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NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, Sample Location Report, SDG 2000247

MCAS
El Toro, CA
April 2021

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

February 18, 2020

Vista Work Order No. 2000247

Ms. Kimberly Shiroodi
KMEA
2423 Hoover Avenue
National City, CA 91950

Dear Ms. Shiroodi,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on February 05, 2020 under your Project Name 'MCAS El Toro and Tustin, PFAS'.

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

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

Sincerely,

Martha Maier
Laboratory Director

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

Vista Work Order No. 2000247
Case Narrative

Sample Condition on Receipt:

Nine groundwater samples and two blank water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The following samples contained particulate and were centrifuged prior to extraction:

Laboratory ID	Sample Name
2000247-06	24-GW-21UGMW37-20200204
2000247-07	24-GW-24EX30B1-20200204
2000247-08	24-GW-24NEW7-20200204
2000247-09	24-GW-24MW10B-20200204
2000247-10	24-GW-24EX20B-20200204
2000247-11	24-GW-24MW05BR-20200204

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

Holding Times

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

Quality Control

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

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

As requested, an MS/MSD was performed on sample "SGU-GW-SGUTPINF-20200204". The MS/MSD recoveries and/or RPDs were out of the acceptance criteria for PFHxA, PFOA, and PFOS.

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

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
2000247-02	EB01-20200204	PFAS Isotope Dilution Method	13C3-PFBS	H	151
2000247-09	24-GW-24MW10B-20200204	PFAS Isotope Dilution Method	13C2-PFDoA	H	43.0
2000247-09	24-GW-24MW10B-20200204	PFAS Isotope Dilution Method	13C2-PFTeDA	H	39.3

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID		Sampled	Received	Components/Containers
2000247-01	SB01-20200204		04-Feb-20 10:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-02	EB01-20200204		04-Feb-20 08:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-03	SGU-GW-SGUTPINF-20200204	MS/MSD	04-Feb-20 07:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-04	DUP02-20200204		04-Feb-20 07:10	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-05	SGU-GW-SGUTPEFL-20200204		04-Feb-20 07:45	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-06	24-GW-21UGMW37-20200204		04-Feb-20 08:45	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-07	24-GW-24EX30B1-20200204		04-Feb-20 10:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-08	24-GW-24NEW7-20200204		04-Feb-20 11:30	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-09	24-GW-24MW10B-20200204		04-Feb-20 13:15	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-10	24-GW-24EX20B-20200204		04-Feb-20 16:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-11	24-GW-24MW05BR-20200204		04-Feb-20 14:30	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Aqueous

Laboratory Data

Lab Sample: B0B0041-BLK1
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFHxA	307-24-4	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
HFPO-DA	13252-13-6	ND	0.00241	0.00300	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFHpA	375-85-9	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
ADONA	919005-14-4	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFHxS	355-46-4	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFOA	335-67-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFNA	375-95-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFOS	1763-23-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
9Cl-PF3ONS	756426-58-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFDA	335-76-2	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
MeFOSAA	2355-31-9	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
EtFOSAA	2991-50-6	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFUnA	2058-94-8	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
11Cl-PF3OUdS	763051-92-9	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFDoA	307-55-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFTrDA	72629-94-8	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFTeDA	376-06-7	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	113	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C3-HFPO-DA	IS	120	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFHxA	IS	103	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C4-PFHpA	IS	104	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C3-PFHxS	IS	108	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C5-PFNA	IS	92.0	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFOA	IS	96.8	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C8-PFOS	IS	106	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFDA	IS	97.6	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
d3-MeFOSAA	IS	92.3	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFUnA	IS	90.4	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
d5-EtFOSAA	IS	95.1	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFDoA	IS	87.8	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFTeDA	IS	86.0	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

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

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Aqueous

Laboratory Data

Lab Sample: B0B0041-BS1
Column: BEH C18

Analyte	CAS Number	Amt Found (ug/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0348	0.0400	86.9	72 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFHxA	307-24-4	0.0355	0.0400	88.8	72 - 129		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
HFPO-DA	13252-13-6	0.0327	0.0400	81.8	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFHpA	375-85-9	0.0364	0.0400	90.9	72 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
ADONA	919005-14-4	0.0347	0.0400	86.7	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFHxS	355-46-4	0.0371	0.0400	92.9	68 - 131		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFOA	335-67-1	0.0369	0.0400	92.2	71 - 133		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFNA	375-95-1	0.0338	0.0400	84.6	69 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFOS	1763-23-1	0.0336	0.0400	84.0	65 - 140		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
9Cl-PF3ONS	756426-58-1	0.0396	0.0400	98.9	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFDA	335-76-2	0.0371	0.0400	92.7	71 - 129		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
MeFOSAA	2355-31-9	0.0437	0.0400	109	65 - 136		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
EtFOSAA	2991-50-6	0.0324	0.0400	80.9	61 - 135		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFUnA	2058-94-8	0.0355	0.0400	88.7	69 - 133		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
11Cl-PF3OUdS	763051-92-9	0.0387	0.0400	96.9	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFDoA	307-55-1	0.0382	0.0400	95.5	72 - 134		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFTrDA	72629-94-8	0.0371	0.0400	92.6	65 - 144		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFTeDA	376-06-7	0.0380	0.0400	94.9	71 - 132		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	128	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C3-HFPO-DA	IS	125	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFHxA	IS	117	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C4-PFHpA	IS	126	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C3-PFHxS	IS	115	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C5-PFNA	IS	118	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFOA	IS	115	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C8-PFOS	IS	105	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFDA	IS	120	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
d3-MeFOSAA	IS	103	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFUnA	IS	116	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
d5-EtFOSAA	IS	93.4	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFDoA	IS	103	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFTeDA	IS	106	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1

Sample ID: SB01-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Blank Water
Date Collected: 04-Feb-20 10:00

Laboratory Data

Lab Sample: 2000247-01
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFHxA	307-24-4	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
HFPO-DA	13252-13-6	ND	0.00256	0.00319	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFHpA	375-85-9	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
ADONA	919005-14-4	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFHxS	355-46-4	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFOA	335-67-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFNA	375-95-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFOS	1763-23-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
9Cl-PF3ONS	756426-58-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFDA	335-76-2	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
MeFOSAA	2355-31-9	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
EtFOSAA	2991-50-6	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFUnA	2058-94-8	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
11Cl-PF3OUdS	763051-92-9	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFDoA	307-55-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFTrDA	72629-94-8	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFTeDA	376-06-7	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	150	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C3-HFPO-DA	IS	138	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFHxA	IS	132	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C4-PFHpA	IS	126	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C3-PFHxS	IS	128	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C5-PFNA	IS	127	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFOA	IS	126	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C8-PFOS	IS	132	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFDA	IS	131	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
d3-MeFOSAA	IS	122	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFUnA	IS	133	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
d5-EtFOSAA	IS	103	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFDoA	IS	120	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFTeDA	IS	97.7	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: EB01-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Blank Water
Date Collected: 04-Feb-20 08:00

Laboratory Data

Lab Sample: 2000247-02
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFHxA	307-24-4	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
HFPO-DA	13252-13-6	ND	0.00232	0.00290	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFHpA	375-85-9	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
ADONA	919005-14-4	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFHxS	355-46-4	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFOA	335-67-1	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFNA	375-95-1	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFOS	1763-23-1	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
9Cl-PF3ONS	756426-58-1	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFDA	335-76-2	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
MeFOSAA	2355-31-9	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
EtFOSAA	2991-50-6	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFUnA	2058-94-8	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
11Cl-PF3OUdS	763051-92-9	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFDoA	307-55-1	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFTrDA	72629-94-8	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
PFTeDA	376-06-7	ND	0.00132	0.00193	0.00385		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	151	50 - 150	H	B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C3-HFPO-DA	IS	121	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C2-PFHxA	IS	123	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C4-PFHpA	IS	136	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C3-PFHxS	IS	130	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C5-PFNA	IS	130	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C2-PFOA	IS	128	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C8-PFOS	IS	123	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C2-PFDA	IS	130	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
d3-MeFOSAA	IS	123	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C2-PFUnA	IS	136	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
d5-EtFOSAA	IS	115	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C2-PFDoA	IS	119	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1
13C2-PFTeDA	IS	101	50 - 150		B0B0041	10-Feb-20	0.259 L	12-Feb-20 22:36	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: SGU-GW-SGUTPINF-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 07:00

Laboratory Data

Lab Sample: 2000247-03
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0548	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFHxA	307-24-4	0.190	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
HFPO-DA	13252-13-6	ND	0.00236	0.00293	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFHpA	375-85-9	0.0335	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
ADONA	919005-14-4	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFHxS	355-46-4	0.237	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFOA	335-67-1	0.241	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFNA	375-95-1	0.00408	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFOS	1763-23-1	0.175	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFDA	335-76-2	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
MeFOSAA	2355-31-9	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
EtFOSAA	2991-50-6	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFUnA	2058-94-8	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFDoA	307-55-1	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFTrDA	72629-94-8	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFTeDA	376-06-7	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	150	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C3-HFPO-DA	IS	123	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFHxA	IS	116	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C4-PFHpA	IS	119	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C3-PFHxS	IS	123	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C5-PFNA	IS	119	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFOA	IS	121	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C8-PFOS	IS	121	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFDA	IS	129	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
d3-MeFOSAA	IS	126	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFUnA	IS	125	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
d5-EtFOSAA	IS	124	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFDoA	IS	113	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFTeDA	IS	111	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: SGU-GW-SGUTPINF-20200204 **PFAS Isotope Dilution Method**

Name:	KMEA	Lab Sample:	B0B0041-MS1/B0B0041-MSD1	Source Lab Sample:	2000247-03
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0B0041	Date Extracted:	10-Feb-20
Matrix:	Aqueous	Samp Size:	0.252/0.254 L	Column:	BEH C18

Analyte	CAS Number	Sample (ug/L)	MS (ug/L)	MS Spike	MS % Rec	MS Quals	MSD (ug/L)	MSD Spike	MSD % Rec	RPD	MSD Quals	%Rec Limits	RPD Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
PFBS	375-73-5	0.0548	0.100	0.0397	114		0.0881	0.0394	84.4	29.8		72-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFHxA	307-24-4	0.190	0.244	0.0397	137	H	0.229	0.0394	99.9	31.3	H	72-129	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
HFPO-DA	13252-13-6	ND	0.0349	0.0397	88.0		0.0337	0.0394	85.5	2.88		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFHpA	375-85-9	0.0335	0.0675	0.0397	85.6		0.0681	0.0394	88.0	2.76		72-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
ADONA	919005-14-4	ND	0.0353	0.0397	89.0		0.0356	0.0394	90.4	1.56		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFHxS	355-46-4	0.237	0.268	0.0397	78.4		0.276	0.0394	98.8	23.0		68-131	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFOA	335-67-1	0.241	0.307	0.0397	166	H	0.291	0.0394	127	26.6		71-133	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFNA	375-95-1	0.00408	0.0409	0.0397	92.7		0.0388	0.0394	88.1	5.09		69-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFOS	1763-23-1	0.175	0.196	0.0397	51.5	H	0.191	0.0394	39.6	26.1	H	65-140	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
9Cl-PF3ONS	756426-58-1	ND	0.0379	0.0397	95.4		0.0348	0.0394	88.3	7.73		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFDA	335-76-2	ND	0.0435	0.0397	109		0.0389	0.0394	98.8	9.82		71-129	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
MeFOSAA	2355-31-9	ND	0.0362	0.0397	91.1		0.0380	0.0394	96.4	5.65		65-136	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
EtFOSAA	2991-50-6	ND	0.0393	0.0397	98.9		0.0357	0.0394	90.6	8.76		61-135	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFUnA	2058-94-8	ND	0.0385	0.0397	97.0		0.0378	0.0394	95.9	1.14		69-133	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
11Cl-PF3OUdS	763051-92-9	ND	0.0402	0.0397	101		0.0383	0.0394	97.3	3.73		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFDoA	307-55-1	ND	0.0401	0.0397	101		0.0373	0.0394	94.8	6.33		72-134	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFTrDA	72629-94-8	ND	0.0354	0.0397	89.3		0.0372	0.0394	94.3	5.45		65-144	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFTeDA	376-06-7	ND	0.0400	0.0397	101		0.0375	0.0394	95.1	6.02		71-132	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C3-PFBS	IS	123		144		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C3-HFPO-DA	IS	103		131		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFHxA	IS	107		114		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C4-PFHpA	IS	123		122		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C3-PFHxS	IS	119		114		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C5-PFNA	IS	113		120		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFOA	IS	104		115		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C8-PFOS	IS	127		131		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFDA	IS	117		127		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
d3-MeFOSAA	IS	121		123		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFUnA	IS	119		121		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
d5-EtFOSAA	IS	104		110		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFDoA	IS	108		114		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1

Sample ID: SGU-GW-SGUTPINF-20200204 **PFAS Isotope Dilution Method**

Name:	KMEA	Lab Sample:	B0B0041-MS1/B0B0041-MSD1	Source Lab Sample:	2000247-03
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0B0041	Date Extracted:	10-Feb-20
Matrix:	Aqueous	Samp Size:	0.252/0.254 L	Column:	BEH C18

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C2-PFTeDA	IS	104		110		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1

Sample ID: DUP02-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 07:10

Laboratory Data

Lab Sample: 2000247-04
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0599	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFHxA	307-24-4	0.196	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
HFPO-DA	13252-13-6	ND	0.00239	0.00298	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFHpA	375-85-9	0.0344	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
ADONA	919005-14-4	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFHxS	355-46-4	0.249	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFOA	335-67-1	0.252	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFNA	375-95-1	0.00404	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFOS	1763-23-1	0.196	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
9Cl-PF3ONS	756426-58-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFDA	335-76-2	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
MeFOSAA	2355-31-9	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
EtFOSAA	2991-50-6	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFUnA	2058-94-8	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
11Cl-PF3OUdS	763051-92-9	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFDoA	307-55-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFTrDA	72629-94-8	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
PFTeDA	376-06-7	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	138	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C3-HFPO-DA	IS	112	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C2-PFHxA	IS	115	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C4-PFHpA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C3-PFHxS	IS	115	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C5-PFNA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C2-PFOA	IS	118	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C8-PFOS	IS	111	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C2-PFDA	IS	127	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
d3-MeFOSAA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C2-PFUnA	IS	118	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
d5-EtFOSAA	IS	112	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C2-PFDoA	IS	115	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1
13C2-PFTeDA	IS	103	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 22:57	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: SGU-GW-SGUTPEFL-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 07:45

Laboratory Data

Lab Sample: 2000247-05
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0597	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFHxA	307-24-4	0.205	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
HFPO-DA	13252-13-6	ND	0.00253	0.00315	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFHpA	375-85-9	0.0336	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
ADONA	919005-14-4	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFHxS	355-46-4	0.242	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFOA	335-67-1	0.248	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFNA	375-95-1	0.00438	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFOS	1763-23-1	0.192	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
9Cl-PF3ONS	756426-58-1	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFDA	335-76-2	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
MeFOSAA	2355-31-9	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
EtFOSAA	2991-50-6	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFUnA	2058-94-8	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
11Cl-PF3OUdS	763051-92-9	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFDoA	307-55-1	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFTrDA	72629-94-8	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
PFTeDA	376-06-7	ND	0.00144	0.00210	0.00420		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	150	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C3-HFPO-DA	IS	140	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C2-PFHxA	IS	114	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C4-PFHpA	IS	123	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C3-PFHxS	IS	123	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C5-PFNA	IS	117	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C2-PFOA	IS	117	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C8-PFOS	IS	120	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C2-PFDA	IS	136	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
d3-MeFOSAA	IS	128	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C2-PFUnA	IS	128	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
d5-EtFOSAA	IS	124	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C2-PFDoA	IS	122	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1
13C2-PFTeDA	IS	122	50 - 150		B0B0041	10-Feb-20	0.238 L	12-Feb-20 23:08	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: 24-GW-21UGMW37-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 08:45

Laboratory Data

Lab Sample: 2000247-06
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0823	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFHxA	307-24-4	0.296	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
HFPO-DA	13252-13-6	ND	0.00236	0.00294	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFHpA	375-85-9	0.0548	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
ADONA	919005-14-4	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFHxS	355-46-4	0.699	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFOA	335-67-1	0.162	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFNA	375-95-1	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFOS	1763-23-1	0.213	0.00134	0.00196	0.00392	Q	B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFDA	335-76-2	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
MeFOSAA	2355-31-9	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
EtFOSAA	2991-50-6	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFUnA	2058-94-8	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFDoA	307-55-1	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFTrDA	72629-94-8	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
PFTeDA	376-06-7	ND	0.00134	0.00196	0.00392		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	139	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C3-HFPO-DA	IS	126	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C2-PFHxA	IS	113	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C4-PFHpA	IS	110	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C3-PFHxS	IS	100	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C5-PFNA	IS	124	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C2-PFOA	IS	114	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C8-PFOS	IS	123	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C2-PFDA	IS	118	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
d3-MeFOSAA	IS	119	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C2-PFUnA	IS	119	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
d5-EtFOSAA	IS	113	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C2-PFDoA	IS	110	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1
13C2-PFTeDA	IS	108	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:18	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: 24-GW-24EX30B1-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 10:00

Laboratory Data

Lab Sample: 2000247-07
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.00252	0.00136	0.00198	0.00397	J	B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFHxA	307-24-4	0.0173	0.00136	0.00198	0.00397	Q	B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
HFPO-DA	13252-13-6	ND	0.00239	0.00298	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFHpA	375-85-9	0.00416	0.00136	0.00198	0.00397	Q	B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
ADONA	919005-14-4	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFHxS	355-46-4	0.0110	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFOA	335-67-1	0.0391	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFNA	375-95-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFOS	1763-23-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
9Cl-PF3ONS	756426-58-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFDA	335-76-2	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
MeFOSAA	2355-31-9	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
EtFOSAA	2991-50-6	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFUnA	2058-94-8	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
11Cl-PF3OUdS	763051-92-9	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFDoA	307-55-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFTrDA	72629-94-8	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFTeDA	376-06-7	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	147	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C3-HFPO-DA	IS	118	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFHxA	IS	121	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C4-PFHpA	IS	120	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C3-PFHxS	IS	131	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C5-PFNA	IS	132	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFOA	IS	129	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C8-PFOS	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFDA	IS	127	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
d3-MeFOSAA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFUnA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
d5-EtFOSAA	IS	110	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFDoA	IS	107	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFTeDA	IS	110	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: 24-GW-24NEW7-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 11:30

Laboratory Data

Lab Sample: 2000247-08
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.124	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFHxA	307-24-4	0.335	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
HFPO-DA	13252-13-6	ND	0.00242	0.00301	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFHpA	375-85-9	0.0135	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
ADONA	919005-14-4	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFHxS	355-46-4	0.0299	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFOA	335-67-1	0.107	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFNA	375-95-1	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFOS	1763-23-1	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
9Cl-PF3ONS	756426-58-1	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFDA	335-76-2	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
MeFOSAA	2355-31-9	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
EtFOSAA	2991-50-6	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFUnA	2058-94-8	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
11Cl-PF3OUdS	763051-92-9	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFDoA	307-55-1	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFTrDA	72629-94-8	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
PFTeDA	376-06-7	ND	0.00138	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	108	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C3-HFPO-DA	IS	87.8	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C2-PFHxA	IS	88.6	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C4-PFHpA	IS	107	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C3-PFHxS	IS	92.6	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C5-PFNA	IS	98.0	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C2-PFOA	IS	92.8	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C8-PFOS	IS	87.8	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C2-PFDA	IS	95.0	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
d3-MeFOSAA	IS	100	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C2-PFUnA	IS	91.2	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
d5-EtFOSAA	IS	88.1	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C2-PFDoA	IS	87.3	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1
13C2-PFTeDA	IS	74.5	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 23:39	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: 24-GW-24MW10B-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 13:15

Laboratory Data

Lab Sample: 2000247-09
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0979	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFHxA	307-24-4	0.284	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
HFPO-DA	13252-13-6	ND	0.00228	0.00284	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFHpA	375-85-9	0.0259	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
ADONA	919005-14-4	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFHxS	355-46-4	0.0682	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFOA	335-67-1	0.108	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFNA	375-95-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFOS	1763-23-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
9Cl-PF3ONS	756426-58-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFDA	335-76-2	0.00217	0.00130	0.00189	0.00379	J	B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
MeFOSAA	2355-31-9	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
EtFOSAA	2991-50-6	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFUnA	2058-94-8	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
11Cl-PF3OUdS	763051-92-9	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFDoA	307-55-1	0.00281	0.00130	0.00189	0.00379	J	B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFTrDA	72629-94-8	0.00349	0.00130	0.00189	0.00379	J	B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
PFTeDA	376-06-7	0.00395	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	101	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C3-HFPO-DA	IS	97.3	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C2-PFHxA	IS	87.1	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C4-PFHpA	IS	94.7	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C3-PFHxS	IS	91.5	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C5-PFNA	IS	96.1	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C2-PFOA	IS	86.8	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C8-PFOS	IS	88.9	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C2-PFDA	IS	88.9	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
d3-MeFOSAA	IS	73.2	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C2-PFUnA	IS	68.4	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
d5-EtFOSAA	IS	66.9	50 - 150		B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C2-PFDoA	IS	43.0	50 - 150	H	B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1
13C2-PFTeDA	IS	39.3	50 - 150	H	B0B0041	10-Feb-20	0.264 L	12-Feb-20 23:49	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: 24-GW-24EX20B-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 16:00

Laboratory Data

Lab Sample: 2000247-10
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0586	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFHxA	307-24-4	0.194	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
HFPO-DA	13252-13-6	ND	0.00237	0.00294	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFHpA	375-85-9	0.0262	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
ADONA	919005-14-4	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFHxS	355-46-4	0.0932	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFOA	335-67-1	0.142	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFNA	375-95-1	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFOS	1763-23-1	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
9Cl-PF3ONS	756426-58-1	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFDA	335-76-2	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
MeFOSAA	2355-31-9	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
EtFOSAA	2991-50-6	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFUnA	2058-94-8	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
11Cl-PF3OUdS	763051-92-9	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFDoA	307-55-1	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFTrDA	72629-94-8	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
PFTeDA	376-06-7	ND	0.00135	0.00196	0.00393		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	125	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C3-HFPO-DA	IS	109	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C2-PFHxA	IS	107	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C4-PFHpA	IS	112	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C3-PFHxS	IS	106	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C5-PFNA	IS	106	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C2-PFOA	IS	101	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C8-PFOS	IS	116	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C2-PFDA	IS	116	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
d3-MeFOSAA	IS	112	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C2-PFUnA	IS	110	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
d5-EtFOSAA	IS	100	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C2-PFDoA	IS	99.1	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1
13C2-PFTeDA	IS	90.8	50 - 150		B0B0041	10-Feb-20	0.255 L	12-Feb-20 23:59	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Sample ID: 24-GW-24MW05BR-20200204

PFAS Isotope Dilution Method

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 14:30

Laboratory Data

Lab Sample: 2000247-11
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0218	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFHxA	307-24-4	0.0477	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
HFPO-DA	13252-13-6	ND	0.00228	0.00284	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFHpA	375-85-9	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
ADONA	919005-14-4	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFHxS	355-46-4	0.00162	0.00130	0.00189	0.00379	J	B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFOA	335-67-1	0.00262	0.00130	0.00189	0.00379	J	B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFNA	375-95-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFOS	1763-23-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
9Cl-PF3ONS	756426-58-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFDA	335-76-2	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
MeFOSAA	2355-31-9	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
EtFOSAA	2991-50-6	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFUnA	2058-94-8	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
11Cl-PF3OUdS	763051-92-9	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFDoA	307-55-1	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFTrDA	72629-94-8	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
PFTeDA	376-06-7	ND	0.00130	0.00189	0.00379		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	113	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C3-HFPO-DA	IS	120	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C2-PFHxA	IS	99.6	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C4-PFHpA	IS	105	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C3-PFHxS	IS	112	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C5-PFNA	IS	112	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C2-PFOA	IS	95.5	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C8-PFOS	IS	111	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C2-PFDA	IS	105	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
d3-MeFOSAA	IS	98.9	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C2-PFUnA	IS	101	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
d5-EtFOSAA	IS	92.0	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C2-PFDoA	IS	88.2	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1
13C2-PFTeDA	IS	86.3	50 - 150		B0B0041	10-Feb-20	0.264 L	13-Feb-20 00:41	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

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

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

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

NELAP Accredited Test Methods

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

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

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

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

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

Vista Analytical

1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

2000247
0.1°C

Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 2/4/2020

PAGE: 1 OF 2

LABORATORY CLIENT: KMEA	CLIENT PROJECT NAME / NUMBER: MCAS El Toro and Tustin, PFAS
ADDRESS: 9210 Sky Park Court, Suite 220	PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson
CITY: San Diego, CA 92123	SAMPLER(S): (SIGNATURE) Meg Rueter
TEL: (619) 399-5900	E-Mail: kimberly.shiroodi@woodplc.com
E-MAIL: brian.johnson@woodplc.com	P.O. NO.: TO 008 Mod 4
CONTRACT NO.: N62473-16-D-2405	LAB USE ONLY:

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 10 DAYS ☒ Standard

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS

Samples potentially contain elevated levels of PFAS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS
	SB01-20200204	2/4/20	10:00	BW	2	IV	X
	EB01-20200204		8:00	"	2	"	X
	SGU-GW-SGUTPINF-20200204		7:00	GW	6	"	X
	DUP02-20200204		7:10	"	2	"	X
	SGU-GW-SGUTPEFL-20200204		7:45	"	2	"	X
	24-GW-21UGMW37-20200204		8:45	"	2	"	X
	24-GW-24EX30B1-20200204		10:00	"	2	"	X
	24-GW-24NEW7-20200204		11:30	"	2	"	X
	24-GW-24MW10B-20200204		13:15	"	2	"	X
	24-GW-24EX20B-20200204		16:00	"	2	"	X

MS/MSD

Relinquished by: (Signature) Meg Rueter	Received by: (Signature) / Carrier Tracking Number FedEx	Date: 2/4/20	Time: 18:00
Relinquished by: (Signature) FedEx	Received by: (Signature)	Date: 02/05/20	Time: 0951
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

2000247
0.1°C

Vista Analytical

1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 2/4/2020
PAGE: 2 OF 2

LABORATORY CLIENT: KMEA	CLIENT PROJECT NAME / NUMBER: MCAS El Toro and Tustin, PFAS
ADDRESS: 9210 Sky Park Court, Suite 220	P.O. NO.: TO 008 Mod 4
CITY: San Diego, CA 92123	PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson
TEL: (619) 399-5900 — E-Mail: kimberly.shiroodi@woodplc.com — E-MAIL: brian.johnson@woodplc.com	CONTRACT NO.: N62473-16-D-2405
	SAMPLER(S): (SIGNATURE) [signature]
	LAB USE ONLY: ☐☐-☐☐☐☐

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 10 DAYS ☒ Standard

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY): ☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS: Samples potentially contain elevated levels of PFAS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS
	24-GW-24MW05BR-20200204	2/4/20	14:30	GW	2	IV	X

UR 2-4-20

Relinquished by: (Signature)	Received by: (Signature) / Carrier Tracking Number	Date:	Time:
[signature]	FedEx	2/4/20	18:00
FedEx	[signature]	02/05/20	0951

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 2000247 TAT 14

Samples Arrival:	**Date/Time** 02/05/20 0951		**Initials:** MJS		**Location:** WR-2 **Shelf/Rack:** N/a		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Dry Ice		None
Temp °C: 0.1 (uncorrected)			**Probe used: Y / (N)**		**Thermometer ID:** IR-4		
Temp °C: 0.1 (corrected)							

					YES	NO	NA
Shipping Container(s) Intact?					✓		
Shipping Custody Seals Intact?					✓		
Airbill —	Trk # 8101 0952 1884				✓		
Shipping Documentation Present?					✓		
Shipping Container	Vista	(Client)	Retain	(Return)		Dispose	
Chain of Custody / Sample Documentation Present?					✓		
Chain of Custody / Sample Documentation Complete?					✓		
Holding Time Acceptable?					✓		

Logged In:	**Date/Time** 02/05/20 1352	**Initials:** KS	**Location:** R-13 / WR-2 **Shelf/Rack:** A-2 / E-5		
COC Anomaly/Sample Acceptance Form completed?				✓	✓

Comments:

CoC/Label Reconciliation Report WO# 2000247

LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time		Container	BaseMatrix	Sample Comments
2000247-01	A SB01-20200204	☑		04-Feb-20 10:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-01	B SB01-20200204	☑		04-Feb-20 10:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-02	A EB01-20200204	☑		04-Feb-20 08:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-02	B EB01-20200204	☑		04-Feb-20 08:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-03	A SGU-GW-SGUTPINF-20200204	☑		04-Feb-20 07:00	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	B SGU-GW-SGUTPINF-20200204	☑		04-Feb-20 07:00	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	C SGU-GW-SGUTPINF-20200204	☑		04-Feb-20 07:00	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	D SGU-GW-SGUTPINF-20200204	☑		04-Feb-20 07:00	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	E SGU-GW-SGUTPINF-20200204	☑		04-Feb-20 07:00	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	F SGU-GW-SGUTPINF-20200204	☑		04-Feb-20 07:00	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-04	A DUP02-20200204	☑		04-Feb-20 07:10	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-04	B DUP02-20200204	☑		04-Feb-20 07:10	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-05	A SGU-GW-SGUTPEFL-20200204	☑		04-Feb-20 07:45	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-05	B SGU-GW-SGUTPEFL-20200204	☑		04-Feb-20 07:45	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-06	A 24-GW-21UGMW37-20200204	☑		04-Feb-20 08:45	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-06	B 24-GW-21UGMW37-20200204	☑		04-Feb-20 08:45	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-07	A 24-GW-24EX30B1-20200204	☑		04-Feb-20 10:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-07	B 24-GW-24EX30B1-20200204	☑		04-Feb-20 10:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-08	A 24-GW-24NEW7-20200204	☑		04-Feb-20 11:30	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-08	B 24-GW-24NEW7-20200204	☑		04-Feb-20 11:30	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-09	A 24-GW-24MW10B-20200204	☑		04-Feb-20 13:15	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-09	B 24-GW-24MW10B-20200204	☑		04-Feb-20 13:15	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-10	A 24-GW-24EX20B-20200204	☑		04-Feb-20 16:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-10	B 24-GW-24EX20B-20200204	☑		04-Feb-20 16:00	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-11	A 24-GW-24MW05BR-20200204	☑		04-Feb-20 14:30	☑	HDPE Bottle, 250 mL	Aqueous	
2000247-11	B 24-GW-24MW05BR-20200204	☑		04-Feb-20 14:30	☑	HDPE Bottle, 250 mL	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA
Sample Container Intact?	✓		
Sample Custody Seals Intact?			✓
Adequate Sample Volume?	✓		
Container Type Appropriate for Analysis(es)	✓		
Preservation Documented: Na2S2O3 Trizma (None) Other		✓	✓
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓

Comments:

Verified by/Date: KS 02/05/20

February 18, 2020

Vista Work Order No. 2000247

Ms. Kimberly Shiroodi
KMEA
2423 Hoover Avenue
National City, CA 91950

Dear Ms. Shiroodi,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on February 05, 2020 under your Project Name 'MCAS El Toro and Tustin, PFAS'.

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

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

Sincerely,

Martha Maier
Laboratory Director

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

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 2000247
Case Narrative

Sample Condition on Receipt:

Nine groundwater samples and two blank water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The following samples contained particulate and were centrifuged prior to extraction:

Laboratory ID	Sample Name
2000247-06	24-GW-21UGMW37-20200204
2000247-07	24-GW-24EX30B1-20200204
2000247-08	24-GW-24NEW7-20200204
2000247-09	24-GW-24MW10B-20200204
2000247-10	24-GW-24EX20B-20200204
2000247-11	24-GW-24MW05BR-20200204

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

Holding Times

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

Quality Control

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

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

As requested, an MS/MSD was performed on sample "SGU-GW-SGUTPINF-20200204". The MS/MSD recoveries and/or RPDs were out of the acceptance criteria for PFHxA, PFOA, and PFOS.

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

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
2000247-02	EB01-20200204	PFAS Isotope Dilution Method	13C3-PFBS	H	151
2000247-09	24-GW-24MW10B-20200204	PFAS Isotope Dilution Method	13C2-PFDoA	H	43.0
2000247-09	24-GW-24MW10B-20200204	PFAS Isotope Dilution Method	13C2-PFTeDA	H	39.3

H = Recovery was outside laboratory acceptance criteria.

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Sample Inventory Report

Vista Sample ID	Client Sample ID		Sampled	Received	Components/Containers
2000247-01	SB01-20200204		04-Feb-20 10:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-02	EB01-20200204		04-Feb-20 08:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-03	SGU-GW-SGUTPINF-20200204	MS/MSD	04-Feb-20 07:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-04	DUP02-20200204		04-Feb-20 07:10	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-05	SGU-GW-SGUTPEFL-20200204		04-Feb-20 07:45	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-06	24-GW-21UGMW37-20200204		04-Feb-20 08:45	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-07	24-GW-24EX30B1-20200204		04-Feb-20 10:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-08	24-GW-24NEW7-20200204		04-Feb-20 11:30	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-09	24-GW-24MW10B-20200204		04-Feb-20 13:15	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-10	24-GW-24EX20B-20200204		04-Feb-20 16:00	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL
2000247-11	24-GW-24MW05BR-20200204		04-Feb-20 14:30	05-Feb-20 09:51	HDPE Bottle, 250 mL
					HDPE Bottle, 250 mL

Vista Project: 2000247

Client Project: MCAS El Toro and Tustin, PFAS

ANALYTICAL RESULTS

Vista Analytical Laboratory

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

Client Data
Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Aqueous

Laboratory Data
Lab Sample: B0B0041-BLK1
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFHxA	307-24-4	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
HFPO-DA	13252-13-6	ND	0.00241	0.00300	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFHpA	375-85-9	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
ADONA	919005-14-4	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFHxS	355-46-4	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFOA	335-67-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFNA	375-95-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFOS	1763-23-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
9Cl-PF3ONS	756426-58-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFDA	335-76-2	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
MeFOSAA	2355-31-9	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
EtFOSAA	2991-50-6	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFUnA	2058-94-8	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
11Cl-PF3OUdS	763051-92-9	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFDoA	307-55-1	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFTrDA	72629-94-8	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
PFTeDA	376-06-7	ND	0.00137	0.00200	0.00400		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	113	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C3-HFPO-DA	IS	120	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFHxA	IS	103	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C4-PFHpA	IS	104	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C3-PFHxS	IS	108	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C5-PFNA	IS	92.0	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFOA	IS	96.8	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C8-PFOS	IS	106	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFDA	IS	97.6	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
d3-MeFOSAA	IS	92.3	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFUnA	IS	90.4	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
d5-EtFOSAA	IS	95.1	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFDoA	IS	87.8	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1
13C2-PFTeDA	IS	86.0	50 - 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:45	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Vista Analytical Laboratory

Sample ID: OPR — **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Aqueous

Laboratory Data

Lab Sample: B0B0041-BS1
Column: BEH C18

Analyte	CAS Number	Amt Found (ug/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0348	0.0400	86.9	72 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFHxA	307-24-4	0.0355	0.0400	88.8	72 - 129		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
HFPO-DA	13252-13-6	0.0327	0.0400	81.8	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFHpA	375-85-9	0.0364	0.0400	90.9	72 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
ADONA	919005-14-4	0.0347	0.0400	86.7	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFHxS	355-46-4	0.0371	0.0400	92.9	68 - 131		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFOA	335-67-1	0.0369	0.0400	92.2	71 - 133		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFNA	375-95-1	0.0338	0.0400	84.6	69 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFOS	1763-23-1	0.0336	0.0400	84.0	65 - 140		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
9Cl-PF3ONS	756426-58-1	0.0396	0.0400	98.9	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFDA	335-76-2	0.0371	0.0400	92.7	71 - 129		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
MeFOSAA	2355-31-9	0.0437	0.0400	109	65 - 136		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
EtFOSAA	2991-50-6	0.0324	0.0400	80.9	61 - 135		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFUnA	2058-94-8	0.0355	0.0400	88.7	69 - 133		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
11Cl-PF3OUdS	763051-92-9	0.0387	0.0400	96.9	70 - 130		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFDoA	307-55-1	0.0382	0.0400	95.5	72 - 134		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFTrDA	72629-94-8	0.0371	0.0400	92.6	65 - 144		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
PFTeDA	376-06-7	0.0380	0.0400	94.9	71 - 132		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1

Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	128	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C3-HFPO-DA	IS	125	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFHxA	IS	117	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C4-PFHpA	IS	126	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C3-PFHxS	IS	115	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C5-PFNA	IS	118	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFOA	IS	115	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C8-PFOS	IS	105	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFDA	IS	120	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
d3-MeFOSAA	IS	103	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFUnA	IS	116	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
d5-EtFOSAA	IS	93.4	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFDoA	IS	103	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1
13C2-PFTeDA	IS	106	50- 150		B0B0041	10-Feb-20	0.250 L	12-Feb-20 21:55	1

Vista Analytical Laboratory

Sample ID: SB01-20200204 — **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Blank Water
Date Collected: 04-Feb-20 10:00

Laboratory Data

Lab Sample: 2000247-01
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFHxA	307-24-4	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
HFPO-DA	13252-13-6	ND	0.00256	0.00319	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFHpA	375-85-9	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
ADONA	919005-14-4	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFHxS	355-46-4	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFOA	335-67-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFNA	375-95-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFOS	1763-23-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
9Cl-PF3ONS	756426-58-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFDA	335-76-2	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
MeFOSAA	2355-31-9	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
EtFOSAA	2991-50-6	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFUnA	2058-94-8	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
11Cl-PF3OUdS	763051-92-9	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFDoA	307-55-1	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFTrDA	72629-94-8	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
PFTeDA	376-06-7	ND	0.00146	0.00213	0.00425		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	150	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C3-HFPO-DA	IS	138	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFHxA	IS	132	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C4-PFHpA	IS	126	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C3-PFHxS	IS	128	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C5-PFNA	IS	127	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFOA	IS	126	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C8-PFOS	IS	132	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFDA	IS	131	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
d3-MeFOSAA	IS	122	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFUnA	IS	133	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
d5-EtFOSAA	IS	103	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFDoA	IS	120	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1
13C2-PFTeDA	IS	97.7	50 - 150		B0B0041	10-Feb-20	0.235 L	12-Feb-20 22:26	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Vista Analytical Laboratory

Sample ID: B0 1- 24141141L **FAs S Iurtrpe DilMirn h etdrc**

Client Data

Name: 1 MEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Klank Water
Date Collected: 04-Feb-20 08:00

baoryatryP Data

Lab Sample: 2000247-02
Date Received: 05-Feb-20 09:5H
Column: KEB CH8

s nalPte	Cs S NMmoey	Crn. (gM)bQ	Db	bED	bEf	f Mlizieyu	0at. d	Bxtya. tec	Samp SiQe	s nalPQec	DilMirn
PFKS	675-76-5	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFBxA	607-24-4	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
BFPO-DA	H6252-H6-3	ND	0.00262	0.00290	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFBpA	675-85-9	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
ADONA	9H9005-H4-4	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFBxS	655-43-4	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFOA	665-37-H	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFNA	675-95-H	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFOS	H736-26-H	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
9Cl-PF6ONS	753423-58-H	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFDA	665-73-2	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
MeFOSAA	2655-6H-9	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
EtFOSAA	299H-50-3	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFUnA	2058-94-8	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
HHCl-PF6OUdS	73605H-92-9	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFDoA	607-55-H	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFTrDA	72329-94-8	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
PFTeDA	673-03-7	ND	0.00H62	0.00H96	0.00685		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H

baoelec Stancaycu	TPpe	% Re. rveyP	bimitu	f Mlizieyu	0at. d	Bxtya. tec	Samp SiQe	s nalPQec	DilMirn
H6C6-PFKS	IS	H5H	50 - H50	B	K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C6-BFPO-DA	IS	H2H	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C2-PFBxA	IS	H26	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C4-PFBpA	IS	H63	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C6-PFBxS	IS	H60	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C5-PFNA	IS	H60	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C2-PFOA	IS	H28	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C8-PFOS	IS	H26	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C2-PFDA	IS	H60	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
d6-MeFOSAA	IS	H26	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C2-PFUnA	IS	H63	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
d5-EtFOSAA	IS	HH5	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C2-PFDoA	IS	HH9	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H
H6C2-PFTeDA	IS	HDH	50 - H50		K0K004H	H0-Feb-20	0.259 L	H2-Feb-20 22:63	H

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Vista Analytical Laboratory

Sample ID: SGU-GW-SGUTPINF-20200204 — **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 07:00

Laboratory Data

Lab Sample: 2000247-03
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0548	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFHxA	307-24-4	0.190	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
HFPO-DA	13252-13-6	ND	0.00236	0.00293	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFHpA	375-85-9	0.0335	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
ADONA	919005-14-4	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFHxS	355-46-4	0.237	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFOA	335-67-1	0.241	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFNA	375-95-1	0.00408	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFOS	1763-23-1	0.175	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFDA	335-76-2	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
MeFOSAA	2355-31-9	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
EtFOSAA	2991-50-6	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFUnA	2058-94-8	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFDoA	307-55-1	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFTrDA	72629-94-8	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
PFTeDA	376-06-7	ND	0.00134	0.00195	0.00391		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	150	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C3-HFPO-DA	IS	123	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFHxA	IS	116	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C4-PFHpA	IS	119	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C3-PFHxS	IS	123	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C5-PFNA	IS	119	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFOA	IS	121	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C8-PFOS	IS	121	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFDA	IS	129	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
d3-MeFOSAA	IS	126	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFUnA	IS	125	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
d5-EtFOSAA	IS	124	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFDoA	IS	113	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1
13C2-PFTeDA	IS	111	50 - 150		B0B0041	10-Feb-20	0.256 L	12-Feb-20 22:47	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Vista Analytical Laboratory

Sample ID: SGU-GW-SGUTPINF-20200204 **PFAS Isotope Dilution Method**

Name:	KMEA	Lab Sample:	B0B0041-MS1/B0B0041-MSD1	Source Lab Sample:	2000247-03
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0B0041	Date Extracted:	10-Feb-20
Matrix:	Aqueous	Samp Size:	0.252/0.254 L	Column:	BEH C18

Analyte	CAS Number	Sample (ug/L)	MS (ug/L)	MS Spike	MS % Rec	MS Quals	MSD (ug/L)	MSD Spike	MSD % Rec	RPD	MSD Quals	%Rec Limits	RPD Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
PFBS	375-73-5	0.0548	0.100	0.0397	114		0.0881	0.0394	84.4	29.8		72-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFHxA	307-24-4	0.190	0.244	0.0397	137	H	0.229	0.0394	99.9	31.3	H	72-129	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
HFPO-DA	13252-13-6	ND	0.0349	0.0397	88.0		0.0337	0.0394	85.5	2.88		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFHpA	375-85-9	0.0335	0.0675	0.0397	85.6		0.0681	0.0394	88.0	2.76		72-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
ADONA	919005-14-4	ND	0.0353	0.0397	89.0		0.0356	0.0394	90.4	1.56		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFHxS	355-46-4	0.237	0.268	0.0397	78.4		0.276	0.0394	98.8	23.0		68-131	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFOA	335-67-1	0.241	0.307	0.0397	166	H	0.291	0.0394	127	26.6		71-133	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFNA	375-95-1	0.00408	0.0409	0.0397	92.7		0.0388	0.0394	88.1	5.09		69-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFOS	1763-23-1	0.175	0.196	0.0397	51.5	H	0.191	0.0394	39.6	26.1	H	65-140	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
9Cl-PF3ONS	756426-58-1	ND	0.0379	0.0397	95.4		0.0348	0.0394	88.3	7.73		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFDA	335-76-2	ND	0.0435	0.0397	109		0.0389	0.0394	98.8	9.82		71-129	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
MeFOSAA	2355-31-9	ND	0.0362	0.0397	91.1		0.0380	0.0394	96.4	5.65		65-136	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
EtFOSAA	2991-50-6	ND	0.0393	0.0397	98.9		0.0357	0.0394	90.6	8.76		61-135	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFUnA	2058-94-8	ND	0.0385	0.0397	97.0		0.0378	0.0394	95.9	1.14		69-133	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
11Cl-PF3OUdS	763051-92-9	ND	0.0402	0.0397	101		0.0383	0.0394	97.3	3.73		70-130	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFDoA	307-55-1	ND	0.0401	0.0397	101		0.0373	0.0394	94.8	6.33		72-134	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFTrDA	72629-94-8	ND	0.0354	0.0397	89.3		0.0372	0.0394	94.3	5.45		65-144	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1
PFTeDA	376-06-7	ND	0.0400	0.0397	101		0.0375	0.0394	95.1	6.02		71-132	30	12-Feb-20 22:05	1	12-Feb-20 22:16	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C3-PFBS	IS	123		144		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C3-HFPO-DA	IS	103		131		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFHxA	IS	107		114		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C4-PFHpA	IS	123		122		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C3-PFHxS	IS	119		114		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C5-PFNA	IS	113		120		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFOA	IS	104		115		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C8-PFOS	IS	127		131		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFDA	IS	117		127		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
d3-MeFOSAA	IS	121		123		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFUnA	IS	119		121		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
d5-EtFOSAA	IS	104		110		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1
13C2-PFDoA	IS	108		114		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1

Sample ID: SGU-GW-SGUTPINF-20200204 **PFAS Isotope Dilution Method**

Name:	KMEA	Lab Sample:	B0B0041-MS1/B0B0041-MSD1	Source Lab Sample:	2000247-03
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0B0041	Date Extracted:	10-Feb-20
Matrix:	Aqueous	Samp Size:	0.252/0.254 L	Column:	BEH C18

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C2-PFTeDA	IS	104		110		50-150	12-Feb-20 22:05	1	12-Feb-20 22:16	1

Vista Analytical Laboratory

Sample ID: DUP02-20200204 — **PFAS Isotope Dilution Method**

Client Data

Name: 3 MEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: 8 roundGater
Date Collected: 04-Feb-20 07:H0

Laboratory Data

Lab Sample: 2000247-04
Date weceiRed: 0v-Feb-20 05:vH
Column: KEB CHl

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFKS	. 7v-7. -v	090v55	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFBxA	. 07-24-4	09H56	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
BFPO-DA	H 2v2-H -6	ND	09002. 5	0900251	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFBpA	. 7v-1v-5	090. 44	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
ADONA	5H500v-H4-4	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFBxS	. vv-46-4	09245	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFOA	. . v-67-H	092v2	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFNA	. 7v-5v-H	0900404	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFOS	H76. -2. -H	09H56	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
5Cl-PF. ONS	7v6426-v1-H	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFDA	. . v-76-2	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
MeFOSAA	2. vv-. H-5	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
EtFOSAA	255H-v0-6	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFUnA	20v1-54-1	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
HHCl-PF. OUdS	76. 0vH-52-5	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFDoA	. 07-vv-H	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFTrDA	72625-54-1	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
PFTeDA	. 76-06-7	ND	0900H 6	0900H51	0900. 57		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
H C. -PFKS	IS	H 1	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C. -BFPO-DA	IS	HH2	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C2-PFBxA	IS	HHv	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C4-PFBpA	IS	H2.	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C. -PFBxS	IS	HHv	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H Cv-PFNA	IS	H2.	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C2-PFOA	IS	HHl	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C1-PFOS	IS	HHH	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C2-PFDA	IS	H27	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
d. -MeFOSAA	IS	H2.	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C2-PFUnA	IS	HHl	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
dv-EtFOSAA	IS	HH2	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C2-PFDoA	IS	HHv	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H
H C2-PFTeDA	IS	HD.	v0 - Hv0		K0K004H	H0-Feb-20	092v2 L	H2-Feb-20 22:v7	H

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
wesults reported to the DL9

When reported, PFBxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers9 Only the linear isomer is reported for all other analytes9

Vista Analytical Laboratory

Sample ID: SGU-GW-SGUTPNF2 -0404404L — **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 07:43

2 aboratory Data

Lab Sample: 2000247-03
Date Received: 03-Feb-20 05:31
Column: BEH C18

Analyte	CAS x umber	Conc. (ug/2)	D2	2 OD	2 OQ	Qualifiers	Batch	NEtracted	Samp Size	Analyzed	Dilution
PFBS	. 73-7. -3	090357	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFHxA	. 07-24-4	09203	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
HFP6 -DA	1. 232-1. -O	ND	090023.	0900. 13	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFHpA	. 73-83-5	090. . C	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
AD6 NA	515003-14-4	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFHxS	. 33-4O-4	09242	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PF6 A	. . 3-O7-1	09248	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFNA	. 73-53-1	09004. 8	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PF6 S	17Q -2. -1	09152	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
5Cl-PF. 6 NS	73O42O-38-1	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFDA	. . 3-7O-2	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
MeF6 SAA	2. 33-. 1-5	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
EtF6 SAA	2551-30-O	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFUnA	2038-54-8	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
11Cl-PF. 6 UdS	7Q 031-52-5	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFDoA	. 07-33-1	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFTrDA	72O25-54-8	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
PFTeDA	. 7O-0O-7	ND	0900144	0900210	0900420		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1

2 abeled Standards	Type	% Recovery	2 imits	Qualifiers	Batch	NEtracted	Samp Size	Analyzed	Dilution
1. C. -PFBS	IS	130	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C. -HFP6 -DA	IS	140	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C2-PFHxA	IS	114	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C4-PFHpA	IS	12.	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C. -PFHxS	IS	12.	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C3-PFNA	IS	117	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C2-PF6 A	IS	117	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C8-PF6 S	IS	120	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C2-PFDA	IS	1. O	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
d. -MeF6 SAA	IS	128	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C2-PFUnA	IS	128	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
d3-EtF6 SAA	IS	124	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C2-PFDoA	IS	122	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1
1. C2-PFTeDA	IS	122	30 - 130		B0B0041	10-Feb-20	092. 8 L	12-Feb-20 2. :08	1

DL - Detection Limit
L6 D - Limit of Detection
L6 Q - Limit of quantitation
Results reported to the DL9
When reported, PFHxS, PF6 A, PF6 S, MeF6 SAA and EtF6 SAA include both linear and branched isomers9 6 nly the linear isomer is reported for all other analytes9

Vista Analytical Laboratory

Sample ID: 24-GW-21UGMW37-20200204 — **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 08:4R

Laboratory Data

Lab Sample: 2000247-03
Date v ecei5ed: 0R-Feb-20 09:Rl
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	67R-76-R	0.0826	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFHxA	607-24-4	0.293	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
HFPO-DA	162R2-16-3	ND	0.00263	0.00294	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFHpA	67R-8R-9	0.0R48	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
ADONA	91900R-14-4	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFHxS	6RR-43-4	0.399	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFOA	66R-37-1	0.132	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFNA	67R-9R-1	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFOS	1736-26-1	0.216	0.00164	0.00193	0.00692	U	B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
9Cl-PF6ONS	7R3423-R8-1	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFDA	66R-73-2	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
MeFOSAA	26RR-61-9	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
EtFOSAA	2991-R0-3	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFI nA	20R8-94-8	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
11Cl-PF6OI dS	7360Rl-92-9	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFDoA	607-RR-1	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFTrDA	72329-94-8	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
PFTeDA	673-03-7	ND	0.00164	0.00193	0.00692		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
16C6-PFBS	hS	169	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C6-HFPO-DA	hS	123	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C2-PFHxA	hS	116	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C4-PFHpA	hS	110	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C6-PFHxS	hS	100	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16CR-PFNA	hS	124	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C2-PFOA	hS	114	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C8-PFOS	hS	126	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C2-PFDA	hS	118	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
d6-MeFOSAA	hS	119	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C2-PFI nA	hS	119	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
dR-EtFOSAA	hS	116	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C2-PFDoA	hS	110	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1
16C2-PFTeDA	hS	108	R0 - 1R0		B0B0041	10-Feb-20	0.2RRL	12-Feb-20 26:18	1

DL - Detection Limit
LOD - Limit oQDetection
LOU - Limit oQquantitation
v esults reported to tWe DL.
y Wen reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include botW linear and brancWed isomers. Onlf tWe linear isomer is reported Qor all otWer analf tes.

Vista Analytical Laboratory

Sample ID: 24-GW-24EX30B1-20200204 **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 10:00

Laboratory Data

Lab Sample: 2000247-07
Date Received: 05-Feb-20 09:51
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.00252	0.00136	0.00198	0.00397	J	B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFHxA	307-24-4	0.0173	0.00136	0.00198	0.00397	Q	B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
HFPO-DA	13252-13-6	ND	0.00239	0.00298	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFHpA	375-85-9	0.00416	0.00136	0.00198	0.00397	Q	B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
ADONA	919005-14-4	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFHxS	355-46-4	0.0110	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFOA	335-67-1	0.0391	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFNA	375-95-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFOS	1763-23-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
9Cl-PF3ONS	756426-58-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFDA	335-76-2	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
MeFOSAA	2355-31-9	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
EtFOSAA	2991-50-6	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFUnA	2058-94-8	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
11Cl-PF3OUdS	763051-92-9	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFDoA	307-55-1	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFTrDA	72629-94-8	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
PFTeDA	376-06-7	ND	0.00136	0.00198	0.00397		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	147	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C3-HFPO-DA	IS	118	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFHxA	IS	121	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C4-PFHpA	IS	120	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C3-PFHxS	IS	131	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C5-PFNA	IS	132	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFOA	IS	129	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C8-PFOS	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFDA	IS	127	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
d3-MeFOSAA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFUnA	IS	123	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
d5-EtFOSAA	IS	110	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFDoA	IS	107	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1
13C2-PFTeDA	IS	110	50 - 150		B0B0041	10-Feb-20	0.252 L	12-Feb-20 23:28	1

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.
When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Vista Analytical Laboratory

Sample ID: 24-GW-24NEW7-20200204 **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: 8 roundGater
Date Collected: 04-Feb-20 11:w0

Laboratory Data

Lab Sample: 2000247-03
Date Received: 05-Feb-20 09:51
Column: BEH C13

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	w75-7w-5	0.124	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFHxA	w07-24-4	0.ww5	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
HFP6 -DA	1w252-1w-O	ND	0.00242	0.00w01	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFHpA	w75-35-9	0.01w5	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
AD6 NA	919005-14-4	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFHxS	w55-4O-4	0.0299	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PF6 A	ww5-O7-1	0.107	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFNA	w75-95-1	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PF6 S	17Ow-2w-1	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
9Cl-PFw6 NS	75O42O-53-1	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFDA	ww5-7O-2	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
MeF6 SAA	2w55-w1-9	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
EtF6 SAA	2991-50-O	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFUnA	2053-94-3	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
11Cl-PFw6 UdS	7Ow051-92-9	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFDoA	w07-55-1	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFTrDA	72O29-94-3	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
PFTeDA	w7O-0O-7	ND	0.001w8	0.00201	0.00402		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
1wCw-PFBS	IS	103	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wCw-HFP6 -DA	IS	37.3	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC2-PFHxA	IS	33.O	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC4-PFHpA	IS	107	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wCw-PFHxS	IS	92.O	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC5-PFNA	IS	93.0	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC2-PF6 A	IS	92.3	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC3-PF6 S	IS	37.3	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC2-PFDA	IS	95.0	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
dw-MeF6 SAA	IS	100	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC2-PFUnA	IS	91.2	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
d5-EtF6 SAA	IS	33.1	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC2-PFDoA	IS	37.w	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1
1wC2-PFTeDA	IS	74.5	50 - 150		B0B0041	10-Feb-20	0.249 L	12-Feb-20 2ww9	1

DL - Detection Limit
L6 D - Limit of Detection
L6 Q - Limit of quantitation
Results reported to the DL.

When reported, PFHxS, PF6 A, PF6 S, MeF6 SAA and EtF6 SAA include both linear and branched isomers. 6 nly the linear isomer is reported for all other analytes.

Vista Analytical Laboratory

Sample ID: 24-GW-24MW10B-20200204 — **PFAS Isotope Dilution Method**

Client Data

Name: BMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: wroundRater
Date Collected: 04-Feb-20 8v:85

Laboratory Data

Lab Sample: 2000247-0K
Date 9 ecei. ed: 05-Feb-20 0K:58
Column: HE1 C8G

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFHS	v75-7v-5	030K7K	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PF1 xA	v07-24-4	032G4	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
1 FPJ -DA	8v252-8v-6	ND	030022G	03002G4	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PF1 pA	v75-G5-K	03025K	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
ADJ NA	K8K005-84-4	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PF1 xS	v55-46-4	0306G2	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFJ A	vv5-67-8	0380C	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFNA	v75-K5-8	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFJ S	876v-2v-8	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
KCl-PFvJ NS	756426-5G-8	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFDA	vv5-76-2	030287	03008v0	03008GK	0300v7K	Q	H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
MeFJ SAA	2v55-v8-K	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
EtFJ SAA	2KK8-50-6	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFOnA	205G-K4-G	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
88Cl-PFvJ OdS	76v058-K2-K	ND	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFDoA	v07-55-8	03002G8	03008v0	03008GK	0300v7K	Q	H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFTrDA	7262K-K4-G	0300v4K	03008v0	03008GK	0300v7K	Q	H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
PFTeDA	v76-06-7	0300vK5	03008v0	03008GK	0300v7K		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
8vCv-PFHS	US	808	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vCv-1 FPJ -DA	US	K73v	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC2-PF1 xA	US	G738	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC4-PF1 pA	US	K437	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vCv-PF1 xS	US	K835	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC5-PFNA	US	K638	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC2-PFJ A	US	G63G	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vCG-PFJ S	US	GG3K	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC2-PFDA	US	GG3K	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
dv-MeFJ SAA	US	7v32	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC2-PFOnA	US	6G34	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
d5-EtFJ SAA	US	663K	50 - 850		H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC2-PFDoA	US	4v30	50 - 850	1	H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8
8vC2-PFTeDA	US	vK3v	50 - 850	1	H0H0048	80-Feb-20	03264 L	82-Feb-20 2v:4K	8

DL - Detection Limit
LJ D - Limit oyDetection
LJ f - Limit oyquantitation
9 esults reported to tI e DL3
h I en reported, PF1 xS, PFJ A, PFJ S, MeFJ SAA and EtFJ SAA include botI linear and brancI ed isomers3 J nlWtI e linear isomer is reported yor all otI er anaIWes3

Vista Analytical Laboratory

Sample ID: 24-GW-24EX20B-20200204 **PFAS Isotope Dilution Method**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: 8 roundGater
Date Collected: 04-Feb-20 3w:00

Laboratory Data

Lab Sample: 2000247-30
Date Received: 05-Feb-20 09:53
Column: BEH C31

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	675-76-5	0.051w	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFHxA	607-24-4	0.394	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
HFPO-DA	36252-36-w	ND	0.00267	0.00294	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFHpA	675-15-9	0.02w2	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
ADONA	939005-34-4	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFHxS	655-4w-4	0.0962	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFOA	665-w7-3	0.342	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFNA	675-95-3	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFOS	37w6-26-3	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
9Cl-PF6ONS	75w42w-51-3	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFDA	665-7w-2	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
MeFOSAA	2655-63-9	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
EtFOSAA	2993-50-w	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFUnA	2051-94-1	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
33Cl-PF6OUdS	7w6053-92-9	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFDoA	607-55-3	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFTrDA	72w29-94-1	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
PFTeDA	67w-0w-7	ND	0.00365	0.0039w	0.00696		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
36C6-PFBS	IS	325	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C6-HFPO-DA	IS	309	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C2-PFHxA	IS	307	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C4-PFHpA	IS	332	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C6-PFHxS	IS	30w	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C5-PFNA	IS	30w	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C2-PFOA	IS	303	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C1-PFOS	IS	33w	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C2-PFDA	IS	33w	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
d6-MeFOSAA	IS	332	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C2-PFUnA	IS	330	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
d5-EtFOSAA	IS	300	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C2-PFDoA	IS	99.3	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3
36C2-PFTeDA	IS	90.1	50 - 350		B0B0043	30-Feb-20	0.255 L	32-Feb-20 26:59	3

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

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

Vista Analytical Laboratory

Sample ID: 24-GW-24N WE70 L-2E2FE2E4 **FAs S Iurtrpe DilMirn N ethrd**

Client Data

Name: BMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 04-Feb-20 K4:R0

baoryatryP Data

Lab Sample: 2000247-KK
Date v ecei5ed: 09-Feb-20 0. :9K
Column: HE1 CK8

s nalPte	Cs S %Mnoey	Crnc. (Mg/b)	Db	bOD	bOQ	QMalifieyu	0atch	Bxtyacted	Samp Size	s nalPzed	DilMirn
PFHS	R79-7R-9	0302K8	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PF1 xA	R07-24-4	030477	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
1 FPJ -DA	KR292-KR-6	ND	0300228	0300284	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PF1 pA	R79-89-.	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
ADJ NA	. K 009-K4-4	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PF1 xS	R99-46-4	0300K62	0300KR0	0300K8.	0300R7.	Q	H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFJ A	RR9-67-K	0300262	0300KR0	0300K8.	0300R7.	Q	H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFNA	R79-. 9-K	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFJ S	K76R-2R-K	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
. Cl-PFRJ NS	796426-98-K	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFDA	RR9-76-2	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
MeFJ SAA	2R99-RK-.	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
EtFJ SAA	2. . K-90-6	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFOnA	2098-. 4-8	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KKCl-PFRJ OdS	76R09K-. 2-.	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFDoA	R07-99-K	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFTrDA	7262. -. 4-8	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
PFTeDA	R76-06-7	ND	0300KR0	0300K8.	0300R7.		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K

baoeled Standaydu	TPpe	R LecrveyP	bimitu	QMalifieyu	0atch	Bxtyacted	Samp Size	s nalPzed	DilMirn
KRCR-PFHS	US	KKR	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRCR-1 FPJ -DA	US	K20	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC2-PF1 xA	US	. . 36	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC4-PF1 pA	US	K09	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRCR-PF1 xS	US	KK2	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC9-PFNA	US	KK2	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC2-PFJ A	US	. 939	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC8-PFJ S	US	KKK	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC2-PFDA	US	K09	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
dR-MeFJ SAA	US	. 83	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC2-PFOnA	US	K0K	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
d9-EtFJ SAA	US	. 230	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC2-PFDoA	US	8832	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K
KRC2-PFTeDA	US	863R	90 - K90		H0H004K	K0-Feb-20	03264 L	KR-Feb-20 00:4K	K

DL - Detection Limit
LJ D - Limit oyDetection
LJ f - Limit oyquantitation
v esults reported to tI e DL3
h I en reported, PF1 xS, PFJ A, PFJ S, MeFJ SAA and EtFJ SAA include botI linear and brancI ed isomers3 J nlWtI e linear isomer is reported yor all otI er anaIWes3

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
CRS	Cleanup Recovery Standard
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
IS	Internal Standard
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limit of Detection
LOQ	Limit of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
OPR	Ongoing Precision and Recovery sample
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
RL	Reporting Limit
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

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

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

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

NELAP Accredited Test Methods

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

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

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

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

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

2000247
0.1°C

Vista Analytical
1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 2/4/2020
PAGE: 1 OF 2

LABORATORY CLIENT: KMEA	CLIENT PROJECT NAME / NUMBER: MCAS El Toro and Tustin, PFAS
ADDRESS: 9210 Sky Park Court, Suite 220	PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson
CITY: San Diego, CA 92123	SAMPLER(S): (SIGNATURE) Uly Ruiter
TEL: (619) 399-5900	E-Mail: kimberly.shiroodi@woodplc.com
E-MAIL: brian.johnson@woodplc.com	
P.O. NO.: TO 008 Mod 4	
CONTRACT NO.: N62473-16-D-2405	
LAB USE ONLY	

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 10 DAYS ☒ Standard

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
Samples potentially contain elevated levels of PFAS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS
	SB01-20200204	2/4/20	10:00	GW	2	IV	X
	EB01-20200204		8:00	"	2	"	X
	SGU-GW-SGUTPINF-20200204		7:00	GW	6	"	X MS/MSD
	DUP02-20200204		7:10	"	2	"	X
	SGU-GW-SGUTPEFL-20200204		7:45	"	2	"	X
	24-GW-21UGMW37-20200204		8:45	"	2	"	X
	24-GW-24EX30B1-20200204		10:00	"	2	"	X
	24-GW-24NEW7-20200204		11:30	"	2	"	X
	24-GW-24MW10B-20200204		13:15	"	2	"	X
	24-GW-24EX20B-20200204		16:00	"	2	"	X

Relinquished by: (Signature) Uly Ruiter	Received by: (Signature) / Carrier Tracking Number FedEx	Date: 2/4/20	Time: 18:00
Relinquished by: (Signature) FedEx	Received by: (Signature)	Date: 02/05/20	Time: 0951
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Vista Analytical
1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

2000247
0.1°C

Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 2/4/2020
PAGE: 2 OF 2

LABORATORY CLIENT: KMEA	CLIENT PROJECT NAME / NUMBER: MCAS El Toro and Tustin, PFAS
ADDRESS: 9210 Sky Park Court, Suite 220	PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson
CITY: San Diego, CA 92123	SAMPLER(S): (SIGNATURE) Jade White
TEL: (619) 399-5900	E-Mail: kimberly.shiroodi@woodplc.com
E-MAIL: brian.johnson@woodplc.com	P.O. NO.: TO 008 Mod 4
	CONTRACT NO.: N62473-16-D-2405
	LAB USE ONLY

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 10 DAYS ☒ Standard

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
Samples potentially contain elevated levels of PFAS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS
	24-GW-24MW05BR-20200204	2/4/20	14:30	GW	2	IV	X

JR 2-4-20

Relinquished by: (Signature) Jade White	Received by: (Signature) / Carrier Tracking Number FedEx	Date: 2/4/20	Time: 18:00
Relinquished by: (Signature) FedEx	Received by: (Signature)	Date: 02/05/20	Time: 0951
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 2000247 TAT 14

Samples Arrival:	**Date/Time** 02/05/20 0951		**Initials:** MMS		**Location:** WR-2 **Shelf/Rack:** N/a		
Delivered By:	(FedEx)	UPS	On Trac	GLS	DHL	Hand Delivered	Other
Preservation:	(Ice)		Blue Ice		Dry Ice		None
Temp °C: 0.1 (uncorrected)	**Probe used:** Y / (N)		**Thermometer ID:** IR-4				
Temp °C: 0.1 (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Airbill — Trk # 8101 0952 1884	✓		
Shipping Documentation Present?	✓		
Shipping Container: Vista / (Client) / Retain / (Return) / Dispose			
Chain of Custody / Sample Documentation Present?	✓		
Chain of Custody / Sample Documentation Complete?	✓		
Holding Time Acceptable?	✓		

Logged In:	**Date/Time** 02/05/20 1352	**Initials:** KS	**Location:** R-13 / WR-2 **Shelf/Rack:** A-2 / E-5	
COC Anomaly/Sample Acceptance Form completed?			✓	✓

Comments:

ID.: LR – SLC *Rev No.: 5* *Rev Date: 01/21/2020* *Page: 1 of 1*

CoC/Label Reconciliation Report WO# 2000247

LabNumber	CoC Sample ID	SampleAlias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2000247-01	A SB01-20200204		04-Feb-20 10:00	HDPE Bottle, 250 mL	Aqueous	
2000247-01	B SB01-20200204		04-Feb-20 10:00	HDPE Bottle, 250 mL	Aqueous	
2000247-02	A EB01-20200204		04-Feb-20 08:00	HDPE Bottle, 250 mL	Aqueous	
2000247-02	B EB01-20200204		04-Feb-20 08:00	HDPE Bottle, 250 mL	Aqueous	
2000247-03	A SGU-GW-SGUTPINF-20200204		04-Feb-20 07:00	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	B SGU-GW-SGUTPINF-20200204		04-Feb-20 07:00	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	C SGU-GW-SGUTPINF-20200204		04-Feb-20 07:00	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	D SGU-GW-SGUTPINF-20200204		04-Feb-20 07:00	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	E SGU-GW-SGUTPINF-20200204		04-Feb-20 07:00	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-03	F SGU-GW-SGUTPINF-20200204		04-Feb-20 07:00	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2000247-04	A DUP02-20200204		04-Feb-20 07:10	HDPE Bottle, 250 mL	Aqueous	
2000247-04	B DUP02-20200204		04-Feb-20 07:10	HDPE Bottle, 250 mL	Aqueous	
2000247-05	A SGU-GW-SGUTPEFL-20200204		04-Feb-20 07:45	HDPE Bottle, 250 mL	Aqueous	
2000247-05	B SGU-GW-SGUTPEFL-20200204		04-Feb-20 07:45	HDPE Bottle, 250 mL	Aqueous	
2000247-06	A 24-GW-21UGMW37-20200204		04-Feb-20 08:45	HDPE Bottle, 250 mL	Aqueous	
2000247-06	B 24-GW-21UGMW37-20200204		04-Feb-20 08:45	HDPE Bottle, 250 mL	Aqueous	
2000247-07	A 24-GW-24EX30B1-20200204		04-Feb-20 10:00	HDPE Bottle, 250 mL	Aqueous	
2000247-07	B 24-GW-24EX30B1-20200204		04-Feb-20 10:00	HDPE Bottle, 250 mL	Aqueous	
2000247-08	A 24-GW-24NEW7-20200204		04-Feb-20 11:30	HDPE Bottle, 250 mL	Aqueous	
2000247-08	B 24-GW-24NEW7-20200204		04-Feb-20 11:30	HDPE Bottle, 250 mL	Aqueous	
2000247-09	A 24-GW-24MW10B-20200204		04-Feb-20 13:15	HDPE Bottle, 250 mL	Aqueous	
2000247-09	B 24-GW-24MW10B-20200204		04-Feb-20 13:15	HDPE Bottle, 250 mL	Aqueous	
2000247-10	A 24-GW-24EX20B-20200204		04-Feb-20 16:00	HDPE Bottle, 250 mL	Aqueous	
2000247-10	B 24-GW-24EX20B-20200204		04-Feb-20 16:00	HDPE Bottle, 250 mL	Aqueous	
2000247-11	A 24-GW-24MW05BR-20200204		04-Feb-20 14:30	HDPE Bottle, 250 mL	Aqueous	
2000247-11	B 24-GW-24MW05BR-20200204		04-Feb-20 14:30	HDPE Bottle, 250 mL	Aqueous	

Checkmarks indicate that information on the COC reconciled with the sample label.
Any discrepancies are noted in the following columns.

	Yes	No	NA	Comments:
Sample Container Intact?	✓			
Sample Custody Seals Intact?			✓	
Adequate Sample Volume?	✓			
Container Type Appropriate for Analysis(es)	✓			
Preservation Documented: Na2S2O3 Trizma (None) Other		✓	✓	
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			✓	

Verified by/Date: KS 02/05/20

EXTRACTION INFORMATION

Process Sheet

Workorder: 2000247

Prep Expiration: 2020-02-18
Client: KMEA

Workorder Due: 20-Feb-20 00:00
TAT: 15

Method: **537M PFAS DOD QSM 5.3 (LOQ as mRL)**
Matrix: **Aqueous**

Prep Batch: B0B0041

Prep Data Entered: M 02/11/2020
Date and Initials

Version: 537.1 List of 18
DoD: DoD QSM 5.3

Initial Sequence: SUB0026

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
2000247-01	A	☑	☑	SB01-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-02	↓	☑	☑	EB01-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-03	ABC	☑	☑	SGU-GW-SGUTPINF-20200204	MS/MSD	R-13 A-2	HDPE Bottle, 250 mL
2000247-04	A	☑	☑	DUP02-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-05		☑	☑	SGU-GW-SGUTPEFL-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-06		☑	☑	24-GW-21UGMW37-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-07		☑	☑	24-GW-24EX30B1-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-08		☑	☑	24-GW-24NEW7-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-09		☑	☑	24-GW-24MW10B-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-10		☑	☑	24-GW-24EX20B-20200204		R-13 A-2	HDPE Bottle, 250 mL
2000247-11	↓	☑	☑	24-GW-24MW05BR-20200204		R-13 A-2	HDPE Bottle, 250 mL

WO Comments: **Samples may have elevated PFAS levels - isolate samples.**
Instrument: begin with dils.

