08	13492.313	14414.429	11.700	12.2	-2.3	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.08	13921.538	14738.273	11.807	12.3	-1.4	NO		NO	MM
7	7 180412M1_8	Standard	12.500	5.08	13226.847	15071.878	10.970	11.4	-8.4	NO		NO	bb
8	8 180412M1_9	Standard	12.500	5.08	14238.182	15170.095	11.732	12.2	-2.1	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.08	14439.042	14260.415	12.657	13.2	5.6	NO		NO	bb
10	10 180412M1_11	Standard	12.500	5.08	13421.889	12909.434	12.996	13.6	8.5	NO		NO	MM

Compound name: 13C2-8:2 FTS

Response Factor: 0.226115

RRF SD: 0.0297681, Relative SD: 13.165

Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.05	3500.403	15950.809	2.743	12.1	-2.9	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.05	3576.784	15716.074	2.845	12.6	0.7	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.05	3740.451	16573.172	2.821	12.5	-0.2	NO		NO	MM
4	4 180412M1_5	Standard	12.500	5.05	3144.534	16234.261	2.421	10.7	-14.3	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.05	3362.617	17001.143	2.472	10.9	-12.5	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.05	3606.306	16840.588	2.677	11.8	-5.3	NO		NO	bb
7	7 180412M1_8	Standard	12.500	5.05	3995.046	16514.162	3.024	13.4	7.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	5.05	4894.652	16957.393	3.608	16.0	27.7	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.05	7147.697	16326.897	5.472	24.2	93.6	NO		NO	bbX ✓
10	10 180412M1_11	Standard	12.500	5.05	9654.647	15670.275	7.701	34.1	172.5	NO		NO	bbX ✓

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: d3-N-MeFOSAA

Response Factor: 0.471472

RRF SD: 0.036147, Relative SD: 7.66685

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.23	7381.724	16395.369	5.628	11.9	-4.5	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.22	7562.005	15150.777	6.239	13.2	5.9	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.23	8204.587	17577.570	5.835	12.4	-1.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.23	8111.684	18186.605	5.575	11.8	-5.4	NO		NO	MM
5	5 180412M1_6	Standard	12.500	5.23	7390.027	18196.930	5.076	10.8	-13.9	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.23	7705.184	17550.332	5.488	11.6	-6.9	NO		NO	MM
7	7 180412M1_8	Standard	12.500	5.23	8795.677	17318.965	6.348	13.5	7.7	NO		NO	MM
8	8 180412M1_9	Standard	12.500	5.23	8413.845	17641.734	5.962	12.6	1.2	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.22	8528.218	16574.436	6.432	13.6	9.1	NO		NO	MM
10	10 180412M1_11	Standard	12.500	5.23	7802.813	15356.910	6.351	13.5	7.8	NO		NO	bb

Compound name: d5-N-EtFOSAA

Response Factor: 0.517167

RRF SD: 0.0257702, Relative SD: 4.98295

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.38	8829.215	16395.369	6.731	13.0	4.1	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.38	8445.769	15150.777	6.968	13.5	7.8	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.38	9503.621	17577.570	6.758	13.1	4.5	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.38	9130.507	18186.605	6.276	12.1	-2.9	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.38	8799.637	18196.930	6.045	11.7	-6.5	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.38	8914.390	17550.332	6.349	12.3	-1.8	NO		NO	bb
7	7 180412M1_8	Standard	12.500	5.38	9410.251	17318.965	6.792	13.1	5.1	NO		NO	bb
8	8 180412M1_9	Standard	12.500	5.38	9038.717	17641.734	6.404	12.4	-0.9	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.38	8121.366	16574.436	6.125	11.8	-5.3	NO		NO	bb
10	10 180412M1_11	Standard	12.500	5.38	7613.820	15356.910	6.197	12.0	-4.1	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C2-PFUdA

Response Factor: 0.959888

RRF SD: 0.0783415, Relative SD: 8.16153

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.40	18456.398	16395.369	14.071	14.7	17.3	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.40	14034.184	15150.777	11.579	12.1	-3.5	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.40	17058.291	17577.570	12.131	12.6	1.1	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.40	16486.967	18186.605	11.332	11.8	-5.6	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.40	16576.582	18196.930	11.387	11.9	-5.1	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.40	15627.048	17550.332	11.130	11.6	-7.2	NO		NO	bb
7	7 180412M1_8	Standard	12.500	5.40	17509.188	17318.965	12.637	13.2	5.3	NO		NO	MM
8	8 180412M1_9	Standard	12.500	5.40	15124.238	17641.734	10.716	11.2	-10.7	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.40	16669.102	16574.436	12.571	13.1	4.8	NO		NO	bb
10	10 180412M1_11	Standard	12.500	5.40	15272.604	15356.910	12.431	13.0	3.6	NO		NO	bb

Compound name: 13C2-PFDoA

Response Factor: 0.840161

RRF SD: 0.0521041, Relative SD: 6.20168

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.68	14303.356	16395.369	10.905	13.0	3.8	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.68	12595.369	15150.777	10.392	12.4	-1.1	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.68	14580.861	17577.570	10.369	12.3	-1.3	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.68	14283.055	18186.605	9.817	11.7	-6.5	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.68	15909.844	18196.930	10.929	13.0	4.1	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.68	13710.530	17550.332	9.765	11.6	-7.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	5.68	16196.083	17318.965	11.690	13.9	11.3	NO		NO	bb
8	8 180412M1_9	Standard	12.500	5.68	13777.638	17641.734	9.762	11.6	-7.0	NO		NO	MM
9	9 180412M1_10	Standard	12.500	5.68	13590.670	16574.436	10.250	12.2	-2.4	NO		NO	bb
10	10 180412M1_11	Standard	12.500	5.68	13688.563	15356.910	11.142	13.3	6.1	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
 Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: d3-N-MeFOSA

Response Factor: 0.0969387

RRF SD: 0.00672736, Relative SD: 6.93981

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	150.000	5.88	19881.256	16395.369	15.158	156.4	4.2	NO		NO	bb
2	2 180412M1_3	Standard	150.000	5.87	19846.855	15150.777	16.374	168.9	12.6	NO		NO	bb
3	3 180412M1_4	Standard	150.000	5.87	19466.199	17577.570	13.843	142.8	-4.8	NO		NO	bb
4	4 180412M1_5	Standard	150.000	5.88	19676.539	18186.605	13.524	139.5	-7.0	NO		NO	bb
5	5 180412M1_6	Standard	150.000	5.88	19441.104	18196.930	13.355	137.8	-8.2	NO		NO	bb
6	6 180412M1_7	Standard	150.000	5.88	19116.365	17550.332	13.615	140.5	-6.4	NO		NO	bb
7	7 180412M1_8	Standard	150.000	5.87	20024.764	17318.965	14.453	149.1	-0.6	NO		NO	bb
8	8 180412M1_9	Standard	150.000	5.87	20202.986	17641.734	14.315	147.7	-1.6	NO		NO	bb
9	9 180412M1_10	Standard	150.000	5.87	20035.076	16574.436	15.110	155.9	3.9	NO		NO	bb
10	10 180412M1_11	Standard	150.000	5.87	19240.549	15356.910	15.661	161.6	7.7	NO		NO	bb

Compound name: 13C2-PFTeDA

Response Factor: 0.510286

RRF SD: 0.0718456, Relative SD: 14.0795

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	6.15	8693.006	16395.369	6.628	13.0	3.9	NO		NO	bb
2	2 180412M1_3	Standard	12.500	6.15	7635.941	15150.777	6.300	12.3	-1.2	NO		NO	bb
3	3 180412M1_4	Standard	12.500	6.15	7897.562	17577.570	5.616	11.0	-12.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	6.15	9385.261	18186.605	6.451	12.6	1.1	NO		NO	bb
5	5 180412M1_6	Standard	12.500	6.15	7202.300	18196.930	4.947	9.7	-22.4	NO		NO	bb
6	6 180412M1_7	Standard	12.500	6.15	8036.246	17550.332	5.724	11.2	-10.3	NO		NO	bb
7	7 180412M1_8	Standard	12.500	6.15	8929.627	17318.965	6.445	12.6	1.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	6.14	8675.864	17641.734	6.147	12.0	-3.6	NO		NO	bb
9	9 180412M1_10	Standard	12.500	6.15	9843.813	16574.436	7.424	14.5	16.4	NO		NO	bb
10	10 180412M1_11	Standard	12.500	6.14	9955.998	15356.910	8.104	15.9	27.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: d5-N-ETFOSA

Response Factor: 0.137593

RRF SD: 0.00954862, Relative SD: 6.93976

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	150.000	6.25	29596.826	16395.369	22.565	164.0	9.3	NO		NO	bb
2	2 180412M1_3	Standard	150.000	6.25	28715.805	15150.777	23.692	172.2	14.8	NO		NO	MM
3	3 180412M1_4	Standard	150.000	6.25	28376.305	17577.570	20.179	146.7	-2.2	NO		NO	bb
4	4 180412M1_5	Standard	150.000	6.25	28227.439	18186.605	19.401	141.0	-6.0	NO		NO	bb
5	5 180412M1_6	Standard	150.000	6.25	28324.021	18196.930	19.457	141.4	-5.7	NO		NO	bb
6	6 180412M1_7	Standard	150.000	6.25	27769.570	17550.332	19.779	143.7	-4.2	NO		NO	MM
7	7 180412M1_8	Standard	150.000	6.25	29344.453	17318.965	21.179	153.9	2.6	NO		NO	bb
8	8 180412M1_9	Standard	150.000	6.25	27768.916	17641.734	19.676	143.0	-4.7	NO		NO	bb
9	9 180412M1_10	Standard	150.000	6.25	26837.293	16574.436	20.240	147.1	-1.9	NO		NO	bb
10	10 180412M1_11	Standard	150.000	6.25	24843.971	15356.910	20.222	147.0	-2.0	NO		NO	MM

Compound name: 13C2-PFHxDA

Response Factor: 1.11809

RRF SD: 0.111468, Relative SD: 9.96946

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	5.000	6.47	7801.947	16395.369	5.948	5.3	6.4	NO		NO	bb
2	2 180412M1_3	Standard	5.000	6.47	7634.968	15150.777	6.299	5.6	12.7	NO		NO	bb
3	3 180412M1_4	Standard	5.000	6.47	7524.094	17577.570	5.351	4.8	-4.3	NO		NO	MM
4	4 180412M1_5	Standard	5.000	6.47	7732.711	18186.605	5.315	4.8	-4.9	NO		NO	bb
5	5 180412M1_6	Standard	5.000	6.47	6890.001	18196.930	4.733	4.2	-15.3	NO		NO	MM
6	6 180412M1_7	Standard	5.000	6.47	7051.974	17550.332	5.023	4.5	-10.2	NO		NO	bb
7	7 180412M1_8	Standard	5.000	6.47	7985.996	17318.965	5.764	5.2	3.1	NO		NO	bb
8	8 180412M1_9	Standard	5.000	6.47	7335.567	17641.734	5.198	4.6	-7.0	NO		NO	bb
9	9 180412M1_10	Standard	5.000	6.47	7727.248	16574.436	5.828	5.2	4.2	NO		NO	bb
10	10 180412M1_11	Standard	5.000	6.47	7920.329	15356.910	6.447	5.8	15.3	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: d7-N-MeFOSE

Response Factor: 0.168585

RRF SD: 0.0099523, Relative SD: 5.90343

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	150.000	6.35	34476.195	16395.369	26.285	155.9	3.9	NO		NO	bb
2	2 180412M1_3	Standard	150.000	6.35	34717.695	15150.777	28.643	169.9	13.3	NO		NO	bb
3	3 180412M1_4	Standard	150.000	6.35	34714.133	17577.570	24.686	146.4	-2.4	NO		NO	bb
4	4 180412M1_5	Standard	150.000	6.35	35988.875	18186.605	24.736	146.7	-2.2	NO		NO	bb
5	5 180412M1_6	Standard	150.000	6.35	34757.234	18196.930	23.876	141.6	-5.6	NO		NO	bb
6	6 180412M1_7	Standard	150.000	6.35	33851.879	17550.332	24.111	143.0	-4.7	NO		NO	bb
7	7 180412M1_8	Standard	150.000	6.35	36557.137	17318.965	26.385	156.5	4.3	NO		NO	bb
8	8 180412M1_9	Standard	150.000	6.34	33758.895	17641.734	23.920	141.9	-5.4	NO		NO	bb
9	9 180412M1_10	Standard	150.000	6.34	34044.660	16574.436	25.676	152.3	1.5	NO		NO	bb
10	10 180412M1_11	Standard	150.000	6.34	30173.070	15356.910	24.560	145.7	-2.9	NO		NO	bb

Compound name: d9-N-EtFOSE

Response Factor: 0.160906

RRF SD: 0.010306, Relative SD: 6.40499

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	150.000	6.49	33555.383	16395.369	25.583	159.0	6.0	NO		NO	bb
2	2 180412M1_3	Standard	150.000	6.49	32262.832	15150.777	26.618	165.4	10.3	NO		NO	bb
3	3 180412M1_4	Standard	150.000	6.49	35090.871	17577.570	24.954	155.1	3.4	NO		NO	MM
4	4 180412M1_5	Standard	150.000	6.49	35000.305	18186.605	24.056	149.5	-0.3	NO		NO	MM
5	5 180412M1_6	Standard	150.000	6.49	33232.809	18196.930	22.829	141.9	-5.4	NO		NO	bb
6	6 180412M1_7	Standard	150.000	6.49	31771.980	17550.332	22.629	140.6	-6.2	NO		NO	bb
7	7 180412M1_8	Standard	150.000	6.49	35079.051	17318.965	25.318	157.3	4.9	NO		NO	bb
8	8 180412M1_9	Standard	150.000	6.49	30306.809	17641.734	21.474	133.5	-11.0	NO		NO	bb
9	9 180412M1_10	Standard	150.000	6.49	31561.912	16574.436	23.803	147.9	-1.4	NO		NO	MM
10	10 180412M1_11	Standard	150.000	6.49	29600.912	15356.910	24.094	149.7	-0.2	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C4-PFBA

Response Factor: 1

RRF SD: 1.33432e-016, Relative SD: 1.33432e-014

Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	1.44	13744.884	13744.884	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	1.44	13951.613	13951.613	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	1.44	14321.319	14321.319	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	1.44	13953.640	13953.640	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	1.42	13788.243	13788.243	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	1.42	14250.937	14250.937	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	1.44	14735.778	14735.778	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	1.44	14691.964	14691.964	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	1.44	14013.995	14013.995	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	1.44	13927.561	13927.561	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C5-PFHxA

Response Factor: 1

RRF SD: 1.33432e-016, Relative SD: 1.33432e-014

Response type: Internal Std (Ref 58), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	3.14	15950.809	15950.809	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	3.14	15716.074	15716.074	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	3.14	16573.172	16573.172	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	3.14	16234.261	16234.261	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	3.14	17001.143	17001.143	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	3.14	16840.588	16840.588	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	3.14	16514.162	16514.162	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	3.14	16957.393	16957.393	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	3.14	16326.897	16326.897	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	3.14	15670.275	15670.275	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C3-PFHxS

Response Factor: 1

RRF SD: 1.11022e-016, Relative SD: 1.11022e-014

Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	3.91	3674.084	3674.084	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	3.90	3655.116	3655.116	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	3.90	3790.588	3790.588	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	3.91	3700.391	3700.391	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	3.91	3691.896	3691.896	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	3.90	3784.923	3784.923	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	3.90	3493.132	3493.132	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	3.90	3832.103	3832.103	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	3.90	3671.971	3671.971	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	3.90	3570.464	3570.464	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C8-PFOA

Response Factor: 1

RRF SD: 8.27511e-017, Relative SD: 8.27511e-015

Response type: Internal Std (Ref 60), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.27	15239.889	15239.889	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.27	14973.652	14973.652	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.27	15684.143	15684.143	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	4.28	15181.911	15181.911	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.28	16161.127	16161.127	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.27	15479.951	15479.951	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.27	15077.326	15077.326	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	4.27	15327.687	15327.687	12.500	12.5	0.0	NO		NO	MM
9	9 180412M1_10	Standard	12.500	4.27	15791.204	15791.204	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.27	15058.353	15058.353	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C9-PFNA

Response Factor: 1

RRF SD: 1.33432e-016, Relative SD: 1.33432e-014

Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.71	15895.429	15895.429	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.71	16770.383	16770.383	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.71	15385.251	15385.251	12.500	12.5	0.0	NO		NO	MM
4	4 180412M1_5	Standard	12.500	4.71	15157.203	15157.203	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.71	14202.925	14202.925	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.71	17304.805	17304.805	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.71	16956.936	16956.936	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	4.71	15545.010	15545.010	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	4.71	14654.074	14654.074	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.71	14354.023	14354.023	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C4-PFOS

Response Factor: 1

RRF SD: 9.06493e-017, Relative SD: 9.06493e-015

Response type: Internal Std (Ref 62), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	4.79	3603.819	3603.819	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	4.79	3730.520	3730.520	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	4.79	3575.679	3575.679	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	4.79	3451.449	3451.449	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	4.79	3527.122	3527.122	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	4.79	3797.220	3797.220	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	4.79	3736.533	3736.533	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	4.79	3836.111	3836.111	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	4.79	3798.137	3798.137	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	4.79	3430.075	3430.075	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:22:03 Pacific Daylight Time

Compound name: 13C6-PFDA

Response Factor: 1

RRF SD: 9.79125e-017, Relative SD: 9.79125e-015

Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.08	13809.248	13809.248	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.08	12512.083	12512.083	12.500	12.5	0.0	NO		NO	bb
3	3 180412M1_4	Standard	12.500	5.08	14955.958	14955.958	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.08	14486.448	14486.448	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.08	14414.429	14414.429	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.08	14738.273	14738.273	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	5.08	15071.878	15071.878	12.500	12.5	0.0	NO		NO	MM
8	8 180412M1_9	Standard	12.500	5.08	15170.095	15170.095	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.08	14260.415	14260.415	12.500	12.5	0.0	NO		NO	MM
10	10 180412M1_11	Standard	12.500	5.08	12909.434	12909.434	12.500	12.5	0.0	NO		NO	bb

Compound name: 13C7-PFUdA

Response Factor: 1

RRF SD: 3.70074e-017, Relative SD: 3.70074e-015

Response type: Internal Std (Ref 64), Area * (IS Conc. / IS Area)

Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 180412M1_2	Standard	12.500	5.40	16395.369	16395.369	12.500	12.5	0.0	NO		NO	bb
2	2 180412M1_3	Standard	12.500	5.40	15150.777	15150.777	12.500	12.5	0.0	NO		NO	MM
3	3 180412M1_4	Standard	12.500	5.40	17577.570	17577.570	12.500	12.5	0.0	NO		NO	bb
4	4 180412M1_5	Standard	12.500	5.40	18186.605	18186.605	12.500	12.5	0.0	NO		NO	bb
5	5 180412M1_6	Standard	12.500	5.40	18196.930	18196.930	12.500	12.5	0.0	NO		NO	bb
6	6 180412M1_7	Standard	12.500	5.40	17550.332	17550.332	12.500	12.5	0.0	NO		NO	bb
7	7 180412M1_8	Standard	12.500	5.40	17318.965	17318.965	12.500	12.5	0.0	NO		NO	bb
8	8 180412M1_9	Standard	12.500	5.40	17641.734	17641.734	12.500	12.5	0.0	NO		NO	bb
9	9 180412M1_10	Standard	12.500	5.40	16574.436	16574.436	12.500	12.5	0.0	NO		NO	bb
10	10 180412M1_11	Standard	12.500	5.40	15356.910	15356.910	12.500	12.5	0.0	NO		NO	bb

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:23:38 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202

#	Name	IS#	CoD	CoD Flag	%RSD
1	1 PFBA	34	0.9998	NO	
2	2 PFPeA	35	0.9997	NO	
3	3 PFBS	36	0.9992	NO	
4	4 4:2 FTS	36	0.9995	NO	
5	5 PFHxA	37	0.9988	NO	
6	6 PFPeS	36	0.9999	NO	
7	7 PFHpA	38	0.9995	NO	
8	8 L-PFHxS	39	0.9993	NO	
9	10 6:2 FTS	40	0.9986	NO	
10	11 L-PFOA	41	0.9978	NO	
11	13 PFHpS	41	0.9984	NO	
12	14 PFNA	42	0.9996	NO	
13	15 PFOSA	43	0.9996	NO	
14	16 L-PFOS	44	0.9967	NO	
15	18 PFDA	45	0.9997	NO	
16	19 8:2 FTS	46	0.9994	NO	
17	20 PFNS	44	0.9996	NO	
18	21 N-MeFOSAA	47	0.9987	NO	
19	22 N-EtFOSAA	48	0.9997	NO	
20	23 PFUdA	49	0.9982	NO	
21	24 PFDS	49	0.9990	NO	
22	25 PFDoA	50	0.9992	NO	
23	26 N-MeFOSA	51	0.9982	NO	
24	27 PFTrDA	50	0.9978	NO	
25	28 PFTeDA	52	0.9985	NO	
26	29 N-EtFOSA	53	0.9998	NO	
27	30 PFHxDA	54	0.9994	NO	
28	31 PFODA	54	0.9996	NO	
29	32 N-MeFOSE	55	0.9980	NO	
30	33 N-EtFOSE	56	0.9950	NO	
31	34 13C3-PFBA	57		NO	2.234

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:23:38 Pacific Daylight Time

Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202

#	Name	IS#	CoD	CoD Flag	%RSD
32	35 13C3-PFPeA	58		NO	3.254
33	36 13C3-PFBS	58		NO	3.432
34	37 13C2-PFHxA	58		NO	4.083
35	38 13C4-PFHpA	58		NO	6.385
36	39 18O2-PFHxS	59		NO	6.866
37	40 13C2-6:2 FTS	60		NO	14.819
38	41 13C2-PFOA	60		NO	2.608
39	42 13C5-PFNA	61		NO	3.116
40	43 13C8-PFOSA	64		NO	7.767
41	44 13C8-PFOS	62		NO	5.370
42	45 13C2-PFDA	63		NO	5.333
43	46 13C2-8:2 FTS	58		NO	13.165
44	47 d3-N-MeFOSAA	64		NO	7.667
45	48 d5-N-EtFOSAA	64		NO	4.983
46	49 13C2-PFUdA	64		NO	8.162
47	50 13C2-PFDoA	64		NO	6.202
48	51 d3-N-MeFOSA	64		NO	6.940
49	52 13C2-PFTeDA	64		NO	14.079
50	53 d5-N-ETFOSA	64		NO	6.940
51	54 13C2-PFHxDA	64		NO	9.969
52	55 d7-N-MeFOSE	64		NO	5.903
53	56 d9-N-EtFOSE	64		NO	6.405
54	57 13C4-PFBA	57		NO	0.000
55	58 13C5-PFHxA	58		NO	0.000
56	59 13C3-PFHxS	59		NO	0.000
57	60 13C8-PFOA	60		NO	0.000
58	61 13C9-PFNA	61		NO	0.000
59	62 13C4-PFOS	62		NO	0.000
60	63 13C6-PFDA	63		NO	0.000
61	64 13C7-PFUdA	64		NO	0.000

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:33:27 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:34:15 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
1	180412M1_1	IPA	12-Apr-18	17:52:26
2	180412M1_2	ST180412M1-1 PFC CS-2 18D0202	12-Apr-18	18:04:04
3	180412M1_3	ST180412M1-2 PFC CS-1 18D0203	12-Apr-18	18:15:35
4	180412M1_4	ST180412M1-3 PFC CS0 18D0204	12-Apr-18	18:27:04
5	180412M1_5	ST180412M1-4 PFC CS1 18D0205	12-Apr-18	18:38:34
6	180412M1_6	ST180412M1-5 PFC CS2 18D0206	12-Apr-18	18:50:03
7	180412M1_7	ST180412M1-6 PFC CS3 18D0207	12-Apr-18	19:01:32
8	180412M1_8	ST180412M1-7 PFC CS4 18D0208	12-Apr-18	19:13:02
9	180412M1_9	ST180412M1-8 PFC CS5 18D0209	12-Apr-18	19:24:31
10	180412M1_10	ST180412M1-9 PFC CS6 18D0210	12-Apr-18	19:36:01
11	180412M1_11	ST180412M1-10 PFC CS7 18D0211	12-Apr-18	19:47:30
12	180412M1_12	IPA	12-Apr-18	19:59:00
13	180412M1_13	ICV180412M1-1 PFC ICV 18D0201	12-Apr-18	20:10:30
14	180412M1_14	IPA	12-Apr-18	20:22:00

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

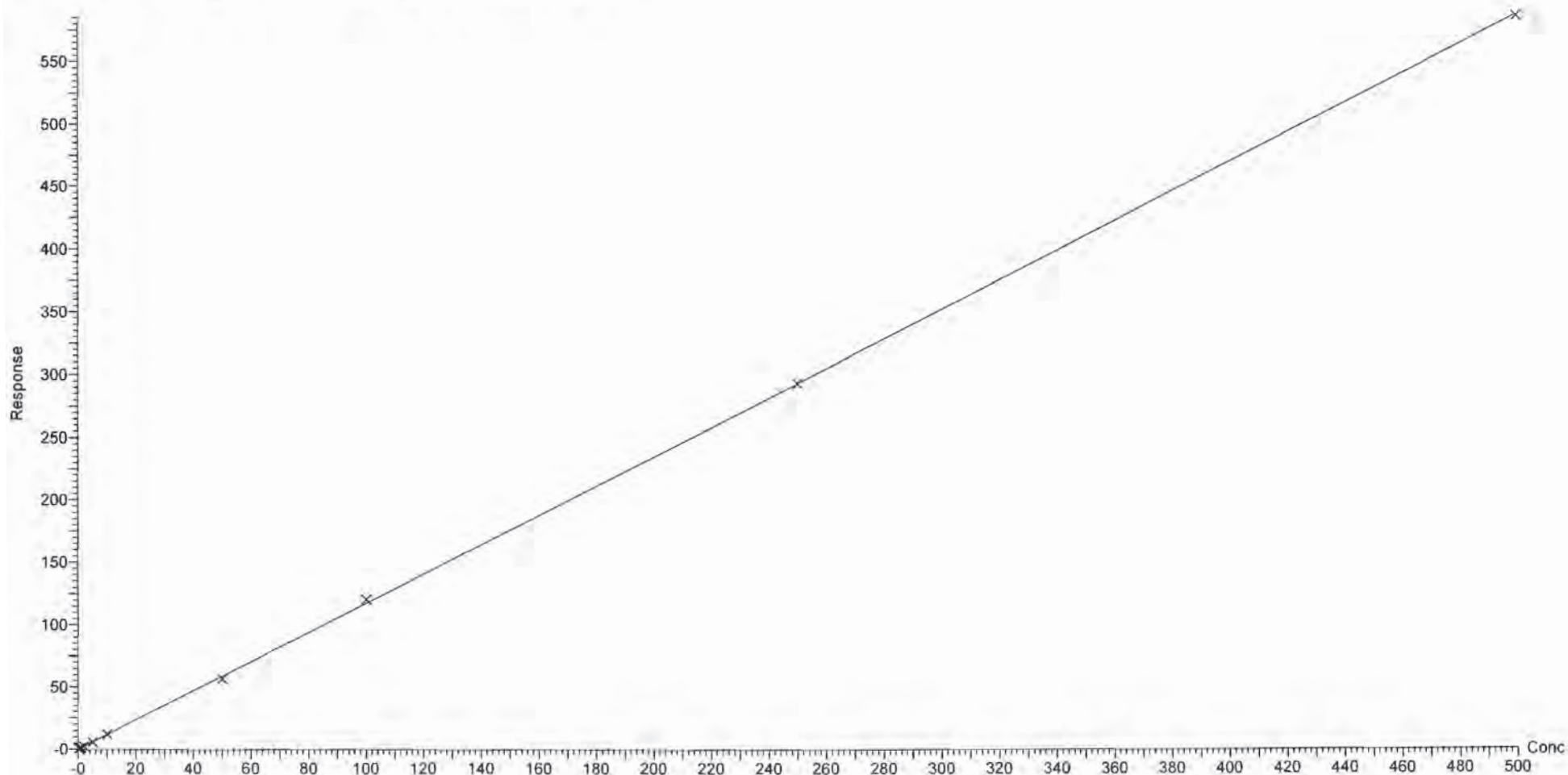
Compound name: PFBA

Correlation coefficient: $r = 0.999917$, $r^2 = 0.999835$

Calibration curve: $1.17165 * x + 0.0472244$

Response type: Internal Std (Ref 34), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

Compound name: PFPeA

Correlation coefficient: $r = 0.999842$, $r^2 = 0.999684$

Calibration curve: $1.0664 * x + 0.0408351$

Response type: Internal Std (Ref 35), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

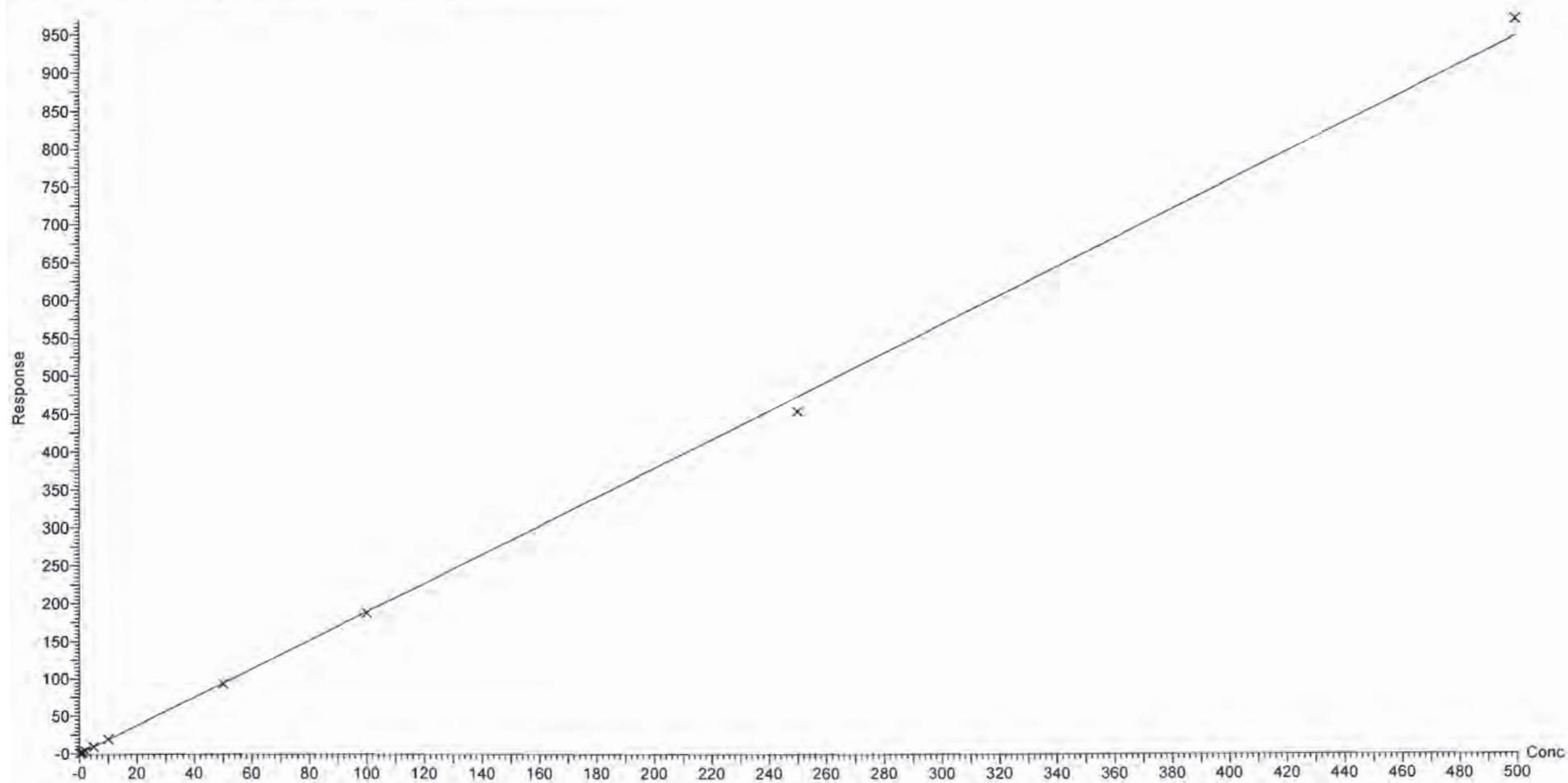
Compound name: PFBS

Correlation coefficient: $r = 0.999598$, $r^2 = 0.999197$

Calibration curve: $1.89414 * x + -0.0288383$

Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

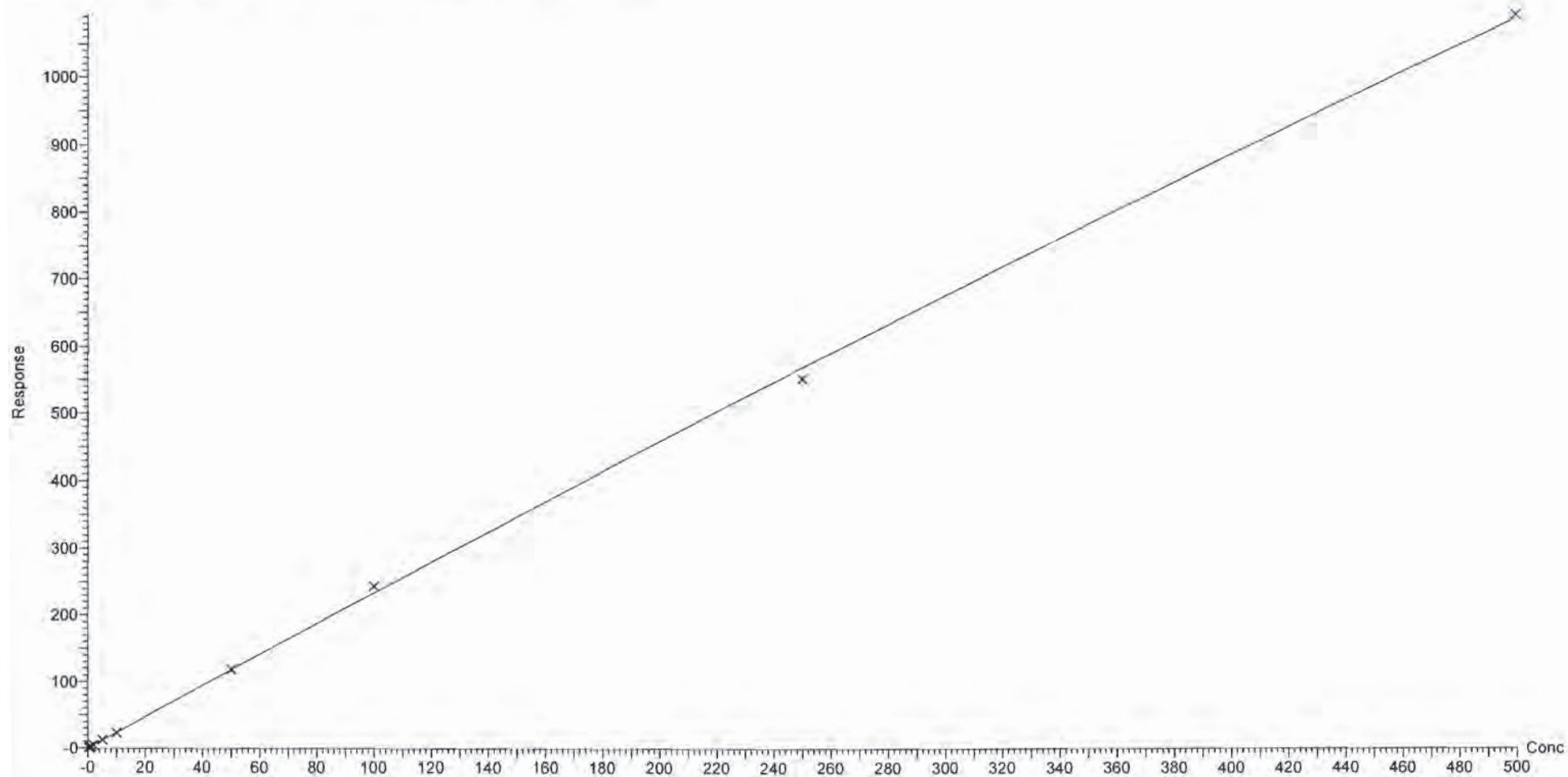
Compound name: 4:2 FTS

Coefficient of Determination: $R^2 = 0.999470$

Calibration curve: $-0.000405212 * x^2 + 2.37556 * x + -0.0593719$

Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

Compound name: PFHxA

Coefficient of Determination: $R^2 = 0.998763$

Calibration curve: $-0.000593566 * x^2 + 1.6809 * x + 0.0121769$

Response type: Internal Std (Ref 37), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

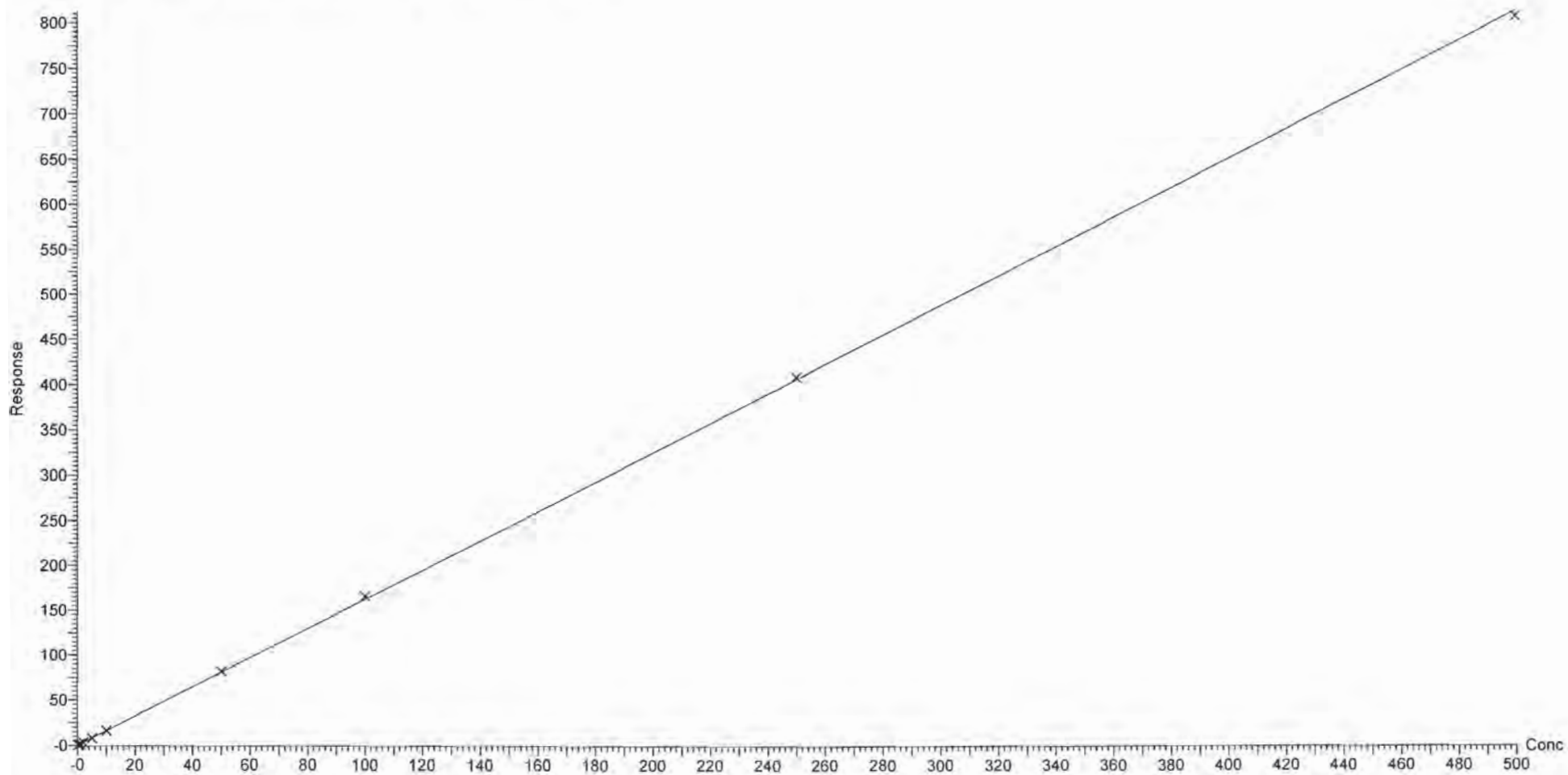
Compound name: PFPeS

Correlation coefficient: $r = 0.999947$, $r^2 = 0.999894$

Calibration curve: $1.62535 * x + -0.117866$

Response type: Internal Std (Ref 36), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

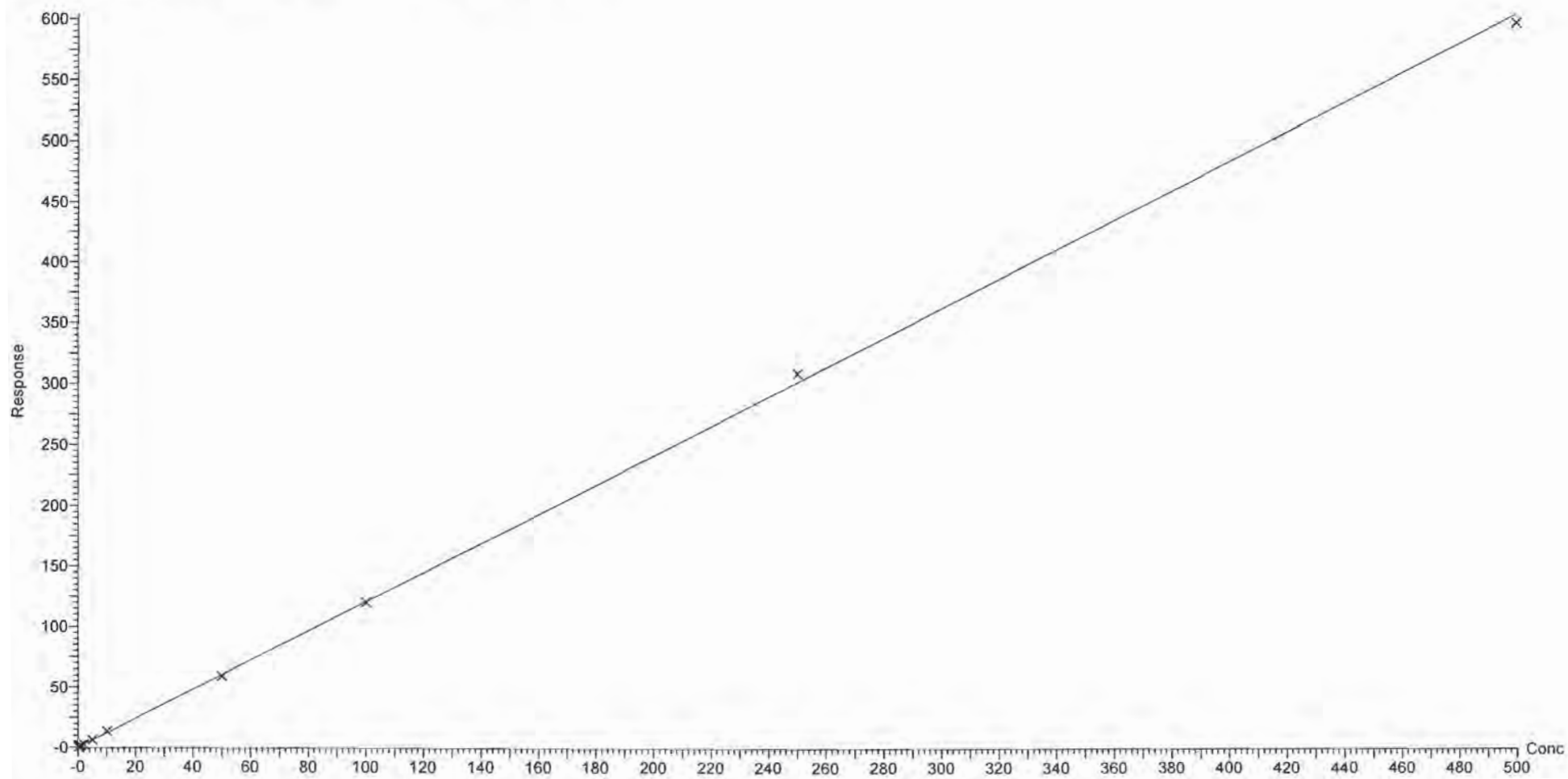
Compound name: PFHpA

Correlation coefficient: $r = 0.999769$, $r^2 = 0.999538$

Calibration curve: $1.208 * x + 0.0277093$

Response type: Internal Std (Ref 38), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

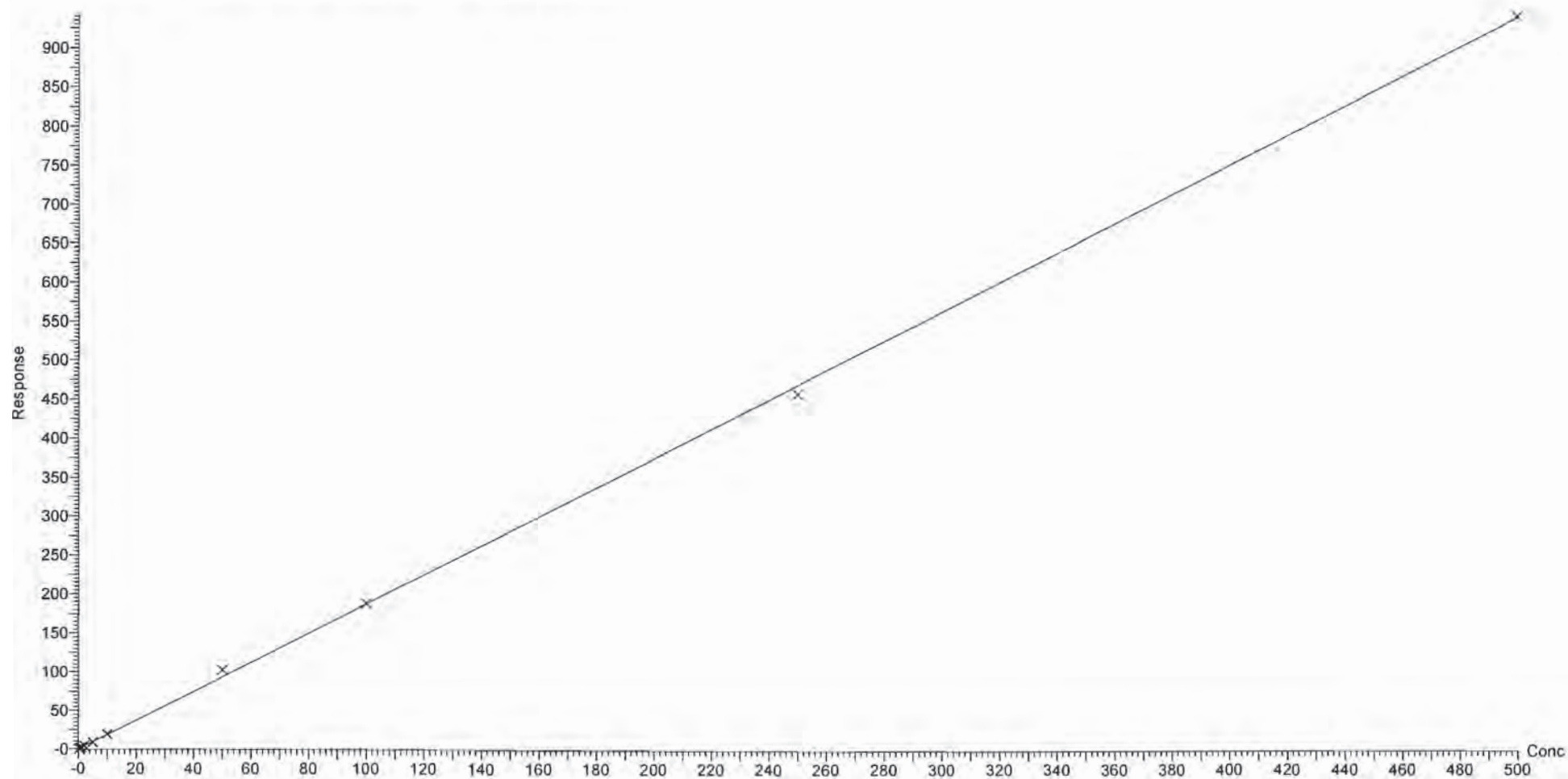
Compound name: L-PFHxS

Correlation coefficient: $r = 0.999641$, $r^2 = 0.999282$

Calibration curve: $1.87852 * x + -0.109873$

Response type: Internal Std (Ref 39), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

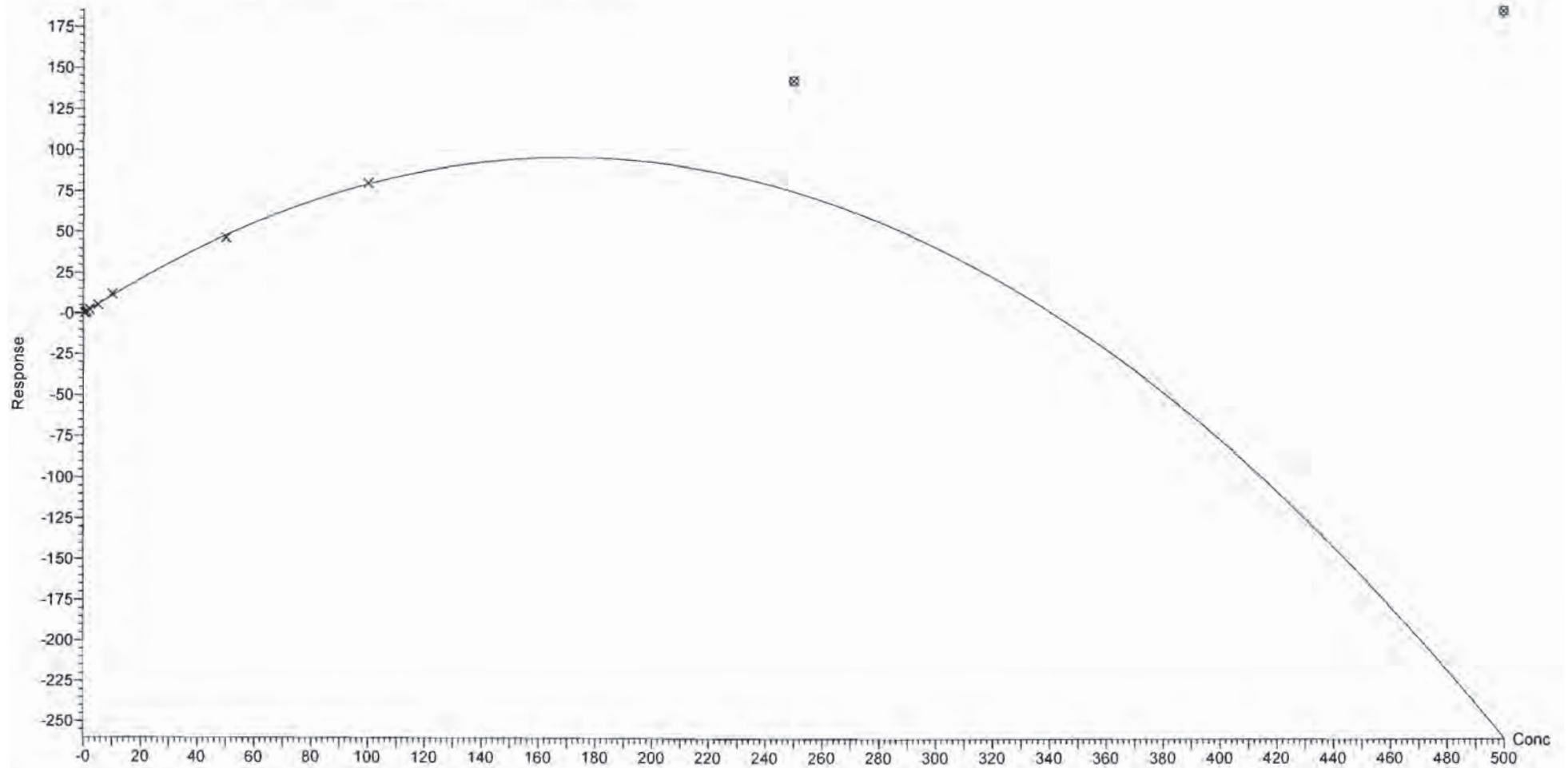


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

Compound name: 6:2 FTS
Coefficient of Determination: $R^2 = 0.998553$
Calibration curve: $-0.00328829 * x^2 + 1.12459 * x + 0.0184508$
Response type: Internal Std (Ref 40), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

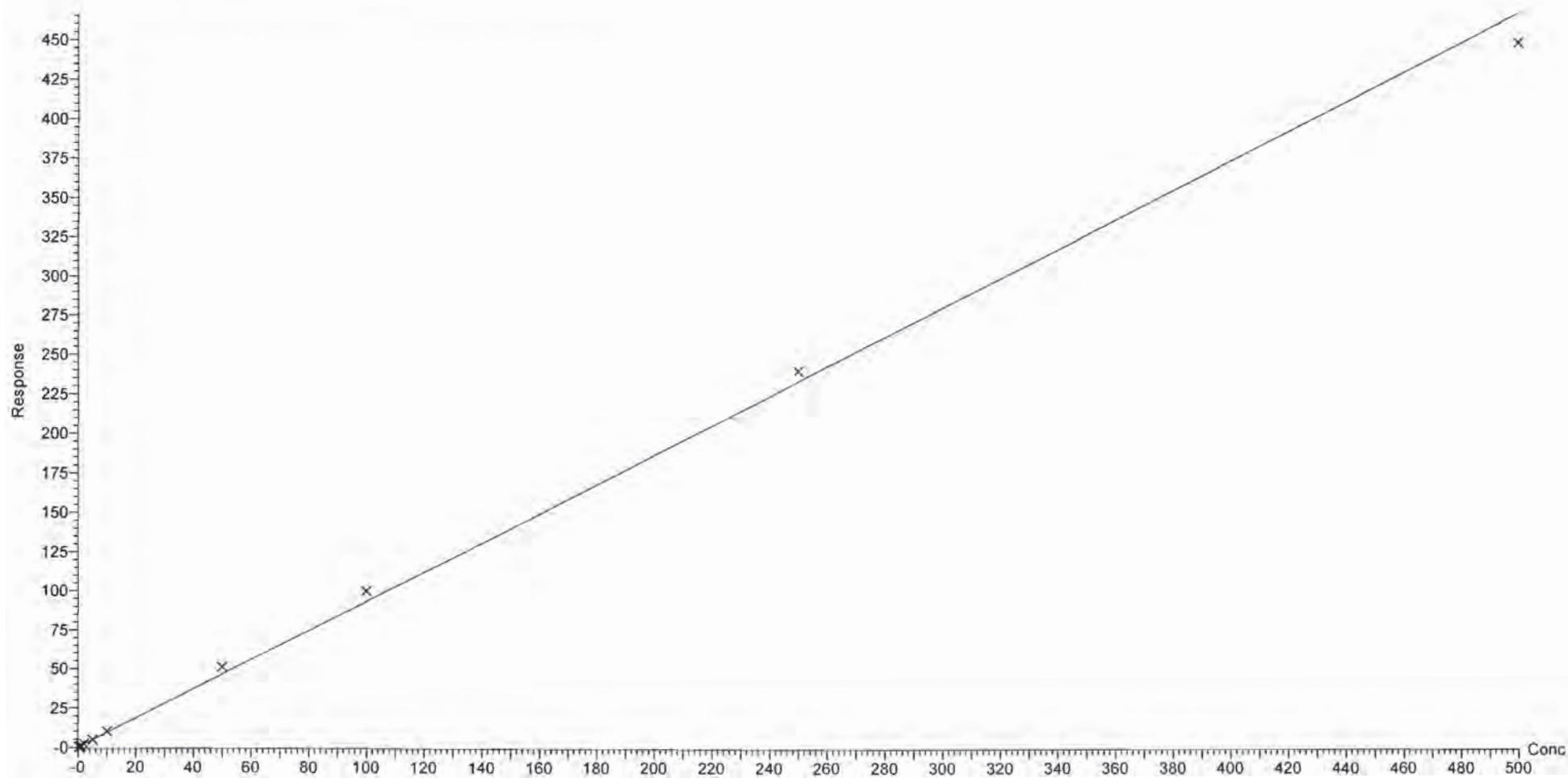
Compound name: L-PFOA

Correlation coefficient: $r = 0.998891$, $r^2 = 0.997784$

Calibration curve: $0.933217 * x + 0.0971148$

Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

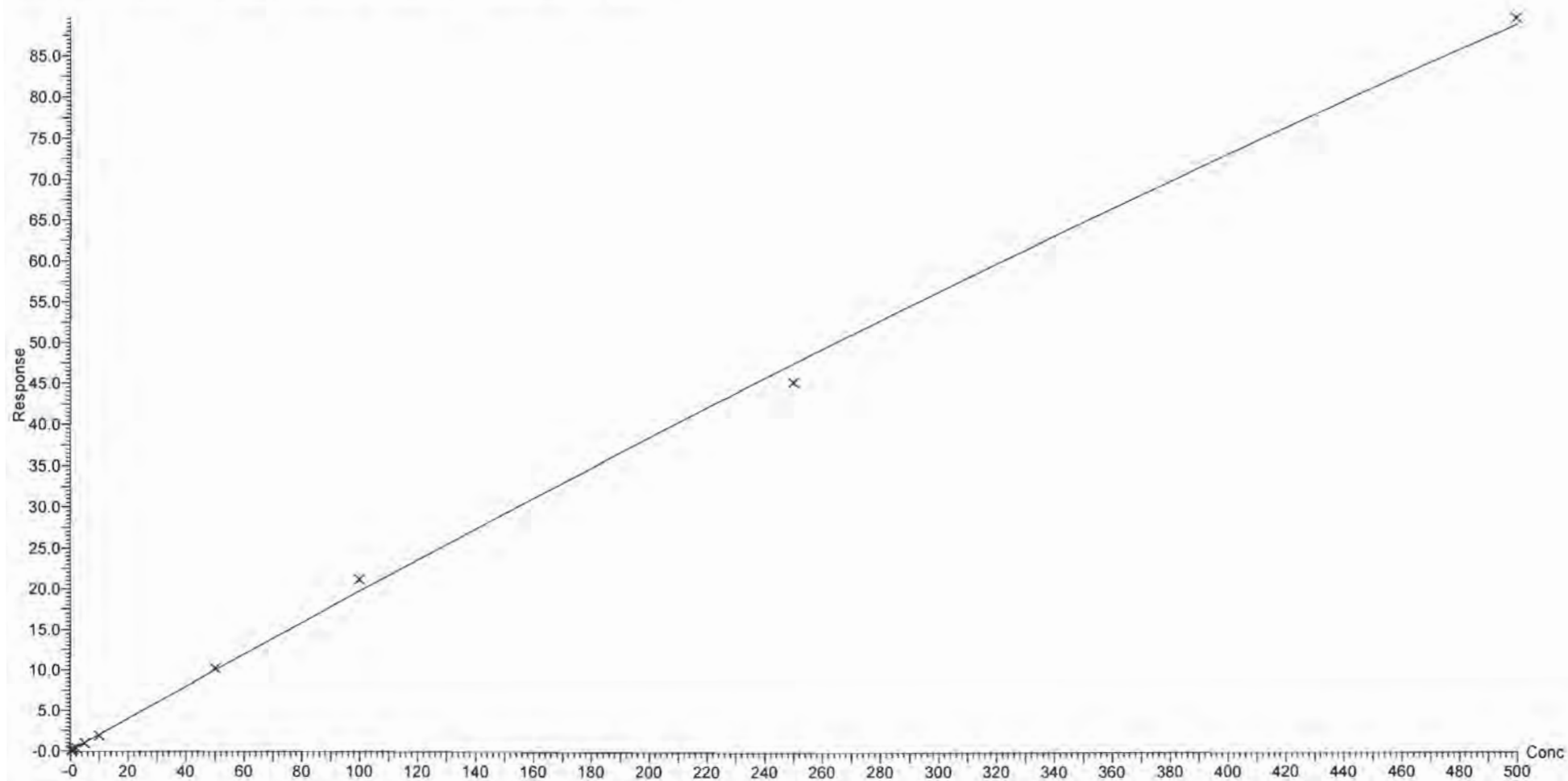
Compound name: PFHpS

Coefficient of Determination: $R^2 = 0.998356$

Calibration curve: $-5.04164e-005 * x^2 + 0.202804 * x + -0.00232181$

Response type: Internal Std (Ref 41), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

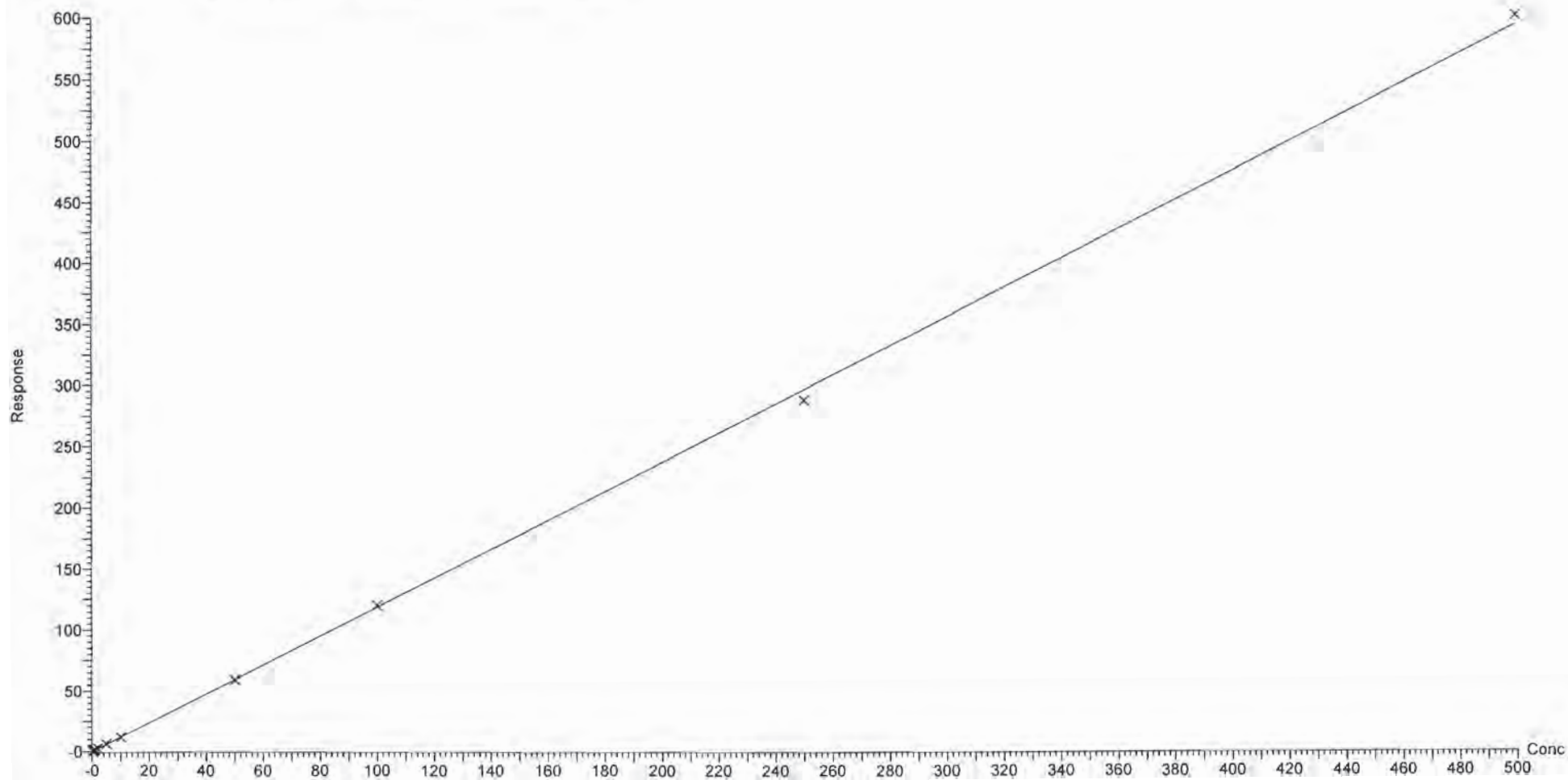
Compound name: PFNA

Correlation coefficient: $r = 0.999818$, $r^2 = 0.999637$

Calibration curve: $1.18721 * x + 0.0329161$

Response type: Internal Std (Ref 42), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

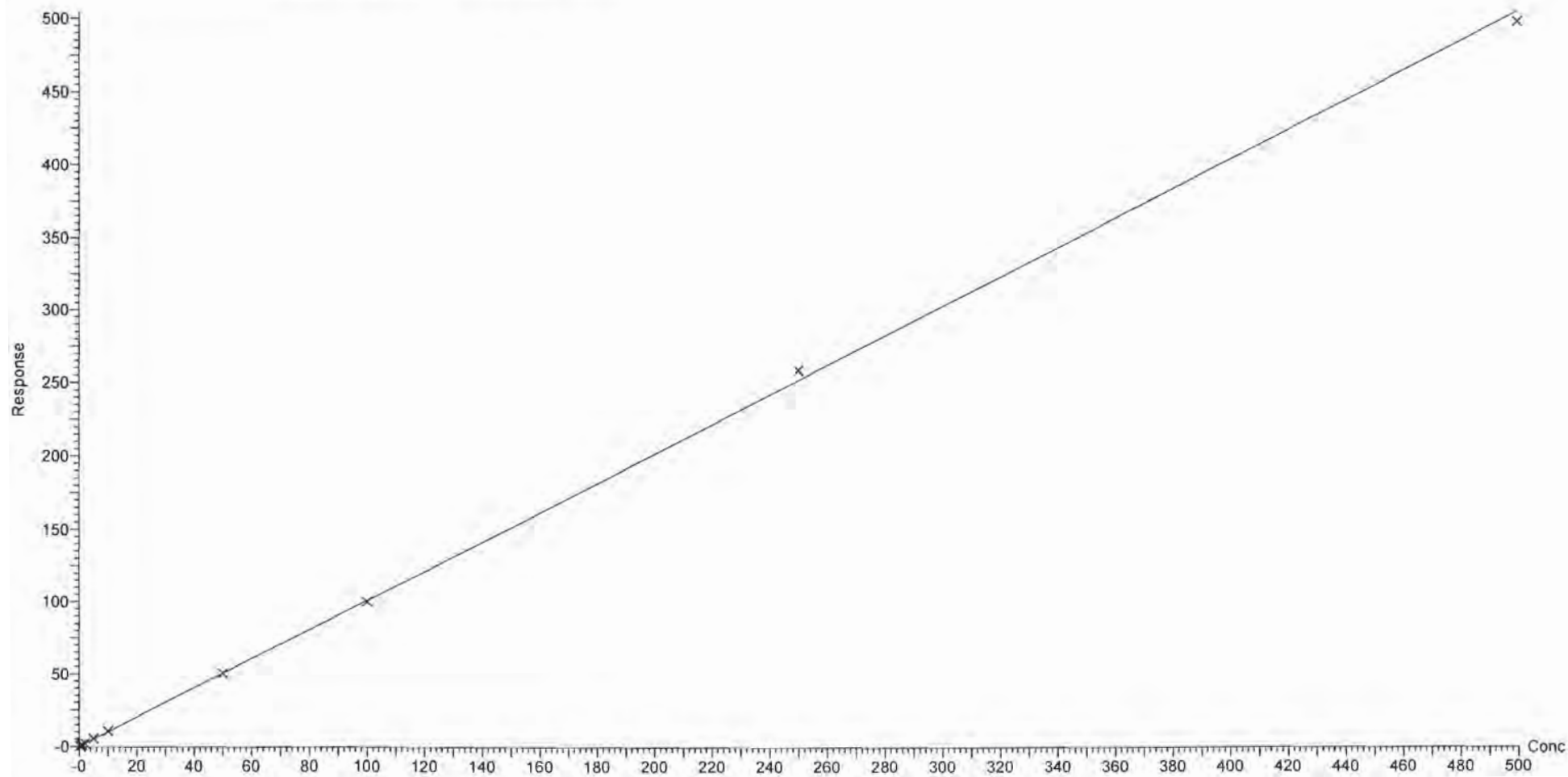
Compound name: PFOSA

Correlation coefficient: $r = 0.999783$, $r^2 = 0.999565$

Calibration curve: $1.00842 * x + -0.0126412$

Response type: Internal Std (Ref 43), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

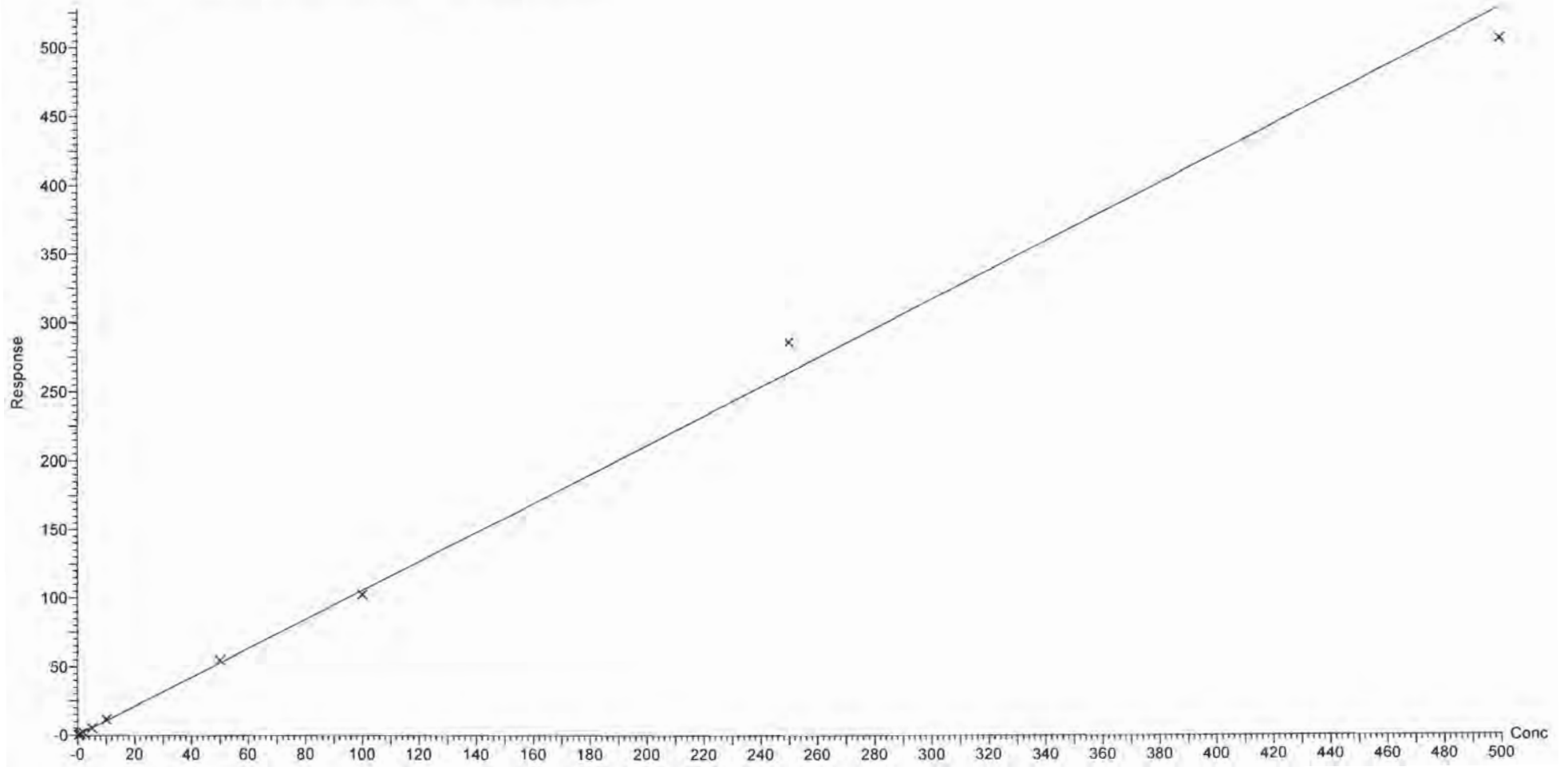
Compound name: L-PFOS

Correlation coefficient: $r = 0.998367$, $r^2 = 0.996737$

Calibration curve: $1.05556 * x + -0.0448468$

Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

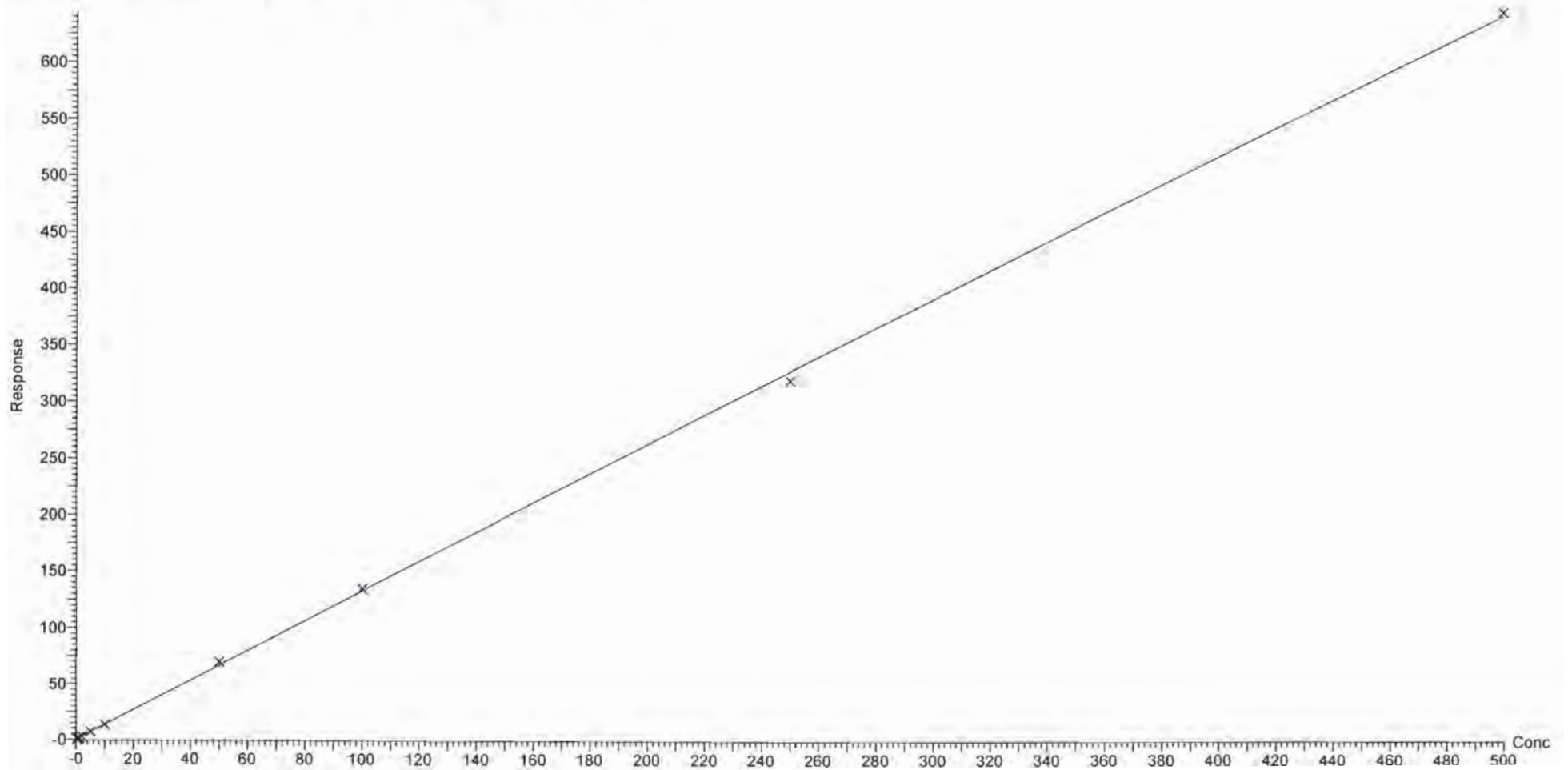
Compound name: PFDA

Coefficient of Determination: $R^2 = 0.999664$

Calibration curve: $-0.000114213 * x^2 + 1.33852 * x + 0.0655649$

Response type: Internal Std (Ref 45), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

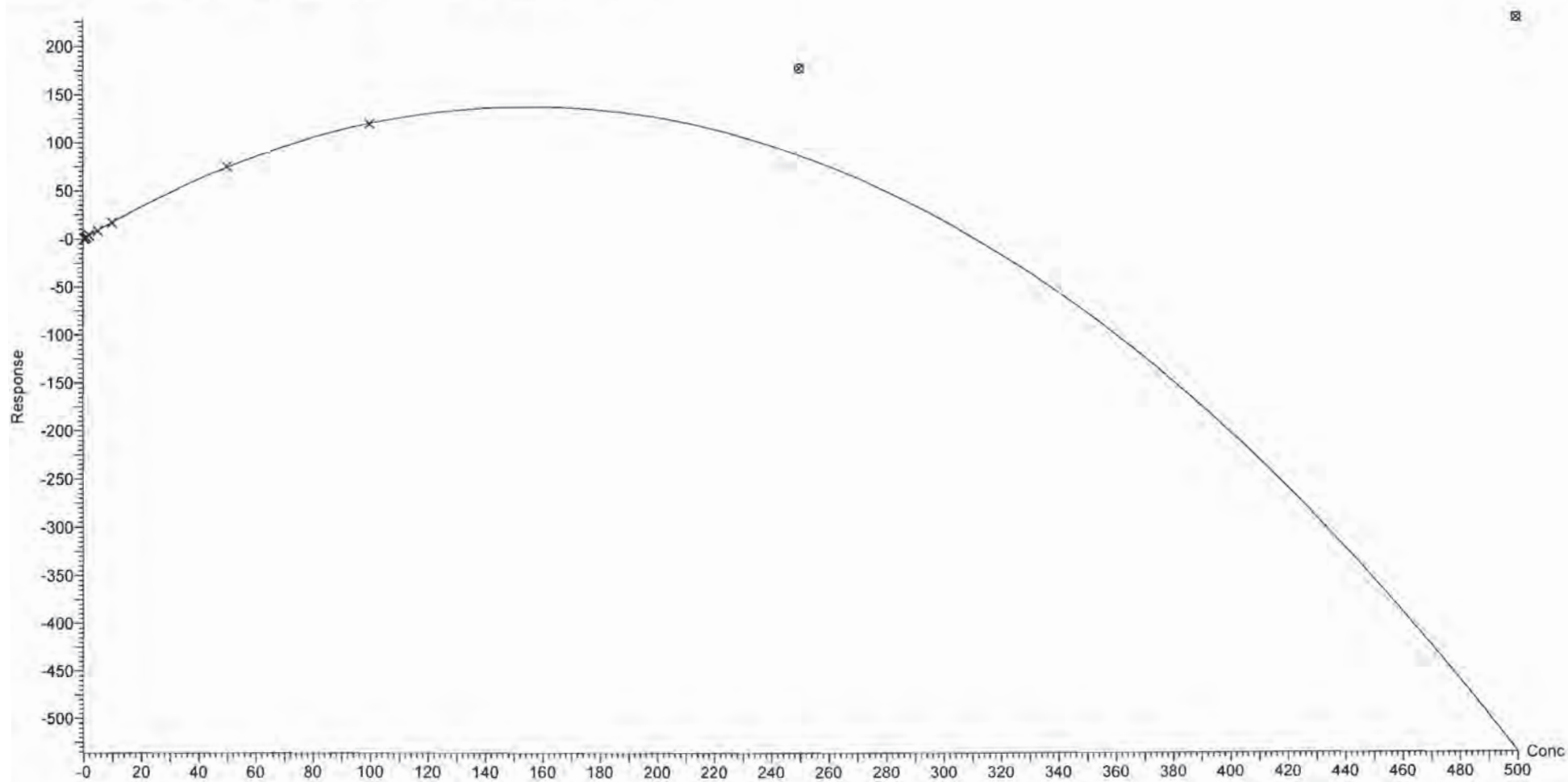
Compound name: 8:2 FTS

Coefficient of Determination: $R^2 = 0.999393$

Calibration curve: $-0.00567628 * x^2 + 1.76645 * x + -0.0113749$

Response type: Internal Std (Ref 46), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

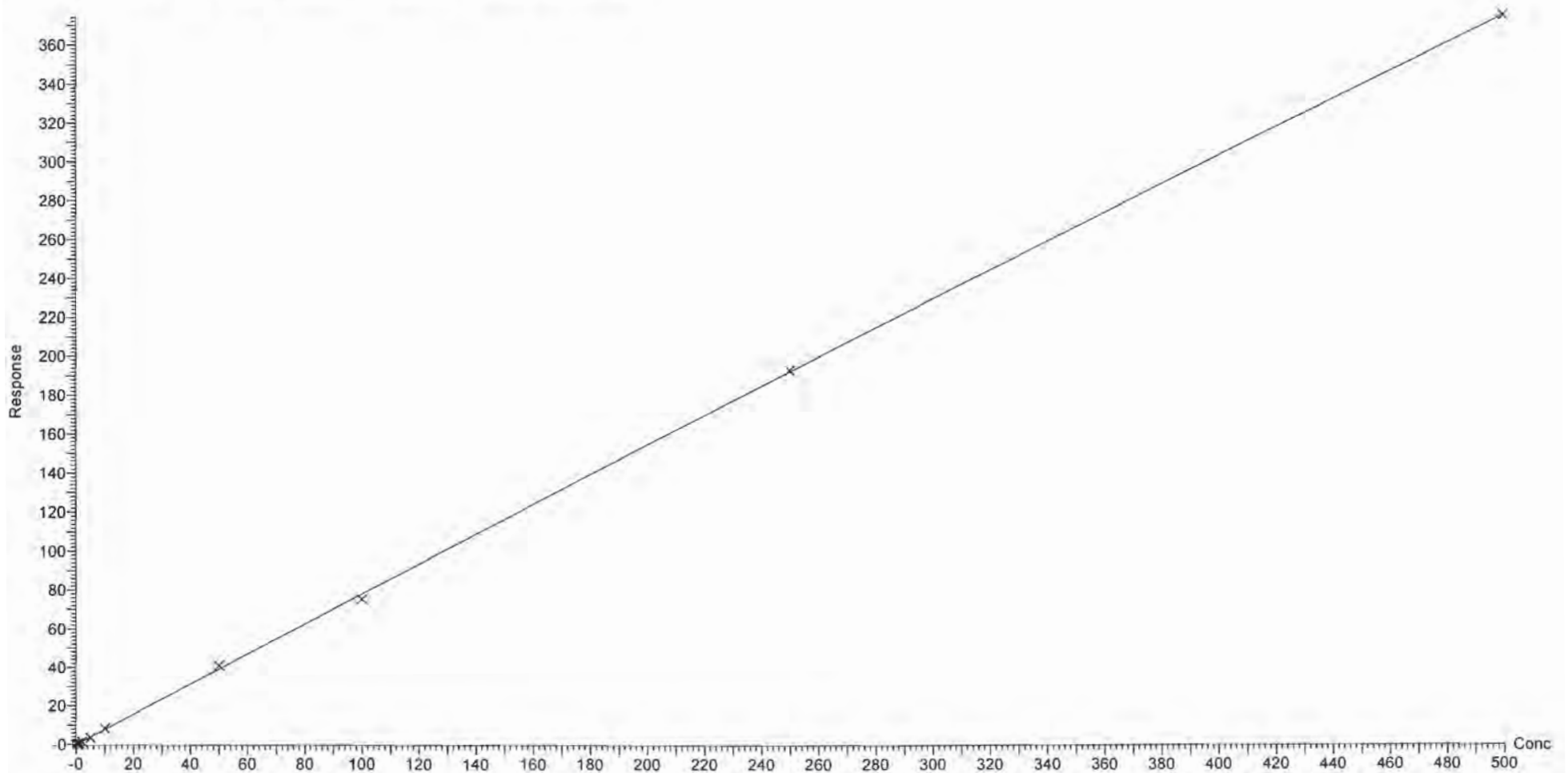
Compound name: PFNS

Coefficient of Determination: $R^2 = 0.999574$

Calibration curve: $-8.16963e-005 * x^2 + 0.790266 * x + -0.141984$

Response type: Internal Std (Ref 44), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

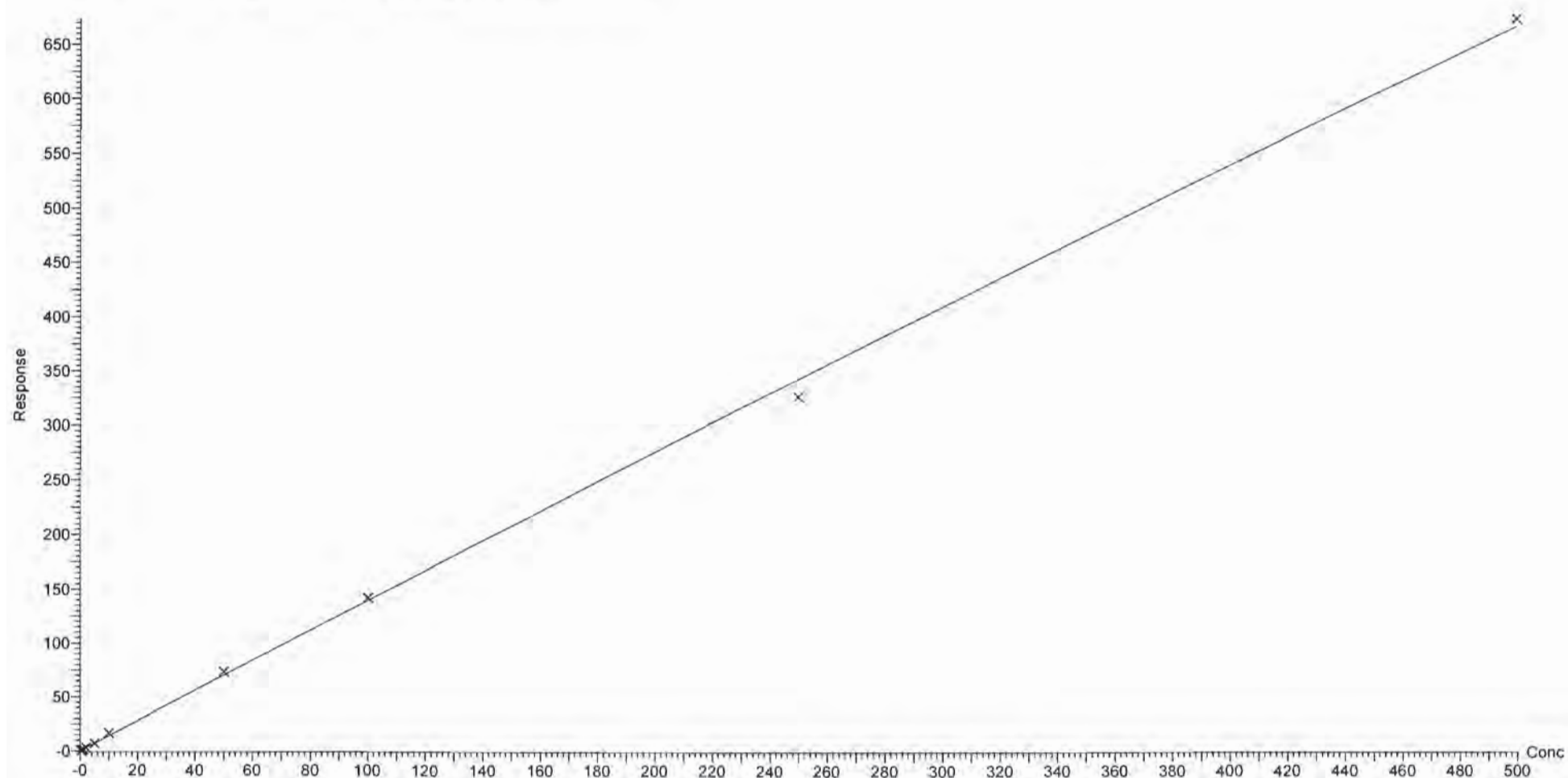
Compound name: N-MeFOSAA

Coefficient of Determination: $R^2 = 0.998666$

Calibration curve: $-0.000163635 * x^2 + 1.41496 * x + 0.06191$

Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

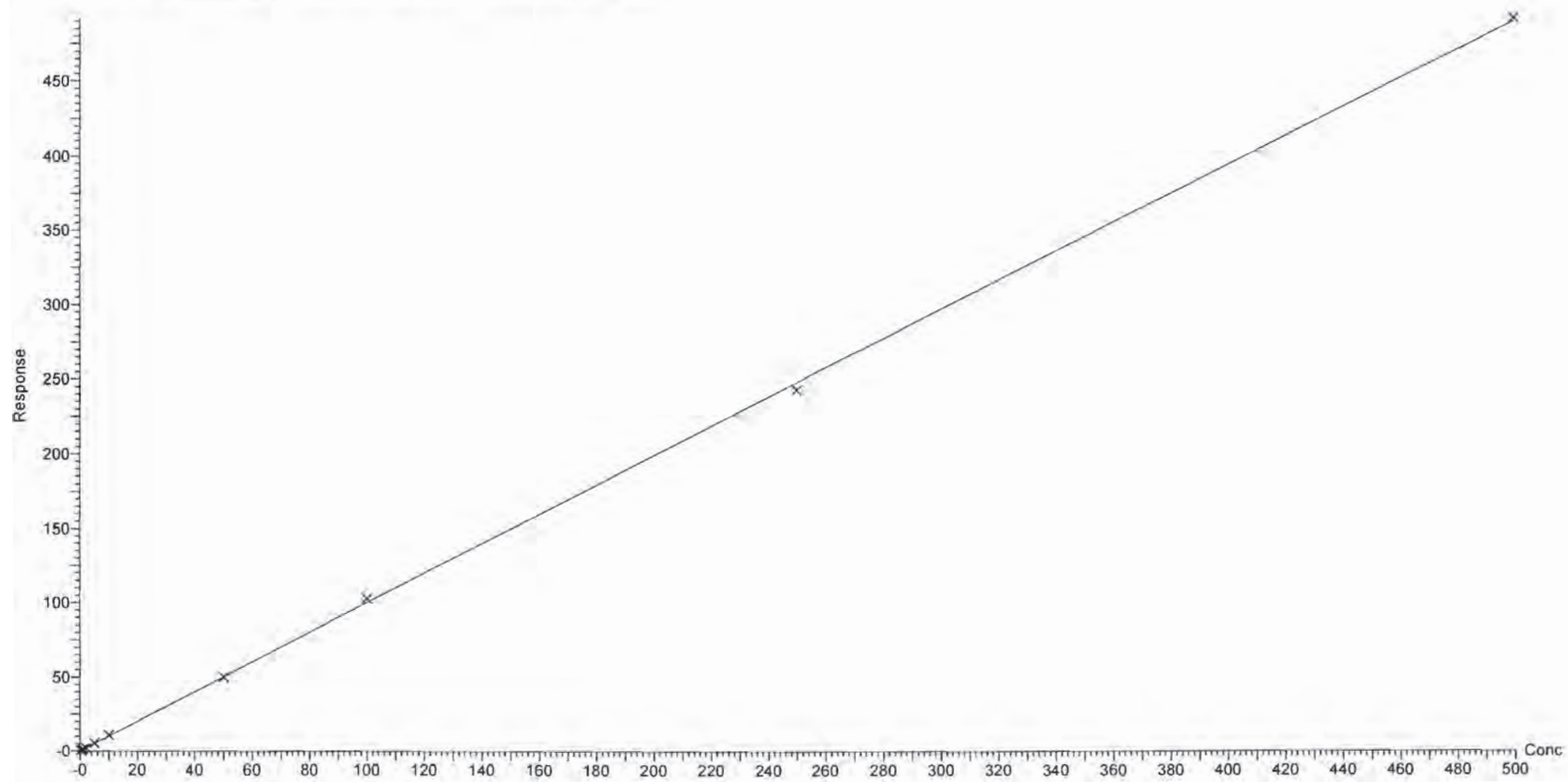
Compound name: N-EtFOSAA

Coefficient of Determination: $R^2 = 0.999715$

Calibration curve: $-5.98261e-005 * x^2 + 1.00844 * x + -0.00487995$

Response type: Internal Std (Ref 48), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

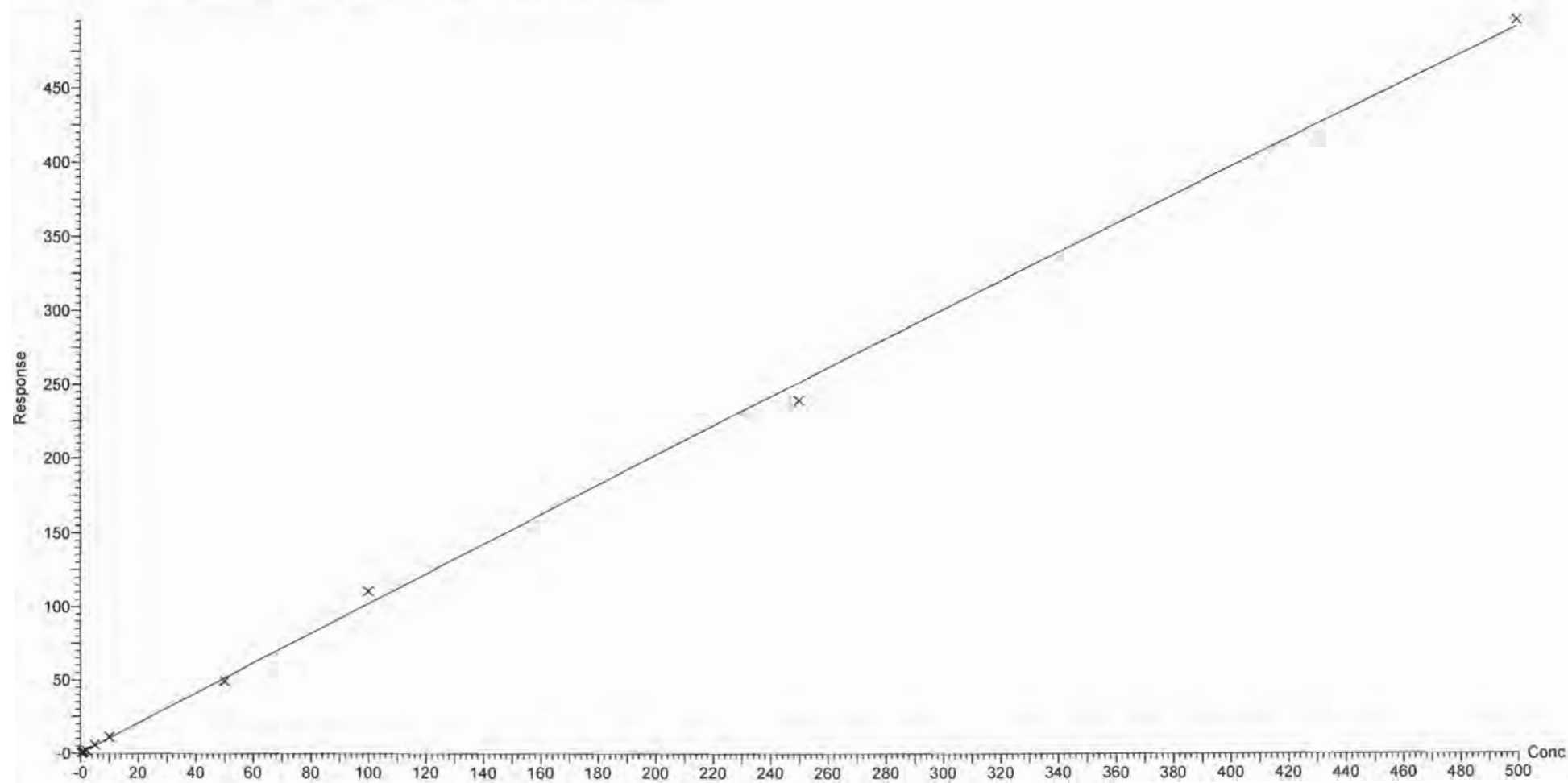
Compound name: PFUdA

Coefficient of Determination: $R^2 = 0.998191$

Calibration curve: $-9.75727e-005 * x^2 + 1.0298 * x + 0.0729832$

Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

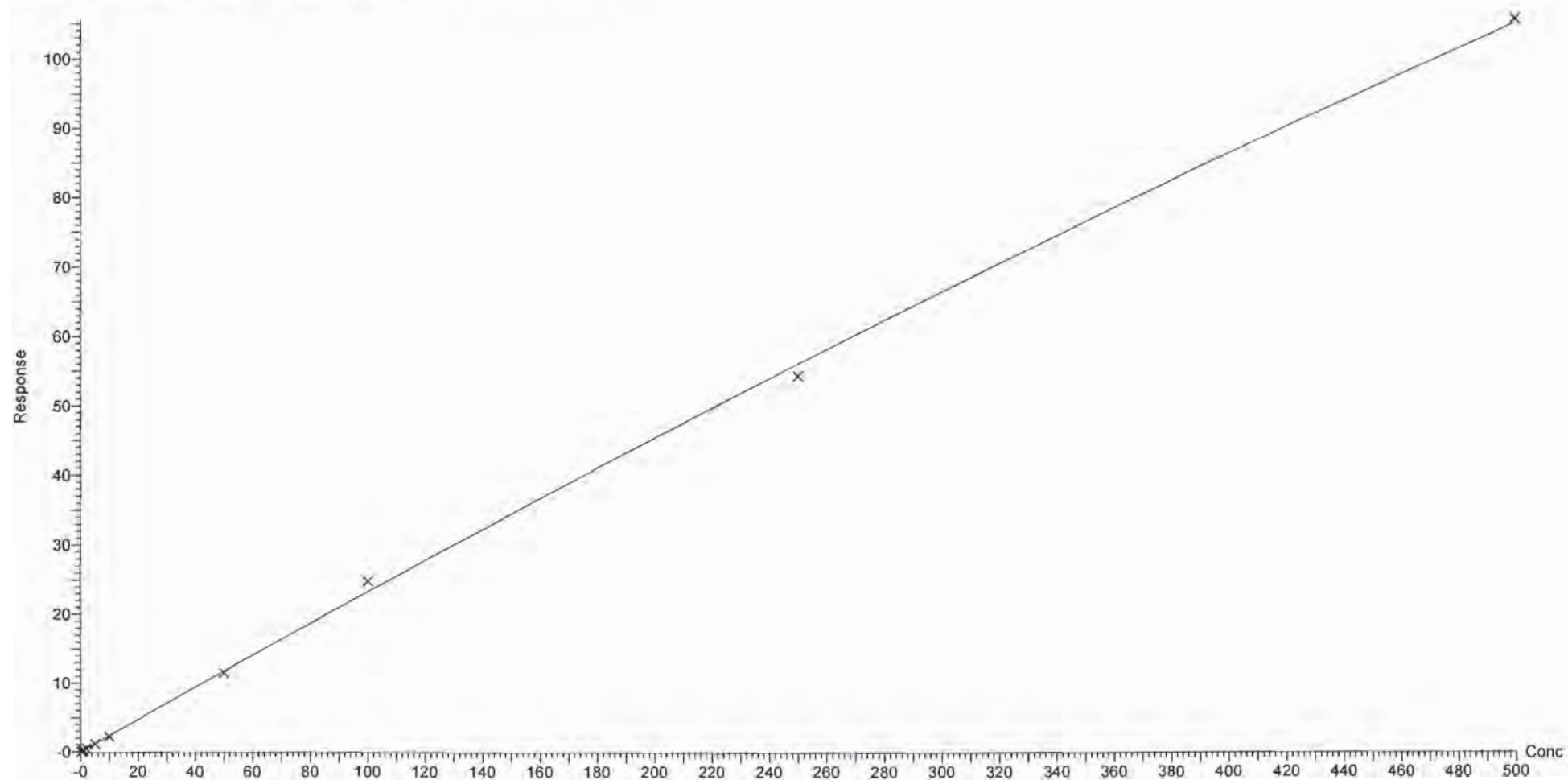
Compound name: PFDS

Coefficient of Determination: $R^2 = 0.999010$

Calibration curve: $-5.80925e-005 * x^2 + 0.239142 * x + -0.0310009$

Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

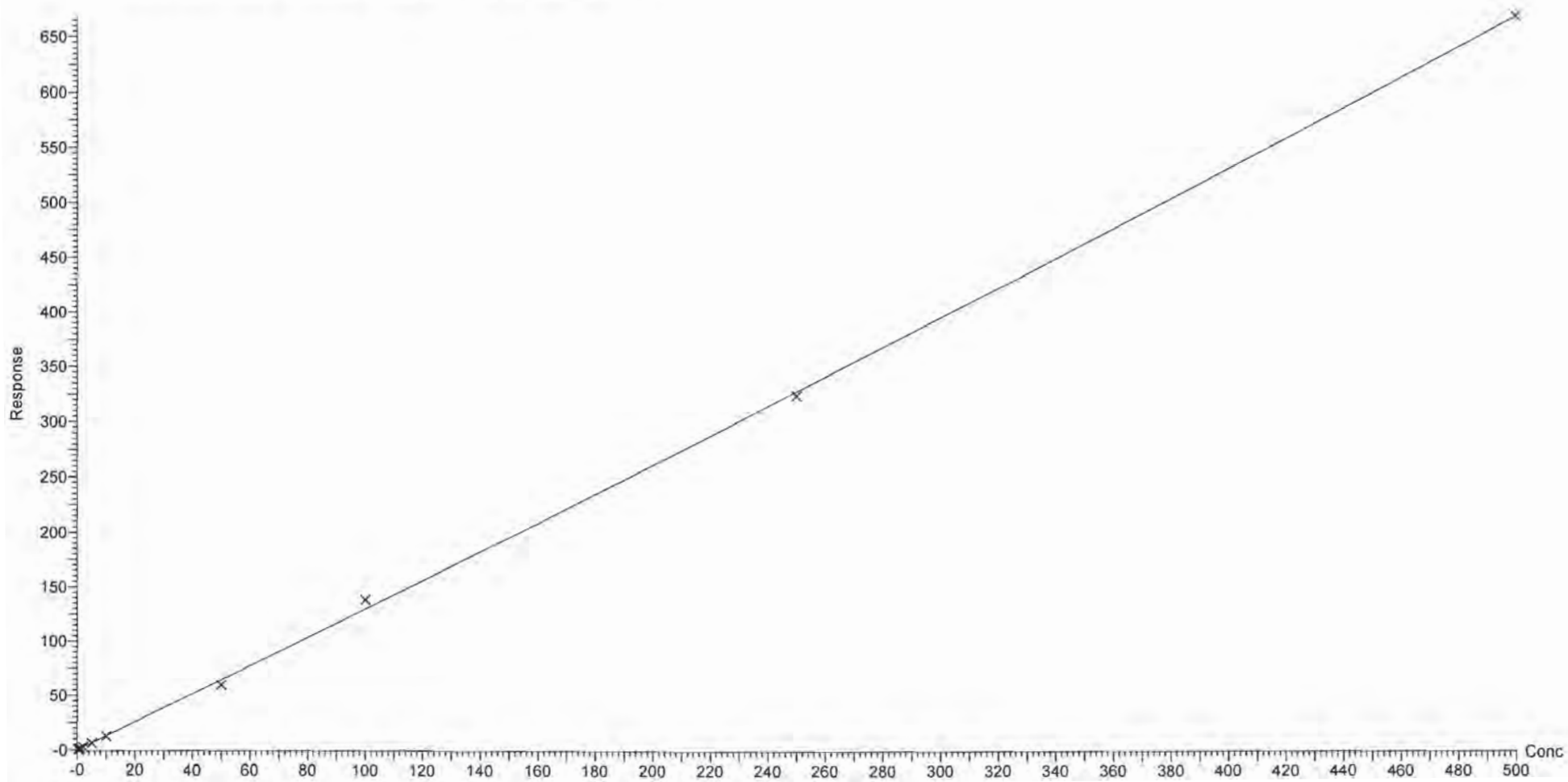


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

Compound name: PFD_oA
Coefficient of Determination: $R^2 = 0.999158$
Calibration curve: $9.73778e-005 * x^2 + 1.28783 * x + 0.059227$
Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

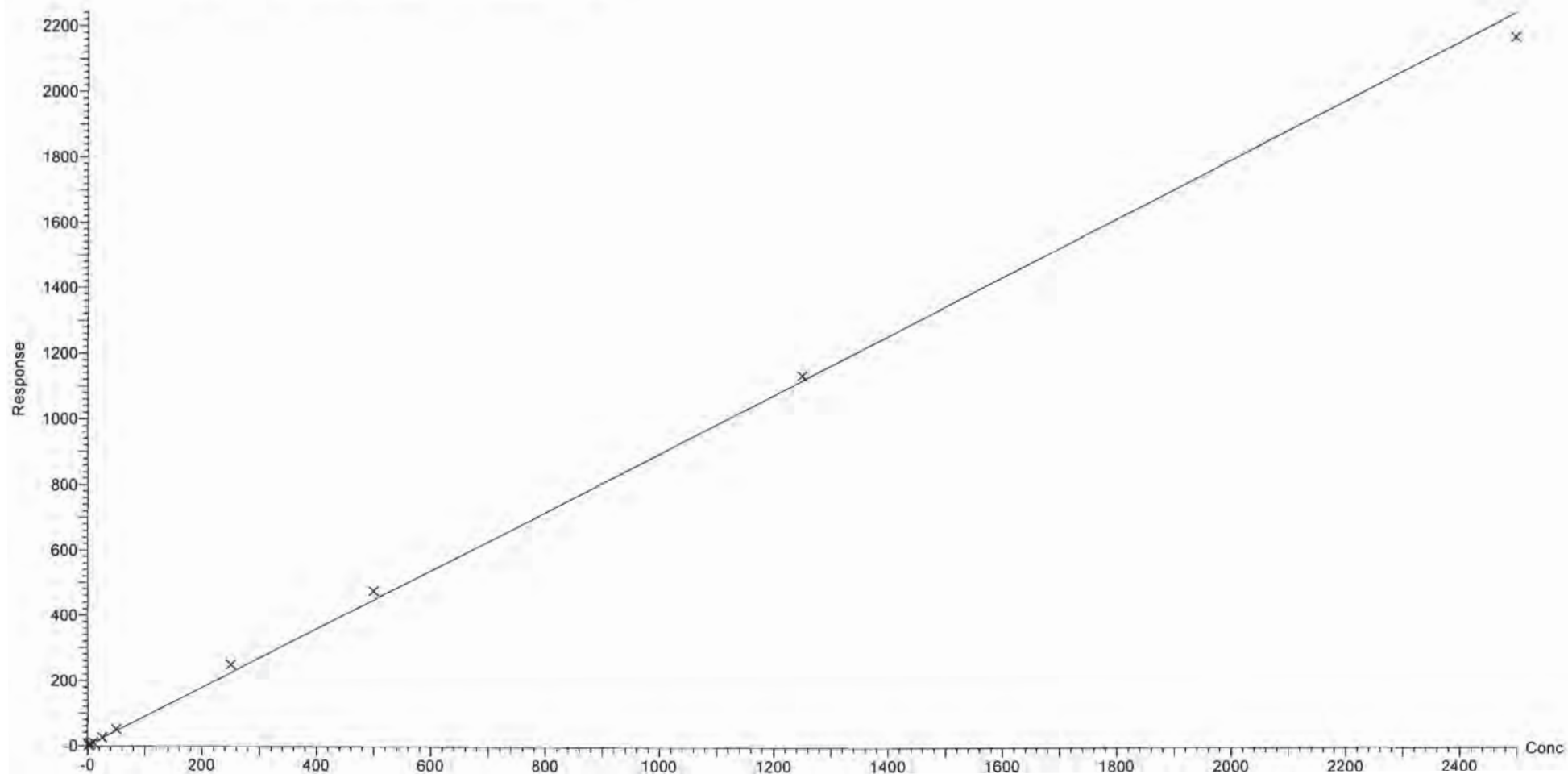
Compound name: N-MeFOSA

Correlation coefficient: $r = 0.999089$, $r^2 = 0.998179$

Calibration curve: $0.896574 * x + 0.307732$

Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

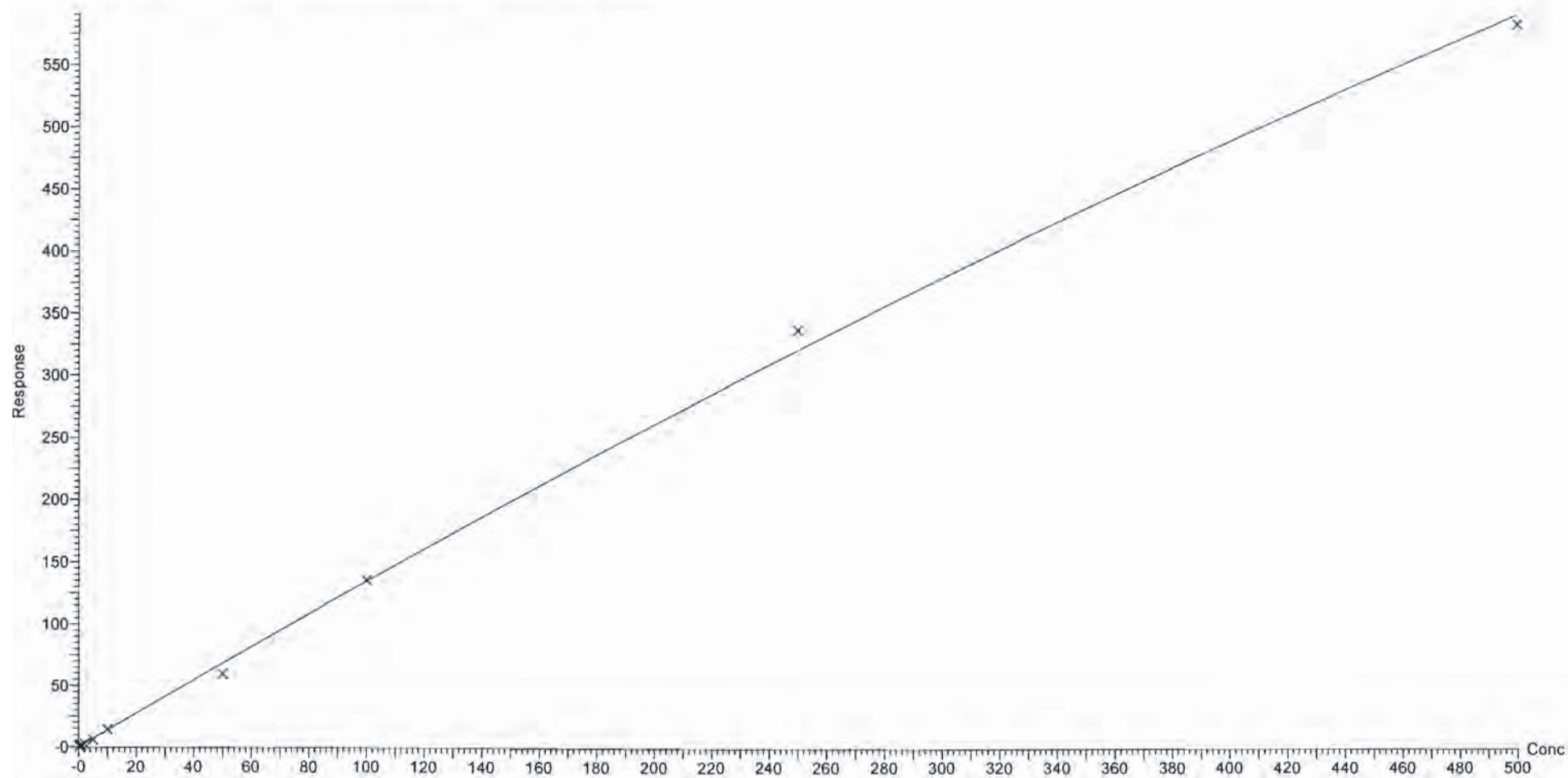
Compound name: PFTrDA

Coefficient of Determination: $R^2 = 0.997791$

Calibration curve: $-0.00042286 * x^2 + 1.39176 * x - 0.0410811$

Response type: Internal Std (Ref 50), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

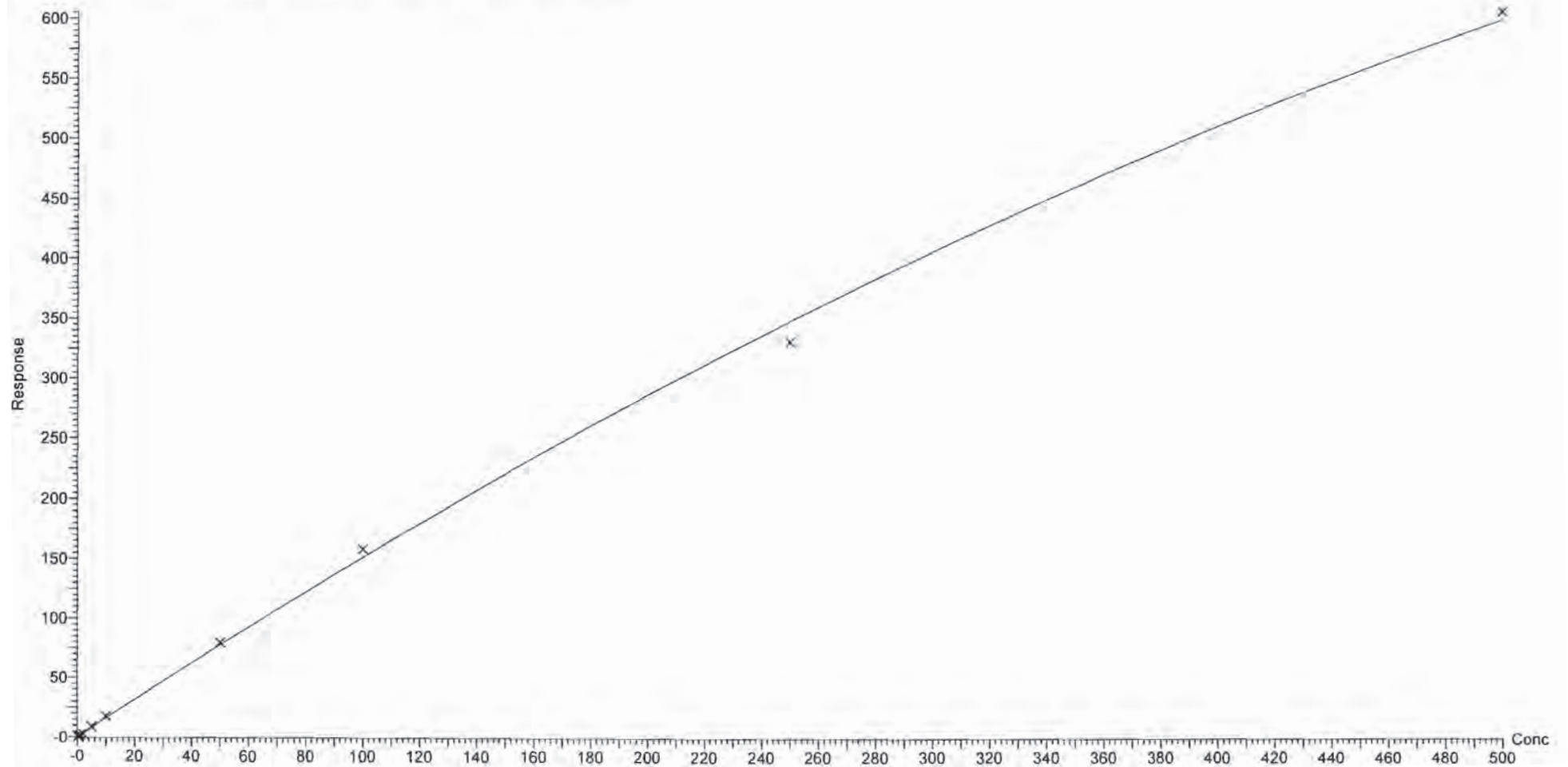
Compound name: PFTeDA

Coefficient of Determination: $R^2 = 0.998549$

Calibration curve: $-0.000787853 * x^2 + 1.59226 * x + 0.135857$

Response type: Internal Std (Ref 52), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

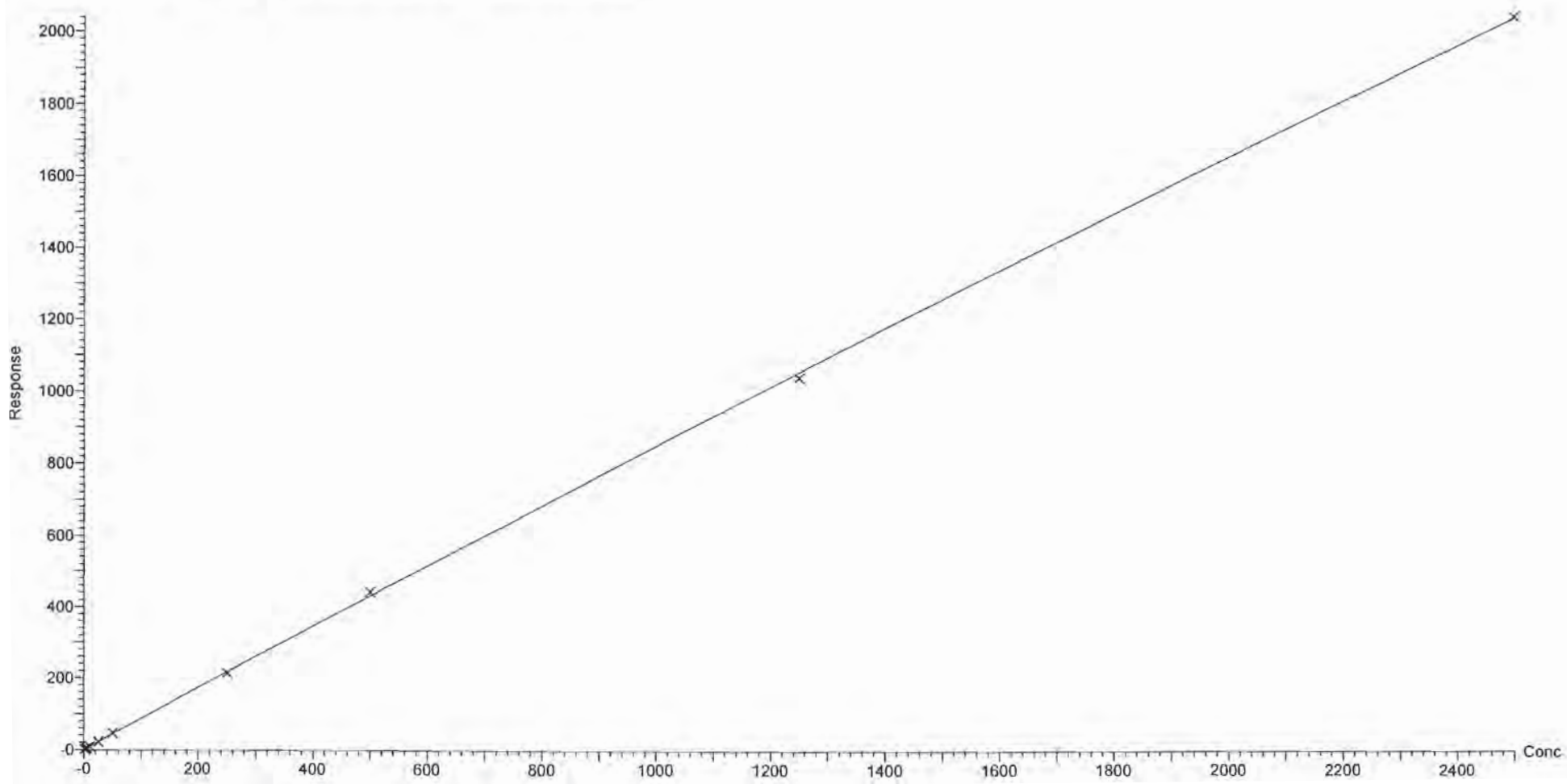
Compound name: N-EtFOSA

Coefficient of Determination: $R^2 = 0.999841$

Calibration curve: $-2.33649e-005 * x^2 + 0.872986 * x + 0.0461319$

Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

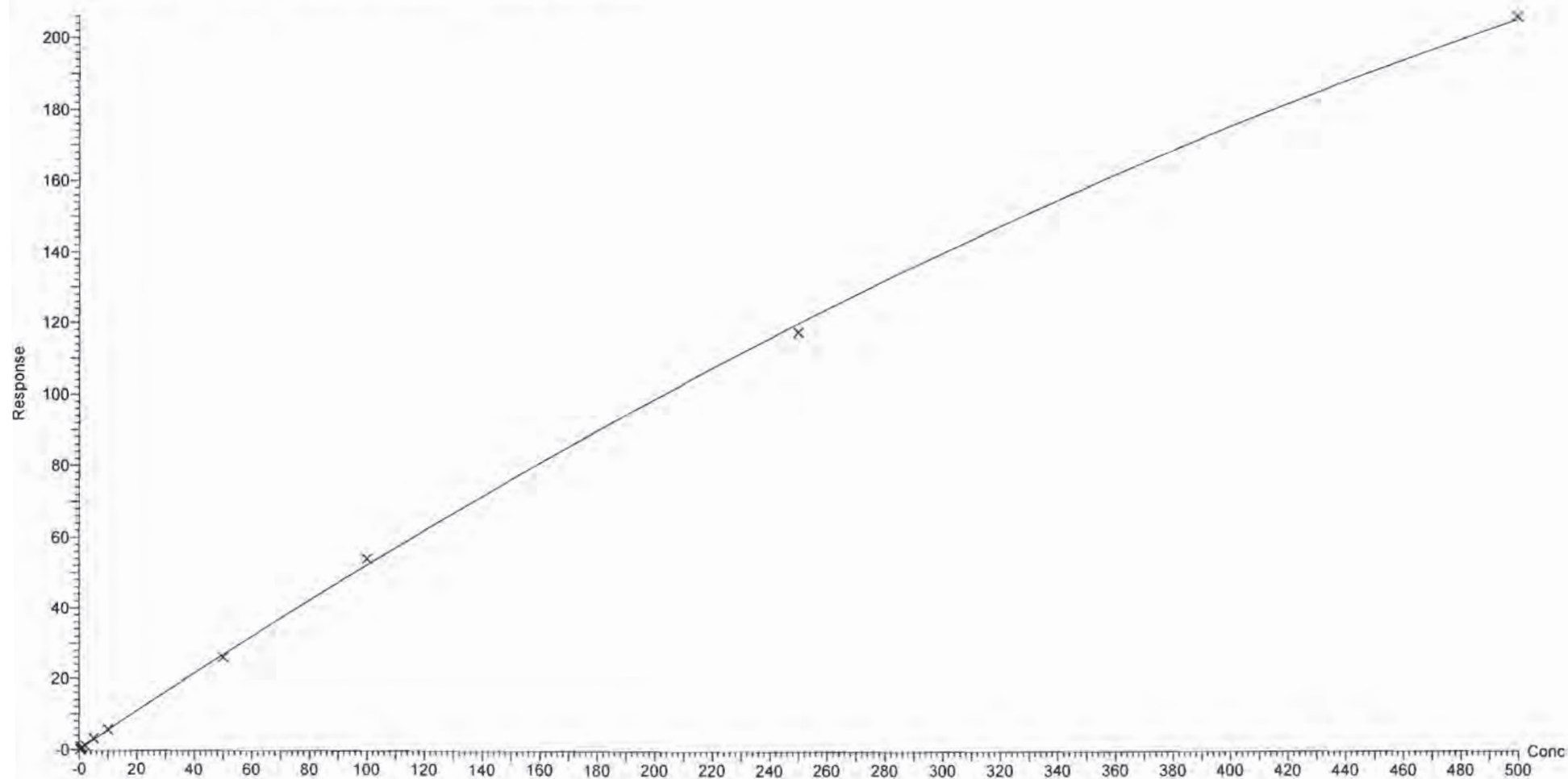
Compound name: PFHxDA

Coefficient of Determination: $R^2 = 0.999443$

Calibration curve: $-0.000280688 * x^2 + 0.550364 * x + 0.059562$

Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

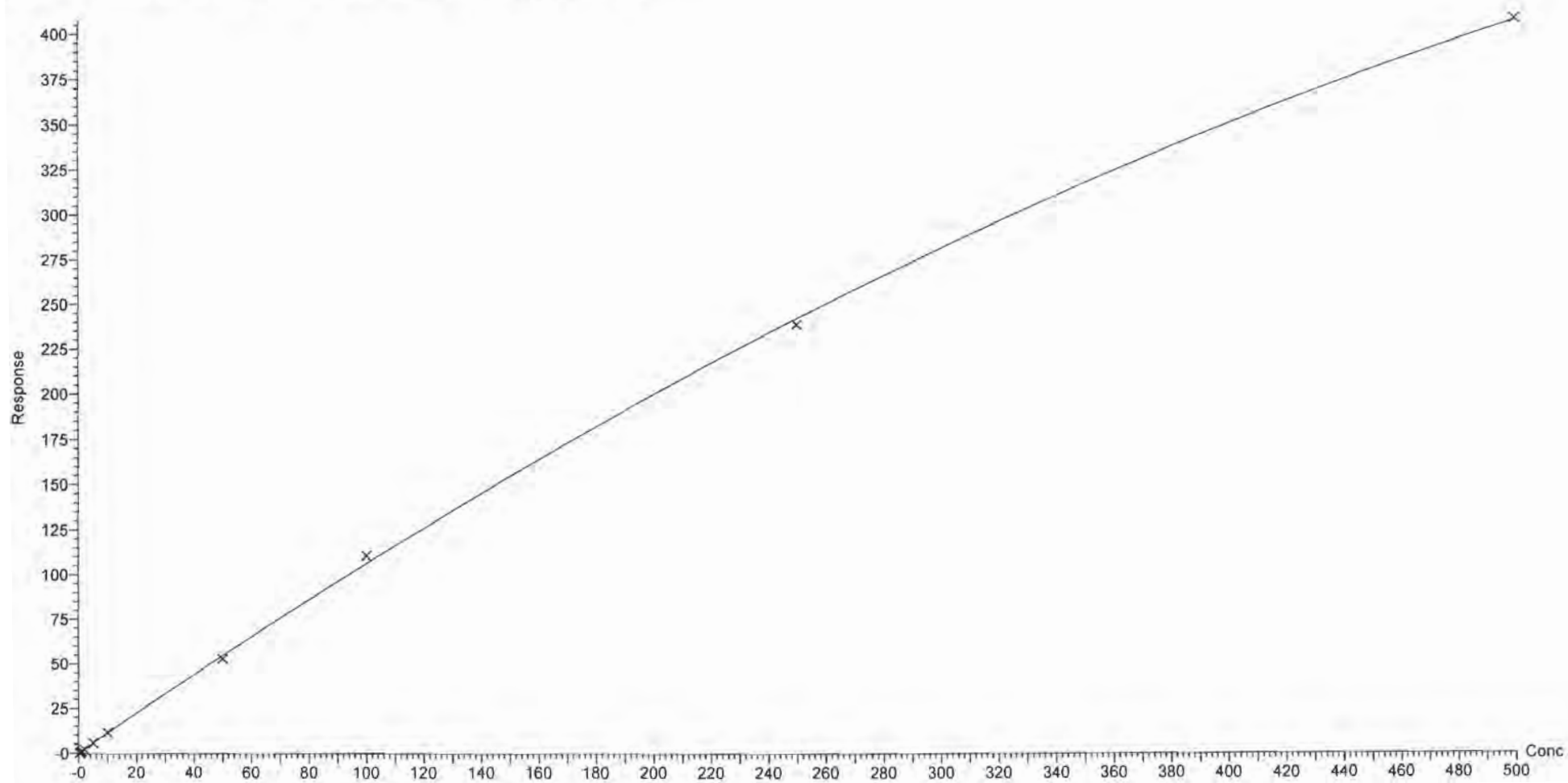
Compound name: PFODA

Coefficient of Determination: $R^2 = 0.999575$

Calibration curve: $-0.000618242 * x^2 + 1.12274 * x + -0.0572034$

Response type: Internal Std (Ref 54), Area * (IS Conc. / IS Area)

Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

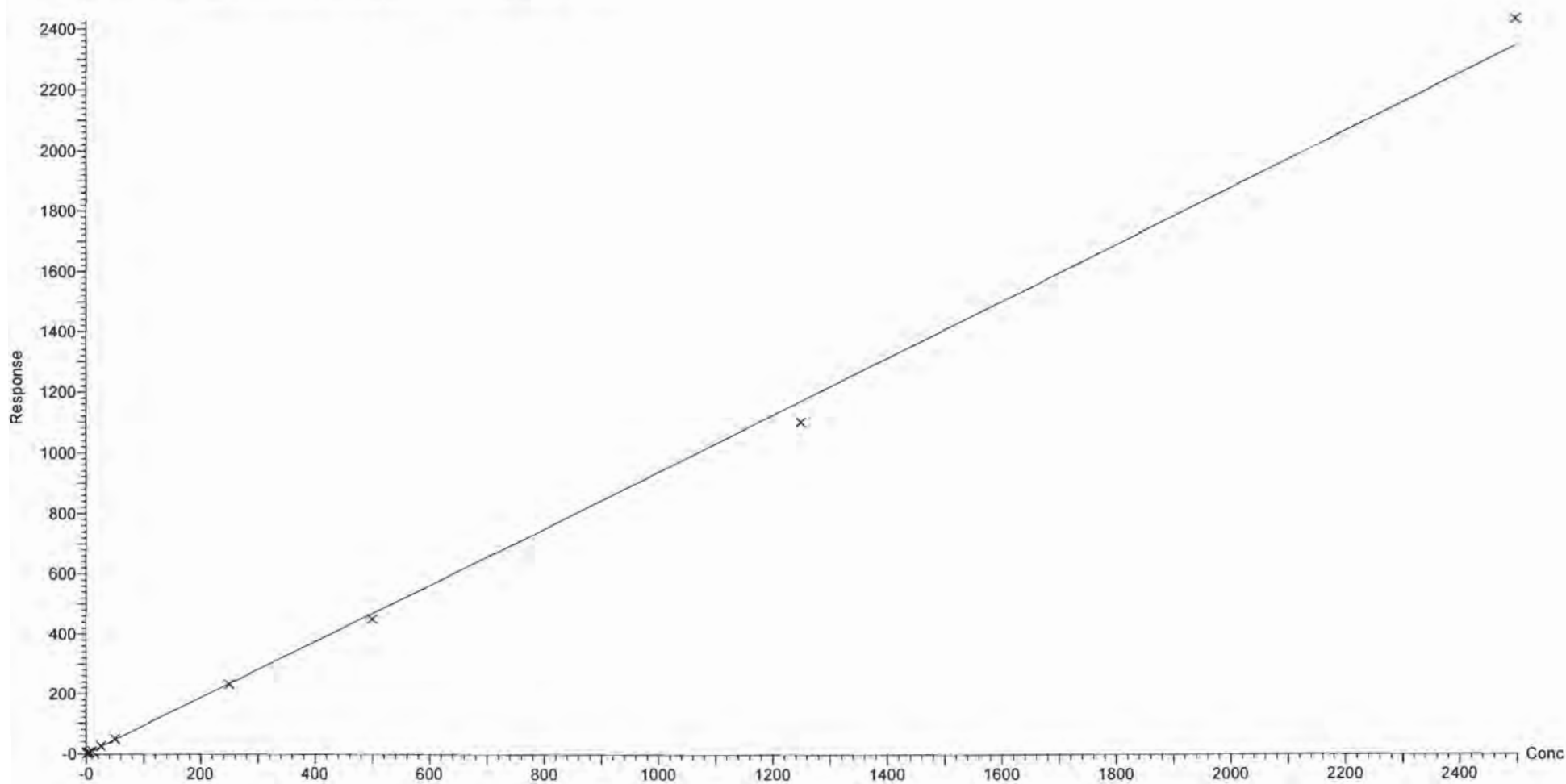
Compound name: N-MeFOSE

Correlation coefficient: $r = 0.999008$, $r^2 = 0.998018$

Calibration curve: $0.936978 * x + 0.0632936$

Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:24:41 Pacific Daylight Time

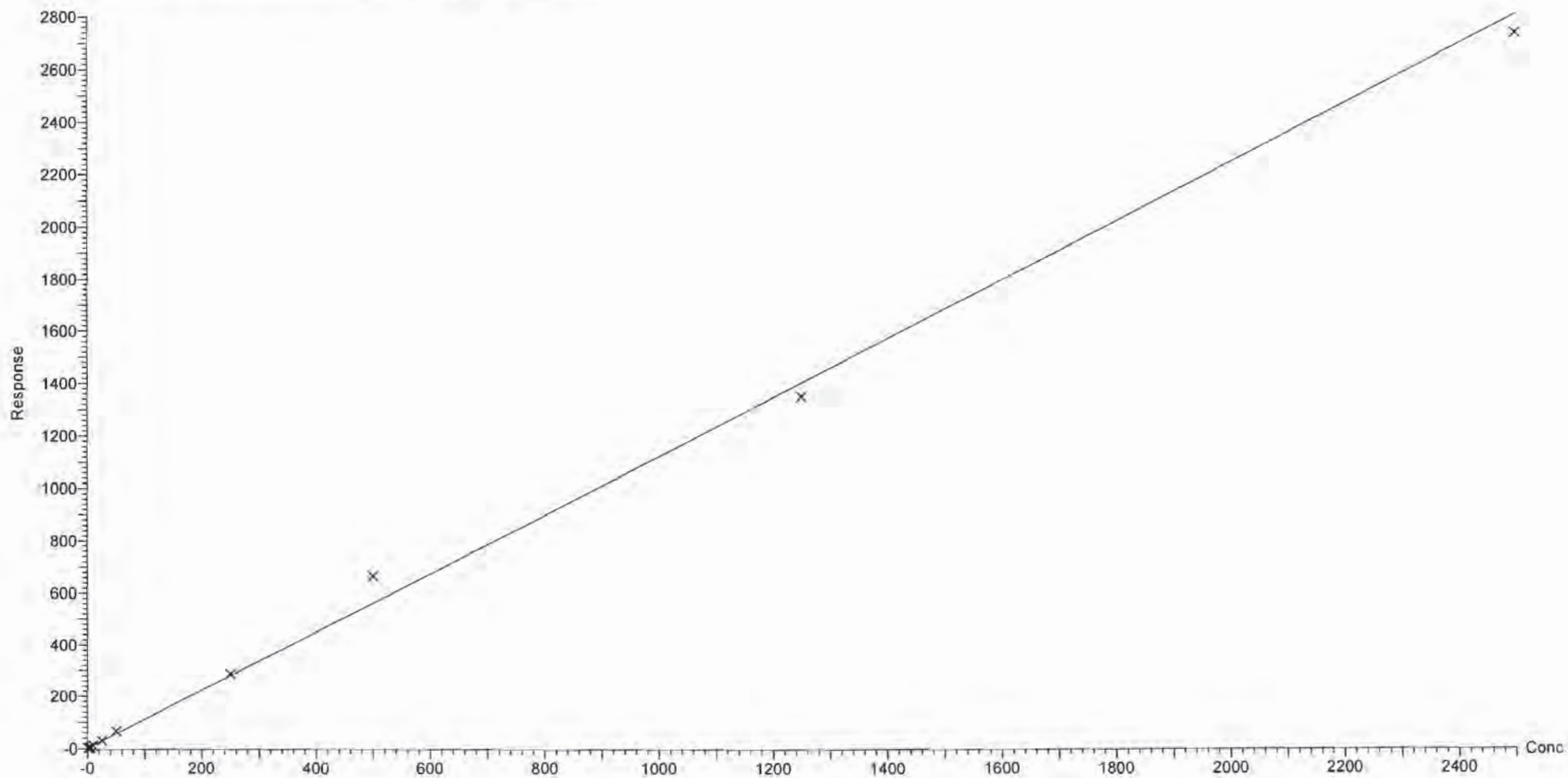
Compound name: N-EtFOSE

Correlation coefficient: $r = 0.997491$, $r^2 = 0.994989$

Calibration curve: $1.12141 * x + 0.244491$

Response type: Internal Std (Ref 56), Area * (IS Conc. / IS Area)

Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

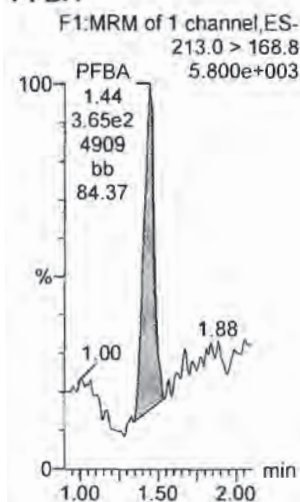
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

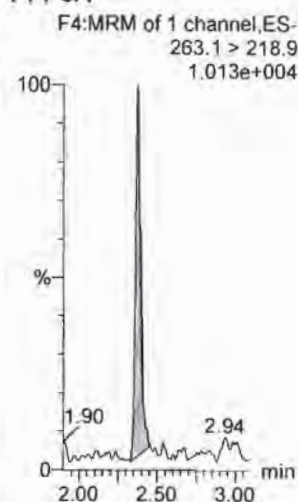
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202