Pre-Prep Check Out: CHT 02/06/20
Pre-Prep Check In: CHT 02/06/20

Prep Check Out: HP 02/10/20
Prep Check In: N/A

Prep Reconciled Initals/Date: CHT 02/06/20
Spike Reconciled Initals/Date: HP 02/10/2020
VialBoxID: FTP

Page 1 of 4

Matrix: Aqueous

Method: 537M PFAS DOD QSM 5.3 (LOQ as mRL)

PREPARATION BENCH SHEET

B0B0041

Chemist: Hp

Prep Date: 02/10/2020

Prep Time: 07:27

Hood#: 5

Prepared using: ☐ Sonication Shaker ☑ SPE Extraction ☑ Centrifuge ID: C3

Rec Date/Initals: Hp 02/11/2020

Date/Initals: 02/06/20 CHT

BalanceID: HRMS-9

Cen	VISTA Sample ID	Rec Vial1	Rec Vial2	pH	Chlorine (Cl)	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE and Reconciliation	ENVI-Carb and Reconciliation	RS CHEM/WIT DATE
☑	B0B0041-BLK1	☑	☑	5	0	NA	NA	(0.250)	Hp 02/10/2020	Hp 02/10/2020	Hp 02/10/2020	Hp 02/10/2020
☑	B0B0041-BS1	☑	☑	5	0	↓	↓	(0.250)	↓	↓	↓	↓
☐	B0B0041-MS1 2000247-03	☑	☑	6	0	278.26	26.08	0.25218				
☐	B0B0041-MSD1 2000247-03	☑	☑	6	0	279.46	25.78	0.25368				
☐	2000247-01 (9)	☑	☑	5	0	260.90	25.86	0.23504				
☐	2000247-02	☑	☑	5	0	285.70	26.26	0.25944				
☐	2000247-03	☑	☑	6	0	281.46	25.88	0.25558				
☐	2000247-04	☑	☑	6	0	277.60	25.98	0.25162				
☐	2000247-05	☑	☑	6	0	264.04	26.10	0.23794				
☑	2000247-06	☑	☑	6	0	281.04	25.74	0.25530				
☑	2000247-07	☑	☑	6	0	277.88	26.28	0.25160				
☑	2000247-08	☑	☑	6	0	274.54	25.92	0.24862				
☑	2000247-09	☑	☑	6	0	289.74	26.02	0.26372				
☑	2000247-10	☑	☑	6	0	280.76	26.18	0.25458				

IS: 20A0801 10uL (V03)

IS SUP: N/A

NS: 20A0803 10uL (V11)

NS SUP: N/A

RS: 20A0804 10uL (V03)

SPE Chem: strata XL-AW 100mm 200mg/6mL

SPE Lot#: SPE-0007446

ENVI-Carb Lot#: B123074

Ele SOLV: MeOH/0.5%NH4OH in MeOH

Final Volume(s): 1 mL

Notes:

(9) CHT 02/06/20 CHT

Comments: Assume 1 g = 1 mL
Cen = Centrifuged
Rec = Reconcile final vial transfer

1 = Sample centrifuged twice
2 = Sample deeply colored after centrifuge
3 = Cartridge sorbent discolored after SPE
4 = Sample clogged cartridge, additional cartridge(s) used
5 = Sample recombined at final volume
6 = Sample took longer to SPE, required stronger vacuum
7 = Required Nitrogen line to finish SPE
8 = Required Nitrogen line to finish elution
9 = Sample arrived with low volume
10 = Trizma added to QC (5g/L)

Matrix: Aqueous

Method: 537M PFAS DOD QSM 5.3 (LOQ as mRL)

PREPARATION BENCH SHEET

B0B0041

Chemist: HP
Prep Date: 02/10/2020
Prep Time: 7:27
Hood#: 5

Prepared using: ☐ Sonication Shaker ☑ SPE Extraction ☑ Centrifuge ID: C3

Rec Date/Initals:
Date/Initals: 02/10/20 CHT
BalanceID: HRMS-1

Cen	VISTA Sample ID	Rec Vial1	Rec Vial2	pH	Chlorine (Cl)	Bottle + Sample (g)	Bottle Only (g)	Sample Amt. (L)	IS/NS CHEM/WIT DATE	SPE and Reconciliation	ENVI-Carb and Reconciliation	RS CHEM/WIT DATE
☑	2000247-11	☐	☐	6	0	289.90	25.96	0.26394	HP 02/10/2020	HP 02/10/2020	HP 02/10/2020	HP 02/10/2020

IS: 20A08C1 10µL (V03)
IS SUP: N/A
NS: 20A08C3 10µL V11
NS SUP: N/A
RS: 20A08E4 10µL (V03)

SPE Chem: Strata XL-AW 100µm 200mg 6mL
SPE Lot#: 519-000746
ENVI-Carb Lot#: B03074
Ele SOLV: MeOH/0.5%NH4OH in MeOH
Final Volume(s): 1 mL

Notes:

Comments: Assume 1 g = 1 mL
Cen = Centrifuged
Rec = Reconcile final vial transfer

1 = Sample centrifuged twice
2 = Sample deeply colored after centrifuge
3 = Cartridge sorbent discolored after SPE
4 = Sample clogged cartridge, additional cartridge(s) used
5 = Sample recombined at final volume
6 = Sample took longer to SPE, required stronger vacuum
7 = Required Nitrogen line to finish SPE
8 = Required Nitrogen line to finish elution
9 = Sample arrived with low volume
10 = Trizma added to QC (5g/L)

Batch: B0B0041

Matrix: Aqueous

LabNumber	WetWeight (initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	ExtBy	Spike	SpikeAmount	ClientMatrix	Analysis
2000247-01	0.25504			1000	10-Feb-20 07:27	HRP			[illegible]	537M PFAS DOD [illegible]
2000247-02	0.25944			1000	10-Feb-20 07:27	HRP			Blank Water	537M PFAS DOD QSM 5.3
2000247-03	**0.25558**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-04	**0.25162**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-05	**0.23794**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-06	**0.2553**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-07	**0.2516**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-08	**0.24862**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-09	**0.26372**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-10	**0.25458**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
2000247-11	**0.26394**			**1000**	**10-Feb-20 07:27**	**HRP**			Groundwater	537M PFAS DOD QSM 5.3
B0B0041-BLK1	**0.25**			**1000**	**10-Feb-20 07:27**	**HRP**				QC
B0B0041-BS1	**0.25**			**1000**	**10-Feb-20 07:27**	**HRP**	**20A0803**	**10**		QC
B0B0041-MS1	**0.25218**			**1000**	**10-Feb-20 07:27**	**HRP**	**20A0803**	**10**		QC
B0B0041-MSD1	**0.25368**			**1000**	**10-Feb-20 07:27**	**HRP**	**20A0803**	**10**		QC

All bolded data on report verified against written benchsheet by (initial/date) M 02/11/2020

Printed: 2/11/2020 7:17:21AM
Page 1 of 1

Matrix: Aqueous

Method: 537M PFAS DOD QSM 5.3 (LOQ as mRL)

Vista Internal Chain-of-Custody

B0B0041

Vista Analytical Laboratory

	Location		L2	R-13	L2	R12	L7	R12	L4		
	Reason		Prep	R9	R4	R9	R9	R9	R8		
	Initials		CHT	CHT	HP	HP	HR	ZC	[illegible]		
	Date/Time		02/06/20 1002	02/06/20 10:44	02/10/20 7:11	02/10/20 15:00	02/11/20 0704	02/11/20 12:00	02/12/20 15:45		
Initial Storage	LabNumber	Cont									
R-13 A-2	2000247-01	A	O	O	O	E	E	E	E		
R-13 A-2	2000247-02	L									
R-13 A-2	2000247-03	ABL									
R-13 A-2	2000247-04	A									
R-13 A-2	2000247-05										
R-13 A-2	2000247-06										
R-13 A-2	2000247-07										
R-13 A-2	2000247-08										
R-13 A-2	2000247-09										
R-13 A-2	2000247-10										
R-13 A-2	2000247-11										

Location Key:
L1 = Prep Lab 1
L2 = Prep Lab 2
L3 = HRMS Diox
L4 = Instrument
Other = _____

Reason Key:
R1 = Percent Solids
R2 = Eluate Preservation
R3 = Sub-Sample
R4 = Extraction
R6 = Concentration
R7 = Filtering
R8 = Analysis
R9 = Storage
Other = _____

Type Key:
O = Original Sample
E = Extract of Sample

Sample Data – PFAS Isotope Dilution Method

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

Last Altered: Friday, February 14, 2020 15:40:24 Pacific Standard Time
Printed: Friday, February 14, 2020 15:41:43 Pacific Standard Time

Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7		3.33e2	0.250		2.59						
2	7	PFHxA	313.0 > 269.0		1.85e3	0.250		3.11						
3	9	HFPO-DA	284.5 > 168.8		1.01e2	0.250		3.31						
4	11	PFHpA	363.0 > 318.9		1.23e3	0.250		3.71						
5	12	ADONA	376.8 > 250.9		1.23e3	0.250		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	3.33e2		0.250	23.482	2.65	2.59	333	56.6776	113.4		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.85e3		0.250	144.232	3.10	3.11	1850	51.4275	102.9		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.01e2		0.250	6.687	3.39	3.31	101	60.1966	120.4		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.23e3		0.250	95.340	3.74	3.71	1230	51.8004	103.6		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.23e3		0.250	95.340	3.74	3.71	1230	51.8004	103.6		
11	-1													
12	13	L-PFHxS	398.9 > 80		1.19e3	0.250		3.86						
13	1...	Total PFHxS	398.9 > 80	0.00e0	1.19e3	0.250		3.83		0.000				
14	16	L-PFOA	412.8 > 368.9	2.29e0	2.66e3	0.250		4.23	4.23	0.0107			0.650	YES
15	1...	Total PFOA	412.8 > 368.9	2.29e0	2.66e3	0.250		4.20		0.000				
16	21	PFNA	463.0 > 418.8		3.02e3	0.250		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.19e3		0.250	88.291	3.86	3.86	1190	54.0289	108.1		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.19e3		0.250	88.291	3.86	3.86	1190	54.0289	108.1		
19	69	13C2-PFOA-EIS	414.9 > 369.7	2.66e3		0.250	220.187	4.23	4.23	2660	48.3938	96.8		
20	69	13C2-PFOA-EIS	414.9 > 369.7	2.66e3		0.250	220.187	4.23	4.23	2660	48.3938	96.8		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.02e3		0.250	262.826	4.67	4.67	3020	45.9801	92.0		
22	-1													
23	23	L-PFOS	498.9 > 79.9		1.40e3	0.250		4.75						
24	1...	Total PFOS	498.9 > 79.9	0.00e0	1.40e3	0.250		4.73		0.000				
25	25	9Cl-PF30NS	531 > 351.1		1.40e3	0.250		4.96						
26	26	PFDA	513 > 468.8		3.21e3	0.250		5.04						
27	33	PFUdA	563.0 > 518.9		4.09e3	0.250		5.36						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.40e3		0.250	105.884	4.75	4.75	1400	52.9515	105.9		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.40e3		0.250	105.884	4.75	4.75	1400	52.9515	105.9		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.40e3		0.250	105.884	4.75	4.75	1400	52.9515	105.9		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.21e3		0.250	263.358	5.04	5.04	3210	48.8015	97.6		
32	79	13C2-PFUdA-EIS	565 > 519.8	4.09e3		0.250	362.134	5.36	5.36	4090	45.2097	90.4		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.67e3	0.250		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	2.67e3	0.250		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		2.61e3	0.250		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

Last Altered: Friday, February 14, 2020 15:40:24 Pacific Standard Time
Printed: Friday, February 14, 2020 15:41:43 Pacific Standard Time

Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	2.61e3	0.250		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		5.03e3	0.250		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	2.67e3		0.250	231.747	5.19	5.19	2670	46.1549	92.3		
40	77	d3-N-MeFOSAA-EIS	573. > 419	2.67e3		0.250	231.747	5.19	5.19	2670	46.1549	92.3		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.61e3		0.250	219.903	5.33	5.35	2610	47.5470	95.1		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.61e3		0.250	219.903	5.33	5.35	2610	47.5470	95.1		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	5.03e3		0.250	458.130	5.63	5.65	5030	43.8905	87.8		
44	-1													
45	37	PFDoA	612.9 > 569.0		5.03e3	0.250		5.65						
46	39	PFTrDA	662.9 > 618.9		5.03e3	0.250		5.90						
47	41	PFTeDA	713.0 > 669.0		3.93e3	0.250		6.11						
48	1...	TDCA	498.3>106.9			0.250		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.05e3	1.05e3	0.250	1.000	1.27	1.27	12.5	50.0000	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	5.03e3		0.250	458.130	5.63	5.65	5030	43.8905	87.8		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	5.03e3		0.250	458.130	5.63	5.65	5030	43.8905	87.8		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	3.93e3		0.250	365.370	6.07	6.11	3930	42.9804	86.0		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.40e3		0.250	105.884	4.75	4.75	1400	52.9515	105.9		
54	1...	13C5-PFHxA	318.0 > 272.9	2.18e3	2.18e3	0.250	1.000	3.10	3.10	12.5	50.0000	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.65e2	5.65e2	0.250	1.000	3.86	3.86	12.5	50.0000	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.06e3	4.06e3	0.250	1.000	5.04	5.04	12.5	50.0000	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	5.31e3	5.31e3	0.250	1.000	5.36	5.36	12.5	50.0000	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.49e3	1.49e3	0.250	1.000	4.75	4.75	12.5	50.0000	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.50e3	3.50e3	0.250	1.000	4.66	4.67	12.5	50.0000	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 1 of 8
Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

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Printed: Friday, February 14, 2020 15:41:43 Pacific Standard Time

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Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

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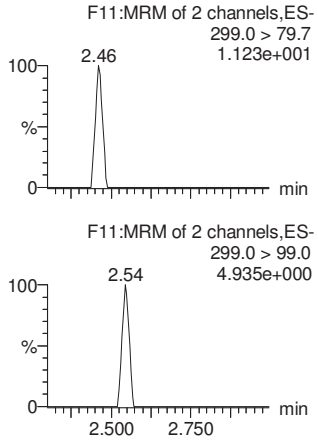

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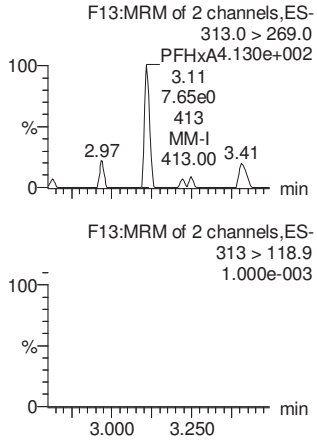

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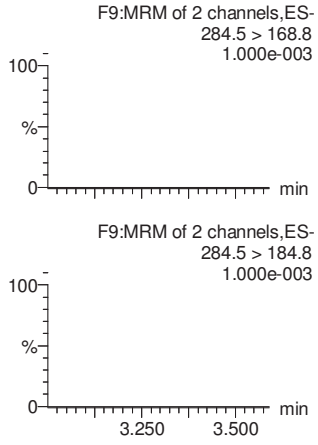

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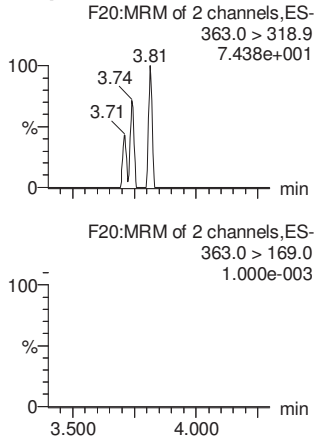
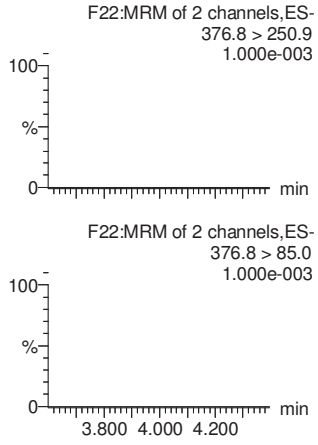


ADONA



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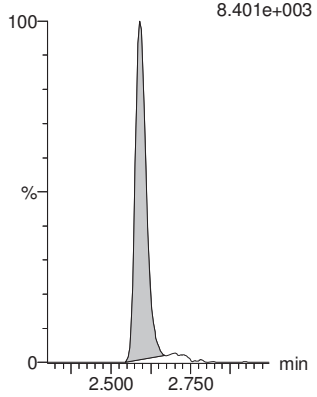

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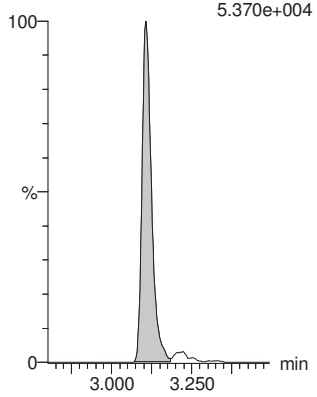

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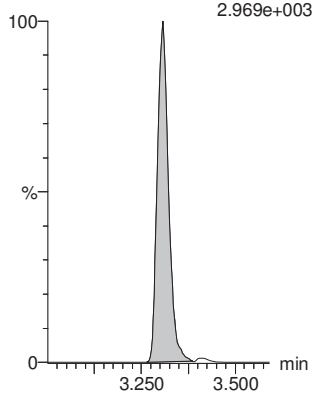

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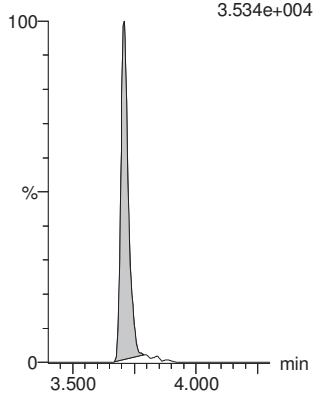

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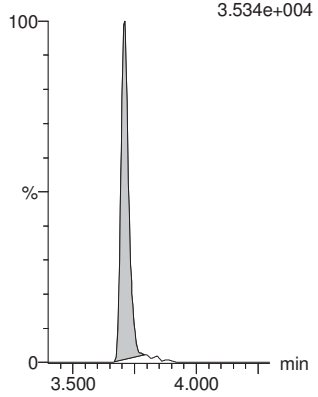

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

Last Altered: Friday, February 14, 2020 15:40:24 Pacific Standard Time
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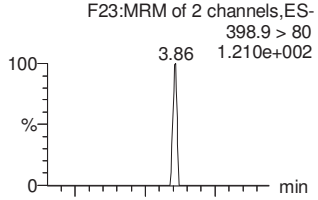
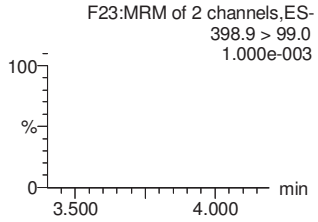
L-PFHxS





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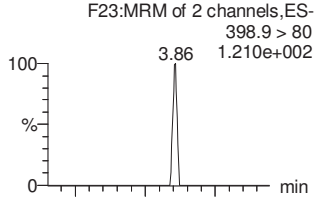
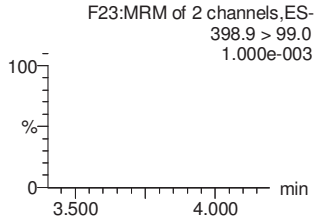
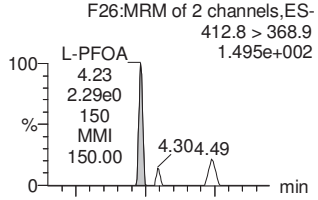
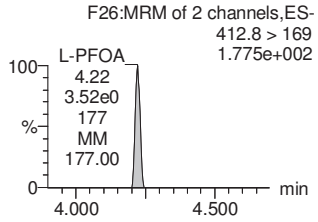




L-PFOA





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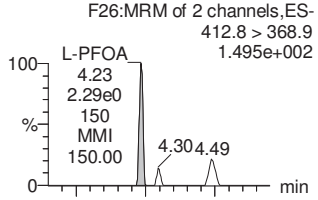

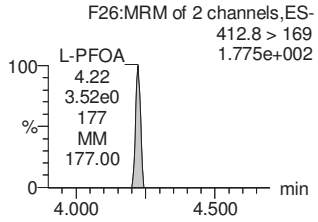

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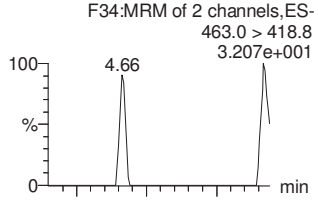

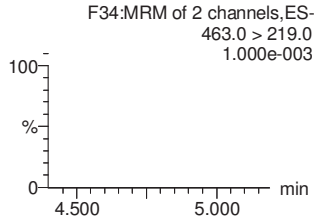

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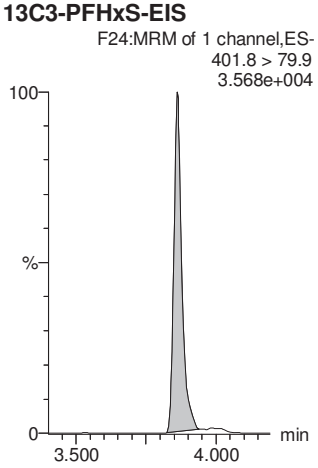

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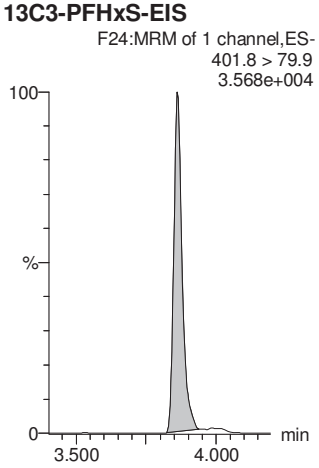

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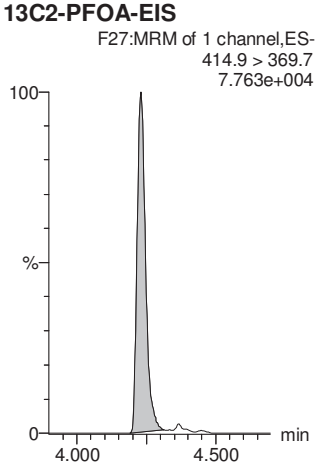

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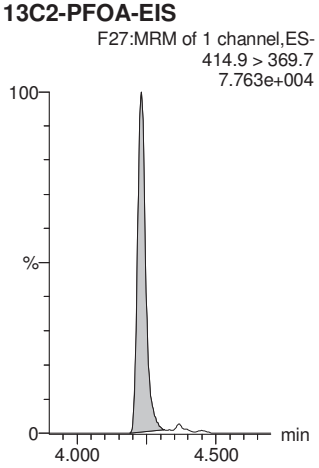

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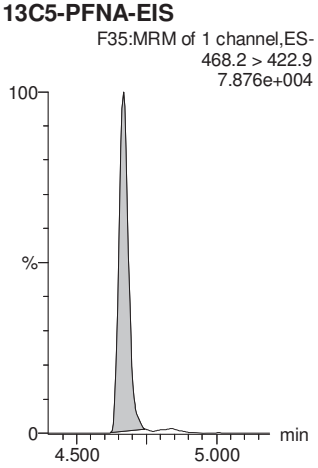

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

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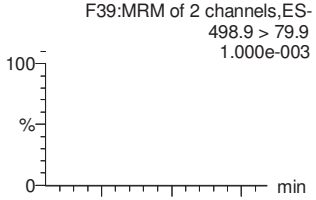
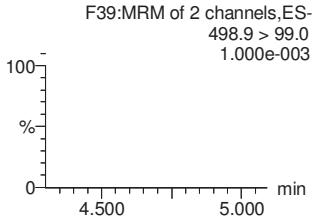
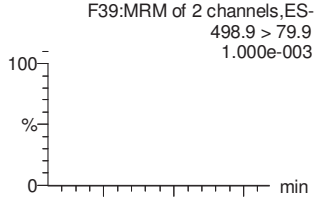
Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

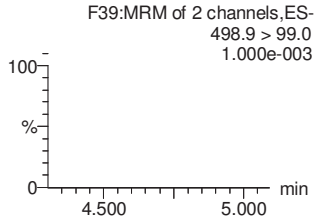
L-PFOS



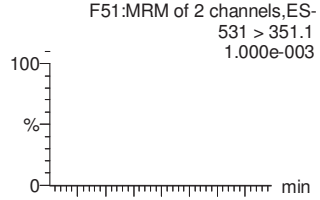


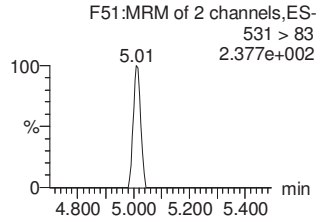
Total PFOS





9Cl-PF30NS





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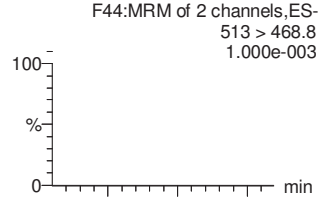

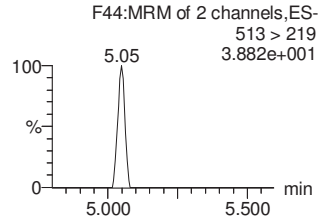

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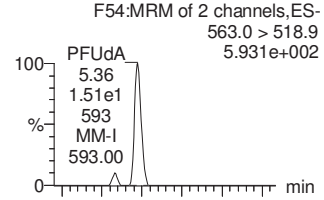

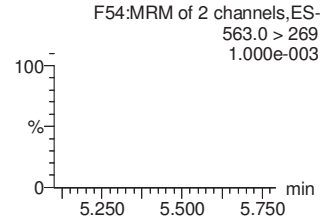

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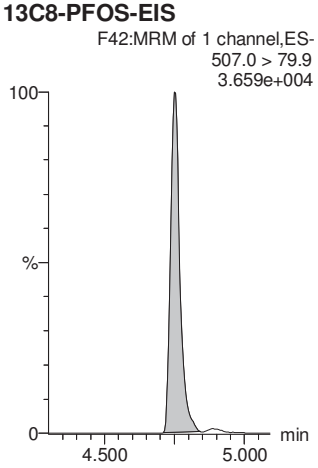

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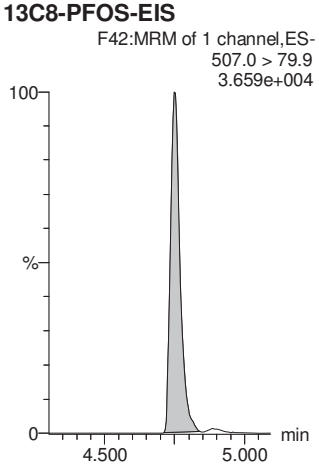

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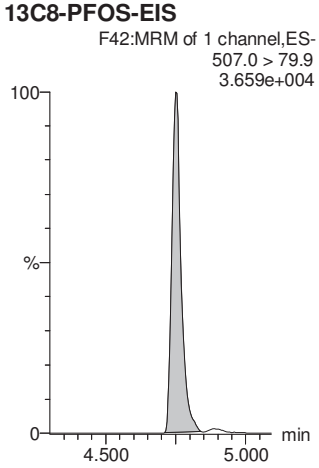
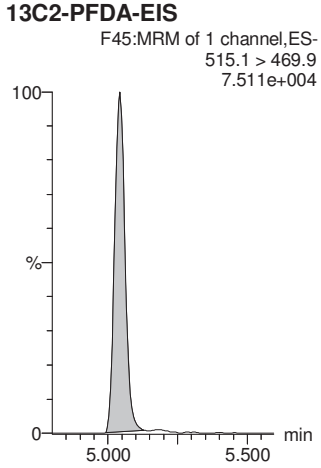
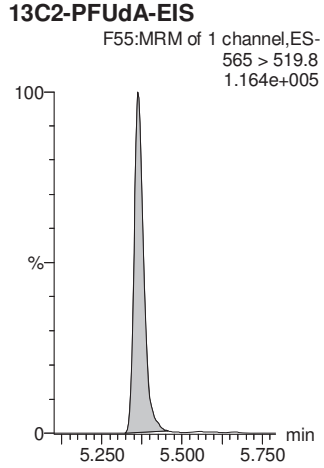


13C2-PFDA-EIS



13C2-PFUdA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

Last Altered: Friday, February 14, 2020 15:40:24 Pacific Standard Time
Printed: Friday, February 14, 2020 15:41:43 Pacific Standard Time

Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

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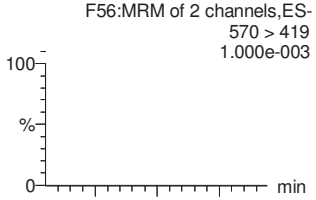

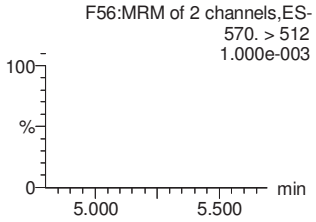

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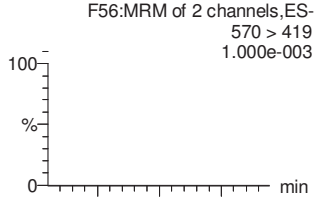

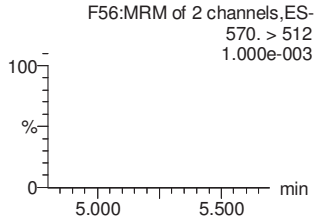

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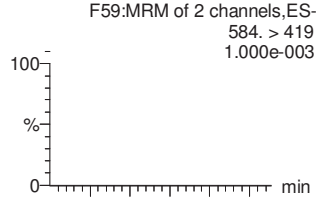

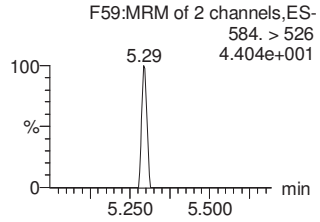

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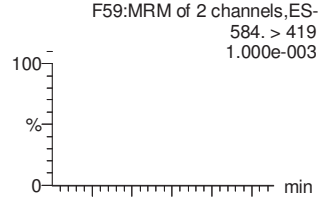
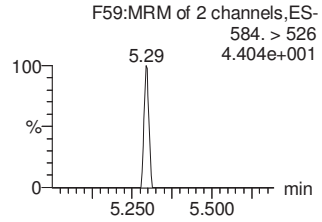
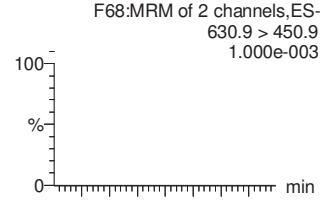
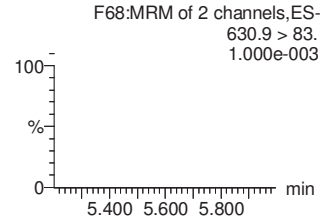




11Cl-PF30UdS





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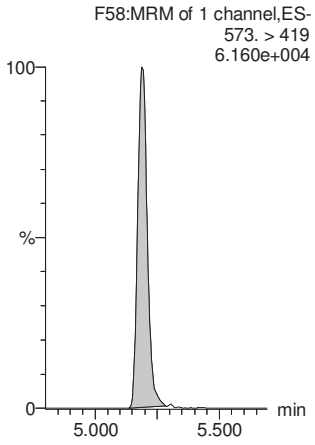

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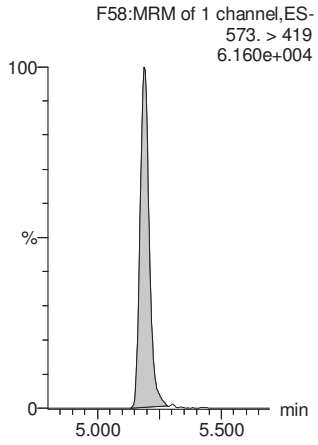

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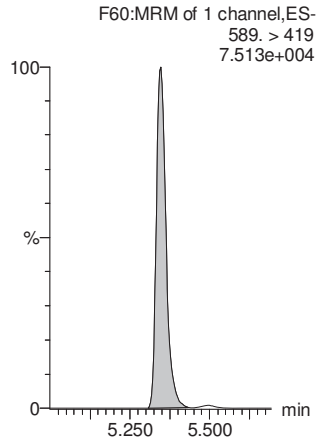

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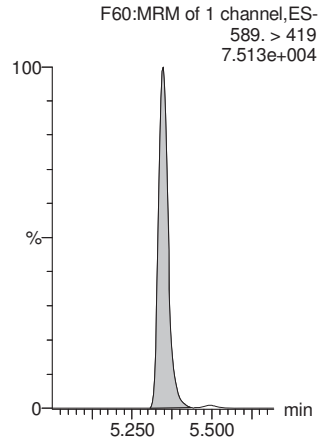
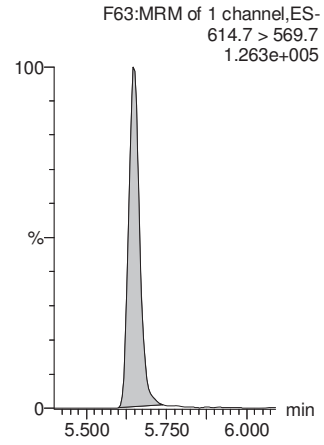


13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

Last Altered: Friday, February 14, 2020 15:40:24 Pacific Standard Time
Printed: Friday, February 14, 2020 15:41:43 Pacific Standard Time

Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

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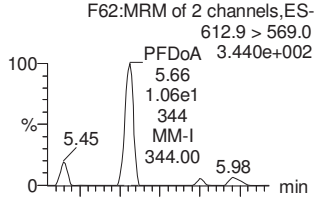

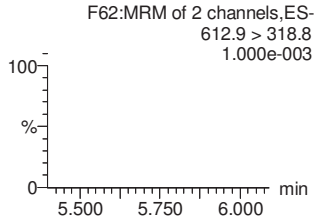

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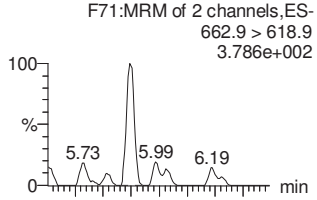
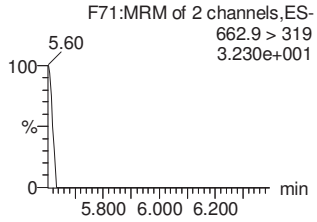
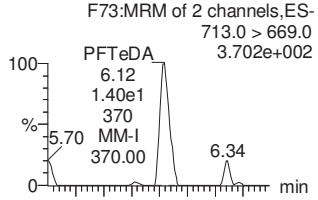
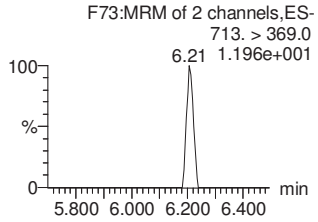




PFTeDA





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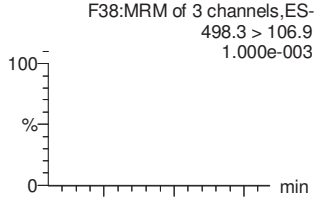
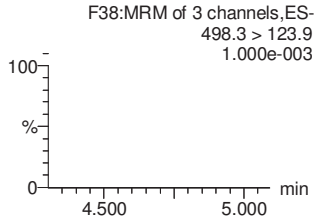
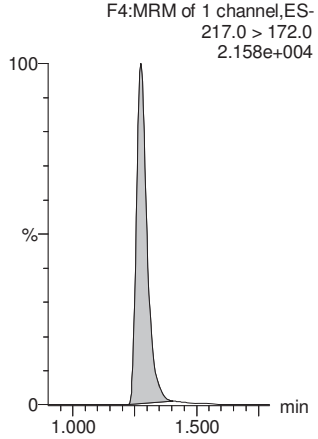
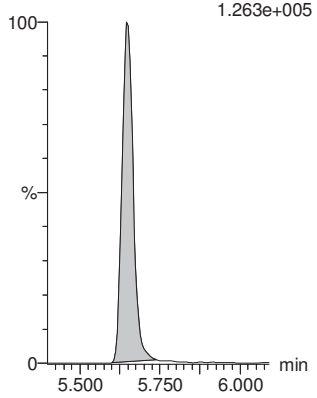




13C4-PFBA



13C2-PFDoA-EIS



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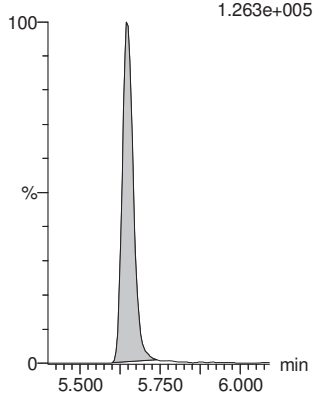

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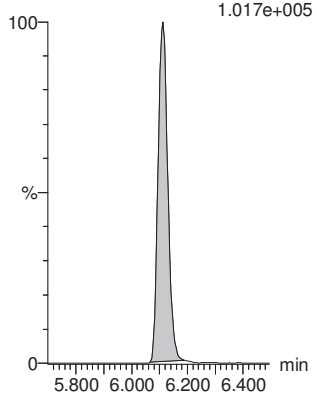

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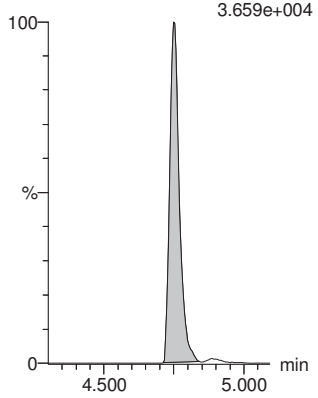

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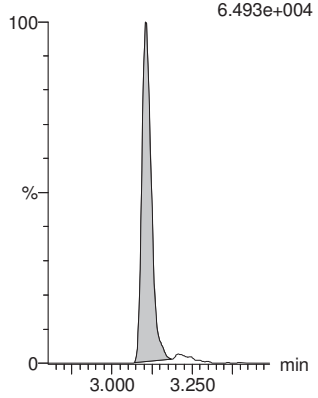

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_16.qld

Last Altered: Friday, February 14, 2020 15:40:24 Pacific Standard Time
Printed: Friday, February 14, 2020 15:41:43 Pacific Standard Time

Name: 200212M2_16, Date: 12-Feb-2020, Time: 21:45:02, ID: B0B0041-BLK1 Method Blank 0.25, Description: Method Blank

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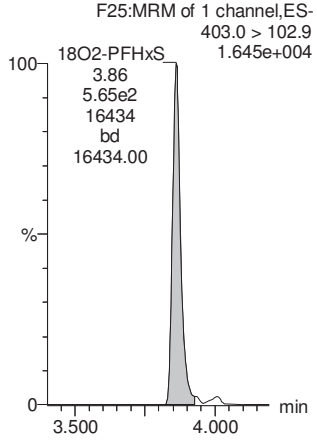

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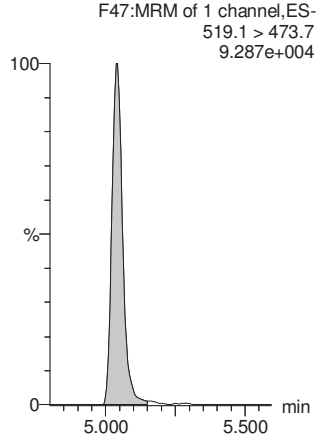
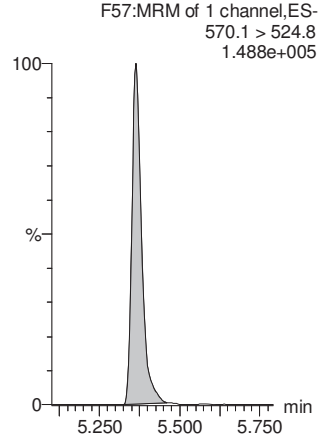


13C7-PFUdA



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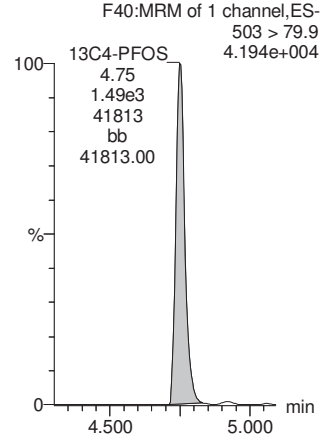

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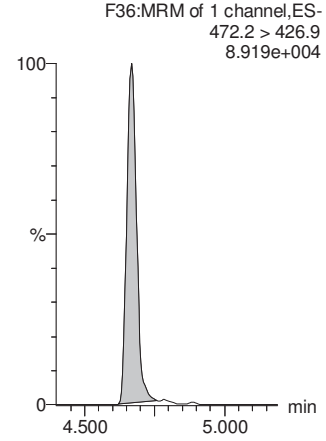

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
Printed: Friday, February 14, 2020 15:47:37 Pacific Standard Time

Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	6.09e2	3.75e2	0.250		2.59	2.59	20.3	34.7613	86.9	2.578	NO
2	7	PFHxA	313.0 > 269.0	1.63e3	2.12e3	0.250		3.10	3.11	9.60	35.5341	88.8	16.469	NO
3	9	HFPO-DA	284.5 > 168.8	5.74e1	1.04e2	0.250		3.31	3.31	6.89	32.7058	81.8	1.859	NO
4	11	PFHpA	363.0 > 318.9	1.41e3	1.50e3	0.250		3.71	3.71	11.8	36.3578	90.9	9.706	NO
5	12	ADONA	376.8 > 250.9	5.16e3	1.50e3	0.250		3.80	3.82	43.0	34.6872	86.7	3.015	NO
6	51	13C3-PFBS-EIS	302.0 > 99	3.75e2		0.250	23.482	2.65	2.59	375	63.8410	127.7		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.12e3		0.250	144.232	3.11	3.10	2120	58.6758	117.4		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.04e2		0.250	6.687	3.39	3.31	104	62.3680	124.7		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.50e3		0.250	95.340	3.74	3.71	1500	62.8882	125.8		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.50e3		0.250	95.340	3.74	3.71	1500	62.8882	125.8		
11	-1													
12	13	L-PFHxS	398.9 > 80	9.90e2	1.27e3	0.250		3.86	3.86	9.75	37.1400	92.9	1.945	NO
13	1...	Total PFHxS	398.9 > 80	9.90e2	1.27e3	0.250		3.83		9.75	37.1400			
14	16	L-PFOA	412.8 > 368.9	3.43e3	3.17e3	0.250		4.23	4.23	13.5	36.8769	92.2	2.937	NO
15	1...	Total PFOA	412.8 > 368.9	3.43e3	3.17e3	0.250		4.20		13.5	36.8769			
16	21	PFNA	463.0 > 418.8	3.05e3	3.89e3	0.250		4.67	4.67	9.80	33.8354	84.6	4.427	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.27e3		0.250	88.291	3.86	3.86	1270	57.4647	114.9		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.27e3		0.250	88.291	3.86	3.86	1270	57.4647	114.9		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.17e3		0.250	220.187	4.23	4.23	3170	57.6606	115.3		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.17e3		0.250	220.187	4.23	4.23	3170	57.6606	115.3		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.89e3		0.250	262.826	4.67	4.67	3890	59.1495	118.3		
22	-1													
23	23	L-PFOS	498.9 > 79.9	1.09e3	1.39e3	0.250		4.75	4.76	9.75	33.5898	84.0	1.592	NO
24	1...	Total PFOS	498.9 > 79.9	1.09e3	1.39e3	0.250		4.73		9.75	33.5898			
25	25	9Cl-PF30NS	531 > 351.1	3.78e3	1.39e3	0.250		4.96	4.97	33.9	39.5587	98.9	24.342	NO
26	26	PFDA	513 > 468.8	3.67e3	3.95e3	0.250		5.04	5.04	11.6	37.0652	92.7	5.744	NO
27	33	PFUdA	563.0 > 518.9	3.84e3	5.27e3	0.250		5.37	5.37	9.12	35.4893	88.7	9.695	NO
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.39e3		0.250	105.884	4.76	4.75	1390	52.6423	105.3		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.39e3		0.250	105.884	4.76	4.75	1390	52.6423	105.3		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.39e3		0.250	105.884	4.76	4.75	1390	52.6423	105.3		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.95e3		0.250	263.358	5.04	5.04	3950	59.9365	119.9		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.27e3		0.250	362.134	5.37	5.37	5270	58.1669	116.3		
33	-1													
34	29	L-MeFOSAA	570 > 419	2.33e3	2.97e3	0.250		5.19	5.20	9.78	43.7274	109.3	2.827	NO
35	1...	Total N-MeFOSAA	570. > 419	2.33e3	2.97e3	0.250		5.17		9.78	43.7274			
36	31	L-EtFOSAA	584. > 419	1.67e3	2.57e3	0.250		5.35	5.35	8.12	32.3633	80.9	1.222	NO

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
Printed: Friday, February 14, 2020 15:47:37 Pacific Standard Time

Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	1.67e3	2.57e3	0.250		5.33		8.12	32.3633			
38	35	11Cl-PF30UdS	630.9 > 450.9	4.00e3	5.89e3	0.250		5.58	5.58	8.50	38.7474	96.9	21.860	NO
39	77	d3-N-MeFOSAA-EIS	573. > 419	2.97e3		0.250	231.747	5.19	5.19	2970	51.3395	102.7		
40	77	d3-N-MeFOSAA-EIS	573. > 419	2.97e3		0.250	231.747	5.19	5.19	2970	51.3395	102.7		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.57e3		0.250	219.903	5.34	5.35	2570	46.7192	93.4		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.57e3		0.250	219.903	5.34	5.35	2570	46.7192	93.4		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	5.89e3		0.250	458.130	5.64	5.65	5890	51.4015	102.8		
44	-1													
45	37	PFDoA	612.9 > 569.0	4.88e3	5.89e3	0.250		5.65	5.65	10.4	38.2039	95.5	9.403	NO
46	39	PFTrDA	662.9 > 618.9	5.65e3	5.89e3	0.250		5.90	5.89	12.0	37.0514	92.6	27.826	NO
47	41	PFTeDA	713.0 > 669.0	5.06e3	4.85e3	0.250		6.11	6.11	13.0	37.9783	94.9	13.431	NO
48	1...	TDCA	498.3>106.9			0.250		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.22e3	1.22e3	0.250	1.000	1.27	1.27	12.5	50.0000	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	5.89e3		0.250	458.130	5.64	5.65	5890	51.4015	102.8		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	5.89e3		0.250	458.130	5.64	5.65	5890	51.4015	102.8		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.85e3		0.250	365.370	6.07	6.11	4850	53.1203	106.2		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.39e3		0.250	105.884	4.76	4.75	1390	52.6423	105.3		
54	1...	13C5-PFHxA	318.0 > 272.9	2.44e3	2.44e3	0.250	1.000	3.10	3.11	12.5	50.0000	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.99e2	5.99e2	0.250	1.000	3.86	3.86	12.5	50.0000	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.42e3	4.42e3	0.250	1.000	5.04	5.04	12.5	50.0000	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	5.89e3	5.89e3	0.250	1.000	5.36	5.37	12.5	50.0000	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.63e3	1.63e3	0.250	1.000	4.75	4.76	12.5	50.0000	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.90e3	3.90e3	0.250	1.000	4.66	4.67	12.5	50.0000	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

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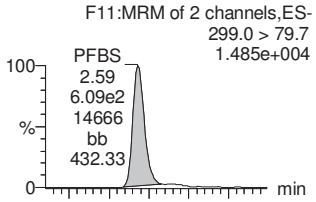

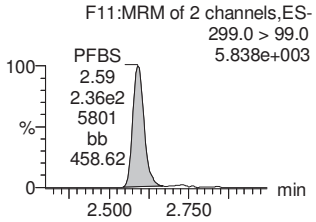

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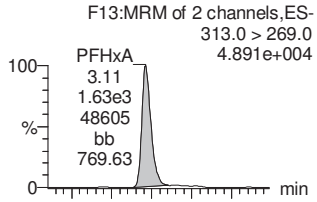

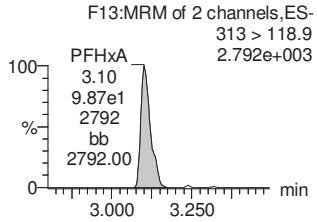

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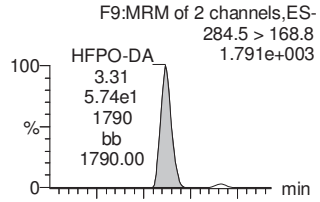

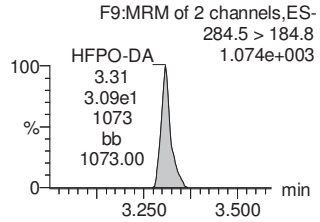

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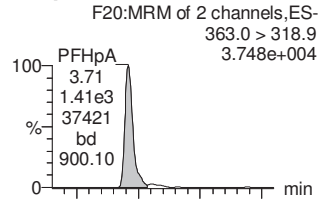

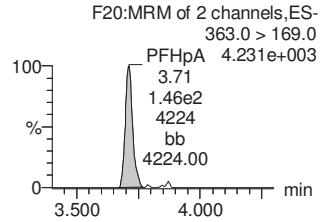

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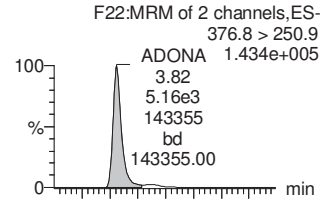

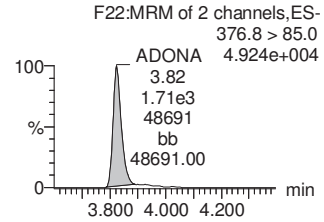

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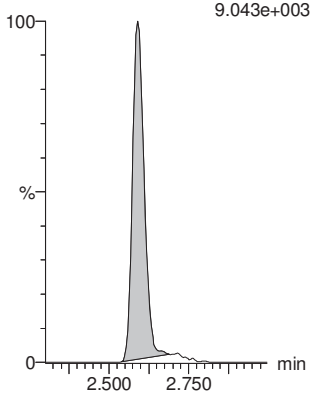

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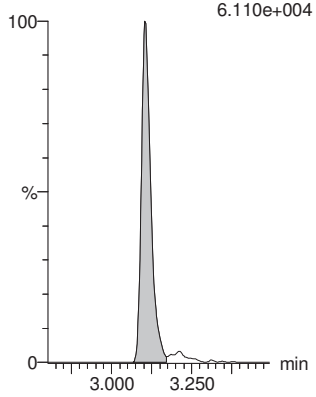

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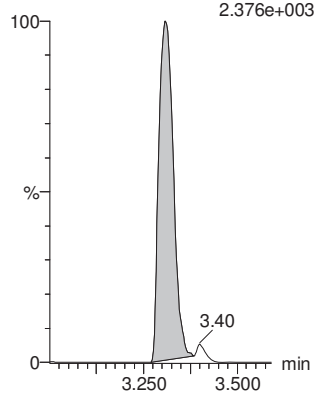

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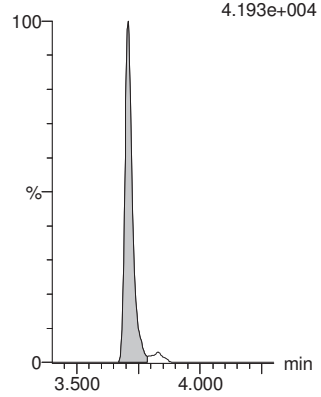

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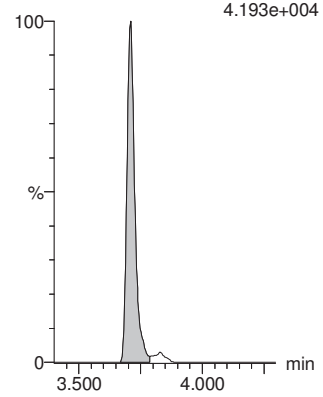

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
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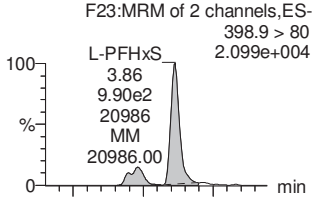
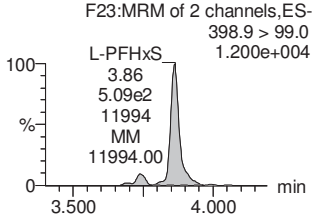
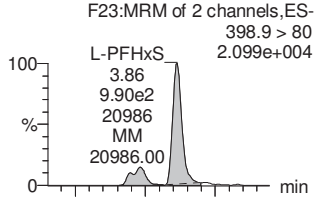
Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

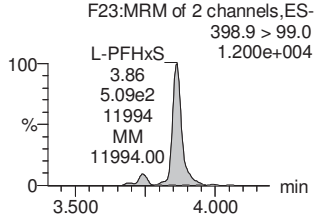
L-PFHxS



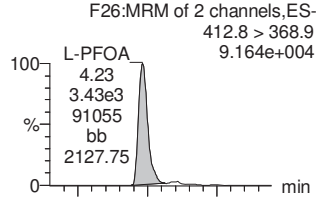


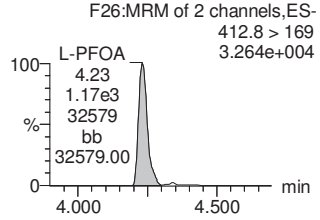
Total PFHxS



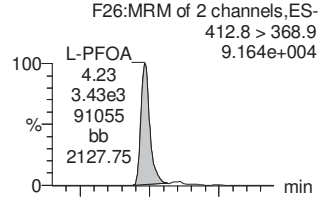


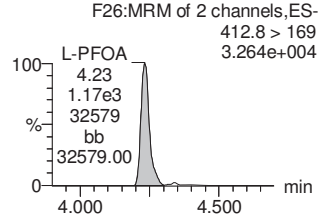
L-PFOA





Total PFOA





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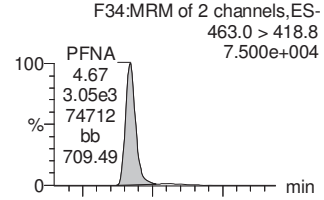

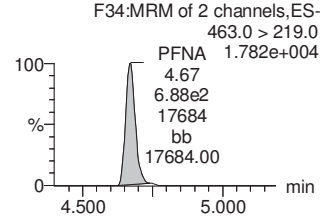

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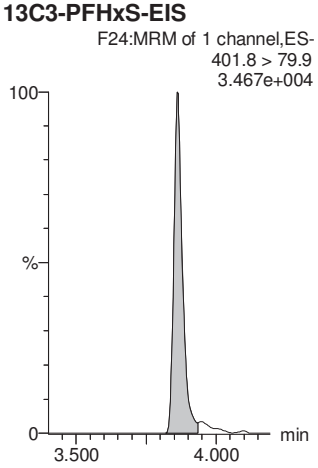

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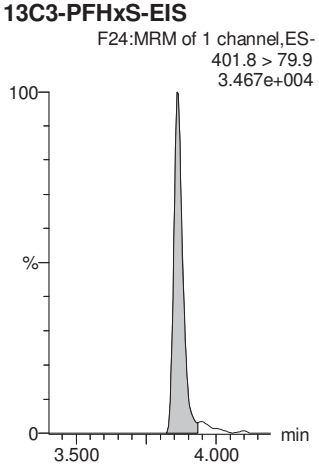

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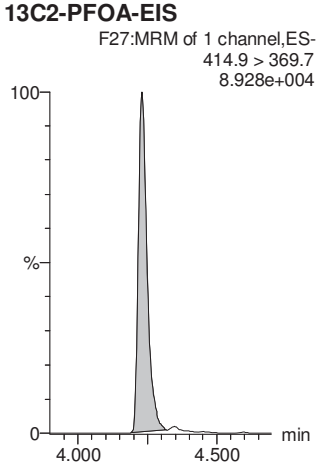

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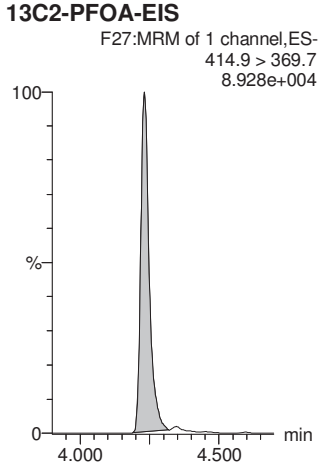

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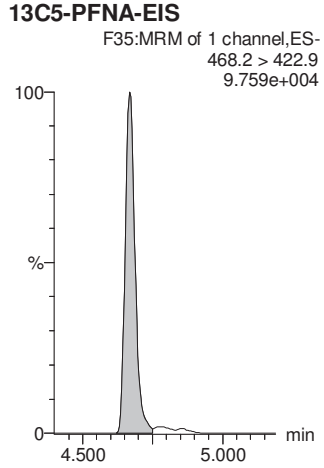


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

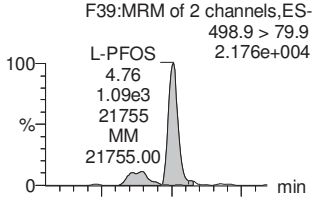
Review: AMR 2/18/2020

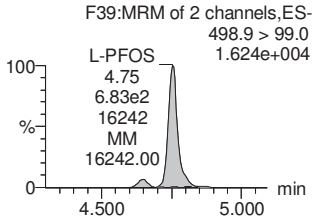
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
Printed: Friday, February 14, 2020 15:47:37 Pacific Standard Time

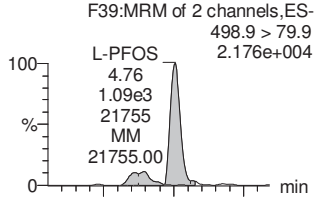
Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

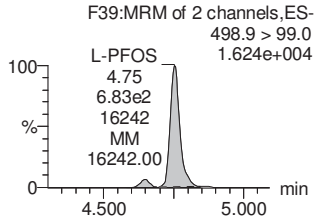
L-PFOS



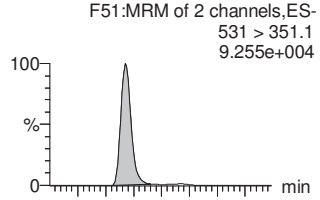


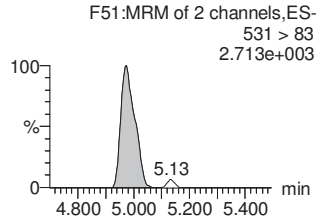
Total PFOS





9Cl-PF30NS





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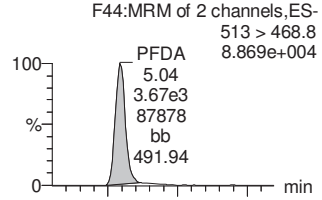
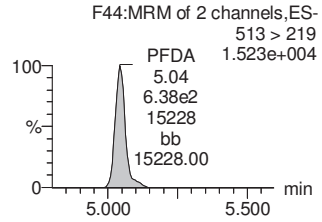
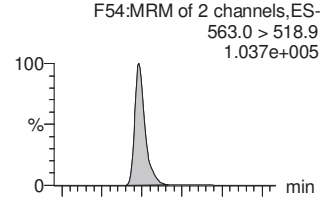
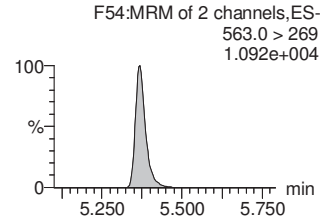




PFUdA





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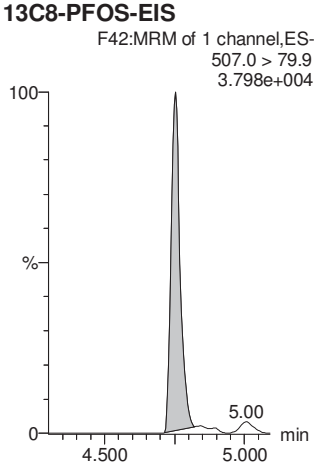

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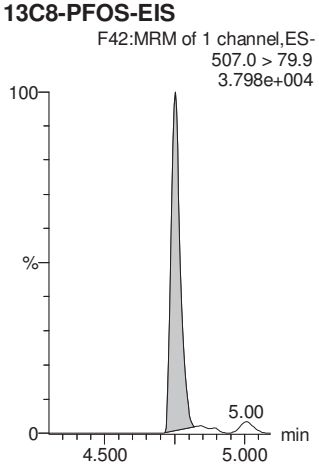

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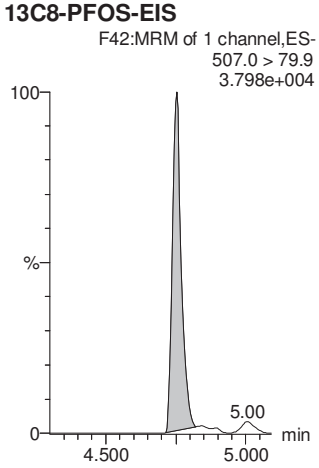
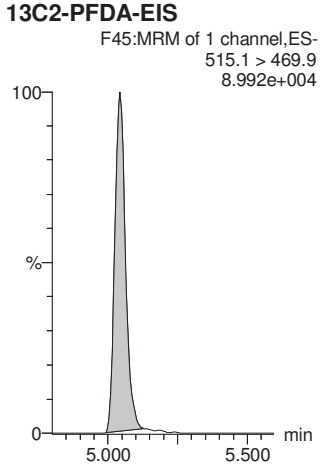
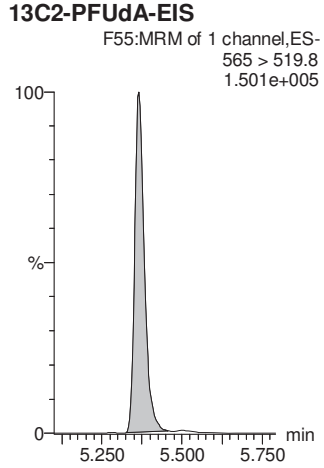


13C2-PFDA-EIS



13C2-PFUdA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
Printed: Friday, February 14, 2020 15:47:37 Pacific Standard Time

Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

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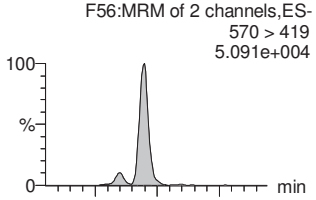
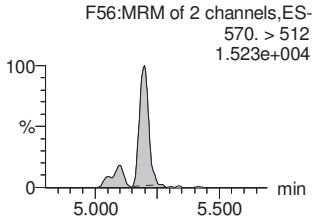
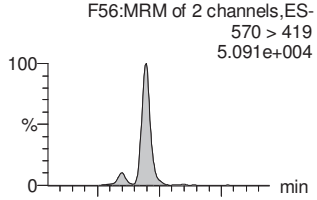
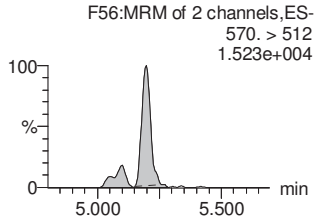


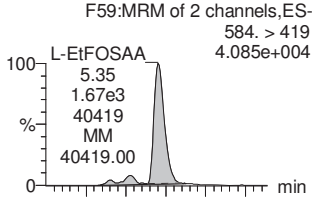


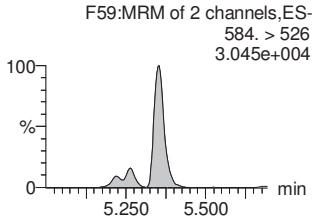
Total N-MeFOSAA





L-EtFOSAA





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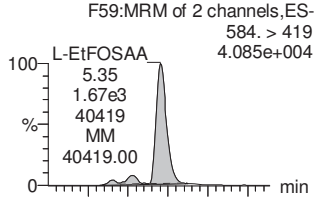
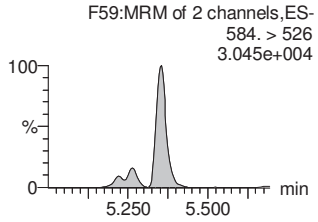
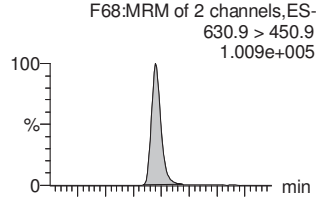
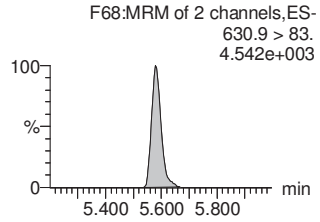


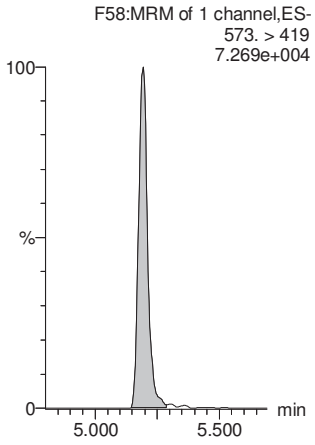


11Cl-PF30UdS





d3-N-MeFOSAA-EIS



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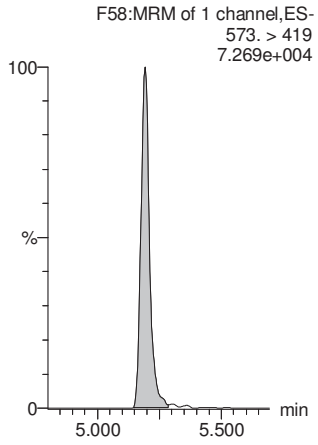
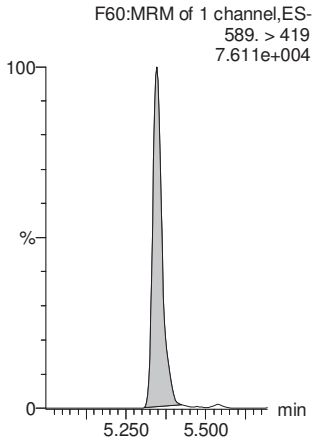


d5-N-EtFOSAA-EIS



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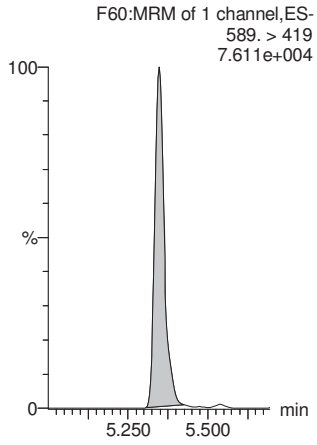
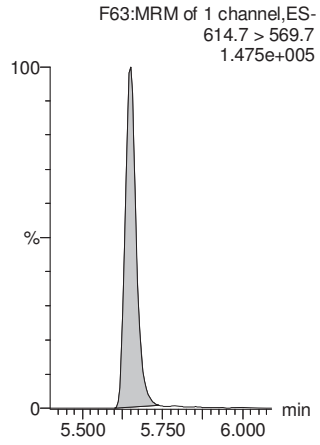


13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

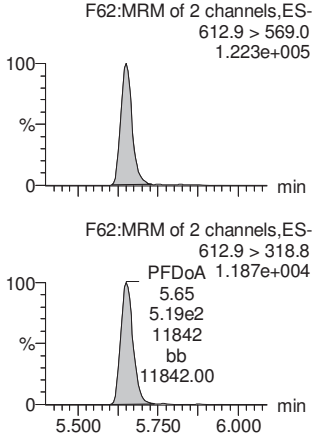
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

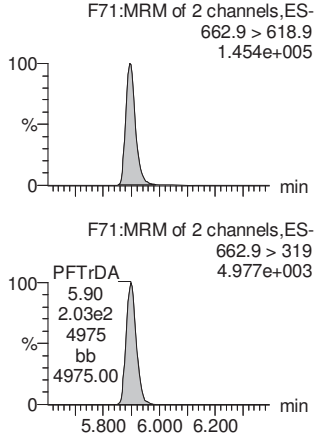
Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
Printed: Friday, February 14, 2020 15:47:37 Pacific Standard Time

Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

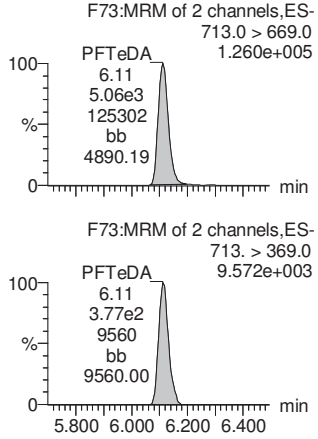
PFDoA



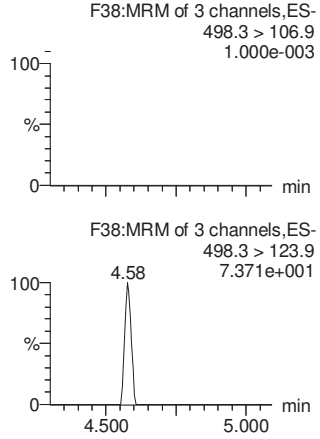
PFTrDA



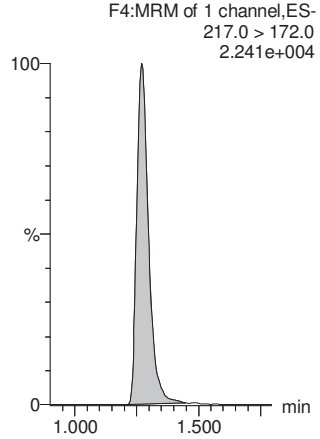
PFTeDA



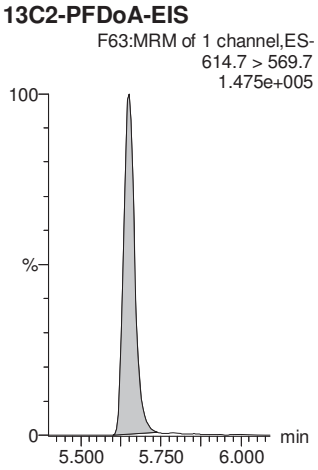
TDCA



13C4-PFBA



13C2-PFDoA-EIS



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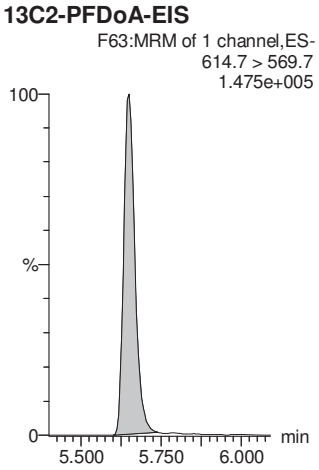
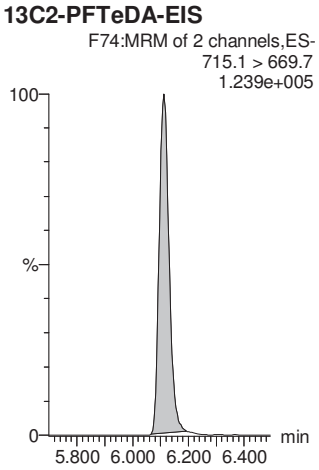
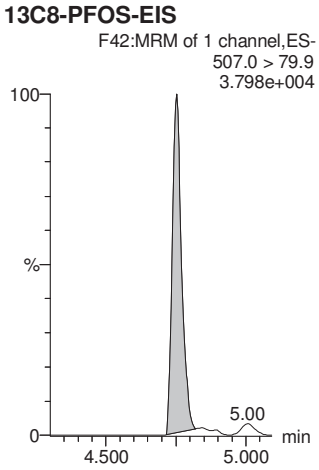


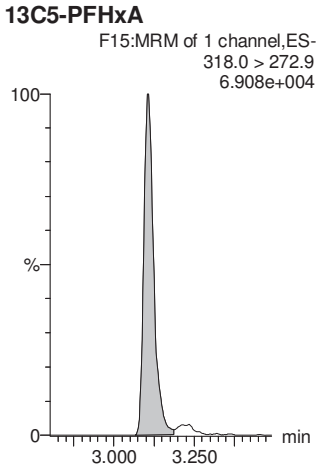
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

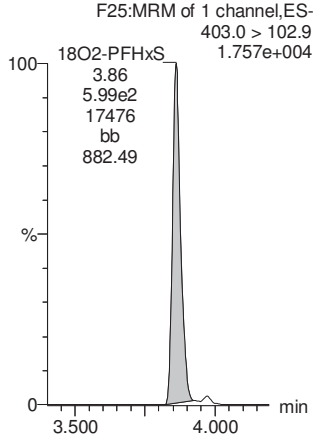
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_17.qld

Last Altered: Friday, February 14, 2020 15:46:48 Pacific Standard Time
Printed: Friday, February 14, 2020 15:47:37 Pacific Standard Time

Name: 200212M2_17, Date: 12-Feb-2020, Time: 21:55:24, ID: B0B0041-BS1 OPR 0.25, Description: OPR

18O2-PFHxS



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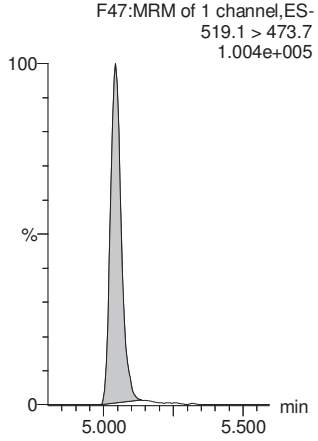

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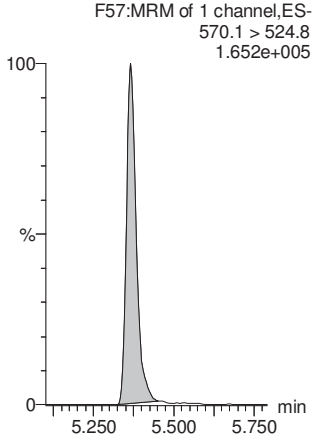

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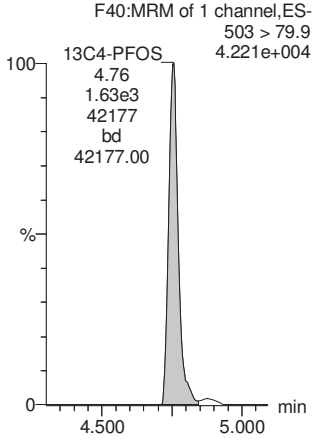

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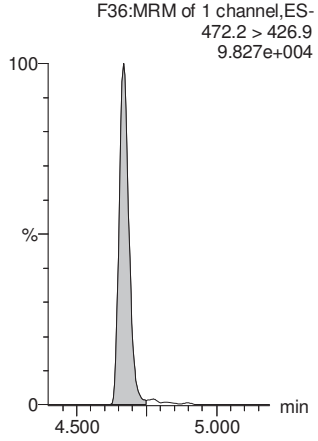


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7		4.41e2	0.235		2.59						
2	7	PFHxA	313.0 > 269.0		2.37e3	0.235		3.11						
3	9	HFPO-DA	284.5 > 168.8		1.15e2	0.235		3.31						
4	11	PFHpA	363.0 > 318.9		1.50e3	0.235		3.71						
5	12	ADONA	376.8 > 250.9		1.50e3	0.235		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.41e2		0.235	23.482	2.65	2.59	441	79.8757	150.2		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.37e3		0.235	144.232	3.10	3.11	2370	69.9972	131.6		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.15e2		0.235	6.687	3.39	3.31	115	73.1608	137.6		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.50e3		0.235	95.340	3.74	3.71	1500	66.8650	125.7		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.50e3		0.235	95.340	3.74	3.71	1500	66.8650	125.7		
11	-1													
12	13	L-PFHxS	398.9 > 80		1.41e3	0.235		3.86						
13	1...	Total PFHxS	398.9 > 80	0.00e0	1.41e3	0.235		3.83		0.000				
14	16	L-PFOA	412.8 > 368.9		3.46e3	0.235		4.23						
15	1...	Total PFOA	412.8 > 368.9	0.00e0	3.46e3	0.235		4.20		0.000				
16	21	PFNA	463.0 > 418.8		4.19e3	0.235		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.41e3		0.235	88.291	3.86	3.86	1410	68.1720	128.2		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.41e3		0.235	88.291	3.86	3.86	1410	68.1720	128.2		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.46e3		0.235	220.187	4.23	4.23	3460	66.7996	125.6		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.46e3		0.235	220.187	4.23	4.23	3460	66.7996	125.6		
21	65	13C5-PFNA-EIS	468.2 > 422.9	4.19e3		0.235	262.826	4.67	4.67	4190	67.7639	127.4		
22	-1													
23	23	L-PFOS	498.9 > 79.9		1.75e3	0.235		4.75						
24	1...	Total PFOS	498.9 > 79.9	0.00e0	1.75e3	0.235		4.73		0.000				
25	25	9Cl-PF30NS	531 > 351.1		1.75e3	0.235		4.96						
26	26	PFDA	513 > 468.8		4.30e3	0.235		5.04						
27	33	PFUdA	563.0 > 518.9		6.01e3	0.235		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.75e3		0.235	105.884	4.75	4.75	1750	70.3949	132.4		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.75e3		0.235	105.884	4.75	4.75	1750	70.3949	132.4		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.75e3		0.235	105.884	4.75	4.75	1750	70.3949	132.4		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.30e3		0.235	263.358	5.04	5.04	4300	69.5300	130.7		
32	79	13C2-PFUdA-EIS	565 > 519.8	6.01e3		0.235	362.134	5.37	5.37	6010	70.5597	132.7		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.55e3	0.235		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.55e3	0.235		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		2.84e3	0.235		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	2.84e3	0.235		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.86e3	0.235		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.55e3		0.235	231.747	5.19	5.19	3550	65.1049	122.4		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.55e3		0.235	231.747	5.19	5.19	3550	65.1049	122.4		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.84e3		0.235	219.903	5.34	5.35	2840	54.9171	103.3		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.84e3		0.235	219.903	5.34	5.35	2840	54.9171	103.3		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.86e3		0.235	458.130	5.64	5.65	6860	63.7467	119.9		
44	-1													
45	37	PFDoA	612.9 > 569.0		6.86e3	0.235		5.65						
46	39	PFTrDA	662.9 > 618.9		6.86e3	0.235		5.90						
47	41	PFTeDA	713.0 > 669.0		4.46e3	0.235		6.11						
48	1...	TDCA	498.3>106.9			0.235		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.38e3	1.38e3	0.235	1.000	1.27	1.27	12.5	53.1824	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.86e3		0.235	458.130	5.64	5.65	6860	63.7467	119.9		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.86e3		0.235	458.130	5.64	5.65	6860	63.7467	119.9		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.46e3		0.235	365.370	6.07	6.11	4460	51.9776	97.7		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.75e3		0.235	105.884	4.75	4.75	1750	70.3949	132.4		
54	1...	13C5-PFHxA	318.0 > 272.9	2.80e3	2.80e3	0.235	1.000	3.10	3.10	12.5	53.1824	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	7.37e2	7.37e2	0.235	1.000	3.86	3.86	12.5	53.1824	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	5.53e3	5.53e3	0.235	1.000	5.04	5.04	12.5	53.1824	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.89e3	6.89e3	0.235	1.000	5.36	5.37	12.5	53.1824	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.87e3	1.87e3	0.235	1.000	4.75	4.75	12.5	53.1824	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.34e3	4.34e3	0.235	1.000	4.66	4.67	12.5	53.1824	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

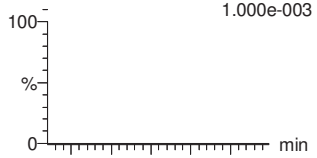
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

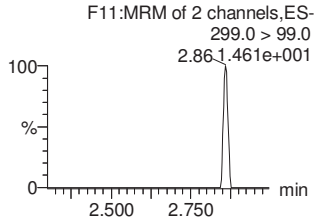
Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

PFBS





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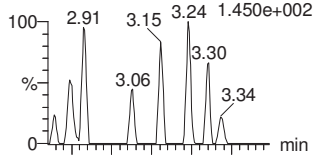

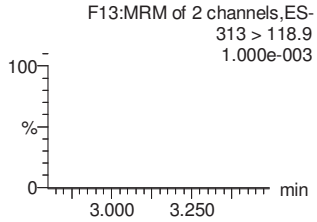

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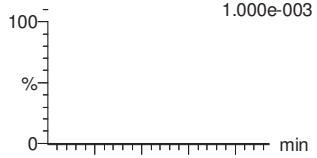

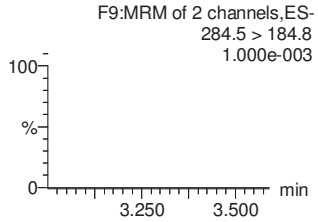

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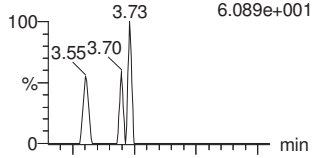

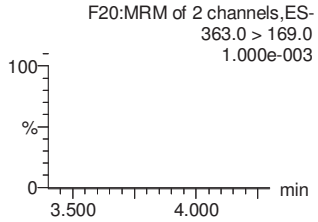

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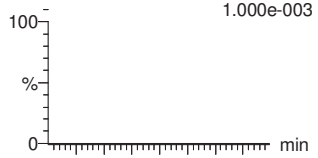

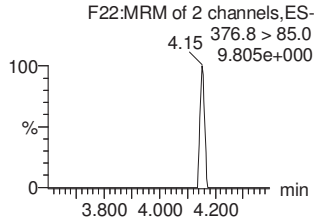

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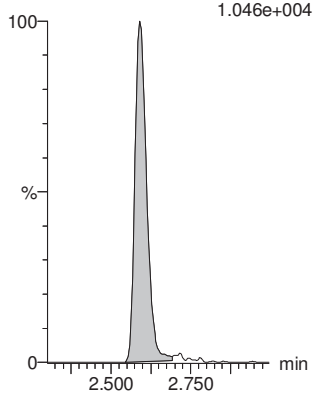

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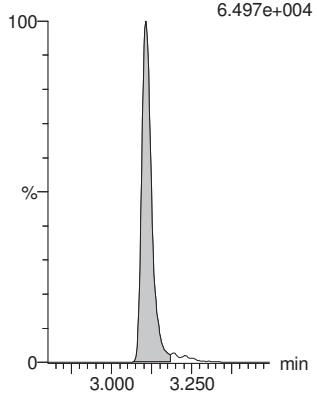

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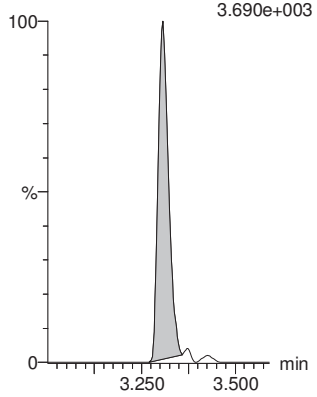

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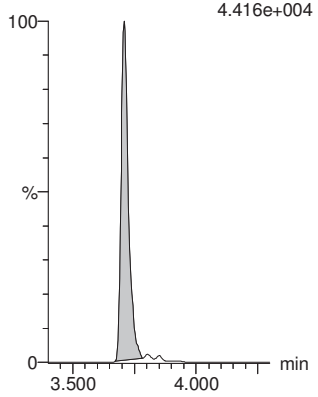

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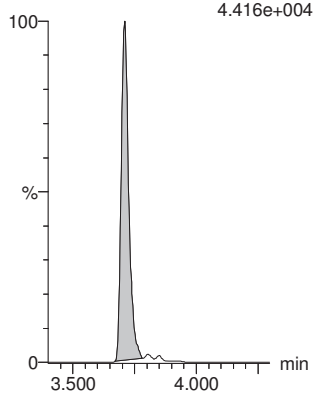


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory L18

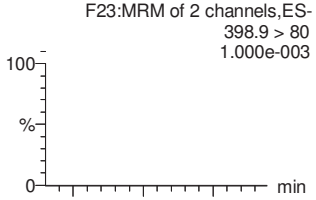
Review: AMR 2/18/2020

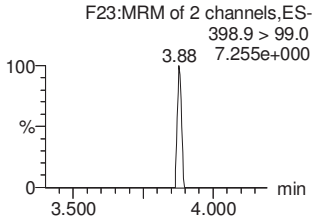
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

L-PFHxS





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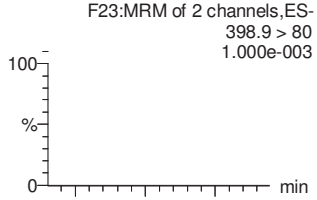

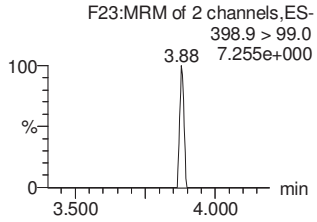

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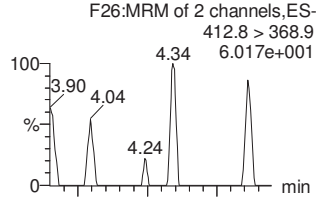
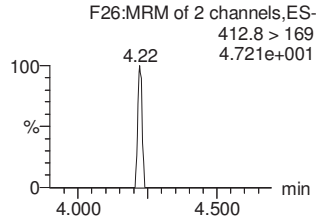
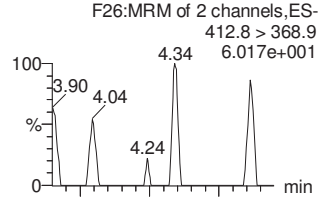
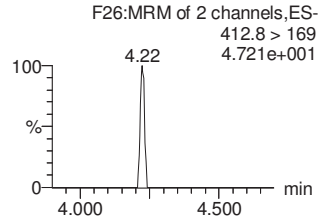




Total PFOA





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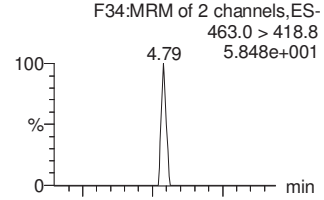

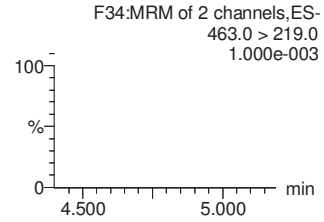

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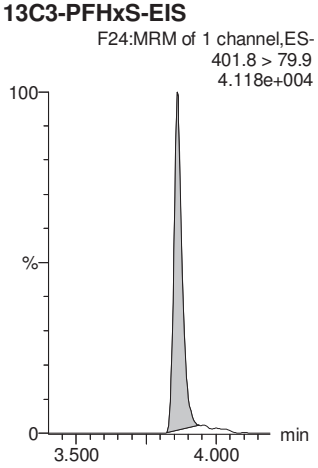

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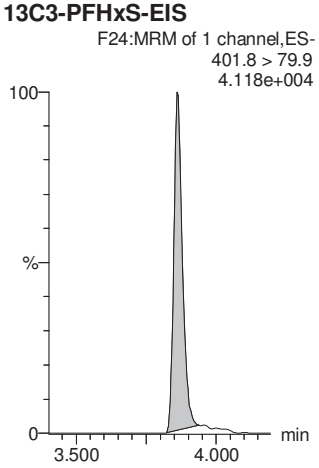

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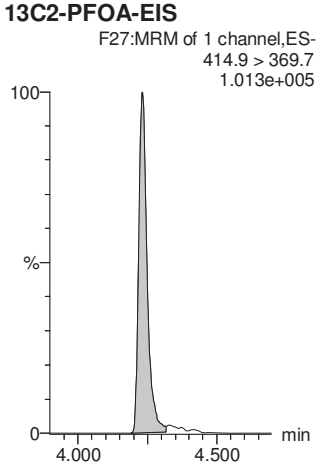

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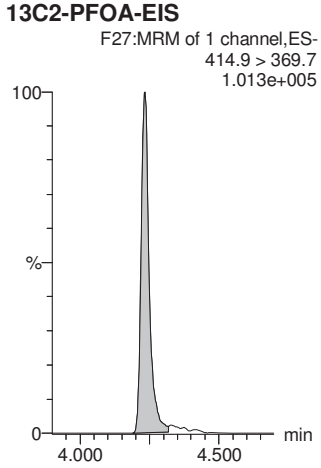

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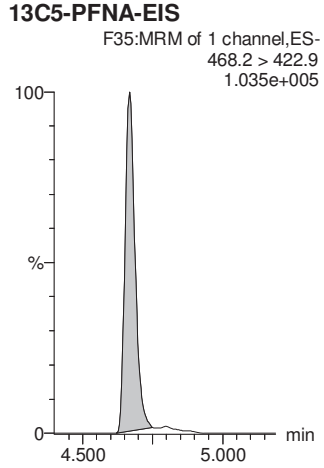


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

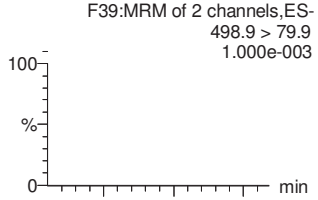
Review: AMR 2/18/2020

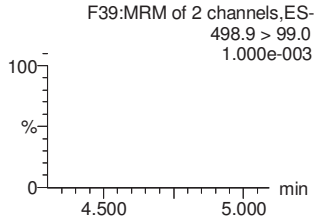
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

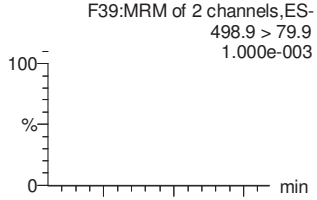
Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

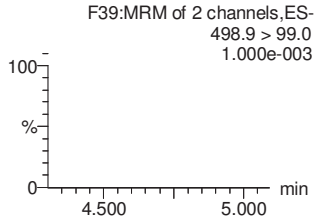
L-PFOS





Total PFOS





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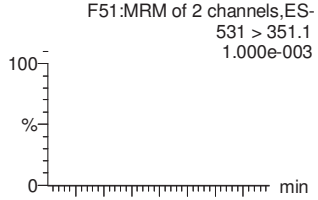

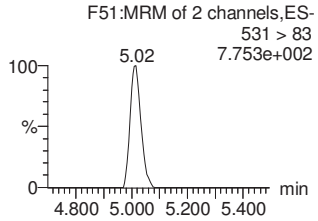

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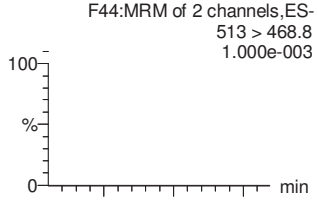
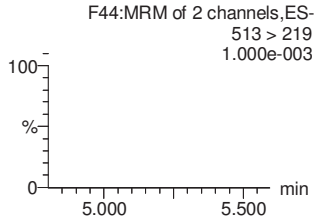
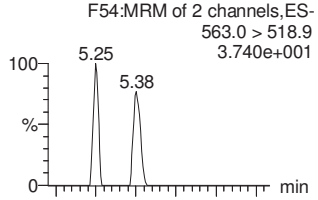
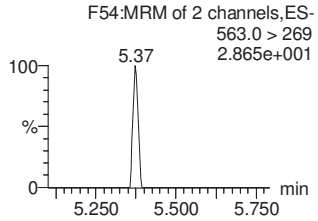


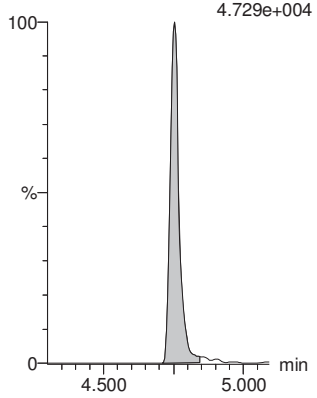


PFUdA





13C8-PFOS-EIS



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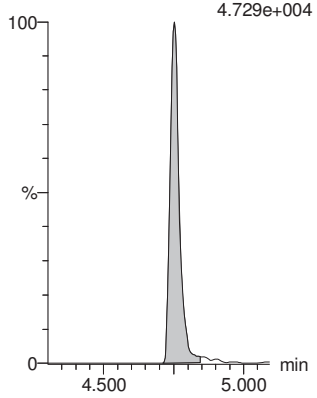

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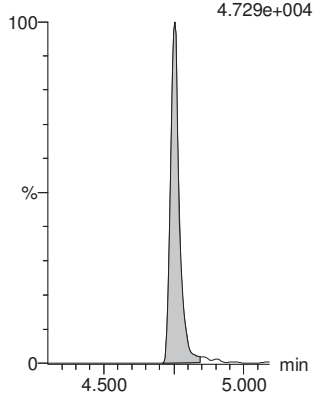

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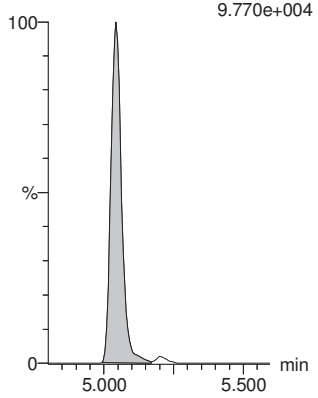

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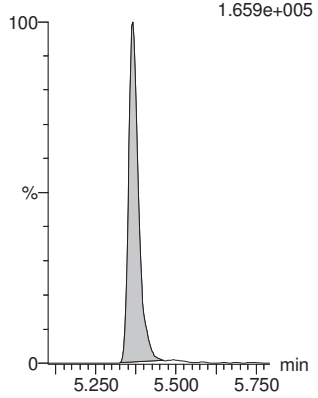


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

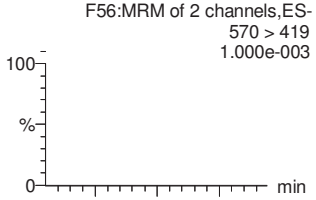
Review: AMR 2/18/2020

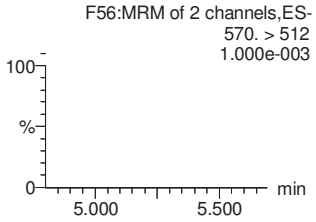
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

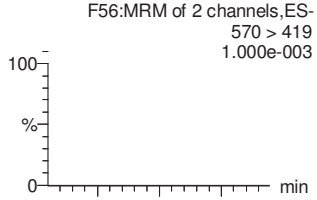
Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

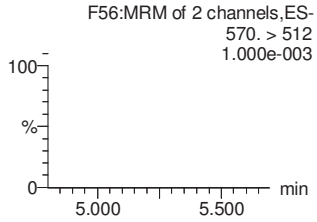
L-MeFOSAA



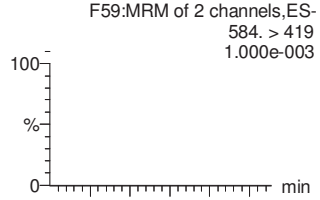


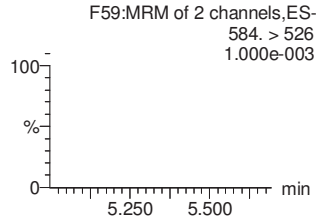
Total N-MeFOSAA



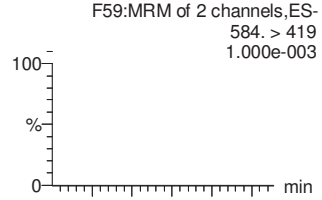


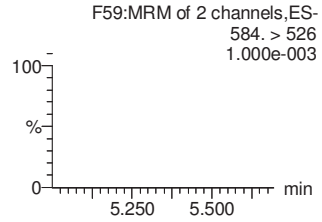
L-EtFOSAA



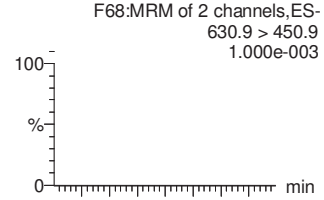


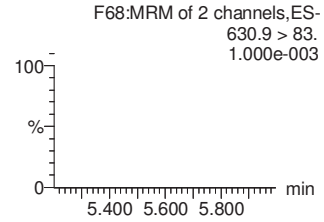
Total N-EtFOSAA



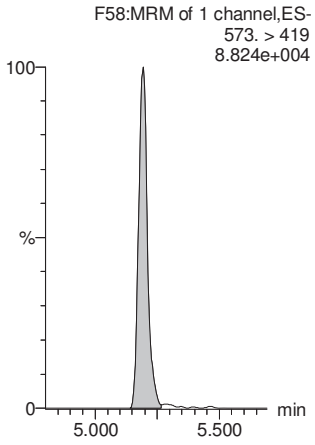


11Cl-PF30UdS





d3-N-MeFOSAA-EIS



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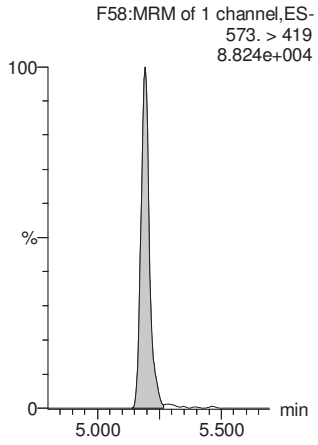

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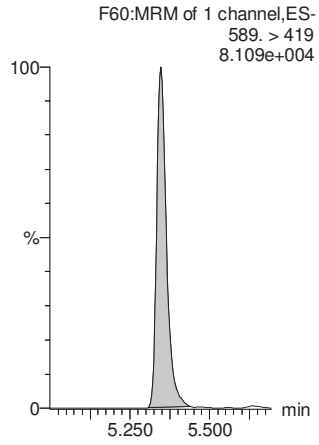

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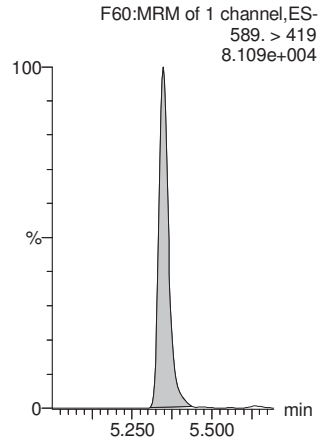
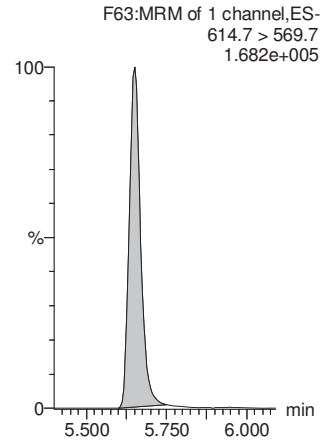


13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

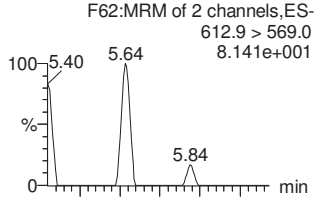
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

PFDoA



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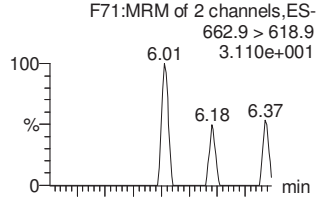
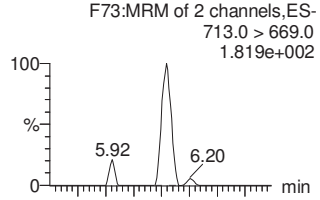


PFTeDA



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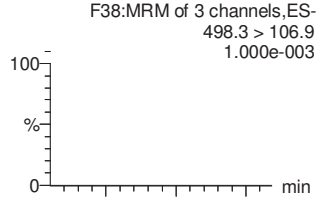
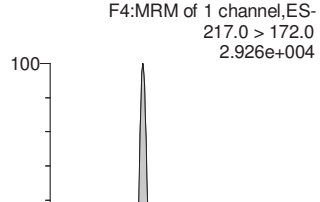
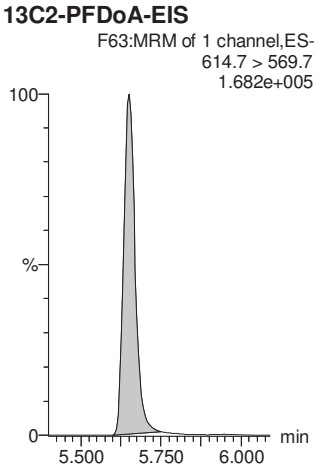


13C4-PFBA



13C2-PFDoA-EIS



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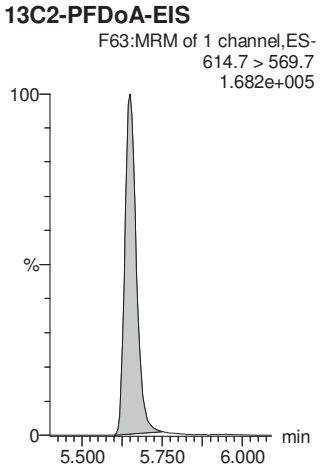
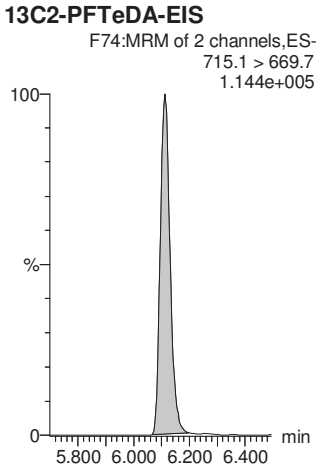
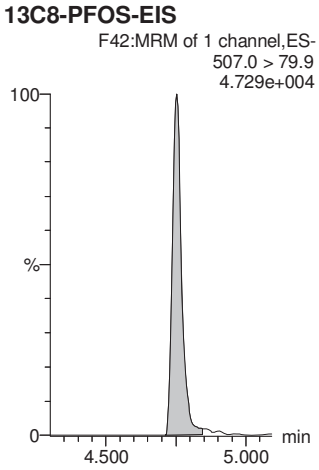


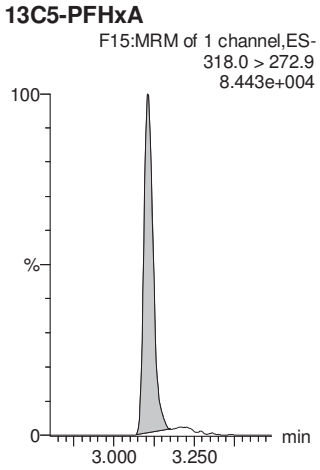
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

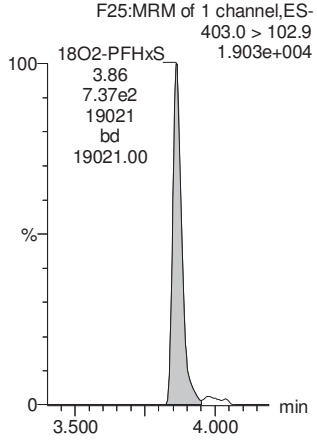
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_20.qld

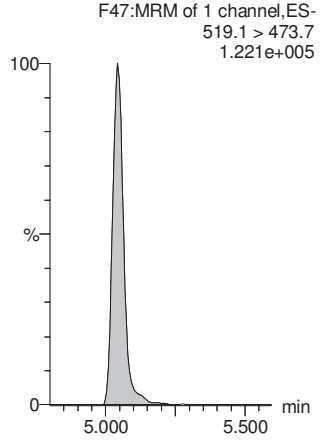
Last Altered: Friday, February 14, 2020 15:59:25 Pacific Standard Time
Printed: Friday, February 14, 2020 16:00:06 Pacific Standard Time

Name: 200212M2_20, Date: 12-Feb-2020, Time: 22:26:30, ID: 2000247-01 SB01-20200204 0.23504, Description: SB01-20200204

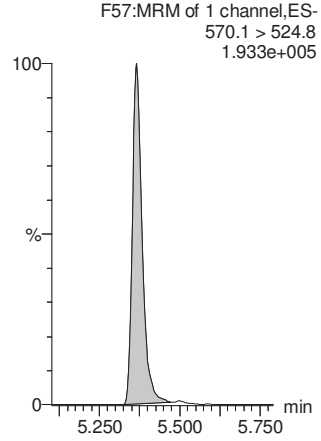
18O2-PFHxS



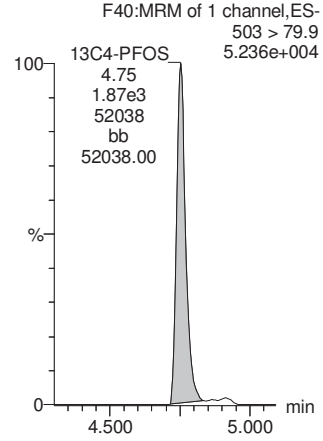
13C6-PFDA



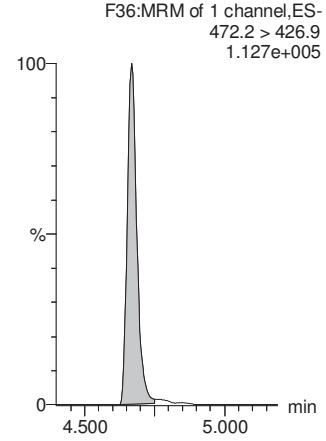
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7		4.44e2	0.259		2.60						
2	7	PFHxA	313.0 > 269.0		2.21e3	0.259		3.11						
3	9	HFPO-DA	284.5 > 168.8		1.01e2	0.259		3.31						
4	11	PFHpA	363.0 > 318.9		1.62e3	0.259		3.71						
5	12	ADONA	376.8 > 250.9		1.62e3	0.259		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.44e2		0.259	23.482	2.66	2.60	444	72.8300	151.2		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.21e3		0.259	144.232	3.11	3.11	2210	59.0168	122.5		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.01e2		0.259	6.687	3.39	3.31	101	58.1717	120.7		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.62e3		0.259	95.340	3.74	3.71	1620	65.3705	135.7		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.62e3		0.259	95.340	3.74	3.71	1620	65.3705	135.7		
11	-1													
12	13	L-PFHxS	398.9 > 80		1.44e3	0.259		3.86						
13	1...	Total PFHxS	398.9 > 80	0.00e0	1.44e3	0.259		3.83		0.000				
14	16	L-PFOA	412.8 > 368.9	4.22e0	3.51e3	0.259		4.23	4.22	0.0150			3.396	NO
15	1...	Total PFOA	412.8 > 368.9	4.22e0	3.51e3	0.259		4.20		0.000				
16	21	PFNA	463.0 > 418.8		4.26e3	0.259		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.44e3		0.259	88.291	3.86	3.86	1440	62.6585	130.0		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.44e3		0.259	88.291	3.86	3.86	1440	62.6585	130.0		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.51e3		0.259	220.187	4.23	4.23	3510	61.4436	127.5		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.51e3		0.259	220.187	4.23	4.23	3510	61.4436	127.5		
21	65	13C5-PFNA-EIS	468.2 > 422.9	4.26e3		0.259	262.826	4.67	4.67	4260	62.4664	129.7		
22	-1													
23	23	L-PFOS	498.9 > 79.9		1.63e3	0.259		4.75						
24	1...	Total PFOS	498.9 > 79.9	0.00e0	1.63e3	0.259		4.73		0.000				
25	25	9Cl-PF30NS	531 > 351.1		1.63e3	0.259		4.96						
26	26	PFDA	513 > 468.8		4.29e3	0.259		5.04						
27	33	PFUdA	563.0 > 518.9		6.17e3	0.259		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.259	105.884	4.75	4.75	1630	59.2911	123.1		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.259	105.884	4.75	4.75	1630	59.2911	123.1		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.259	105.884	4.75	4.75	1630	59.2911	123.1		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.29e3		0.259	263.358	5.04	5.04	4290	62.8141	130.4		
32	79	13C2-PFUdA-EIS	565 > 519.8	6.17e3		0.259	362.134	5.36	5.37	6170	65.6690	136.3		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.57e3	0.259		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.57e3	0.259		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		3.15e3	0.259		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	3.15e3	0.259		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.80e3	0.259		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.57e3		0.259	231.747	5.19	5.19	3570	59.3118	123.1		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.57e3		0.259	231.747	5.19	5.19	3570	59.3118	123.1		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.15e3		0.259	219.903	5.33	5.35	3150	55.1629	114.5		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.15e3		0.259	219.903	5.33	5.35	3150	55.1629	114.5		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.80e3		0.259	458.130	5.63	5.65	6800	57.2490	118.8		
44	-1													
45	37	PFDoA	612.9 > 569.0		6.80e3	0.259		5.65						
46	39	PFTrDA	662.9 > 618.9		6.80e3	0.259		5.90						
47	41	PFTeDA	713.0 > 669.0		4.62e3	0.259		6.11						
48	1...	TDCA	498.3>106.9			0.259		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.36e3	1.36e3	0.259	1.000	1.27	1.28	12.5	48.1807	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.80e3		0.259	458.130	5.63	5.65	6800	57.2490	118.8		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.80e3		0.259	458.130	5.63	5.65	6800	57.2490	118.8		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.62e3		0.259	365.370	6.07	6.11	4620	48.7381	101.2		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.259	105.884	4.75	4.75	1630	59.2911	123.1		
54	1...	13C5-PFHxA	318.0 > 272.9	2.48e3	2.48e3	0.259	1.000	3.10	3.11	12.5	48.1807	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	6.86e2	6.86e2	0.259	1.000	3.86	3.86	12.5	48.1807	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	5.13e3	5.13e3	0.259	1.000	5.04	5.04	12.5	48.1807	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.66e3	6.66e3	0.259	1.000	5.36	5.36	12.5	48.1807	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.81e3	1.81e3	0.259	1.000	4.75	4.75	12.5	48.1807	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.42e3	4.42e3	0.259	1.000	4.66	4.67	12.5	48.1807	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

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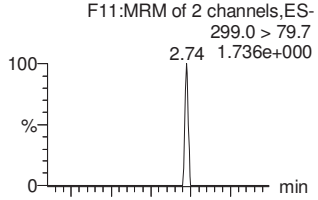
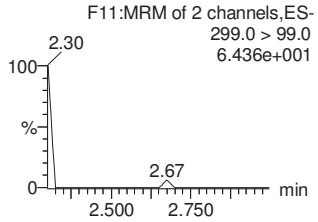
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

PFBS





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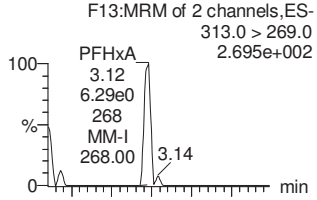

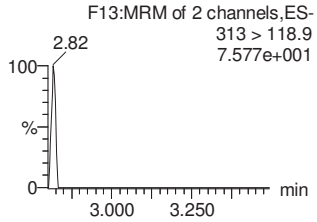

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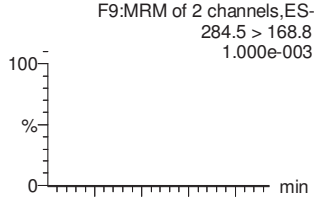

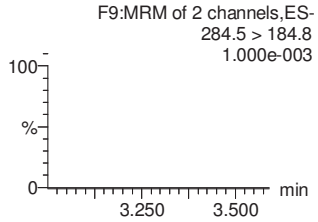

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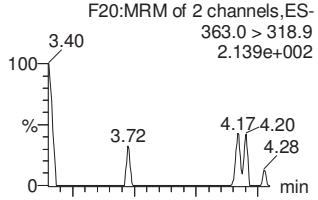

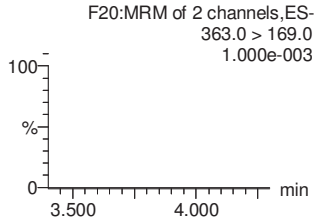

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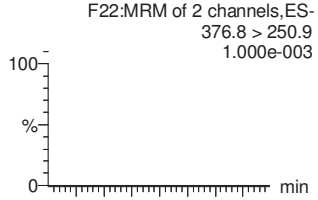

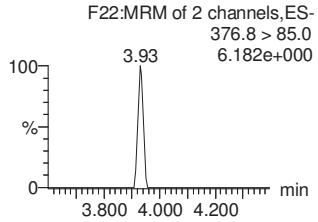

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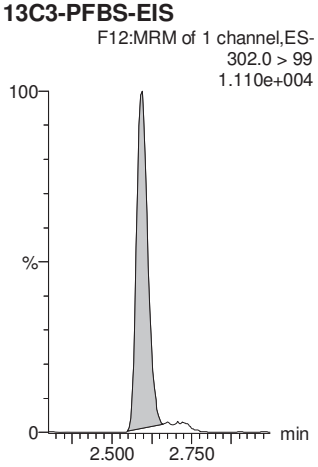

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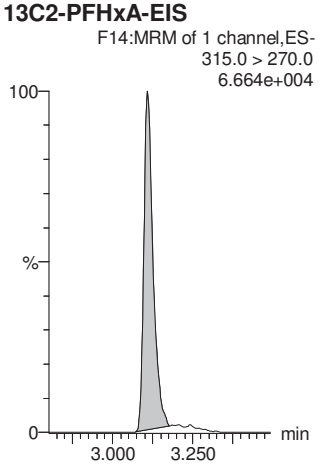

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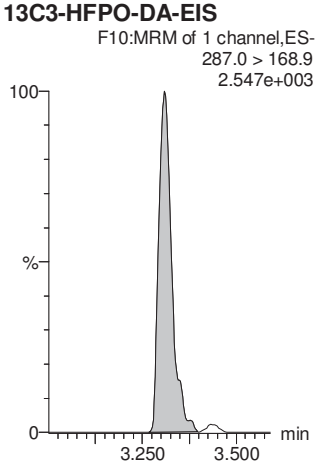

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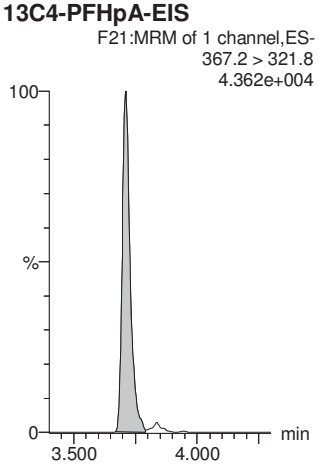

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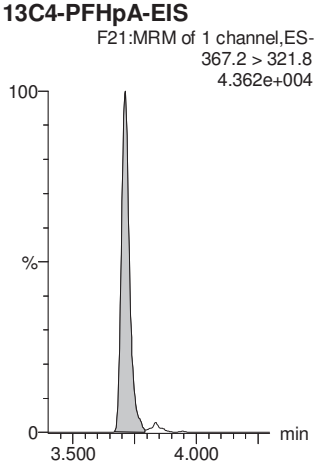

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

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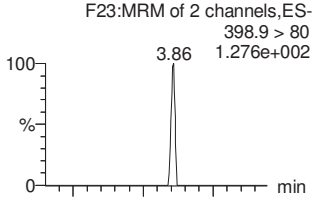

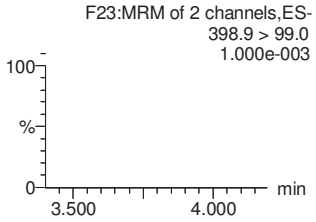

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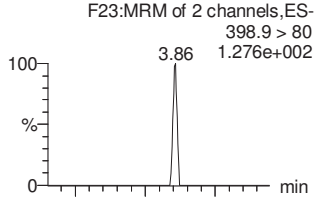

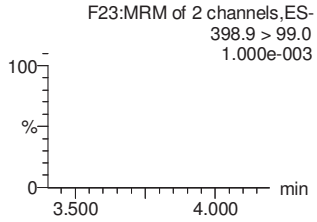

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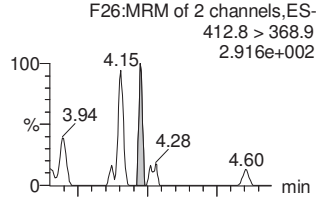

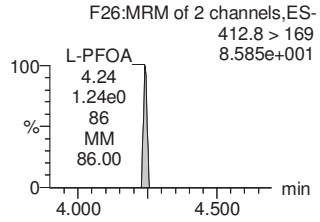

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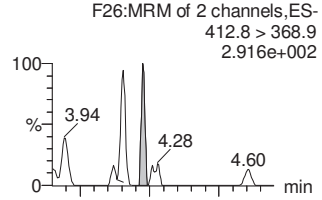

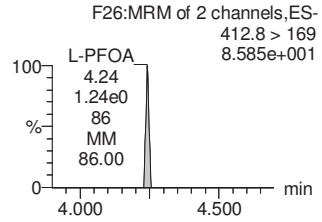

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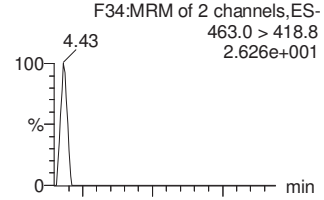

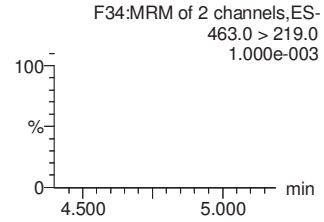

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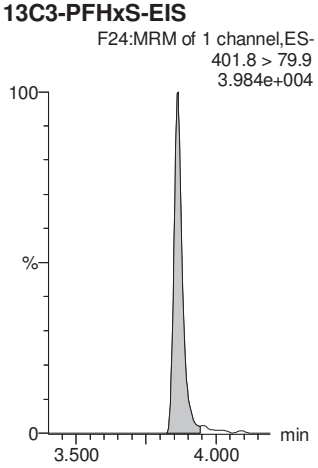

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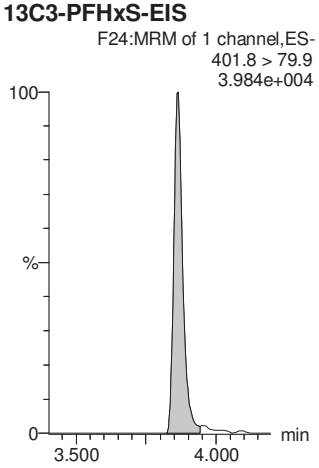

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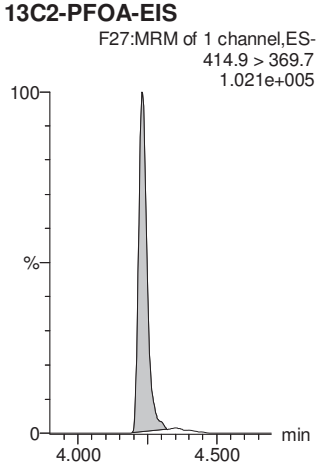

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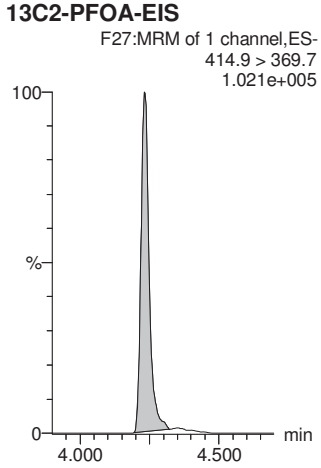

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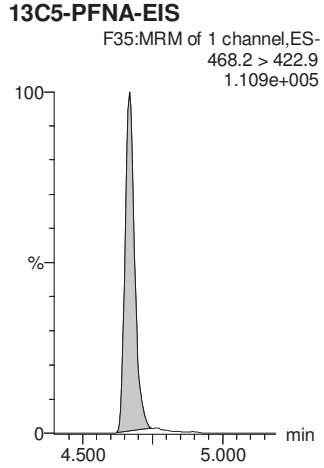


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

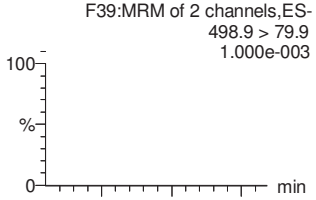
Review: AMR 2/18/2020

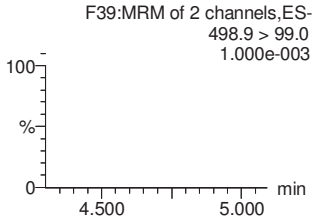
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

L-PFOS





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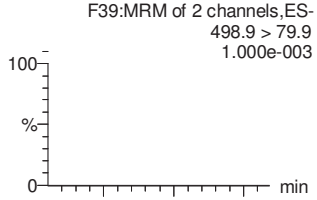

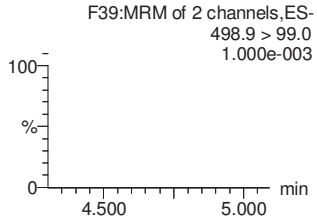

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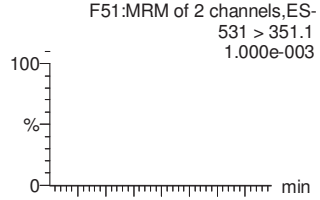

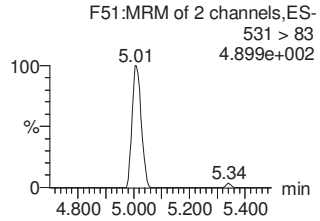

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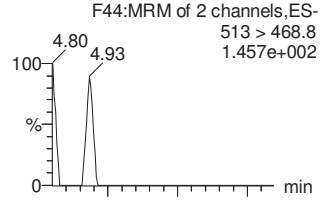

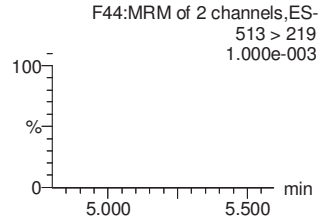

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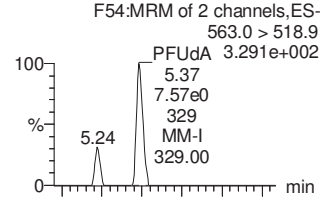

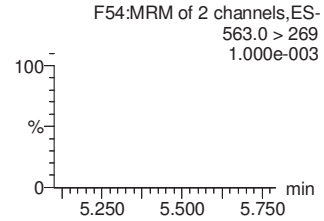

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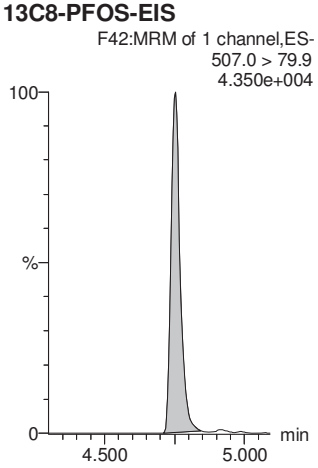

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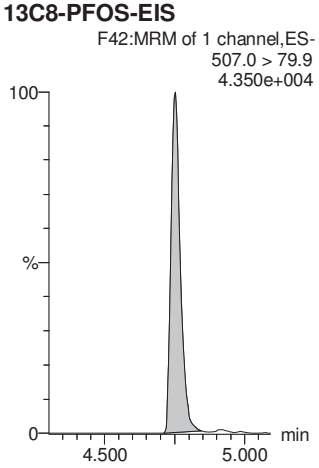

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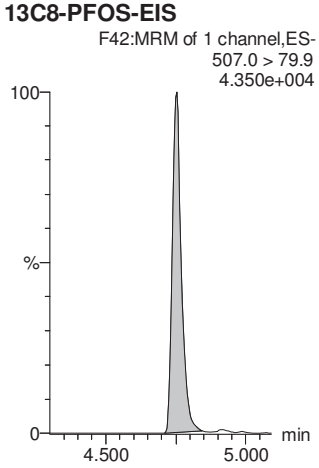
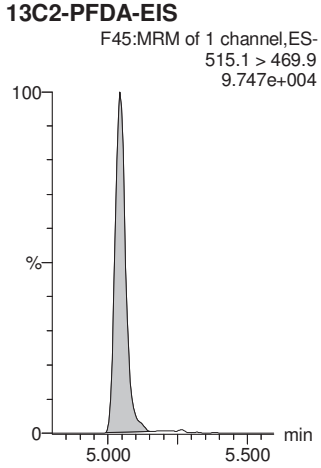
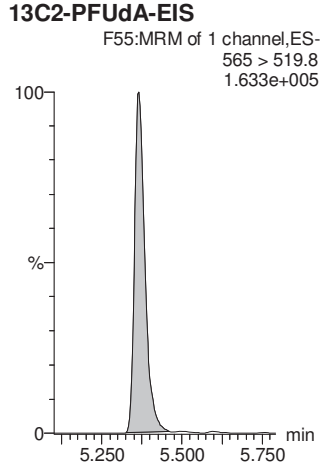


13C2-PFDA-EIS



13C2-PFUdA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

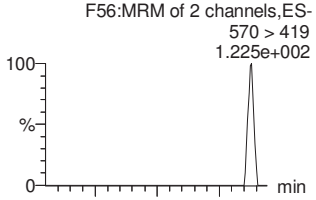
Review: AMR 2/18/2020

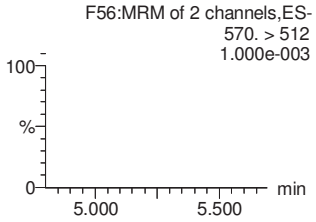
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

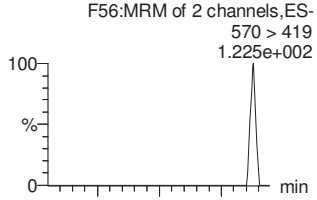
Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

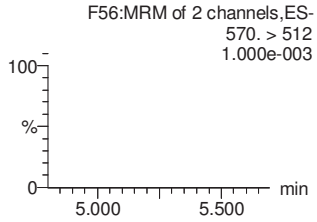
L-MeFOSAA



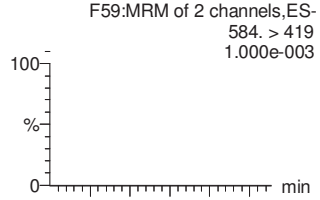


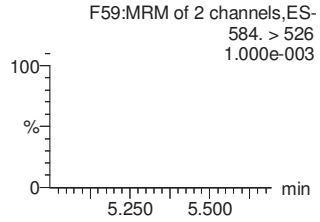
Total N-MeFOSAA



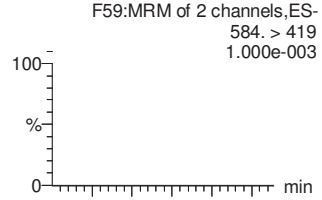


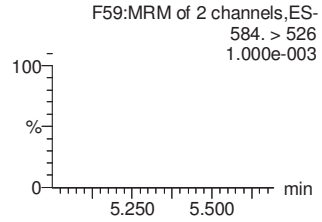
L-EtFOSAA



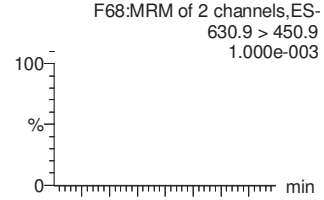


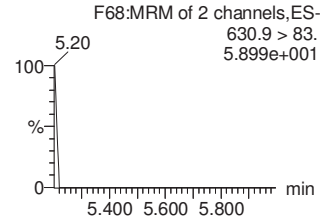
Total N-EtFOSAA



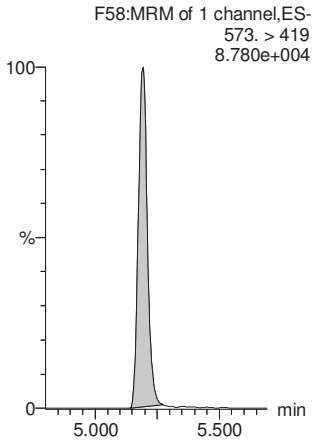


11Cl-PF30UdS

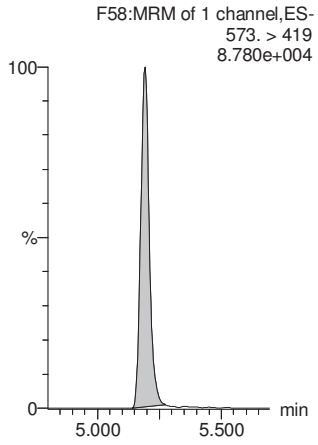




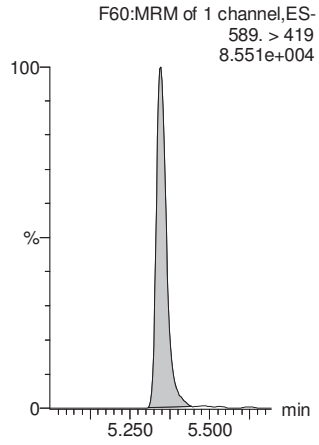
d3-N-MeFOSAA-EIS



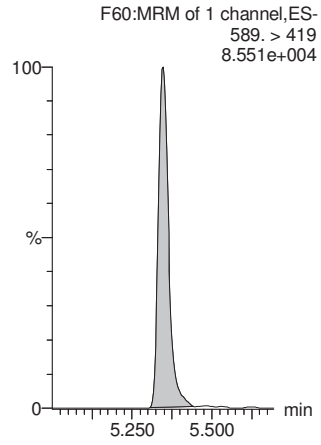
d3-N-MeFOSAA-EIS



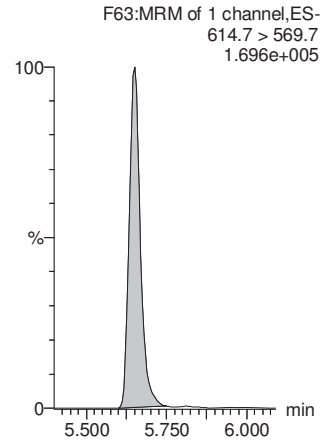
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

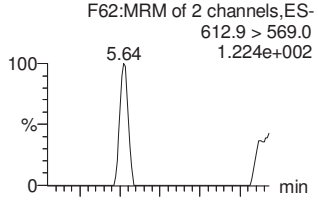
Review: AMR 2/18/2020

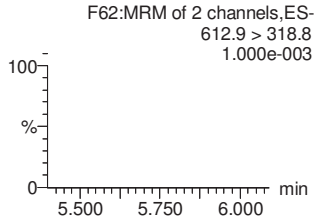
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

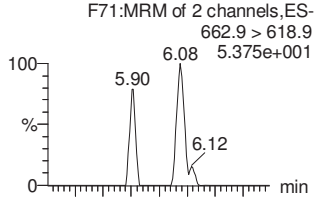
Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

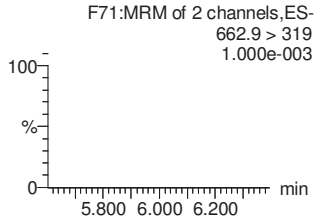
PFDoA



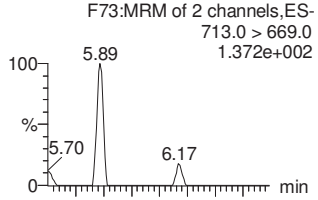


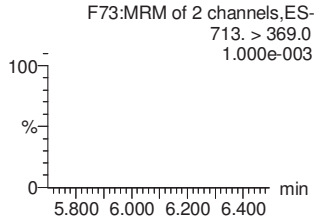
PFTrDA



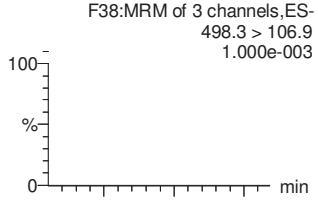


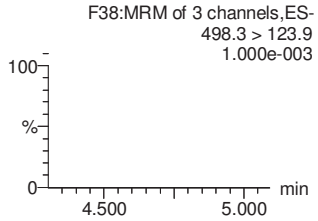
PFTeDA



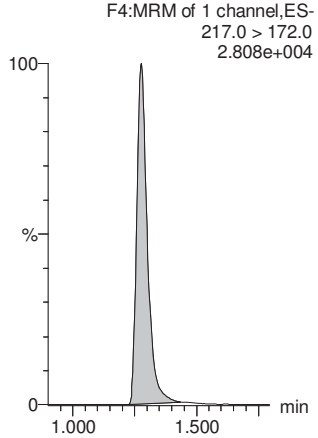


TDCA

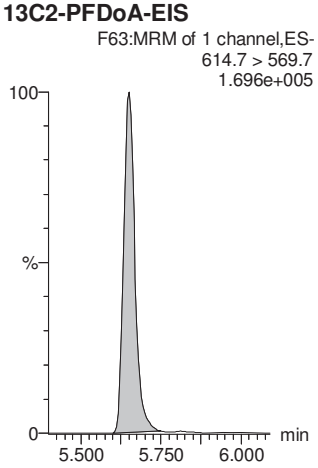




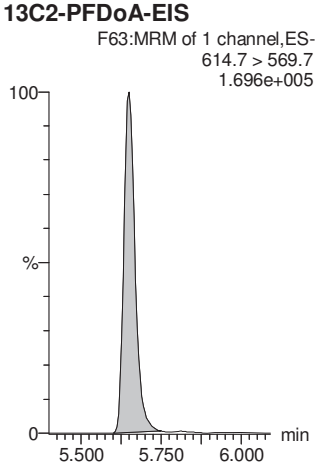
13C4-PFBA



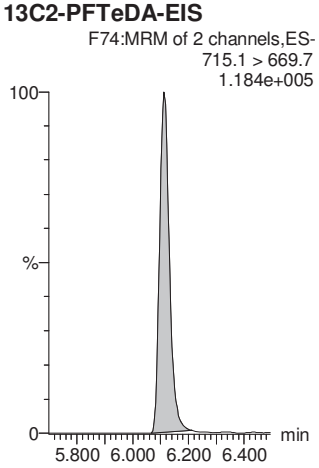
13C2-PFDoA-EIS



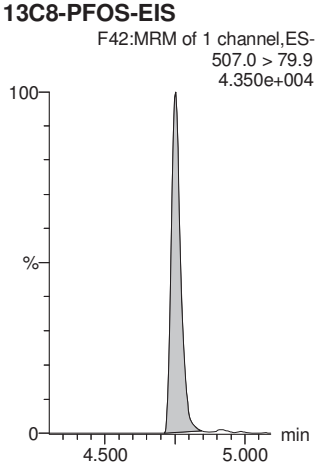
13C2-PFDoA-EIS



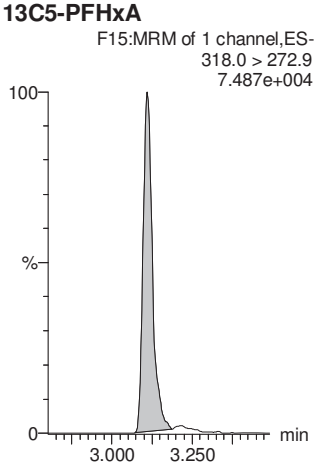
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

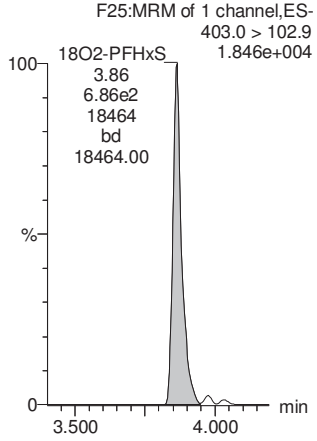
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_21.qld

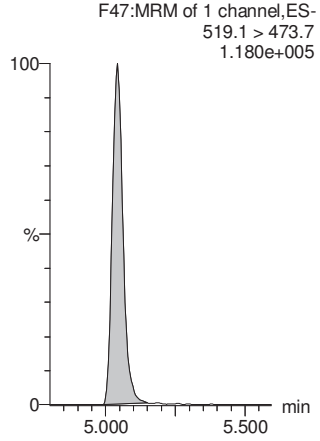
Last Altered: Friday, February 14, 2020 16:02:36 Pacific Standard Time
Printed: Friday, February 14, 2020 16:03:13 Pacific Standard Time

Name: 200212M2_21, Date: 12-Feb-2020, Time: 22:36:53, ID: 2000247-02 EB01-20200204 0.25944, Description: EB01-20200204

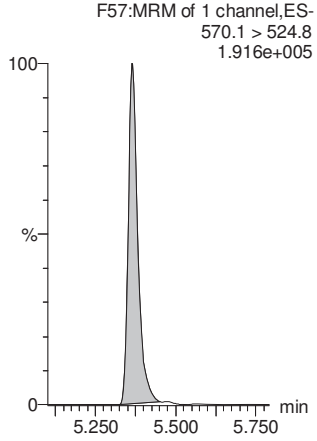
18O2-PFHxS



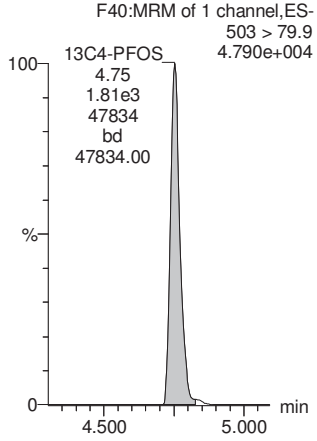
13C6-PFDA



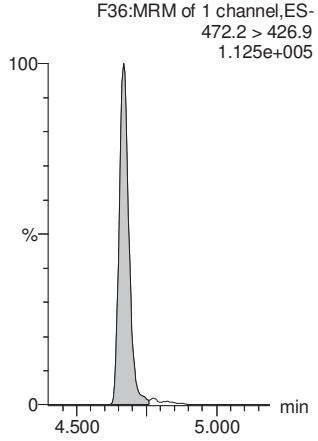
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
Printed: Friday, February 14, 2020 16:07:24 Pacific Standard Time

Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.15e3	4.40e2	0.256		2.59	2.59	32.8	54.8482		2.955	NO
2	7	PFHxA	313.0 > 269.0	8.80e3	2.10e3	0.256		3.11	3.11	52.4	189.7433		16.504	NO
3	9	HFPO-DA	284.5 > 168.8		1.03e2	0.256		3.31						
4	11	PFHpA	363.0 > 318.9	1.26e3	1.42e3	0.256		3.71	3.71	11.1	33.4829		10.933	NO
5	12	ADONA	376.8 > 250.9		1.42e3	0.256		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.40e2		0.256	23.482	2.66	2.59	440	73.3271	149.9		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.10e3		0.256	144.232	3.11	3.11	2100	56.9376	116.4		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.03e2		0.256	6.687	3.39	3.31	103	60.0128	122.7		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.42e3		0.256	95.340	3.74	3.71	1420	58.3949	119.4		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.42e3		0.256	95.340	3.74	3.71	1420	58.3949	119.4		
11	-1													
12	13	L-PFHxS	398.9 > 80	7.03e3	1.36e3	0.256		3.86	3.86	64.5	236.8972		2.042	NO
13	1...	Total PFHxS	398.9 > 80	7.03e3	1.36e3	0.256		3.83		64.5	236.8972			
14	16	L-PFOA	412.8 > 368.9	2.38e4	3.33e3	0.256		4.23	4.23	89.5	240.8576		2.869	NO
15	1...	Total PFOA	412.8 > 368.9	2.38e4	3.33e3	0.256		4.20		89.5	240.8576			
16	21	PFNA	463.0 > 418.8	3.65e2	3.92e3	0.256		4.67	4.67	1.16	4.0757		5.231	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.36e3		0.256	88.291	3.86	3.86	1360	60.3169	123.3		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.36e3		0.256	88.291	3.86	3.86	1360	60.3169	123.3		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.33e3		0.256	220.187	4.23	4.23	3330	59.1656	121.0		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.33e3		0.256	220.187	4.23	4.23	3330	59.1656	121.0		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.92e3		0.256	262.826	4.67	4.67	3920	58.3050	119.2		
22	-1													
23	23	L-PFOS	498.9 > 79.9	6.64e3	1.60e3	0.256		4.75	4.75	51.7	175.0744		2.242	NO
24	1...	Total PFOS	498.9 > 79.9	6.64e3	1.60e3	0.256		4.73		51.7	175.0744			
25	25	9Cl-PF30NS	531 > 351.1		1.60e3	0.256		4.96						
26	26	PFDA	513 > 468.8		4.23e3	0.256		5.04						
27	33	PFUdA	563.0 > 518.9		5.64e3	0.256		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.60e3		0.256	105.884	4.75	4.75	1600	59.3039	121.3		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.60e3		0.256	105.884	4.75	4.75	1600	59.3039	121.3		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.60e3		0.256	105.884	4.75	4.75	1600	59.3039	121.3		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.23e3		0.256	263.358	5.04	5.04	4230	62.8296	128.5		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.64e3		0.256	362.134	5.37	5.37	5640	60.9495	124.6		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.64e3	0.256		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.64e3	0.256		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		3.39e3	0.256		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
Printed: Friday, February 14, 2020 16:07:24 Pacific Standard Time

Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	3.39e3	0.256		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.47e3	0.256		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.64e3		0.256	231.747	5.19	5.19	3640	61.4347	125.6		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.64e3		0.256	231.747	5.19	5.19	3640	61.4347	125.6		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.39e3		0.256	219.903	5.34	5.35	3390	60.3856	123.5		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.39e3		0.256	219.903	5.34	5.35	3390	60.3856	123.5		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.47e3		0.256	458.130	5.64	5.65	6470	55.2462	113.0		
44	-1													
45	37	PFDoA	612.9 > 569.0	7.12e0	6.47e3	0.256		5.65	5.64	0.0138			15.920	YES
46	39	PFTrDA	662.9 > 618.9		6.47e3	0.256		5.90						
47	41	PFTeDA	713.0 > 669.0		5.05e3	0.256		6.11						
48	1...	TDCA	498.3>106.9			0.256		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.28e3	1.28e3	0.256	1.000	1.27	1.27	12.5	48.9084	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.47e3		0.256	458.130	5.64	5.65	6470	55.2462	113.0		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.47e3		0.256	458.130	5.64	5.65	6470	55.2462	113.0		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	5.05e3		0.256	365.370	6.07	6.11	5050	54.0314	110.5		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.60e3		0.256	105.884	4.75	4.75	1600	59.3039	121.3		
54	1...	13C5-PFHxA	318.0 > 272.9	2.32e3	2.32e3	0.256	1.000	3.10	3.11	12.5	48.9084	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	6.63e2	6.63e2	0.256	1.000	3.86	3.86	12.5	48.9084	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	5.33e3	5.33e3	0.256	1.000	5.04	5.04	12.5	48.9084	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.71e3	6.71e3	0.256	1.000	5.36	5.37	12.5	48.9084	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.64e3	1.64e3	0.256	1.000	4.75	4.75	12.5	48.9084	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.37e3	4.37e3	0.256	1.000	4.66	4.67	12.5	48.9084	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
Printed: Friday, February 14, 2020 16:07:24 Pacific Standard Time

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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

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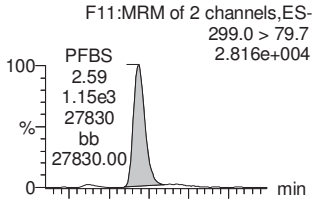

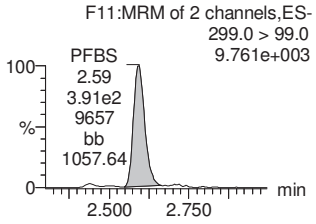

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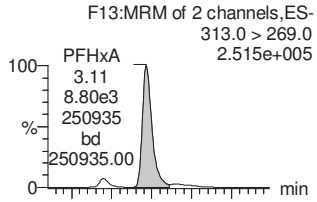

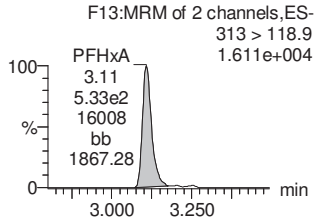

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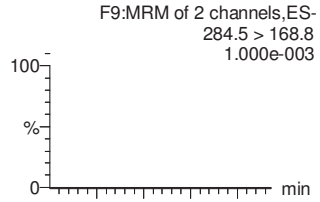

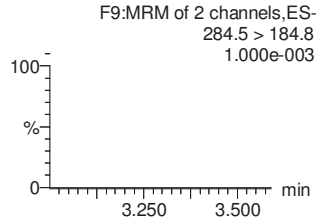

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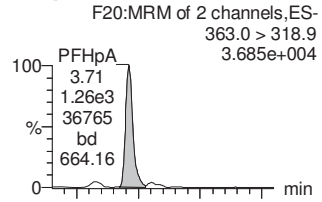
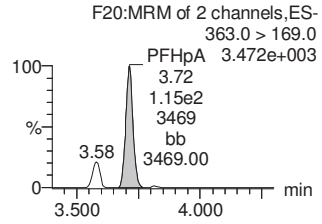
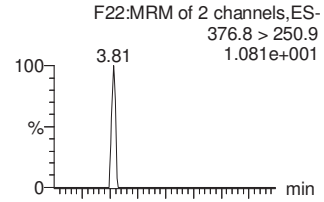
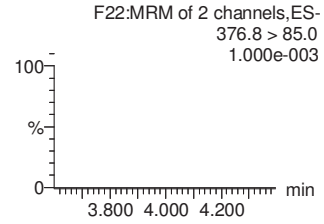




ADONA





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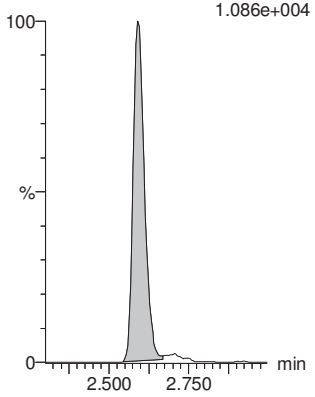

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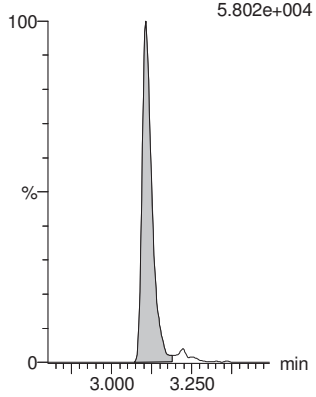

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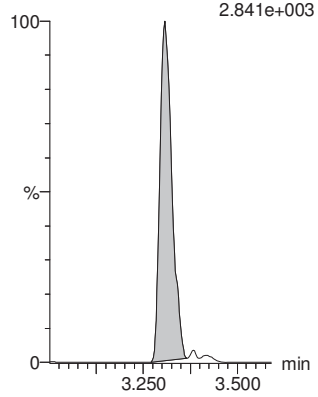

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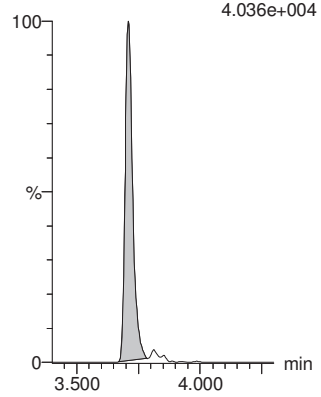

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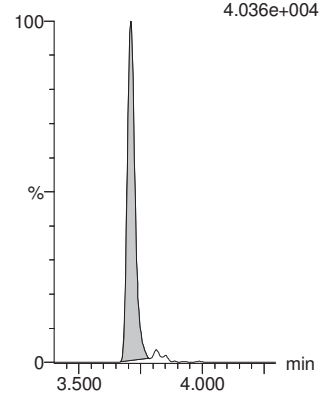


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

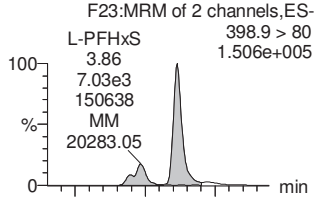
Review: AMR 2/18/2020

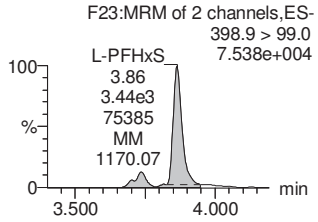
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
Printed: Friday, February 14, 2020 16:07:24 Pacific Standard Time

Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

L-PFHxS





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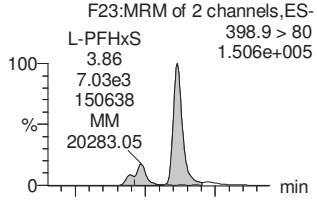

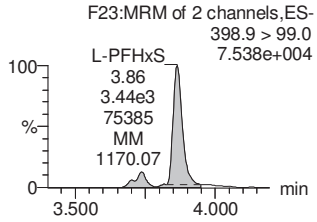

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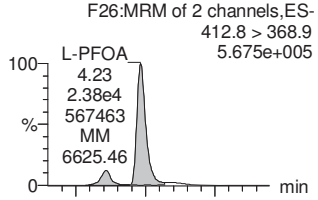

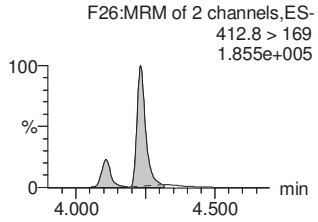

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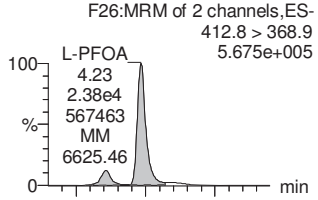

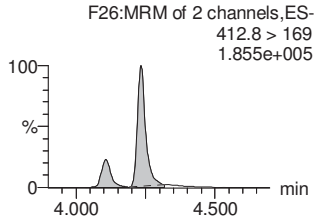

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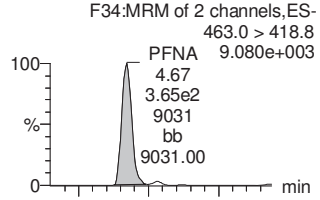

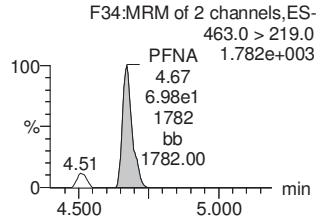

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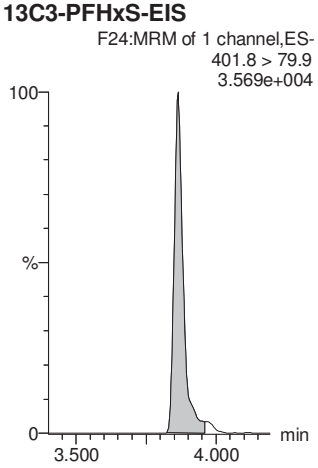

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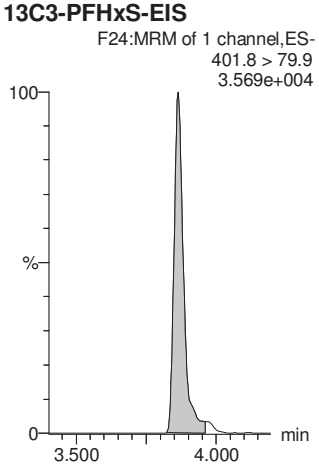

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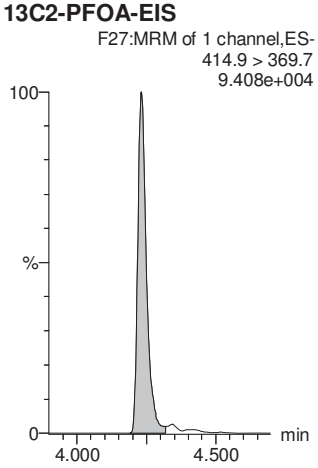

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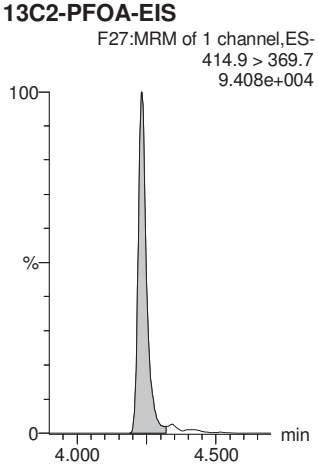

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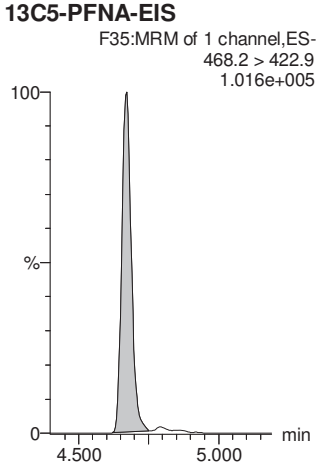


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

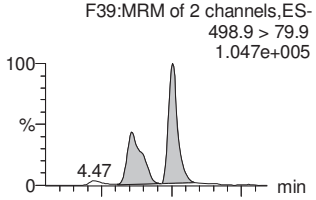
Review: AMR 2/18/2020

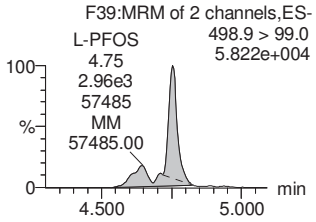
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
Printed: Friday, February 14, 2020 16:07:24 Pacific Standard Time

Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

L-PFOS





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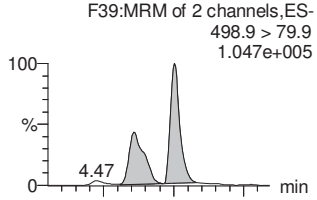

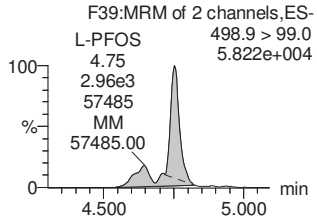

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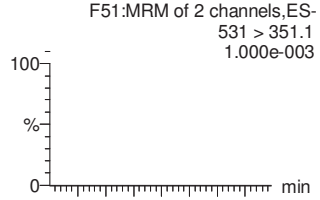

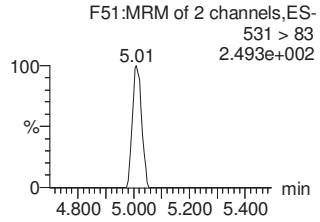

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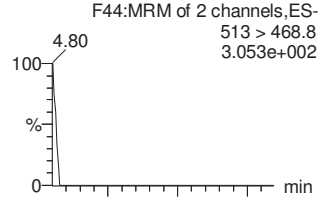

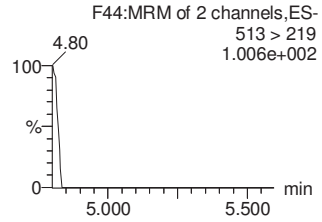

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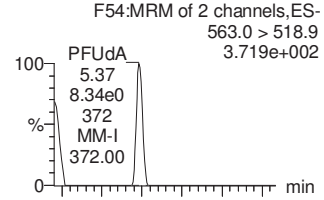

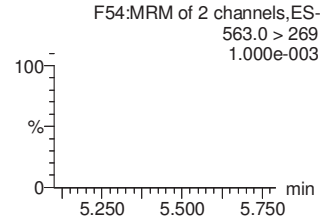

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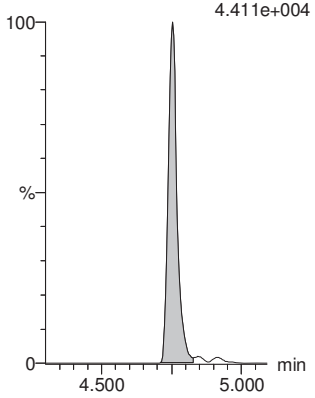

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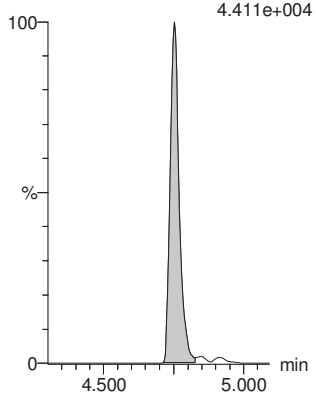

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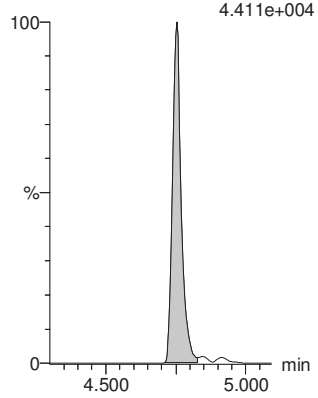
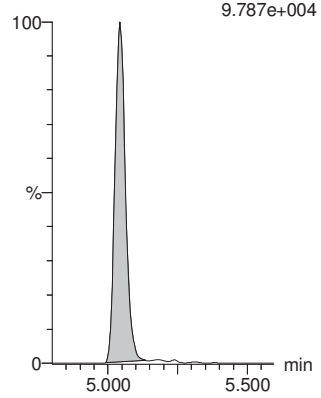
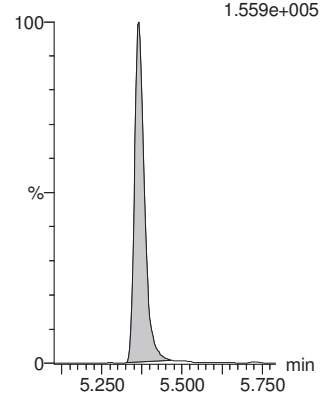


13C2-PFDA-EIS



13C2-PFUdA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

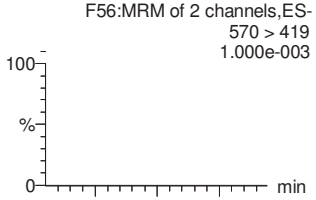
Review: AMR 2/18/2020

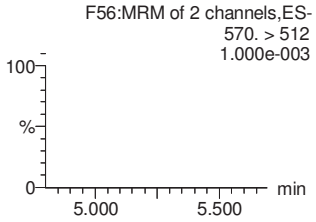
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
Printed: Friday, February 14, 2020 16:07:24 Pacific Standard Time

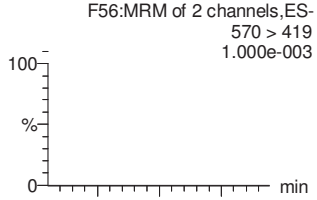
Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

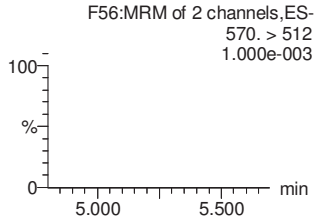
L-MeFOSAA



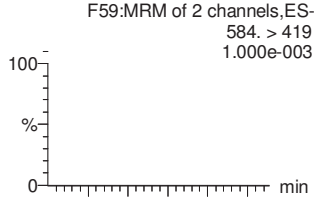


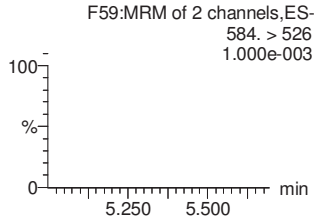
Total N-MeFOSAA



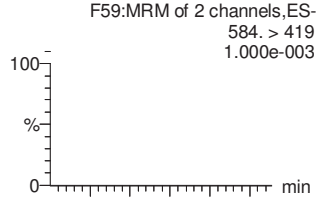


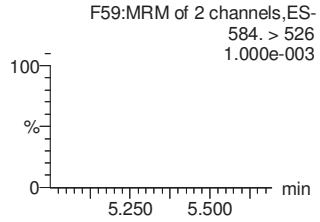
L-EtFOSAA



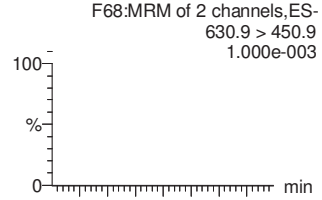


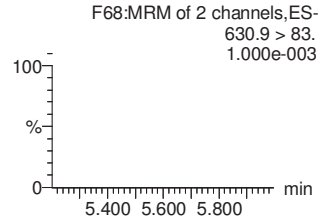
Total N-EtFOSAA



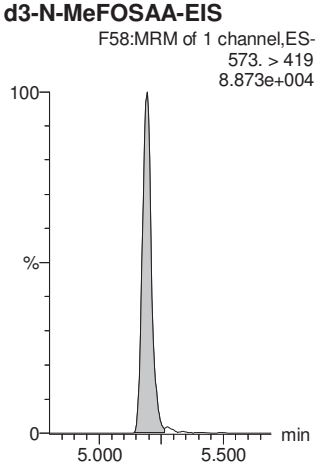


11Cl-PF30UdS

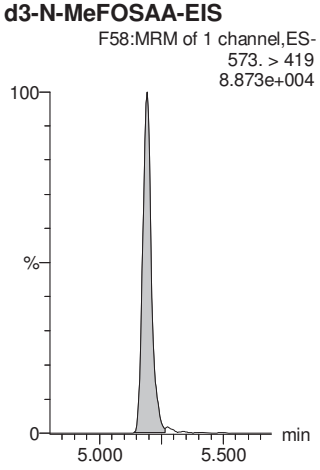




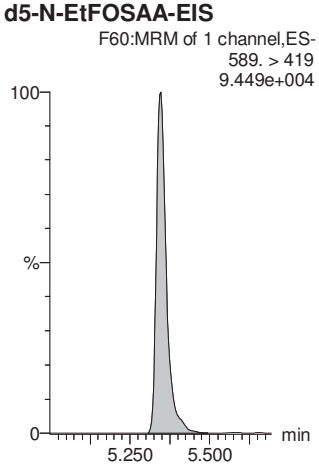
d3-N-MeFOSAA-EIS



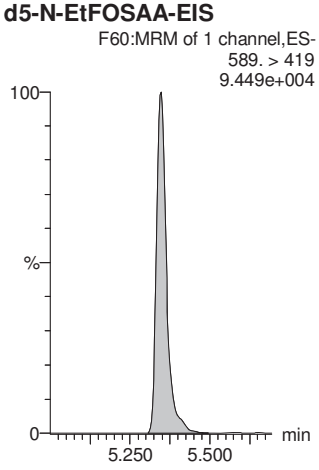
d3-N-MeFOSAA-EIS



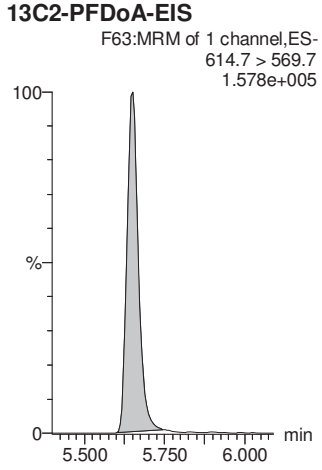
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

Last Altered: Friday, February 14, 2020 16:06:49 Pacific Standard Time
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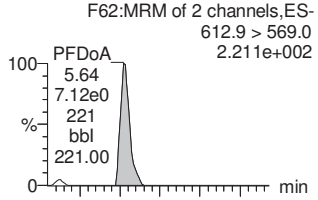
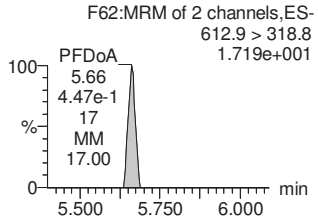
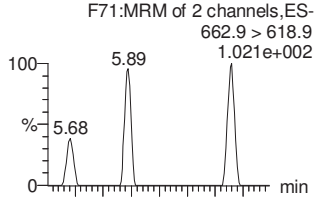
Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

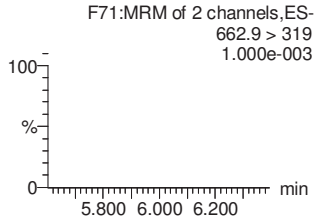
PFDoA



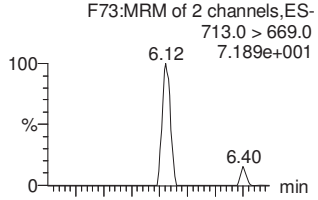


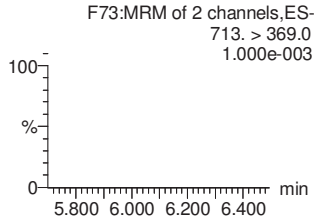
PFTrDA



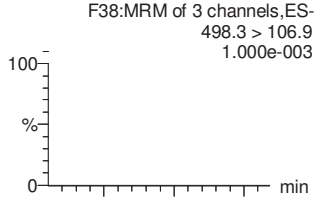


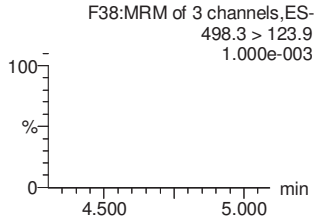
PFTeDA



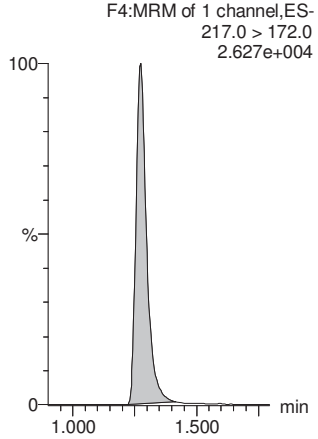


TDCA

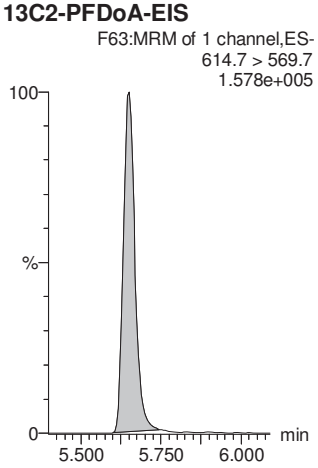




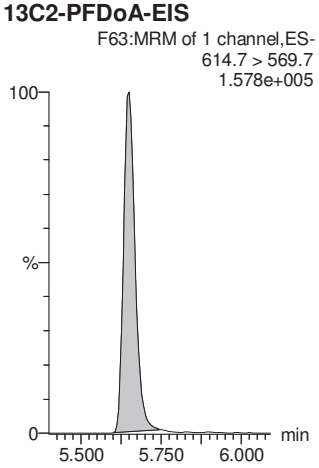
13C4-PFBA



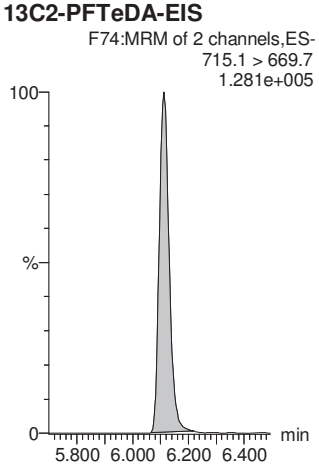
13C2-PFDoA-EIS



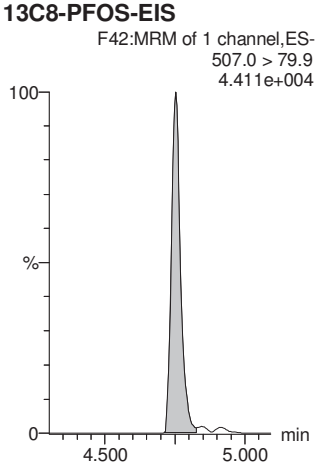
13C2-PFDoA-EIS



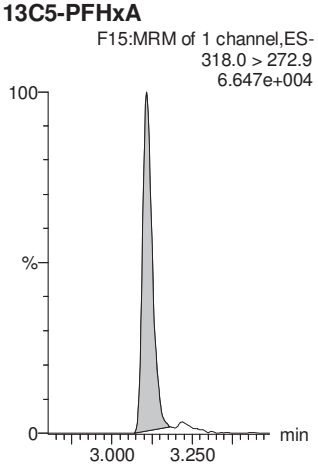
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_22.qld

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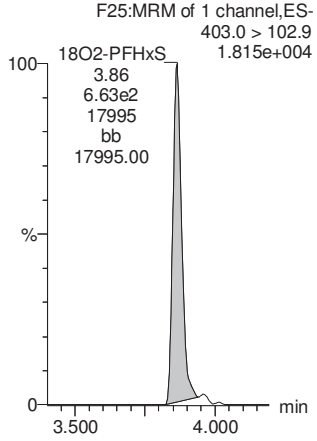
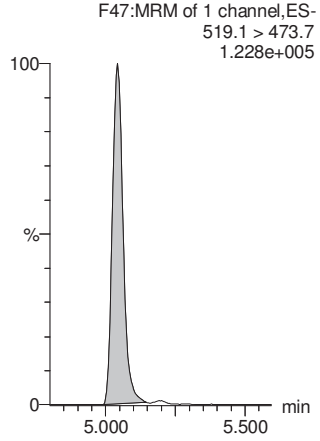
Name: 200212M2_22, Date: 12-Feb-2020, Time: 22:47:15, ID: 2000247-03 SGU-GW-SGUTPINF-20200204 0.25558, Description: SGU-GW-SGUTPINF-20200204

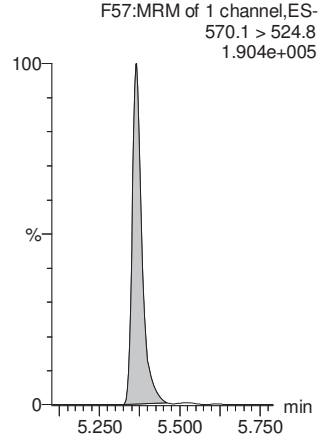
18O2-PFHxS



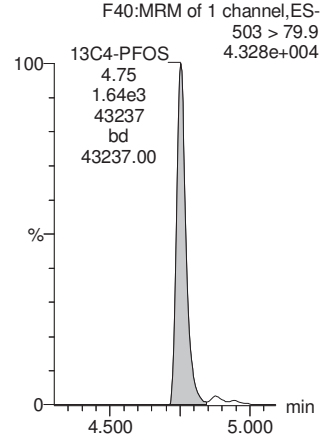
13C6-PFDA



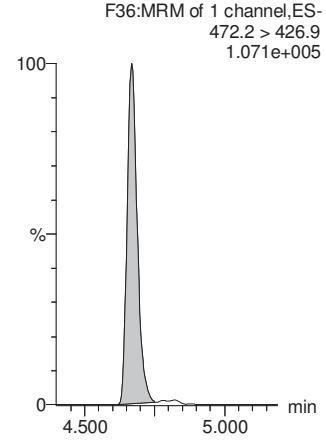
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.71e3	3.61e2	0.252		2.59	2.59	59.2	100.1824		2.740	NO
2	7	PFHxA	313.0 > 269.0	1.03e4	1.93e3	0.252		3.11	3.11	66.5	244.1001		17.810	NO
3	9	HFPO-DA	284.5 > 168.8	5.11e1	8.57e1	0.252		3.30	3.31	7.46	34.9403		1.586	NO
4	11	PFHpA	363.0 > 318.9	2.59e3	1.46e3	0.252		3.71	3.71	22.1	67.4771		9.541	NO
5	12	ADONA	376.8 > 250.9	5.17e3	1.46e3	0.252		3.80	3.82	44.2	35.3351		2.684	NO
6	51	13C3-PFBS-EIS	302.0 > 99	3.61e2		0.252	23.482	2.65	2.59	361	61.0190	123.1		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.93e3		0.252	144.232	3.11	3.11	1930	53.1902	107.3		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	8.57e1		0.252	6.687	3.39	3.30	85.7	50.8410	102.6		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.46e3		0.252	95.340	3.74	3.71	1460	60.8497	122.8		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.46e3		0.252	95.340	3.74	3.71	1460	60.8497	122.8		
11	-1													
12	13	L-PFHxS	398.9 > 80	7.58e3	1.31e3	0.252		3.86	3.86	72.1	268.0092		2.036	NO
13	1...	Total PFHxS	398.9 > 80	7.58e3	1.31e3	0.252		3.83		72.1	268.0092			
14	16	L-PFOA	412.8 > 368.9	2.57e4	2.85e3	0.252		4.23	4.23	112	306.5634		2.935	NO
15	1...	Total PFOA	412.8 > 368.9	2.57e4	2.85e3	0.252		4.20		112	306.5634			
16	21	PFNA	463.0 > 418.8	3.55e3	3.72e3	0.252		4.67	4.67	11.9	40.8643		4.435	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.31e3		0.252	88.291	3.86	3.86	1310	59.0516	119.1		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.31e3		0.252	88.291	3.86	3.86	1310	59.0516	119.1		
19	69	13C2-PFOA-EIS	414.9 > 369.7	2.85e3		0.252	220.187	4.23	4.23	2850	51.4055	103.7		
20	69	13C2-PFOA-EIS	414.9 > 369.7	2.85e3		0.252	220.187	4.23	4.23	2850	51.4055	103.7		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.72e3		0.252	262.826	4.67	4.67	3720	56.0972	113.2		
22	-1													
23	23	L-PFOS	498.9 > 79.9	7.64e3	1.68e3	0.252		4.75	4.75	56.9	195.5222		2.269	NO
24	1...	Total PFOS	498.9 > 79.9	7.64e3	1.68e3	0.252		4.73		56.9	195.5222			
25	25	9Cl-PF30NS	531 > 351.1	4.38e3	1.68e3	0.252		4.96	4.97	32.7	37.8567		21.697	NO
26	26	PFDA	513 > 468.8	4.21e3	3.83e3	0.252		5.04	5.04	13.7	43.4593		5.689	NO
27	33	PFUdA	563.0 > 518.9	4.31e3	5.39e3	0.252		5.37	5.36	9.98	38.4980		13.101	NO
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.68e3		0.252	105.884	4.75	4.75	1680	62.7846	126.7		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.68e3		0.252	105.884	4.75	4.75	1680	62.7846	126.7		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.68e3		0.252	105.884	4.75	4.75	1680	62.7846	126.7		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.83e3		0.252	263.358	5.04	5.04	3830	57.7362	116.5		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.39e3		0.252	362.134	5.36	5.37	5390	59.0682	119.2		
33	-1													
34	29	L-MeFOSAA	570 > 419	2.29e3	3.51e3	0.252		5.19	5.19	8.16	36.1601		2.136	NO
35	1...	Total N-MeFOSAA	570. > 419	2.29e3	3.51e3	0.252		5.17		8.16	36.1601			
36	31	L-EtFOSAA	584. > 419	2.28e3	2.87e3	0.252		5.35	5.35	9.94	39.2734		1.413	NO

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

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Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	2.28e3	2.87e3	0.252		5.33		9.94	39.2734			
38	35	11Cl-PF30UdS	630.9 > 450.9	4.41e3	6.20e3	0.252		5.58	5.58	8.90	40.2221		27.470	NO
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.51e3		0.252	231.747	5.19	5.19	3510	59.9832	121.0		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.51e3		0.252	231.747	5.19	5.19	3510	59.9832	121.0		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.87e3		0.252	219.903	5.33	5.35	2870	51.7114	104.3		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.87e3		0.252	219.903	5.33	5.35	2870	51.7114	104.3		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.20e3		0.252	458.130	5.63	5.65	6200	53.6683	108.3		
44	-1													
45	37	PFDoA	612.9 > 569.0	5.44e3	6.20e3	0.252		5.65	5.65	11.0	40.0578		9.781	NO
46	39	PFTrDA	662.9 > 618.9	5.75e3	6.20e3	0.252		5.90	5.89	11.6	35.4362		19.785	NO
47	41	PFTeDA	713.0 > 669.0	5.24e3	4.74e3	0.252		6.11	6.11	13.8	39.9566		13.822	NO
48	1...	TDCA	498.3>106.9			0.252		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.21e3	1.21e3	0.252	1.000	1.27	1.27	12.5	49.5678	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.20e3		0.252	458.130	5.63	5.65	6200	53.6683	108.3		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.20e3		0.252	458.130	5.63	5.65	6200	53.6683	108.3		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.74e3		0.252	365.370	6.07	6.11	4740	51.4004	103.7		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.68e3		0.252	105.884	4.75	4.75	1680	62.7846	126.7		
54	1...	13C5-PFHxA	318.0 > 272.9	2.27e3	2.27e3	0.252	1.000	3.10	3.11	12.5	49.5678	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	7.14e2	7.14e2	0.252	1.000	3.86	3.86	12.5	49.5678	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.82e3	4.82e3	0.252	1.000	5.04	5.04	12.5	49.5678	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.55e3	6.55e3	0.252	1.000	5.36	5.36	12.5	49.5678	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.62e3	1.62e3	0.252	1.000	4.75	4.75	12.5	49.5678	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.91e3	3.91e3	0.252	1.000	4.66	4.67	12.5	49.5678	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

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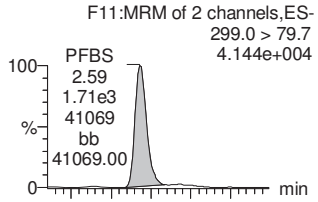
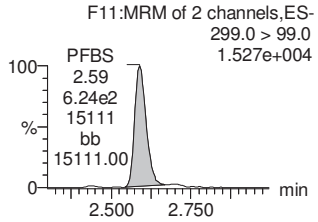
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

PFBS





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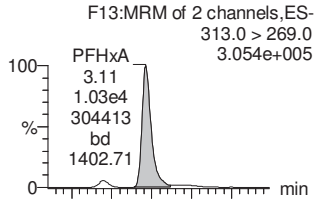

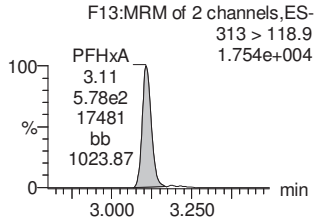

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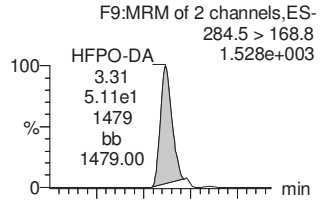

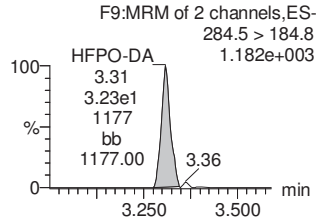

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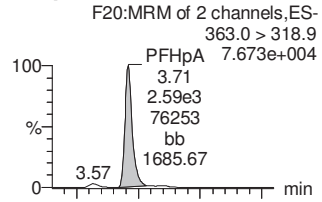

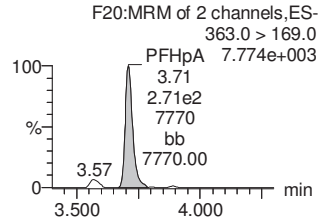

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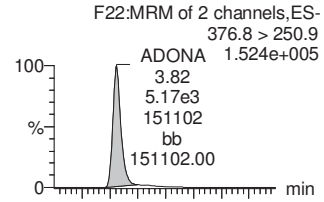

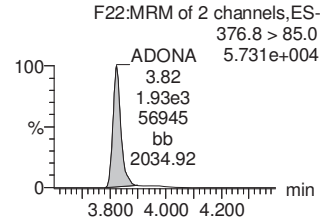

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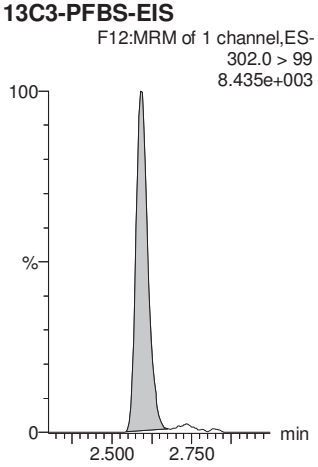

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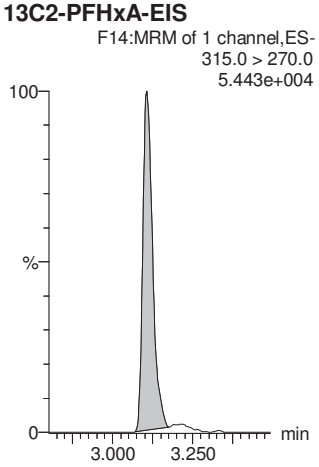

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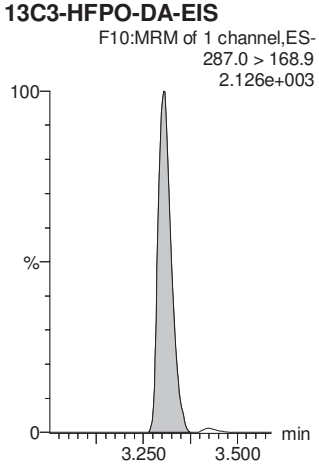

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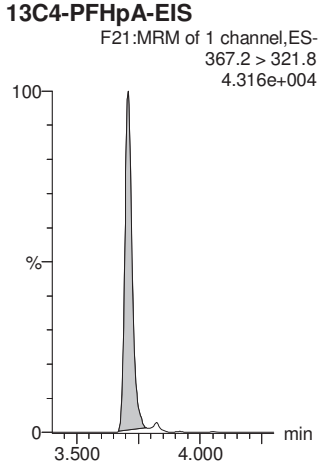