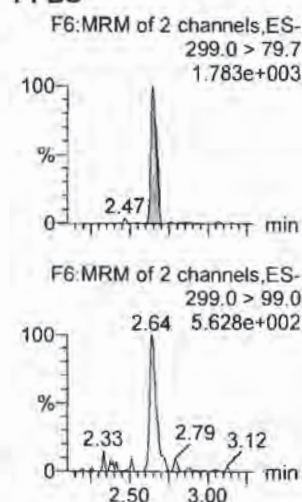
PFBA



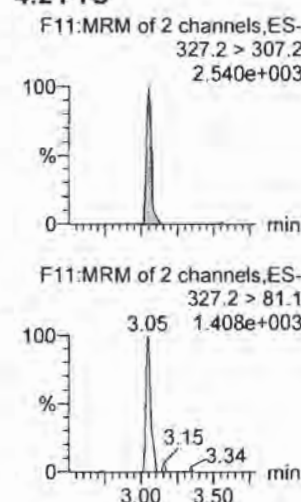
PFPeA



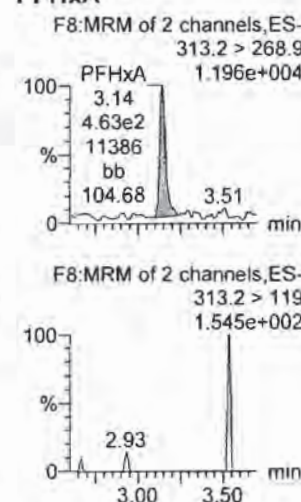
PFBS



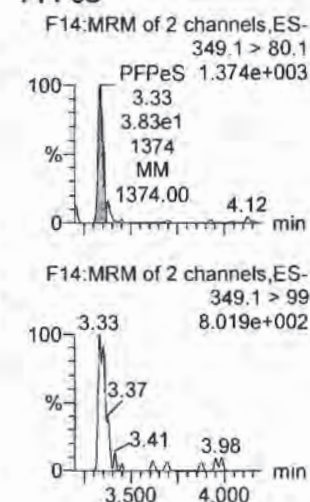
4:2 FTS



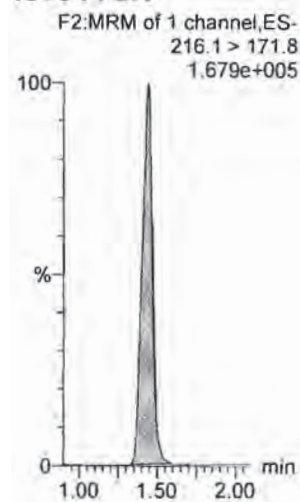
PFHxA



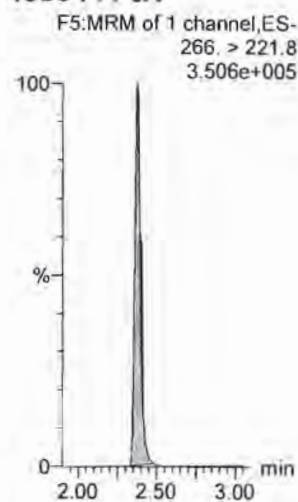
PFPeS



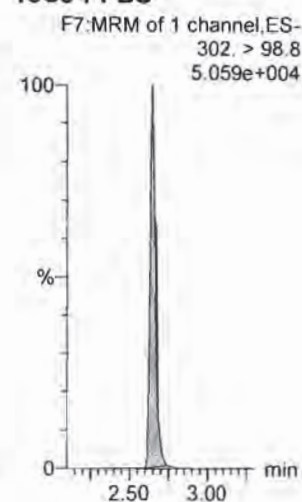
13C3-PFBA



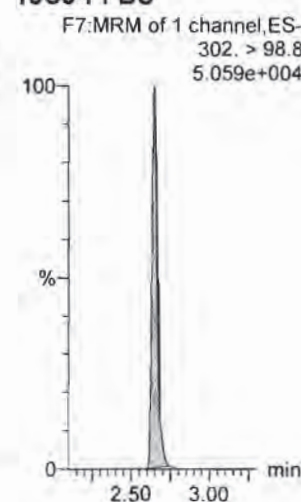
13C3-PFPeA



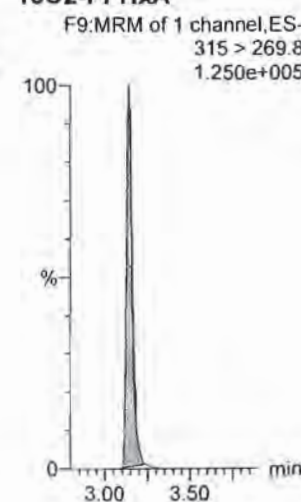
13C3-PFBS



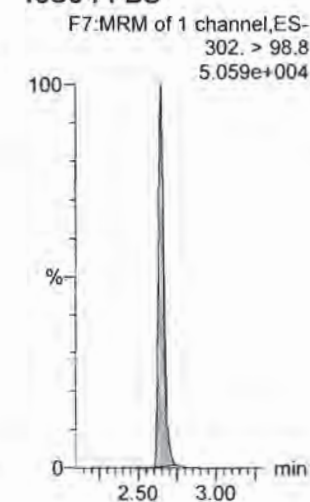
13C3-PFBS



13C2-PFHxA



13C3-PFBS

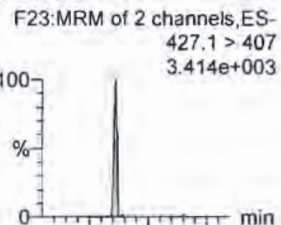


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

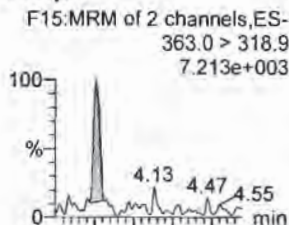
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202

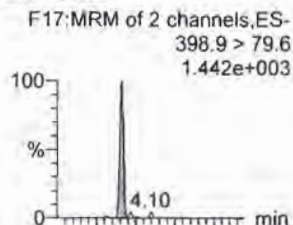
6:2 FTS



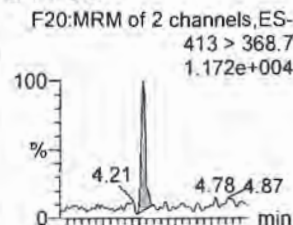
PFHpA



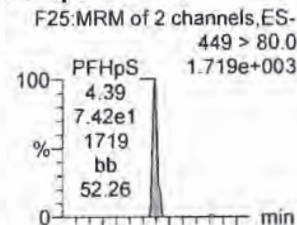
L-PFHxS



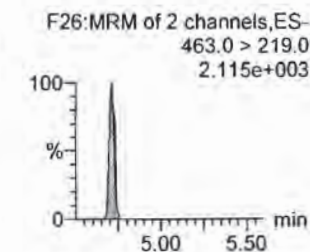
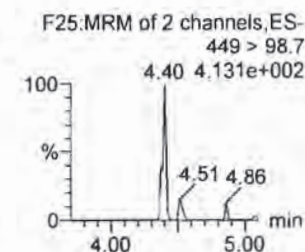
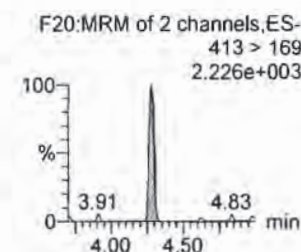
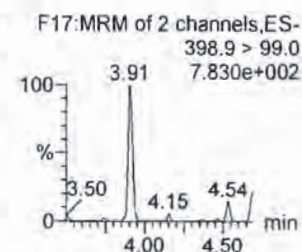
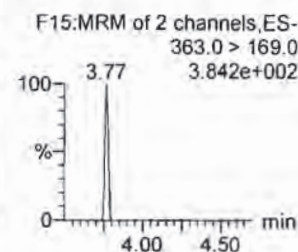
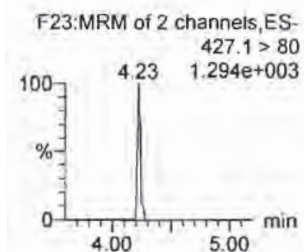
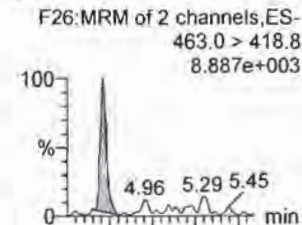
L-PFOA



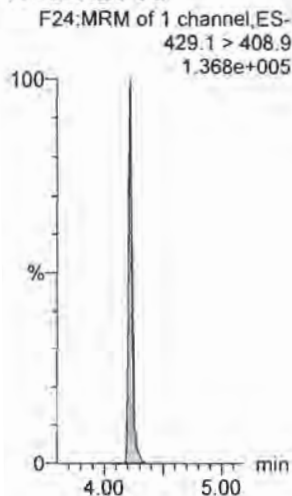
PFHpS



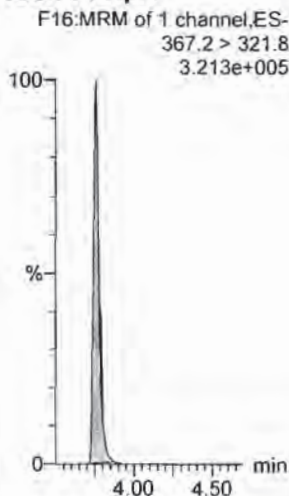
PFNA



13C2-6:2 FTS



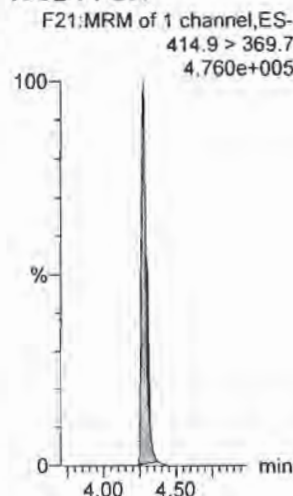
13C4-PFHpA



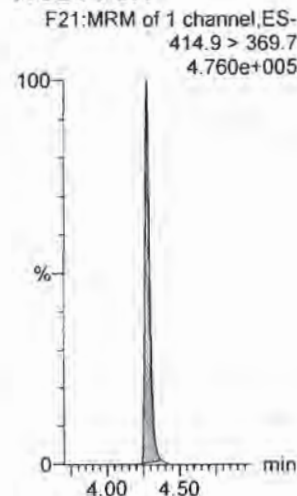
18O2-PFHxS



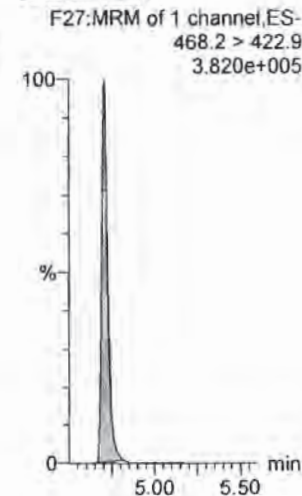
13C2-PFOA



13C2-PFOA



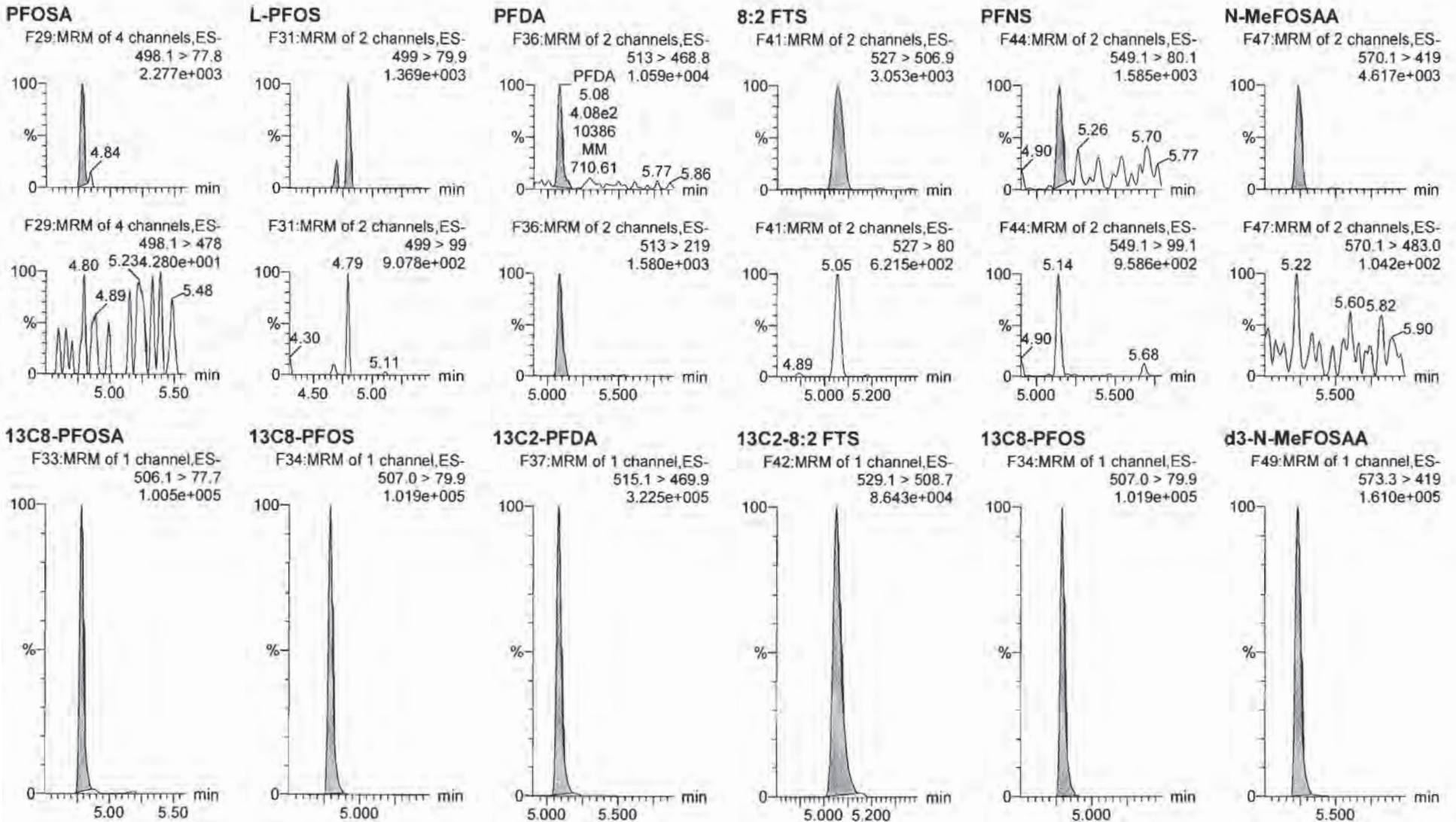
13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

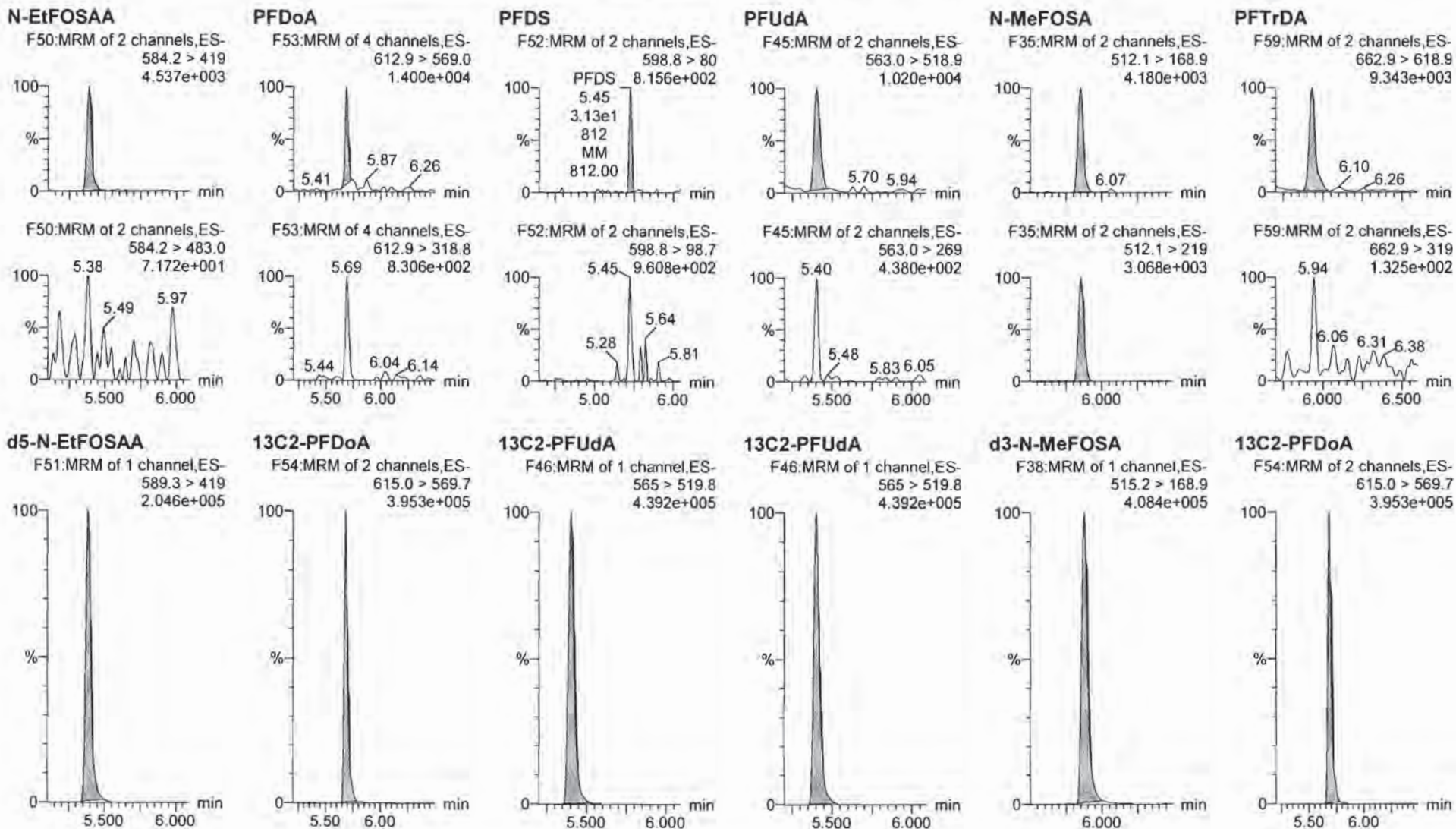
Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202



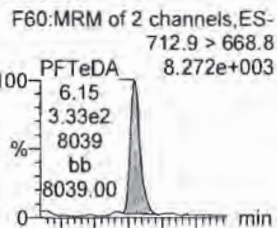
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

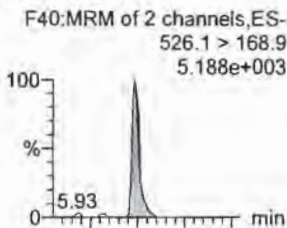
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202

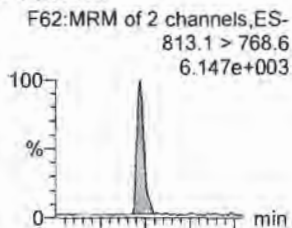
PFTeDA



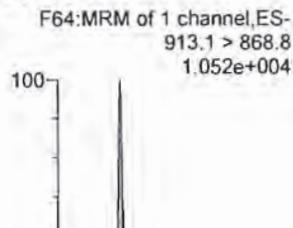
N-EtFOSA



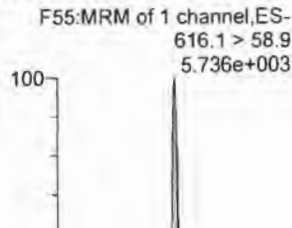
PFHxDA



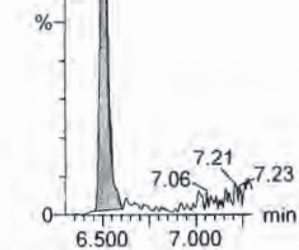
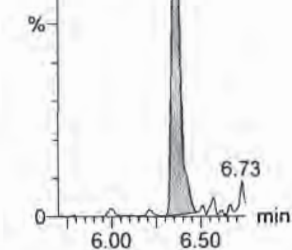
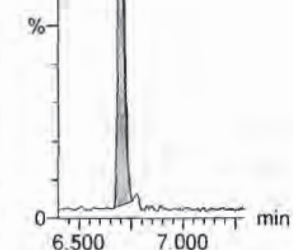
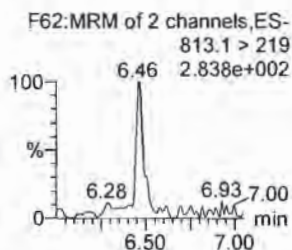
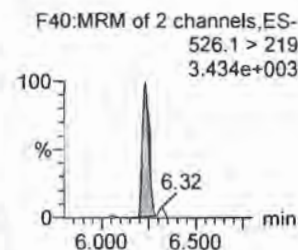
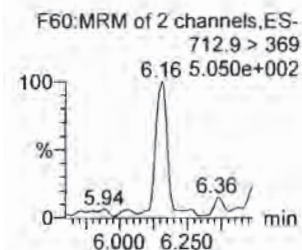
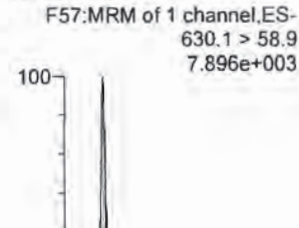
PFODA



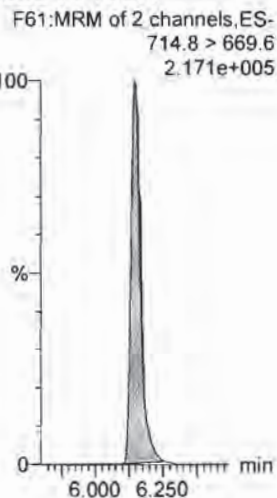
N-MeFOSE



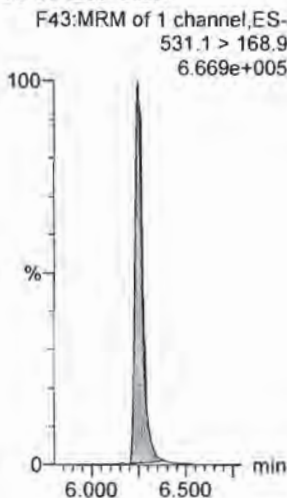
N-EtFOSE



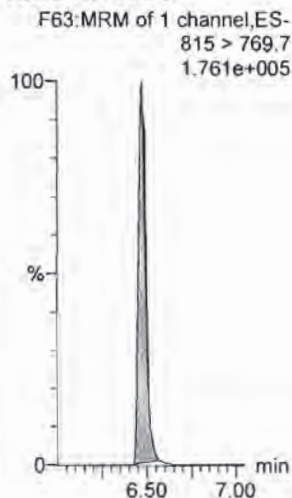
13C2-PFTeDA



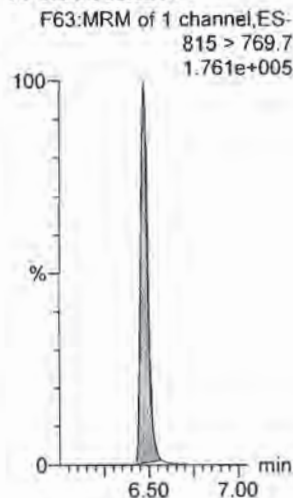
d5-N-ETFOSA



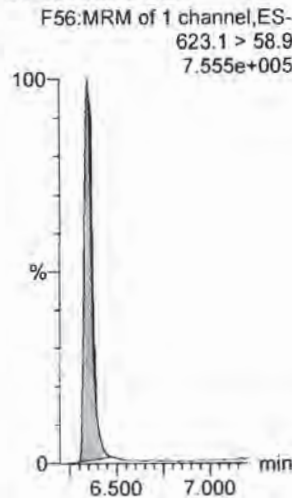
13C2-PFHxDA



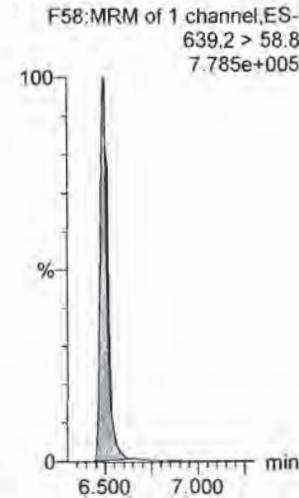
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE

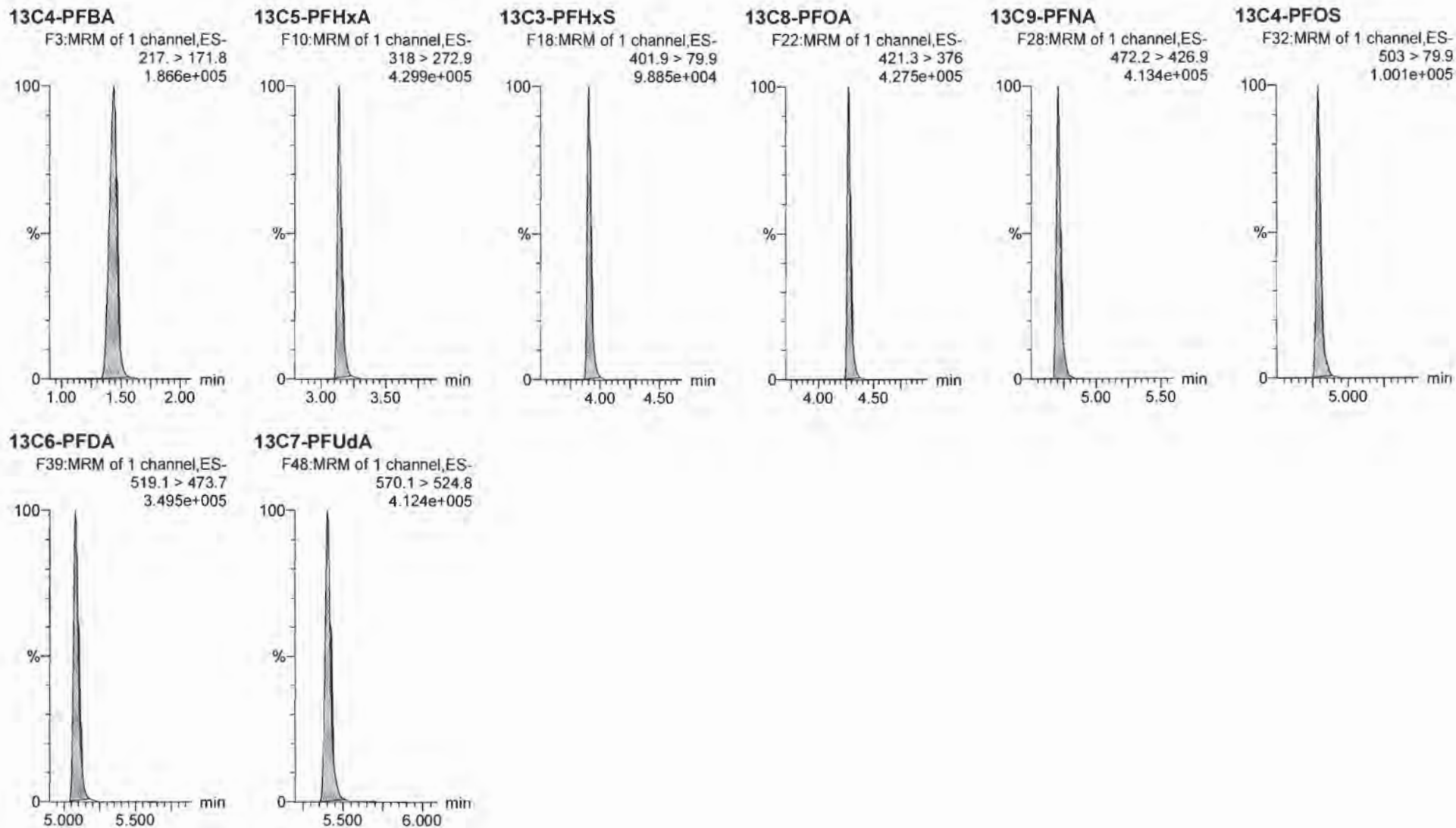


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

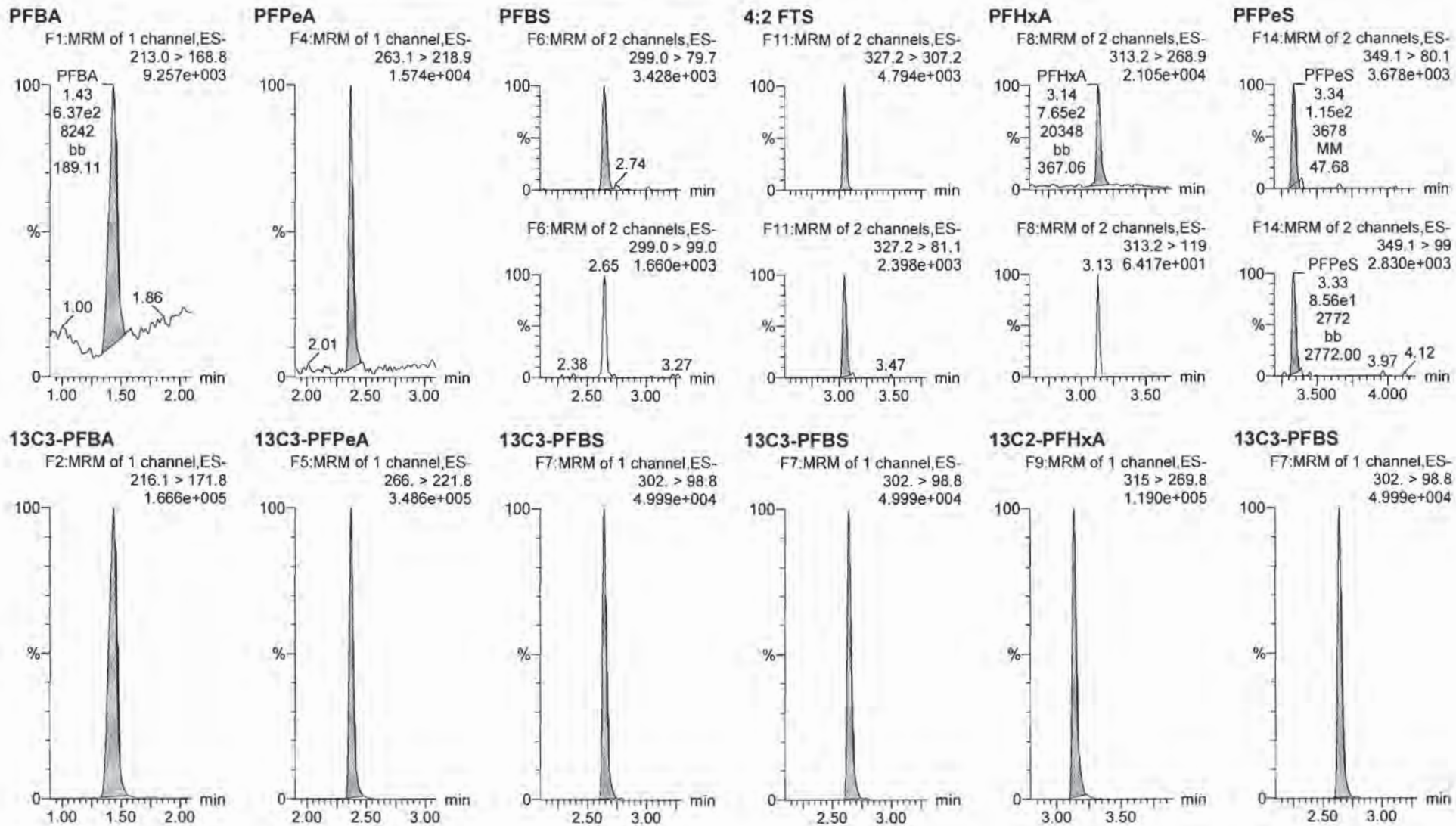
Name: 180412M1_2, Date: 12-Apr-2018, Time: 18:04:04, ID: ST180412M1-1 PFC CS-2 18D0202, Description: PFC CS-2 18D0202



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_3, Date: 12-Apr-2018, Time: 18:15:35, ID: ST180412M1-2 PFC CS-1 18D0203, Description: PFC CS-1 18D0203



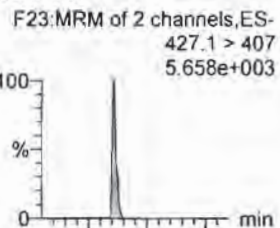
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

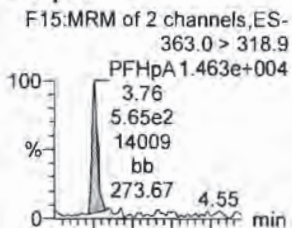
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_3, Date: 12-Apr-2018, Time: 18:15:35, ID: ST180412M1-2 PFC CS-1 18D0203, Description: PFC CS-1 18D0203

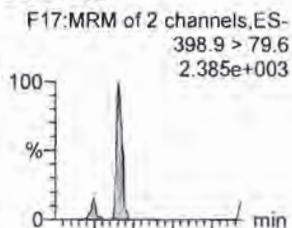
6:2 FTS



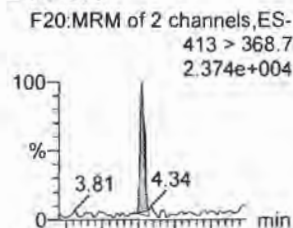
PFHpA



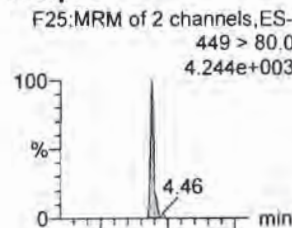
L-PFHxS



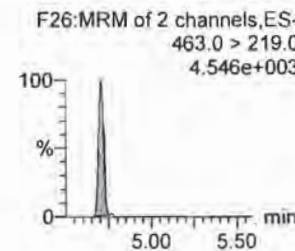
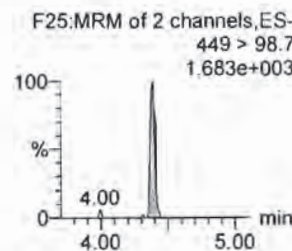
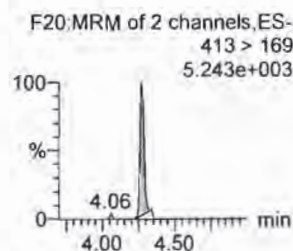
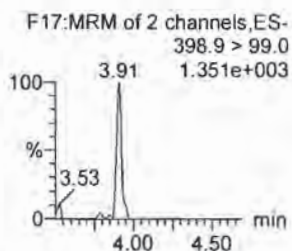
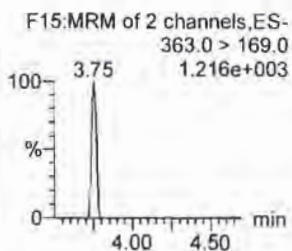
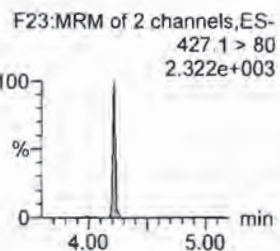
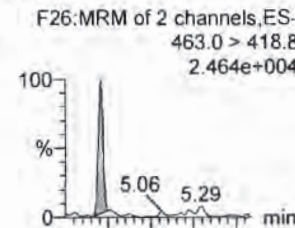
L-PFOA



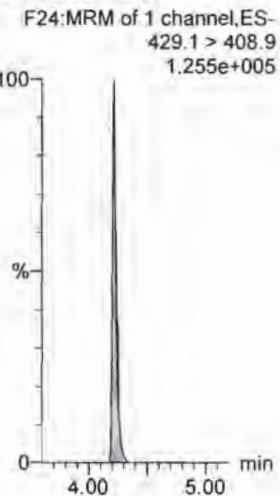
PFHpS



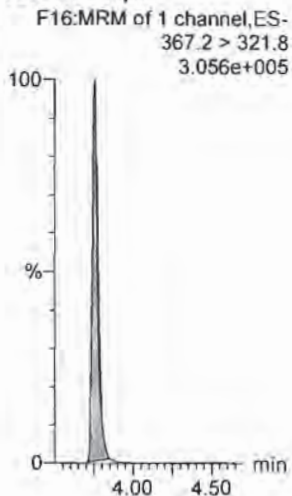
PFNA



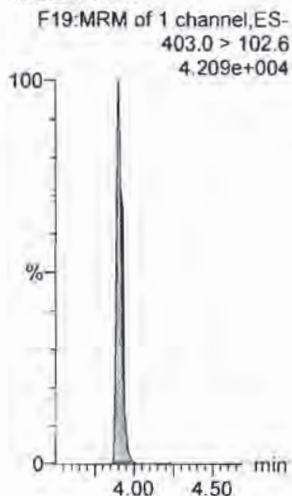
13C2-6:2 FTS



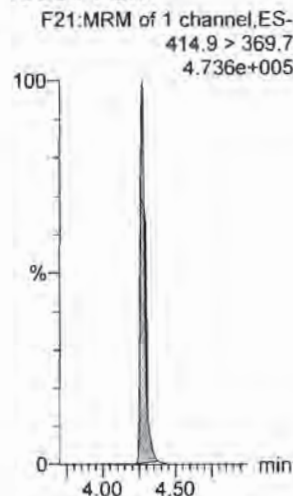
13C4-PFHpA



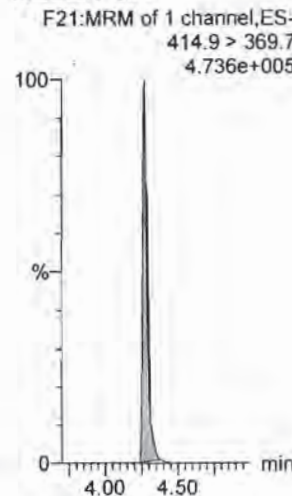
18O2-PFHxS



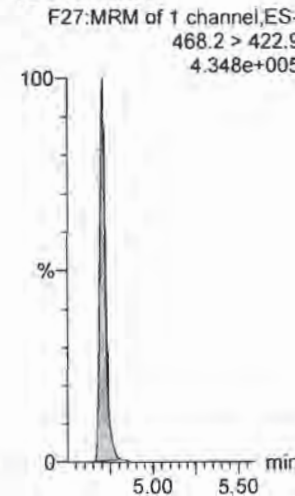
13C2-PFOA



13C2-PFOA



13C5-PFNA



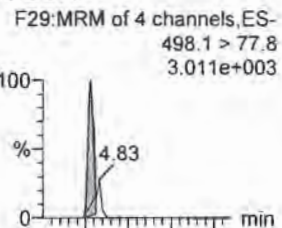
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

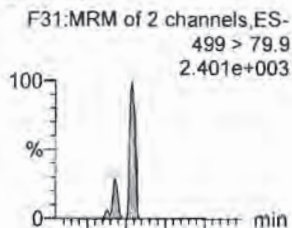
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_3, Date: 12-Apr-2018, Time: 18:15:35, ID: ST180412M1-2 PFC CS-1 18D0203, Description: PFC CS-1 18D0203

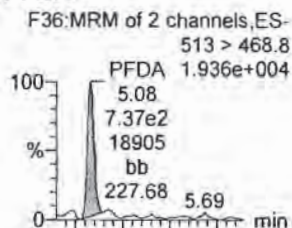
PFOSA



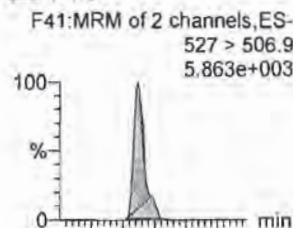
L-PFOS



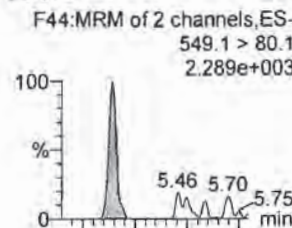
PFDA



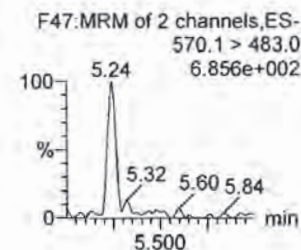
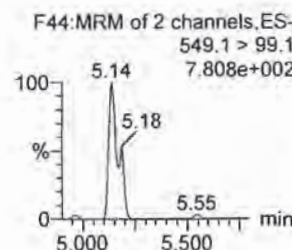
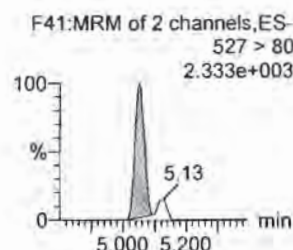
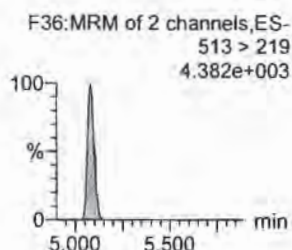
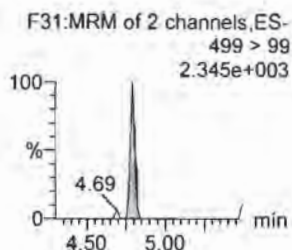
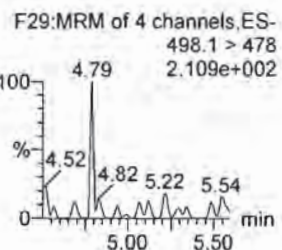
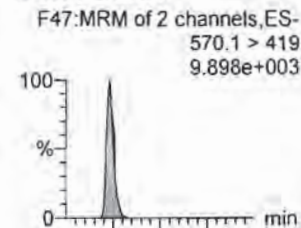
8:2 FTS



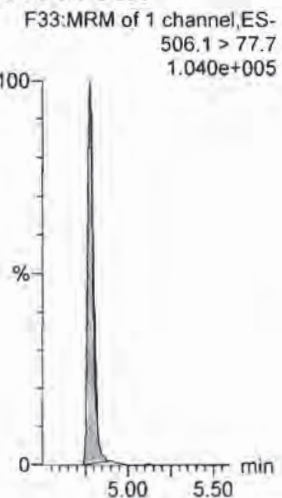
PFNS



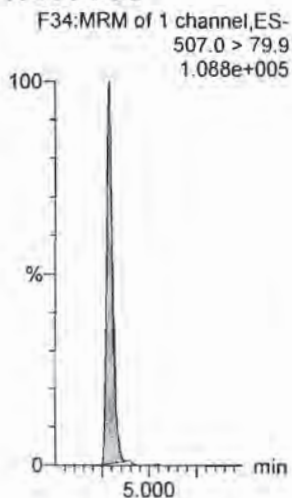
N-MeFOSAA



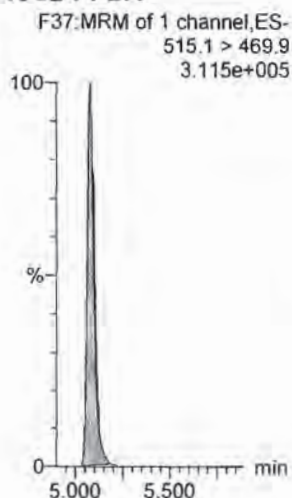
13C8-PFOSA



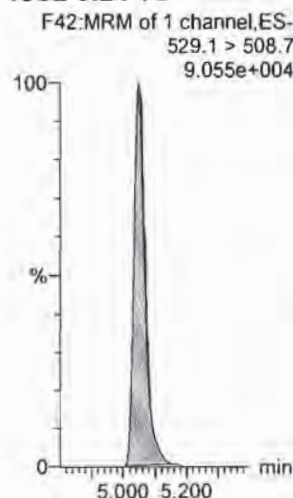
13C8-PFOS



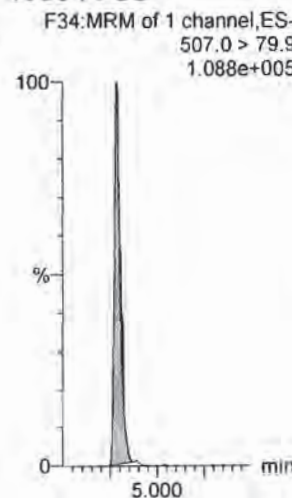
13C2-PFDA



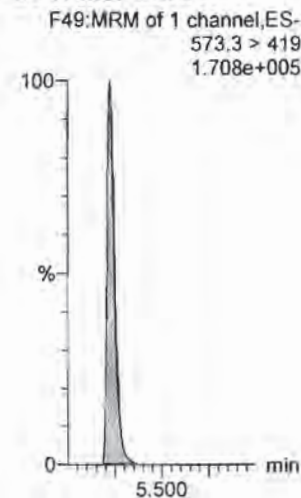
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



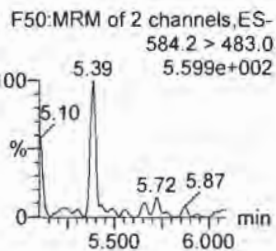
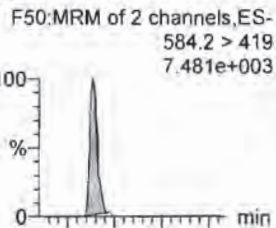
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

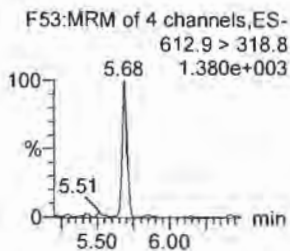
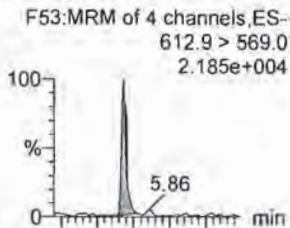
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_3, Date: 12-Apr-2018, Time: 18:15:35, ID: ST180412M1-2 PFC CS-1 18D0203, Description: PFC CS-1 18D0203

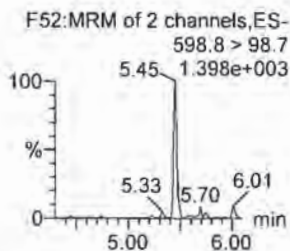
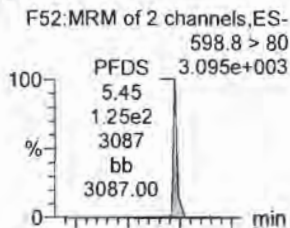
N-EtFOSAA



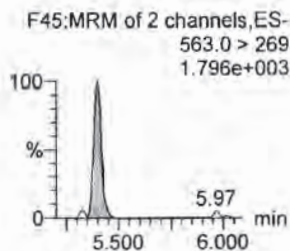
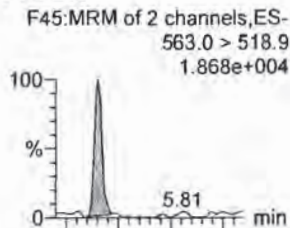
PFDoA



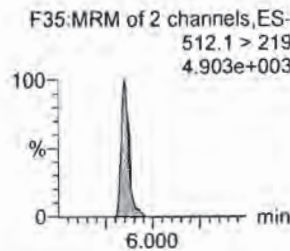
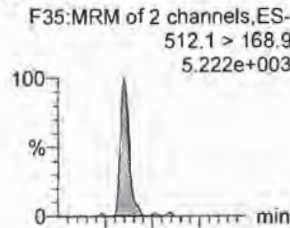
PFDS



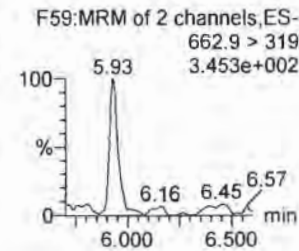
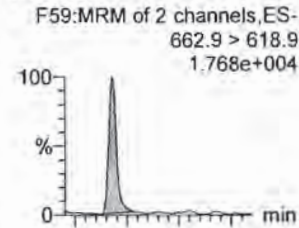
PFUdA



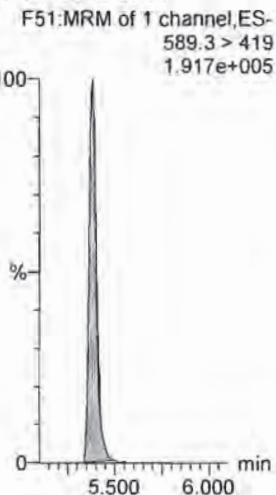
N-MeFOSA



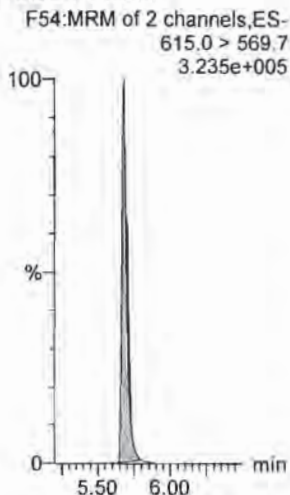
PFTrDA



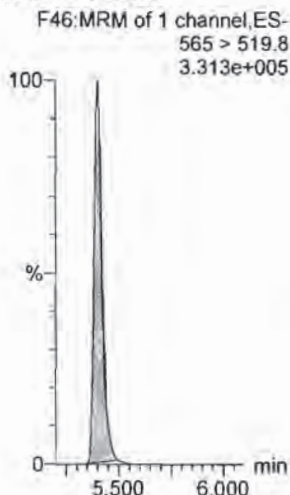
d5-N-EtFOSAA



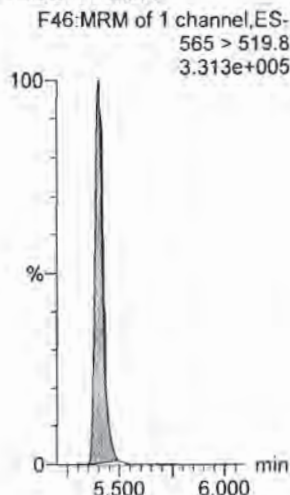
13C2-PFDoA



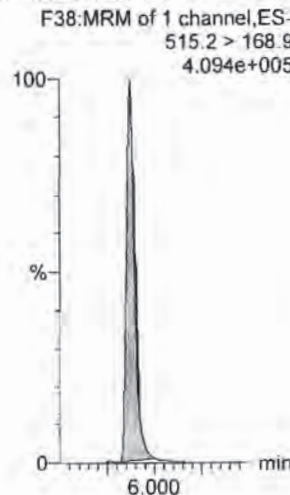
13C2-PFUdA



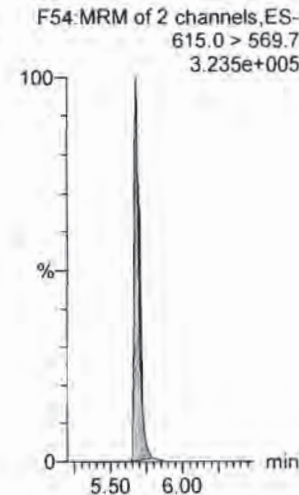
13C2-PFUdA



d3-N-MeFOSA



13C2-PFDoA

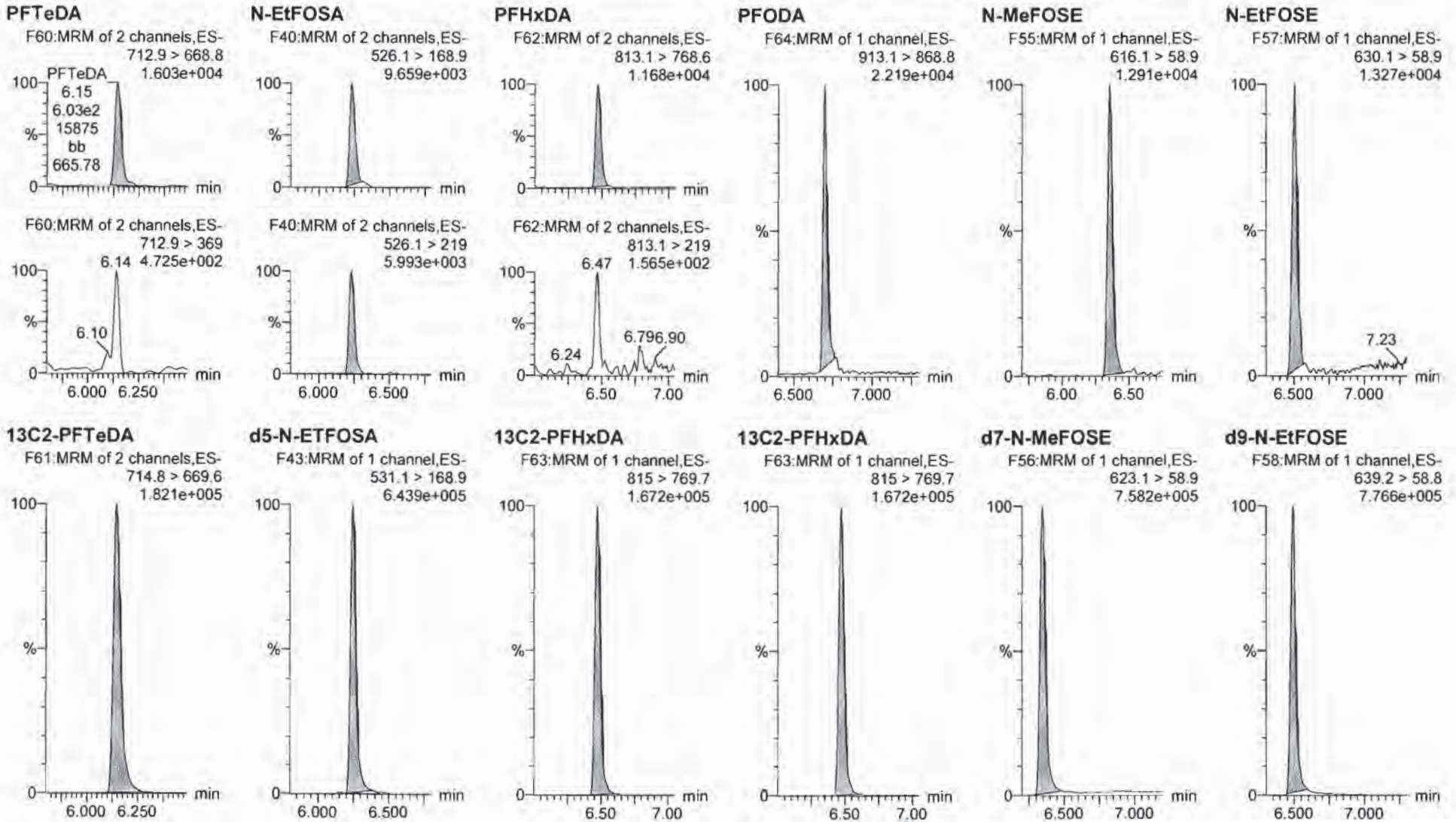


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_3, Date: 12-Apr-2018, Time: 18:15:35, ID: ST180412M1-2 PFC CS-1 18D0203, Description: PFC CS-1 18D0203

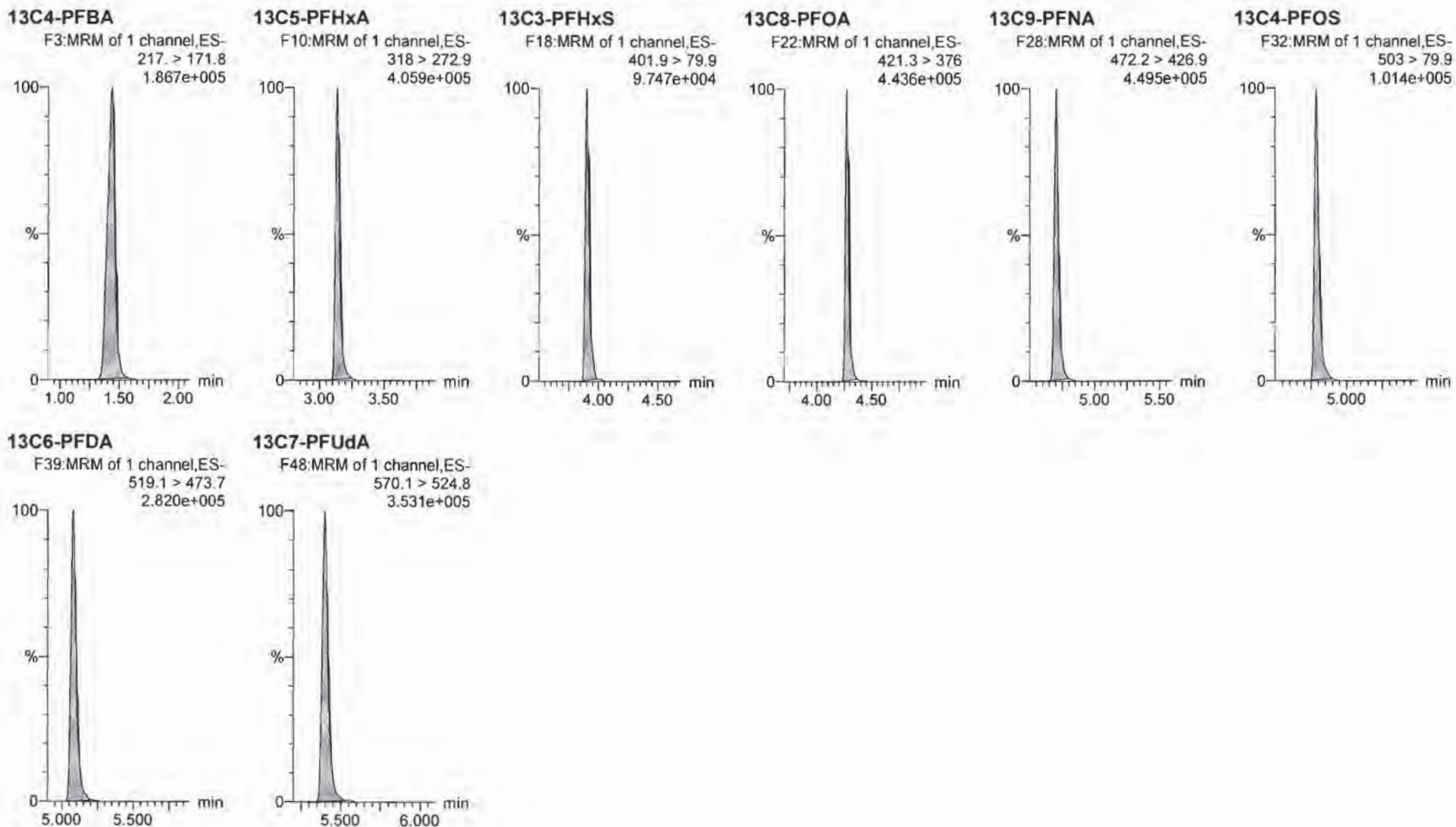


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_3, Date: 12-Apr-2018, Time: 18:15:35, ID: ST180412M1-2 PFC CS-1 18D0203, Description: PFC CS-1 18D0203



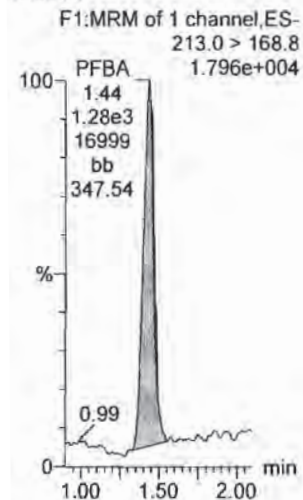
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

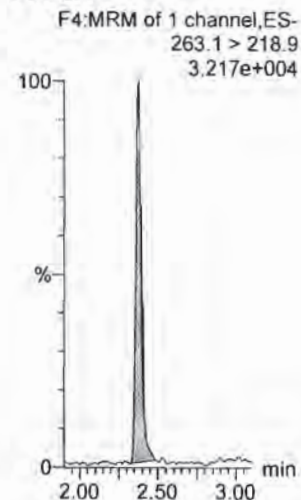
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204

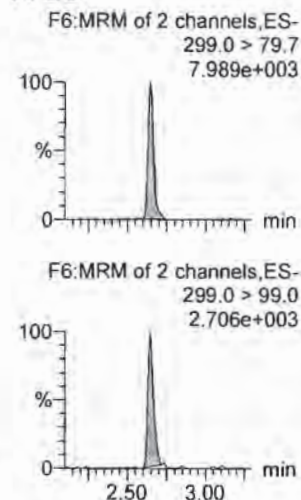
PFBA



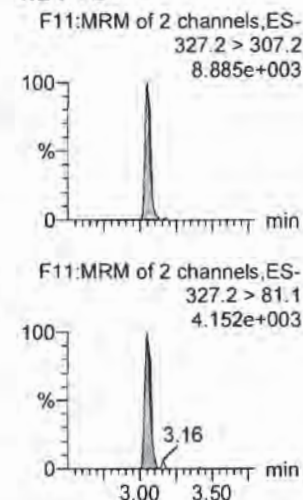
PFPeA



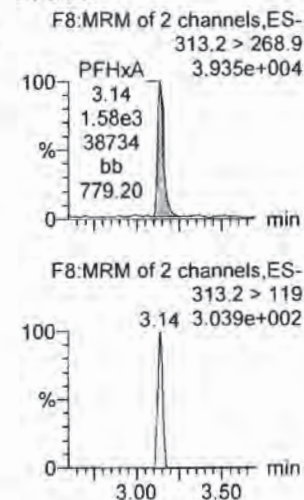
PFBS



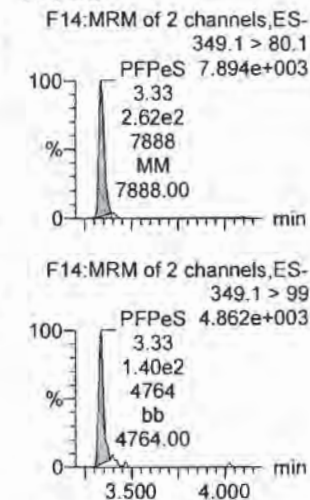
4:2 FTS



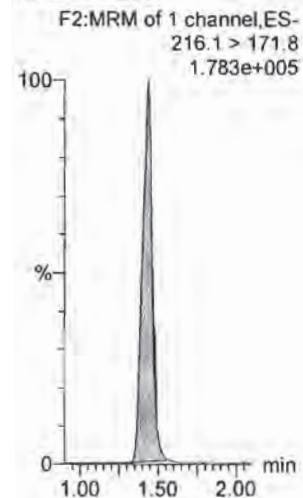
PFHxA



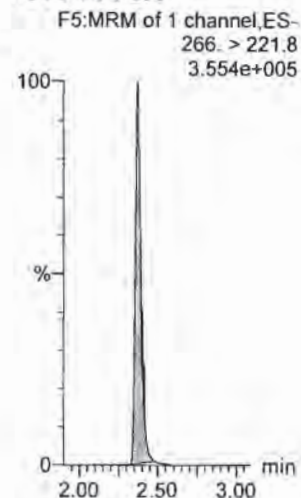
PFPeS



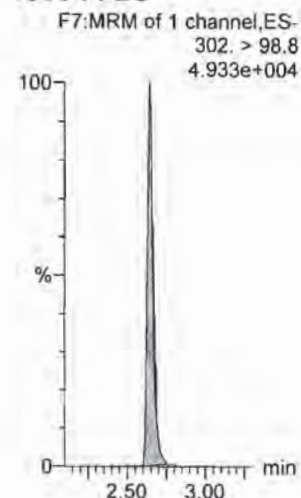
13C3-PFBA



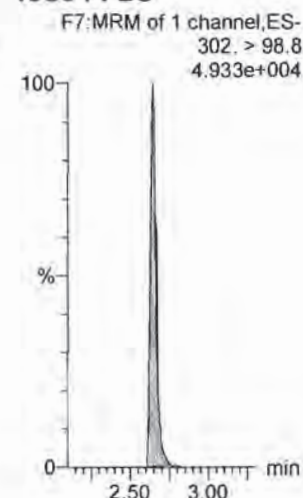
13C3-PFPeA



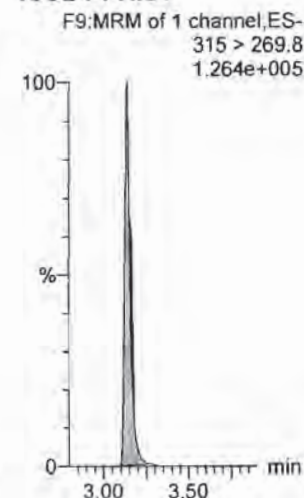
13C3-PFBS



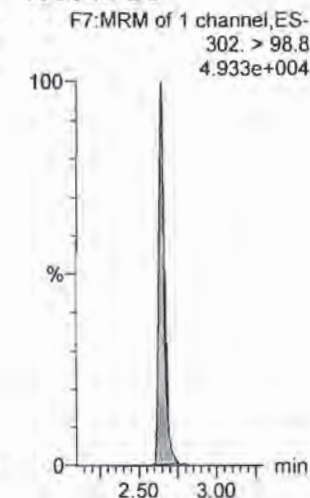
13C3-PFBS



13C2-PFHxA



13C3-PFBS



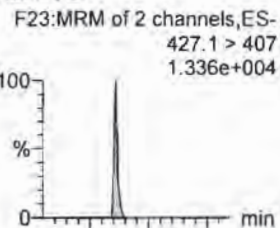
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

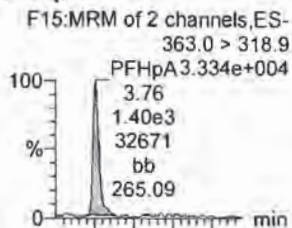
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204

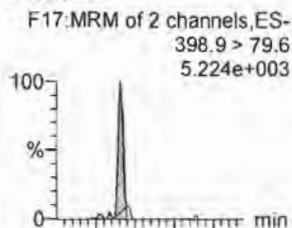
6:2 FTS



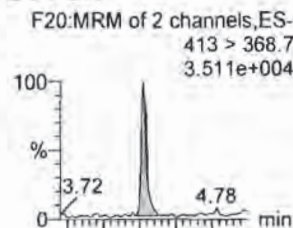
PFHpA



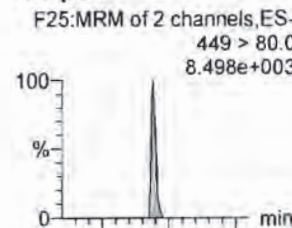
L-PFHxS



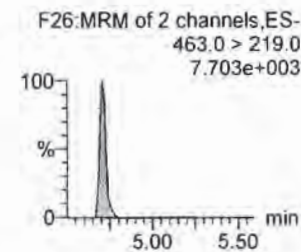
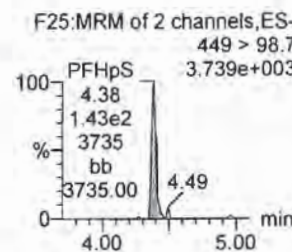
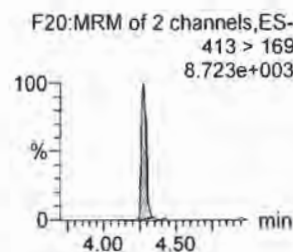
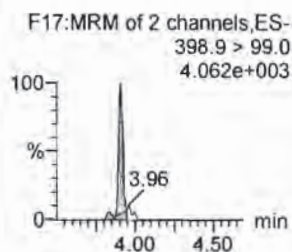
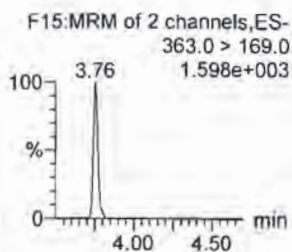
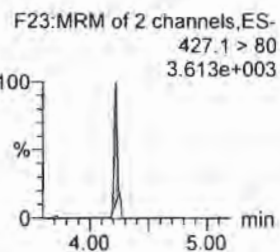
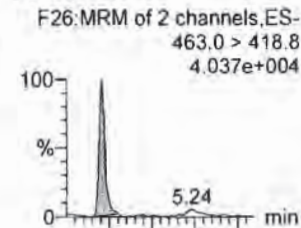
L-PFOA



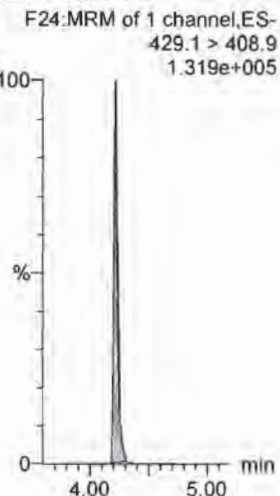
PFHpS



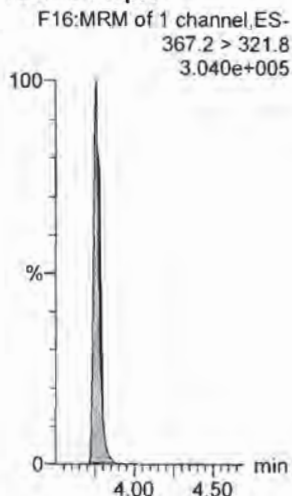
PFNA



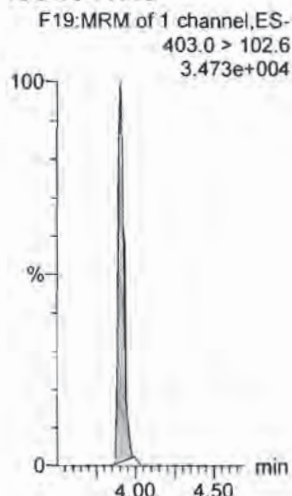
13C2-6:2 FTS



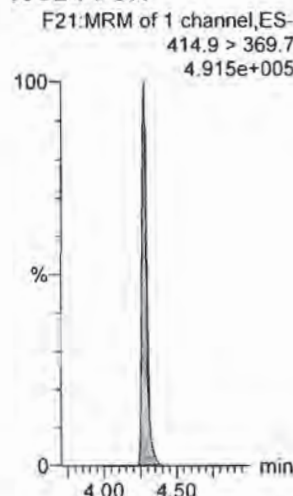
13C4-PFHpA



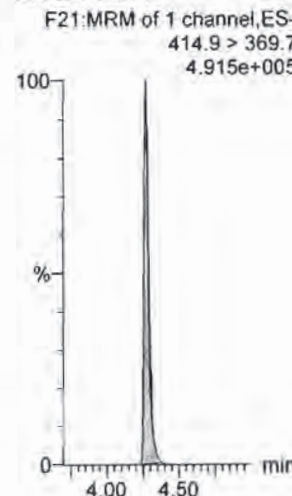
18O2-PFHxS



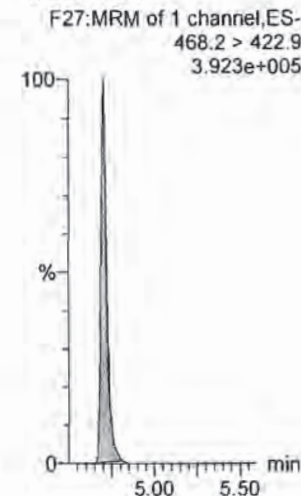
13C2-PFOA



13C2-PFOA



13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

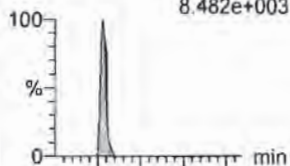
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

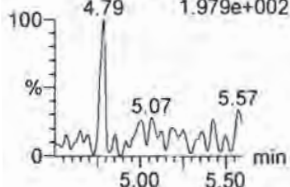
Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204

PFOSA

F29:MRM of 4 channels,ES-
498.1 > 77.8
8.482e+003

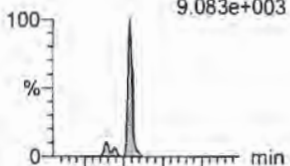


F29:MRM of 4 channels,ES-
498.1 > 478
1.979e+002

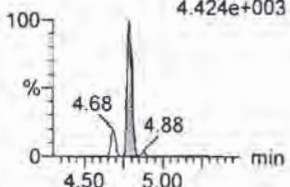


L-PFOS

F31:MRM of 2 channels,ES-
499 > 79.9
9.083e+003

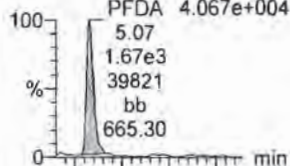


F31:MRM of 2 channels,ES-
499 > 99
4.424e+003

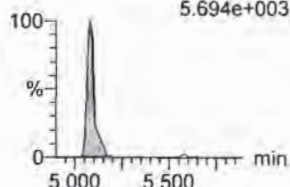


PFDA

F36:MRM of 2 channels,ES-
513 > 468.8
4.067e+004



F36:MRM of 2 channels,ES-
513 > 219
5.694e+003

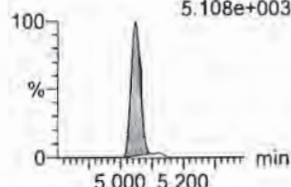


8:2 FTS

F41:MRM of 2 channels,ES-
527 > 506.9
1.225e+004

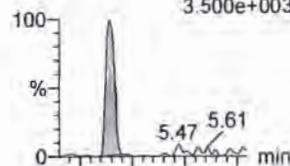


F41:MRM of 2 channels,ES-
527 > 80
5.108e+003

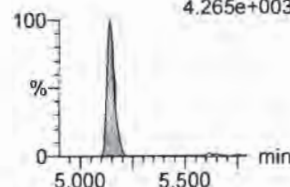


PFNS

F44:MRM of 2 channels,ES-
549.1 > 80.1
3.500e+003

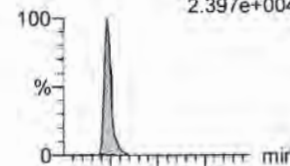


F44:MRM of 2 channels,ES-
549.1 > 99.1
4.265e+003

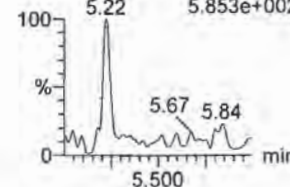


N-MeFOSAA

F47:MRM of 2 channels,ES-
570.1 > 419
2.397e+004

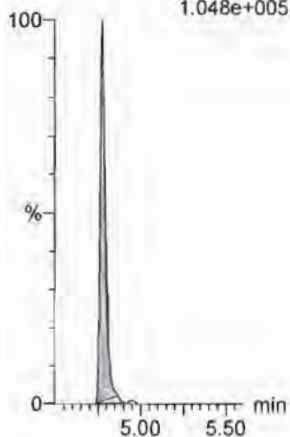


F47:MRM of 2 channels,ES-
570.1 > 483.0
5.853e+002



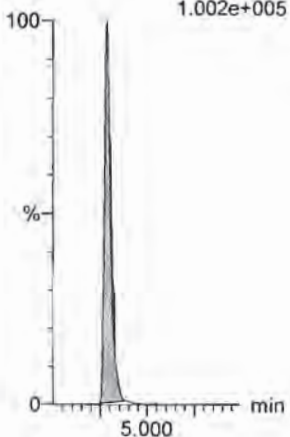
13C8-PFOSA

F33:MRM of 1 channel,ES-
506.1 > 77.7
1.048e+005



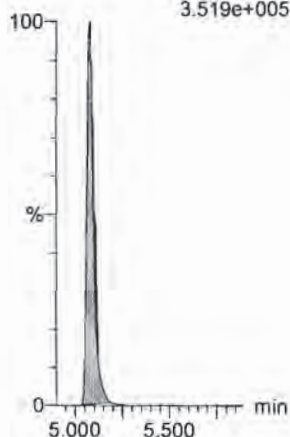
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
1.002e+005



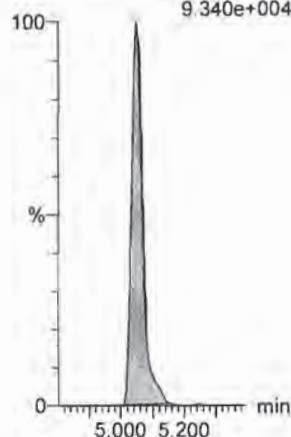
13C2-PFDA

F37:MRM of 1 channel,ES-
515.1 > 469.9
3.519e+005



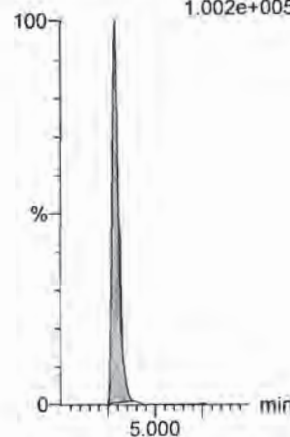
13C2-8:2 FTS

F42:MRM of 1 channel,ES-
529.1 > 508.7
9.340e+004



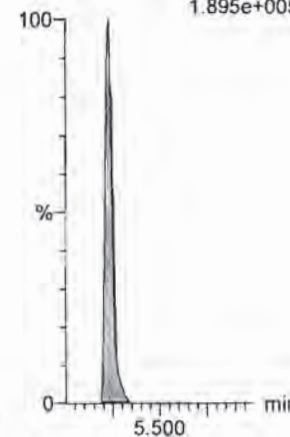
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
1.002e+005



d3-N-MeFOSAA

F49:MRM of 1 channel,ES-
573.3 > 419
1.895e+005

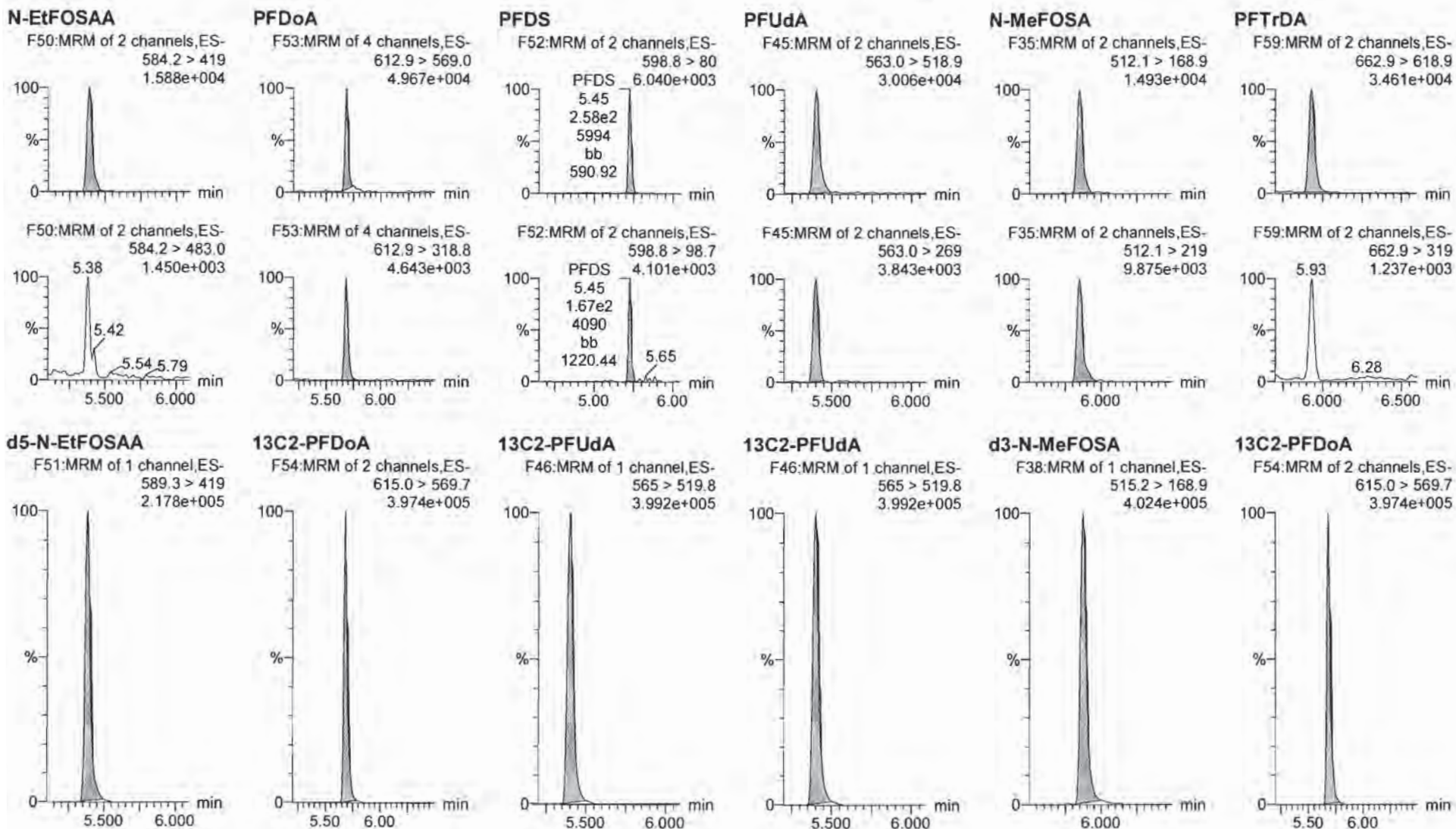


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204

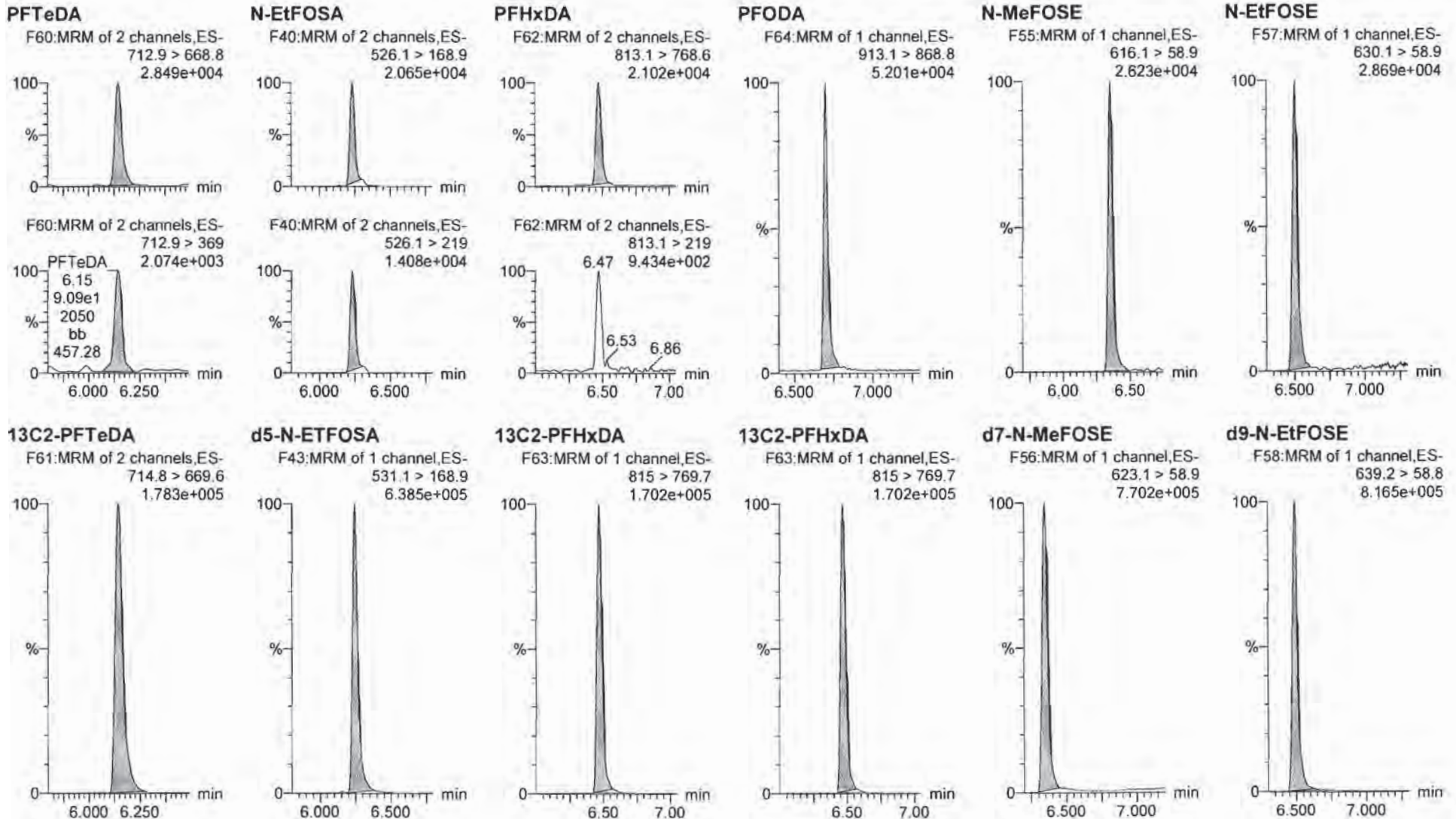


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

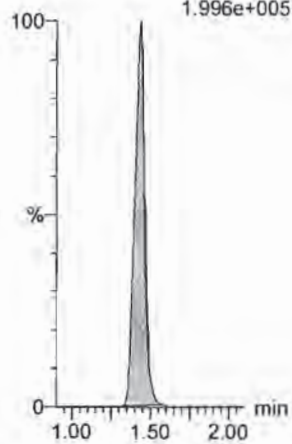
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_4, Date: 12-Apr-2018, Time: 18:27:04, ID: ST180412M1-3 PFC CS0 18D0204, Description: PFC CS0 18D0204

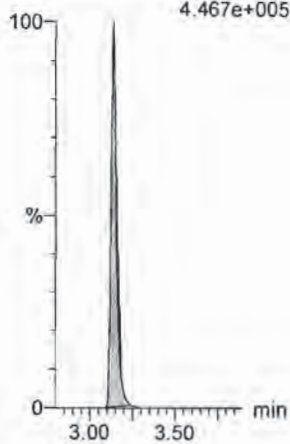
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
1.996e+005



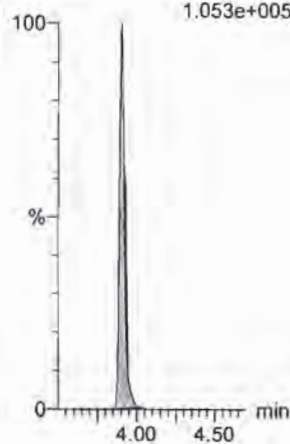
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.467e+005



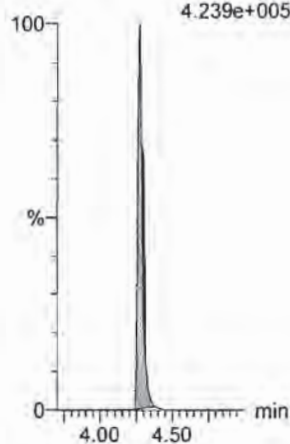
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
1.053e+005



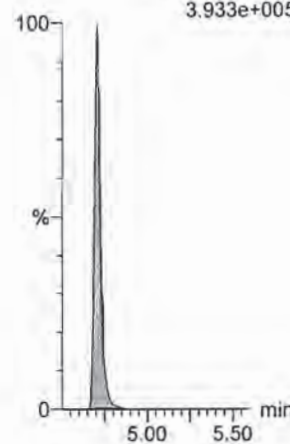
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
4.239e+005



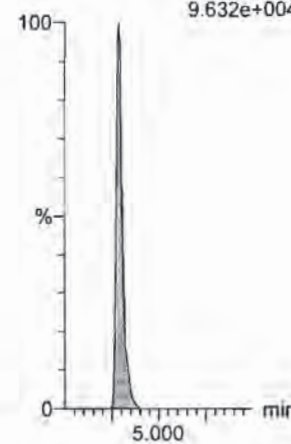
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.933e+005



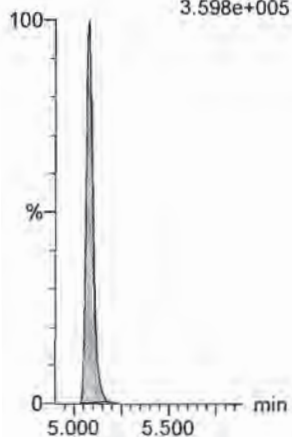
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
9.632e+004



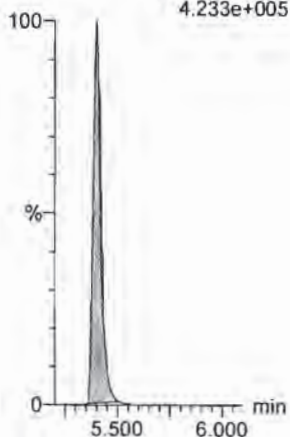
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.598e+005



13C7-PFUdA

F48:MRM of 1 channel,ES-
570.1 > 524.8
4.233e+005



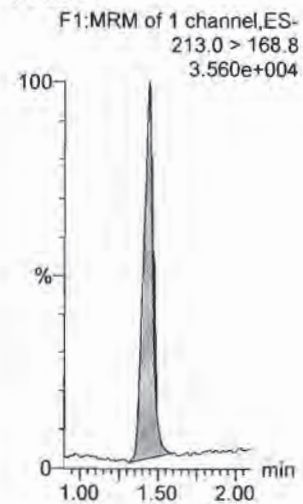
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

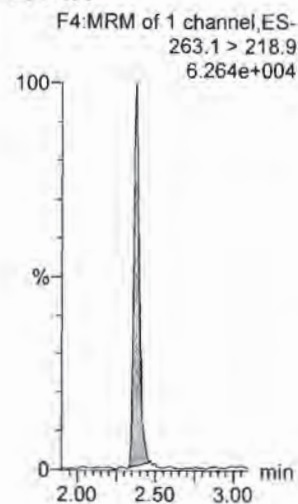
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205

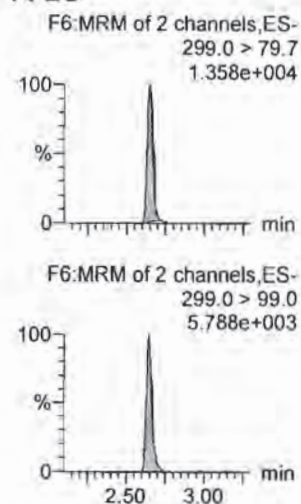
PFBA



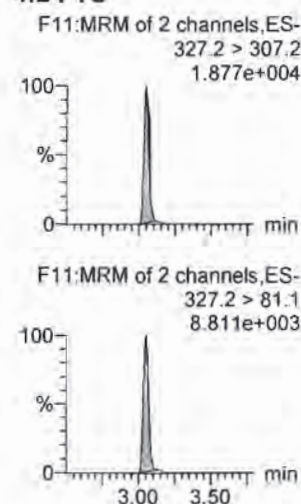
PFPeA



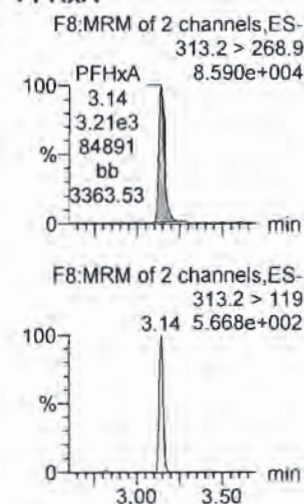
PFBS



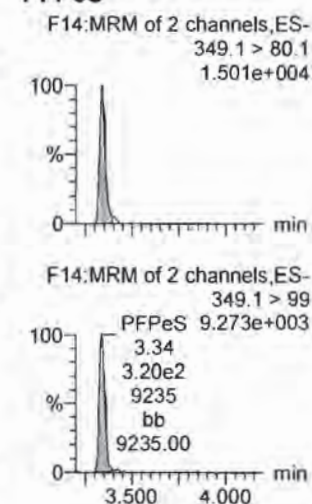
4:2 FTS



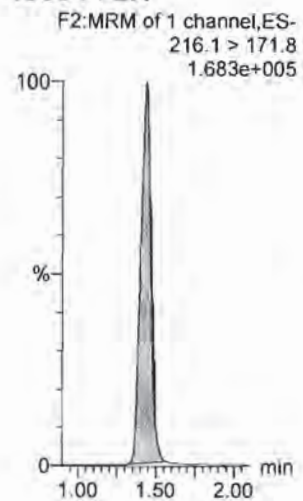
PFHxA



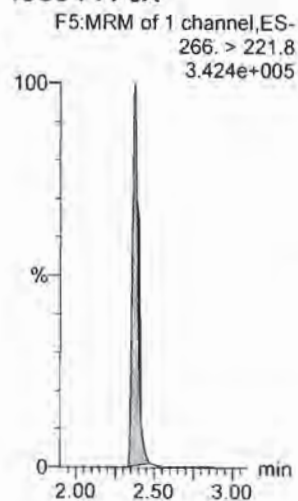
PFPeS



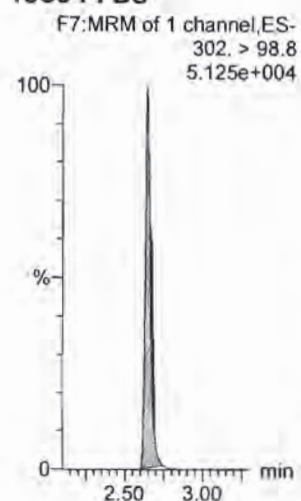
13C3-PFBA



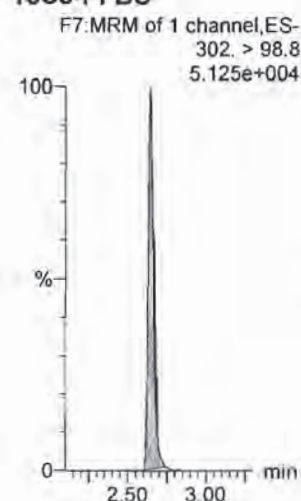
13C3-PFPeA



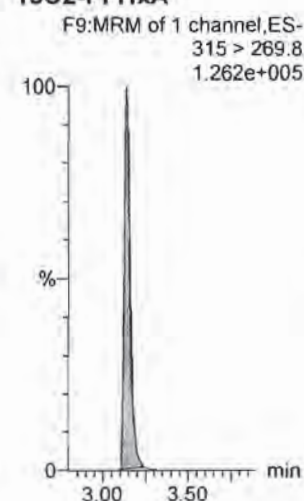
13C3-PFBS



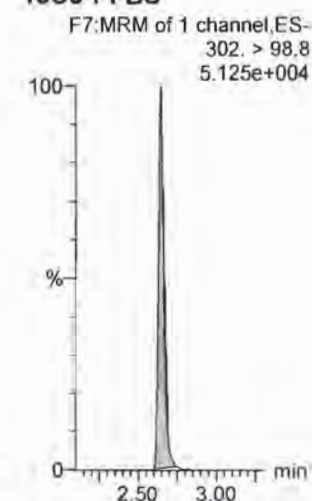
13C3-PFBS



13C2-PFHxA



13C3-PFBS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

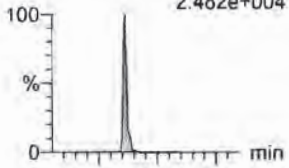
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205

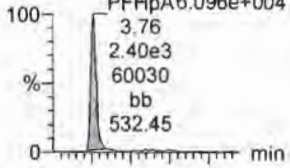
6:2 FTS

F23:MRM of 2 channels,ES-
427.1 > 407
2.482e+004



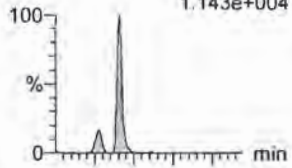
PFHpA

F15:MRM of 2 channels,ES-
363.0 > 318.9
PFHpA6.096e+004



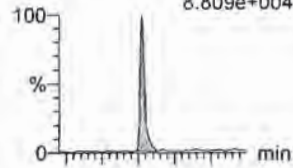
L-PFHxS

F17:MRM of 2 channels,ES-
398.9 > 79.6
1.143e+004



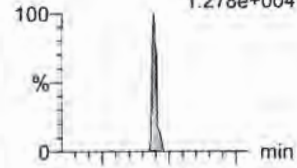
L-PFOA

F20:MRM of 2 channels,ES-
413 > 368.7
8.809e+004



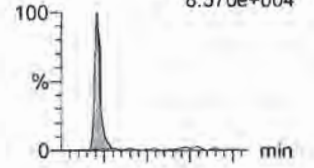
PFHpS

F25:MRM of 2 channels,ES-
449 > 80.0
1.278e+004

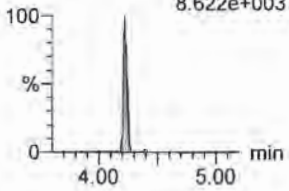


PFNA

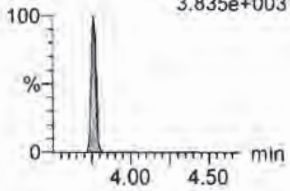
F26:MRM of 2 channels,ES-
463.0 > 418.8
8.570e+004



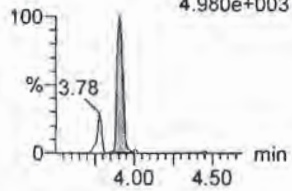
F23:MRM of 2 channels,ES-
427.1 > 80
8.622e+003



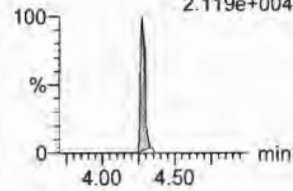
F15:MRM of 2 channels,ES-
363.0 > 169.0
3.835e+003



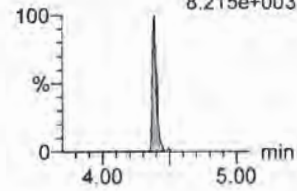
F17:MRM of 2 channels,ES-
398.9 > 99.0
4.980e+003



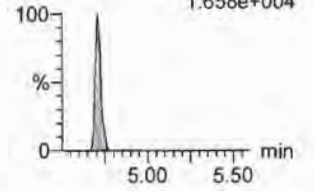
F20:MRM of 2 channels,ES-
413 > 169
2.119e+004



F25:MRM of 2 channels,ES-
449 > 98.7
8.215e+003

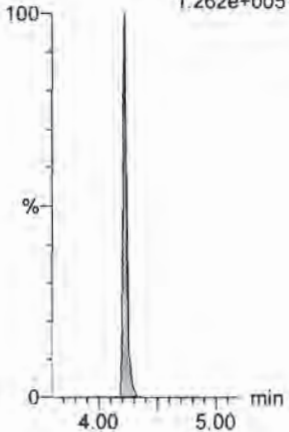


F26:MRM of 2 channels,ES-
463.0 > 219.0
1.658e+004



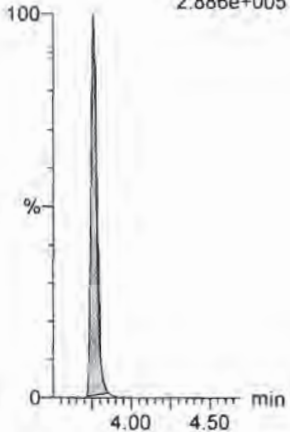
13C2-6:2 FTS

F24:MRM of 1 channel,ES-
429.1 > 408.9
1.262e+005



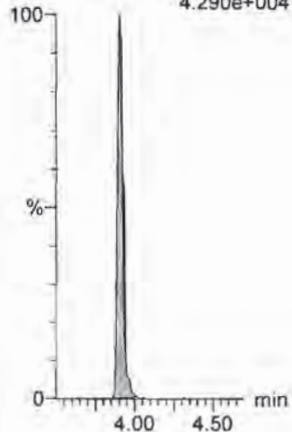
13C4-PFHpA

F16:MRM of 1 channel,ES-
367.2 > 321.8
2.886e+005



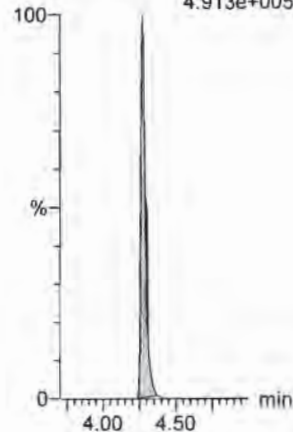
18O2-PFHxS

F19:MRM of 1 channel,ES-
403.0 > 102.6
4.290e+004



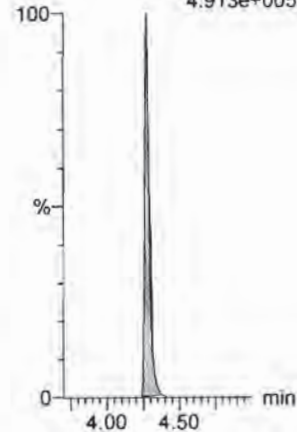
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
4.913e+005



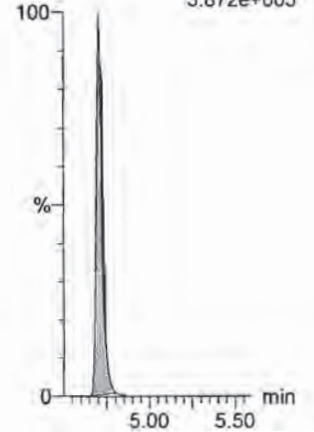
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
4.913e+005



13C5-PFNA

F27:MRM of 1 channel,ES-
468.2 > 422.9
3.872e+005

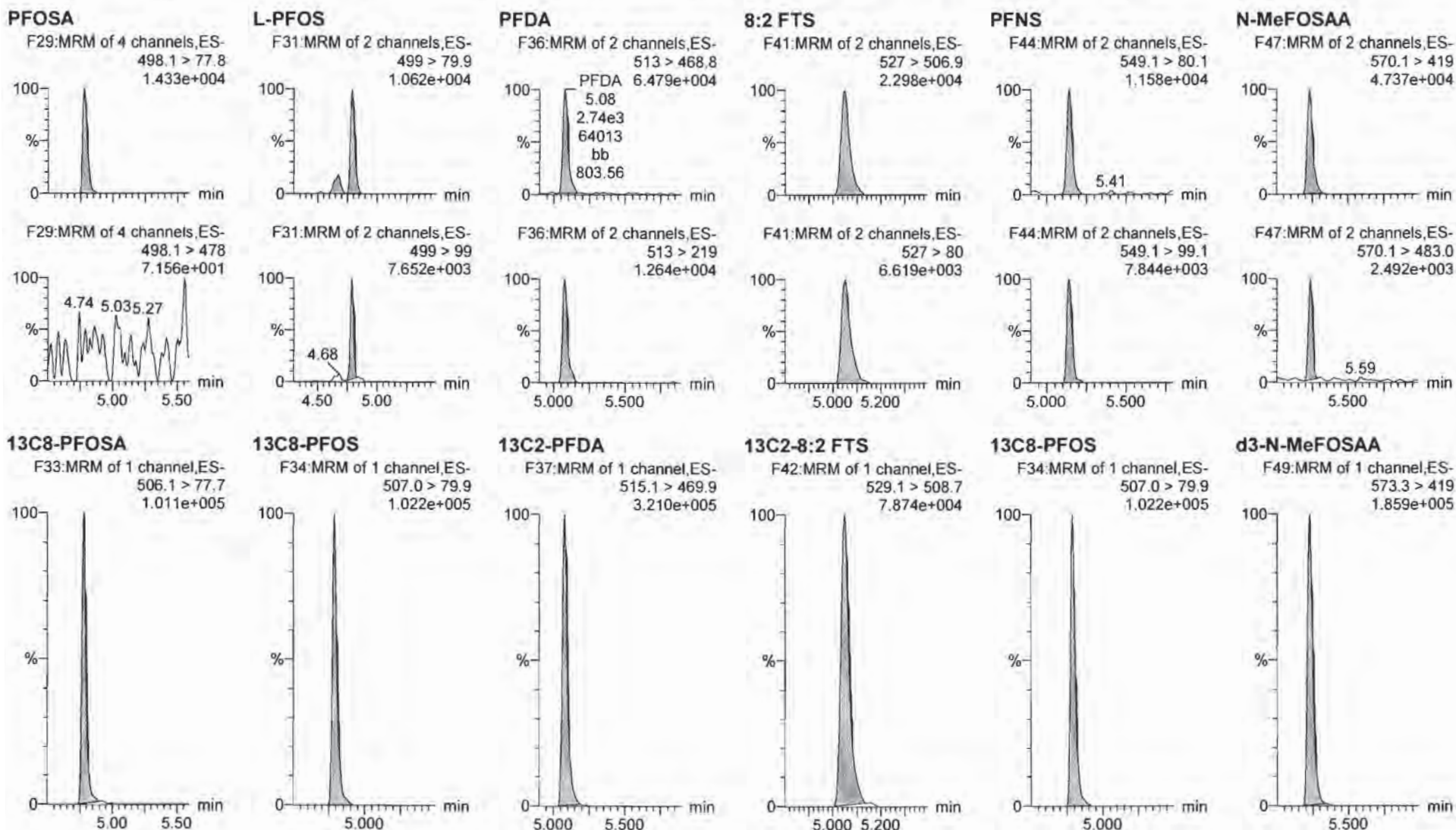


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205

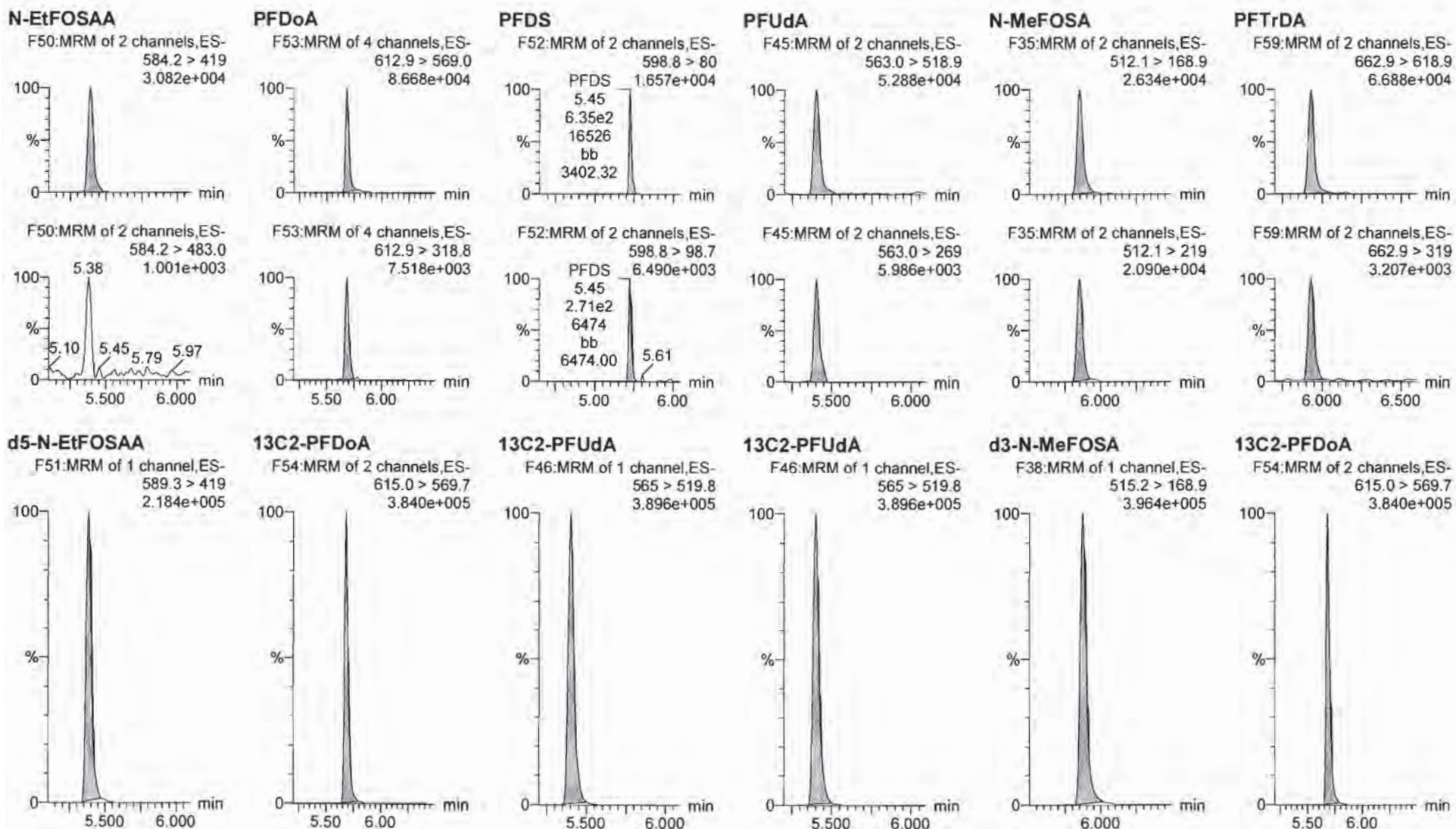


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

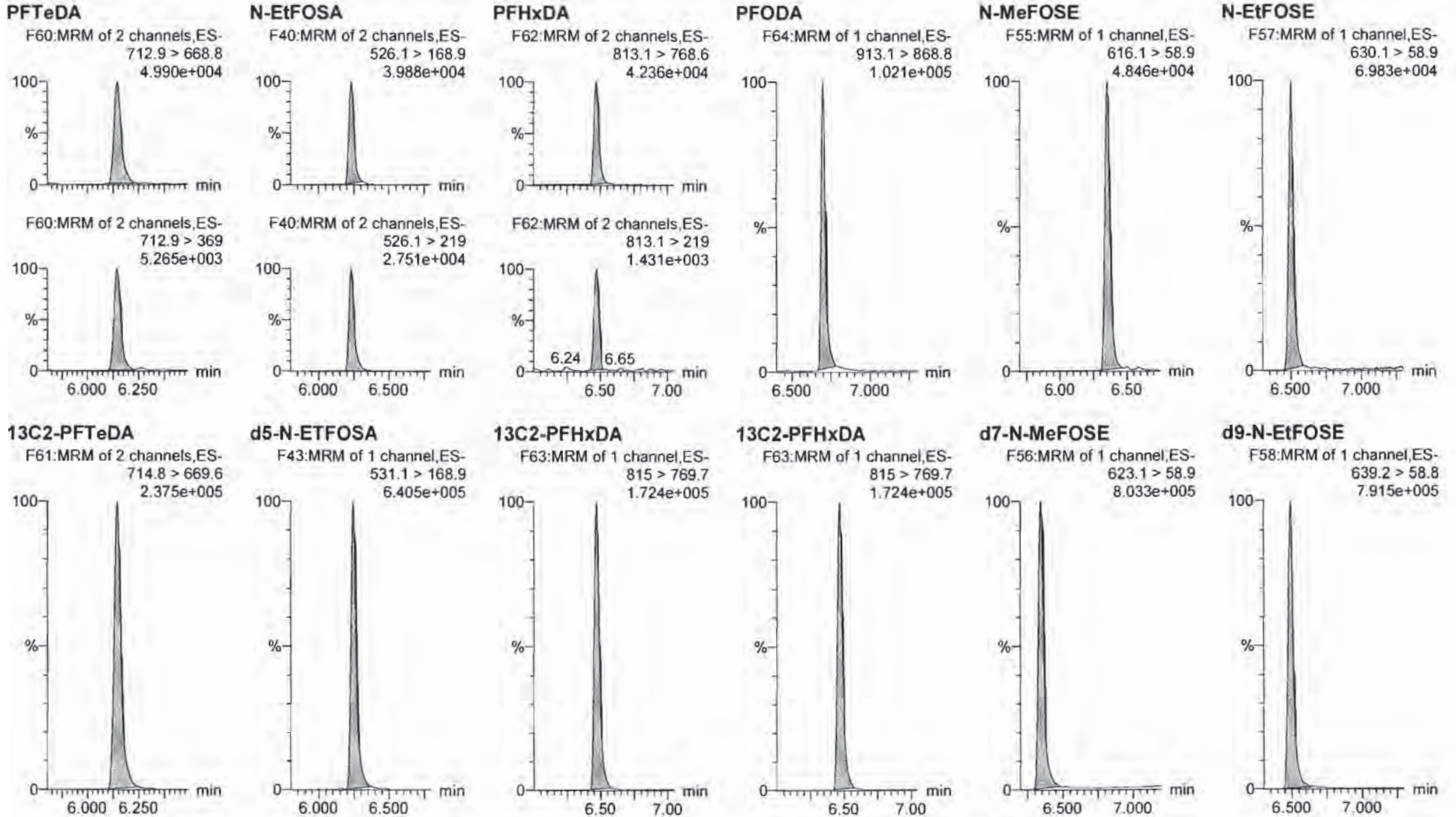
Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205



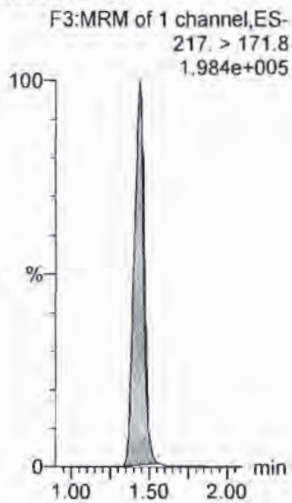
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

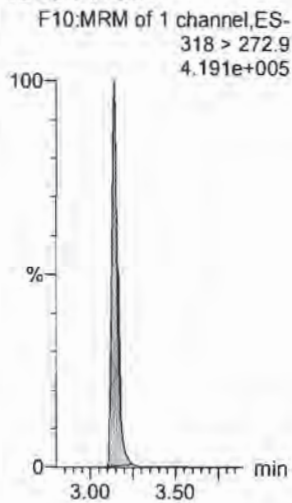
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_5, Date: 12-Apr-2018, Time: 18:38:34, ID: ST180412M1-4 PFC CS1 18D0205, Description: PFC CS1 18D0205

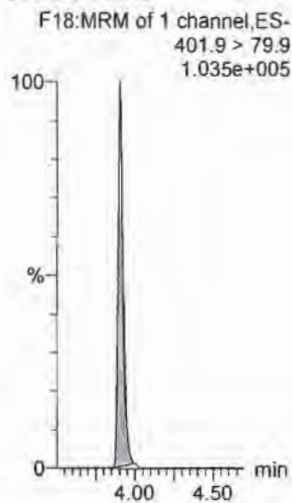
13C4-PFBA



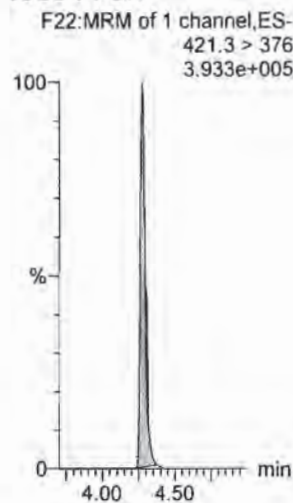
13C5-PFHxA



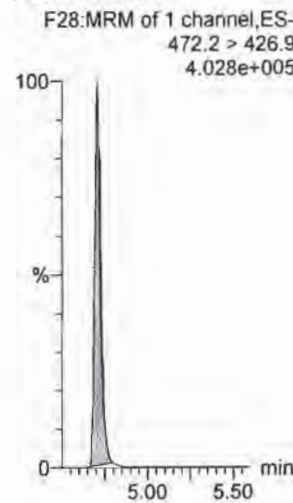
13C3-PFHxS



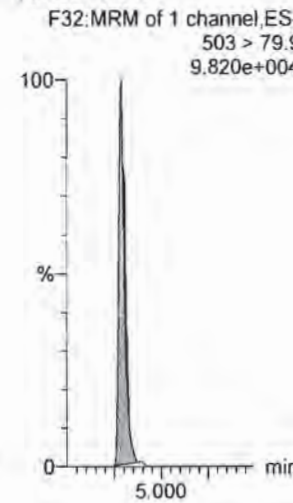
13C8-PFOA



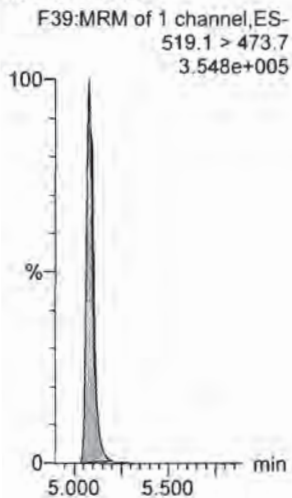
13C9-PFNA



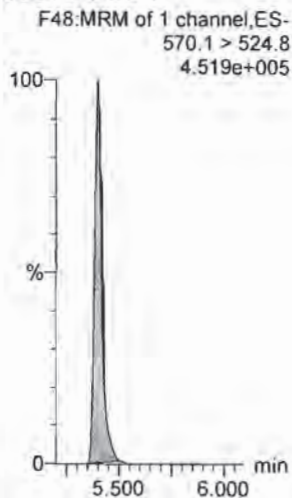
13C4-PFOS



13C6-PFDA



13C7-PFUDa



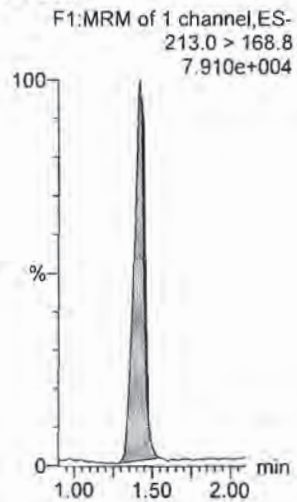
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

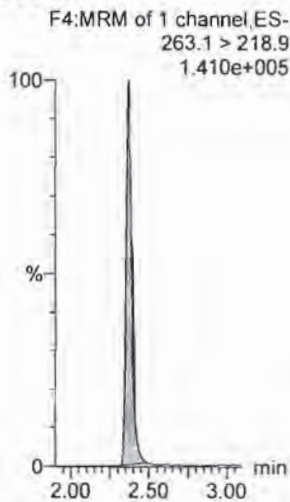
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206

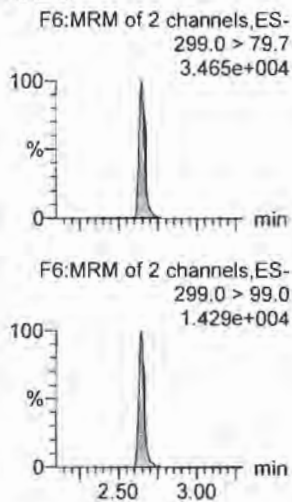
PFBA



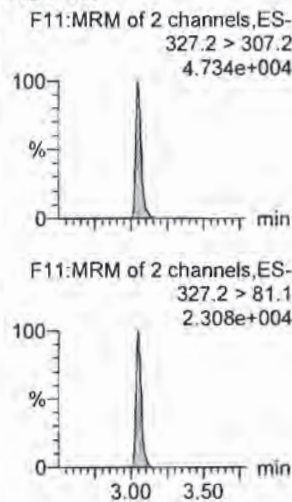
PFPeA



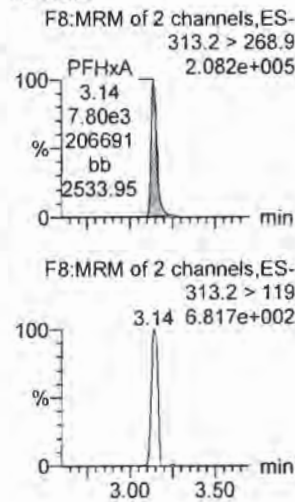
PFBS



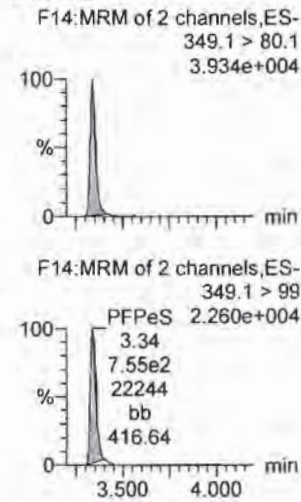
4:2 FTS



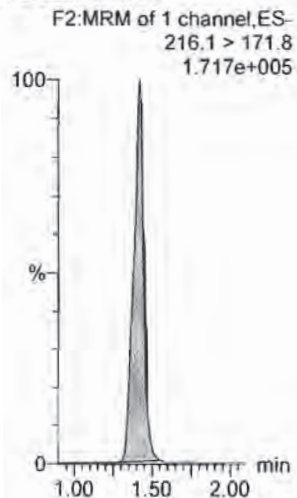
PFHxA



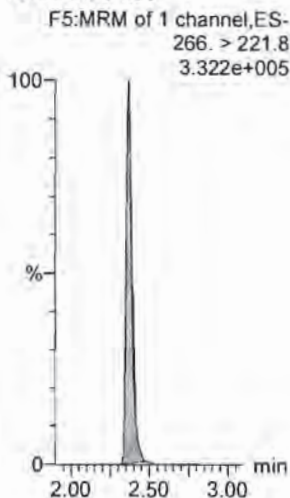
PFPeS



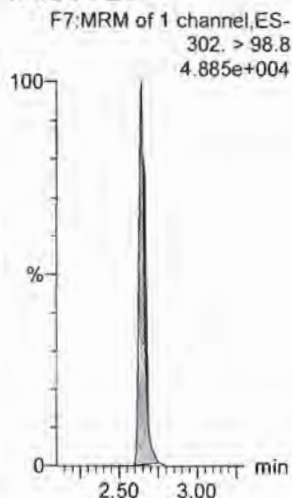
13C3-PFBA



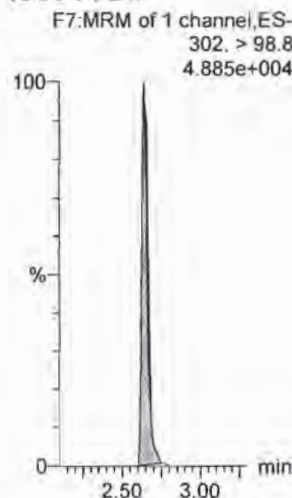
13C3-PFPeA



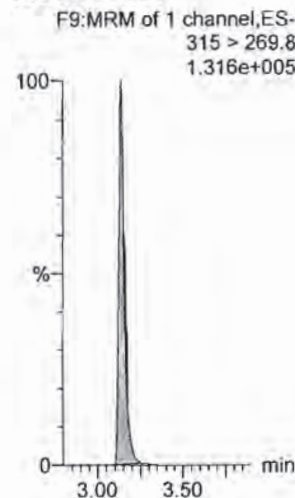
13C3-PFBS



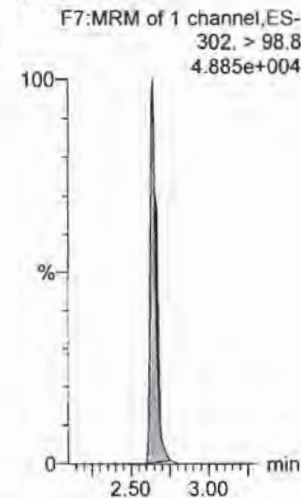
13C3-PFBS



13C2-PFHxA



13C3-PFBS



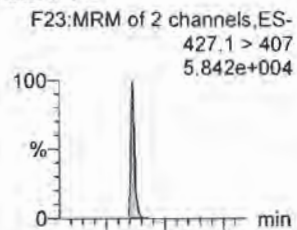
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

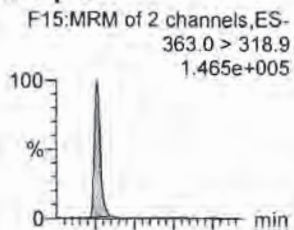
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206

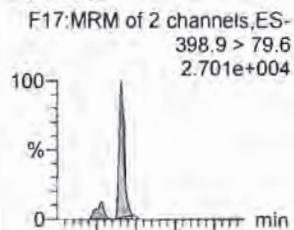
6:2 FTS



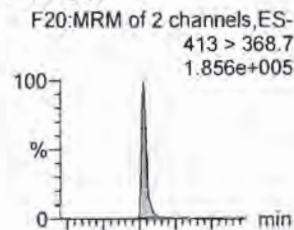
PFHpA



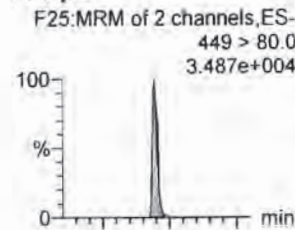
L-PFHxS



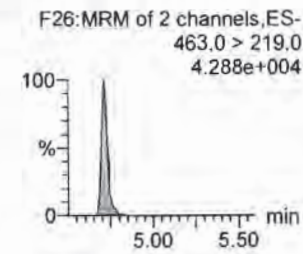
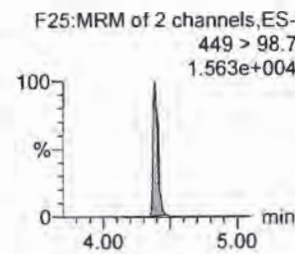
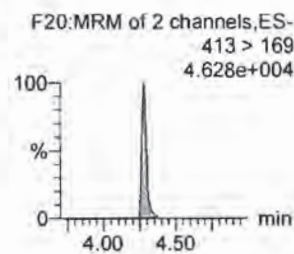
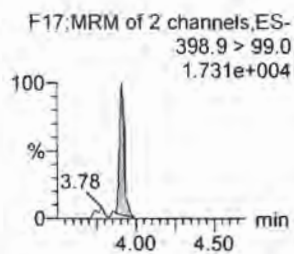
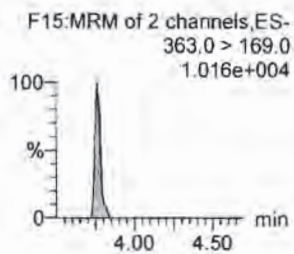
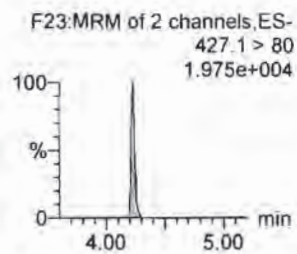
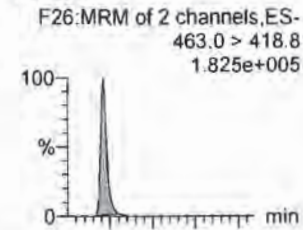
L-PFOA



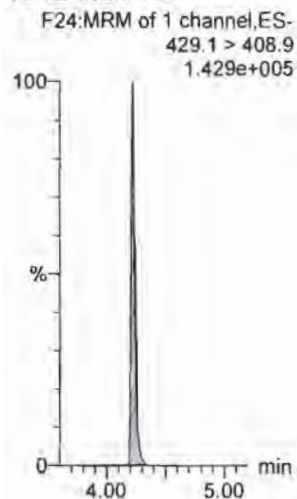
PFHpS



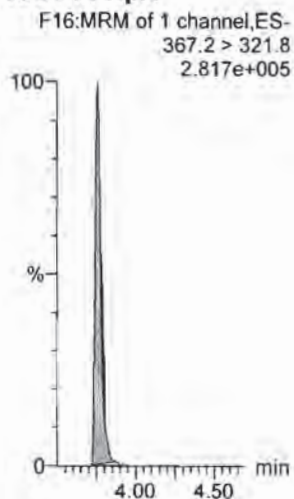
PFNA



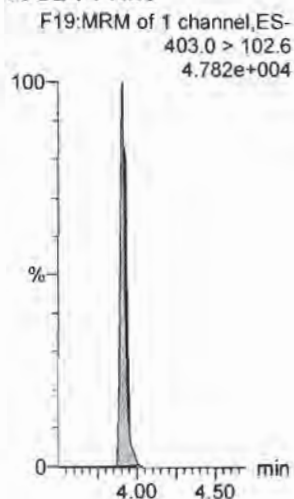
13C2-6:2 FTS



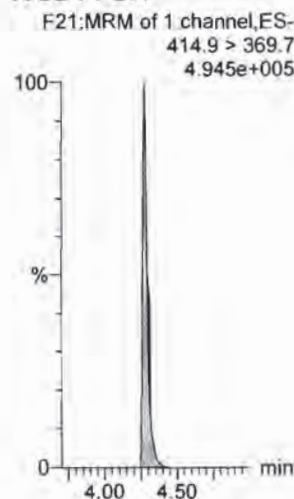
13C4-PFHpA



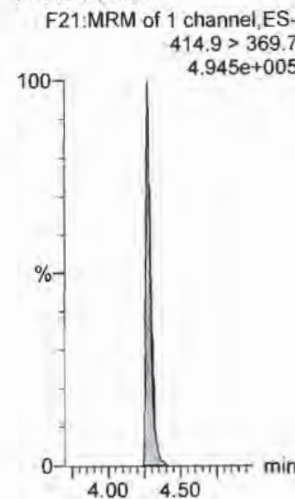
18O2-PFHxS



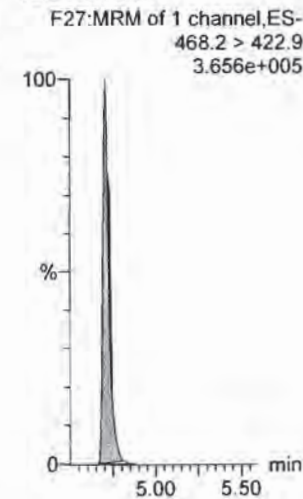
13C2-PFOA



13C2-PFOA



13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

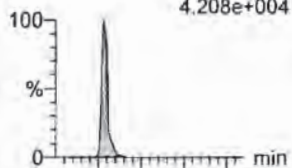
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

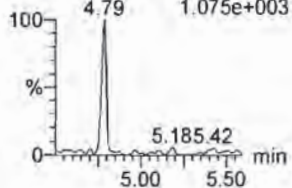
Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206

PFOSA

F29:MRM of 4 channels,ES-
498.1 > 77.8
4.208e+004

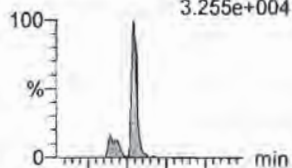


F29:MRM of 4 channels,ES-
498.1 > 478
1.075e+003

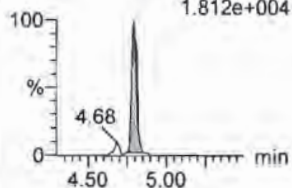


L-PFOS

F31:MRM of 2 channels,ES-
499 > 79.9
3.255e+004

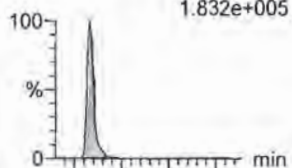


F31:MRM of 2 channels,ES-
499 > 99
1.812e+004

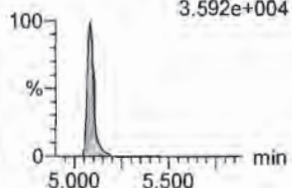


PFDA

F36:MRM of 2 channels,ES-
513 > 468.8
1.832e+005

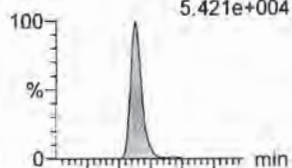


F36:MRM of 2 channels,ES-
513 > 219
3.592e+004

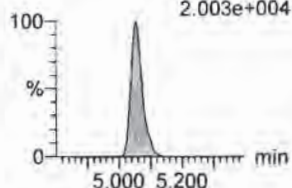


8:2 FTS

F41:MRM of 2 channels,ES-
527 > 506.9
5.421e+004

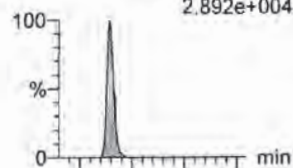


F41:MRM of 2 channels,ES-
527 > 80
2.003e+004

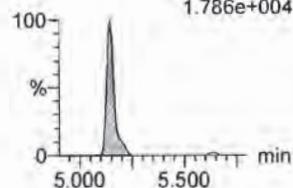


PFNS

F44:MRM of 2 channels,ES-
549.1 > 80.1
2.892e+004

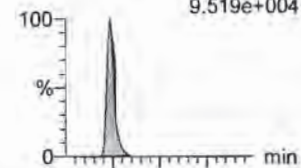


F44:MRM of 2 channels,ES-
549.1 > 99.1
1.786e+004

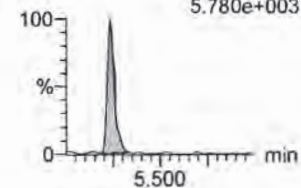


N-MeFOSAA

F47:MRM of 2 channels,ES-
570.1 > 419
9.519e+004

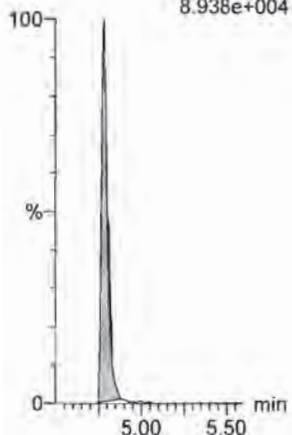


F47:MRM of 2 channels,ES-
570.1 > 483.0
5.780e+003



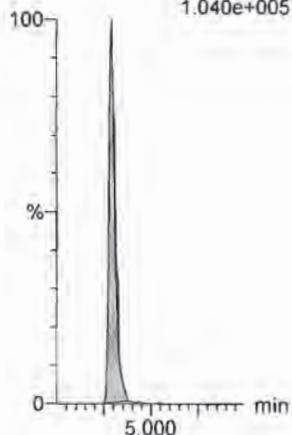
13C8-PFOA

F33:MRM of 1 channel,ES-
506.1 > 77.7
8.938e+004



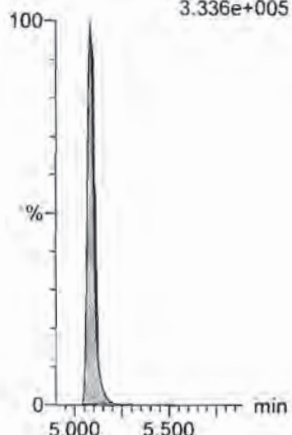
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
1.040e+005



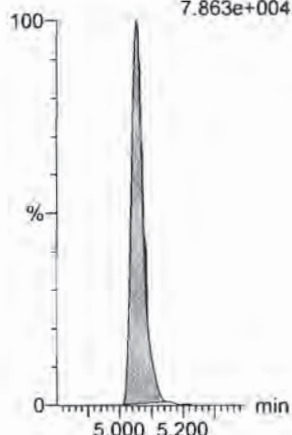
13C2-PFDA

F37:MRM of 1 channel,ES-
515.1 > 469.9
3.336e+005



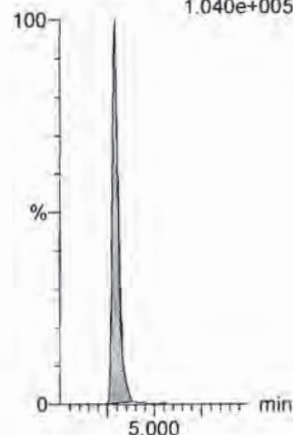
13C2-8:2 FTS

F42:MRM of 1 channel,ES-
529.1 > 508.7
7.863e+004



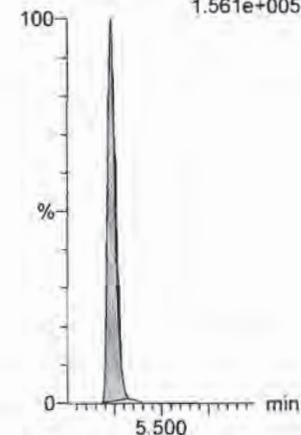
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
1.040e+005



d3-N-MeFOSAA

F49:MRM of 1 channel,ES-
573.3 > 419
1.561e+005

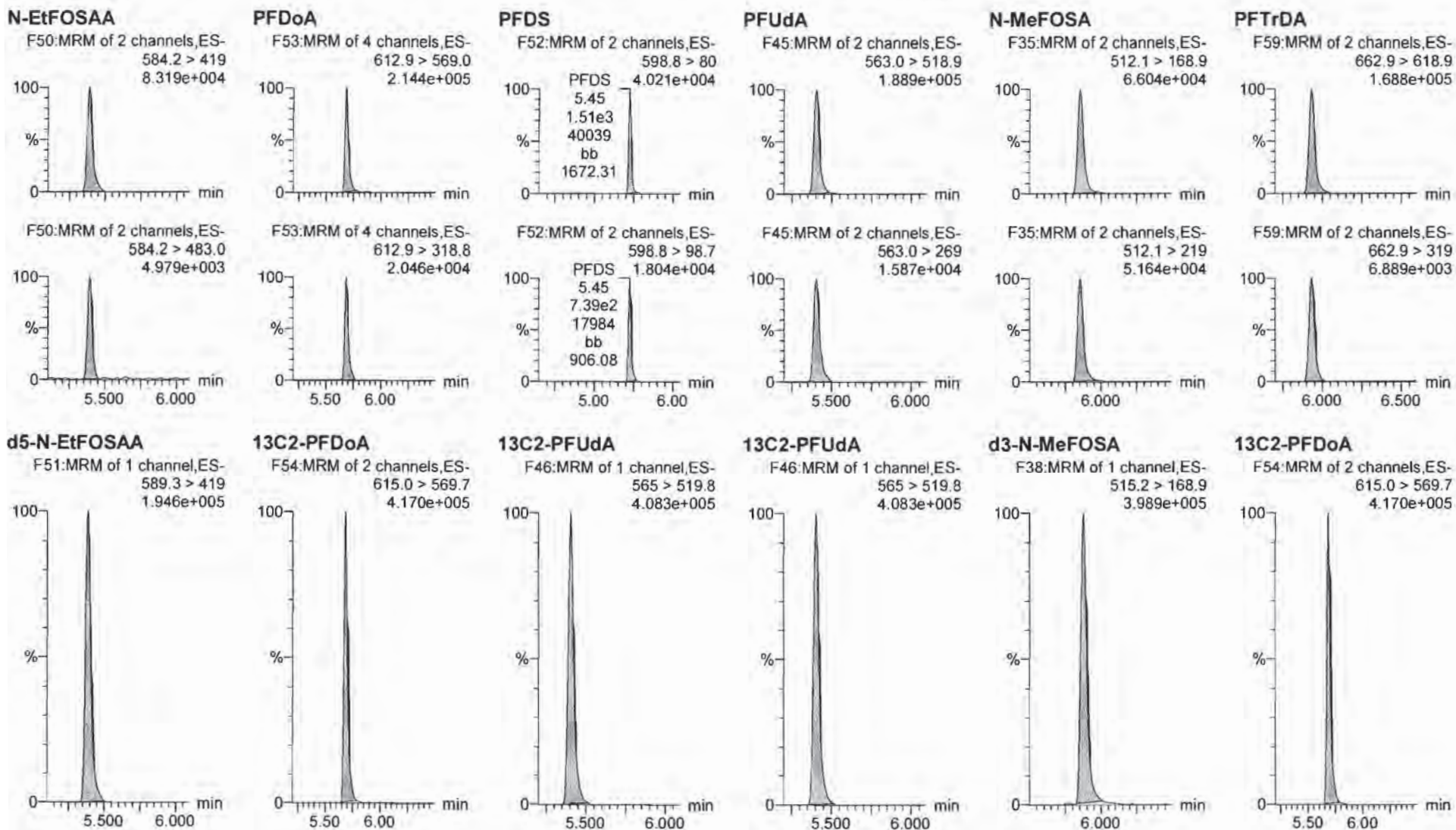


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206



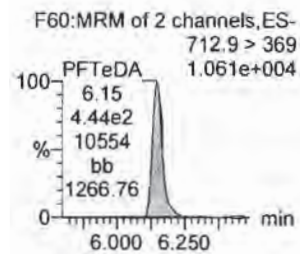
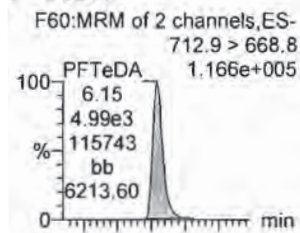
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