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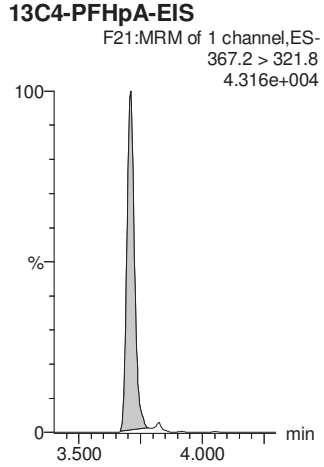

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
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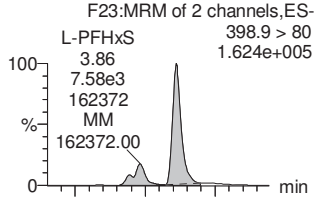
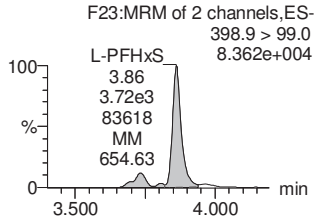
Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

L-PFHxS





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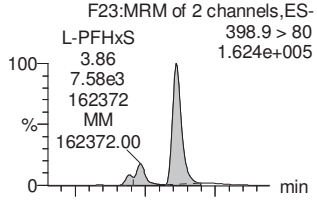
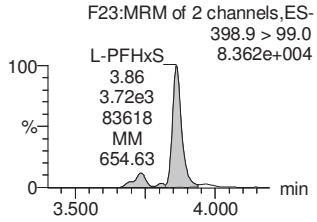
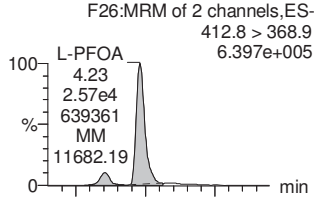
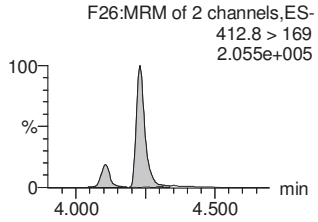


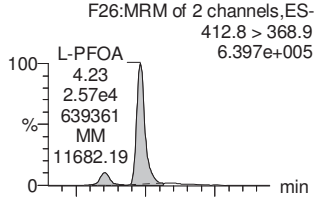


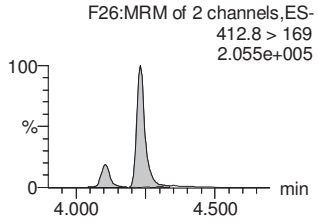
L-PFOA





Total PFOA





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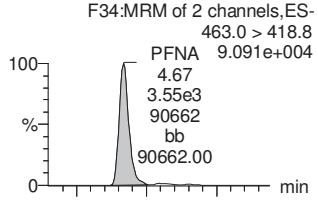

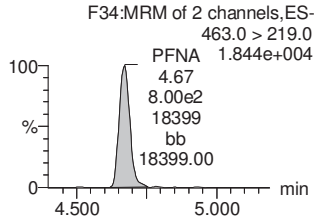

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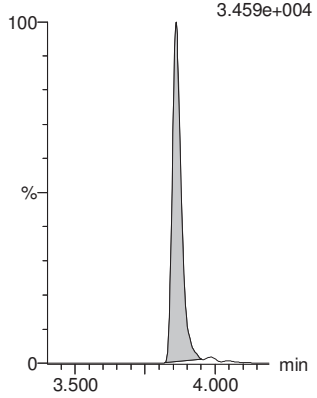

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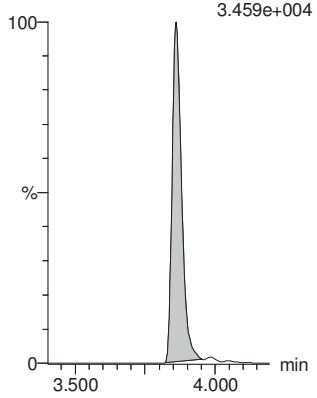

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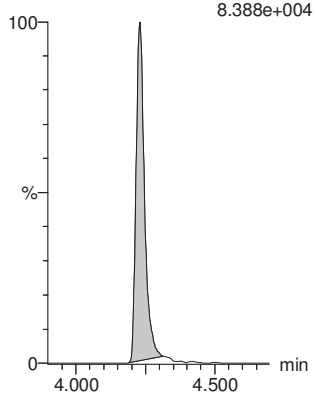

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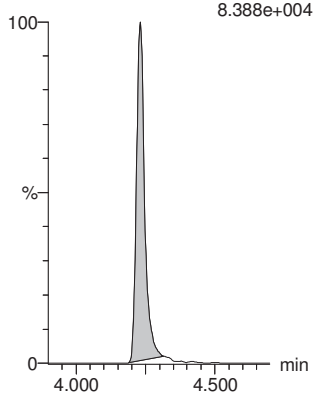

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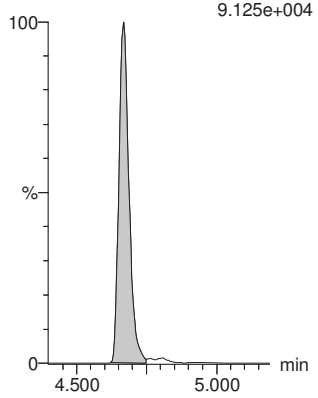


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

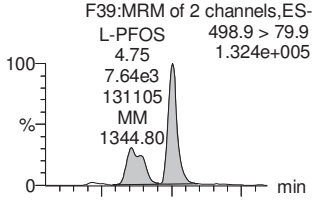
Review: AMR 2/18/2020

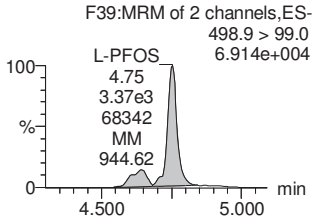
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

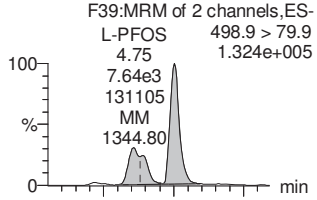
Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

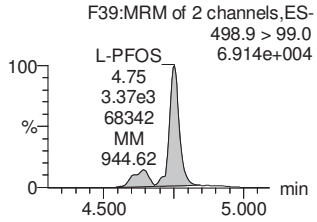
L-PFOS





Total PFOS





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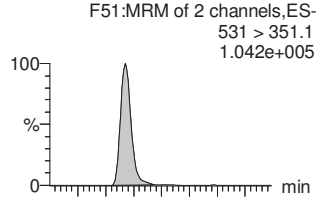

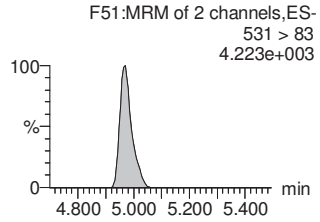

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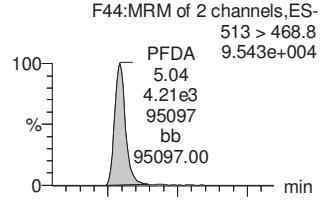

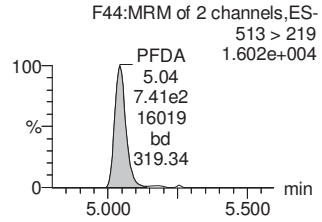

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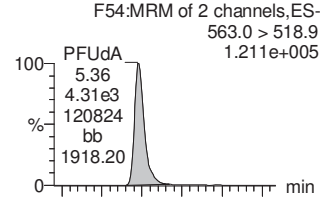

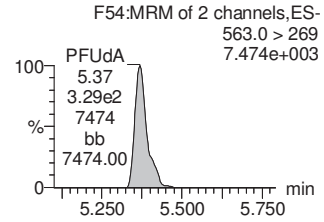

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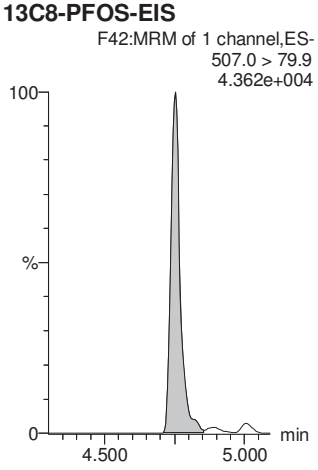

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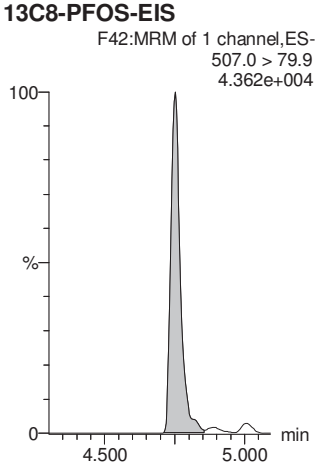
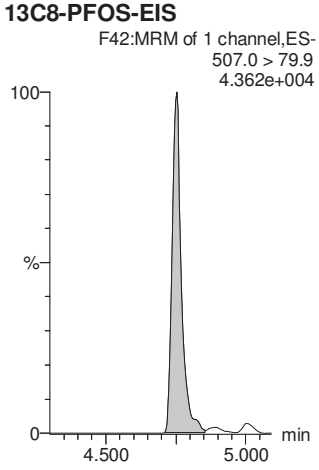
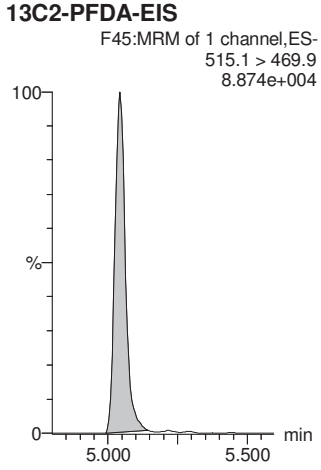


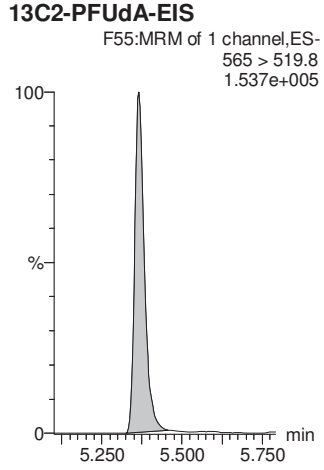
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

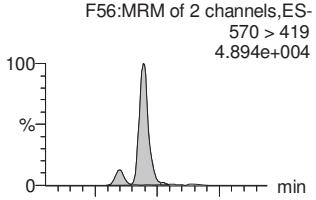
Review: AMR 2/18/2020

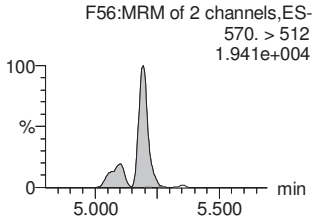
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

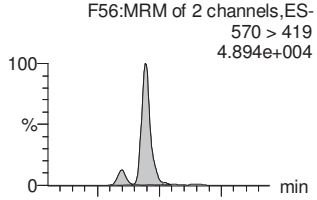
Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

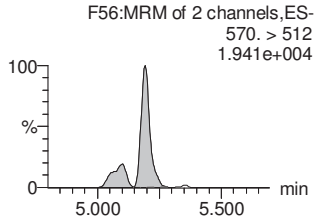
L-MeFOSAA



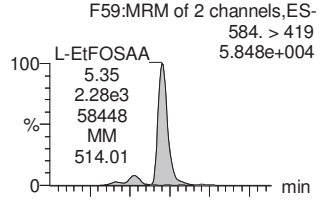


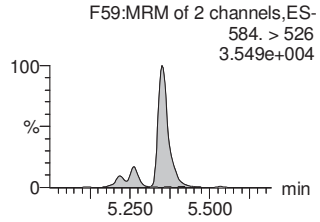
Total N-MeFOSAA



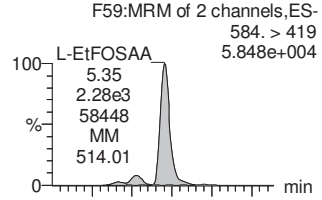


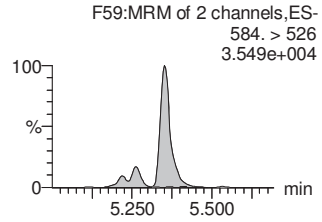
L-EtFOSAA



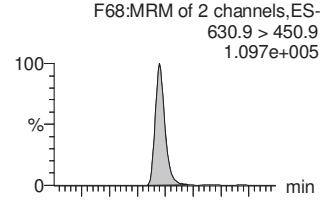


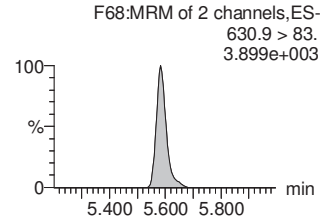
Total N-EtFOSAA



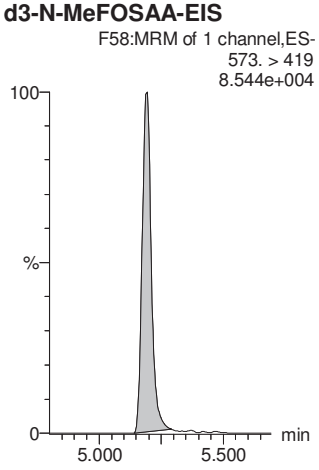


11Cl-PF30UdS

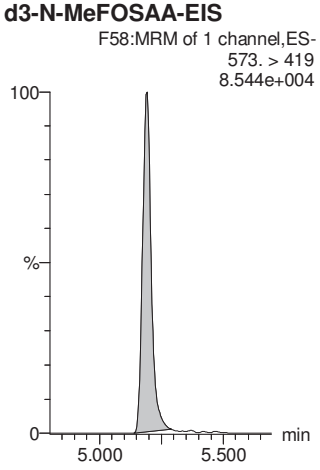




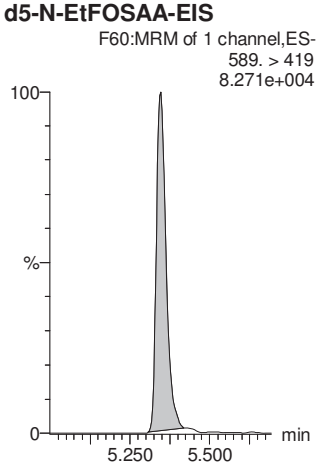
d3-N-MeFOSAA-EIS



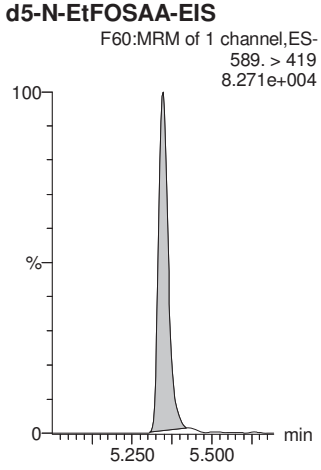
d3-N-MeFOSAA-EIS



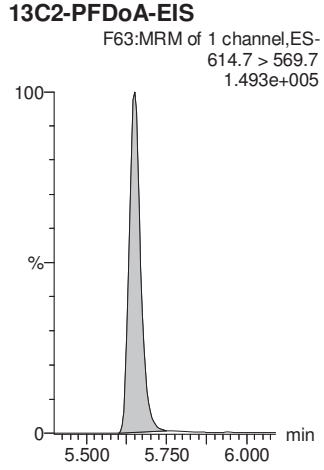
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

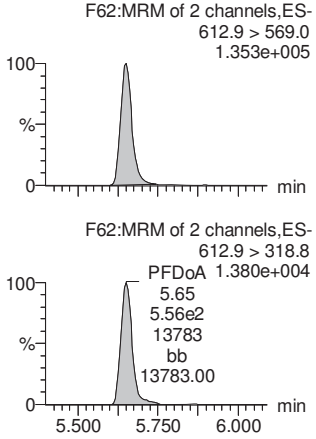
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

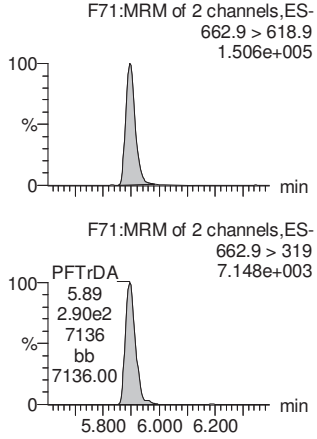
Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

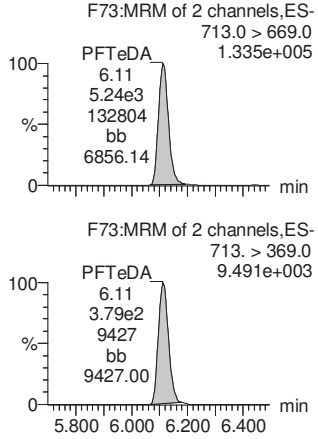
PFDoA



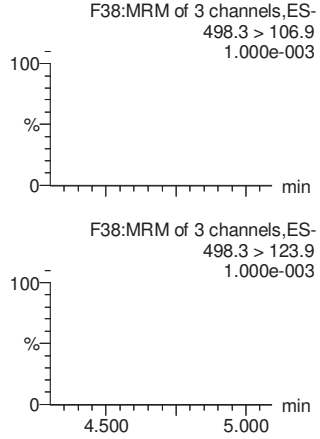
PFTrDA



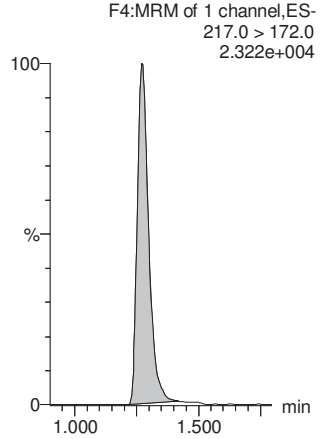
PFTeDA



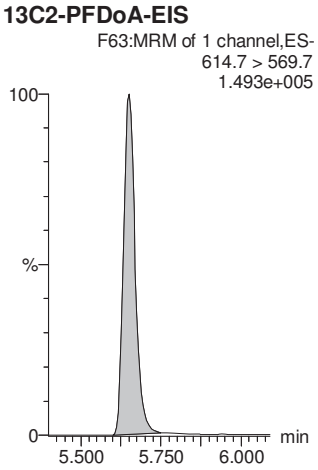
TDCA



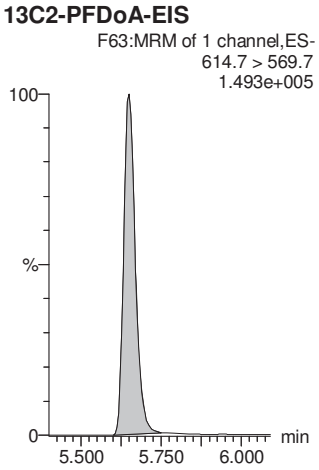
13C4-PFBA



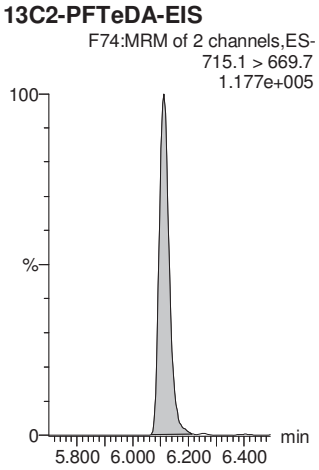
13C2-PFDoA-EIS



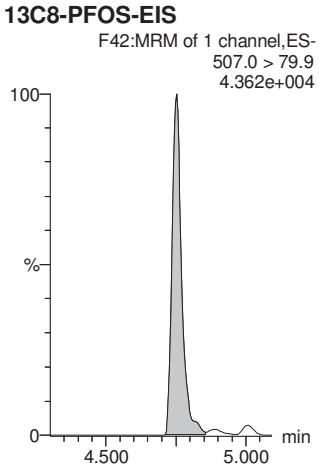
13C2-PFDoA-EIS



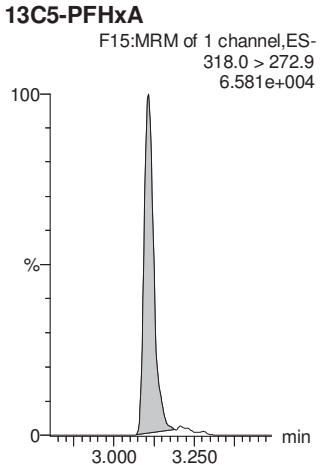
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

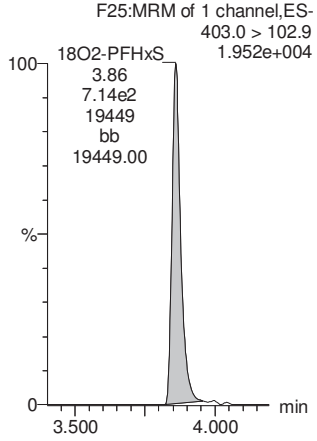
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_18.qld

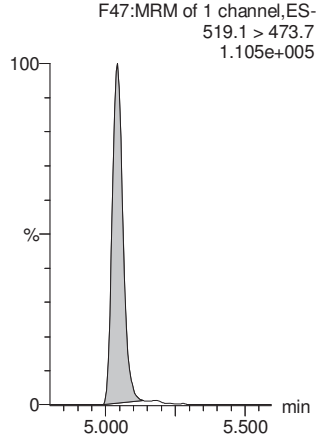
Last Altered: Friday, February 14, 2020 15:52:29 Pacific Standard Time
Printed: Friday, February 14, 2020 15:53:17 Pacific Standard Time

Name: 200212M2_18, Date: 12-Feb-2020, Time: 22:05:46, ID: B0B0041-MS1 Matrix Spike 0.25218, Description: Matrix Spike

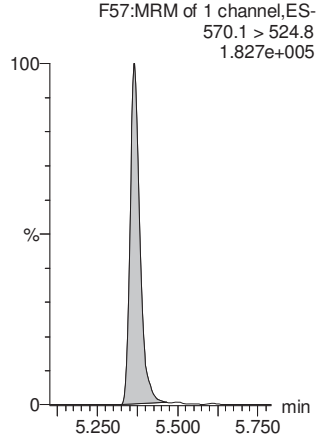
18O2-PFHxS



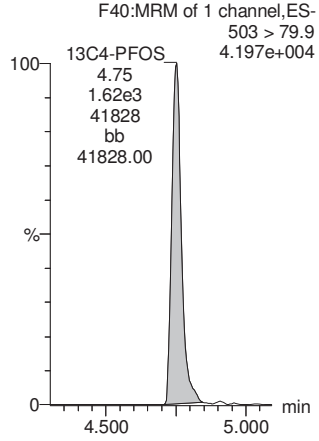
13C6-PFDA



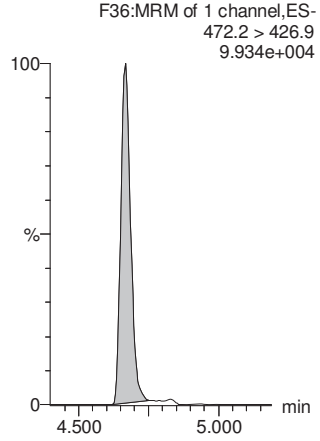
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.77e3	4.23e2	0.254		2.59	2.59	52.3	88.0911		2.904	NO
2	7	PFHxA	313.0 > 269.0	1.03e4	2.06e3	0.254		3.11	3.11	62.8	229.0943		15.634	NO
3	9	HFPO-DA	284.5 > 168.8	6.32e1	1.09e2	0.254		3.30	3.31	7.22	33.6854		2.443	NO
4	11	PFHpA	363.0 > 318.9	2.62e3	1.46e3	0.254		3.71	3.71	22.4	68.1396		10.682	NO
5	12	ADONA	376.8 > 250.9	5.22e3	1.46e3	0.254		3.80	3.82	44.8	35.6102		2.777	NO
6	51	13C3-PFBS-EIS	302.0 > 99	4.23e2		0.254	23.482	2.65	2.59	423	70.9440	144.0		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.06e3		0.254	144.232	3.11	3.11	2060	56.2660	114.2		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.09e2		0.254	6.687	3.39	3.30	109	64.5451	131.0		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.46e3		0.254	95.340	3.74	3.71	1460	60.2260	122.2		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.46e3		0.254	95.340	3.74	3.71	1460	60.2260	122.2		
11	-1													
12	13	L-PFHxS	398.9 > 80	7.50e3	1.26e3	0.254		3.86	3.86	74.6	275.8128		1.964	NO
13	1...	Total PFHxS	398.9 > 80	7.50e3	1.26e3	0.254		3.83		74.6	275.8128			
14	16	L-PFOA	412.8 > 368.9	2.71e4	3.16e3	0.254		4.23	4.23	107	290.7123		3.013	NO
15	1...	Total PFOA	412.8 > 368.9	2.71e4	3.16e3	0.254		4.20		107	290.7123			
16	21	PFNA	463.0 > 418.8	3.60e3	3.95e3	0.254		4.67	4.67	11.4	38.7912		3.960	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.26e3		0.254	88.291	3.86	3.86	1260	56.0619	113.8		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.26e3		0.254	88.291	3.86	3.86	1260	56.0619	113.8		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.16e3		0.254	220.187	4.23	4.23	3160	56.6343	114.9		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.16e3		0.254	220.187	4.23	4.23	3160	56.6343	114.9		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.95e3		0.254	262.826	4.67	4.67	3950	59.2573	120.3		
22	-1													
23	23	L-PFOS	498.9 > 79.9	7.75e3	1.73e3	0.254		4.75	4.75	55.9	190.6766		2.152	NO
24	1...	Total PFOS	498.9 > 79.9	7.75e3	1.73e3	0.254		4.73		55.9	190.6766			
25	25	9Cl-PF30NS	531 > 351.1	4.19e3	1.73e3	0.254		4.96	4.97	30.2	34.7781		21.884	NO
26	26	PFDA	513 > 468.8	4.13e3	4.18e3	0.254		5.04	5.04	12.4	38.9214		5.229	NO
27	33	PFUdA	563.0 > 518.9	4.31e3	5.47e3	0.254		5.37	5.37	9.85	37.7860		10.219	NO
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.73e3		0.254	105.884	4.75	4.75	1730	64.5357	131.0		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.73e3		0.254	105.884	4.75	4.75	1730	64.5357	131.0		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.73e3		0.254	105.884	4.75	4.75	1730	64.5357	131.0		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.18e3		0.254	263.358	5.04	5.04	4180	62.5074	126.9		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.47e3		0.254	362.134	5.36	5.37	5470	59.5603	120.9		
33	-1													
34	29	L-MeFOSAA	570 > 419	2.45e3	3.55e3	0.254		5.19	5.19	8.62	37.9728		2.665	NO
35	1...	Total N-MeFOSAA	570. > 419	2.45e3	3.55e3	0.254		5.17		8.62	37.9728			
36	31	L-EtFOSAA	584. > 419	2.19e3	3.01e3	0.254		5.35	5.35	9.09	35.6953		1.451	NO

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	2.19e3	3.01e3	0.254		5.33		9.09	35.6953			
38	35	11Cl-PF30UdS	630.9 > 450.9	4.45e3	6.52e3	0.254		5.58	5.58	8.53	38.3434		27.793	NO
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.55e3		0.254	231.747	5.19	5.19	3550	60.4627	122.7		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.55e3		0.254	231.747	5.19	5.19	3550	60.4627	122.7		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.01e3		0.254	219.903	5.33	5.35	3010	53.9431	109.5		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.01e3		0.254	219.903	5.33	5.35	3010	53.9431	109.5		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.52e3		0.254	458.130	5.63	5.65	6520	56.1040	113.9		
44	-1													
45	37	PFDoA	612.9 > 569.0	5.37e3	6.52e3	0.254		5.65	5.65	10.3	37.3494		8.335	NO
46	39	PFTrDA	662.9 > 618.9	6.37e3	6.52e3	0.254		5.90	5.89	12.2	37.1716		24.131	NO
47	41	PFTeDA	713.0 > 669.0	5.27e3	5.04e3	0.254		6.11	6.11	13.1	37.4662		12.522	NO
48	1...	TDCA	498.3>106.9			0.254		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.24e3	1.24e3	0.254	1.000	1.27	1.27	12.5	49.2747	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.52e3		0.254	458.130	5.63	5.65	6520	56.1040	113.9		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.52e3		0.254	458.130	5.63	5.65	6520	56.1040	113.9		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	5.04e3		0.254	365.370	6.07	6.11	5040	54.4009	110.4		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.73e3		0.254	105.884	4.75	4.75	1730	64.5357	131.0		
54	1...	13C5-PFHxA	318.0 > 272.9	2.31e3	2.31e3	0.254	1.000	3.10	3.11	12.5	49.2747	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	6.00e2	6.00e2	0.254	1.000	3.86	3.86	12.5	49.2747	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	5.11e3	5.11e3	0.254	1.000	5.04	5.04	12.5	49.2747	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.58e3	6.58e3	0.254	1.000	5.36	5.36	12.5	49.2747	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.64e3	1.64e3	0.254	1.000	4.75	4.75	12.5	49.2747	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.18e3	4.18e3	0.254	1.000	4.66	4.67	12.5	49.2747	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

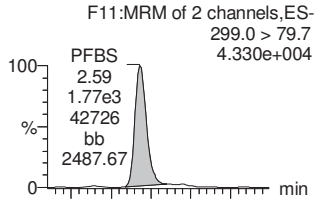
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

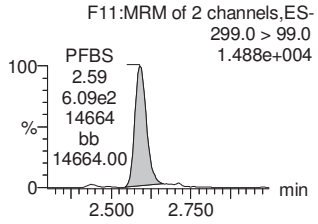
Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

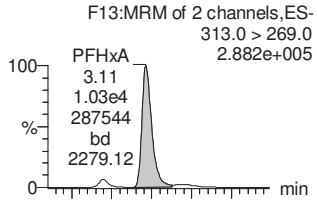
Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

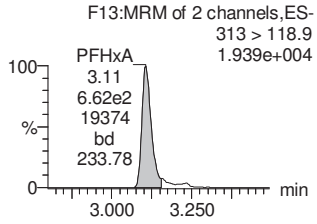
PFBS





PFHxA





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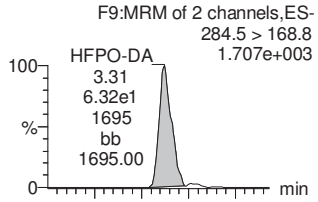

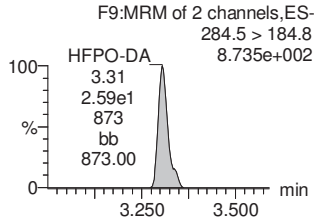

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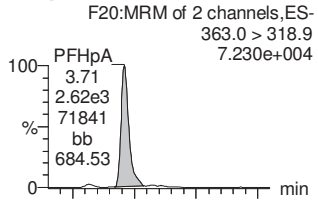
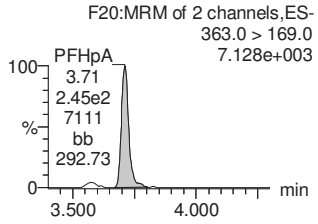
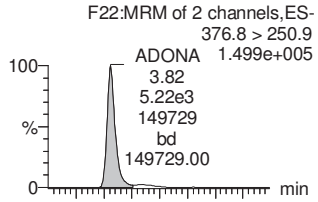
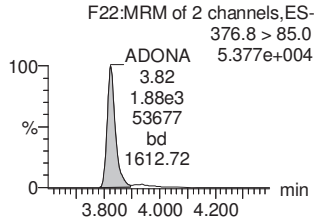




ADONA





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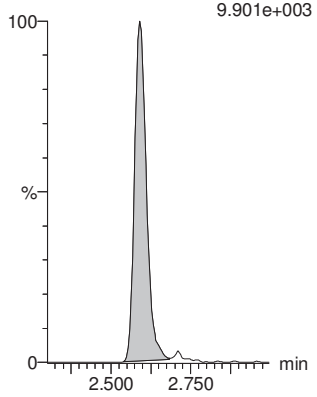

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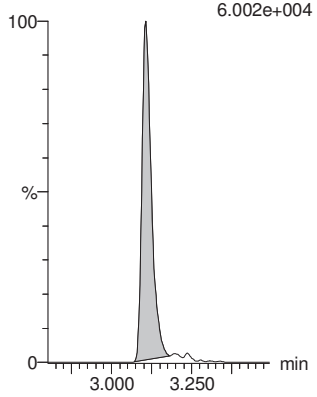

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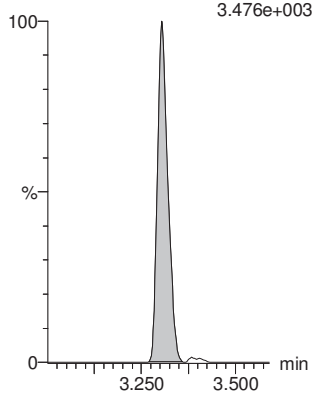

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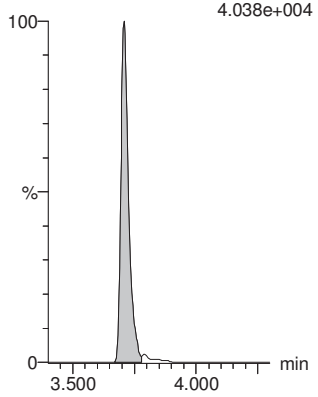

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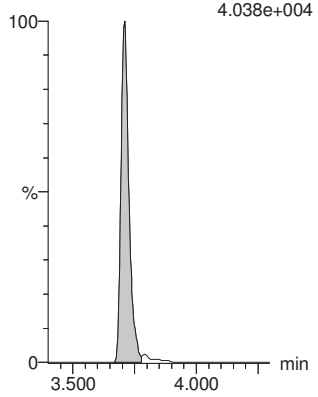


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

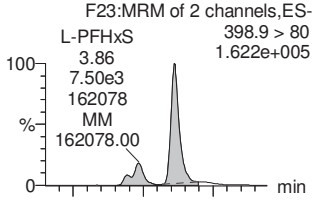
Review: AMR 2/18/2020

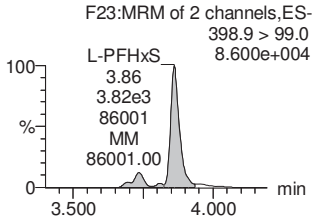
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

L-PFHxS





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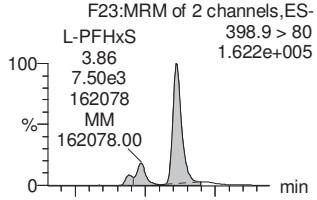
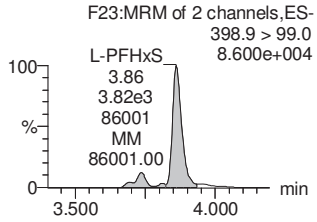
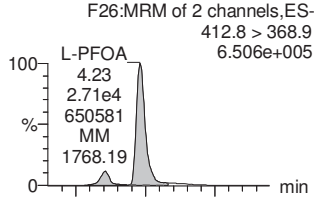
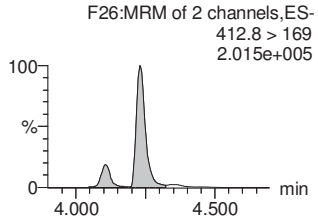


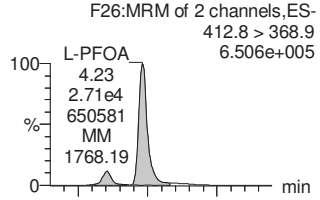


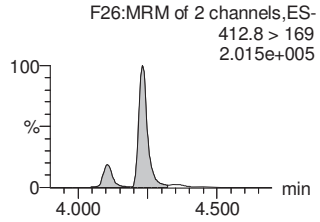
L-PFOA



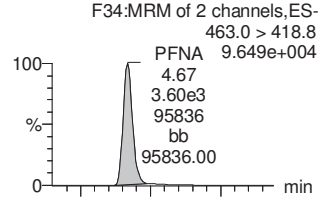


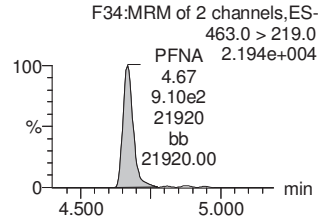
Total PFOA





PFNA





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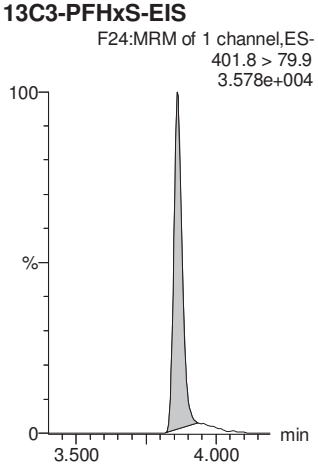

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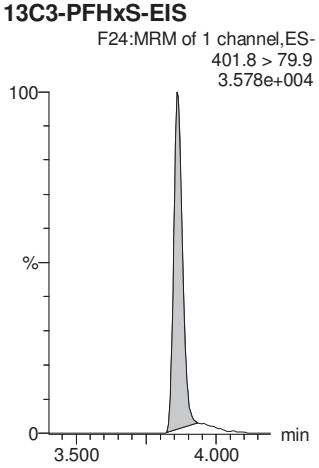

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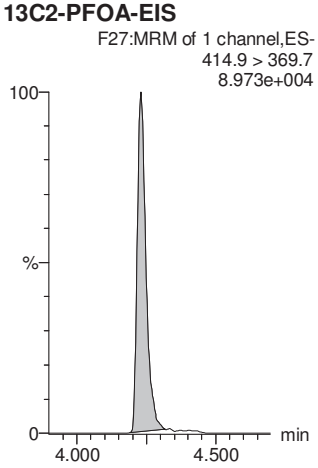

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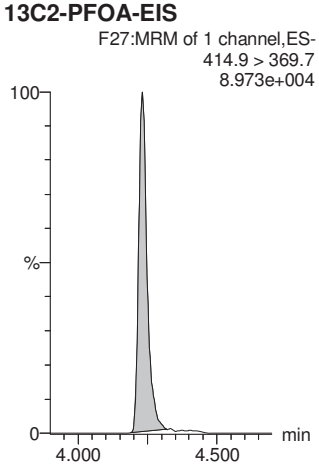

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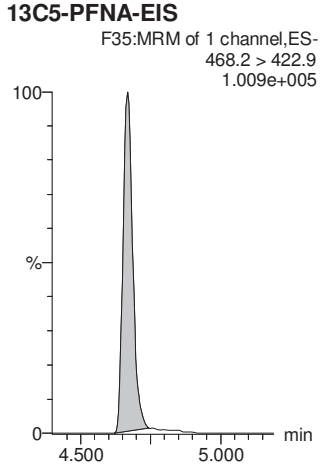


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

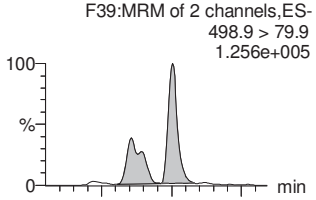
Review: AMR 2/18/2020

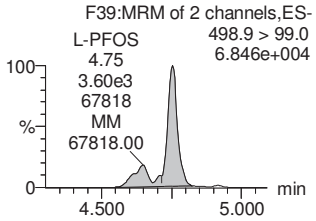
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

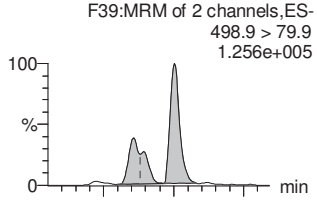
Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

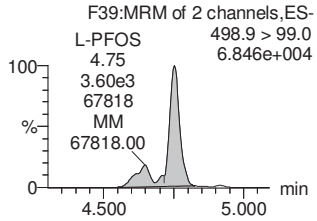
L-PFOS





Total PFOS





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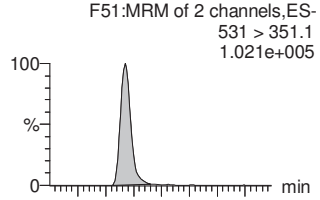

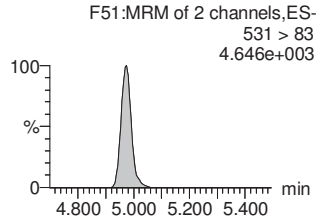

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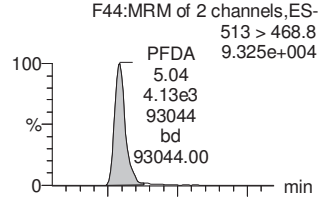
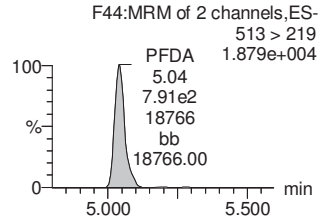
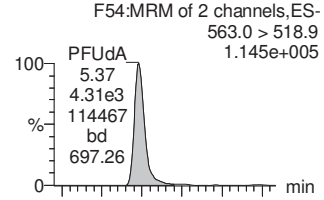
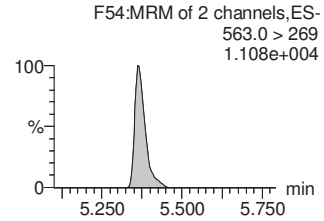




PFUdA





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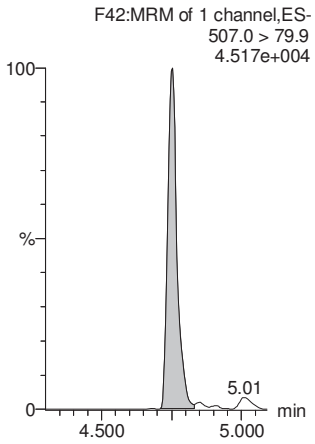

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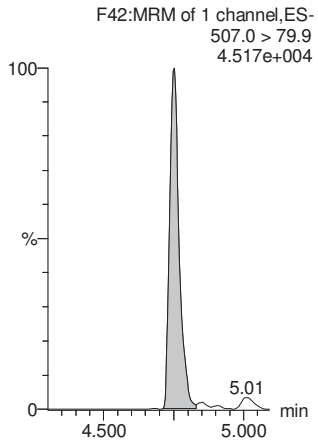

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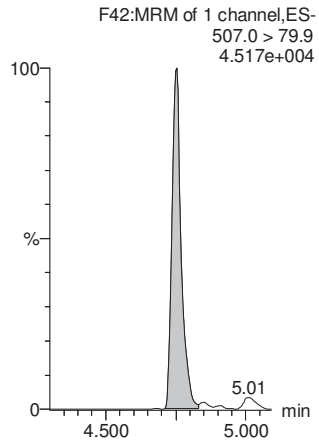

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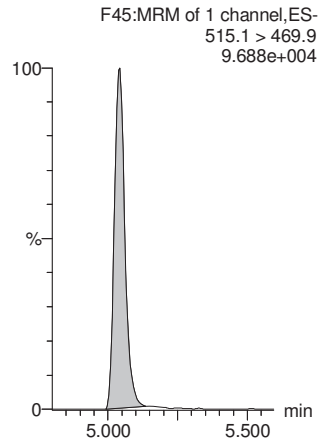

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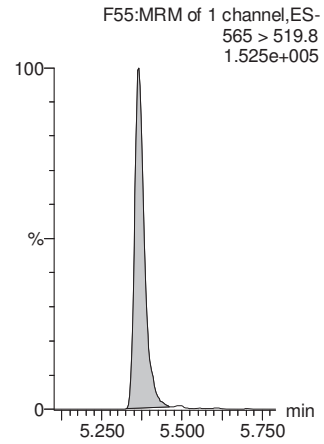


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

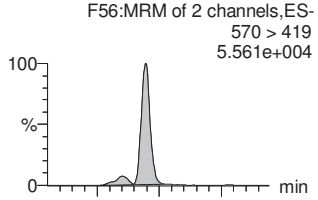
Review: AMR 2/18/2020

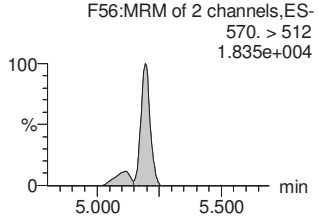
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

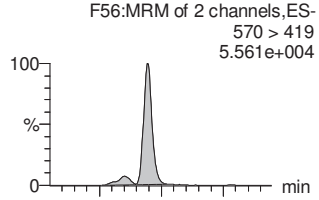
Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

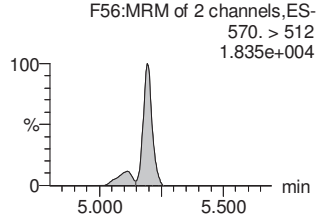
L-MeFOSAA



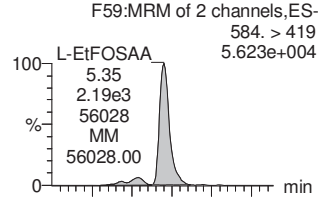


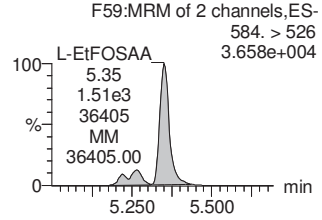
Total N-MeFOSAA



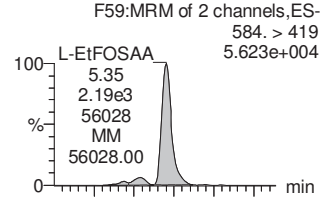


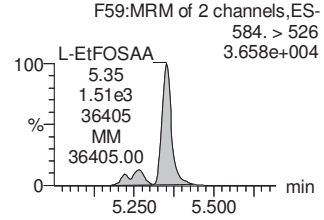
L-EtFOSAA



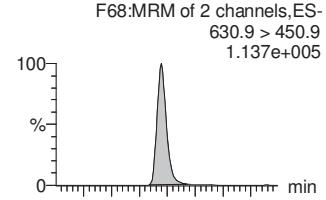


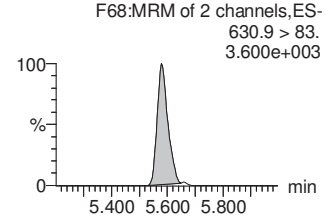
Total N-EtFOSAA



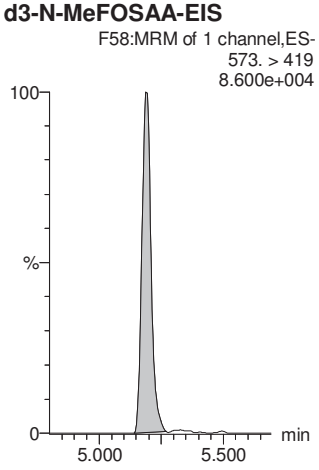


11Cl-PF30UdS

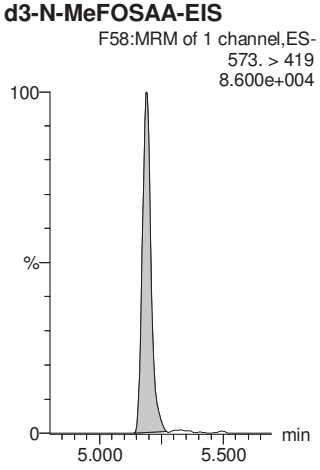




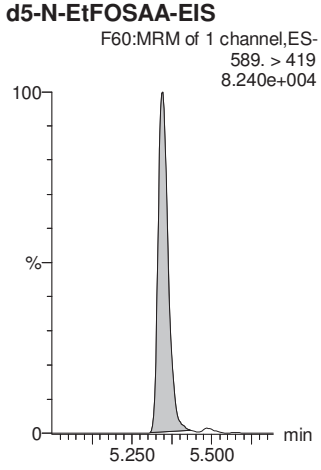
d3-N-MeFOSAA-EIS



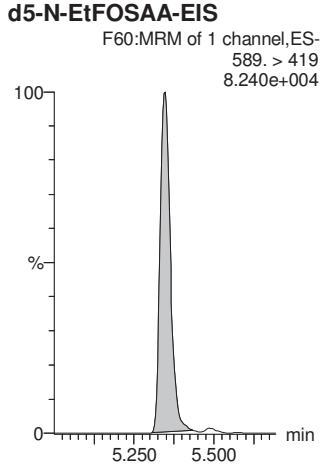
d3-N-MeFOSAA-EIS



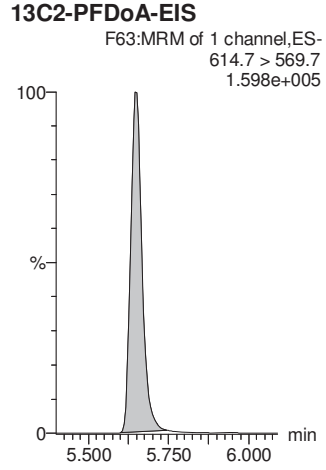
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

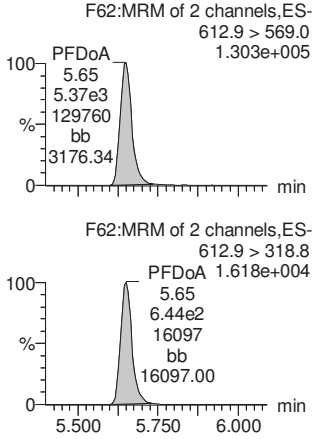
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

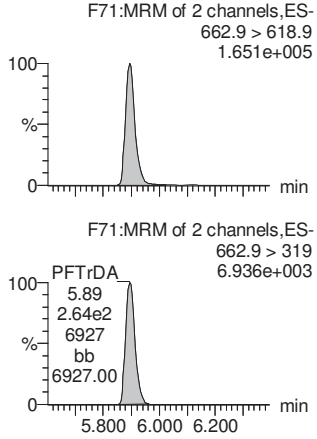
Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

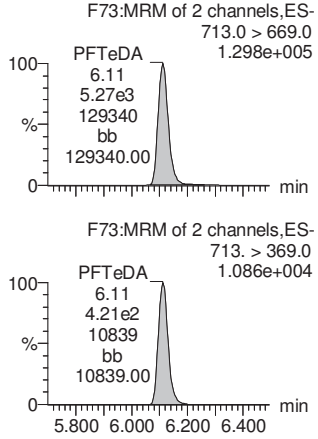
PFDoA



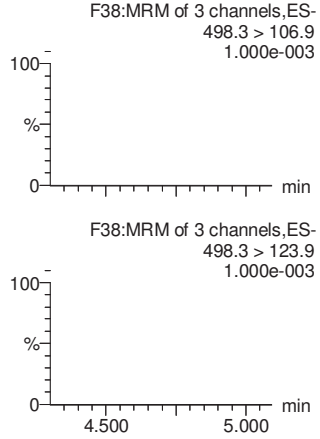
PFTrDA



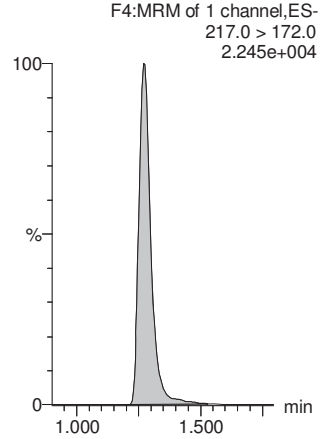
PFTeDA



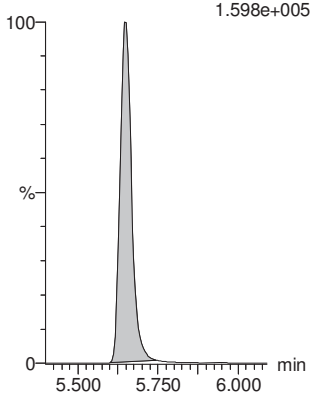
TDCA



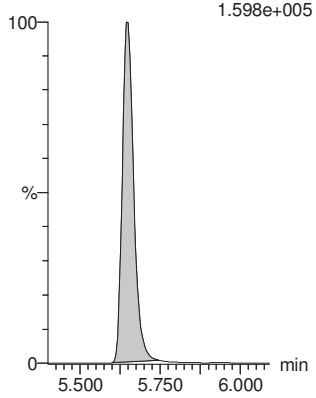
13C4-PFBA



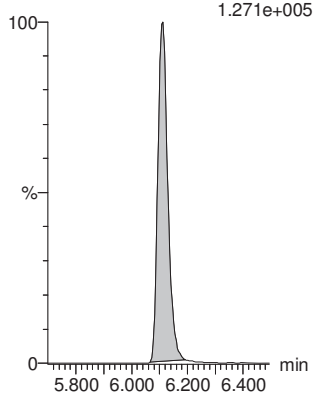
13C2-PFDoA-EIS



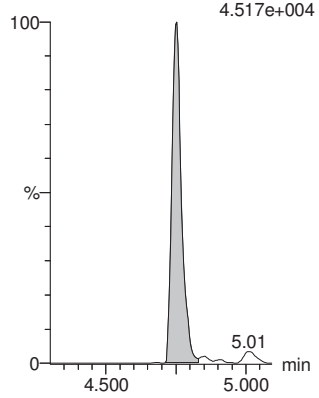
13C2-PFDoA-EIS



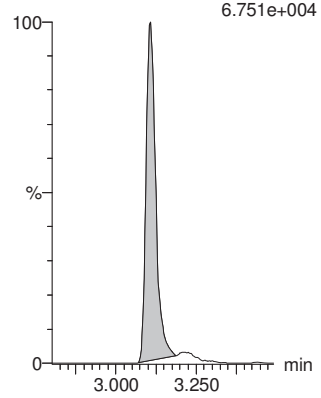
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

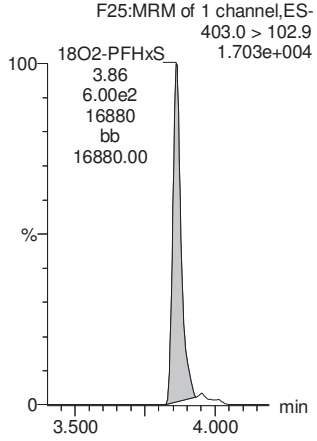
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_19.qld

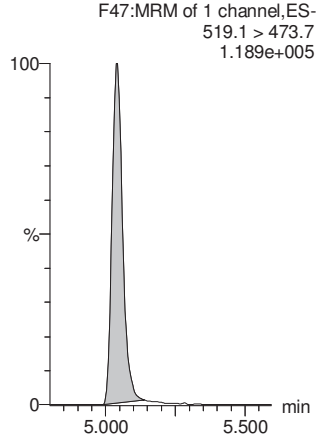
Last Altered: Friday, February 14, 2020 15:57:02 Pacific Standard Time
Printed: Friday, February 14, 2020 15:57:42 Pacific Standard Time

Name: 200212M2_19, Date: 12-Feb-2020, Time: 22:16:08, ID: B0B0041-MSD1 Matrix Spike Dup 0.25368, Description: Matrix Spike Dup

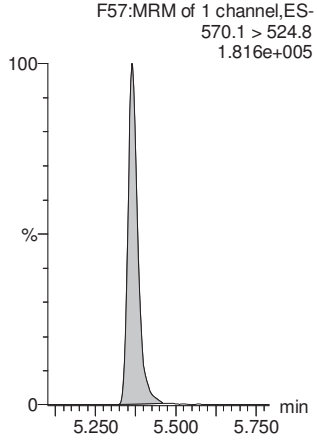
18O2-PFHxS



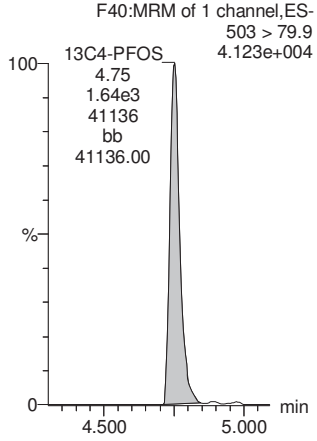
13C6-PFDA



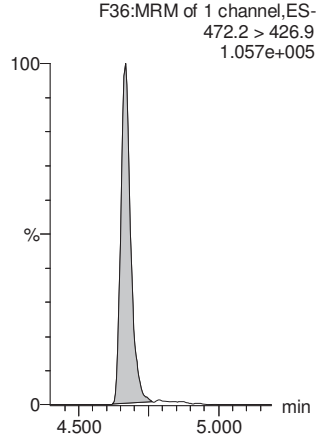
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.14e3	4.04e2	0.252		2.60	2.59	35.3	59.8755		3.131	NO
2	7	PFHxA	313.0 > 269.0	8.82e3	2.07e3	0.252		3.11	3.11	53.3	195.8793		13.837	NO
3	9	HFPO-DA	284.5 > 168.8		9.39e1	0.252		3.31						
4	11	PFHpA	363.0 > 318.9	1.32e3	1.47e3	0.252		3.71	3.71	11.2	34.3608		11.882	NO
5	12	ADONA	376.8 > 250.9		1.47e3	0.252		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.04e2		0.252	23.482	2.65	2.60	404	68.3501	137.6		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.07e3		0.252	144.232	3.11	3.11	2070	57.0254	114.8		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	9.39e1		0.252	6.687	3.39	3.31	93.9	55.8175	112.4		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.47e3		0.252	95.340	3.74	3.71	1470	61.1715	123.1		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.47e3		0.252	95.340	3.74	3.71	1470	61.1715	123.1		
11	-1													
12	13	L-PFHxS	398.9 > 80	6.77e3	1.27e3	0.252		3.86	3.86	66.7	248.7912		2.046	NO
13	1...	Total PFHxS	398.9 > 80	6.77e3	1.27e3	0.252		3.83		66.7	248.7912			
14	16	L-PFOA	412.8 > 368.9	2.39e4	3.24e3	0.252		4.23	4.23	92.0	251.5360		2.969	NO
15	1...	Total PFOA	412.8 > 368.9	2.39e4	3.24e3	0.252		4.20		92.0	251.5360			
16	21	PFNA	463.0 > 418.8	3.67e2	4.03e3	0.252		4.67	4.67	1.14	4.0417		5.965	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.27e3		0.252	88.291	3.86	3.86	1270	57.1305	115.0		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.27e3		0.252	88.291	3.86	3.86	1270	57.1305	115.0		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.24e3		0.252	220.187	4.23	4.23	3240	58.5287	117.8		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.24e3		0.252	220.187	4.23	4.23	3240	58.5287	117.8		
21	65	13C5-PFNA-EIS	468.2 > 422.9	4.03e3		0.252	262.826	4.67	4.67	4030	60.9832	122.8		
22	-1													
23	23	L-PFOS	498.9 > 79.9	6.73e3	1.47e3	0.252		4.75	4.75	57.0	196.2282		2.291	NO
24	1...	Total PFOS	498.9 > 79.9	6.73e3	1.47e3	0.252		4.73		57.0	196.2282			
25	25	9Cl-PF30NS	531 > 351.1		1.47e3	0.252		4.96						
26	26	PFDA	513 > 468.8		4.18e3	0.252		5.04						
27	33	PFUdA	563.0 > 518.9		5.32e3	0.252		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.47e3		0.252	105.884	4.75	4.75	1470	55.3622	111.4		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.47e3		0.252	105.884	4.75	4.75	1470	55.3622	111.4		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.47e3		0.252	105.884	4.75	4.75	1470	55.3622	111.4		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.18e3		0.252	263.358	5.04	5.04	4180	63.0858	127.0		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.32e3		0.252	362.134	5.37	5.37	5320	58.3496	117.5		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.56e3	0.252		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.56e3	0.252		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		3.07e3	0.252		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

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Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	3.07e3	0.252		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.58e3	0.252		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.56e3		0.252	231.747	5.19	5.19	3560	61.0383	122.9		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.56e3		0.252	231.747	5.19	5.19	3560	61.0383	122.9		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.07e3		0.252	219.903	5.34	5.35	3070	55.4833	111.7		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.07e3		0.252	219.903	5.34	5.35	3070	55.4833	111.7		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.58e3		0.252	458.130	5.64	5.65	6580	57.1149	115.0		
44	-1													
45	37	PFDoA	612.9 > 569.0		6.58e3	0.252		5.65						
46	39	PFTrDA	662.9 > 618.9		6.58e3	0.252		5.90						
47	41	PFTeDA	713.0 > 669.0		4.71e3	0.252		6.11						
48	1...	TDCA	498.3>106.9			0.252		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.31e3	1.31e3	0.252	1.000	1.27	1.28	12.5	49.6781	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.58e3		0.252	458.130	5.64	5.65	6580	57.1149	115.0		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.58e3		0.252	458.130	5.64	5.65	6580	57.1149	115.0		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.71e3		0.252	365.370	6.07	6.11	4710	51.2125	103.1		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.47e3		0.252	105.884	4.75	4.75	1470	55.3622	111.4		
54	1...	13C5-PFHxA	318.0 > 272.9	2.44e3	2.44e3	0.252	1.000	3.10	3.11	12.5	49.6781	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.80e2	5.80e2	0.252	1.000	3.86	3.86	12.5	49.6781	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.79e3	4.79e3	0.252	1.000	5.04	5.04	12.5	49.6781	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.61e3	6.61e3	0.252	1.000	5.36	5.37	12.5	49.6781	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.63e3	1.63e3	0.252	1.000	4.75	4.75	12.5	49.6781	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.42e3	4.42e3	0.252	1.000	4.66	4.67	12.5	49.6781	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

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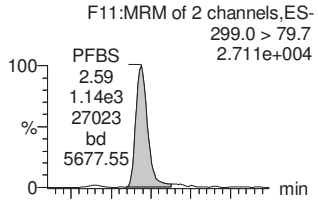
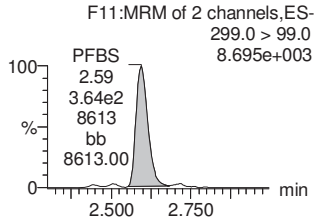
Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

PFBS





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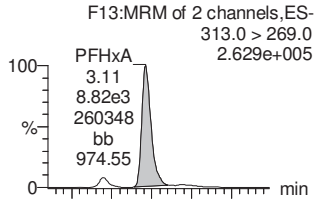

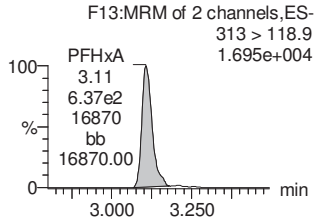

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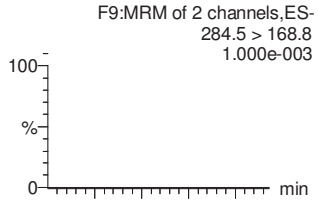

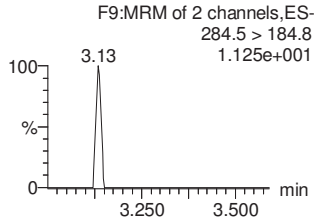

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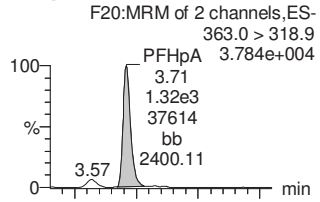

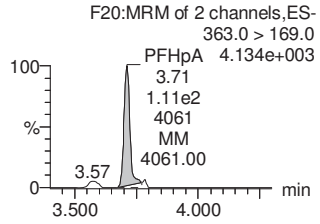

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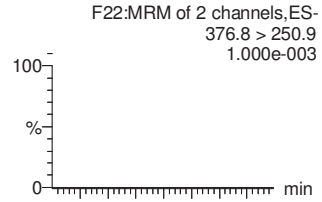

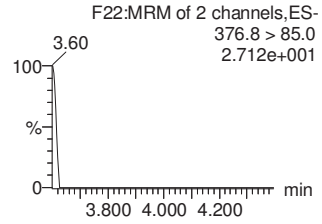

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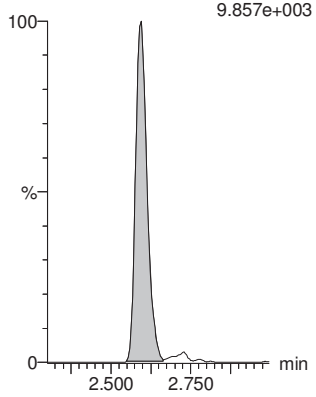

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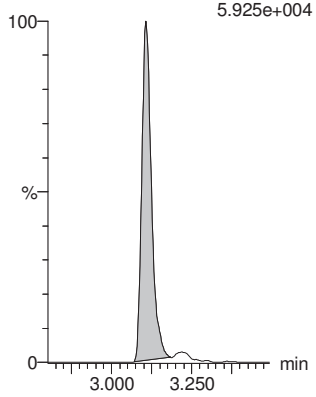

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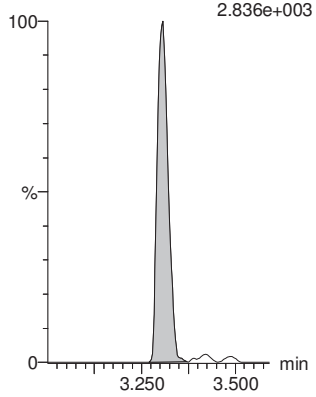

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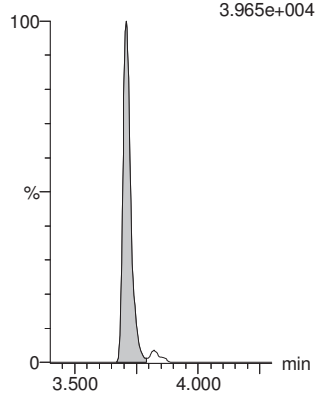

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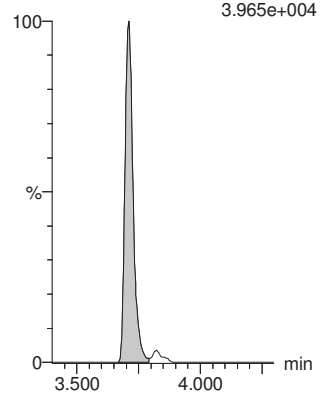

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

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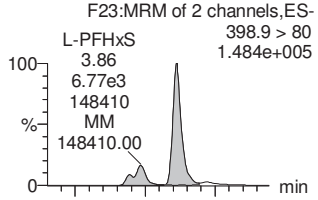

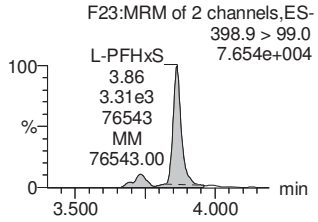

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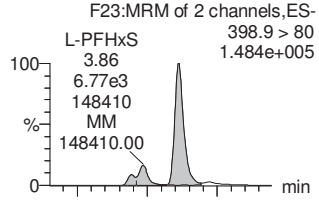
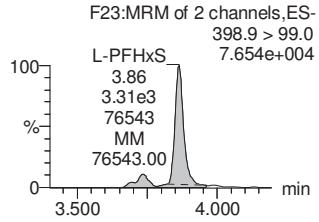
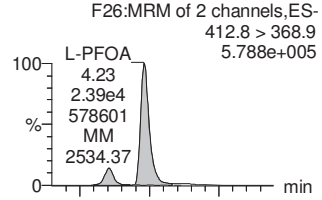
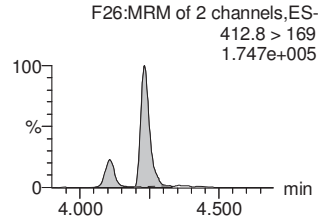




L-PFOA





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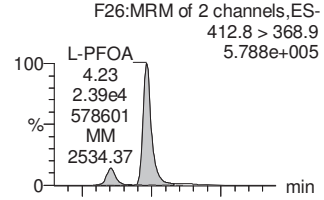

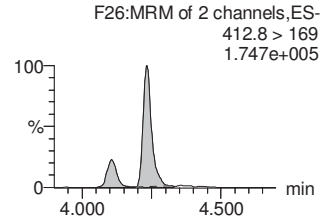

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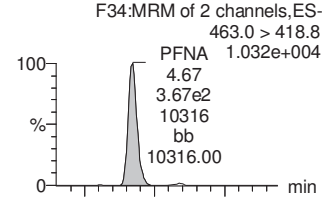

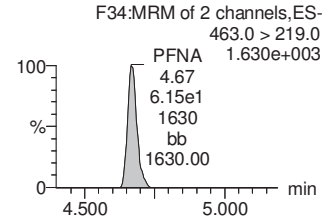

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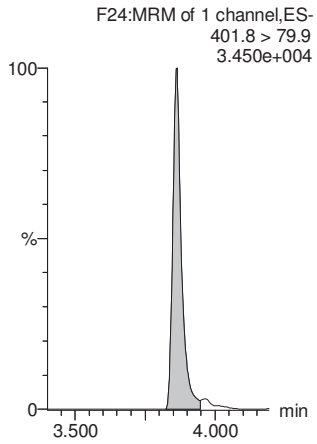

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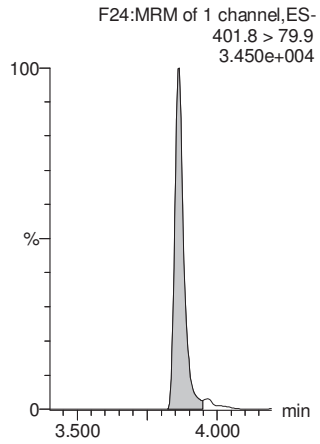

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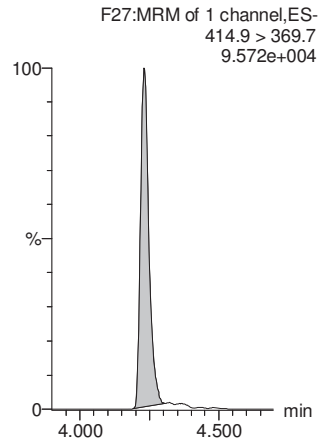

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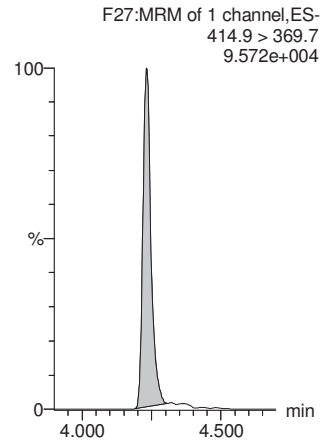

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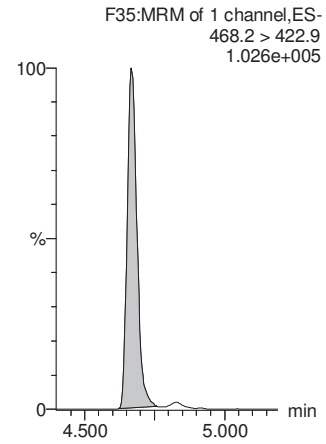


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

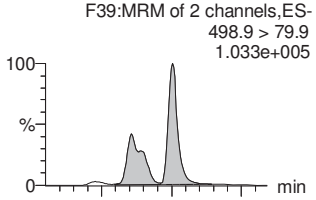
Review: AMR 2/18/2020

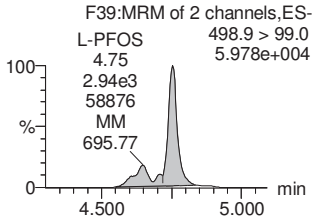
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

L-PFOS





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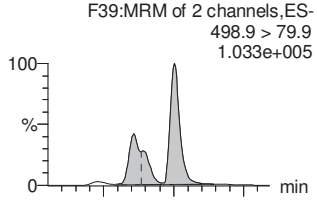

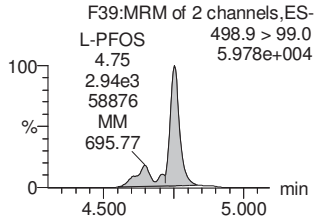

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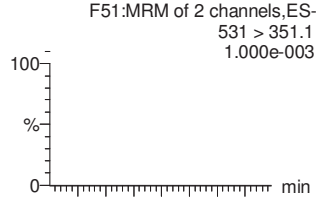

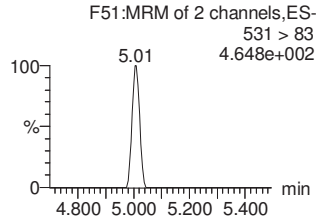

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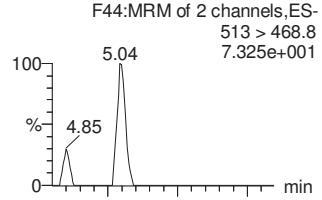

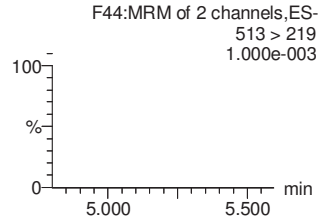

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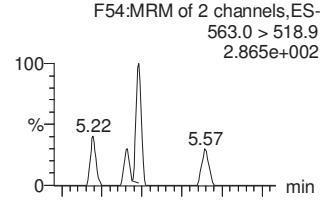

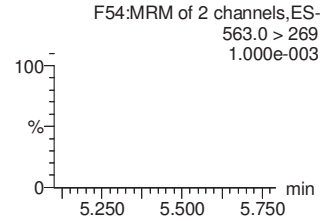

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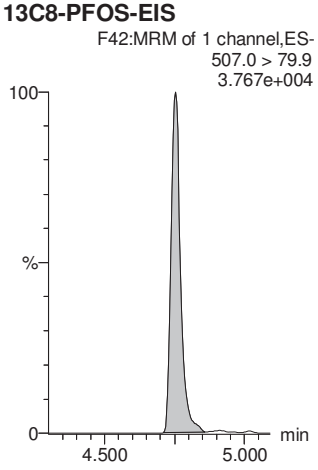

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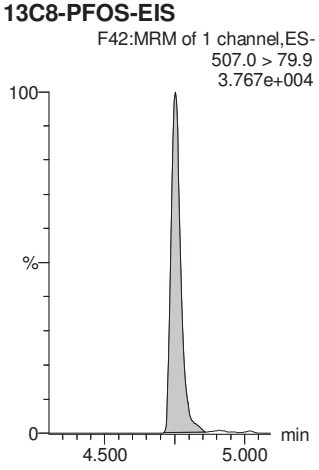

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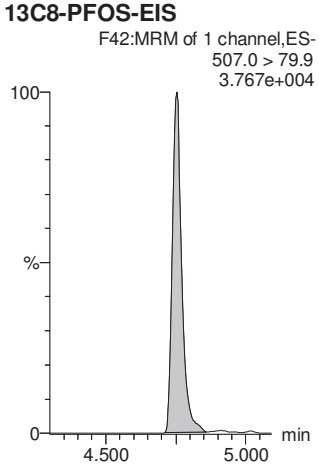

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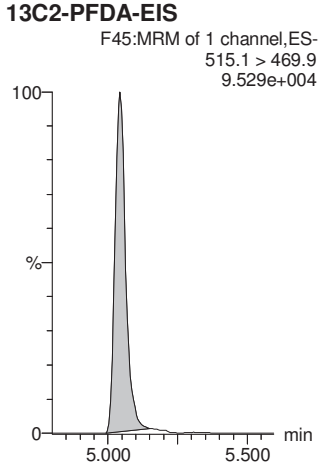

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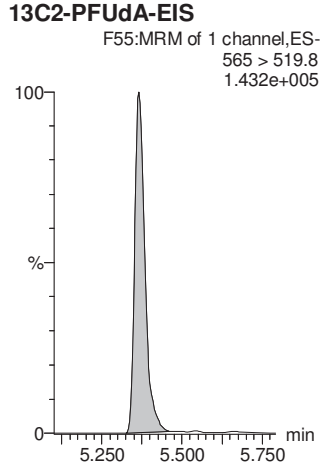


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

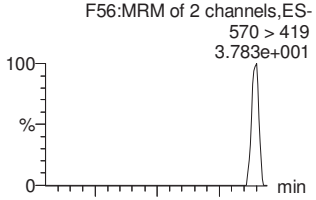
Review: AMR 2/18/2020

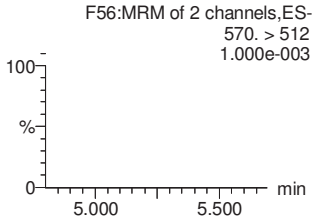
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

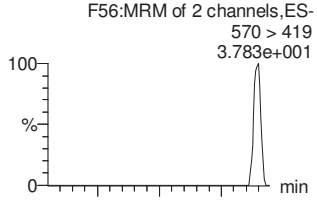
Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

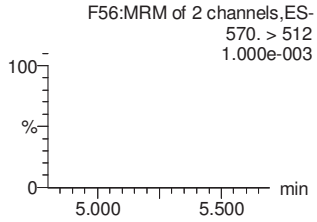
L-MeFOSAA



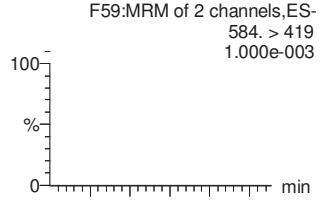


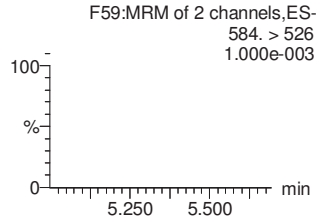
Total N-MeFOSAA



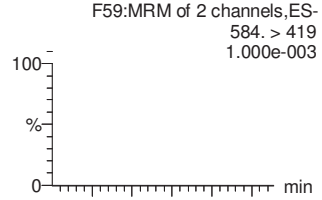


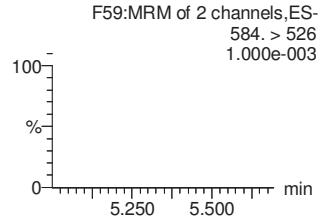
L-EtFOSAA



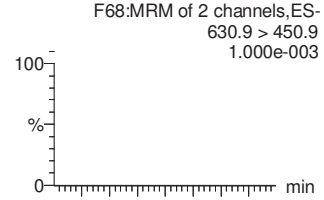


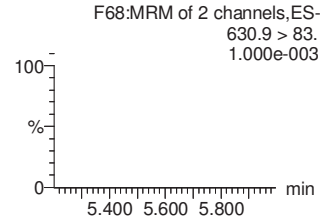
Total N-EtFOSAA



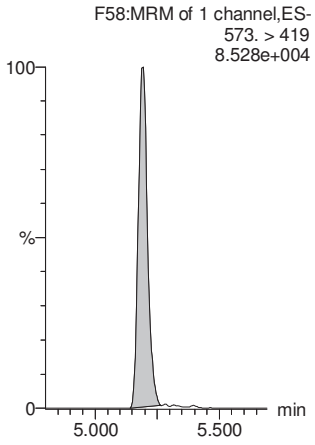


11Cl-PF30UdS

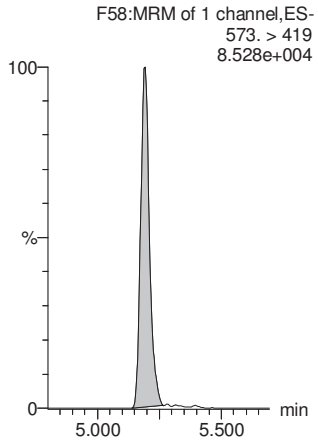




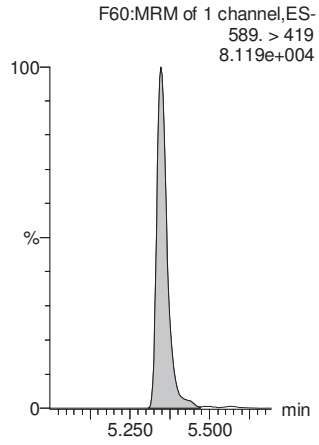
d3-N-MeFOSAA-EIS



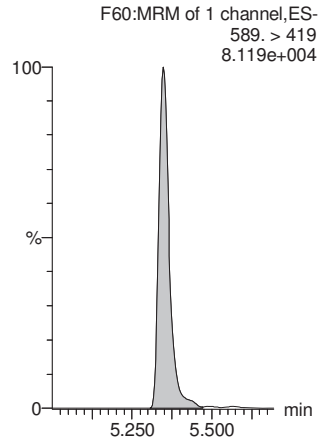
d3-N-MeFOSAA-EIS



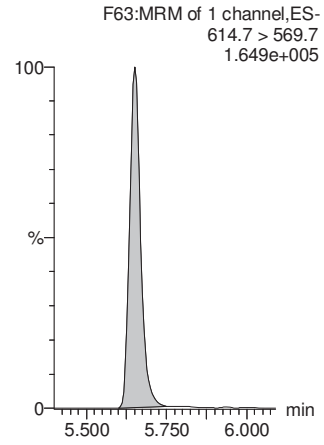
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

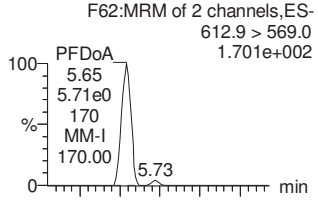
Review: AMR 2/18/2020

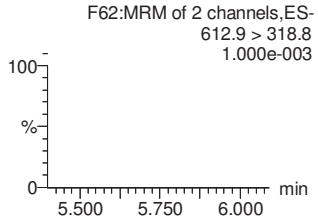
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

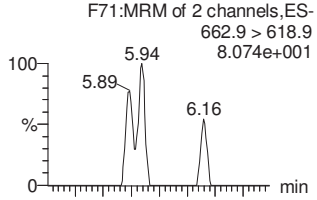
Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

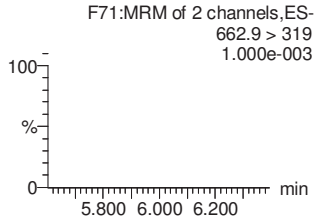
PFDoA



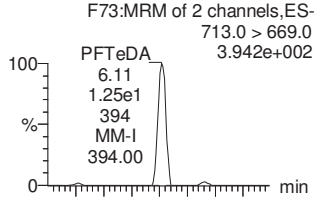


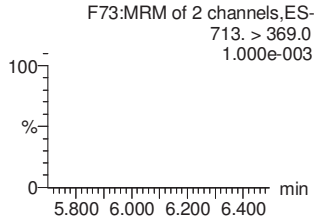
PFTrDA



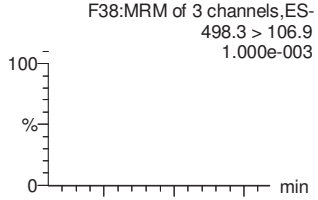


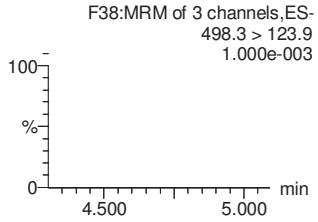
PFTeDA



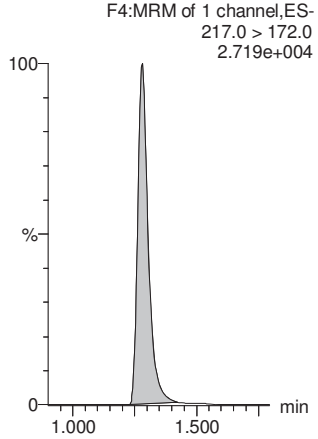


TDCA

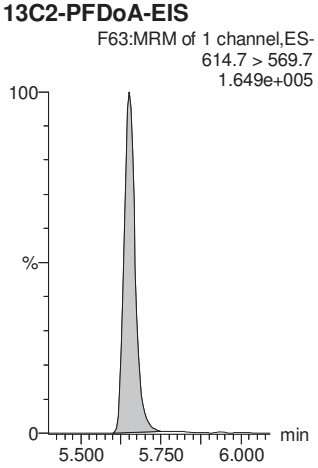




13C4-PFBA



13C2-PFDoA-EIS



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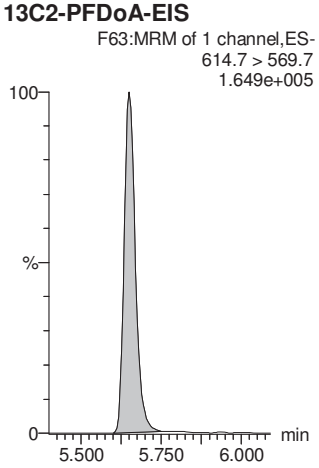
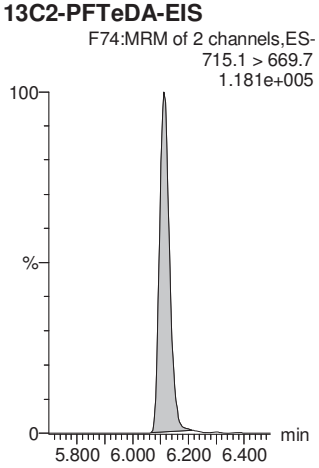
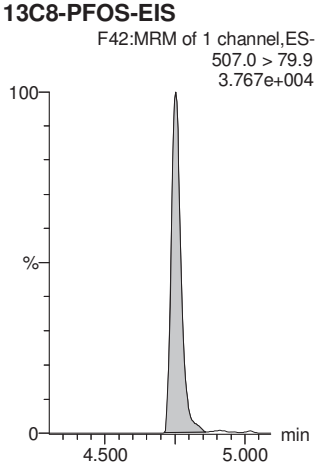


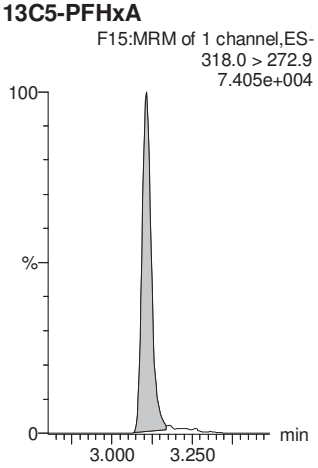
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

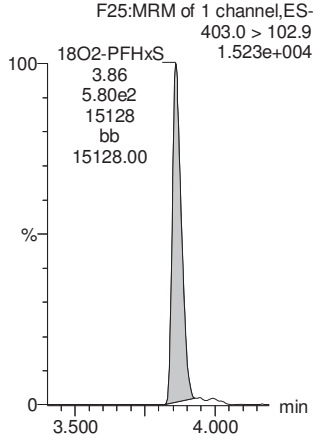
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_23.qld

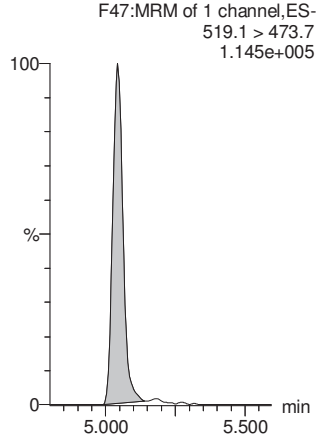
Last Altered: Friday, February 14, 2020 16:12:11 Pacific Standard Time
Printed: Friday, February 14, 2020 16:12:51 Pacific Standard Time

Name: 200212M2_23, Date: 12-Feb-2020, Time: 22:57:40, ID: 2000247-04 DUP02-20200204 0.25162, Description: DUP02-20200204

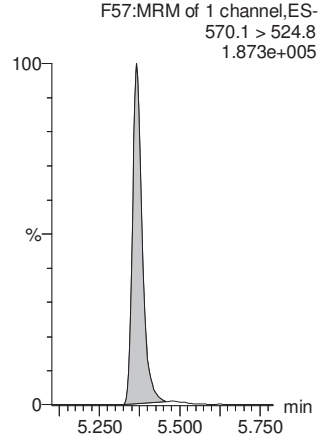
18O2-PFHxS



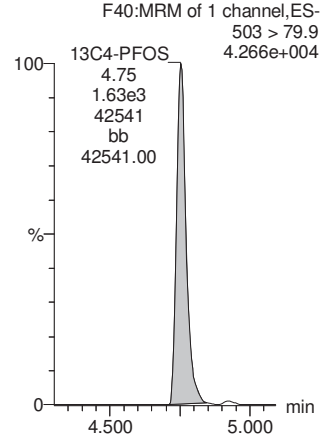
13C6-PFDA



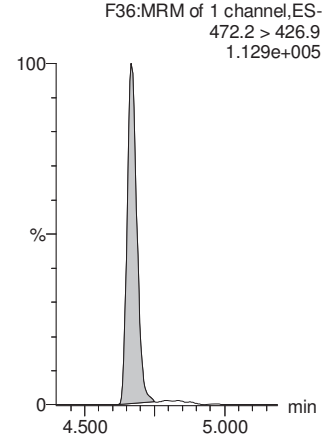
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_24.qld

Last Altered: Friday, February 14, 2020 16:18:38 Pacific Standard Time
Printed: Friday, February 14, 2020 16:19:09 Pacific Standard Time

Name: 200212M2_24, Date: 12-Feb-2020, Time: 23:08:02, ID: 2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794, Description: SGU-GW-SGUTPEFL-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.17e3	4.42e2	0.238		2.59	2.59	33.2	59.7172		3.009	NO
2	7	PFHxA	313.0 > 269.0	8.65e3	2.05e3	0.238		3.11	3.11	52.6	204.7169		15.706	NO
3	9	HFPO-DA	284.5 > 168.8		1.17e2	0.238		3.31						
4	11	PFHpA	363.0 > 318.9	1.21e3	1.46e3	0.238		3.71	3.71	10.3	33.5703		11.095	NO
5	12	ADONA	376.8 > 250.9		1.46e3	0.238		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.42e2		0.238	23.482	2.65	2.59	442	79.0231	150.4		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.05e3		0.238	144.232	3.11	3.11	2050	59.8519	113.9		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.17e2		0.238	6.687	3.39	3.31	117	73.7083	140.3		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.46e3		0.238	95.340	3.74	3.71	1460	64.4331	122.6		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.46e3		0.238	95.340	3.74	3.71	1460	64.4331	122.6		
11	-1													
12	13	L-PFHxS	398.9 > 80	6.67e3	1.36e3	0.238		3.86	3.86	61.2	241.5223		2.089	NO
13	1...	Total PFHxS	398.9 > 80	6.67e3	1.36e3	0.238		3.83		61.2	241.5223			
14	16	L-PFOA	412.8 > 368.9	2.21e4	3.22e3	0.238		4.23	4.23	85.7	247.8552		2.932	NO
15	1...	Total PFOA	412.8 > 368.9	2.21e4	3.22e3	0.238		4.20		85.7	247.8552			
16	21	PFNA	463.0 > 418.8	3.60e2	3.85e3	0.238		4.67	4.67	1.17	4.3848		6.018	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.36e3		0.238	88.291	3.86	3.86	1360	64.7920	123.3		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.36e3		0.238	88.291	3.86	3.86	1360	64.7920	123.3		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.22e3		0.238	220.187	4.23	4.23	3220	61.5233	117.1		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.22e3		0.238	220.187	4.23	4.23	3220	61.5233	117.1		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.85e3		0.238	262.826	4.67	4.67	3850	61.5816	117.2		
22	-1													
23	23	L-PFOS	498.9 > 79.9	6.70e3	1.59e3	0.238		4.75	4.75	52.7	191.5665		2.451	NO
24	1...	Total PFOS	498.9 > 79.9	6.70e3	1.59e3	0.238		4.73		52.7	191.5665			
25	25	9Cl-PF30NS	531 > 351.1		1.59e3	0.238		4.96						
26	26	PFDA	513 > 468.8		4.46e3	0.238		5.04						
27	33	PFUdA	563.0 > 518.9		5.81e3	0.238		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.59e3		0.238	105.884	4.75	4.75	1590	63.1422	120.2		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.59e3		0.238	105.884	4.75	4.75	1590	63.1422	120.2		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.59e3		0.238	105.884	4.75	4.75	1590	63.1422	120.2		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.46e3		0.238	263.358	5.04	5.04	4460	71.1711	135.5		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.81e3		0.238	362.134	5.37	5.37	5810	67.4589	128.4		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.71e3	0.238		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.71e3	0.238		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		3.41e3	0.238		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_24.qld

Last Altered: Friday, February 14, 2020 16:18:38 Pacific Standard Time
Printed: Friday, February 14, 2020 16:19:09 Pacific Standard Time

Name: 200212M2_24, Date: 12-Feb-2020, Time: 23:08:02, ID: 2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794, Description: SGU-GW-SGUTPEFL-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	3.41e3	0.238		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.97e3	0.238		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.71e3		0.238	231.747	5.19	5.19	3710	67.2899	128.1		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.71e3		0.238	231.747	5.19	5.19	3710	67.2899	128.1		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.41e3		0.238	219.903	5.34	5.35	3410	65.0825	123.9		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.41e3		0.238	219.903	5.34	5.35	3410	65.0825	123.9		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.97e3		0.238	458.130	5.64	5.65	6970	63.9678	121.8		
44	-1													
45	37	PFDoA	612.9 > 569.0		6.97e3	0.238		5.65						
46	39	PFTrDA	662.9 > 618.9		6.97e3	0.238		5.90						
47	41	PFTeDA	713.0 > 669.0		5.59e3	0.238		6.11						
48	1...	TDCA	498.3>106.9			0.238		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.36e3	1.36e3	0.238	1.000	1.27	1.28	12.5	52.5343	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.97e3		0.238	458.130	5.64	5.65	6970	63.9678	121.8		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.97e3		0.238	458.130	5.64	5.65	6970	63.9678	121.8		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	5.59e3		0.238	365.370	6.07	6.11	5590	64.3103	122.4		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.59e3		0.238	105.884	4.75	4.75	1590	63.1422	120.2		
54	1...	13C5-PFHxA	318.0 > 272.9	2.43e3	2.43e3	0.238	1.000	3.10	3.11	12.5	52.5343	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	6.81e2	6.81e2	0.238	1.000	3.86	3.86	12.5	52.5343	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	5.29e3	5.29e3	0.238	1.000	5.04	5.04	12.5	52.5343	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	7.20e3	7.20e3	0.238	1.000	5.36	5.37	12.5	52.5343	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.97e3	1.97e3	0.238	1.000	4.75	4.75	12.5	52.5343	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.35e3	4.35e3	0.238	1.000	4.66	4.67	12.5	52.5343	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_24.qld

Last Altered: Friday, February 14, 2020 16:18:38 Pacific Standard Time
Printed: Friday, February 14, 2020 16:19:09 Pacific Standard Time

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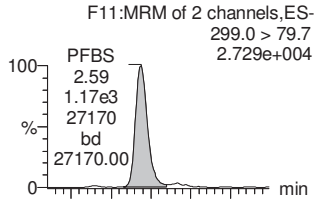
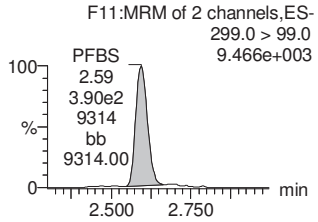
Name: 200212M2_24, Date: 12-Feb-2020, Time: 23:08:02, ID: 2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794, Description: SGU-GW-SGUTPEFL-20200204

PFBS





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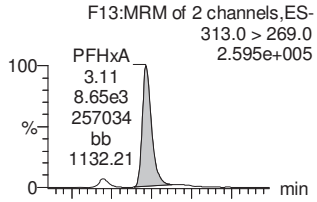

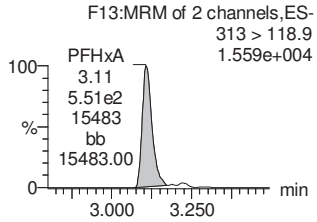

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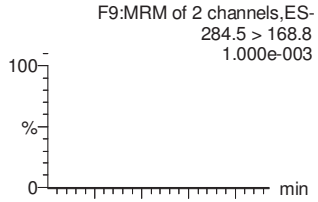

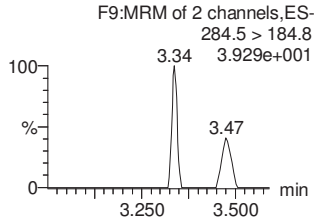

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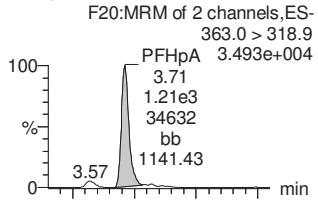

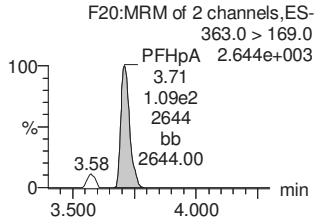

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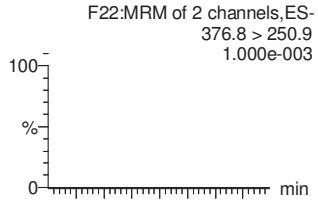

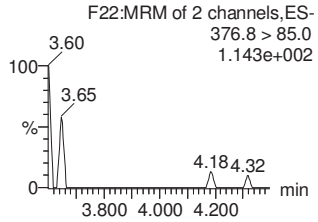

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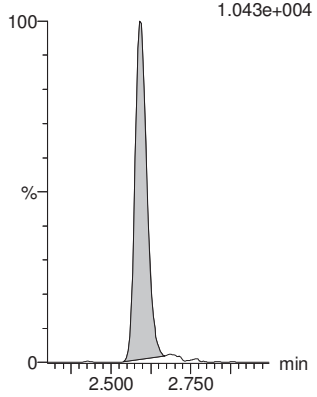

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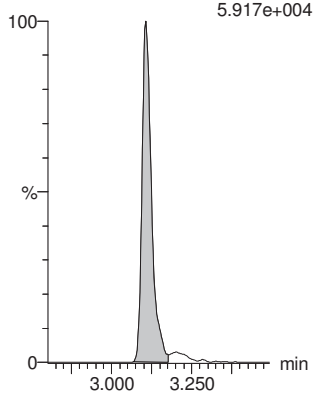

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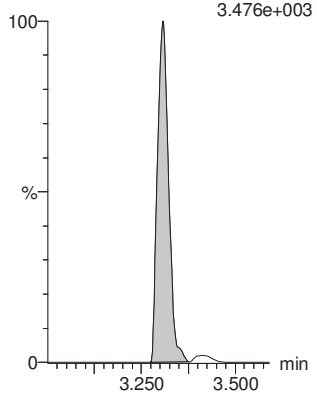

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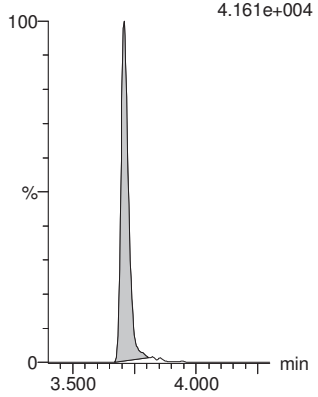

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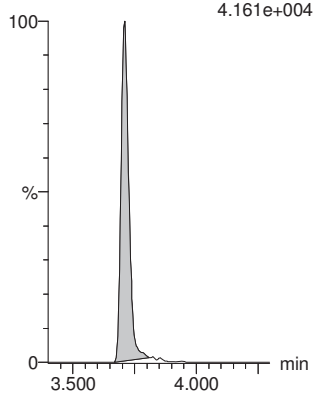

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_24.qld

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Name: 200212M2_24, Date: 12-Feb-2020, Time: 23:08:02, ID: 2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794, Description: SGU-GW-SGUTPEFL-20200204

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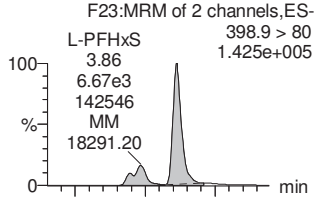

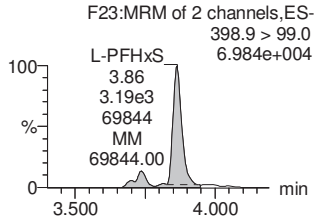

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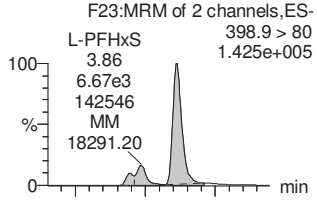

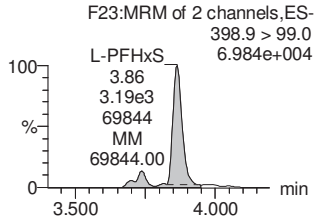

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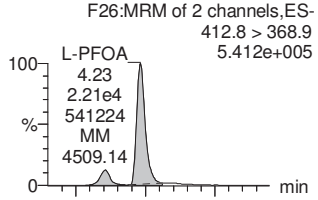

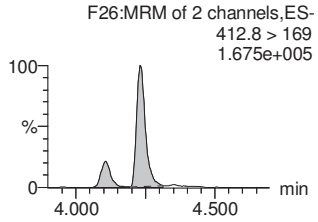

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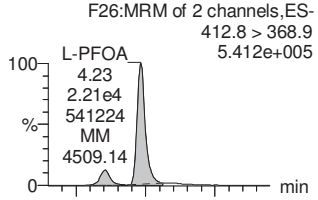

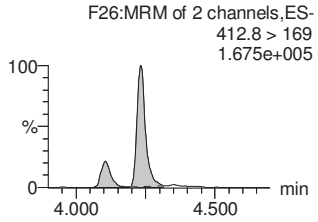

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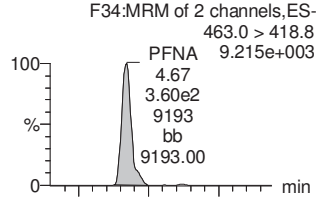

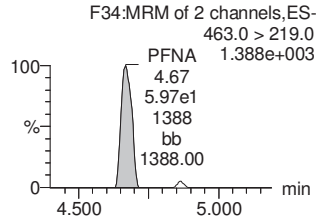

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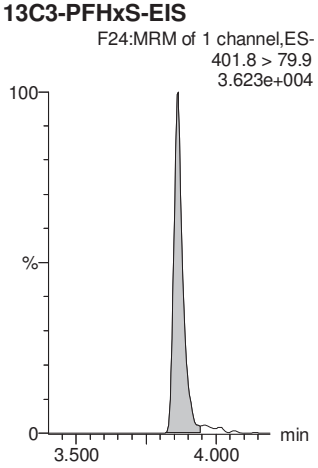

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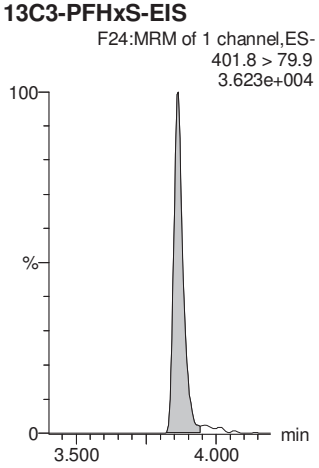

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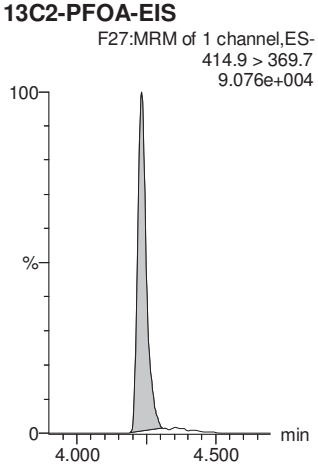

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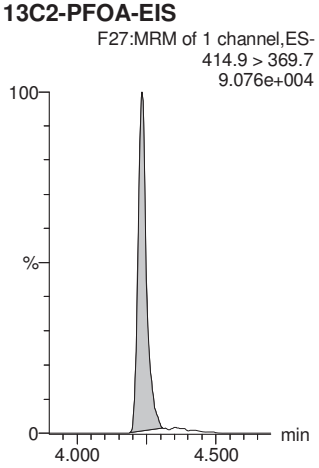

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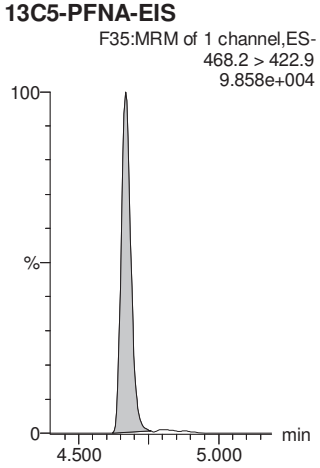

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

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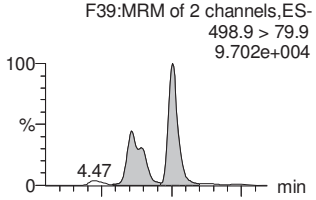
L-PFOS



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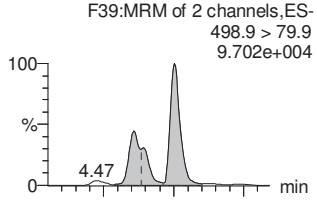

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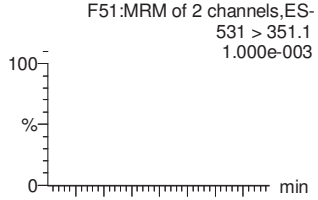

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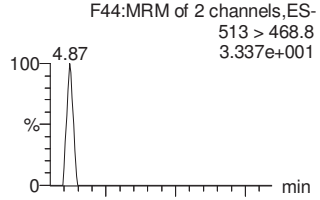

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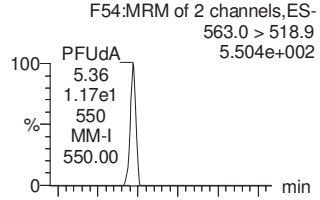

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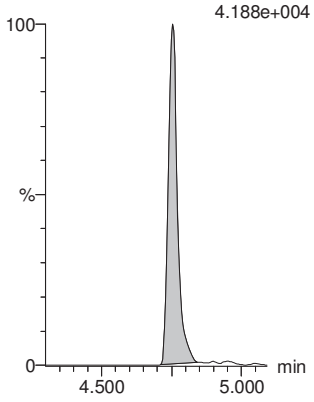

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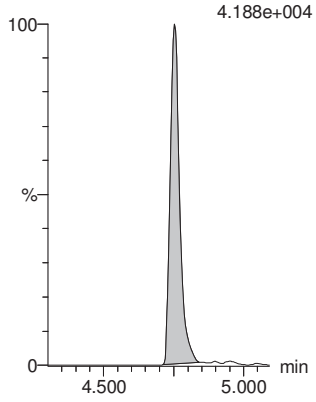

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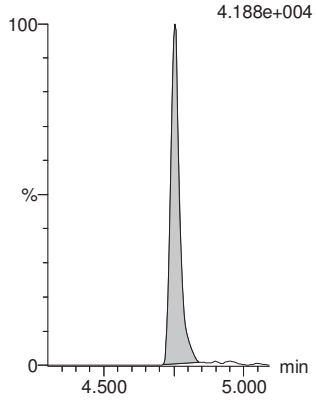

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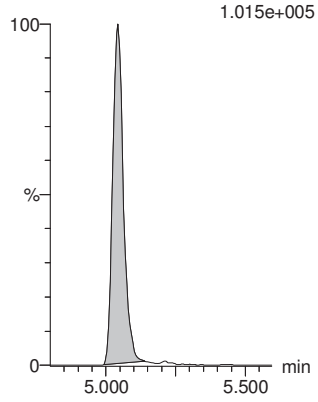

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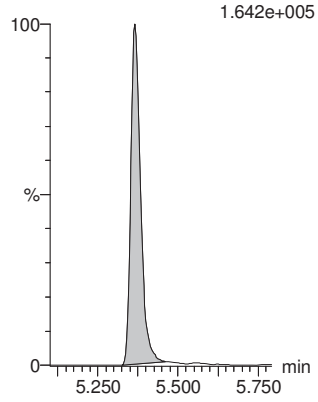

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

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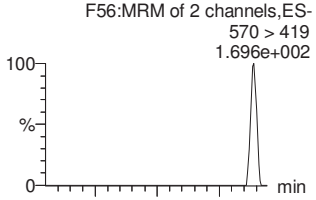
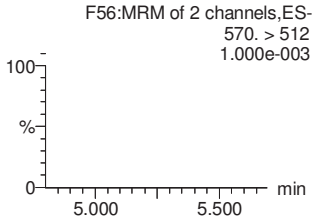
L-MeFOSAA





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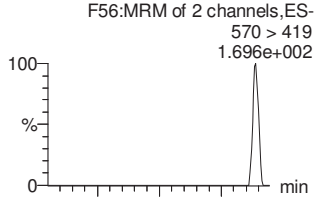

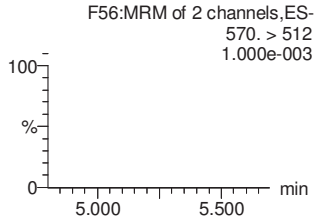

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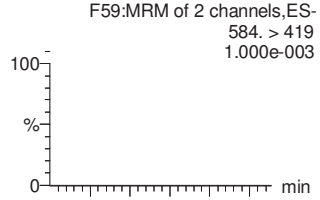

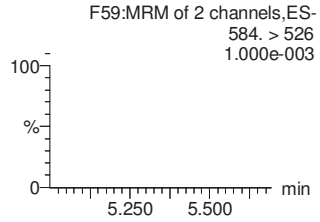

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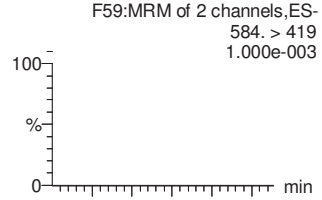

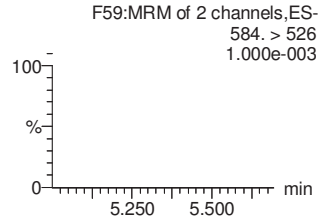

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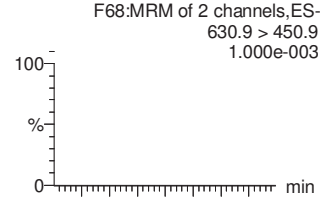

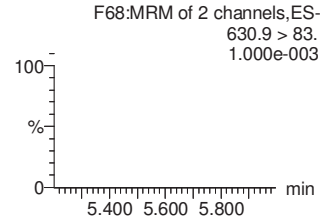

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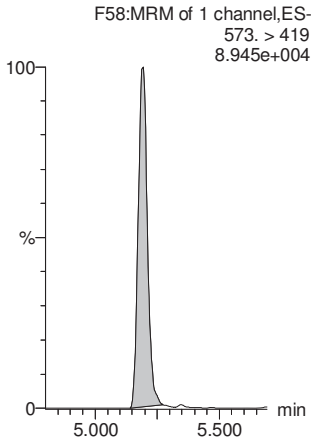
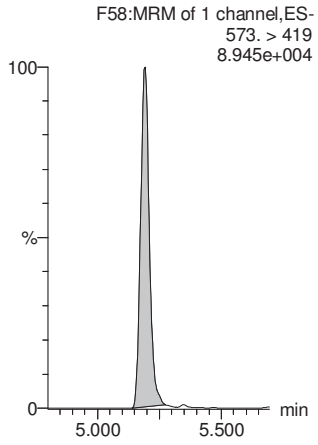


d3-N-MeFOSAA-EIS



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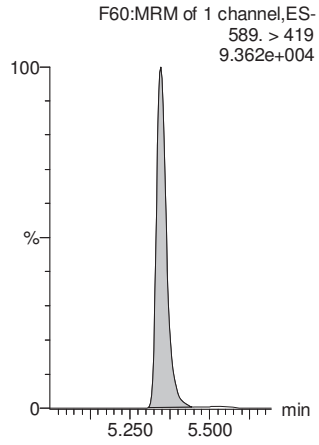

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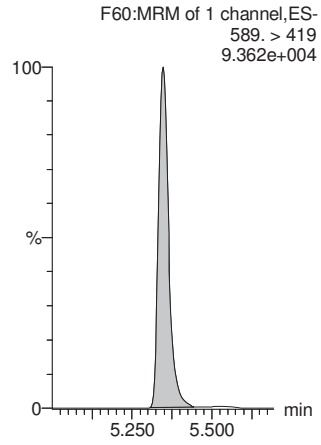
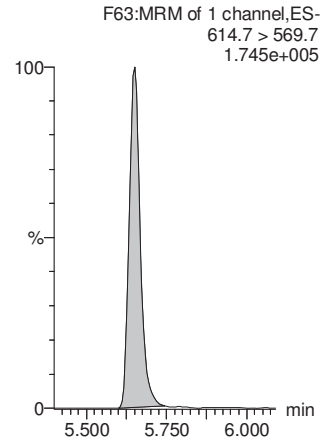


13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

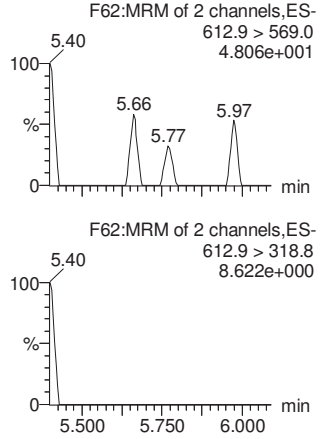
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_24.qld

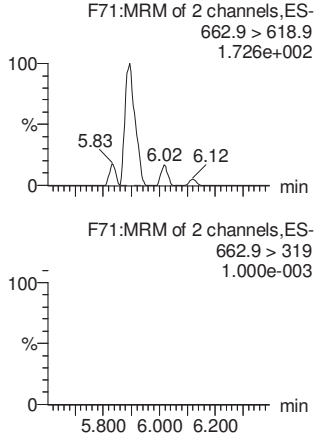
Last Altered: Friday, February 14, 2020 16:18:38 Pacific Standard Time
Printed: Friday, February 14, 2020 16:19:09 Pacific Standard Time

Name: 200212M2_24, Date: 12-Feb-2020, Time: 23:08:02, ID: 2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794, Description: SGU-GW-SGUTPEFL-20200204

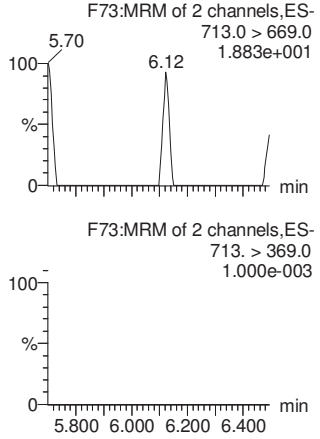
PFDoA



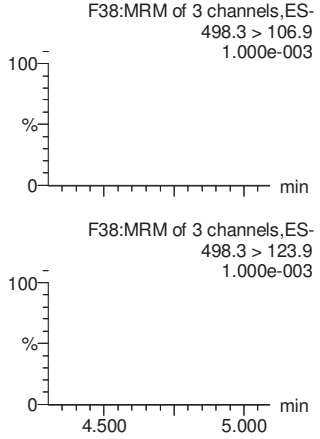
PFTrDA



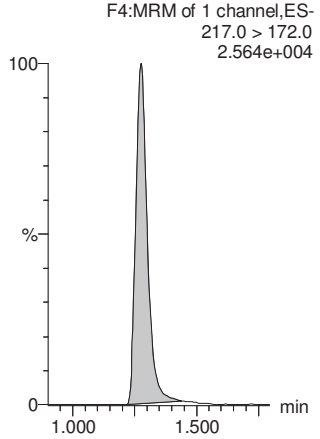
PFTeDA



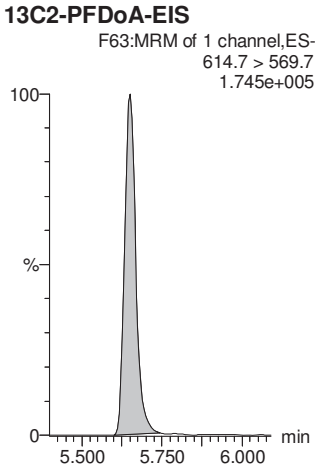
TDCA



13C4-PFBA



13C2-PFDoA-EIS



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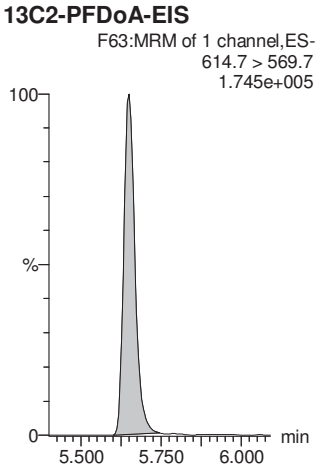
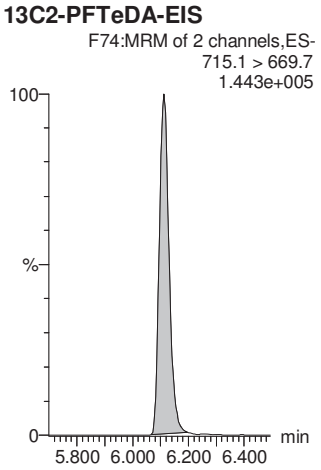
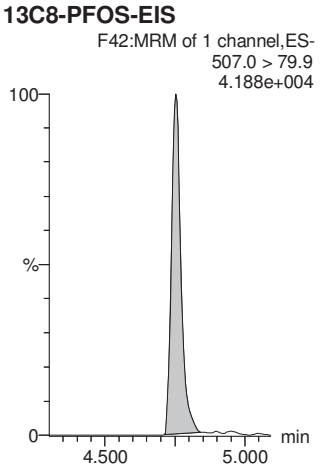


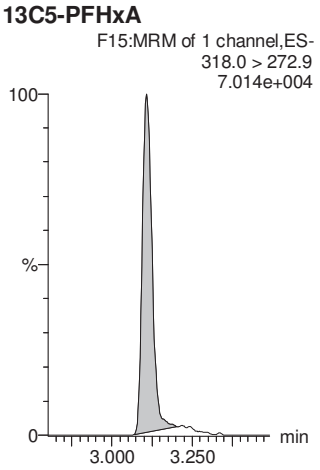
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

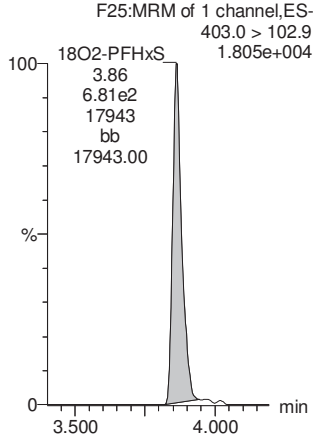
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_24.qld

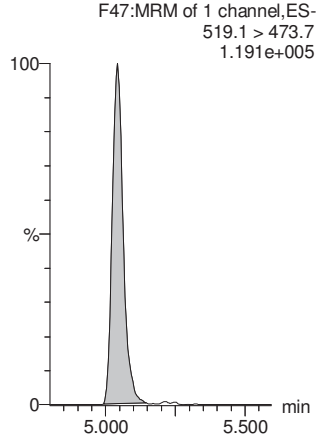
Last Altered: Friday, February 14, 2020 16:18:38 Pacific Standard Time
Printed: Friday, February 14, 2020 16:19:09 Pacific Standard Time

Name: 200212M2_24, Date: 12-Feb-2020, Time: 23:08:02, ID: 2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794, Description: SGU-GW-SGUTPEFL-20200204

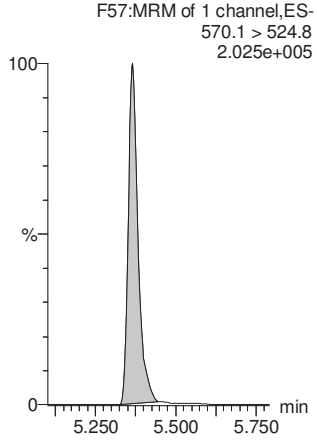
18O2-PFHxS



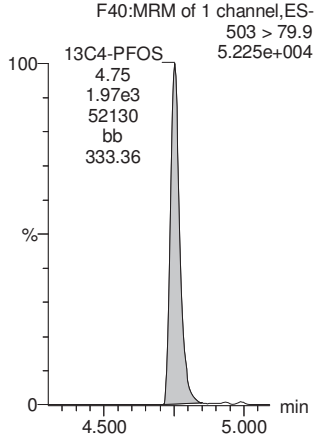
13C6-PFDA



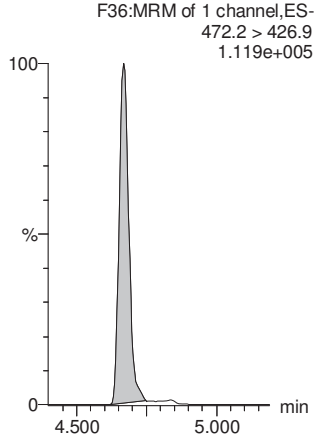
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.61e3	4.08e2	0.255		2.60	2.59	49.2	82.3003		2.780	NO
2	7	PFHxA	313.0 > 269.0	1.33e4	2.03e3	0.255		3.11	3.11	81.6	295.7951		14.567	NO
3	9	HFPO-DA	284.5 > 168.8		1.06e2	0.255		3.31						
4	11	PFHpA	363.0 > 318.9	1.90e3	1.31e3	0.255		3.71	3.71	18.2	54.8332		11.212	NO
5	12	ADONA	376.8 > 250.9		1.31e3	0.255		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.08e2		0.255	23.482	2.66	2.60	408	68.0310	138.9		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.03e3		0.255	144.232	3.11	3.11	2030	55.2095	112.8		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.06e2		0.255	6.687	3.39	3.31	106	61.8991	126.4		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.31e3		0.255	95.340	3.74	3.71	1310	53.7179	109.7		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.31e3		0.255	95.340	3.74	3.71	1310	53.7179	109.7		
11	-1													
12	13	L-PFHxS	398.9 > 80	1.70e4	1.11e3	0.255		3.87	3.87	192	698.8451		2.040	NO
13	1...	Total PFHxS	398.9 > 80	1.70e4	1.11e3	0.255		3.83		192	698.8451			
14	16	L-PFOA	412.8 > 368.9	1.51e4	3.15e3	0.255		4.23	4.24	60.0	161.5952		3.040	NO
15	1...	Total PFOA	412.8 > 368.9	1.51e4	3.15e3	0.255		4.20		60.0	161.5952			
16	21	PFNA	463.0 > 418.8	1.01e2	4.07e3	0.255		4.67	4.67	0.310	1.2130		6.643	NO
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.11e3		0.255	88.291	3.87	3.87	1110	49.1096	100.3		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.11e3		0.255	88.291	3.87	3.87	1110	49.1096	100.3		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.15e3		0.255	220.187	4.23	4.23	3150	56.0036	114.4		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.15e3		0.255	220.187	4.23	4.23	3150	56.0036	114.4		
21	65	13C5-PFNA-EIS	468.2 > 422.9	4.07e3		0.255	262.826	4.67	4.67	4070	60.6339	123.8		
22	-1													
23	23	L-PFOS	498.9 > 79.9	8.17e3	1.63e3	0.255		4.76	4.61	62.8	213.0564		4.031	YES
24	1...	Total PFOS	498.9 > 79.9	8.17e3	1.63e3	0.255		4.73		62.8	213.0564			
25	25	9Cl-PF30NS	531 > 351.1		1.63e3	0.255		4.97						
26	26	PFDA	513 > 468.8		3.89e3	0.255		5.04						
27	33	PFUdA	563.0 > 518.9	2.14e1	5.38e3	0.255		5.37	5.36	0.0498	0.1483			
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.255	105.884	4.76	4.76	1630	60.2041	123.0		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.255	105.884	4.76	4.76	1630	60.2041	123.0		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.255	105.884	4.76	4.76	1630	60.2041	123.0		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.89e3		0.255	263.358	5.04	5.04	3890	57.8382	118.1		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.38e3		0.255	362.134	5.37	5.37	5380	58.1698	118.8		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.45e3	0.255		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.45e3	0.255		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		3.10e3	0.255		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	3.10e3	0.255		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.31e3	0.255		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.45e3		0.255	231.747	5.19	5.19	3450	58.2815	119.0		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.45e3		0.255	231.747	5.19	5.19	3450	58.2815	119.0		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.10e3		0.255	219.903	5.34	5.35	3100	55.2720	112.9		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.10e3		0.255	219.903	5.34	5.35	3100	55.2720	112.9		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.31e3		0.255	458.130	5.64	5.65	6310	53.9671	110.2		
44	-1													
45	37	PFDoA	612.9 > 569.0		6.31e3	0.255		5.65						
46	39	PFTrDA	662.9 > 618.9		6.31e3	0.255		5.90						
47	41	PFTeDA	713.0 > 669.0		4.93e3	0.255		6.11						
48	1...	TDCA	498.3>106.9			0.255		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.30e3	1.30e3	0.255	1.000	1.27	1.27	12.5	48.9620	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.31e3		0.255	458.130	5.64	5.65	6310	53.9671	110.2		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.31e3		0.255	458.130	5.64	5.65	6310	53.9671	110.2		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.93e3		0.255	365.370	6.07	6.11	4930	52.8011	107.8		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.255	105.884	4.76	4.76	1630	60.2041	123.0		
54	1...	13C5-PFHxA	318.0 > 272.9	2.30e3	2.30e3	0.255	1.000	3.10	3.11	12.5	48.9620	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.94e2	5.94e2	0.255	1.000	3.86	3.87	12.5	48.9620	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.98e3	4.98e3	0.255	1.000	5.04	5.04	12.5	48.9620	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.64e3	6.64e3	0.255	1.000	5.36	5.37	12.5	48.9620	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.73e3	1.73e3	0.255	1.000	4.75	4.76	12.5	48.9620	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.14e3	4.14e3	0.255	1.000	4.66	4.67	12.5	48.9620	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

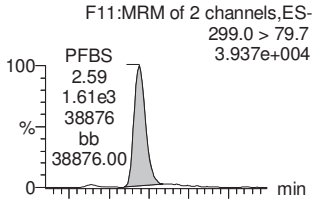
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

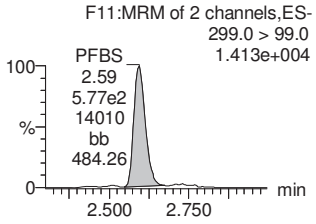
Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

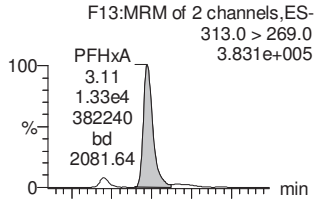
Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

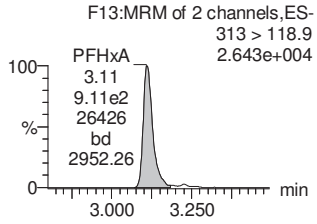
PFBS





PFHxA





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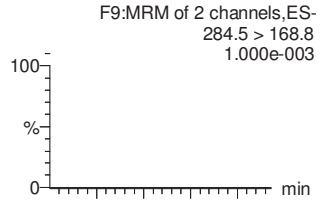

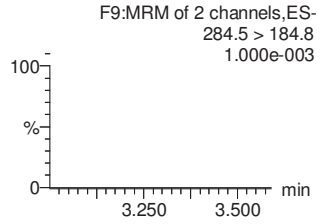

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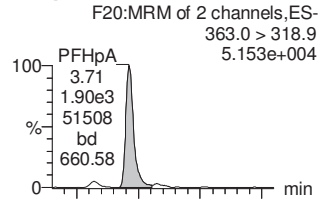
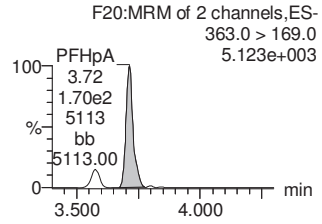
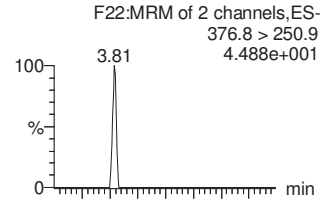
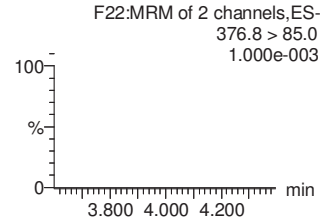




ADONA





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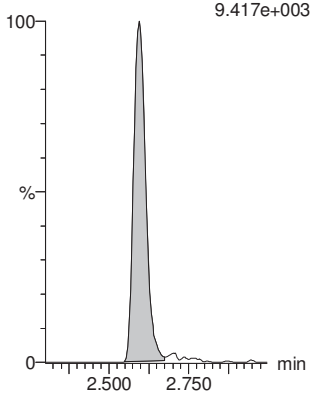

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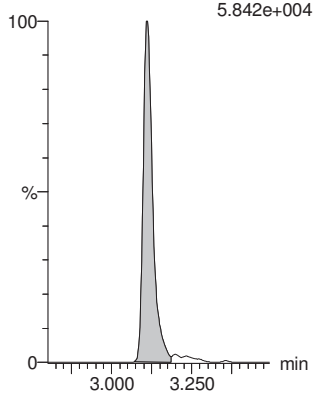

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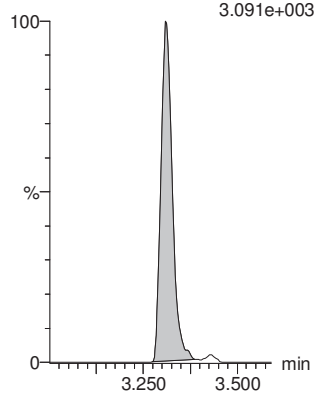

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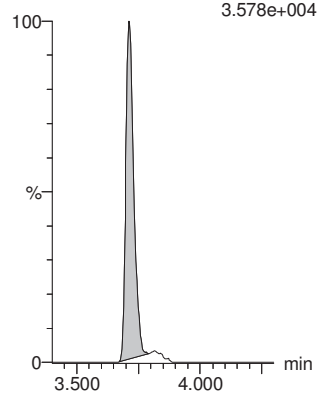

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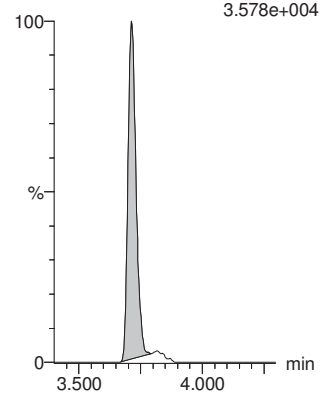


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

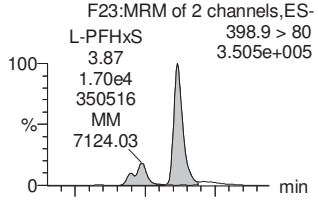
Review: AMR 2/18/2020

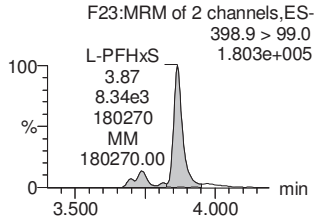
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

L-PFHxS





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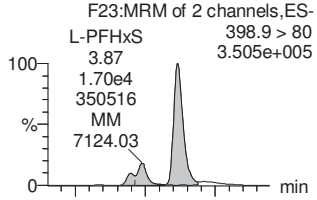
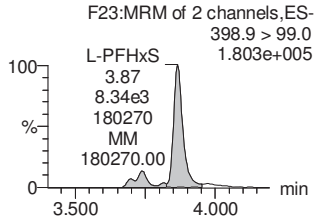
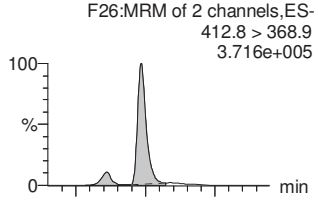
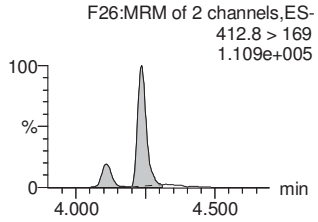




L-PFOA





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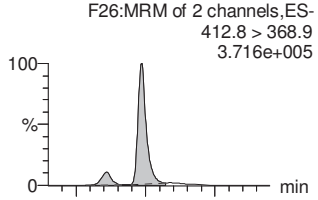

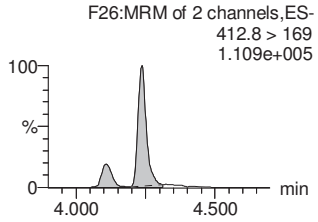

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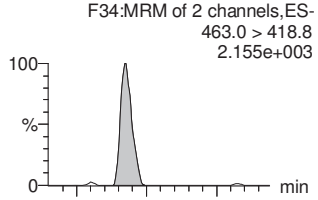

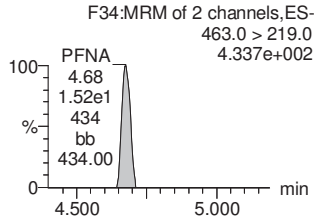

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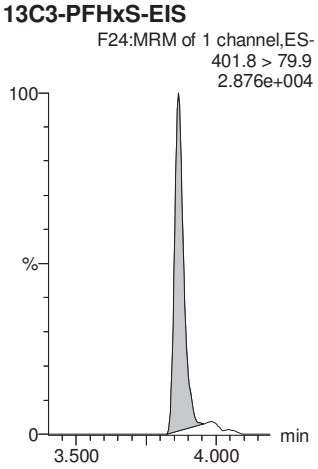

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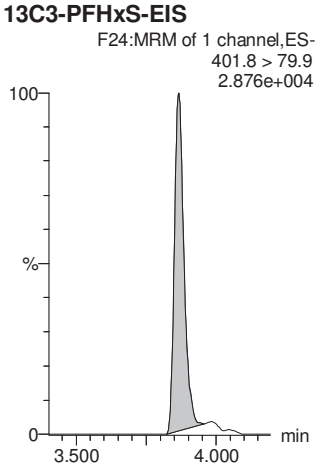

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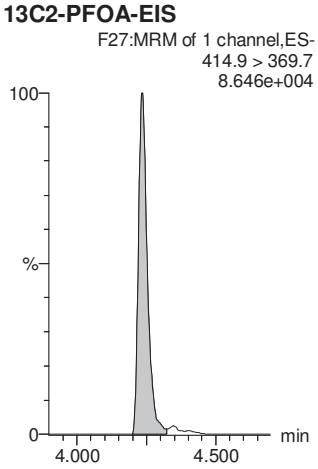

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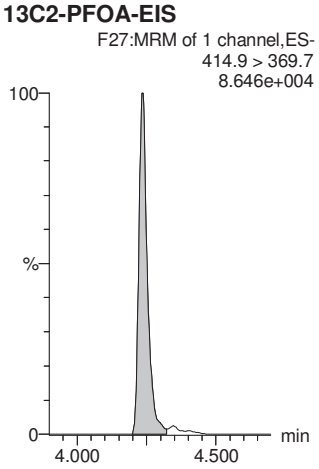

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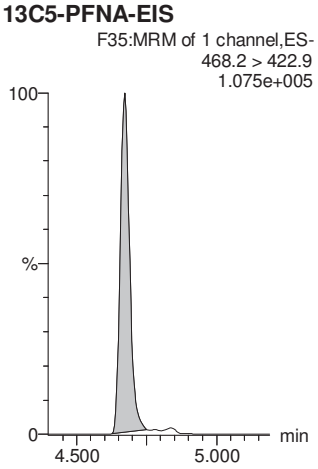


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

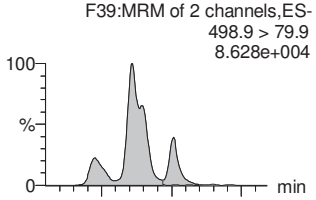
Review: AMR 2/18/2020

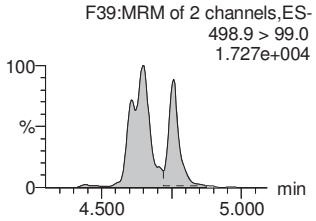
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

L-PFOS





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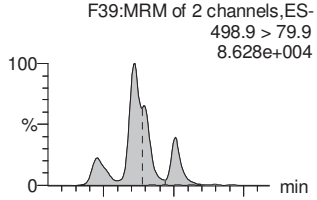

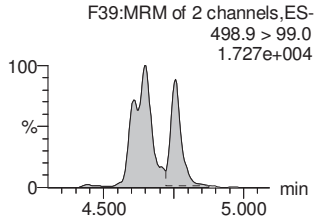

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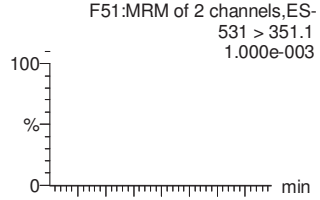

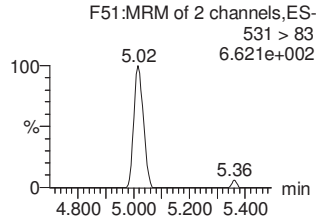

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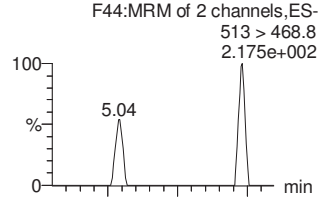

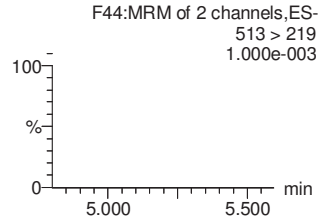

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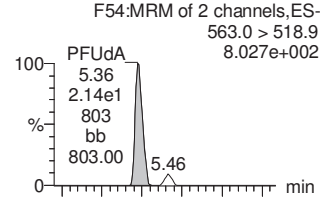

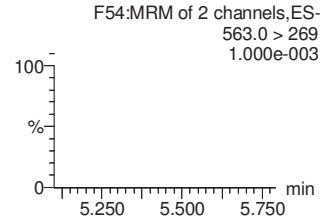

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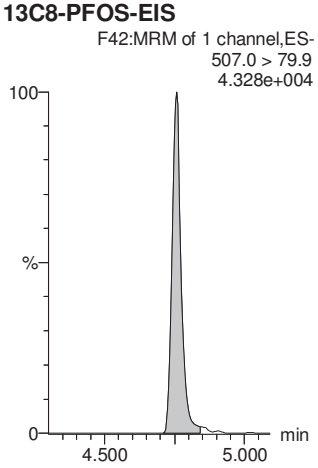

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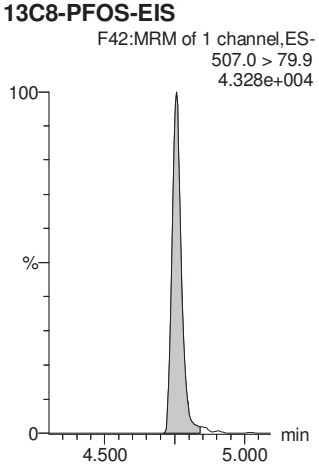

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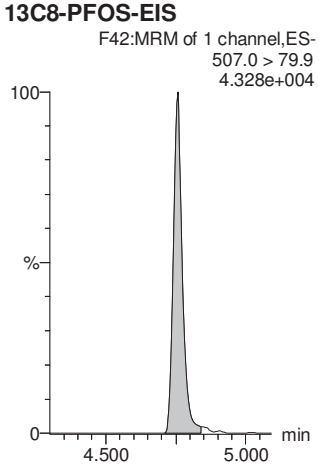

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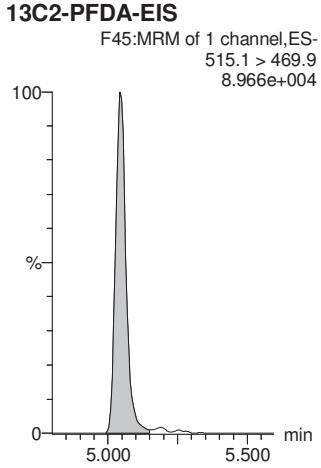

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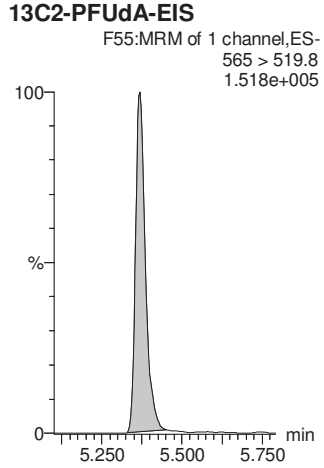


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

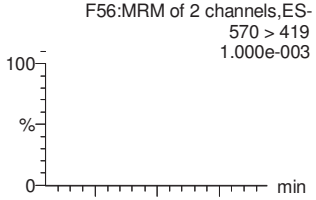
Review: AMR 2/18/2020

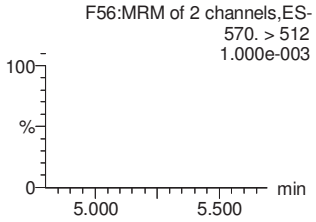
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

L-MeFOSAA





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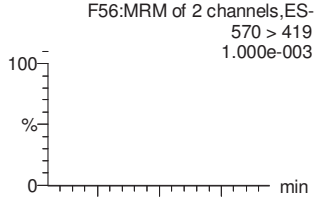
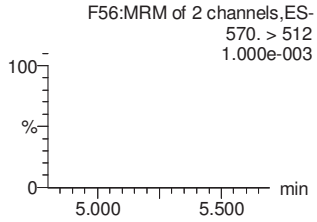
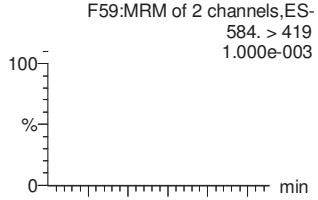
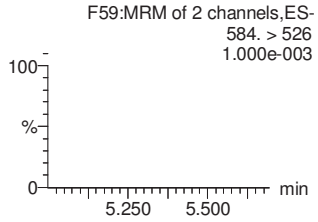




L-EtFOSAA





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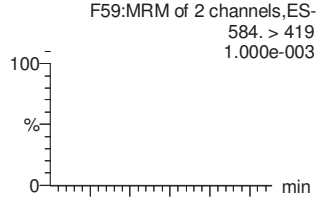
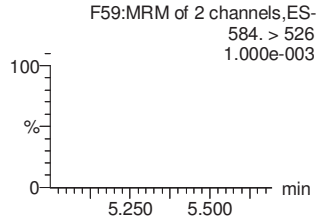
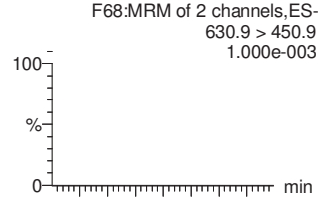
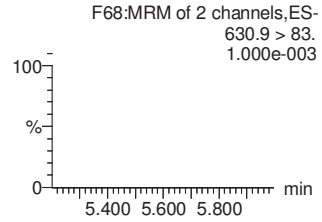


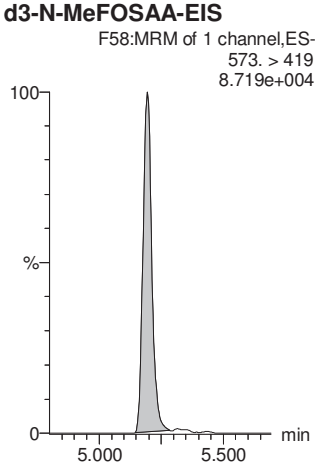


11Cl-PF30UdS





d3-N-MeFOSAA-EIS



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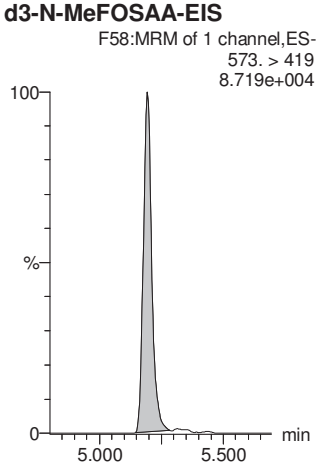

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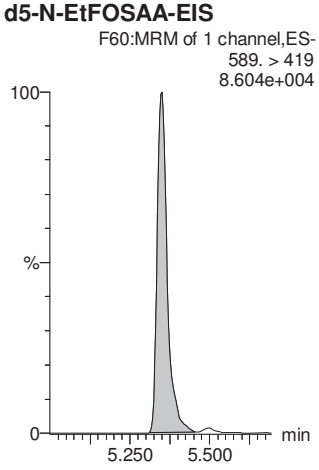

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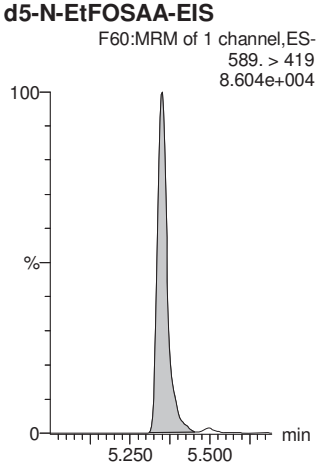
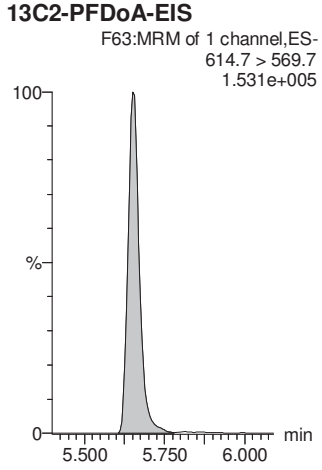


13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

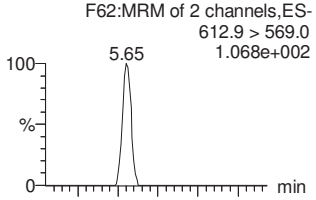
Review: AMR 2/18/2020

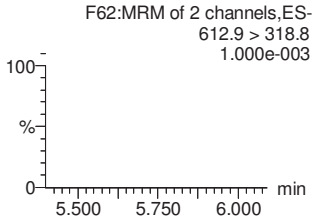
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

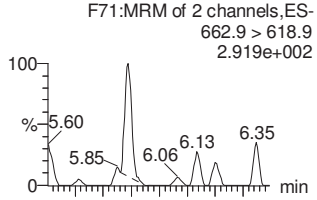
Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

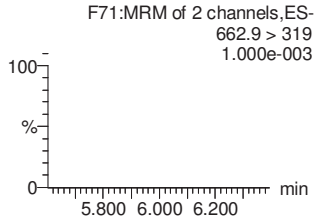
PFDoA



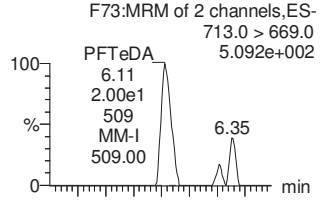


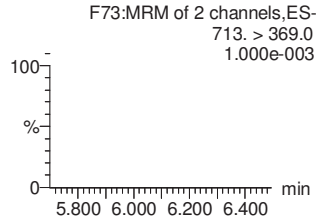
PFTrDA





PFTeDA





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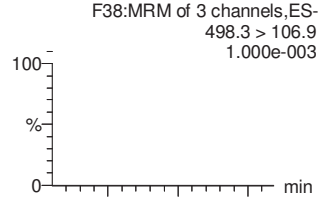
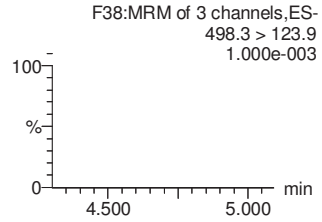
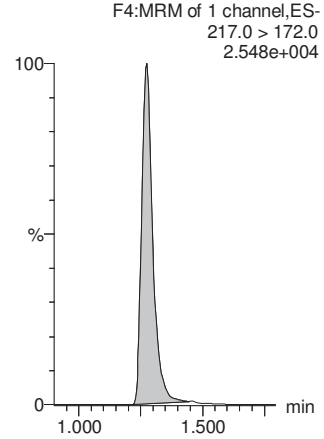
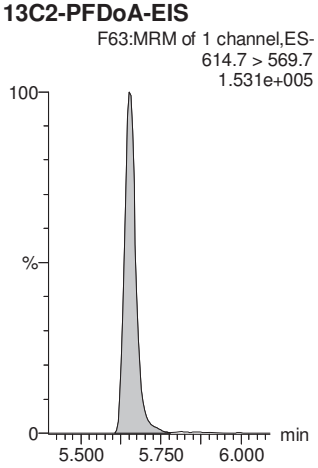




13C4-PFBA



13C2-PFDoA-EIS



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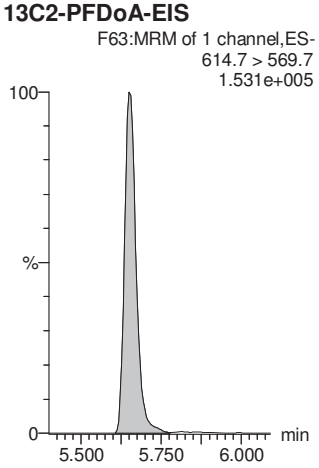
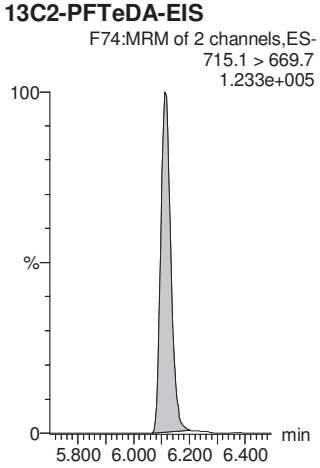
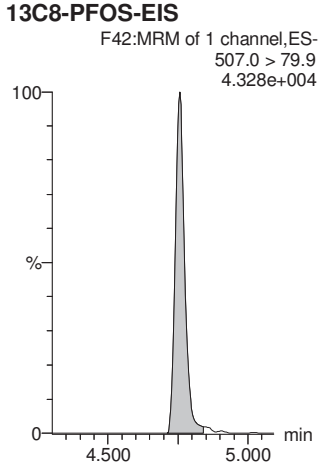


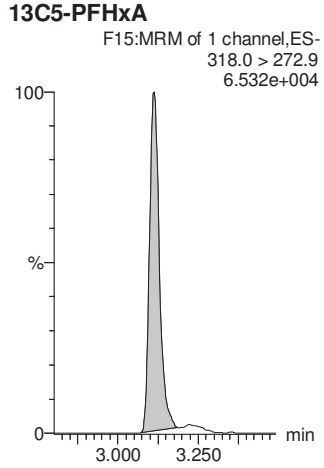
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

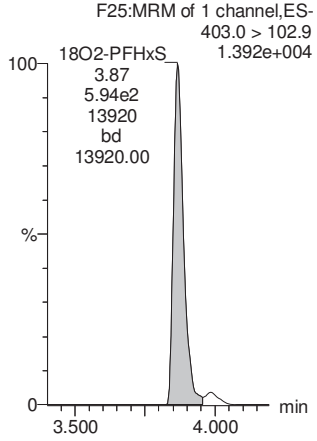
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_25.qld

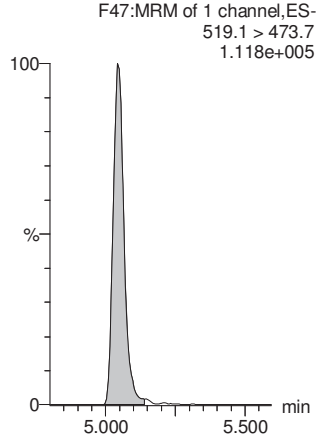
Last Altered: Tuesday, February 18, 2020 09:04:52 Pacific Standard Time
Printed: Tuesday, February 18, 2020 09:07:50 Pacific Standard Time

Name: 200212M2_25, Date: 12-Feb-2020, Time: 23:18:24, ID: 2000247-06 24-GW-21UGMW37-20200204 0.2553, Description: 24-GW-21UGMW37-20200204

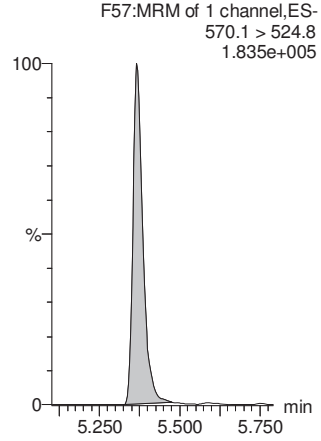
18O2-PFHxS



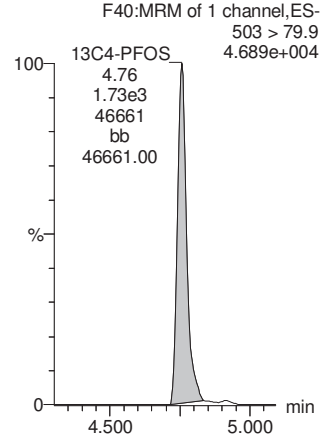
13C6-PFDA



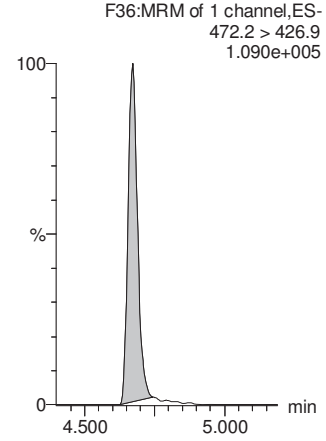
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	4.82e1	4.31e2	0.252		2.60	2.60	1.40	2.5158		2.470	NO
2	7	PFHxA	313.0 > 269.0	8.23e2	2.18e3	0.252		3.11	3.11	4.72	17.3474		21.615	YES
3	9	HFPO-DA	284.5 > 168.8		9.87e1	0.252		3.31						
4	11	PFHpA	363.0 > 318.9	1.46e2	1.43e3	0.252		3.71	3.71	1.28	4.1576		17.462	YES
5	12	ADONA	376.8 > 250.9		1.43e3	0.252		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	4.31e2		0.252	23.482	2.66	2.60	431	73.0285	147.0		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	2.18e3		0.252	144.232	3.11	3.11	2180	60.0621	120.9		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	9.87e1		0.252	6.687	3.39	3.31	98.7	58.6862	118.1		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.43e3		0.252	95.340	3.74	3.71	1430	59.5161	119.8		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.43e3		0.252	95.340	3.74	3.71	1430	59.5161	119.8		
11	-1													
12	13	L-PFHxS	398.9 > 80	3.28e2	1.45e3	0.252		3.86	3.86	2.83	11.0192		1.965	NO
13	1...	Total PFHxS	398.9 > 80	3.28e2	1.45e3	0.252		3.83		2.83	11.0192			
14	16	L-PFOA	412.8 > 368.9	4.08e3	3.55e3	0.252		4.23	4.23	14.4	39.0515		2.826	NO
15	1...	Total PFOA	412.8 > 368.9	4.08e3	3.55e3	0.252		4.20		14.4	39.0515			
16	21	PFNA	463.0 > 418.8		4.32e3	0.252		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.45e3		0.252	88.291	3.86	3.86	1450	65.2720	131.4		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.45e3		0.252	88.291	3.86	3.86	1450	65.2720	131.4		
19	69	13C2-PFOA-EIS	414.9 > 369.7	3.55e3		0.252	220.187	4.23	4.23	3550	64.0251	128.9		
20	69	13C2-PFOA-EIS	414.9 > 369.7	3.55e3		0.252	220.187	4.23	4.23	3550	64.0251	128.9		
21	65	13C5-PFNA-EIS	468.2 > 422.9	4.32e3		0.252	262.826	4.67	4.67	4320	65.3718	131.6		
22	-1													
23	23	L-PFOS	498.9 > 79.9		1.63e3	0.252		4.75						
24	1...	Total PFOS	498.9 > 79.9	0.00e0	1.63e3	0.252		4.73		0.000				
25	25	9Cl-PF30NS	531 > 351.1		1.63e3	0.252		4.96						
26	26	PFDA	513 > 468.8		4.17e3	0.252		5.04						
27	33	PFUdA	563.0 > 518.9		5.56e3	0.252		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.252	105.884	4.75	4.75	1630	61.1509	123.1		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.252	105.884	4.75	4.75	1630	61.1509	123.1		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.252	105.884	4.75	4.75	1630	61.1509	123.1		
31	73	13C2-PFDA-EIS	515.1 > 469.9	4.17e3		0.252	263.358	5.04	5.04	4170	62.9478	126.7		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.56e3		0.252	362.134	5.37	5.37	5560	60.9999	122.8		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.56e3	0.252		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.56e3	0.252		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		3.01e3	0.252		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	3.01e3	0.252		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		6.12e3	0.252		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.56e3		0.252	231.747	5.19	5.19	3560	60.9784	122.7		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.56e3		0.252	231.747	5.19	5.19	3560	60.9784	122.7		
41	81	d5-N-EtFOSAA-EIS	589. > 419	3.01e3		0.252	219.903	5.34	5.35	3010	54.4650	109.6		
42	81	d5-N-EtFOSAA-EIS	589. > 419	3.01e3		0.252	219.903	5.34	5.35	3010	54.4650	109.6		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	6.12e3		0.252	458.130	5.64	5.65	6120	53.0615	106.8		
44	-1													
45	37	PFDoA	612.9 > 569.0		6.12e3	0.252		5.65						
46	39	PFTrDA	662.9 > 618.9		6.12e3	0.252		5.90						
47	41	PFTeDA	713.0 > 669.0		5.02e3	0.252		6.11						
48	1...	TDCA	498.3>106.9			0.252		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.30e3	1.30e3	0.252	1.000	1.27	1.28	12.5	49.6820	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	6.12e3		0.252	458.130	5.64	5.65	6120	53.0615	106.8		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	6.12e3		0.252	458.130	5.64	5.65	6120	53.0615	106.8		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	5.02e3		0.252	365.370	6.07	6.11	5020	54.6069	109.9		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.63e3		0.252	105.884	4.75	4.75	1630	61.1509	123.1		
54	1...	13C5-PFHxA	318.0 > 272.9	2.63e3	2.63e3	0.252	1.000	3.10	3.11	12.5	49.6820	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	6.95e2	6.95e2	0.252	1.000	3.86	3.86	12.5	49.6820	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	5.14e3	5.14e3	0.252	1.000	5.04	5.04	12.5	49.6820	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	6.48e3	6.48e3	0.252	1.000	5.36	5.37	12.5	49.6820	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.76e3	1.76e3	0.252	1.000	4.75	4.75	12.5	49.6820	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	4.31e3	4.31e3	0.252	1.000	4.66	4.67	12.5	49.6820	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

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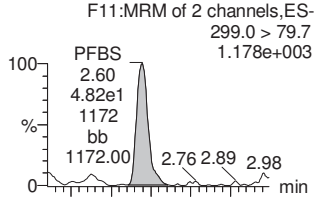
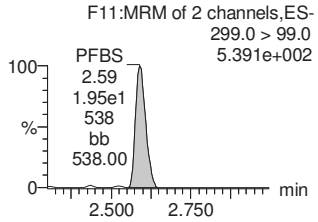
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

PFBS





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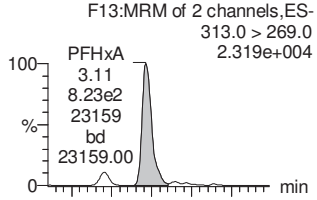

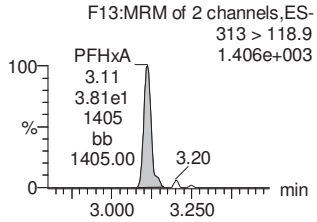

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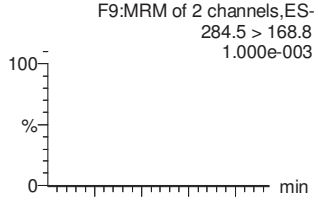

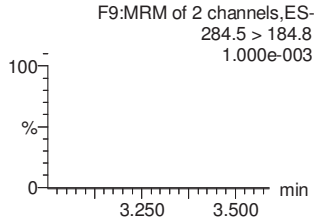

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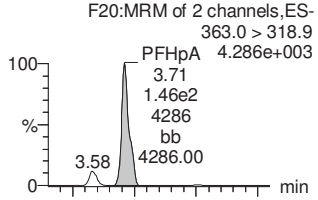

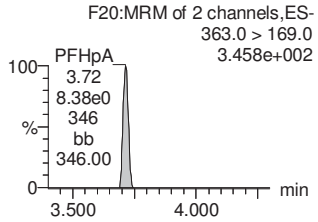

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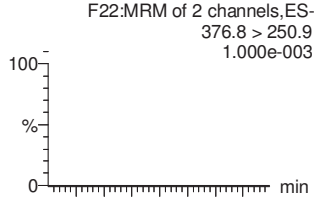

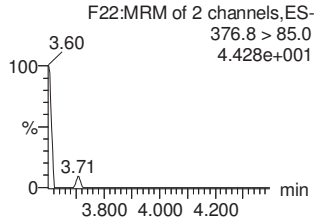

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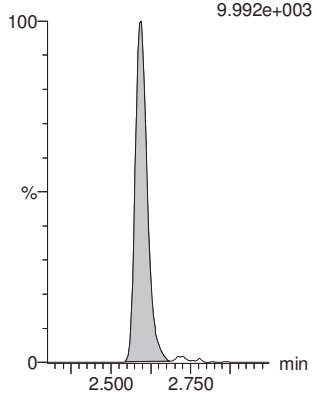

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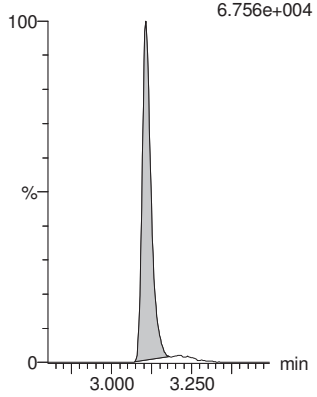

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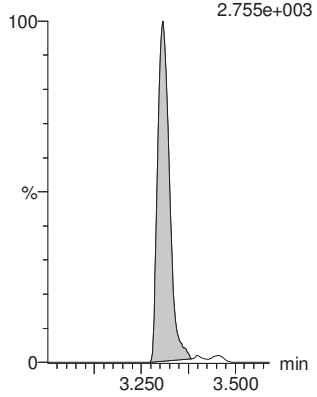

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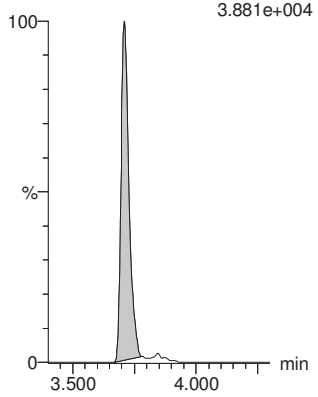

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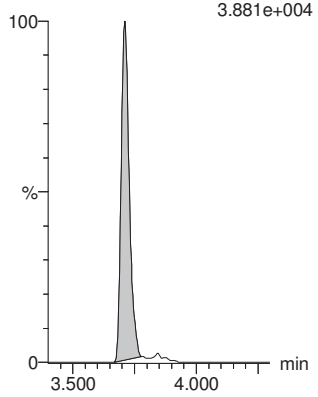

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

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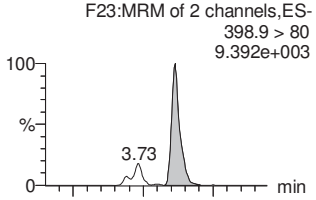

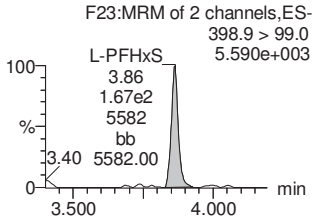

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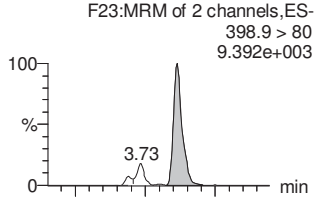

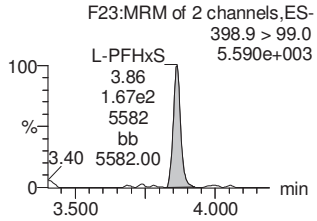

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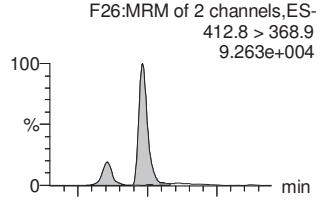

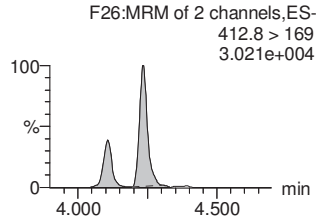

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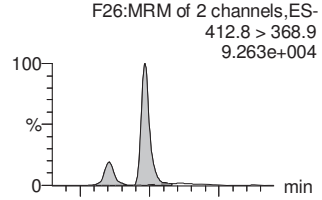

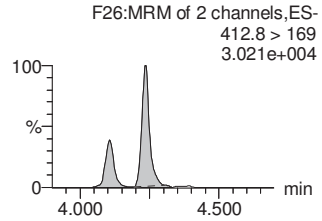

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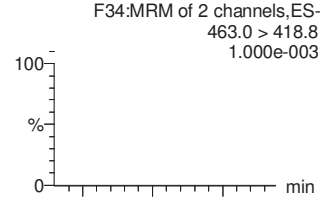

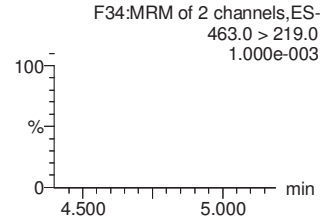

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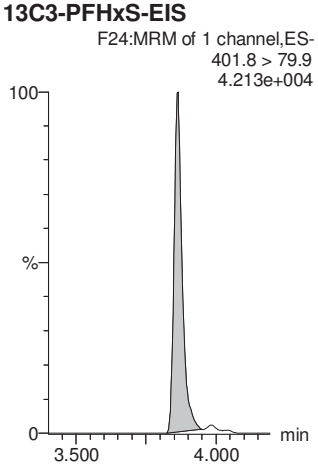

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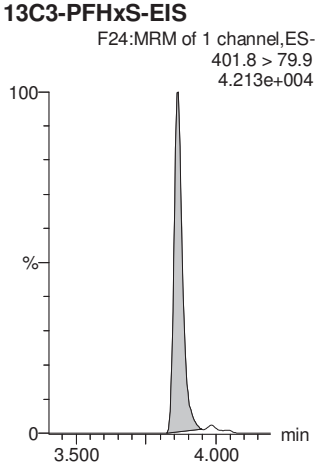

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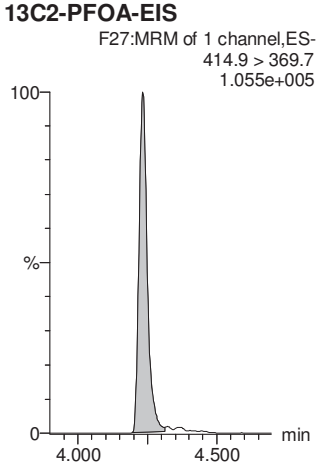

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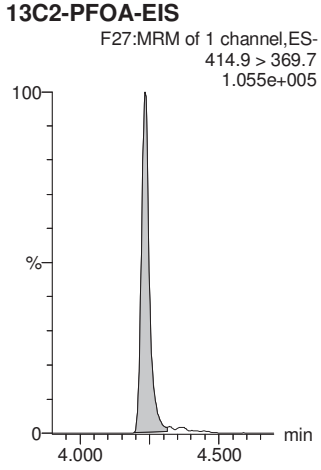

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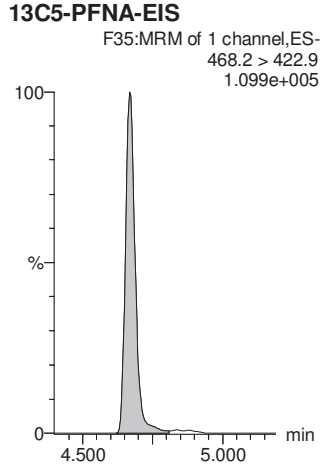


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

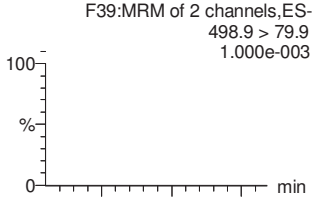
Review: AMR 2/18/2020

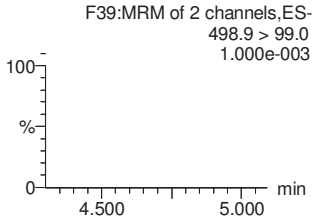
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

L-PFOS





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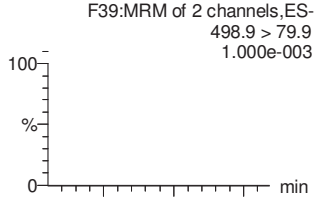

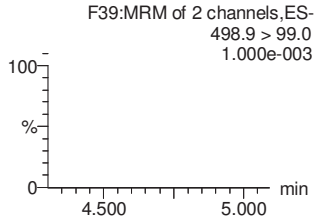

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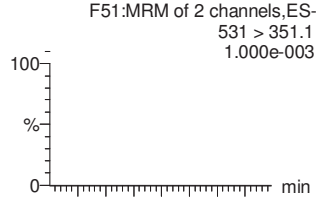