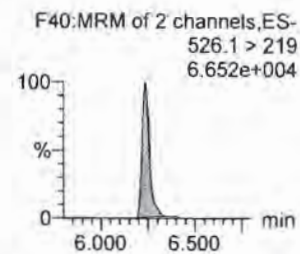
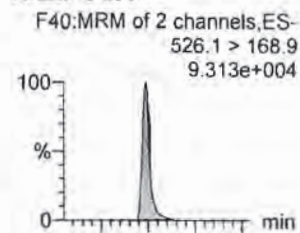
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206

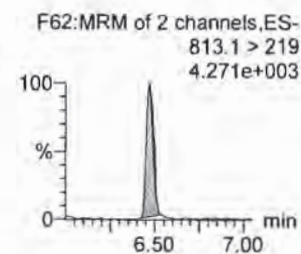
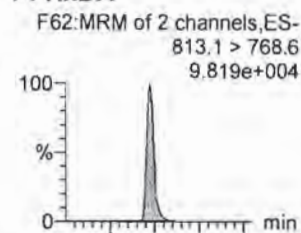
PFTeDA



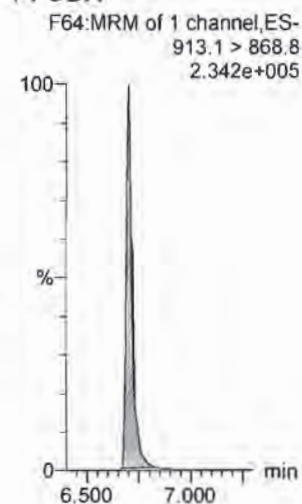
N-EtFOSA



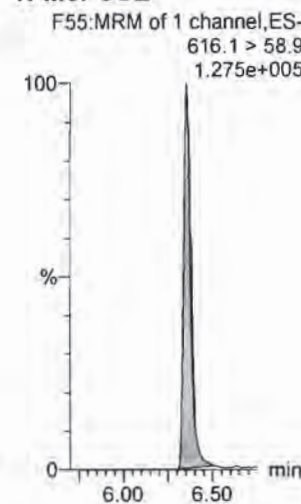
PFHxDA



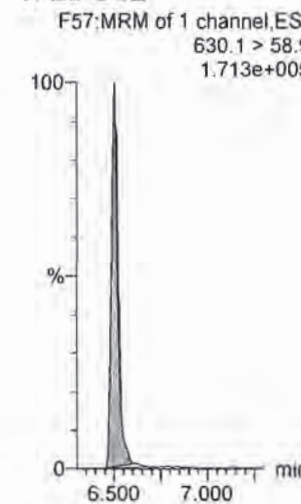
PFODA



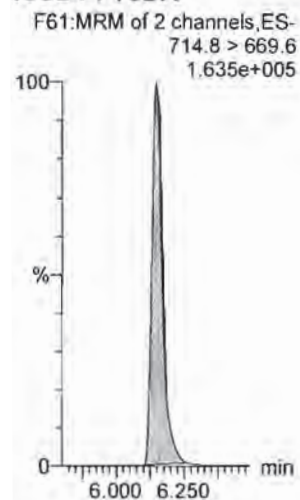
N-MeFOSE



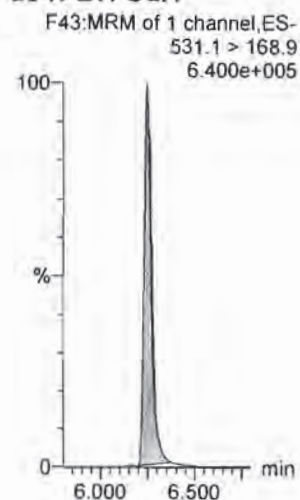
N-EtFOSE



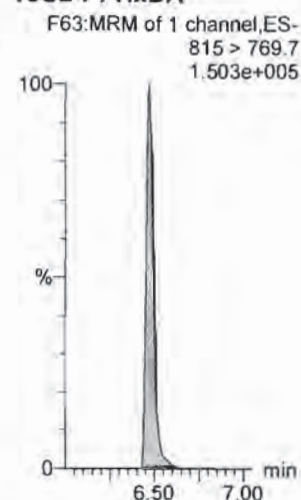
13C2-PFTeDA



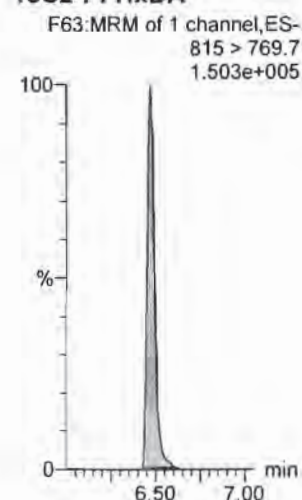
d5-N-ETFOSE



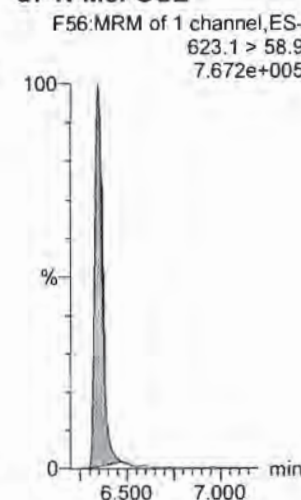
13C2-PFHxDA



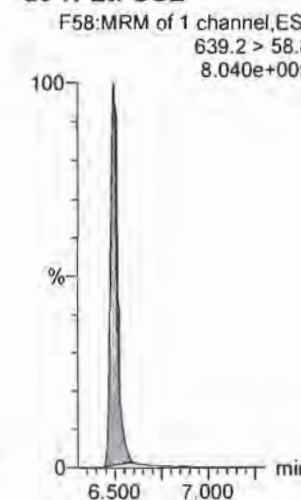
13C2-PFHxDA



d7-N-MeFOSE



d9-N-EtFOSE



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

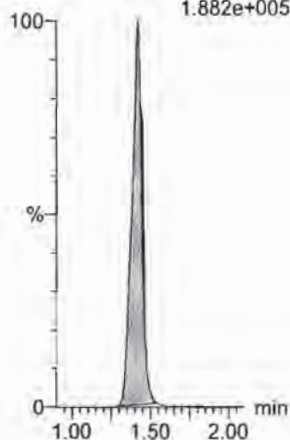
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_6, Date: 12-Apr-2018, Time: 18:50:03, ID: ST180412M1-5 PFC CS2 18D0206, Description: PFC CS2 18D0206

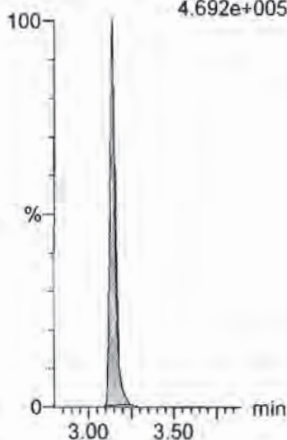
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
1.882e+005



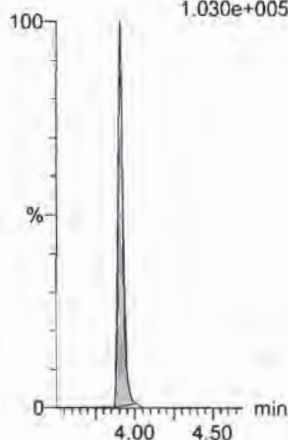
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.692e+005



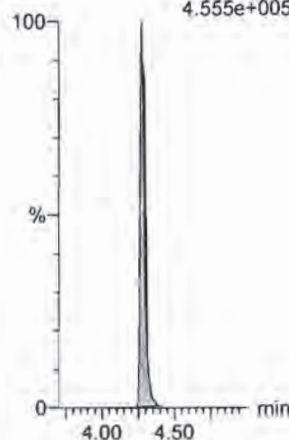
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
1.030e+005



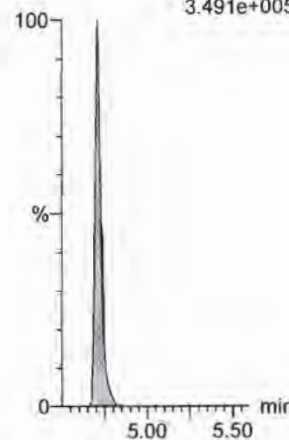
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
4.555e+005



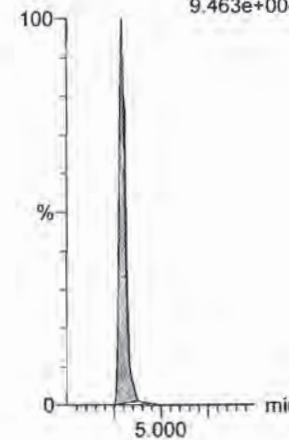
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.491e+005



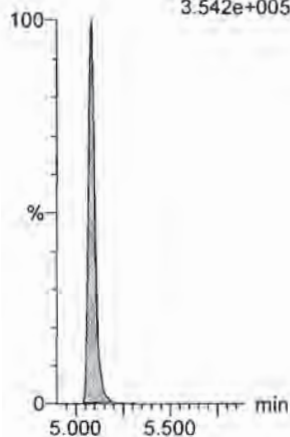
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
9.463e+004



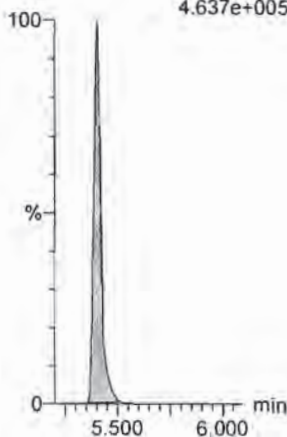
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.542e+005



13C7-PFUdA

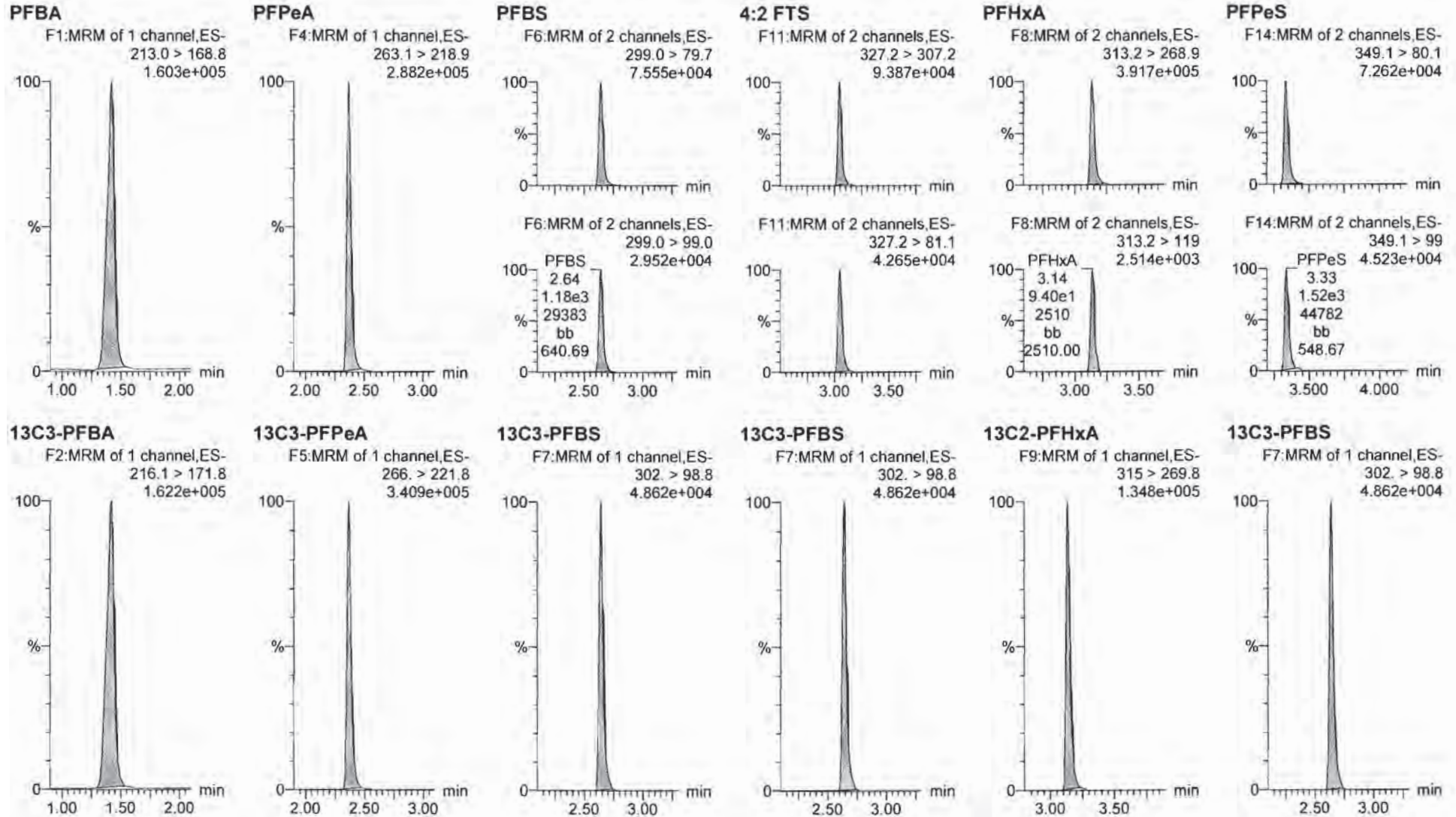
F48:MRM of 1 channel,ES-
570.1 > 524.8
4.637e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207



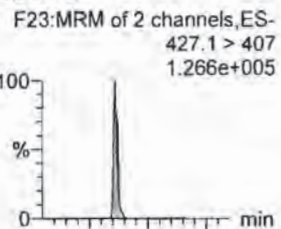
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

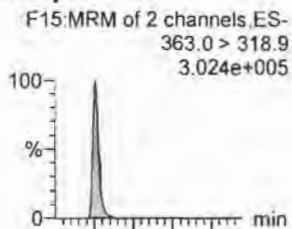
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207

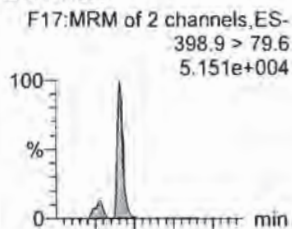
6:2 FTS



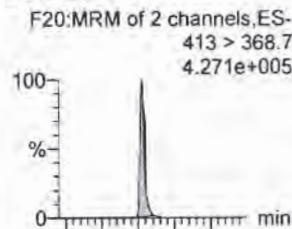
PFHpA



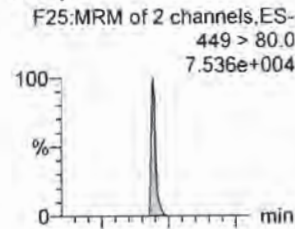
L-PFHxS



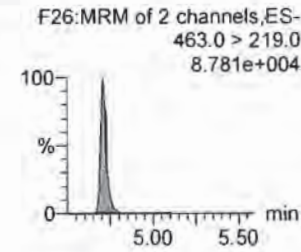
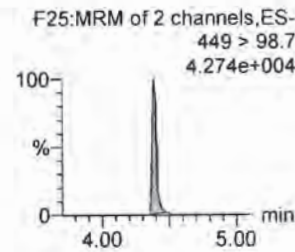
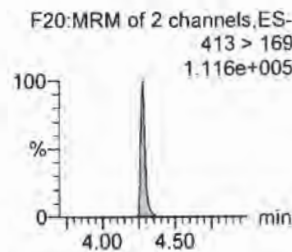
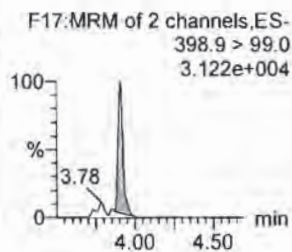
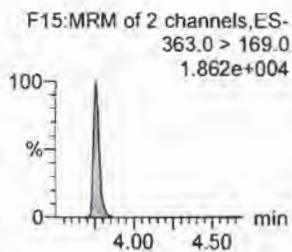
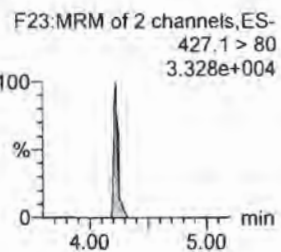
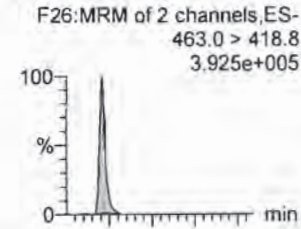
L-PFOA



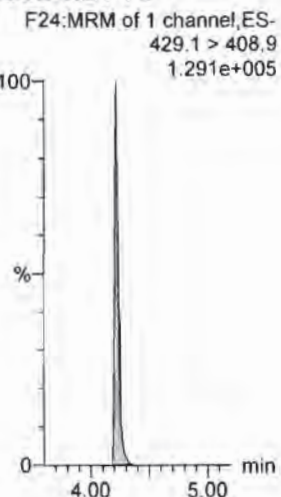
PFHpS



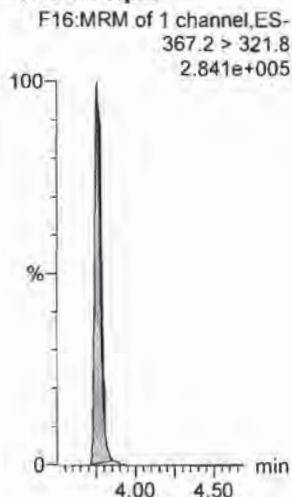
PFNA



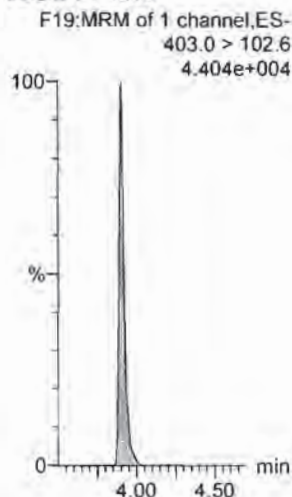
13C2-6:2 FTS



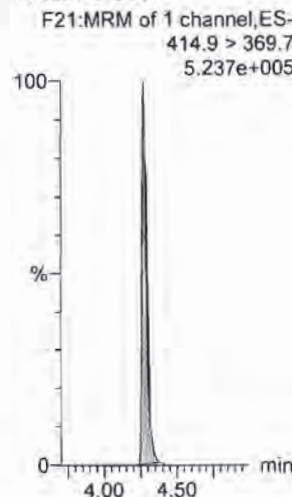
13C4-PFHpA



18O2-PFHxS



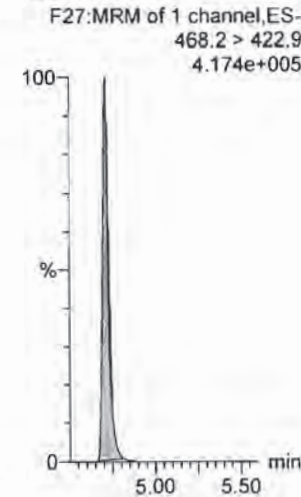
13C2-PFOA



13C2-PFOA



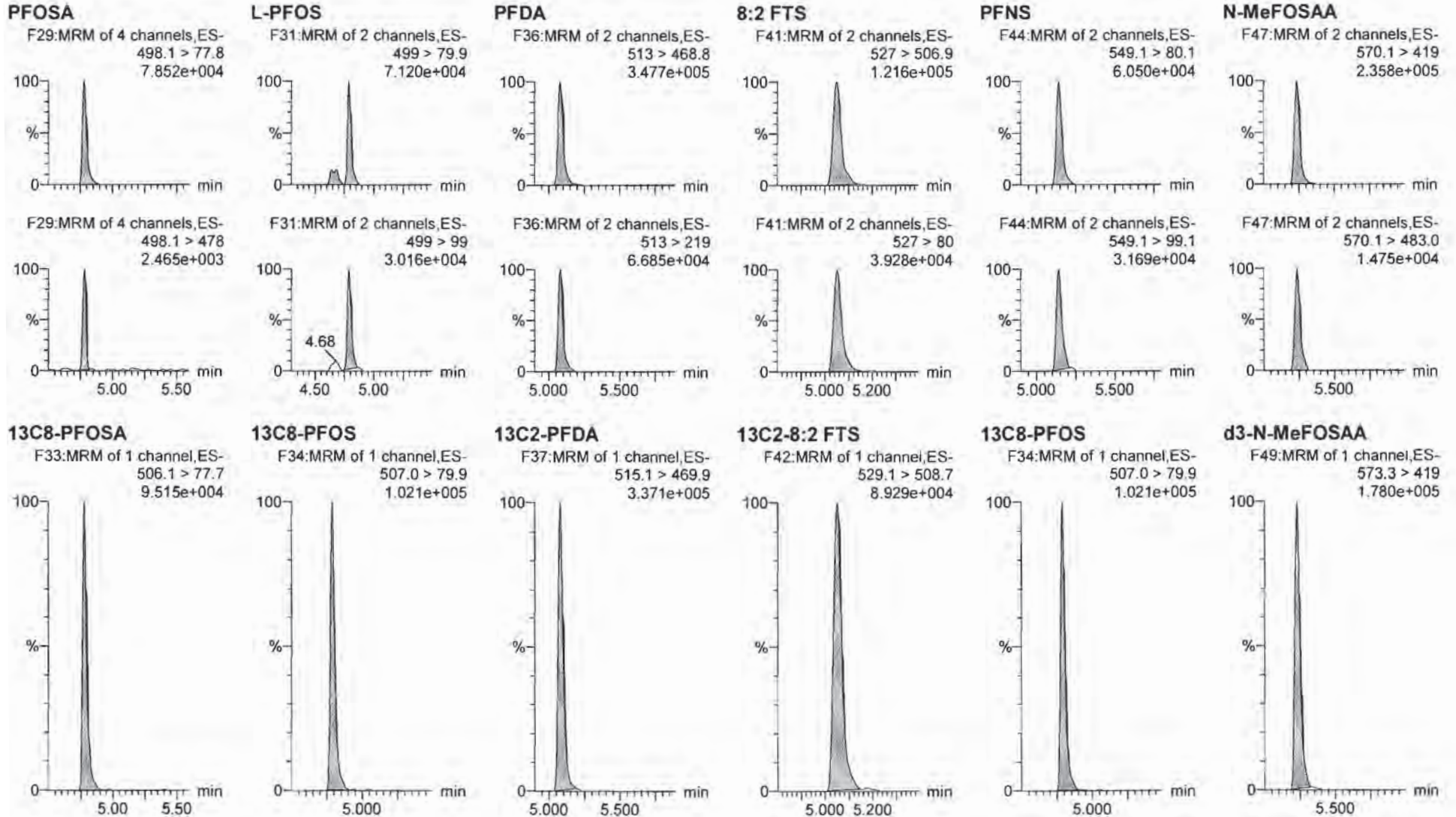
13C5-PFNA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207

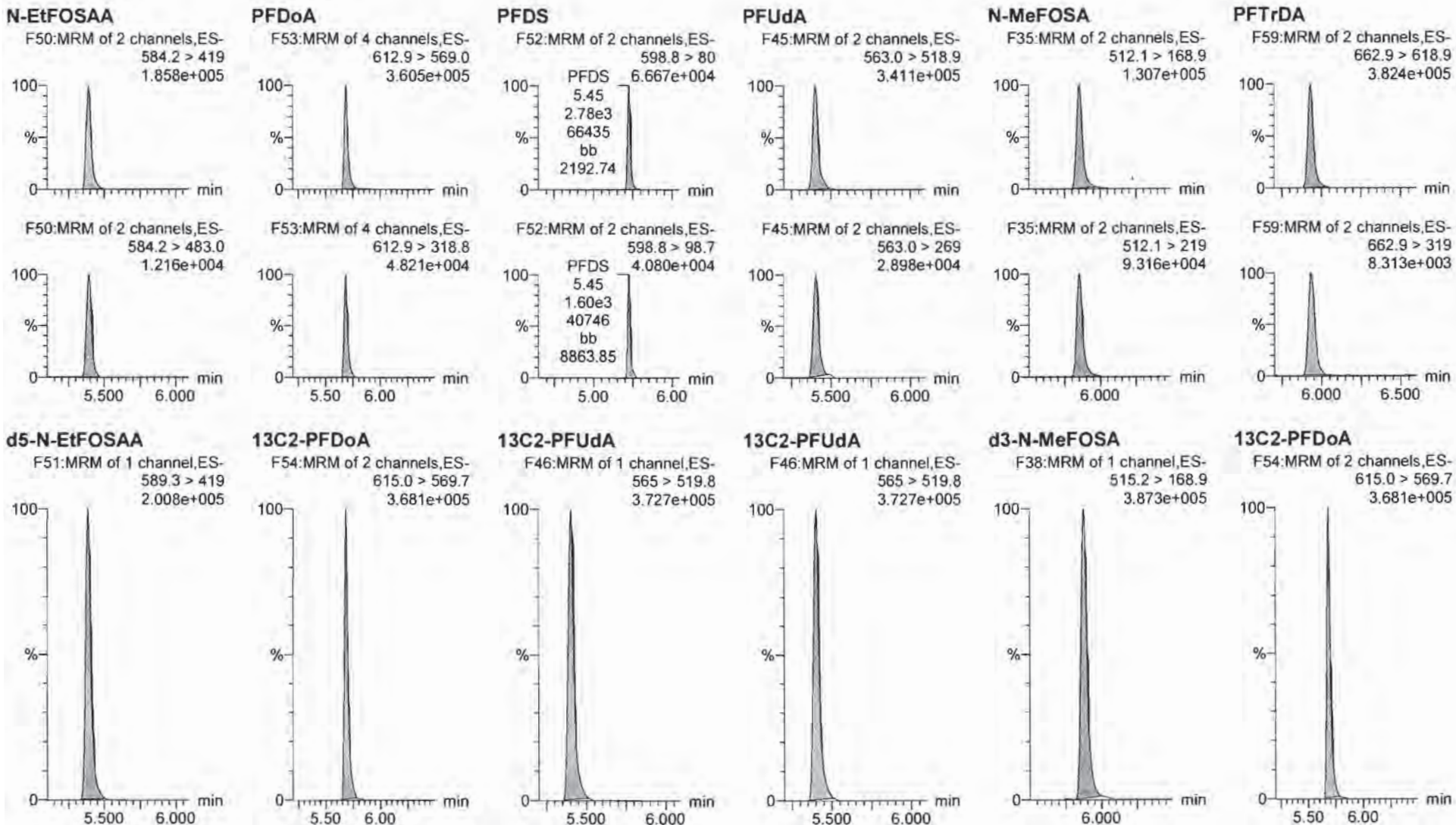


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207

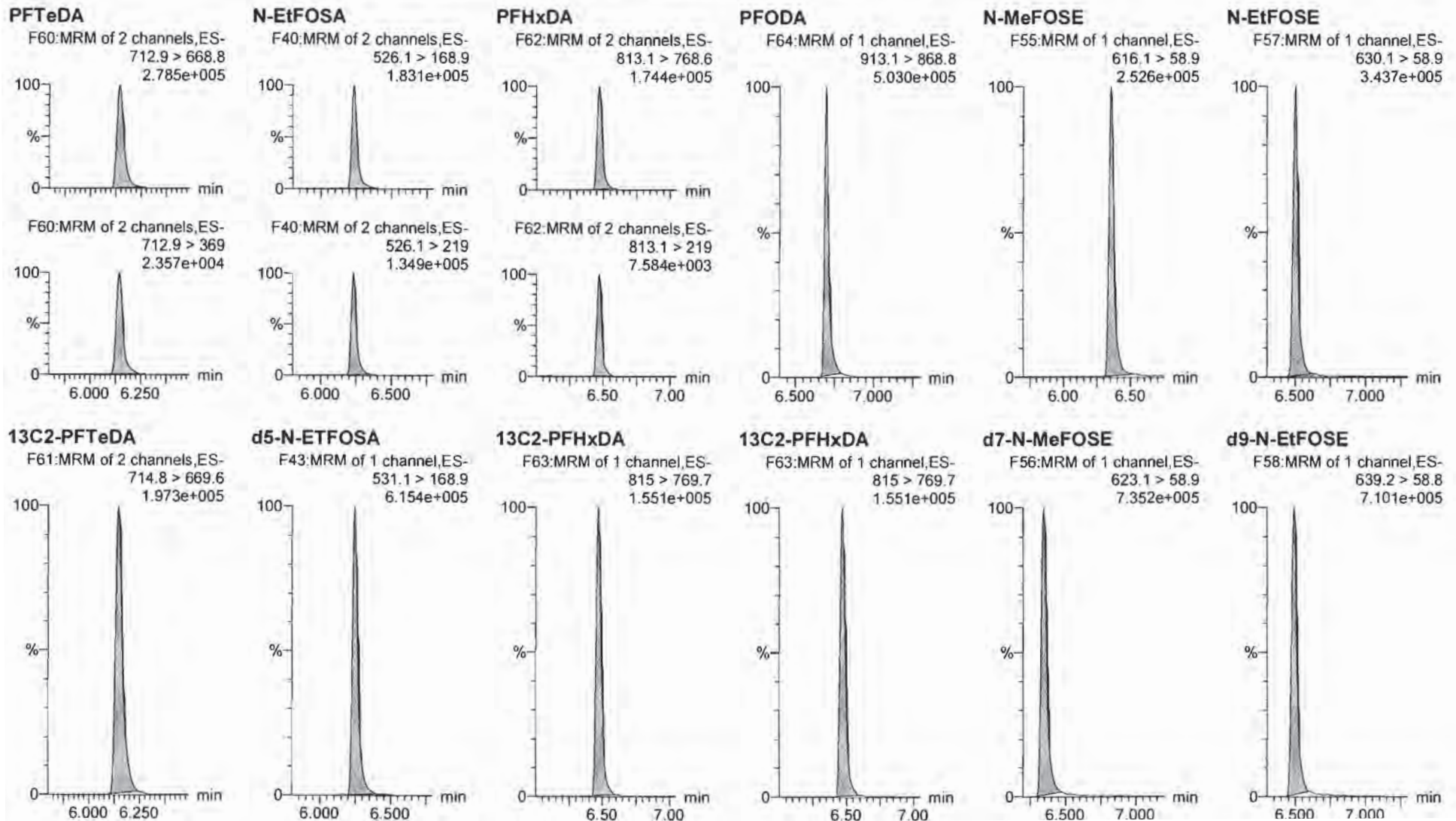


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207

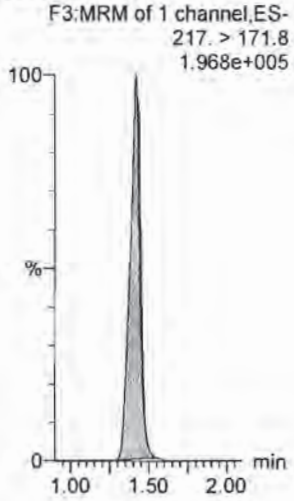


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

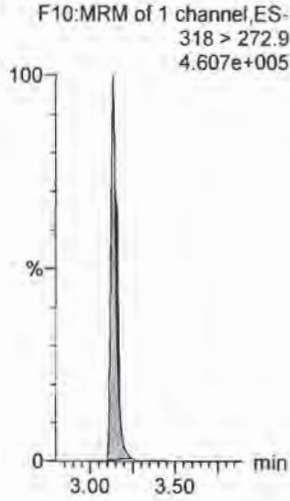
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_7, Date: 12-Apr-2018, Time: 19:01:32, ID: ST180412M1-6 PFC CS3 18D0207, Description: PFC CS3 18D0207

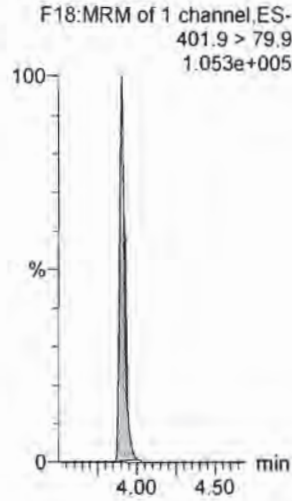
13C4-PFBA



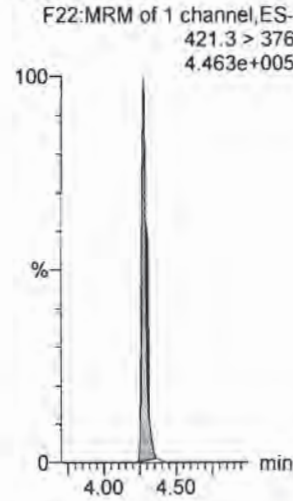
13C5-PFHxA



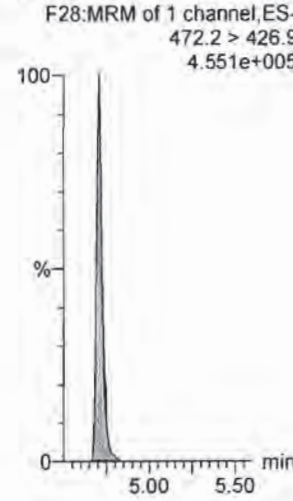
13C3-PFHxS



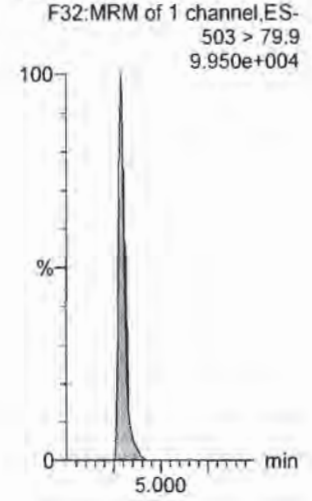
13C8-PFOA



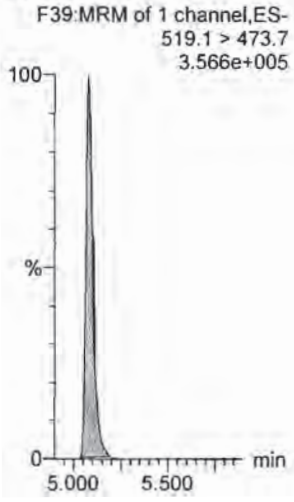
13C9-PFNA



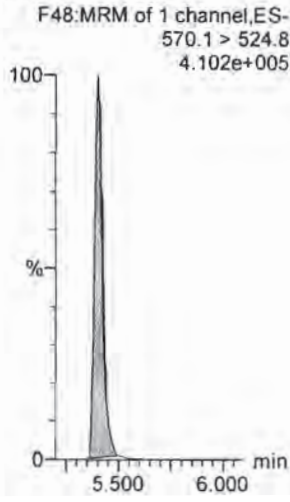
13C4-PFOS



13C6-PFDA



13C7-PFUdA

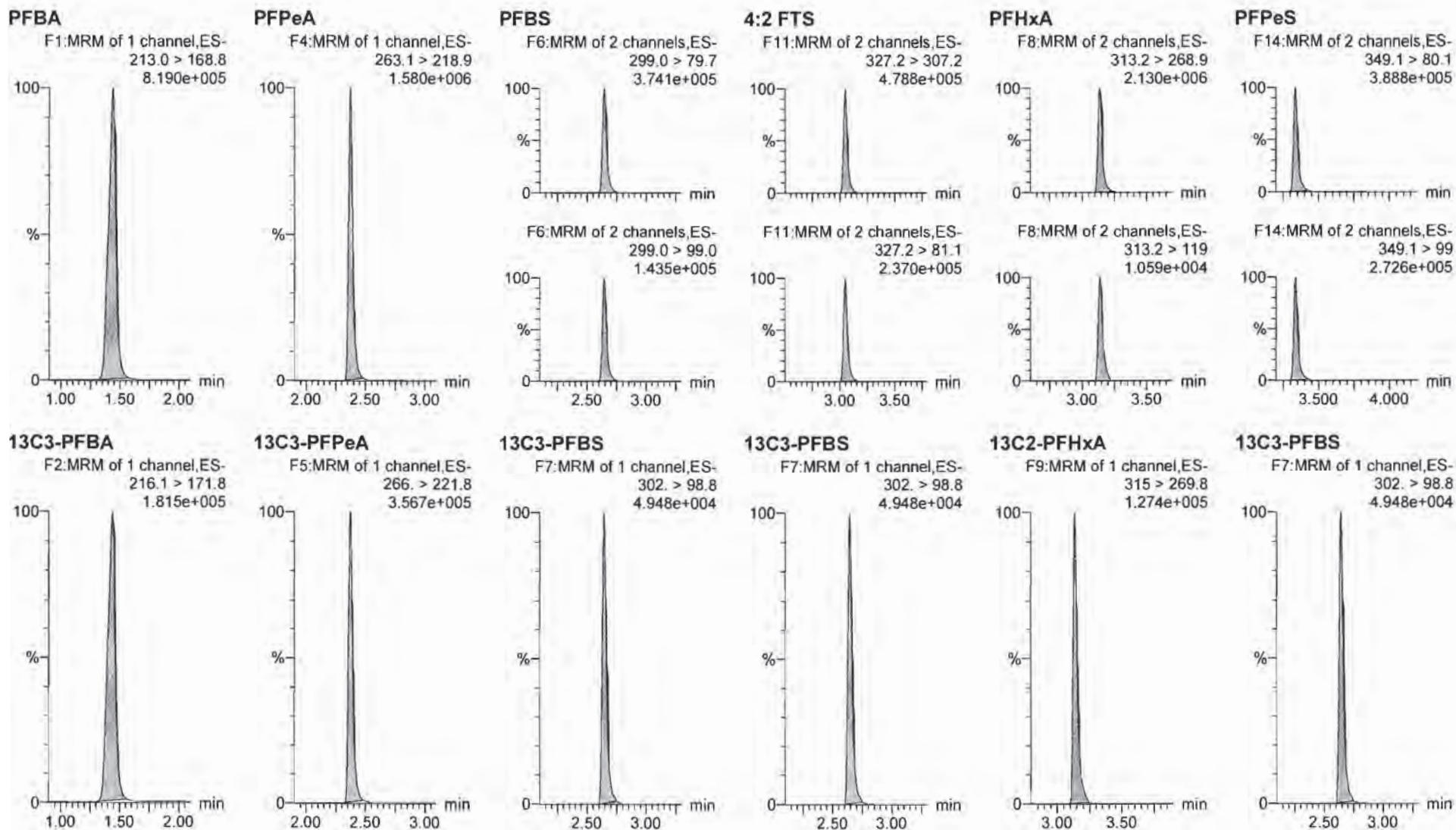


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208

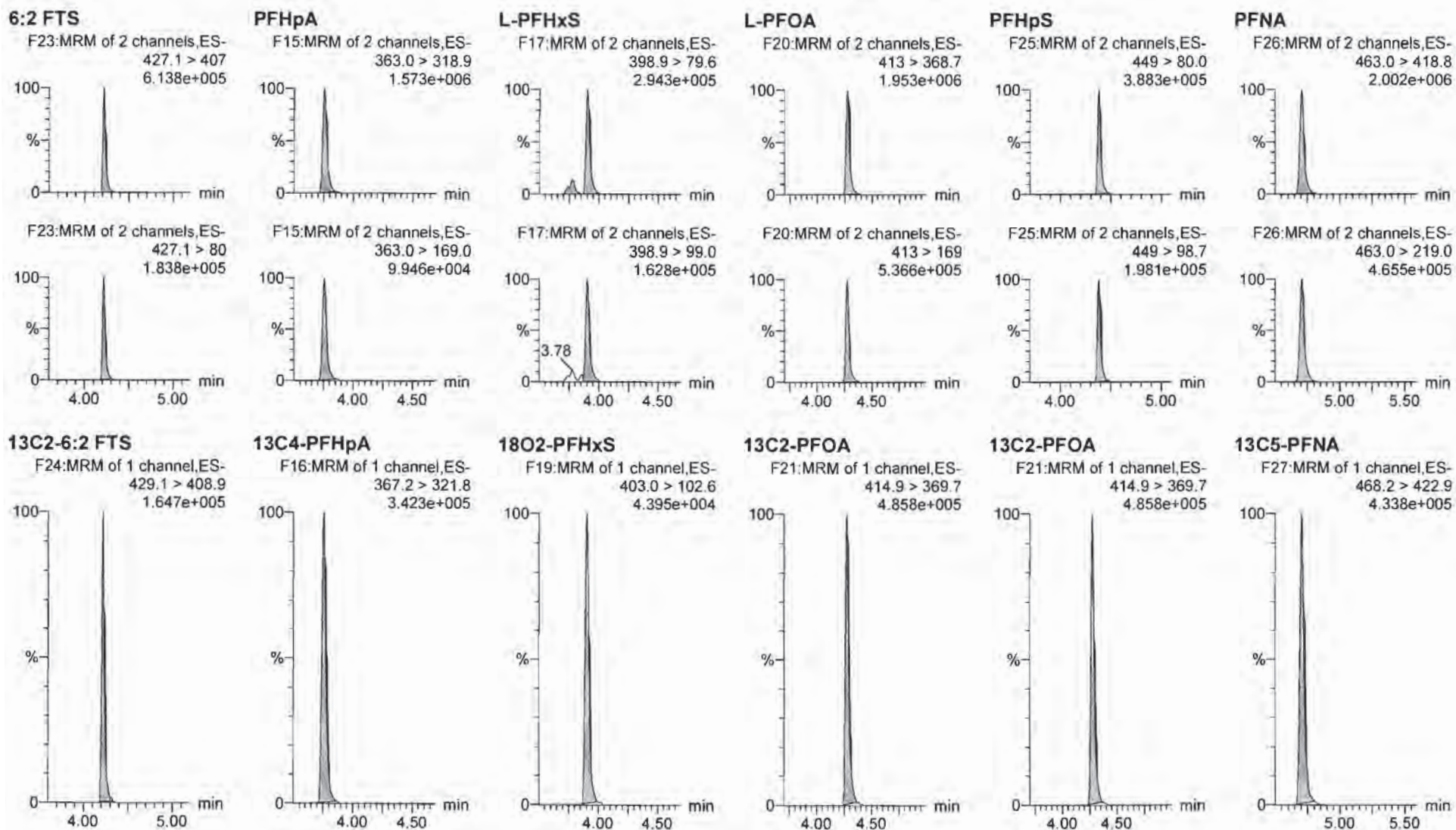


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208

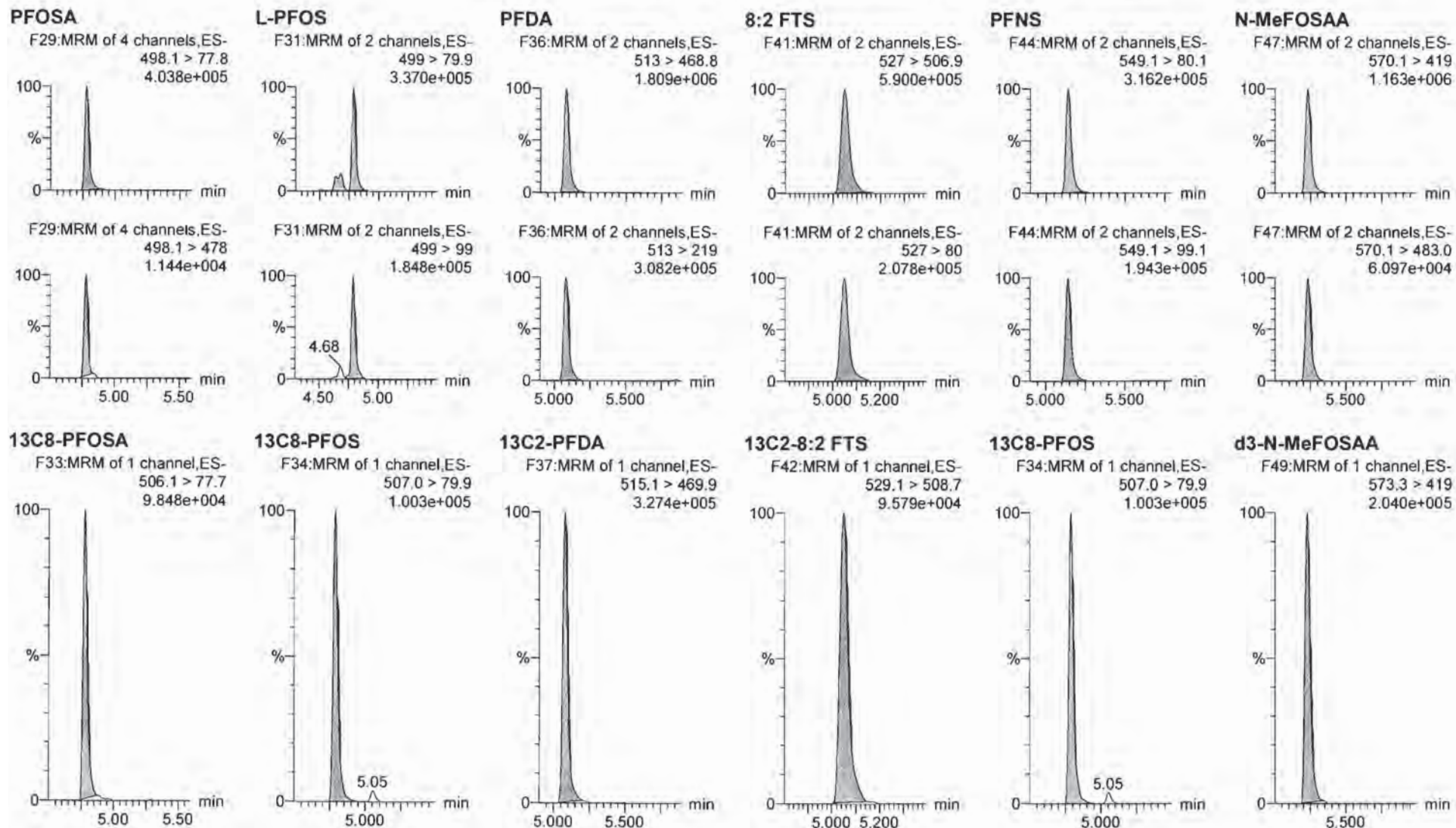


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208

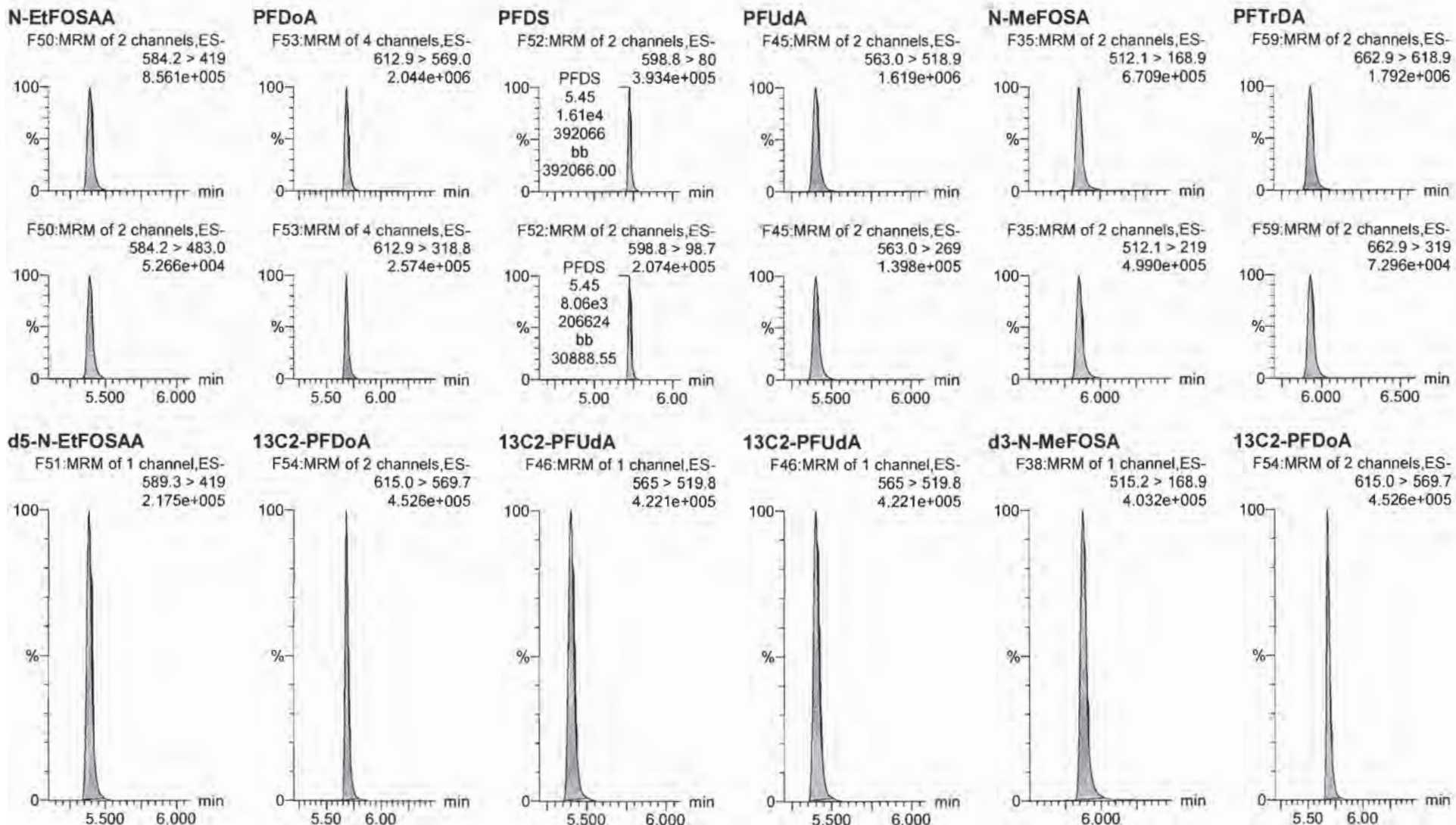


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208

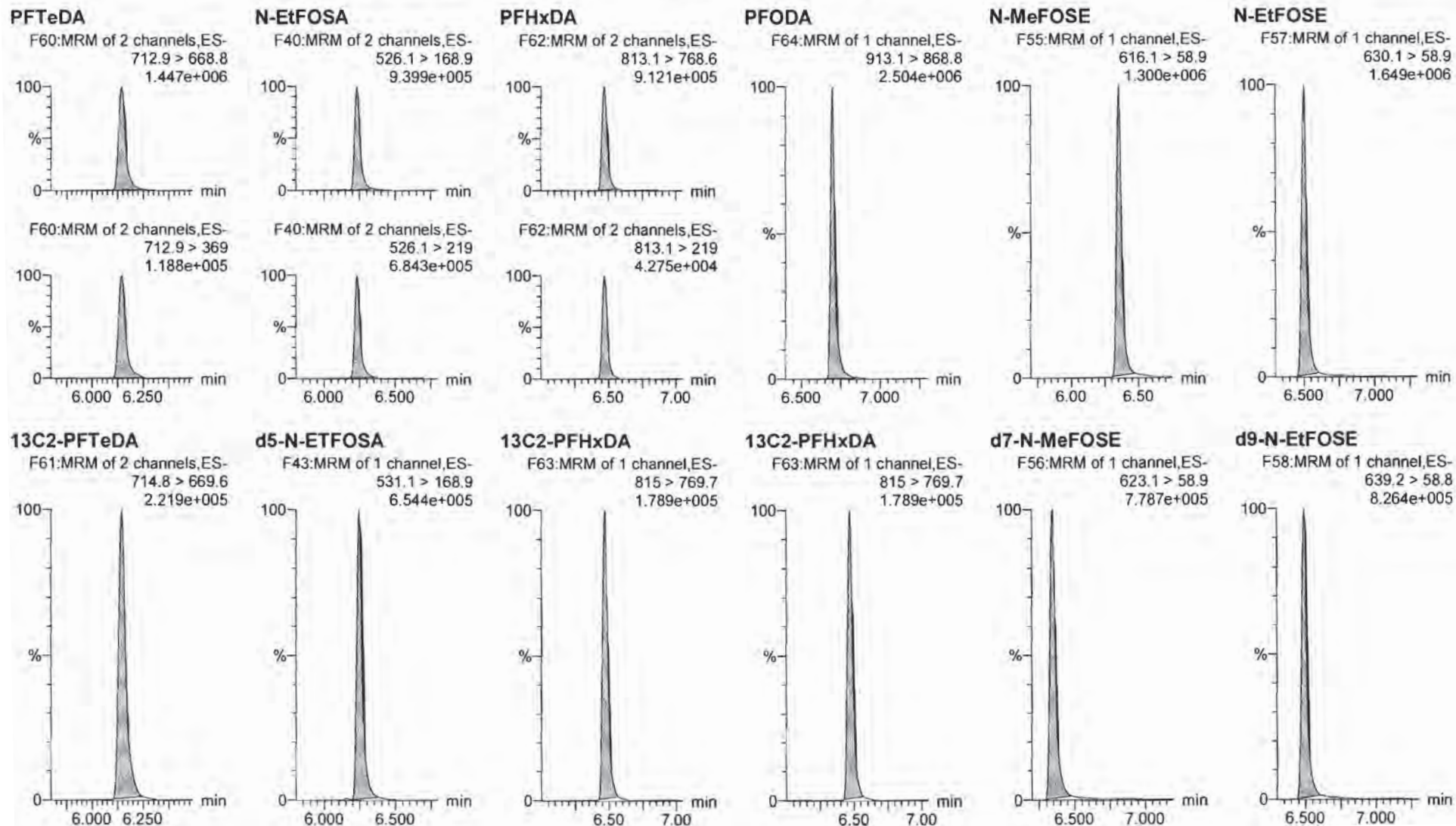


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208



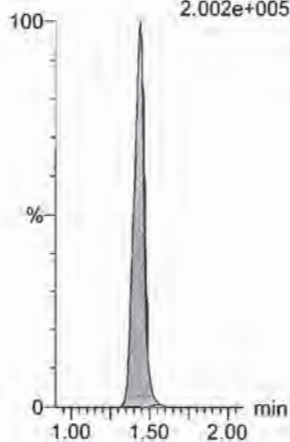
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_8, Date: 12-Apr-2018, Time: 19:13:02, ID: ST180412M1-7 PFC CS4 18D0208, Description: PFC CS4 18D0208

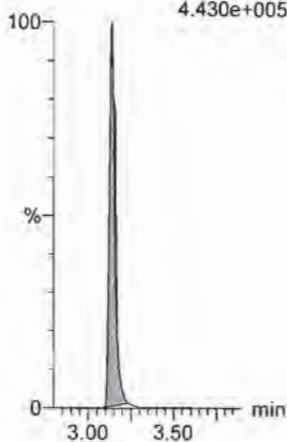
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
2.002e+005



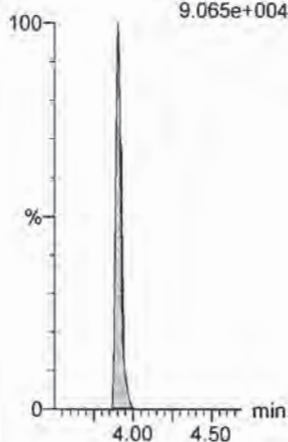
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.430e+005



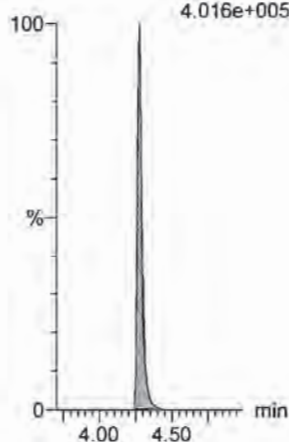
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
9.065e+004



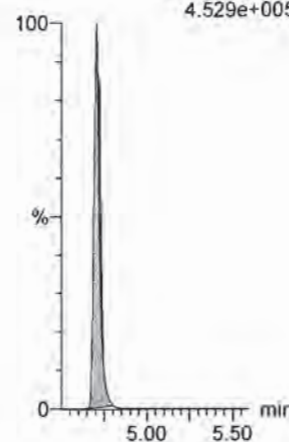
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
4.016e+005



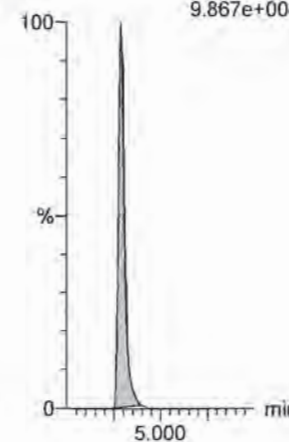
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
4.529e+005



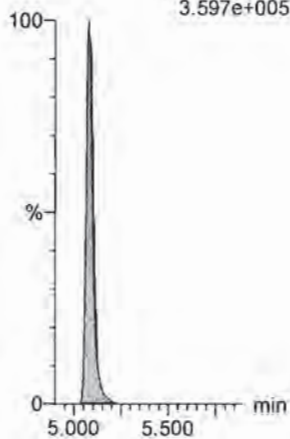
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
9.867e+004



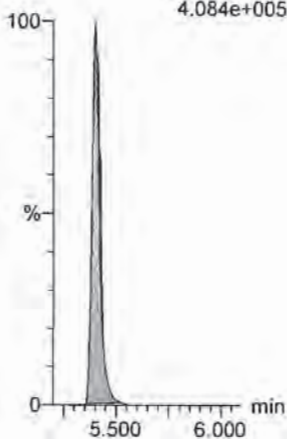
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.597e+005



13C7-PFUDa

F48:MRM of 1 channel,ES-
570.1 > 524.8
4.084e+005



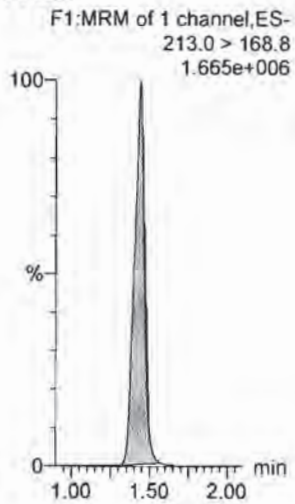
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

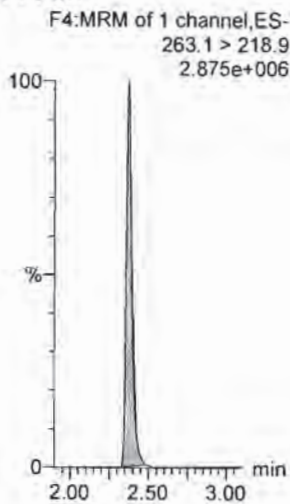
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209

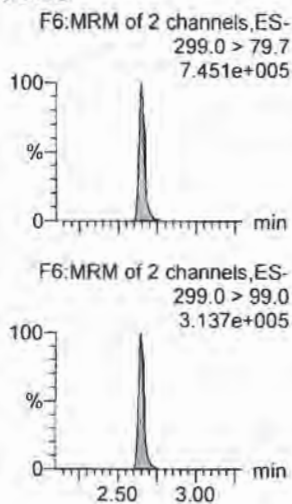
PFBA



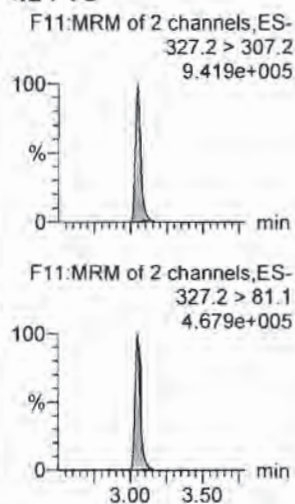
PFPeA



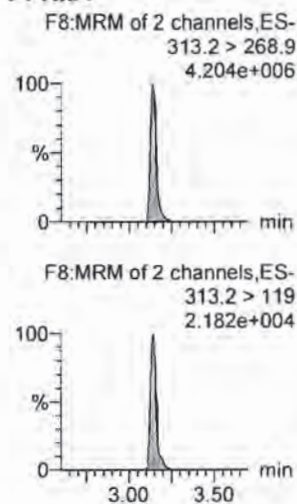
PFBS



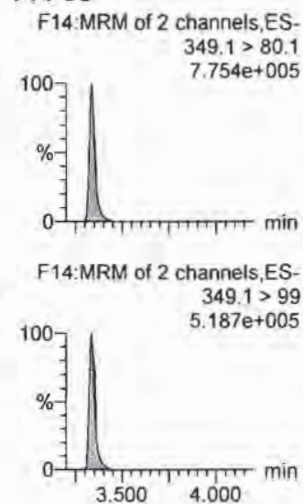
4:2 FTS



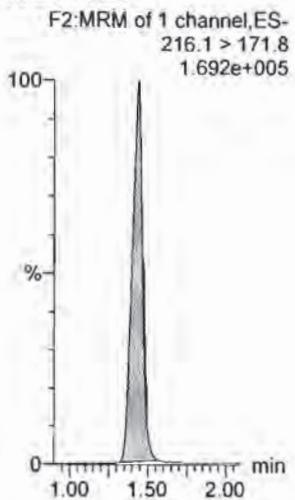
PFHxA



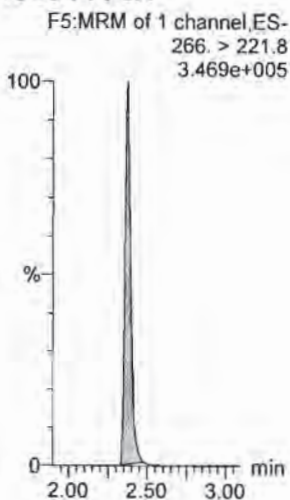
PFPeS



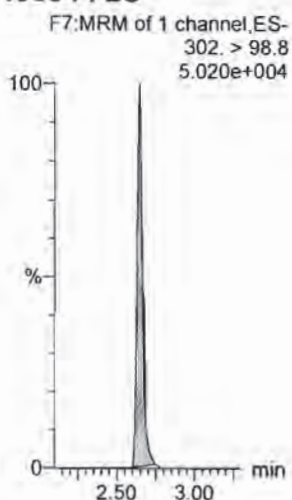
13C3-PFBA



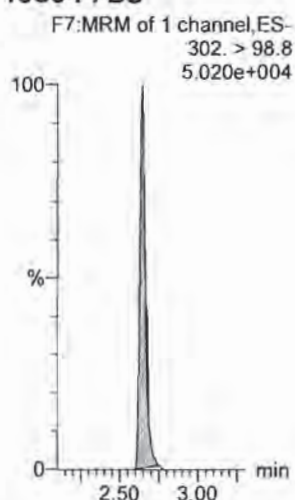
13C3-PFPeA



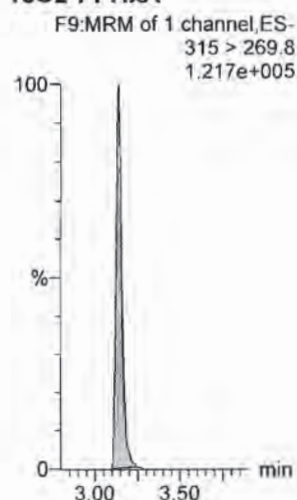
13C3-PFBS



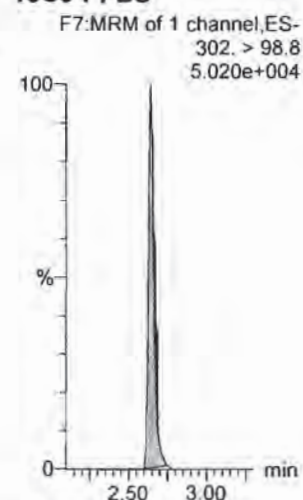
13C3-PFBS



13C2-PFHxA



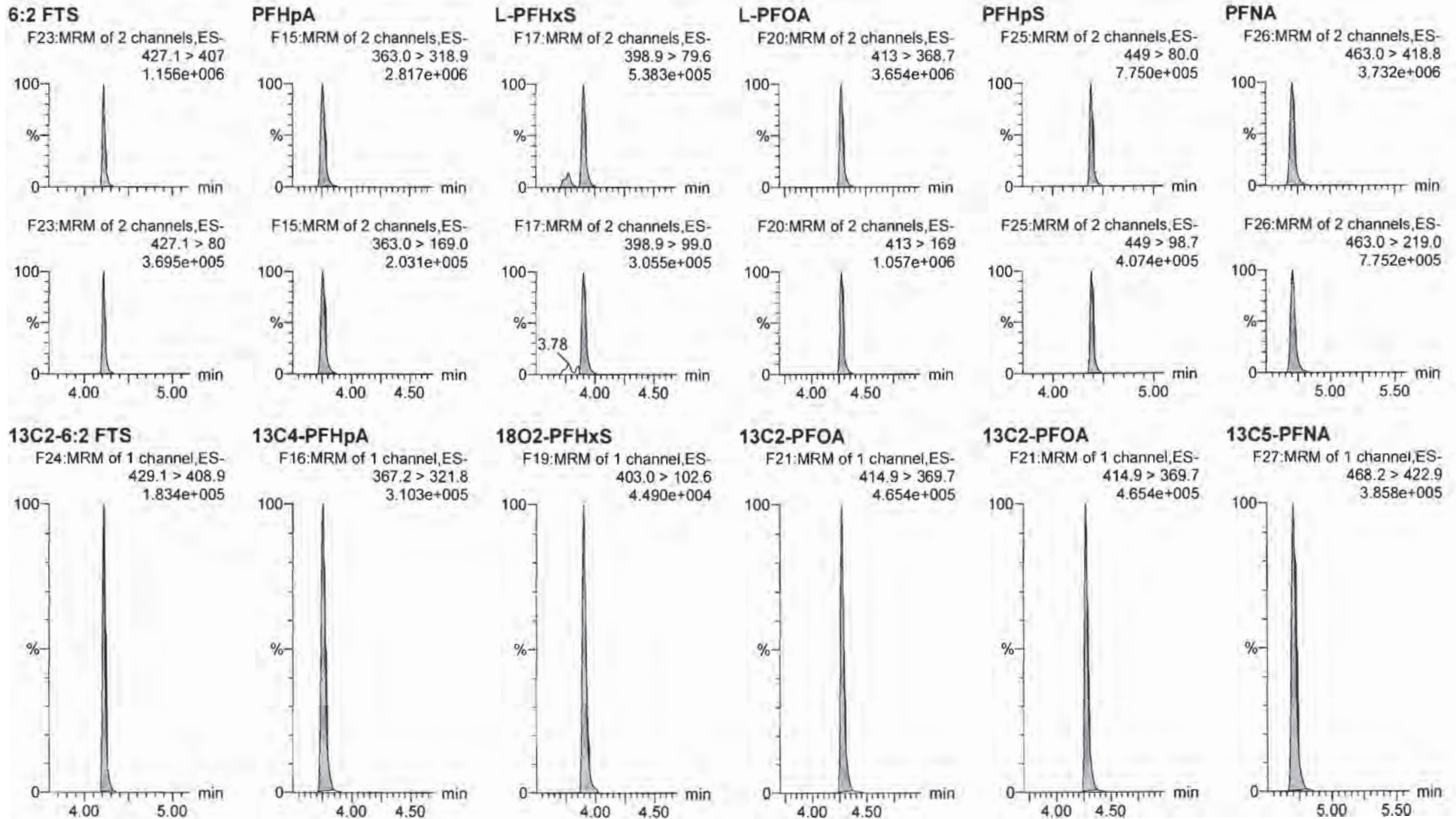
13C3-PFBS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

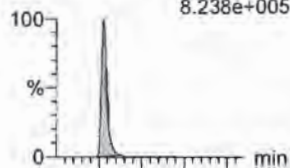
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

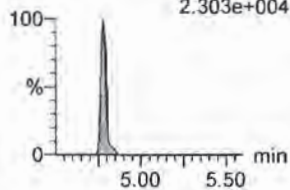
Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209

PFOSA

F29:MRM of 4 channels,ES-
498.1 > 77.8
8.238e+005

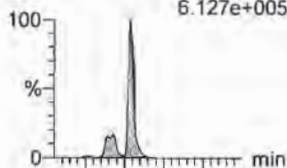


F29:MRM of 4 channels,ES-
498.1 > 478
2.303e+004

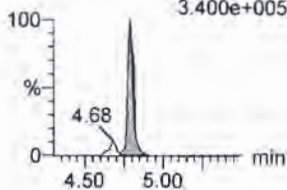


L-PFOS

F31:MRM of 2 channels,ES-
499 > 79.9
6.127e+005

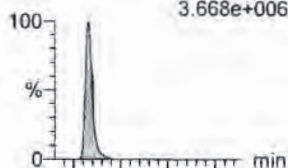


F31:MRM of 2 channels,ES-
499 > 99
3.400e+005

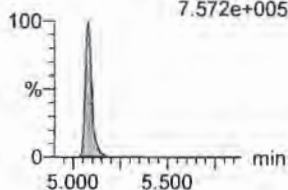


PFDA

F36:MRM of 2 channels,ES-
513 > 468.8
3.668e+006

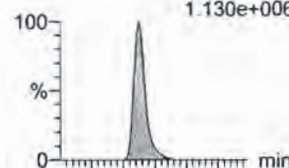


F36:MRM of 2 channels,ES-
513 > 219
7.572e+005

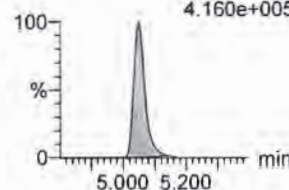


8:2 FTS

F41:MRM of 2 channels,ES-
527 > 506.9
1.130e+006

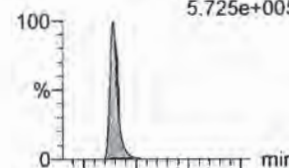


F41:MRM of 2 channels,ES-
527 > 80
4.160e+005

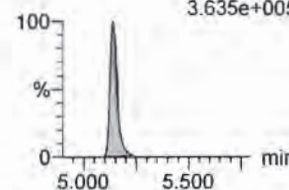


PFNS

F44:MRM of 2 channels,ES-
549.1 > 80.1
5.725e+005

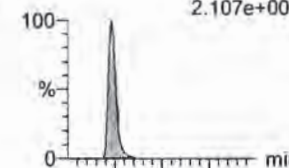


F44:MRM of 2 channels,ES-
549.1 > 99.1
3.635e+005

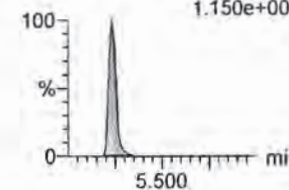


N-MeFOSAA

F47:MRM of 2 channels,ES-
570.1 > 419
2.107e+006

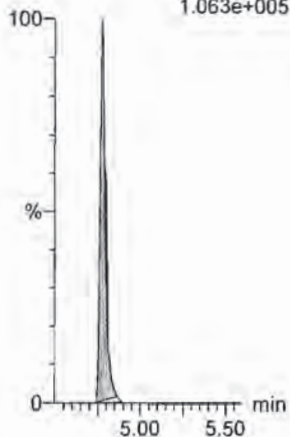


F47:MRM of 2 channels,ES-
570.1 > 483.0
1.150e+005



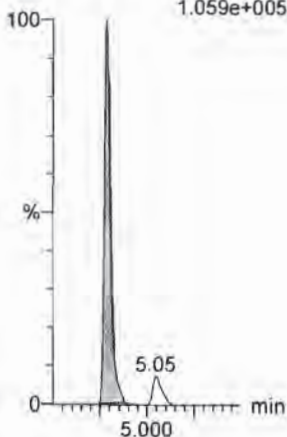
13C8-PFOSA

F33:MRM of 1 channel,ES-
506.1 > 77.7
1.063e+005



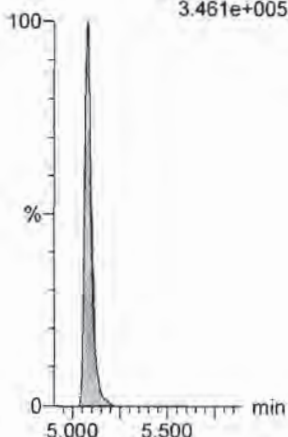
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
1.059e+005



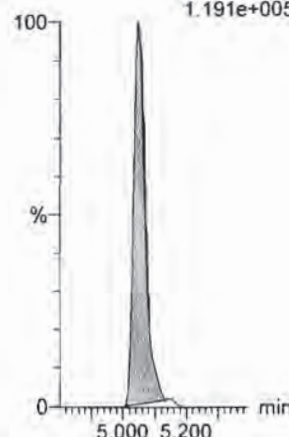
13C2-PFDA

F37:MRM of 1 channel,ES-
515.1 > 469.9
3.461e+005



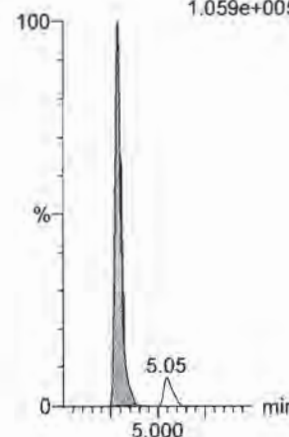
13C2-8:2 FTS

F42:MRM of 1 channel,ES-
529.1 > 508.7
1.191e+005



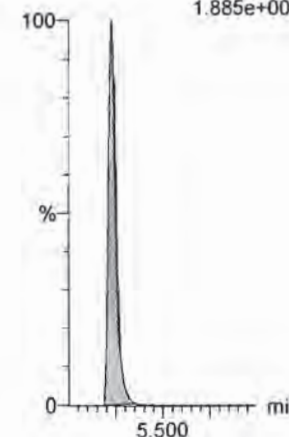
13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
1.059e+005



d3-N-MeFOSAA

F49:MRM of 1 channel,ES-
573.3 > 419
1.885e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

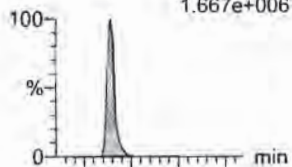
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

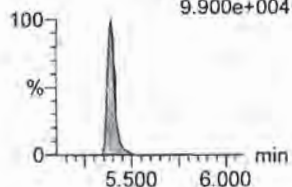
Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209

N-EtFOSAA

F50:MRM of 2 channels,ES-
584.2 > 419
1.667e+006

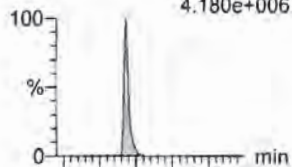


F50:MRM of 2 channels,ES-
584.2 > 483.0
9.900e+004

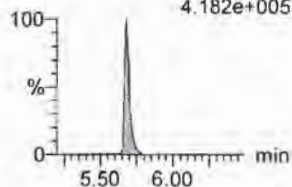


PFDoA

F53:MRM of 4 channels,ES-
612.9 > 569.0
4.180e+006

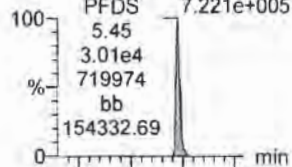


F53:MRM of 4 channels,ES-
612.9 > 318.8
4.182e+005

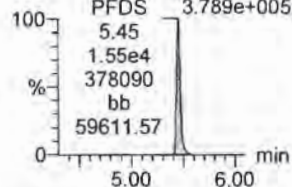


PFDS

F52:MRM of 2 channels,ES-
598.8 > 80
7.221e+005

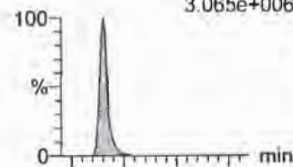


F52:MRM of 2 channels,ES-
598.8 > 98.7
3.789e+005

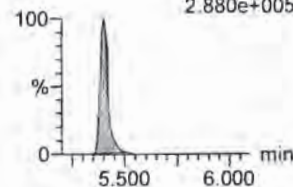


PFUdA

F45:MRM of 2 channels,ES-
563.0 > 518.9
3.065e+006

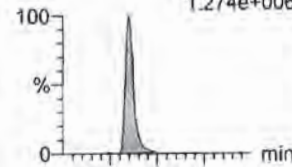


F45:MRM of 2 channels,ES-
563.0 > 269
2.880e+005

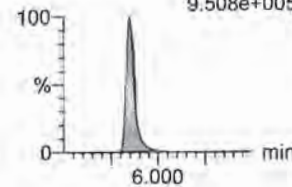


N-MeFOSA

F35:MRM of 2 channels,ES-
512.1 > 168.9
1.274e+006

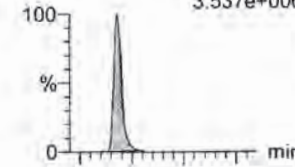


F35:MRM of 2 channels,ES-
512.1 > 219
9.508e+005

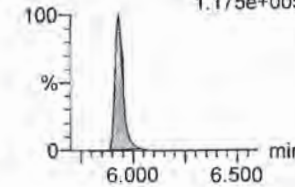


PFTrDA

F59:MRM of 2 channels,ES-
662.9 > 618.9
3.537e+006

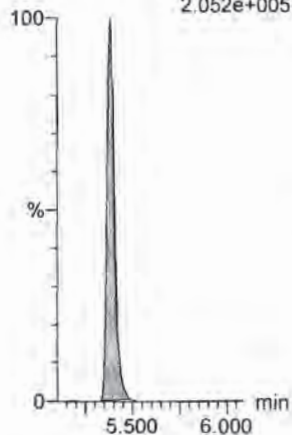


F59:MRM of 2 channels,ES-
662.9 > 319
1.175e+005



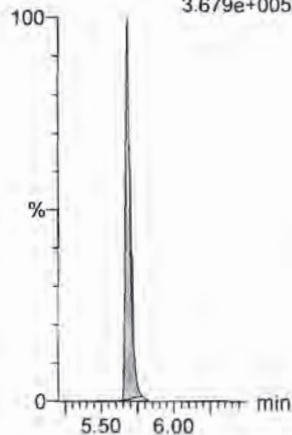
d5-N-EtFOSAA

F51:MRM of 1 channel,ES-
589.3 > 419
2.052e+005



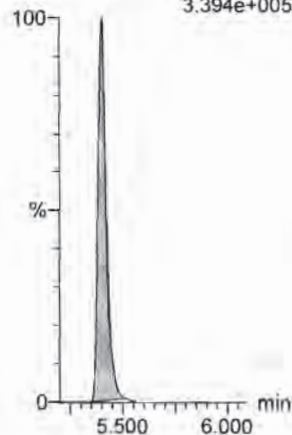
13C2-PFDoA

F54:MRM of 2 channels,ES-
615.0 > 569.7
3.679e+005



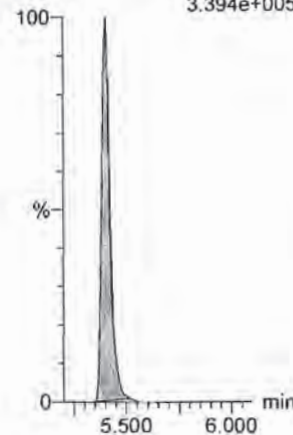
13C2-PFUdA

F46:MRM of 1 channel,ES-
565 > 519.8
3.394e+005



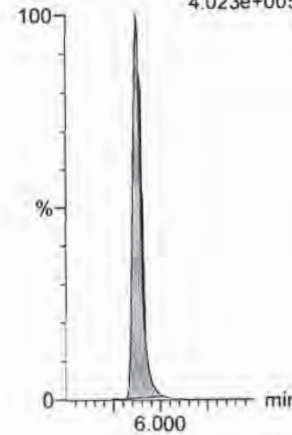
13C2-PFUdA

F46:MRM of 1 channel,ES-
565 > 519.8
3.394e+005



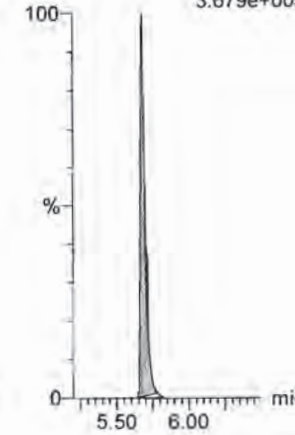
d3-N-MeFOSA

F38:MRM of 1 channel,ES-
515.2 > 168.9
4.023e+005



13C2-PFDoA

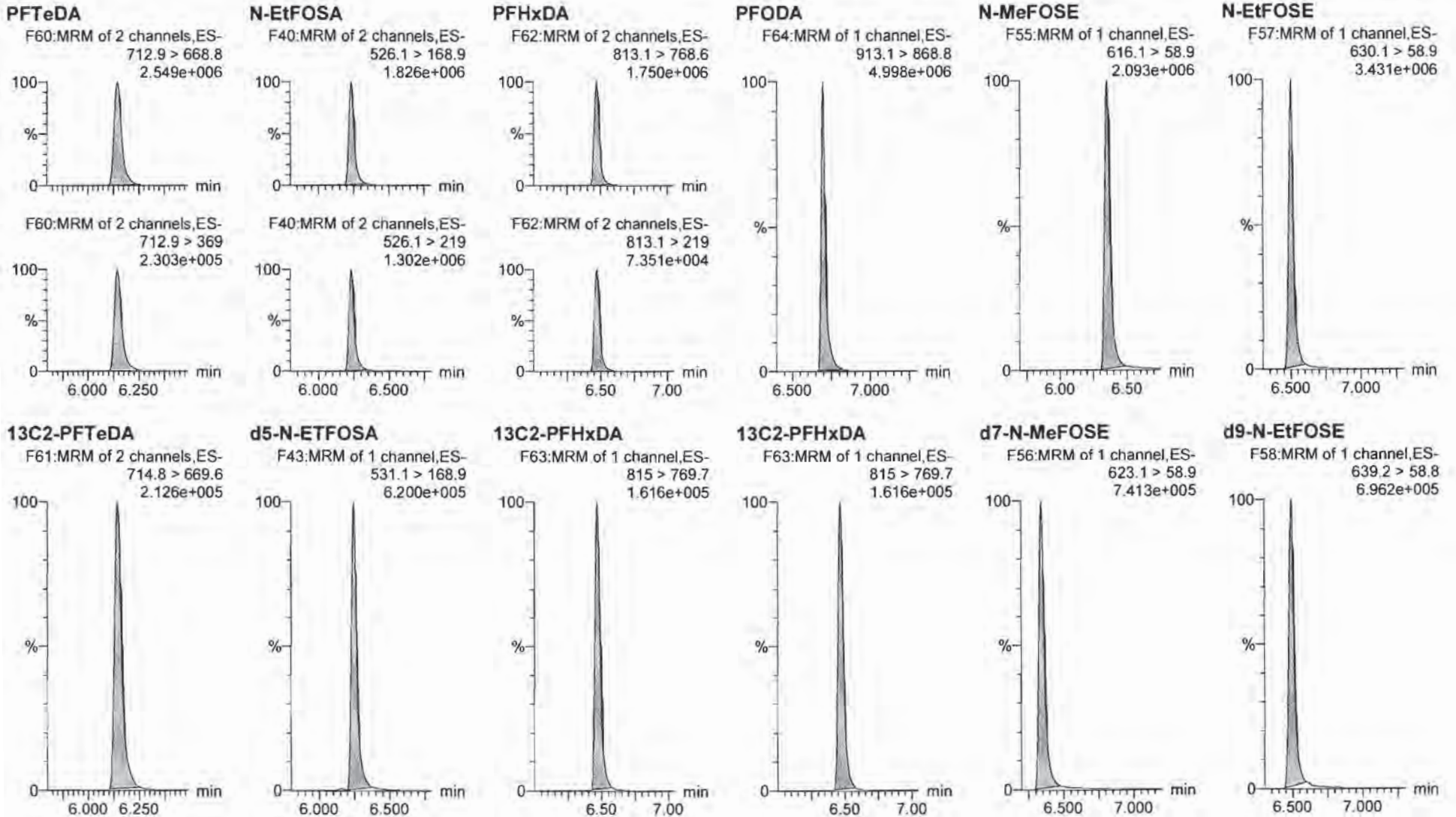
F54:MRM of 2 channels,ES-
615.0 > 569.7
3.679e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

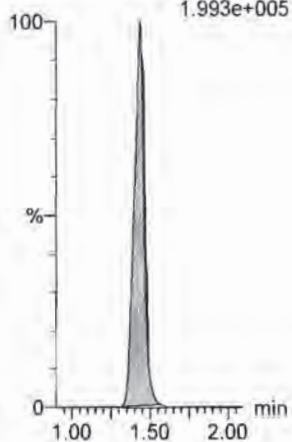
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_9, Date: 12-Apr-2018, Time: 19:24:31, ID: ST180412M1-8 PFC CS5 18D0209, Description: PFC CS5 18D0209

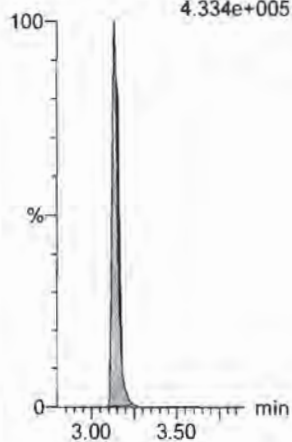
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
1.993e+005



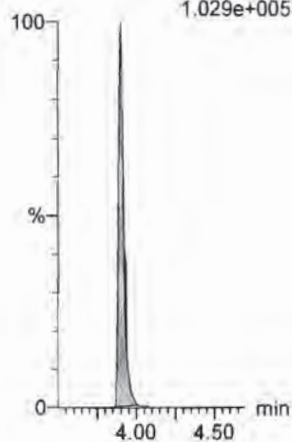
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.334e+005



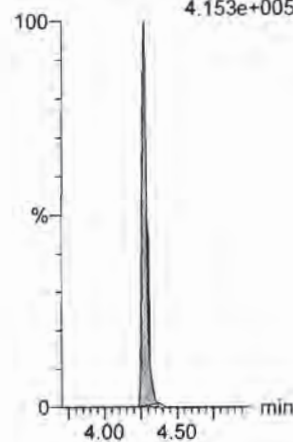
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
1.029e+005



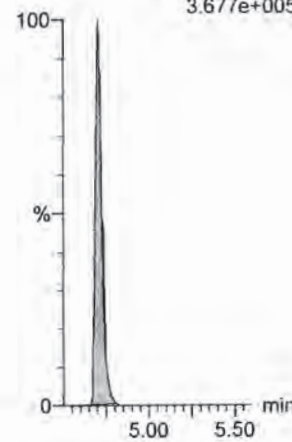
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
4.153e+005



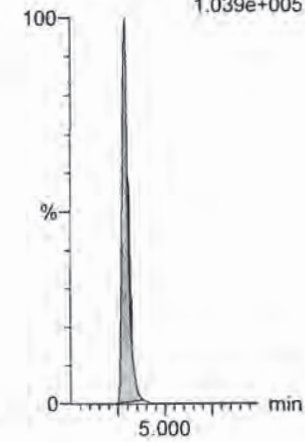
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.677e+005



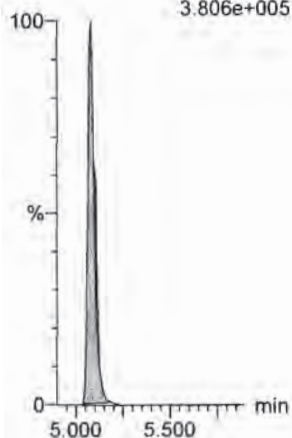
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
1.039e+005



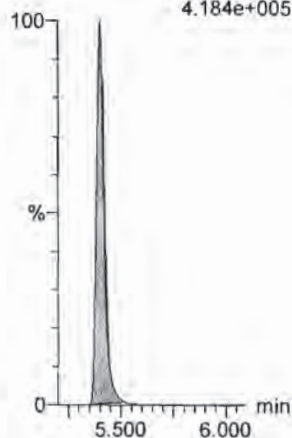
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.806e+005



13C7-PFUDA

F48:MRM of 1 channel,ES-
570.1 > 524.8
4.184e+005



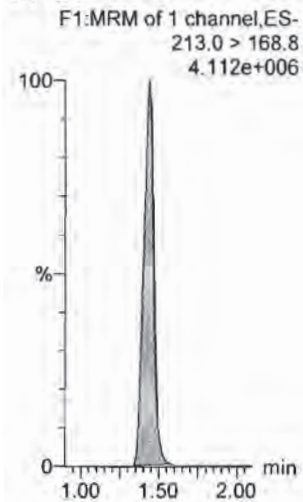
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

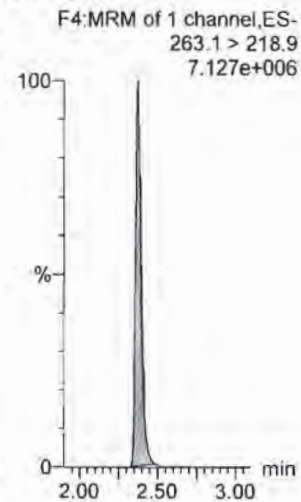
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210

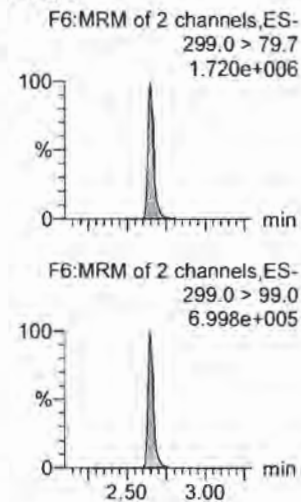
PFBA



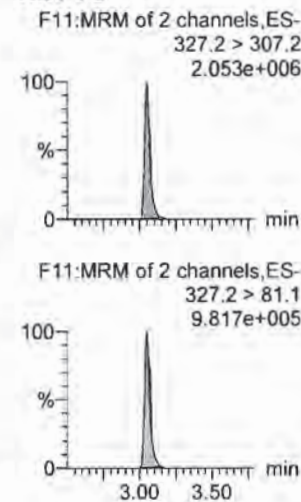
PFPeA



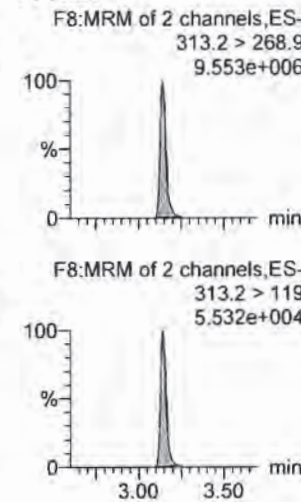
PFBS



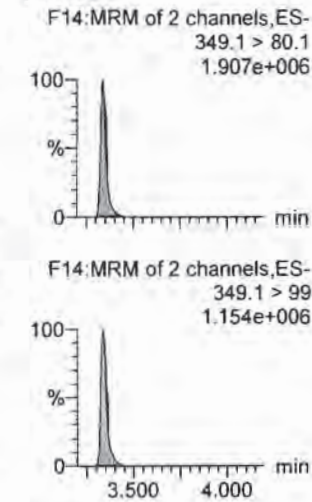
4:2 FTS



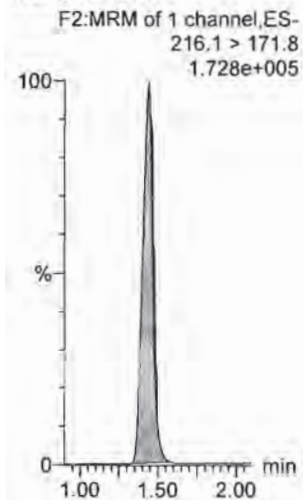
PFHxA



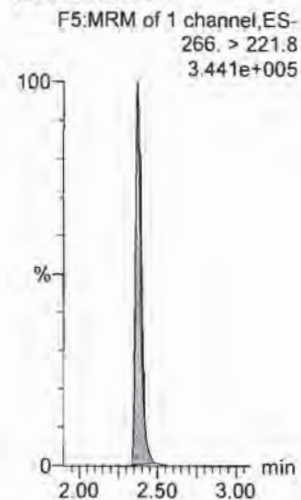
PFPeS



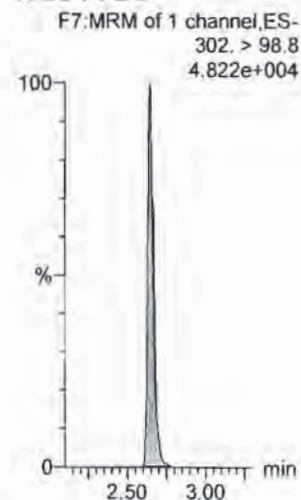
13C3-PFBA



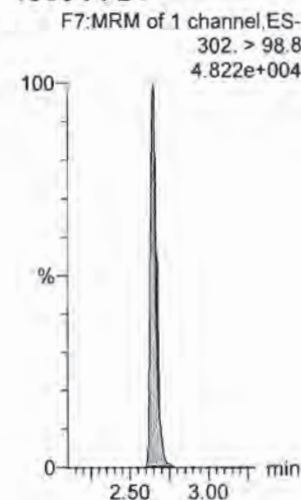
13C3-PFPeA



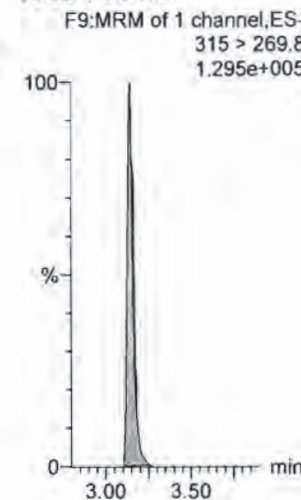
13C3-PFBS



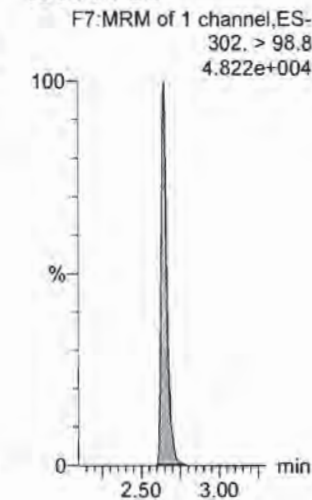
13C3-PFBS



13C2-PFHxA



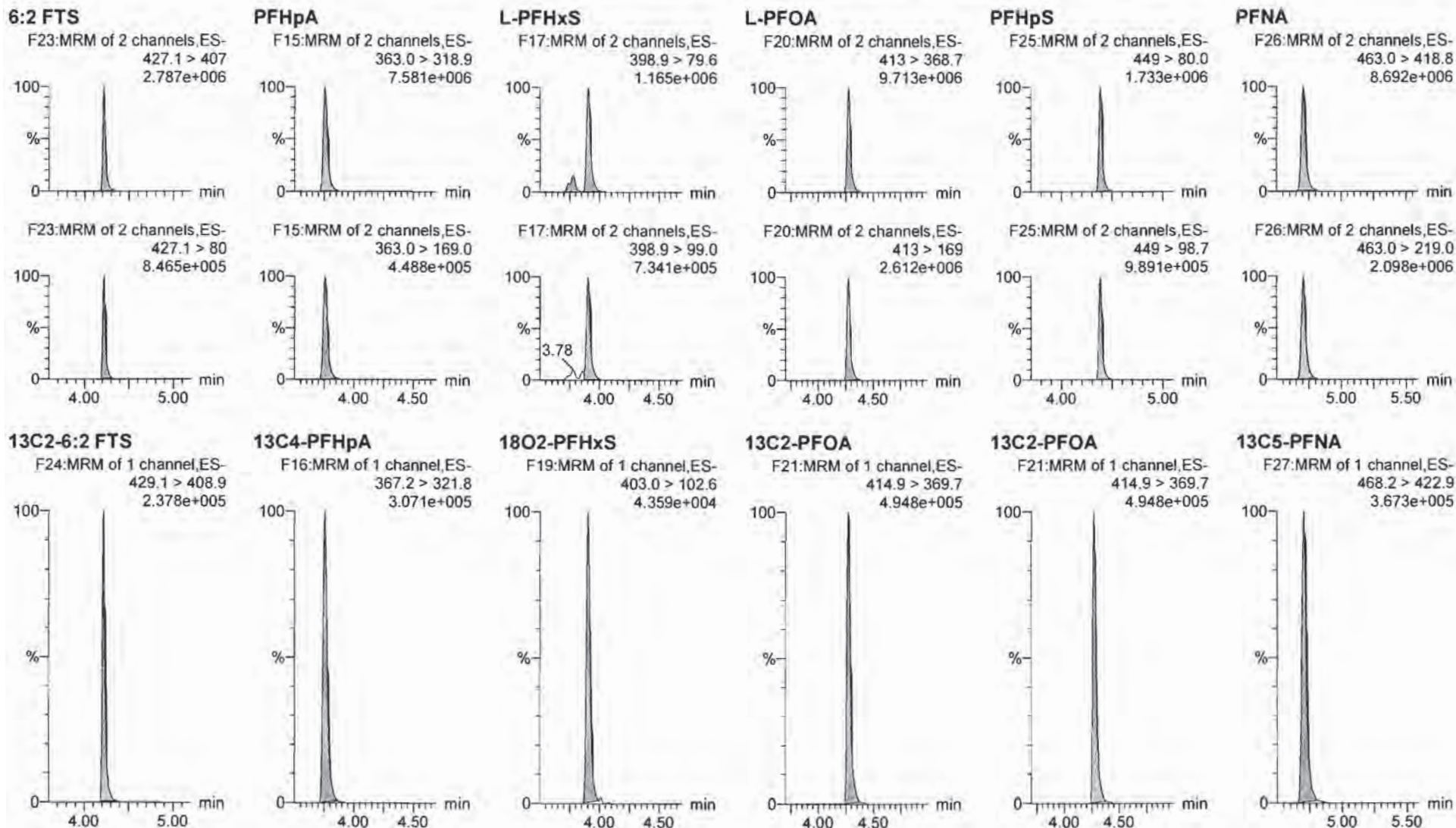
13C3-PFBS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210

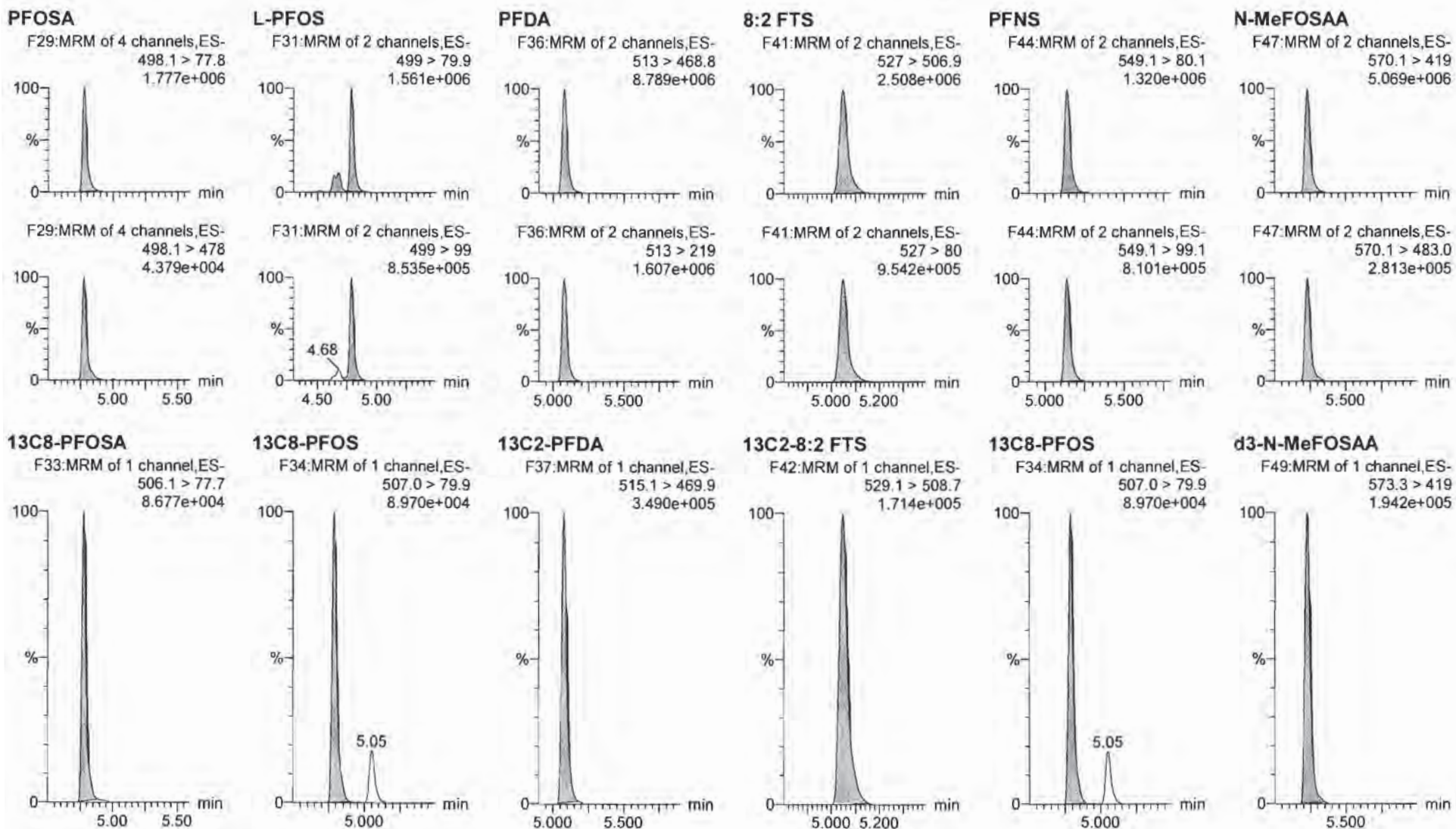


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

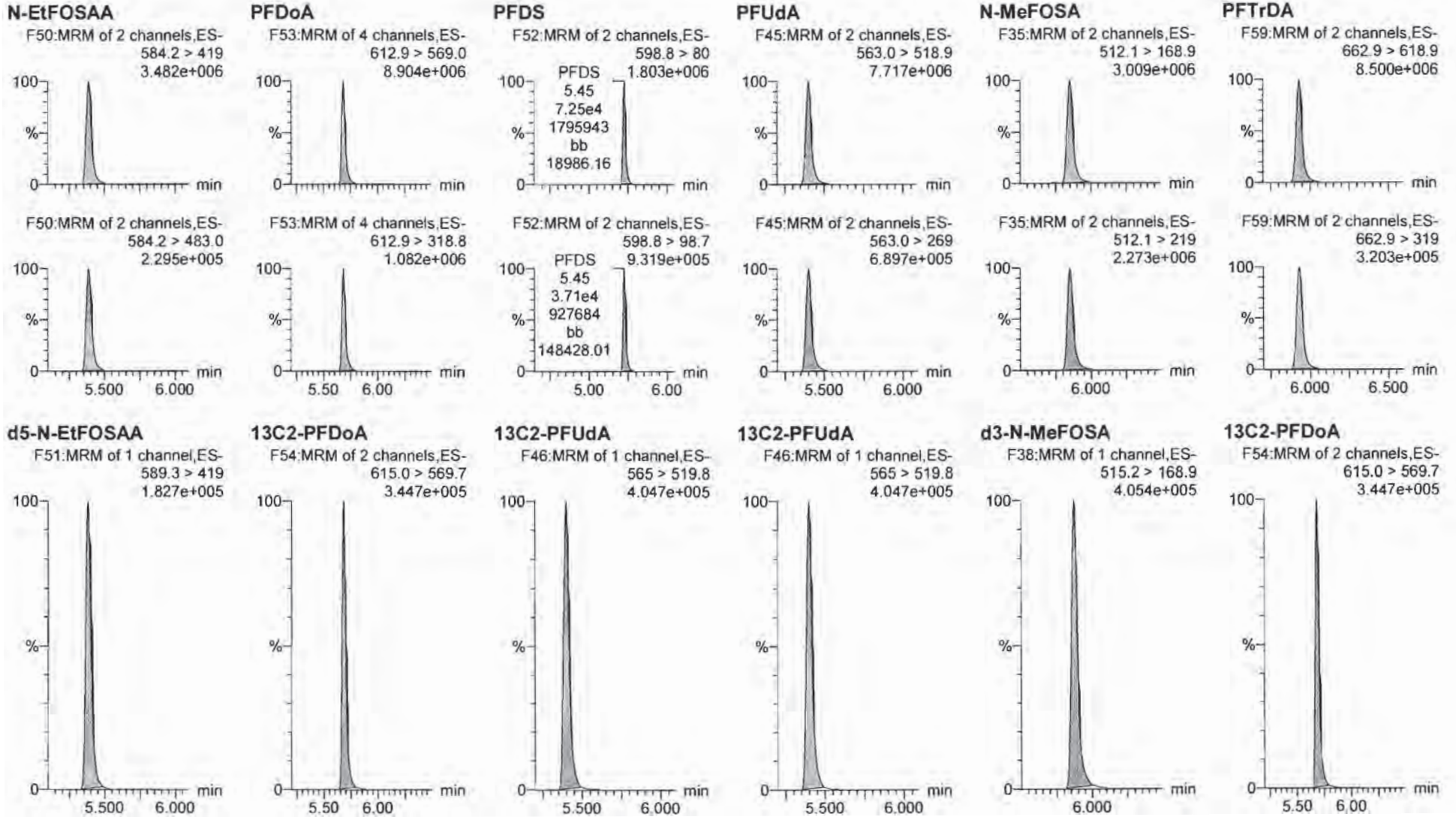
Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

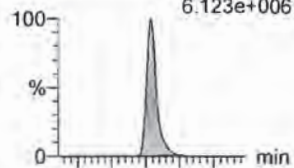
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

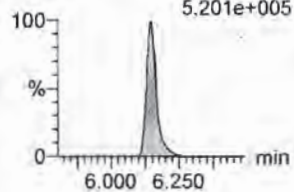
Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210

PFTeDA

F60:MRM of 2 channels,ES-
712.9 > 668.8
6.123e+006

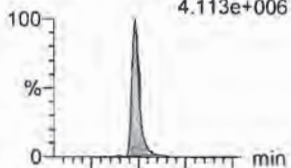


F60:MRM of 2 channels,ES-
712.9 > 369
5.201e+005

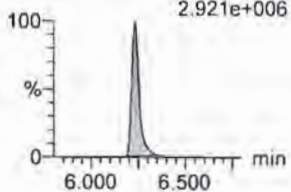


N-EtFOFA

F40:MRM of 2 channels,ES-
526.1 > 168.9
4.113e+006

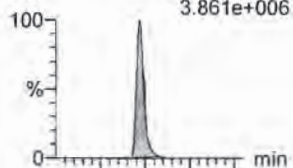


F40:MRM of 2 channels,ES-
526.1 > 219
2.921e+006

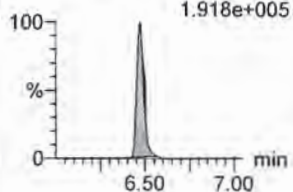


PFHxDA

F62:MRM of 2 channels,ES-
813.1 > 768.6
3.861e+006



F62:MRM of 2 channels,ES-
813.1 > 219
1.918e+005



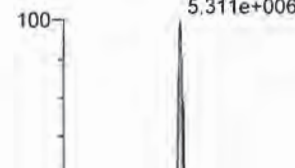
PFODA

F64:MRM of 1 channel,ES-
913.1 > 868.8
1.115e+007



N-MeFOSE

F55:MRM of 1 channel,ES-
616.1 > 58.9
5.311e+006



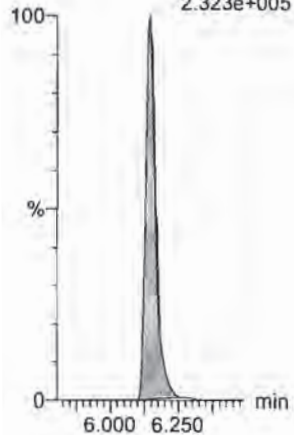
N-EtFOSE

F57:MRM of 1 channel,ES-
630.1 > 58.9
6.738e+006



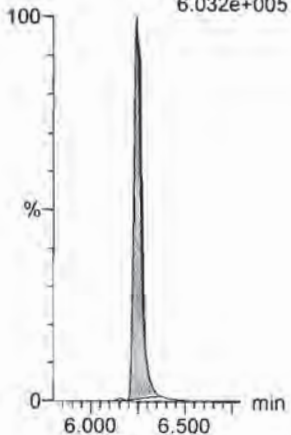
13C2-PFTeDA

F61:MRM of 2 channels,ES-
714.8 > 669.6
2.323e+005



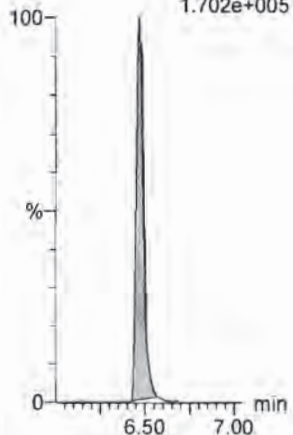
d5-N-ETFOFA

F43:MRM of 1 channel,ES-
531.1 > 168.9
6.032e+005



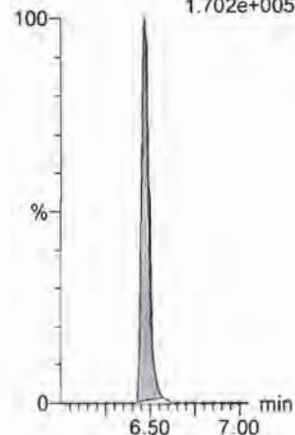
13C2-PFHxDA

F63:MRM of 1 channel,ES-
815 > 769.7
1.702e+005



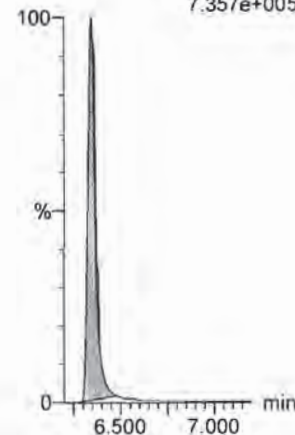
13C2-PFHxDA

F63:MRM of 1 channel,ES-
815 > 769.7
1.702e+005



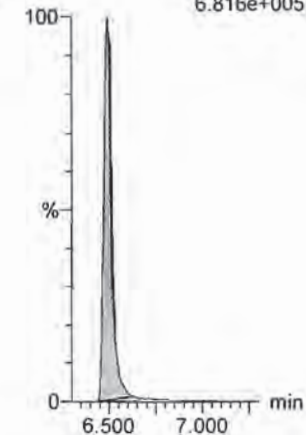
d7-N-MeFOSE

F56:MRM of 1 channel,ES-
623.1 > 58.9
7.357e+005



d9-N-EtFOSE

F58:MRM of 1 channel,ES-
639.2 > 58.8
6.816e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

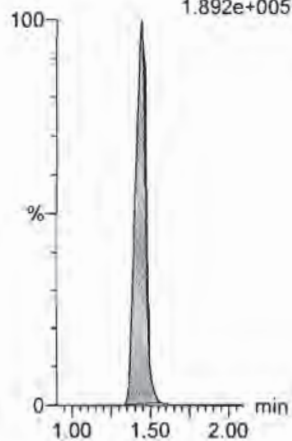
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_10, Date: 12-Apr-2018, Time: 19:36:01, ID: ST180412M1-9 PFC CS6 18D0210, Description: PFC CS6 18D0210

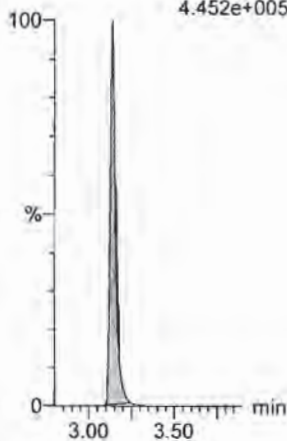
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
1.892e+005



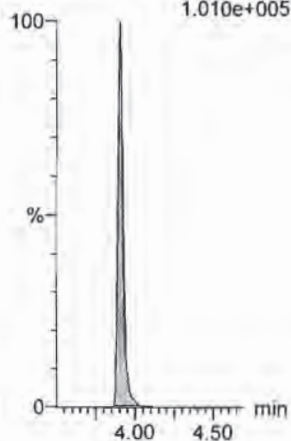
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.452e+005



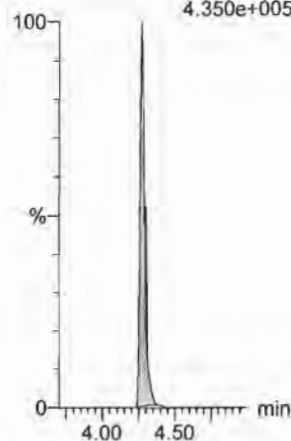
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
1.010e+005



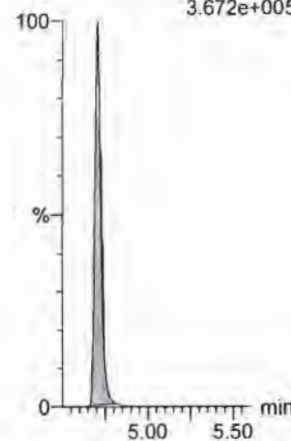
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
4.350e+005



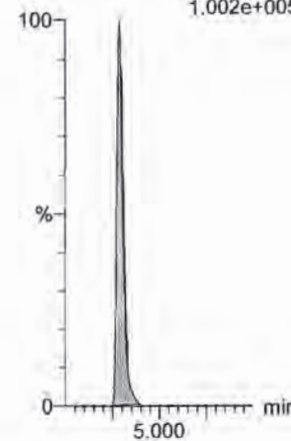
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.672e+005



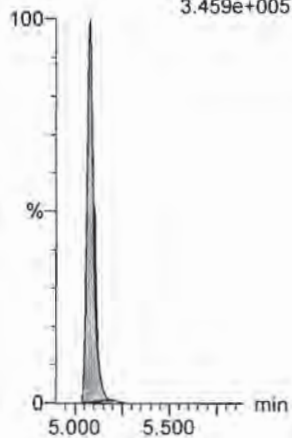
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
1.002e+005



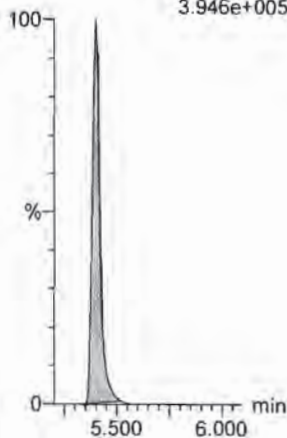
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
3.459e+005



13C7-PFUdA

F48:MRM of 1 channel,ES-
570.1 > 524.8
3.946e+005

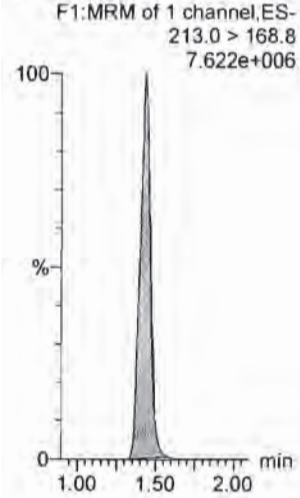


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

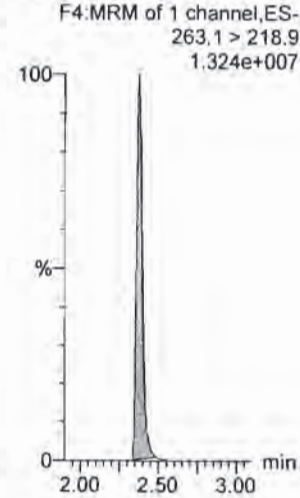
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211

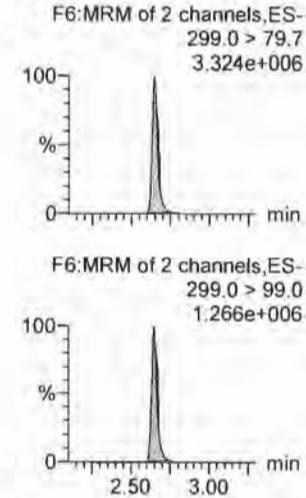
PFBA



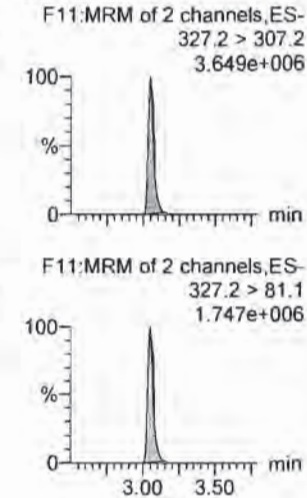
PFPeA



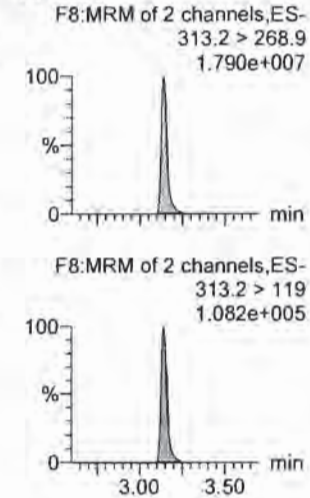
PFBS



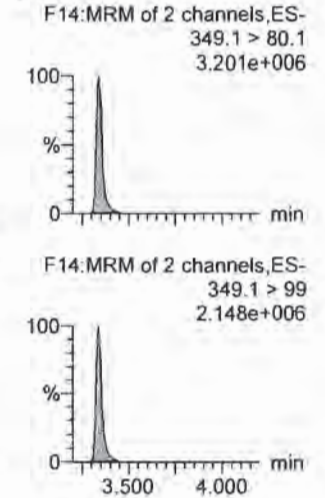
4:2 FTS



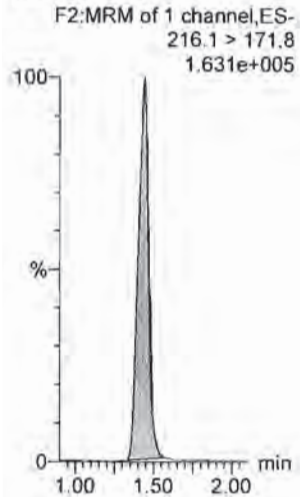
PFHxA



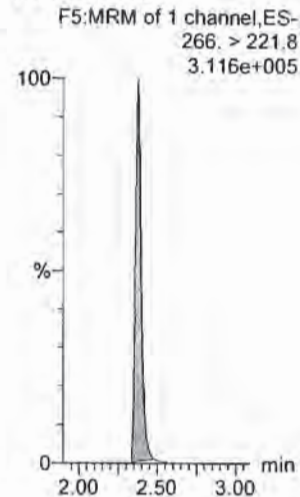
PFPeS



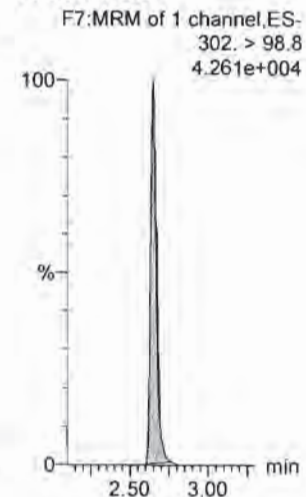
13C3-PFBA



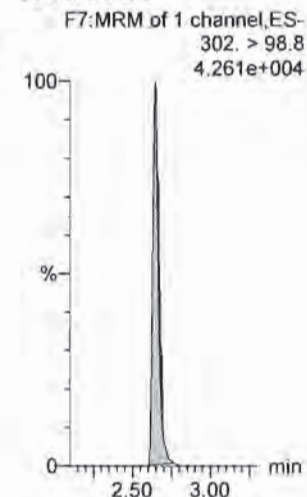
13C3-PFPeA



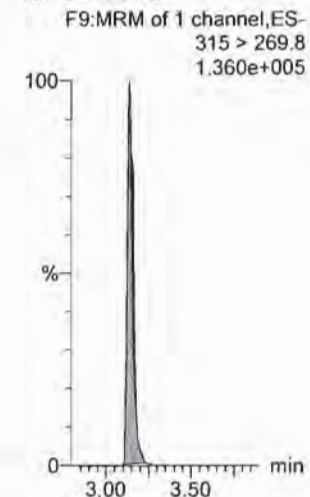
13C3-PFBS



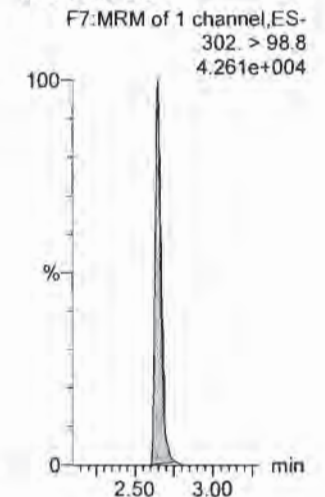
13C3-PFBS



13C2-PFHxA



13C3-PFBS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

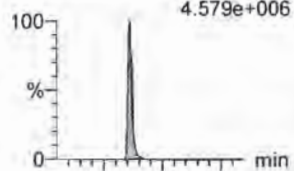
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

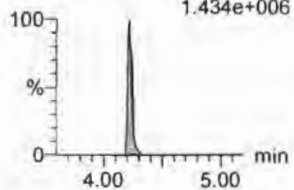
Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211

6:2 FTS

F23:MRM of 2 channels,ES-
427.1 > 407
4.579e+006

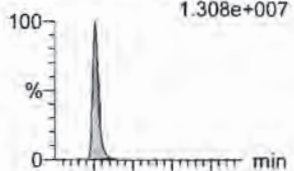


F23:MRM of 2 channels,ES-
427.1 > 80
1.434e+006

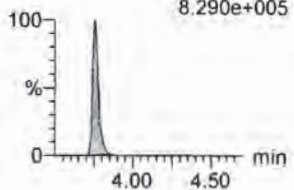


PFHpA

F15:MRM of 2 channels,ES-
363.0 > 318.9
1.308e+007

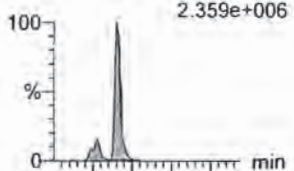


F15:MRM of 2 channels,ES-
363.0 > 169.0
8.290e+005

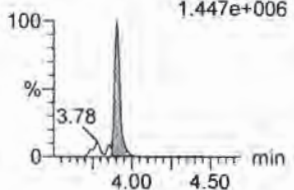


L-PFHxS

F17:MRM of 2 channels,ES-
398.9 > 79.6
2.359e+006

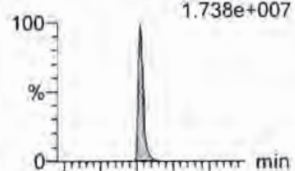


F17:MRM of 2 channels,ES-
398.9 > 99.0
1.447e+006

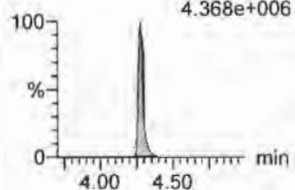


L-PFOA

F20:MRM of 2 channels,ES-
413 > 368.7
1.738e+007

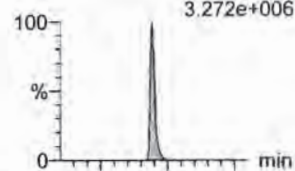


F20:MRM of 2 channels,ES-
413 > 169
4.368e+006

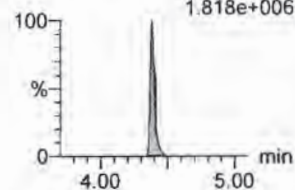


PFHpS

F25:MRM of 2 channels,ES-
449 > 80.0
3.272e+006

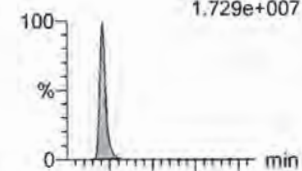


F25:MRM of 2 channels,ES-
449 > 98.7
1.818e+006

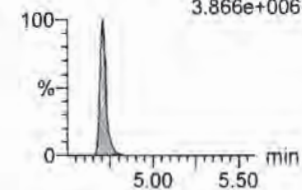


PFNA

F26:MRM of 2 channels,ES-
463.0 > 418.8
1.729e+007

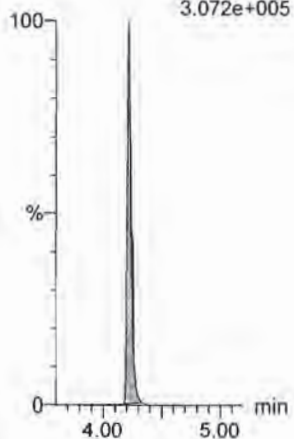


F26:MRM of 2 channels,ES-
463.0 > 219.0
3.866e+006



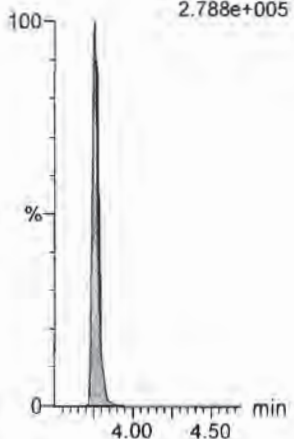
13C2-6:2 FTS

F24:MRM of 1 channel,ES-
429.1 > 408.9
3.072e+005



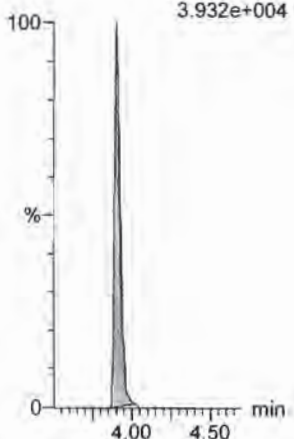
13C4-PFHpA

F16:MRM of 1 channel,ES-
367.2 > 321.8
2.788e+005



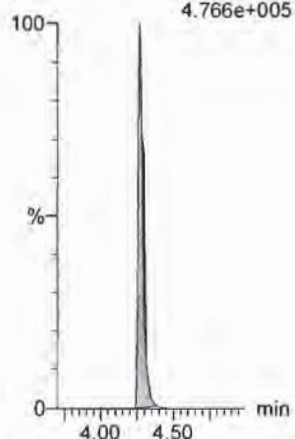
18O2-PFHxS

F19:MRM of 1 channel,ES-
403.0 > 102.6
3.932e+004



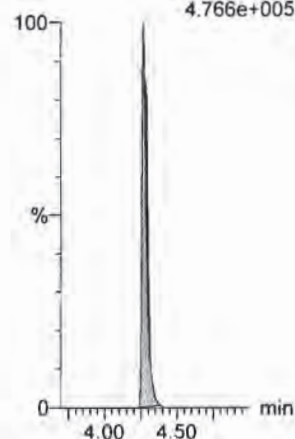
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
4.766e+005



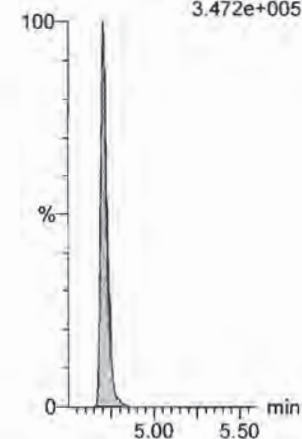
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
4.766e+005



13C5-PFNA

F27:MRM of 1 channel,ES-
468.2 > 422.9
3.472e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

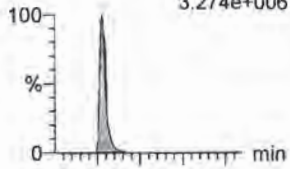
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

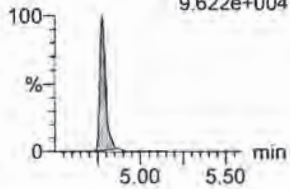
Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211

PFOSA

F29:MRM of 4 channels,ES-
498.1 > 77.8
3.274e+006

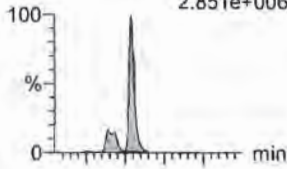


F29:MRM of 4 channels,ES-
498.1 > 478
9.622e+004

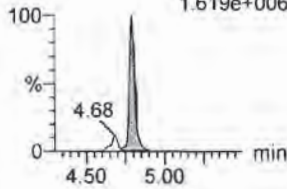


L-PFOS

F31:MRM of 2 channels,ES-
499 > 79.9
2.851e+006

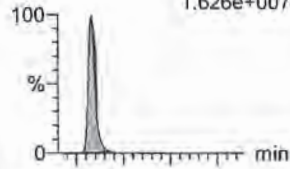


F31:MRM of 2 channels,ES-
499 > 99
1.619e+006

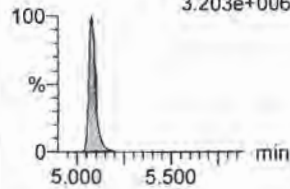


PFDA

F36:MRM of 2 channels,ES-
513 > 468.8
1.626e+007

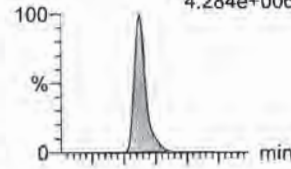


F36:MRM of 2 channels,ES-
513 > 219
3.203e+006

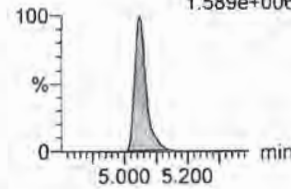


8:2 FTS

F41:MRM of 2 channels,ES-
527 > 506.9
4.284e+006

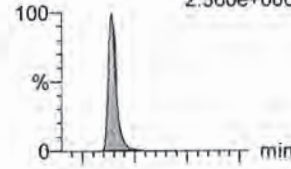


F41:MRM of 2 channels,ES-
527 > 80
1.589e+006

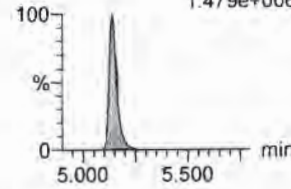


PFNS

F44:MRM of 2 channels,ES-
549.1 > 80.1
2.560e+006

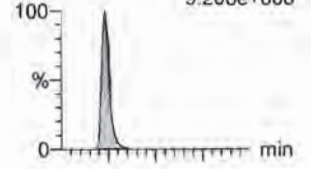


F44:MRM of 2 channels,ES-
549.1 > 99.1
1.479e+006

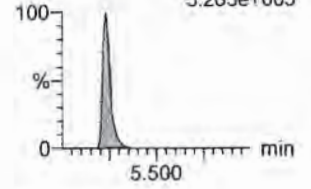


N-MeFOSAA

F47:MRM of 2 channels,ES-
570.1 > 419
9.206e+006

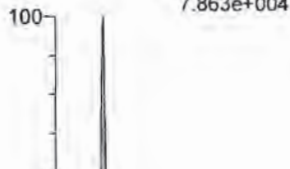


F47:MRM of 2 channels,ES-
570.1 > 483.0
5.265e+005



13C8-PFOSA

F33:MRM of 1 channel,ES-
506.1 > 77.7
7.863e+004



13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
9.199e+004



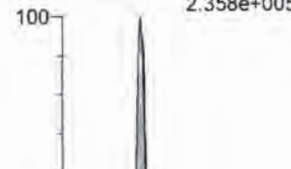
13C2-PFDA

F37:MRM of 1 channel,ES-
515.1 > 469.9
3.139e+005



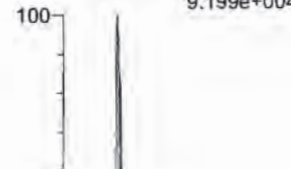
13C2-8:2 FTS

F42:MRM of 1 channel,ES-
529.1 > 508.7
2.358e+005



13C8-PFOS

F34:MRM of 1 channel,ES-
507.0 > 79.9
9.199e+004



d3-N-MeFOSAA

F49:MRM of 1 channel,ES-
573.3 > 419
1.746e+005

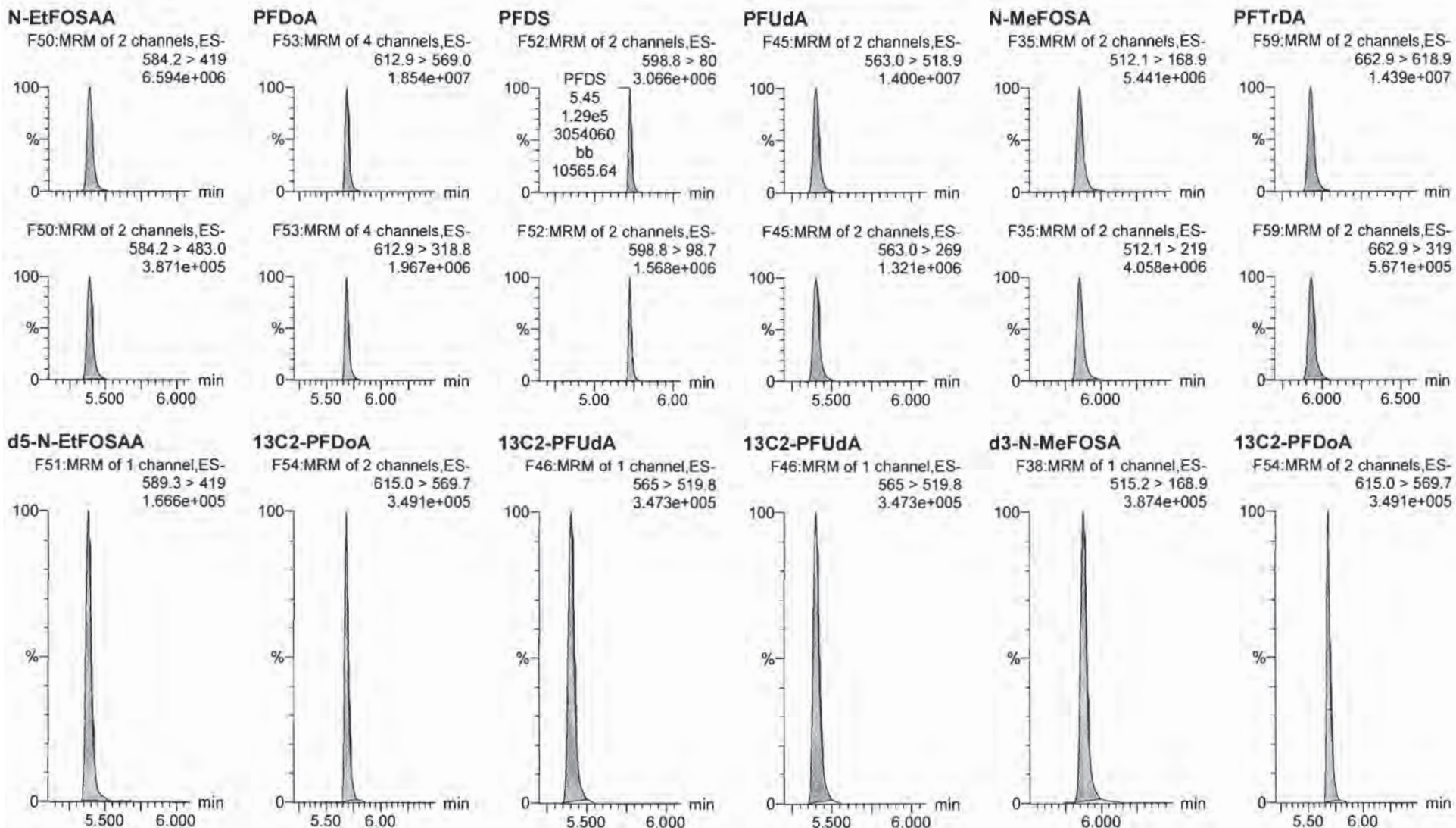


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

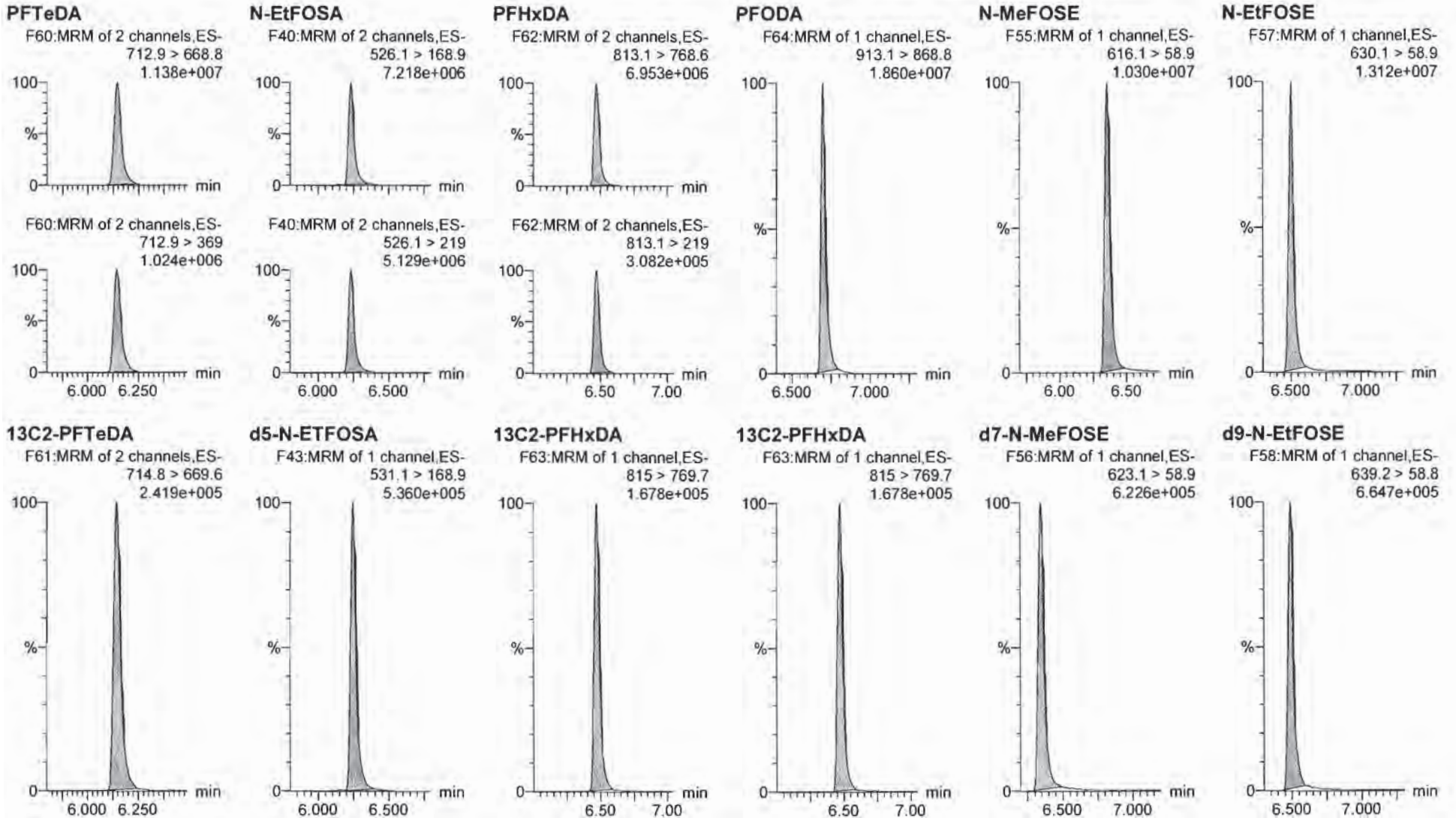
Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time
Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-CRV.qld