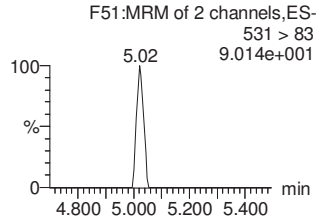

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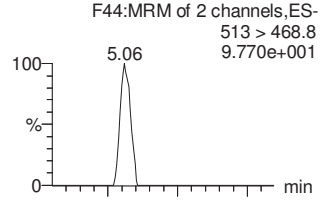

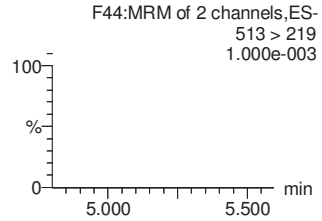

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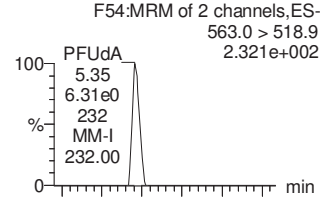

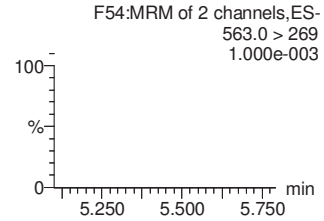

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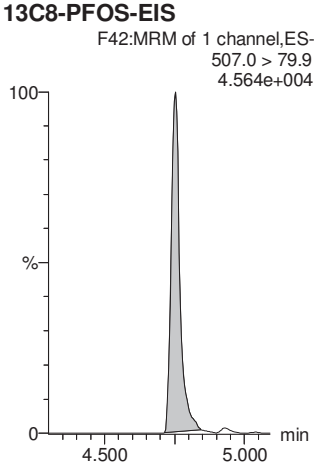

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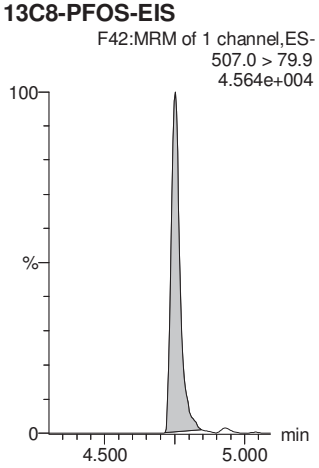

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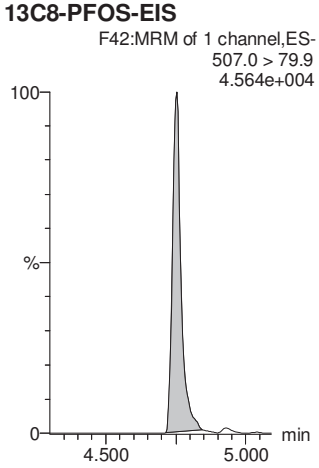

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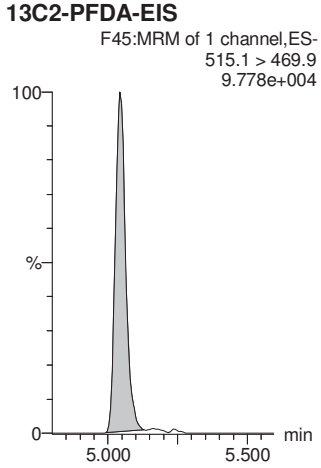

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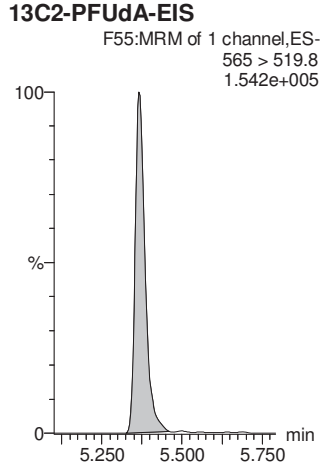

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
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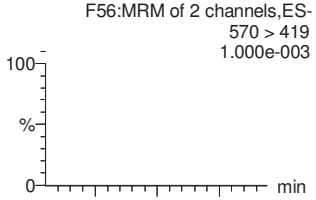
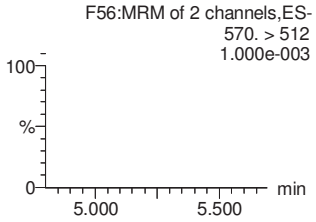
Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

L-MeFOSAA





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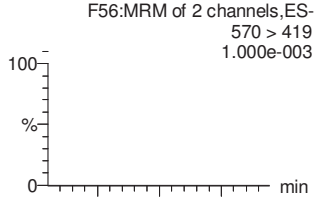

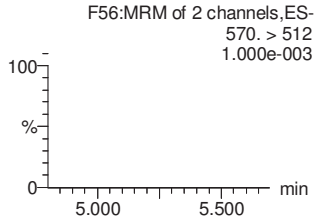

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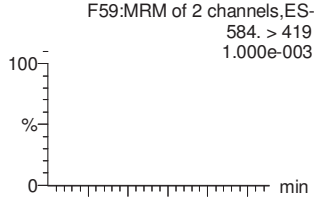

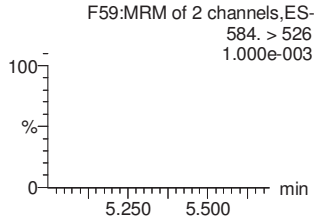

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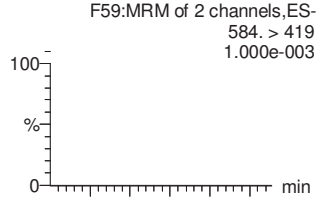

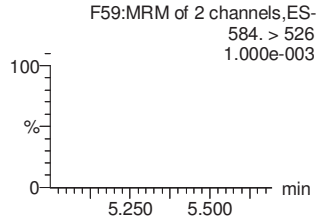

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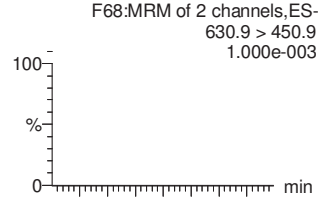
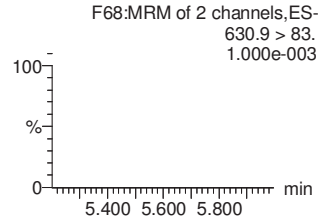
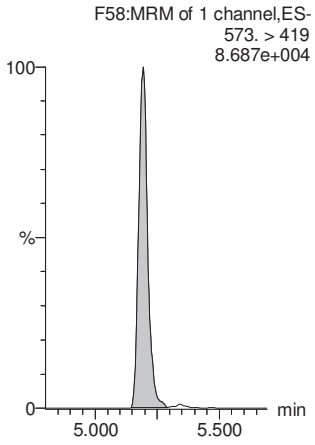




d3-N-MeFOSAA-EIS



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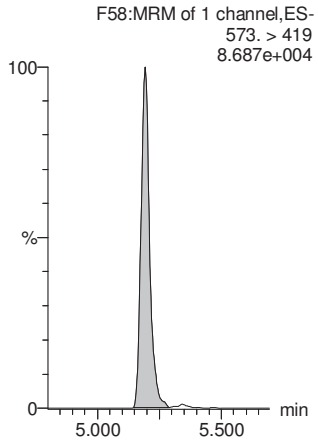

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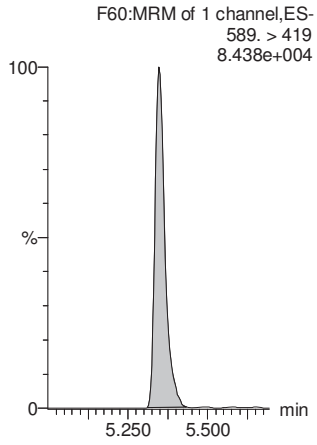

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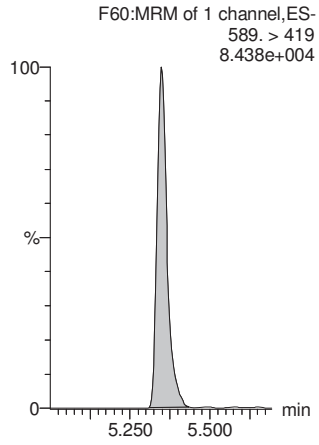

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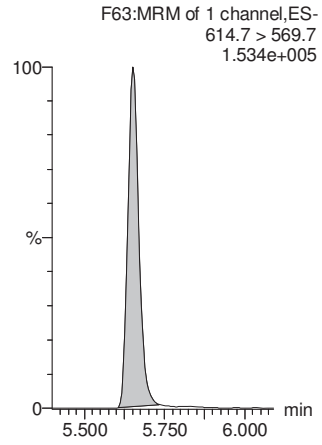


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

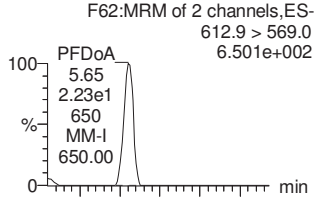
Review: AMR 2/18/2020

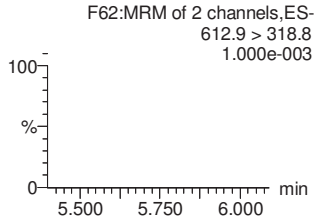
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

PFDoA





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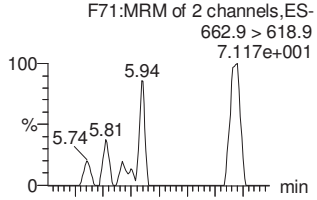
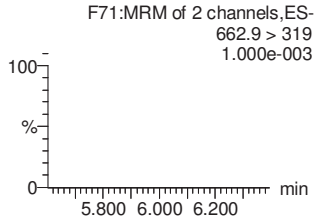
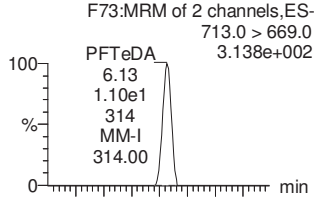
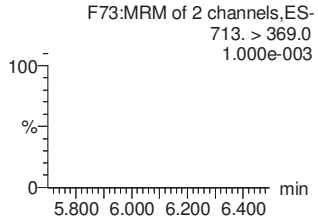




PFTeDA





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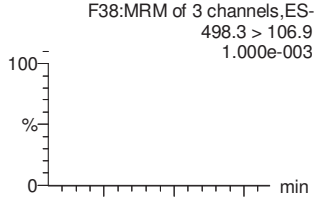
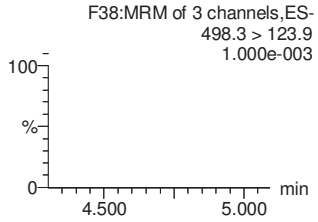
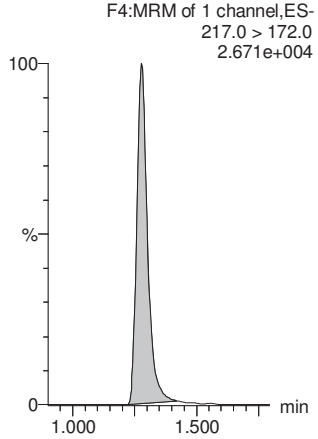
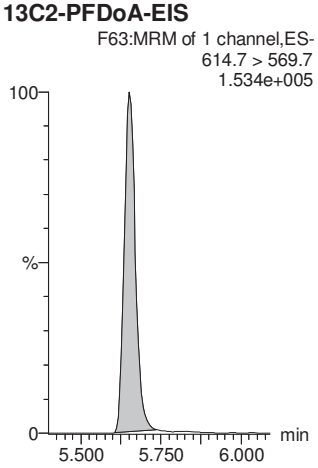




13C4-PFBA



13C2-PFDoA-EIS



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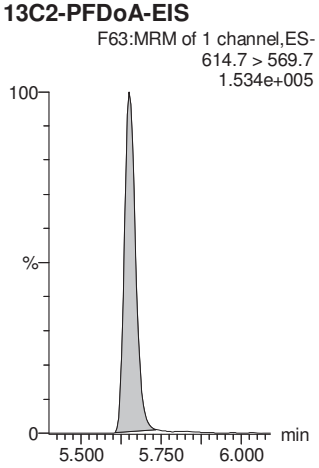
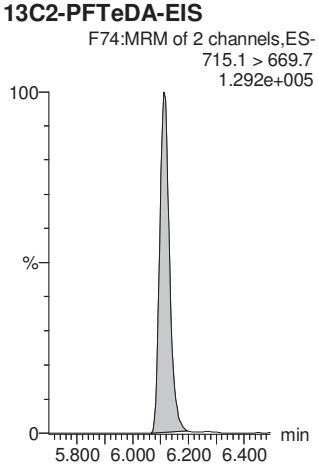
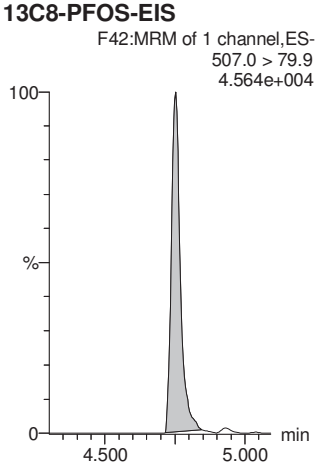


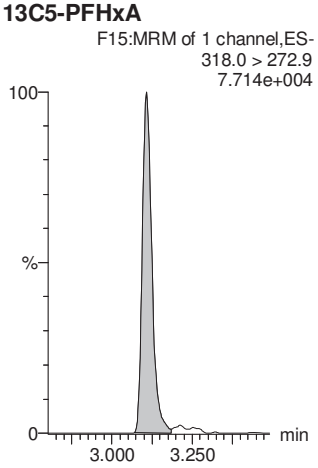
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

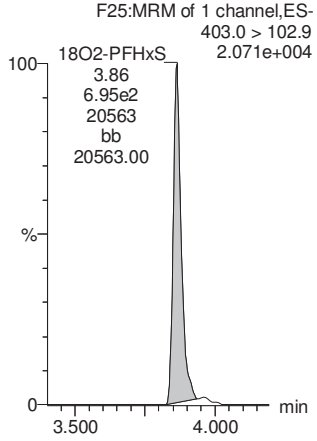
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_26.qld

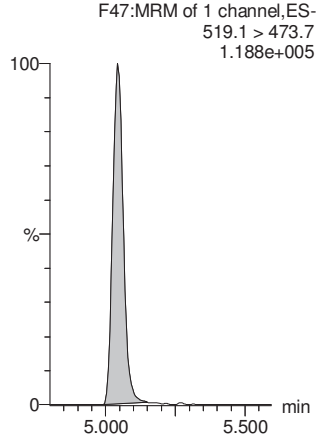
Last Altered: Friday, February 14, 2020 16:29:57 Pacific Standard Time
Printed: Friday, February 14, 2020 16:30:23 Pacific Standard Time

Name: 200212M2_26, Date: 12-Feb-2020, Time: 23:28:46, ID: 2000247-07 24-GW-24EX30B1-20200204 0.2516, Description: 24-GW-24EX30B1-20200204

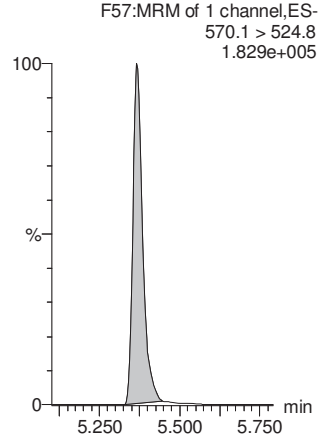
18O2-PFHxS



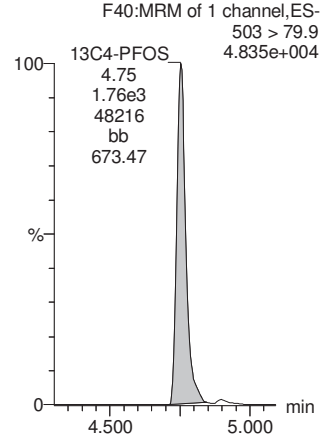
13C6-PFDA



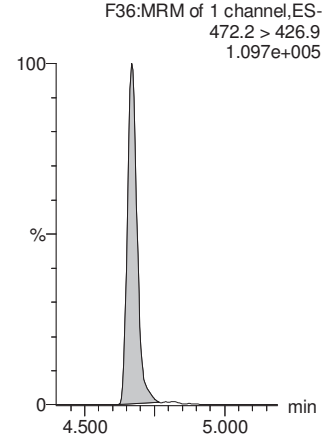
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

Last Altered: Tuesday, February 18, 2020 07:45:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:45:51 Pacific Standard Time

Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.83e3	3.17e2	0.249		2.60	2.59	72.2	123.9161		2.856	NO
2	7	PFHxA	313.0 > 269.0	1.15e4	1.60e3	0.249		3.11	3.11	90.1	335.1781		16.031	NO
3	9	HFPO-DA	284.5 > 168.8		7.34e1	0.249		3.31						
4	11	PFHpA	363.0 > 318.9	4.40e2	1.28e3	0.249		3.71	3.71	4.29	13.4813		10.695	NO
5	12	ADONA	376.8 > 250.9		1.28e3	0.249		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	3.17e2		0.249	23.482	2.66	2.60	317	54.3364	108.1		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.60e3		0.249	144.232	3.11	3.11	1600	44.5383	88.6		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	7.34e1		0.249	6.687	3.39	3.31	73.4	44.1218	87.8		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.28e3		0.249	95.340	3.74	3.71	1280	54.0206	107.4		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.28e3		0.249	95.340	3.74	3.71	1280	54.0206	107.4		
11	-1													
12	13	L-PFHxS	398.9 > 80	6.35e2	1.02e3	0.249		3.86	3.86	7.77	29.8535		2.204	NO
13	1...	Total PFHxS	398.9 > 80	6.35e2	1.02e3	0.249		3.83		7.77	29.8535			
14	16	L-PFOA	412.8 > 368.9	7.90e3	2.56e3	0.249		4.23	4.23	38.6	106.6911		2.921	NO
15	1...	Total PFOA	412.8 > 368.9	7.90e3	2.56e3	0.249		4.20		38.6	106.6911			
16	21	PFNA	463.0 > 418.8		3.22e3	0.249		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.02e3		0.249	88.291	3.86	3.86	1020	46.5535	92.6		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.02e3		0.249	88.291	3.86	3.86	1020	46.5535	92.6		
19	69	13C2-PFOA-EIS	414.9 > 369.7	2.56e3		0.249	220.187	4.23	4.23	2560	46.6774	92.8		
20	69	13C2-PFOA-EIS	414.9 > 369.7	2.56e3		0.249	220.187	4.23	4.23	2560	46.6774	92.8		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.22e3		0.249	262.826	4.67	4.67	3220	49.2707	98.0		
22	-1													
23	23	L-PFOS	498.9 > 79.9	2.04e1	1.16e3	0.249		4.76	4.75	0.219	0.7587		2.663	NO
24	1...	Total PFOS	498.9 > 79.9	2.04e1	1.16e3	0.249		4.73		0.219	0.7587			
25	25	9Cl-PF30NS	531 > 351.1		1.16e3	0.249		4.97						
26	26	PFDA	513 > 468.8		3.13e3	0.249		5.04						
27	33	PFUdA	563.0 > 518.9		4.13e3	0.249		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.16e3		0.249	105.884	4.75	4.76	1160	44.1288	87.8		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.16e3		0.249	105.884	4.75	4.76	1160	44.1288	87.8		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.16e3		0.249	105.884	4.75	4.76	1160	44.1288	87.8		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.13e3		0.249	263.358	5.04	5.04	3130	47.7552	95.0		
32	79	13C2-PFUdA-EIS	565 > 519.8	4.13e3		0.249	362.134	5.36	5.37	4130	45.8447	91.2		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.90e3	0.249		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	2.90e3	0.249		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		2.42e3	0.249		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

Last Altered: Tuesday, February 18, 2020 07:45:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:45:51 Pacific Standard Time

Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	2.42e3	0.249		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		5.00e3	0.249		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	2.90e3		0.249	231.747	5.19	5.19	2900	50.2572	100.0		
40	77	d3-N-MeFOSAA-EIS	573. > 419	2.90e3		0.249	231.747	5.19	5.19	2900	50.2572	100.0		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.42e3		0.249	219.903	5.33	5.35	2420	44.2938	88.1		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.42e3		0.249	219.903	5.33	5.35	2420	44.2938	88.1		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	5.00e3		0.249	458.130	5.63	5.65	5000	43.8765	87.3		
44	-1													
45	37	PFDoA	612.9 > 569.0		5.00e3	0.249		5.65						
46	39	PFTrDA	662.9 > 618.9		5.00e3	0.249		5.90						
47	41	PFTeDA	713.0 > 669.0		3.40e3	0.249		6.11						
48	1...	TDCA	498.3>106.9			0.249		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.02e3	1.02e3	0.249	1.000	1.27	1.28	12.5	50.2775	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	5.00e3		0.249	458.130	5.63	5.65	5000	43.8765	87.3		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	5.00e3		0.249	458.130	5.63	5.65	5000	43.8765	87.3		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	3.40e3		0.249	365.370	6.07	6.11	3400	37.4801	74.5		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.16e3		0.249	105.884	4.75	4.76	1160	44.1288	87.8		
54	1...	13C5-PFHxA	318.0 > 272.9	1.78e3	1.78e3	0.249	1.000	3.10	3.11	12.5	50.2775	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.11e2	5.11e2	0.249	1.000	3.86	3.86	12.5	50.2775	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	3.81e3	3.81e3	0.249	1.000	5.04	5.04	12.5	50.2775	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	5.36e3	5.36e3	0.249	1.000	5.36	5.36	12.5	50.2775	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.31e3	1.31e3	0.249	1.000	4.75	4.75	12.5	50.2775	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.28e3	3.28e3	0.249	1.000	4.66	4.67	12.5	50.2775	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

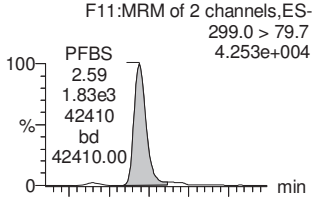
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

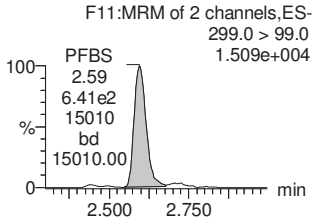
Last Altered: Tuesday, February 18, 2020 07:45:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:45:51 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

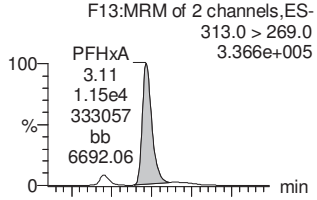
Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

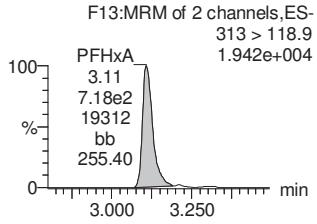
PFBS



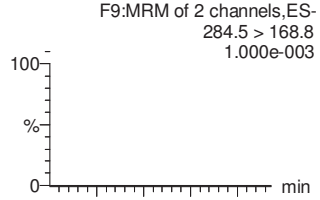


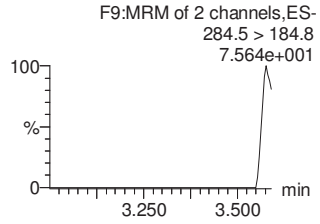
PFHxA



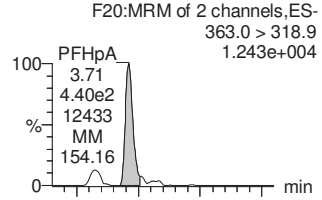


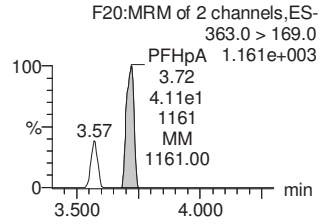
HFPO-DA



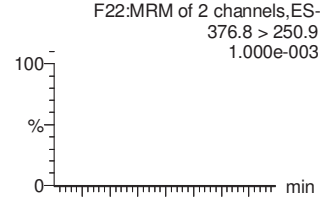


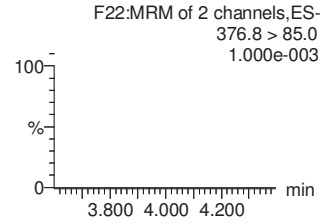
PFHpA



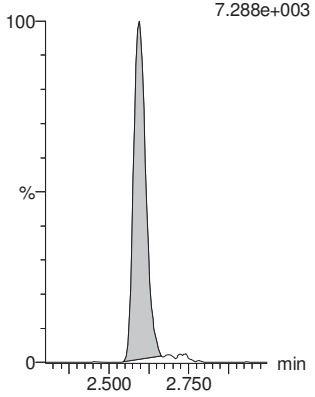


ADONA





13C3-PFBS-EIS



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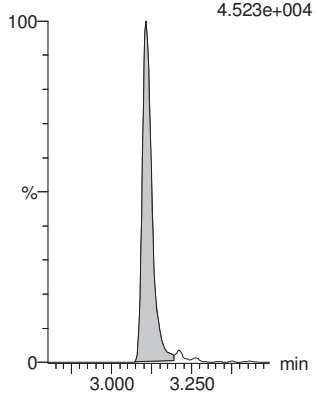

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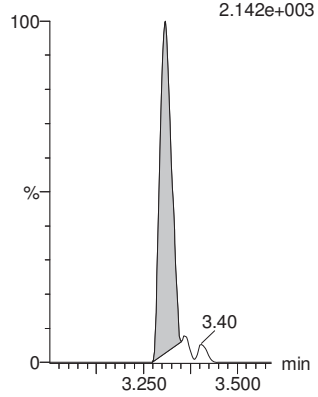

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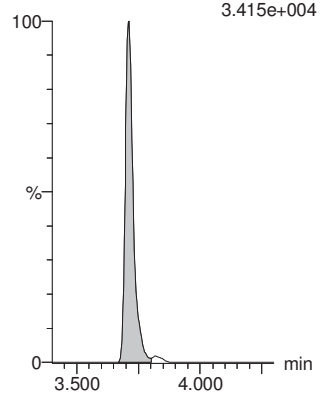

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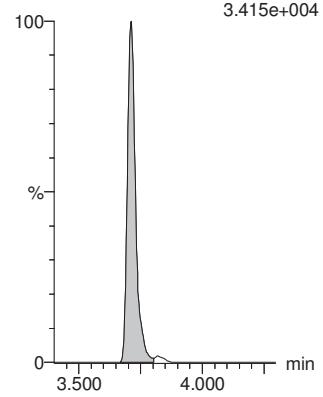

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

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Printed: Tuesday, February 18, 2020 07:45:51 Pacific Standard Time

Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

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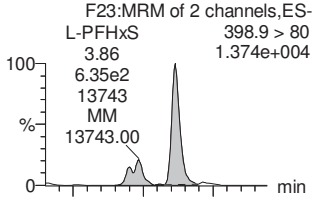

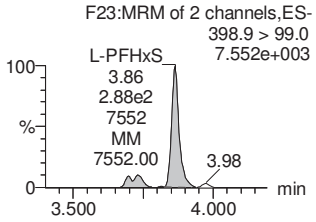

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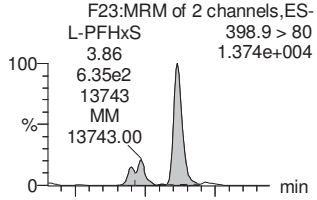

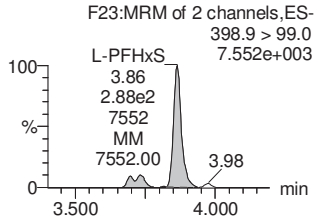

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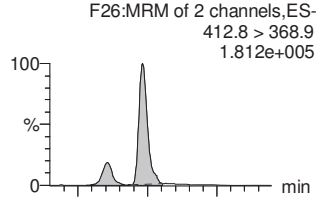

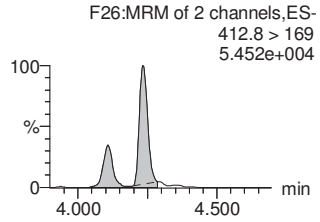

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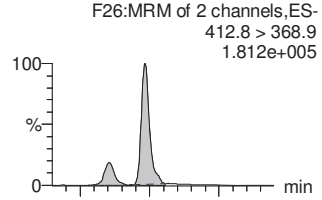

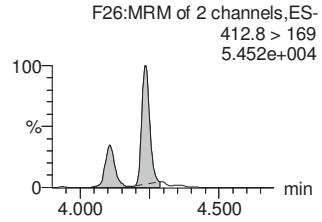

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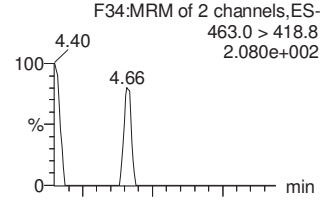

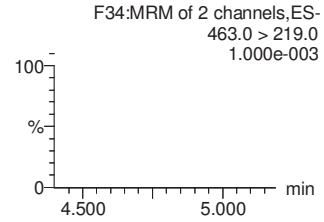

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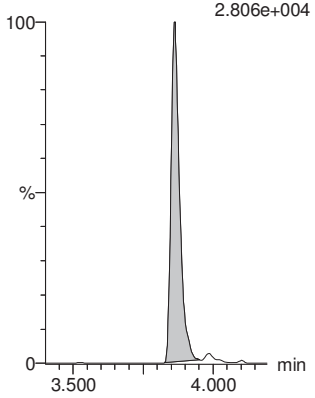

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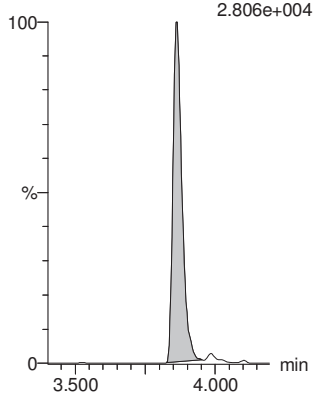

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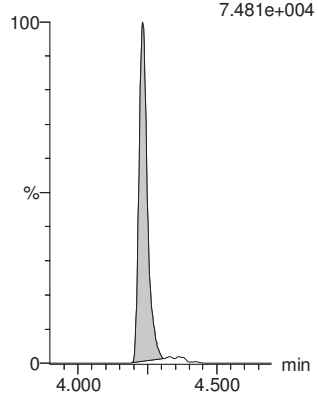

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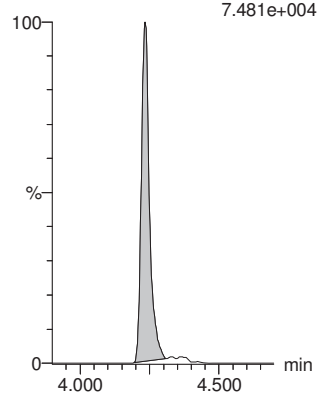

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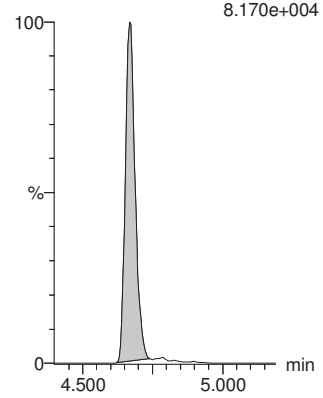

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

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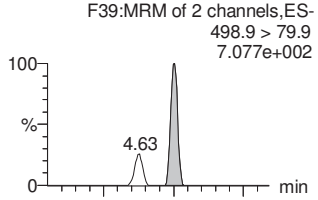
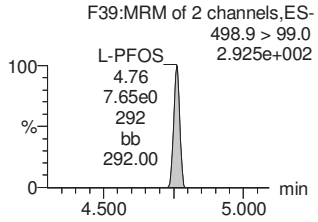
Printed: Tuesday, February 18, 2020 07:45:51 Pacific Standard Time

Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

L-PFOS





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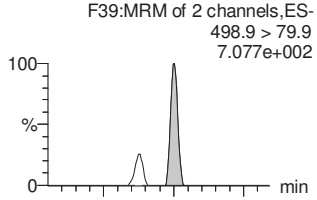

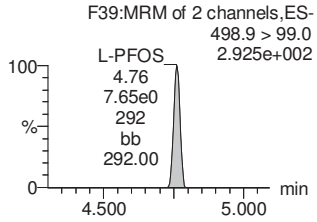

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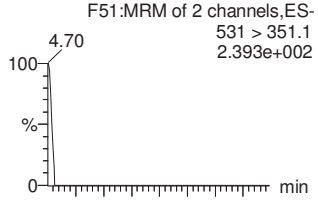

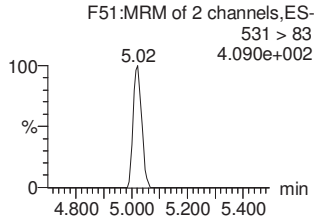

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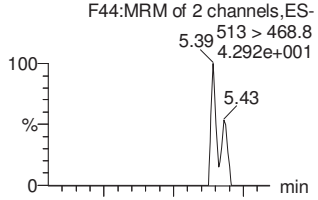

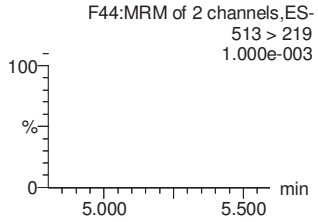

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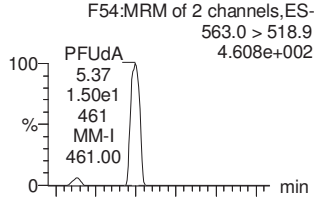

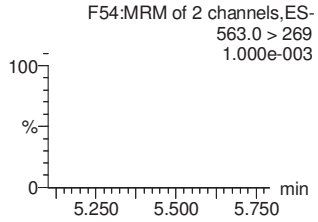

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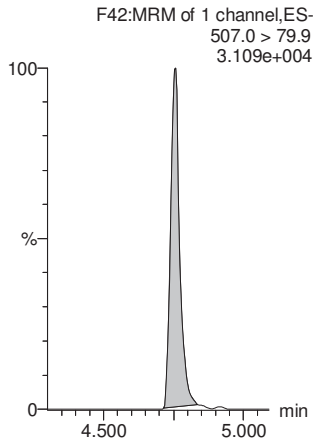

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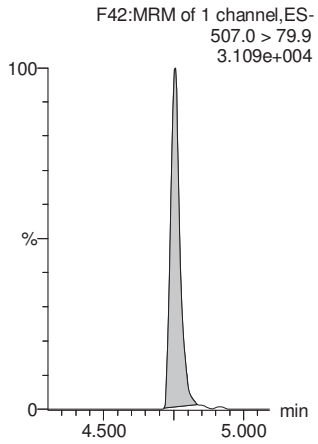

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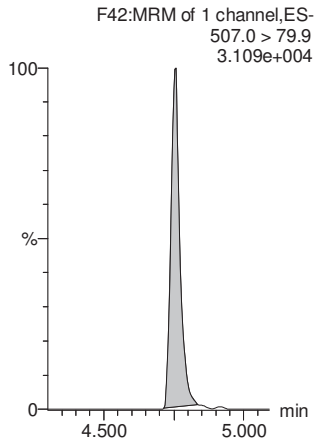

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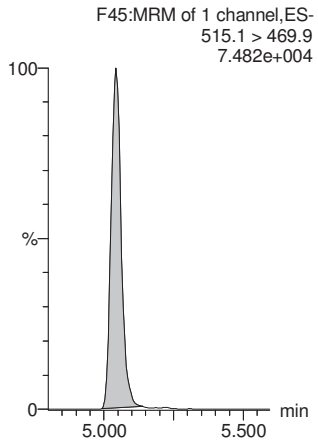

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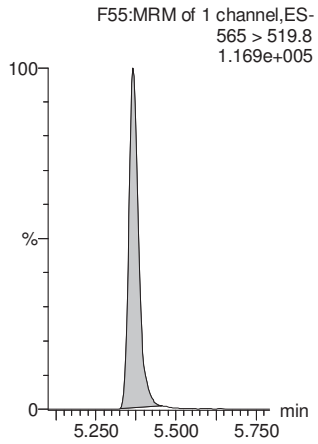

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

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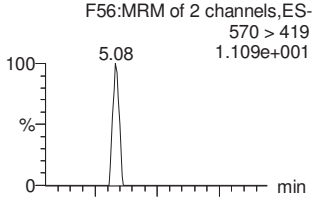
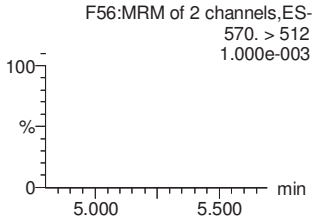
Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

L-MeFOSAA





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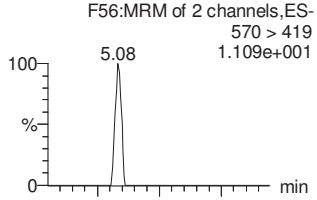

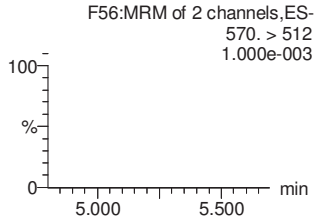

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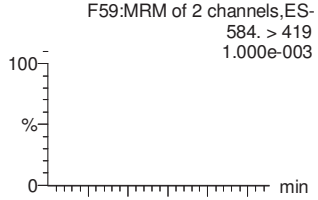

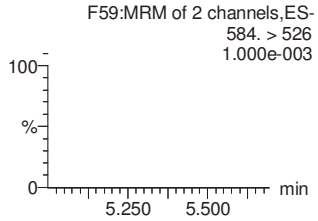

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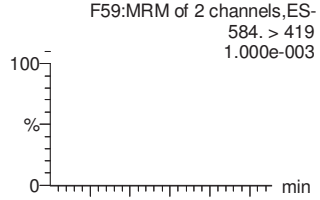

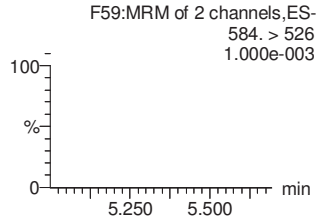

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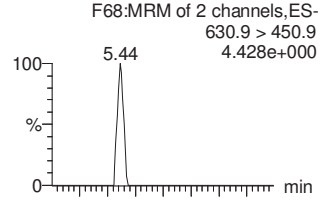
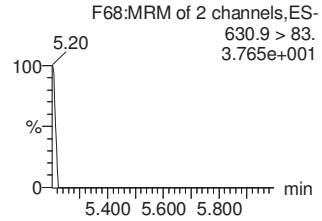
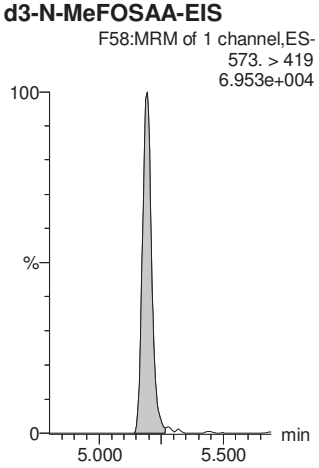




d3-N-MeFOSAA-EIS



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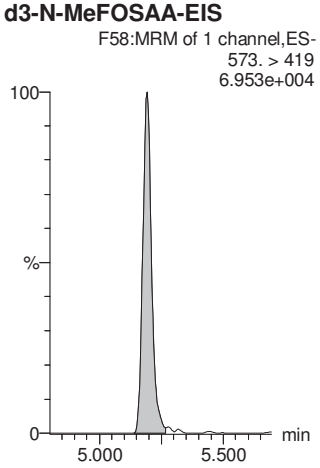

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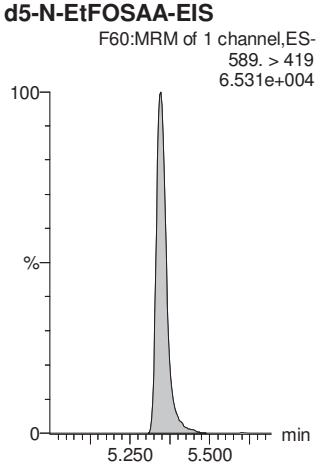

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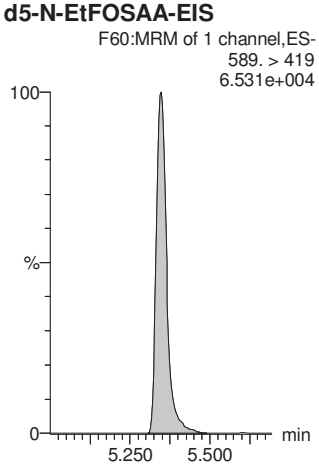

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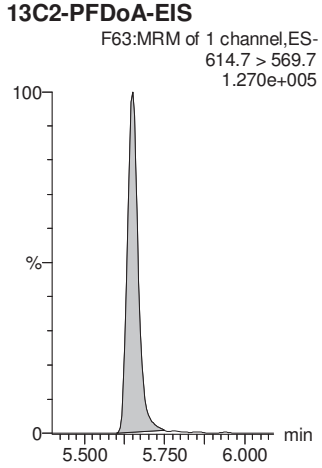

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

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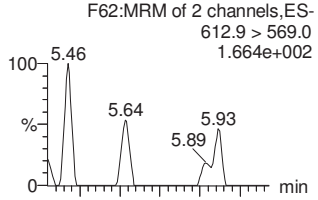
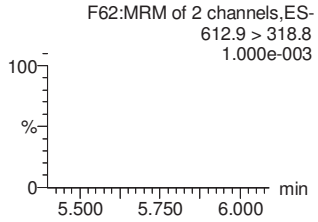
Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

PFDoA





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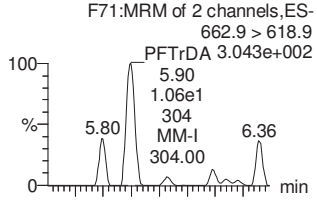
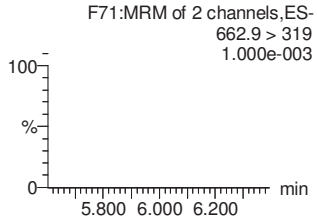
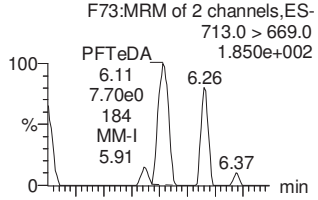
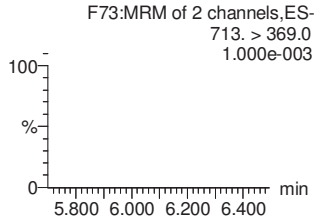




PFTeDA





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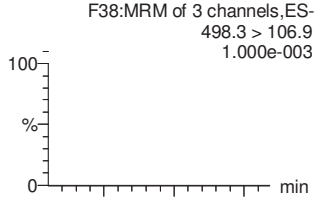
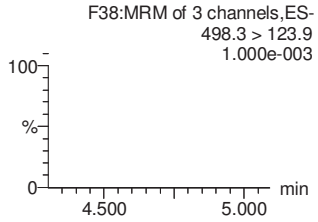
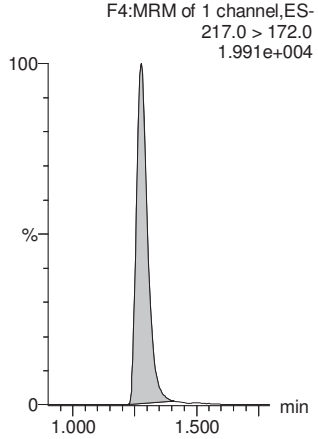
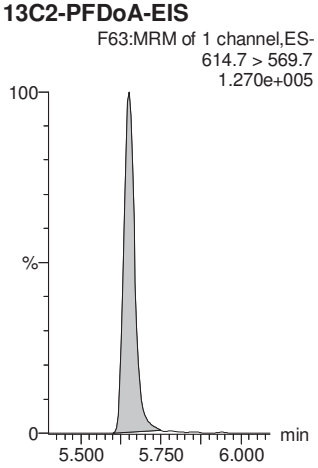




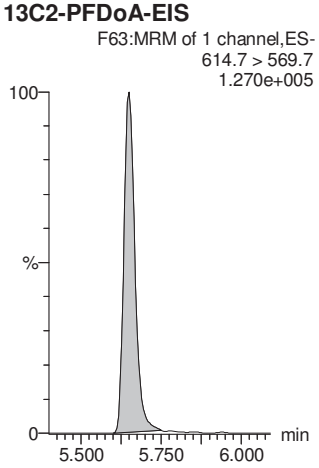
13C4-PFBA



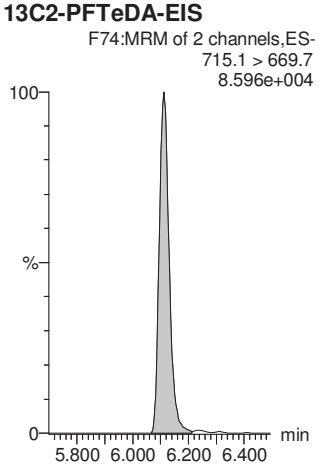
13C2-PFDoA-EIS



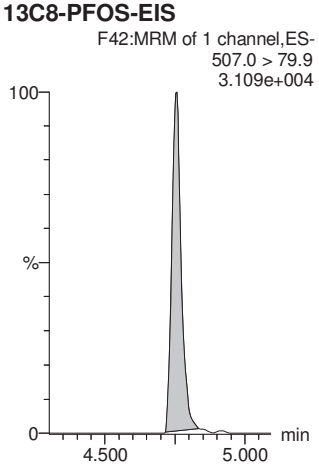
13C2-PFDoA-EIS



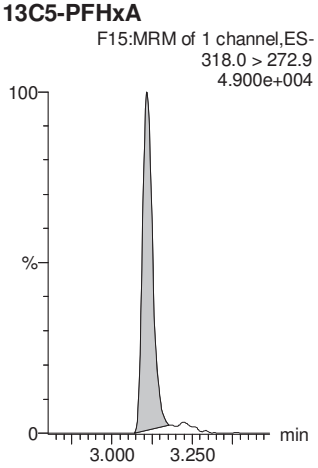
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

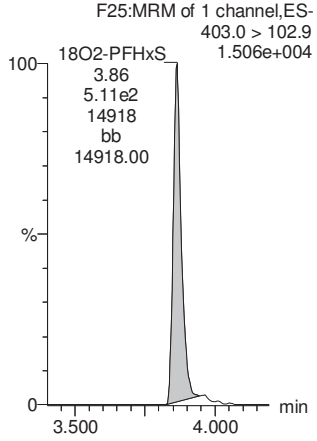
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_27.qld

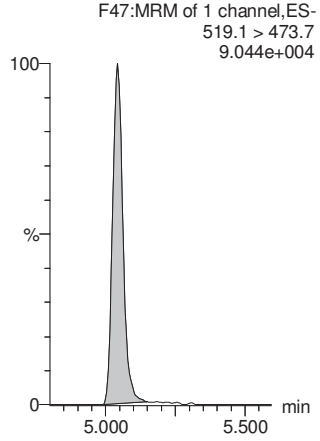
Last Altered: Tuesday, February 18, 2020 07:45:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:45:51 Pacific Standard Time

Name: 200212M2_27, Date: 12-Feb-2020, Time: 23:39:08, ID: 2000247-08 24-GW-24NEW7-20200204 0.24862, Description: 24-GW-24NEW7-20200204

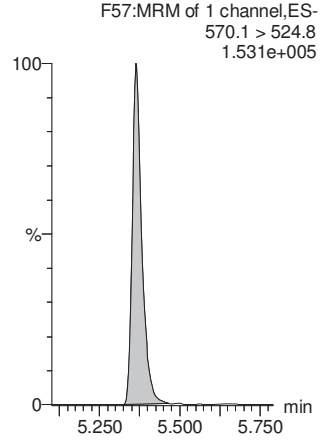
18O2-PFHxS



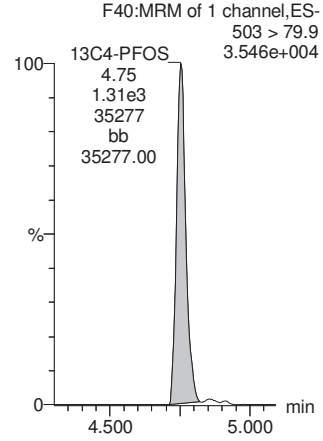
13C6-PFDA



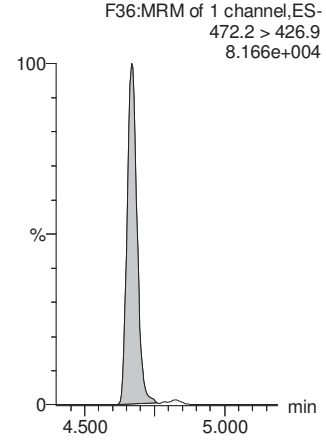
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:50:32 Pacific Standard Time

Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.43e3	2.95e2	0.264		2.60	2.59	60.5	97.9457		2.988	NO
2	7	PFHxA	313.0 > 269.0	1.02e4	1.57e3	0.264		3.11	3.11	80.9	283.8080		16.334	NO
3	9	HFPO-DA	284.5 > 168.8		8.14e1	0.264		3.30						
4	11	PFHpA	363.0 > 318.9	7.97e2	1.13e3	0.264		3.71	3.71	8.82	25.8701		11.668	NO
5	12	ADONA	376.8 > 250.9		1.13e3	0.264		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	2.95e2		0.264	23.482	2.66	2.60	295	47.7033	100.6		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.57e3		0.264	144.232	3.11	3.11	1570	41.2983	87.1		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	8.14e1		0.264	6.687	3.39	3.30	81.4	46.1331	97.3		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.13e3		0.264	95.340	3.74	3.71	1130	44.9055	94.7		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.13e3		0.264	95.340	3.74	3.71	1130	44.9055	94.7		
11	-1													
12	13	L-PFHxS	398.9 > 80	1.54e3	1.01e3	0.264		3.86	3.86	19.0	68.2278		1.932	NO
13	1...	Total PFHxS	398.9 > 80	1.54e3	1.01e3	0.264		3.83		19.0	68.2278			
14	16	L-PFOA	412.8 > 368.9	7.95e3	2.39e3	0.264		4.23	4.23	41.6	108.3744		3.017	NO
15	1...	Total PFOA	412.8 > 368.9	7.95e3	2.39e3	0.264		4.20		41.6	108.3744			
16	21	PFNA	463.0 > 418.8		3.16e3	0.264		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.01e3		0.264	88.291	3.86	3.86	1010	43.3571	91.5		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.01e3		0.264	88.291	3.86	3.86	1010	43.3571	91.5		
19	69	13C2-PFOA-EIS	414.9 > 369.7	2.39e3		0.264	220.187	4.23	4.23	2390	41.1324	86.8		
20	69	13C2-PFOA-EIS	414.9 > 369.7	2.39e3		0.264	220.187	4.23	4.23	2390	41.1324	86.8		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.16e3		0.264	262.826	4.67	4.67	3160	45.5640	96.1		
22	-1													
23	23	L-PFOS	498.9 > 79.9	1.79e1	1.18e3	0.264		4.75	4.75	0.190	0.6210		3.178	NO
24	1...	Total PFOS	498.9 > 79.9	1.79e1	1.18e3	0.264		4.73		0.190	0.6210			
25	25	9Cl-PF30NS	531 > 351.1		1.18e3	0.264		4.96						
26	26	PFDA	513 > 468.8	1.70e2	2.93e3	0.264		5.04	5.04	0.727	2.1709		4.115	NO
27	33	PFUdA	563.0 > 518.9	4.81e1	3.10e3	0.264		5.37	5.37	0.194	0.6750		6.931	NO
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.18e3		0.264	105.884	4.75	4.75	1180	42.1364	88.9		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.18e3		0.264	105.884	4.75	4.75	1180	42.1364	88.9		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.18e3		0.264	105.884	4.75	4.75	1180	42.1364	88.9		
31	73	13C2-PFDA-EIS	515.1 > 469.9	2.93e3		0.264	263.358	5.04	5.04	2930	42.1589	88.9		
32	79	13C2-PFUdA-EIS	565 > 519.8	3.10e3		0.264	362.134	5.37	5.37	3100	32.4111	68.4		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.12e3	0.264		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	2.12e3	0.264		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		1.84e3	0.264		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:50:32 Pacific Standard Time

Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	1.84e3	0.264		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		2.46e3	0.264		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	2.12e3		0.264	231.747	5.19	5.19	2120	34.6854	73.2		
40	77	d3-N-MeFOSAA-EIS	573. > 419	2.12e3		0.264	231.747	5.19	5.19	2120	34.6854	73.2		
41	81	d5-N-EtFOSAA-EIS	589. > 419	1.84e3		0.264	219.903	5.34	5.35	1840	31.7021	66.9		
42	81	d5-N-EtFOSAA-EIS	589. > 419	1.84e3		0.264	219.903	5.34	5.35	1840	31.7021	66.9		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	2.46e3		0.264	458.130	5.64	5.65	2460	20.3788	43.0		
44	-1													
45	37	PFDoA	612.9 > 569.0	1.69e2	2.46e3	0.264		5.65	5.65	0.859	2.8087		10.598	NO
46	39	PFTrDA	662.9 > 618.9	2.46e2	2.46e3	0.264		5.90	5.90	1.25	3.4900		21.063	NO
47	41	PFTeDA	713.0 > 669.0	2.15e2	1.80e3	0.264		6.11	6.11	1.49	3.9506		13.250	NO
48	1...	TDCA	498.3>106.9			0.264		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.06e3	1.06e3	0.264	1.000	1.27	1.27	12.5	47.3988	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	2.46e3		0.264	458.130	5.64	5.65	2460	20.3788	43.0		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	2.46e3		0.264	458.130	5.64	5.65	2460	20.3788	43.0		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.80e3		0.264	365.370	6.07	6.11	1800	18.6463	39.3		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.18e3		0.264	105.884	4.75	4.75	1180	42.1364	88.9		
54	1...	13C5-PFHxA	318.0 > 272.9	1.91e3	1.91e3	0.264	1.000	3.10	3.11	12.5	47.3988	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.84e2	5.84e2	0.264	1.000	3.86	3.86	12.5	47.3988	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.16e3	4.16e3	0.264	1.000	5.04	5.04	12.5	47.3988	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	5.43e3	5.43e3	0.264	1.000	5.36	5.37	12.5	47.3988	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.50e3	1.50e3	0.264	1.000	4.75	4.75	12.5	47.3988	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.35e3	3.35e3	0.264	1.000	4.66	4.67	12.5	47.3988	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

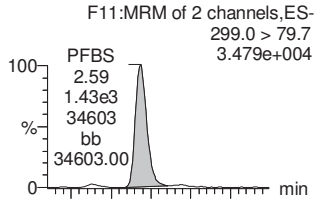
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

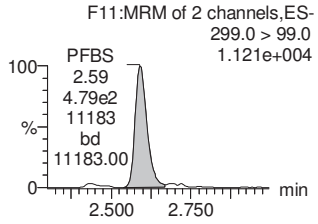
Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:50:32 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

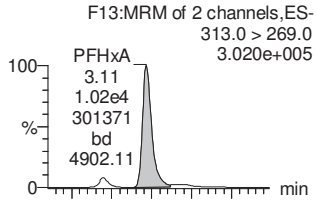
Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

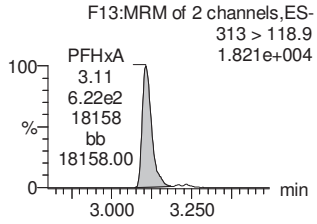
PFBS



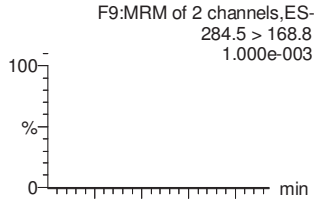


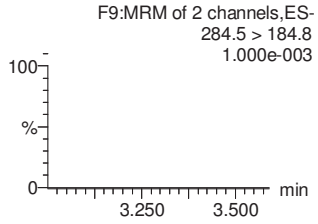
PFHxA



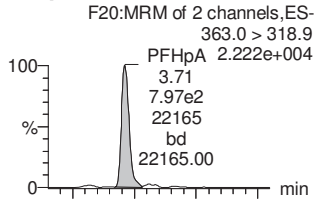


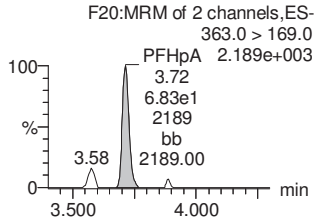
HFPO-DA



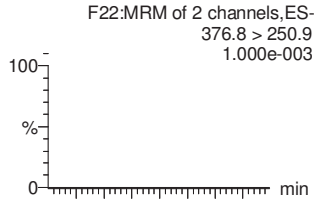


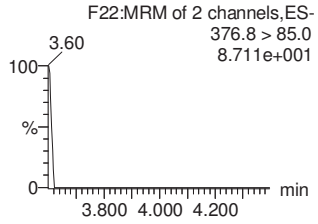
PFHpA



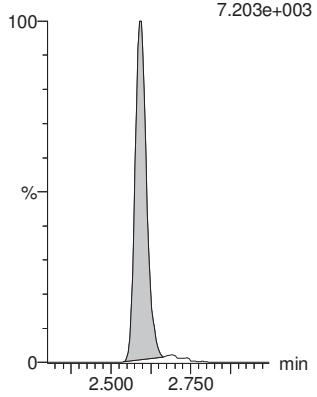


ADONA





13C3-PFBS-EIS



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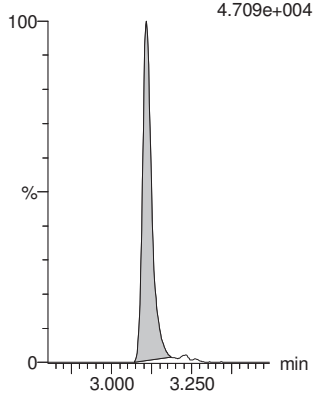

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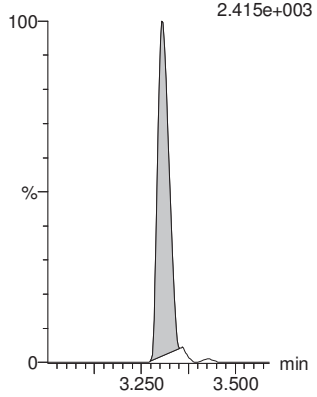

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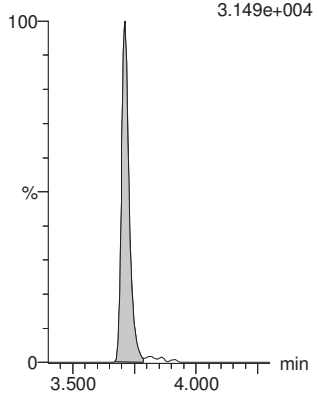

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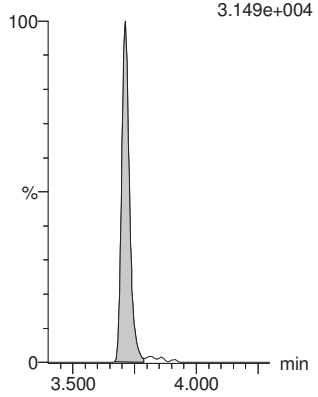


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

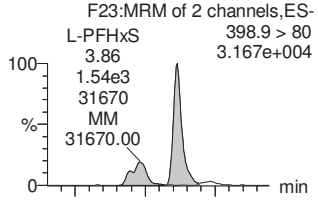
Review: AMR 2/18/2020

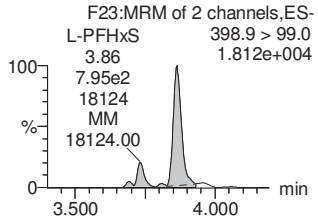
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:50:32 Pacific Standard Time

Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

L-PFHxS





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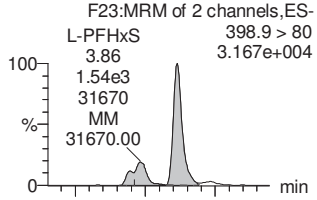

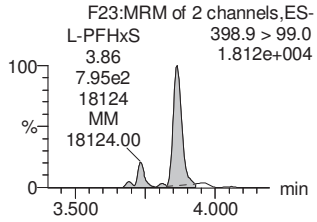

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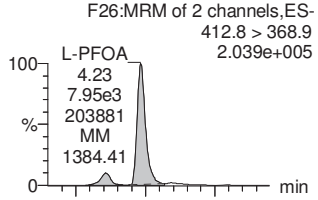

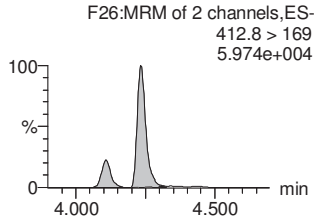

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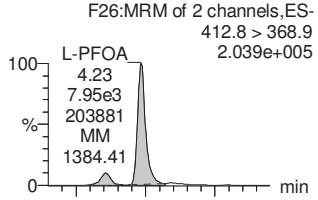

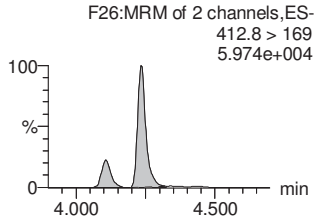

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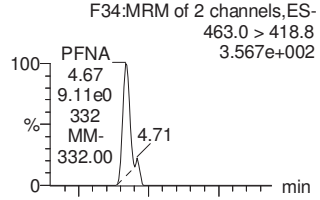

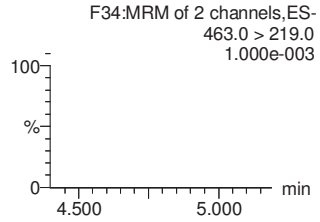

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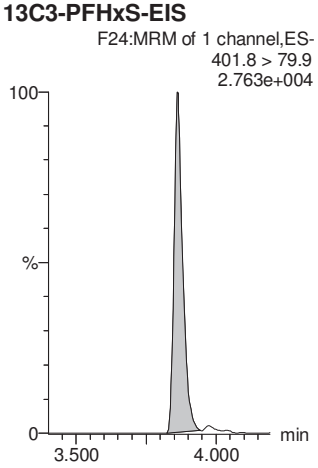

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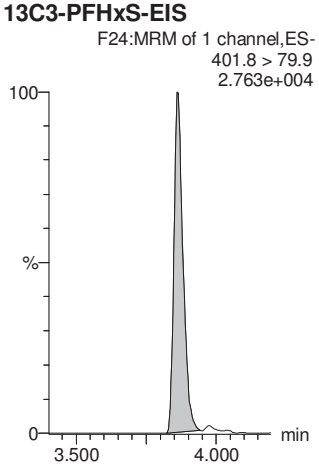

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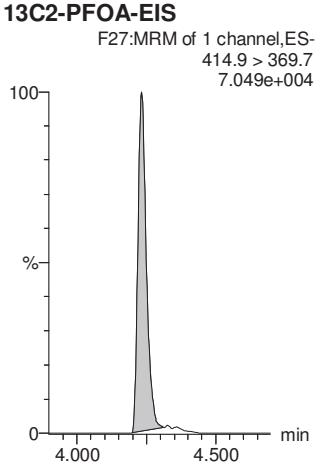

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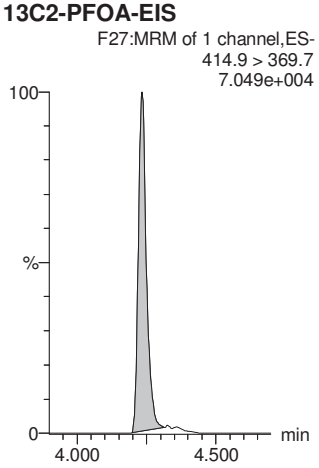

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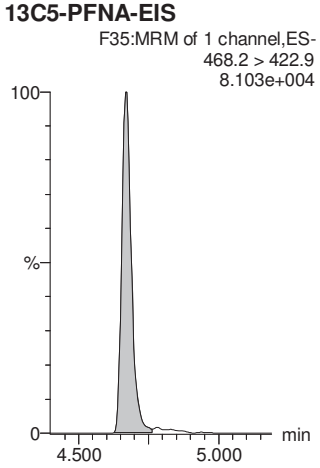

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
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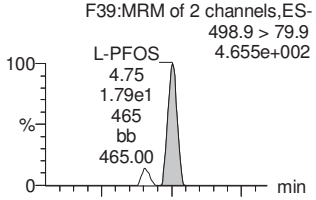
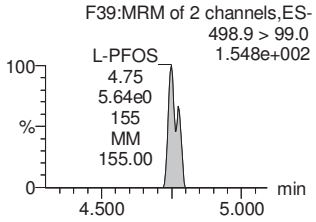
Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

L-PFOS





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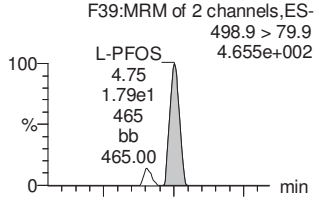

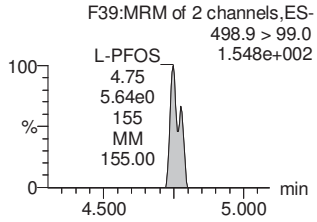

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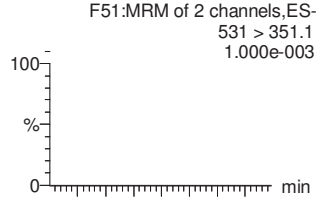

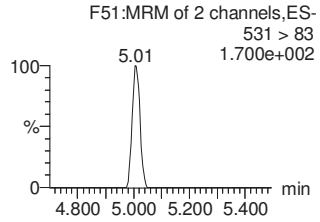

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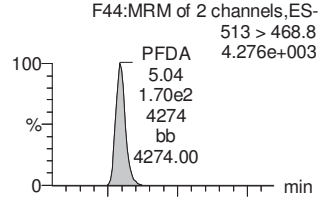

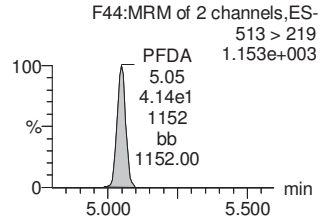

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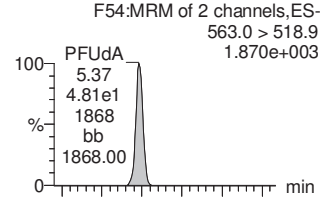

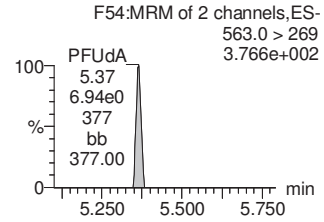

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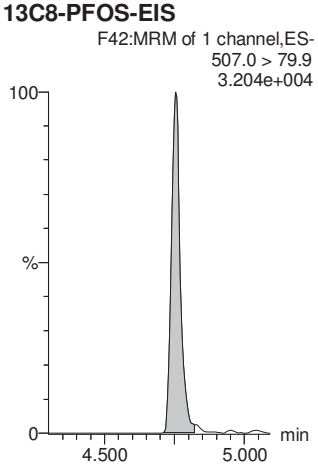

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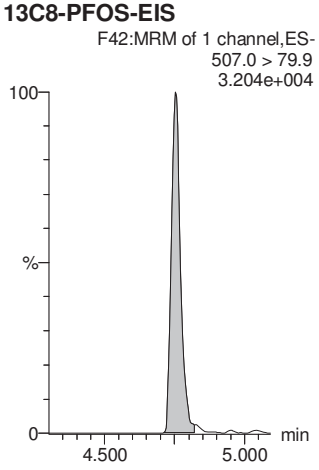

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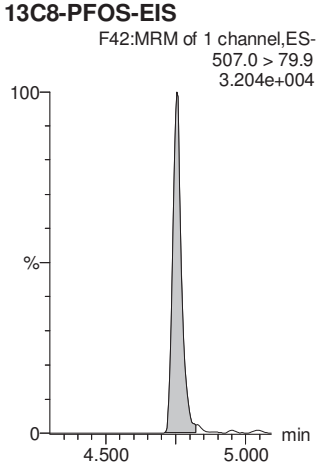

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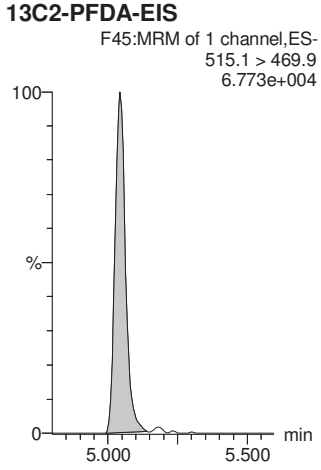

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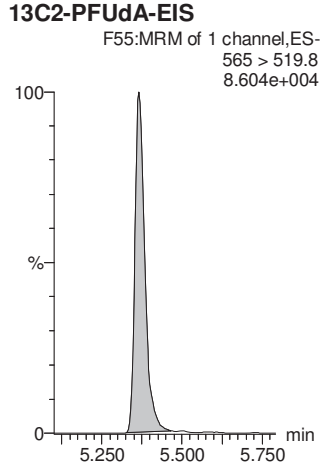

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
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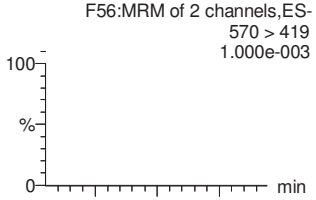
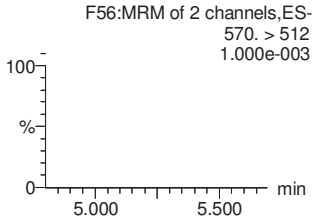
Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

L-MeFOSAA





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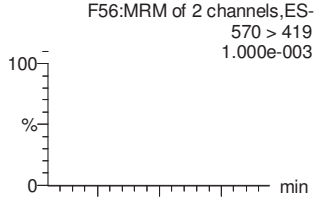
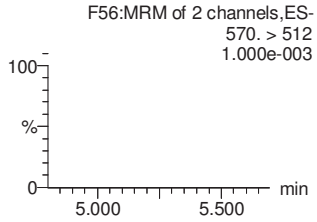
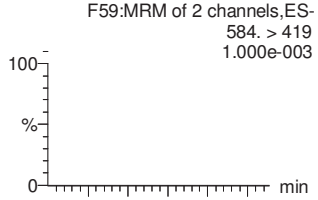
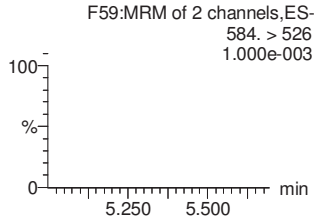




L-EtFOSAA





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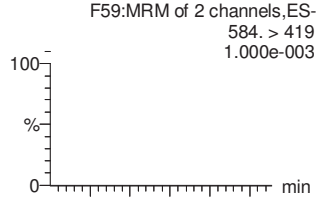

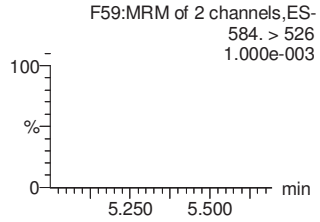

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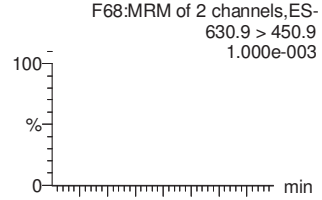

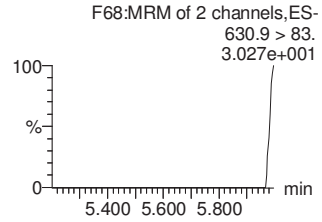

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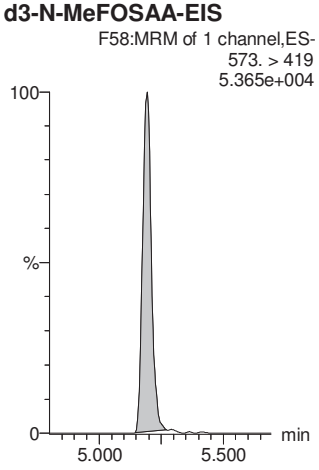

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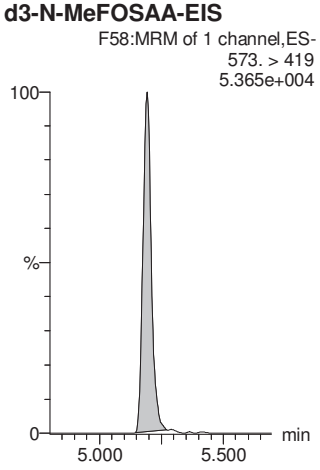

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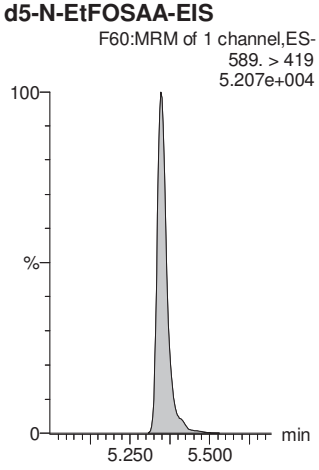

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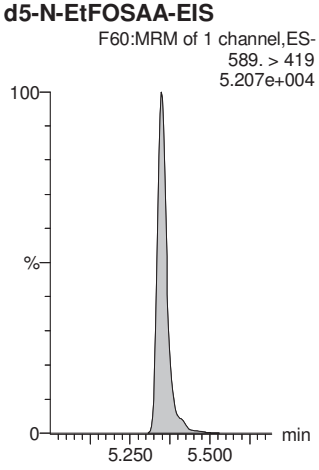

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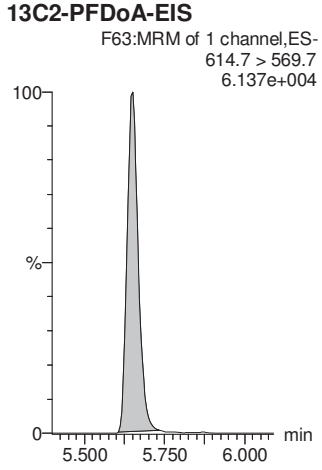

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

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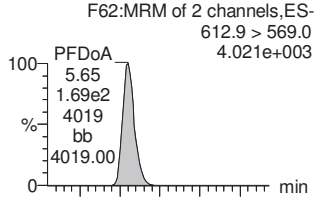
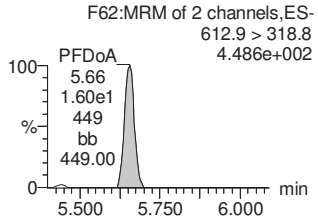
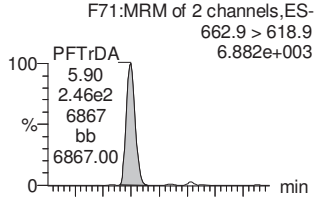
Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

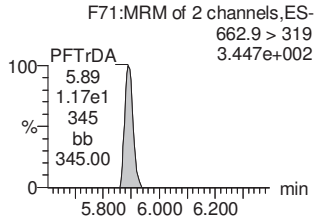
PFDoA



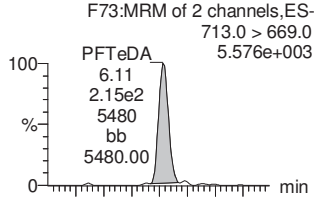


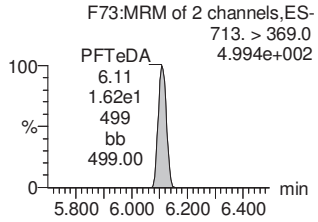
PFTrDA





PFTeDA





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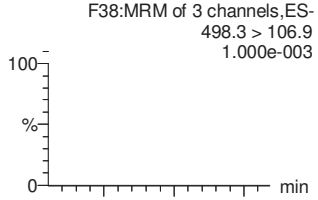
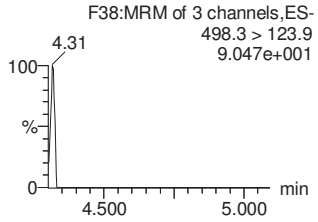
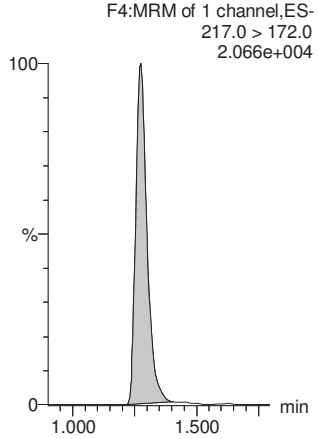
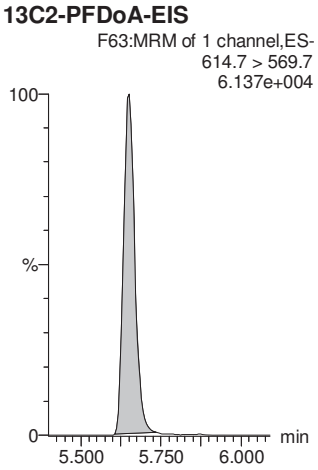




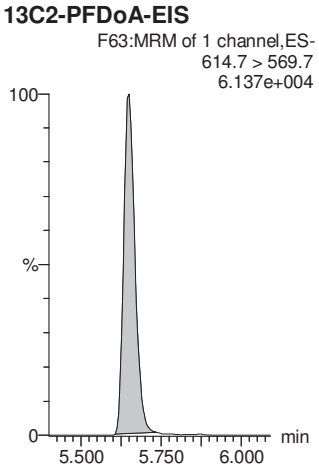
13C4-PFBA



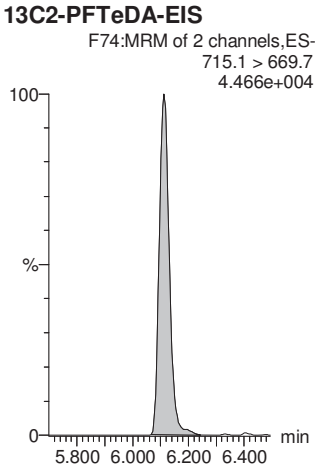
13C2-PFDoA-EIS



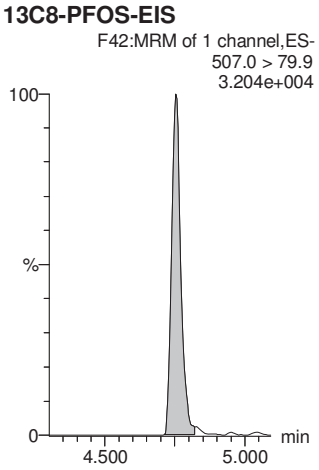
13C2-PFDoA-EIS



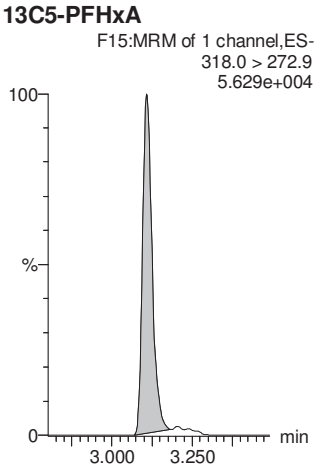
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

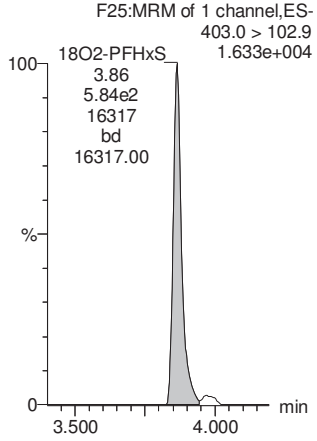
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_28.qld

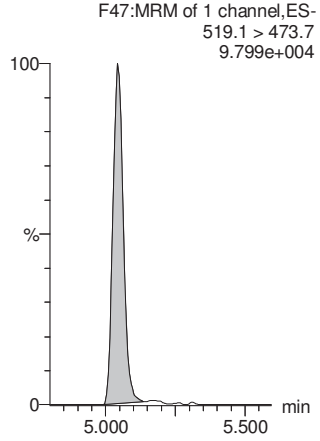
Last Altered: Tuesday, February 18, 2020 07:49:34 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:50:32 Pacific Standard Time

Name: 200212M2_28, Date: 12-Feb-2020, Time: 23:49:31, ID: 2000247-09 24-GW-24MW10B-20200204 0.26372, Description: 24-GW-24MW10B-20200204

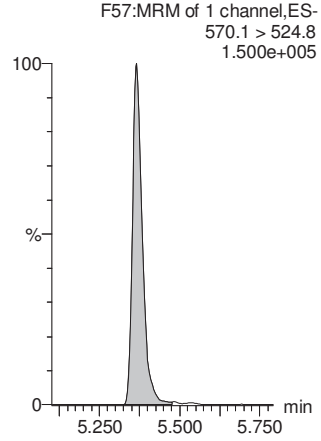
18O2-PFHxS



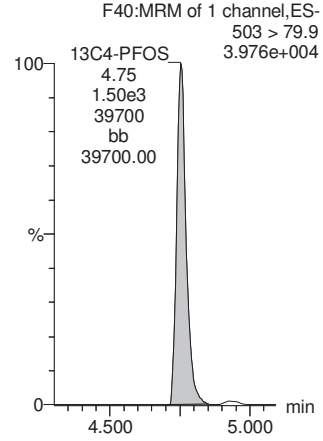
13C6-PFDA



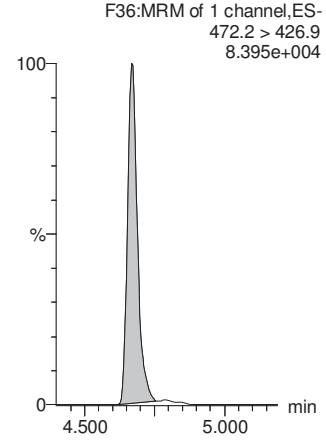
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

Last Altered: Tuesday, February 18, 2020 07:59:04 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:59:48 Pacific Standard Time

Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	1.03e3	3.67e2	0.255		2.60	2.59	34.9	58.6319		2.876	NO
2	7	PFHxA	313.0 > 269.0	8.27e3	1.93e3	0.255		3.11	3.11	53.4	194.1123		15.165	NO
3	9	HFPO-DA	284.5 > 168.8		9.13e1	0.255		3.31						
4	11	PFHpA	363.0 > 318.9	9.23e2	1.34e3	0.255		3.71	3.71	8.63	26.2001		12.748	NO
5	12	ADONA	376.8 > 250.9		1.34e3	0.255		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	3.67e2		0.255	23.482	2.65	2.60	367	61.3951	125.0		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.93e3		0.255	144.232	3.11	3.11	1930	52.6908	107.3		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	9.13e1		0.255	6.687	3.39	3.31	91.3	53.6148	109.2		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.34e3		0.255	95.340	3.74	3.71	1340	55.1047	112.2		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.34e3		0.255	95.340	3.74	3.71	1340	55.1047	112.2		
11	-1													
12	13	L-PFHxS	398.9 > 80	2.35e3	1.17e3	0.255		3.86	3.86	25.1	93.2212		2.172	NO
13	1...	Total PFHxS	398.9 > 80	2.35e3	1.17e3	0.255		3.83		25.1	93.2212			
14	16	L-PFOA	412.8 > 368.9	1.16e4	2.77e3	0.255		4.23	4.23	52.4	141.5873		2.977	NO
15	1...	Total PFOA	412.8 > 368.9	1.16e4	2.77e3	0.255		4.20		52.4	141.5873			
16	21	PFNA	463.0 > 418.8		3.49e3	0.255		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.17e3		0.255	88.291	3.86	3.86	1170	51.9414	105.8		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.17e3		0.255	88.291	3.86	3.86	1170	51.9414	105.8		
19	69	13C2-PFOA-EIS	414.9 > 369.7	2.77e3		0.255	220.187	4.23	4.23	2770	49.4068	100.6		
20	69	13C2-PFOA-EIS	414.9 > 369.7	2.77e3		0.255	220.187	4.23	4.23	2770	49.4068	100.6		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.49e3		0.255	262.826	4.67	4.67	3490	52.1414	106.2		
22	-1													
23	23	L-PFOS	498.9 > 79.9	3.56e1	1.53e3	0.255		4.75	4.75	0.292	0.9856		1.442	NO
24	1...	Total PFOS	498.9 > 79.9	3.56e1	1.53e3	0.255		4.73		0.292	0.9856			
25	25	9Cl-PF30NS	531 > 351.1		1.53e3	0.255		4.96						
26	26	PFDA	513 > 468.8		3.82e3	0.255		5.04						
27	33	PFUdA	563.0 > 518.9		5.00e3	0.255		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.53e3		0.255	105.884	4.75	4.75	1530	56.6906	115.5		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.53e3		0.255	105.884	4.75	4.75	1530	56.6906	115.5		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.53e3		0.255	105.884	4.75	4.75	1530	56.6906	115.5		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.82e3		0.255	263.358	5.04	5.04	3820	57.0494	116.2		
32	79	13C2-PFUdA-EIS	565 > 519.8	5.00e3		0.255	362.134	5.37	5.37	5000	54.2214	110.4		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.24e3	0.255		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	3.24e3	0.255		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		2.75e3	0.255		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

Last Altered: Tuesday, February 18, 2020 07:59:04 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:59:48 Pacific Standard Time

Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	2.75e3	0.255		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		5.67e3	0.255		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	3.24e3		0.255	231.747	5.19	5.19	3240	54.9325	111.9		
40	77	d3-N-MeFOSAA-EIS	573. > 419	3.24e3		0.255	231.747	5.19	5.19	3240	54.9325	111.9		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.75e3		0.255	219.903	5.34	5.35	2750	49.1164	100.0		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.75e3		0.255	219.903	5.34	5.35	2750	49.1164	100.0		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	5.67e3		0.255	458.130	5.64	5.65	5670	48.6346	99.1		
44	-1													
45	37	PFDoA	612.9 > 569.0		5.67e3	0.255		5.65						
46	39	PFTrDA	662.9 > 618.9		5.67e3	0.255		5.90						
47	41	PFTeDA	713.0 > 669.0		4.15e3	0.255		6.11						
48	1...	TDCA	498.3>106.9			0.255		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.09e3	1.09e3	0.255	1.000	1.27	1.28	12.5	49.1005	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	5.67e3		0.255	458.130	5.64	5.65	5670	48.6346	99.1		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	5.67e3		0.255	458.130	5.64	5.65	5670	48.6346	99.1		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	4.15e3		0.255	365.370	6.07	6.11	4150	44.5836	90.8		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.53e3		0.255	105.884	4.75	4.75	1530	56.6906	115.5		
54	1...	13C5-PFHxA	318.0 > 272.9	2.11e3	2.11e3	0.255	1.000	3.10	3.11	12.5	49.1005	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.40e2	5.40e2	0.255	1.000	3.86	3.86	12.5	49.1005	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.29e3	4.29e3	0.255	1.000	5.04	5.04	12.5	49.1005	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	5.86e3	5.86e3	0.255	1.000	5.36	5.37	12.5	49.1005	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.54e3	1.54e3	0.255	1.000	4.75	4.75	12.5	49.1005	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.56e3	3.56e3	0.255	1.000	4.66	4.67	12.5	49.1005	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

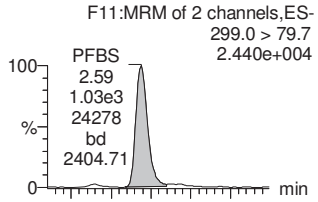
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

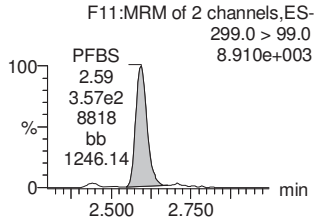
Last Altered: Tuesday, February 18, 2020 07:59:04 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:59:48 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

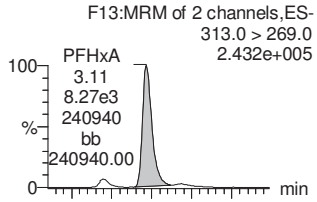
Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

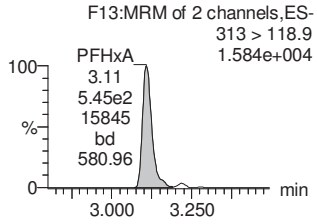
PFBS



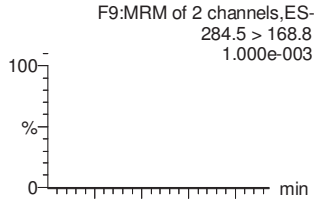


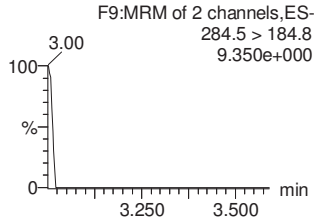
PFHxA



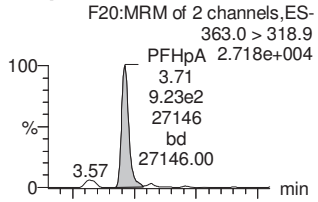


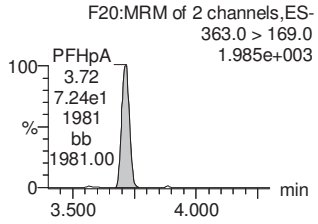
HFPO-DA



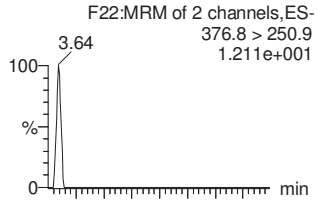


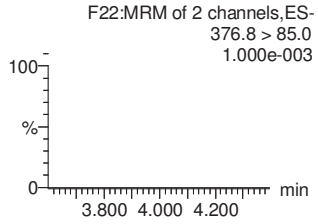
PFHpA



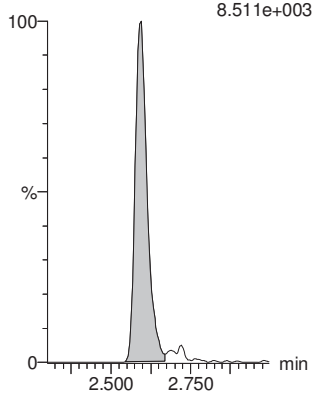


ADONA





13C3-PFBS-EIS



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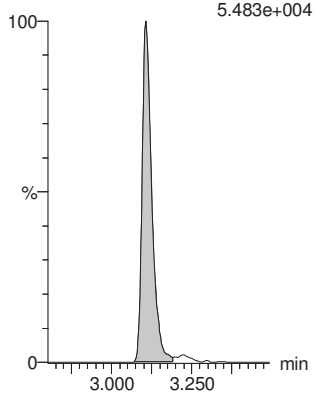

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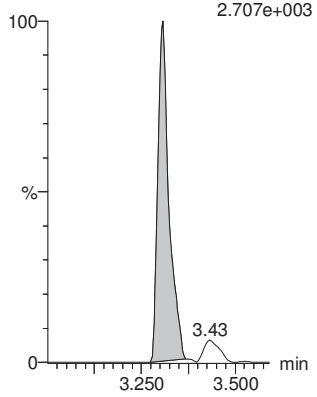

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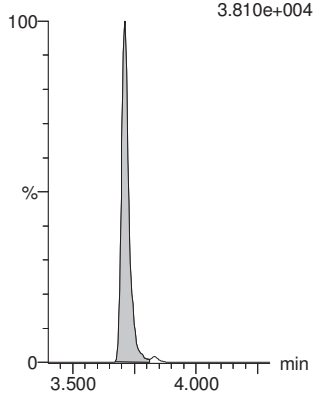

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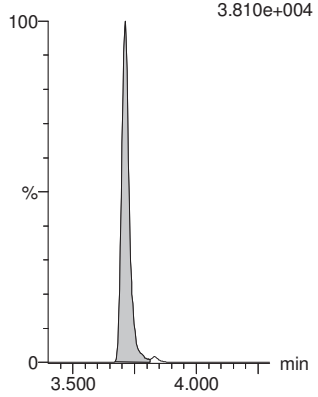


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

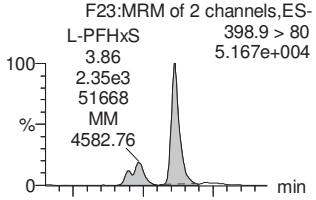
Review: AMR 2/18/2020

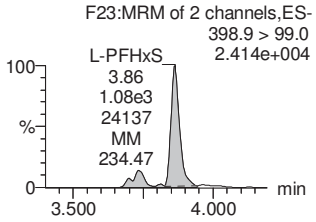
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

Last Altered: Tuesday, February 18, 2020 07:59:04 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:59:48 Pacific Standard Time

Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

L-PFHxS





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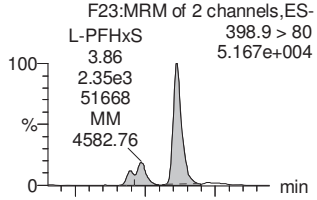

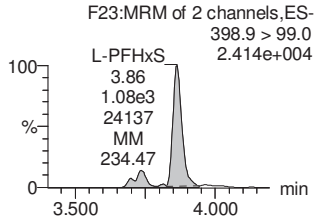

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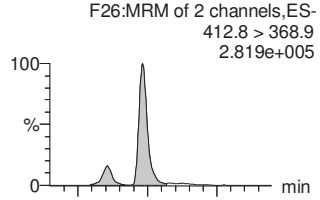

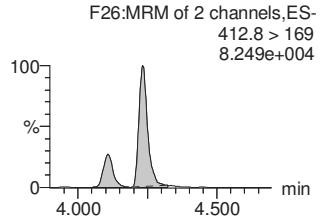

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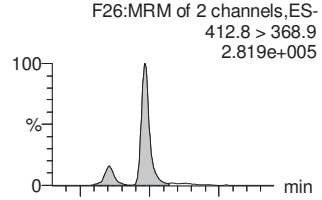

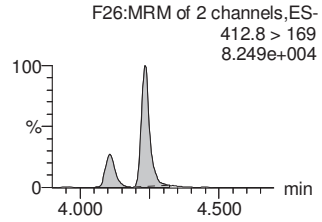

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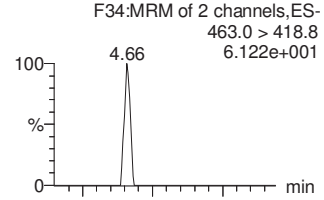

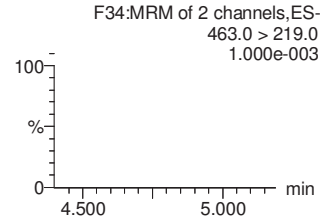

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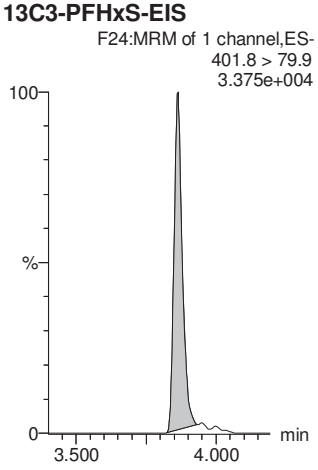

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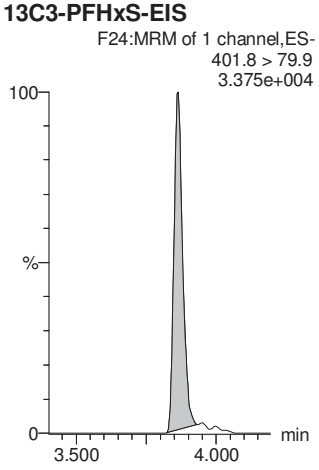

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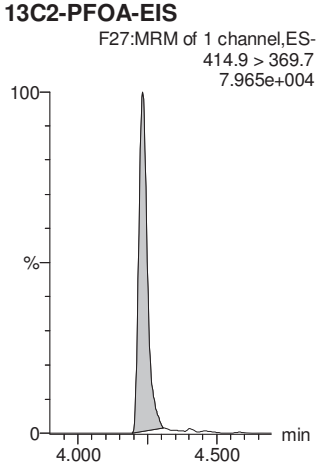

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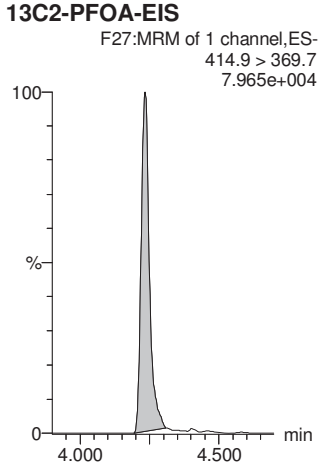

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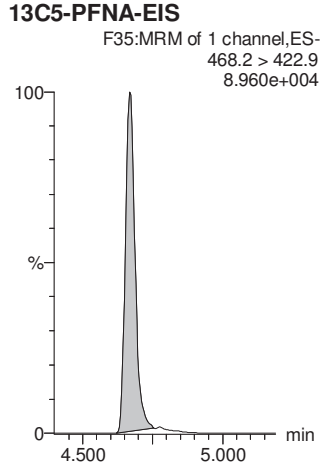

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

Last Altered: Tuesday, February 18, 2020 07:59:04 Pacific Standard Time
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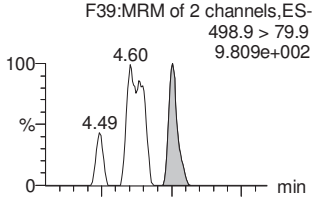
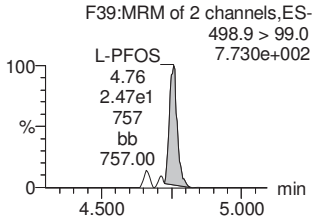
Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

L-PFOS





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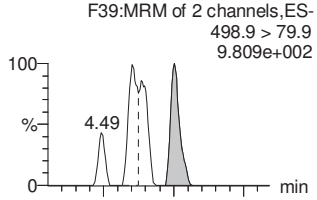

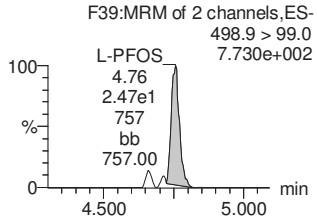

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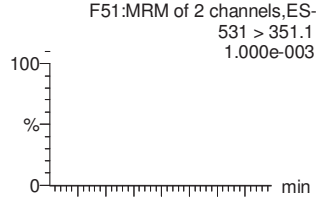

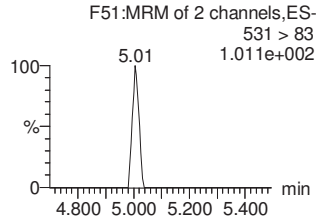

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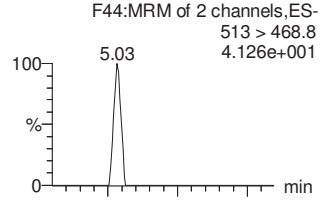

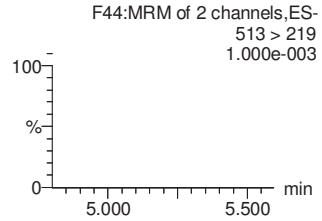

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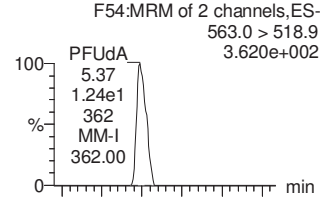

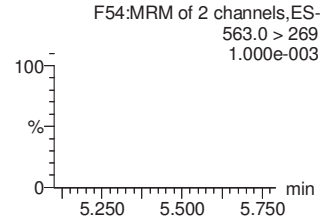

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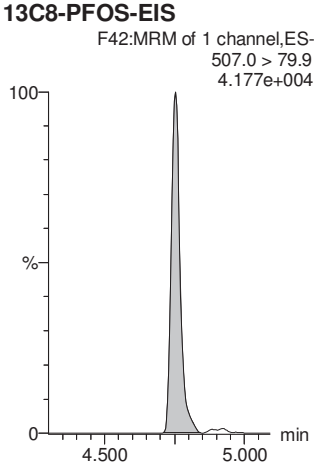

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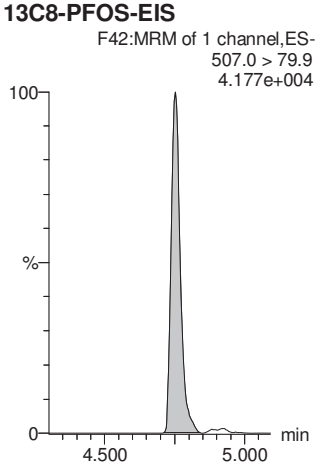

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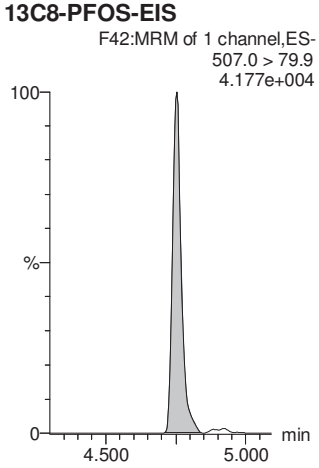

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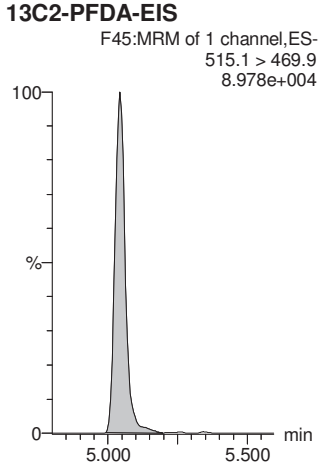

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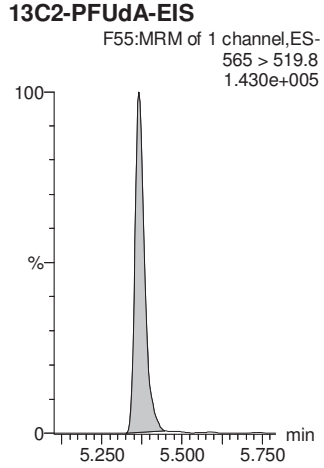

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

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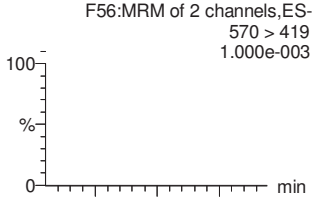
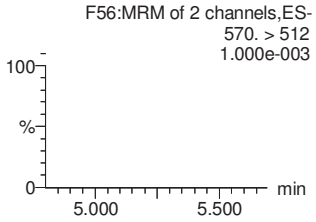
Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

L-MeFOSAA





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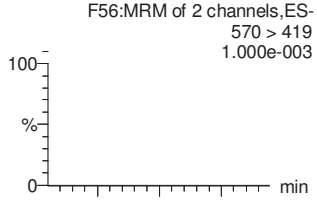
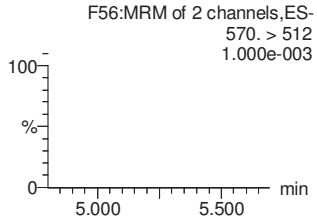
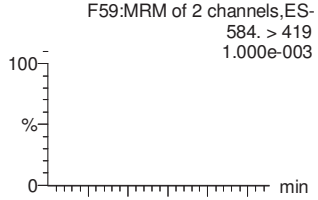
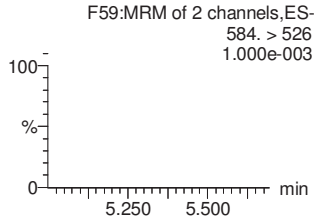




L-EtFOSAA





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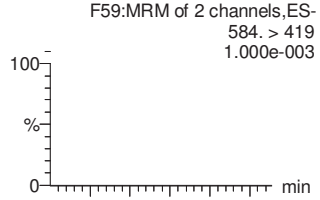

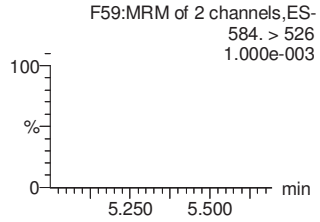

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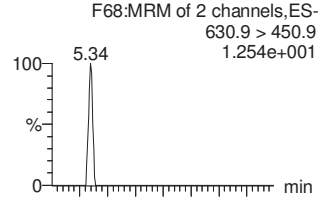
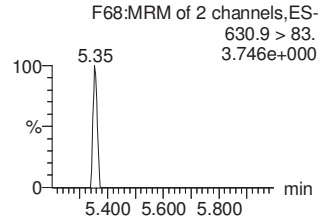
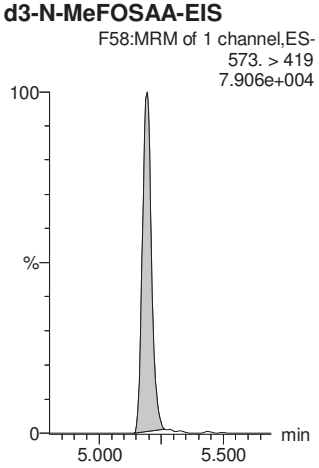




d3-N-MeFOSAA-EIS



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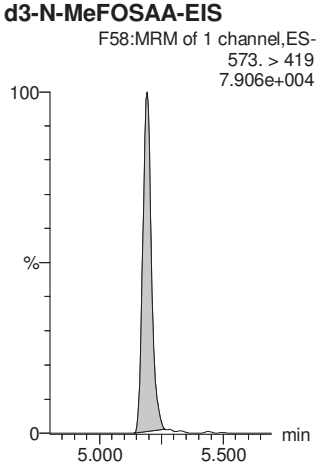

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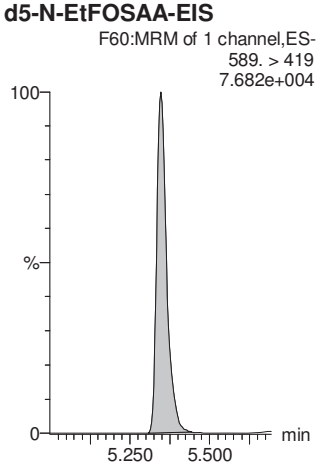

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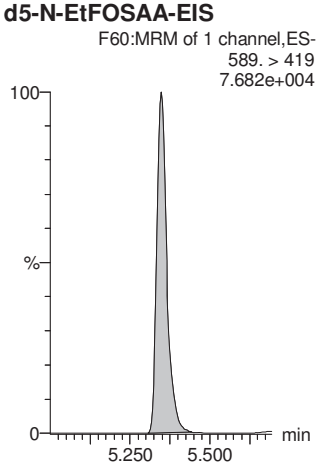

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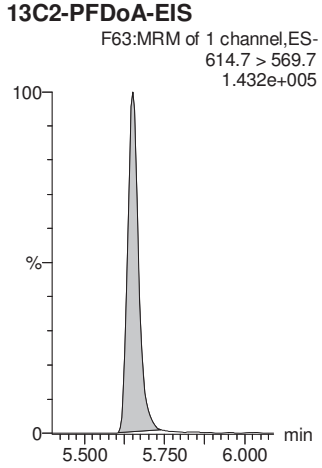

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

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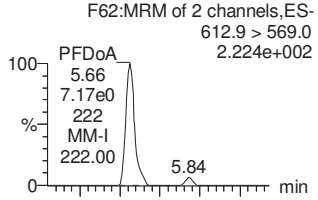
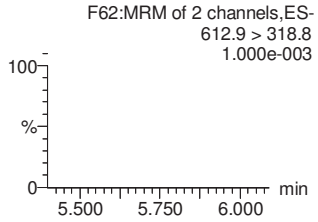
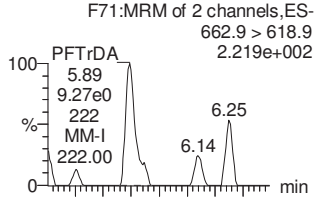
Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

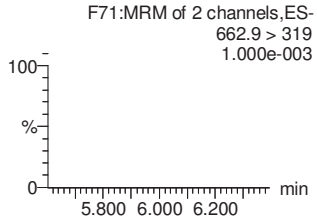
PFDoA



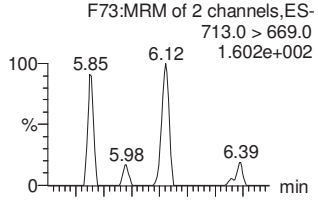


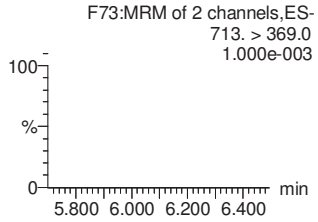
PFTrDA





PFTeDA





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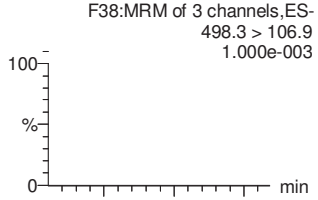
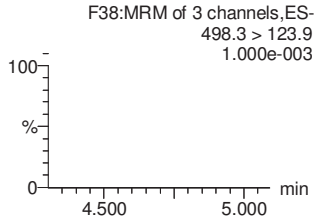
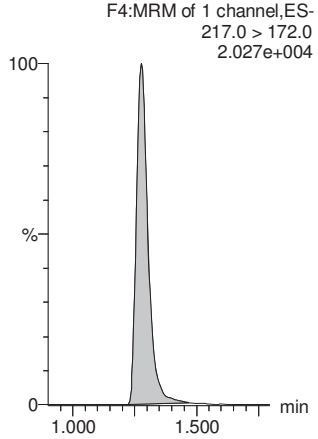
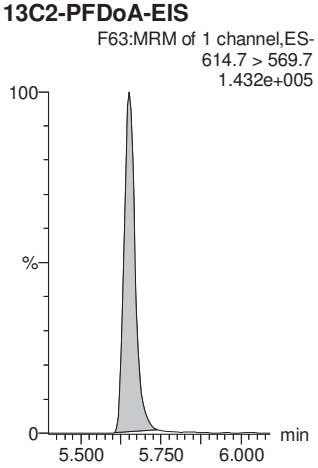




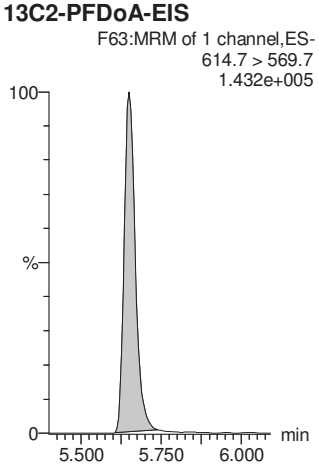
13C4-PFBA



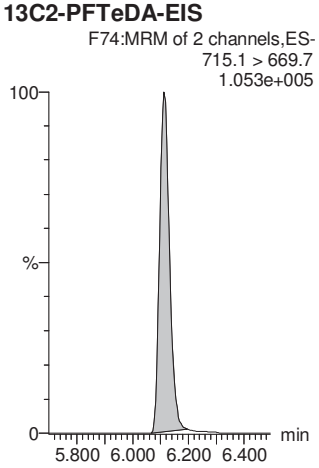
13C2-PFDoA-EIS



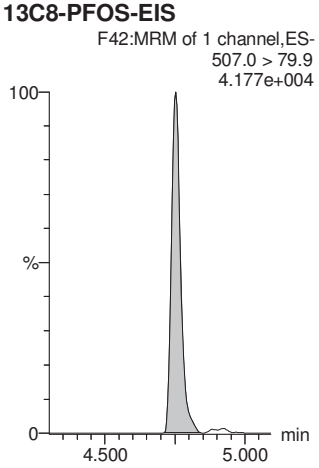
13C2-PFDoA-EIS



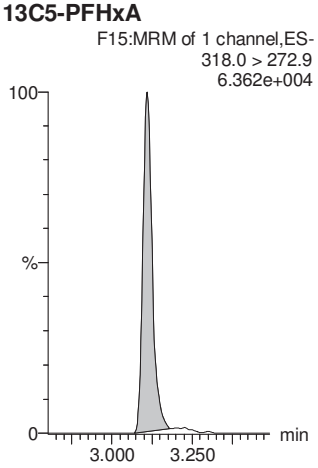
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

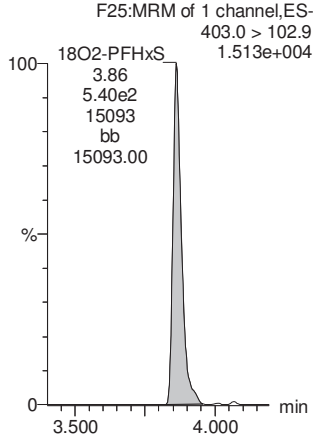
Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_29.qld

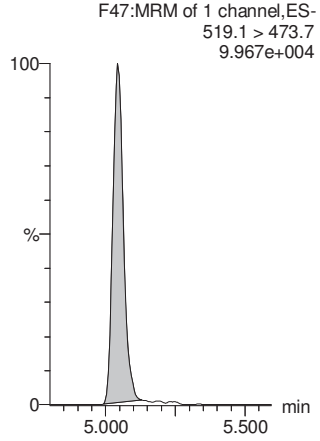
Last Altered: Tuesday, February 18, 2020 07:59:04 Pacific Standard Time
Printed: Tuesday, February 18, 2020 07:59:48 Pacific Standard Time

Name: 200212M2_29, Date: 12-Feb-2020, Time: 23:59:53, ID: 2000247-10 24-GW-24EX20B-20200204 0.25458, Description: 24-GW-24EX20B-20200204

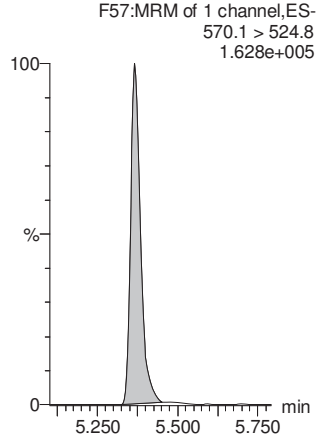
18O2-PFHxS



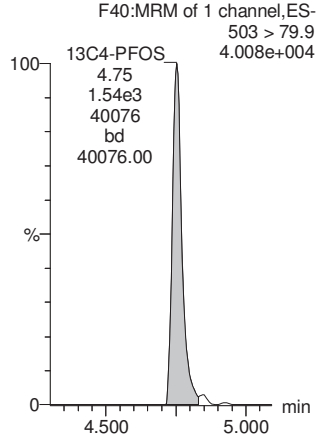
13C6-PFDA



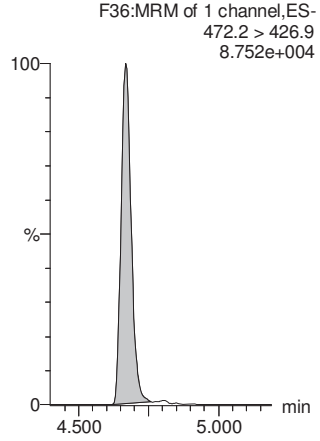
13C7-PFUdA



13C4-PFOS



13C9-PFNA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

Last Altered: Tuesday, February 18, 2020 08:02:28 Pacific Standard Time
Printed: Tuesday, February 18, 2020 08:02:58 Pacific Standard Time

Name: 200212M2_33, Date: 13-Feb-2020, Time: 00:41:22, ID: 2000247-11 24-GW-24MW05BR-20200204 0.26394, Description: 24-GW-24MW05BR-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 79.7	3.54e2	3.30e2	0.264		2.60	2.59	13.4	21.7614		3.060	NO
2	7	PFHxA	313.0 > 269.0	1.96e3	1.80e3	0.264		3.11	3.11	13.6	47.7384		16.311	NO
3	9	HFPO-DA	284.5 > 168.8		1.01e2	0.264		3.31						
4	11	PFHpA	363.0 > 318.9	3.39e1	1.25e3	0.264		3.71	3.71	0.339	1.2337		45.485	YES
5	12	ADONA	376.8 > 250.9		1.25e3	0.264		3.80						
6	51	13C3-PFBS-EIS	302.0 > 99	3.30e2		0.264	23.482	2.66	2.60	330	53.2961	112.5		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.80e3		0.264	144.232	3.11	3.11	1800	47.1931	99.6		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.01e2		0.264	6.687	3.39	3.31	101	56.9697	120.3		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.25e3		0.264	95.340	3.74	3.71	1250	49.7637	105.1		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.25e3		0.264	95.340	3.74	3.71	1250	49.7637	105.1		
11	-1													
12	13	L-PFHxS	398.9 > 80	3.31e1	1.24e3	0.264		3.86	3.87	0.333	1.6221		2.111	NO
13	1...	Total PFHxS	398.9 > 80	3.31e1	1.24e3	0.264		3.83		0.333	1.6221			
14	16	L-PFOA	412.8 > 368.9	2.36e2	2.63e3	0.264		4.23	4.24	1.12	2.6215		2.888	NO
15	1...	Total PFOA	412.8 > 368.9	2.36e2	2.63e3	0.264		4.20		1.12	2.6215			
16	21	PFNA	463.0 > 418.8		3.66e3	0.264		4.67						
17	61	13C3-PFHxS-EIS	401.8 > 79.9	1.24e3		0.264	88.291	3.87	3.86	1240	53.2098	112.4		
18	61	13C3-PFHxS-EIS	401.8 > 79.9	1.24e3		0.264	88.291	3.87	3.86	1240	53.2098	112.4		
19	69	13C2-PFOA-EIS	414.9 > 369.7	2.63e3		0.264	220.187	4.23	4.23	2630	45.2300	95.5		
20	69	13C2-PFOA-EIS	414.9 > 369.7	2.63e3		0.264	220.187	4.23	4.23	2630	45.2300	95.5		
21	65	13C5-PFNA-EIS	468.2 > 422.9	3.66e3		0.264	262.826	4.67	4.67	3660	52.7872	111.5		
22	-1													
23	23	L-PFOS	498.9 > 79.9		1.46e3	0.264		4.75						
24	1...	Total PFOS	498.9 > 79.9	0.00e0	1.46e3	0.264		4.73		0.000				
25	25	9Cl-PF30NS	531 > 351.1		1.46e3	0.264		4.96						
26	26	PFDA	513 > 468.8		3.46e3	0.264		5.04						
27	33	PFUdA	563.0 > 518.9		4.56e3	0.264		5.37						
28	71	13C8-PFOS-EIS	507.0 > 79.9	1.46e3		0.264	105.884	4.76	4.75	1460	52.4136	110.7		
29	71	13C8-PFOS-EIS	507.0 > 79.9	1.46e3		0.264	105.884	4.76	4.75	1460	52.4136	110.7		
30	71	13C8-PFOS-EIS	507.0 > 79.9	1.46e3		0.264	105.884	4.76	4.75	1460	52.4136	110.7		
31	73	13C2-PFDA-EIS	515.1 > 469.9	3.46e3		0.264	263.358	5.04	5.04	3460	49.7697	105.1		
32	79	13C2-PFUdA-EIS	565 > 519.8	4.56e3		0.264	362.134	5.37	5.37	4560	47.6919	100.7		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.86e3	0.264		5.19						
35	1...	Total N-MeFOSAA	570. > 419	0.00e0	2.86e3	0.264		5.17		0.000				
36	31	L-EtFOSAA	584. > 419		2.53e3	0.264		5.35						

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

Last Altered: Tuesday, February 18, 2020 08:02:28 Pacific Standard Time
Printed: Tuesday, February 18, 2020 08:02:58 Pacific Standard Time

Name: 200212M2_33, Date: 13-Feb-2020, Time: 00:41:22, ID: 2000247-11 24-GW-24MW05BR-20200204 0.26394, Description: 24-GW-24MW05BR-20200204

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	584. > 419	0.00e0	2.53e3	0.264		5.33		0.000				
38	35	11Cl-PF30UdS	630.9 > 450.9		5.05e3	0.264		5.58						
39	77	d3-N-MeFOSAA-EIS	573. > 419	2.86e3		0.264	231.747	5.19	5.19	2860	46.8318	98.9		
40	77	d3-N-MeFOSAA-EIS	573. > 419	2.86e3		0.264	231.747	5.19	5.19	2860	46.8318	98.9		
41	81	d5-N-EtFOSAA-EIS	589. > 419	2.53e3		0.264	219.903	5.34	5.35	2530	43.5812	92.0		
42	81	d5-N-EtFOSAA-EIS	589. > 419	2.53e3		0.264	219.903	5.34	5.35	2530	43.5812	92.0		
43	83	13C2-PFDoA-EIS	614.7 > 569.7	5.05e3		0.264	458.130	5.64	5.65	5050	41.7840	88.2		
44	-1													
45	37	PFDoA	612.9 > 569.0		5.05e3	0.264		5.65						
46	39	PFTrDA	662.9 > 618.9		5.05e3	0.264		5.90						
47	41	PFTeDA	713.0 > 669.0		3.94e3	0.264		6.11						
48	1...	TDCA	498.3>106.9			0.264		4.69						
49	99	13C4-PFBA	217.0 > 172.0	1.08e3	1.08e3	0.264	1.000	1.27	1.28	12.5	47.3592	100.0		
50	83	13C2-PFDoA-EIS	614.7 > 569.7	5.05e3		0.264	458.130	5.64	5.65	5050	41.7840	88.2		
51	83	13C2-PFDoA-EIS	614.7 > 569.7	5.05e3		0.264	458.130	5.64	5.65	5050	41.7840	88.2		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	3.94e3		0.264	365.370	6.07	6.11	3940	40.8720	86.3		
53	71	13C8-PFOS-EIS	507.0 > 79.9	1.46e3		0.264	105.884	4.76	4.75	1460	52.4136	110.7		
54	1...	13C5-PFHxA	318.0 > 272.9	2.21e3	2.21e3	0.264	1.000	3.10	3.11	12.5	47.3592	100.0		
55	-1													
56	1...	18O2-PFHxS	403.0 > 102.9	5.89e2	5.89e2	0.264	1.000	3.86	3.87	12.5	47.3592	100.0		
57	1...	13C6-PFDA	519.1 > 473.7	4.37e3	4.37e3	0.264	1.000	5.04	5.04	12.5	47.3592	100.0		
58	1...	13C7-PFUdA	570.1 > 524.8	5.72e3	5.72e3	0.264	1.000	5.36	5.37	12.5	47.3592	100.0		
59	1...	13C4-PFOS	503 > 79.9	1.51e3	1.51e3	0.264	1.000	4.75	4.76	12.5	47.3592	100.0		
60	1...	13C9-PFNA	472.2 > 426.9	3.80e3	3.80e3	0.264	1.000	4.66	4.67	12.5	47.3592	100.0		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

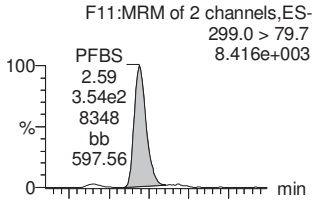
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

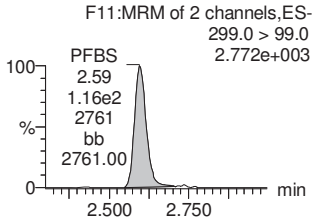
Last Altered: Tuesday, February 18, 2020 08:02:28 Pacific Standard Time
Printed: Tuesday, February 18, 2020 08:02:58 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

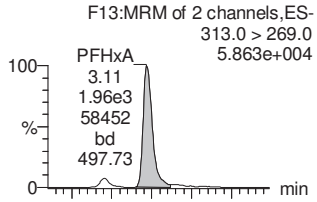
Name: 200212M2_33, Date: 13-Feb-2020, Time: 00:41:22, ID: 2000247-11 24-GW-24MW05BR-20200204 0.26394, Description: 24-GW-24MW05BR-20200204

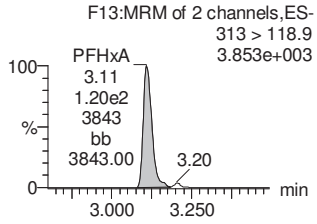
PFBS



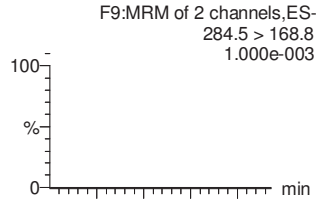


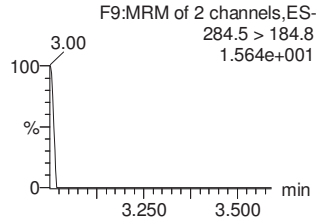
PFHxA



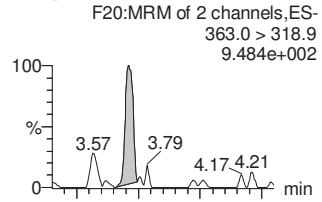


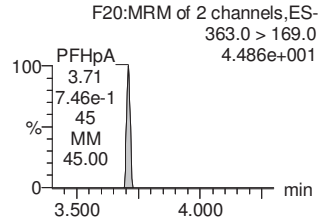
HFPO-DA



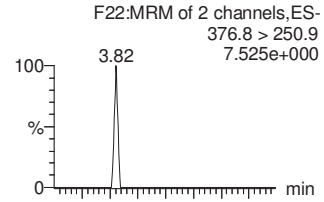


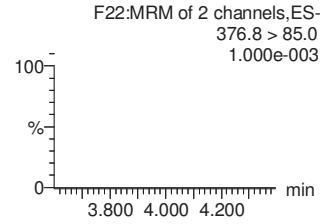
PFHpA



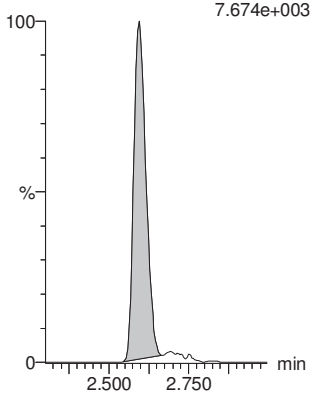


ADONA

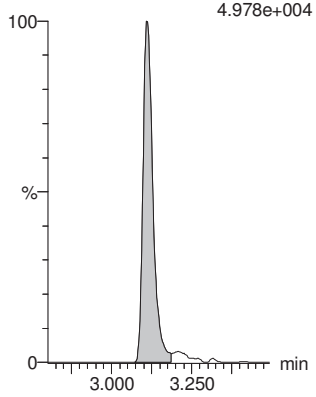




13C3-PFBS-EIS



13C2-PFHxA-EIS



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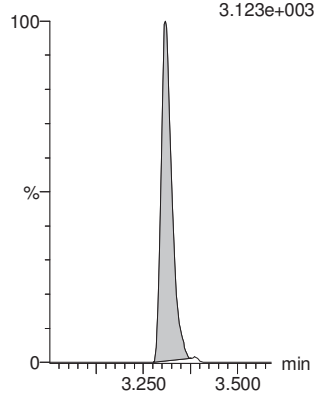

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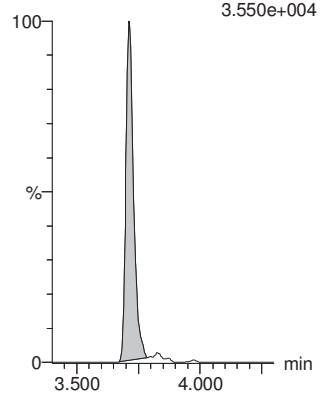

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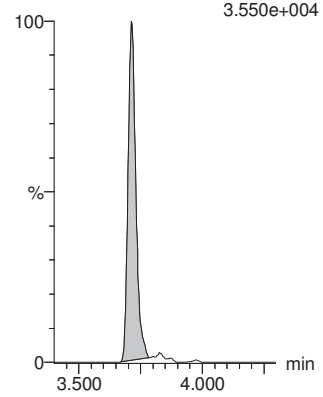

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

Last Altered: Tuesday, February 18, 2020 08:02:28 Pacific Standard Time
Printed: Tuesday, February 18, 2020 08:02:58 Pacific Standard Time

Name: 200212M2_33, Date: 13-Feb-2020, Time: 00:41:22, ID: 2000247-11 24-GW-24MW05BR-20200204 0.26394, Description: 24-GW-24MW05BR-20200204

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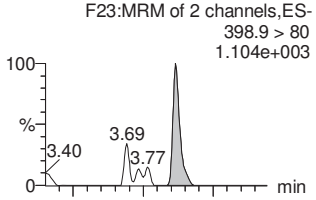

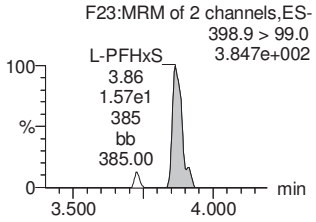

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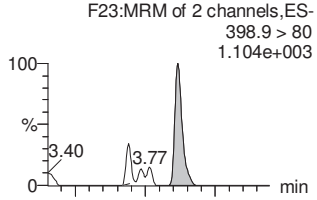

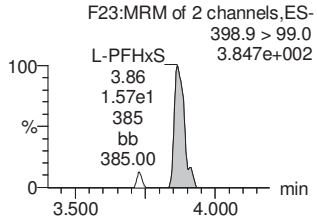

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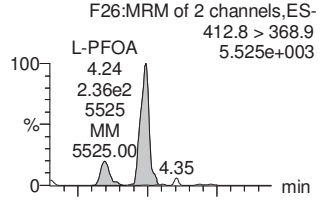

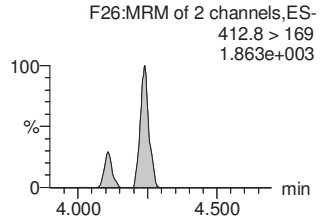

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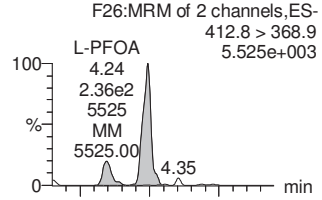

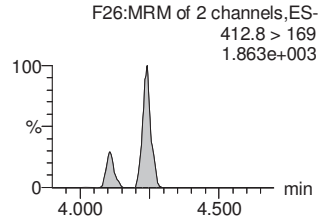

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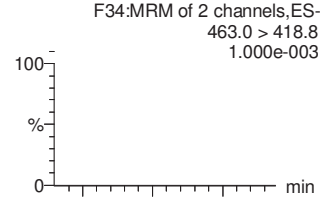

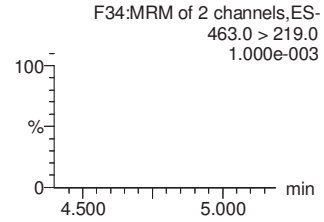

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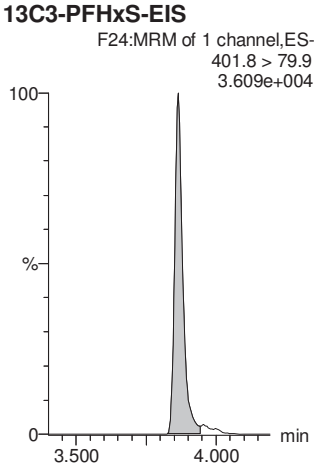

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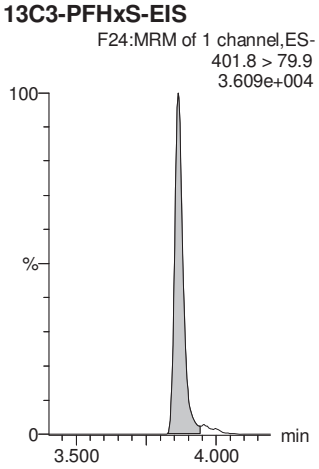

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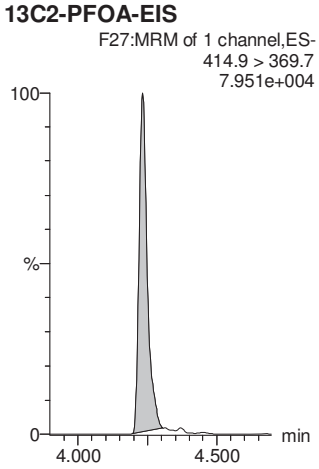

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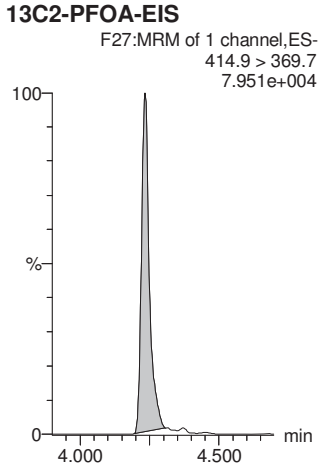

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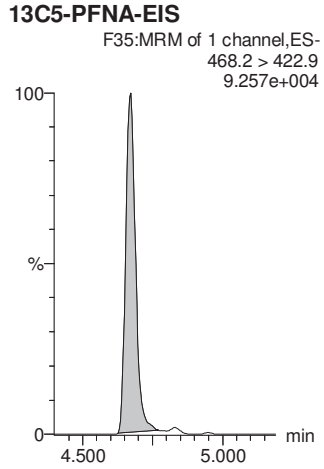

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

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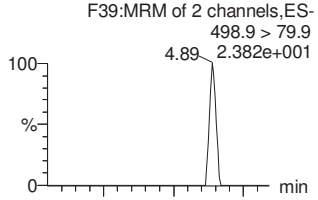
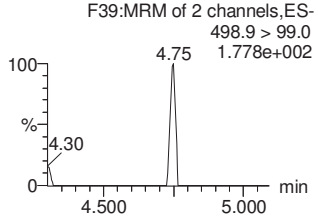
Name: 200212M2_33, Date: 13-Feb-2020, Time: 00:41:22, ID: 2000247-11 24-GW-24MW05BR-20200204 0.26394, Description: 24-GW-24MW05BR-20200204

L-PFOS





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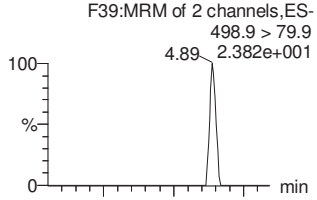

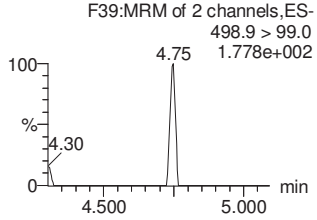

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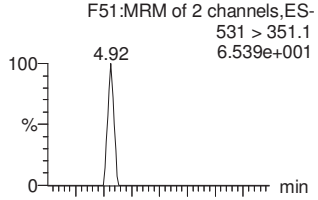

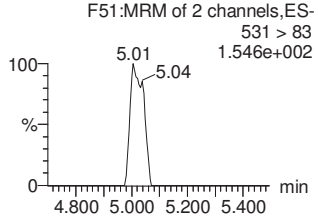

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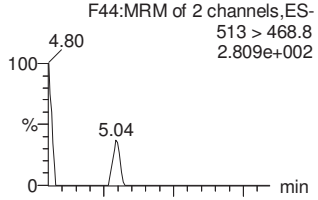

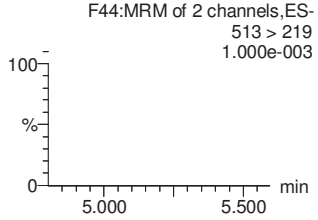

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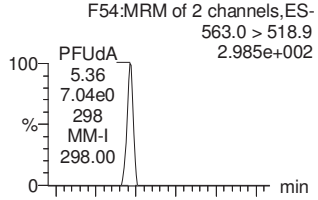

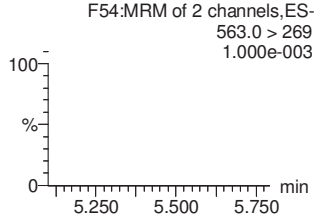

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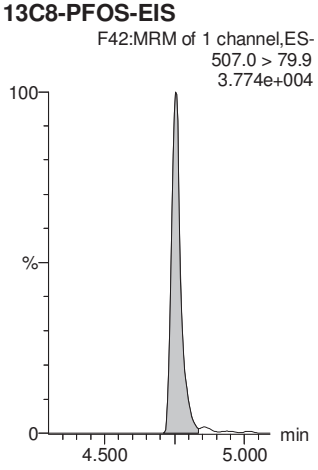

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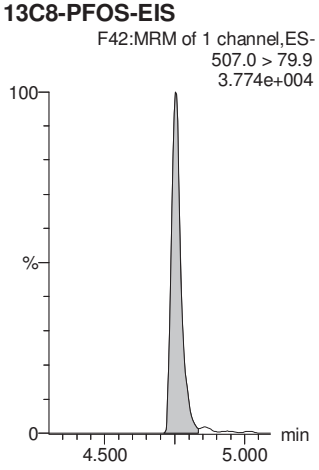

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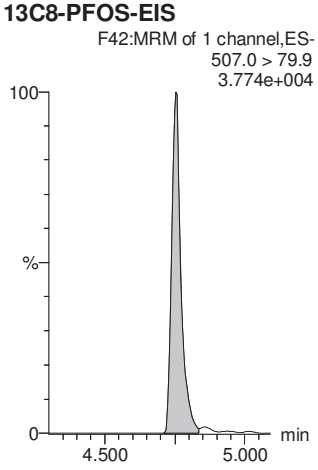

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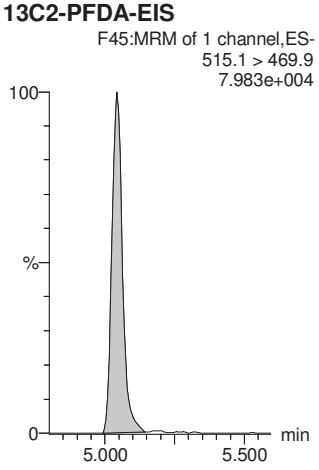

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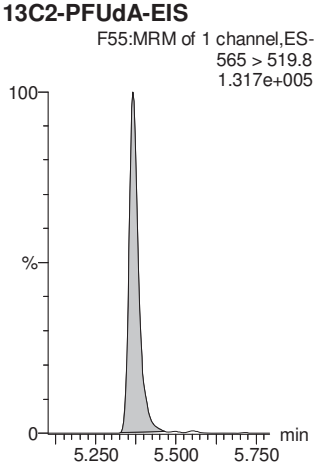

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

Last Altered: Tuesday, February 18, 2020 08:02:28 Pacific Standard Time
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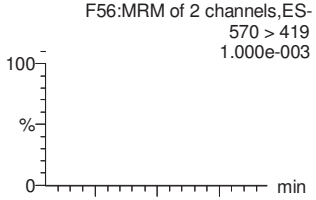
Name: 200212M2_33, Date: 13-Feb-2020, Time: 00:41:22, ID: 2000247-11 24-GW-24MW05BR-20200204 0.26394, Description: 24-GW-24MW05BR-20200204

L-MeFOSAA



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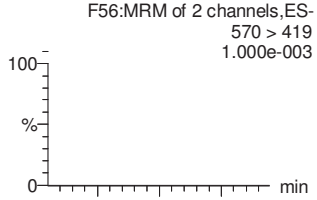

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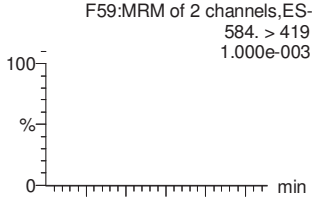

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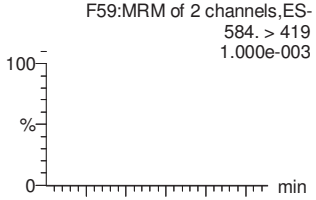

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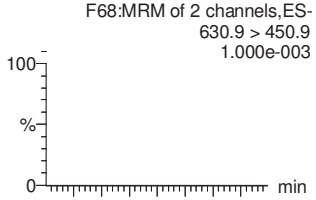

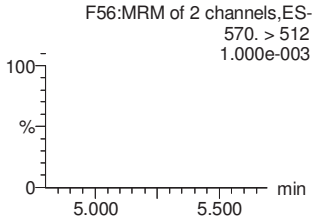

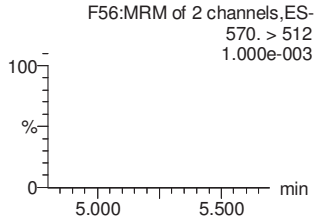

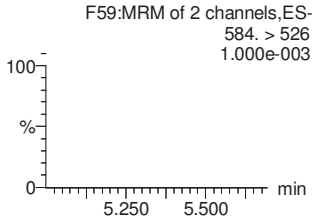

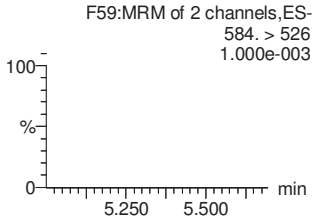

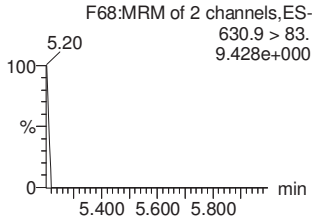

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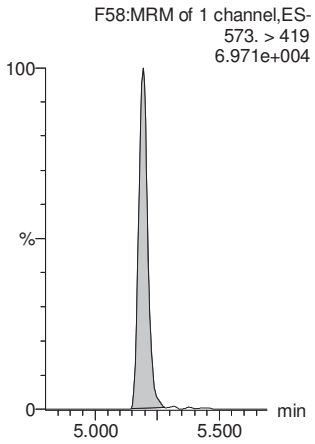

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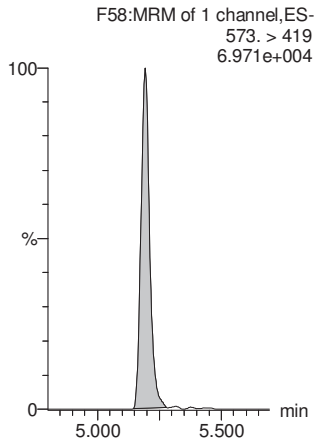

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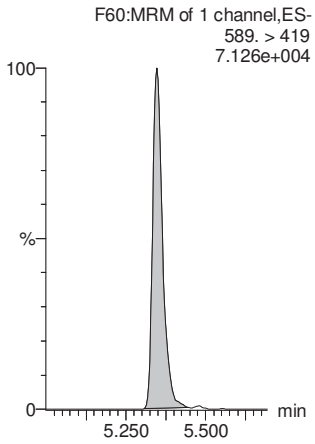

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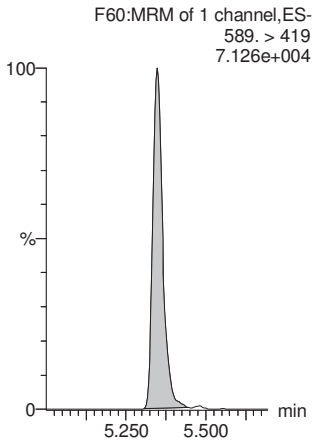

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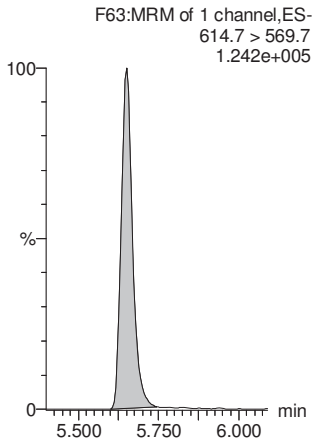

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

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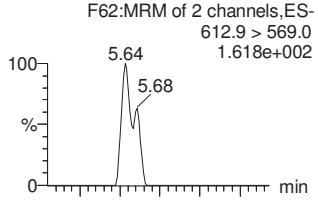
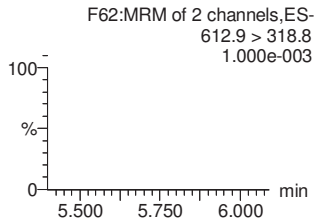
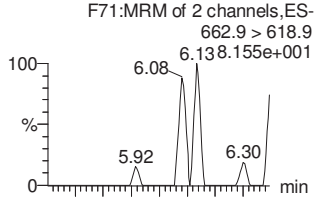
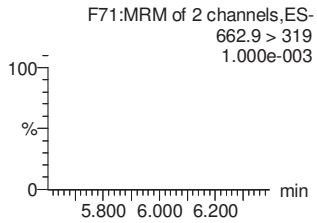


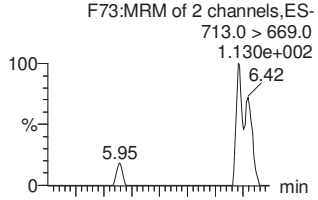


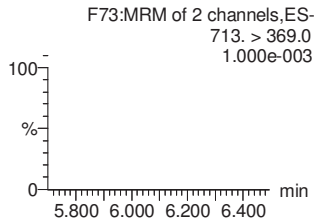
PFTrDA





PFTeDA





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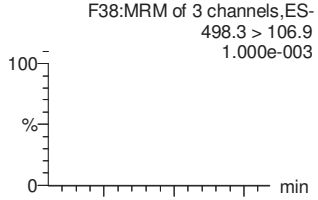
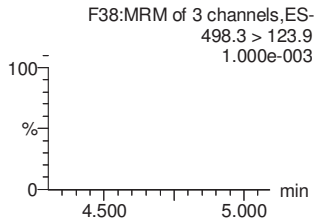
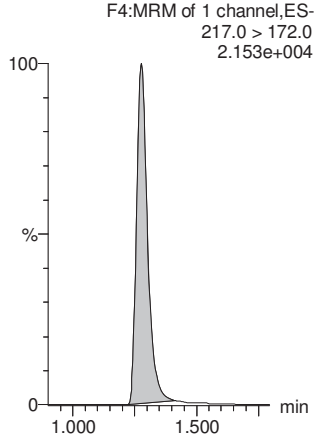
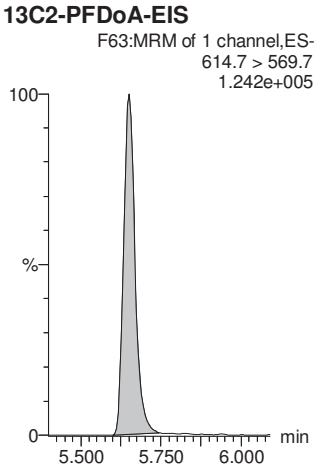




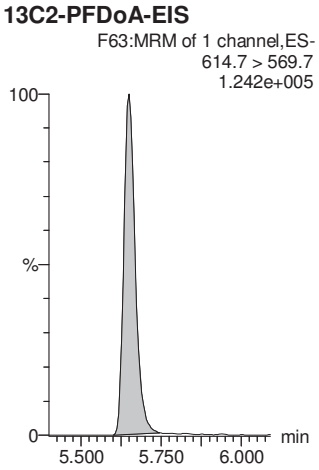
13C4-PFBA



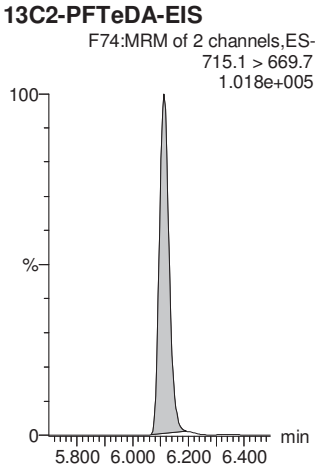
13C2-PFDoA-EIS



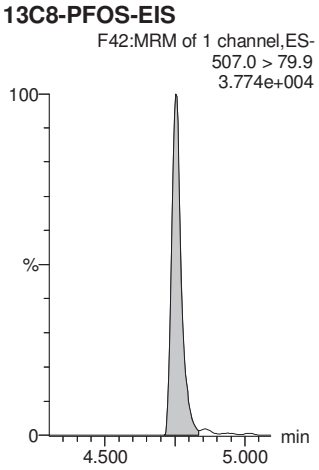
13C2-PFDoA-EIS



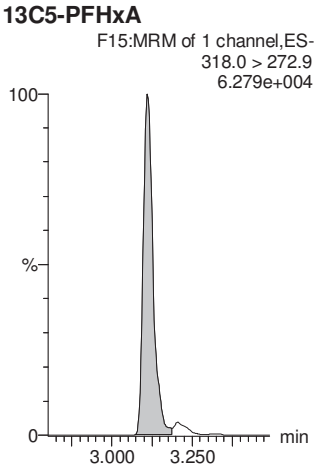
13C2-PFTeDA-EIS



13C8-PFOS-EIS



13C5-PFHxA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory L18

Review: AMR 2/18/2020

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_33.qld

Last Altered: Tuesday, February 18, 2020 08:02:28 Pacific Standard Time
Printed: Tuesday, February 18, 2020 08:02:58 Pacific Standard Time

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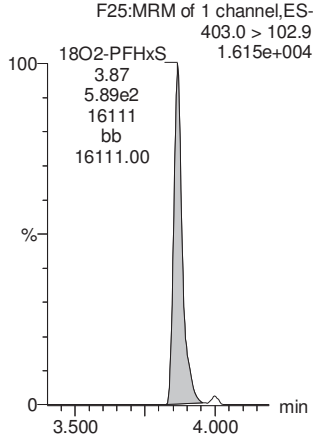
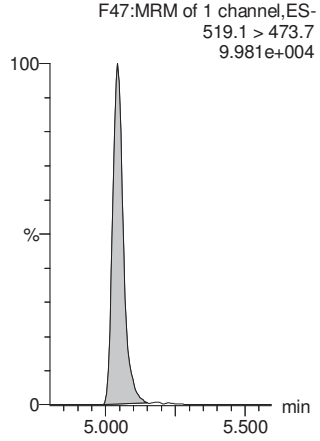
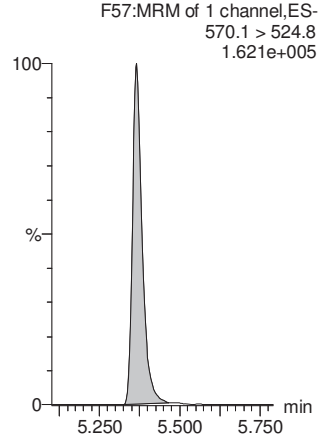
18O2-PFHxS



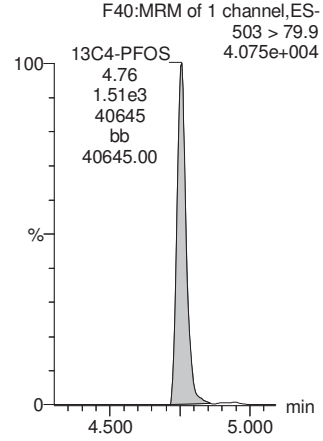
13C6-PFDA



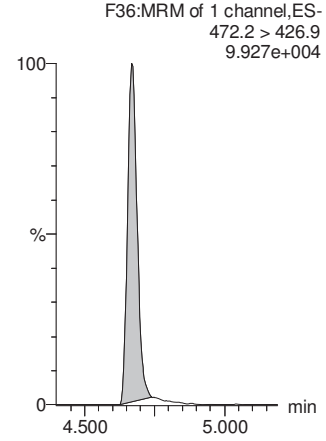
13C7-PFUdA



13C4-PFOS



13C9-PFNA



INSTRUMENT BLANKS (IB)

AND

CONTINUTING CALIBRATION VERIFICATIONS (CCV)

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

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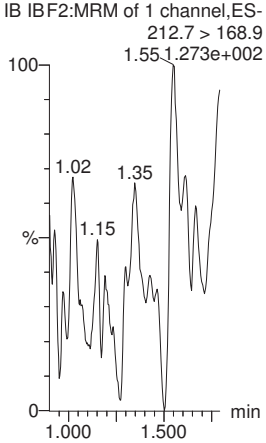
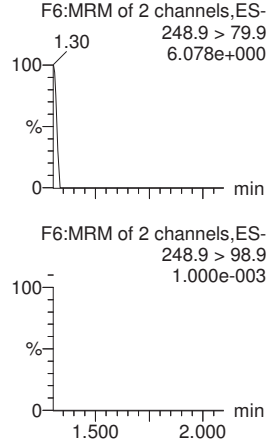
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 13:55:50

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

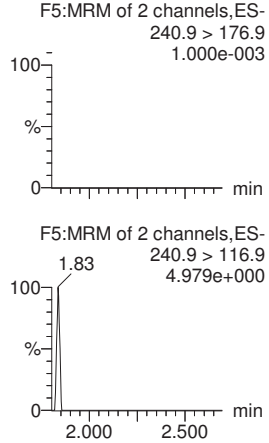
PFBA



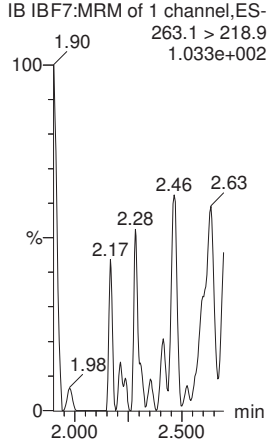
PFPrS



3:3 FTCA



PFPeA



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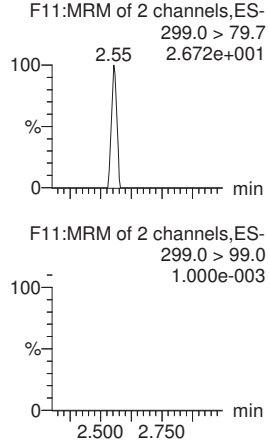
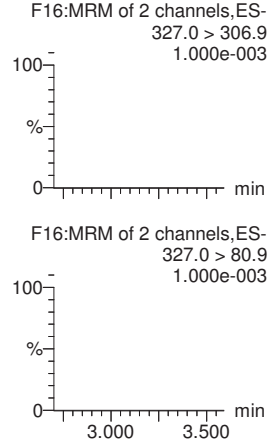
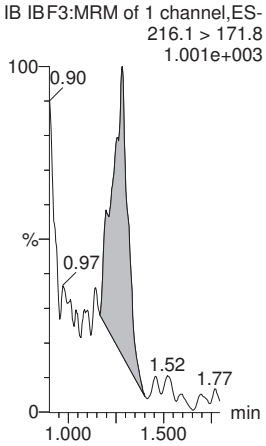


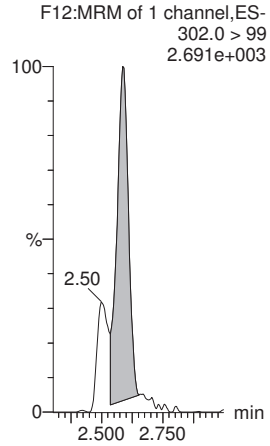
4:2 FTS



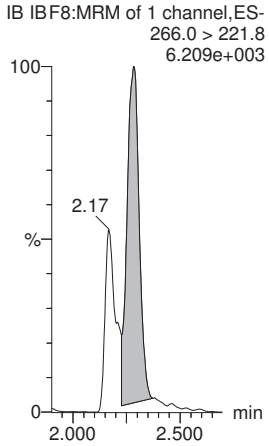
13C3-PFBA-EIS



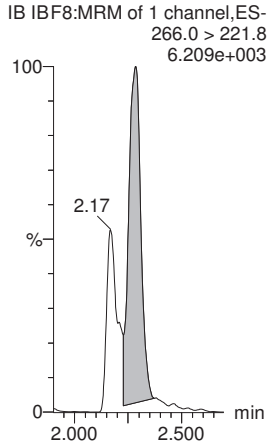
13C3-PFBS-EIS



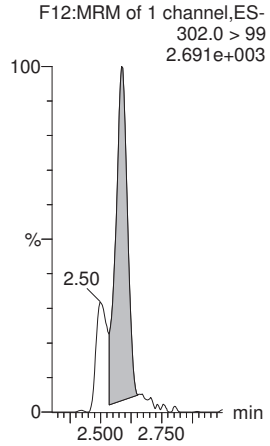
13C3-PFPeA-EIS



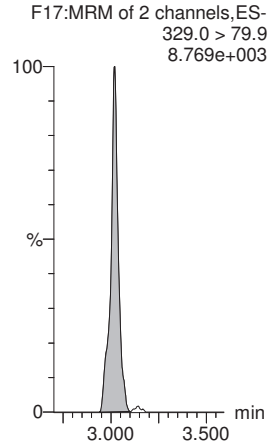
13C3-PFPeA-EIS



13C3-PFBS-EIS



13C2-4:2 FTS-EIS



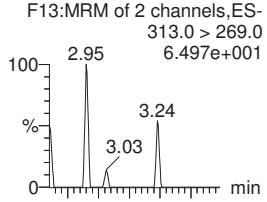
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

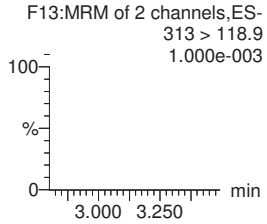
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

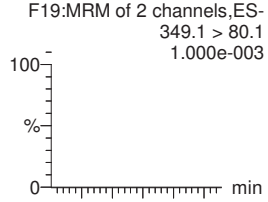
Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

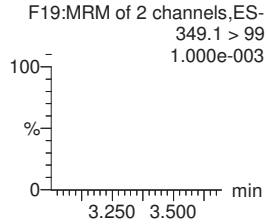
PFHxA



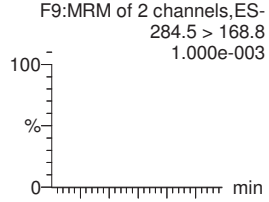


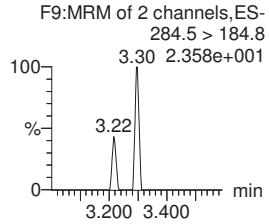
PFPeS



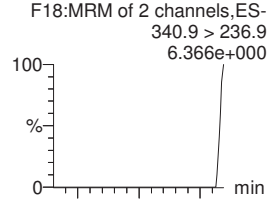


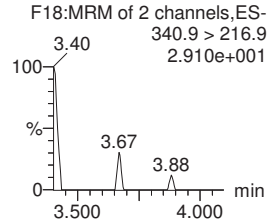
HFPO-DA



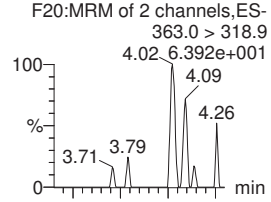


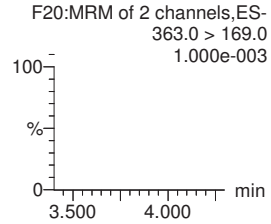
5:3 FTCA



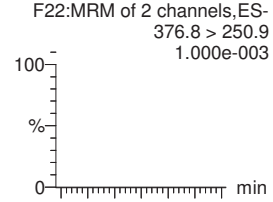


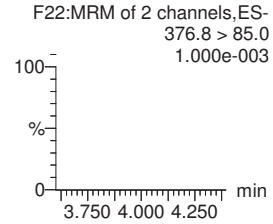
PFHpA



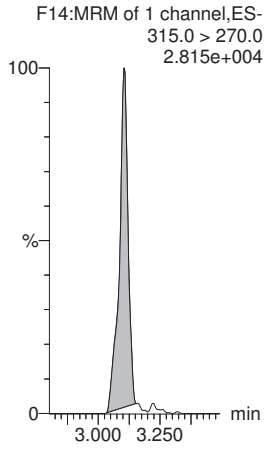


ADONA

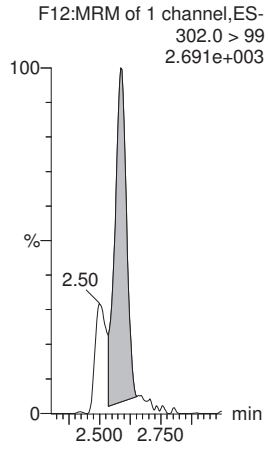




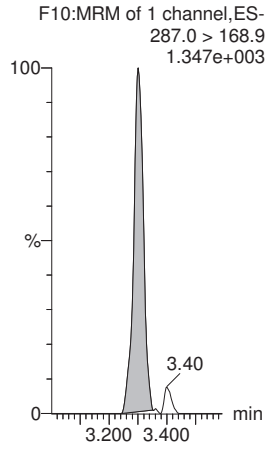
13C2-PFHxA-EIS



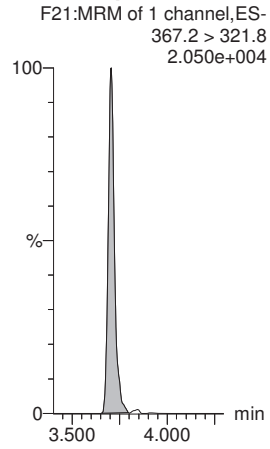
13C3-PFBS-EIS



13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



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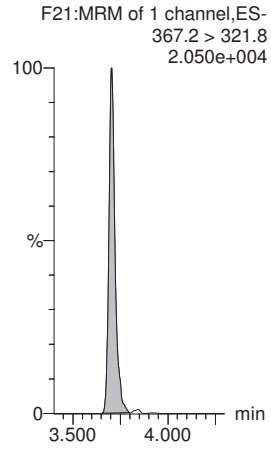
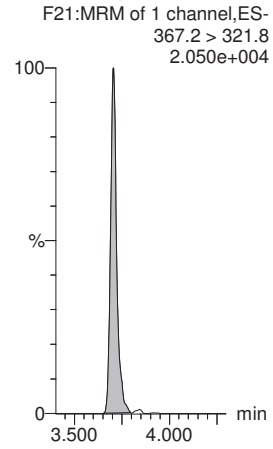


13C4-PFHpA-EIS



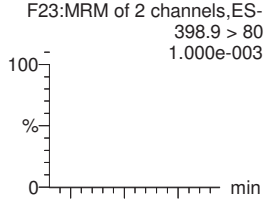
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

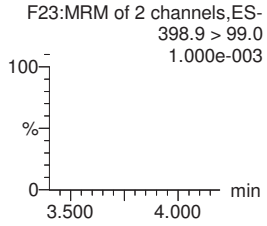
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

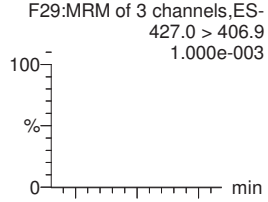
Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

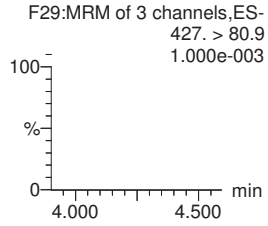
L-PFHxS





6:2 FTS





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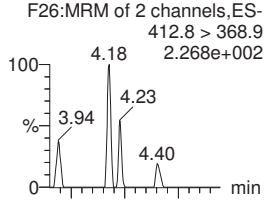

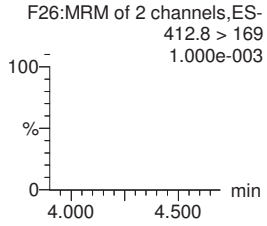

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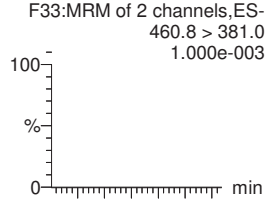

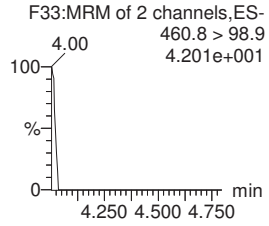

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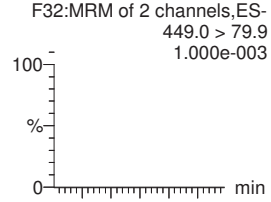
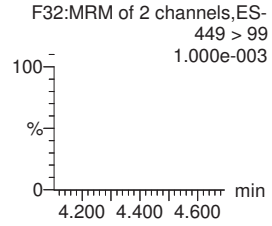
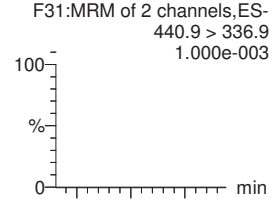
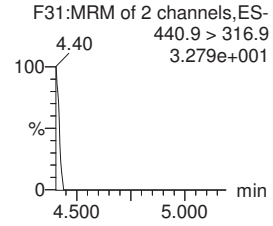


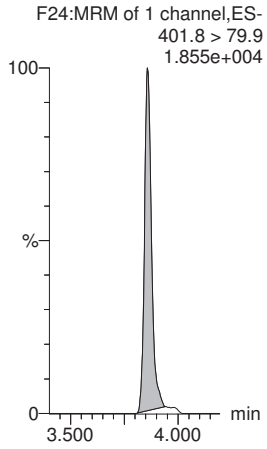


7:3 FTCA

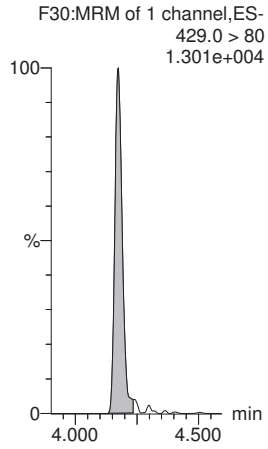




13C3-PFHxS-EIS



13C2-6:2 FTS-EIS



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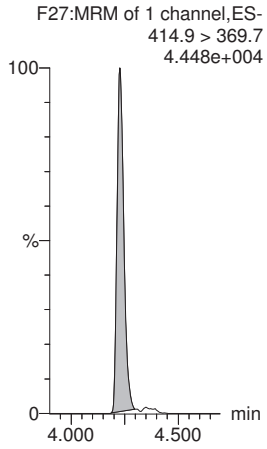

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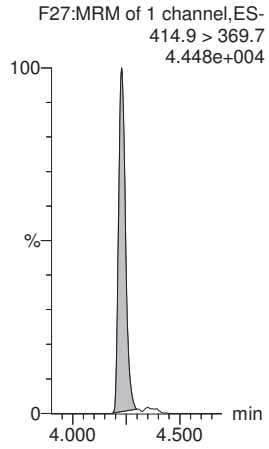
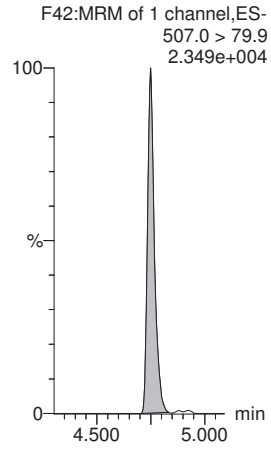
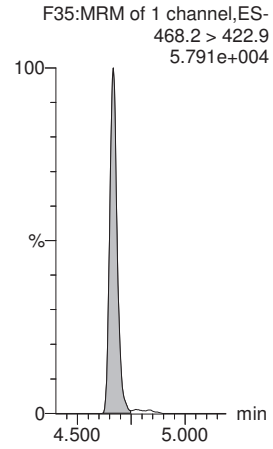


13C8-PFOS-EIS



13C5-PFNA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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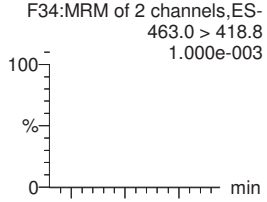

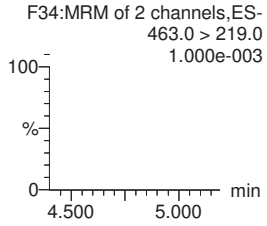

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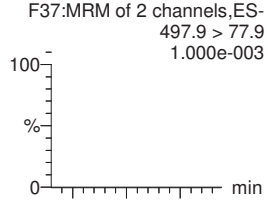

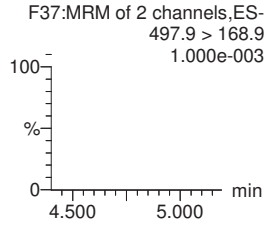

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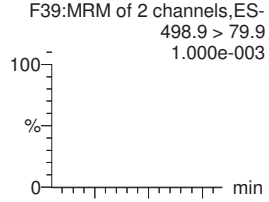
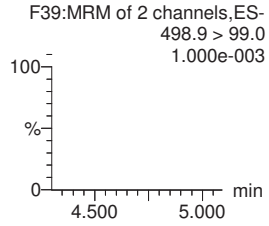
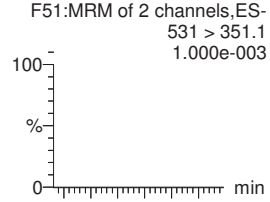
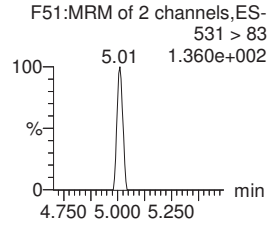