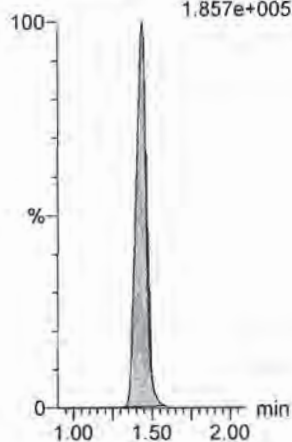
Last Altered: Friday, April 13, 2018 10:17:47 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:27:36 Pacific Daylight Time

Name: 180412M1_11, Date: 12-Apr-2018, Time: 19:47:30, ID: ST180412M1-10 PFC CS7 18D0211, Description: PFC CS7 18D0211

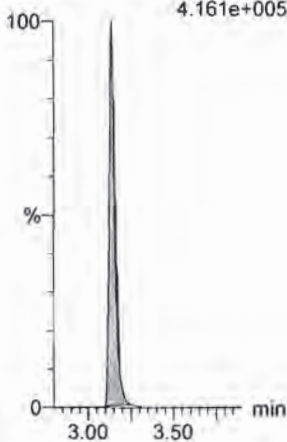
13C4-PFBA

F3:MRM of 1 channel,ES-
217. > 171.8
1.857e+005



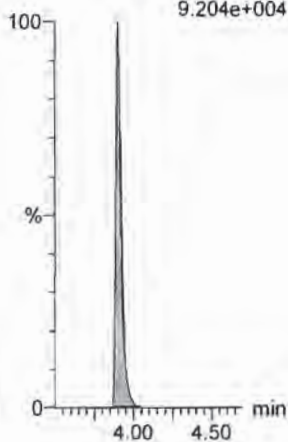
13C5-PFHxA

F10:MRM of 1 channel,ES-
318 > 272.9
4.161e+005



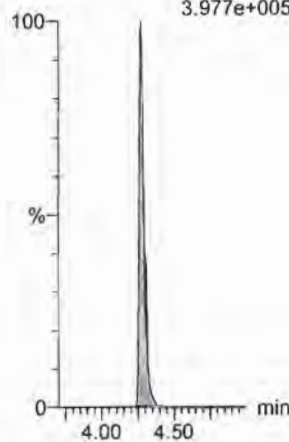
13C3-PFHxS

F18:MRM of 1 channel,ES-
401.9 > 79.9
9.204e+004



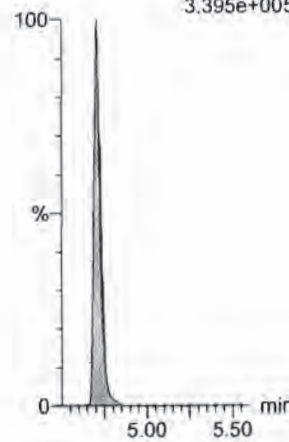
13C8-PFOA

F22:MRM of 1 channel,ES-
421.3 > 376
3.977e+005



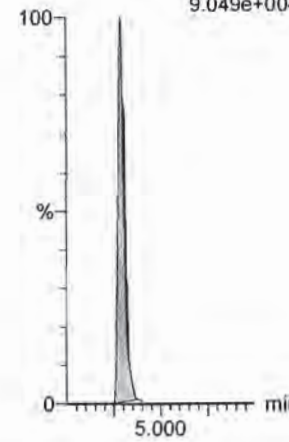
13C9-PFNA

F28:MRM of 1 channel,ES-
472.2 > 426.9
3.395e+005



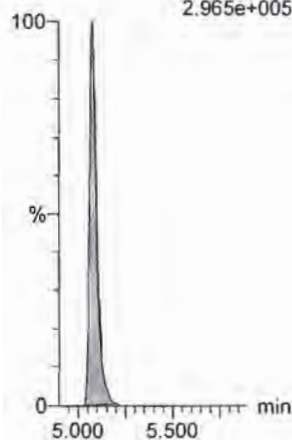
13C4-PFOS

F32:MRM of 1 channel,ES-
503 > 79.9
9.049e+004



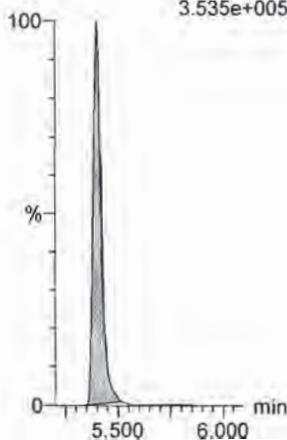
13C6-PFDA

F39:MRM of 1 channel,ES-
519.1 > 473.7
2.965e+005



13C7-PFUdA

F48:MRM of 1 channel,ES-
570.1 > 524.8
3.535e+005



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Ⓐ Compounds not present in ICV

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

Calibration: F:\Projects\PFAS.PRO\CurveDB\IC18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

#	Name	Trace	Area	IS Area	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	Recovery Out
1	1 PFBA	213.0 > 168.8	1.11e4	1.28e4		1.56	1.43	10.8	9.15	91.5	NO
2	2 PFPeA	263.1 > 218.9	1.13e4	1.46e4		2.54	2.37	9.67	9.03	90.3	NO
3	3 PFBS	299.0 > 79.7	2.52e3	2.00e3		2.81	2.65	15.8	8.34	83.4	NO
4	4 4:2 FTS	327.2 > 307.2	3.81e3	2.00e3		3.21	3.05	23.8	10.1	100.8	NO
5	5 PFHxA	313.2 > 268.9	1.51e4	5.18e3		3.30	3.14	14.6	8.70	87.0	NO
6	6 PFPeS	349.1 > 80.1	2.20e3	2.00e3		3.50	3.34	13.8	8.54	85.4	NO
7	7 PFHpA	363.0 > 318.9	1.16e4	1.30e4		3.92	3.76	11.1	9.15	91.5	NO
8	8 L-PFHxS	398.9 > 79.6	2.11e3	1.70e3		4.06	3.91	15.4	8.28	82.8	NO
9	10 6:2 FTS	427.1 > 407	3.60e3	4.73e3		4.38	4.22	9.52	8.66	86.6	NO
10	11 L-PFOA	413 > 368.7	1.29e4	1.74e4		4.30	4.27	9.26	9.82	98.2	NO
11	13 PFHpS	449 > 80.0	2.27e3	1.74e4		4.54	4.38	1.63	8.07	80.7	NO
12	14 PFNA	463.0 > 418.8	1.39e4	1.56e4		4.87	4.71	11.1	9.35	93.5	NO
13	15 PFOSA	498.1 > 77.8	2.76e3	3.97e3		4.93	4.78	8.70	8.64	86.4	NO
14	16 L-PFOS	499 > 79.9	2.90e3	3.58e3		4.90	4.79	10.1	9.64	96.4	NO
15	18 PFDA	513 > 468.8	1.51e4	1.36e4		5.24	5.08	13.8	10.3	102.7	NO
16	19 8:2 FTS	527 > 506.9	4.07e3	3.69e3		5.21	5.05	13.8	8.02	80.2	NO
17	20 PFNS	549.1 > 80.1	2.10e3	3.58e3		5.30	5.14	7.34	9.47	94.7	NO
18	21 N-MeFOSAA	570.1 > 419	8.67e3	8.35e3		5.39	5.23	13.0	9.13	91.3	NO
19	22 N-EiFOSAA	584.2 > 419	6.73e3	8.89e3		5.55	5.39	9.46	9.39	93.9	NO
20	23 PFUdA	563.0 > 518.9	1.37e4	1.68e4		5.56	5.40	10.2	9.82	98.2	NO
21	24 PFDS	598.8 > 80	2.69e3	1.68e4		5.61	5.45	2.00	8.50	85.0	NO
22	25 PFDoA	612.9 > 569.0	1.50e4	1.53e4		5.84	5.68	12.2	9.44	94.4	NO
23	26 N-MeFOSA	512.1 > 168.9		1.98e4		6.00				Ⓐ	NO
24	27 PFTrDA	662.9 > 618.9	1.24e4	1.53e4		6.10	5.93	10.2	7.34	73.4	NO
25	28 PFTeDA	712.9 > 668.8	1.08e4	7.63e3		6.30	6.15	17.6	11.1	110.5	NO
26	29 N-EiFOSA	526.1 > 168.9		2.82e4		6.38				Ⓐ	NO
27	30 PFHxDA	813.1 > 768.6		6.85e3		6.62				↓	NO
28	31 PFODA	913.1 > 868.8		6.85e3		6.85				↓	NO
29	32 N-MeFOSE	616.1 > 58.9		3.56e4		6.50				↓	NO
30	33 N-EiFOSE	630.1 > 58.9		3.40e4		6.65				↓	NO
31	34 13C3-PFBA	216.1 > 171.8	1.28e4	1.41e4	0.887	1.56	1.43	11.4	12.9	102.9	NO

MT
4/13/18
KBF
4/13/18

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

	# Name	Trace	Area	IS Area	RRF	Pred.RT	RT	y Axis Resp.	Conc.	%Rec	Recovery Out
32	35 13C3-PFPeA	266. > 221.8	1.46e4	1.68e4	0.859	2.54	2.37	10.9	12.7	101.2	NO
33	36 13C3-PFBS	302. > 98.8	2.00e3	1.68e4	0.121	2.81	2.64	1.49	12.3	98.8	NO
34	37 13C2-PFHxA	315 > 269.8	5.18e3	1.68e4	0.733	3.30	3.14	3.87	5.28	105.5	NO
35	38 13C4-PFHpA	367.2 > 321.8	1.30e4	1.68e4	0.761	3.92	3.76	9.73	12.8	102.3	NO
36	39 18O2-PFHxS	403.0 > 102.6	1.70e3	3.88e3	0.431	4.06	3.90	5.49	12.7	101.9	NO
37	40 13C2-6:2 FTS	429.1 > 408.9	4.73e3	1.63e4	0.333	4.38	4.22	3.61	10.9	86.9	NO
38	41 13C2-PFOA	414.9 > 369.7	1.74e4	1.63e4	1.150	4.43	4.27	13.3	11.6	92.6	NO
39	42 13C5-PFNA	468.2 > 422.9	1.56e4	1.60e4	0.979	4.87	4.71	12.2	12.4	99.6	NO
40	43 13C8-PFOSA	506.1 > 77.7	3.97e3	1.68e4	0.218	4.93	4.78	2.95	13.5	107.9	NO
41	44 13C8-PFOS	507.0 > 79.9	3.58e3	3.78e3	1.047	4.95	4.79	11.8	11.3	90.3	NO
42	45 13C2-PFDA	515.1 > 469.9	1.36e4	1.40e4	0.958	5.24	5.08	12.1	12.7	101.3	NO
43	46 13C2-8:2 FTS	529.1 > 508.7	3.69e3	1.68e4	0.226	5.21	5.05	2.75	12.2	97.3	NO
44	47 d3-N-MeFOSAA	573.3 > 419	8.35e3	1.68e4	0.471	5.39	5.23	6.21	13.2	105.3	NO
45	48 d5-N-EtFOSAA	589.3 > 419	8.89e3	1.68e4	0.517	5.55	5.38	6.61	12.8	102.2	NO
46	49 13C2-PFUdA	565 > 519.8	1.68e4	1.68e4	0.960	5.56	5.40	12.5	13.0	104.3	NO
47	50 13C2-PFDoA	615.0 > 569.7	1.53e4	1.68e4	0.840	5.84	5.68	11.4	13.5	108.2	NO
48	51 d3-N-MeFOSA	515.2 > 168.9	1.98e4	1.68e4	0.097	6.00	5.87	14.7	152	101.3	NO
49	52 13C2-PFTeDA	714.8 > 669.6	7.63e3	1.68e4	0.510	6.30	6.15	5.67	11.1	88.9	NO
50	53 d5-N-ETFOSA	531.1 > 168.9	2.82e4	1.68e4	0.138	6.40	6.25	21.0	152	101.5	NO
51	54 13C2-PFHxDA	815 > 769.7	6.85e3	1.68e4	1.118	6.62	6.47	5.09	4.56	91.1	NO
52	55 d7-N-MeFOSE	623.1 > 58.9	3.56e4	1.68e4	0.169	6.50	6.34	26.5	157	104.8	NO
53	56 d9-N-EtFOSE	639.2 > 58.8	3.40e4	1.68e4	0.161	6.65	6.49	25.3	157	104.8	NO
54	57 13C4-PFBA	217. > 171.8	1.41e4	1.41e4	1.000	1.56	1.43	12.5	12.5	100.0	NO
55	58 13C5-PFHxA	318 > 272.9	1.68e4	1.68e4	1.000	3.30	3.14	12.5	12.5	100.0	NO
56	59 13C3-PFHxS	401.9 > 79.9	3.88e3	3.88e3	1.000	4.04	3.90	12.5	12.5	100.0	NO
57	60 13C8-PFOA	421.3 > 376	1.63e4	1.63e4	1.000	4.43	4.27	12.5	12.5	100.0	NO
58	61 13C9-PFNA	472.2 > 426.9	1.60e4	1.60e4	1.000	4.87	4.71	12.5	12.5	100.0	NO
59	62 13C4-PFOS	503 > 79.9	3.78e3	3.78e3	1.000	4.95	4.79	12.5	12.5	100.0	NO
60	63 13C6-PFDA	519.1 > 473.7	1.40e4	1.40e4	1.000	5.24	5.08	12.5	12.5	100.0	NO
61	64 13C7-PFUdA	570.1 > 524.8	1.68e4	1.68e4	1.000	5.56	5.40	12.5	12.5	100.0	NO

Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

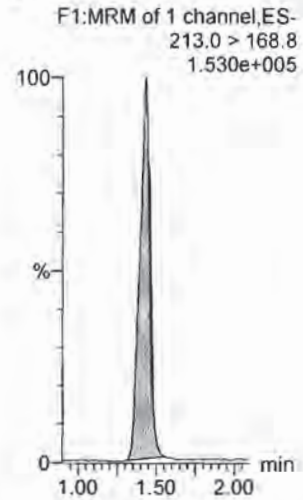
Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

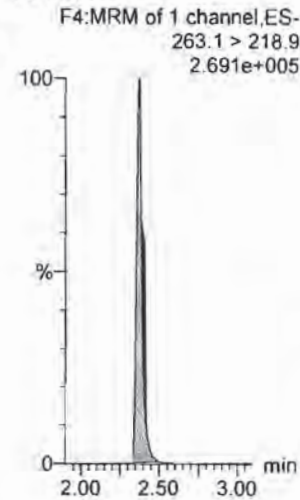
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

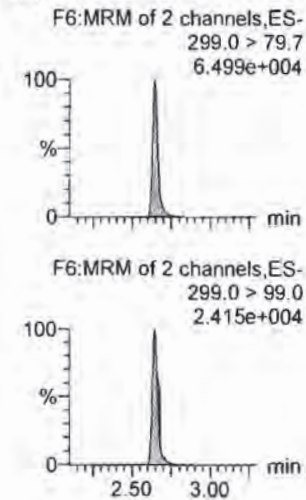
PFBA



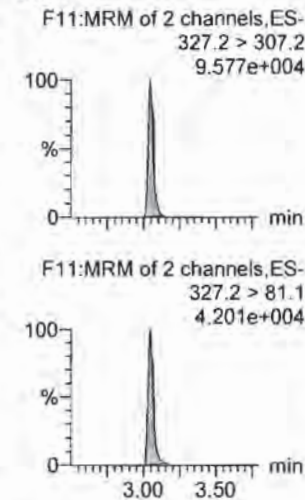
PFPeA



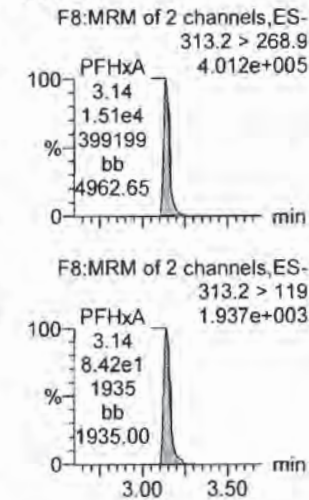
PFBS



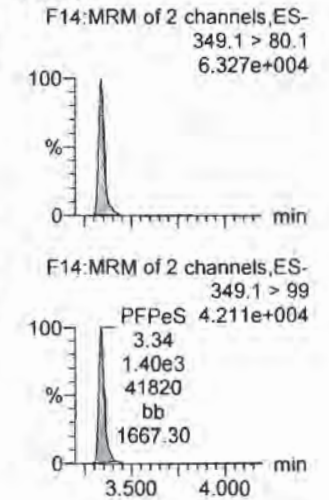
4:2 FTS



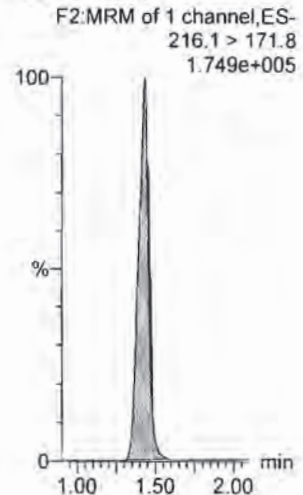
PFHxA



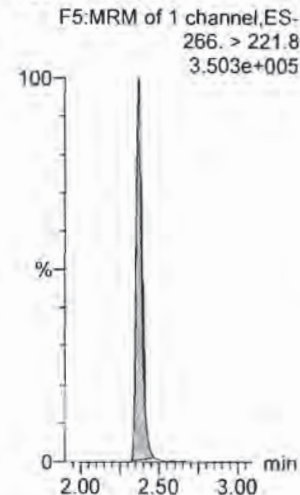
PFPeS



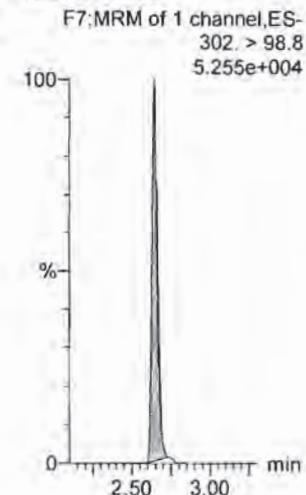
13C3-PFBA



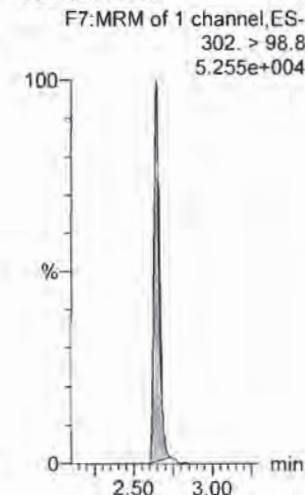
13C3-PFPeA



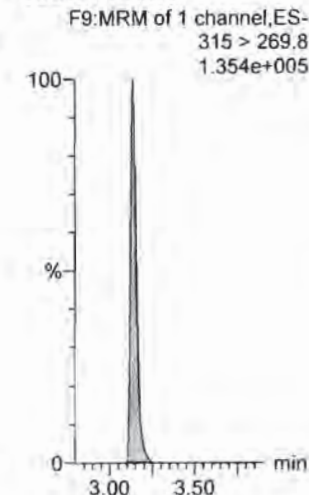
13C3-PFBS



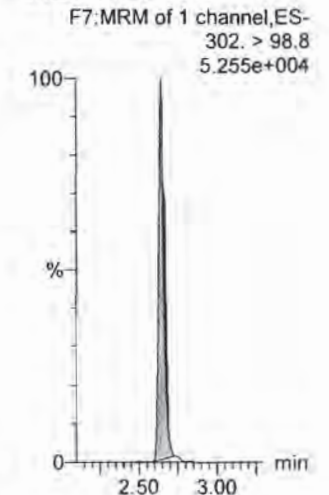
13C3-PFBS



13C2-PFHxA



13C3-PFBS



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

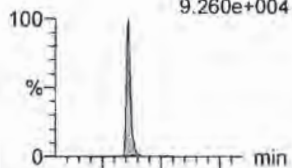
Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

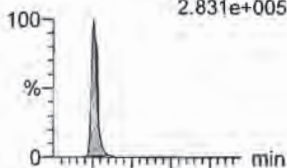
6:2 FTS

F23:MRM of 2 channels,ES-
427.1 > 407
9.260e+004



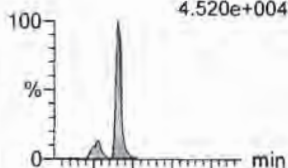
PFHpA

F15:MRM of 2 channels,ES-
363.0 > 318.9
2.831e+005



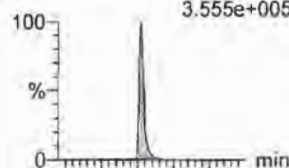
L-PFHxS

F17:MRM of 2 channels,ES-
398.9 > 79.6
4.520e+004



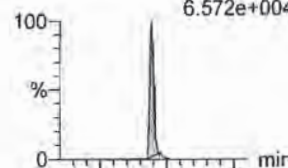
L-PFOA

F20:MRM of 2 channels,ES-
413 > 368.7
3.555e+005



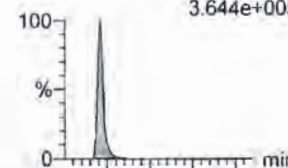
PFHpS

F25:MRM of 2 channels,ES-
449 > 80.0
6.572e+004

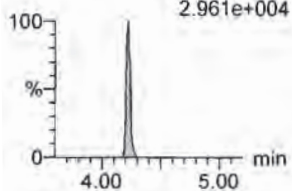


PFNA

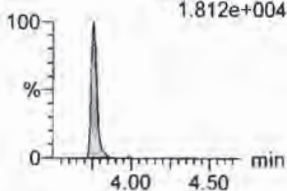
F26:MRM of 2 channels,ES-
463.0 > 418.8
3.644e+005



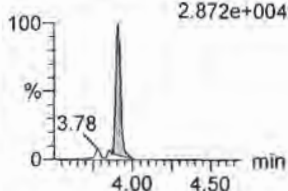
F23:MRM of 2 channels,ES-
427.1 > 80
2.961e+004



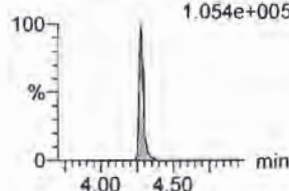
F15:MRM of 2 channels,ES-
363.0 > 169.0
1.812e+004



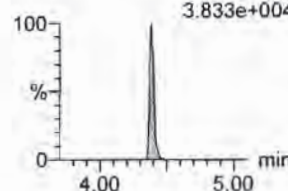
F17:MRM of 2 channels,ES-
398.9 > 99.0
2.872e+004



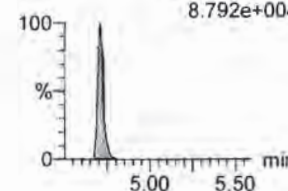
F20:MRM of 2 channels,ES-
413 > 169
1.054e+005



F25:MRM of 2 channels,ES-
449 > 98.7
3.833e+004

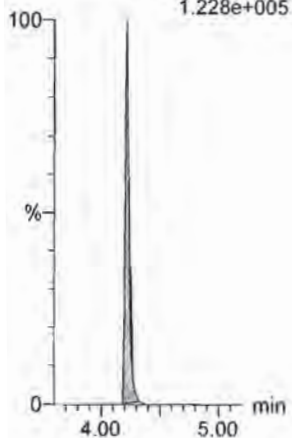


F26:MRM of 2 channels,ES-
463.0 > 219.0
8.792e+004



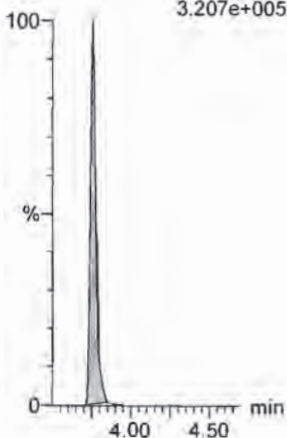
13C2-6:2 FTS

F24:MRM of 1 channel,ES-
429.1 > 408.9
1.228e+005



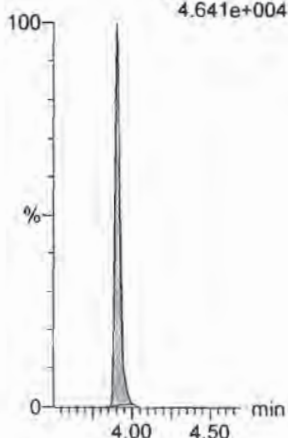
13C4-PFHpA

F16:MRM of 1 channel,ES-
367.2 > 321.8
3.207e+005



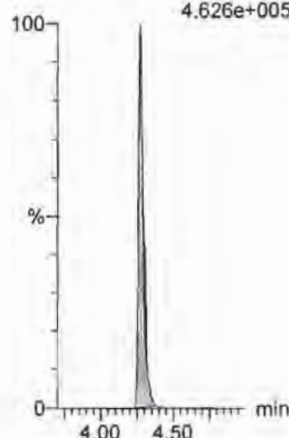
18O2-PFHxS

F19:MRM of 1 channel,ES-
403.0 > 102.6
4.641e+004



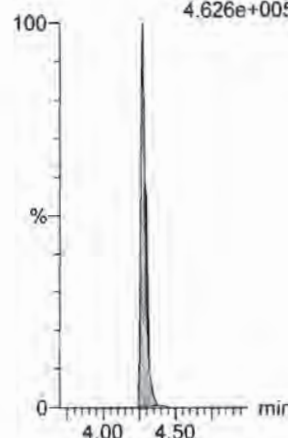
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
4.626e+005



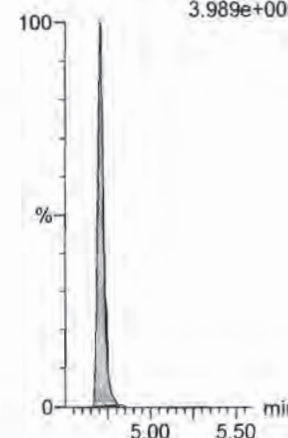
13C2-PFOA

F21:MRM of 1 channel,ES-
414.9 > 369.7
4.626e+005



13C5-PFNA

F27:MRM of 1 channel,ES-
468.2 > 422.9
3.989e+005



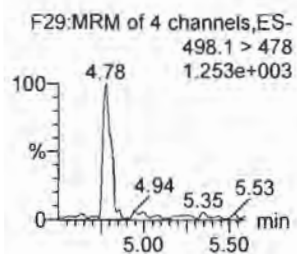
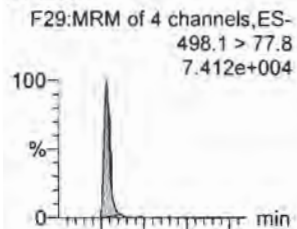
Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

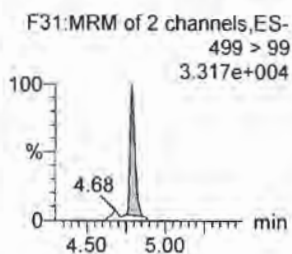
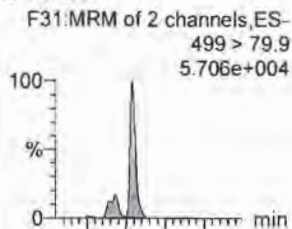
Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

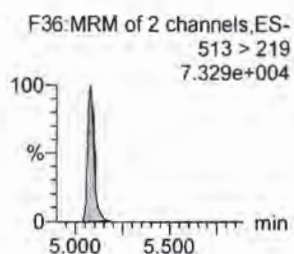
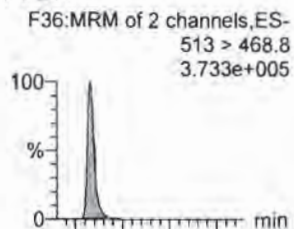
PFOSA



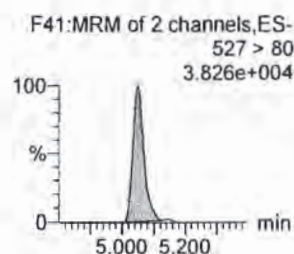
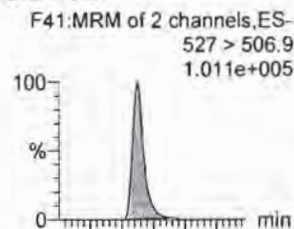
L-PFOS



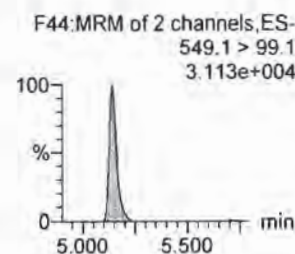
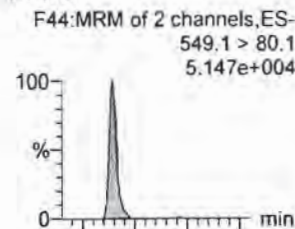
PFDA



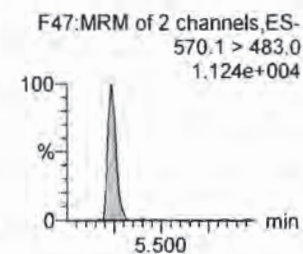
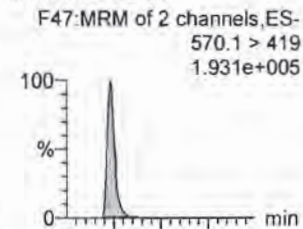
8:2 FTS



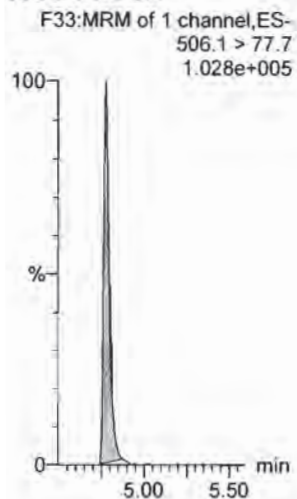
PFNS



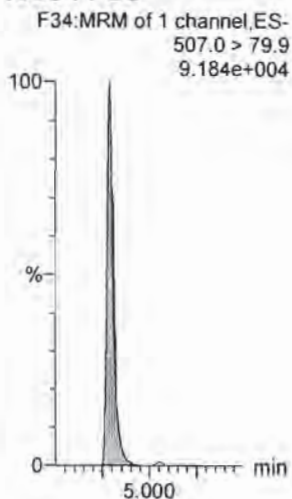
N-MeFOSAA



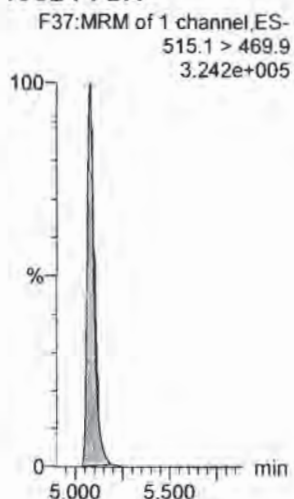
13C8-PFOSA



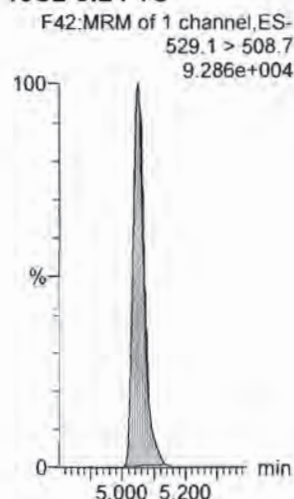
13C8-PFOS



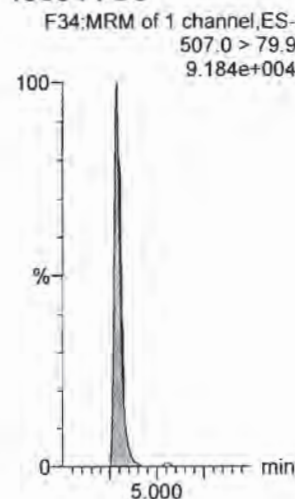
13C2-PFDA



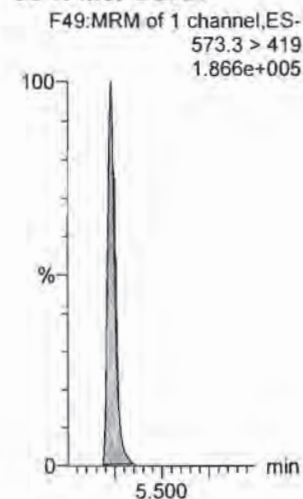
13C2-8:2 FTS



13C8-PFOS



d3-N-MeFOSAA



Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

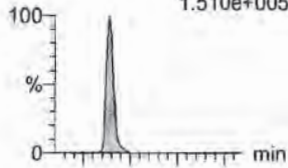
Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

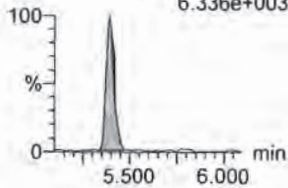
Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

N-EtFOSAA

F50:MRM of 2 channels,ES-
584.2 > 419
1.510e+005

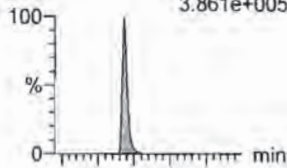


F50:MRM of 2 channels,ES-
584.2 > 483.0
6.336e+003

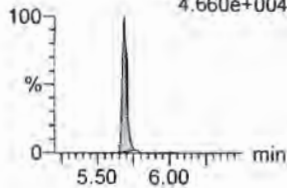


PFDoA

F53:MRM of 4 channels,ES-
612.9 > 569.0
3.861e+005

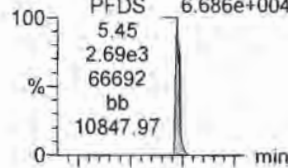


F53:MRM of 4 channels,ES-
612.9 > 318.8
4.660e+004

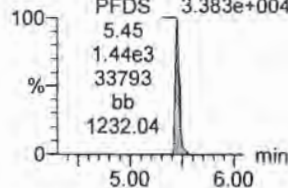


PFDS

F52:MRM of 2 channels,ES-
598.8 > 80
6.686e+004

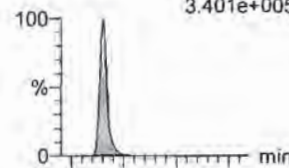


F52:MRM of 2 channels,ES-
598.8 > 98.7
3.383e+004

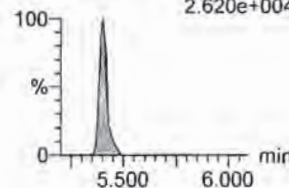


PFUdA

F45:MRM of 2 channels,ES-
563.0 > 518.9
3.401e+005

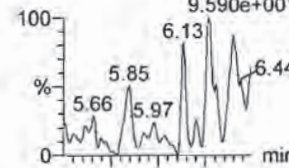


F45:MRM of 2 channels,ES-
563.0 > 269
2.620e+004

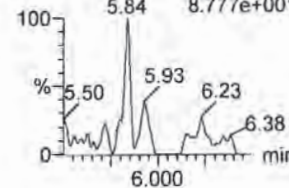


N-MeFOSA

F35:MRM of 2 channels,ES-
512.1 > 168.9
9.590e+001

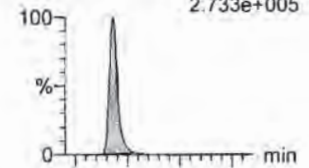


F35:MRM of 2 channels,ES-
512.1 > 219
8.777e+001

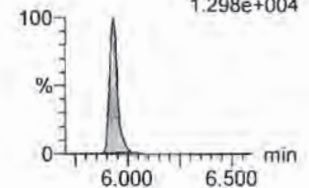


PFTrDA

F59:MRM of 2 channels,ES-
662.9 > 618.9
2.733e+005

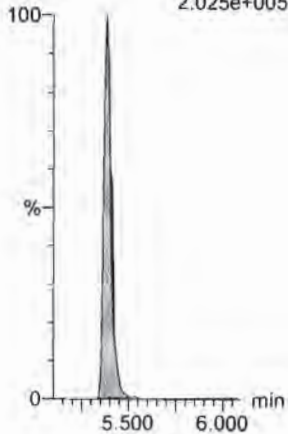


F59:MRM of 2 channels,ES-
662.9 > 319
1.298e+004



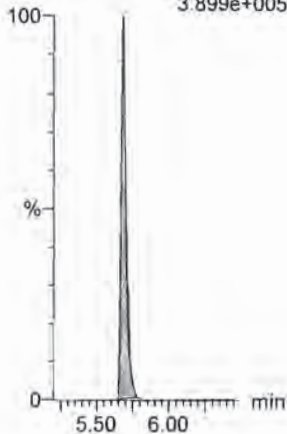
d5-N-EtFOSAA

F51:MRM of 1 channel,ES-
589.3 > 419
2.025e+005



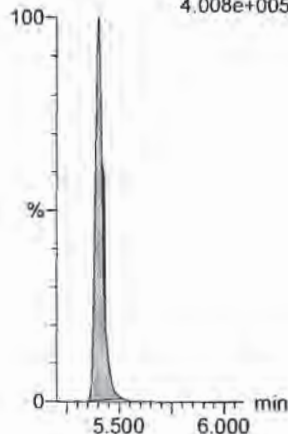
13C2-PFDoA

F54:MRM of 2 channels,ES-
615.0 > 569.7
3.899e+005



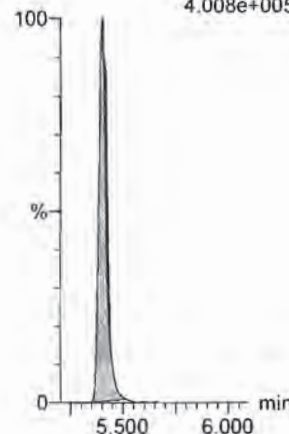
13C2-PFUdA

F46:MRM of 1 channel,ES-
565 > 519.8
4.008e+005



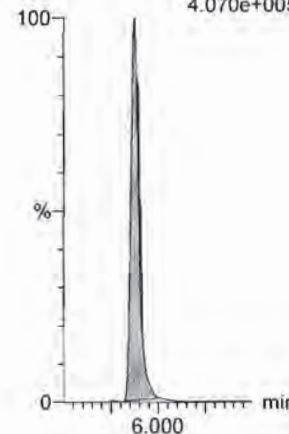
13C2-PFUdA

F46:MRM of 1 channel,ES-
565 > 519.8
4.008e+005



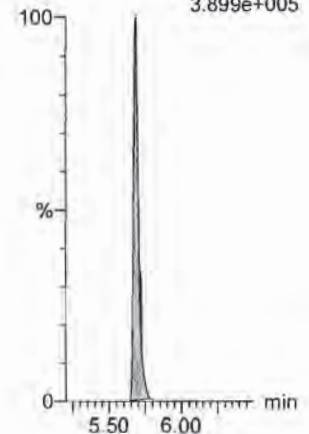
d3-N-MeFOSA

F38:MRM of 1 channel,ES-
515.2 > 168.9
4.070e+005



13C2-PFDoA

F54:MRM of 2 channels,ES-
615.0 > 569.7
3.899e+005

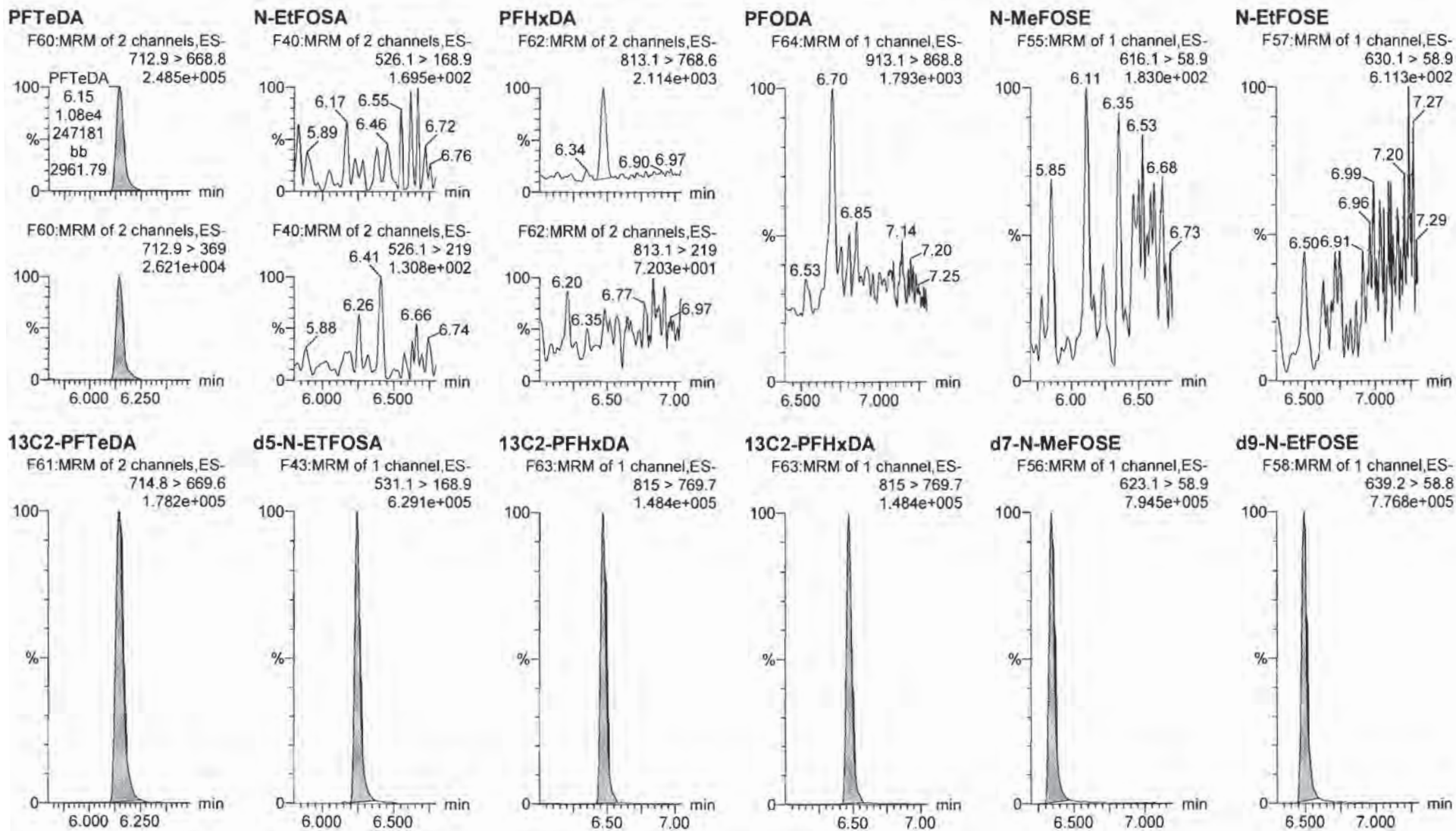


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201

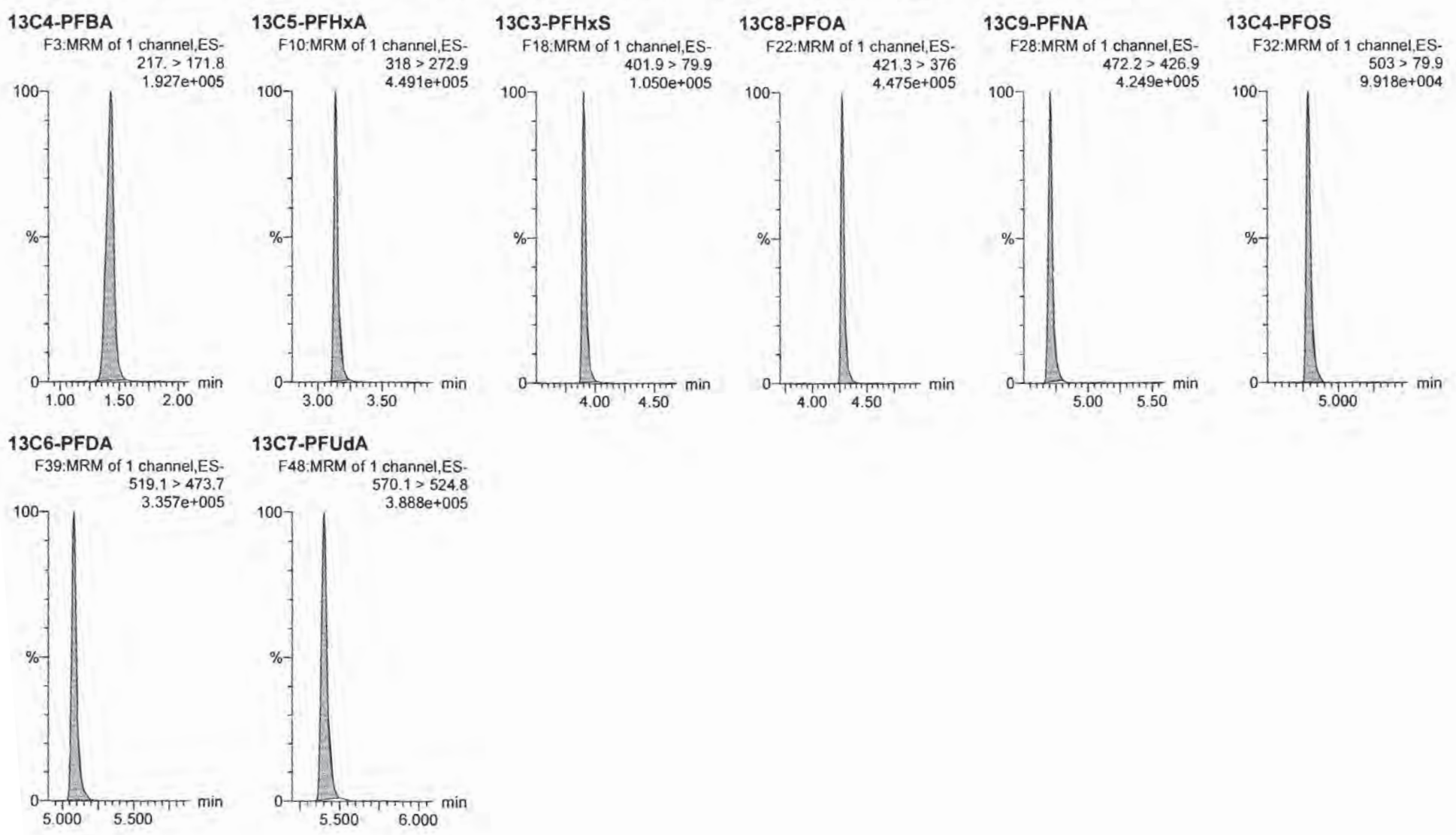


Dataset: F:\Projects\PFAS.PRO\Results\180412M1\180412M1-ICV.qld

Last Altered: Friday, April 13, 2018 10:30:39 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:32:20 Pacific Daylight Time

Name: 180412M1_13, Date: 12-Apr-2018, Time: 20:10:30, ID: ICV180412M1-1 PFC ICV 18D0201, Description: PFC ICV 18D0201



Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

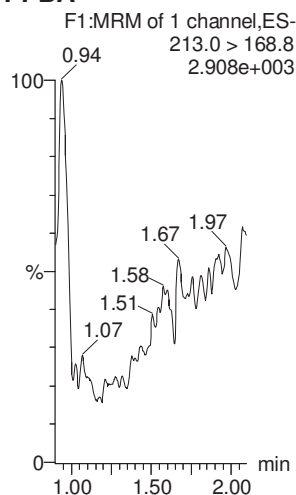
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Method: F:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_040318.mdb 07 Apr 2018 09:47:59

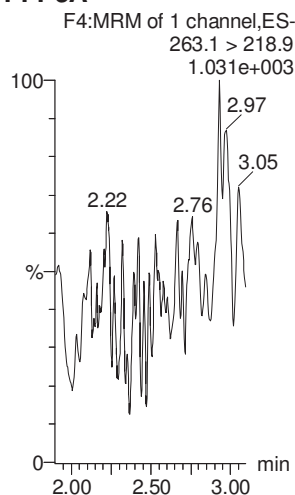
Calibration: F:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_04-12-18-FULL.cdb 13 Apr 2018 10:17:47

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

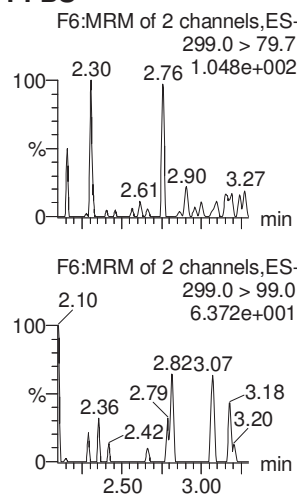
PFBA



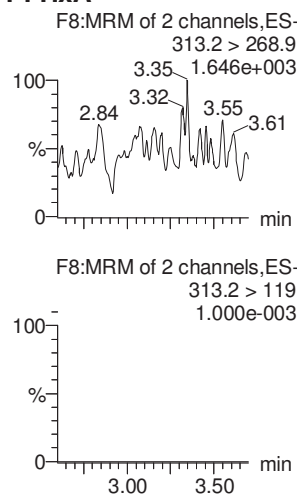
PFPeA



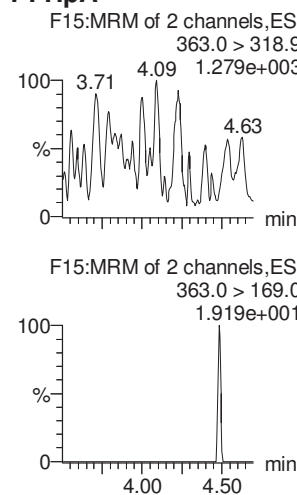
PFBS



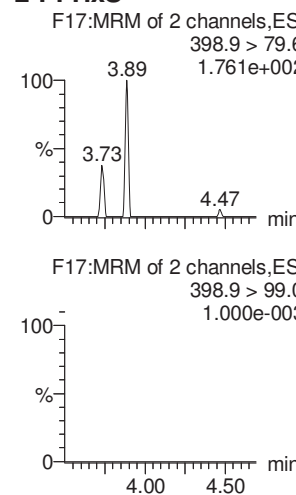
PFHxA



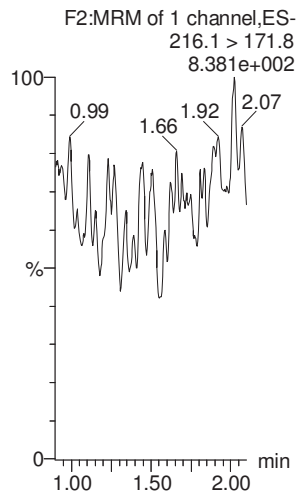
PFHpA



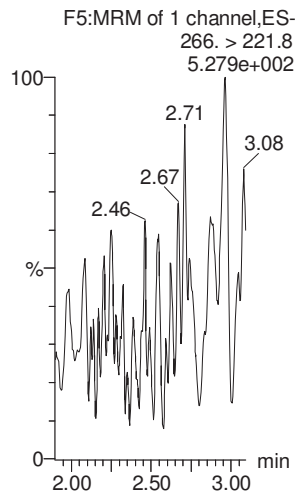
L-PFHxS



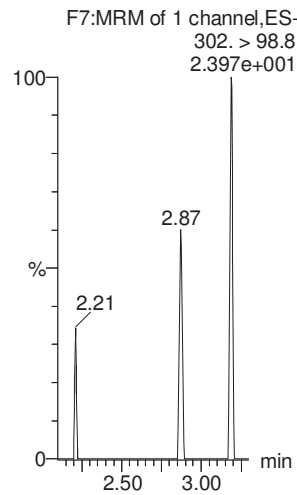
13C3-PFBA



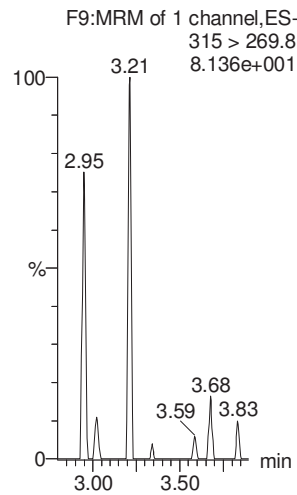
13C3-PFPeA



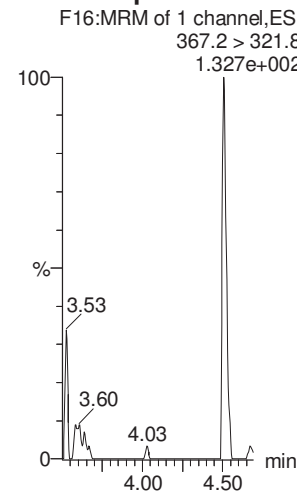
13C3-PFBS



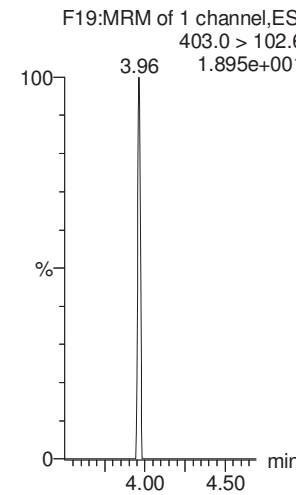
13C2-PFHxA



13C4-PFHpA



18O2-PFHxS



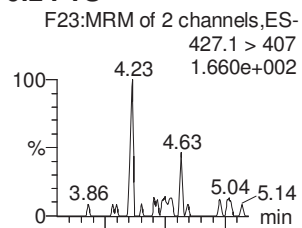
Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

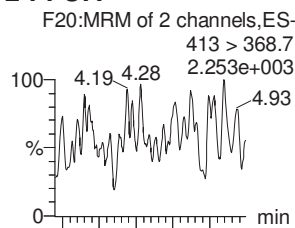
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

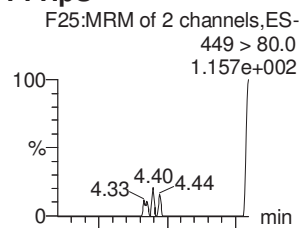
6:2 FTS



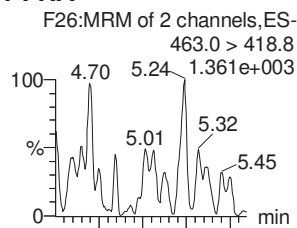
L-PFOA



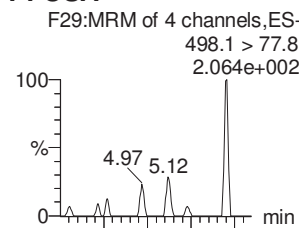
PFHpS



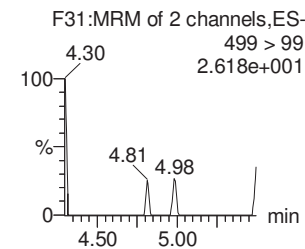
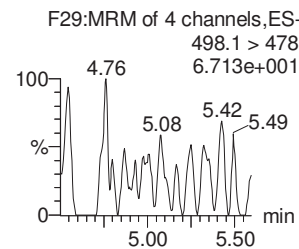
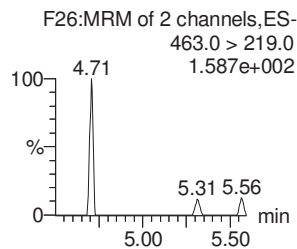
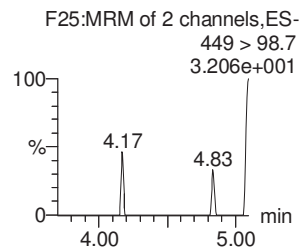
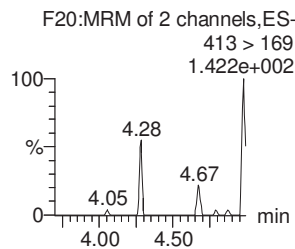
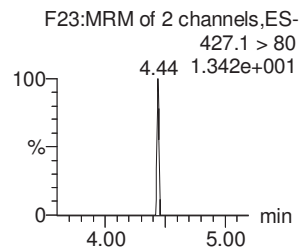
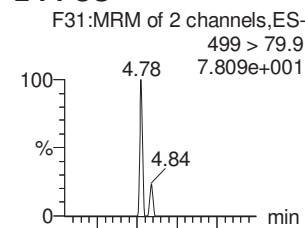
PFNA



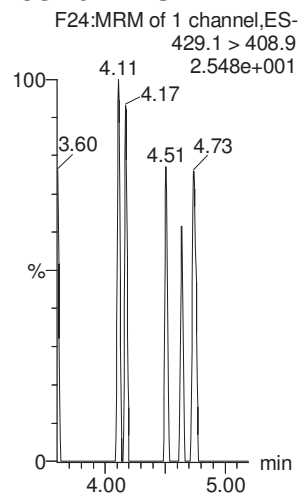
PFOSA



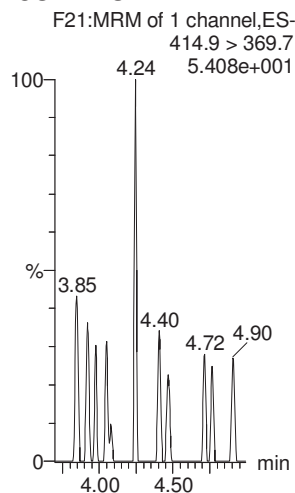
L-PFOS



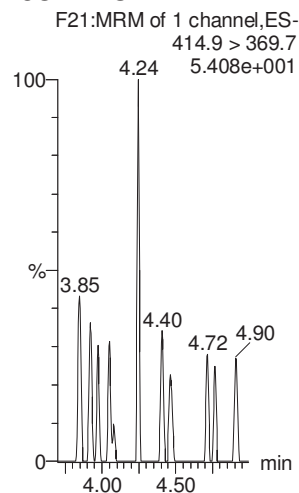
13C2-6:2 FTS



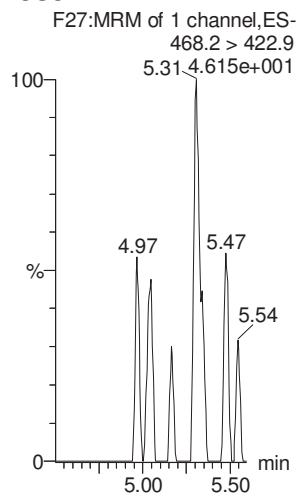
13C2-PFOA



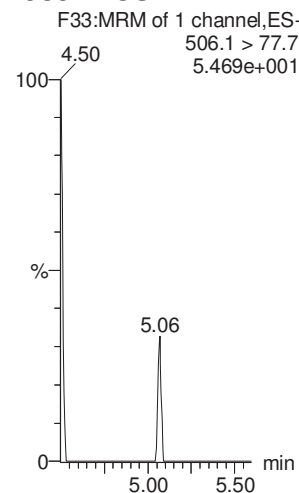
13C2-PFOA



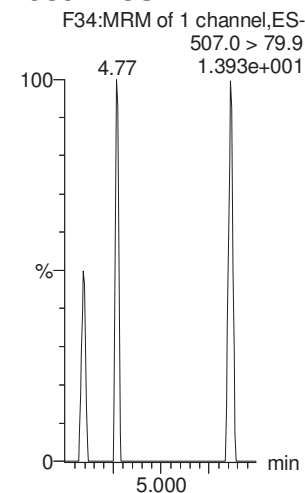
13C5-PFNA



13C8-PFOA



13C8-PFOS



Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

PFDA

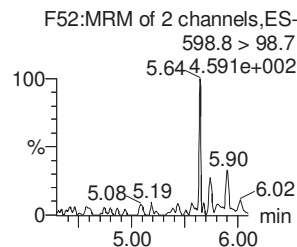
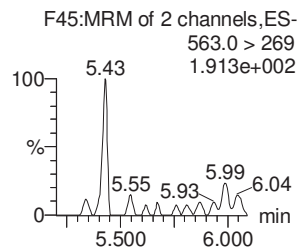
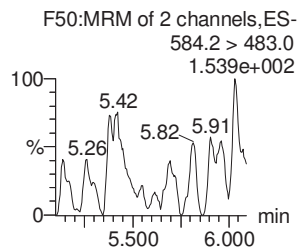
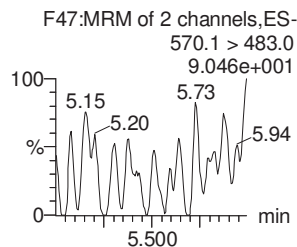
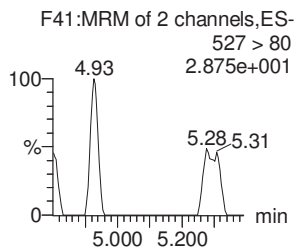
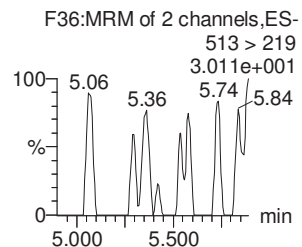
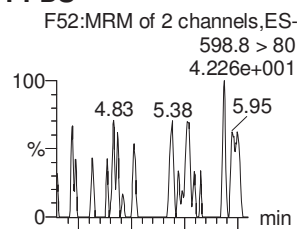
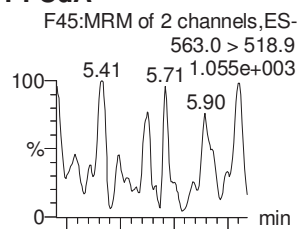
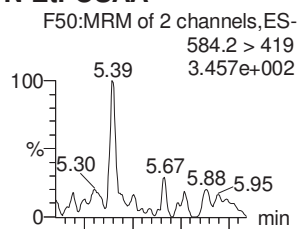
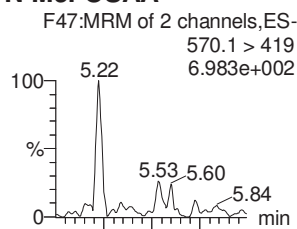
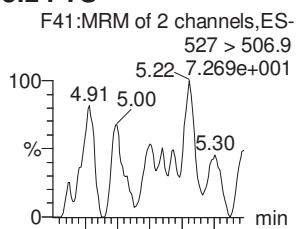
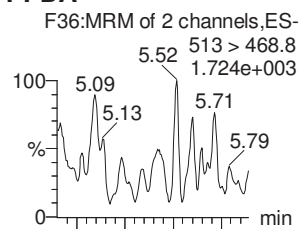
8:2 FTS

N-MeFOSAA

N-EtFOSAA

PFUdA

PFDS



13C2-PFDA

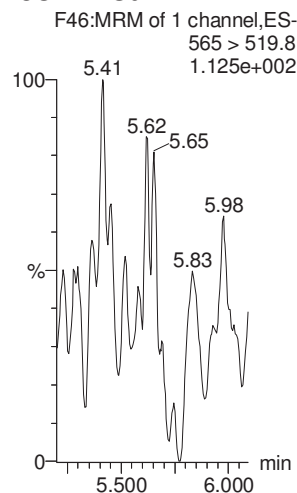
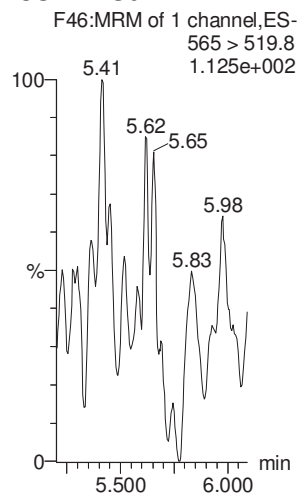
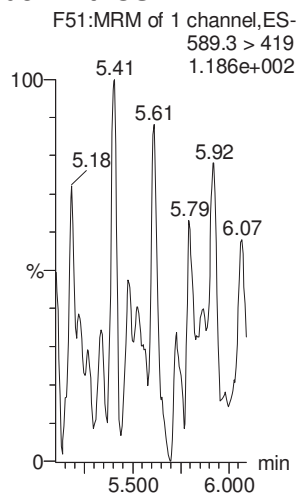
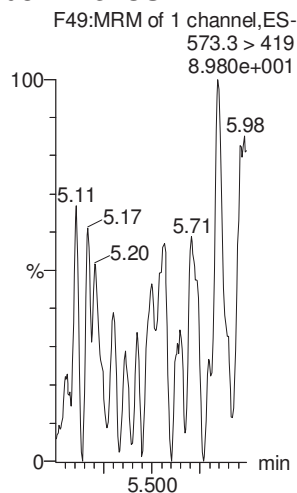
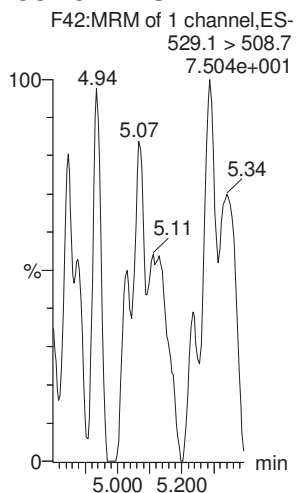
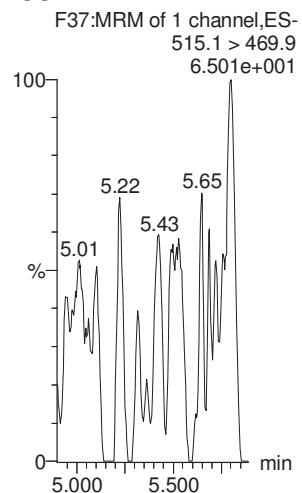
13C2-8:2 FTS

d3-N-MeFOSAA

d5-N-EtFOSAA

13C2-PFUdA

13C2-PFUdA



Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

PFDoA

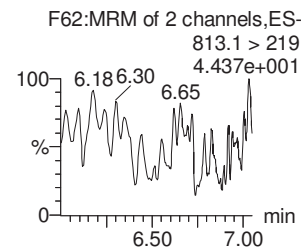
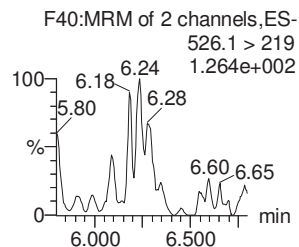
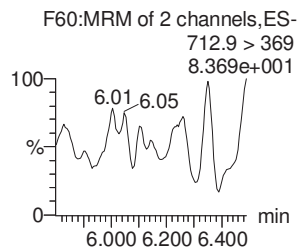
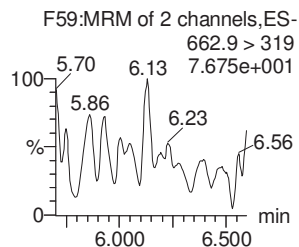
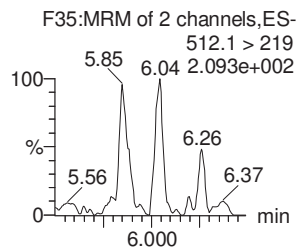
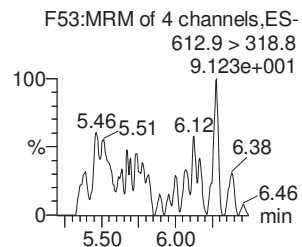
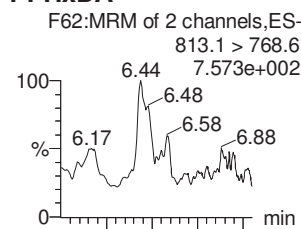
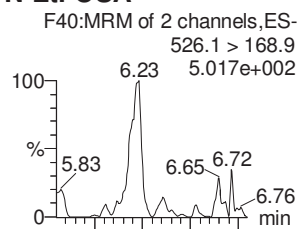
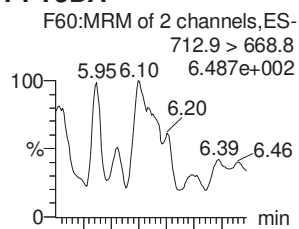
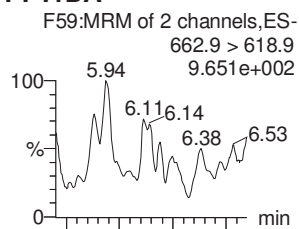
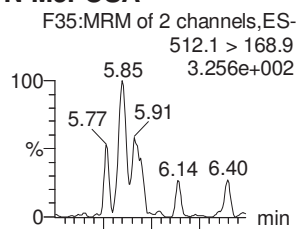
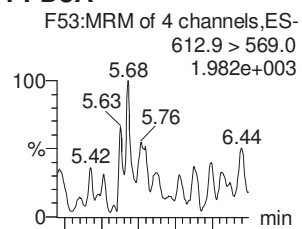
N-MeFOSA

PFTrDA

PFTeDA

N-EtFOSA

PFHxDA



13C2-PFDoA

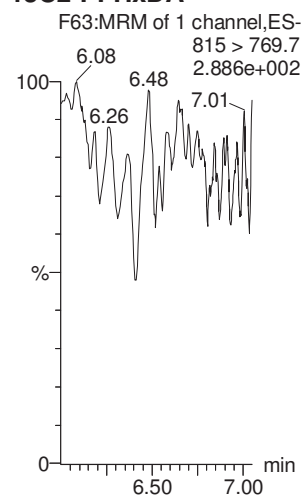
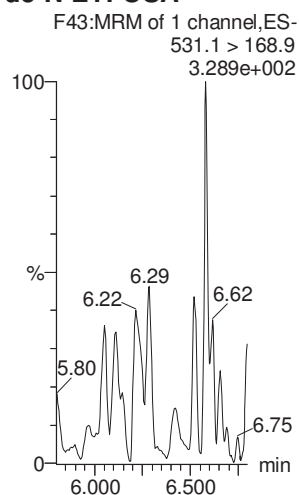
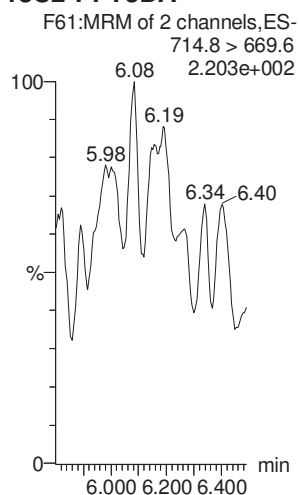
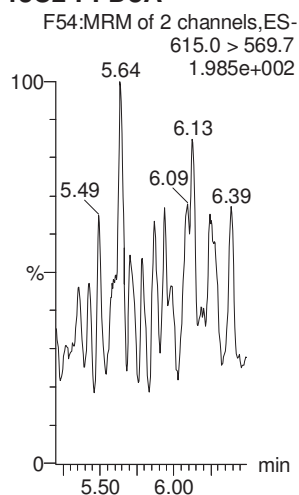
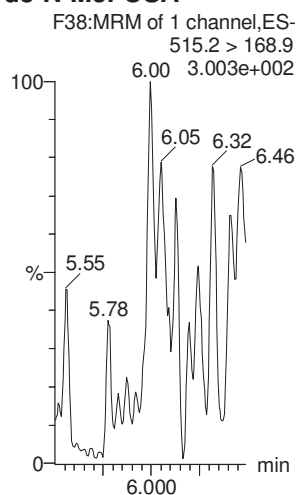
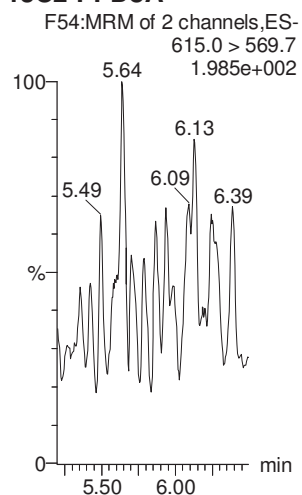
d3-N-MeFOSA

13C2-PFDoA

13C2-PFTeDA

d5-N-ETFOSA

13C2-PFHxDA



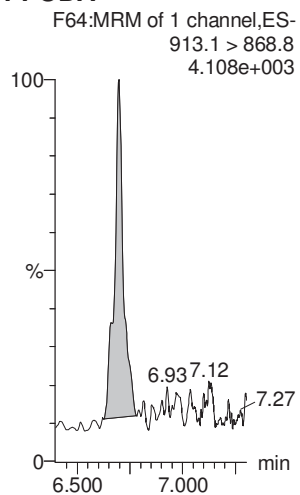
Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

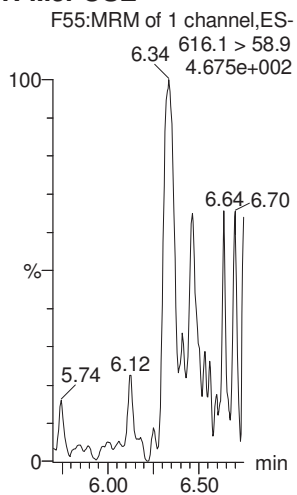
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

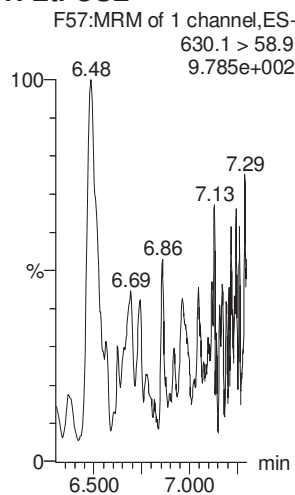
PFODA



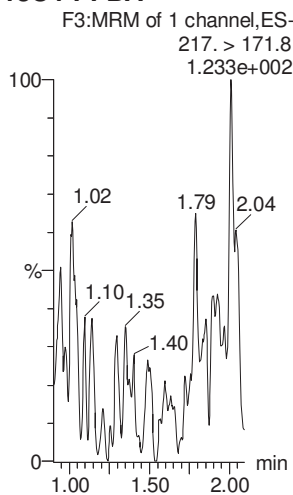
N-MeFOSE



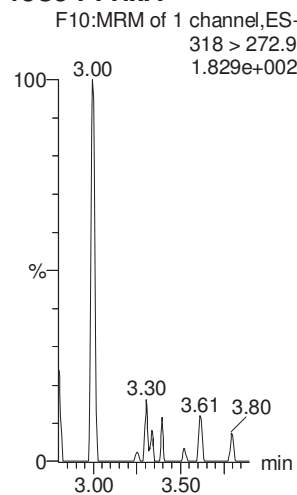
N-EtFOSE



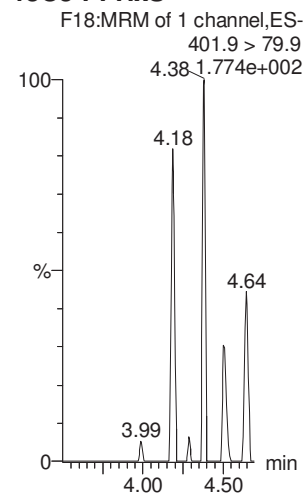
13C4-PFBA



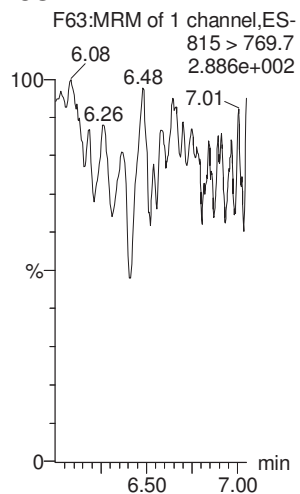
13C5-PFHxA



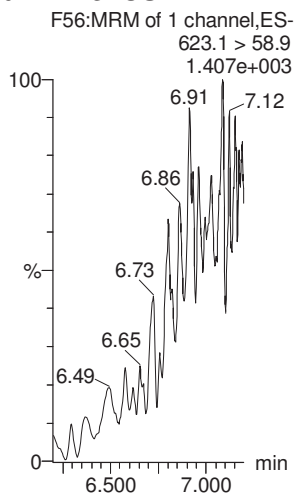
13C3-PFHxS



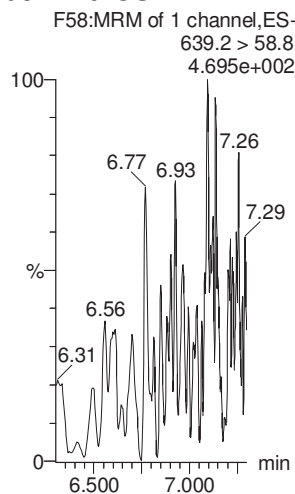
13C2-PFHxDA



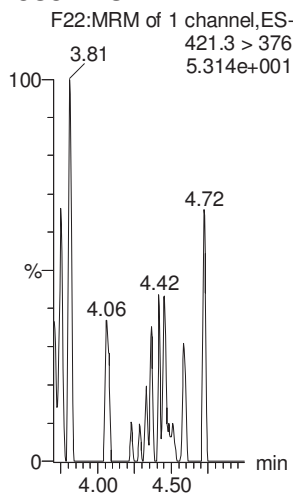
d7-N-MeFOSE



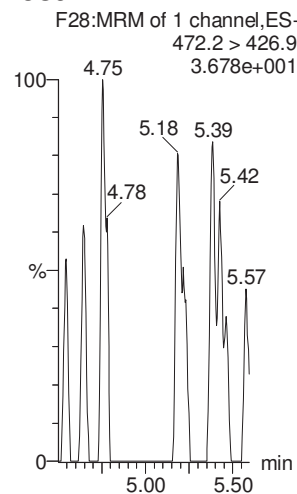
d9-N-EtFOSE



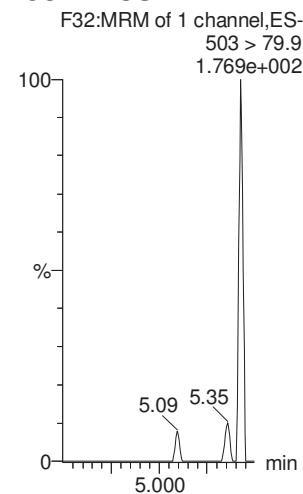
13C8-PFOA



13C9-PFNA



13C4-PFOS



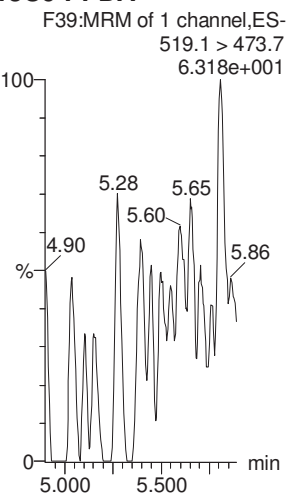
Dataset: Untitled

Last Altered: Friday, April 13, 2018 10:34:50 Pacific Daylight Time

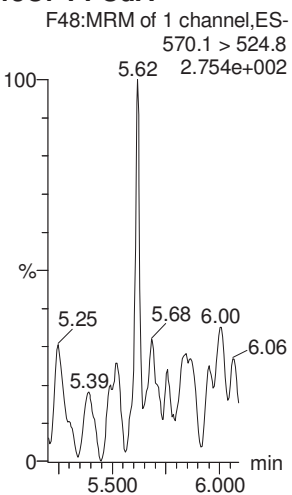
Printed: Friday, April 13, 2018 10:35:10 Pacific Daylight Time

Name: 180412M1_12, Date: 12-Apr-2018, Time: 19:59:00, ID: IPA, Description: IPA

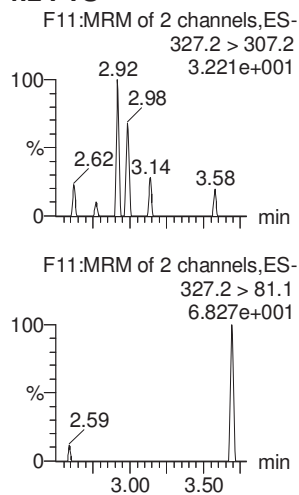
13C6-PFDA



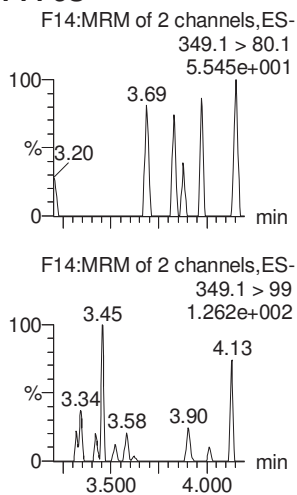
13C7-PFUdA



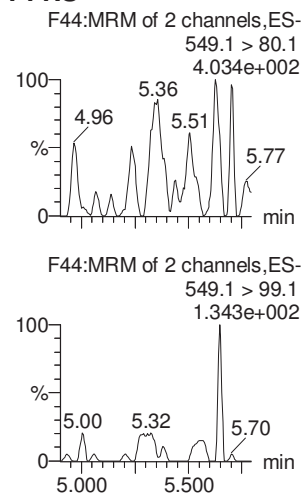
4:2 FTS



PFPeS



PFNS



Analytical Standard Record

Vista Analytical Laboratory

18B2203

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
18A2908	13C2-PFHxA	29-Jan-18	** Vendor **	27-Sep-22	0.3
18B1502	13C2-4:2 FTS	15-Feb-18	** Vendor **	01-Sep-22	0.802
18B1503	13C2-6:2 FTS	15-Feb-18	** Vendor **	17-Feb-22	0.787
18B1504	13C2-8:2 FTS	15-Feb-18	** Vendor **	24-Jan-23	0.783
18B1505	13C3-PFBA	15-Feb-18	** Vendor **	27-May-21	0.75
18B1506	13C2-PFDA	15-Feb-18	** Vendor **	13-Jul-22	0.75
18B1507	13C2-PFUdA	15-Feb-18	** Vendor **	11-Nov-21	0.75
18B1508	13C2-PFTeDA	15-Feb-18	** Vendor **	30-Nov-22	0.75
18B1509	13C5-PFNA	15-Feb-18	** Vendor **	14-Dec-22	0.75
18B1510	13C2-PFDoA	15-Feb-18	** Vendor **	23-May-22	0.75
18B1511	13C4-PFHpA	15-Feb-18	** Vendor **	03-May-22	0.75
18B1512	13C2-PFOA	15-Feb-18	** Vendor **	26-Oct-22	0.75
18B1513	13C3-PFPeA	15-Feb-18	** Vendor **	20-Apr-22	0.75
18B1514	13C2-PFHxDA	15-Feb-18	** Vendor **	13-Jul-22	0.3
18B1515	d3-N-Me-FOSAA	15-Feb-18	** Vendor **	08-Nov-19	0.75
18B1516	d5-N-EtFOSAA	15-Feb-18	** Vendor **	08-Nov-22	0.75
18B1517	13C3-PFBS	15-Feb-18	** Vendor **	24-May-22	0.807
18B1518	18O2-PFHxS	15-Feb-18	** Vendor **	17-Feb-22	0.793
18B1520	13C8-PFOS	15-Feb-18	** Vendor **	08-Nov-22	0.787
18B1525	13C8-FOSA-I	15-Feb-18	** Vendor **	11-Oct-22	0.75

Description:	PFC - IS	Expires:	24-Feb-20
Standard Type:	Reagent	Prepared:	24-Feb-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	30	Department:	LCMS
Vials:	1	Last Edit:	24-Feb-18 09:23 by GRB

Analyte	CAS Number	Concentration	Units
13C3-PFBA		1.25	ug/mL
13C2-6:2 FTS		1.25	ug/mL
13C2-8:2 FTS		1.25	ug/mL
13C2-PFDA		1.25	ug/mL
13C2-PFDoA		1.25	ug/mL
13C2-PFHxA		0.5	ug/mL
13C2-PFHxDA		0.5	ug/mL
13C2-PFOA		1.25	ug/mL
13C2-4:2 FTS		1.25	ug/mL
13C2-PFUdA		1.25	ug/mL
d5-EtFOSAA		1.25	ug/mL
13C3-PFBS		1.25	ug/mL
13C3-PFPeA		1.25	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

18B2203

Description:	PFC - IS	Expires:	24-Feb-20
Standard Type:	Reagent	Prepared:	24-Feb-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	30	Department:	LCMS
Vials:	1	Last Edit:	24-Feb-18 09:23 by GRB

Analyte	CAS Number	Concentration	Units
13C4-PFHpA		1.25	ug/mL
13C5-PFNA		1.25	ug/mL
13C8-PFOS		1.25	ug/mL
13C8-PFOSA		1.25	ug/mL
18O2-PFHxS		1.25	ug/mL
d3-MeFOSAA		1.25	ug/mL
13C2-PFTeDA		1.25	ug/mL

18A2908

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

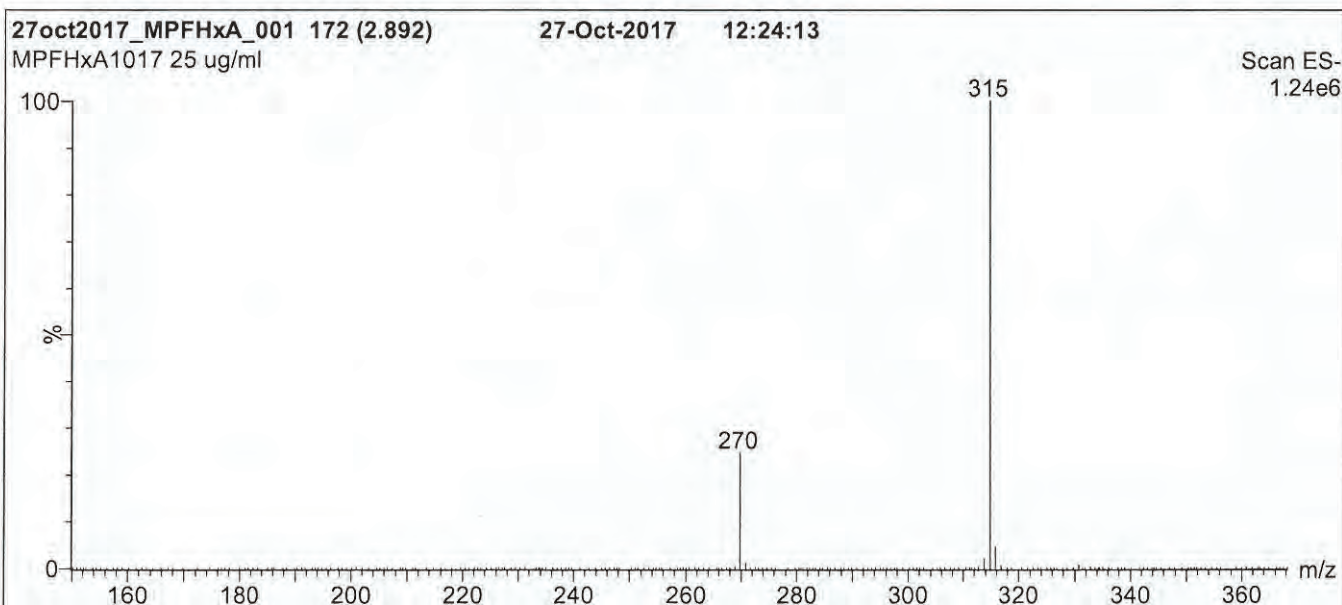
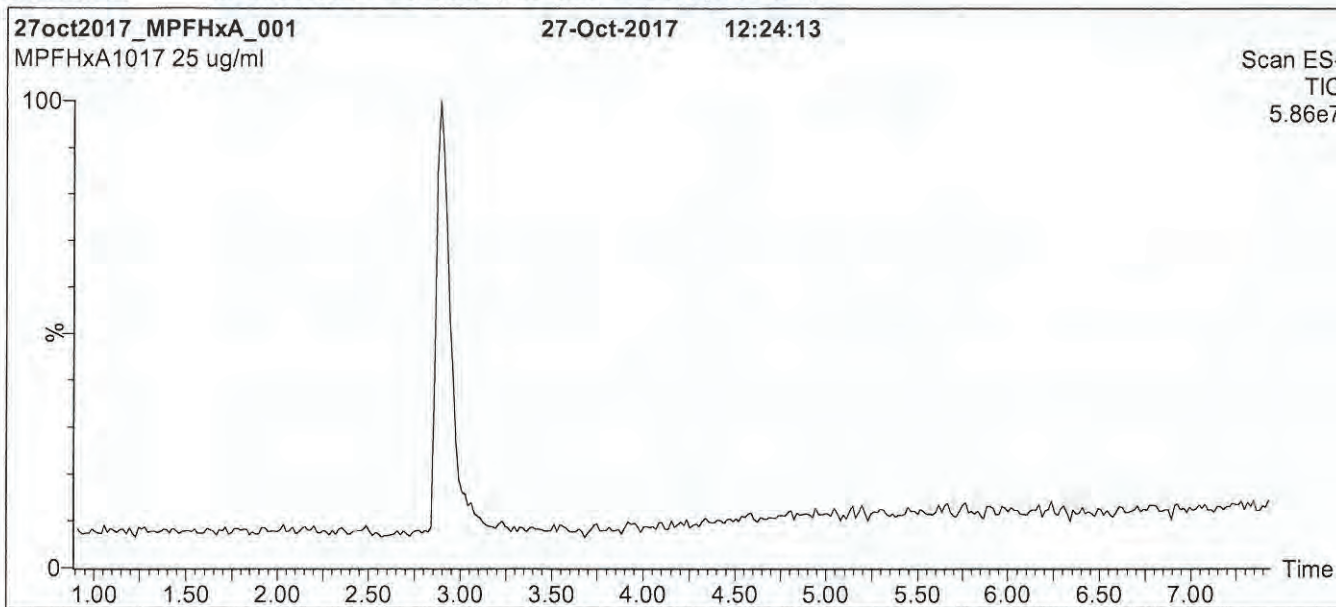
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18A2908

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

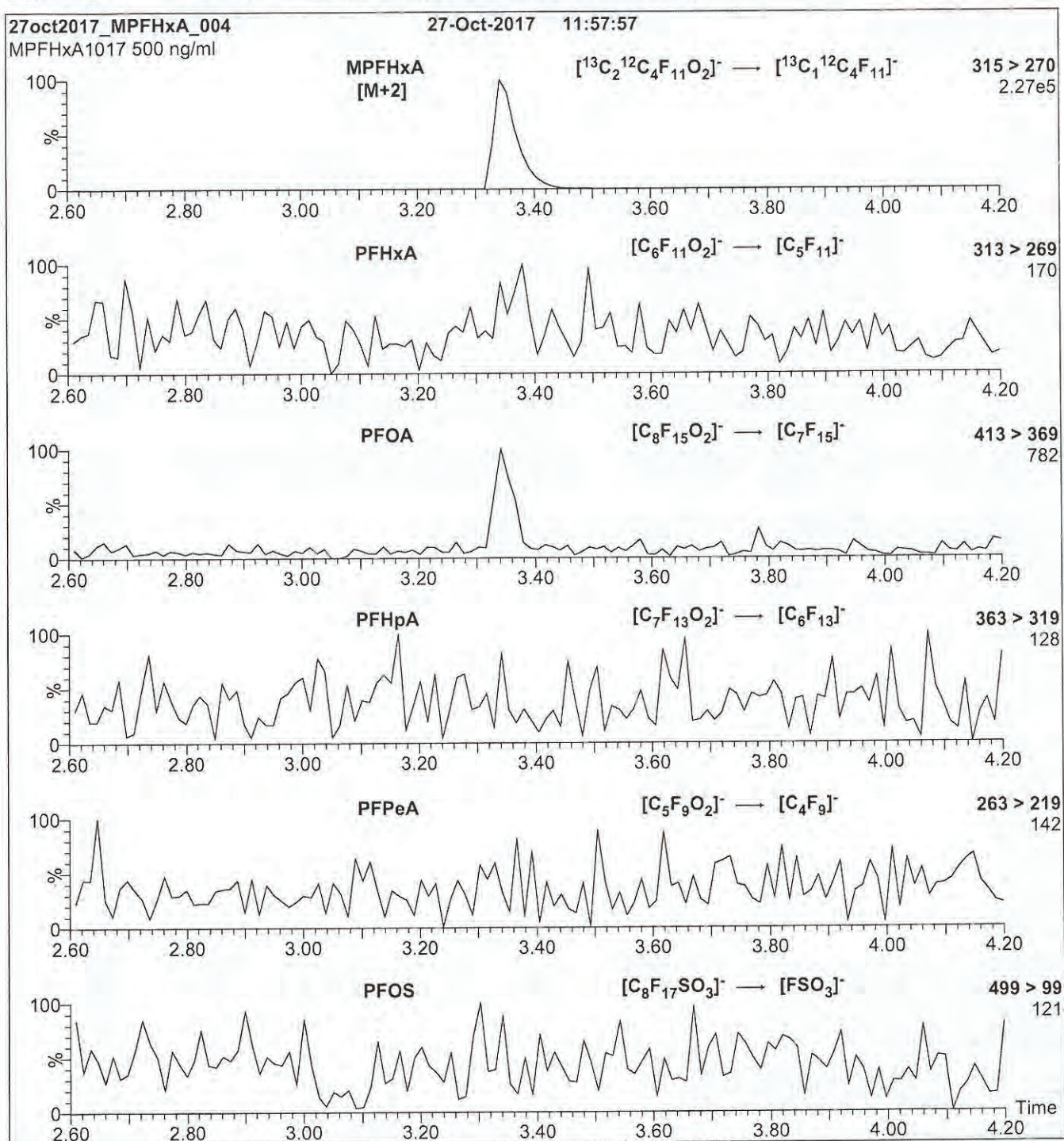
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18A2908

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 10

18B1502

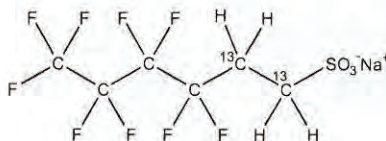


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-4:2FTS **LOT NUMBER:** M242FTS0817
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]hexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄H₄F₉SO₃Na **MOLECULAR WEIGHT:** 352.12
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 46.7 ± 2.3 µg/ml (M2-4:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 09/01/2017 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 09/01/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

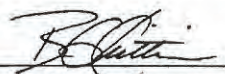
Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 4:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 4:2FTS and M2-4:2FTS will produce signals in the m/z 329 to m/z 309 channel during SRM analysis. We recommend using the m/z 329 to m/z 81 transition to monitor for M2-4:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim, General Manager

Date: 09/29/2017

(mm/dd/yyyy)

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

18B1502

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

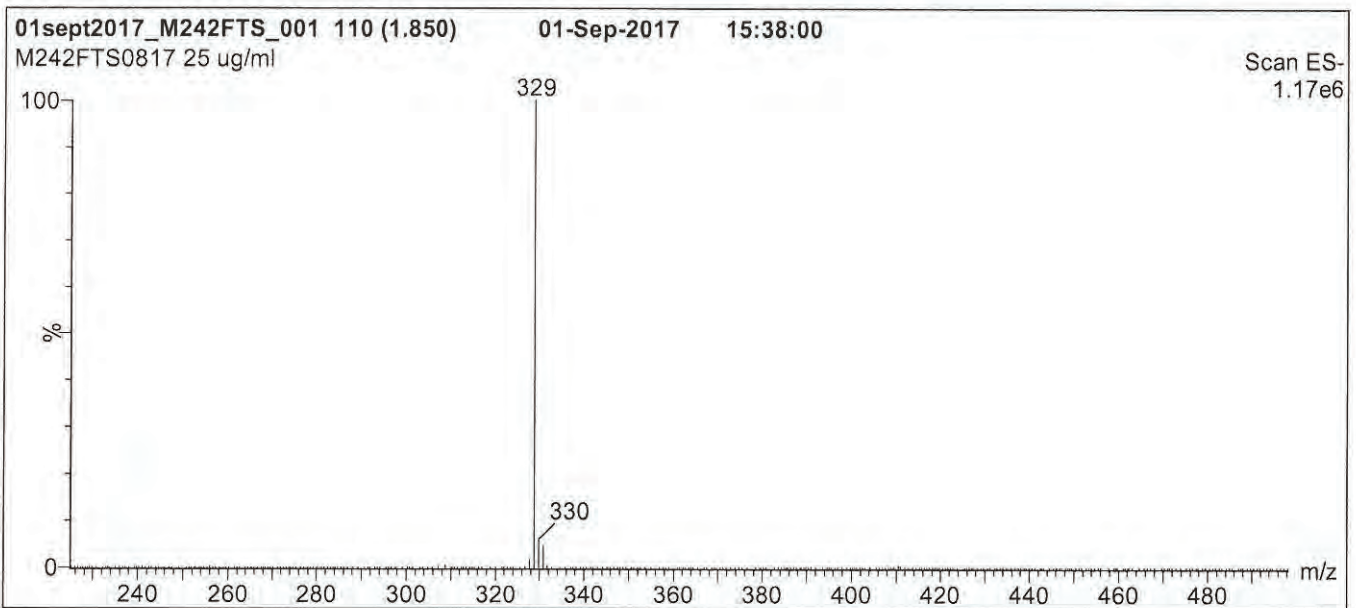
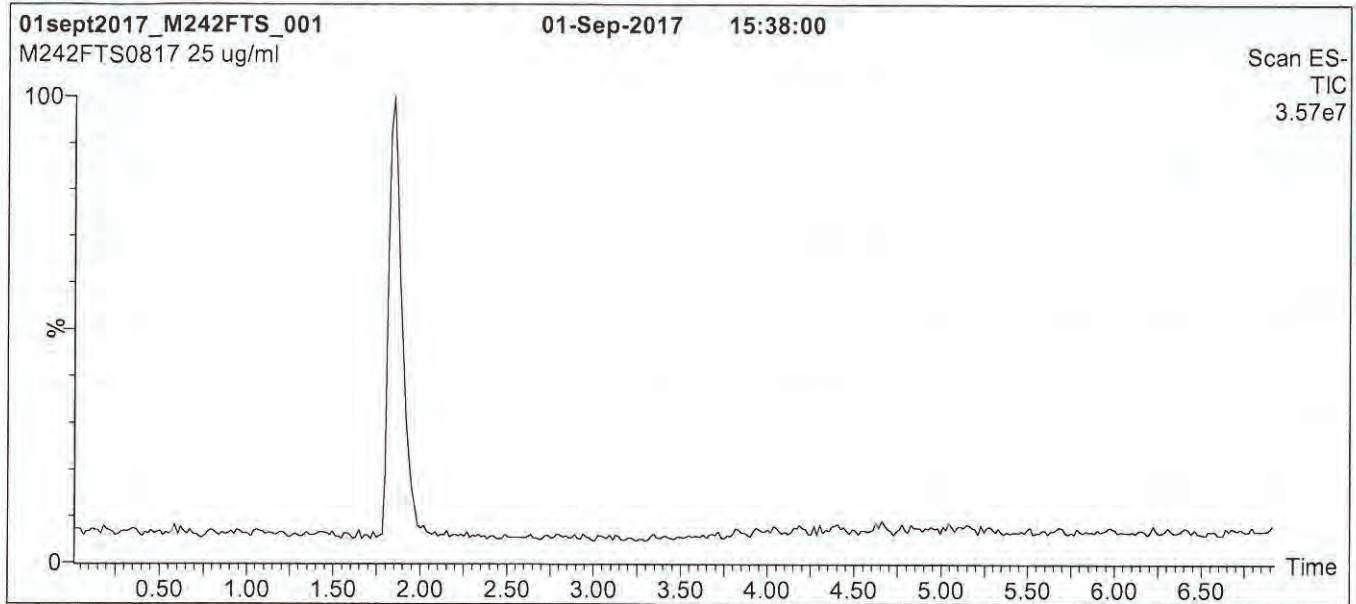
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1502

Figure 1: M2-4:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min
and hold for 1 min before returning
to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

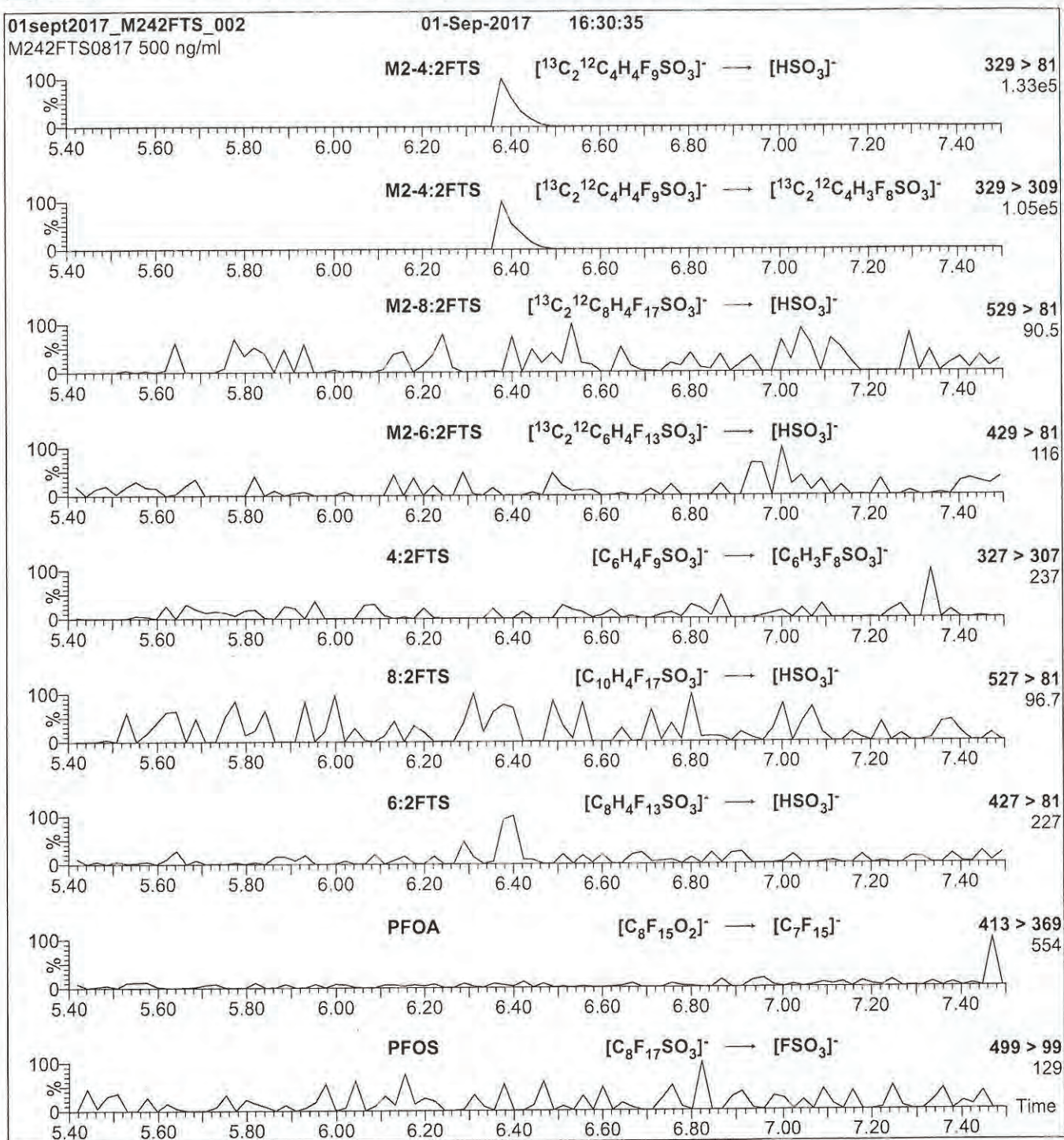
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1502

Figure 2: M2-4:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-4:2FTS)

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

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

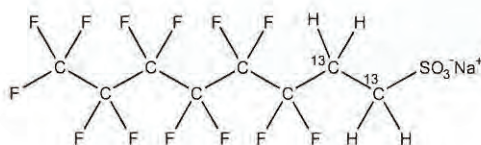
18B1503


WELLINGTON
 LABORATORIES

 CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0217
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **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% ¹³C
LAST TESTED: (mm/dd/yyyy) 02/17/2017 (1,2-¹³C₂)
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 ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

 B.G. Chittim

 Date: 02/24/2017
 (mm/dd/yyyy)

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

18B1503

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

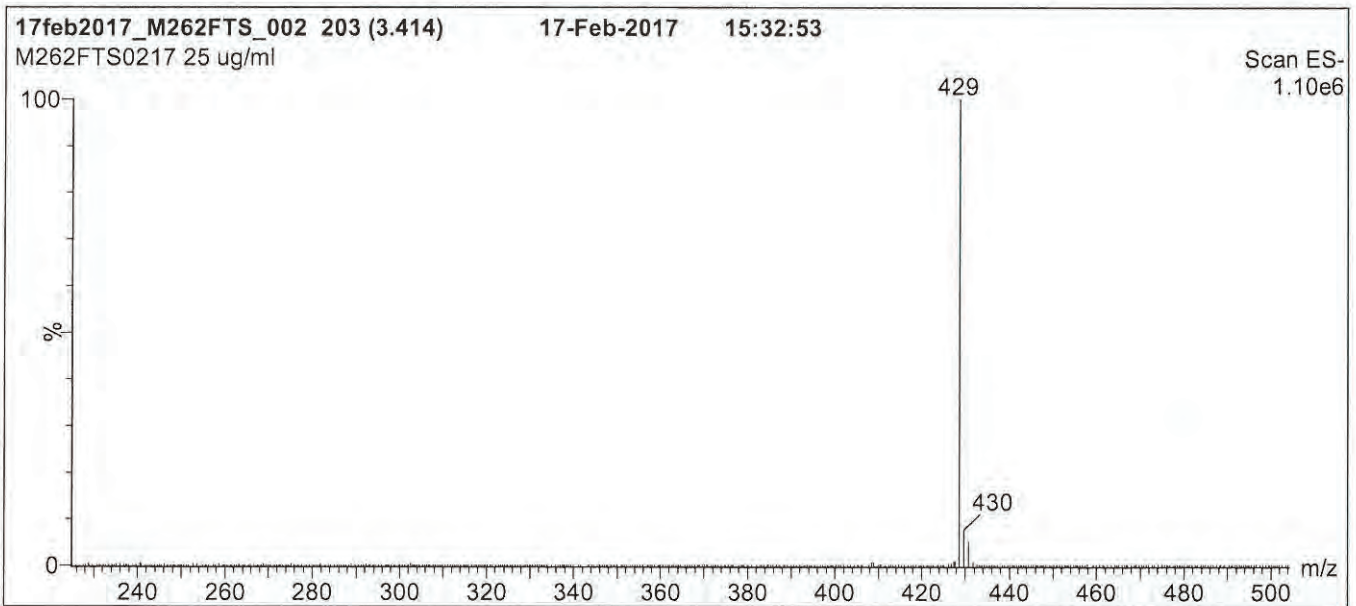
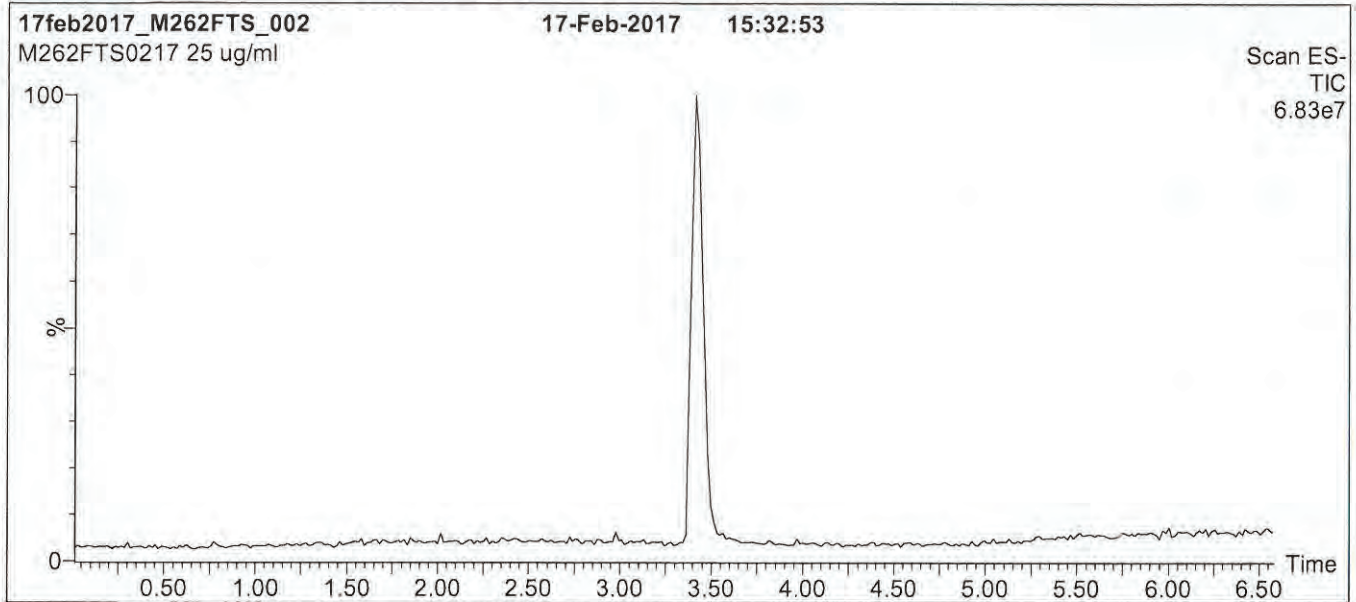
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1503

Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

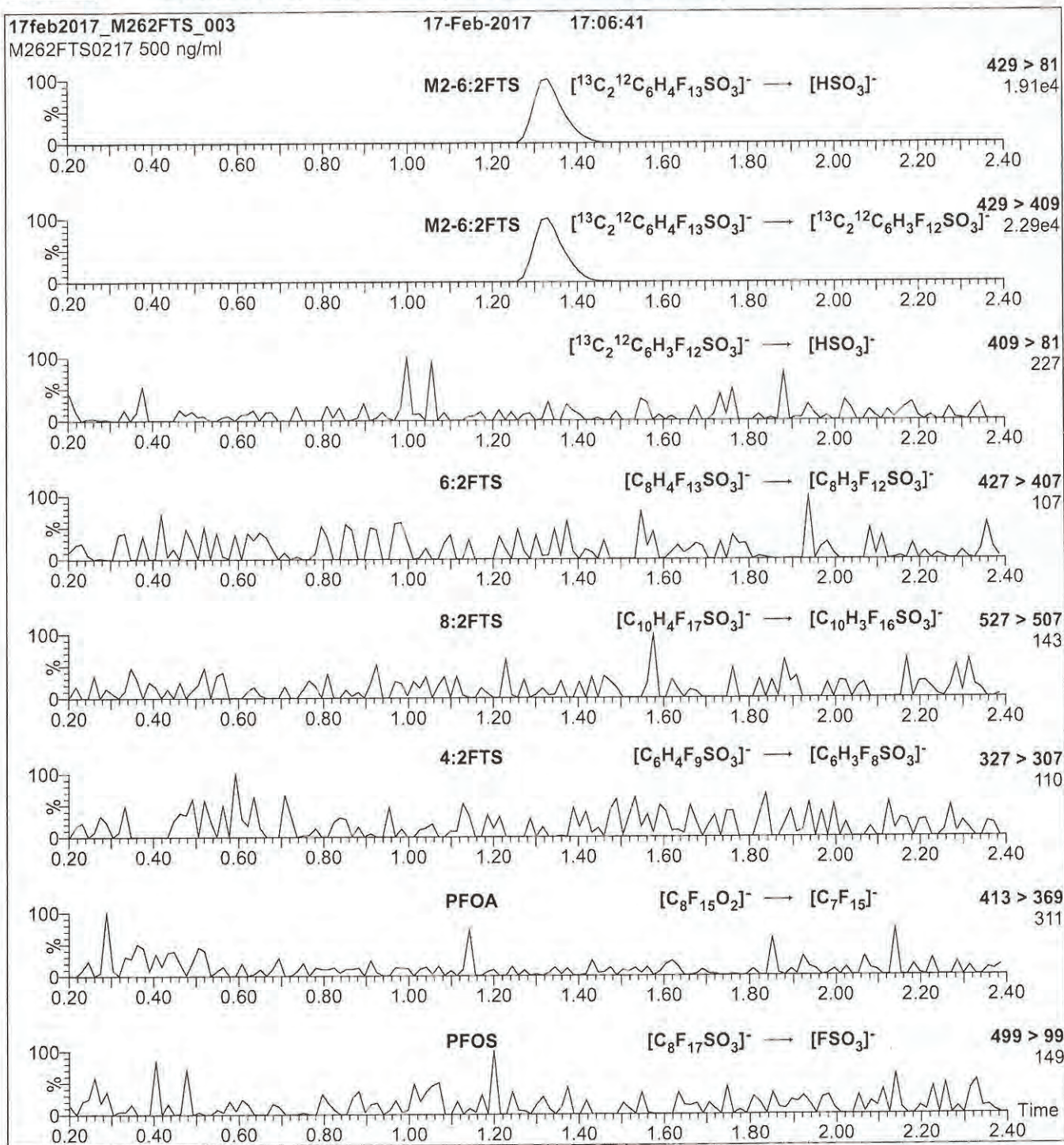
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1503

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

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

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

18B1504

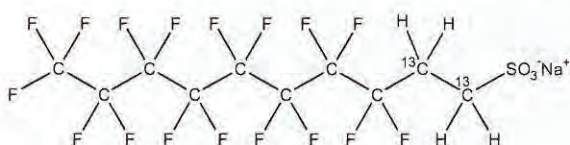


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0118
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **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% ¹³C
LAST TESTED: (mm/dd/yyyy) 01/24/2018 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/24/2023
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 01/26/2018
 B.G. Chittim, General Manager (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

18B1504

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.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

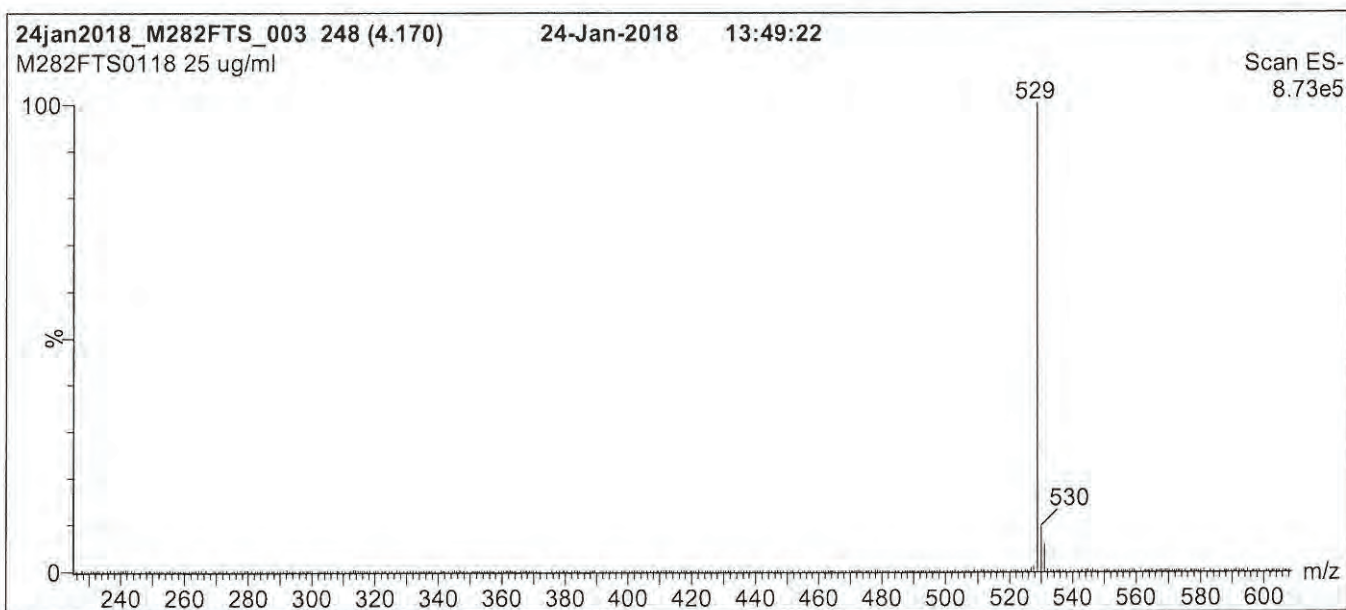
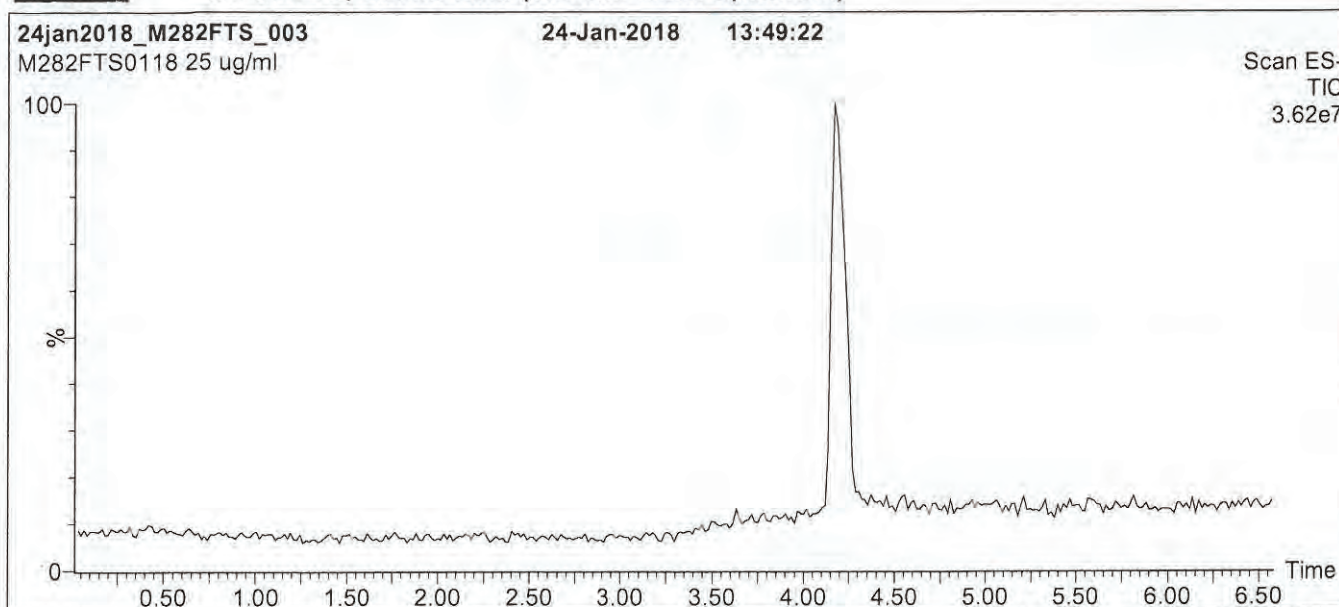
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1504

Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

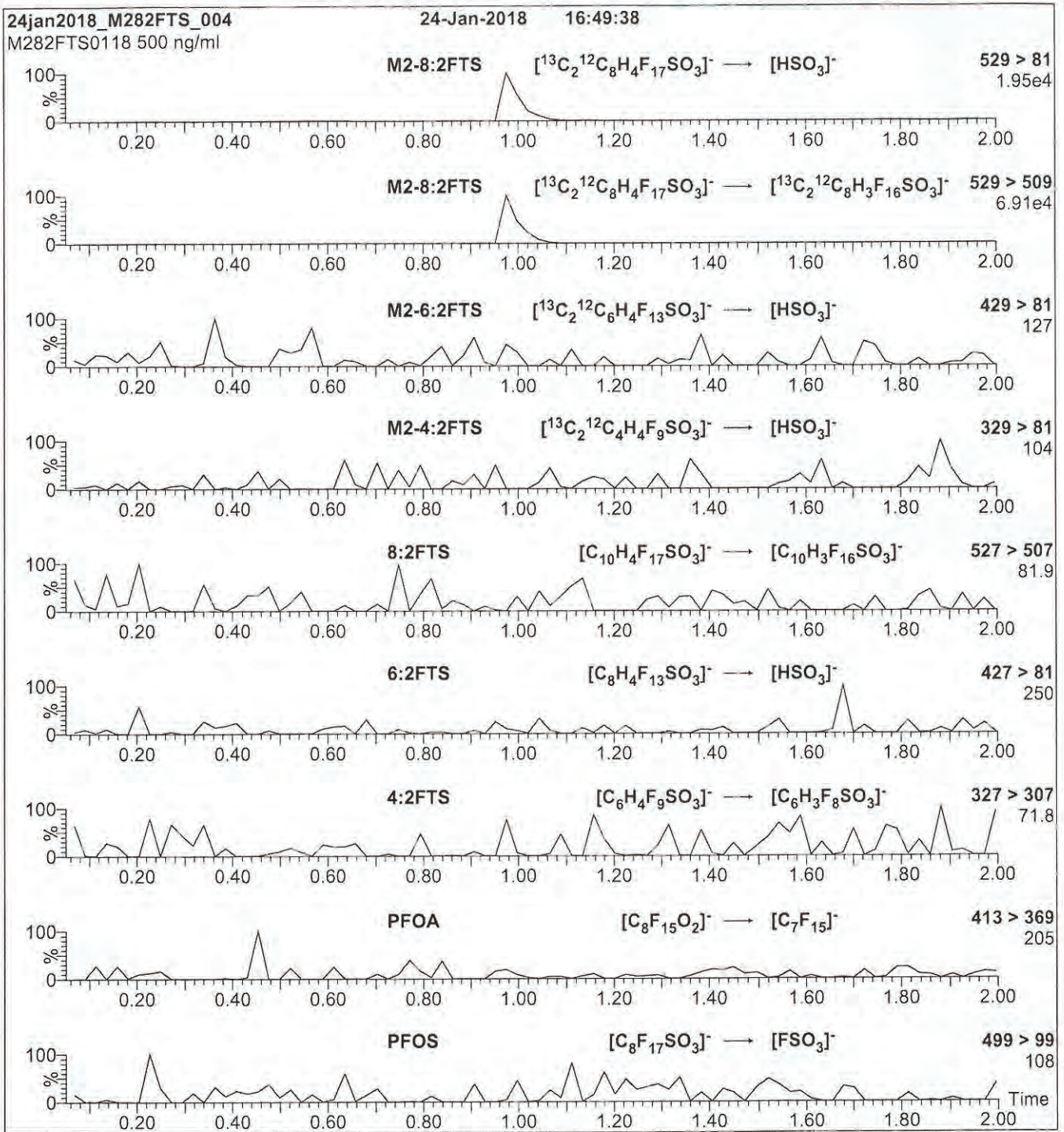
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1504

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-8:2FTS)

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

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

MS Parameters

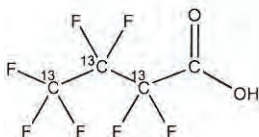
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

18B1505


WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: M3PFBA **LOT NUMBER:** M3PFBA0516
COMPOUND: Perfluoro-n-[2,3,4-¹³C₃]butanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²CHF₇O₂ **MOLECULAR WEIGHT:** 217.02
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (2,3,4-¹³C₃)
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-[¹³C₃]propanoic acid and also contains ~ 1.0% of perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid due to the naturally occurring isotopic abundance of ¹³C in the unlabelled carbon atom.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

 B.G. Chittim

Date: 07/08/2016
 (mm/dd/yyyy)

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

18B1505

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

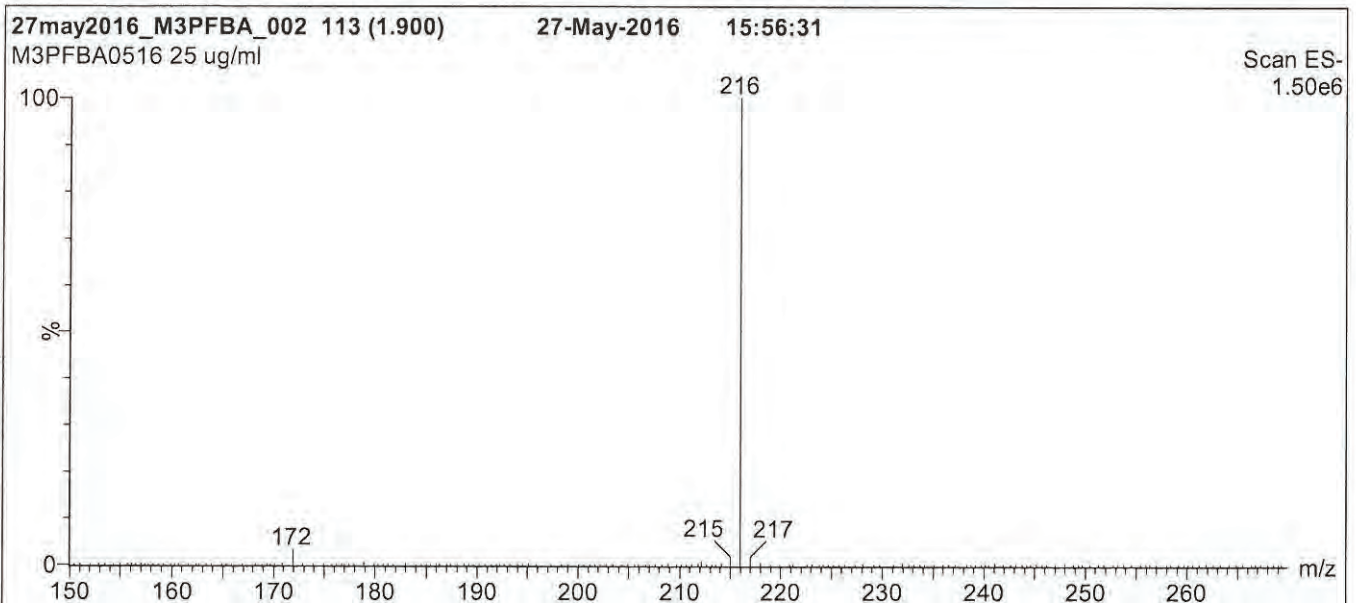
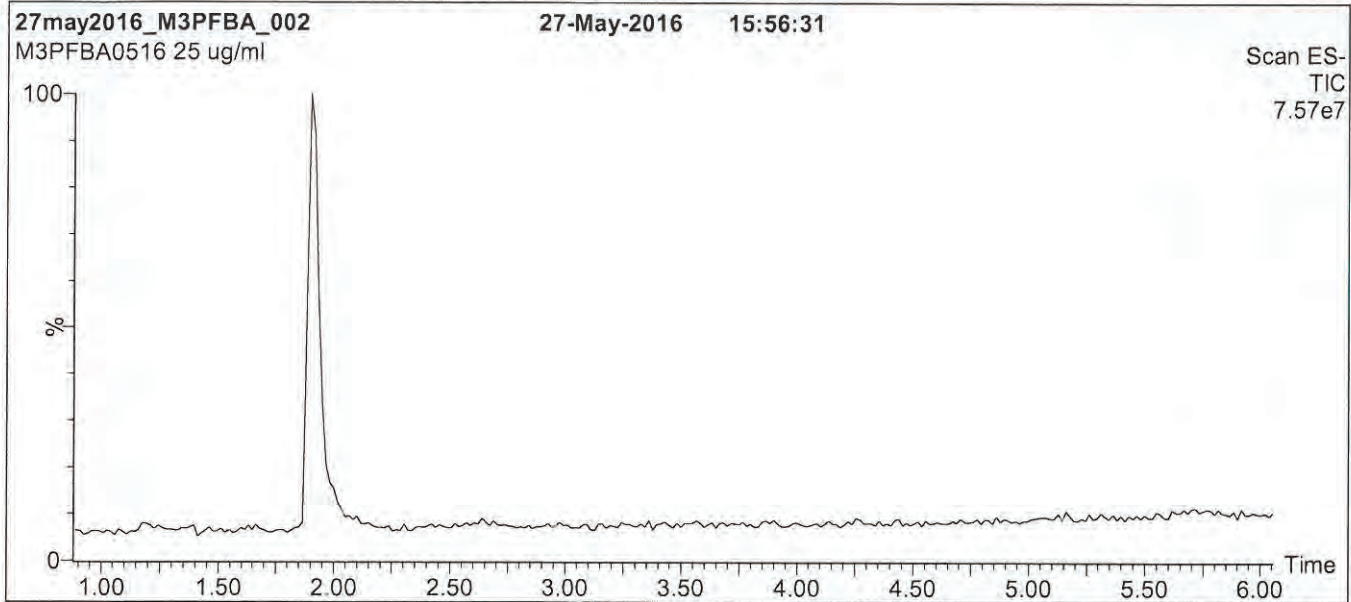
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1505

Figure 1: M3PFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

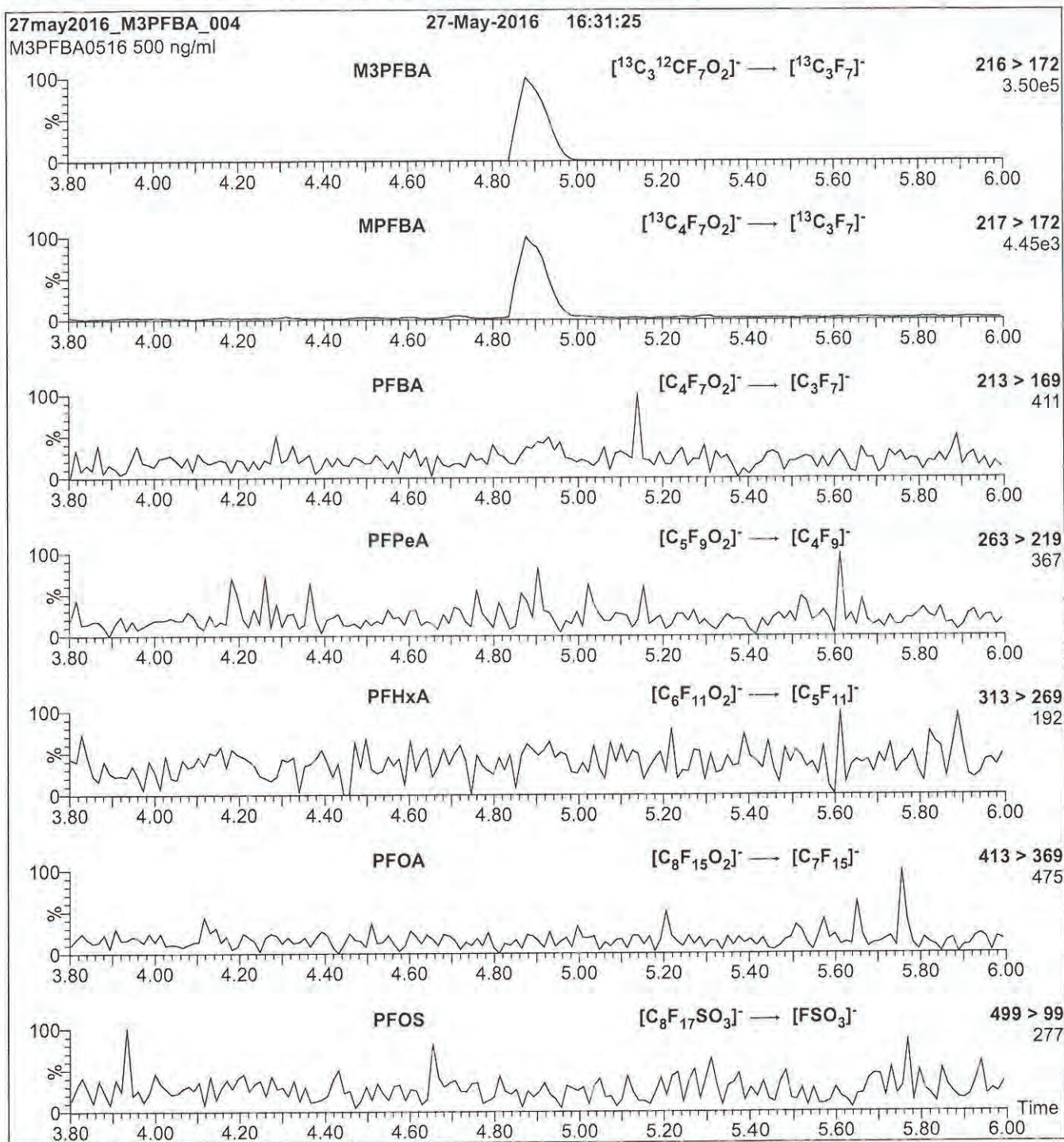
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1505

Figure 2: M3PFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M3PFBA)

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

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

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

18B1506

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

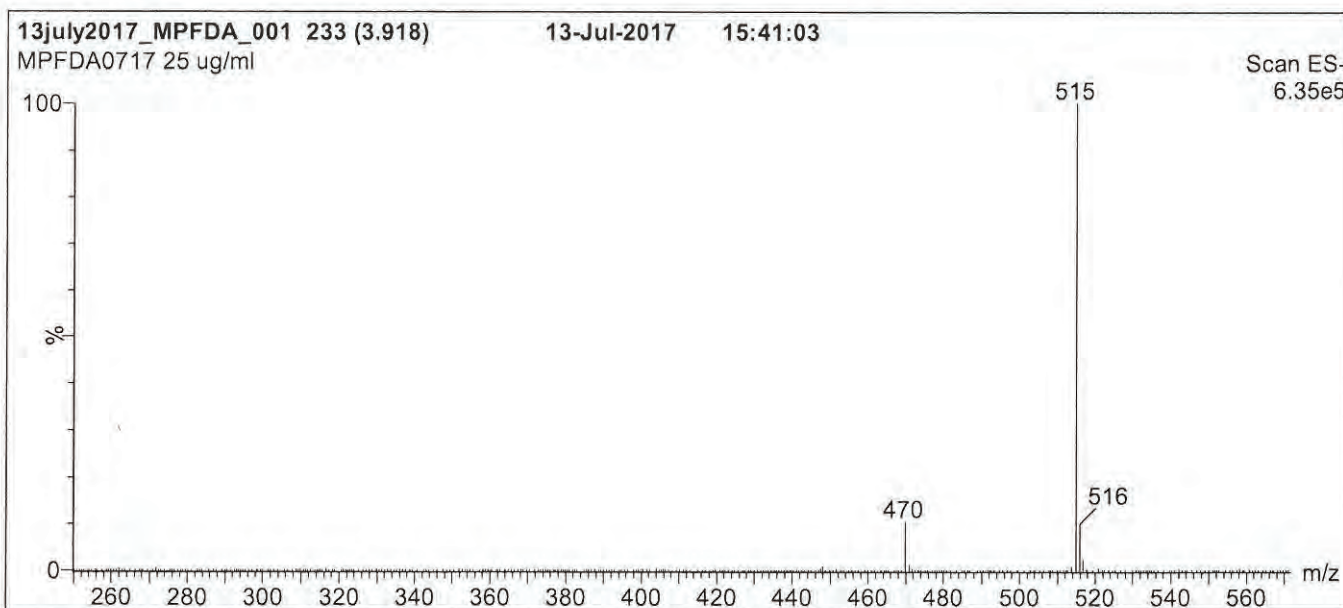
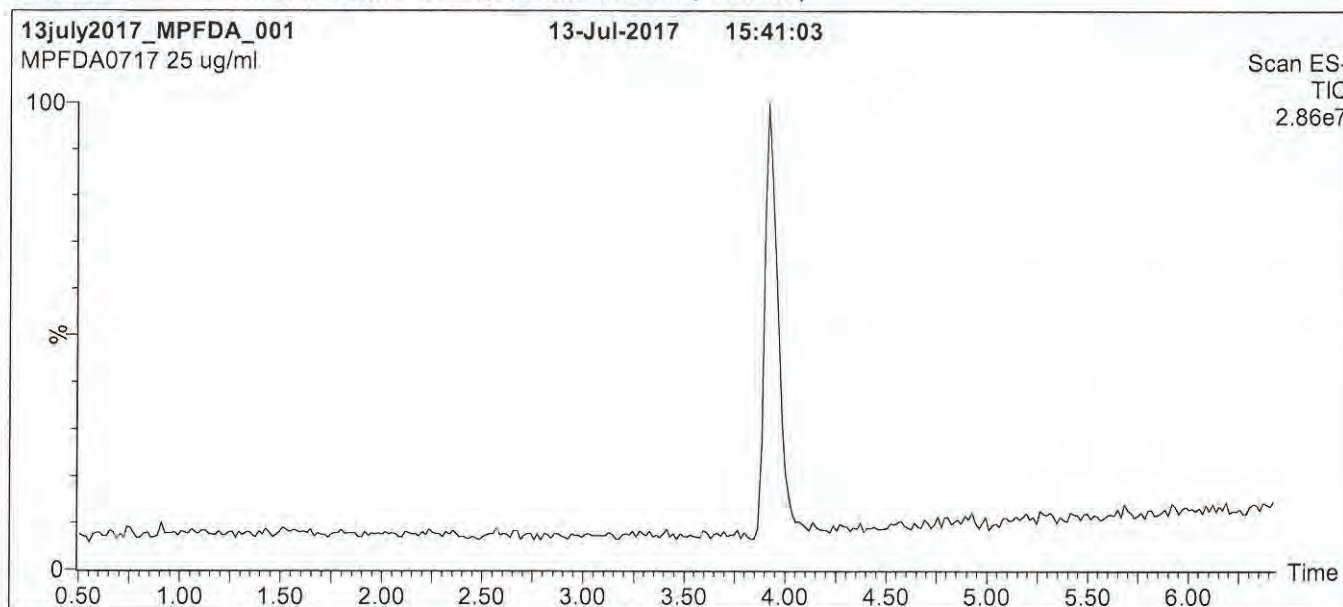
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1506

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

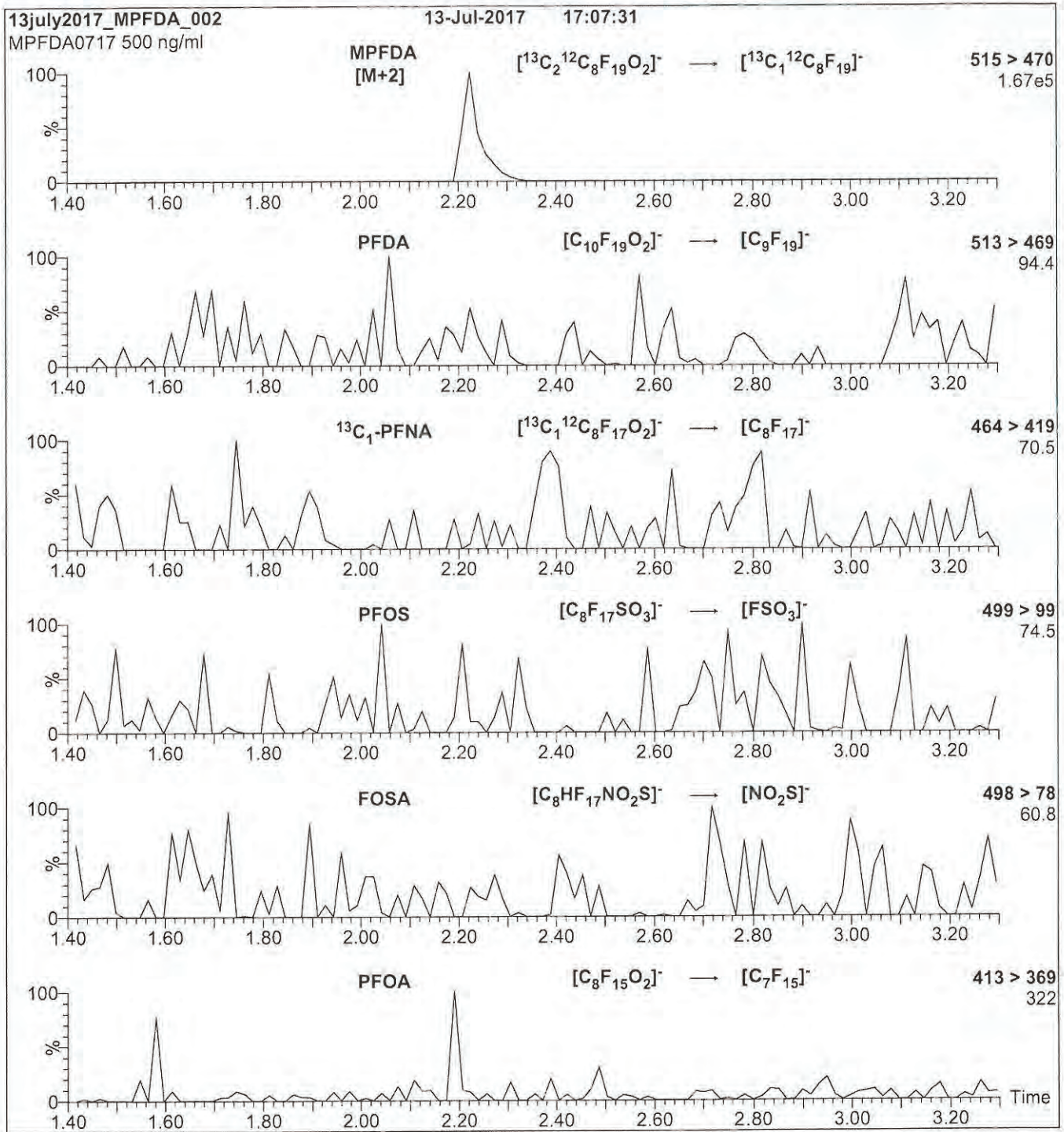
MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1506

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 13

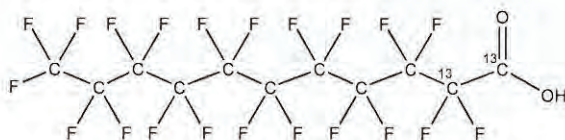
18B1507



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA **LOT NUMBER:** MPFUdA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₉HF₂₁O₂ **MOLECULAR WEIGHT:** 566.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 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

18B1507

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

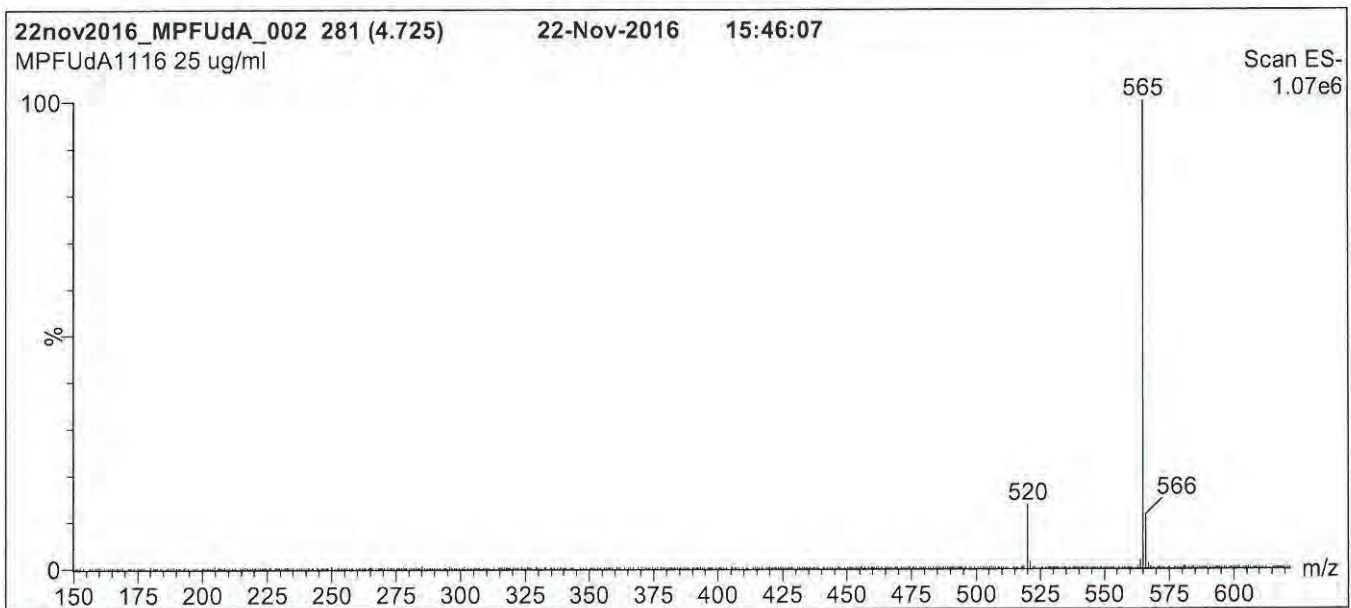
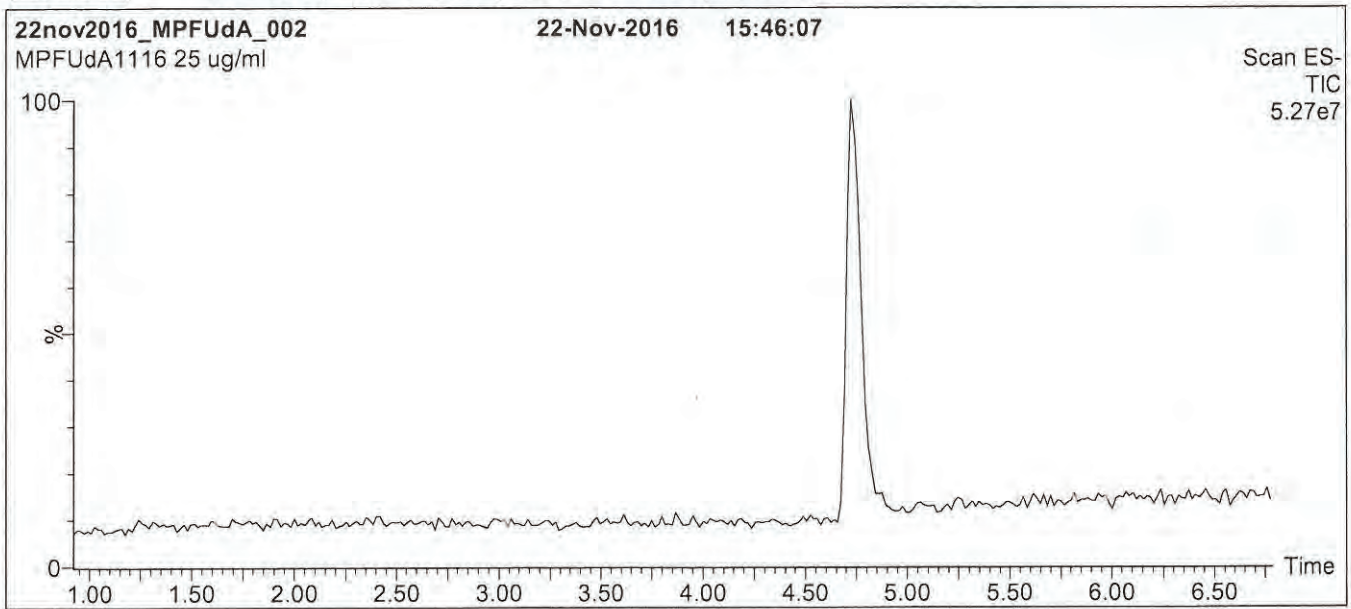
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1507

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

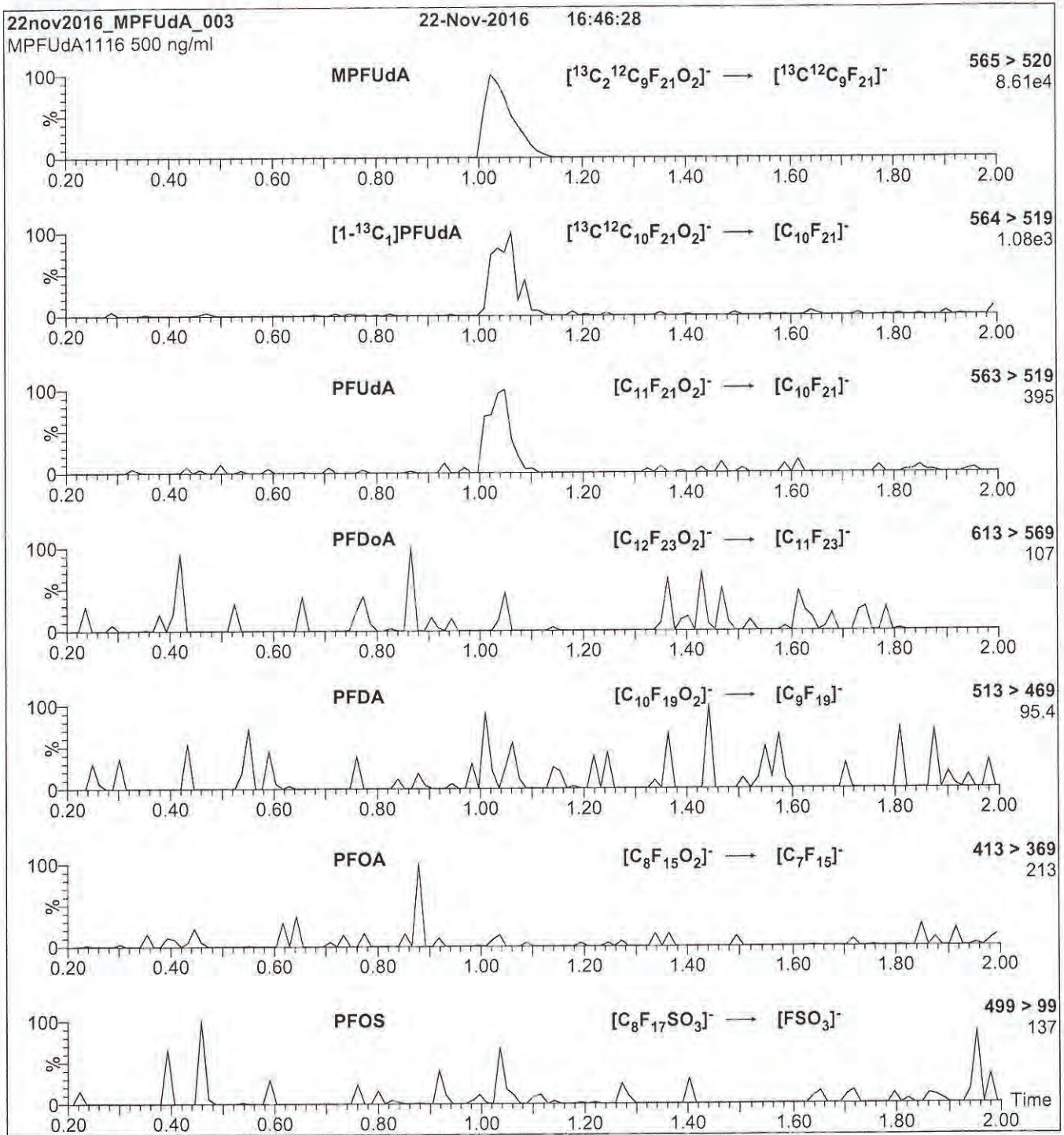
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

18B1507

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.46e-3
 Collision Energy (eV) = 11

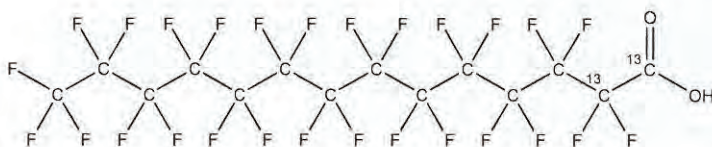
18B1508



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA1117
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂HF₂₇O₂ **MOLECULAR WEIGHT:** 716.10
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 11/30/2017
EXPIRY DATE: (mm/dd/yyyy) 11/30/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/01/2017
 B.G. Chittim, General Manager (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

18B1508

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

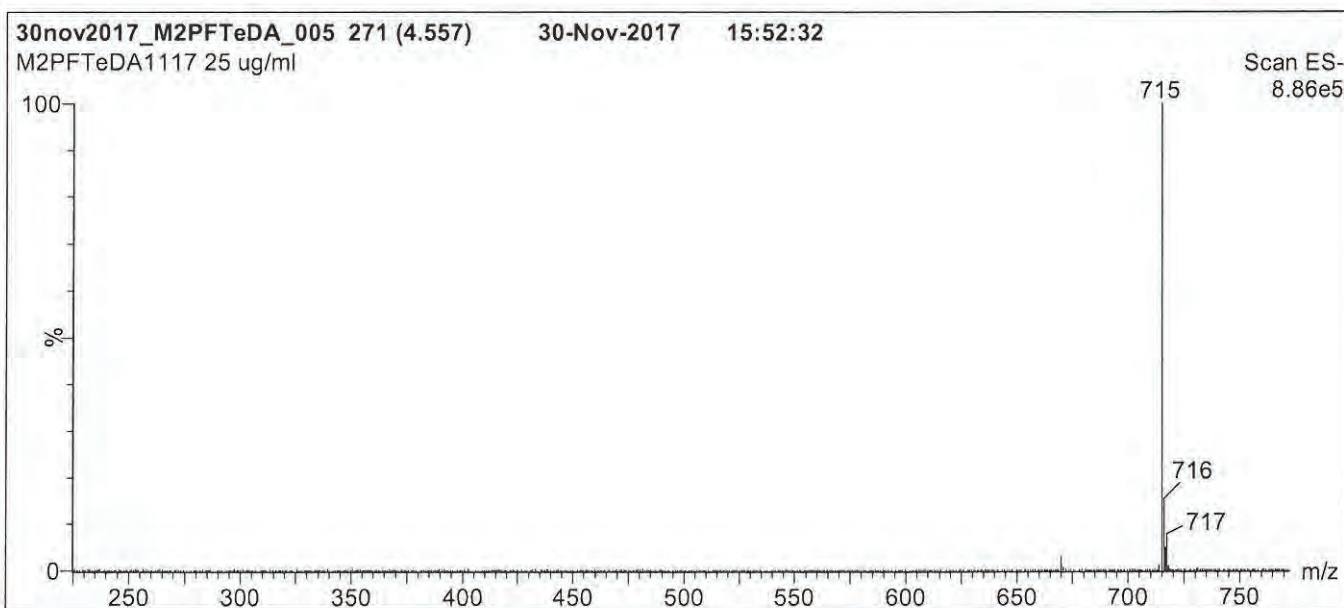
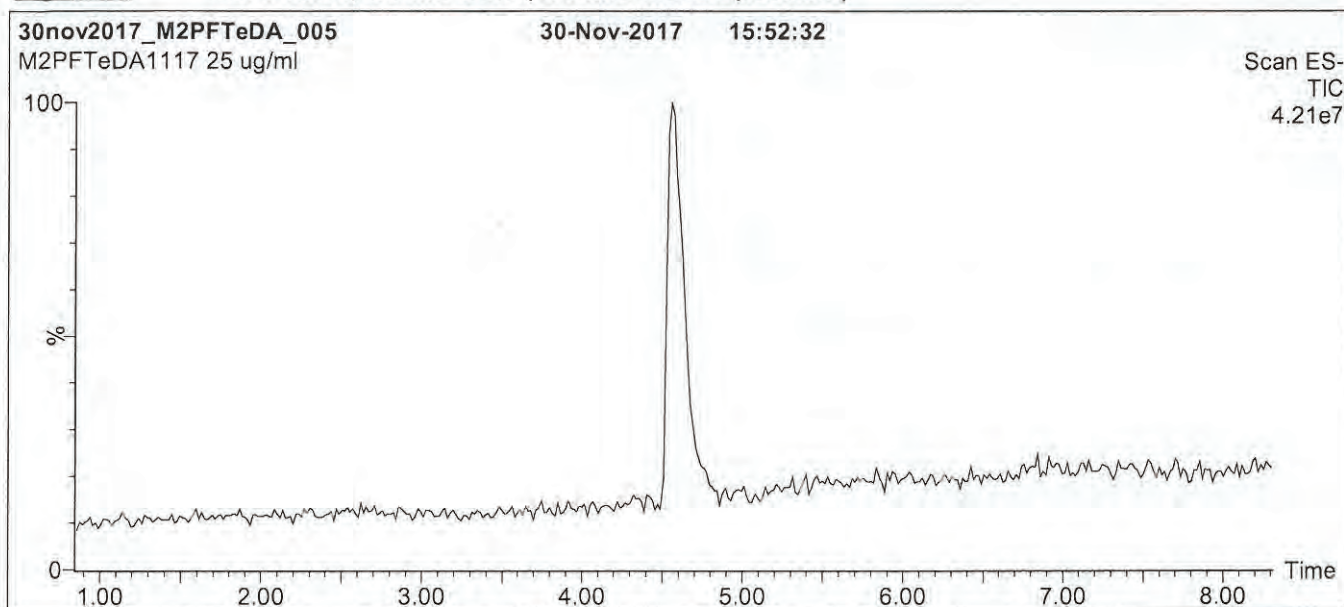
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1508

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

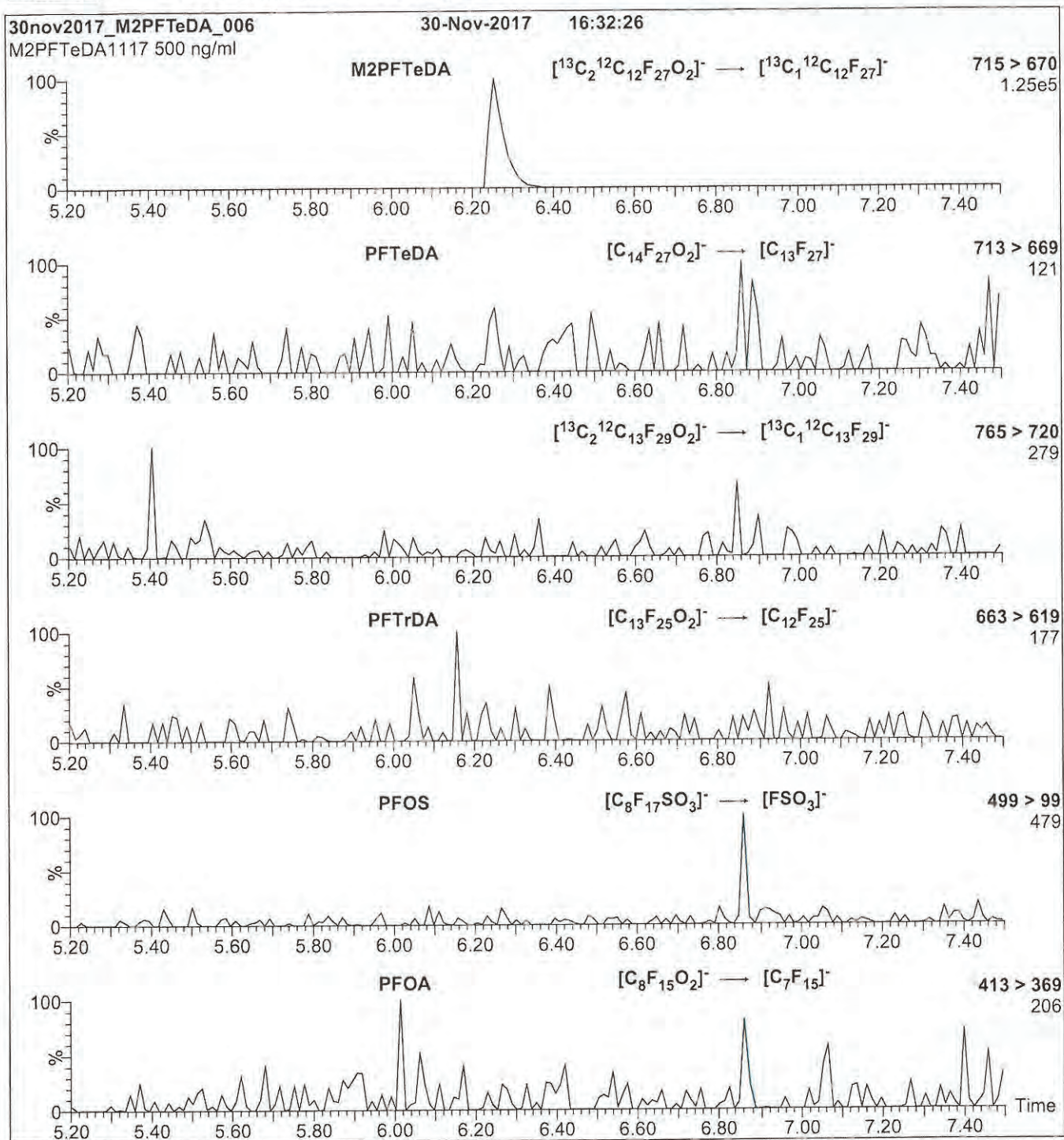
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1508

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



Conditions for Figure 2:

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

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

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

MS Parameters

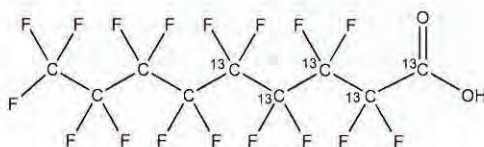
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 14

18B1509


WELLINGTON
 LABORATORIES

 CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: MPFNA **LOT NUMBER:** MPFNA1217
COMPOUND: Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₅¹²C₄HF₁₇O₂ **MOLECULAR WEIGHT:** 469.04
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
 (1,2,3,4,5-¹³C₅)
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 12/19/2017
 (mm/dd/yyyy)

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

18B1509

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

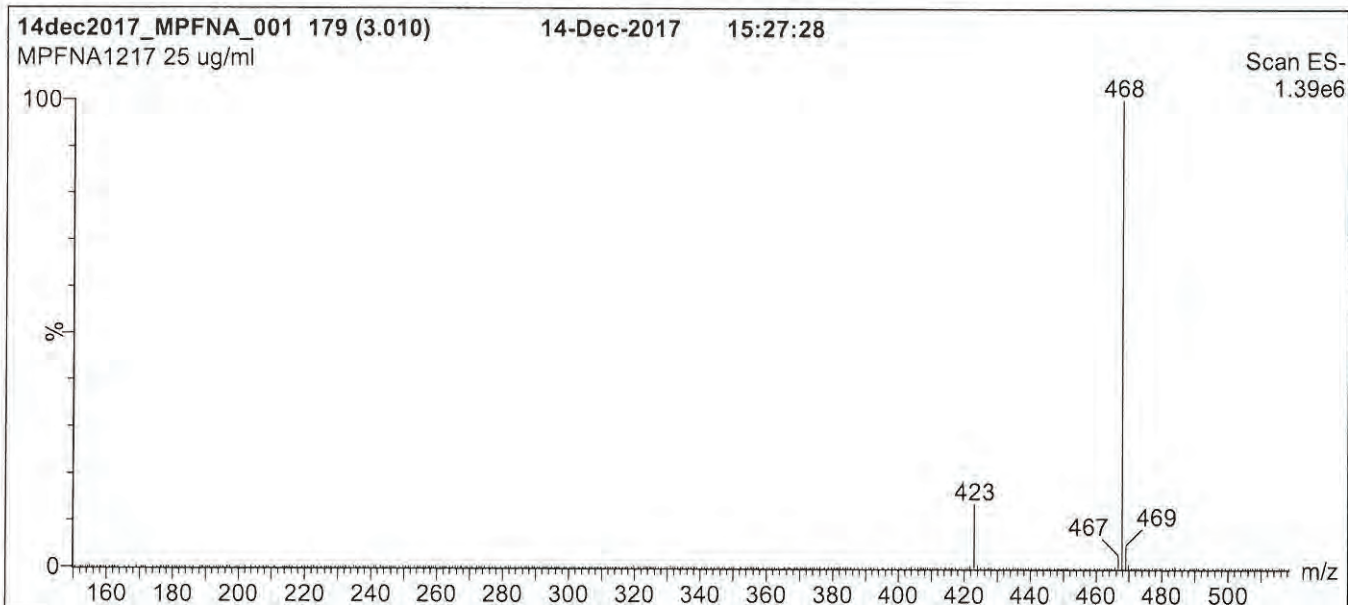
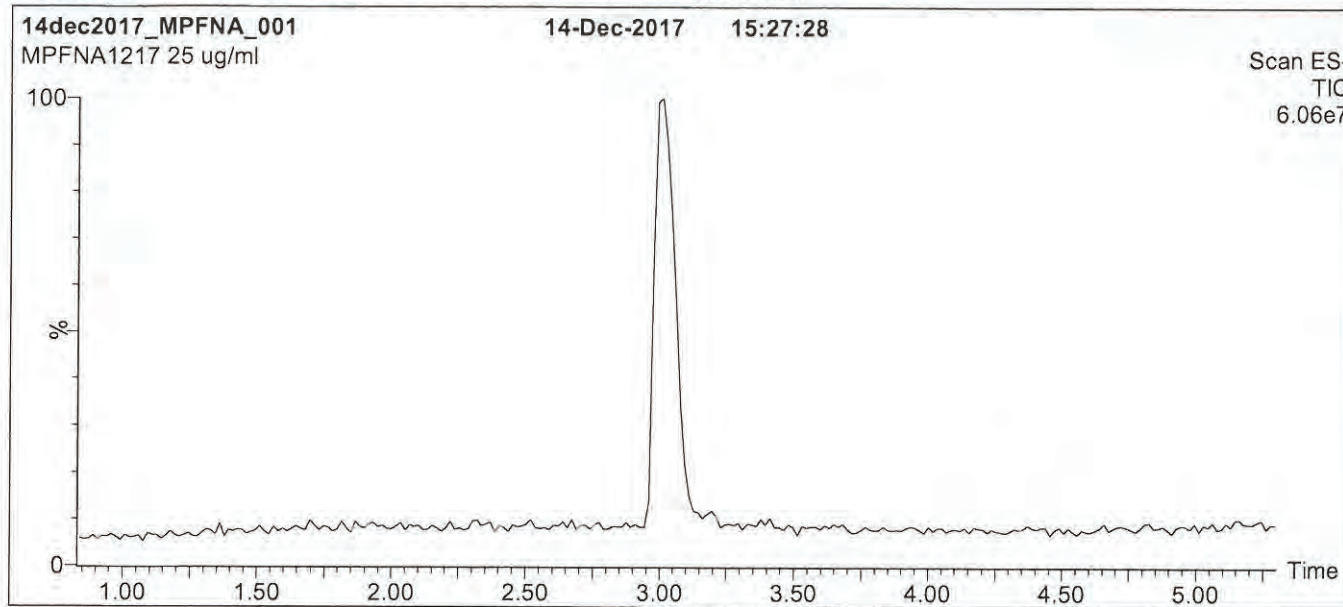
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1509

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

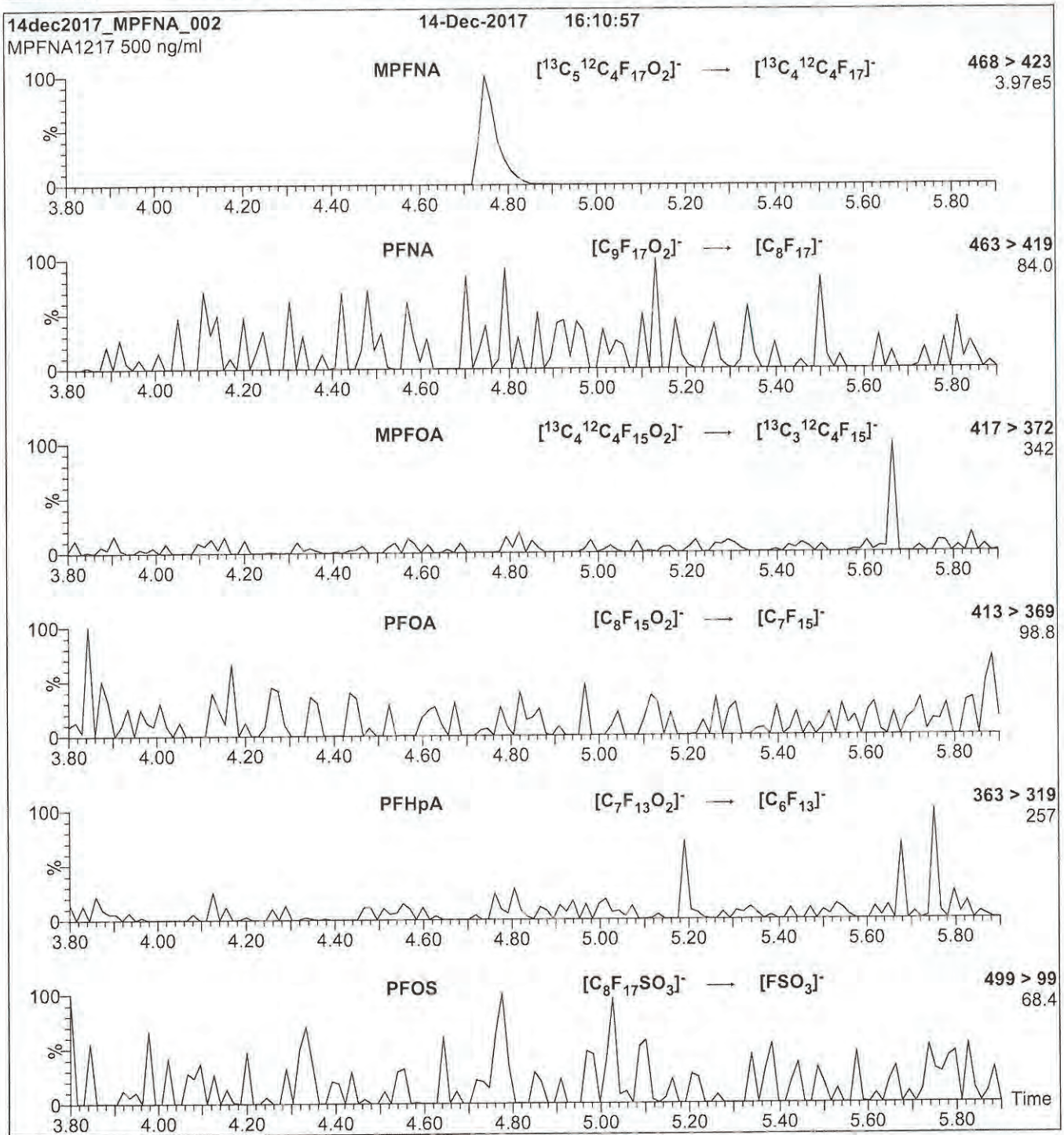
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1509

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 11

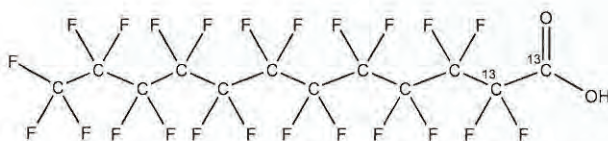
18B1510



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA **LOT NUMBER:** MPFDoA0517
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂ **MOLECULAR WEIGHT:** 616.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 05/23/2017
EXPIRY DATE: (mm/dd/yyyy) 05/23/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 05/26/2017
 B.G. Chittim, General Manager (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

18B1510

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

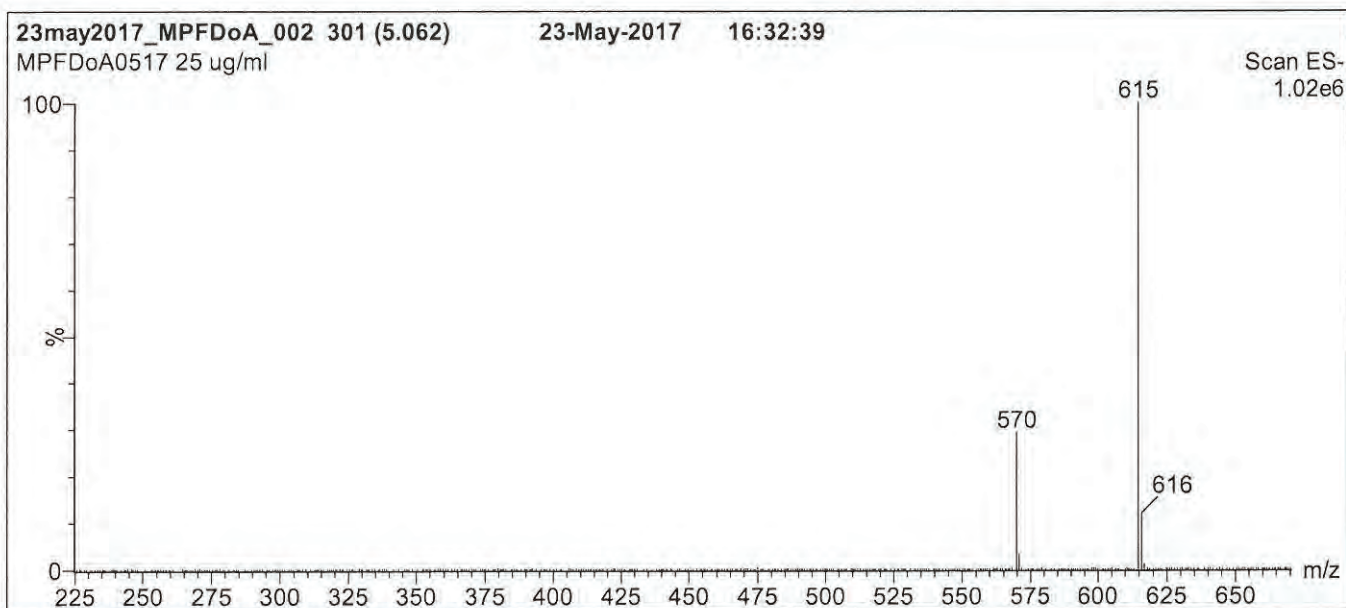
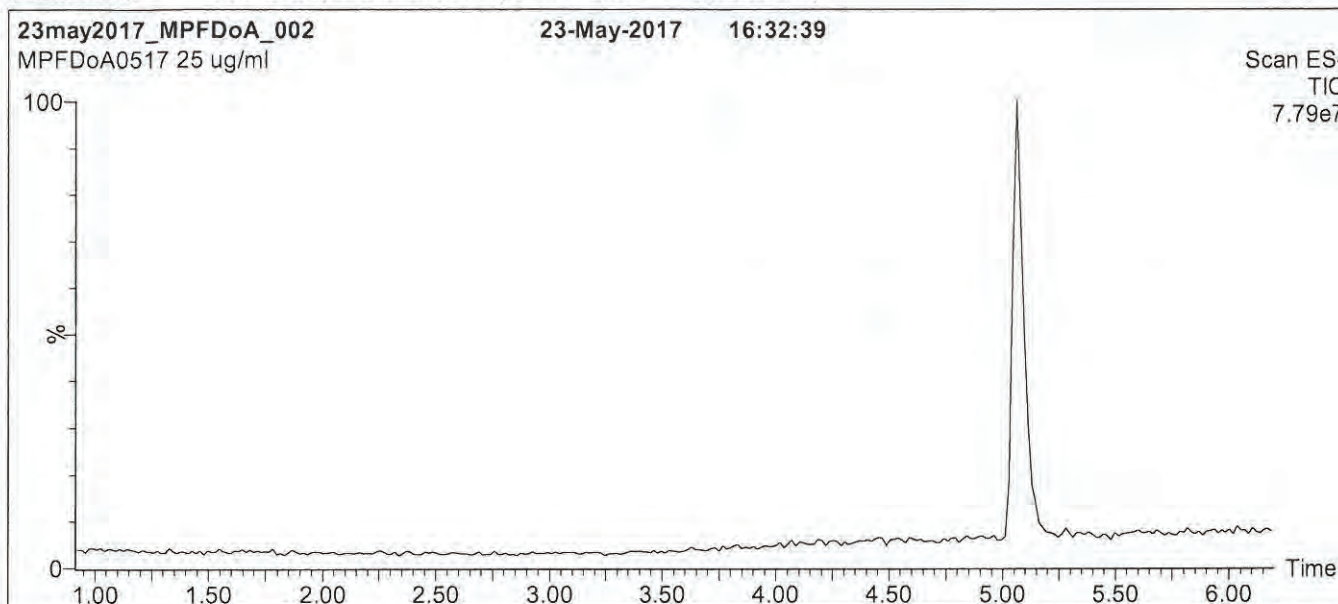
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1510

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

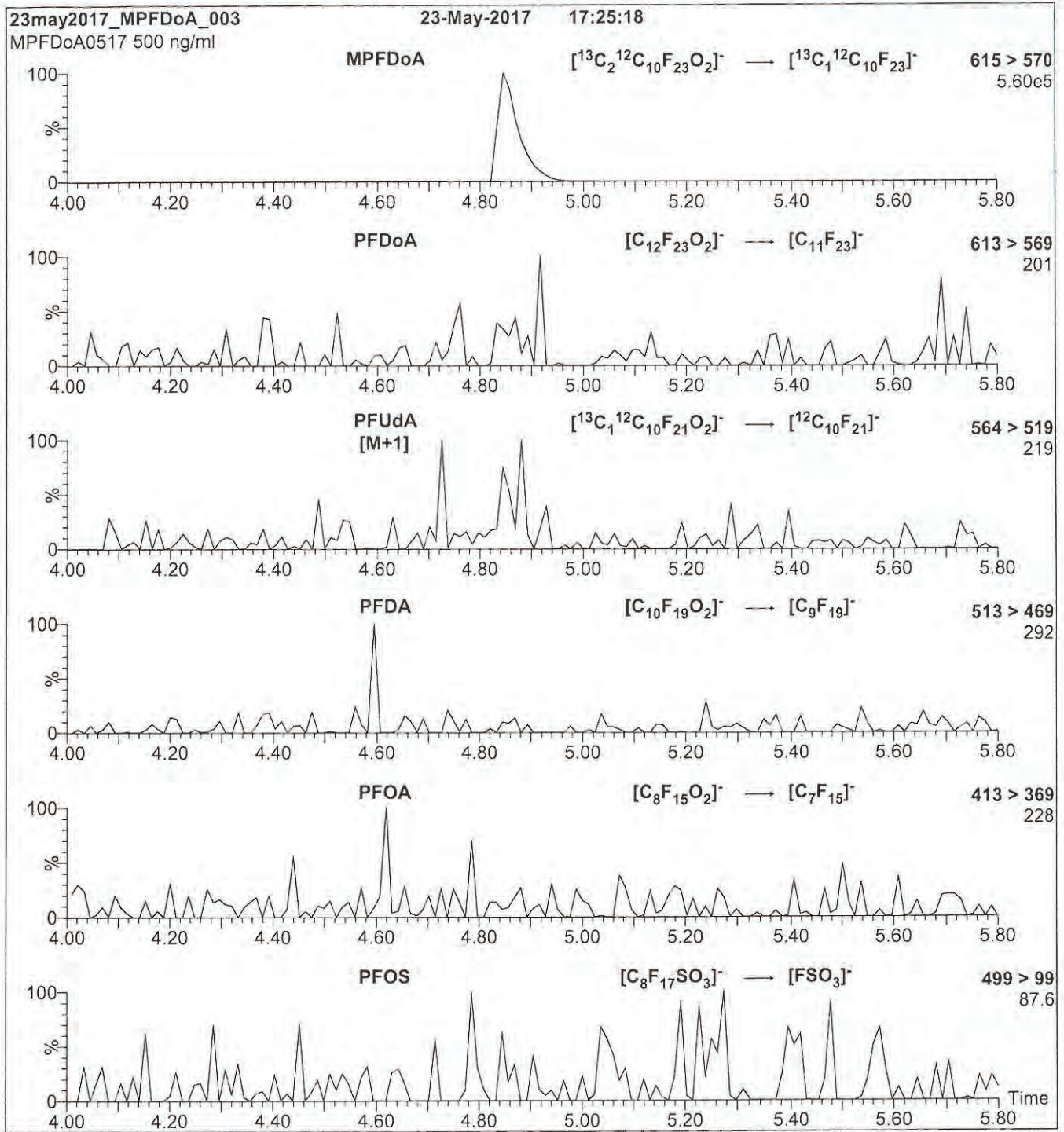
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1510

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

18B1511

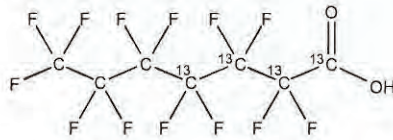


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA **LOT NUMBER:** M4PFHpA0517
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂ **MOLECULAR WEIGHT:** 368.03
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2,3,4-¹³C₄)
LAST TESTED: (mm/dd/yyyy) 05/03/2017
EXPIRY DATE: (mm/dd/yyyy) 05/03/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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, General Manager

Date: 05/11/2017
 (mm/dd/yyyy)

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

1881511

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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.

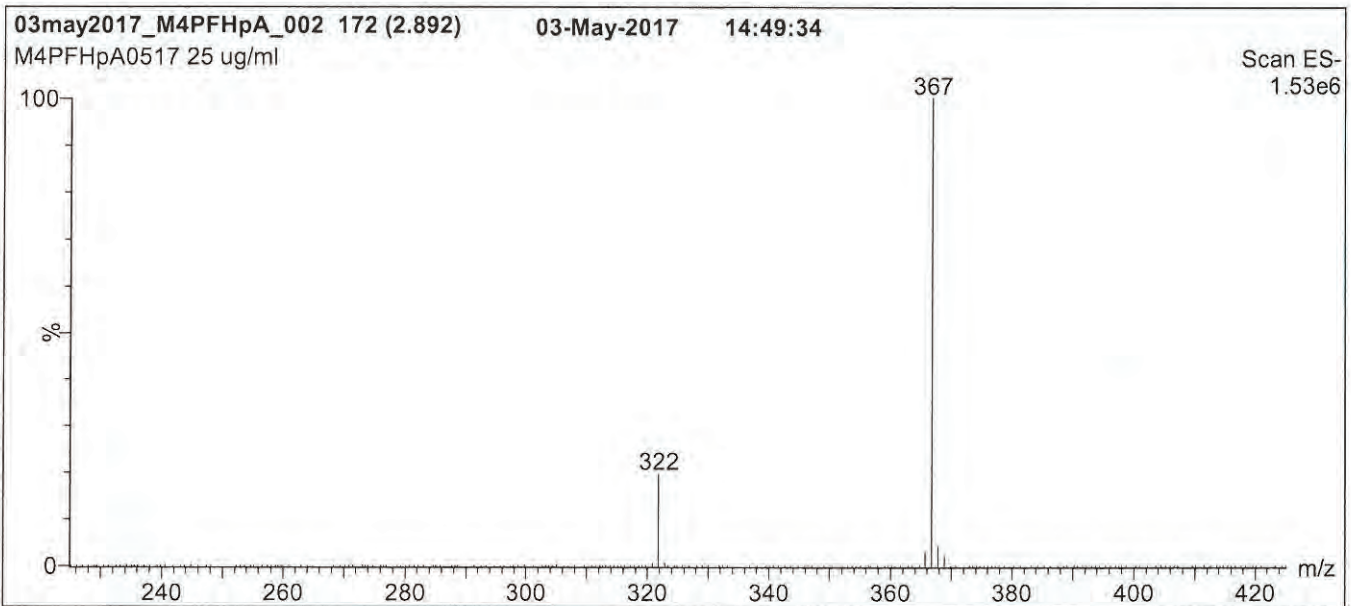
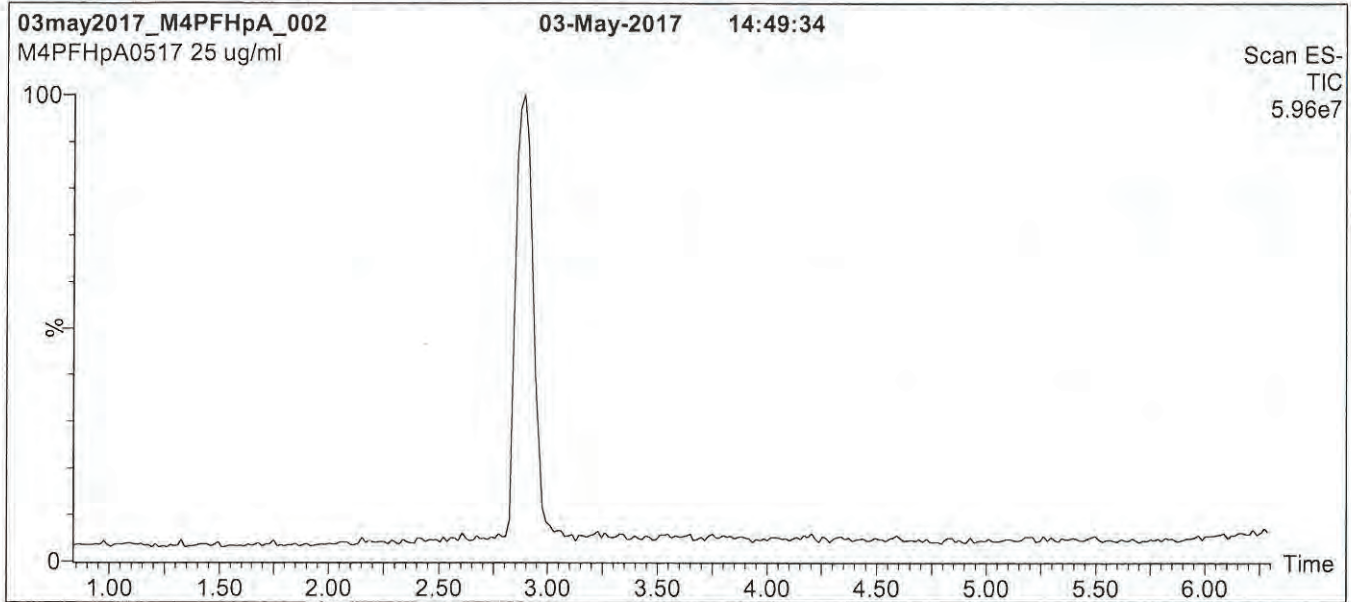
QUALITY MANAGEMENT:

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).



18B1511

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

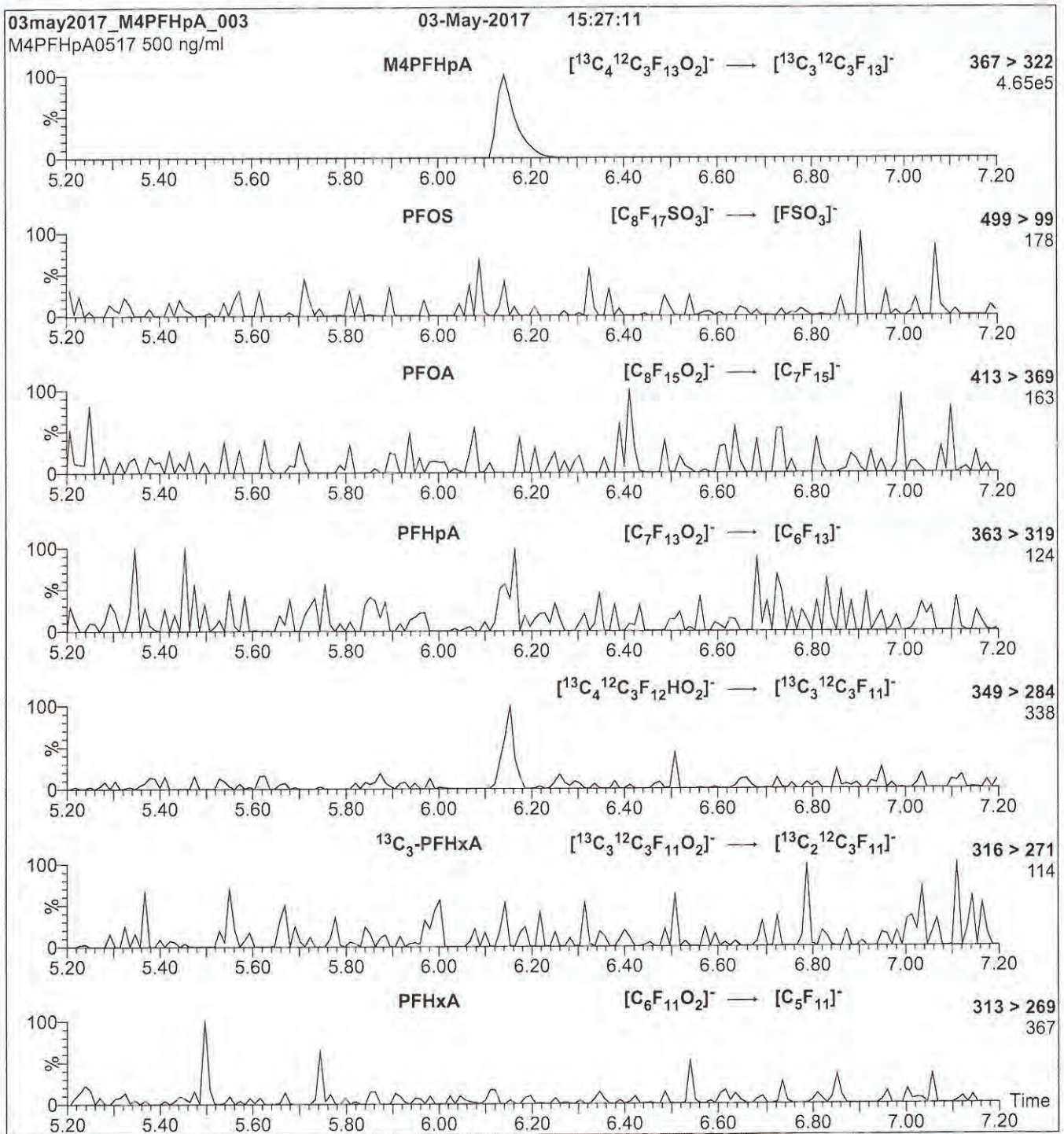
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1511

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 9

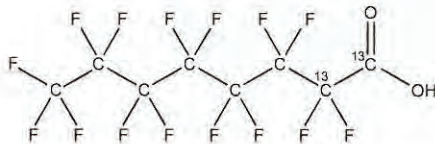
18B1512



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA1017
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₅O₂ **MOLECULAR WEIGHT:** 416.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99%¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 10/26/2017
EXPIRY DATE: (mm/dd/yyyy) 10/26/2022
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: _____


 B.G. Chittim, General Manager

Date: 10/30/2017
 (mm/dd/yyyy)

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

18B1512

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

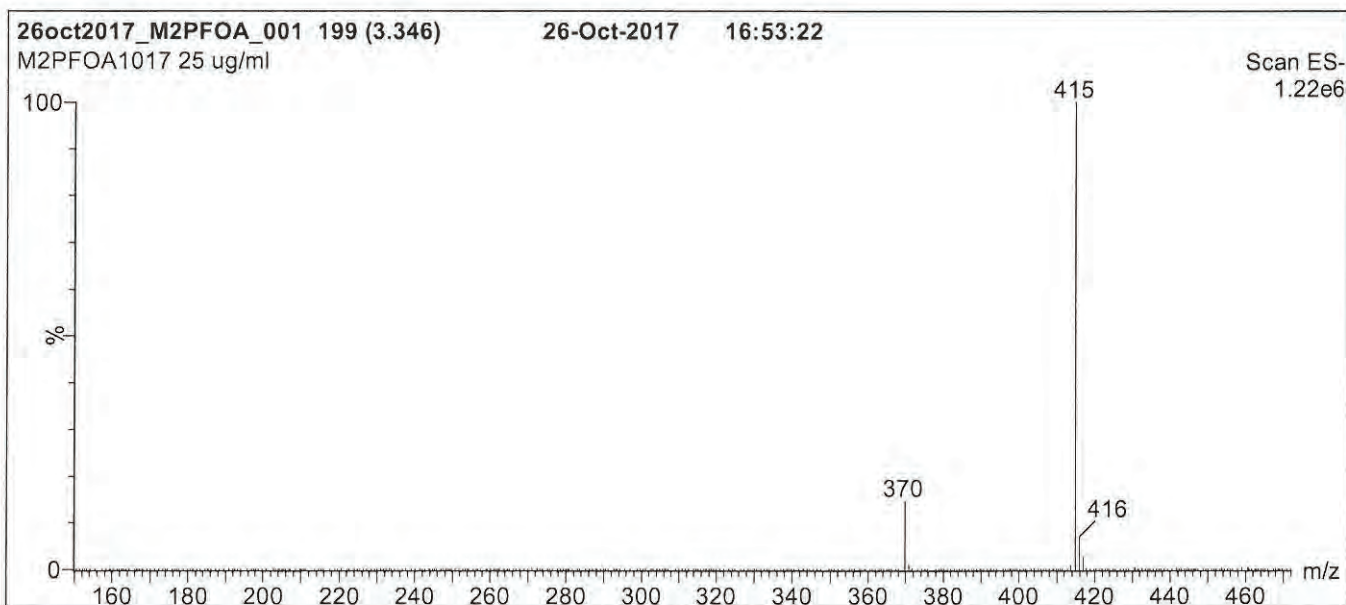
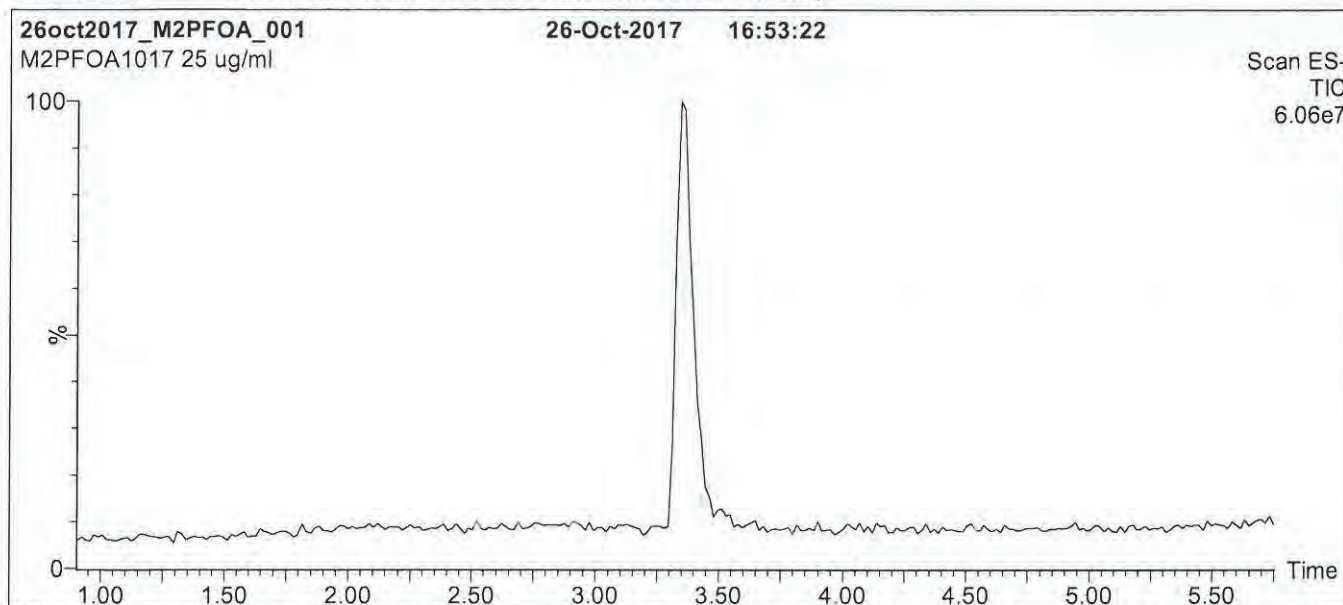
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1512

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

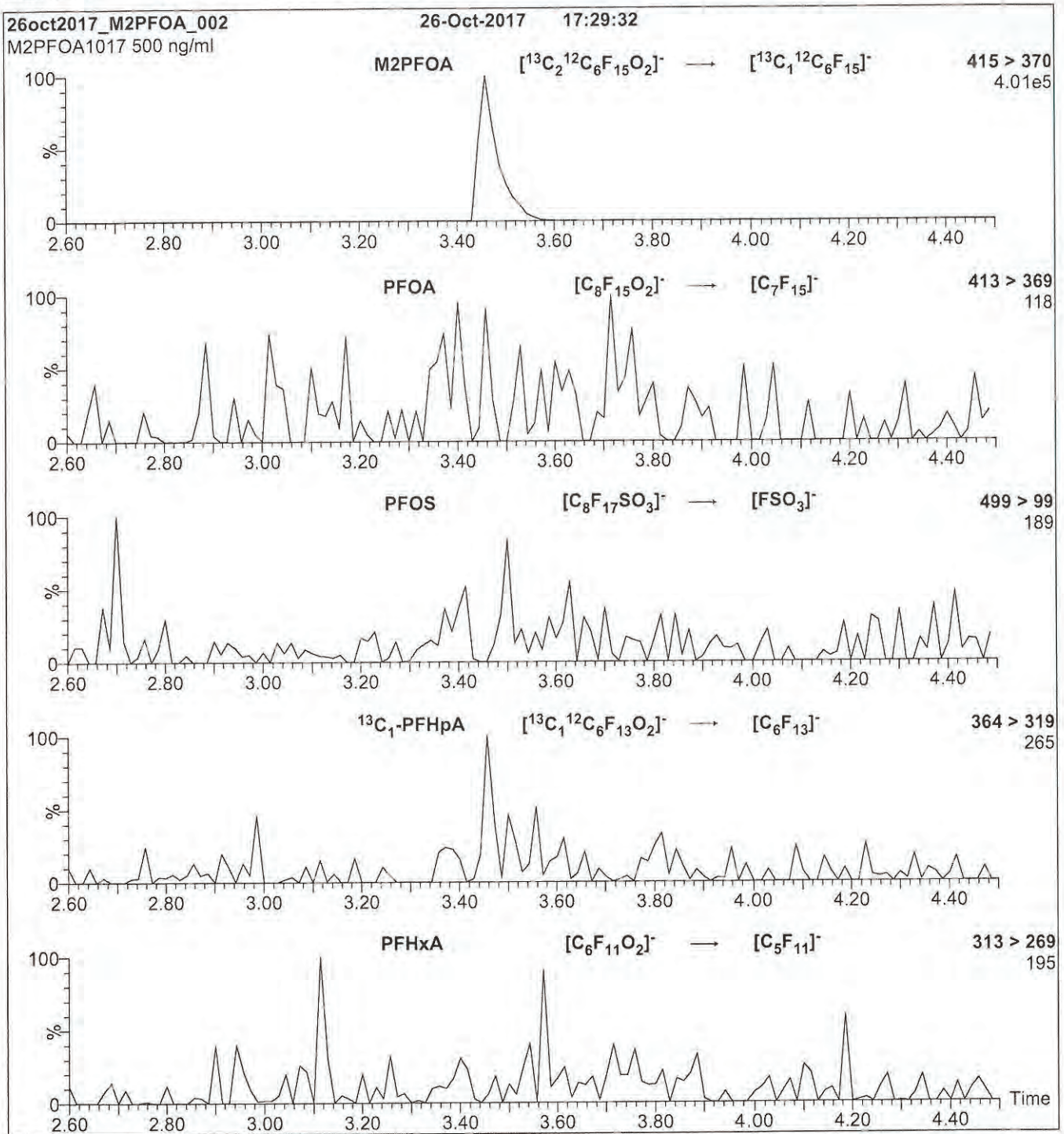
MS Parameters

Experiment: Full Scan (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

18B1512

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

18B1513

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

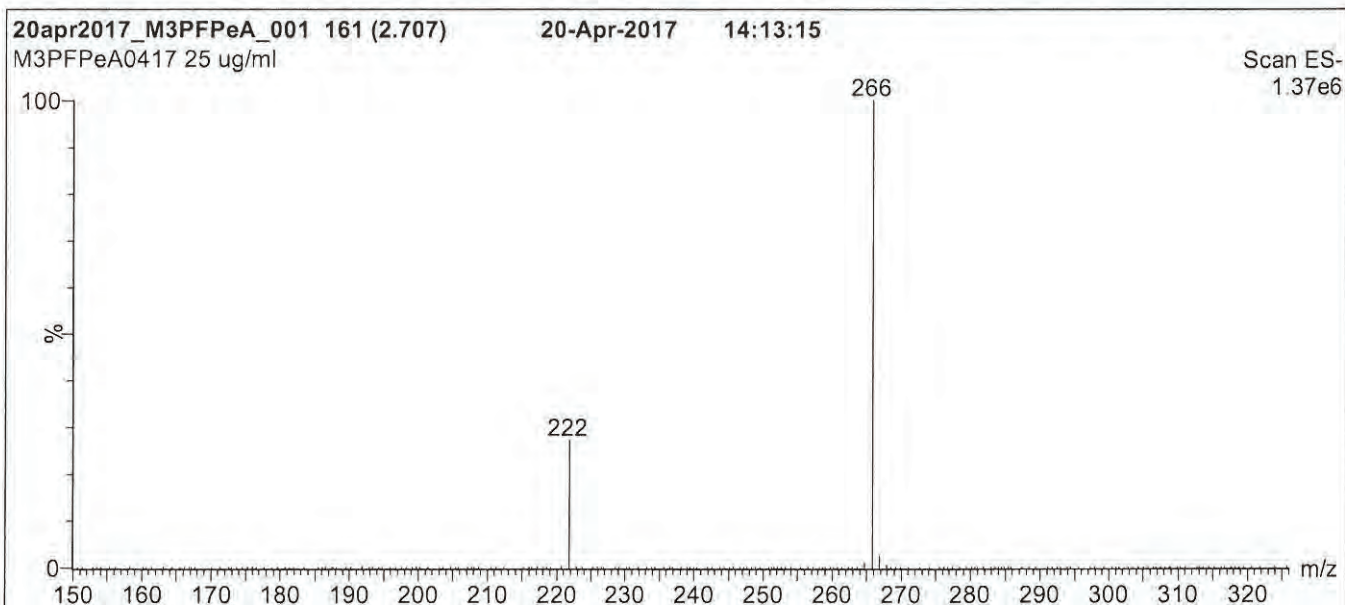
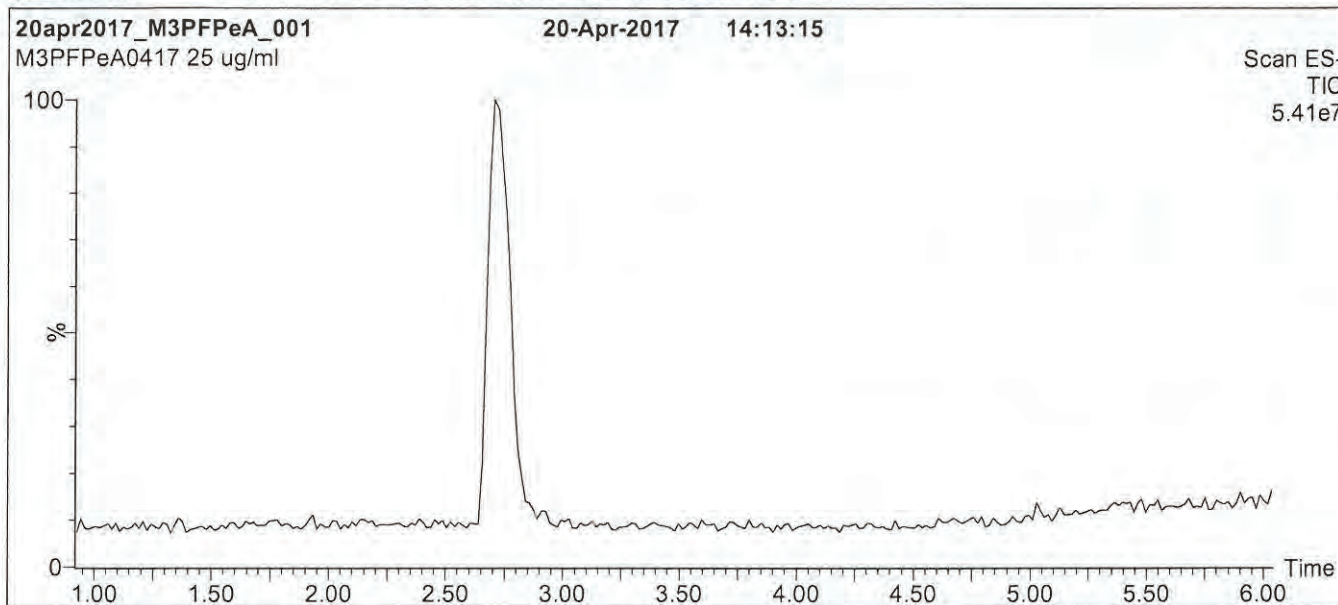
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1513

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

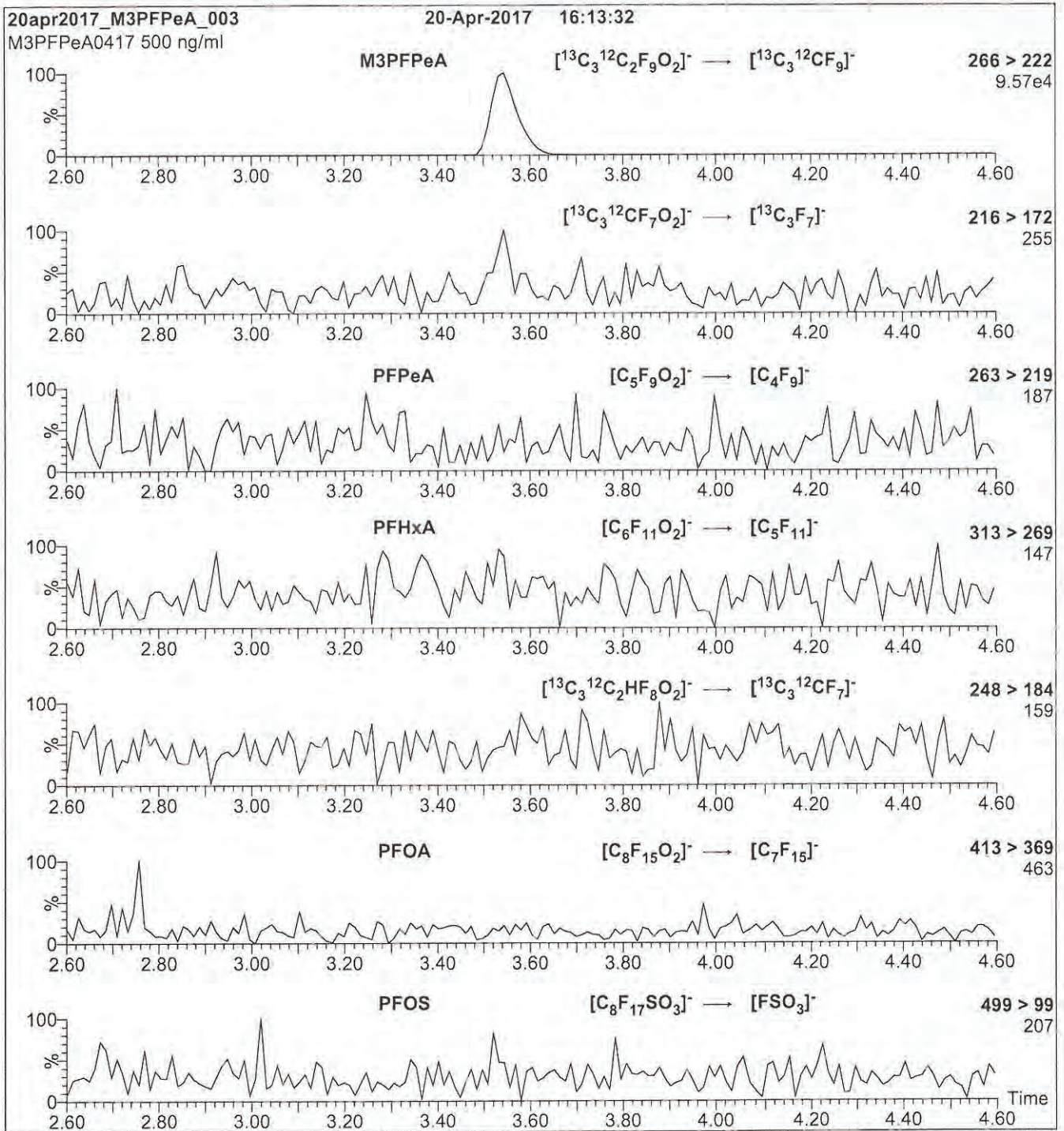
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1513

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

18B1514

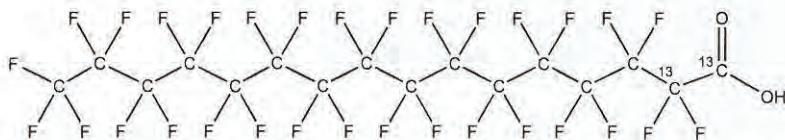


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA0717
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂ **MOLECULAR WEIGHT:** 816.11
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 07/13/2017 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 07/14/2017
(mm/dd/yyyy)

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

18B1514

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

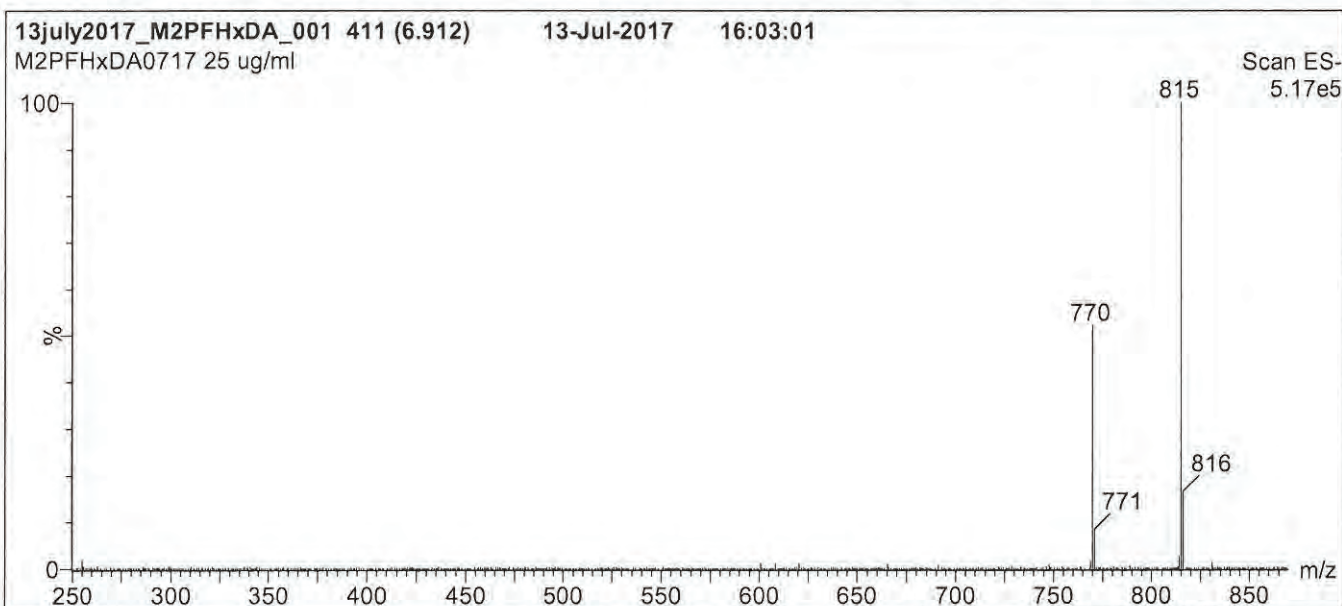
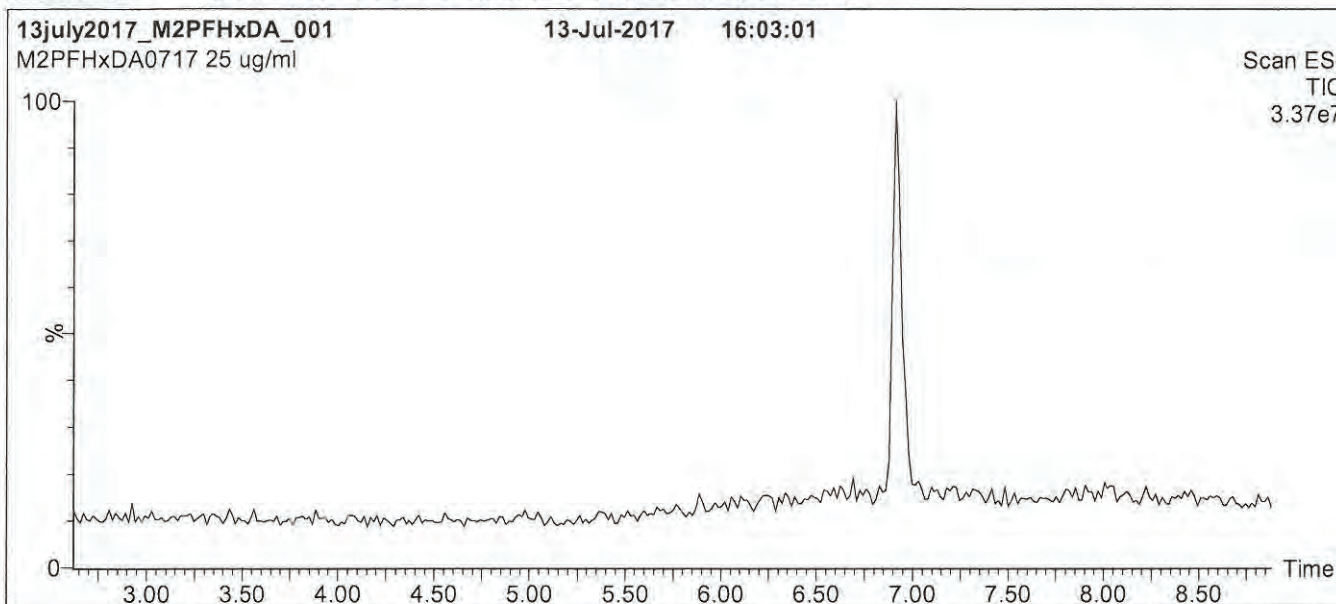
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B514

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

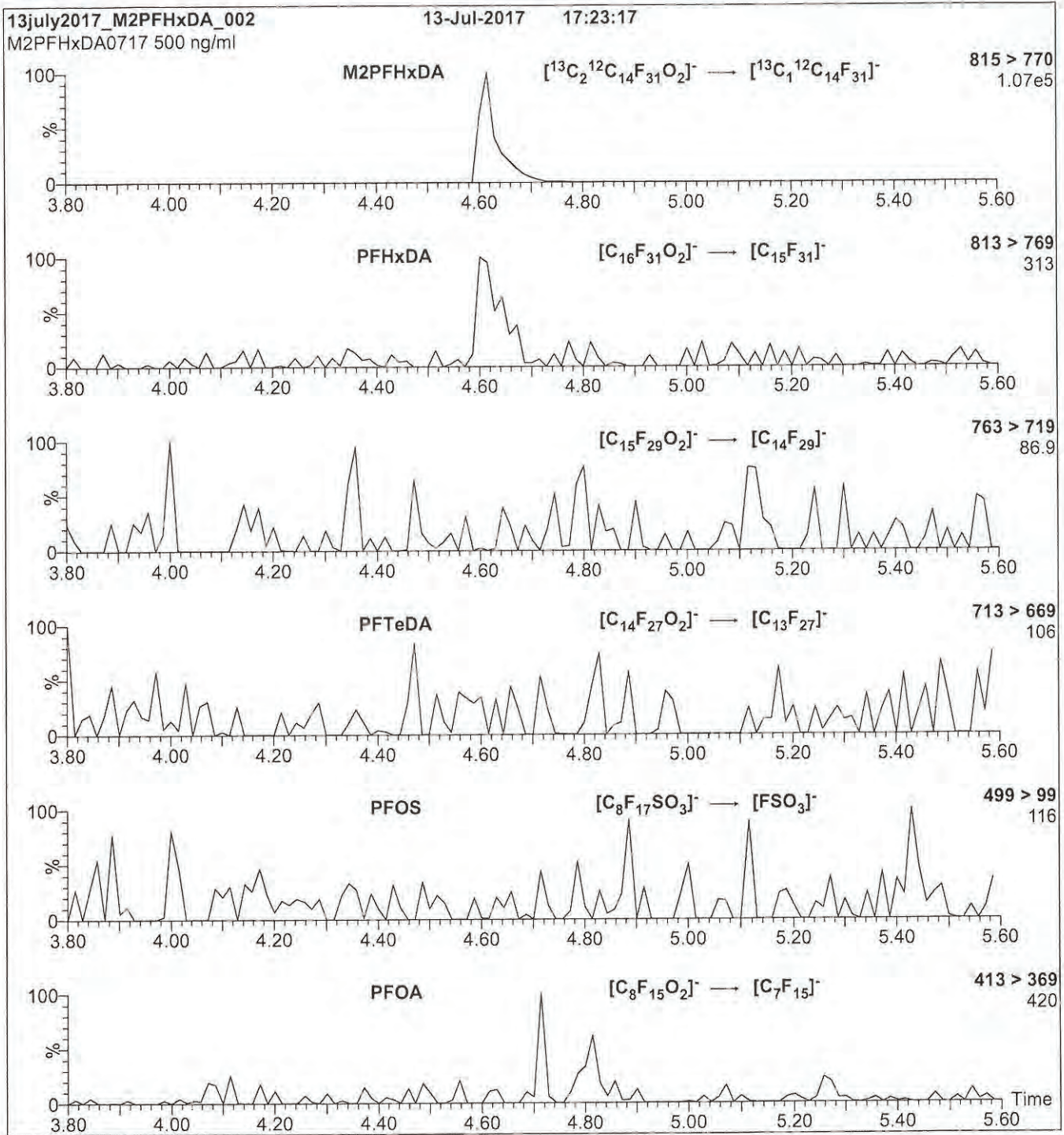
MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1514

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

18B1515

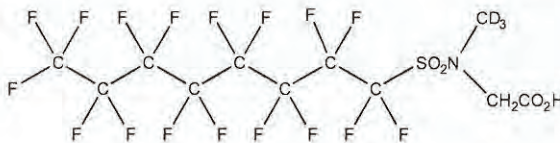


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1117
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₁D₃H₃F₁₇NO₄S **MOLECULAR WEIGHT:** 574.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₃
LAST TESTED: (mm/dd/yyyy) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager **Date:** 11/16/2017
(mm/dd/yyyy)

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

188515

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

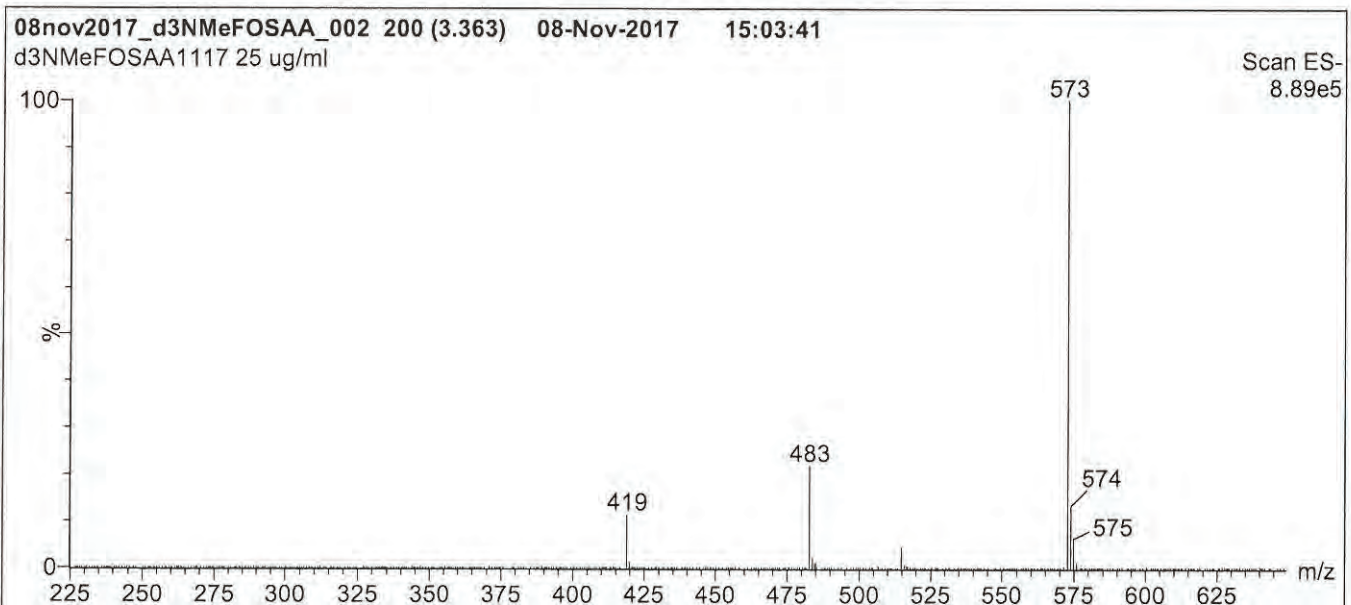
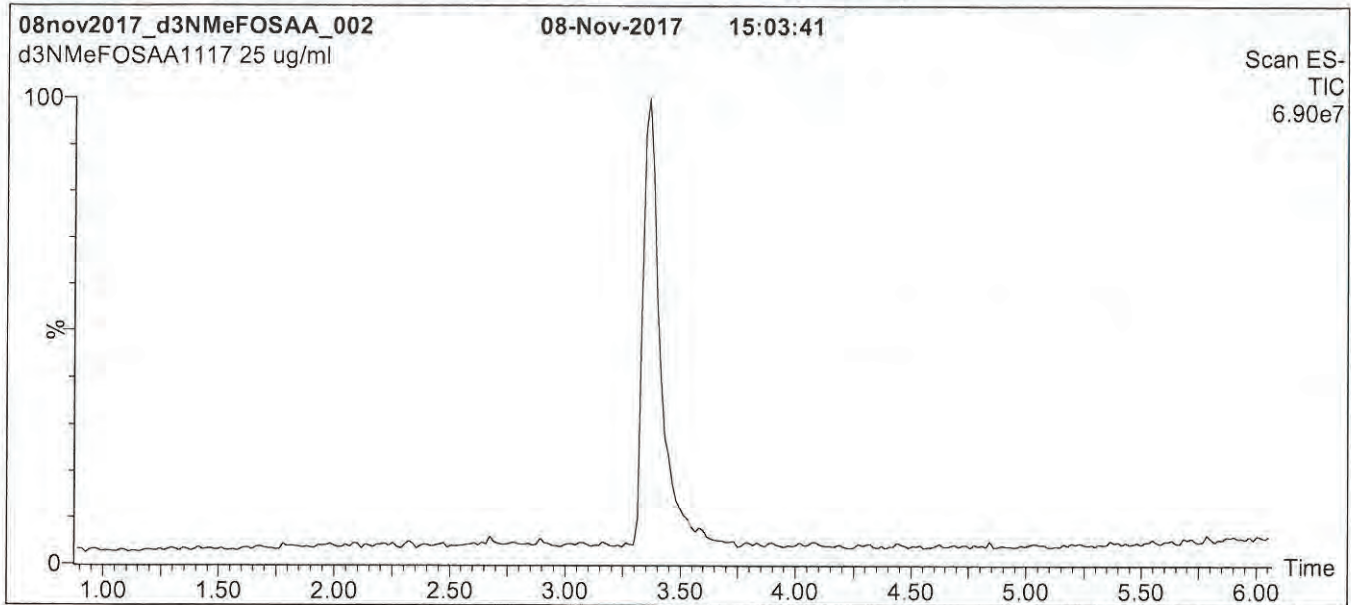
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1515

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

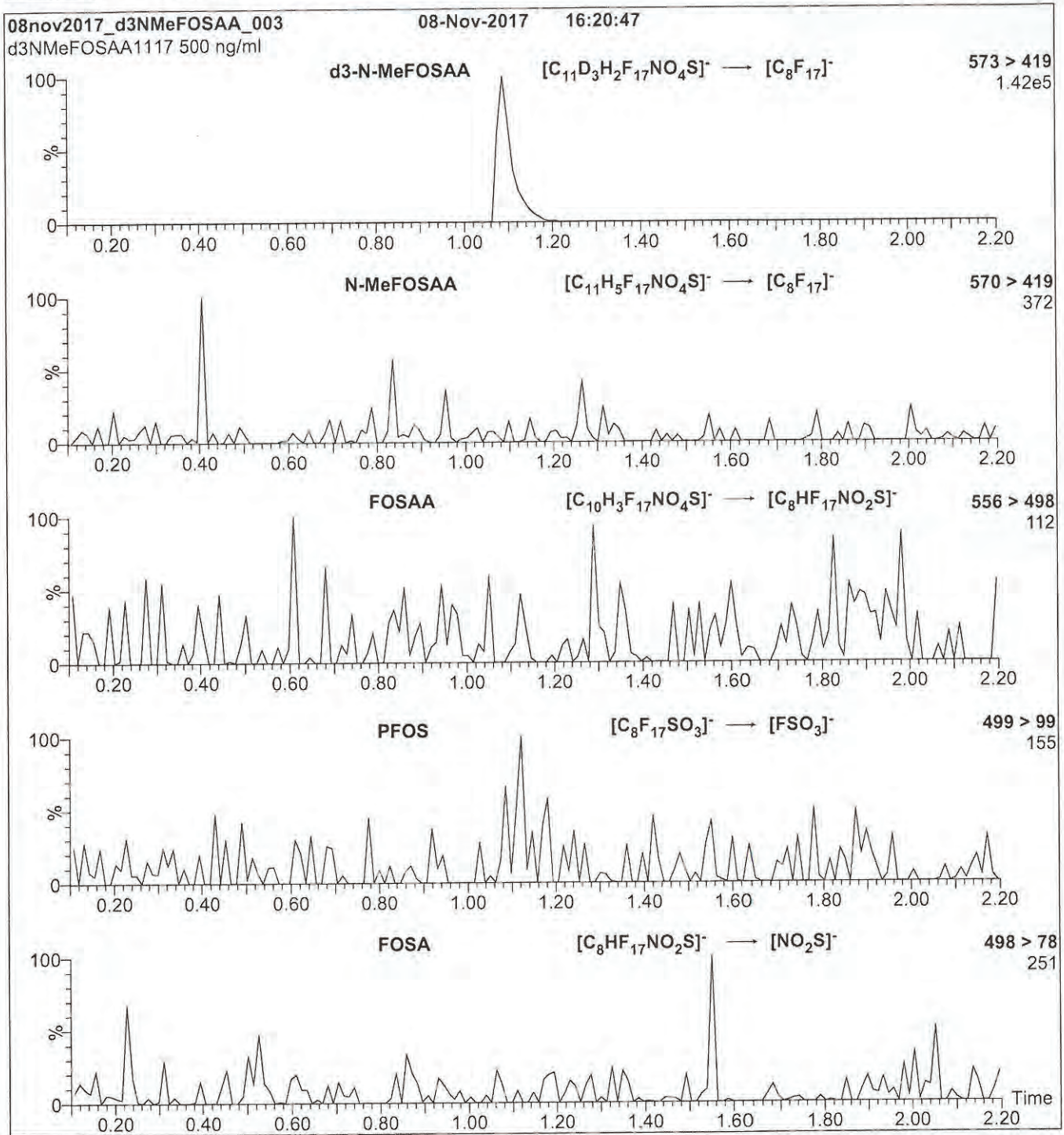
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1515

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

18B1516

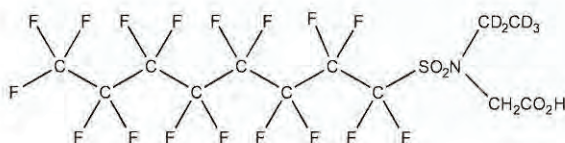


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1117
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₂D₅H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 590.26
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Refrigerate ampoule

ISOTOPIC PURITY: ≥98% ²H₅

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, General Manager

Date: 11/16/2017
 (mm/dd/yyyy)

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

18B1516

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

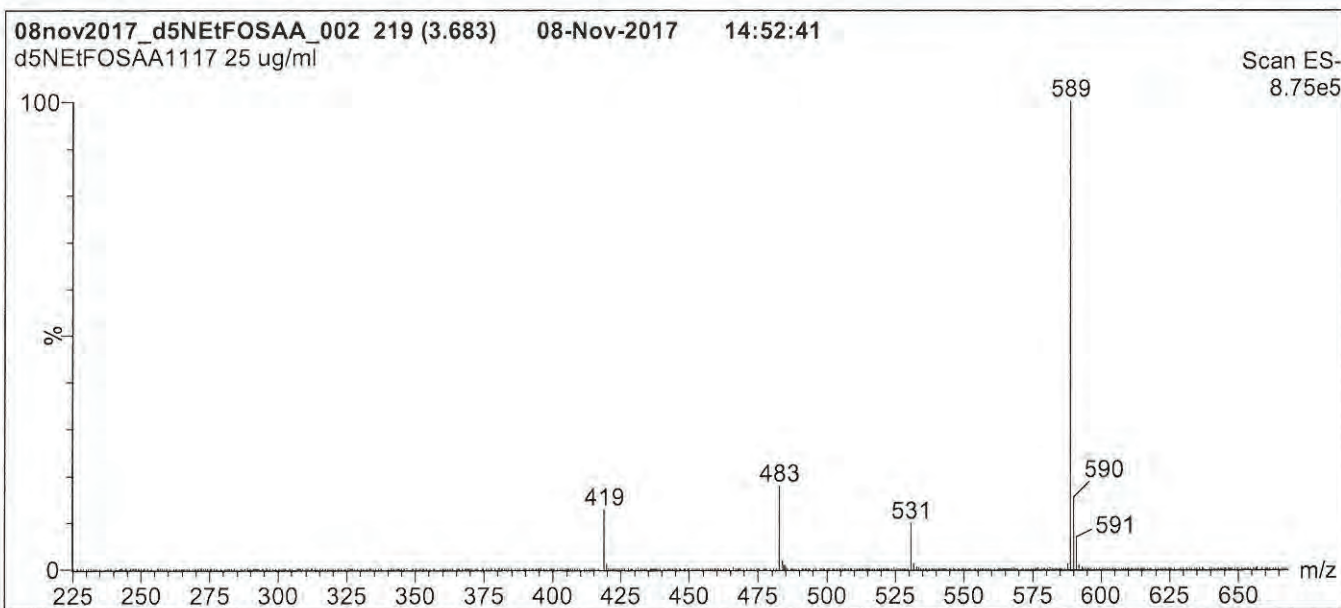
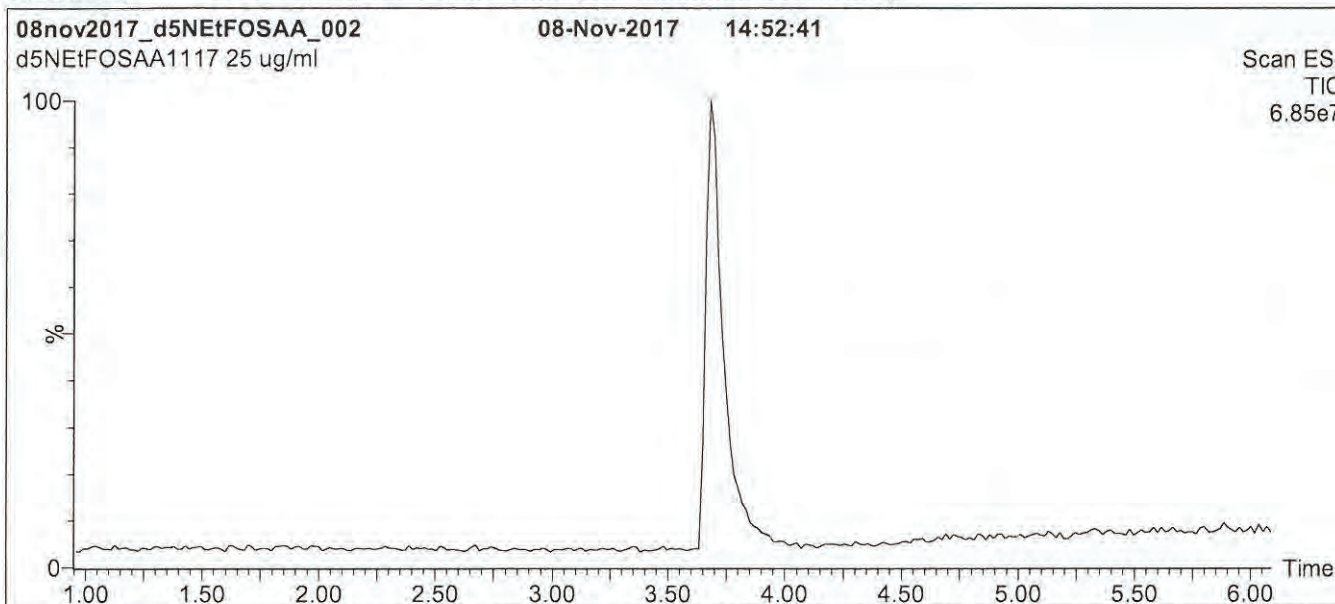
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1516

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

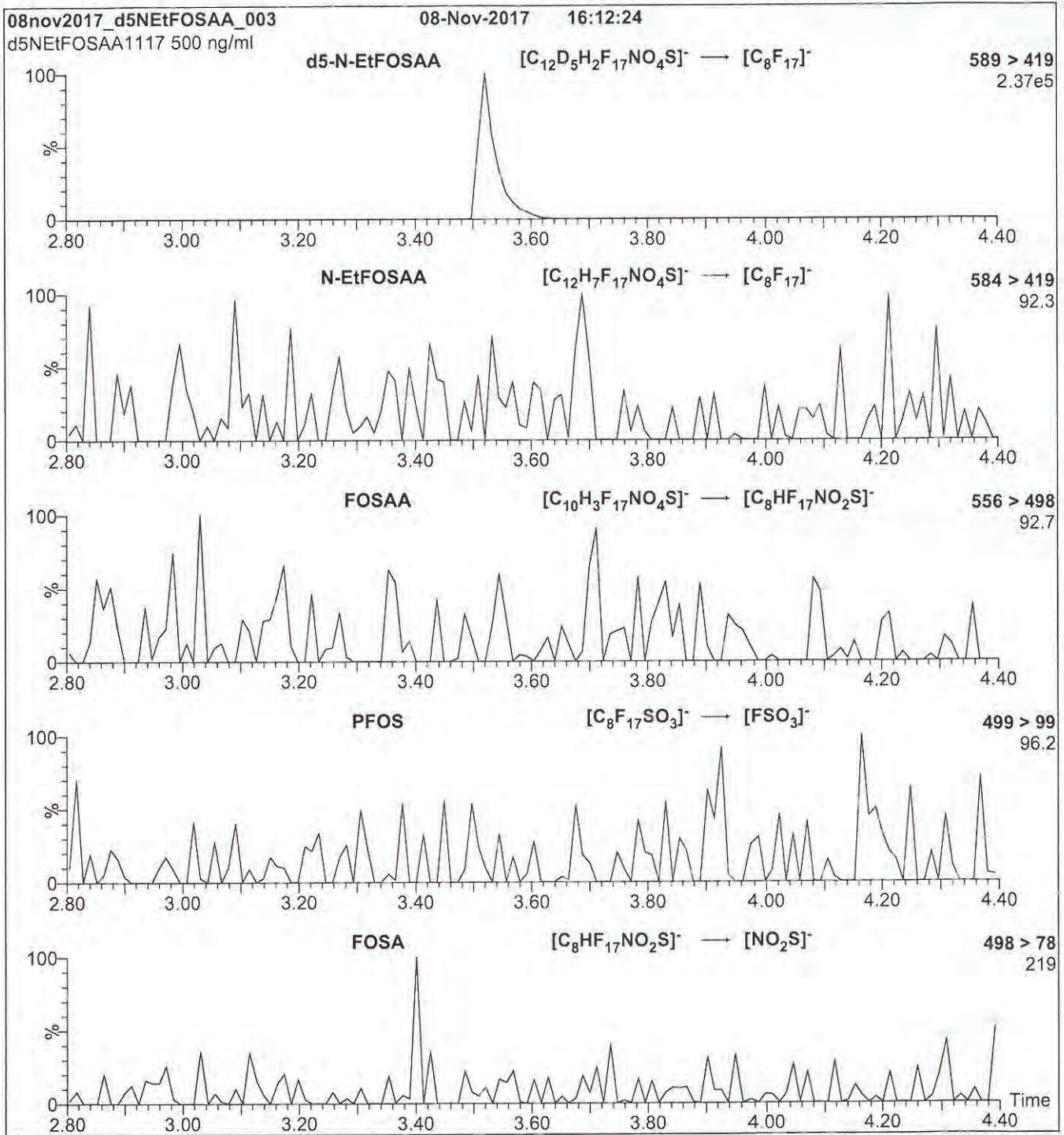
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1576

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

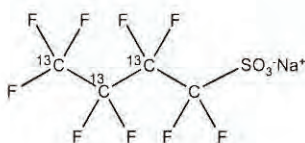
Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 20

18B1517


WELLINGTON
 LABORATORIES

 CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0815
COMPOUND: Sodium perfluoro-1-[2,3,4-¹³C₃]butanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²CF₉SO₃Na **MOLECULAR WEIGHT:** 325.06
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 46.5 ± 2.3 µg/ml (M3PFBS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 05/24/2017 (2,3,4-¹³C₃)
EXPIRY DATE: (mm/dd/yyyy) 05/24/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

 B.G. Chittim, General Manager

Date: 05/25/2017

(mm/dd/yyyy)

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

18B1517

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

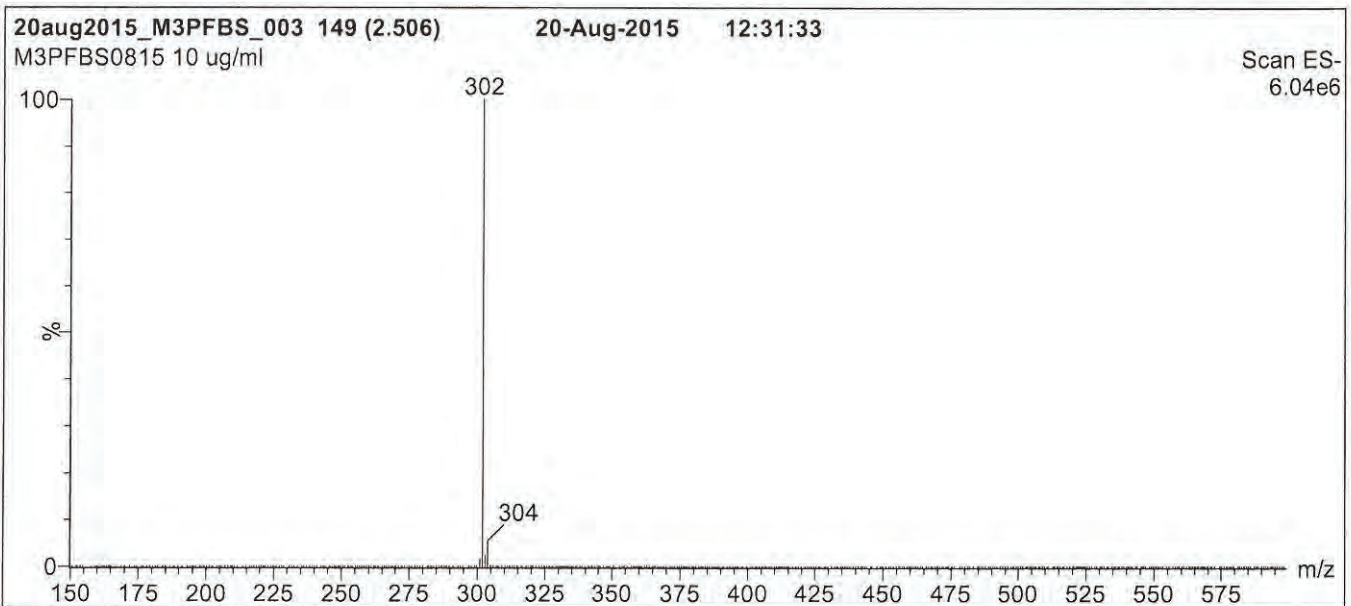
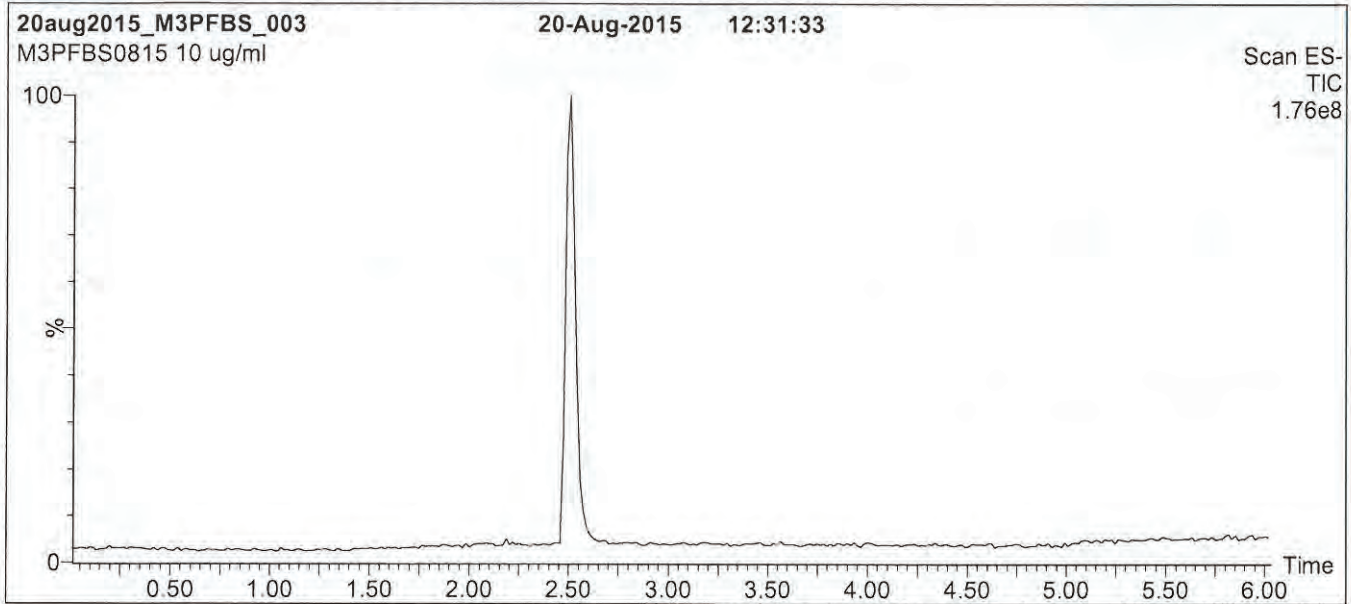
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1517

Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

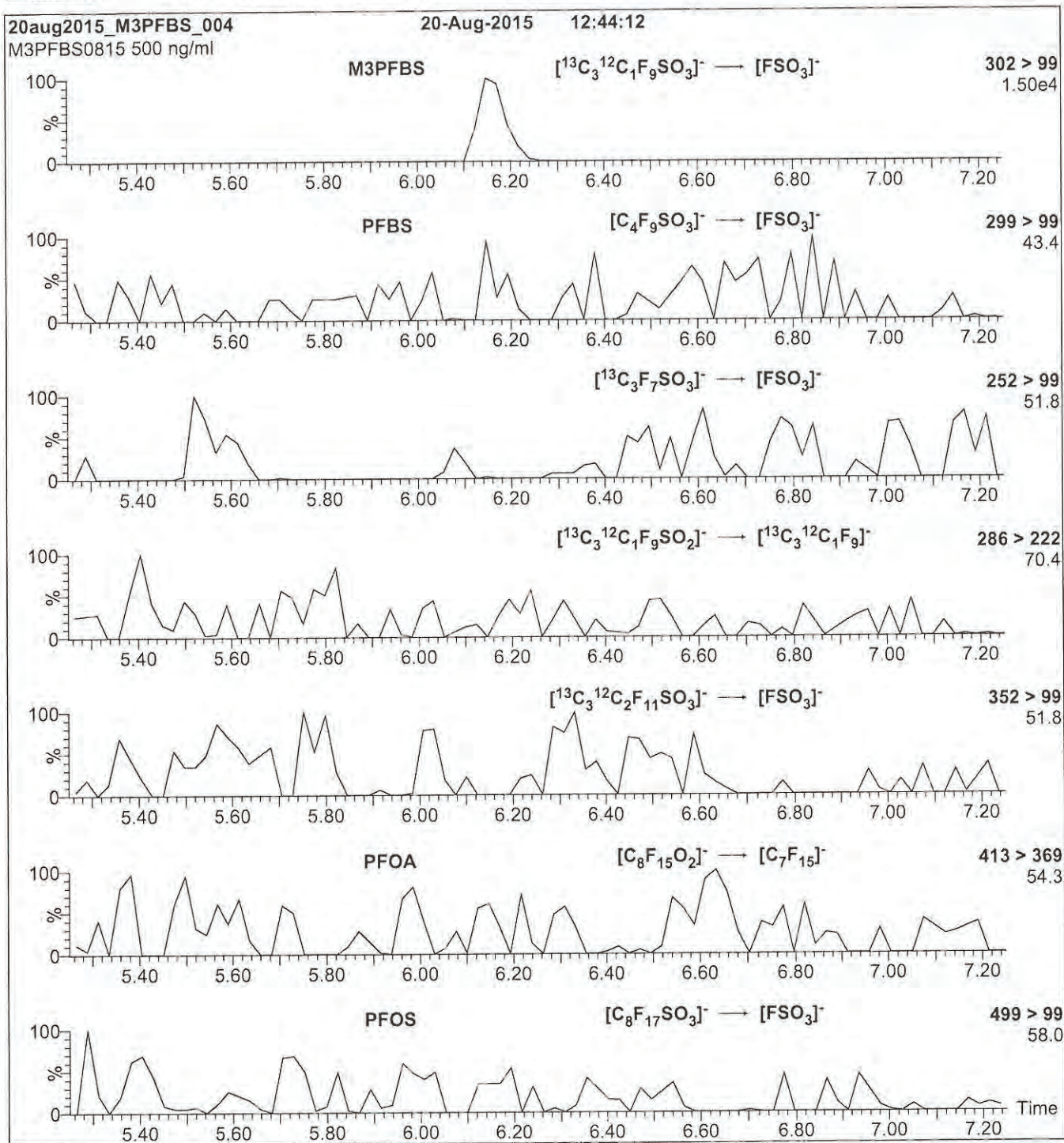
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1517

Figure 2: M3PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M3PFBS)

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

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

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

18B1518

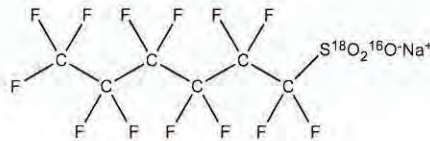


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS **LOT NUMBER:** MPFHxS0217
COMPOUND: Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₆F₁₃S¹⁸O₂¹⁶ONa **MOLECULAR WEIGHT:** 426.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.3 ± 2.4 µg/ml (MPFHxS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** >94% (¹⁸O₂)
LAST TESTED: (mm/dd/yyyy) 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 (C₆F₁₃S¹⁸O₂¹⁶O) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁸O₃) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[¹⁸O₂]sulfonate (¹⁸O₂-PFOS).
- Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim

Date: 03/02/2017
(mm/dd/yyyy)

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

18B1518

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

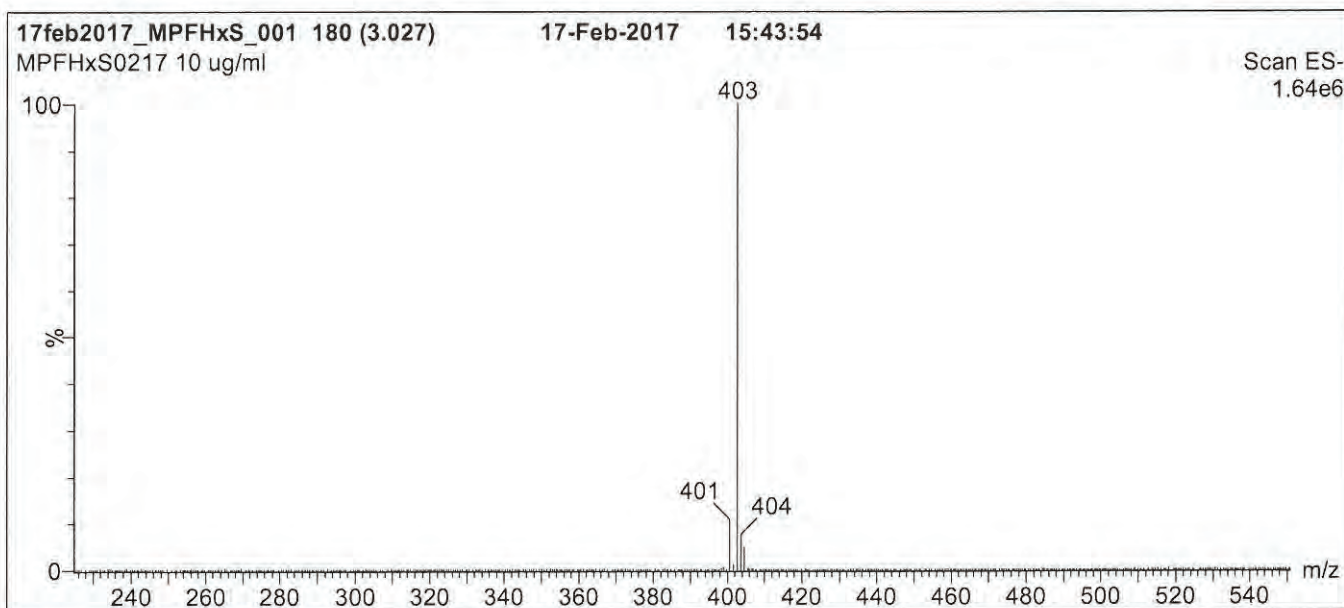
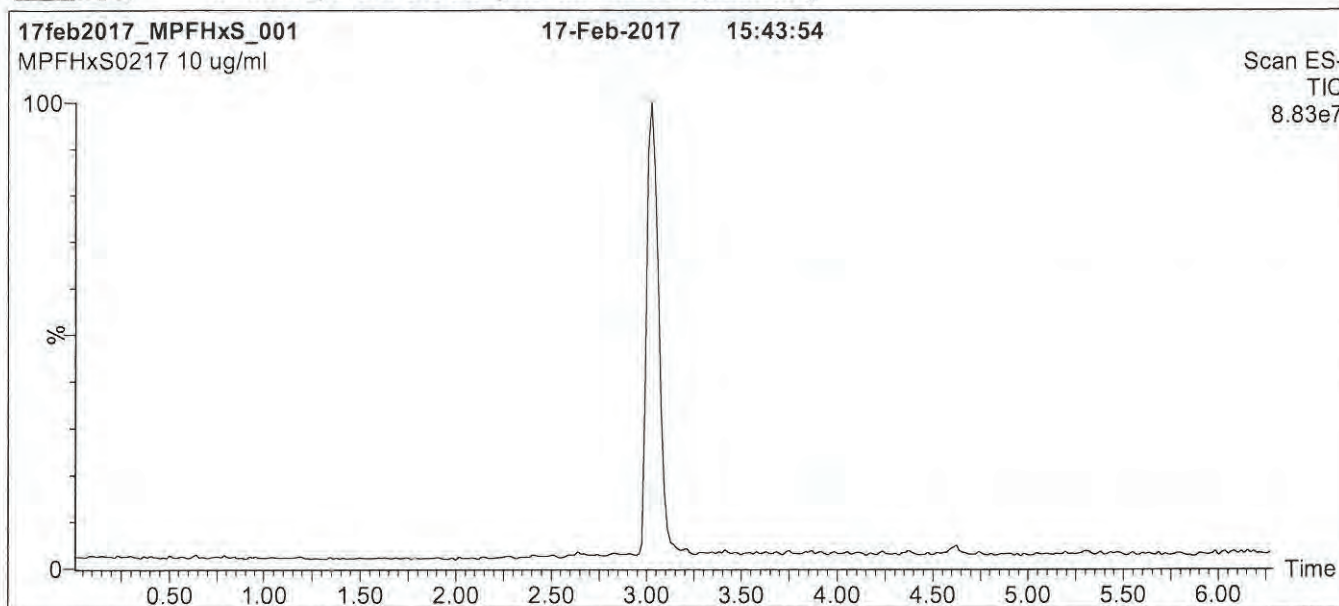
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1518

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

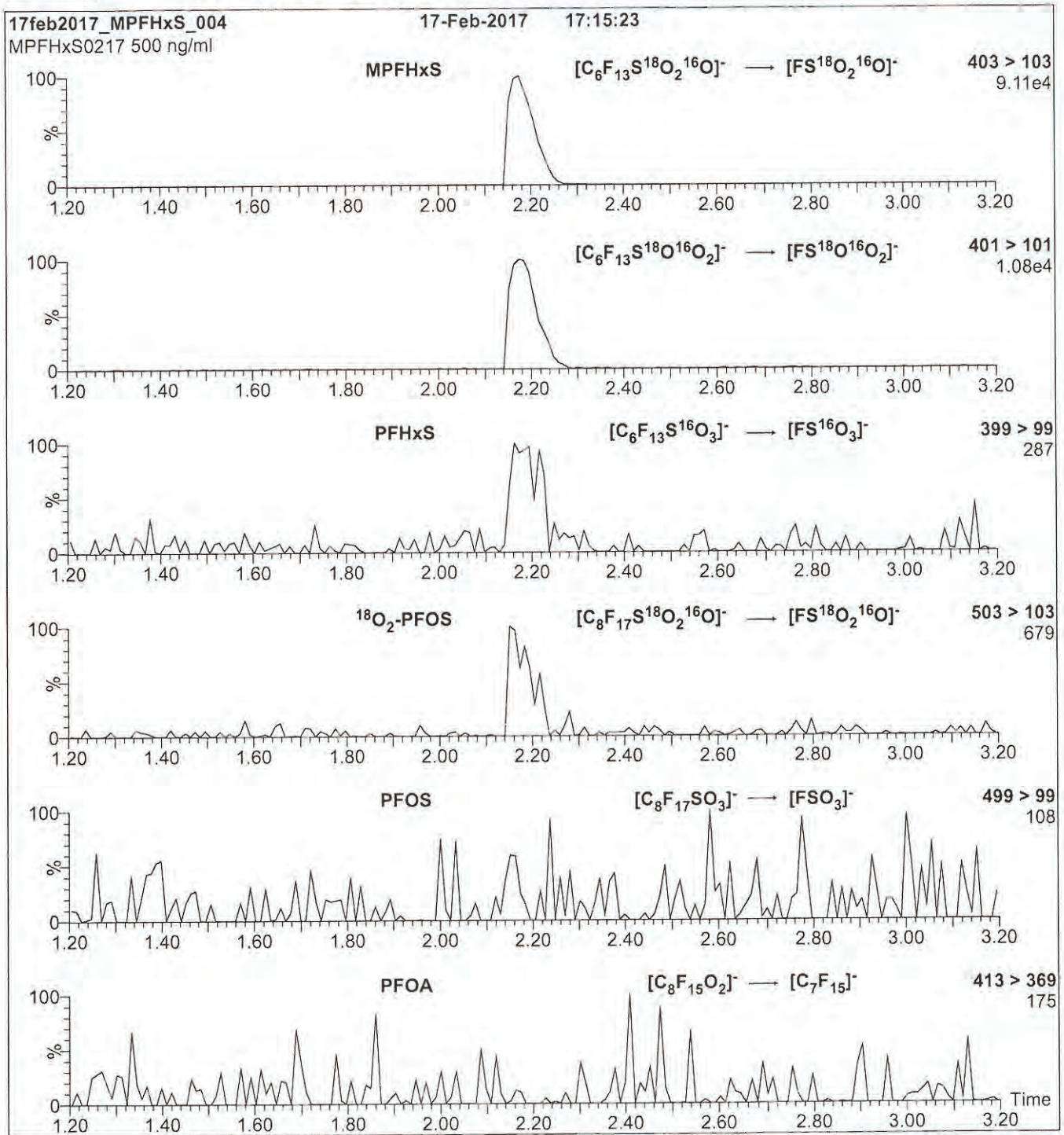
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1518

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

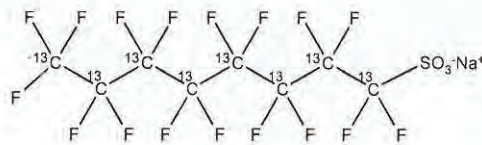
Collision Gas (mbar) = 3.43e-3
 Collision Energy (eV) = 30

18B1520


WELLINGTON
 LABORATORIES

 CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: M8PFOS **LOT NUMBER:** M8PFOS1117
COMPOUND: Sodium perfluoro-1-[¹³C₈]octanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₈F₁₇SO₃Na **MOLECULAR WEIGHT:** 530.05
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.8 ± 2.4 µg/ml (M8PFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** >99% ¹³C
LAST TESTED: (mm/dd/yyyy) 11/08/2017 (¹³C₈)
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.3% of sodium perfluoro-1-[¹³C₇]heptanesulfonate (¹³C₇-PFHpS) and ~ 0.8% of sodium perfluoro-1-[¹³C₄]octanesulfonate (MPFOS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

 B.G. Chittim, General Manager

 Date: 11/22/2017
(mm/dd/yyyy)

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

18B1520

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

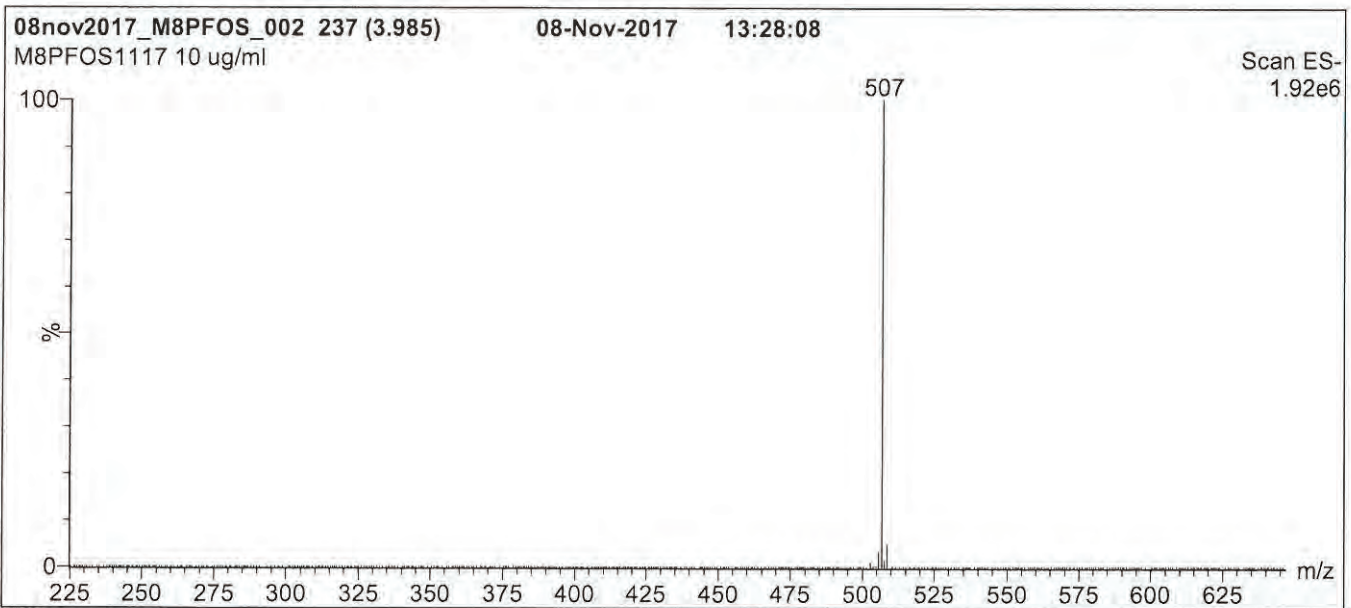
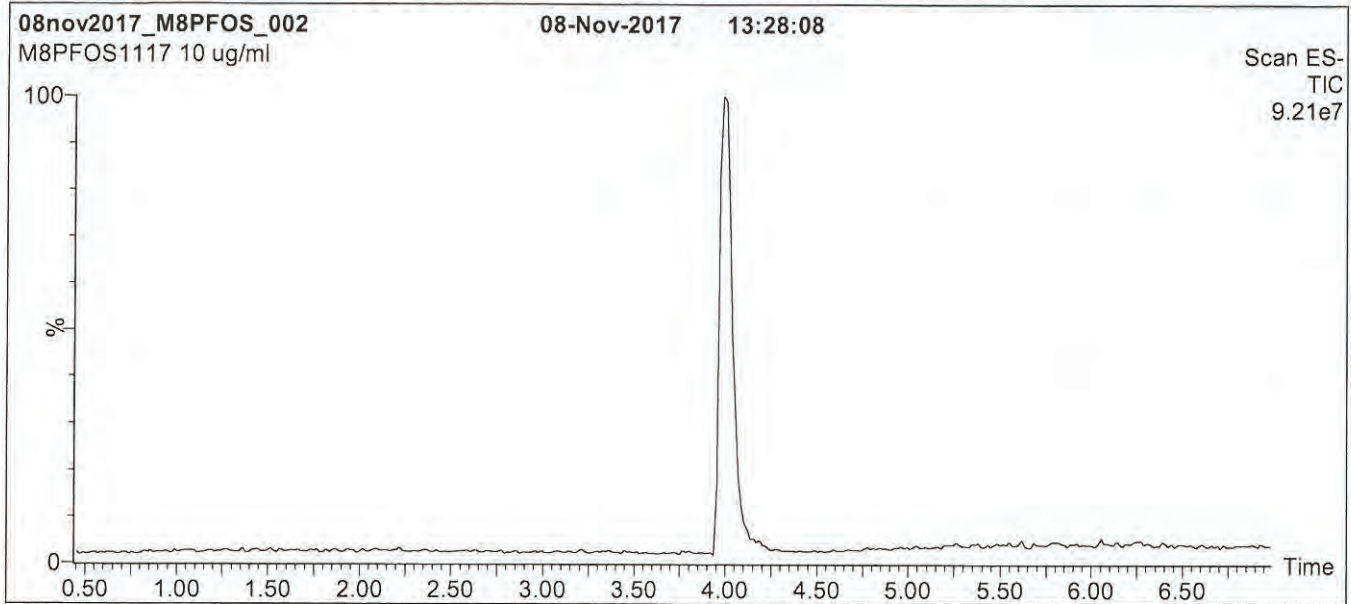
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1520

Figure 1: M8PFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

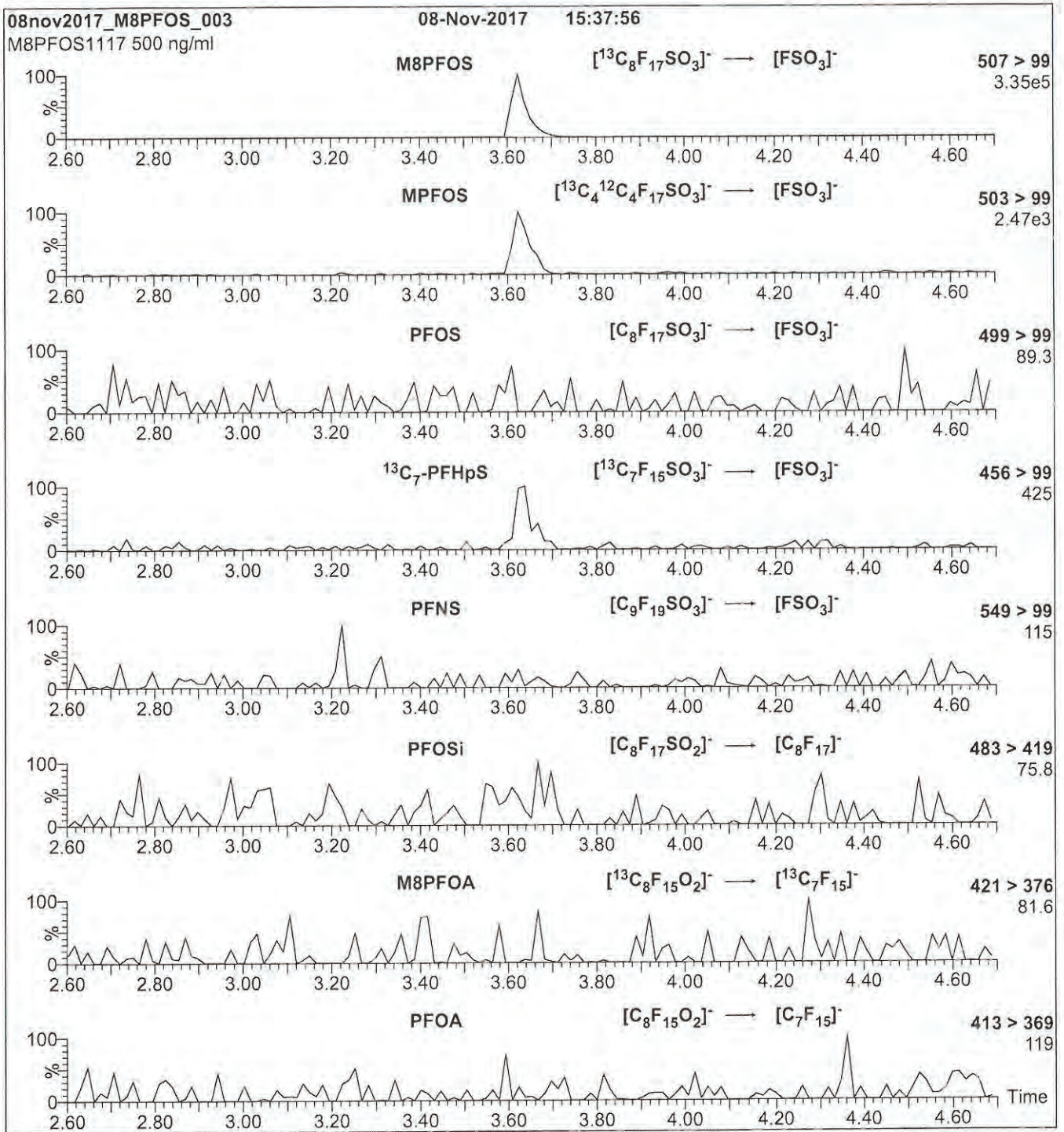
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1520

Figure 2: M8PFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M8PFOS)

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

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

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 40

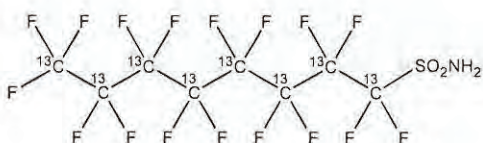
18B1525



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M8FOSA-I **LOT NUMBER:** M8FOSA1017I
COMPOUND: Perfluoro-1-[¹³C₈]octanesulfonamide
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S **MOLECULAR WEIGHT:** 507.09
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Isopropanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 10/11/2017 (¹³C₈)
EXPIRY DATE: (mm/dd/yyyy) 10/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[¹³C₄]octanesulfonamide and ~ 0.01% of perfluoro-1-[¹³C₇]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 10/20/2017
 B.G. Chittim, General Manager (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

18B1525

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

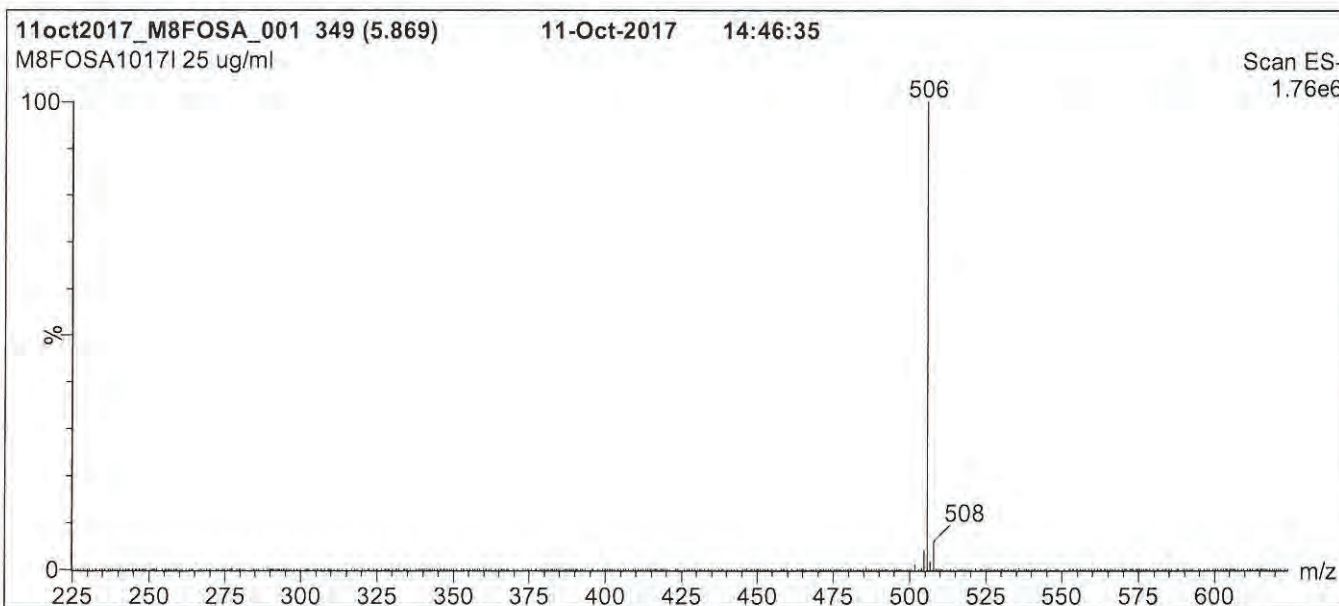
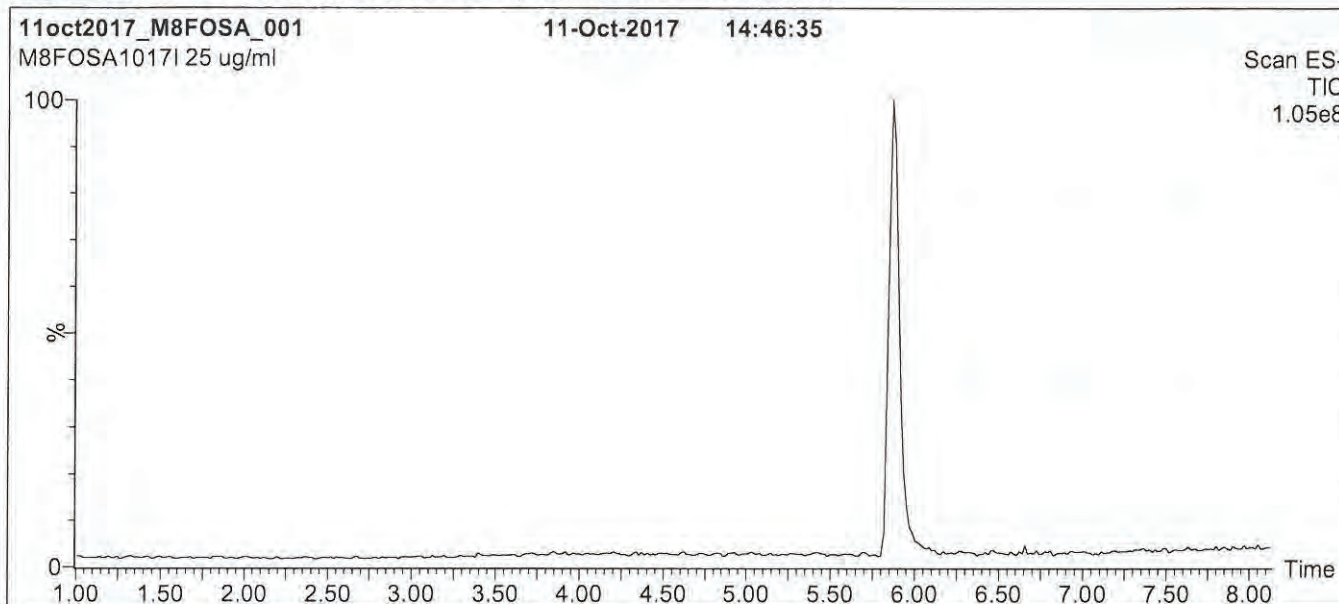
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1525

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 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 μ l/min

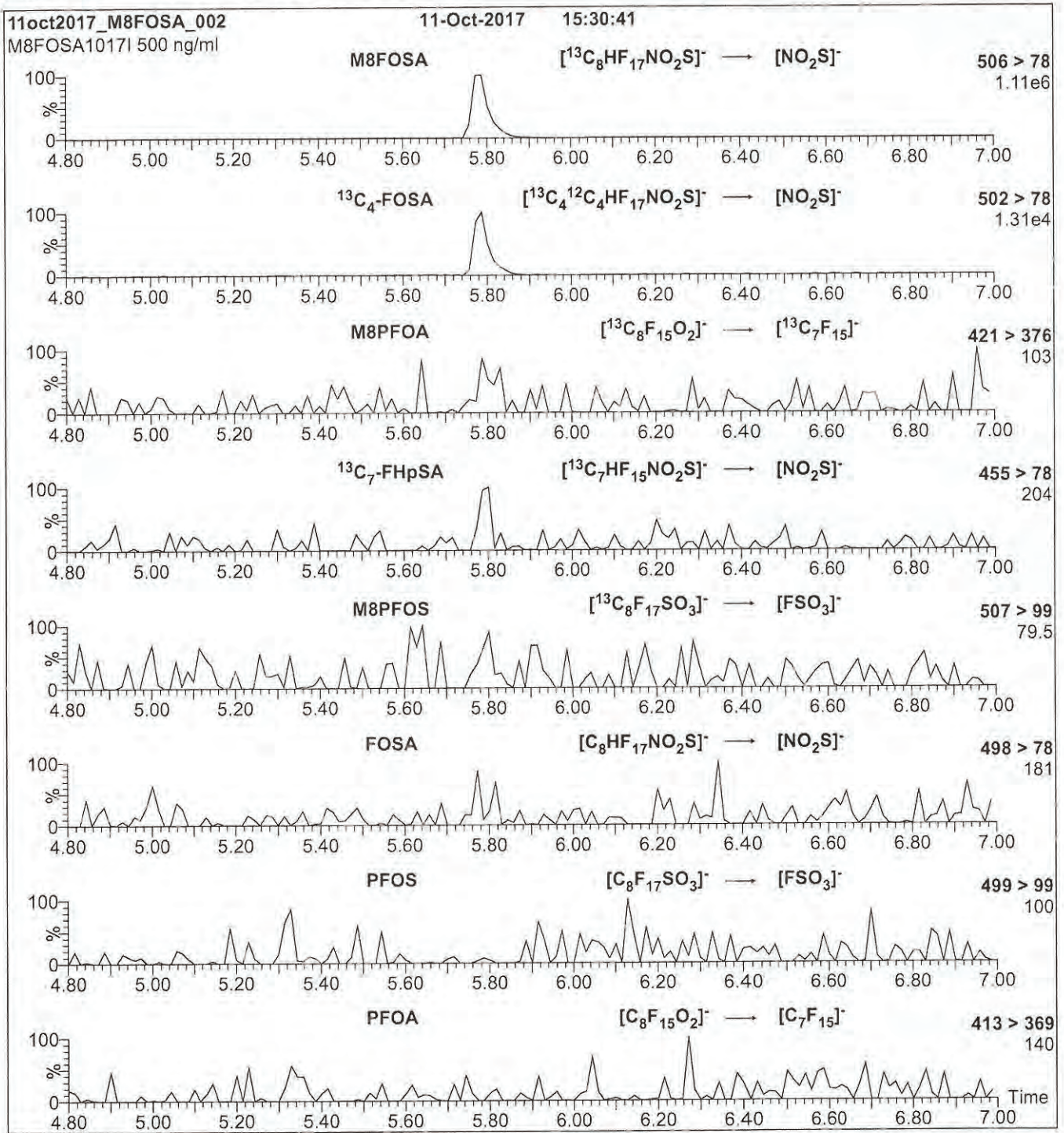
MS Parameters

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

18B1525

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Analytical Standard Record

Vista Analytical Laboratory

18C1302

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
17L2024	PFD _o A	20-Dec-17	** Vendor **	29-May-22	0.4
18B1539	PFBA	15-Feb-18	** Vendor **	14-Dec-22	0.4
18B1540	PFPeA	15-Feb-18	** Vendor **	14-Jun-19	0.4
18B1541	PFH _x A	15-Feb-18	** Vendor **	27-Sep-22	0.4
18B1542	PFDA	15-Feb-18	** Vendor **	14-Dec-22	0.4
18B1543	PFUD _A	15-Feb-18	** Vendor **	21-Sep-22	0.4
18B1544	PFT _r DA	15-Feb-18	** Vendor **	02-May-22	0.4
18B1545	PFH _p A	15-Feb-18	** Vendor **	27-Sep-22	0.4
18B1546	PFOA	15-Feb-18	** Vendor **	27-Sep-22	0.4
18B1547	PFNA	15-Feb-18	** Vendor **	20-Jul-22	0.4
18B1548	PFT _e DA	15-Feb-18	** Vendor **	21-Sep-22	0.4
18B1549	PFH _x DA	15-Feb-18	** Vendor **	13-Jul-22	0.4
18B1550	PFODA	15-Feb-18	** Vendor **	13-Jul-22	0.4
18B1551	L-PFBS	15-Feb-18	** Vendor **	21-Sep-22	0.454
18B1552	L-PFPeS	15-Feb-18	** Vendor **	11-Jan-19	0.428
18B1553	br-PFH _x SK	15-Feb-18	** Vendor **	04-Jan-22	0.44
18B1554	L-PFH _p S	15-Feb-18	** Vendor **	01-Sep-22	0.42
18B1555	br-PFO _s K anion	15-Feb-18	** Vendor **	12-Jan-22	0.431
18B1556	L-PFNS	15-Feb-18	** Vendor **	27-Sep-22	0.418
18B1557	L-PFDS	15-Feb-18	** Vendor **	08-Nov-19	0.415
18B1558	4:2 FTS	15-Feb-18	** Vendor **	12-Dec-21	0.43
18B1559	6:2FTS	15-Feb-18	** Vendor **	20-Apr-22	0.422
18B1560	8:2FTS	15-Feb-18	** Vendor **	12-Dec-21	0.418
18B1561	FOSA-I	15-Feb-18	** Vendor **	01-Sep-22	0.4
18B1562	N-MeFOSAA	15-Feb-18	** Vendor **	11-Jan-22	0.4
18B1563	N-EtFOSAA	15-Feb-18	** Vendor **	11-Jan-22	0.4
18B1564	N-MeFOSA-M	15-Feb-18	** Vendor **	05-Jul-22	2
18B1565	N-EtFOSA-M	15-Feb-18	** Vendor **	05-Jul-22	2
18B1566	N-MeFOSE-M	15-Feb-18	** Vendor **	24-Apr-22	2
18B1567	N-EtFOSE-M	15-Feb-18	** Vendor **	24-Apr-22	2

Description:	PFC NS Stock	Expires:	13-Mar-20
Standard Type:	Analyte Spike	Prepared:	13-Mar-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	13-Mar-18 11:49 by GRB

PFOS and PFH_xS linear and branched components

Analyte	CAS Number	Concentration	Units
L-PFDS		1	ug/mL
L-PFUnA		1	ug/mL
L-PFT _r DA		1	ug/mL
L-PFT _e DA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

18C1302

Description:	PFC NS Stock	Expires:	13-Mar-20
Standard Type:	Analyte Spike	Prepared:	13-Mar-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	13-Mar-18 11:49 by GRB

PFOS and PFHxS linear and branched components

Analyte	CAS Number	Concentration	Units
L-PFPeA		1	ug/mL
L-PFOSA		1	ug/mL
L-PFOS		0.789	ug/mL
L-PFODA		1	ug/mL
L-PFOA		1	ug/mL
L-PFNA		1	ug/mL
L-PFHxS		0.812	ug/mL
L-PFHxDA		1	ug/mL
L-PFHxA		1	ug/mL
4:2 FTS		1	ug/mL
L-PFHpA		1	ug/mL
MeFOSE	24448-09-7	5	ug/mL
L-PFDoA		1	ug/mL
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
Br-PFHxS	3871-99-6	0.189	ug/mL
8:2 FTS	39108-34-4	1	ug/mL
6:2 FTS	27619-97-2	1	ug/mL
L-PFHpS		1	ug/mL
PFOA	335-67-1	1	ug/mL
Total PFOS		1	ug/mL
Total PFOA		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
PFUnA	2058-94-8	1	ug/mL
PFTrDA	72629-94-8	1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

18C1302

Description:	PFC NS Stock	Expires:	13-Mar-20
Standard Type:	Analyte Spike	Prepared:	13-Mar-18
Solvent:	MeOH	Prepared By:	Giana R. Bilotta
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	13-Mar-18 11:49 by GRB

PFOS and PFHxS linear and branched components

Analyte	CAS Number	Concentration	Units
PFTeDA	376-06-7	1	ug/mL
PFPeS	630402-22-1	1	ug/mL
PFPeA	2706-90-3	1	ug/mL
PFOSA	754-91-6	1	ug/mL
MeFOSA	31506-32-8	5	ug/mL
PFODA	16517-11-6	1	ug/mL
MeFOSAA	2355-31-9	1	ug/mL
PFNS	98789-57-2	1	ug/mL
PFNA	375-95-1	1	ug/mL
PFHxS	355-46-4	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
PFDA	335-76-2	1	ug/mL
PFBS	375-73-5	1	ug/mL
PFBA	375-22-4	1	ug/mL
Total PFUnA		1	ug/mL
PFOS	1763-23-1	1	ug/mL

17L2024

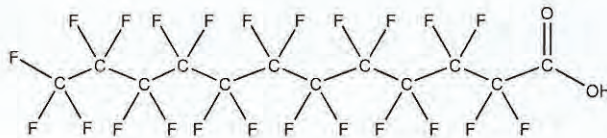


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFD0A **LOT NUMBER:** PFD0A0517
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: C₁₂H₂₃O₂ **MOLECULAR WEIGHT:** 614.10
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 05/30/2017
B.G. Chittim, General Manager (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

17L 2024

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

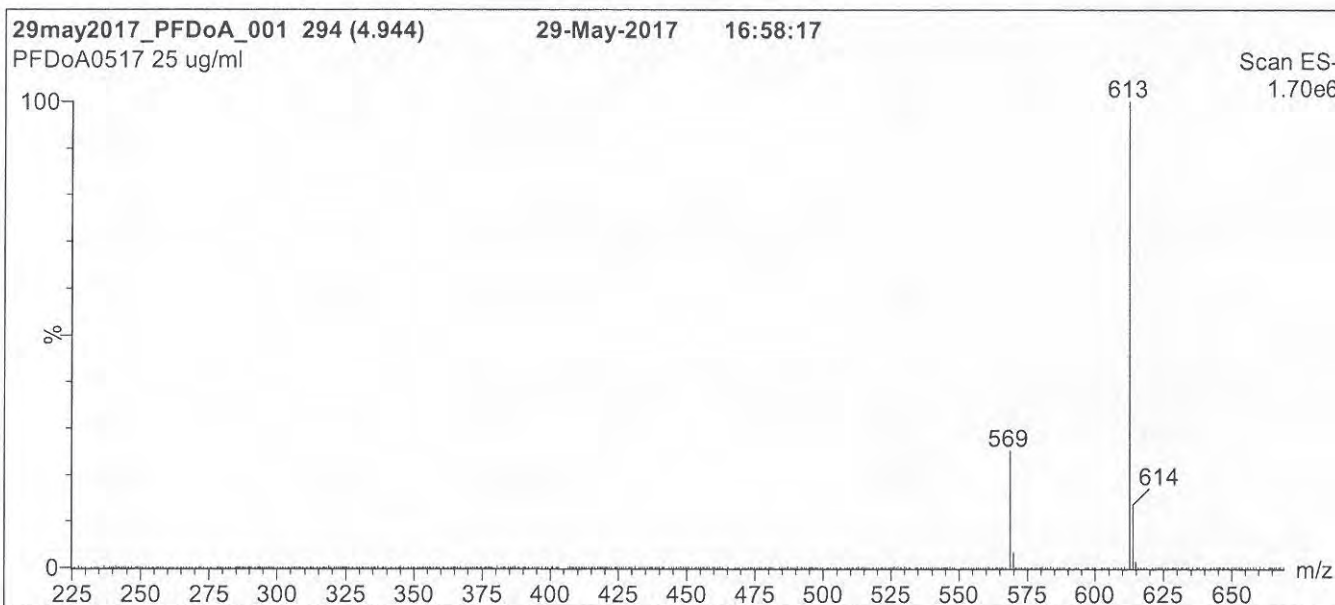
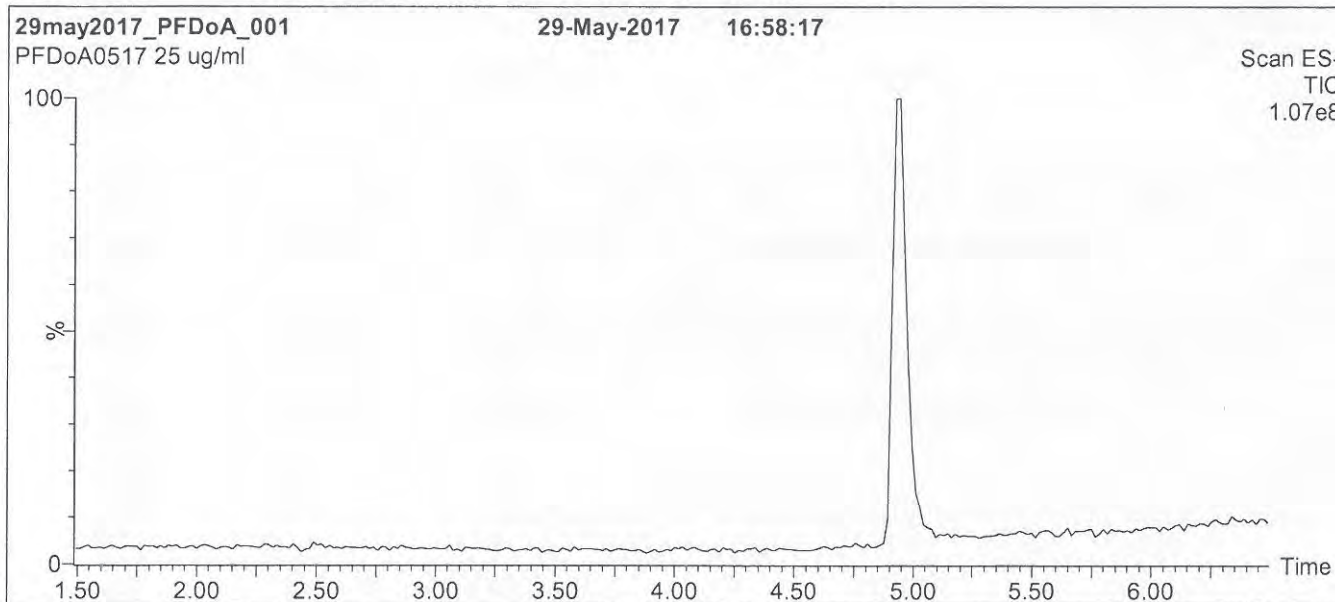
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

17L2024

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

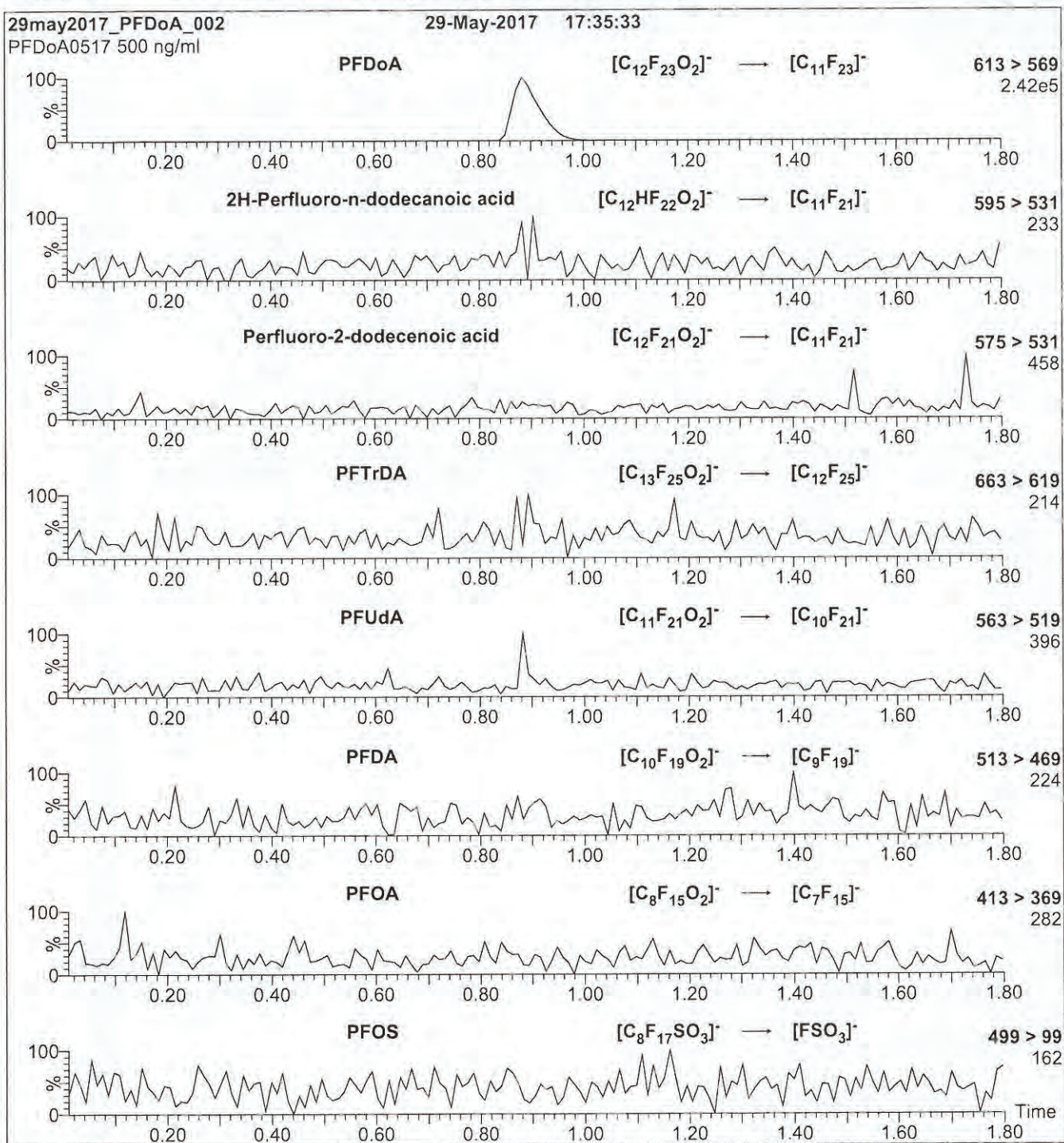
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

17L2024

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

18B1539



WELLINGTON
LABORATORIES

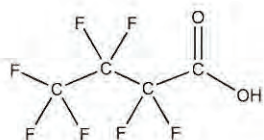
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA1217

STRUCTURE:

CAS #: 375-22-4



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

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 12/18/2017
(mm/dd/yyyy)

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

18B1539

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

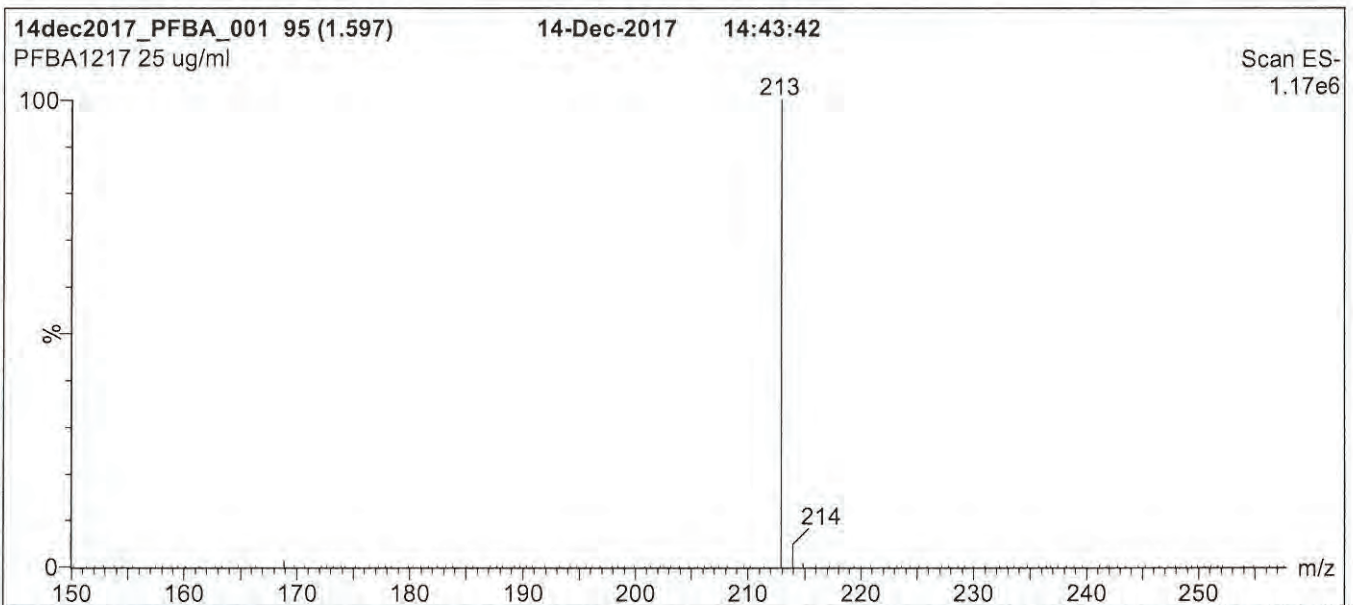
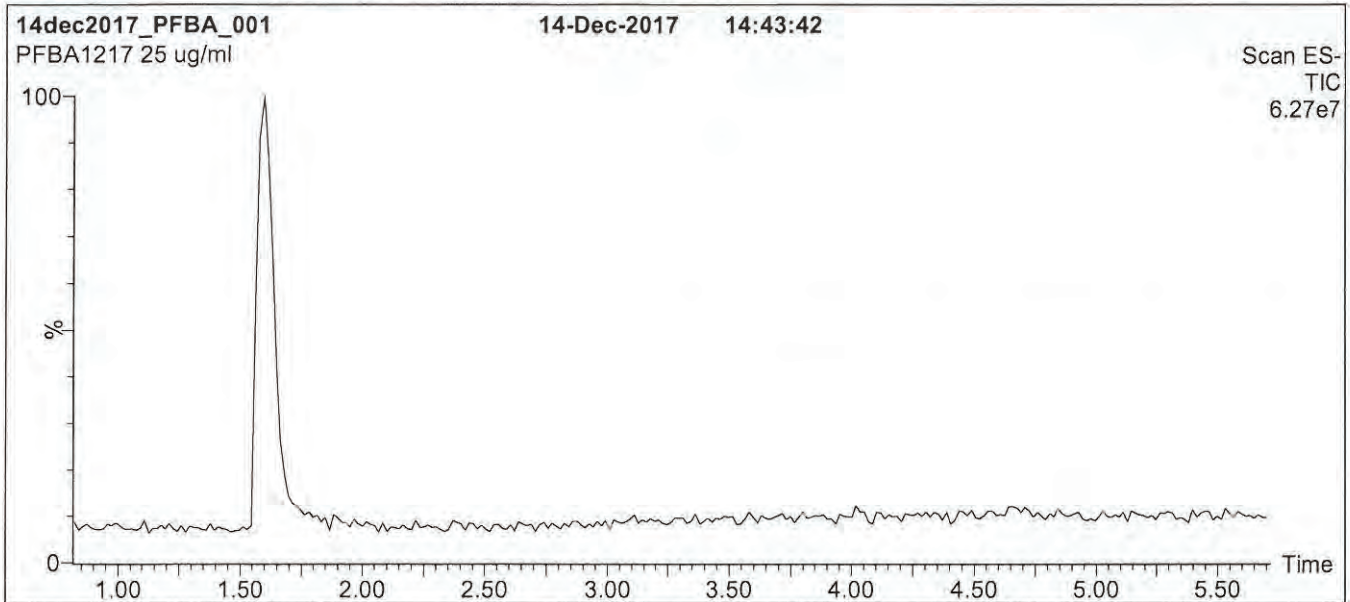
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1539

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

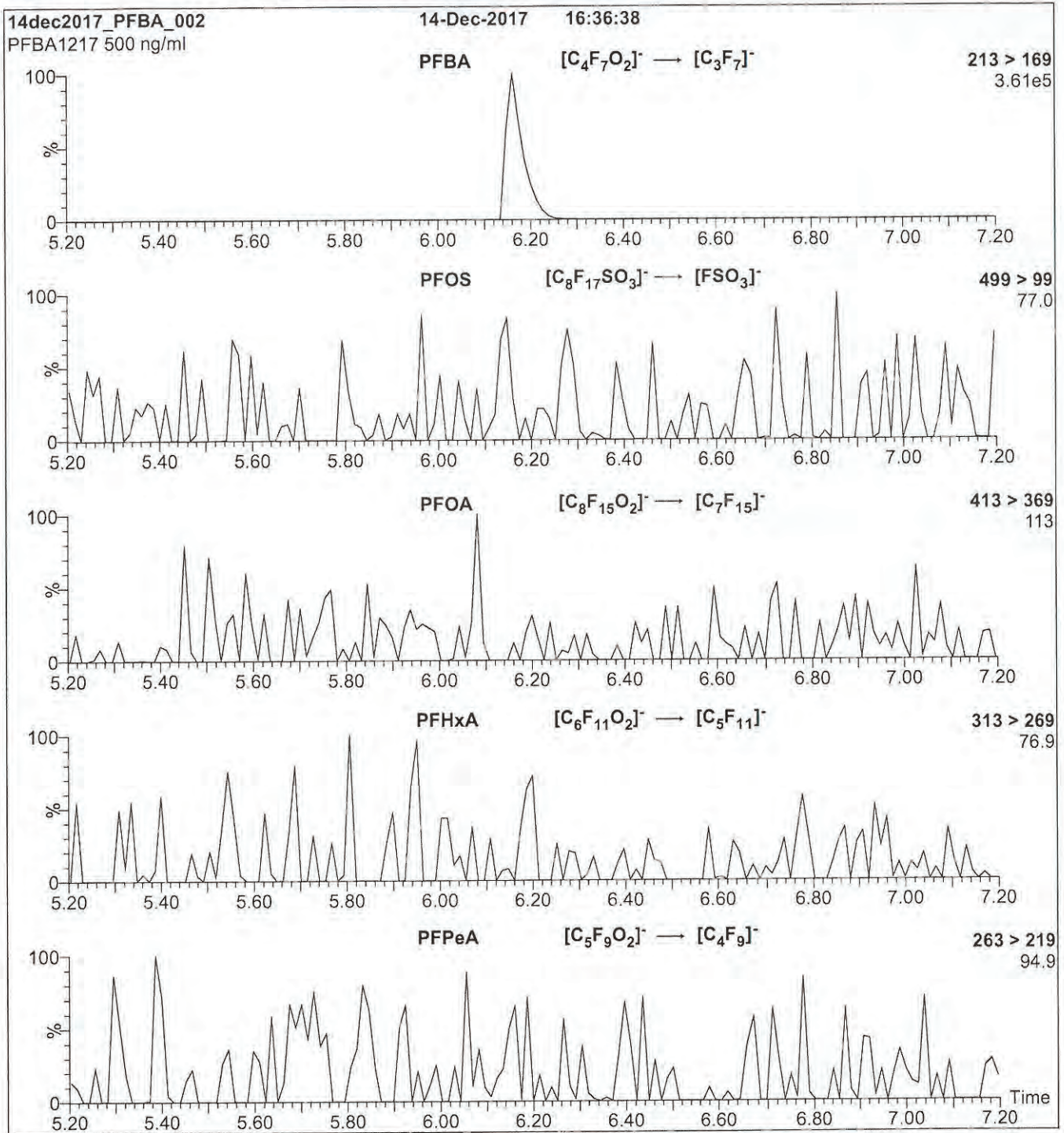
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1539

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 10

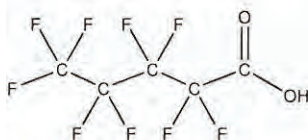
18B1540



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA **LOT NUMBER:** PFPeA0617
COMPOUND: Perfluoro-n-pentanoic acid
STRUCTURE: **CAS #:** 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$ **MOLECULAR WEIGHT:** 264.05
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/14/2017
EXPIRY DATE: (mm/dd/yyyy) 06/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 06/16/2017
 (mm/dd/yyyy)

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

18B1540

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

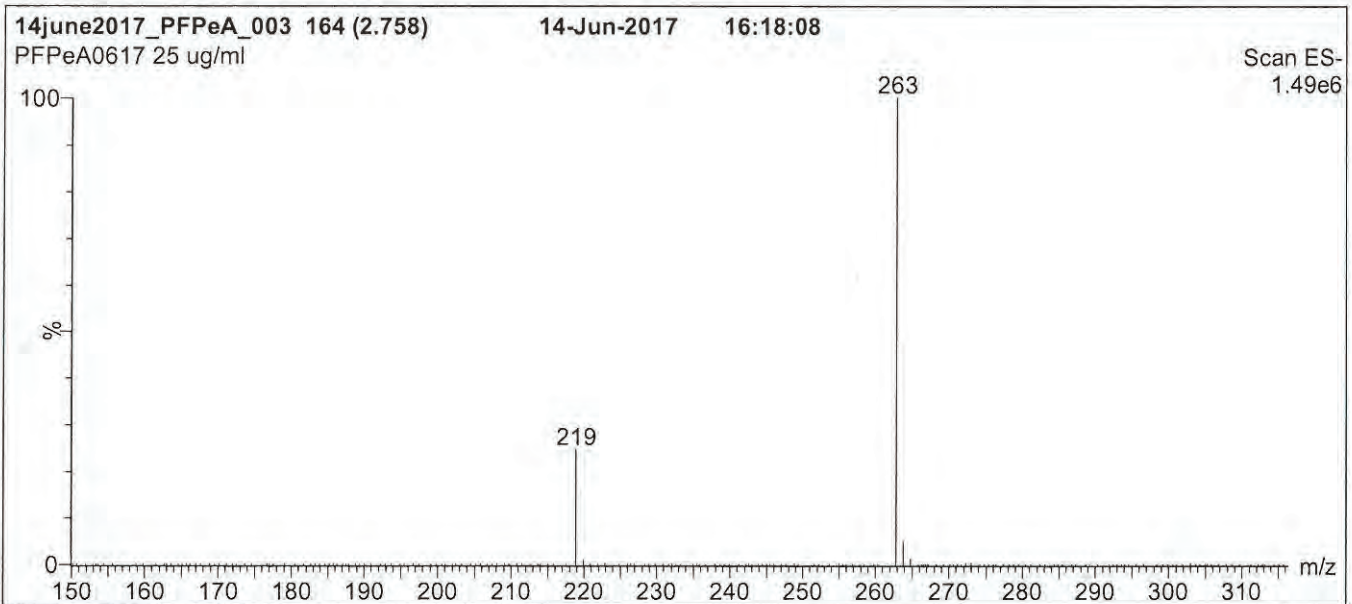
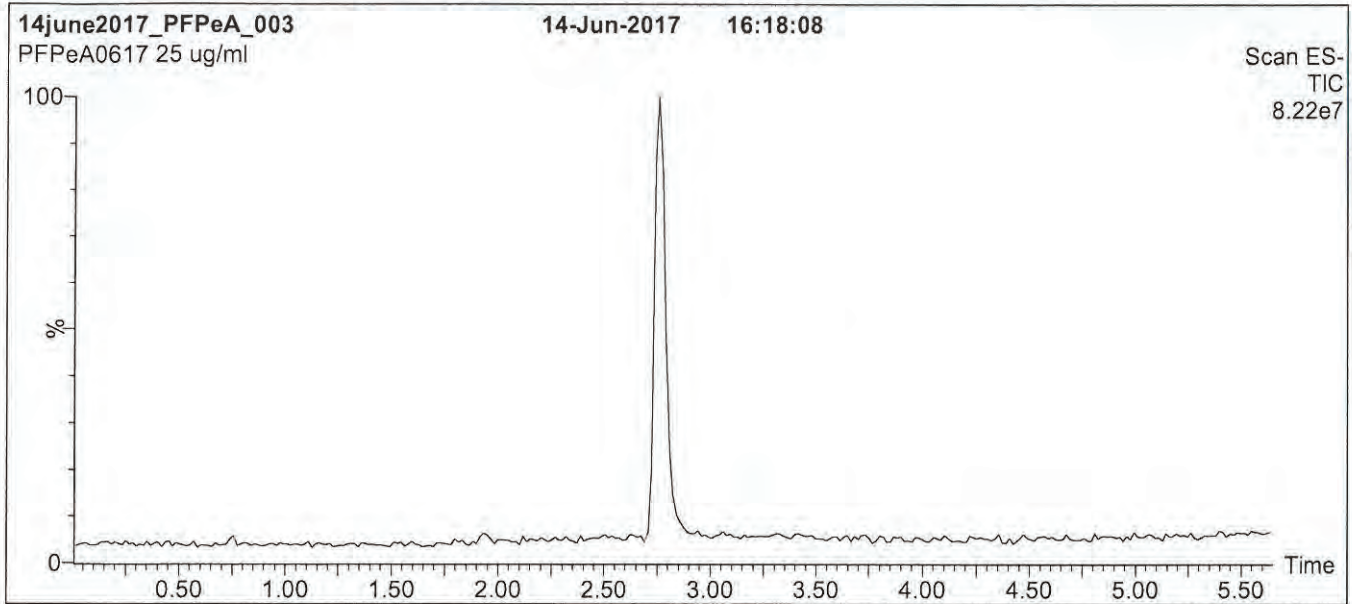
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1540

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

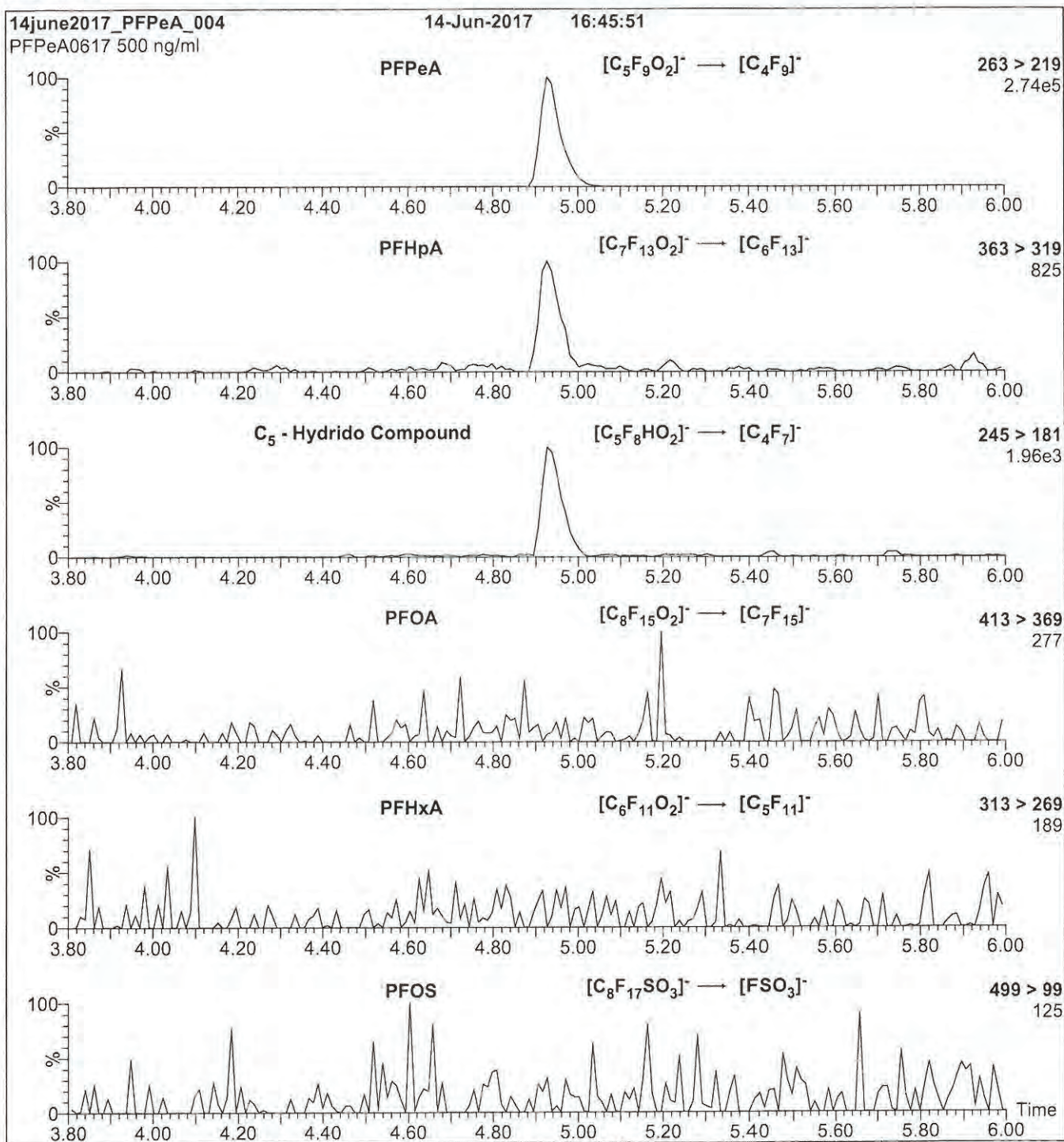
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1540

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
 Collision Energy (eV) = 9

18B1541

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

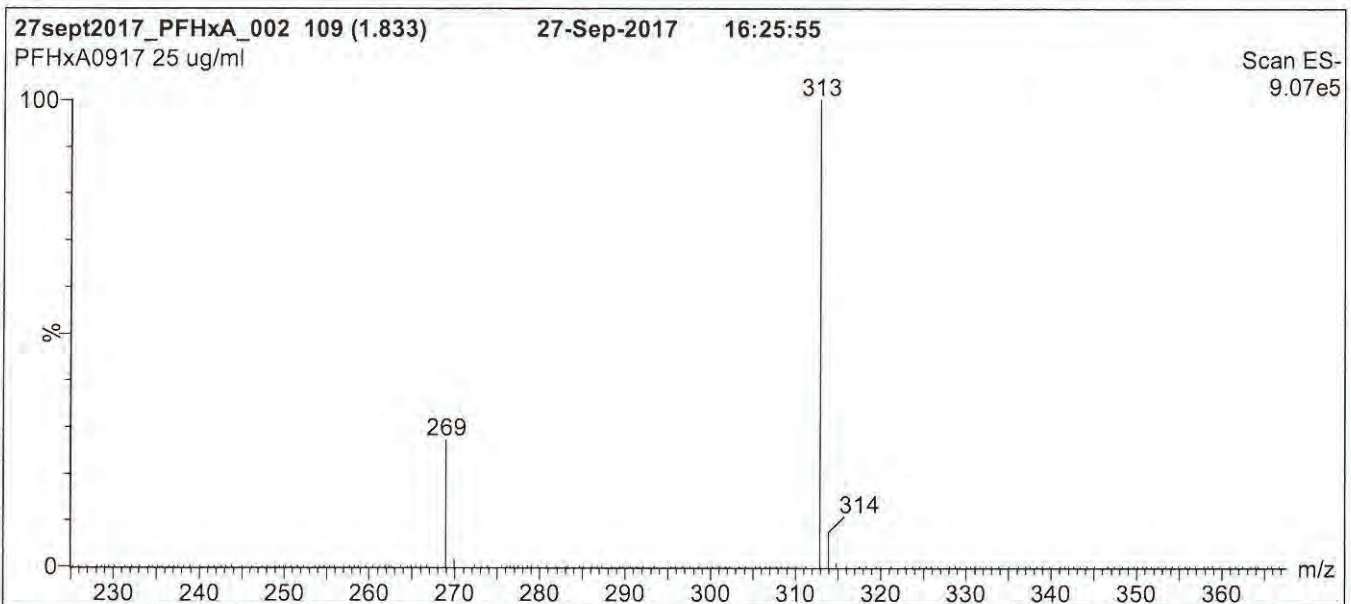
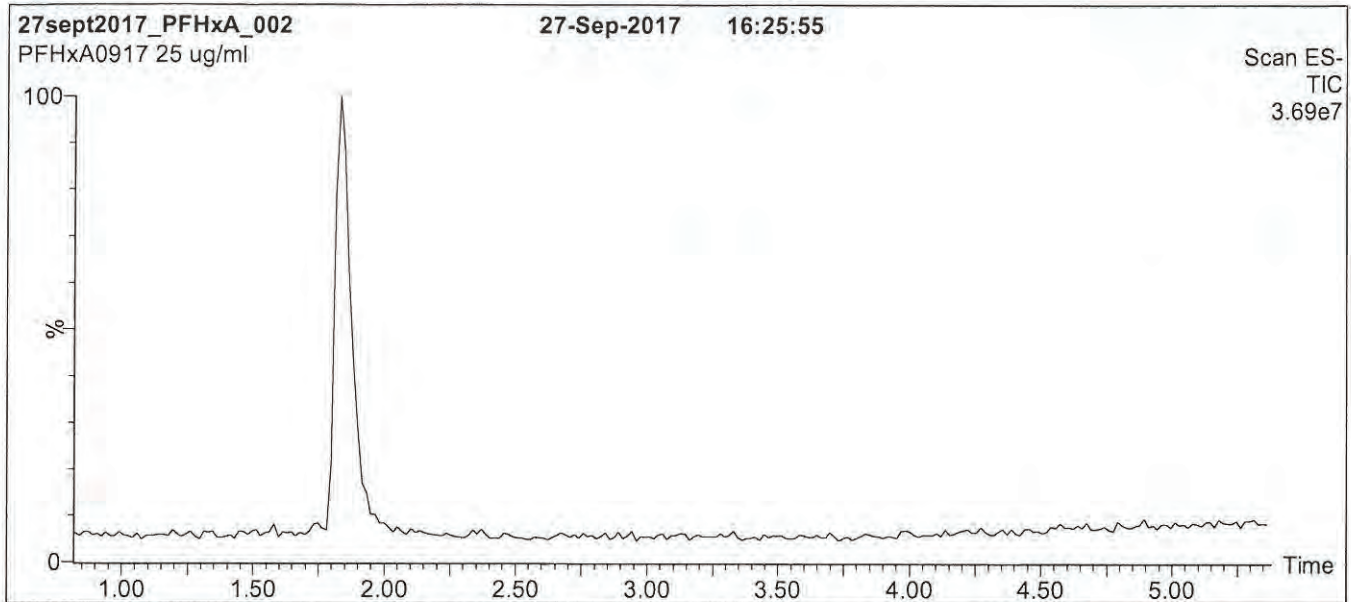
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1541

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 RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

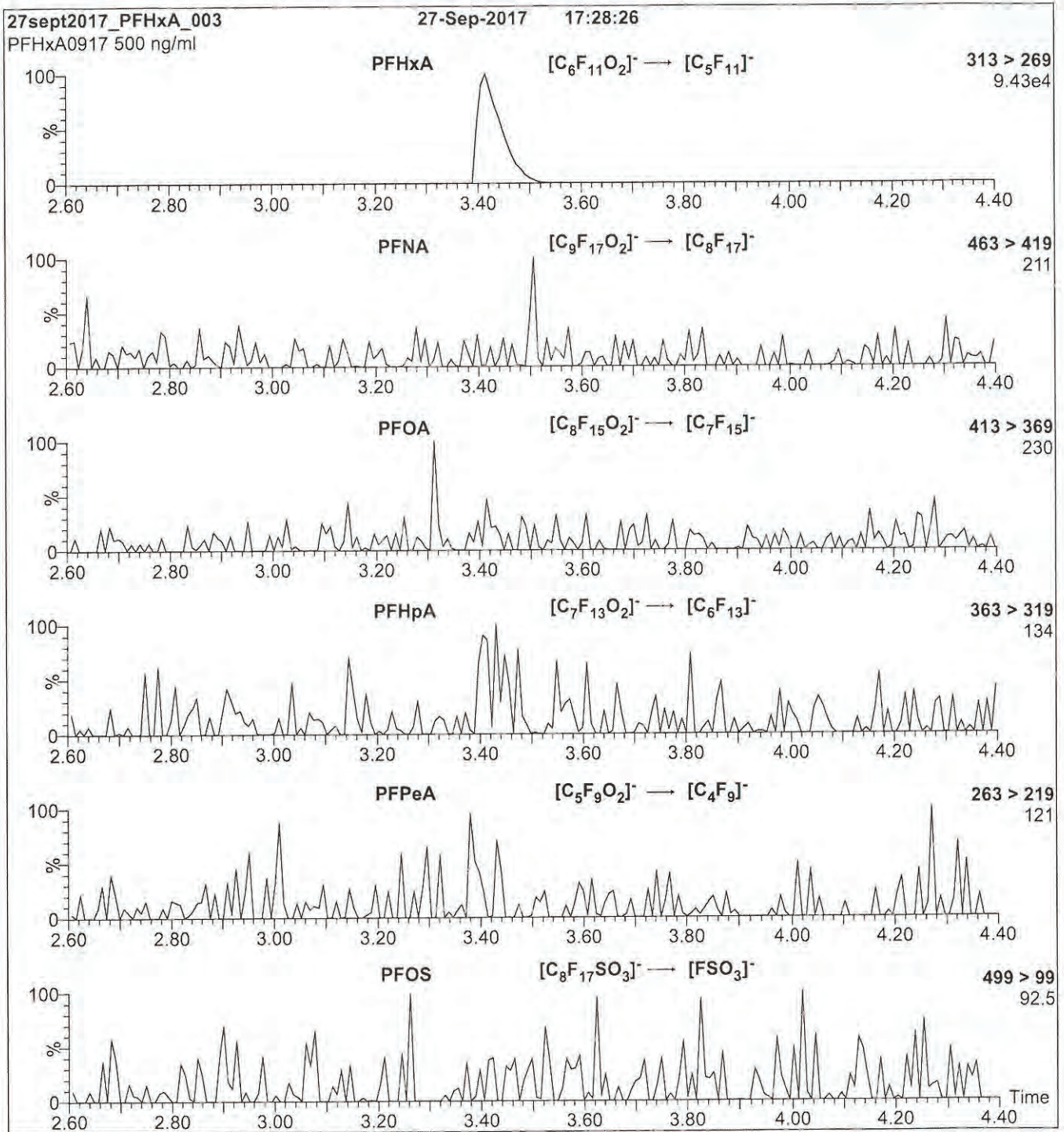
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1541

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
 Collision Energy (eV) = 10

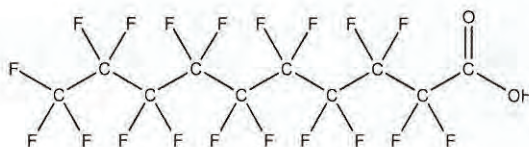
18B1542



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA **LOT NUMBER:** PFDA1217
COMPOUND: Perfluoro-n-decanoic acid
STRUCTURE: **CAS #:** 335-76-2



MOLECULAR FORMULA: C₁₀HF₁₉O₂ **MOLECULAR WEIGHT:** 514.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/18/2017
B.G. Chittim, General Manager (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

18B1542

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

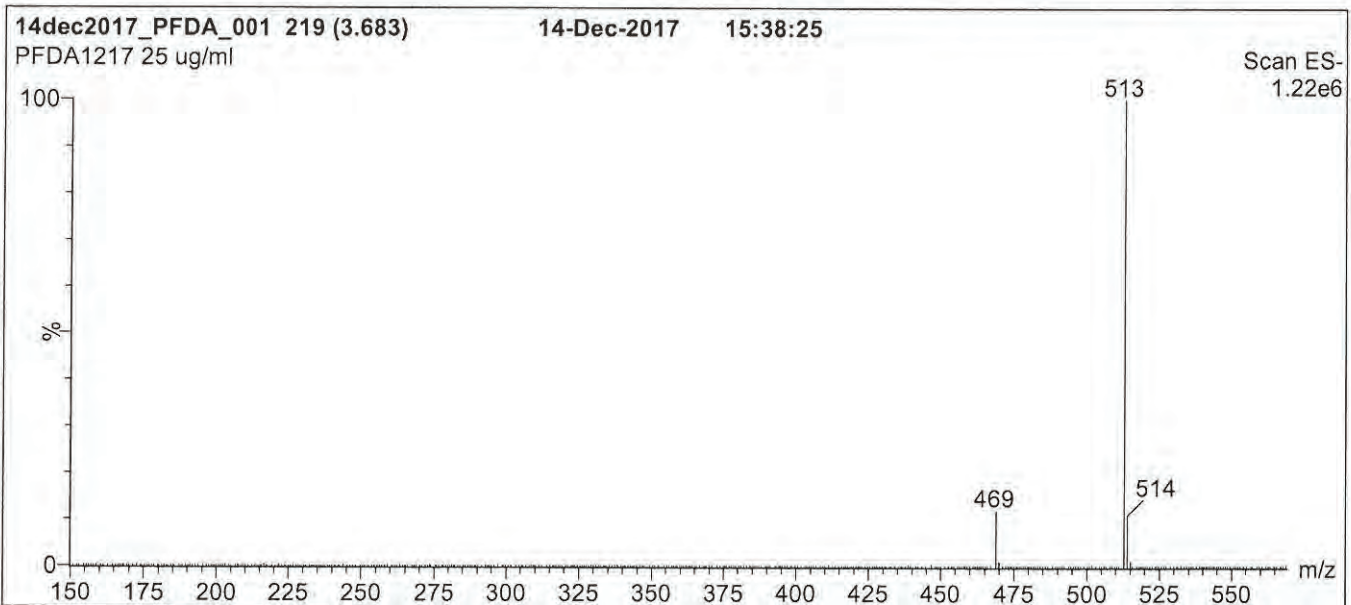
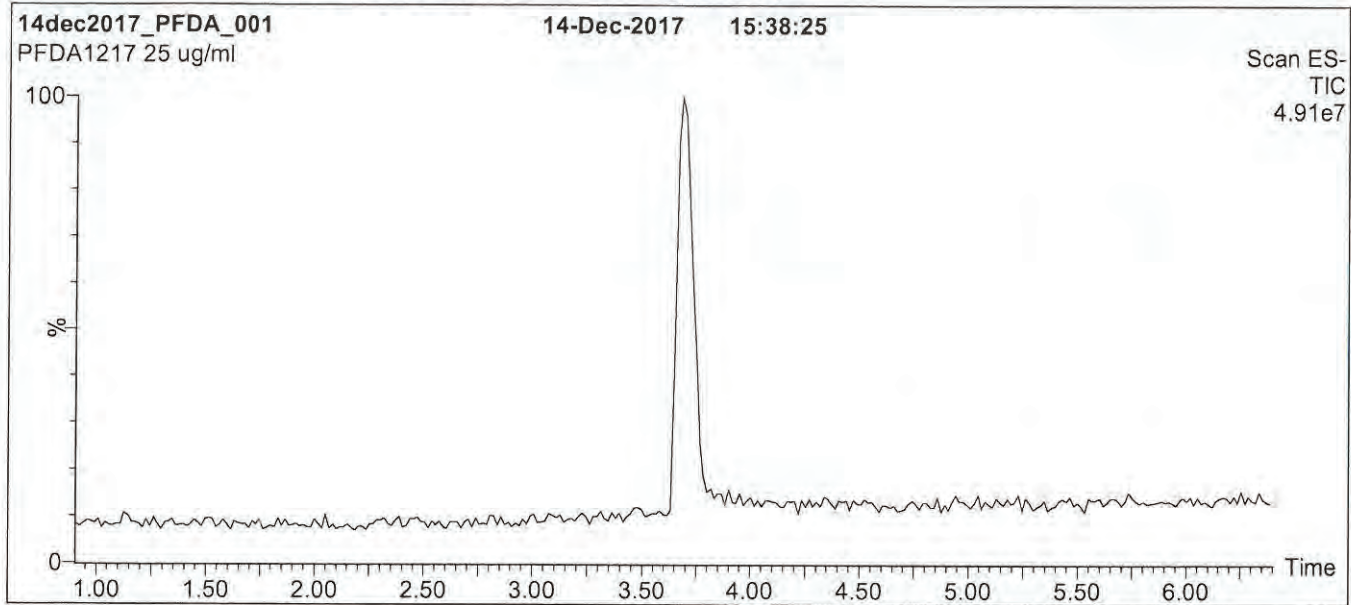
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1542

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

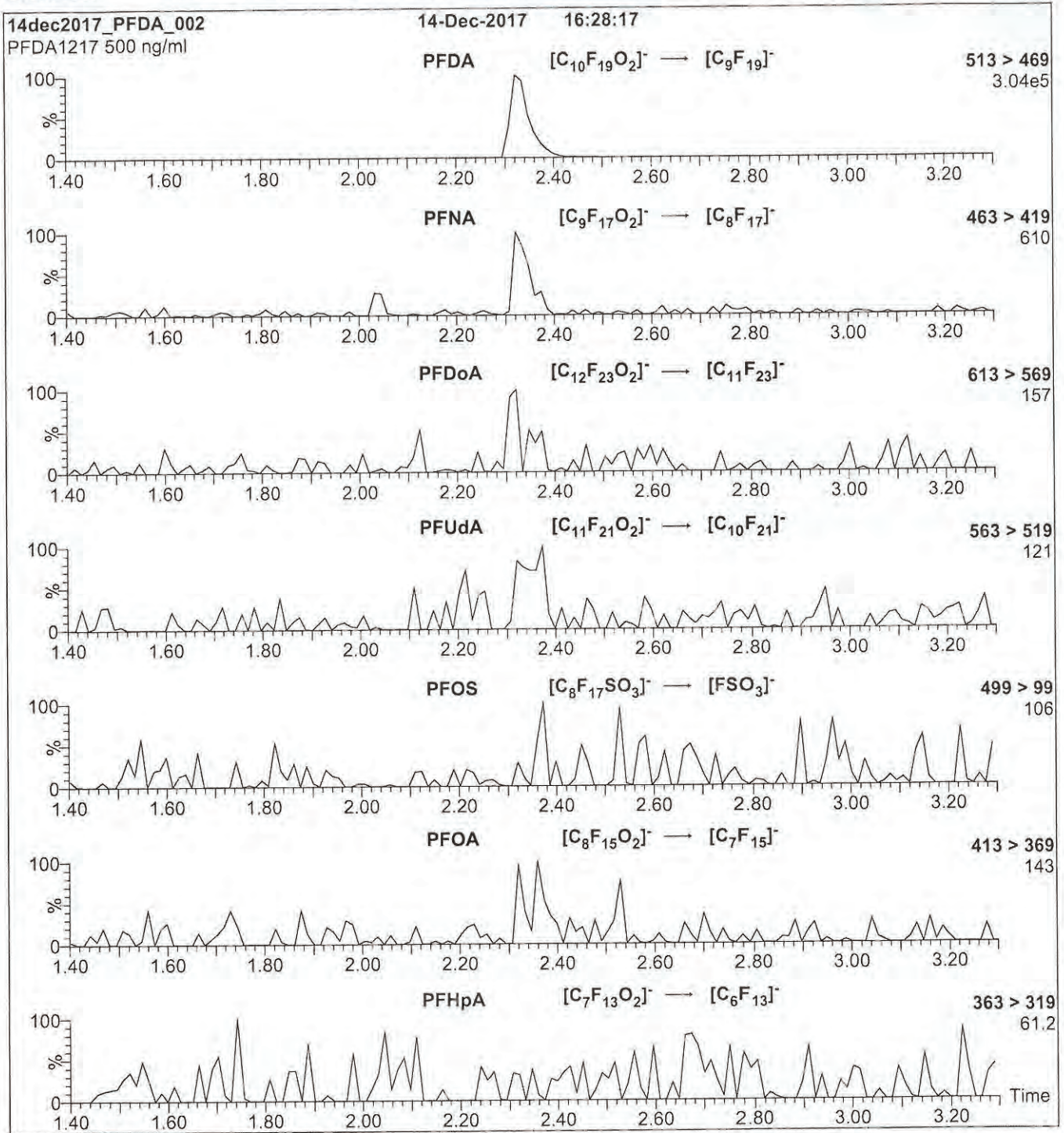
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1542

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 13

18B1543

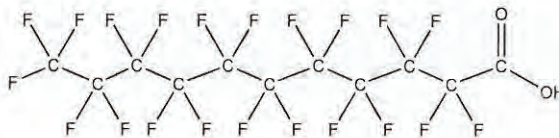


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA LOT NUMBER: PFUdA0917
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE: CAS #: 2058-94-8



MOLECULAR FORMULA: C11HF21O2 MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: 09/21/2017
EXPIRY DATE: 09/21/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: [Signature] Date: 09/22/2017
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

18B1543

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

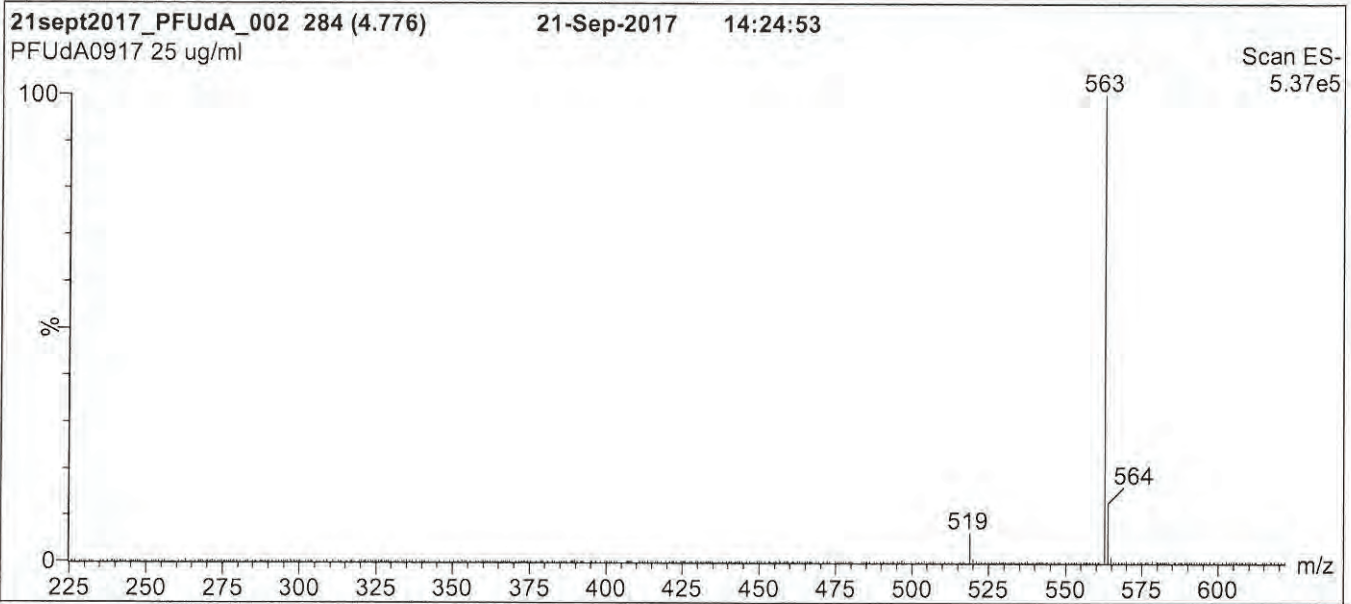
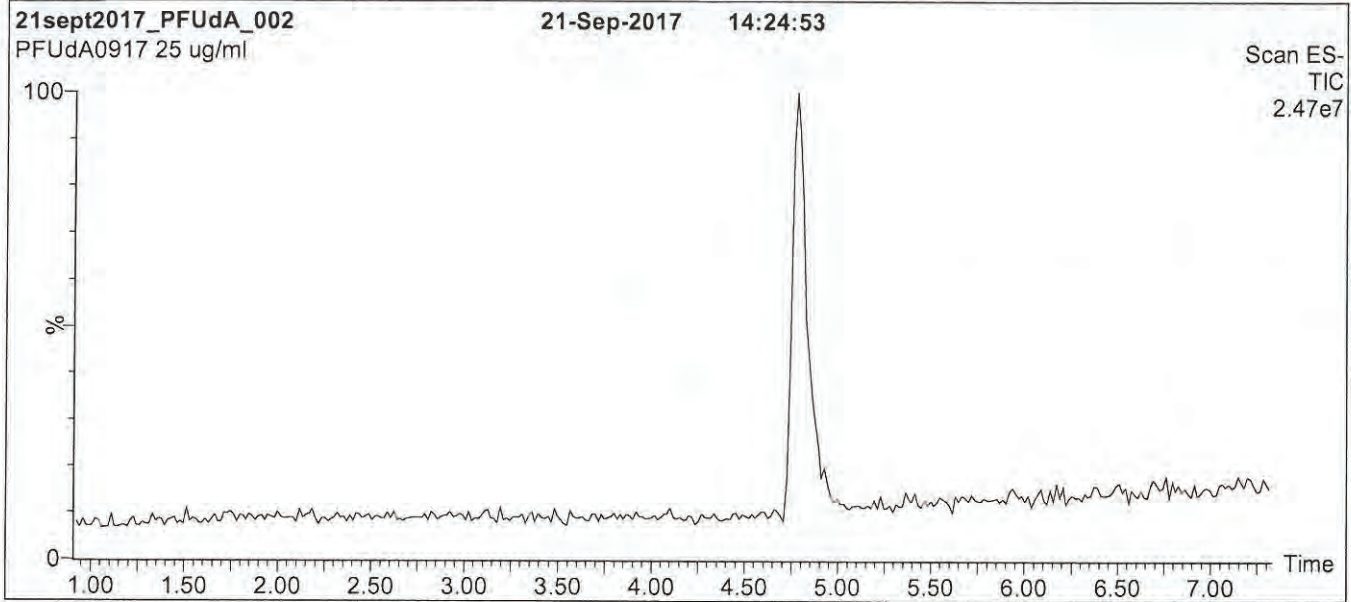
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1543

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

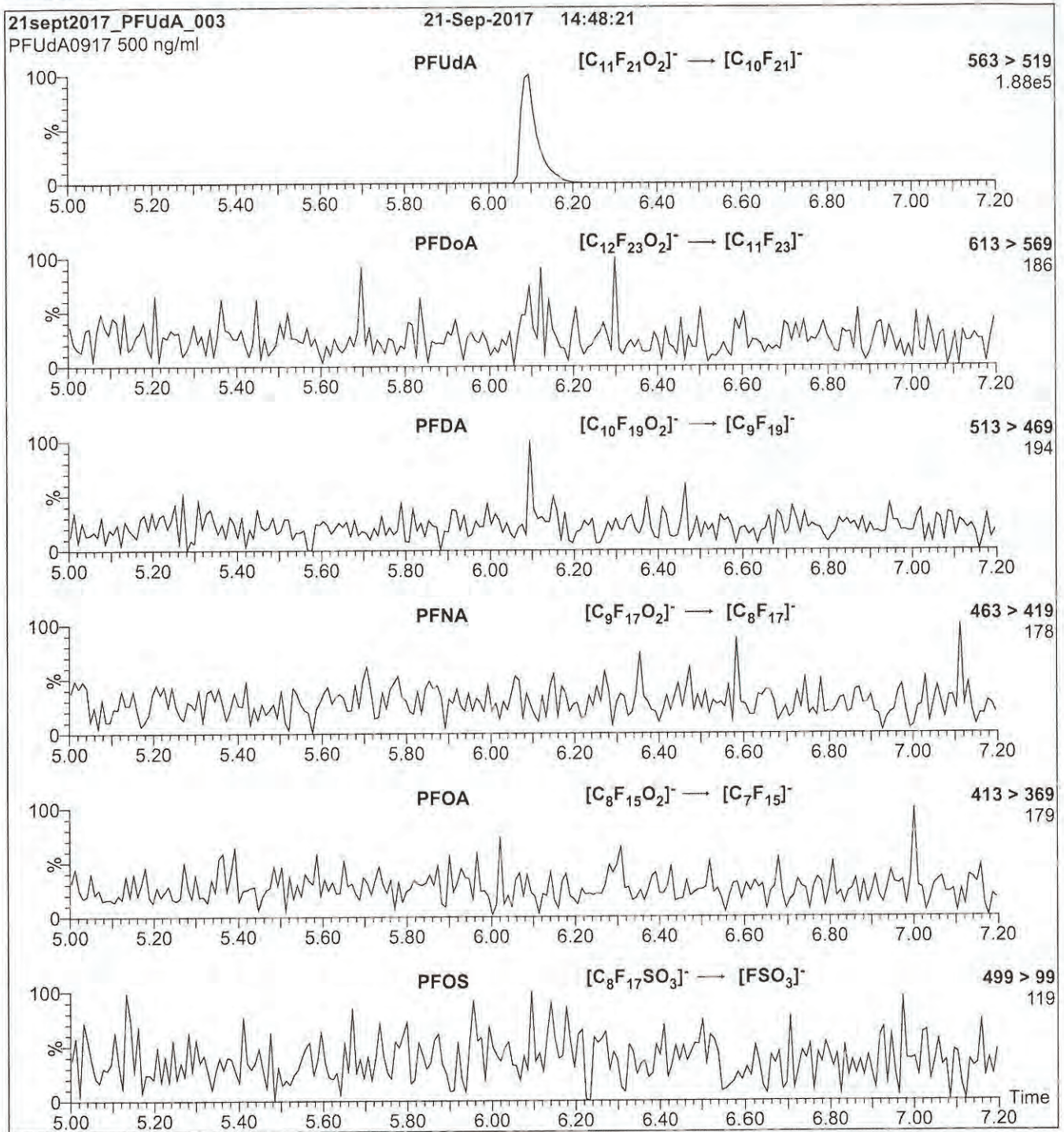
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

18B1543

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

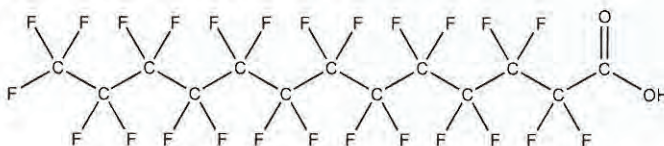
Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

18B1544


WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: PFTrDA **LOT NUMBER:** PFTrDA0517
COMPOUND: Perfluoro-n-tridecanoic acid
STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$ **MOLECULAR WEIGHT:** 664.11
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 05/04/2017
 (mm/dd/yyyy)

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

18B1544

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 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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

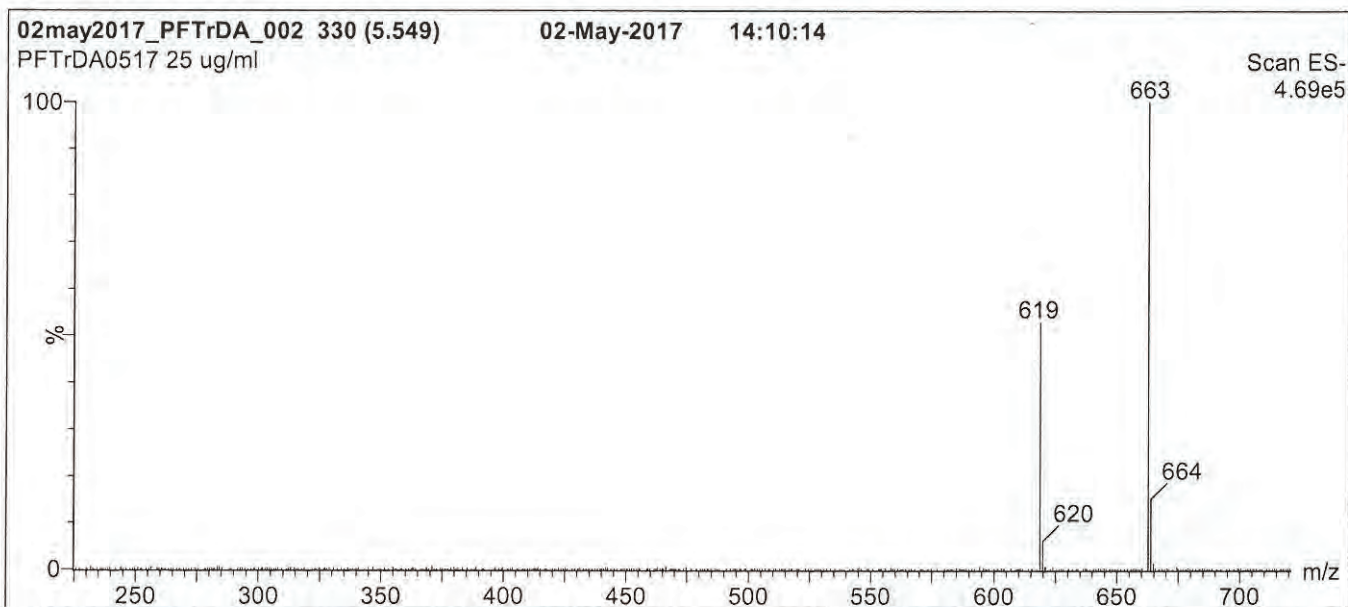
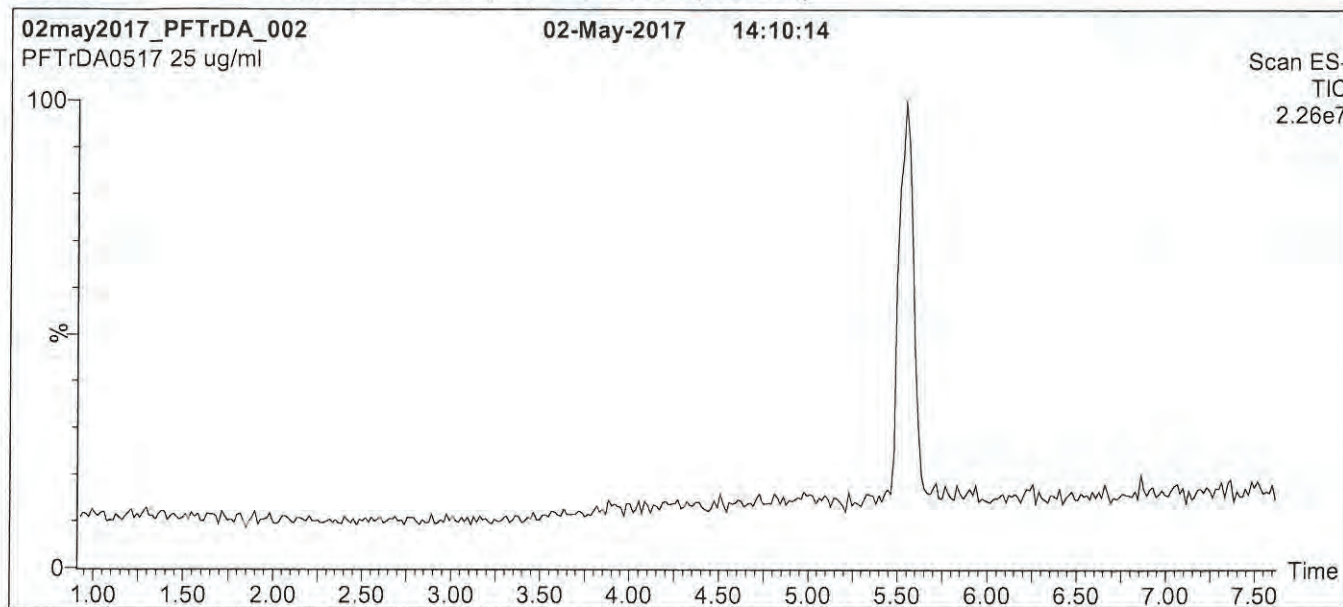
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1544

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

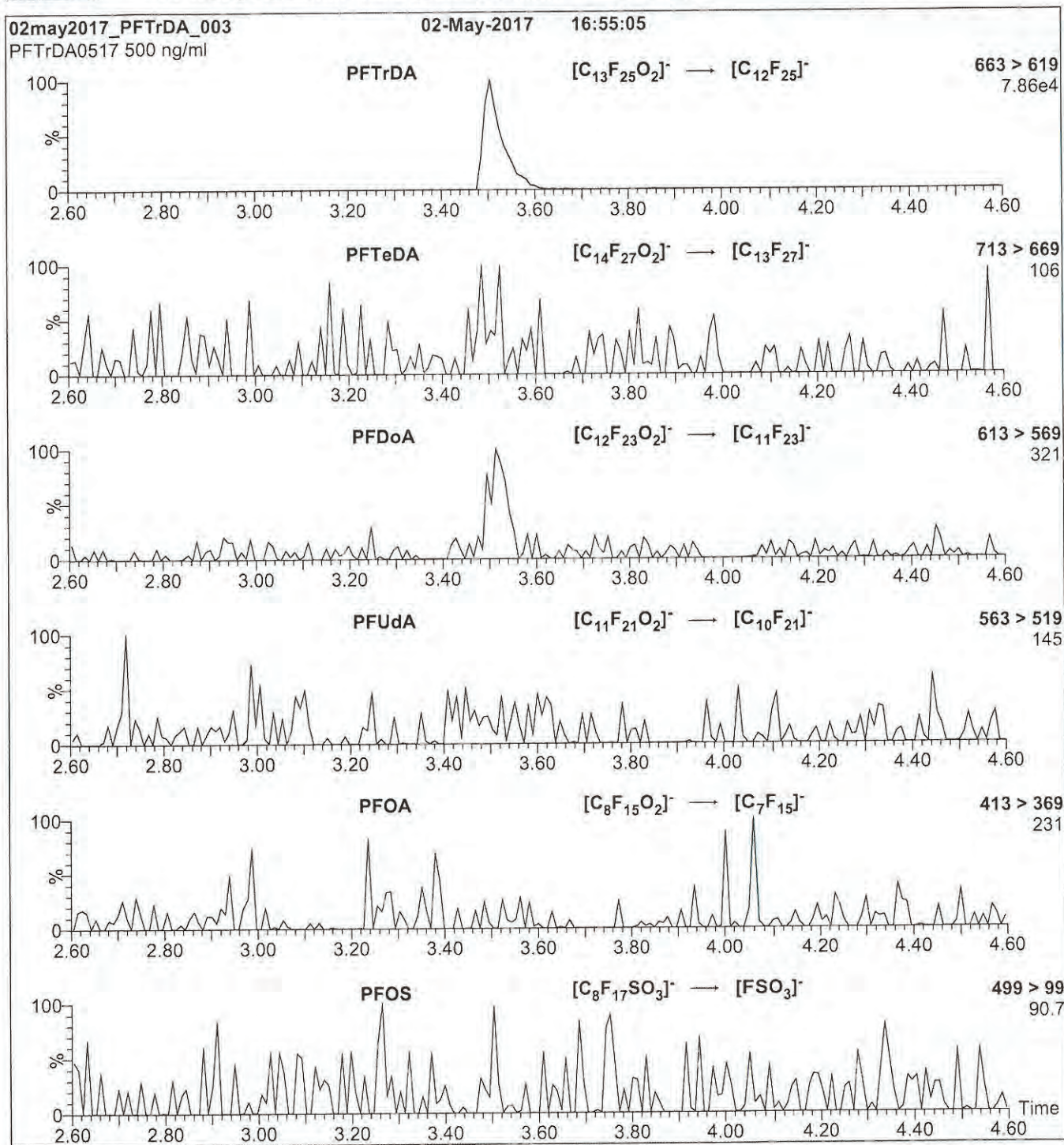
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

18B1544

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 15

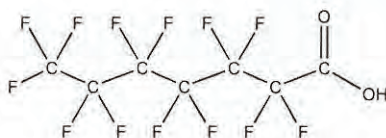
18B1545



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHpA **LOT NUMBER:** PFHpA0917
COMPOUND: Perfluoro-n-heptanoic acid
STRUCTURE: **CAS #:** 375-85-9



MOLECULAR FORMULA: C₇HF₁₃O₂ **MOLECULAR WEIGHT:** 364.06
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

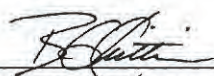
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/29/2017
B.G. Chittim, General Manager (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

18B1545

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

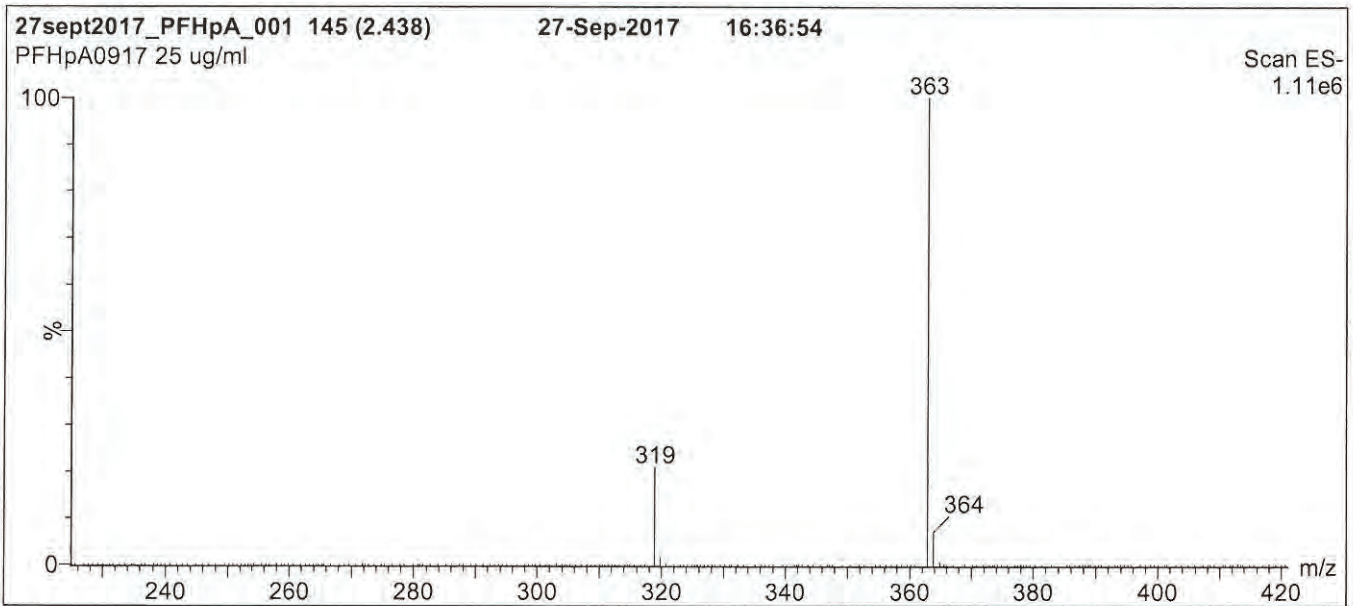
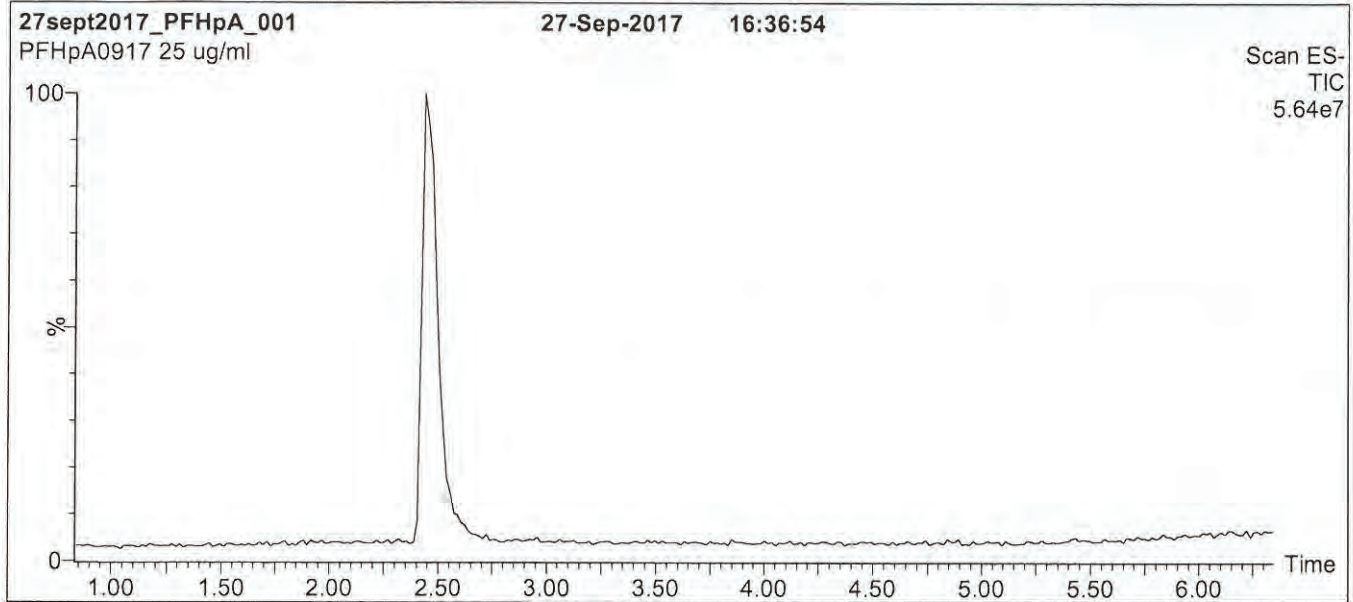
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1545

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

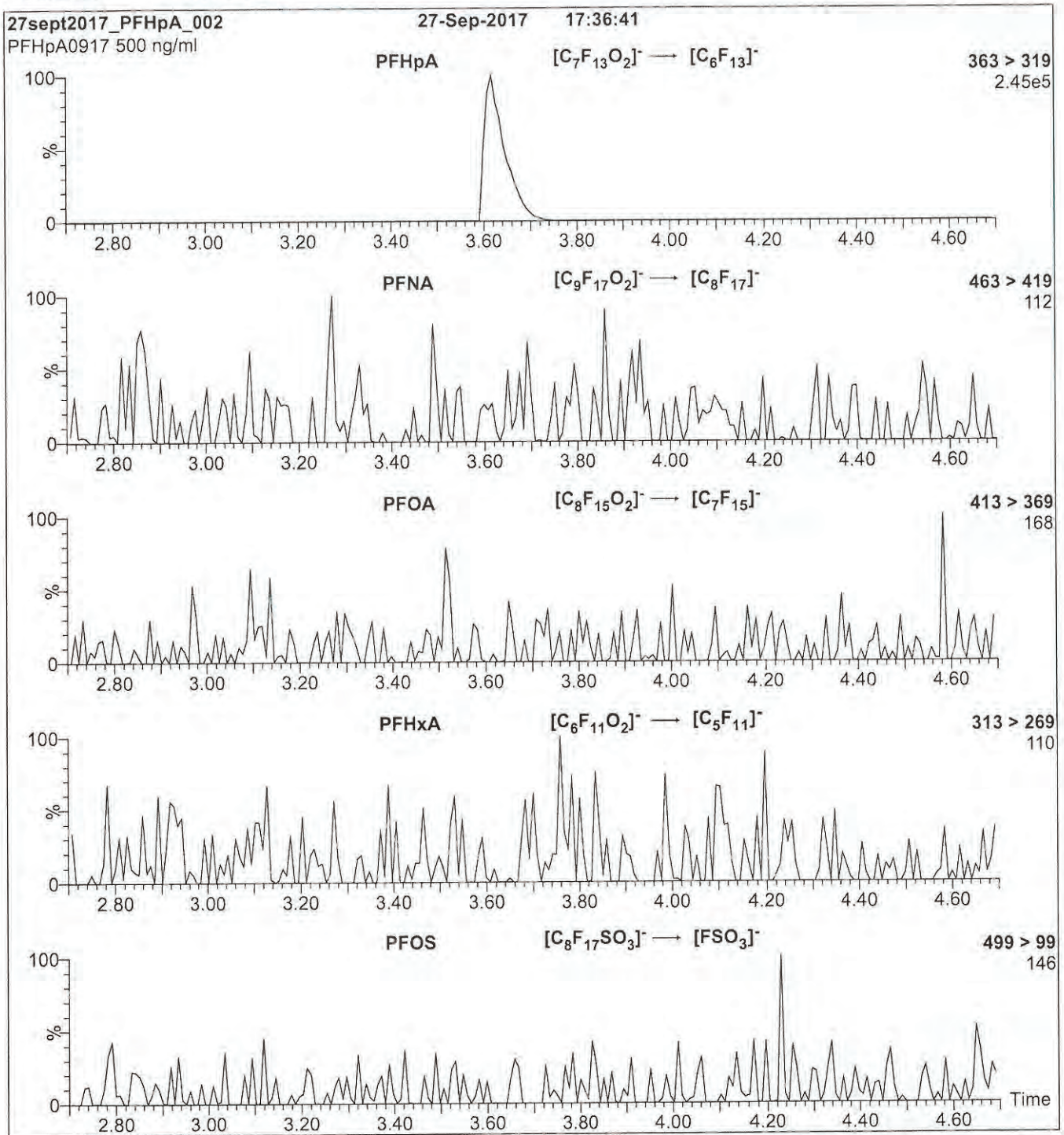
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1545

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 11

18B1546



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA0917

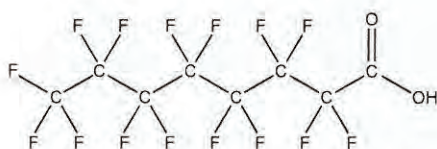
COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #:

335-67-1



MOLECULAR FORMULA:

$C_8HF_{15}O_2$

MOLECULAR WEIGHT:

414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/27/2017

EXPIRY DATE: (mm/dd/yyyy)

09/27/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2017

(mm/dd/yyyy)

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

18B1546

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

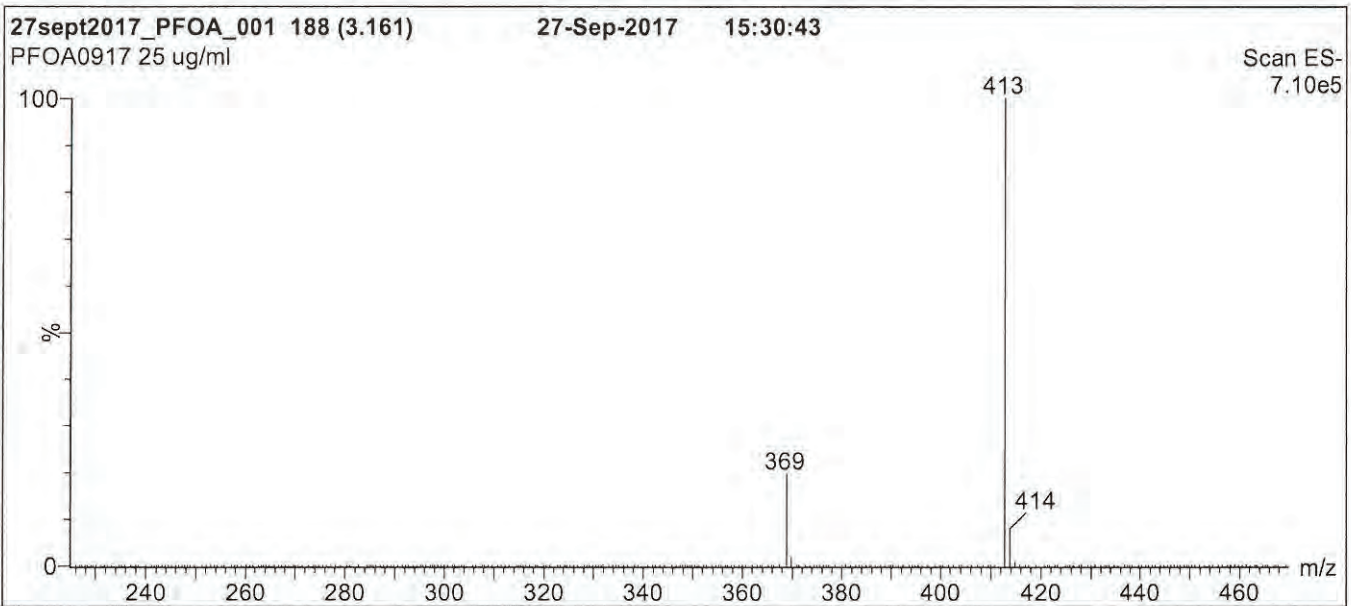
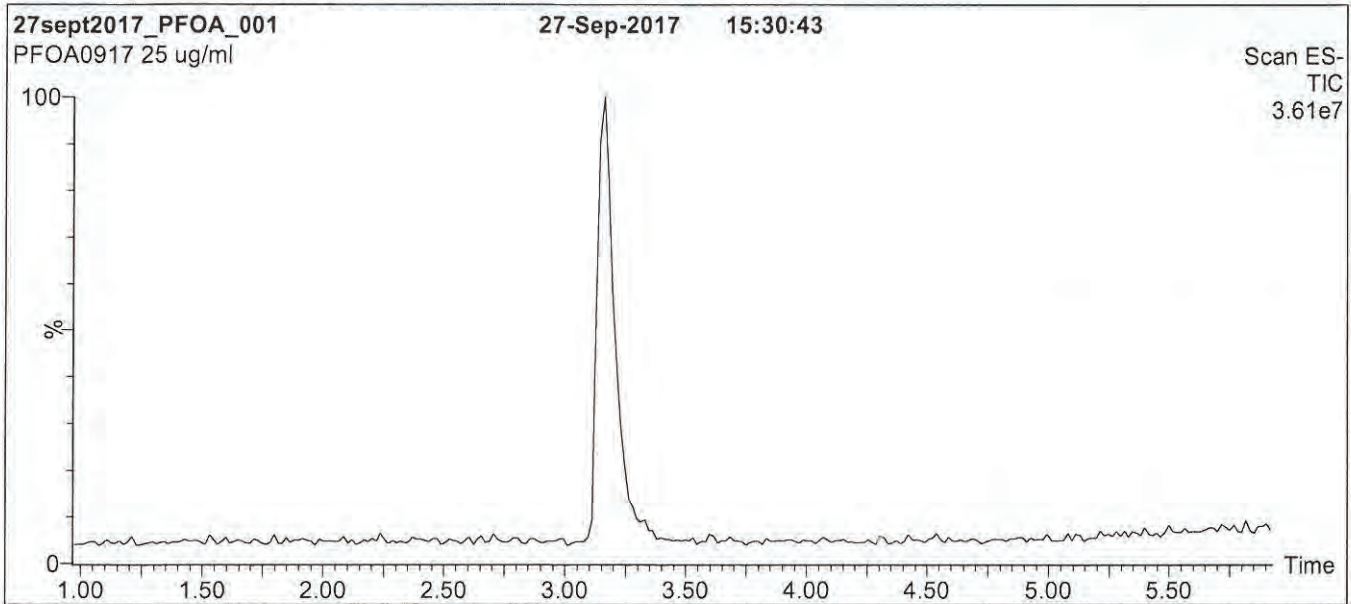
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1546

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

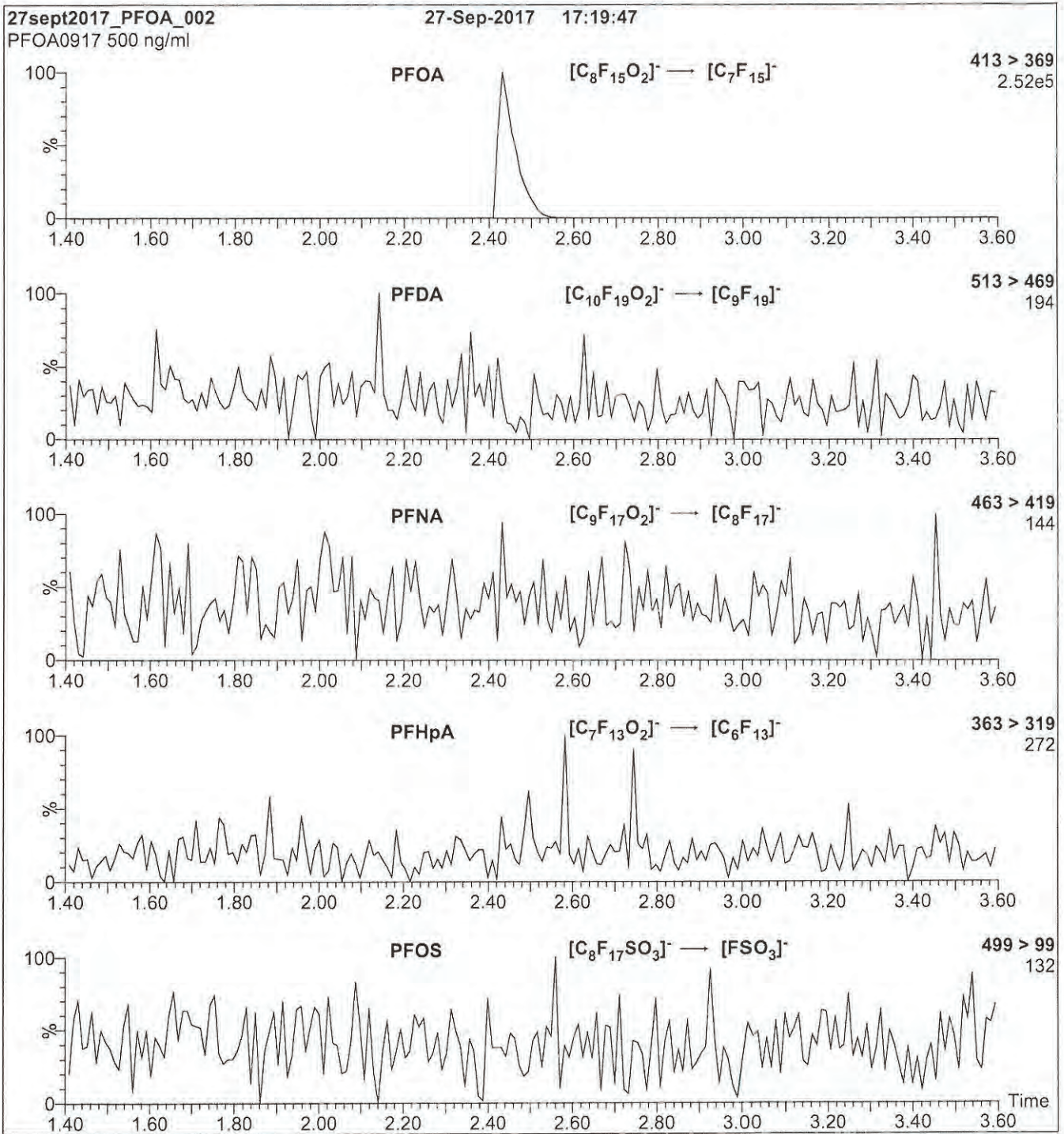
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

1831546

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

18B1547

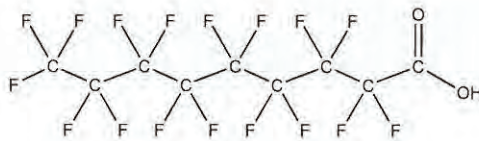


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFNA **LOT NUMBER:** PFNA0717
COMPOUND: Perfluoro-n-nonanoic acid

STRUCTURE: **CAS #:** 375-95-1



MOLECULAR FORMULA: C₉HF₁₇O₂ **MOLECULAR WEIGHT:** 464.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUDA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/24/2017
B.G. Chittim, General Manager (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

18B1547

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

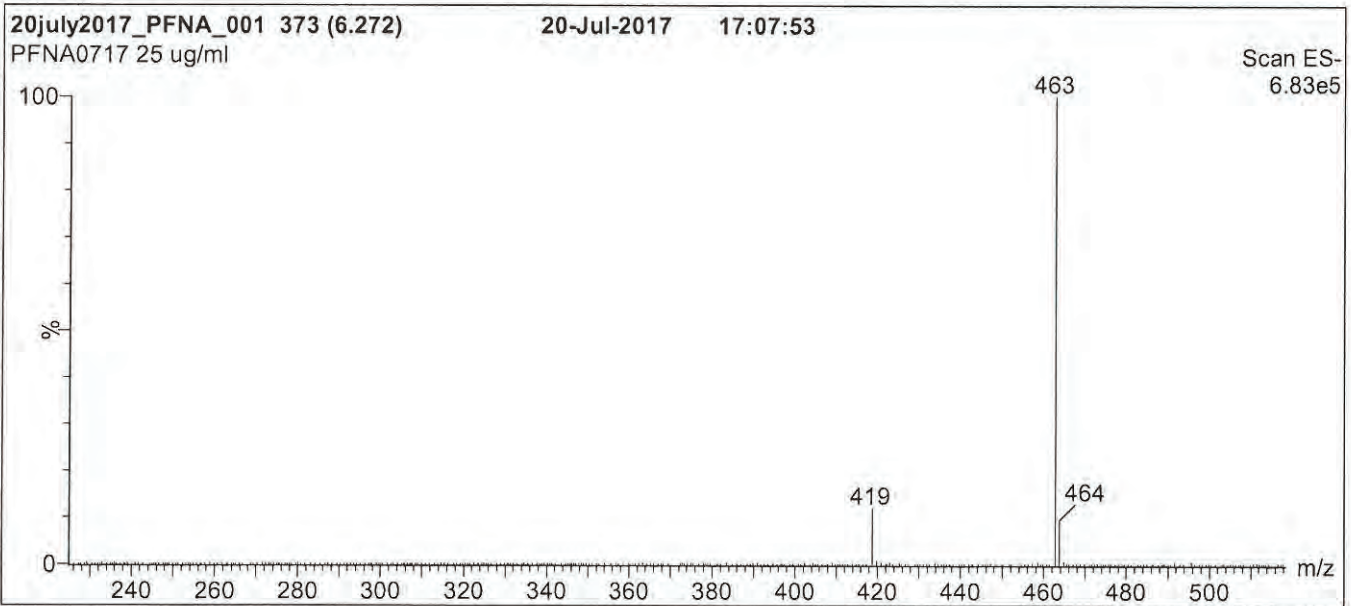
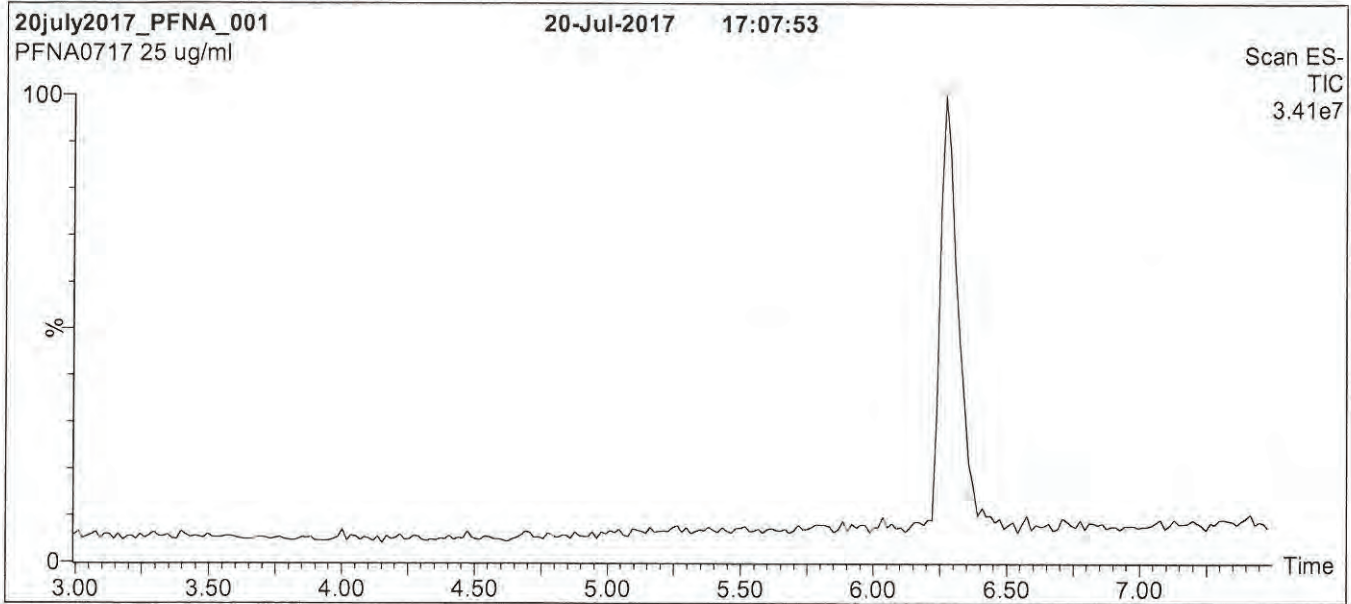
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1547

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

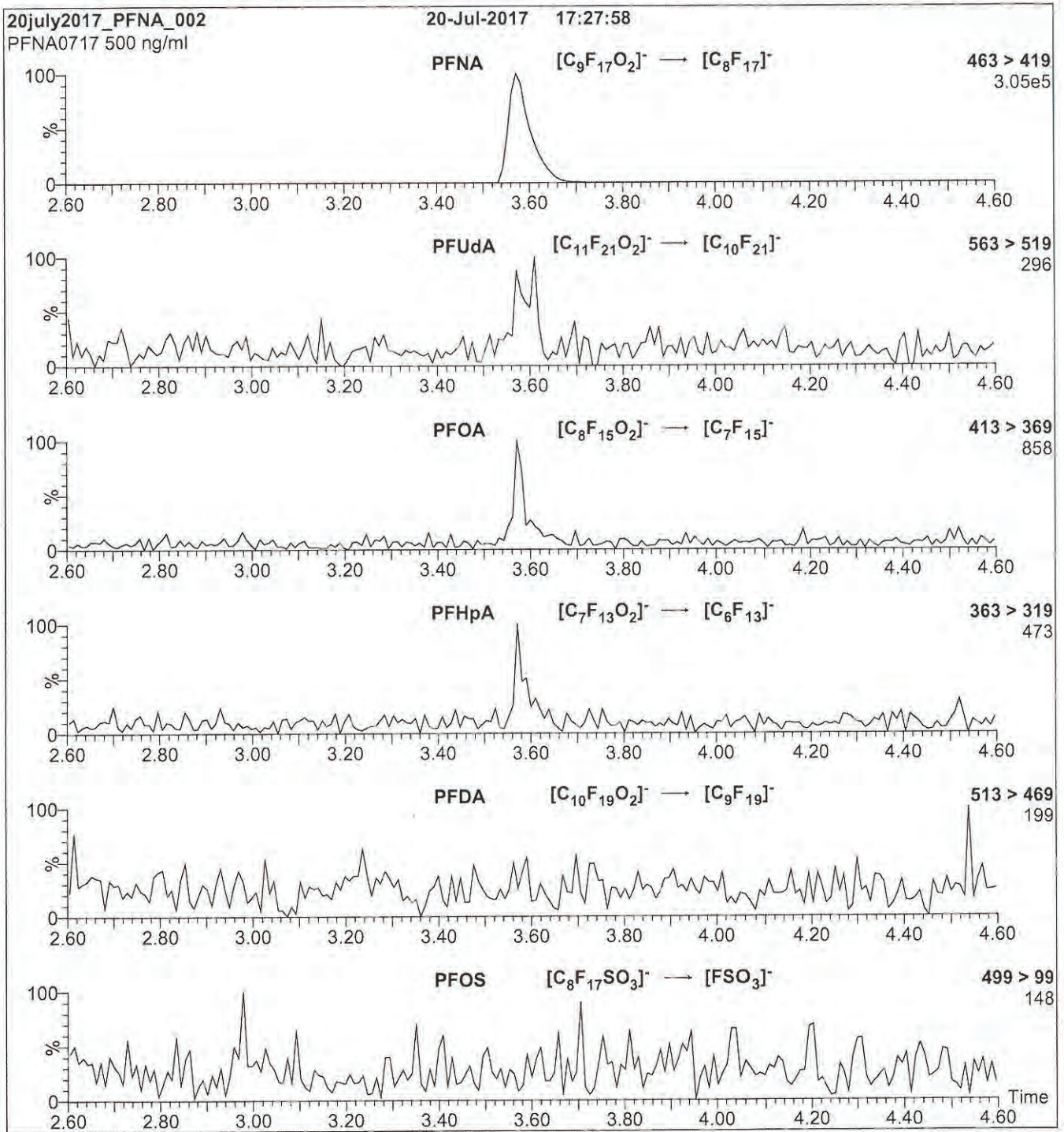
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1547

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

18B1548

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

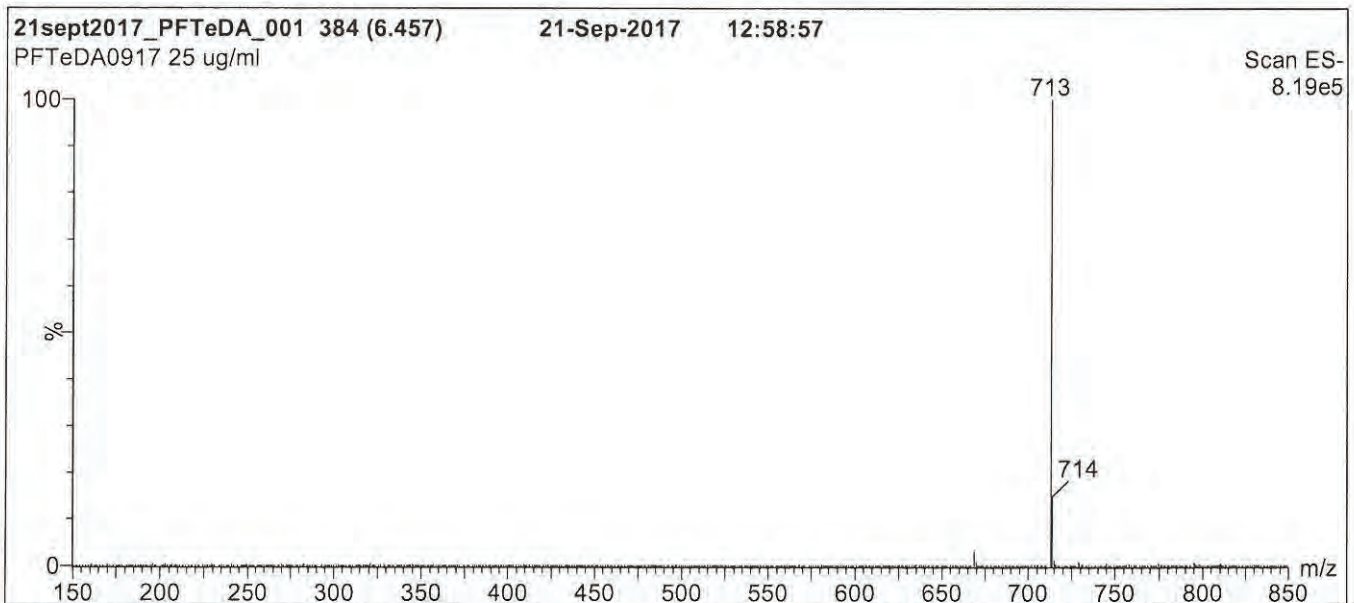
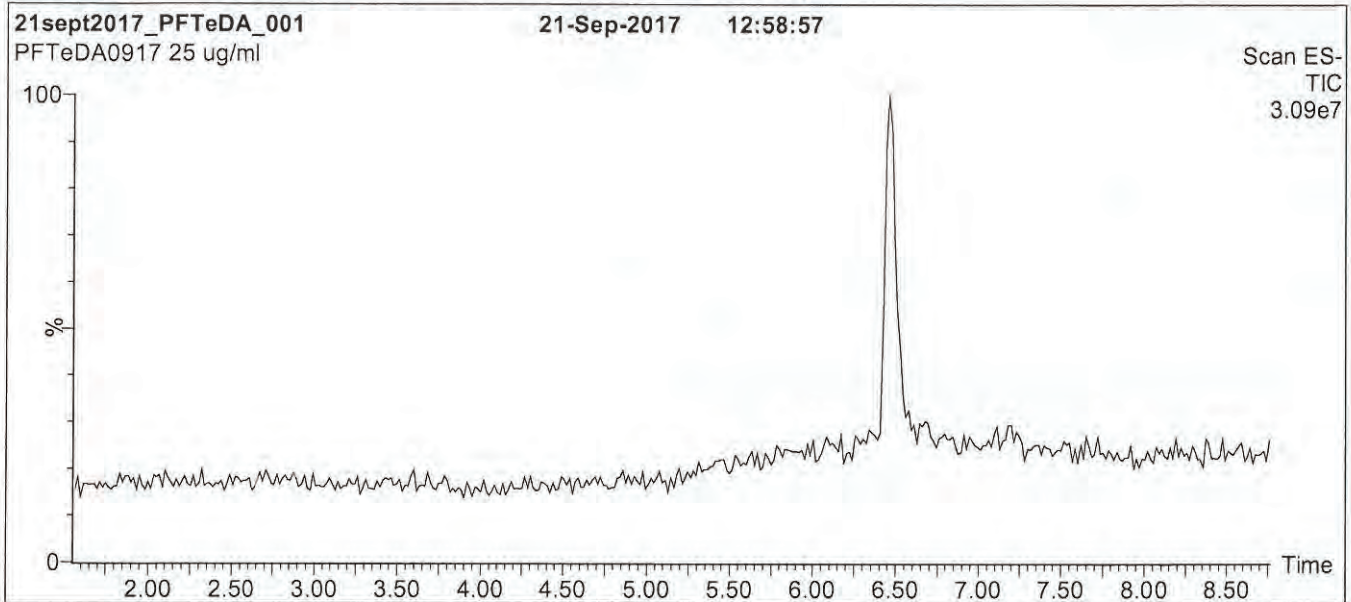
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1548

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

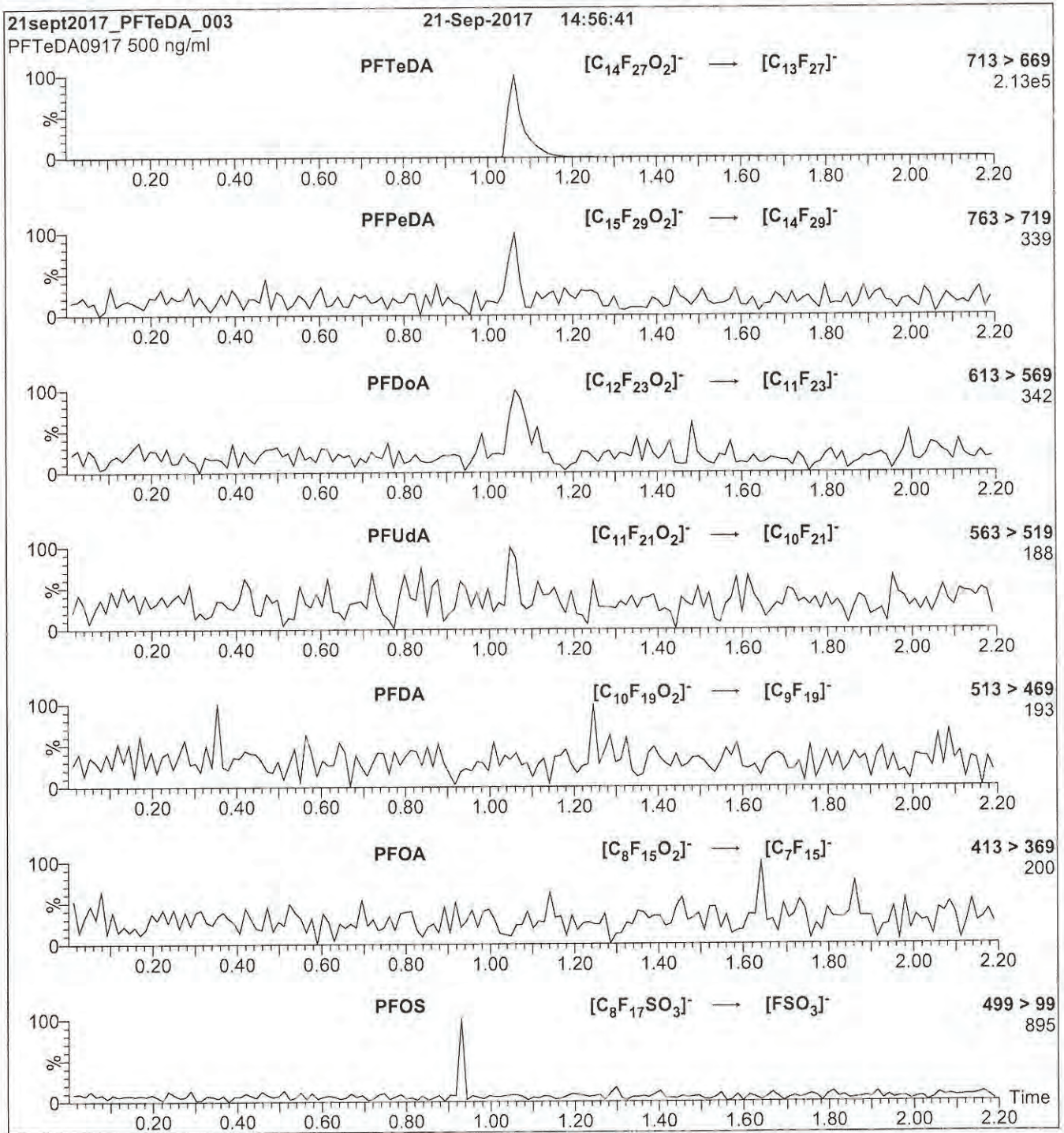
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1548

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 14

18B1549

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

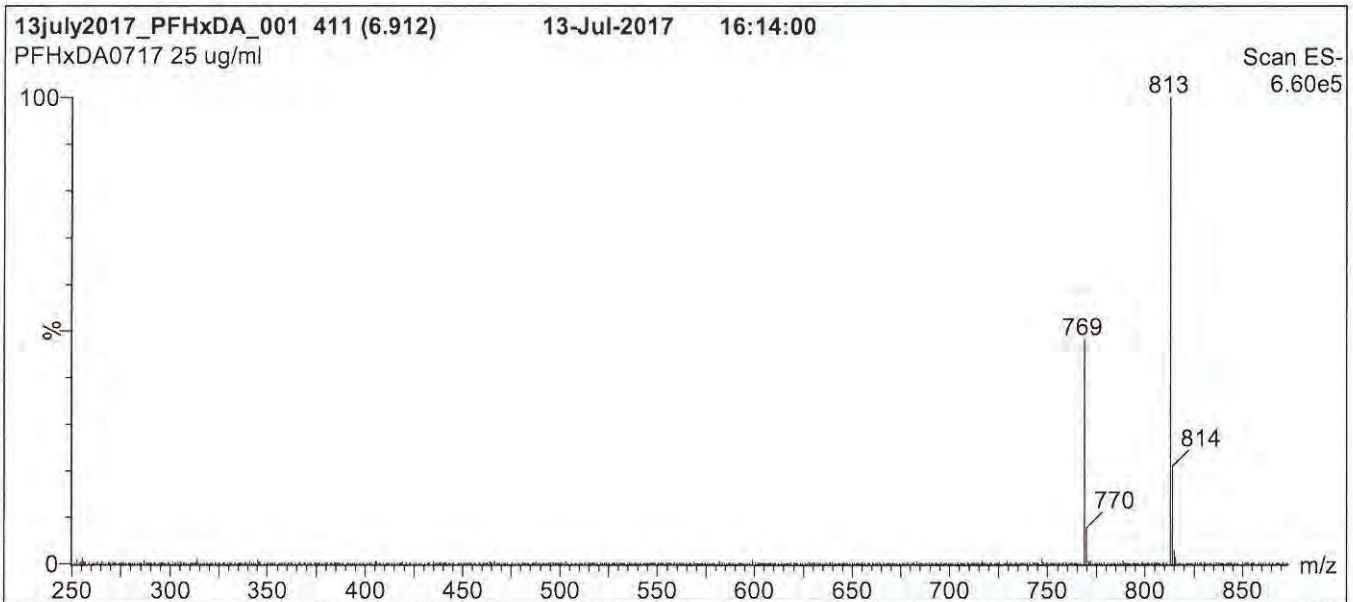
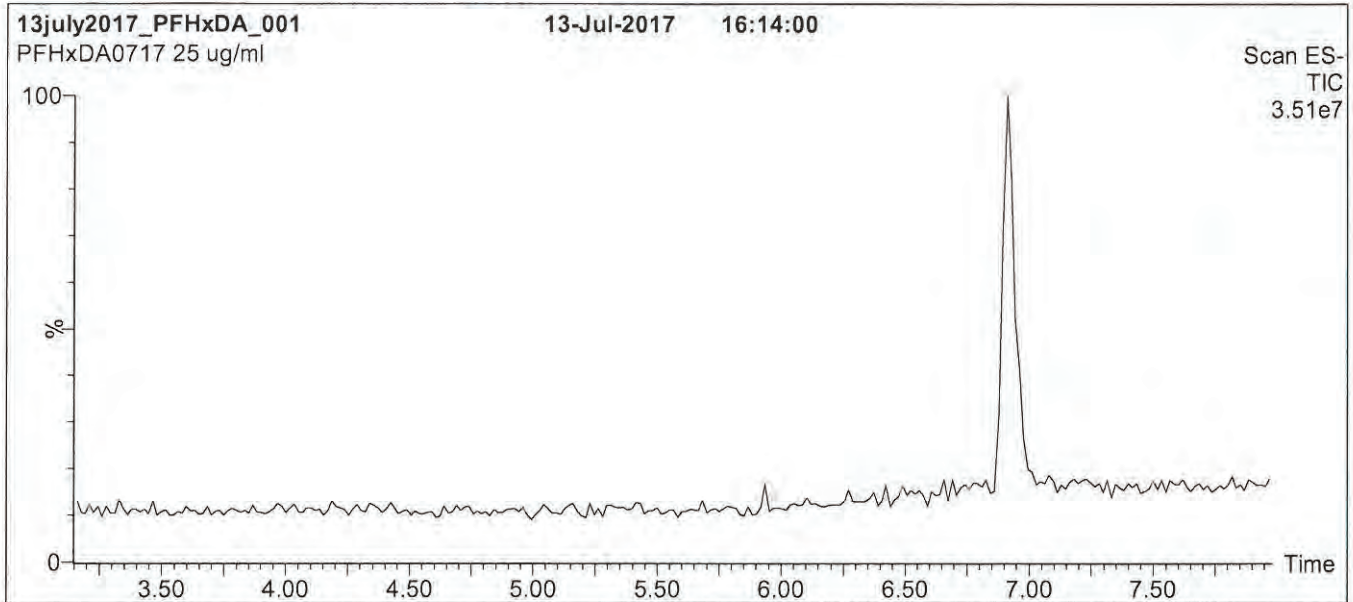
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1549

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

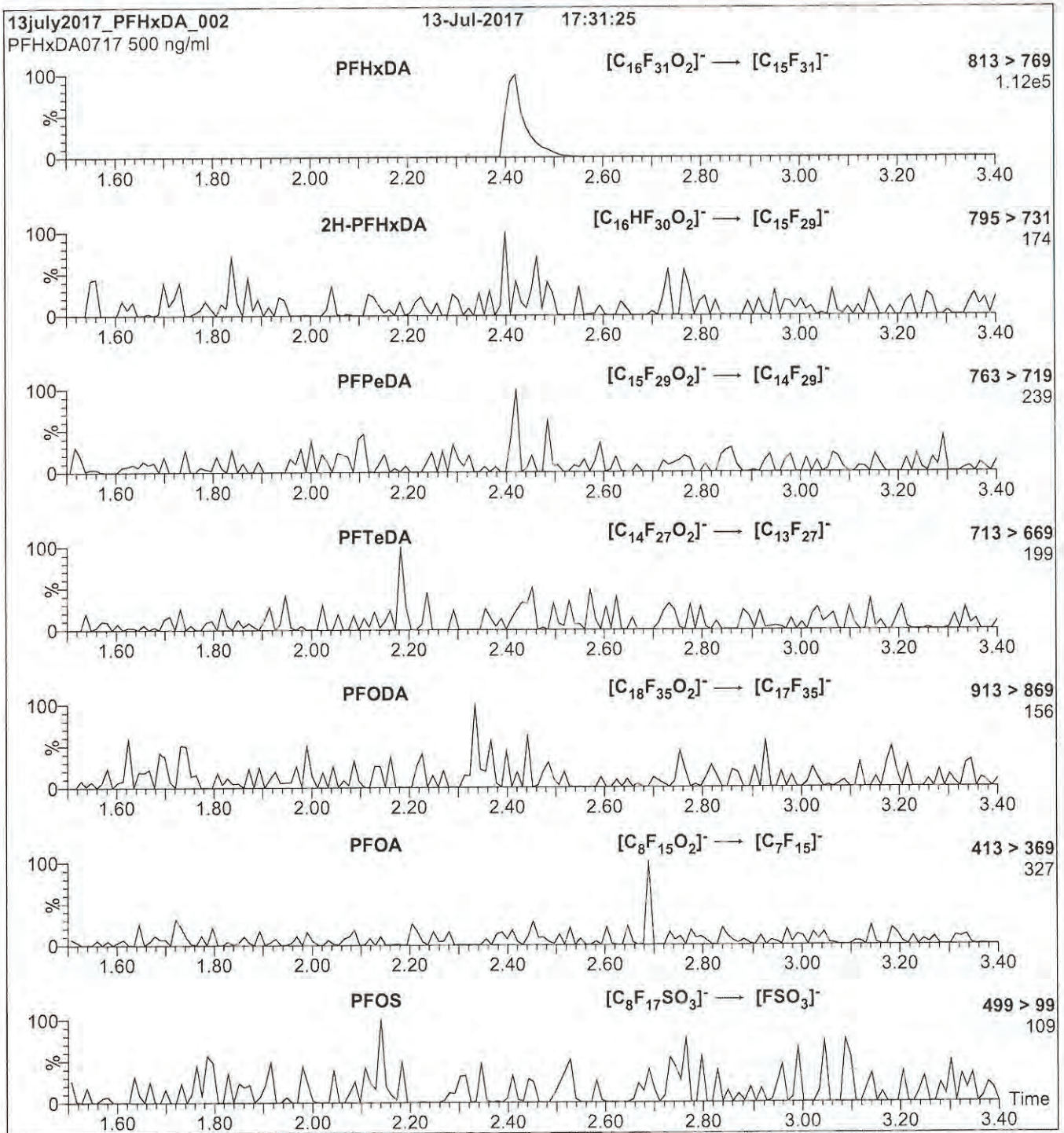
MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1549

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.13e-3
 Collision Energy (eV) = 15

18B1550

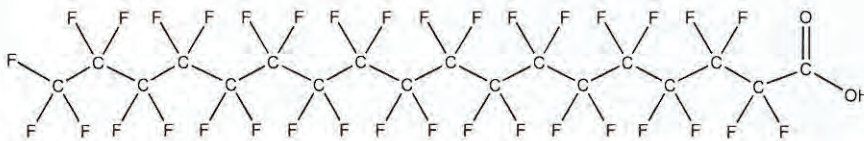


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA **LOT NUMBER:** PFODA0717
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE: **CAS #:** 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$ **MOLECULAR WEIGHT:** 914.14
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/14/2017
B.G. Chittim, General Manager (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

18B1550

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

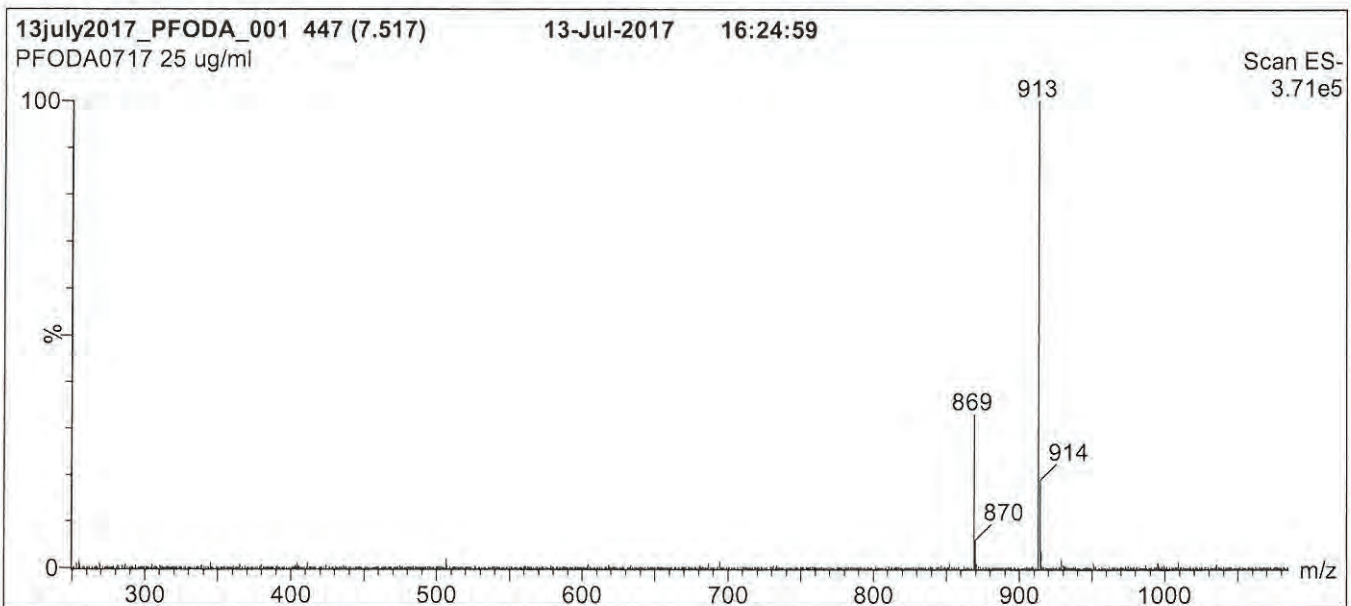
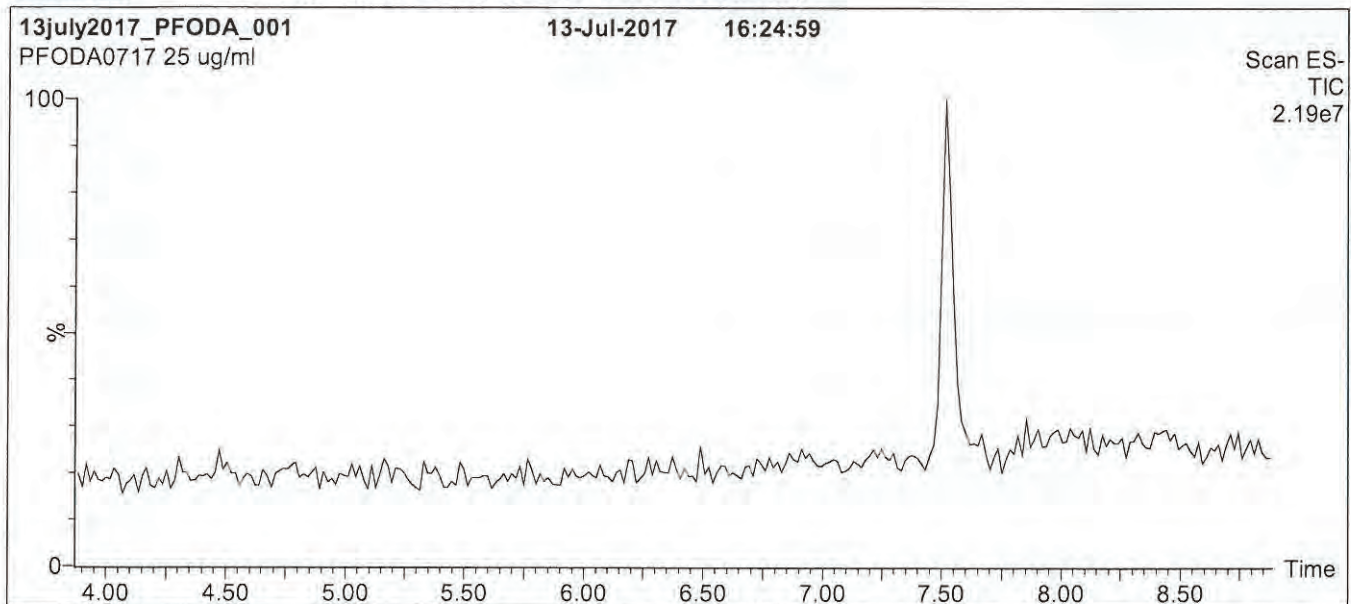
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1550

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

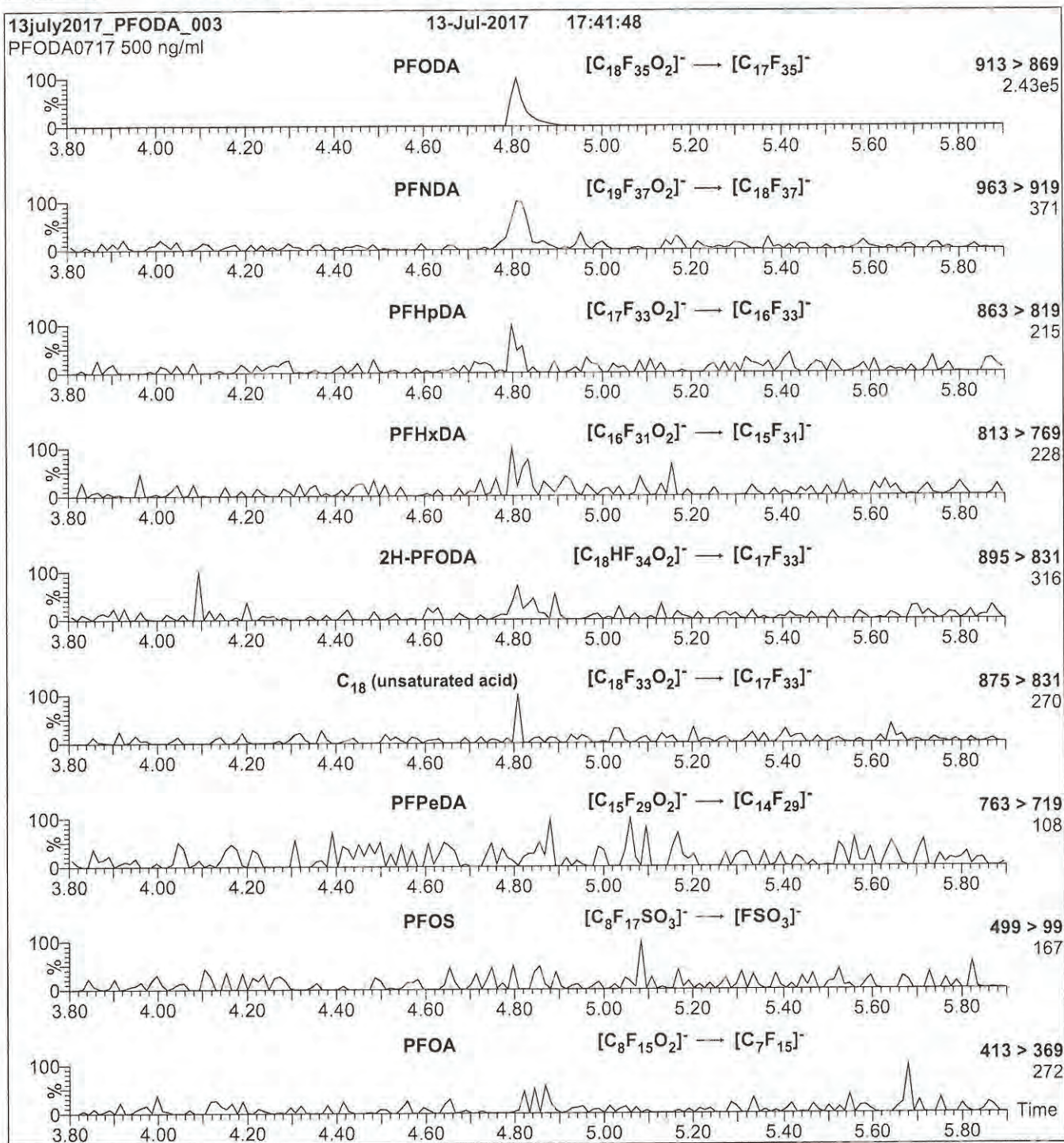
MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1550

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 15

18B1551

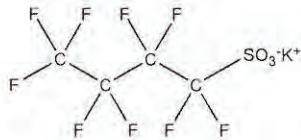


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFBS **LOT NUMBER:** LPFBS0917
COMPOUND: Potassium perfluoro-1-butanesulfonate

STRUCTURE: **CAS #:** 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K **MOLECULAR WEIGHT:** 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol
44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/22/2017
B.G. Chittim, General Manager (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

18B1551

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

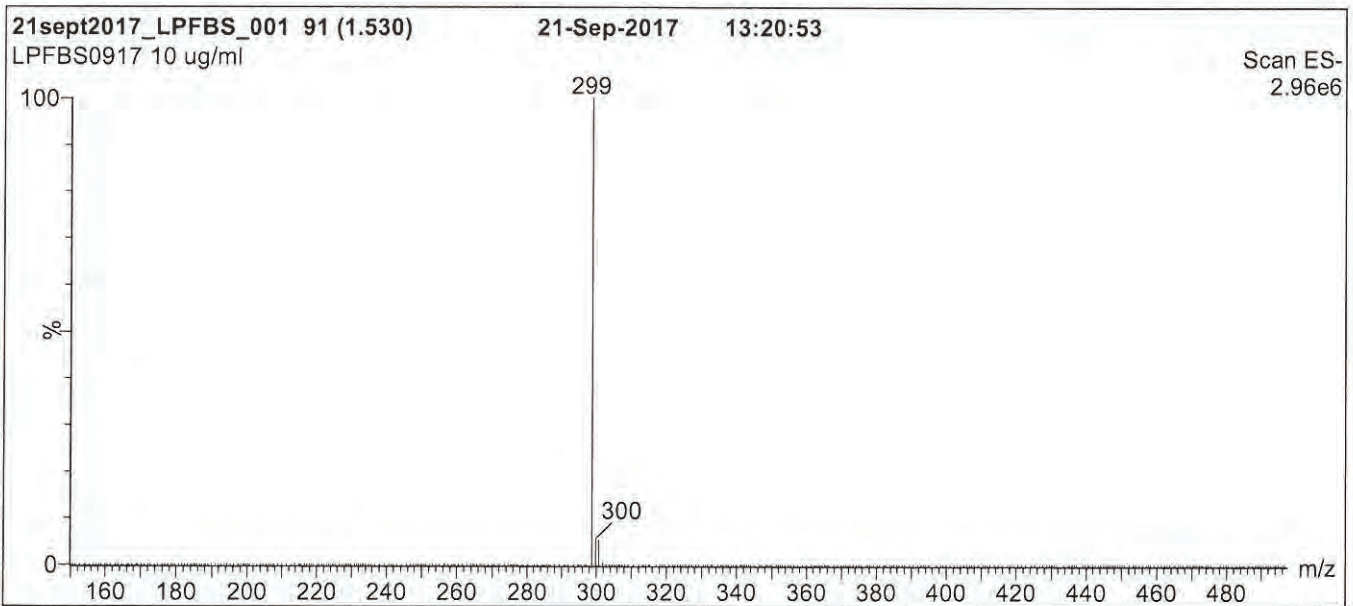
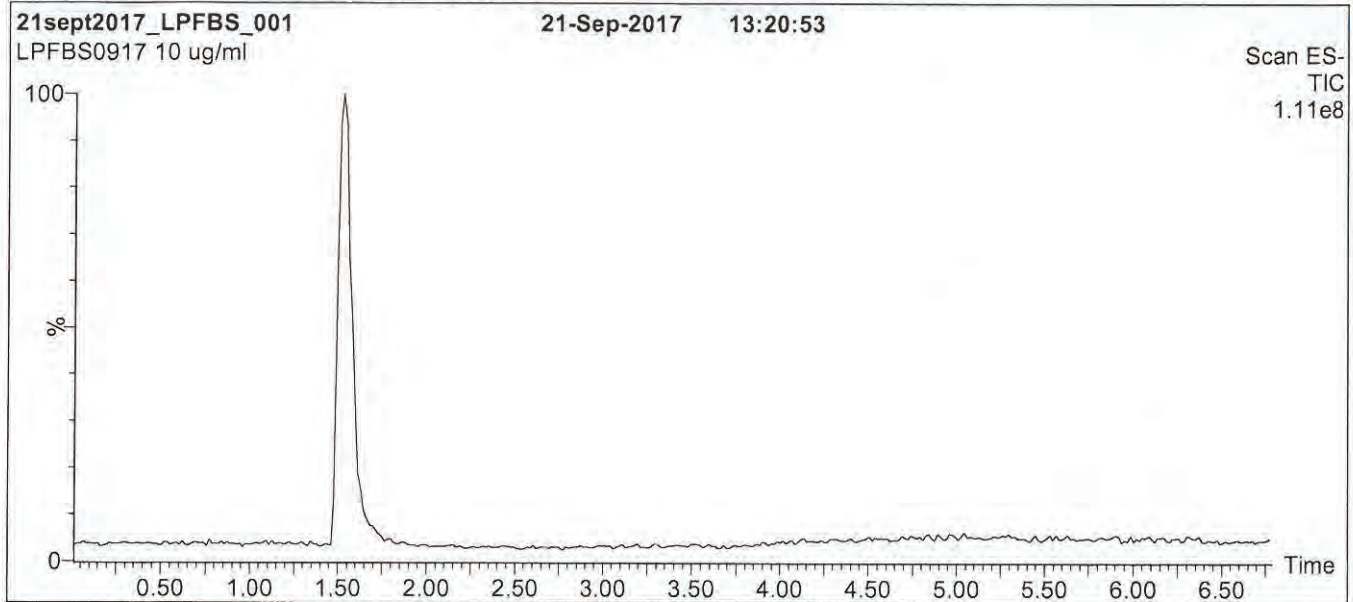
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1551

Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

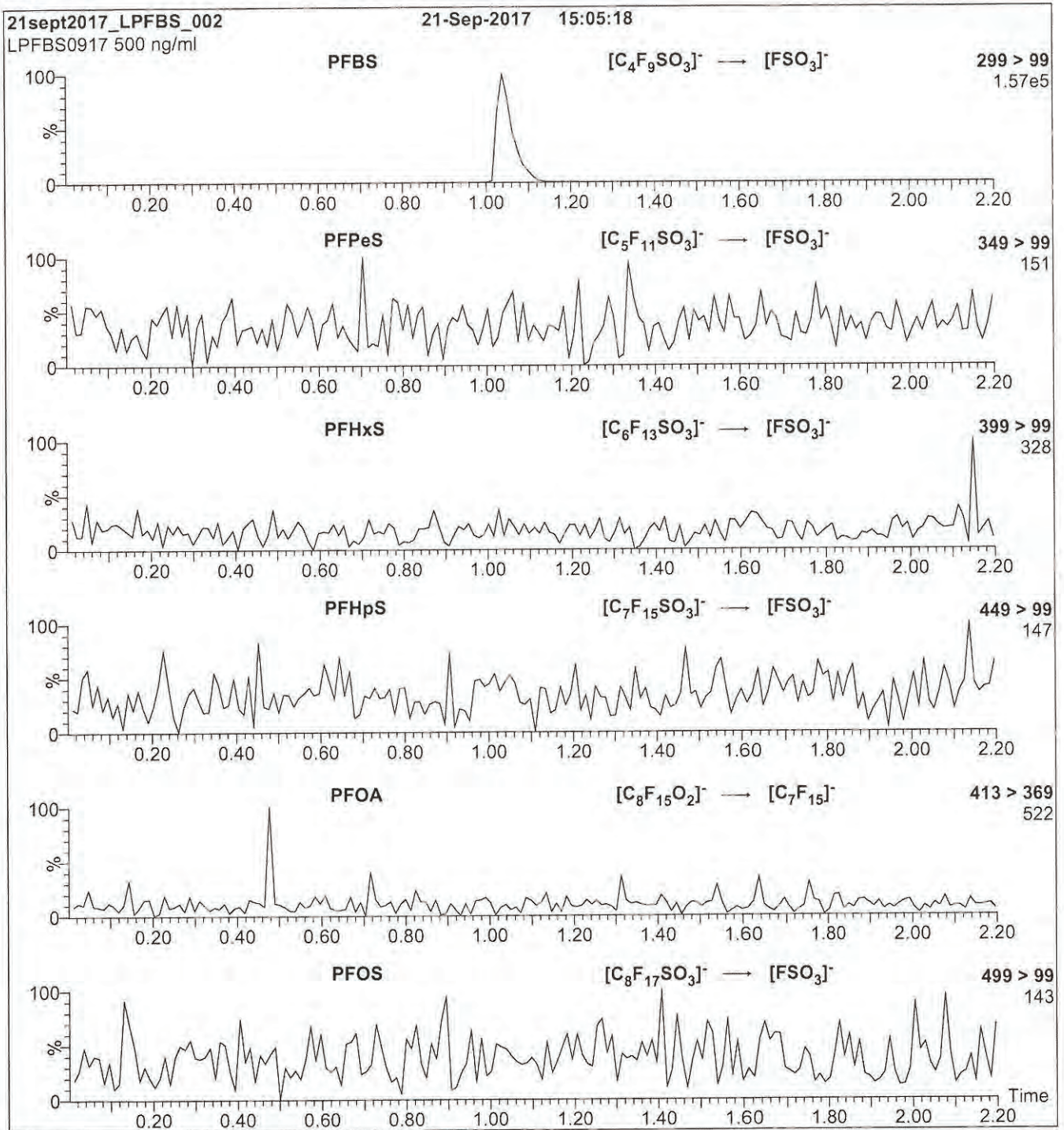
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1551

Figure 2: L-PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

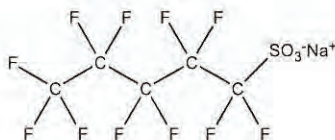
18B1552



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFPeS **LOT NUMBER:** LPFPeS0117
COMPOUND: Sodium perfluoro-1-pentanesulfonate
STRUCTURE: **CAS #:** 630402-22-1



MOLECULAR FORMULA: C₅F₁₁SO₃Na **MOLECULAR WEIGHT:** 372.09
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
46.9 ± 2.3 µg/ml (PFPeS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

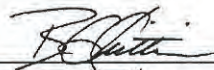
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/06/2017
B.G. Chittim, General Manager (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

18B1552

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

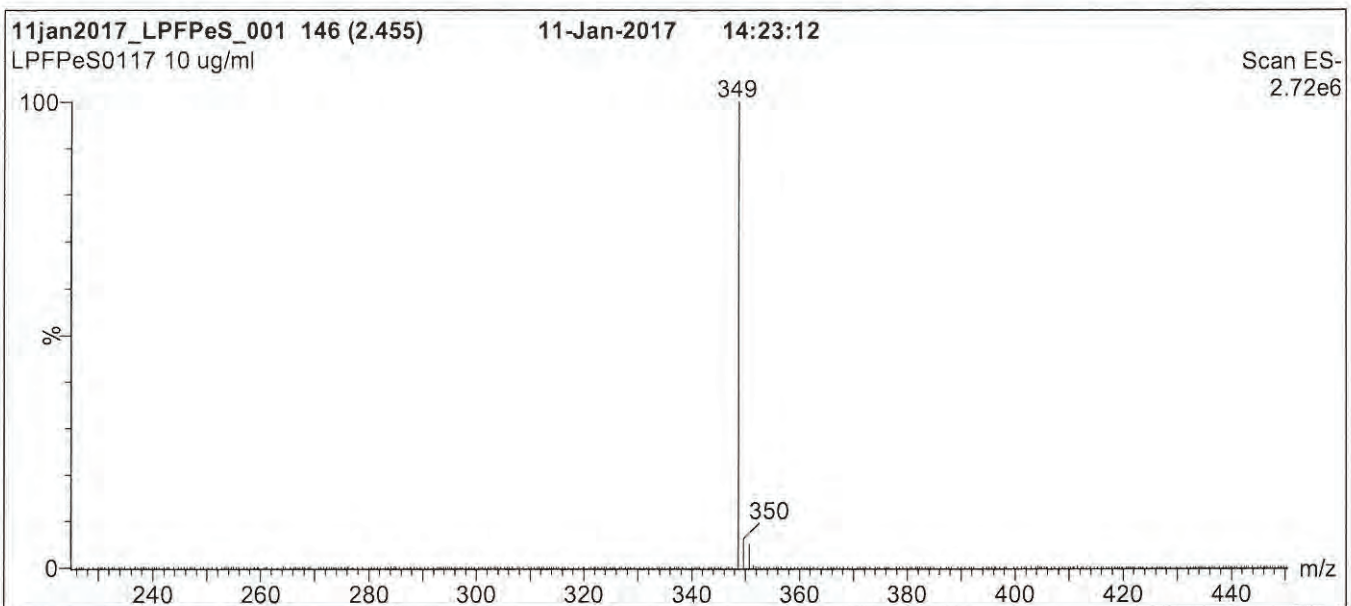
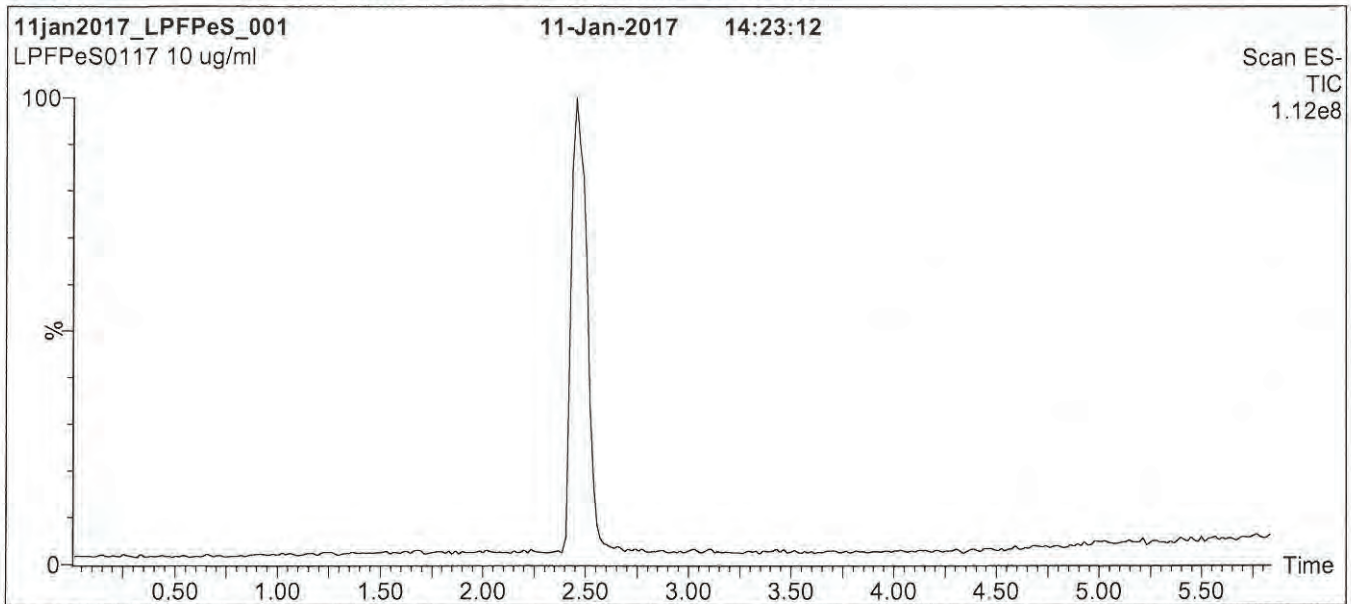
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1552

Figure 1: L-PFPeS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

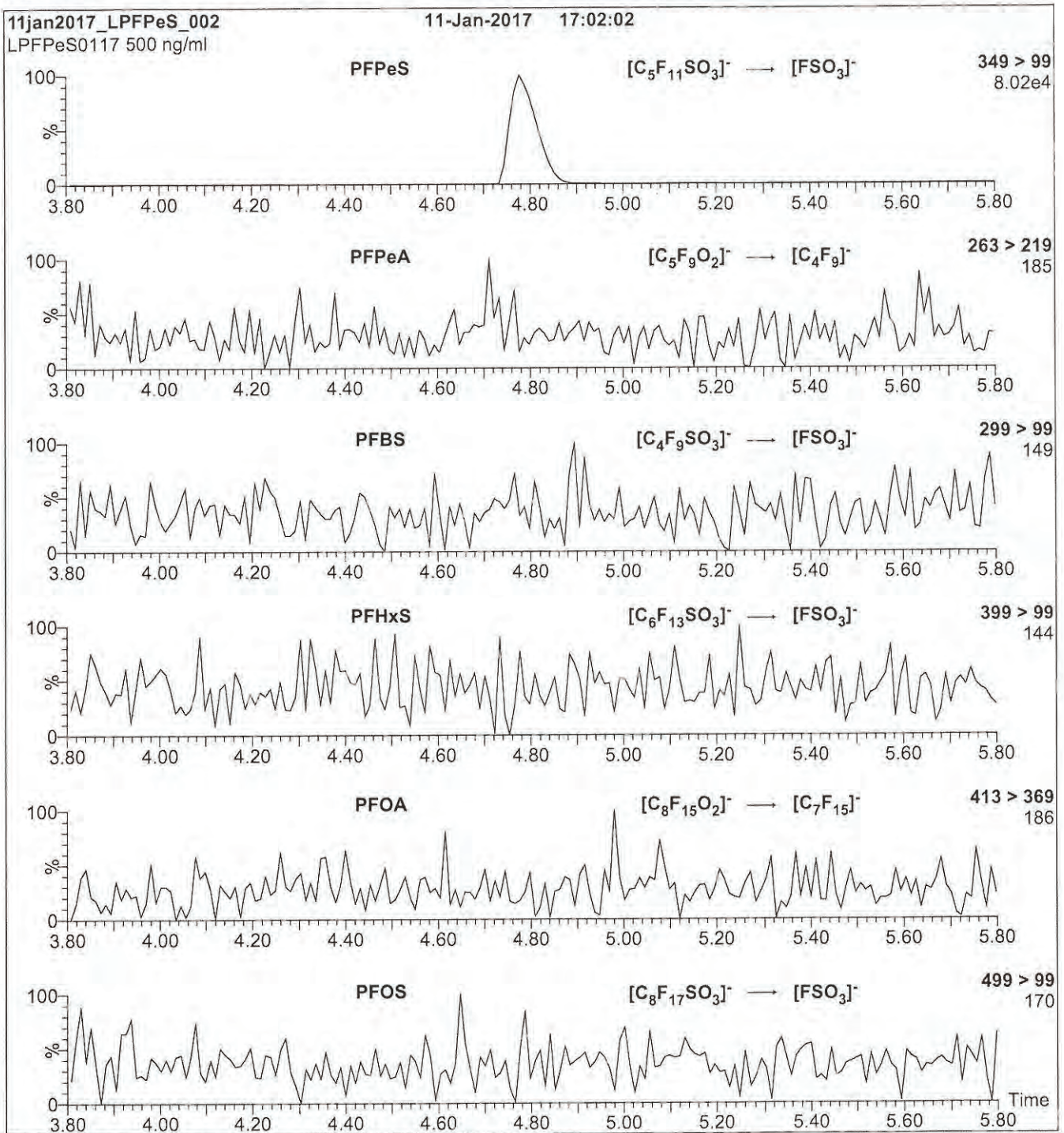
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1552

Figure 2: L-PFPeS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFPeS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

18B1553



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 ¹⁹F-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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

18B1553

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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



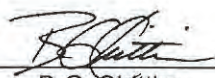
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

18B1553

Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF(SO ₃ ⁻)K ⁺ CF ₃	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF ₂ CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	CF ₃ CF ₃ CCF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.2
7	Other Unidentified Isomers		0.5

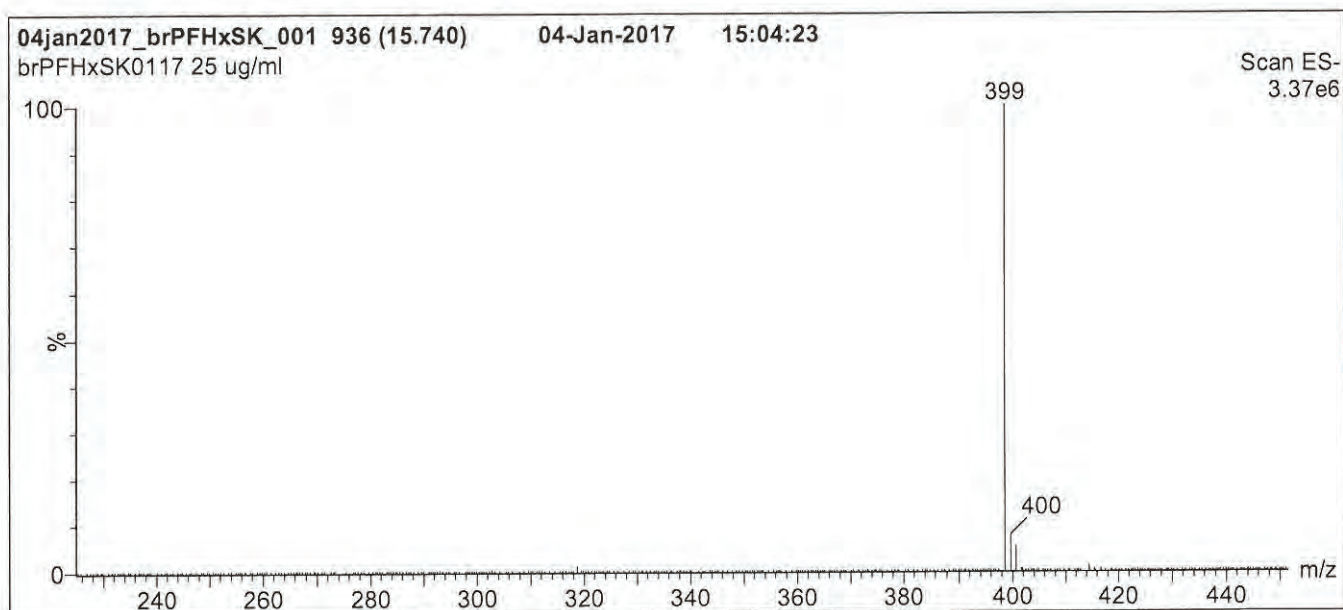
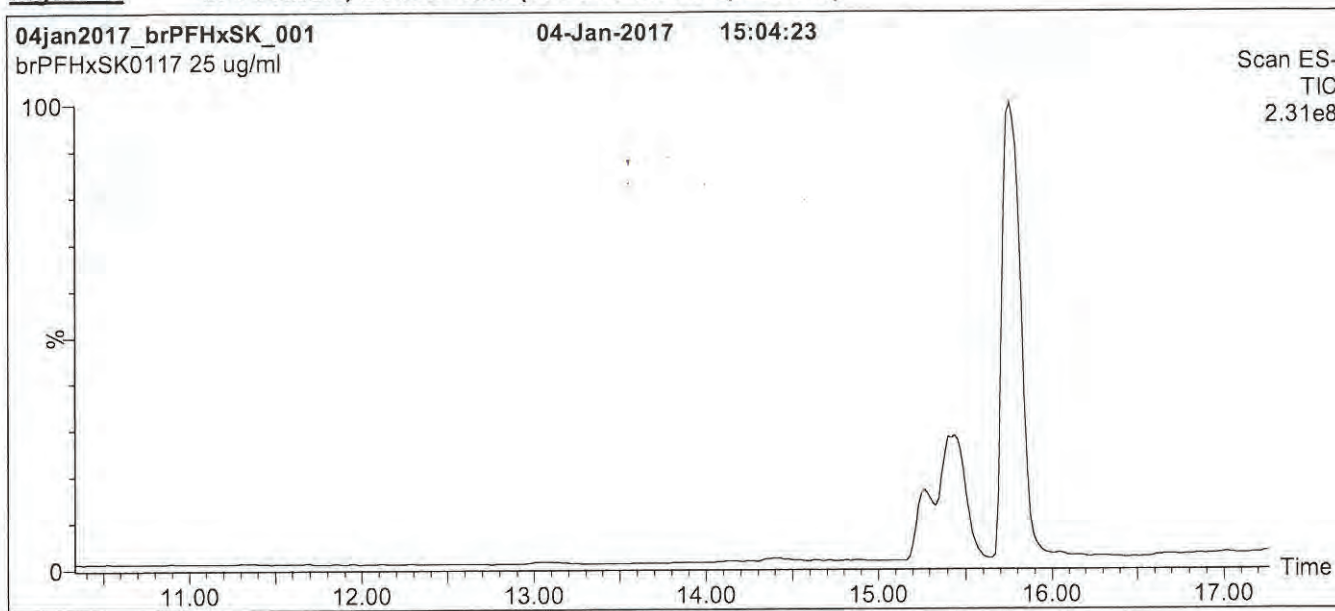
* Percent of total perfluorohexanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 01/20/2017
 (mm/dd/yyyy)

18B1533

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc 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 μ l/min

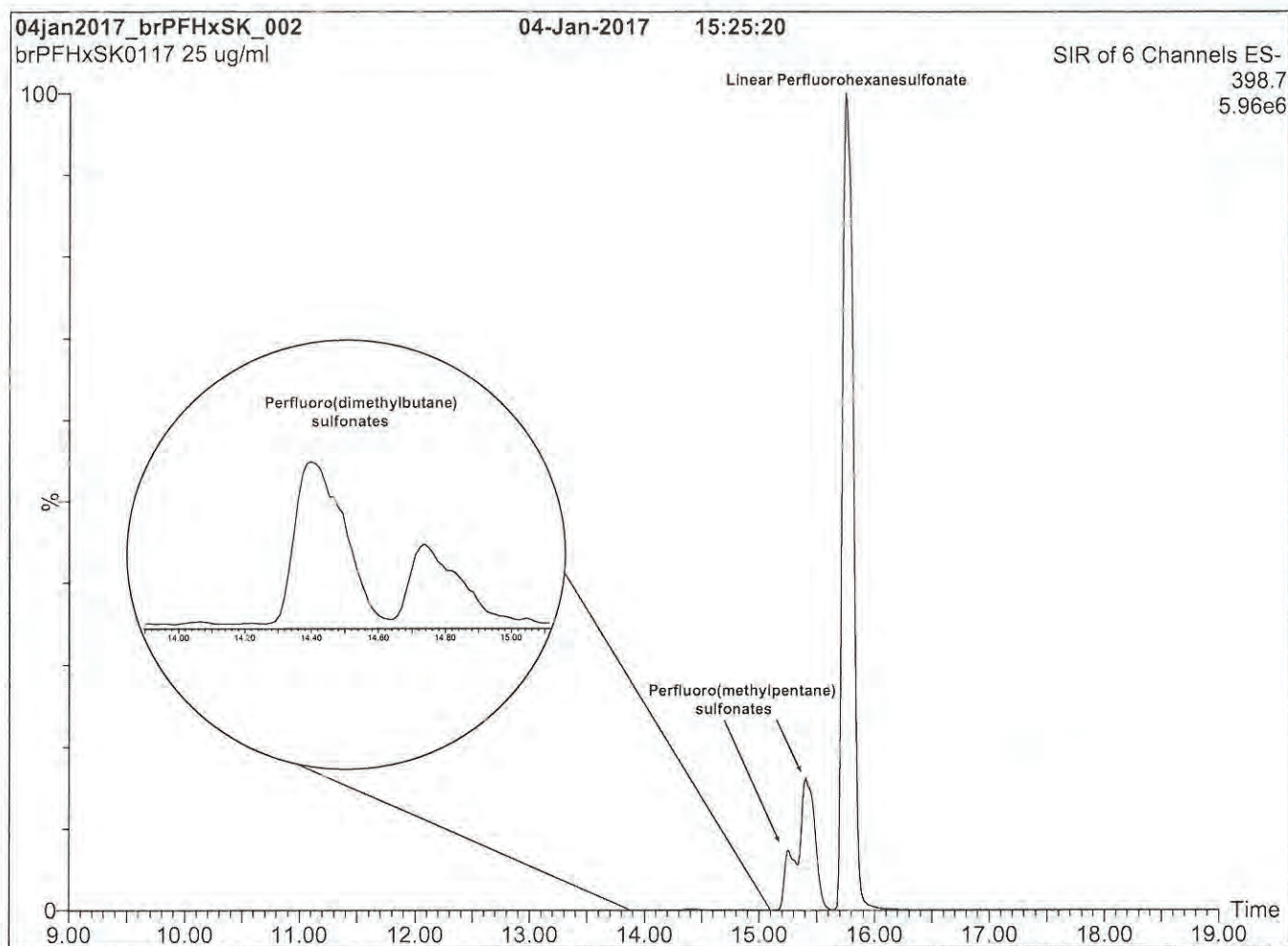
MS Parameters

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

18B1553

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc 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 μ l/min

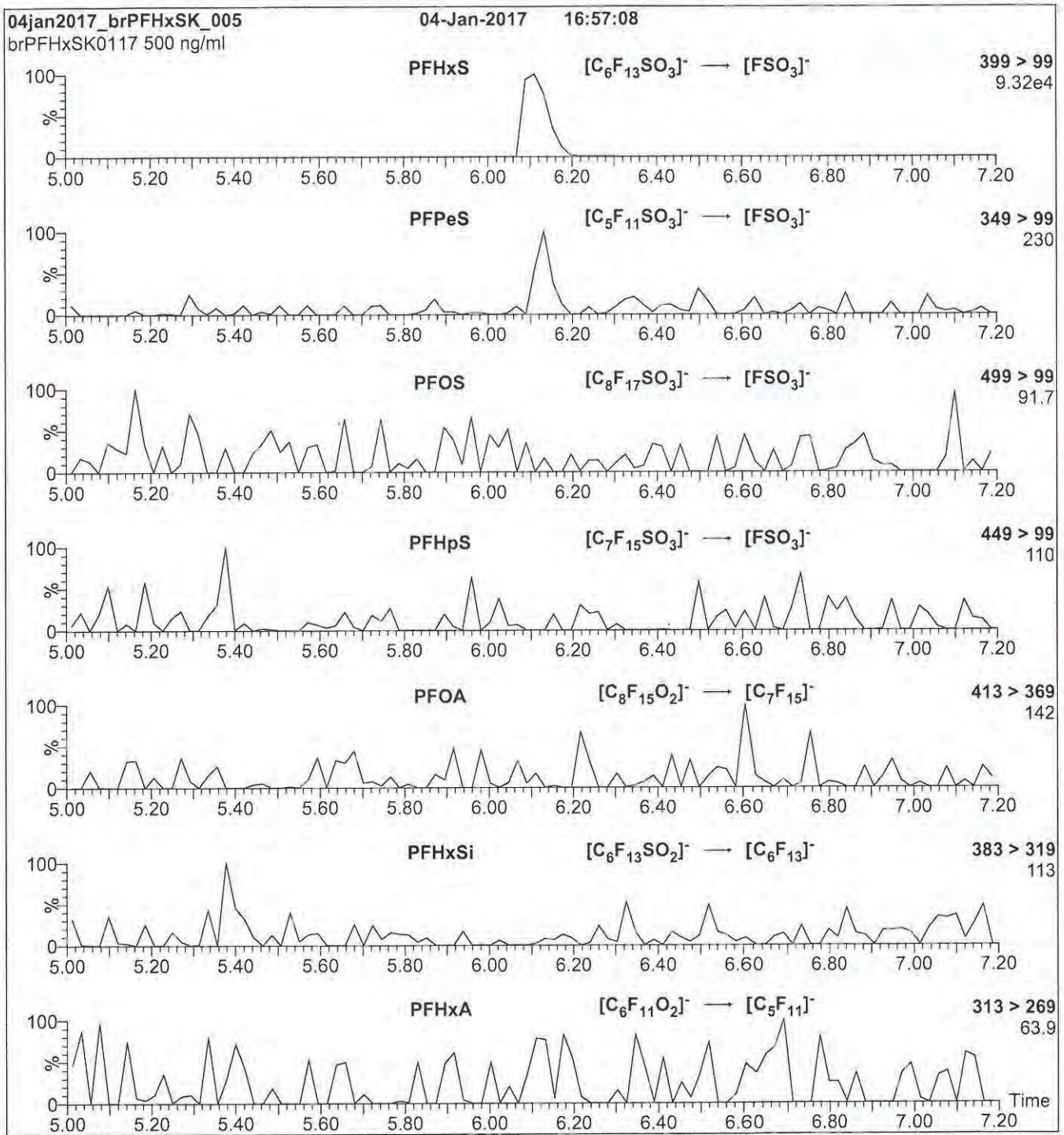
MS Parameters

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

18B1553

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

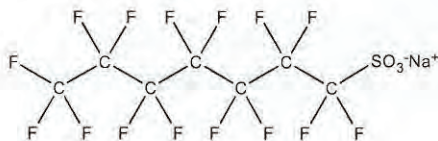
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

18B1554


WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: L-PFHpS **LOT NUMBER:** LPFHpS0817
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) **SOLVENT(S):** Methanol
 47.6 ± 2.4 µg/ml (PFHhS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/01/2017
EXPIRY DATE: (mm/dd/yyyy) 09/01/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/07/2017
 B.G. Chittim, General Manager (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

18B1554

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

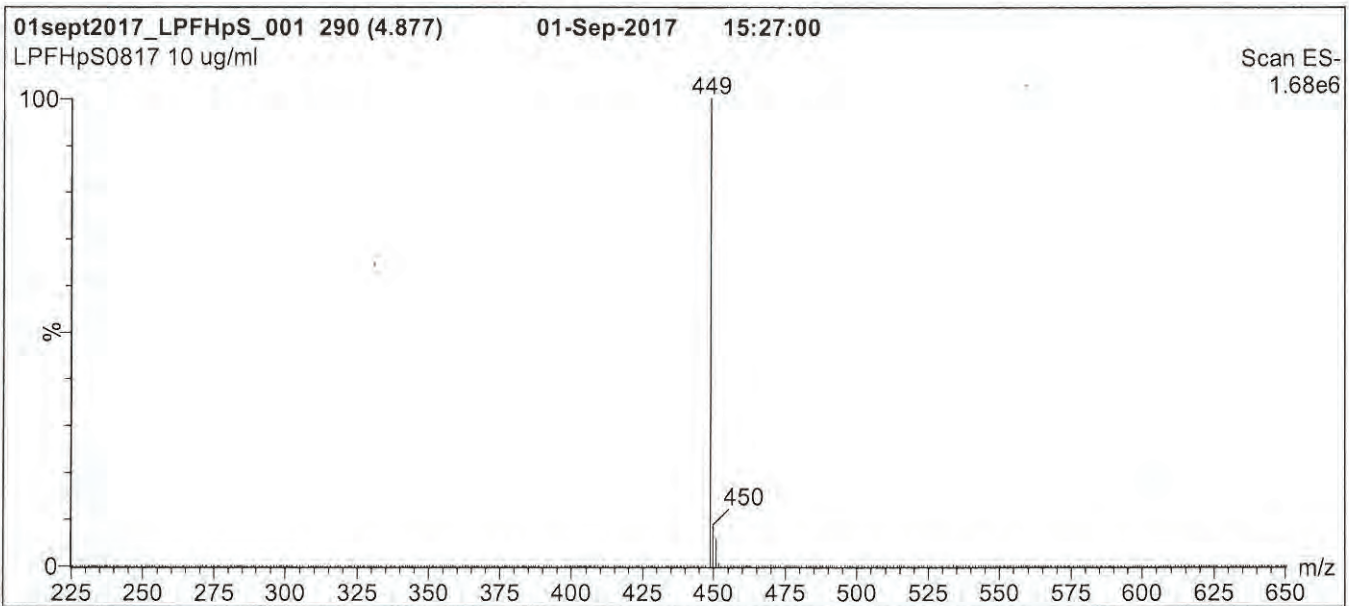
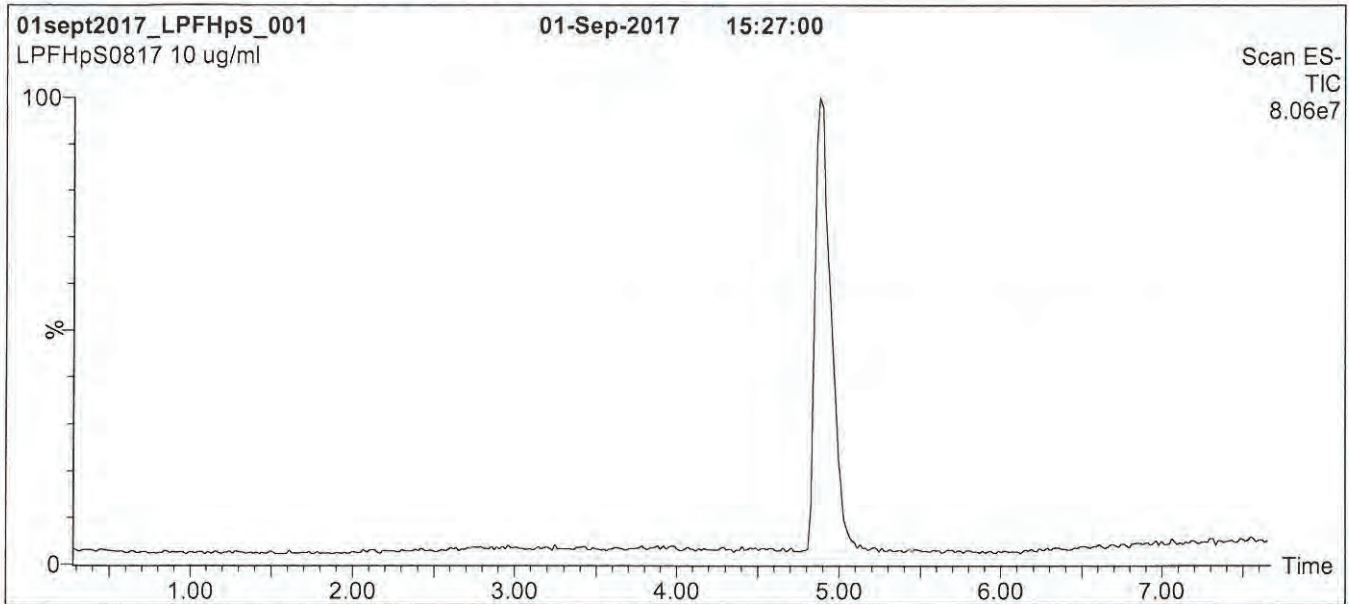
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1554

Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

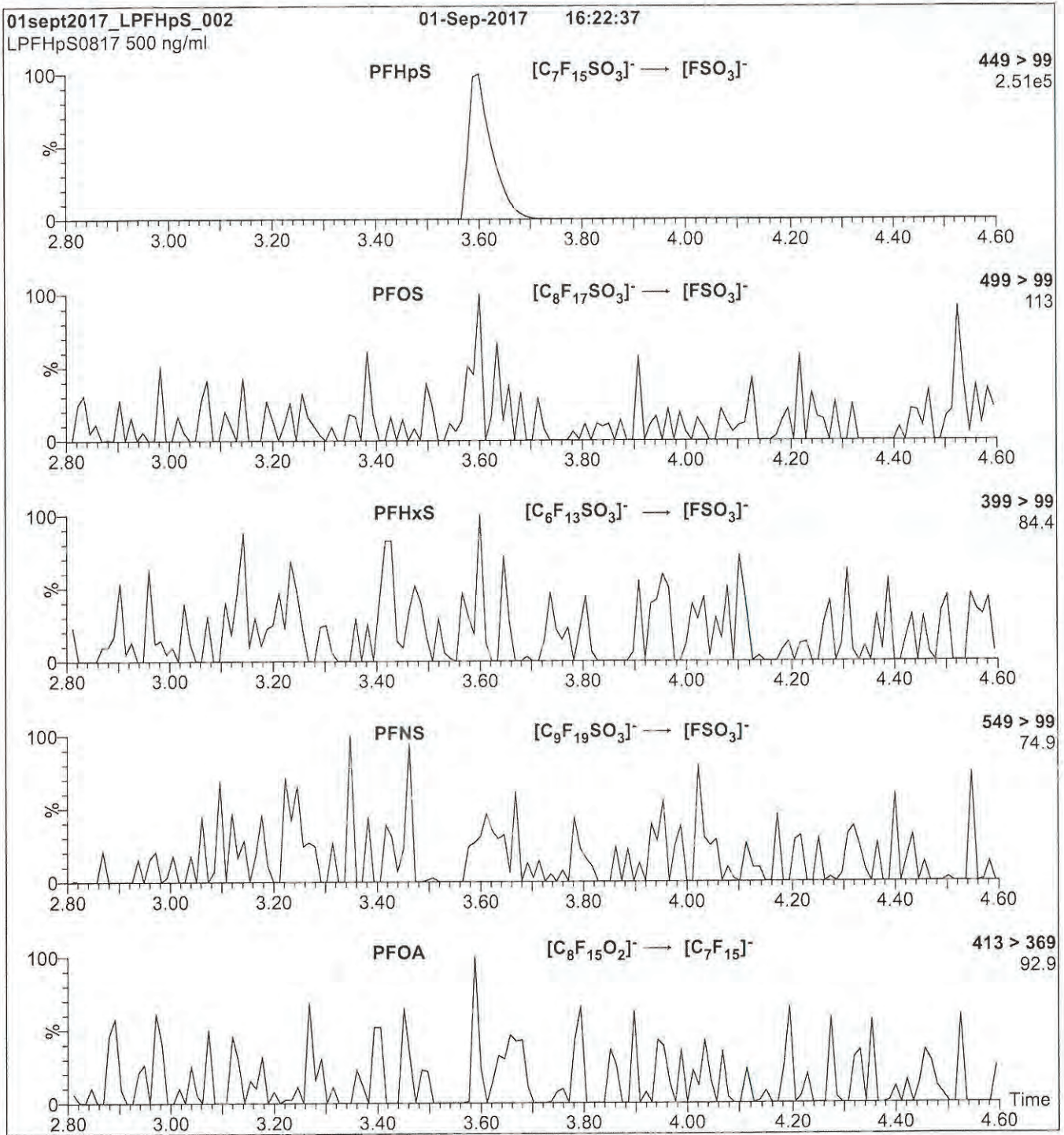
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1554

Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFHpS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
 Collision Energy (eV) = 35

18B1555



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

**Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK0117
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 01/09/2017
LAST TESTED: (mm/dd/yyyy) 01/12/2017
EXPIRY DATE: (mm/dd/yyyy) 01/12/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

18B1555

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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



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

18B1555

Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃ SO ₃ ⁻ K ⁺	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃ SO ₃ ⁻ K ⁺	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃ CF ₂ SO ₃ ⁻ K ⁺	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃ CF ₂ SO ₃ ⁻ K ⁺	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₃ CF ₂ SO ₃ ⁻ K ⁺	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By:

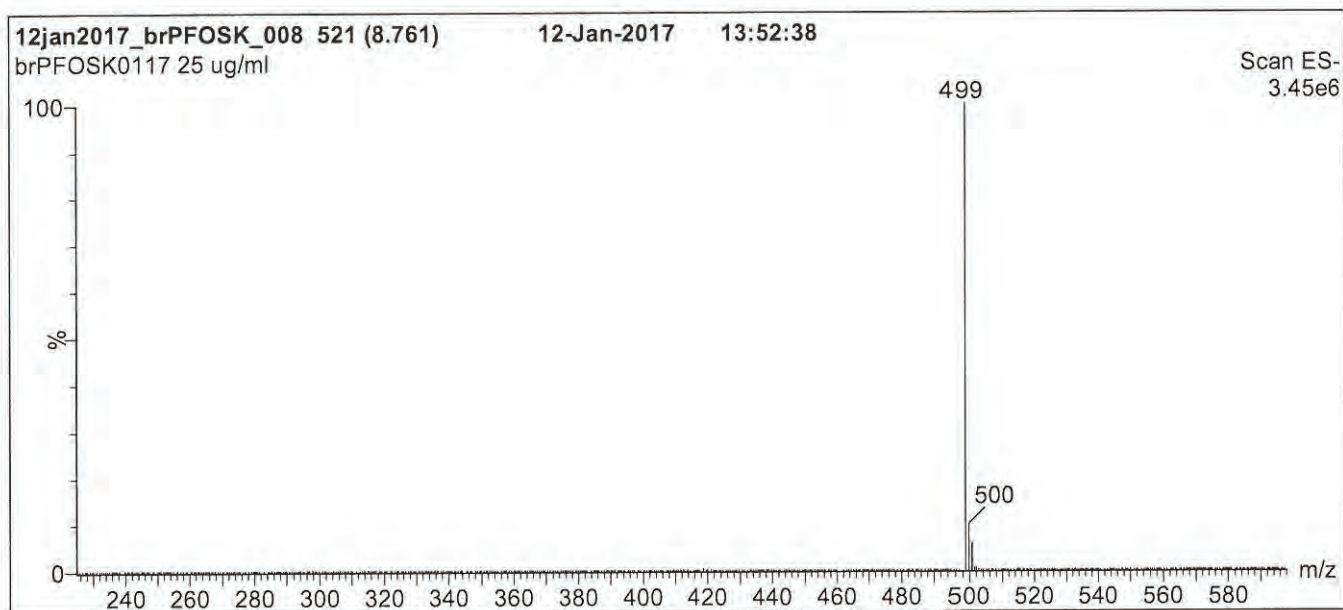
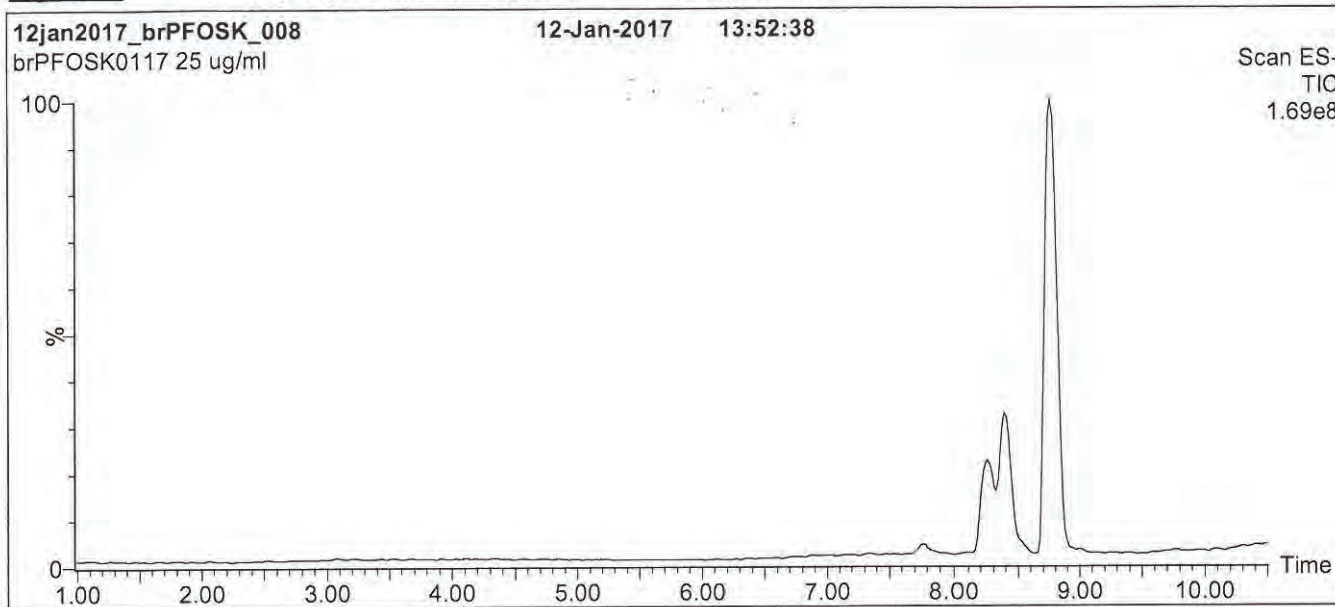

 B.G. Chittim

Date: 01/20/2017

(mm/dd/yyyy)

18B(555)

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

Flow: 300 μ l/min

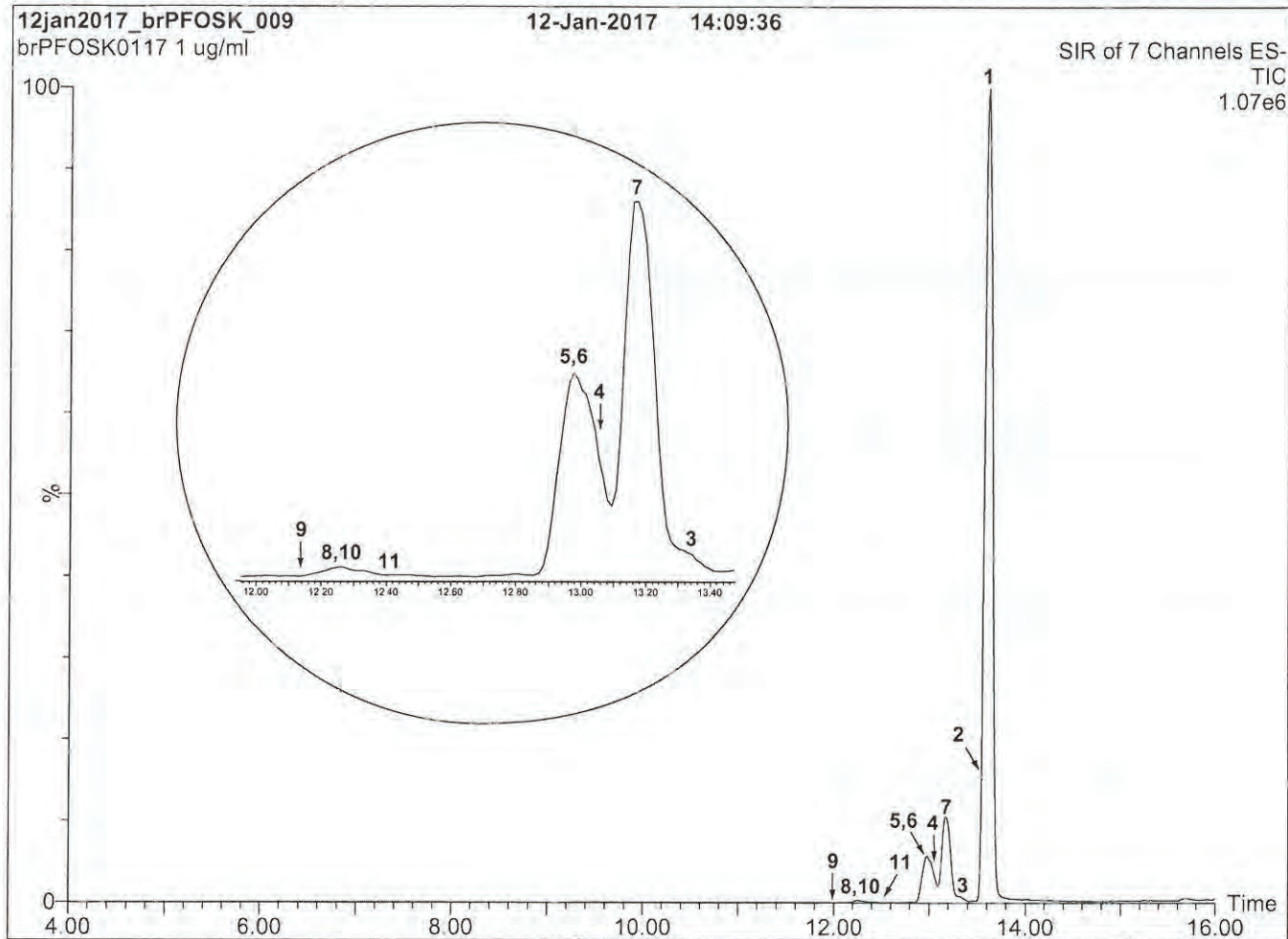
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1555

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:

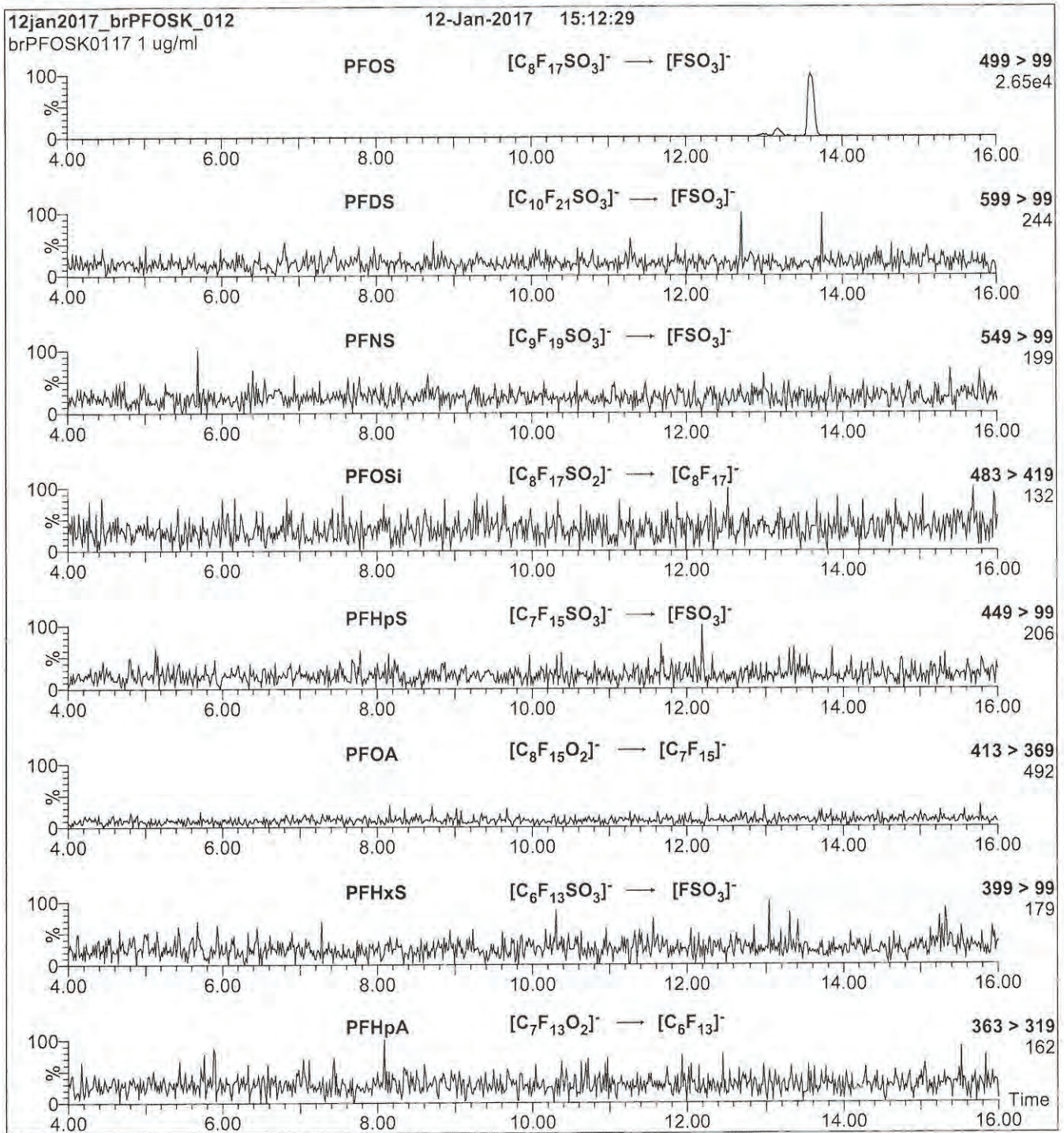
Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

18B1555

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 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3

Collision Energy (eV) = 11-50 (variable)

18B1556

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

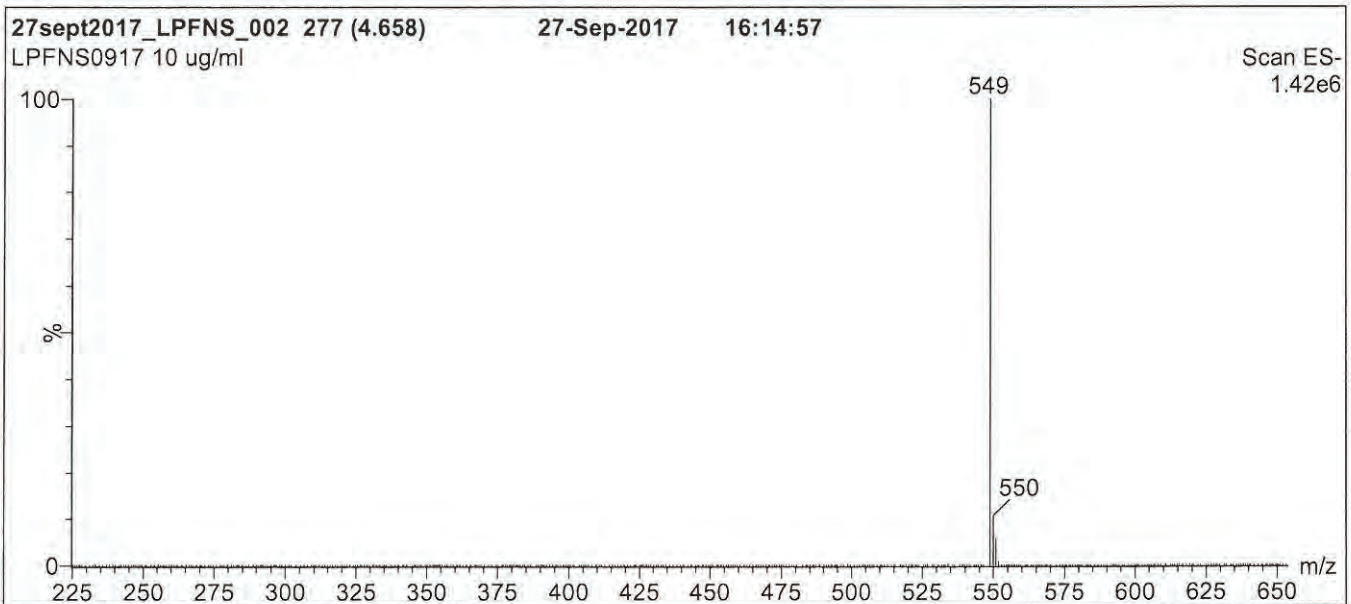
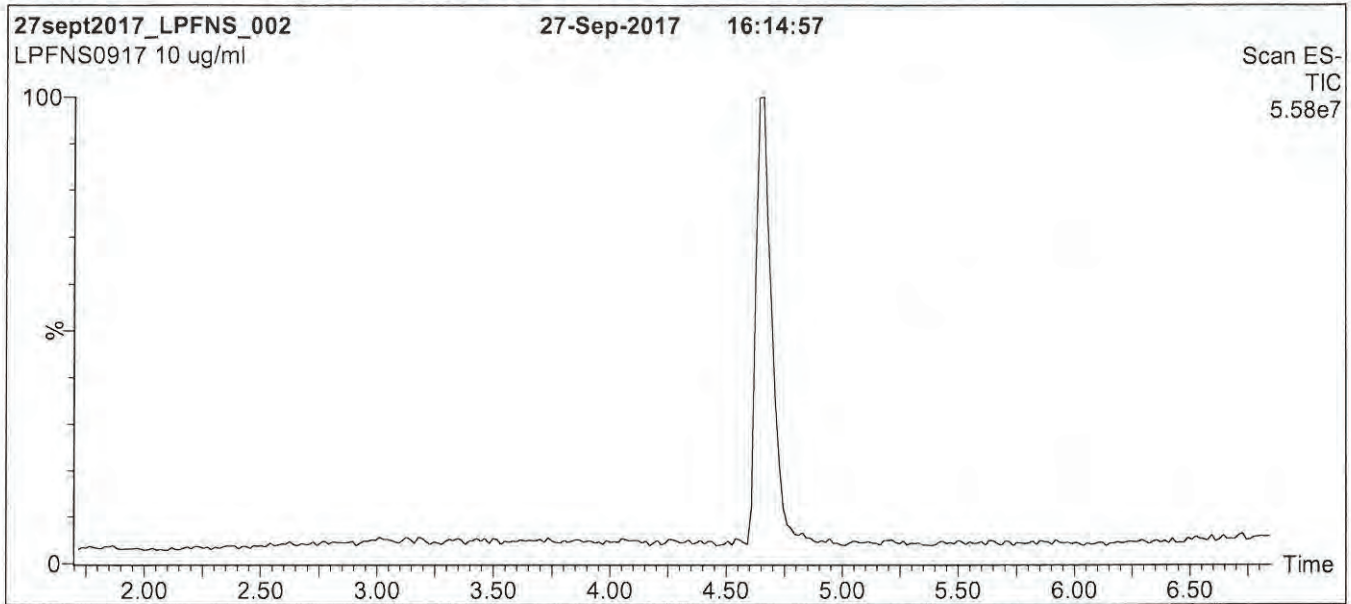
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1556

Figure 1: L-PFNS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

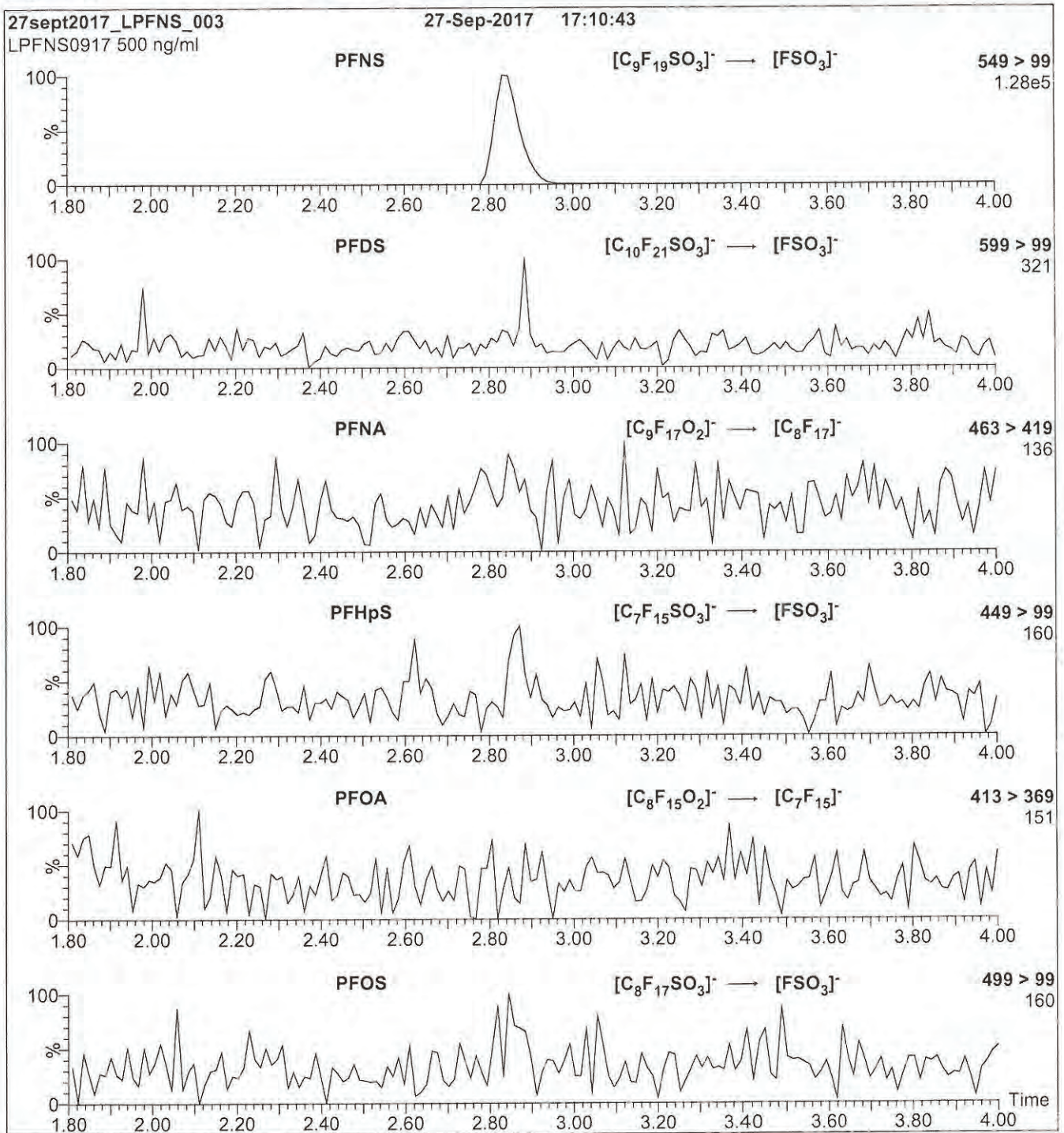
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1556

Figure 2: L-PFNS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFNS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
 Collision Energy (eV) = 45

18B1557

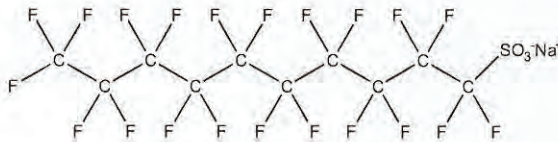


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFDS **LOT NUMBER:** LPFDS1117
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE: **CAS #:** 2806-15-7



MOLECULAR FORMULA: $C_{10}F_{21}SO_3Na$ **MOLECULAR WEIGHT:** 622.13
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $48.2 \pm 2.4 \mu\text{g/ml}$ (PFDS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/16/2017
(mm/dd/yyyy)

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

18B1557

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

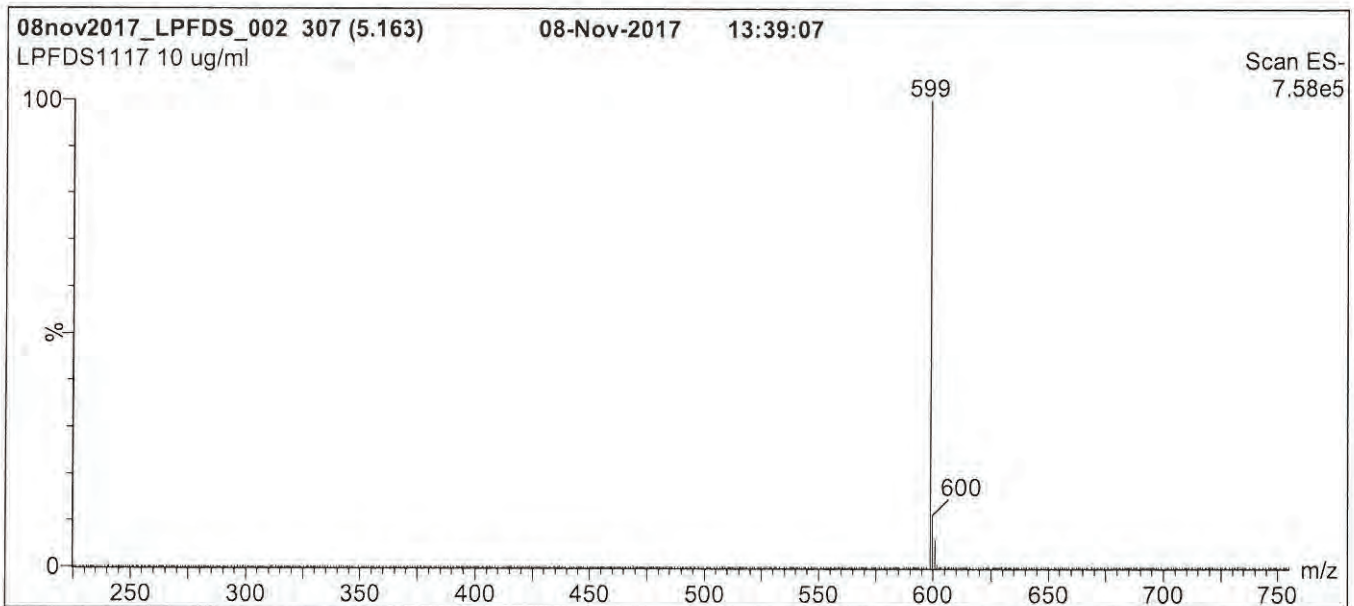
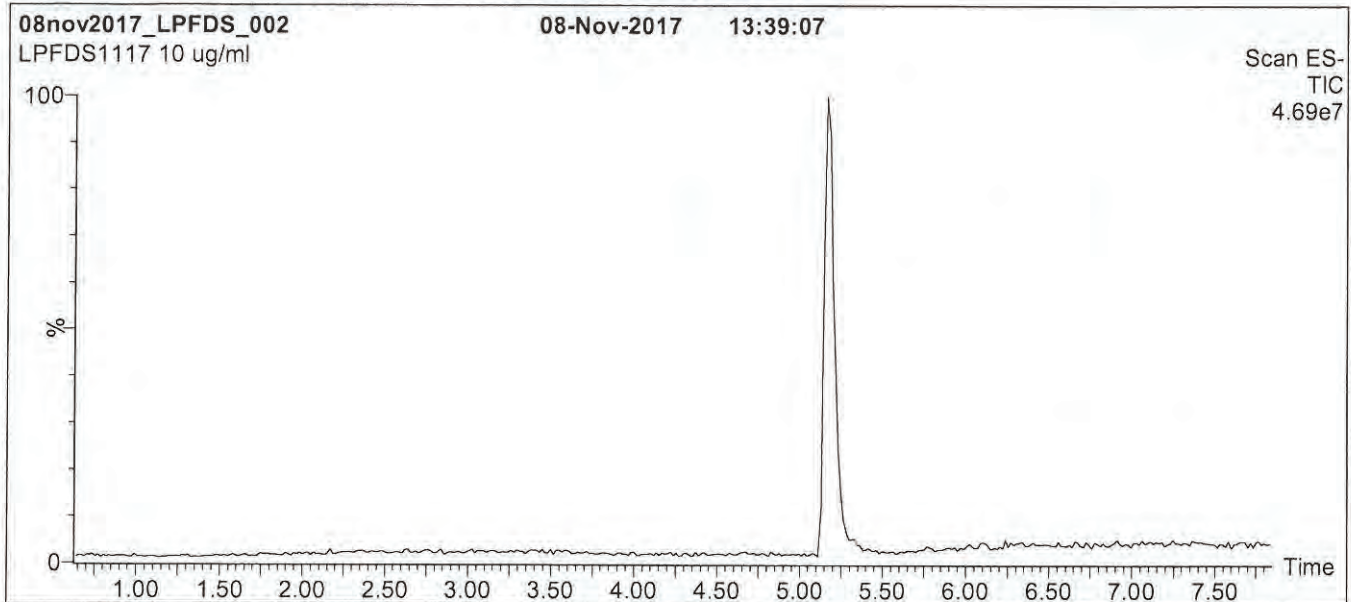
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1557

Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

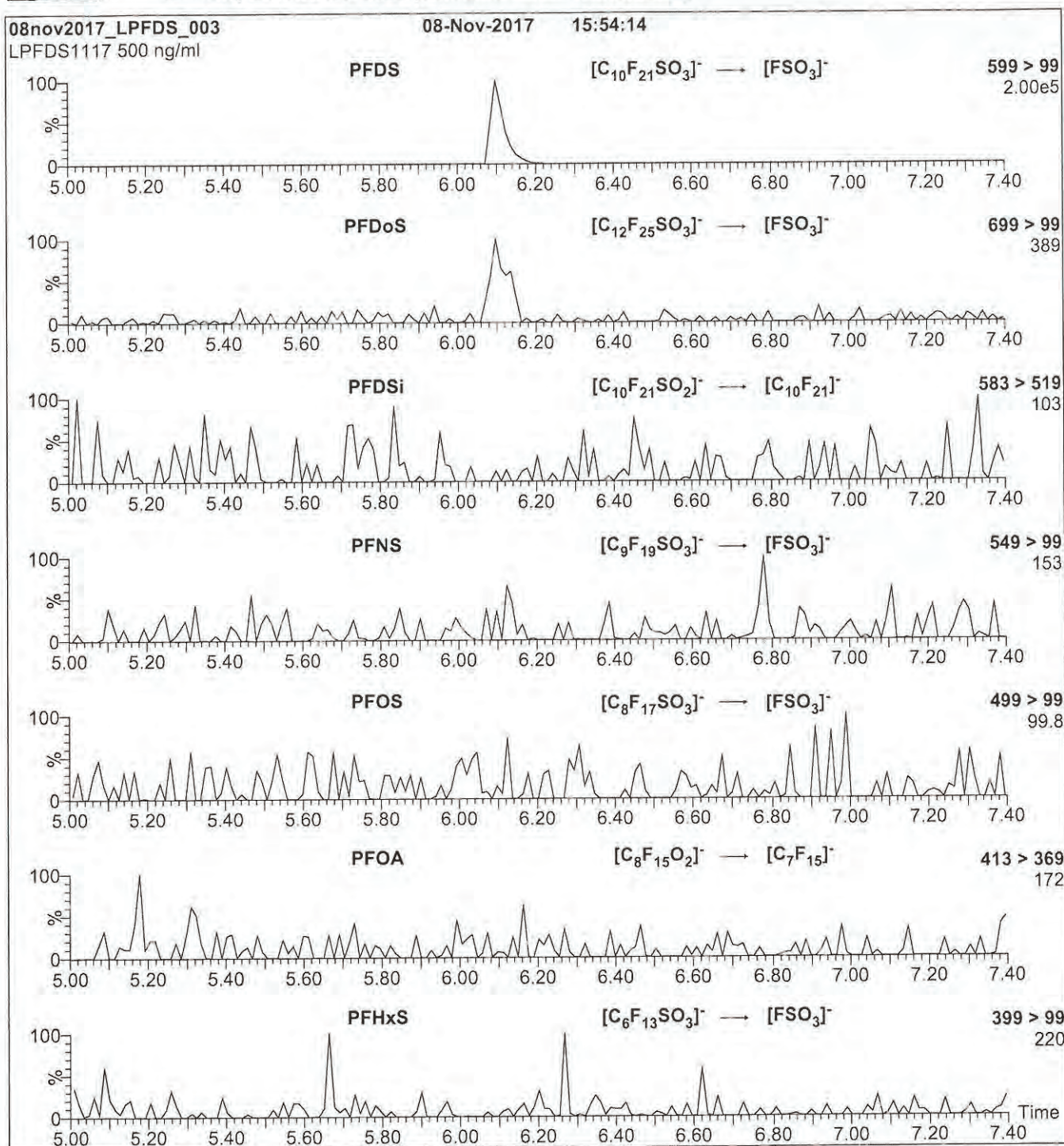
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1557

Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFDS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 50

18B1558

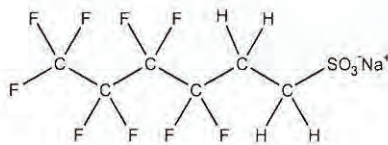


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS1216
COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₆H₄F₉SO₃Na **MOLECULAR WEIGHT:** 350.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
46.7 ± 2.3 µg/ml (4:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/12/2016
EXPIRY DATE: (mm/dd/yyyy) 12/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

• See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 12/21/2016
(mm/dd/yyyy)

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

18B1558

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

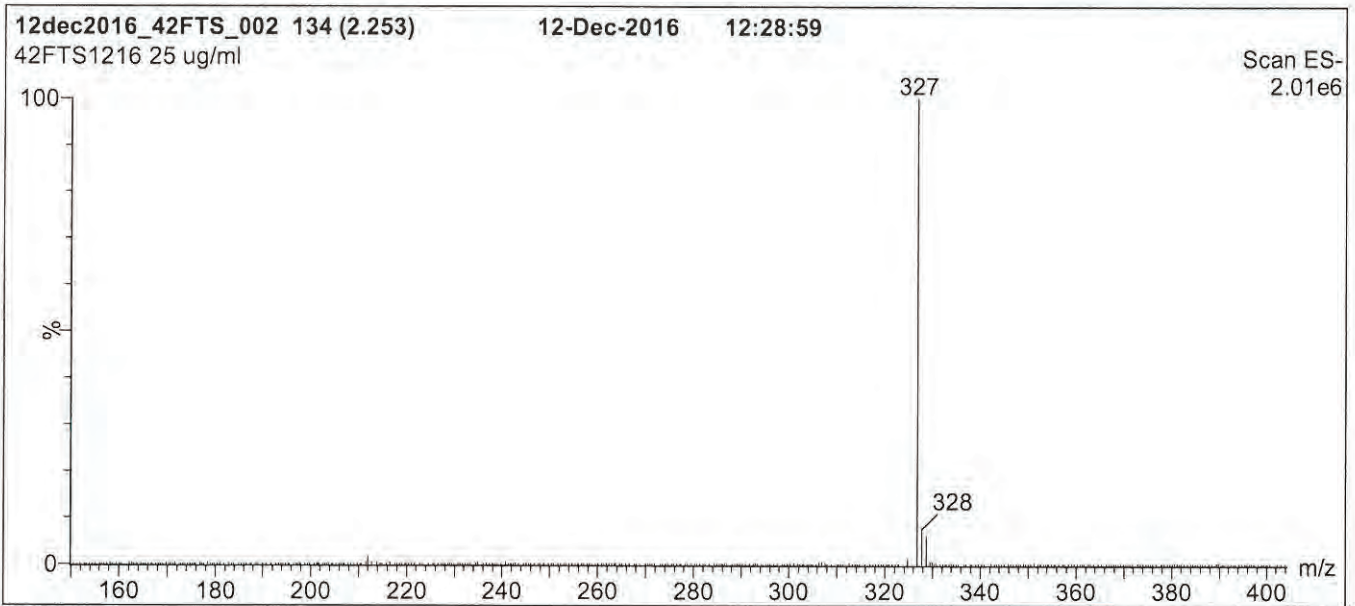
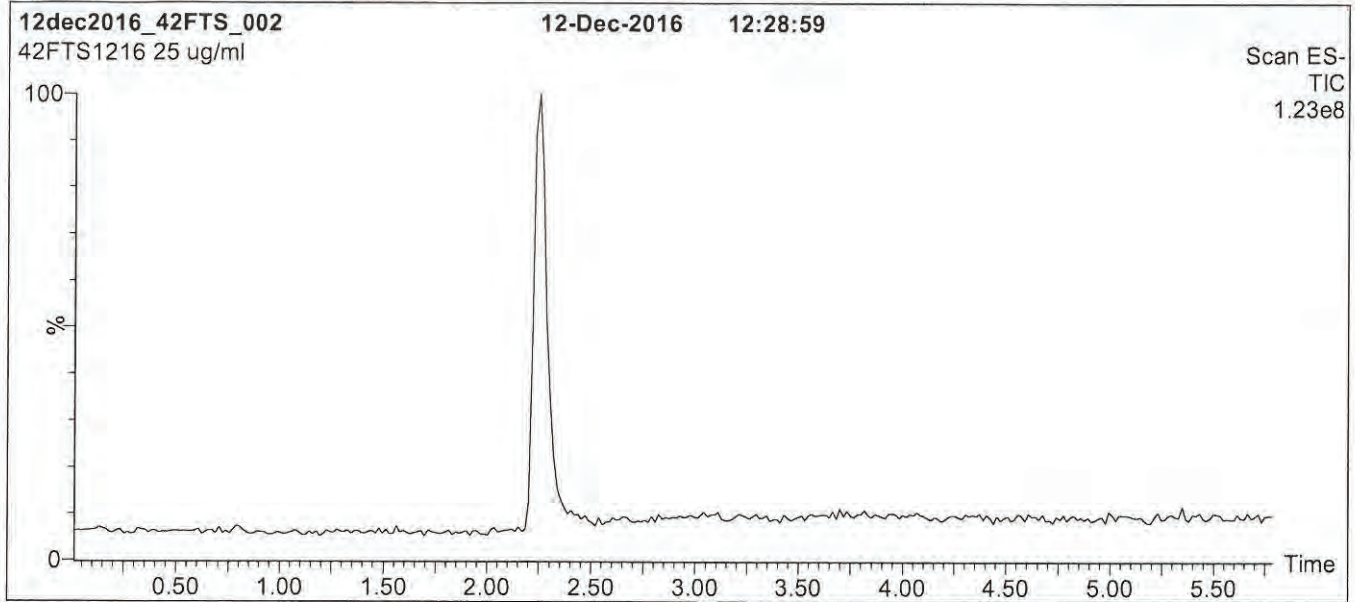
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1558

Figure 1: 4:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

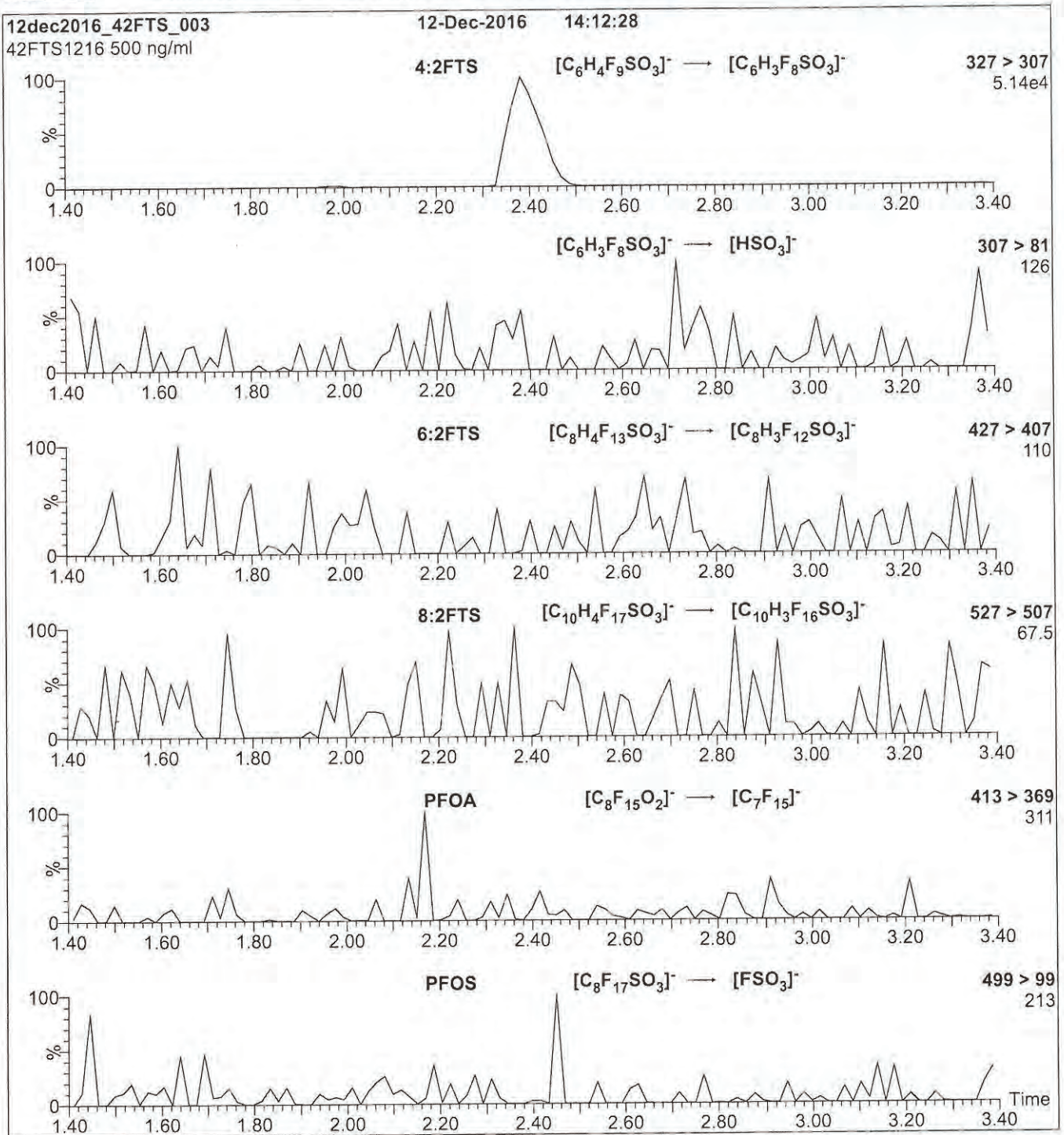
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1558

Figure 2: 4:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

18B1559



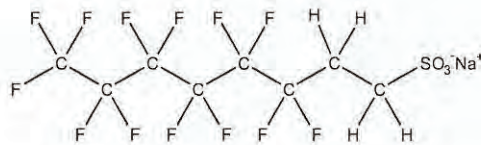
WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0417

COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 450.15

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.4 ± 2.4 µg/ml (6:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 04/20/2017

EXPIRY DATE: (mm/dd/yyyy) 04/20/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 04/24/2017
B.G. Chittim, General Manager (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

18B1559

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

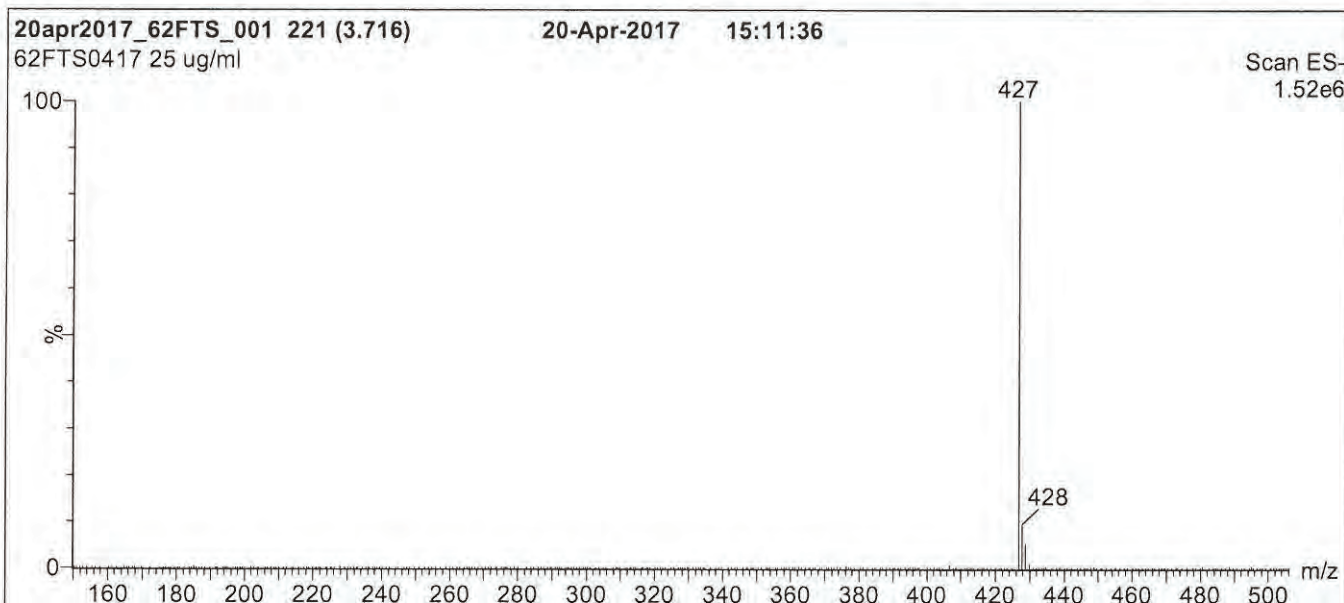
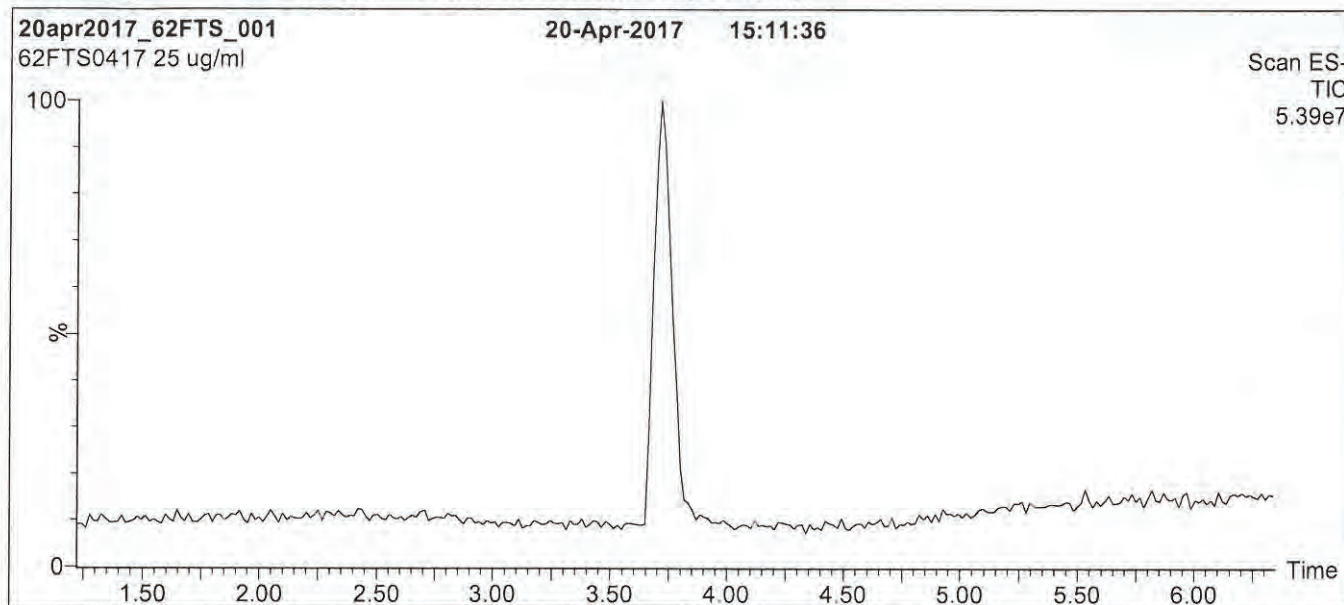
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

1881559

Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 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 μ l/min

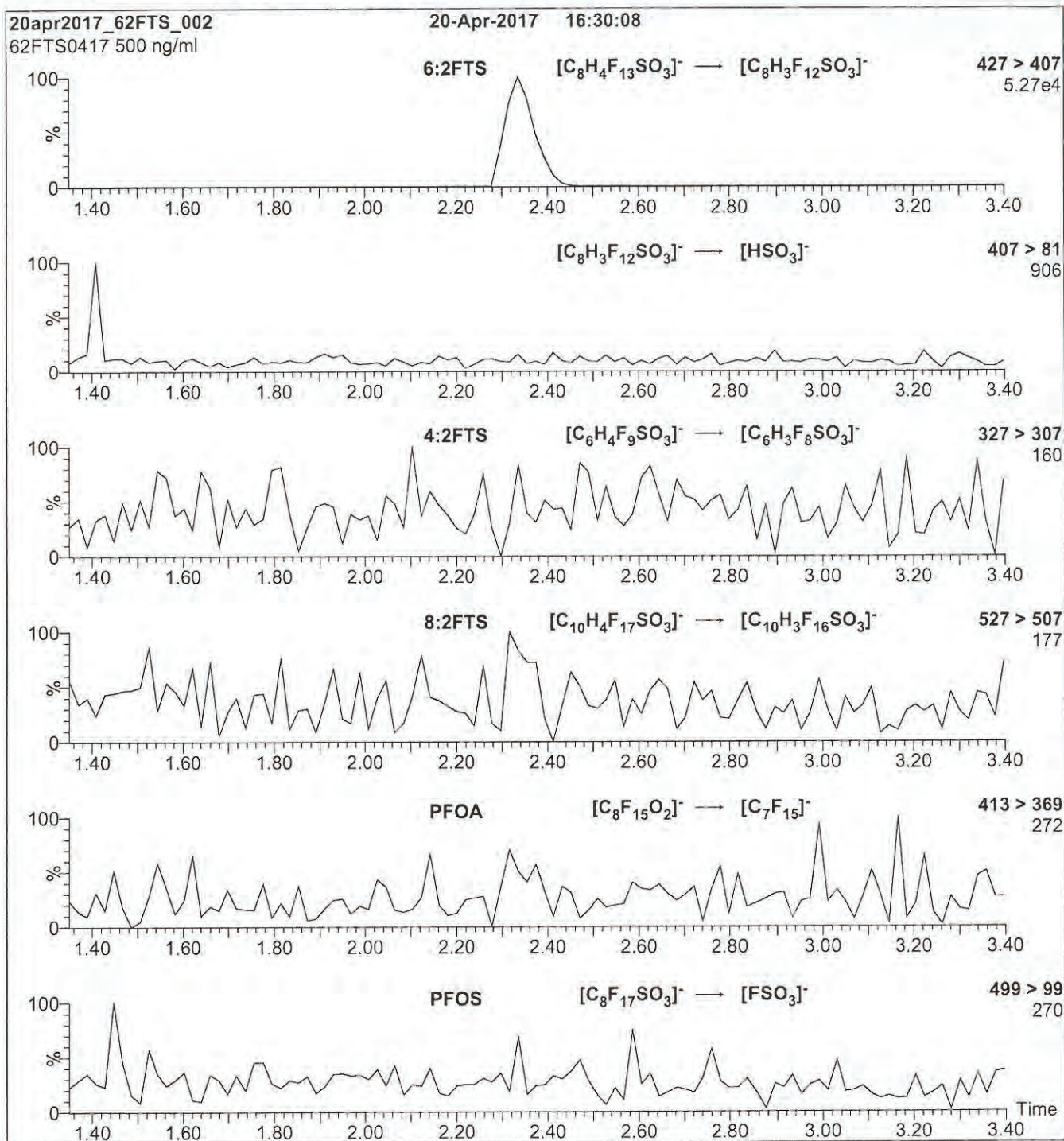
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1559

Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 25

18B1560

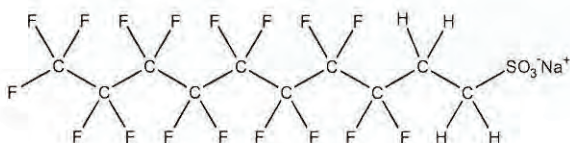


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1216
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₀H₄F₁₇SO₃Na **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) 12/12/2016
EXPIRY DATE: (mm/dd/yyyy) 12/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim **Date:** 12/21/2016
(mm/dd/yyyy)

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

18B1560

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

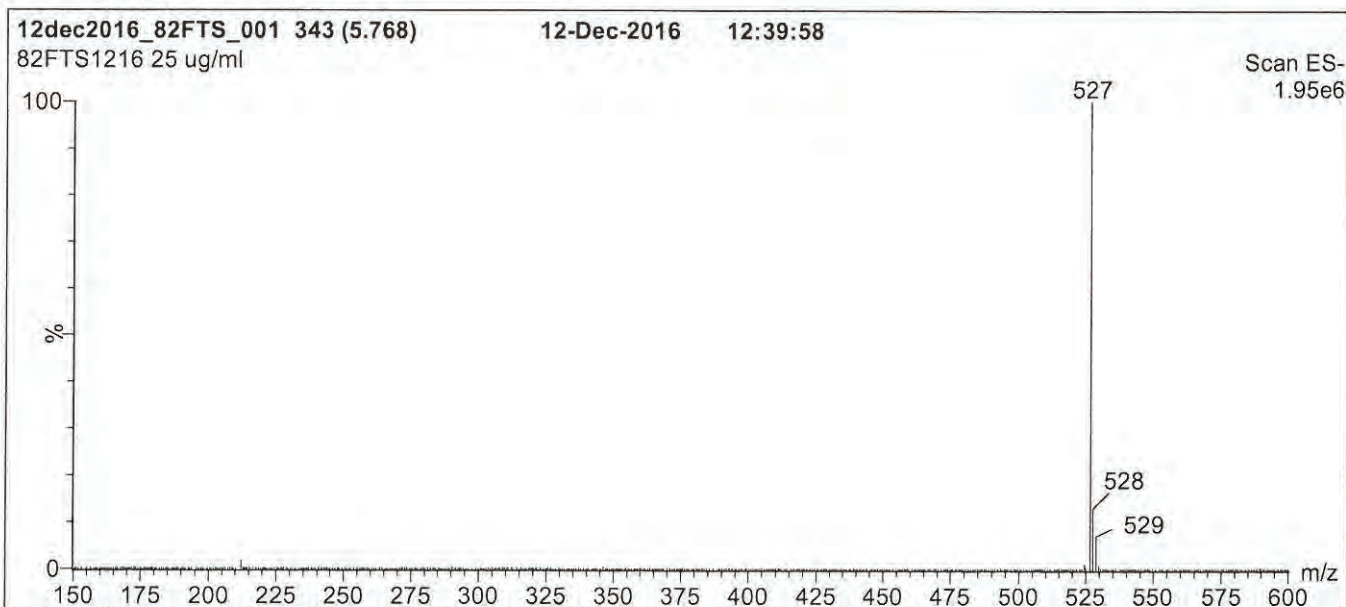
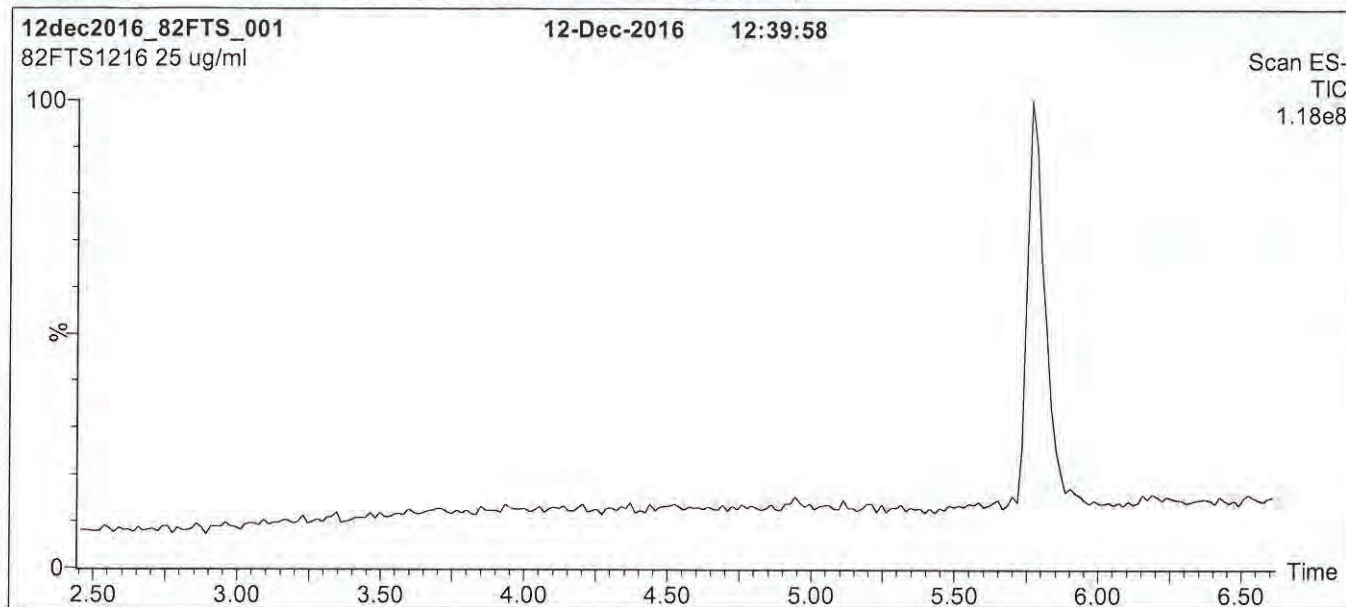
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1560

Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

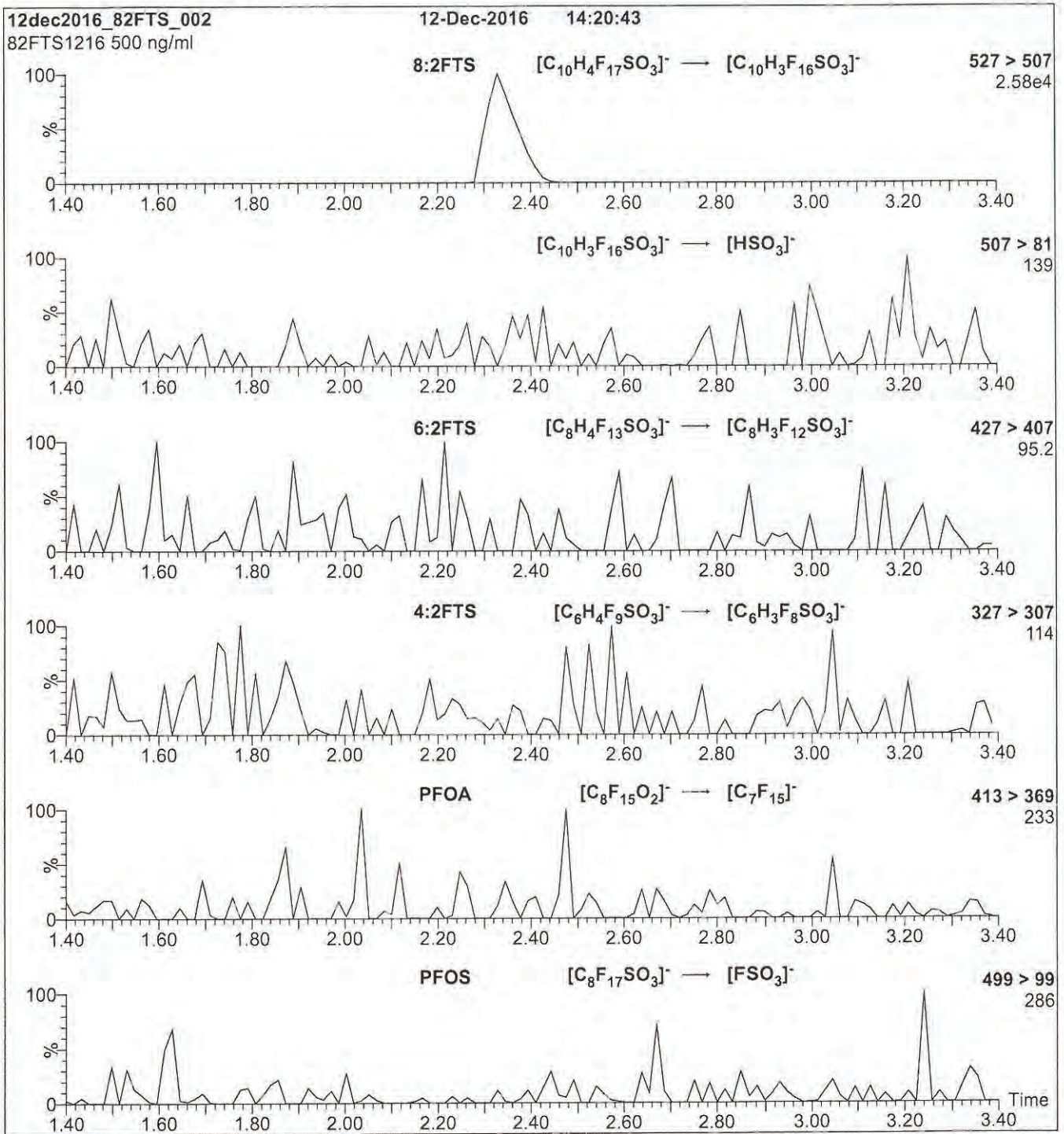
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1560

Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 30

18B1561

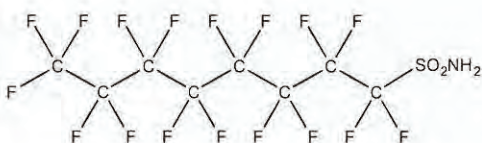


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FOSA-I **LOT NUMBER:** FOSA08171
COMPOUND: Perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 754-91-6



MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$ **MOLECULAR WEIGHT:** 499.14
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Isopropanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/01/2017
EXPIRY DATE: (mm/dd/yyyy) 09/01/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 09/14/2017
(mm/dd/yyyy)

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

18B15761

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

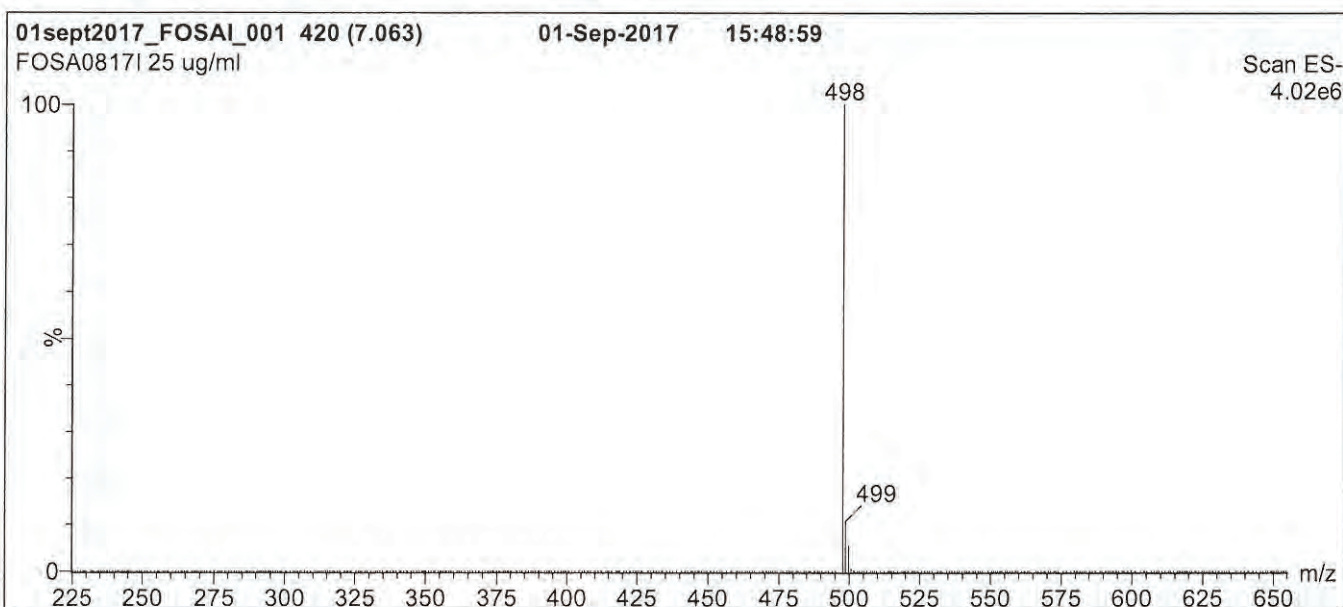
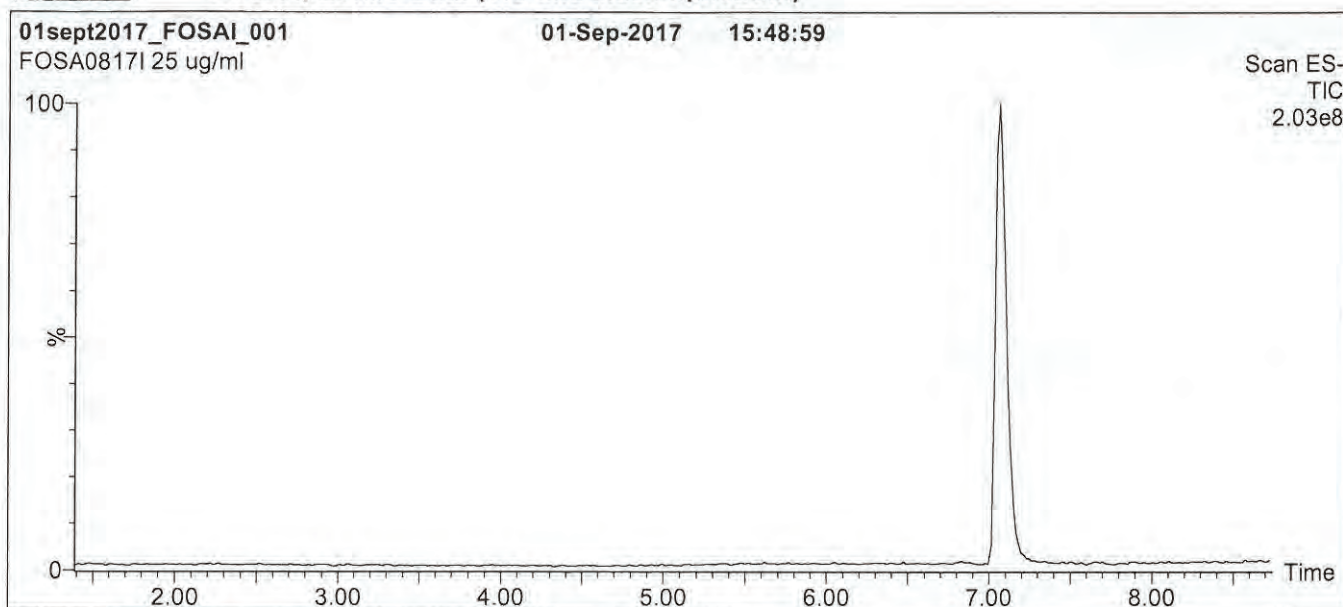
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1561

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

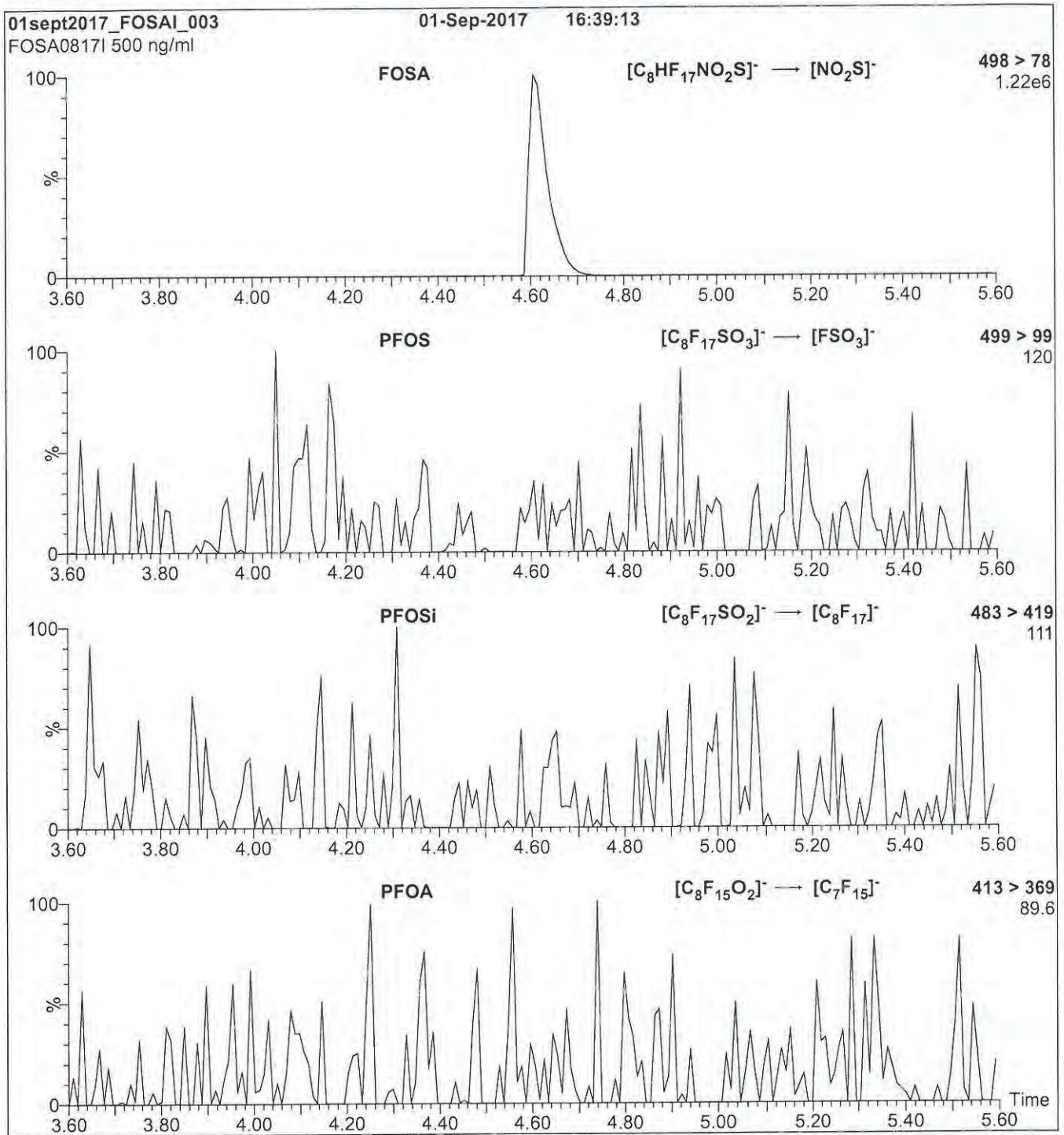
MS Parameters

Experiment: Full Scan (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

18B1561

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

18B1562

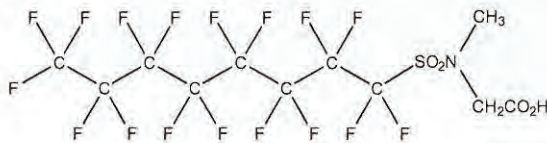


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0117
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: C₁₁H₆F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 571.21
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 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:** 01/12/2017
(mm/dd/yyyy)

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

18B1562

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

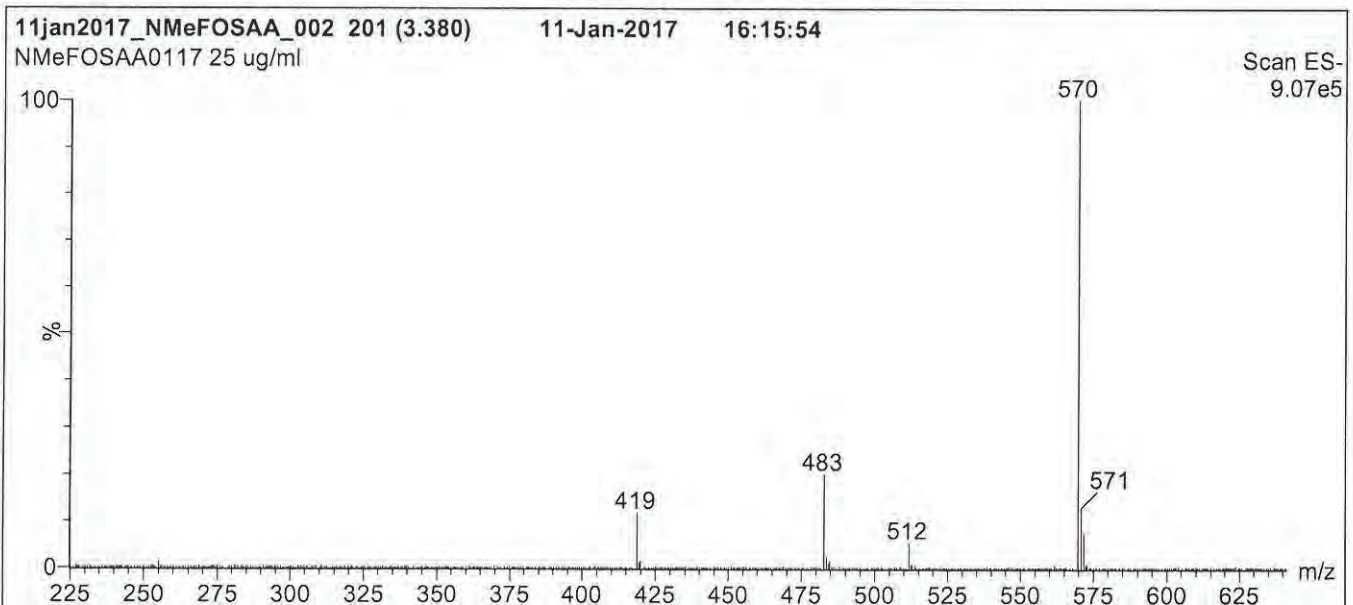
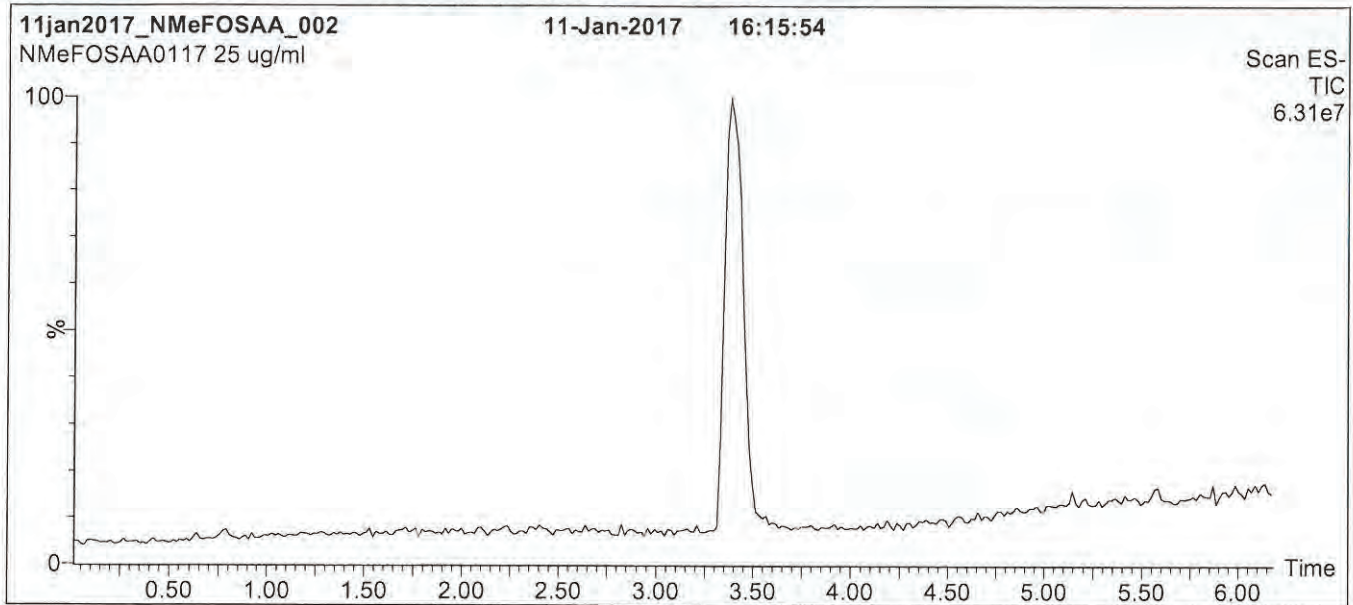
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1562

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

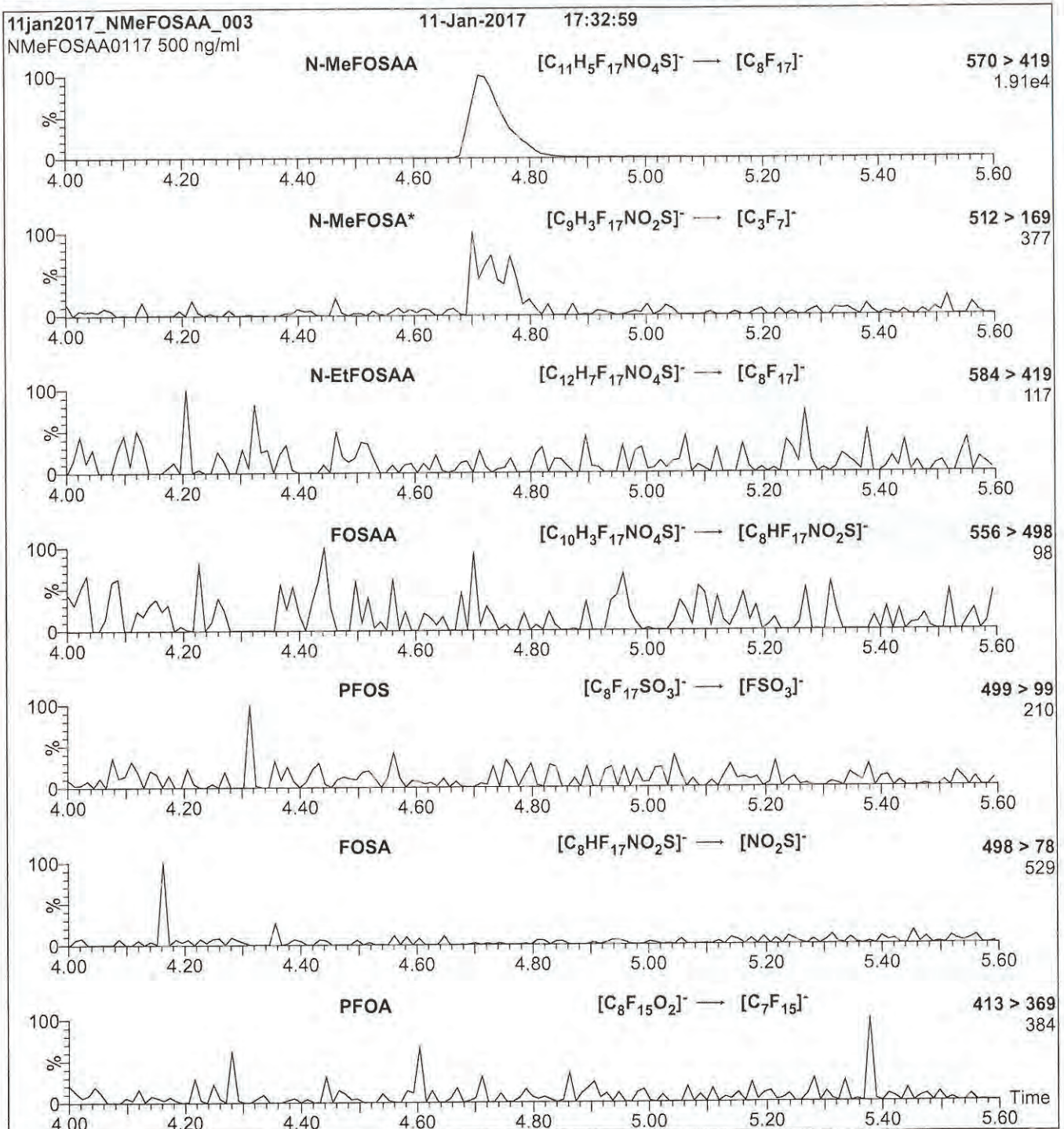
MS Parameters

Experiment: Full Scan (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

18B1562

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 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

18B1563



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0117
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: C₁₂H₆F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 585.23
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 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:** 01/12/2017
 (mm/dd/yyyy)

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

18B1563

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

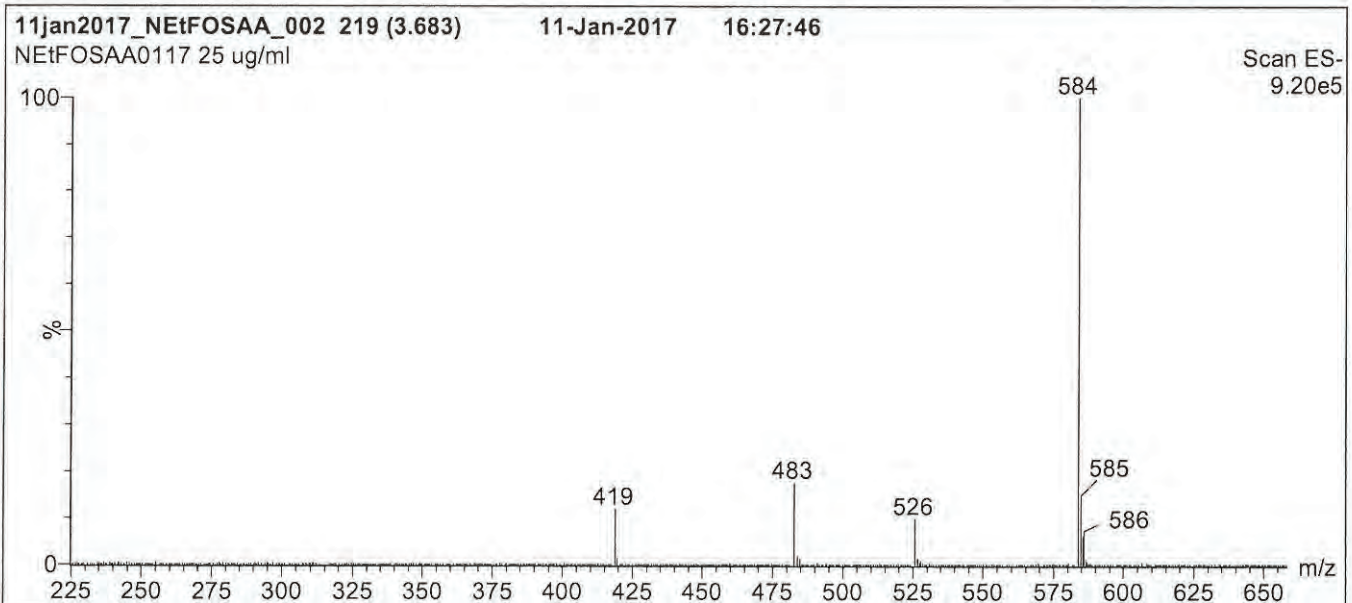
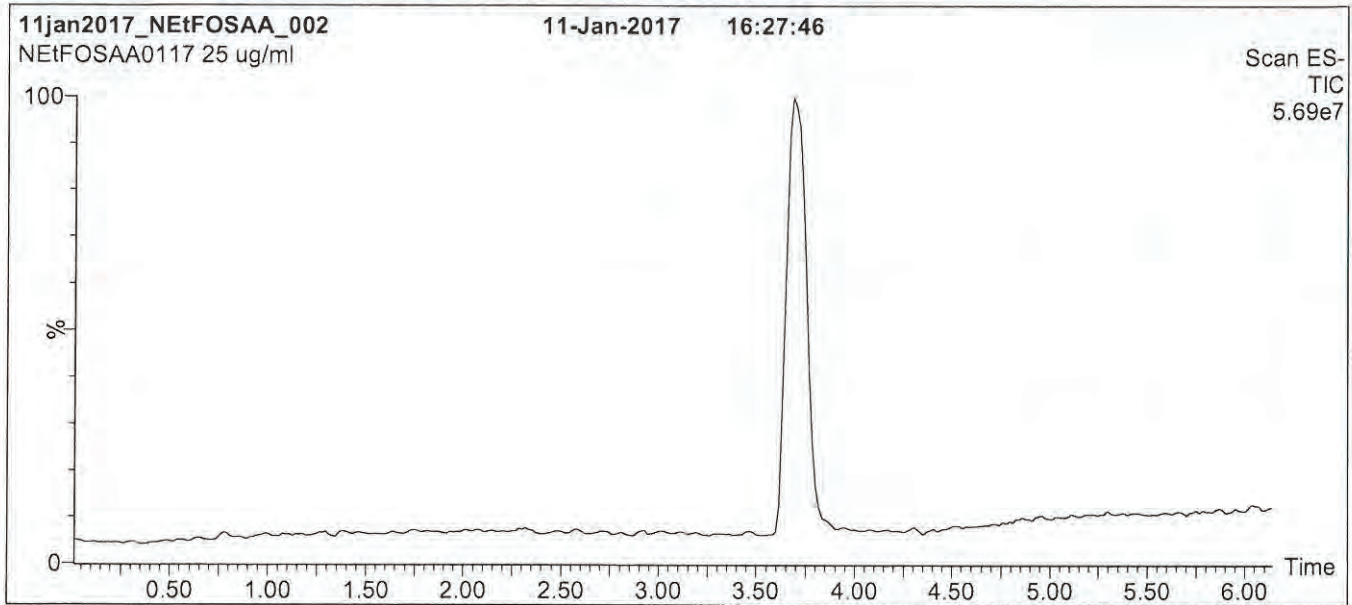
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1563

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 RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

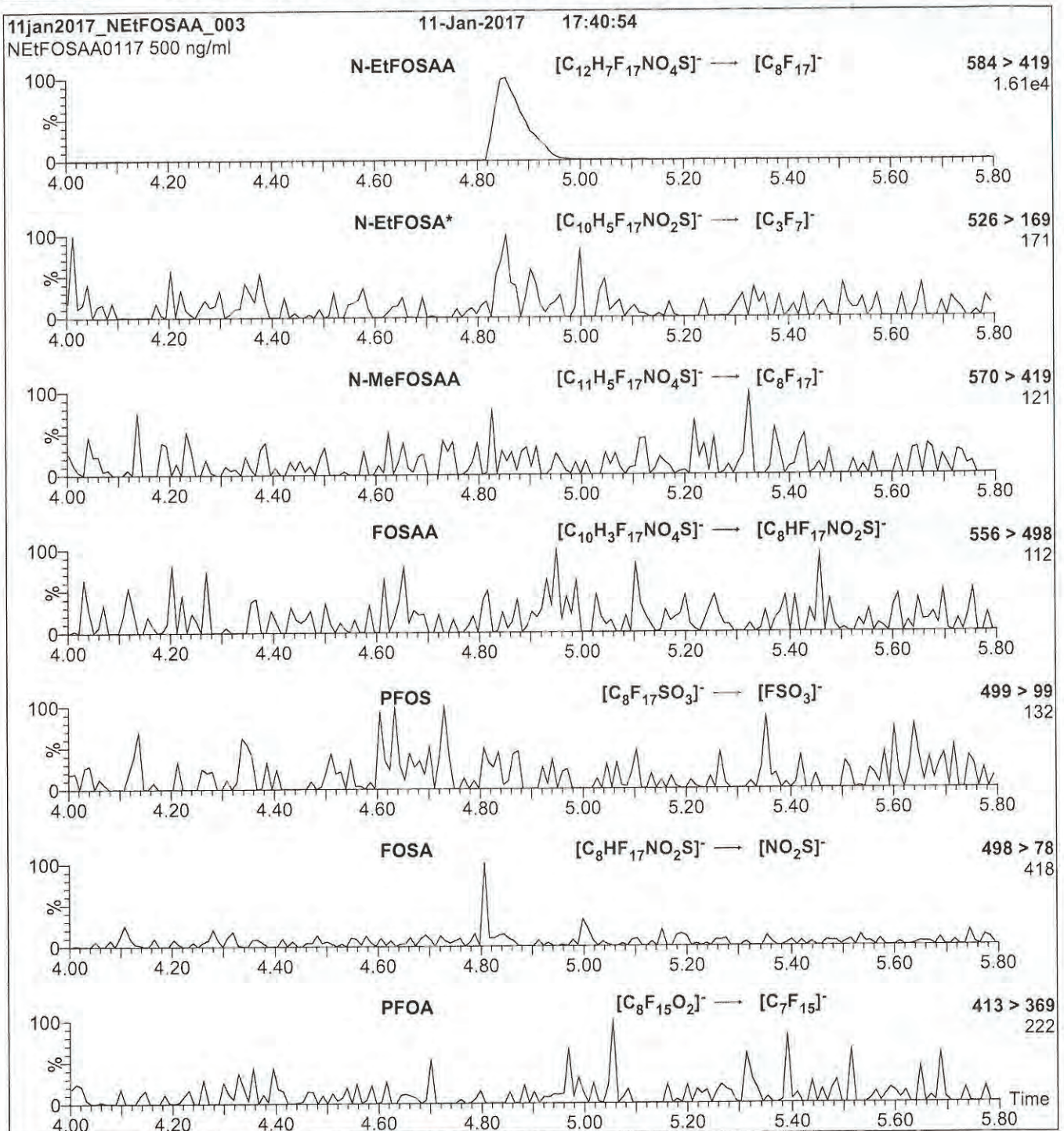
MS Parameters

Experiment: Full Scan (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

18B1563

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 μ l (500 ng/ml N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
 Collision Energy (eV) = 20

18B1564

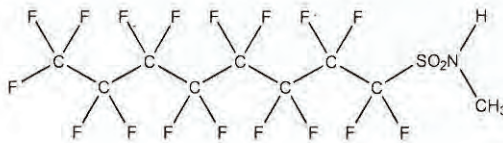


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M **LOT NUMBER:** NMeFOSA0717M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 31506-32-8



MOLECULAR FORMULA: C₉H₄F₁₇NO₂S **MOLECULAR WEIGHT:** 513.17
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/05/2017
EXPIRY DATE: (mm/dd/yyyy) 07/05/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

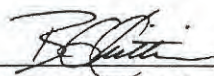
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/10/2017
B.G. Chittim, General Manager (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

18B1564

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

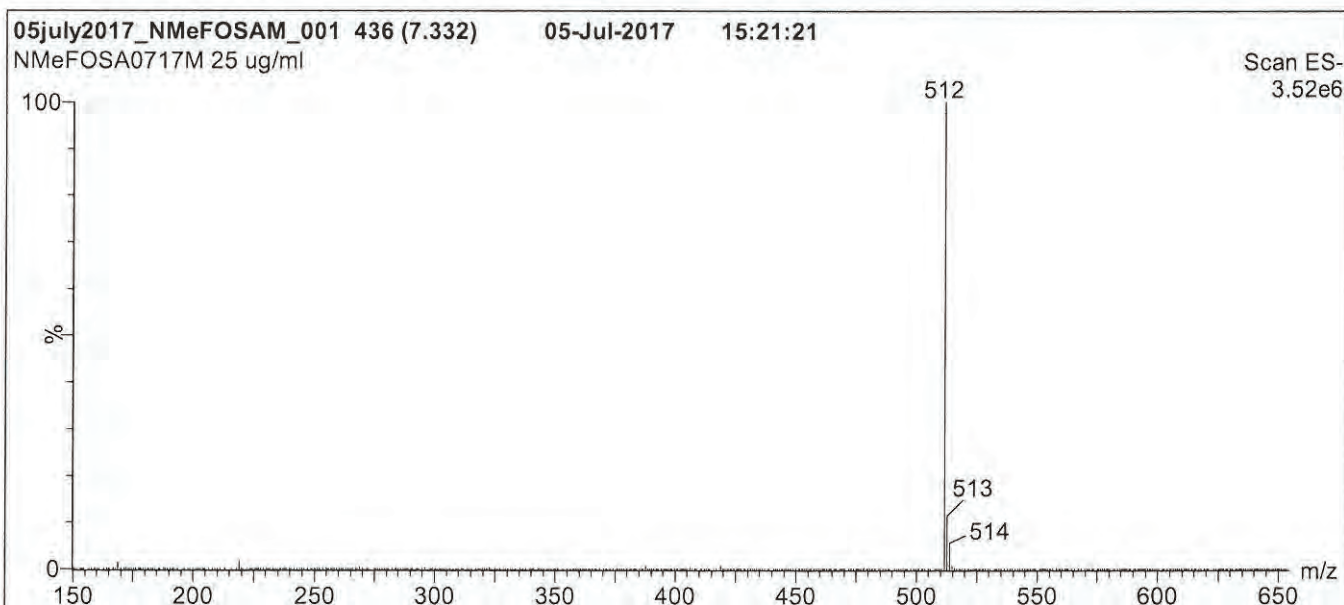
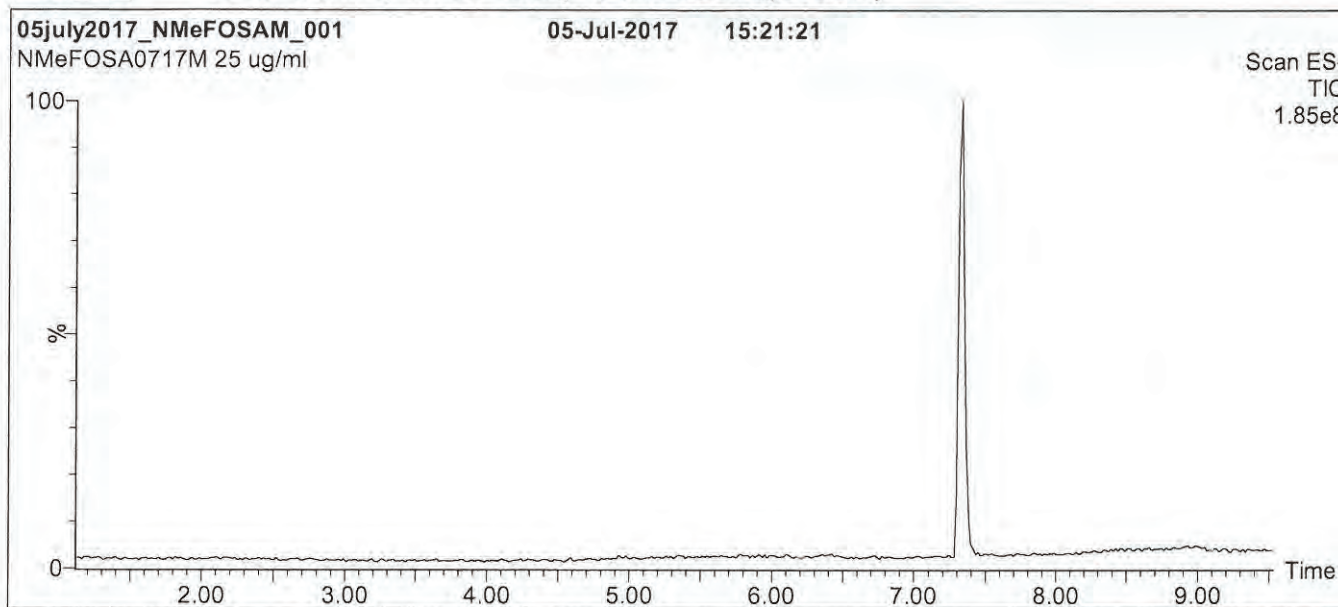
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

1881564

Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

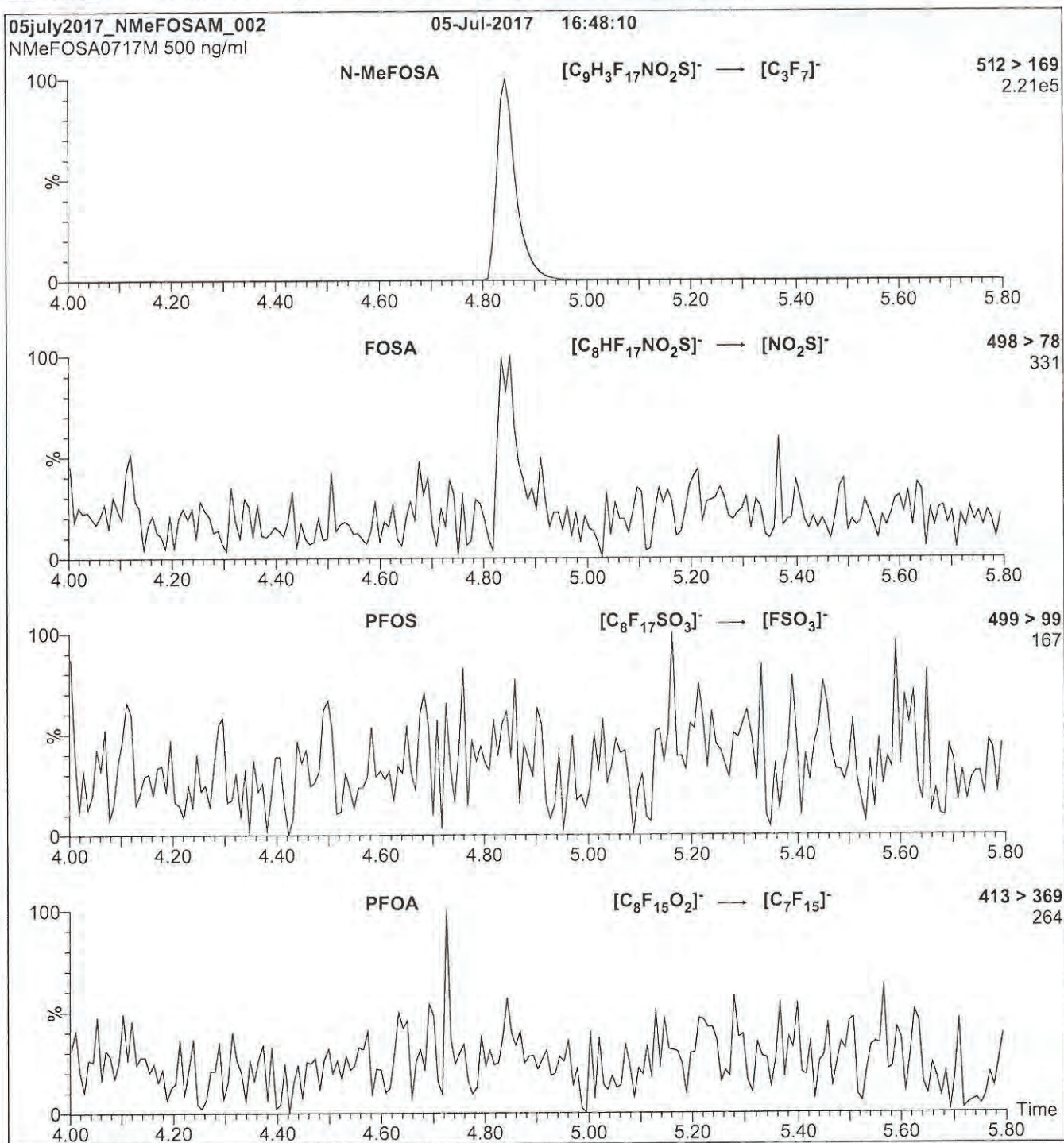
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1564

Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

18B1565

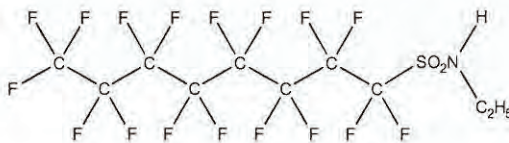


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M **LOT NUMBER:** NEtFOSA0717M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 4151-50-2



MOLECULAR FORMULA: C₁₀H₆F₁₇NO₂S **MOLECULAR WEIGHT:** 527.20
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/05/2017
EXPIRY DATE: (mm/dd/yyyy) 07/05/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/18/2017
B.G. Chittim, General Manager (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

18B1565

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

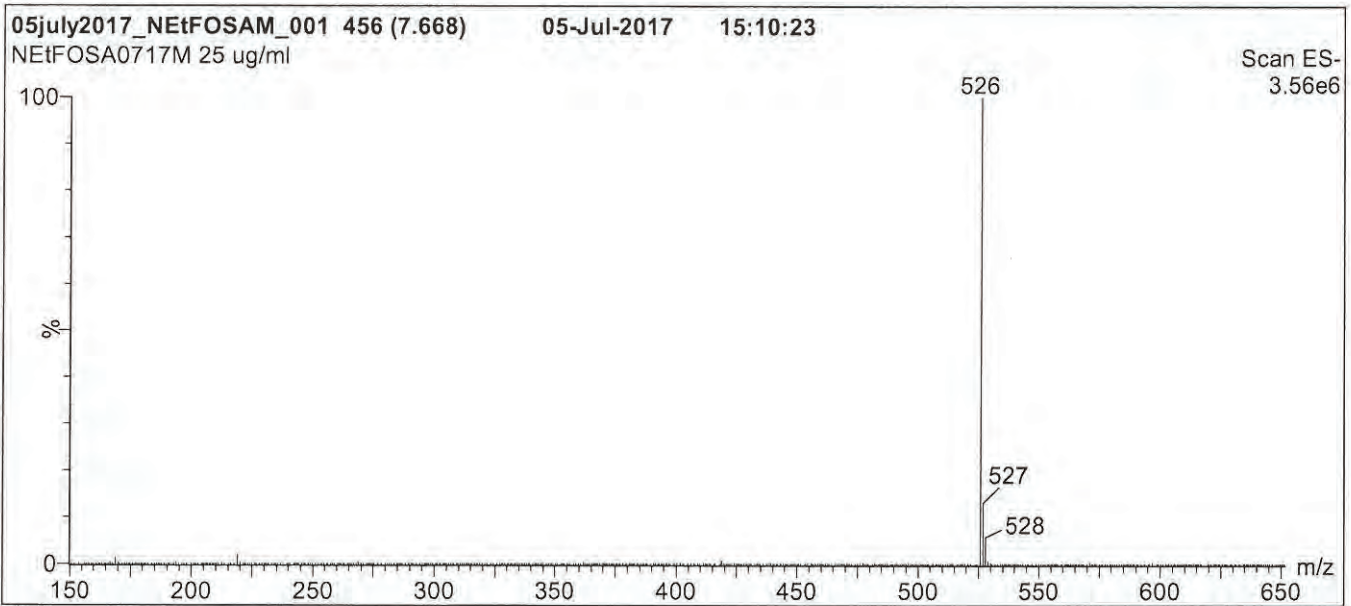
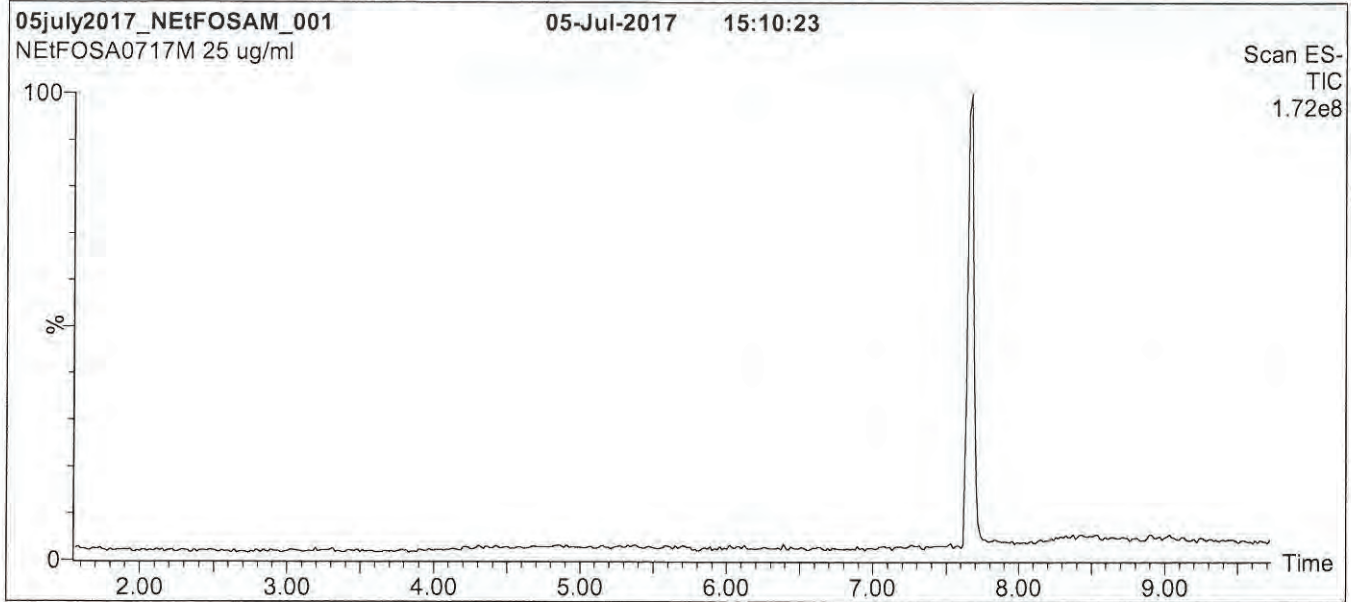
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1565

Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

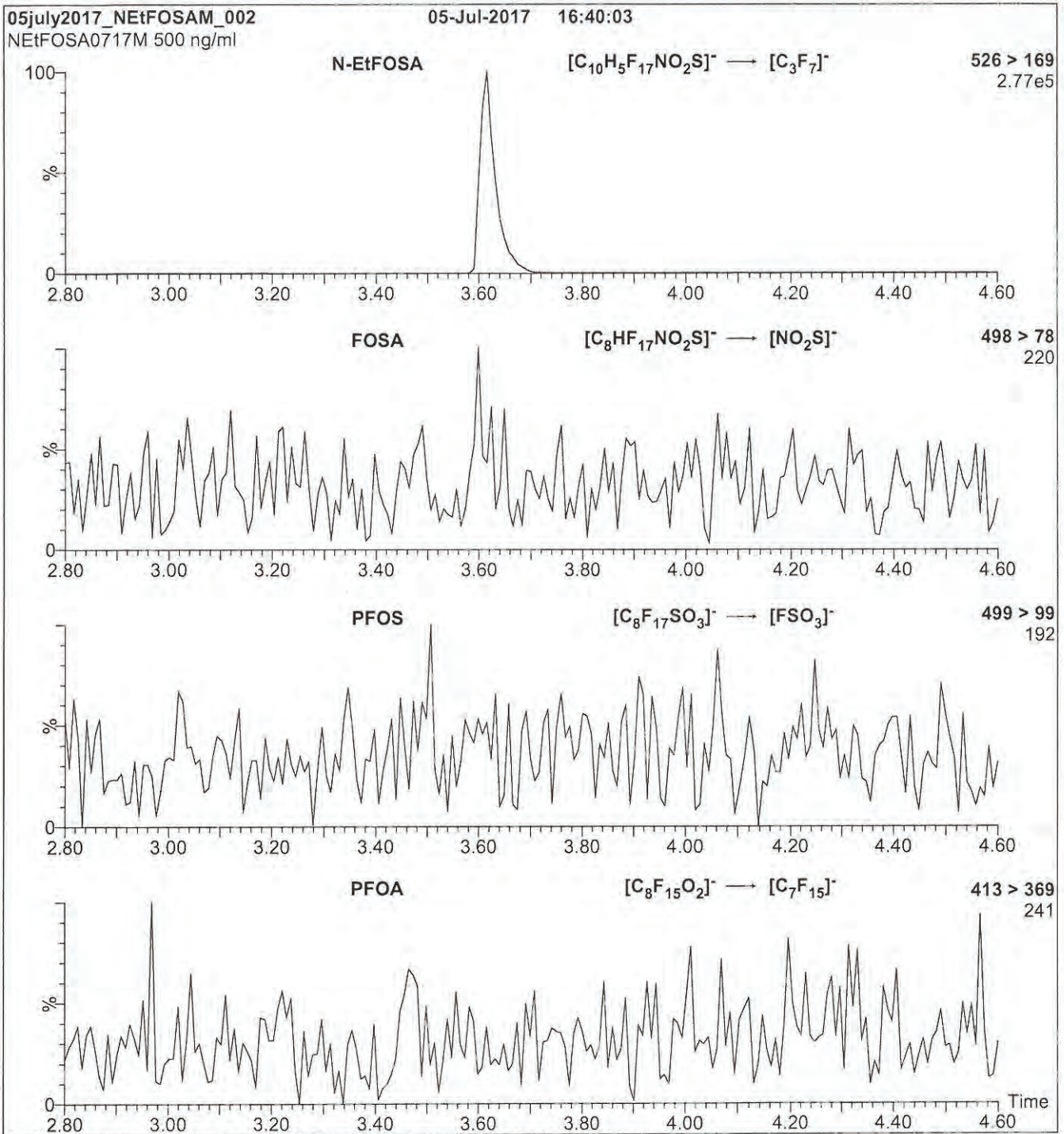
MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

18B1565

Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

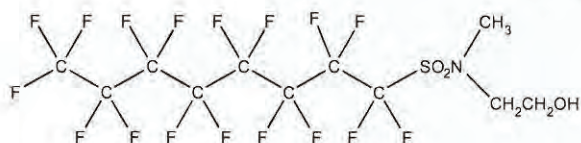
18B1566


WELLINGTON
 LABORATORIES

CERTIFICATE OF ANALYSIS
 DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0417M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 24448-09-7



MOLECULAR FORMULA: C₁₁H₈F₁₇NO₃S **MOLECULAR WEIGHT:** 557.22
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/24/2017 (HRGC/LRMS)
 04/21/2017 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 04/24/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS Data (TIC and Mass Spectrum)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 05/05/2017
 (mm/dd/yyyy)

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

18B1566

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

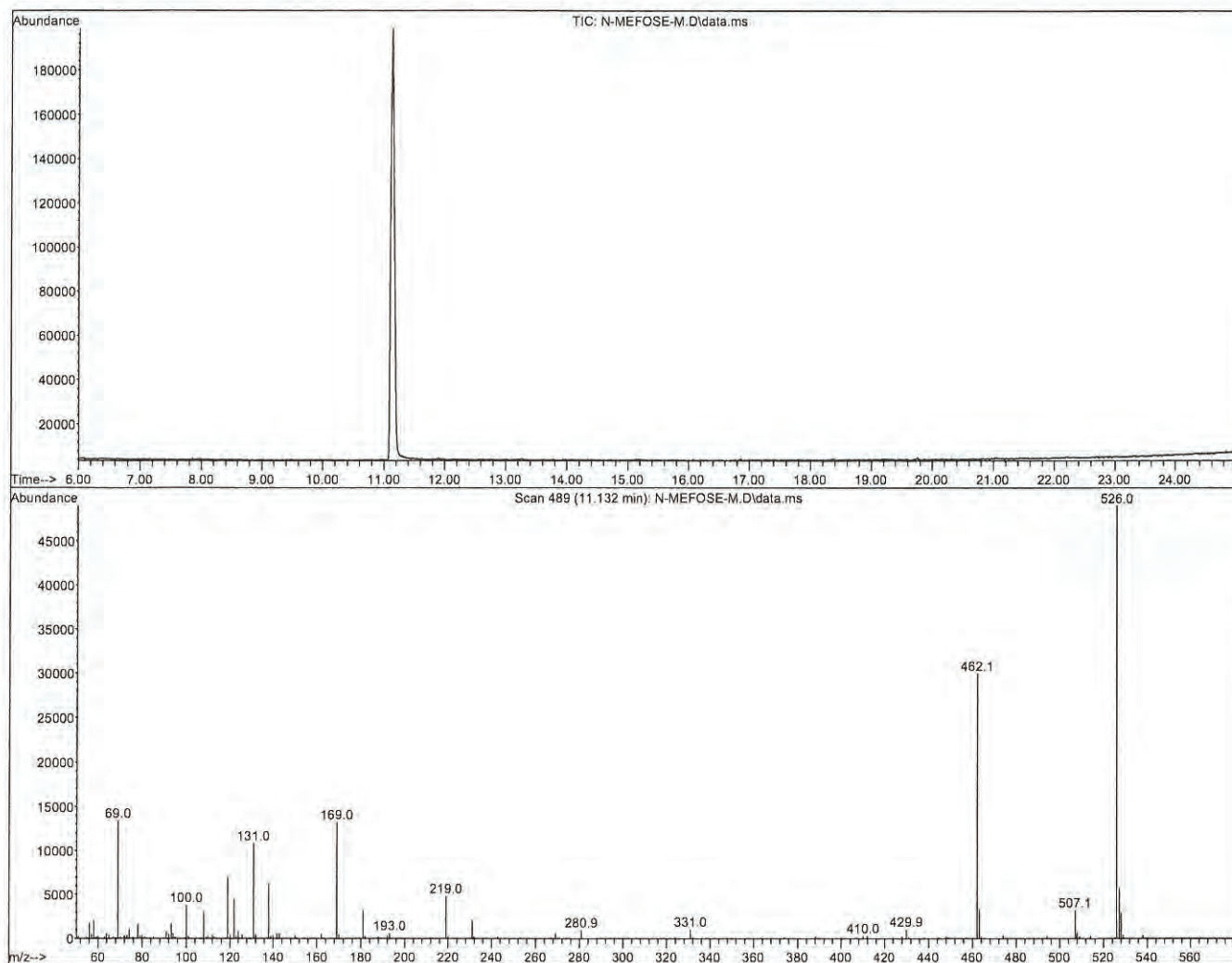
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1566

Figure 1: N-MeFOSE-M; HRGC/LRMS Data (TIC and Mass Spectrum)



HRGC/LRMS:

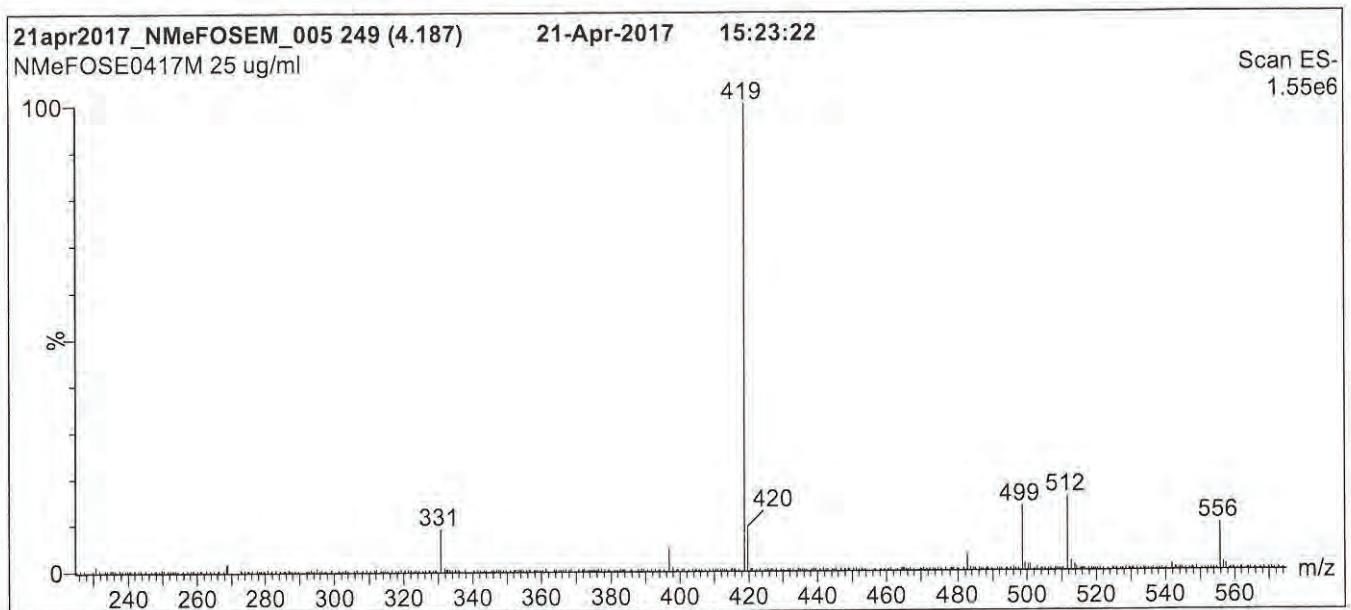
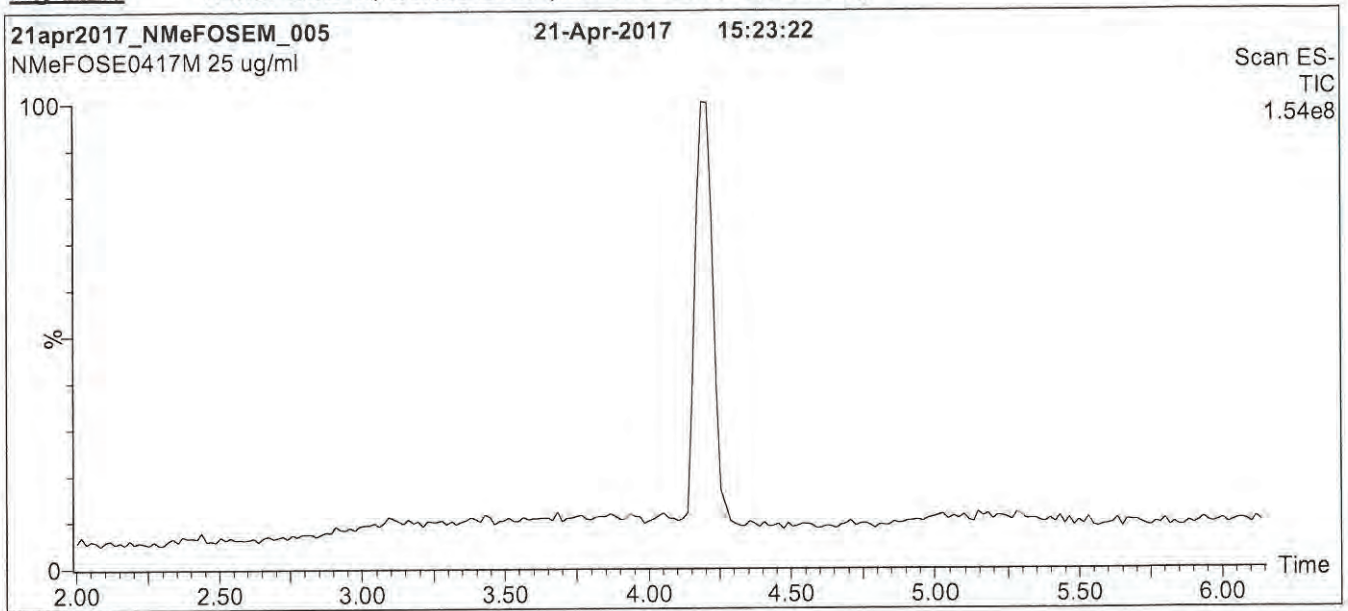
Agilent 7890A (HRGC)
Agilent 5975C (LRMS)

Chromatographic Conditions:

Column: 30 m DB-5 (0.25 mm id, 0.25 μ m film thickness) Agilent J&W
Injector: 250 $^{\circ}$ C (Splitless Injection)
Oven: 100 $^{\circ}$ C (5 min)
10 $^{\circ}$ C/min to 325 $^{\circ}$ C
325 $^{\circ}$ C (20 min)
Ionization: EI+
Detector: 250 $^{\circ}$ C
Full Scan (50-1000 amu)

18B1566

Figure 2: N-MeFOSE-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% MeOH / 40% H₂O
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

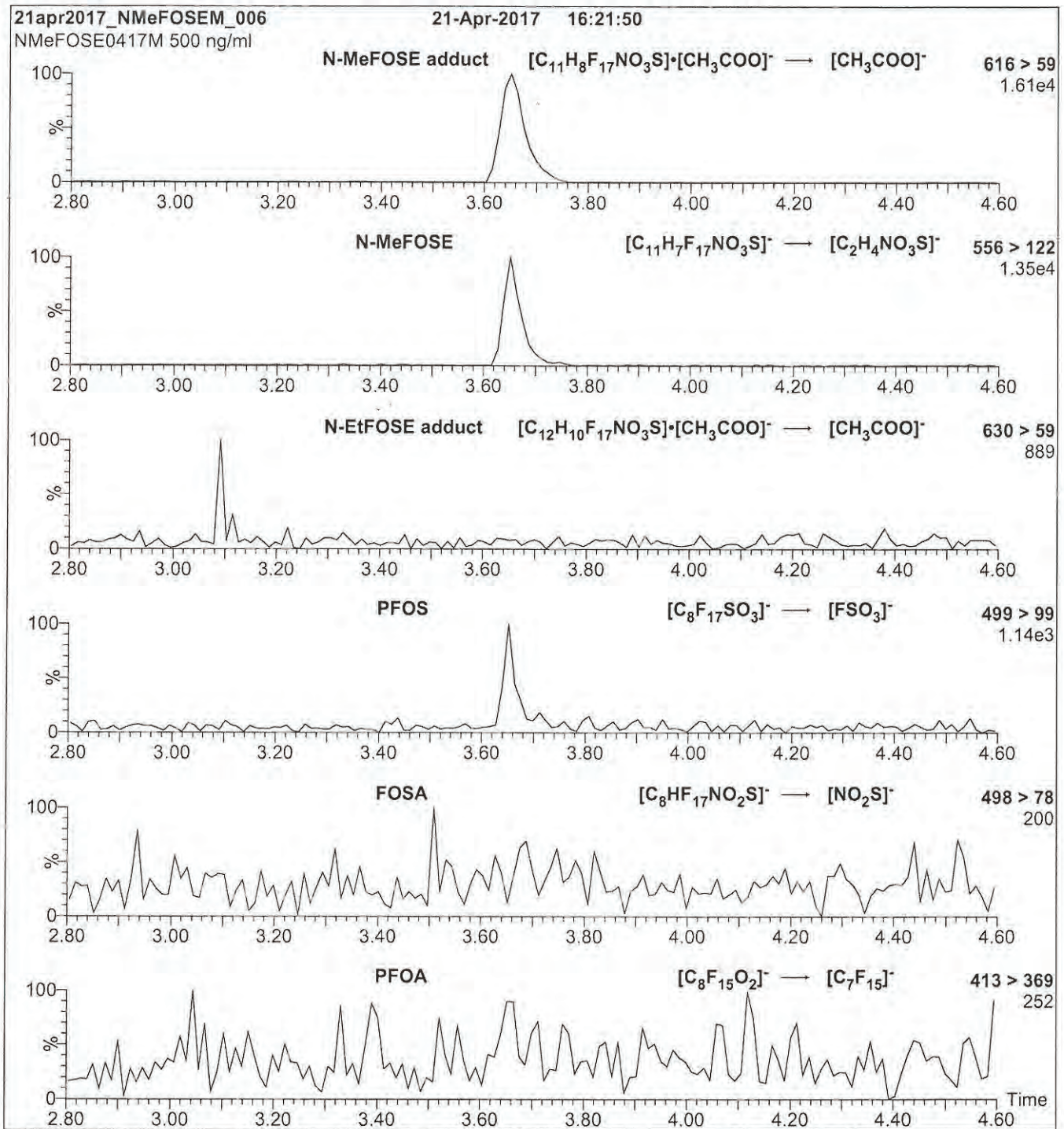
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1566

Figure 3: N-MeFOSE-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSE-M)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 35

18B1567

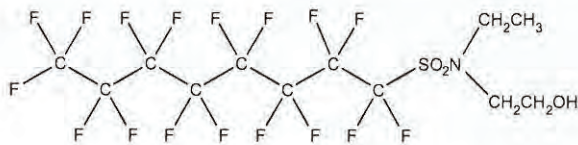


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0417M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA: C₁₂H₁₀F₁₇NO₃S **MOLECULAR WEIGHT:** 571.25
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/24/2017 (HRGC/LRMS)
 04/21/2017 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 04/24/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS Data (TIC and Mass Spectrum)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 04/26/2017
 B.G. Chittim, General Manager (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

18B1567

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

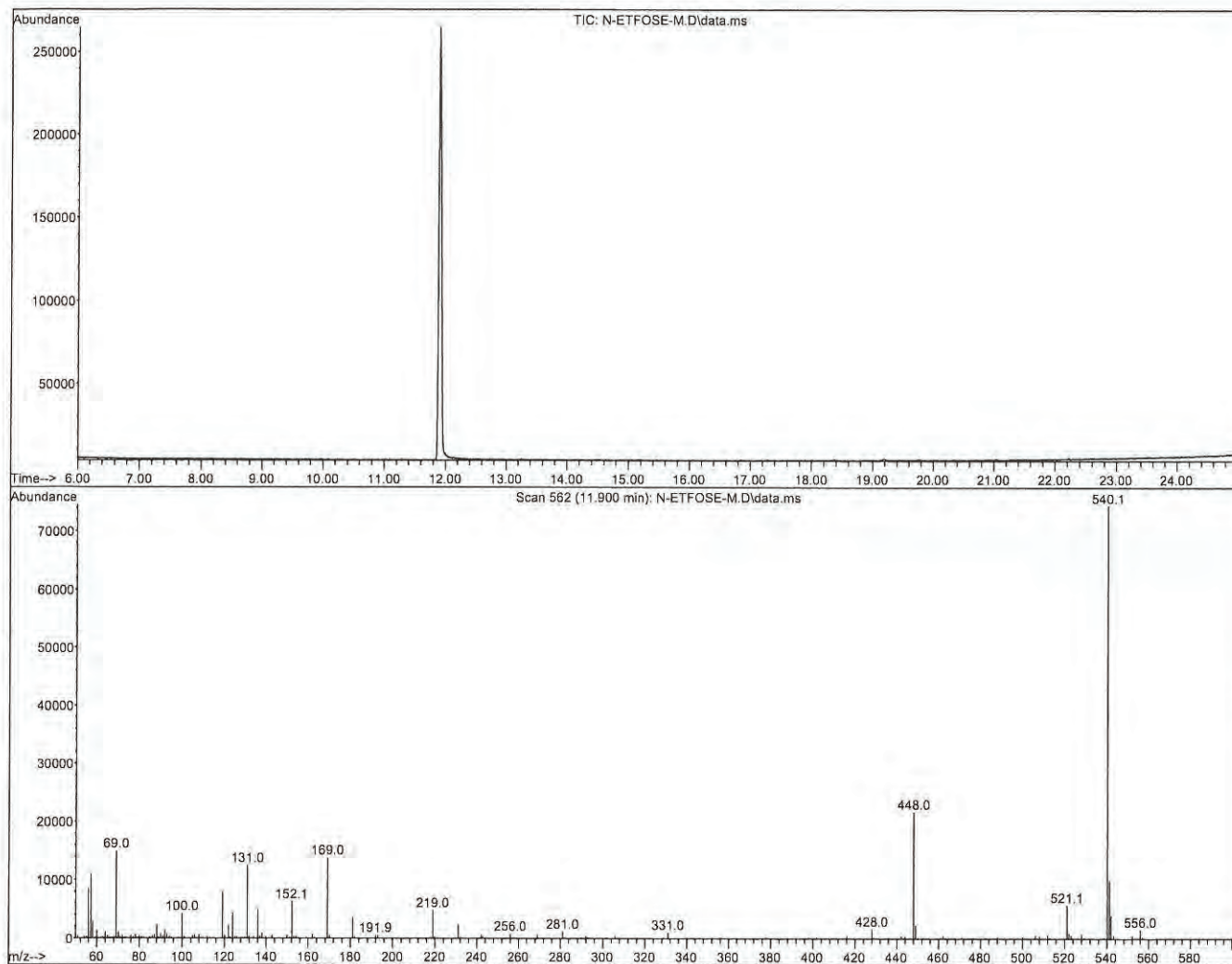
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1567

Figure 1: N-EtFOSE-M; HRGC/LRMS Data (TIC and Mass Spectrum)



HRGC/LRMS:

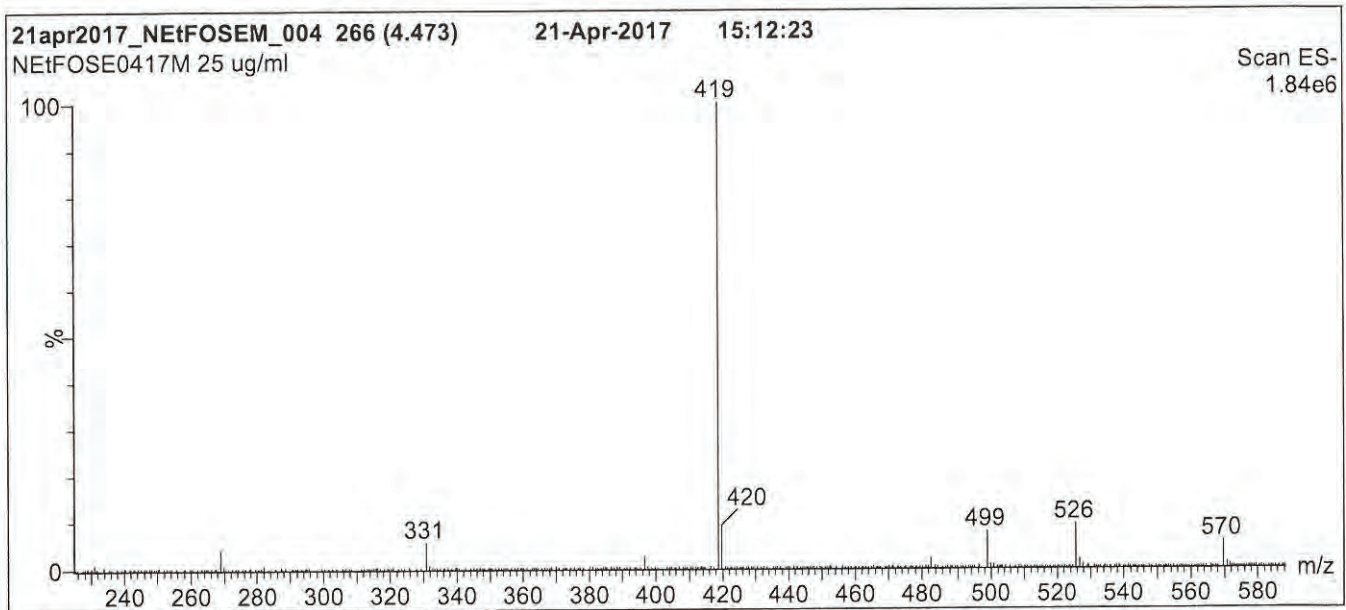
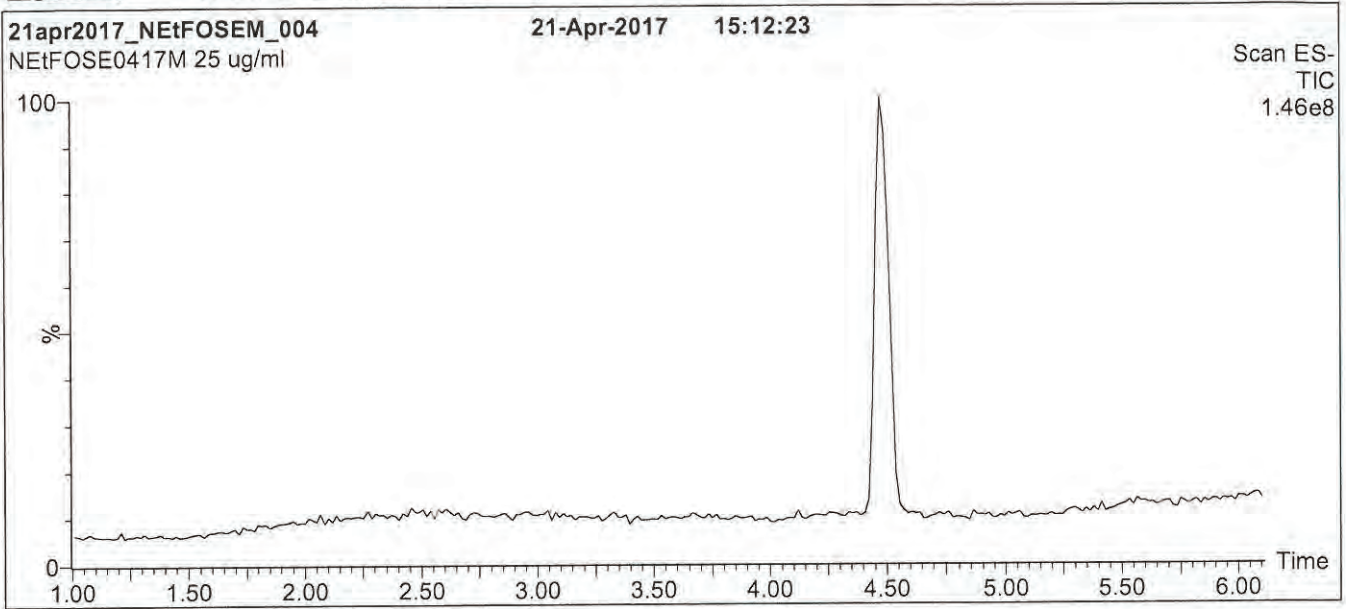
Agilent 7890A (HRGC)
Agilent 5975C (LRMS)

Chromatographic Conditions:

Column: 30 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W
Injector: 250 °C (Splitless Injection)
Oven: 100 °C (5 min)
10 °C/min to 325 °C
325 °C (20 min)
Ionization: EI+
Detector: 250 °C
Full Scan (50-1000 amu)

18B1567

Figure 2: N-EtFOSE-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 2:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% MeOH / 40% H₂O
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

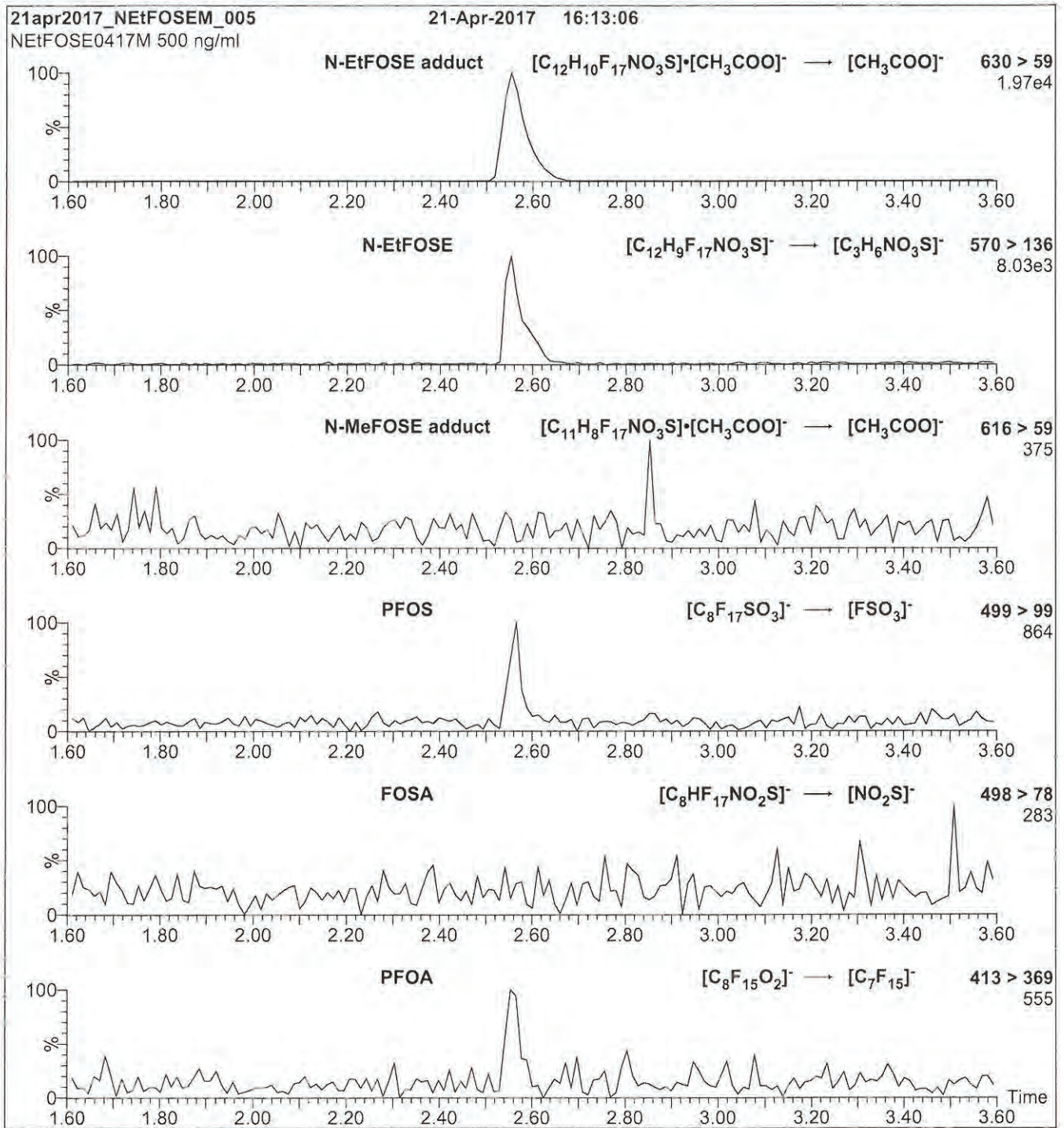
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1567

Figure 3: N-EtFOSE-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
 10 μ l (500 ng/ml N-EtFOSE-M)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
 Collision Energy (eV) = 33

Analytical Standard Record

Vista Analytical Laboratory

18B2206

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
18B1530	13C2-FOUEA	15-Feb-18	** Vendor **	14-Nov-19	0.75
18B1531	13C3-PFHxS	15-Feb-18	** Vendor **	05-Jul-22	0.795
18B1532	13C4-PFOS	15-Feb-18	** Vendor **	17-Oct-22	0.787
18B1533	13C7-PFUDa	15-Feb-18	** Vendor **	13-Jul-22	0.75
18B1534	13C5-PFHxA	15-Feb-18	** Vendor **	17-Oct-22	0.75
18B1535	13C6-PFDA	15-Feb-18	** Vendor **	17-Oct-22	0.75
18B1536	13C8-PFOA	15-Feb-18	** Vendor **	05-Jul-22	0.765
18B1537	13C4-PFBA	15-Feb-18	** Vendor **	12-Apr-22	0.75
18B1538	13C9-PFNA	15-Feb-18	** Vendor **	23-May-22	0.75

Description: PFC-RS Expires: 24-Feb-20
Standard Type: Reagent Prepared: 24-Feb-18
Solvent: MeOH Prepared By: Giana R. Bilotta
Final Volume (mls): 30 Department: LCMS
Vials: 1 Last Edit: 24-Feb-18 09:18 by GRB

Analyte	CAS Number	Concentration	Units
13C9-PFNA		1.25	ug/mL
13C8-PFOA		1.25	ug/mL
13C7-PFUnA		1.25	ug/mL
13C6-PFDA		1.25	ug/mL
13C5-PFHxA		1.25	ug/mL
13C4-PFOS		1.25	ug/mL
13C4-PFBA		1.25	ug/mL
13C3-PFHxS		1.25	ug/mL
13C2-FOUEA		1.25	ug/mL

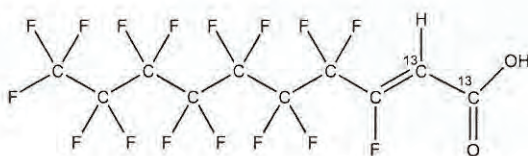
18B1530



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MFOUEA **LOT NUMBER:** MFOUEA1117
COMPOUND: 2H-Perfluoro-[1,2-¹³C₂]-2-decenoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₂F₁₆O₂ **MOLECULAR WEIGHT:** 460.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Anhydrous Isopropanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 11/14/2017
EXPIRY DATE: (mm/dd/yyyy) 11/14/2019
RECOMMENDED STORAGE: Refrigerate ampoule

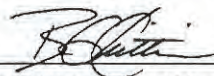
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Dilution of this standard in methanol may lead to the formation of 2H-3-methoxy-perfluoro-[1,2-¹³C₂]-2-decenoic acid. This reaction can be catalyzed by the presence of acid or base. All dilutions should be routinely checked for degradation.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 11/15/2017
 B.G. Chittim, General Manager (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

18B1530

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

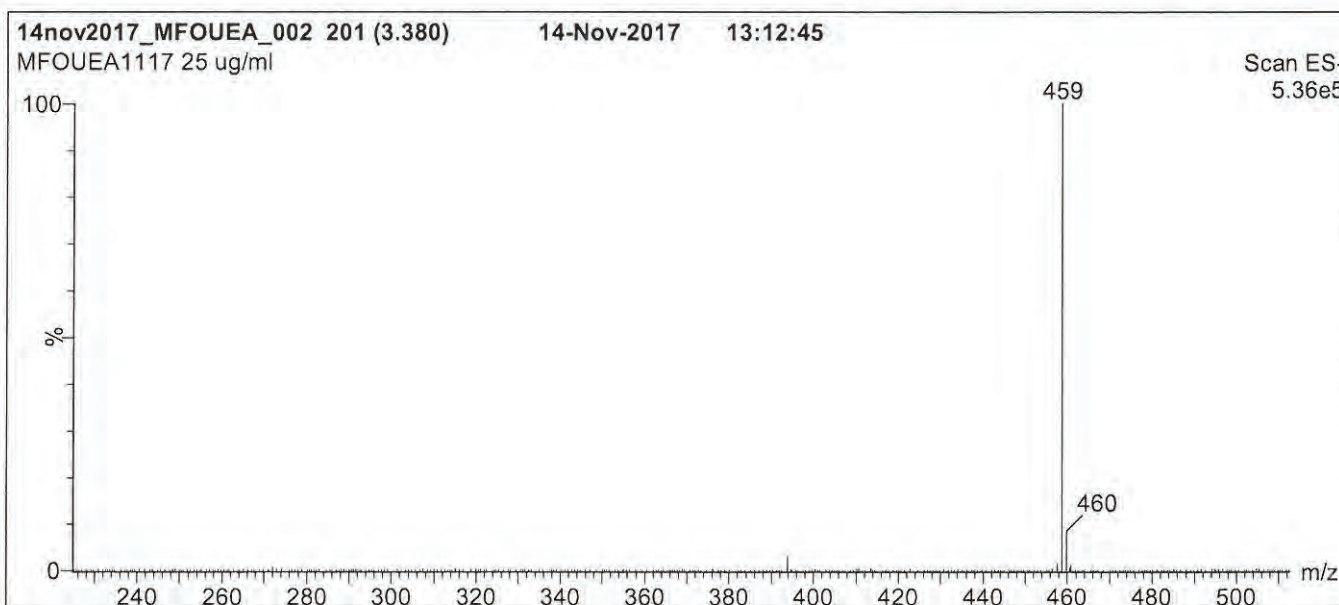
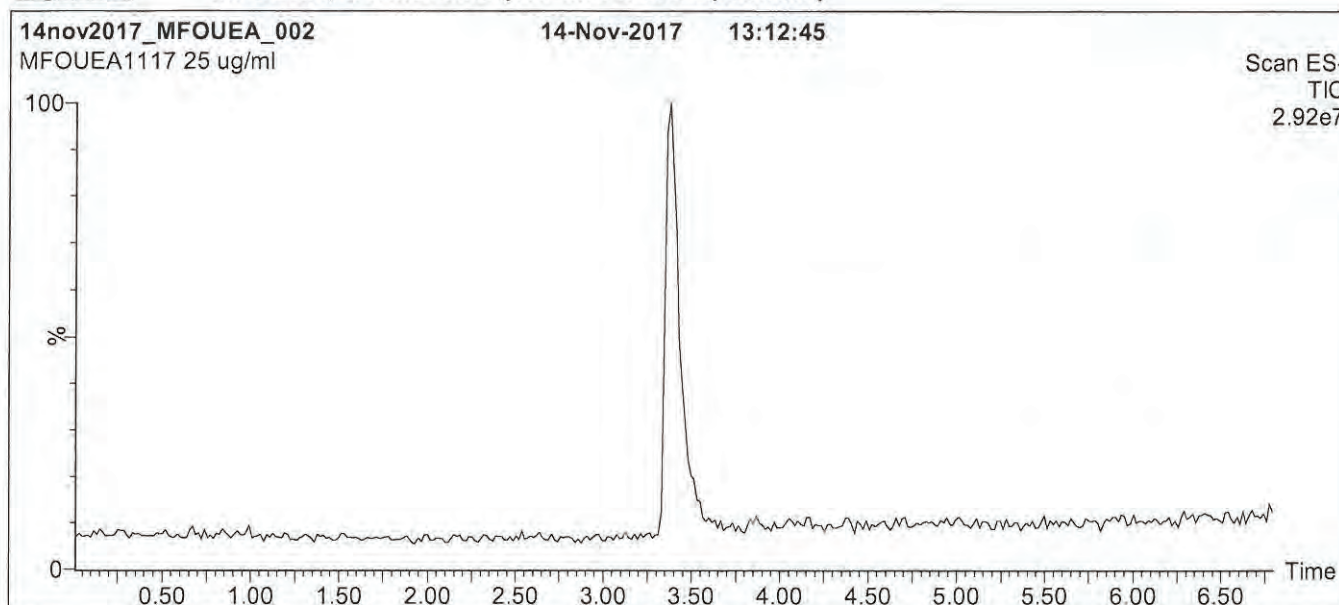
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1530

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold
for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

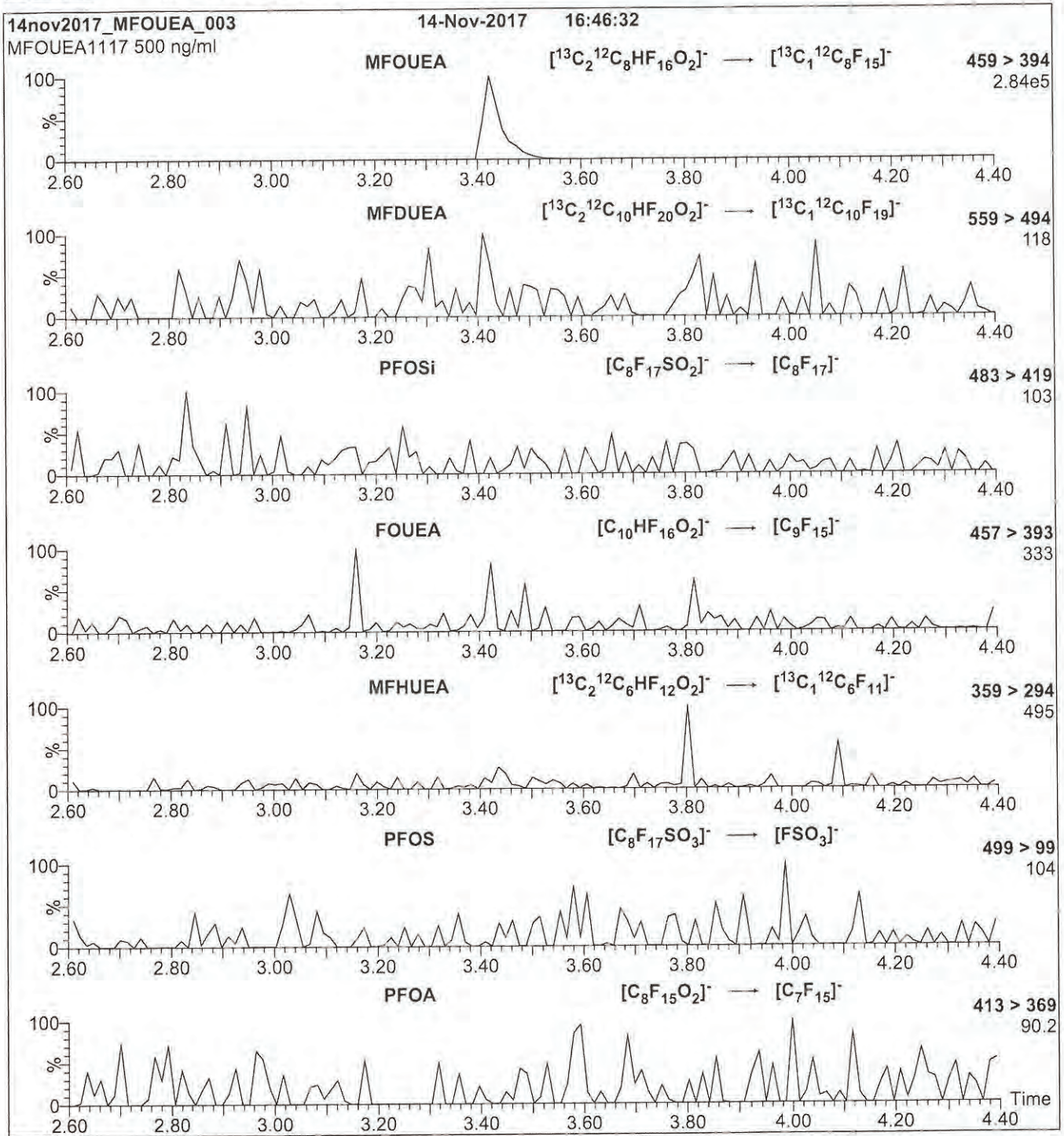
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 14.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1530

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 21

18B1531

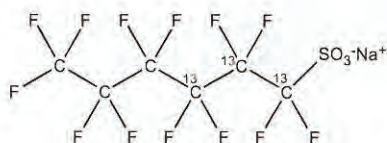


WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M3PFHxS **LOT NUMBER:** M3PFHxS0717
COMPOUND: Sodium perfluoro-1-[1,2,3-¹³C₃]hexanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²C₃F₁₃SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (M3PFHxS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/05/2017
EXPIRY DATE: (mm/dd/yyyy) 07/05/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 425.07
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3-¹³C₃)

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, General Manager

Date: 07/14/2017
(mm/dd/yyyy)

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

18B1531

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

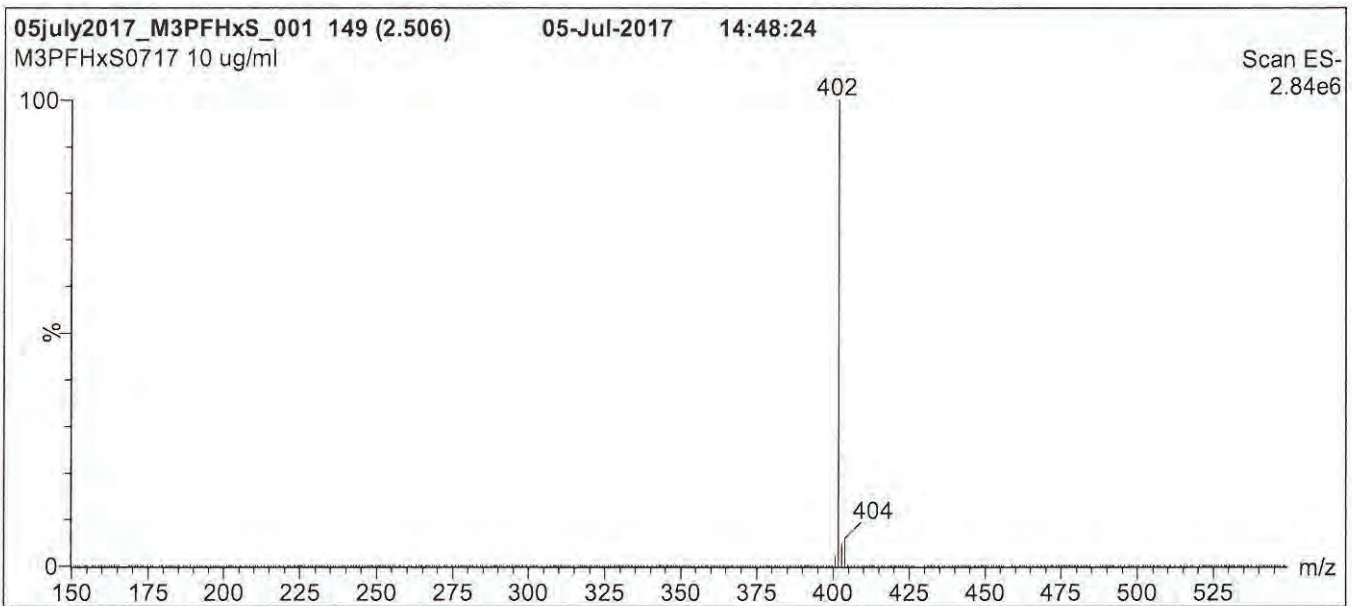
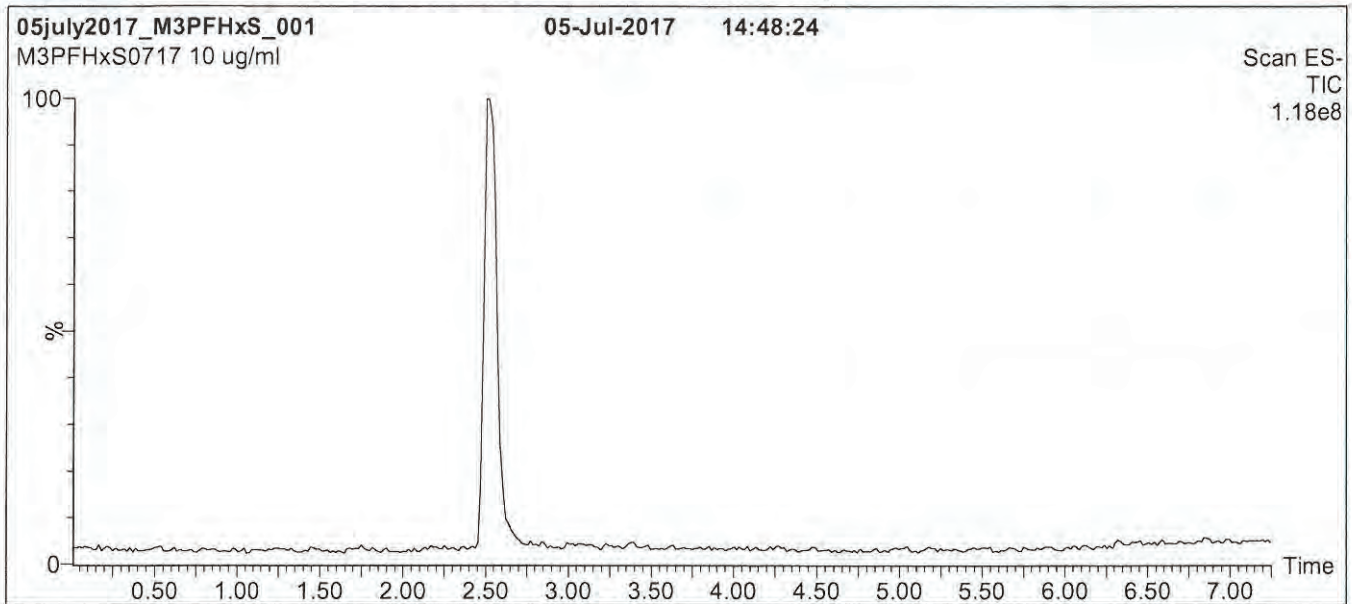
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1531

Figure 1: M3PFHxS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

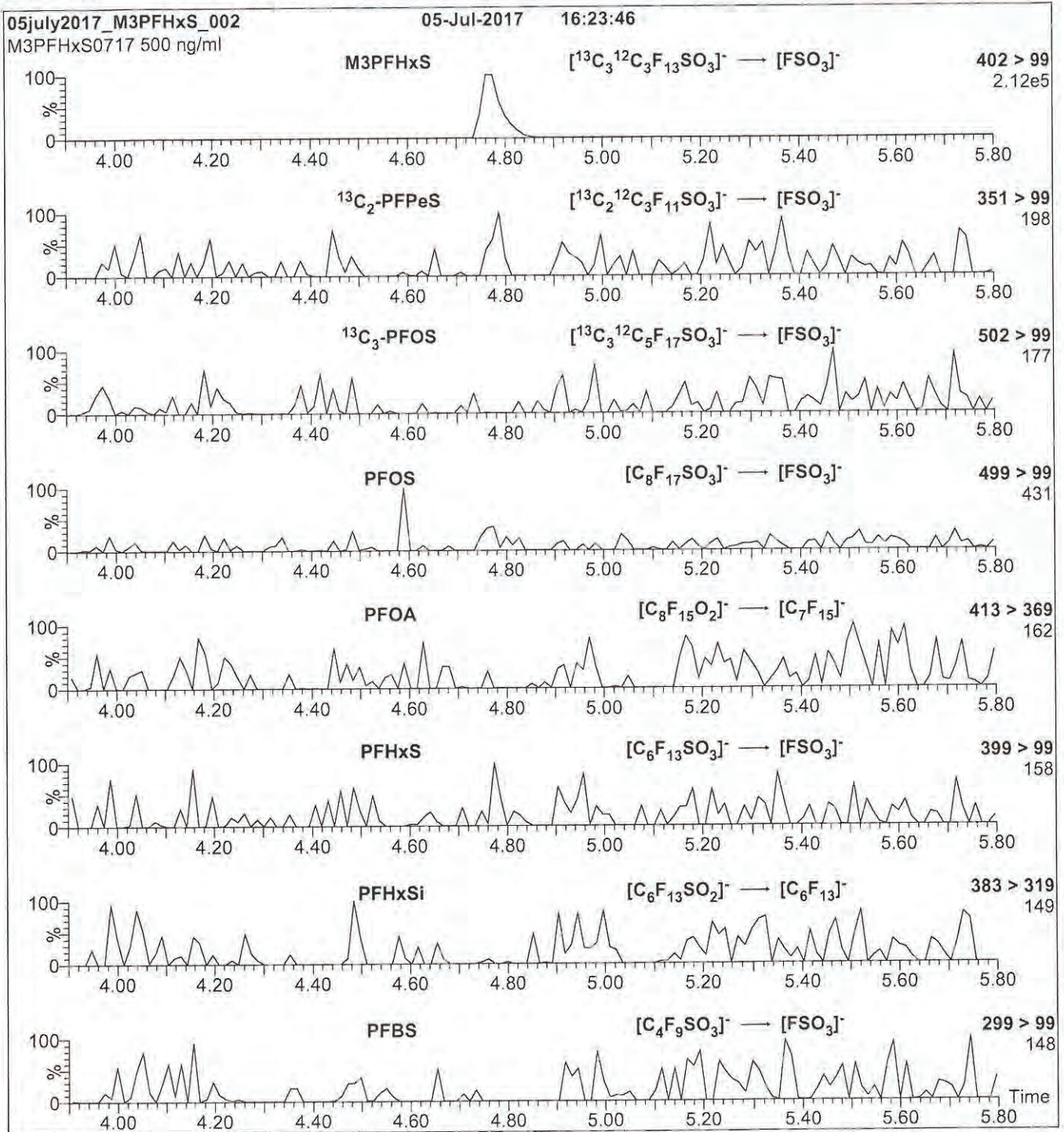
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

18B1531

Figure 2: M3PFHxS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M3PFHxS)

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

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

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

18B1532



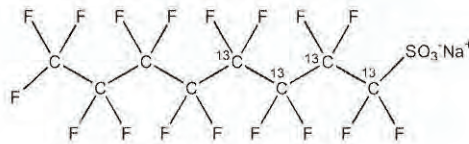
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS LOT NUMBER: MPFOS1017

COMPOUND: Sodium perfluoro-1-[1,2,3,4-13C4]octanesulfonate

STRUCTURE: CAS #: Not available



MOLECULAR FORMULA: 13C4 12C4 F17 SO3 Na

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% 13C (1,2,3,4-13C4)

LAST TESTED: (mm/dd/yyyy) 10/17/2017

EXPIRY DATE: (mm/dd/yyyy) 10/17/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
Contains ~ 0.4% Sodium perfluoro-1-[1,2,3-13C3]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: [Signature] Date: 10/18/2017
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

18B153Z

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

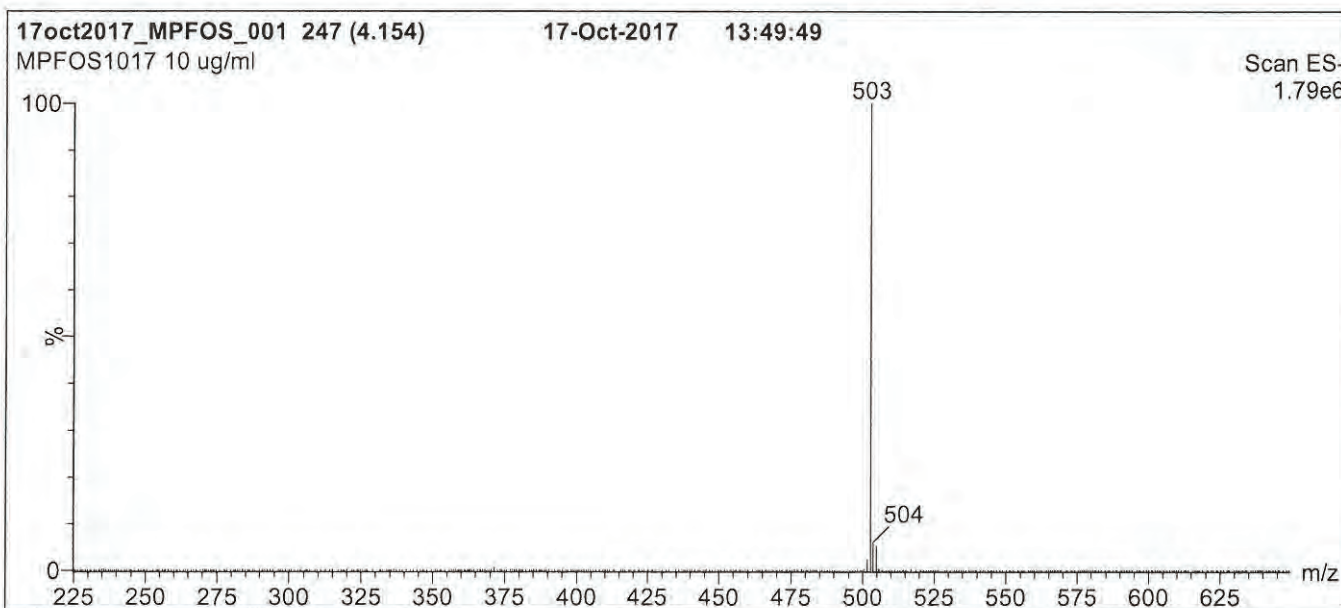
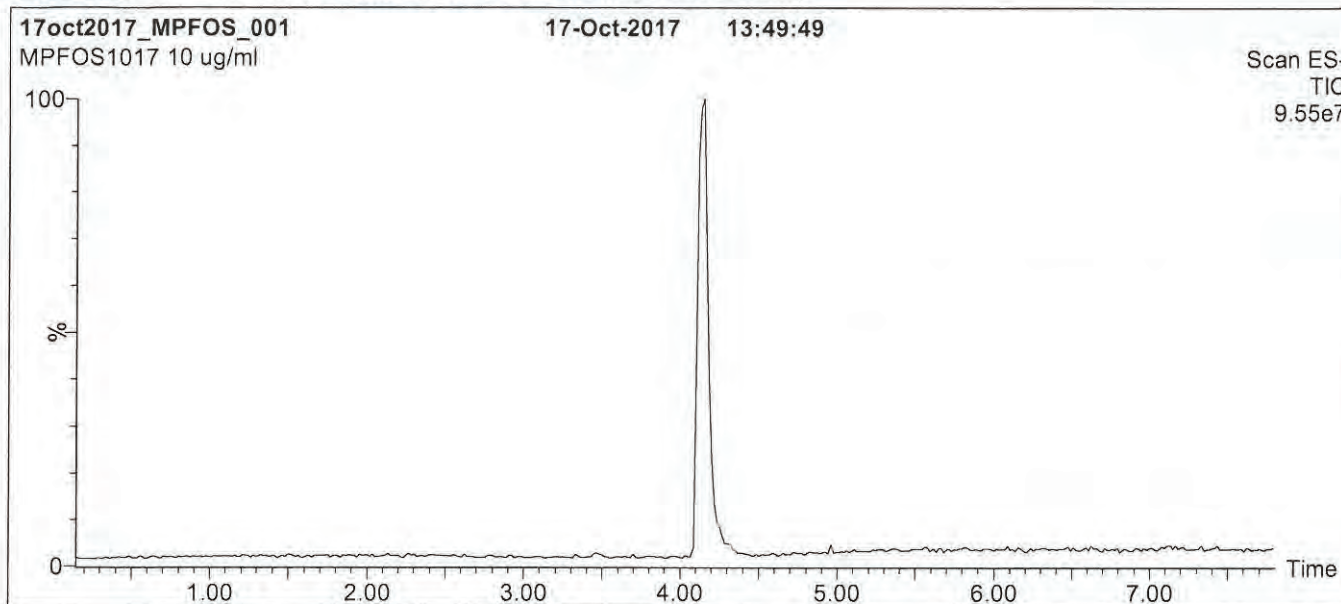
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1532

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

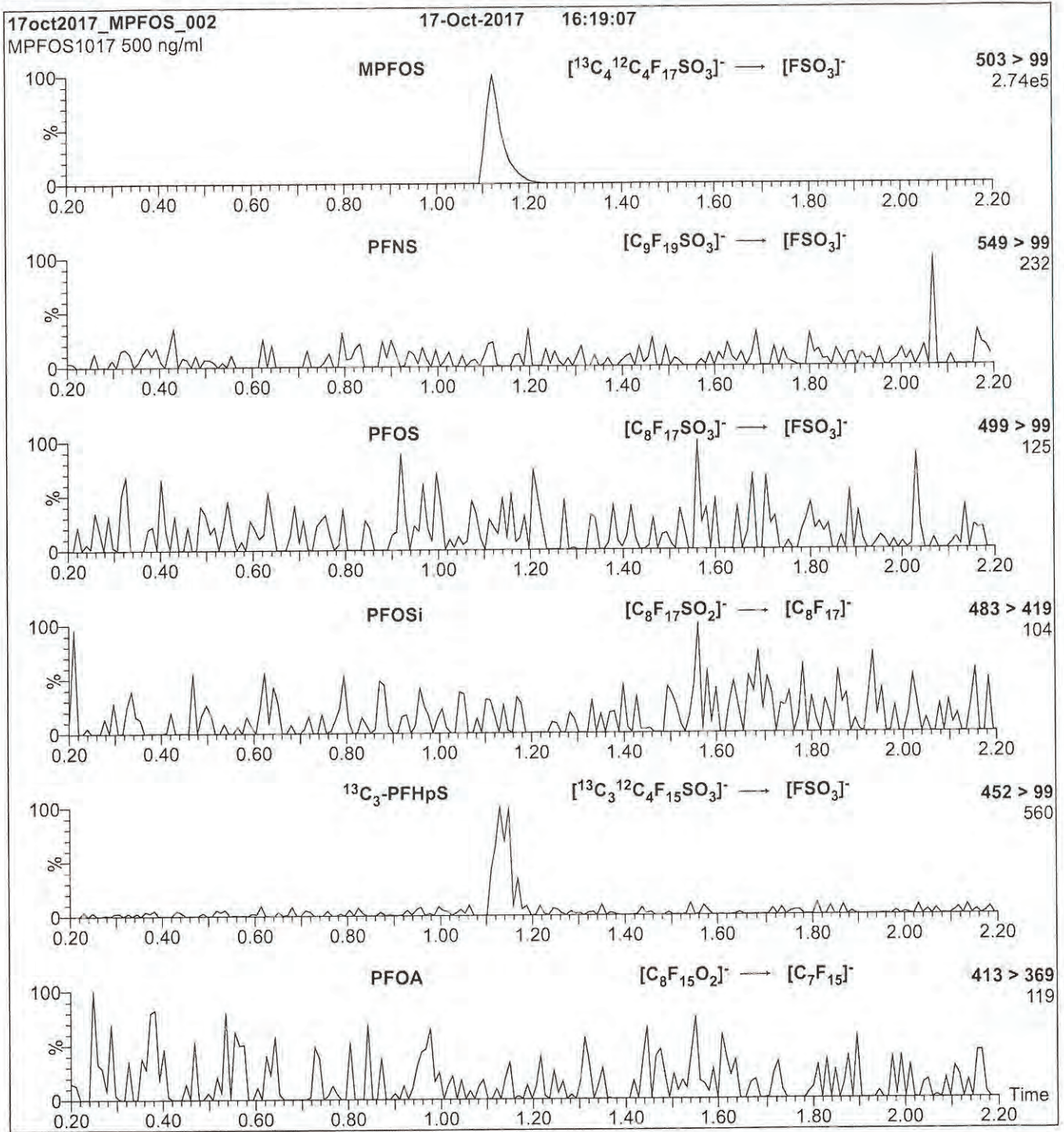
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1532

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 40

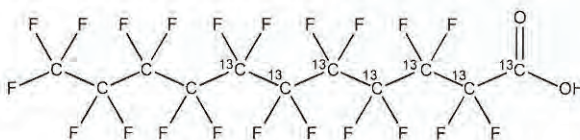
18B1533



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M7PFUdA **LOT NUMBER:** M7PFUdA0717
COMPOUND: Perfluoro-n-[1,2,3,4,5,6,7-¹³C₇]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₇¹²C₄HF₂₁O₂ **MOLECULAR WEIGHT:** 571.04
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2,3,4,5,6,7-¹³C₇)
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

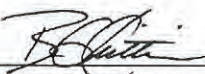
Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim, General Manager

Date: 07/14/2017
 (mm/dd/yyyy)

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

18B1533

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

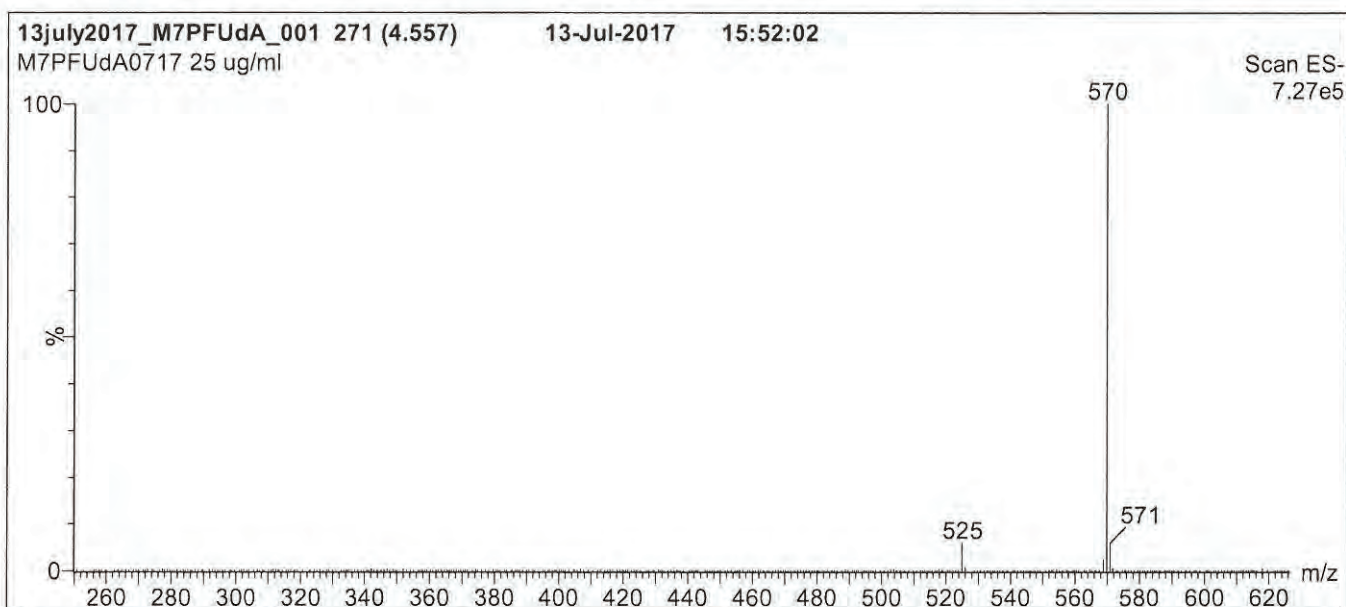
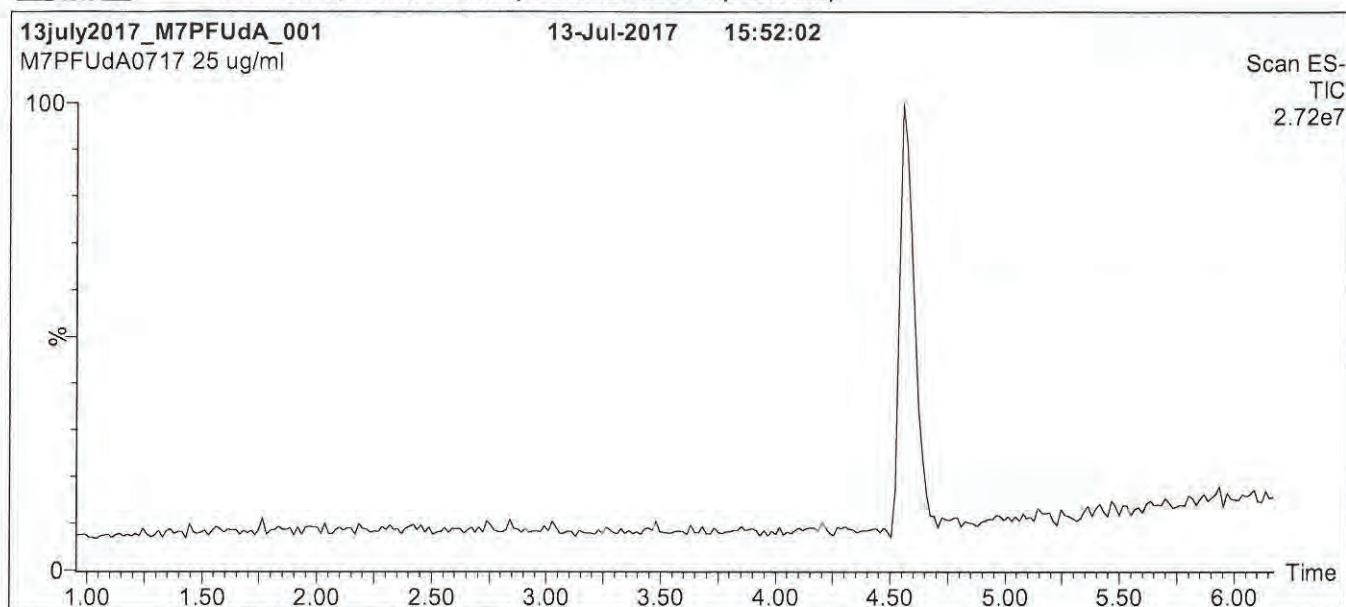
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1533

Figure 1: M7PFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

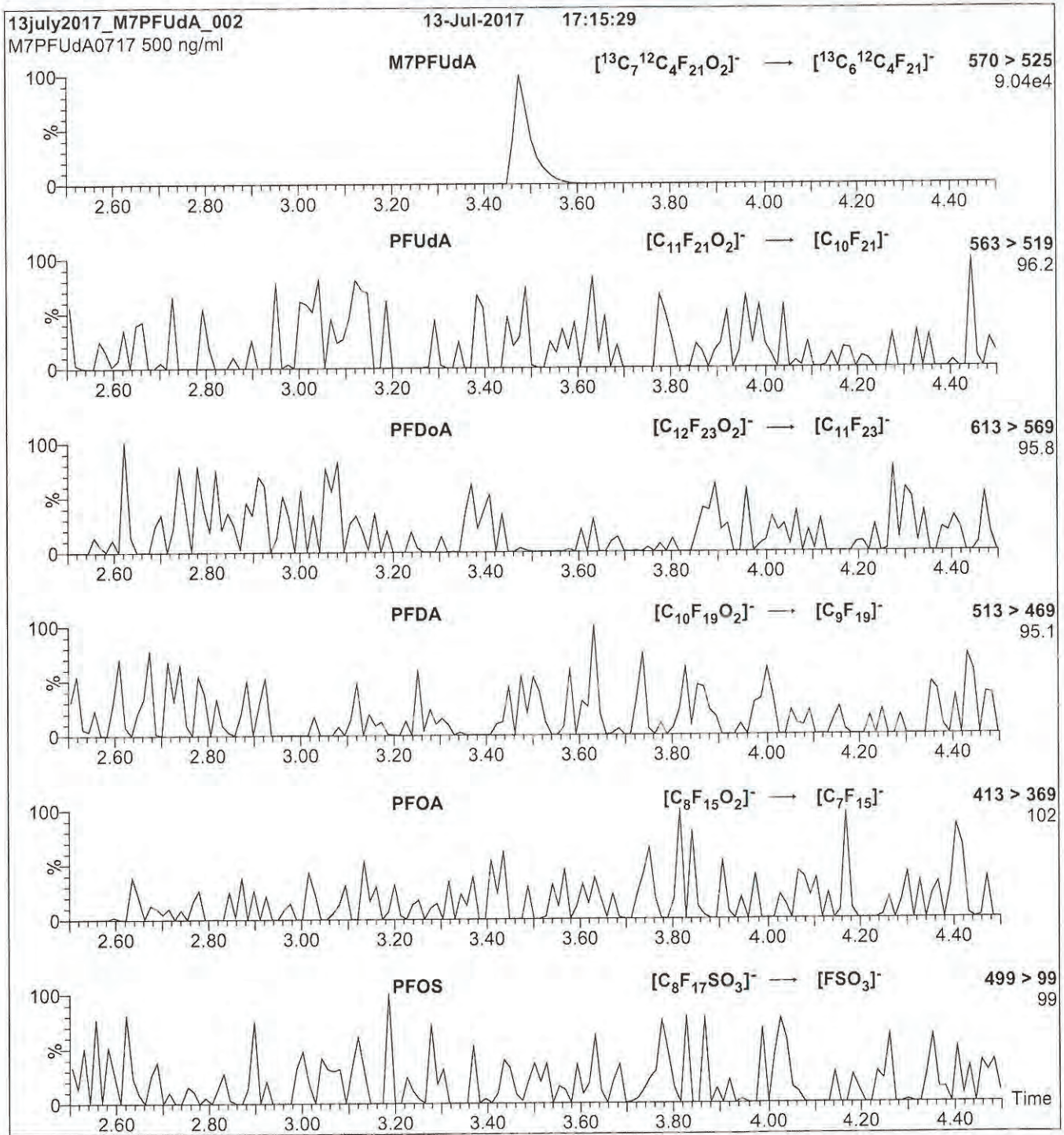
MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

18B1533

Figure 2: M7PFUdA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M7PFUdA)

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

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

18B1534

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

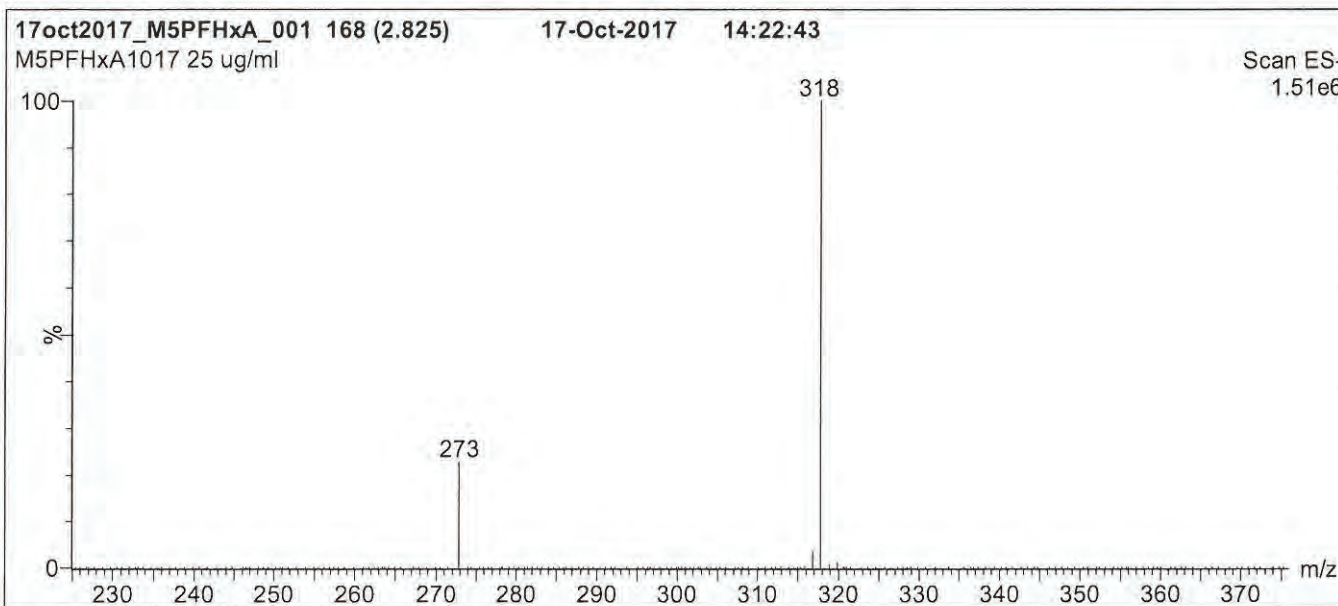
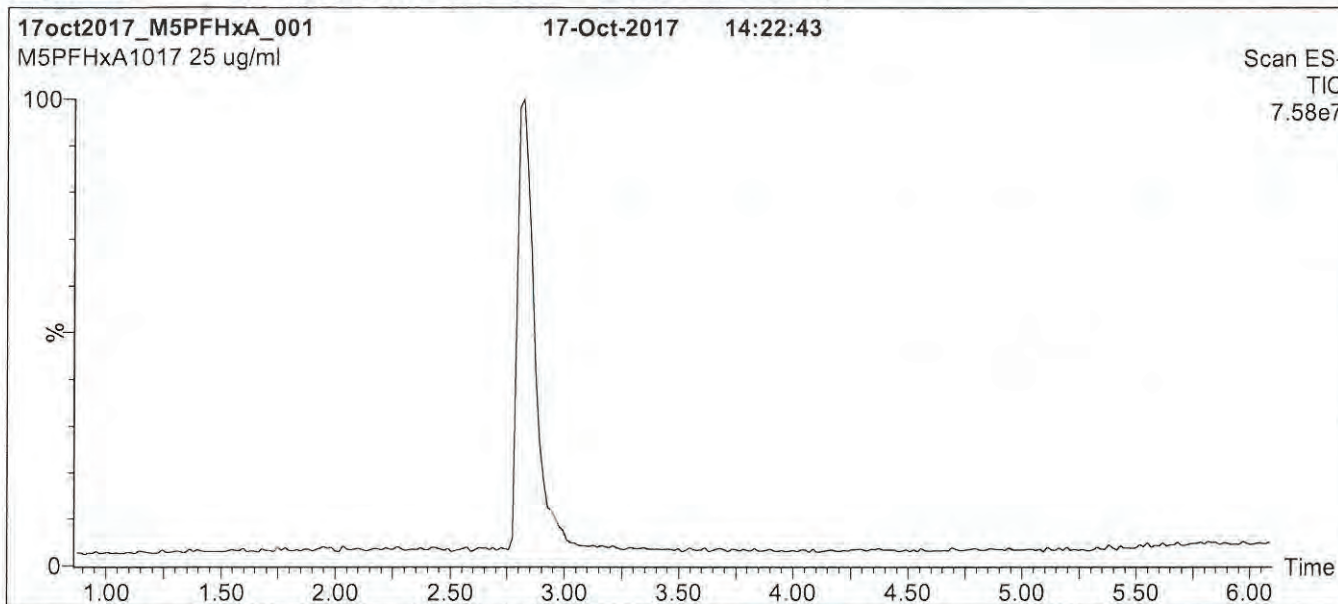
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1534

Figure 1: M5PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

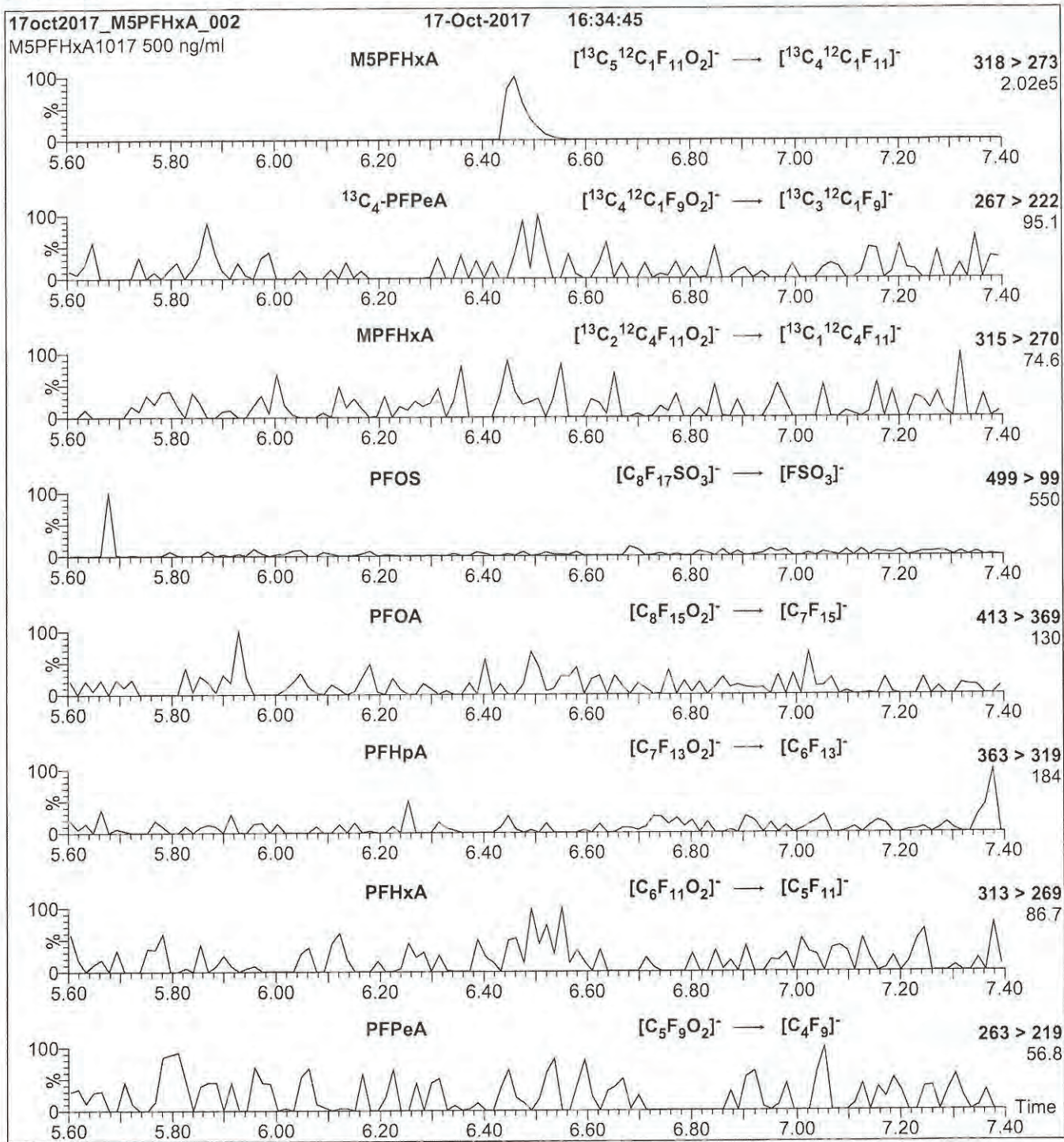
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1534

Figure 2: M5PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFHxA)

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

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

MS Parameters

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

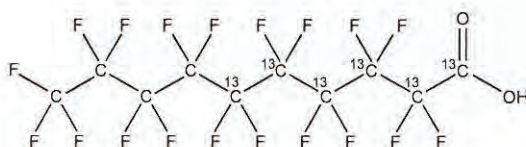
18B1535



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M6PFDA **LOT NUMBER:** M6PFDA1017
COMPOUND: Perfluoro-n-[1,2,3,4,5,6-¹³C₆]decanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₆¹²C₄HF₁₉O₂ **MOLECULAR WEIGHT:** 520.04
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2,3,4,5,6-¹³C₆)
LAST TESTED: (mm/dd/yyyy) 10/17/2017
EXPIRY DATE: (mm/dd/yyyy) 10/17/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

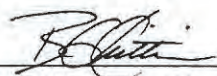
Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____


 B.G. Chittim, General Manager

Date: 10/20/2017
 (mm/dd/yyyy)

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

18B1535

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

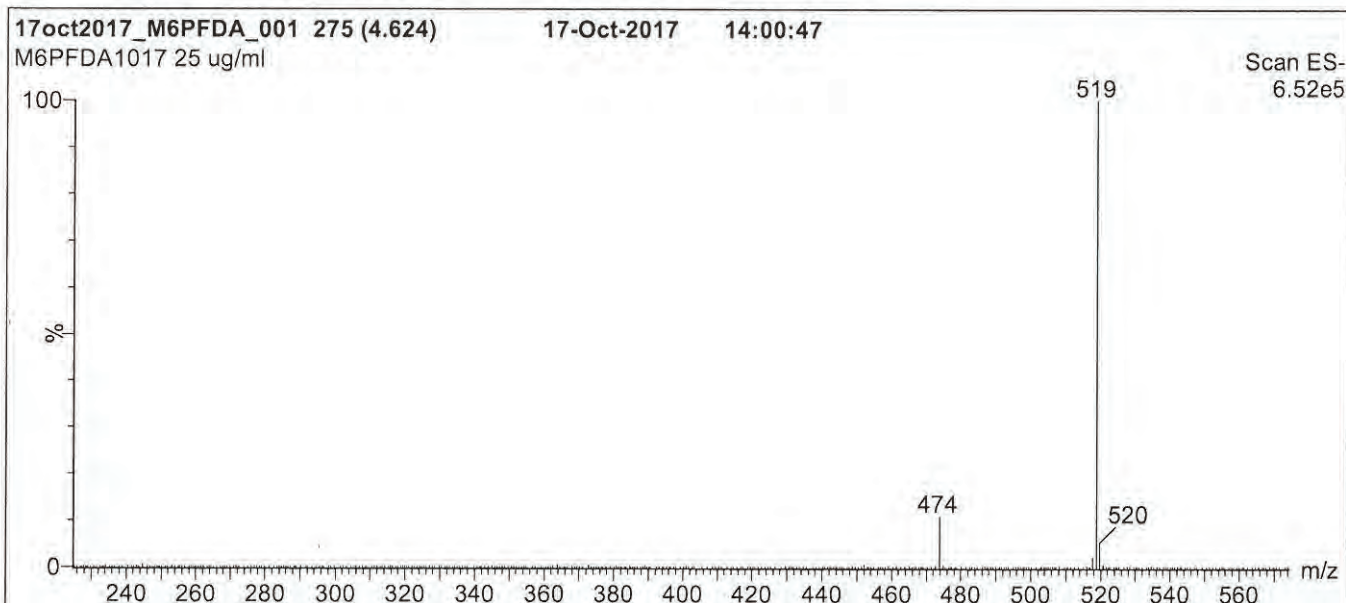
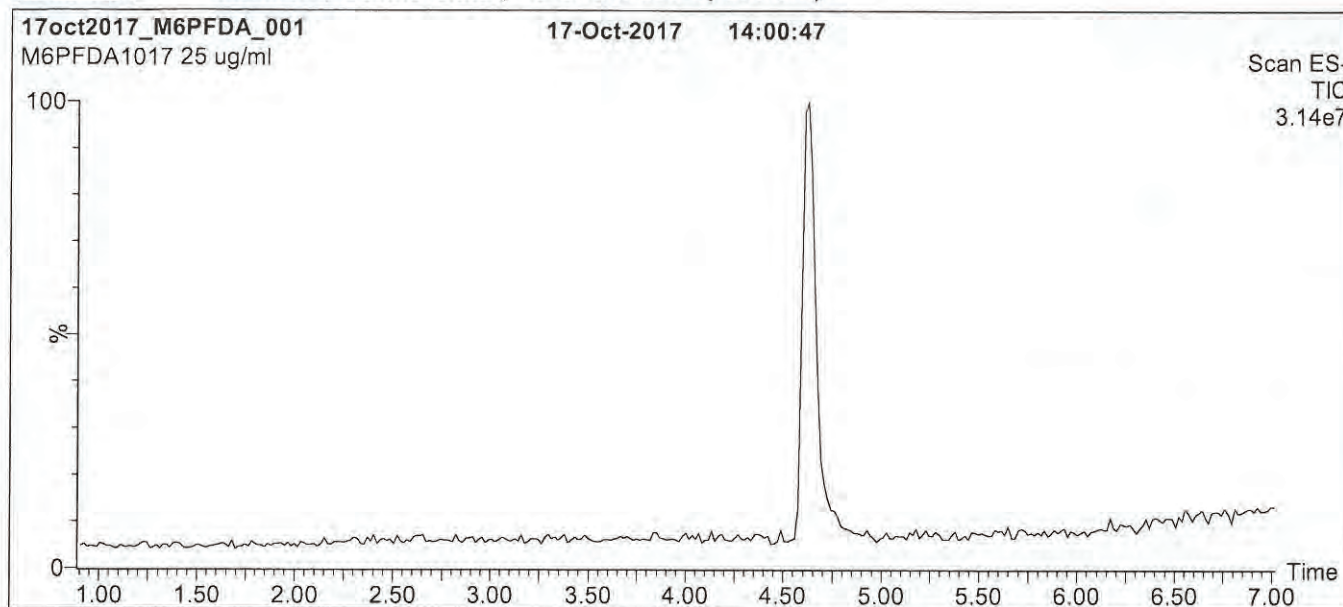
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1535

Figure 1: M6PFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

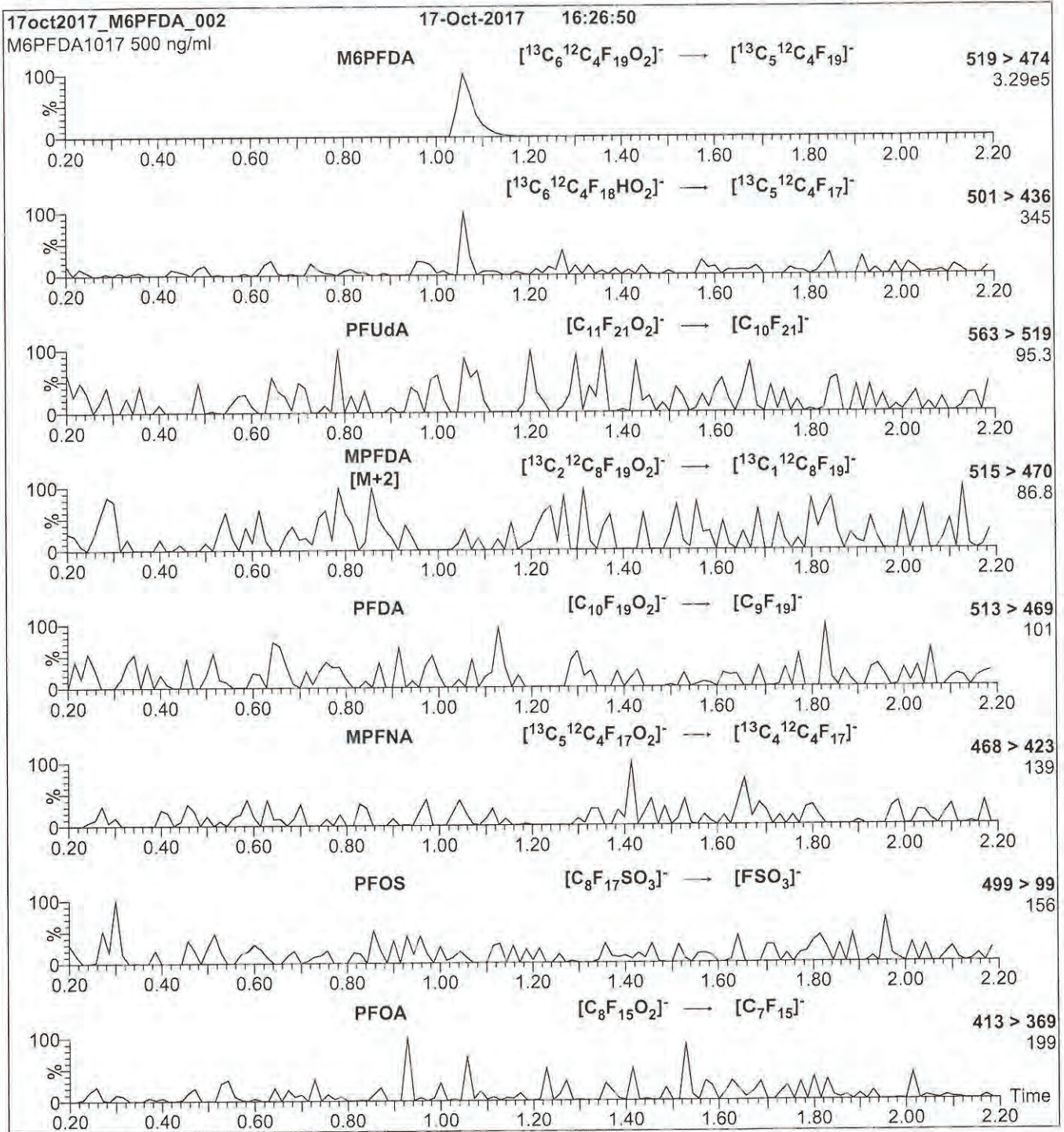
MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

18B1535

Figure 2: M6PFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M6PFDA)

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

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

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 13

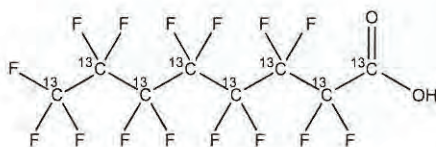
18B1536



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8PFOA **LOT NUMBER:** M8PFOA0717
COMPOUND: Perfluoro-n-[¹³C₈]octanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₈H₁₅O₂ **MOLECULAR WEIGHT:** 422.01
CONCENTRATION: 49 ± 2.45 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: 97.9% (M8PFOA) **ISOTOPIC PURITY:** ≥99% ¹³C
 2.1% (MPFOA [M+4]) (¹³C₈)
LAST TESTED: (mm/dd/yyyy) 07/05/2017
EXPIRY DATE: (mm/dd/yyyy) 07/05/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of native perfluoro-n-octanoic acid (PFOA) and ~ 2.1% of [M+4] perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 07/14/2017
 (mm/dd/yyyy)

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

18B1536

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

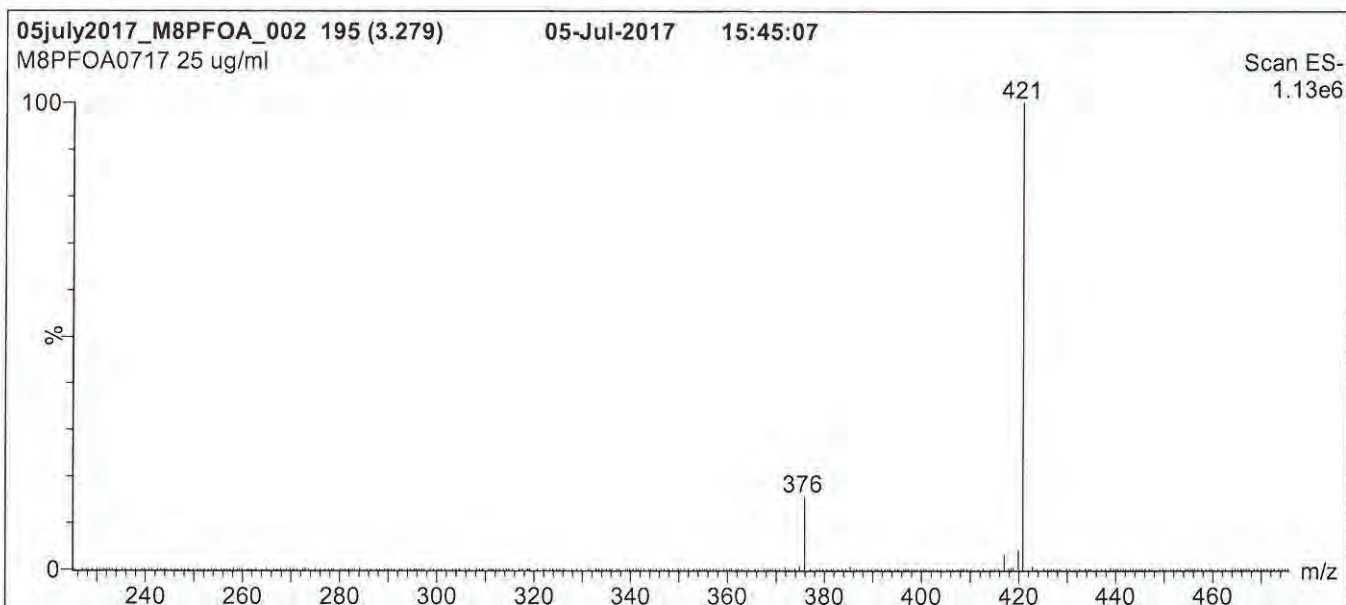
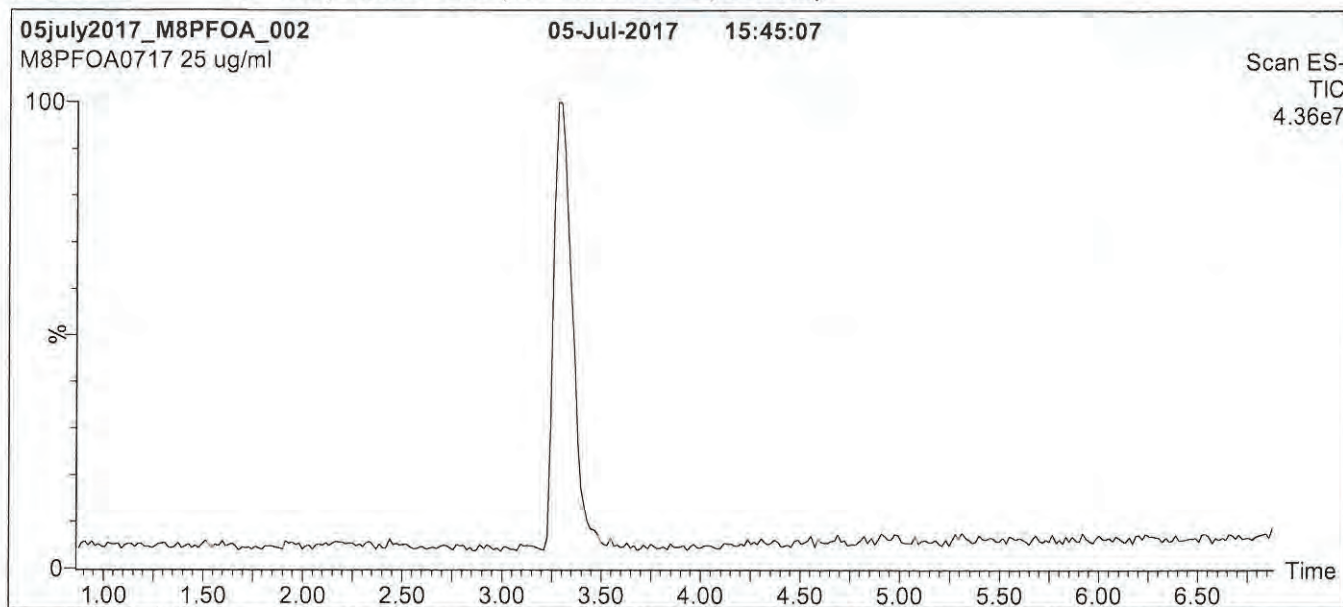
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1536

Figure 1: M8PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

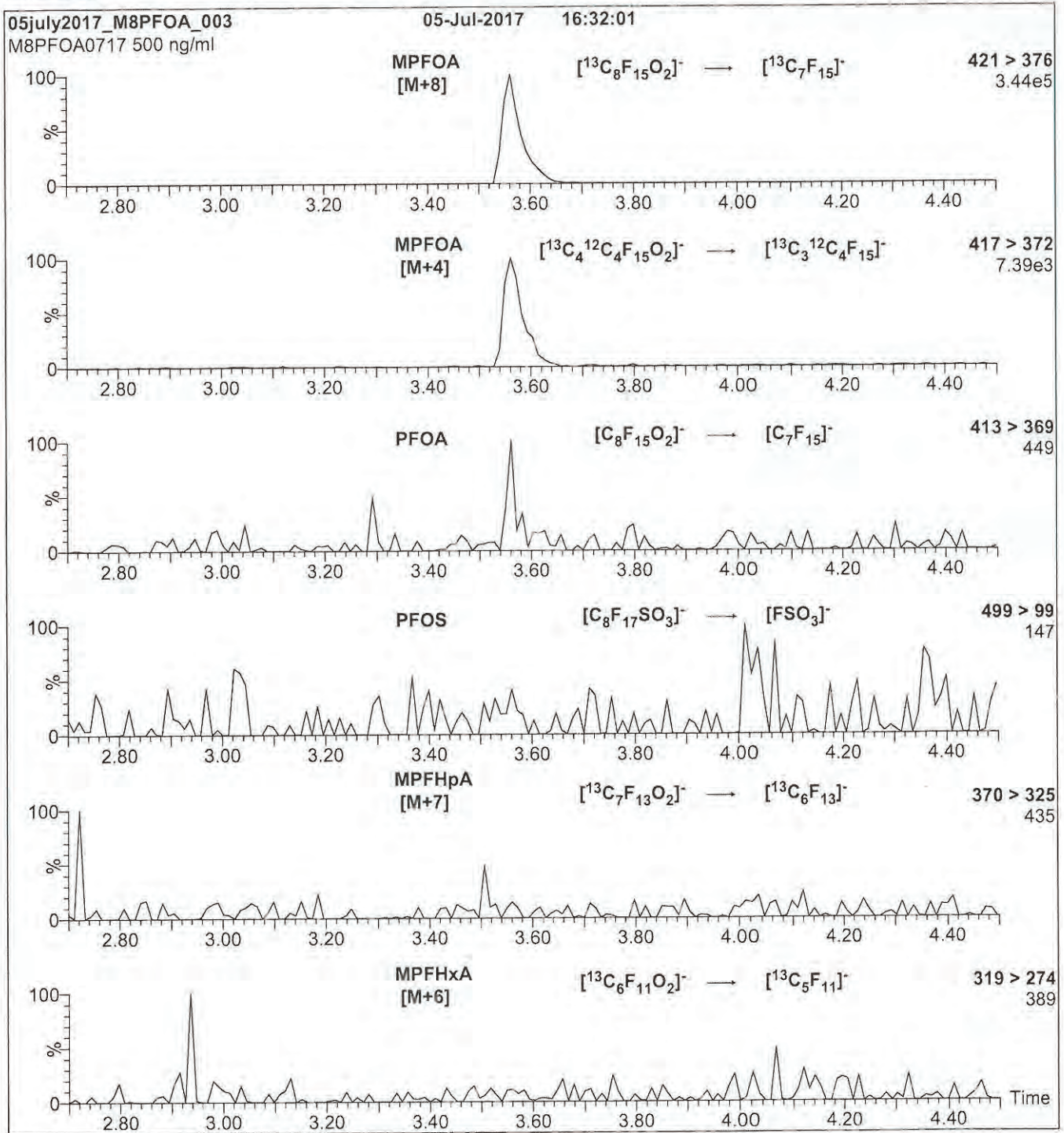
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1536

Figure 2: M8PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M8PFOA)

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

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

MS Parameters

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

18B1537

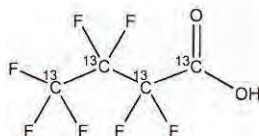


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFBA **LOT NUMBER:** MPFBA0417
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄HF₇O₂ **MOLECULAR WEIGHT:** 218.01
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2,3,4-¹³C₄)
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: _____


 B.G. Chittim, General Manager

Date: 04/20/2017
 (mm/dd/yyyy)

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

18B1537

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

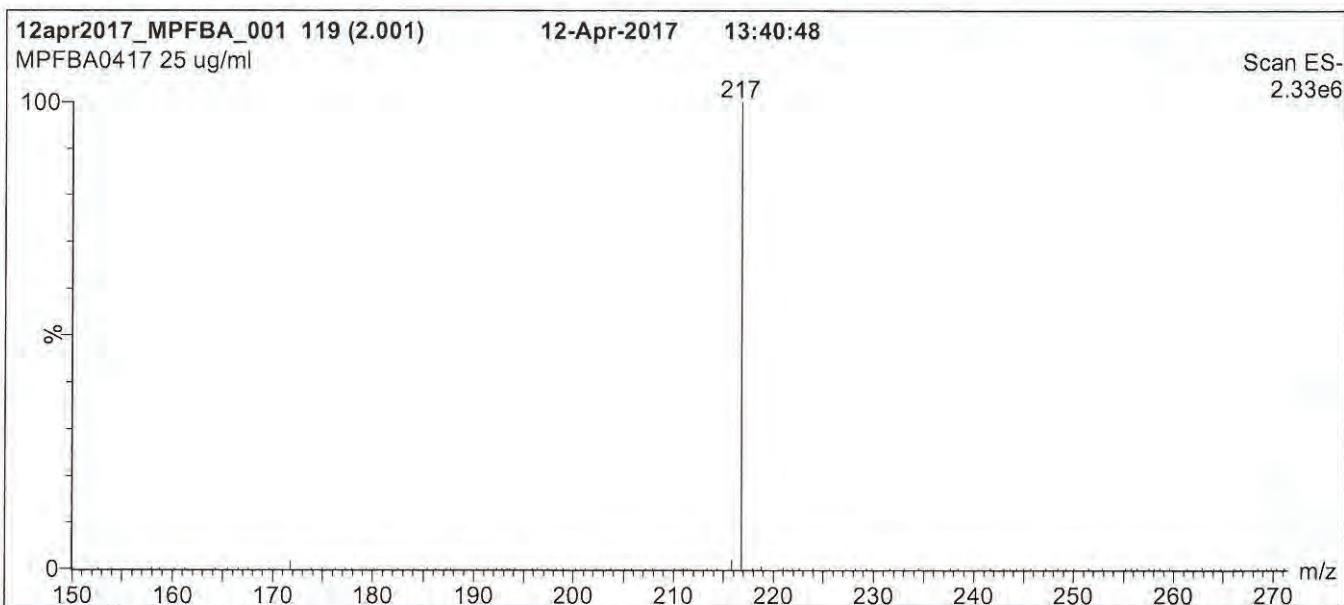
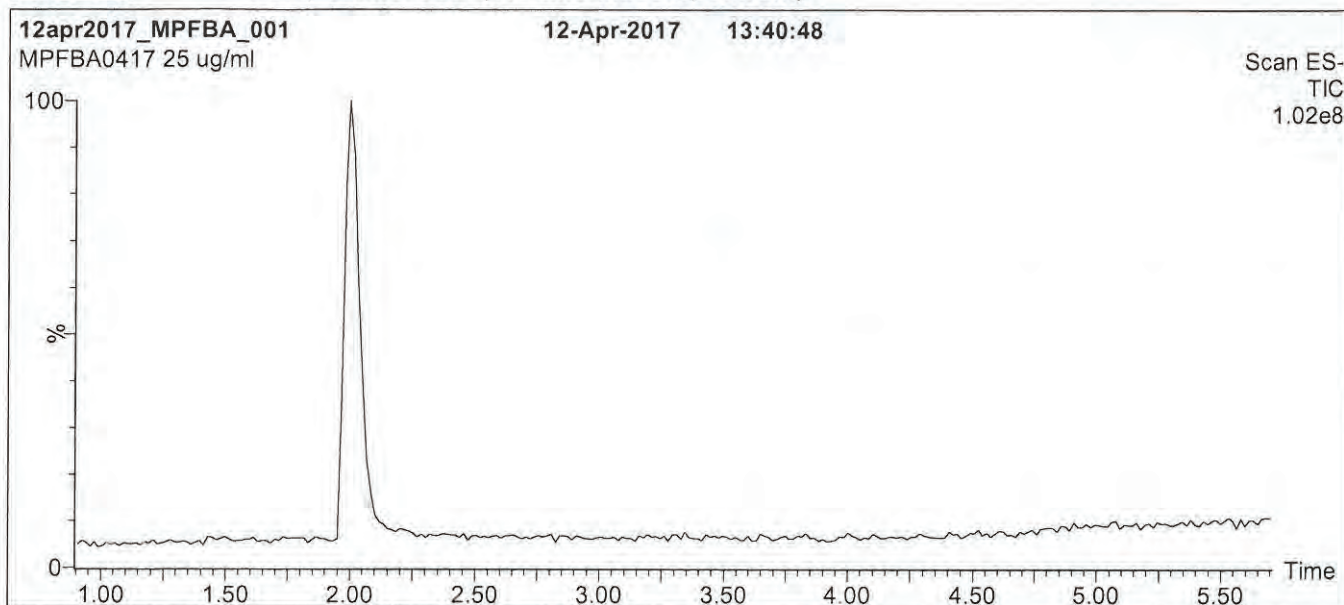
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1537

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

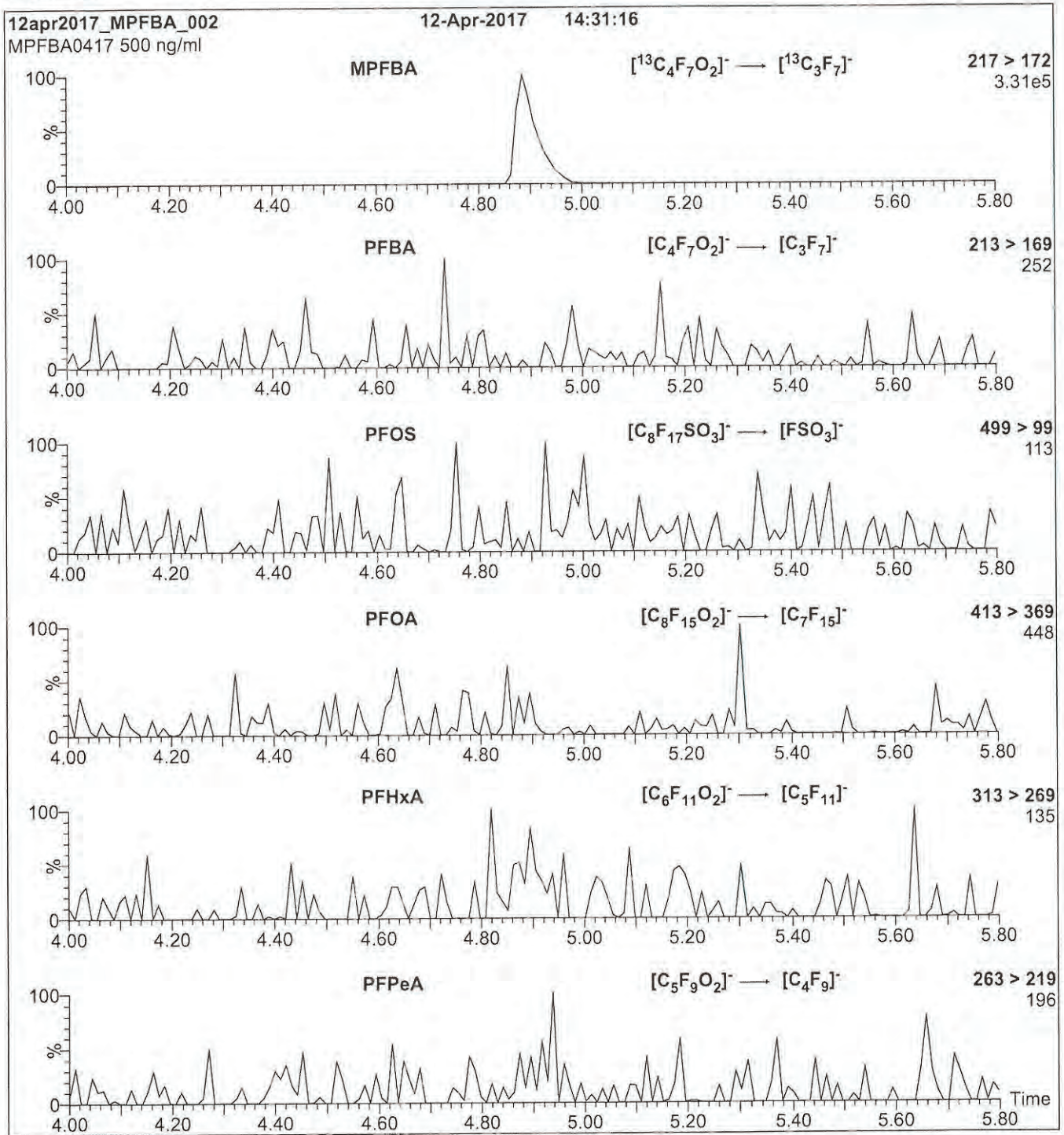
MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

18B1537

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

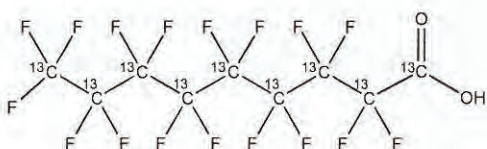
18B1538



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M9PFNA **LOT NUMBER:** M9PFNA0517
COMPOUND: Perfluoro-n-[¹³C₉]nonanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₉HF₁₇O₂ **MOLECULAR WEIGHT:** 473.01
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (¹³C₉)
LAST TESTED: (mm/dd/yyyy) 05/23/2017
EXPIRY DATE: (mm/dd/yyyy) 05/23/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.9% of ¹³C₅¹²C₄HF₁₇O₂ (MPFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 05/25/2017
 (mm/dd/yyyy)

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

18B1538

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, \dots, x_n on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using 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:

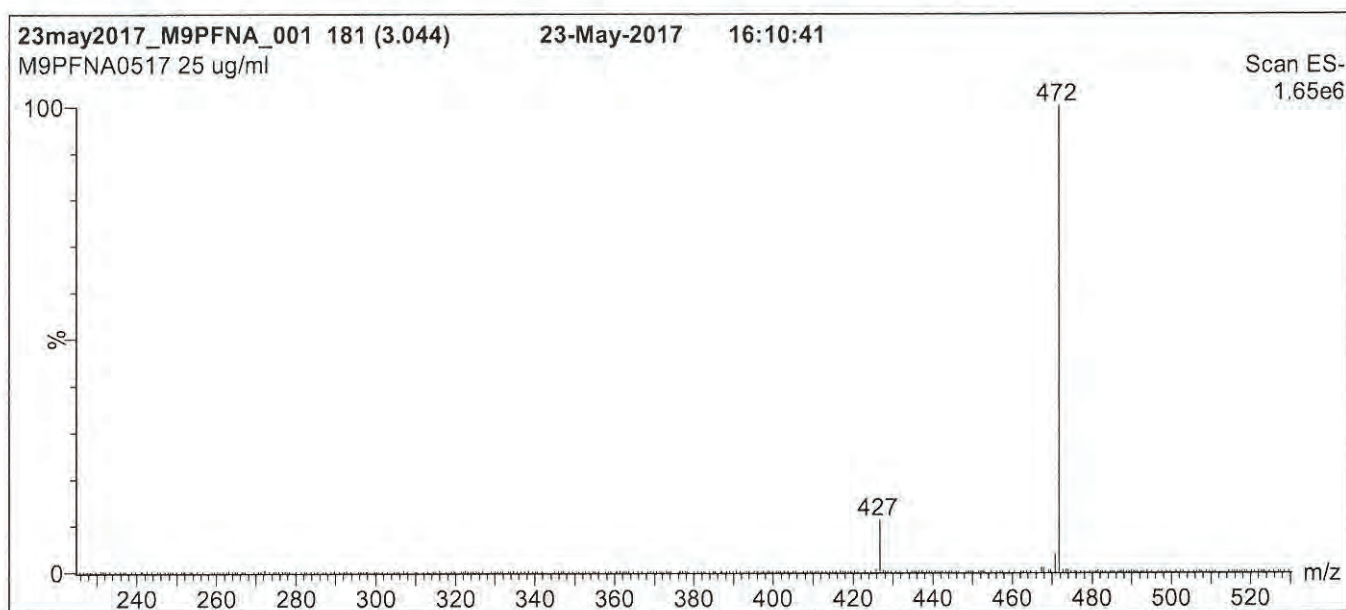
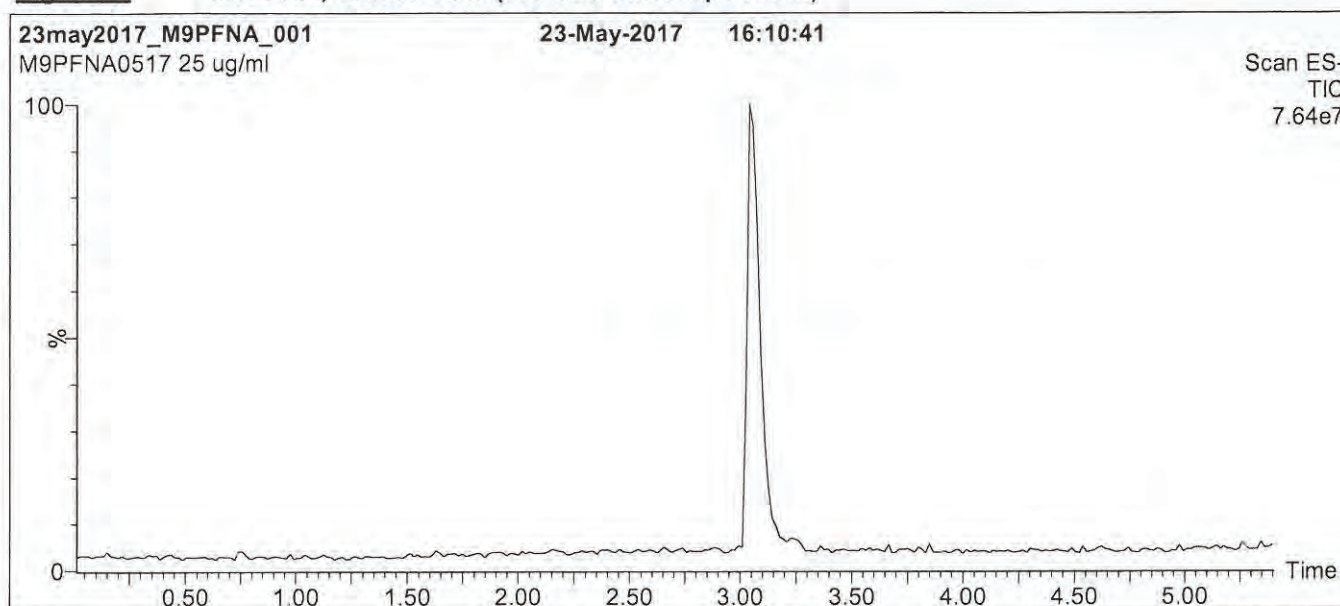
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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

18B1538

Figure 1: M9PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

Flow: 300 μ l/min

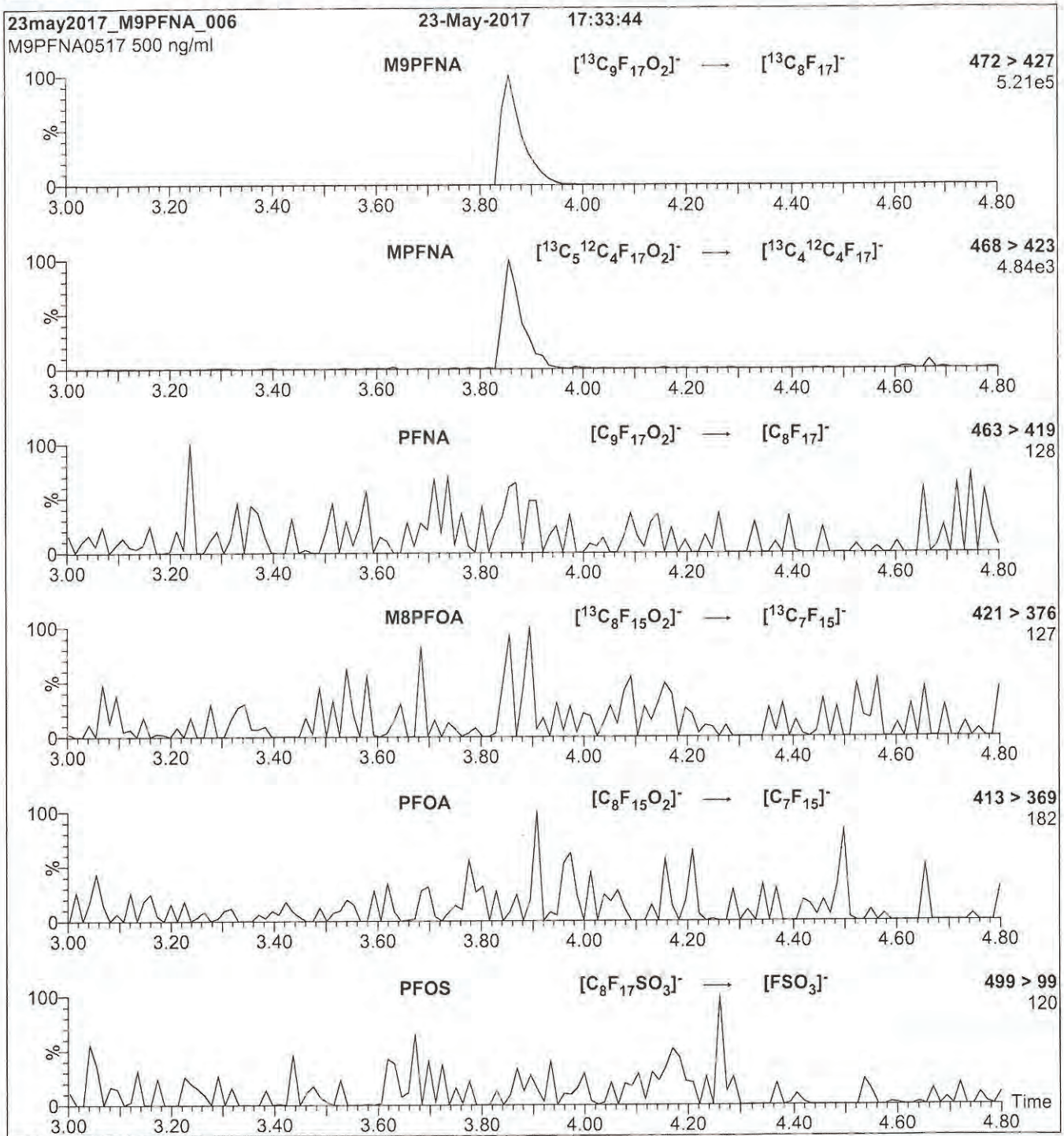
MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

18B1538

Figure 2: M9PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M9PFNA)

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

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

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 11

"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","375-73-5","PFBS","2.50","ng/L","U","0.894","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","307-24-4","PFHxA","2.50","ng/L","U","1.09","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","375-85-9","PFHpA","2.50","ng/L","U","0.295","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","355-46-4","PFHxS","2.50","ng/L","U","0.473","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","335-67-1","PFOA","2.50","ng/L","U","0.325","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","1763-23-1","PFOS","2.50","ng/L","U","0.403","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","375-95-1","PFNA","0.768","ng/L","J","0.404","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","335-76-2","PFDA","2.50","ng/L","U","0.744","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","2355-31-9","MeFOSAA","2.50","ng/L","U","0.824","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","2058-94-8","PFUnA","0.540","ng/L","J","0.524","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","2991-50-6","EtFOSAA","2.50","ng/L","U","0.684","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","307-55-1","PFDoA","2.50","ng/L","U","0.395","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","72629-94-8","PFTTrDA","2.50","ng/L","U","0.247","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","376-06-7","PFTeDA","2.50","ng/L","U","0.377","LOD","","TRG","","","3.99","LOQ","YES","-99","","0.250","0.001","2.50",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C3-PFBS","13C3-PFBS","104","%R","","-99","NA","","IS","104","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C2-PFHxA","13C2-PFHxA","89.1","%R","","-99","NA","","IS","89.1","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C4-PFHpA","13C4-PFHpA","91.5","%R","","-99","NA","","IS","91.5","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","18O2-PFHxS","18O2-PFHxS","98.3","%R","","-99","NA","","IS","98.3","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C2-PFOA","13C2-PFOA","81.8","%R","","-99","NA","","IS","81.8","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C8-PFOS","13C8-PFOS","90.3","%R","","-99","NA","","IS","90.3","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C5-PFNA","13C5-PFNA","88.2","%R","","-99","NA","","IS","88.2","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C2-PFDA","13C2-PFDA","75.6","%R","","-99","NA","","IS","75.6","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","d3-MeFOSAA","d3-MeFOSAA","83.3","%R","","-99","NA","","IS","83.3","","-99","NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C2-PFUnA","13C2-PFUnA","73.3","%R","","-99","NA","","IS","73.3","","-99","NA","YES","100","","0.250","0.001","-99",""

"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","d5-EtFOSAA","d5-EtFOSAA","85.5","%R","",-99,"NA","","IS","85.5","",-99,"NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C2-PFDoA","13C2-PFDoA","79.6","%R","",-99,"NA","","IS","79.6","",-99,"NA","YES","100","","0.250","0.001","-99",""
"CA-AQIDW01-20180409","Modified EPA 537","Initial","1800643-01","Vista","13C2-PFTeDA","13C2-PFTeDA","66.2","%R","",-99,"NA","","IS","66.2","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","375-73-5","PFBS","2.50","ng/L","U","0.895","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","307-24-4","PFHxA","2.50","ng/L","U","1.09","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","375-85-9","PFHpA","2.50","ng/L","U","0.296","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","355-46-4","PFHxS","0.483","ng/L","J","0.474","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","335-67-1","PFOA","2.50","ng/L","U","0.326","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","1763-23-1","PFOS","2.50","ng/L","U","0.404","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","375-95-1","PFNA","2.50","ng/L","U","0.405","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","335-76-2","PFDA","2.50","ng/L","U","0.745","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","2355-31-9","MeFOSAA","2.50","ng/L","U","0.825","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","2058-94-8","PFUnA","2.50","ng/L","U","0.525","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","2991-50-6","EtFOSAA","2.50","ng/L","U","0.685","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","307-55-1","PFDoA","2.50","ng/L","U","0.396","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","72629-94-8","PFTrDA","2.50","ng/L","U","0.247","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","376-06-7","PFTeDA","2.50","ng/L","U","0.378","LOD","","TRG","","","4.00","LOQ","YES","-99","","0.250","0.001","2.50",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C3-PFBS","13C3-PFBS","121","%R","",-99,"NA","","IS","121","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C2-PFHxA","13C2-PFHxA","88.6","%R","",-99,"NA","","IS","88.6","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C4-PFHpA","13C4-PFHpA","96.5","%R","",-99,"NA","","IS","96.5","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","18O2-PFHxS","18O2-PFHxS","102","%R","",-99,"NA","","IS","102","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C2-PFOA","13C2-PFOA","77.5","%R","",-99,"NA","","IS","77.5","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C8-PFOS","13C8-PFOS","93.8","%R","",-99,"NA","","IS","93.8","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C5-PFNA","13C5-PFNA","79.3","%R","",-99,"NA","","IS","79.3","",-99,"NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C2-PFDA","13C2-PFDA","68.2","%R","",-99,"NA","","IS","68.2","",-99,"NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","d3-MeFOSAA","d3-MeFOSAA","72.6","%R","",-99,"NA","",,"IS","72.6","",-99,"NA","YES","100","",,"0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C2-PFUnA","13C2-PFUnA","80.9","%R","",-99,"NA","",,"IS","80.9","",-99,"NA","YES","100","",,"0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","d5-EtFOSAA","d5-EtFOSAA","80.8","%R","",-99,"NA","",,"IS","80.8","",-99,"NA","YES","100","",,"0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C2-PFDoA","13C2-PFDoA","77.8","%R","",-99,"NA","",,"IS","77.8","",-99,"NA","YES","100","",,"0.250","0.001","-99",""
"B8D0070-BLK1","Modified EPA 537","Initial","B8D0070-BLK1","Vista","13C2-PFTeDA","13C2-PFTeDA","71.8","%R","",-99,"NA","",,"IS","71.8","",-99,"NA","YES","100","",,"0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","375-73-5","PFBS","41.2","ng/L","",,"0.895","LOD","",,"TRG","103","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","307-24-4","PFHxA","41.0","ng/L","",,"1.09","LOD","",,"TRG","103","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","375-85-9","PFHpA","39.4","ng/L","",,"0.296","LOD","",,"TRG","98.5","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","355-46-4","PFHxS","41.8","ng/L","B","0.474","LOD","",,"TRG","105","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","335-67-1","PFOA","43.9","ng/L","",,"0.326","LOD","",,"TRG","110","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","1763-23-1","PFOS","44.4","ng/L","",,"0.404","LOD","",,"TRG","111","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","375-95-1","PFNA","38.8","ng/L","",,"0.405","LOD","",,"TRG","97.1","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","335-76-2","PFDA","44.3","ng/L","",,"0.745","LOD","",,"TRG","111","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","2355-31-9","MeFOSAA","40.0","ng/L","",,"0.825","LOD","",,"TRG","100","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","2058-94-8","PFUnA","35.0","ng/L","",,"0.525","LOD","",,"TRG","87.5","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","2991-50-6","EtFOSAA","43.4","ng/L","",,"0.685","LOD","",,"TRG","109","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","307-55-1","PFDoA","39.2","ng/L","",,"0.396","LOD","",,"TRG","97.9","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","72629-94-8","PFTTrDA","33.3","ng/L","",,"0.247","LOD","",,"TRG","83.1","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","376-06-7","PFTeDA","43.1","ng/L","",,"0.378","LOD","",,"TRG","108","",,"4.00","LOQ","YES","40.0","",,"0.250","0.001","2.50",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C3-PFBS","13C3-PFBS","113","%R","",-99,"NA","",,"IS","113","",-99,"NA","YES","100","",,"0.250","0.001","-99",""

"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C2-PFHxA","13C2-PFHxA","89.0","%R","","-99","NA","","IS","89.0","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C4-PFHpA","13C4-PFHpA","102","%R","","-99","NA","","IS","102","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","18O2-PFHxS","18O2-PFHxS","95.4","%R","","-99","NA","","IS","95.4","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C2-PFOA","13C2-PFOA","84.4","%R","","-99","NA","","IS","84.4","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C8-PFOS","13C8-PFOS","87.0","%R","","-99","NA","","IS","87.0","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C5-PFNA","13C5-PFNA","89.7","%R","","-99","NA","","IS","89.7","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C2-PFDA","13C2-PFDA","72.0","%R","","-99","NA","","IS","72.0","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","d3-MeFOSAA","d3-MeFOSAA","81.3","%R","","-99","NA","","IS","81.3","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C2-PFUnA","13C2-PFUnA","80.6","%R","","-99","NA","","IS","80.6","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","d5-EtFOSAA","d5-EtFOSAA","86.5","%R","","-99","NA","","IS","86.5","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C2-PFDoA","13C2-PFDoA","88.4","%R","","-99","NA","","IS","88.4","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BS1","Modified EPA 537","Initial","B8D0070-BS1","Vista","13C2-PFTeDA","13C2-PFTeDA","83.8","%R","","-99","NA","","IS","83.8","","-99","NA","YES","100","","0.250","0.001","-99",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","375-73-5","PFBS","40.5","ng/L","","0.895","LOD","","TRG","101","1.85","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","307-24-4","PFHxA","42.5","ng/L","","1.09","LOD","","TRG","106","3.64","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","375-85-9","PFHpA","40.6","ng/L","","0.296","LOD","","TRG","101","2.88","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","355-46-4","PFHxS","43.3","ng/L","B","0.474","LOD","","TRG","108","3.29","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","335-67-1","PFOA","46.3","ng/L","","0.326","LOD","","TRG","116","5.43","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","1763-23-1","PFOS","39.9","ng/L","","0.404","LOD","","TRG","99.7","10.6","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","375-95-1","PFNA","40.6","ng/L","","0.405","LOD","","TRG","101","4.44","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","335-76-2","PFDA","45.7","ng/L","","0.745","LOD","","TRG","114","3.20","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","2355-31-9","MeFOSAA","44.9","ng/L","","0.825","LOD","","TRG","112","11.5","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""
"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","2058-94-8","PFUnA","42.7","ng/L","","0.525","LOD","","TRG","107","19.9","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","2991-50-6","EtFOSAA","38.8","ng/L","","0.685","LOD","","TRG","97.1","11.2","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","307-55-1","PFD_oA","43.2","ng/L","","0.396","LOD","","TRG","108","9.74","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","72629-94-8","PFT_rDA","37.7","ng/L","","0.247","LOD","","TRG","94.2","12.5","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","376-06-7","PFT_eDA","51.7","ng/L","","0.378","LOD","","TRG","129","18.1","4.00","LOQ","YES","40.0","","0.250","0.001","2.50",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C3-PFBS","13C3-PFBS","111","%R","","-99","NA","","IS","111","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C2-PFH_xA","13C2-PFH_xA","90.0","%R","","-99","NA","","IS","90.0","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C4-PFH_pA","13C4-PFH_pA","99.2","%R","","-99","NA","","IS","99.2","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","18O2-PFH_xS","18O2-PFH_xS","101","%R","","-99","NA","","IS","101","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C2-PFOA","13C2-PFOA","83.1","%R","","-99","NA","","IS","83.1","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C8-PFOS","13C8-PFOS","100","%R","","-99","NA","","IS","100","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C5-PFNA","13C5-PFNA","80.4","%R","","-99","NA","","IS","80.4","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C2-PFDA","13C2-PFDA","72.6","%R","","-99","NA","","IS","72.6","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","d3-MeFOSAA","d3-MeFOSAA","76.9","%R","","-99","NA","","IS","76.9","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C2-PFUnA","13C2-PFUnA","73.9","%R","","-99","NA","","IS","73.9","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","d5-EtFOSAA","d5-EtFOSAA","81.7","%R","","-99","NA","","IS","81.7","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C2-PFD_oA","13C2-PFD_oA","73.2","%R","","-99","NA","","IS","73.2","","-99","NA","YES","100","","0.250","0.001","-99",""

"B8D0070-BSD1","Modified EPA 537","Initial","B8D0070-BSD1","Vista","13C2-PFT_eDA","13C2-PFT_eDA","66.7","%R","","-99","NA","","IS","66.7","","-99","NA","YES","100","","0.250","0.001","-99",""

"112G08005-WE05","112G08005-WE05","CA-AQIDW01-20180409","04/09/2018 16:15","AQ","1800643-01","NM","","0.20","Modified EPA 537","METHOD","Initial","04/11/2018 09:50","04/12/2018 22:05","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B8D0070","B8D0070","NA","S8D0028","1800643","04/10/2018 09:32","01/01/1900 00:00",""

"112G08005-WE05","112G08005-WE05","B8D0070-BLK1","01/01/1900 00:00","AQ","B8D0070-BLK1","MB","","-99","Modified EPA 537","METHOD","Initial","04/11/2018 09:50","04/12/2018 21:53","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B8D0070","B8D0070","NA","S8D0028","1800643","01/01/1900 00:00","01/01/1900 00:00",""

"112G08005-WE05","112G08005-WE05","B8D0070-BS1","01/01/1900 00:00","AQ","B8D0070-BS1","LCS","","-99","Modified EPA 537","METHOD","Initial","04/11/2018 09:50","04/12/2018 21:30","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B8D0070","B8D0070","NA","S8D0028","1800643","01/01/1900 00:00","01/01/1900 00:00",""

"112G08005-WE05","112G08005-WE05","B8D0070-BSD1","01/01/1900 00:00","AQ","B8D0070-BSD1","LCS","","-99","Modified EPA 537","METHOD","Initial","04/11/2018 09:50","04/12/2018 21:42","Vista","COA","WET","NA","1","NA","NA","01/01/1900 00:00","100","B8D0070","B8D0070","NA","S8D0028","1800643","01/01/1900 00:00","01/01/1900 00:00",""

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	CALVERTON_NWIRP	1800643							N6247016D9008	WE05	TETRA TECH, INC.	CA-AQIDW01-20180409	IDW Water	Purge and rinseate water	9-Apr-18	537	Perfluoroalkyl Compounds