9Cl-PF30NS





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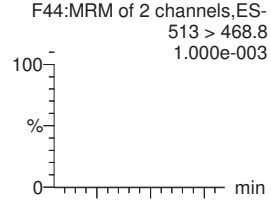
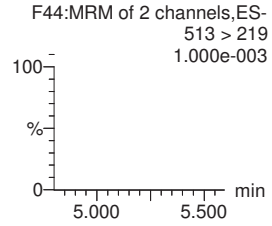
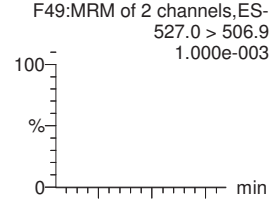
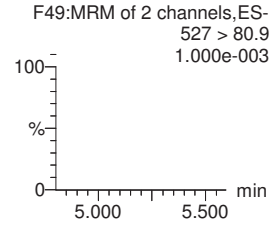




8:2 FTS





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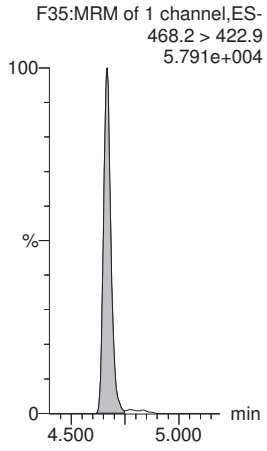

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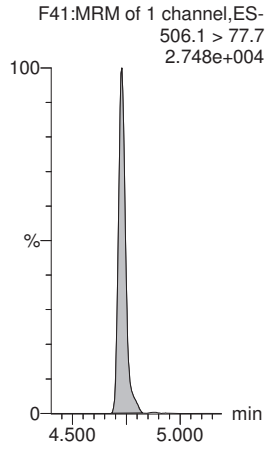

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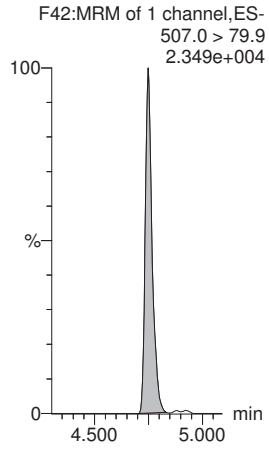

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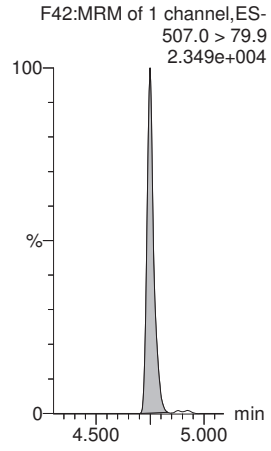

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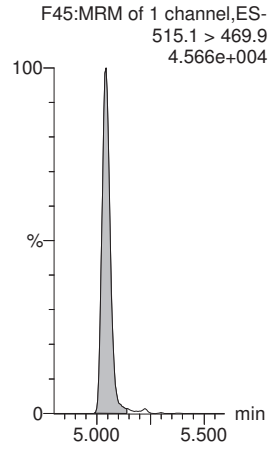
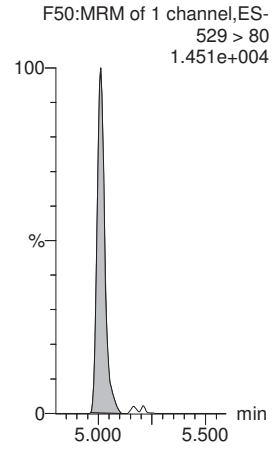


13C2-8:2 FTS-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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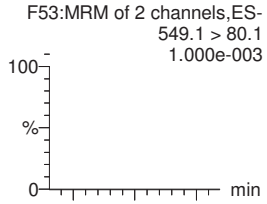

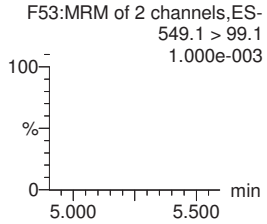

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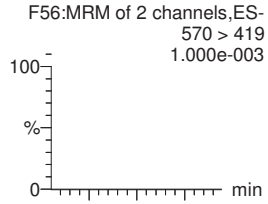
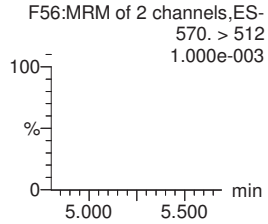
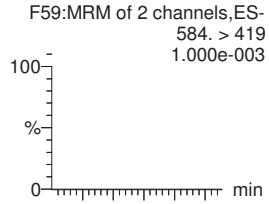
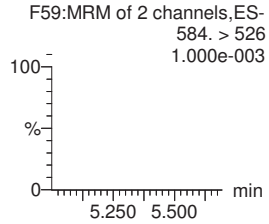




L-EtFOSAA





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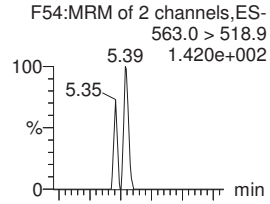

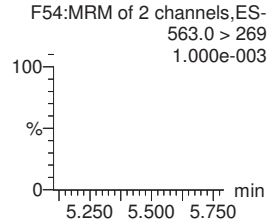

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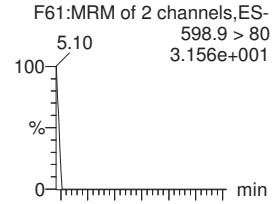

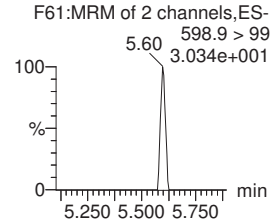

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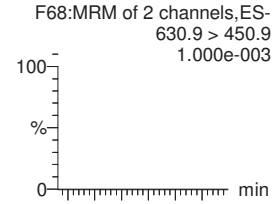

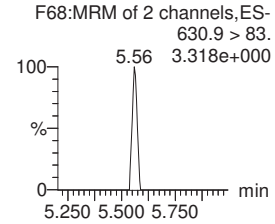

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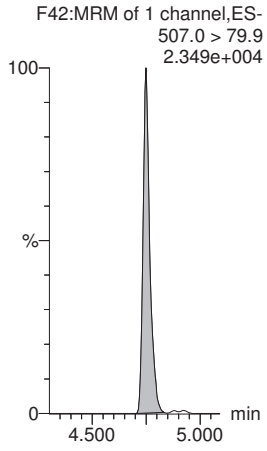
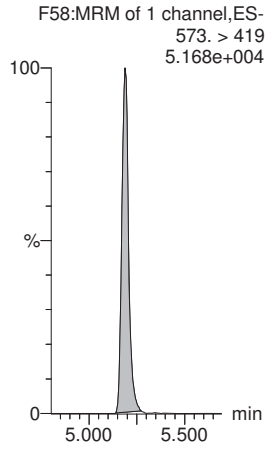


d3-N-MeFOSAA-EIS



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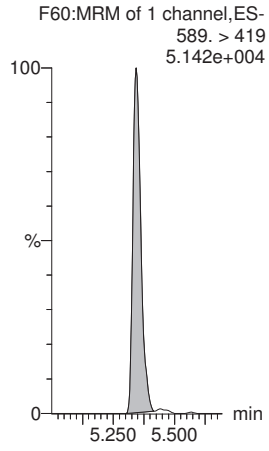

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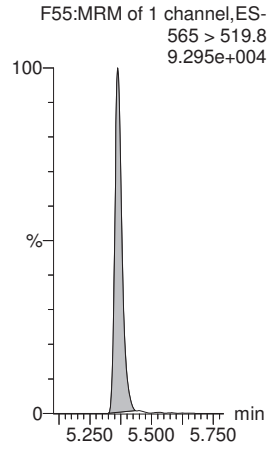

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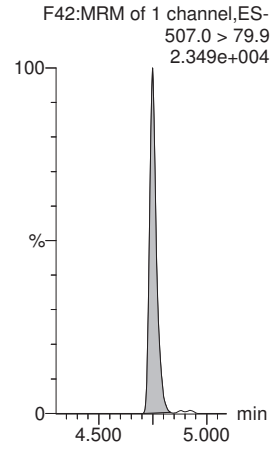

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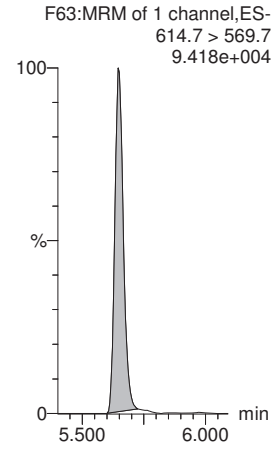

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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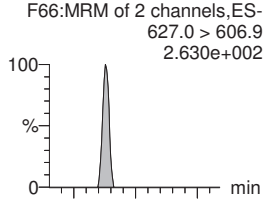
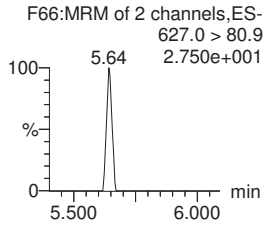
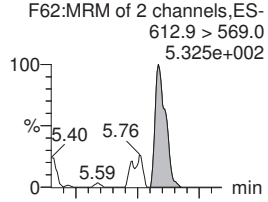
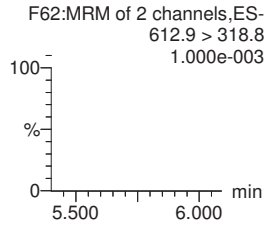




PFDoA





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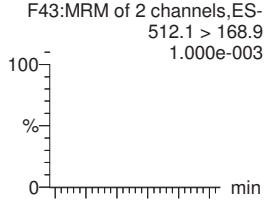
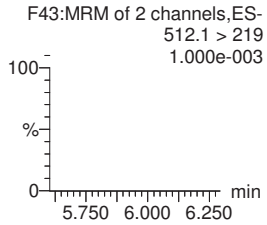
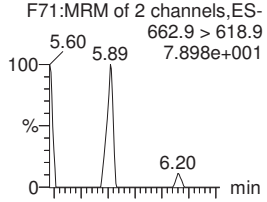
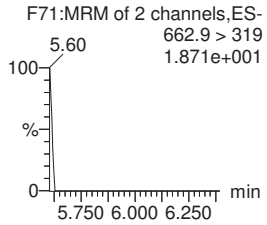


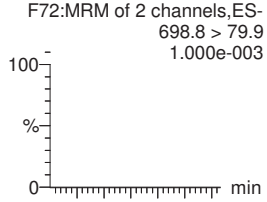


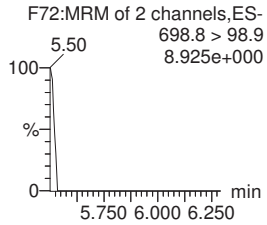
PFTrDA





PFDoS





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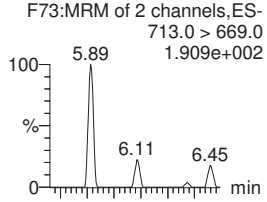
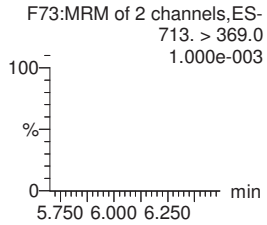
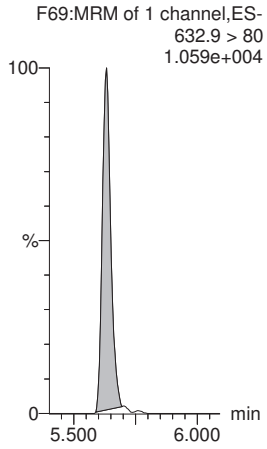
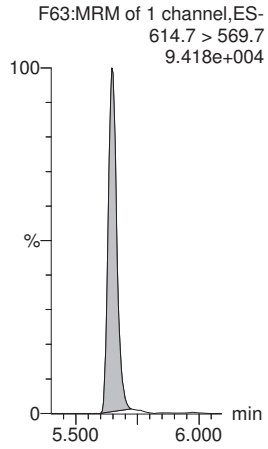




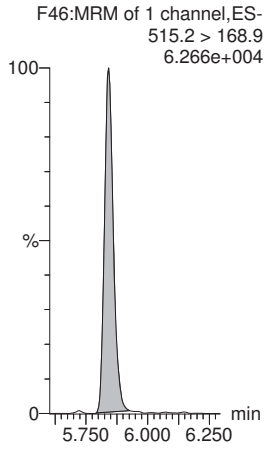
13C2-10:2 FTS-EIS



13C2-PFDoA-EIS



d3-N-MeFOSA-EIS



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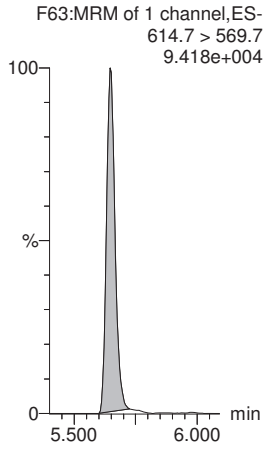

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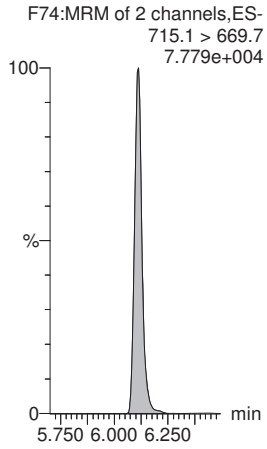

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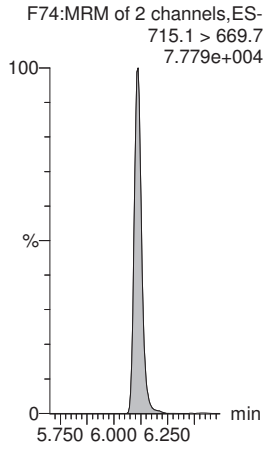

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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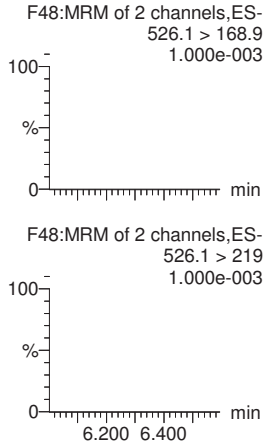

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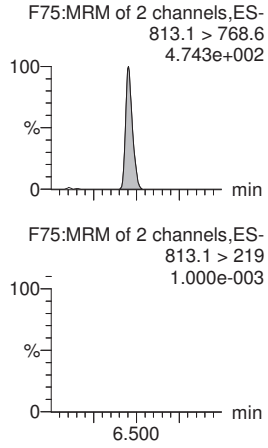
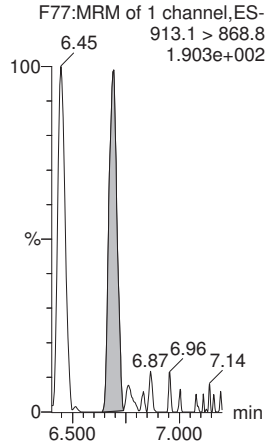
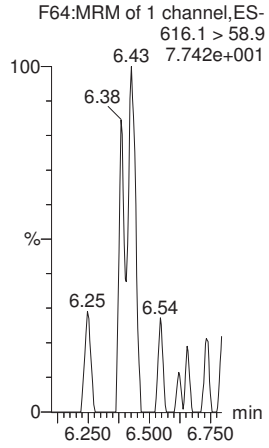


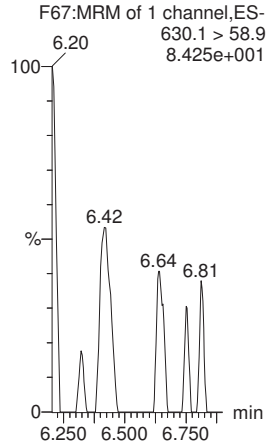
PFODA



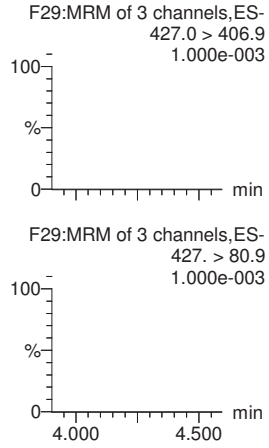
N-MeFOSE



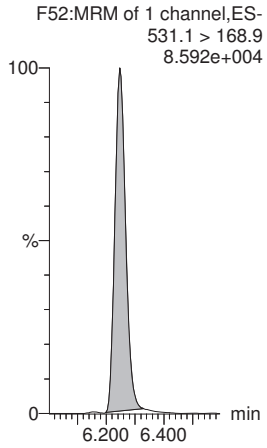
N-EtFOSE



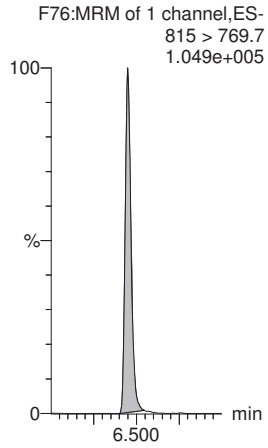
6:2 FTS-13C8PFOS



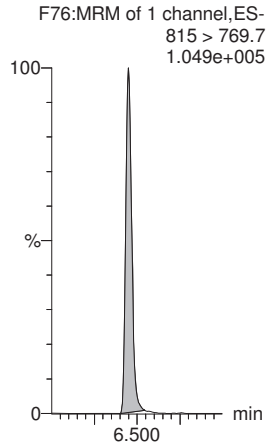
d5-N-ETFOSA-EIS



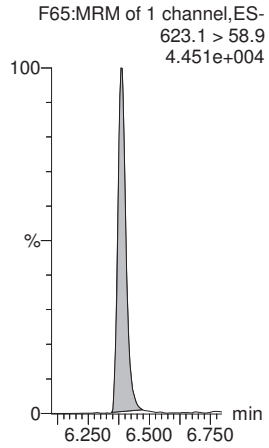
13C2-PFHxDA-EIS



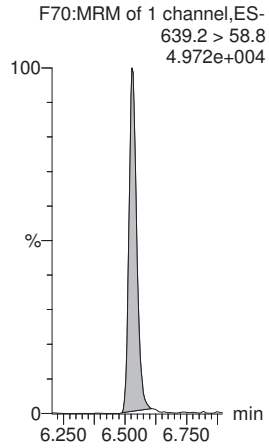
13C2-PFHxDA-EIS



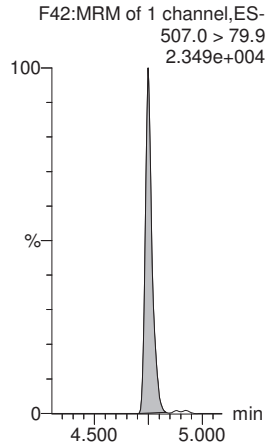
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C8-PFOS-EIS



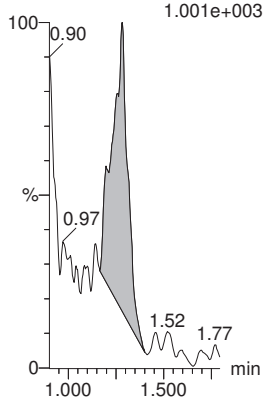
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

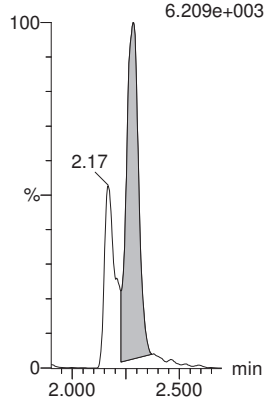
Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

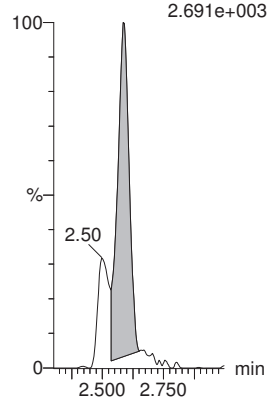
13C3-PFBA-RSD
IB IBF3:MRM of 1 channel,ES-
216.1 > 171.8
1.001e+003



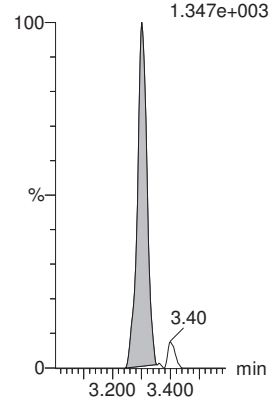
13C3-PFPeA-RSD
IB IBF8:MRM of 1 channel,ES-
266.0 > 221.8
6.209e+003



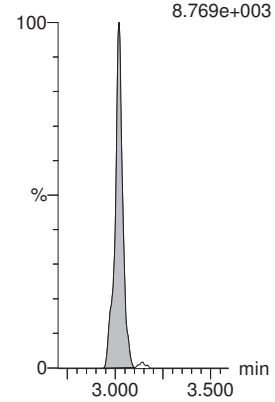
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
2.691e+003



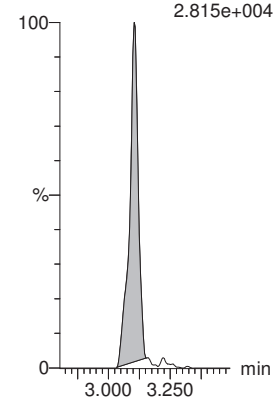
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
1.347e+003



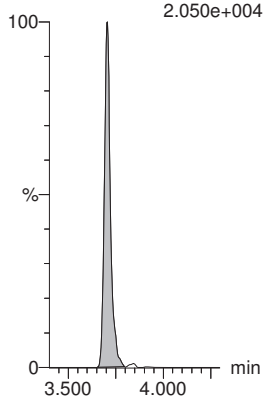
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
8.769e+003



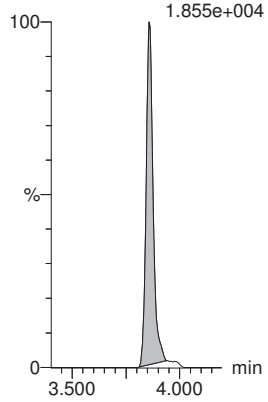
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
2.815e+004



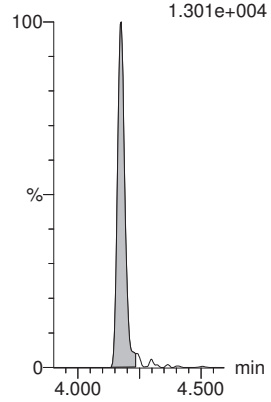
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
2.050e+004



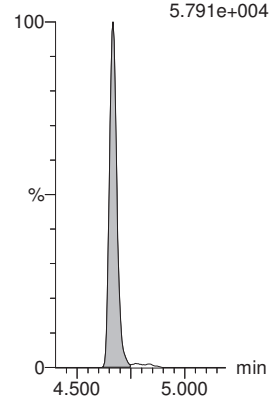
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
1.855e+004



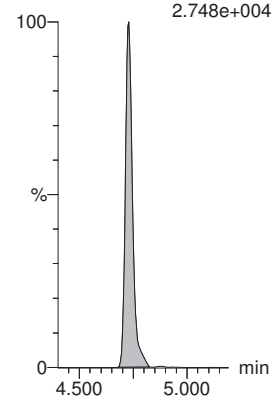
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.301e+004



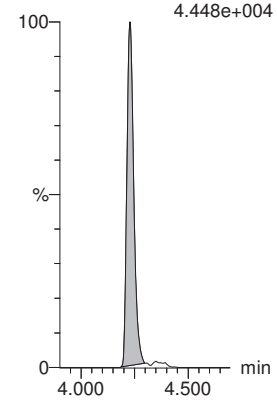
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
5.791e+004



13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
2.748e+004



13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
4.448e+004



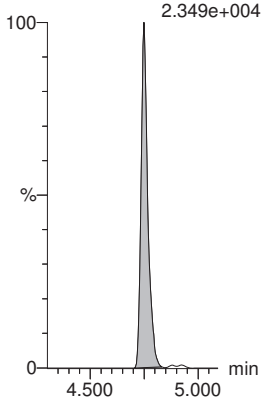
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

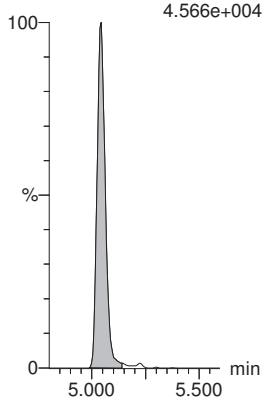
Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

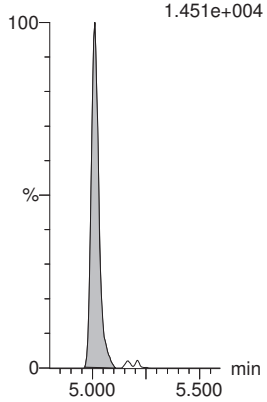
13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
2.349e+004



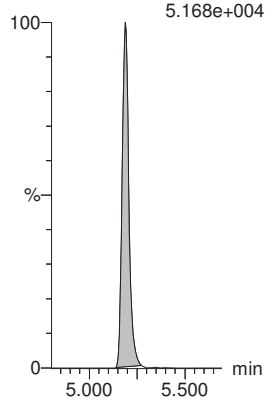
13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
4.566e+004



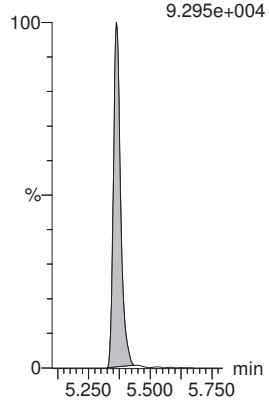
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.451e+004



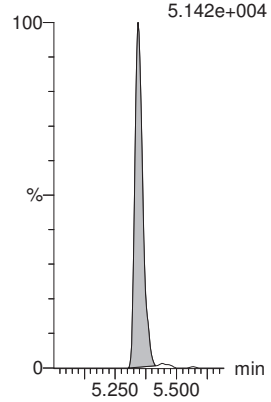
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
5.168e+004



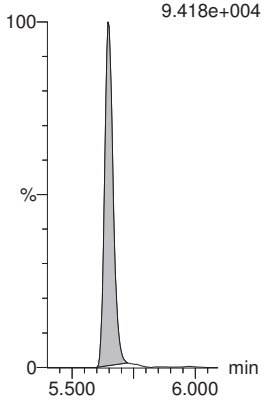
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
9.295e+004



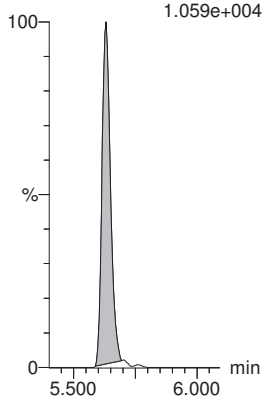
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
5.142e+004



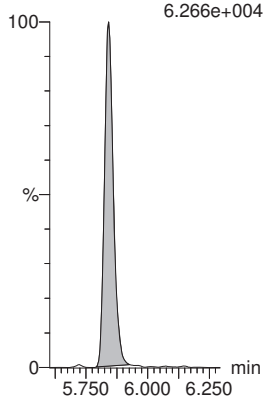
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
9.418e+004



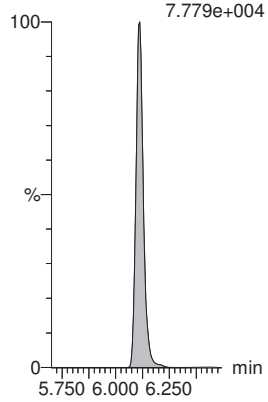
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.059e+004



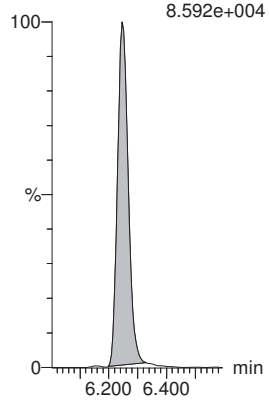
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
6.266e+004



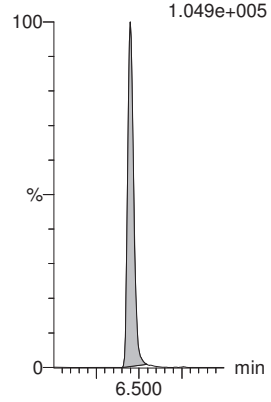
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
7.779e+004



d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
8.592e+004



13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.049e+005



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

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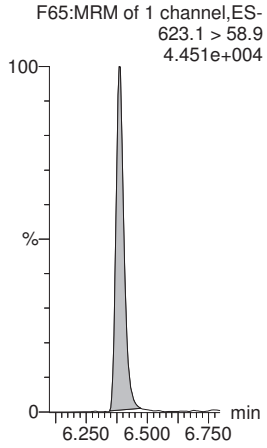
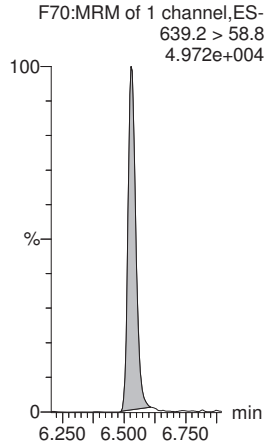
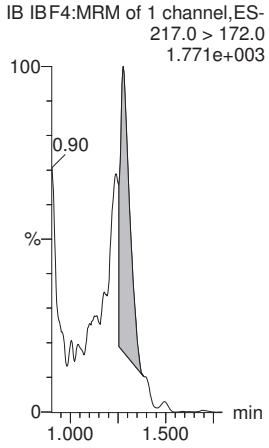
d7-N-MeFOSE-RSD



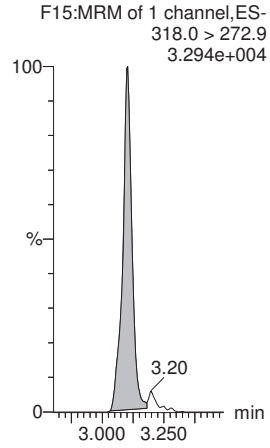
d9-N-EtFOSE-RSD



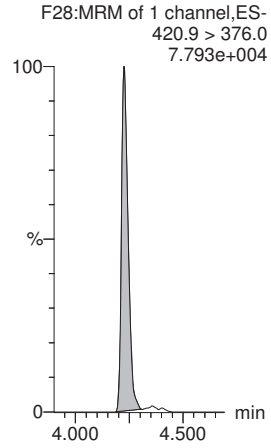
13C4-PFBA



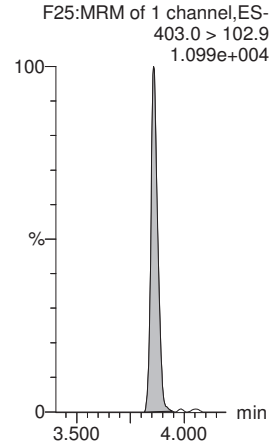
13C5-PFHxA



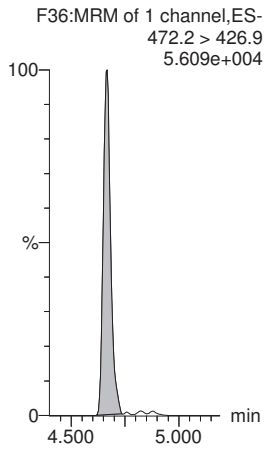
13C8-PFOA



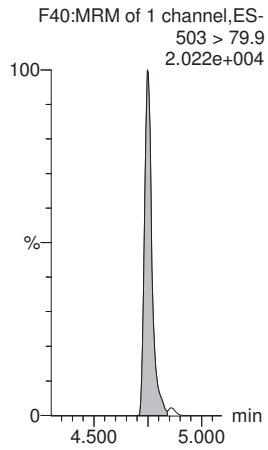
18O2-PFHxS



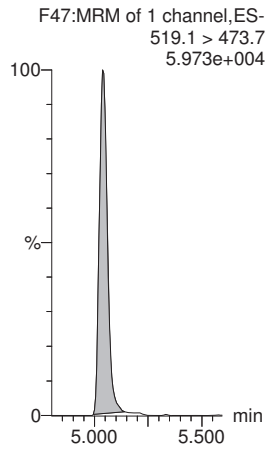
13C9-PFNA



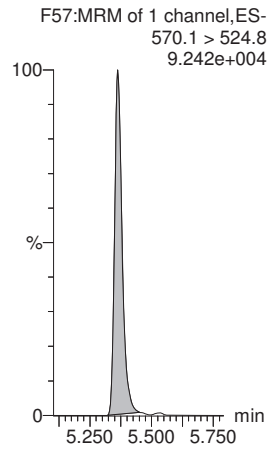
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	212.7 > 168.9		77.680	1.00						NO		
2	2	PFPrS	248.9 > 79.9		142.677	1.00						NO		
3	3	3:3 FTCA	240.9 > 176.9		394.816	1.00						NO		
4	4	PFPeA	263.1 > 218.9		394.816	1.00						NO		
5	5	PFBS	299.0 > 79.7		142.677	1.00						NO		
6	6	4:2 FTS	327.0 > 306.9		393.525	1.00						NO		
7	47	13C3-PFBA-EIS	216.1 > 171.8	77.680		1.00	1.28	77.680	12.500	2.34	18.7	YES		
8	51	13C3-PFBS-EIS	302.0 > 99	142.677		1.00	2.59	142.677	12.500	6.08	48.6	YES		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	394.816		1.00	2.28	394.816	12.500	5.61	44.9	YES		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	394.816		1.00	2.28	394.816	12.500	5.61	44.9	YES		
11	51	13C3-PFBS-EIS	302.0 > 99	142.677		1.00	2.59	142.677	12.500	6.08	48.6	YES		
12	55	13C2-4:2 FTS-EIS	329.0 >79.9	393.525		1.00	3.02	393.525	12.500	7.69	61.5	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0		1113.038	1.00						NO		
15	8	PFPeS	349.1>80.1		142.677	1.00						NO		
16	9	HFPO-DA	284.5 > 168.8		51.951	1.00						NO		
17	10	5:3 FTCA	340.9 > 236.9		753.312	1.00						NO		
18	11	PFHpA	363.0 > 318.9		753.312	1.00						NO		
19	12	ADONA	376.8 > 250.9		753.312	1.00						NO		
20	57	13C2-PFHxA-EIS	315.0 > 270.0	1113.038		1.00	3.10	1113.038	12.500	7.72	61.7	NO		
21	51	13C3-PFBS-EIS	302.0 > 99	142.677		1.00	2.59	142.677	12.500	6.08	48.6	YES		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	51.951		1.00	3.30	51.951	12.500	7.77	62.2	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	753.312		1.00	3.71	753.312	12.500	7.90	63.2	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	753.312		1.00	3.71	753.312	12.500	7.90	63.2	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	753.312		1.00	3.71	753.312	12.500	7.90	63.2	NO		
26	-1													
27	13	L-PFHxS	398.9 > 80		683.042	1.00						NO		
28	15	6:2 FTS	427.0 > 406.9		450.739	1.00						NO		
29	16	L-PFOA	412.8 > 368.9		1634.090	1.00						NO		
30	18	PFecHS	460.8 > 381.0		1634.090	1.00						NO		
31	19	PFHpS	449.0 > 79.9		852.233	1.00						NO		
32	20	7:3 FTCA	440.9 > 336.9		2303.936	1.00						NO		
33	61	13C3-PFHxS-EIS	401.8 > 79.9	683.042		1.00	3.86	683.042	12.500	7.74	61.9	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >80	450.739		1.00	4.17	450.739	12.500	7.91	63.3	NO		
35	69	13C2-PFOA-EIS	414.9 > 369.7	1634.090		1.00	4.23	1634.090	12.500	7.42	59.4	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	1634.090		1.00	4.23	1634.090	12.500	7.42	59.4	NO		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

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	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
37	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	2303.936		1.00	4.67	2303.936	12.500	8.77	70.1	NO		
39	-1													
40	21	PFNA	463.0 > 418.8		2303.936	1.00						NO		
41	22	PFOSA	497.9 > 77.9		1041.297	1.00						NO		
42	23	L-PFOS	498.9 > 79.9		852.233	1.00						NO		
43	25	9Cl-PF30NS	531 > 351.1		852.233	1.00						NO		
44	26	PFDA	513 > 468.8		2013.283	1.00						NO		
45	27	8:2 FTS	527.0 > 506.9		598.827	1.00						NO		
46	65	13C5-PFNA-EIS	468.2 > 422.9	2303.936		1.00	4.67	2303.936	12.500	8.77	70.1	NO		
47	67	13C8-PFOSA-EIS	506.1 > 77.7	1041.297		1.00	4.73	1041.297	12.500	8.79	70.3	NO		
48	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
49	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	2013.283		1.00	5.04	2013.283	12.500	7.64	61.2	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	598.827		1.00	5.01	598.827	12.500	8.73	69.8	NO		
52	-1													
53	28	PFNS	549.1 > 80.1		852.233	1.00						NO		
54	29	L-MeFOSAA	570 > 419		2086.884	1.00						NO		
55	31	L-EtFOSAA	584. > 419		1905.486	1.00						NO		
56	33	PFUdA	563.0 > 518.9		3121.909	1.00						NO		
57	34	PFDS	598.9> 80		852.233	1.00						NO		
58	35	11Cl-PF30UdS	630.9 > 450.9		3729.066	1.00						NO		
59	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
60	77	d3-N-MeFOSAA-EIS	573. > 419	2086.884		1.00	5.19	2086.884	12.500	9.00	72.0	NO		
61	81	d5-N-EtFOSAA-EIS	589. > 419	1905.486		1.00	5.34	1905.486	12.500	8.67	69.3	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	3121.909		1.00	5.36	3121.909	12.500	8.62	69.0	NO		
63	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
64	83	13C2-PFDoA-EIS	614.7 > 569.7	3729.066		1.00	5.65	3729.066	12.500	8.14	65.1	NO		
65	-1													
66	36	10:2 FTS	627.0 > 606.9	8.012	410.561	1.00	5.63	0.244				NO		
67	37	PFDoA	612.9 > 569.0	25.790	3729.066	1.00	5.83	0.086		0.0298		NO		
68	38	N-MeFOSA	512.1 > 168.9		2547.612	1.00						NO		
69	39	PFTrDA	662.9 > 618.9		3729.066	1.00						NO		
70	40	PFDoS	698.8 > 79.9		3079.235	1.00						NO		
71	41	PFTeDA	713.0 > 669.0		3079.235	1.00						NO		
72	85	13C2-10:2 FTS-EIS	632.9 > 80	410.561		1.00	5.63	410.561	12.500	7.71	61.7	YES		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

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	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
73	83	13C2-PFDoA-EIS	614.7 > 569.7	3729.066		1.00	5.65	3729.066	12.500	8.14	65.1	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	2547.612		1.00	5.84	2547.612	149.200	89.8	60.2	NO		
75	83	13C2-PFDoA-EIS	614.7 > 569.7	3729.066		1.00	5.65	3729.066	12.500	8.14	65.1	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	3079.235		1.00	6.11	3079.235	12.500	8.43	67.4	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	3079.235		1.00	6.11	3079.235	12.500	8.43	67.4	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9		3639.215	1.00						NO		
80	43	PFHxDA	813.1 > 768.6	21.740	4170.197	1.00	6.45	0.065				NO		
81	44	PFODA	913.1 > 868.8	8.226	4170.197	1.00	6.69	0.025				NO		
82	45	N-MeFOSE	616.1 > 58.9		1674.858	1.00						NO		
83	46	N-EtFOSE	630.1 > 58.9		1790.798	1.00						NO		
84	1...	6:2 FTS-13C8PFOS	427.0 > 406.9		852.233	1.00						NO		
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	3639.215		1.00	6.25	3639.215	149.200	97.4	65.3	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	4170.197		1.00	6.45	4170.197	12.500	8.14	65.1	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	4170.197		1.00	6.45	4170.197	12.500	8.14	65.1	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	1674.858		1.00	6.38	1674.858	149.200	95.6	64.1	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	1790.798		1.00	6.53	1790.798	149.200	91.8	61.5	NO		
90	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
91	-1													
92	48	13C3-PFBA-RSD	216.1 > 171.8	77.680	82.920	1.00	1.28	11.710	12.500	19.3	154.1	YES		
93	50	13C3-PFPeA-RSD	266.0 > 221.8	394.833	1405.131	1.00	2.28	3.512	12.500	8.30	66.4	NO		
94	52	13C3-PFBS-RSD	302.0 > 99	142.677	398.677	1.00	2.59	4.473	12.500	7.81	62.5	NO		
95	54	13C3-HFPO-DA-RSD	287.0 > 168.9	51.951	1405.131	1.00	3.30	0.462	12.500	11.0	88.1	NO		
96	56	13C2-4:2 FTS-RSD	329.0 >79.9	393.525	398.677	1.00	3.02	12.338	12.500	11.2	89.6	NO		
97	58	13C2-PFHxA-RSD	315.0 > 270.0	1113.038	1405.131	1.00	3.10	9.902	12.500	11.9	95.2	NO		
98	60	13C4-PFHpA-RSD	367.2 > 321.8	753.312	1405.131	1.00	3.71	6.701	12.500	11.8	94.6	NO		
99	62	13C3-PFHxS-RSD	401.8 > 79.9	683.042	398.677	1.00	3.86	21.416	12.500	11.0	88.4	NO		
100	64	13C2-6:2 FTS-RSD	429.0 >80	450.739	805.870	1.00	4.17	6.991	12.500	13.6	108.6	NO		
101	66	13C5-PFNA-RSD	468.2 > 422.9	2303.936	2221.419	1.00	4.67	12.964	12.500	14.1	113.1	NO		
102	68	13C8-PFOSA-RSD	506.1 > 77.7	1041.297	3281.987	1.00	4.73	3.966	12.500	14.1	112.8	NO		
103	70	13C2-PFOA-RSD	414.9 > 369.7	1634.090	2738.947	1.00	4.23	7.458	12.500	11.6	92.8	NO		
104	-1													
105	72	13C8-PFOS-RSD	507.0 > 79.9	852.233	805.870	1.00	4.75	13.219	12.500	13.7	109.3	NO		
106	74	13C2-PFDA-RSD	515.1 > 469.9	2013.283	2549.278	1.00	5.04	9.872	12.500	11.6	93.0	NO		
107	76	13C2-8:2 FTS-RSD	529 > 80	598.827	805.870	1.00	5.01	9.289	12.500	16.3	130.6	NO		
108	78	d3-N-MeFOSAA-RSD	573. > 419	2086.884	3281.987	1.00	5.19	7.948	12.500	13.6	109.1	NO		

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109	80	13C2-PFUdA-RSD	565 > 519.8	3121.909	3281.987	1.00	5.36	11.890	12.500	13.5	108.3	NO		
110	82	d5-N-EtFOSAA-RSD	589. > 419	1905.486	3281.987	1.00	5.34	7.257	12.500	14.2	113.4	NO		
111	84	13C2-PFDoA-RSD	614.7 > 569.7	3729.066	2549.278	1.00	5.65	18.285	12.500	12.5	100.2	NO		
112	86	13C2-10:2 FTS-RSD	632.9 > 80	410.561	805.870	1.00	5.63	6.368	12.500	13.0	103.9	NO		
113	88	d3-N-MeFOSA-RSD	515.2 > 168.9	2547.612	3281.987	1.00	5.84	9.703	149.200	137	92.1	NO		
114	90	13C2-PFTeDA-RSD	715.1 > 669.7	3079.235	3281.987	1.00	6.11	11.728	12.500	13.2	105.9	NO		
115	92	d5-N-ETFOSA-RSD	531.1 > 168.9	3639.215	3281.987	1.00	6.25	13.861	149.200	152	101.6	NO		
116	94	13C2-PFHxDA-RSD	815 > 769.7	4170.197	3281.987	1.00	6.45	15.883	12.500	13.2	105.3	NO		
117	-1													
118	96	d7-N-MeFOSE-RSD	623.1 > 58.9	1674.858	3281.987	1.00	6.38	6.379	149.200	144	96.4	NO		
119	98	d9-N-EtFOSE-RSD	639.2 > 58.8	1790.798	3281.987	1.00	6.53	6.821	149.200	139	93.5	NO		
120	99	13C4-PFBA	217.0 > 172.0	82.920	82.920	1.00	1.28	12.500	12.500	12.5	100.0	NO		
121	1...	13C5-PFHxA	318.0 > 272.9	1405.131	1405.131	1.00	3.10	12.500	12.500	12.5	100.0	NO		
122	1...	13C8-PFOA	420.9 > 376.0	2738.947	2738.947	1.00	4.23	12.500	12.500	12.5	100.0	NO		
123	1...	18O2-PFHxS	403.0 > 102.9	398.677	398.677	1.00	3.86	12.500	12.500	12.5	100.0	NO		
124	1...	13C9-PFNA	472.2 > 426.9	2221.419	2221.419	1.00	4.67	12.500	12.500	12.5	100.0	NO		
125	1...	13C4-PFOS	503 > 79.9	805.870	805.870	1.00	4.75	12.500	12.500	12.5	100.0	NO		
126	1...	13C6-PFDA	519.1 > 473.7	2549.278	2549.278	1.00	5.04	12.500	12.500	12.5	100.0	NO		
127	1...	13C7-PFUdA	570.1 > 524.8	3281.987	3281.987	1.00	5.36	12.500	12.500	12.5	100.0	NO		

LC Calibration Standards Review Checklist 64-(M)

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	N/A
Calibration ID:	ST200212M2-11	L M H	☑	☐	☐	☐	☑	☐	☐
Calibration ID:	-12	L M H	☑	☐	☐	☐	☐	☐	☐
Calibration ID:	-13	L M H	☑	☐	☑	☐	☐	☐	☐
Calibration ID:	-14	L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

Full Mass Cal. Date: 20200211

Run Log Present: ☑

# of Samples per Sequence Checked: ☑

Instrument Blank Saved ☑

All Branches in Acquisition Window ☑

IIS Area Saved ☑

Reviewed By: JM 2/3/2020
Initials/Date

Comments:

ID: LR - LCSRC Rev. No.: 2 Rev. Date: 04/29/2019 Page: 1 of 1

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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

JQM 2/13/2020

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	212.7 > 168.9	493.411	397.518	1.00	1.28	15.515	10.000	9.09	90.9	NO		
2	2	PFPrS	248.9 > 79.9	281.090	322.701	1.00	1.66	10.888	10.000	8.24	82.4	NO	2.771	NO
3	3	3:3 FTCA	240.9 > 176.9	64.616	902.130	1.00	2.14	0.895	10.000	12.2	122.1	NO	2.769	YES
4	4	PFPeA	263.1 > 218.9	649.101	902.130	1.00	2.29	8.994	10.000	9.71	97.1	NO		
5	5	PFBS	299.0 > 79.7	559.960	322.701	1.00	2.59	21.690	10.000	9.28	92.8	NO	3.187	NO
6	6	4:2 FTS	327.0 > 306.9	1039.461	547.405	1.00	3.02	23.736	10.000	10.6	106.2	NO	1.552	NO
7	47	13C3-PFBA-EIS	216.1 > 171.8	397.518		1.00	1.28	397.518	12.500	12.0	95.7	NO		
8	51	13C3-PFBS-EIS	302.0 > 99	322.701		1.00	2.59	322.701	12.500	13.7	109.9	NO		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	902.130		1.00	2.29	902.130	12.500	12.8	102.5	NO		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	902.130		1.00	2.29	902.130	12.500	12.8	102.5	NO		
11	51	13C3-PFBS-EIS	302.0 > 99	322.701		1.00	2.59	322.701	12.500	13.7	109.9	NO		
12	55	13C2-4:2 FTS-EIS	329.0 >79.9	547.405		1.00	3.03	547.405	12.500	10.7	85.5	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0	1562.535	1721.054	1.00	3.11	11.349	10.000	10.5	105.0	NO	18.749	NO
15	8	PFPeS	349.1>80.1	616.347	322.701	1.00	3.30	23.875	10.000	9.10	91.0	NO	1.775	NO
16	9	HFPO-DA	284.5 > 168.8	68.216	82.528	1.00	3.31	10.332	10.000	12.0	120.2	NO	2.610	NO
17	10	5:3 FTCA	340.9 > 236.9	284.846	1209.042	1.00	3.64	2.945	10.000	8.81	88.1	NO	1.431	NO
18	11	PFHpA	363.0 > 318.9	1391.501	1209.042	1.00	3.71	14.386	10.000	11.1	110.9	NO	12.609	NO
19	12	ADONA	376.8 > 250.9	4556.854	1209.042	1.00	3.82	47.112	10.000	9.50	95.0	NO	2.863	NO
20	57	13C2-PFHxA-EIS	315.0 > 270.0	1721.054		1.00	3.10	1721.054	12.500	11.9	95.5	NO		
21	51	13C3-PFBS-EIS	302.0 > 99	322.701		1.00	2.59	322.701	12.500	13.7	109.9	NO		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	82.528		1.00	3.30	82.528	12.500	12.3	98.7	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	1209.042		1.00	3.71	1209.042	12.500	12.7	101.5	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	1209.042		1.00	3.71	1209.042	12.500	12.7	101.5	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	1209.042		1.00	3.71	1209.042	12.500	12.7	101.5	NO		
26	-1													
27	13	L-PFHxS	398.9 > 80	877.784	1006.386	1.00	3.86	10.903	10.000	10.4	103.6	NO	2.152	NO
28	15	6:2 FTS	427.0 > 406.9	1595.933	695.214	1.00	4.18	28.695	10.000	9.20	92.0	NO	2.046	NO
29	16	L-PFOA	412.8 > 368.9	3262.135	2654.636	1.00	4.23	15.361	10.000	10.5	105.0	NO	3.450	NO
30	18	PFecHS	460.8 > 381.0	1471.854	2654.636	1.00	4.25	6.931	10.000	9.03	90.3	NO	1.037	NO
31	19	PFHpS	449.0 > 79.9	307.956	1246.324	1.00	4.35	3.089	10.000	10.5	104.7	NO	1.169	NO
32	20	7:3 FTCA	440.9 > 336.9	370.806	3269.047	1.00	4.65	1.418	10.000	8.51	85.1	NO	1.338	NO
33	61	13C3-PFHxS-EIS	401.8 > 79.9	1006.386		1.00	3.86	1006.386	12.500	11.4	91.2	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >80	695.214		1.00	4.17	695.214	12.500	12.2	97.7	NO		

VY 02/13/20

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Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	69	13C2-PFOA-EIS	414.9 > 369.7	2654.636		1.00	4.23	2654.636	12.500	12.1	96.5	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	2654.636		1.00	4.23	2654.636	12.500	12.1	96.5	NO		
37	71	13C8-PFOS-EIS	507.0 > 79.9	1246.324		1.00	4.75	1246.324	12.500	11.8	94.2	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	3269.047		1.00	4.67	3269.047	12.500	12.4	99.5	NO		
39	-1													
40	21	PFNA	463.0 > 418.8	2878.051	3269.047	1.00	4.67	11.005	10.000	9.50	95.0	NO	4.120	NO
41	22	PFOSA	497.9 > 77.9	1305.527	1448.398	1.00	4.73	11.267	10.000	9.38	93.8	NO	30.757	NO
42	23	L-PFOS	498.9 > 79.9	1131.082	1246.324	1.00	4.76	11.344	10.000	9.77	97.7	NO	2.121	NO
43	25	9Cl-PF30NS	531 > 351.1	3470.523	1246.324	1.00	4.97	34.808	10.000	10.2	101.6	NO	27.966	NO
44	26	PFDA	513 > 468.8	3514.565	3199.524	1.00	5.04	13.731	10.000	11.0	109.6	NO	6.496	NO
45	27	8:2 FTS	527.0 > 506.9	1626.448	732.255	1.00	5.01	27.764	10.000	12.5	125.2	NO	1.525	NO
46	65	13C5-PFNA-EIS	468.2 > 422.9	3269.047		1.00	4.67	3269.047	12.500	12.4	99.5	NO		
47	67	13C8-PFOSA-EIS	506.1 > 77.7	1448.398		1.00	4.73	1448.398	12.500	12.2	97.8	NO		
48	71	13C8-PFOS-EIS	507.0 > 79.9	1246.324		1.00	4.75	1246.324	12.500	11.8	94.2	NO		
49	71	13C8-PFOS-EIS	507.0 > 79.9	1246.324		1.00	4.75	1246.324	12.500	11.8	94.2	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	3199.524		1.00	5.04	3199.524	12.500	12.1	97.2	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	732.255		1.00	5.02	732.255	12.500	10.7	85.4	NO		
52	-1													
53	28	PFNS	549.1 > 80.1	1014.676	1246.324	1.00	5.11	10.177	10.000	9.79	97.9	NO	1.769	NO
54	29	L-MeFOSAA	570 > 419	2127.531	2983.144	1.00	5.20	8.915	10.000	9.96	99.6	NO	2.569	NO
55	31	L-EtFOSAA	584. > 419	2056.767	2803.653	1.00	5.35	9.170	10.000	9.14	91.4	NO	1.398	NO
56	33	PFUdA	563.0 > 518.9	3829.416	4476.461	1.00	5.37	10.693	10.000	10.4	104.1	NO	9.331	NO
57	34	PFDS	598.9> 80	1181.913	1246.324	1.00	5.41	11.854	10.000	9.30	93.0	NO	1.787	NO
58	35	11Cl-PF30UdS	630.9 > 450.9	3879.814	5556.360	1.00	5.58	8.728	10.000	9.95	99.5	NO	30.708	NO
59	71	13C8-PFOS-EIS	507.0 > 79.9	1246.324		1.00	4.75	1246.324	12.500	11.8	94.2	NO		
60	77	d3-N-MeFOSAA-EIS	573. > 419	2983.144		1.00	5.19	2983.144	12.500	12.9	103.0	NO		
61	81	d5-N-EtFOSAA-EIS	589. > 419	2803.653		1.00	5.35	2803.653	12.500	12.7	102.0	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	4476.461		1.00	5.37	4476.461	12.500	12.4	98.9	NO		
63	71	13C8-PFOS-EIS	507.0 > 79.9	1246.324		1.00	4.75	1246.324	12.500	11.8	94.2	NO		
64	83	13C2-PFDoA-EIS	614.7 > 569.7	5556.360		1.00	5.65	5556.360	12.500	12.1	97.0	NO		
65	-1													
66	36	10:2 FTS	627.0 > 606.9	1734.314	643.723	1.00	5.64	33.677	10.000	10.1	100.6	NO	1.720	NO
67	37	PFDoA	612.9 > 569.0	4914.626	5556.360	1.00	5.65	11.056	10.000	10.2	101.9	NO	8.506	NO
68	38	N-MeFOSA	512.1 > 168.9	1432.865	4140.496	1.00	5.82	51.632	50.000	53.1	106.2	NO	1.594	NO

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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

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Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	39	PFTrDA	662.9 > 618.9	5466.497	5556.360	1.00	5.89	12.298	10.000	9.49	94.9	NO	22.486	NO
70	40	PFDoS	698.8 > 79.9	1470.019	4612.307	1.00	5.92	3.984	10.000	10.2	101.9	NO	1.756	NO
71	41	PFTeDA	713.0 > 669.0	5222.872	4612.307	1.00	6.11	14.155	10.000	10.3	103.1	NO	13.365	NO
72	85	13C2-10:2 FTS-EIS	632.9 > 80	643.723		1.00	5.63	643.723	12.500	12.1	96.7	NO		
73	83	13C2-PFDoA-EIS	614.7 > 569.7	5556.360		1.00	5.65	5556.360	12.500	12.1	97.0	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	4140.496		1.00	5.84	4140.496	149.200	146	97.8	NO		
75	83	13C2-PFDoA-EIS	614.7 > 569.7	5556.360		1.00	5.65	5556.360	12.500	12.1	97.0	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	4612.307		1.00	6.11	4612.307	12.500	12.6	101.0	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	4612.307		1.00	6.11	4612.307	12.500	12.6	101.0	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9	1636.648	5618.563	1.00	6.23	43.461	50.000	52.6	105.3	NO	1.590	NO
80	43	PFHxDA	813.1 > 768.6	3248.421	6303.626	1.00	6.45	6.442	10.000	10.2	102.3	NO	28.518	NO
81	44	PFODA	913.1 > 868.8	4888.308	6303.626	1.00	6.68	9.693	10.000	10.1	101.1	NO		
82	45	N-MeFOSE	616.1 > 58.9	909.584	2644.102	1.00	6.39	51.326	50.000	51.4	102.7	NO		
83	46	N-EtFOSE	630.1 > 58.9	1052.640	2834.710	1.00	6.54	55.404	50.000	50.3	100.5	NO		
84	1...	6:2 FTS-13C8PFOS	427.0 > 406.9	1595.933	1246.324	1.00	4.18	16.006	10.000	19.1	190.9	YES	1.919	NO
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	5618.563		1.00	6.25	5618.563	149.200	150	100.8	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	6303.626		1.00	6.45	6303.626	12.500	12.3	98.4	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	6303.626		1.00	6.45	6303.626	12.500	12.3	98.4	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	2644.102		1.00	6.38	2644.102	149.200	151	101.1	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	2834.710		1.00	6.53	2834.710	149.200	145	97.4	NO		
90	71	13C8-PFOS-EIS	507.0 > 79.9	1246.324		1.00	4.75	1246.324	12.500	11.8	94.2	NO		
91	-1													
92	48	13C3-PFBA-RSD	216.1 > 171.8	397.518	682.684	1.00	1.28	7.279	12.500	12.0	95.8	NO		
93	50	13C3-PFPeA-RSD	266.0 > 221.8	854.080	2022.174	1.00	2.29	5.279	12.500	12.5	99.8	NO		
94	52	13C3-PFBS-RSD	302.0 > 99	322.701	577.049	1.00	2.59	6.990	12.500	12.2	97.6	NO		
95	54	13C3-HFPO-DA-RSD	287.0 > 168.9	87.515	2022.174	1.00	3.30	0.541	12.500	12.9	103.1	NO		
96	56	13C2-4:2 FTS-RSD	329.0 >79.9	548.594	577.049	1.00	3.03	11.884	12.500	10.8	86.3	NO		
97	58	13C2-PFHxA-RSD	315.0 > 270.0	1714.125	2022.174	1.00	3.10	10.596	12.500	12.7	101.8	NO		
98	60	13C4-PFHpA-RSD	367.2 > 321.8	1216.827	2022.174	1.00	3.71	7.522	12.500	13.3	106.1	NO		
99	62	13C3-PFHxS-RSD	401.8 > 79.9	1006.386	577.049	1.00	3.86	21.800	12.500	11.2	90.0	NO		
100	64	13C2-6:2 FTS-RSD	429.0 >80	725.851	1357.280	1.00	4.17	6.685	12.500	13.0	103.8	NO		
101	66	13C5-PFNA-RSD	468.2 > 422.9	3270.637	3471.536	1.00	4.67	11.777	12.500	12.8	102.2	NO		
102	68	13C8-PFOSA-RSD	506.1 > 77.7	1451.011	5228.257	1.00	4.73	3.469	12.500	12.3	98.7	NO		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
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Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
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Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
103	70	13C2-PFOA-RSD	414.9 > 369.7	2654.636	4206.684	1.00	4.23	7.888	12.500	12.3	98.2	NO		
104	-1													
105	72	13C8-PFOS-RSD	507.0 > 79.9	1246.324	1357.280	1.00	4.75	11.478	12.500	11.9	94.9	NO		
106	74	13C2-PFDA-RSD	515.1 > 469.9	3199.524	3987.278	1.00	5.04	10.030	12.500	11.8	94.5	NO		
107	76	13C2-8:2 FTS-RSD	529 > 80	728.139	1357.280	1.00	5.02	6.706	12.500	11.8	94.3	NO		
108	78	d3-N-MeFOSAA-RSD	573. > 419	2983.144	5228.257	1.00	5.19	7.132	12.500	12.2	97.9	NO		
109	80	13C2-PFUdA-RSD	565 > 519.8	4476.461	5228.257	1.00	5.37	10.703	12.500	12.2	97.4	NO		
110	82	d5-N-EtFOSAA-RSD	589. > 419	2803.653	5228.257	1.00	5.35	6.703	12.500	13.1	104.7	NO		
111	84	13C2-PFDoA-RSD	614.7 > 569.7	5556.360	3987.278	1.00	5.65	17.419	12.500	11.9	95.4	NO		
112	86	13C2-10:2 FTS-RSD	632.9 > 80	643.723	1357.280	1.00	5.63	5.928	12.500	12.1	96.7	NO		
113	88	d3-N-MeFOSA-RSD	515.2 > 168.9	4140.496	5228.257	1.00	5.84	9.899	149.200	140	94.0	NO		
114	90	13C2-PFTeDA-RSD	715.1 > 669.7	4612.307	5228.257	1.00	6.11	11.027	12.500	12.4	99.6	NO		
115	92	d5-N-ETFOSA-RSD	531.1 > 168.9	5618.563	5228.257	1.00	6.25	13.433	149.200	147	98.4	NO		
116	94	13C2-PFHxDA-RSD	815 > 769.7	6303.626	5228.257	1.00	6.45	15.071	12.500	12.5	99.9	NO		
117	-1													
118	96	d7-N-MeFOSE-RSD	623.1 > 58.9	2644.102	5228.257	1.00	6.38	6.322	149.200	143	95.5	NO		
119	98	d9-N-EtFOSE-RSD	639.2 > 58.8	2834.710	5228.257	1.00	6.53	6.777	149.200	139	92.9	NO		
120	99	13C4-PFBA	217.0 > 172.0	682.684	682.684	1.00	1.28	12.500	12.500	12.5	100.0	NO		
121	1...	13C5-PFHxA	318.0 > 272.9	2022.174	2022.174	1.00	3.10	12.500	12.500	12.5	100.0	NO		
122	1...	13C8-PFOA	420.9 > 376.0	4206.684	4206.684	1.00	4.23	12.500	12.500	12.5	100.0	NO		
123	1...	18O2-PFHxS	403.0 > 102.9	577.049	577.049	1.00	3.86	12.500	12.500	12.5	100.0	NO		
124	1...	13C9-PFNA	472.2 > 426.9	3471.536	3471.536	1.00	4.67	12.500	12.500	12.5	100.0	NO		
125	1...	13C4-PFOS	503 > 79.9	1357.280	1357.280	1.00	4.75	12.500	12.500	12.5	100.0	NO		
126	1...	13C6-PFDA	519.1 > 473.7	3987.278	3987.278	1.00	5.04	12.500	12.500	12.5	100.0	NO		
127	1...	13C7-PFUdA	570.1 > 524.8	5228.257	5228.257	1.00	5.37	12.500	12.500	12.5	100.0	NO		

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 16:49:45 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:51:17 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Compound name: PFBA

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1	1 200212M2_1	IPA	12-Feb-20	18:56:57
2	2 200212M2_2	IPA	12-Feb-20	19:19:48
3	3 200212M2_3	ST200212M2-1 PFC CS-2 20B1102	12-Feb-20	19:30:08
4	4 200212M2_4	ST200212M2-2 PFC CS-1 20B1103	12-Feb-20	19:40:29
5	5 200212M2_5	ST200212M2-3 PFC CS0 20B1104	12-Feb-20	19:50:52
6	6 200212M2_6	ST200212M2-4 PFC CS1 20B1105	12-Feb-20	20:01:14
7	7 200212M2_7	ST200212M2-5 PFC CS2 20B1106	12-Feb-20	20:11:36
8	8 200212M2_8	ST200212M2-6 PFC CS3 20B1107	12-Feb-20	20:21:58
9	9 200212M2_9	ST200212M2-7 PFC CS4 20B1108	12-Feb-20	20:32:23
10	10 200212M2_10	ST200212M2-8 PFC CS5 20B1109	12-Feb-20	20:42:48
11	11 200212M2_11	ST200212M2-9 PFC CS6 20B1110	12-Feb-20	20:53:10
12	12 200212M2_12	ST200212M2-10 PFC CS7 20B1111	12-Feb-20	21:03:33
13	13 200212M2_13	IB	12-Feb-20	21:13:55
14	14 200212M2_14	ICV200212M2-1 PFC ICV 20B1112	12-Feb-20	21:24:17
15	15 200212M2_15	IB	12-Feb-20	21:34:39
16	16 200212M2_16	B0B0041-BLK1 Method Blank 0.25	12-Feb-20	21:45:02
17	17 200212M2_17	B0B0041-BS1 OPR 0.25	12-Feb-20	21:55:24
18	18 200212M2_18	B0B0041-MS1 Matrix Spike 0.25218	12-Feb-20	22:05:46
19	19 200212M2_19	B0B0041-MSD1 Matrix Spike Dup 0.25368	12-Feb-20	22:16:08
20	20 200212M2_20	2000247-01 SB01-20200204 0.23504	12-Feb-20	22:26:30
21	21 200212M2_21	2000247-02 EB01-20200204 0.25944	12-Feb-20	22:36:53
22	22 200212M2_22	2000247-03 SGU-GW-SGUTPINF-20200204 0.25558	12-Feb-20	22:47:15
23	23 200212M2_23	2000247-04 DUP02-20200204 0.25162	12-Feb-20	22:57:40
24	24 200212M2_24	2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794	12-Feb-20	23:08:02
25	25 200212M2_25	2000247-06 24-GW-21UGMW37-20200204 0.2553	12-Feb-20	23:18:24
26	26 200212M2_26	2000247-07 24-GW-24EX30B1-20200204 0.2516	12-Feb-20	23:28:46
27	27 200212M2_27	2000247-08 24-GW-24NEW7-20200204 0.24862	12-Feb-20	23:39:08
28	28 200212M2_28	2000247-09 24-GW-24MW10B-20200204 0.26372	12-Feb-20	23:49:31
29	29 200212M2_29	2000247-10 24-GW-24EX20B-20200204 0.25458	12-Feb-20	23:59:53
30	30 200212M2_30	IB	13-Feb-20	00:10:15
31	31 200212M2_31	ST200212M2-11 PFC CS3 20B1107	13-Feb-20	00:20:37

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 16:49:45 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:51:17 Pacific Standard Time

Compound name: PFBA

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32	32 200212M2_32	IB	13-Feb-20	00:31:00
33	33 200212M2_33	2000247-11 24-GW-24MW05BR-20200204 0.26394	13-Feb-20	00:41:22
34	34 200212M2_34	B0B0047-BLK1 Method Blank 0.125	13-Feb-20	00:51:44
35	35 200212M2_35	B0B0047-BS1 OPR 0.125	13-Feb-20	01:02:06
36	36 200212M2_36	2000208-01 S1 (pre-oxidation) 0.06128	13-Feb-20	01:12:29
37	37 200212M2_37	2000208-03 S3 (pre-oxidation) 0.06154	13-Feb-20	01:22:51
38	38 200212M2_38	2000208-05 S5 (pre-oxidation) 0.06004	13-Feb-20	01:33:13
39	39 200212M2_39	B0B0058-BLK1 Method Blank 0.25	13-Feb-20	01:43:35
40	40 200212M2_40	B0B0058-BS1 OPR 0.25	13-Feb-20	01:53:57
41	41 200212M2_41	B0B0058-BSD1 LCSD 0.25	13-Feb-20	02:04:19
42	42 200212M2_42	2000256-01 FRAC-7 0.23032	13-Feb-20	02:14:41
43	43 200212M2_43	2000256-02 DISCH-7 0.22712	13-Feb-20	02:25:04
44	44 200212M2_44	2000260-01 Str Schl 0.25568	13-Feb-20	02:35:26
45	45 200212M2_45	B0B0049-BLK1 Method Blank 2	13-Feb-20	02:45:48
46	46 200212M2_46	B0B0049-BS1 OPR 2	13-Feb-20	02:56:10
47	47 200212M2_47	B0B0049-MS1 Matrix Spike 2.58	13-Feb-20	03:06:32
48	48 200212M2_48	B0B0049-MSD1 Matrix Spike Dup 2.6	13-Feb-20	03:16:55
49	49 200212M2_49	2000244-03 CDM-SS02-07-020320 2.64	13-Feb-20	03:27:17
50	50 200212M2_50	2000244-04 CDM-SS02-07K-020320 2.6	13-Feb-20	03:37:39
51	51 200212M2_51	2000244-05 CDM-SS03-07-020320 2.7	13-Feb-20	03:48:02
52	52 200212M2_52	2000244-06 CDM-SS04-06-020320 2.68 A	13-Feb-20	03:58:24
53	53 200212M2_53	IB	13-Feb-20	04:08:46
54	54 200212M2_54	ST200212M2-12 PFC CS3 20B1107	13-Feb-20	04:19:08
55	55 200212M2_55	IB	13-Feb-20	04:29:31
56	56 200212M2_56	B0B0056-BLK1 Method Blank 0.125	13-Feb-20	04:39:53
57	57 200212M2_57	B0B0056-BS1 OPR 0.125	13-Feb-20	04:50:15
58	58 200212M2_58	2000262-04 Field Blank 0.11676	13-Feb-20	05:00:37
59	59 200212M2_59	B0B0064-BLK1 Method Blank 0.25	13-Feb-20	05:11:02
60	60 200212M2_60	B0B0064-BS1 OPR 0.25	13-Feb-20	05:21:27
61	61 200212M2_61	2000261-01 002 FINISHED SAMPLE FROM PLANT/BLEND 4/	13-Feb-20	05:31:48
62	62 200212M2_62	2000263-01 502 CASWELL PUMP STATION/TAP FOR SOURCE	13-Feb-20	05:42:11
63	63 200212M2_63	2000263-02 503 CASWELL PUMP STATION/TAP FOR SOURCE	13-Feb-20	05:52:33
64	64 200212M2_64	2000264-01 000 APARTMENT 10 KITCHEN SINK/BLEND 001	13-Feb-20	06:02:57
65	65 200212M2_65	2000265-01 504 PUMPROOM IN BASEMENT/004 0.25762	13-Feb-20	06:13:23

A Over 10 samples, invalid. GM

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 16:49:45 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:51:17 Pacific Standard Time

Compound name: PFBA

	# Name	ID	Acq.Date	Acq.Time
66	66 200212M2_66	2000266-01 001 FINISHED WATER SAMPLE AT PLANT/002	13-Feb-20	06:23:45
67	67 200212M2_67	2000267-01 501 PH DEP TAP POST UV/BLEND 002 003 0.	13-Feb-20	06:34:07
68	68 200212M2_68	2000268-01 008 PUMPHOUSE TAP/BLND 0.25922	13-Feb-20	06:44:29
69	69 200212M2_69	2000269-01 501 DEP TAP/PH/AFTER TREAT/BLEND 001 00	13-Feb-20	06:54:51
70	70 200212M2_70	2000270-01 005 FINISHED WATER SAMPLE FROM PLANT/PO	13-Feb-20	07:05:14
71	71 200212M2_71	IB	13-Feb-20	07:15:36
72	72 200212M2_72	ST200212M2-13 PFC CS3 20B1107	13-Feb-20	07:25:58
73	73 200212M2_73	IB	13-Feb-20	07:36:20
74	74 200212M2_74	2000270-02 004 COLD SPR GRP/WET WELL IN PH/7/8/9/1	13-Feb-20	07:46:43
75	75 200212M2_75	2000270-03 506 FINISHED WATER SAMPLE FROM PLANT/PE	13-Feb-20	07:57:05
76	76 200212M2_76	2000271-01 501 VILLAS WELL HOUSE SOURCE TAP/001 0.	13-Feb-20	08:07:27
77	77 200212M2_77	2000272-01 501 DEP TAP PUMPHOUSE/BLEND OF 001 002	13-Feb-20	08:17:49
78	78 200212M2_78	2000273-01 501 HAND SINK BY BOILER ROOM/001 0.2529	13-Feb-20	08:28:12
79	79 200212M2_79	2000274-01 501 DEP TAP/PH/AFTER TREATMENT/BLEND 00	13-Feb-20	08:38:34
80	80 200212M2_80	2000275-01 000 MOBILE HOME 15/BLEND 001 002 0.2580	13-Feb-20	08:48:56
81	81 200212M2_81	B0B0053-BS1 OPR 0.125	13-Feb-20	08:59:18
82	82 200212M2_82	B0A0238-BLK1 Method Blank 500	13-Feb-20	09:09:41
83	83 200212M2_83	B0A0238-BS1 OPR 500	13-Feb-20	09:20:03
84	84 200212M2_84	2000191-01@5X South Berwick 301.32	13-Feb-20	09:30:25
85	85 200212M2_85	2000192-01 Dyer Septage 495.02	13-Feb-20	09:40:47
86	86 200212M2_86	IB	13-Feb-20	09:51:10
87	87 200212M2_87	ST200212M2-14 PFC CS3 20B1107	13-Feb-20	10:01:32
88	88 200212M2_88	IB	13-Feb-20	10:11:54

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

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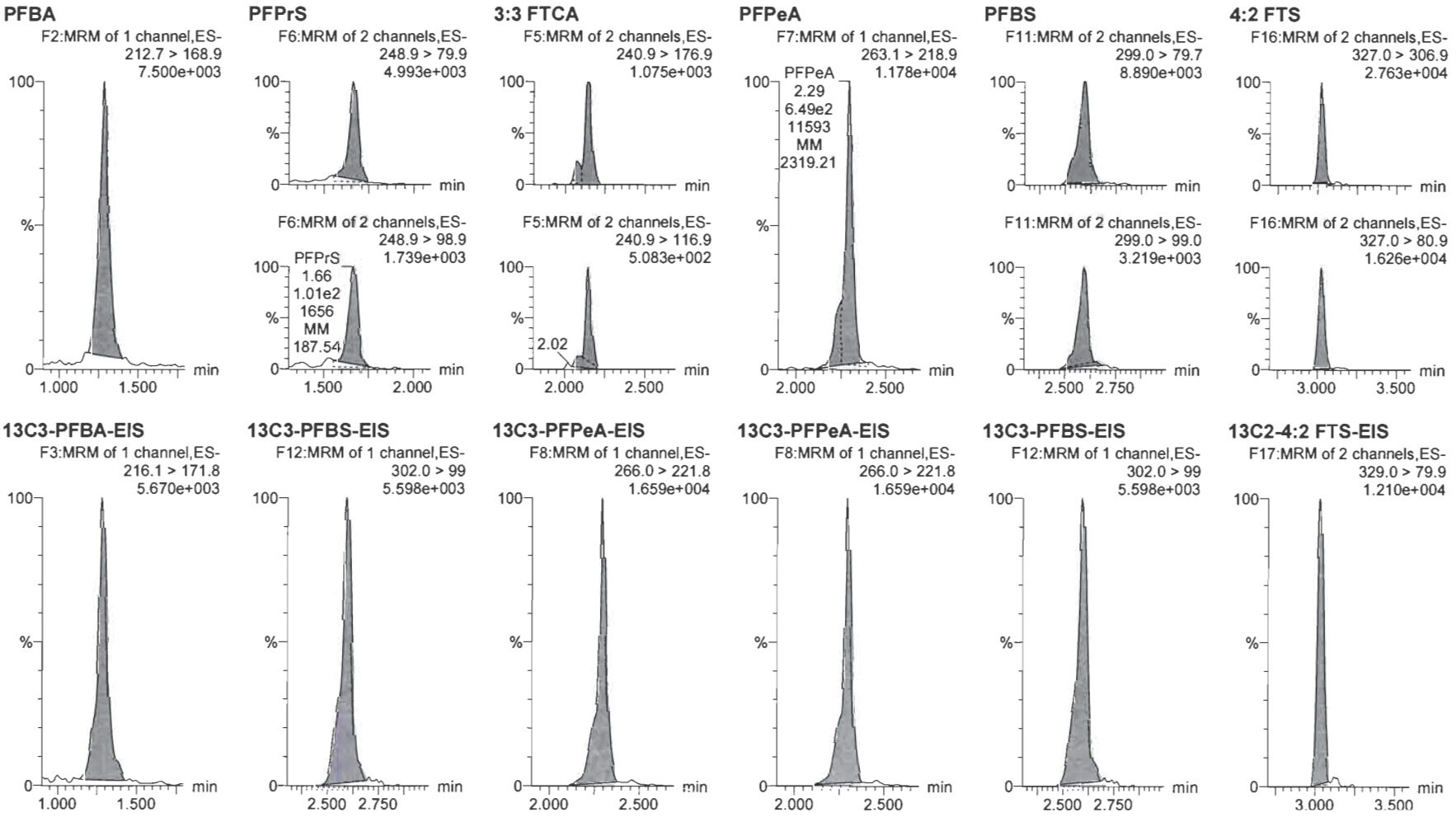

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

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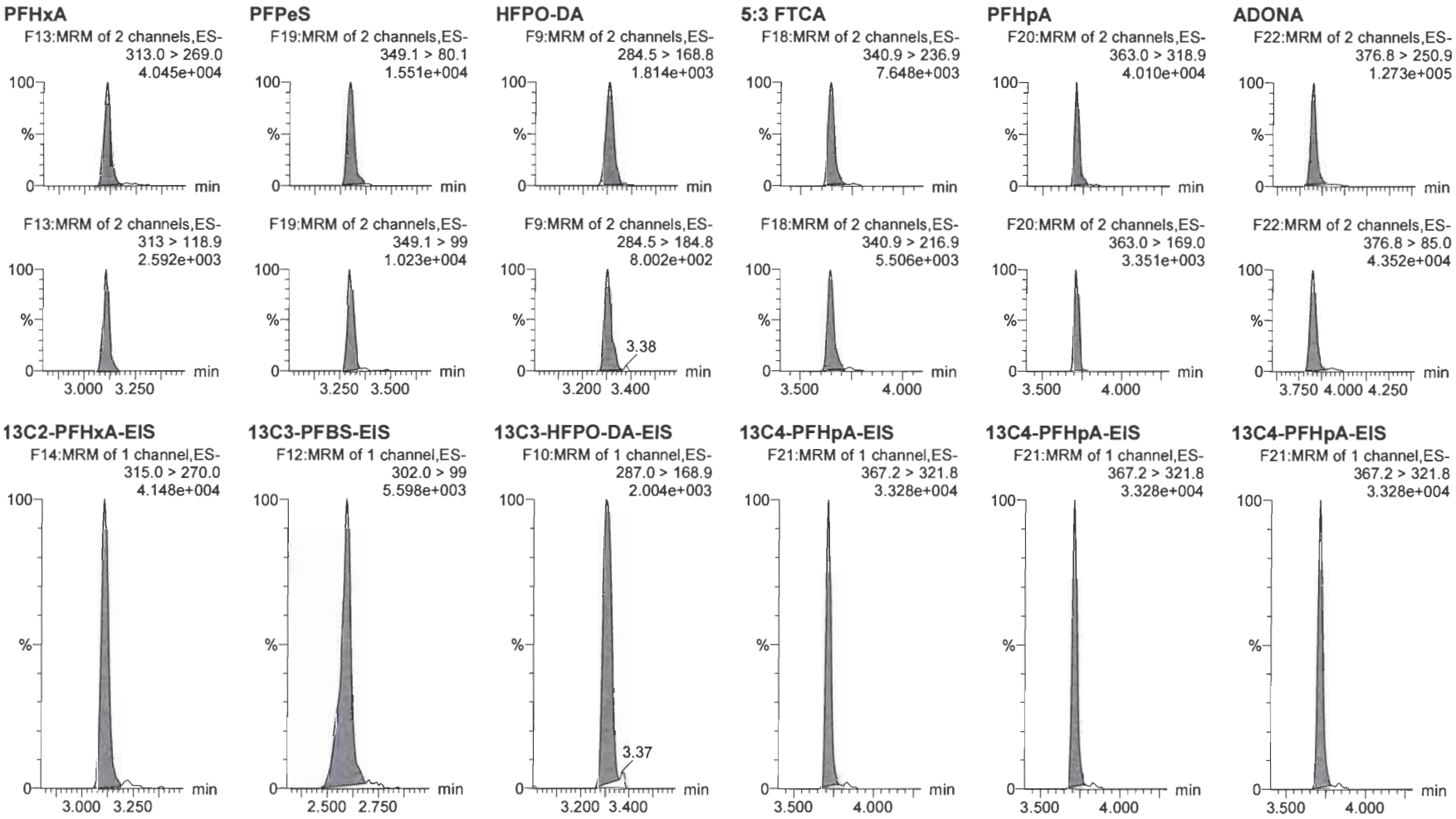

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

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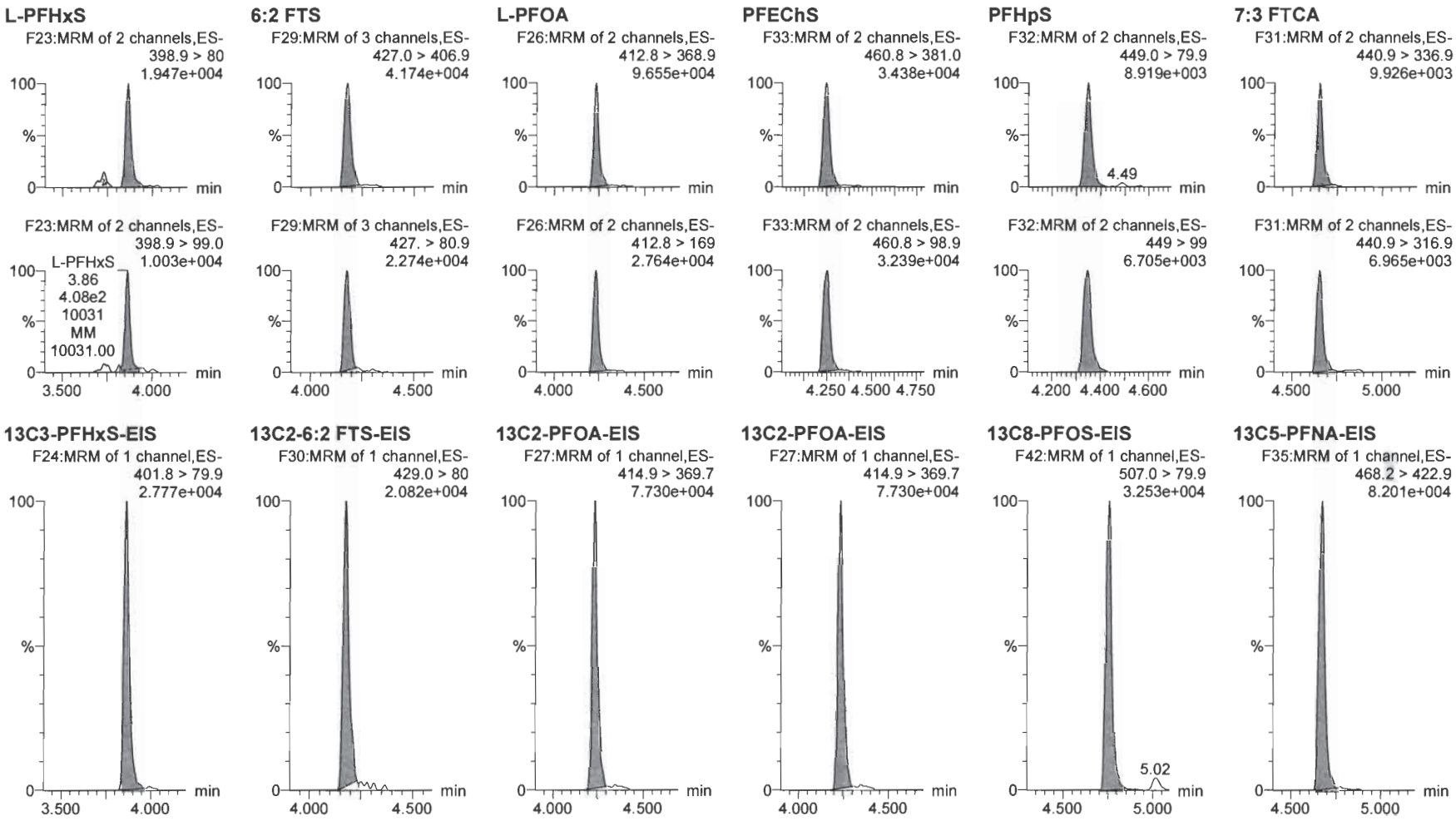

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

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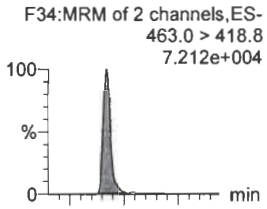
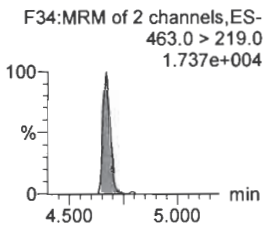
PFNA





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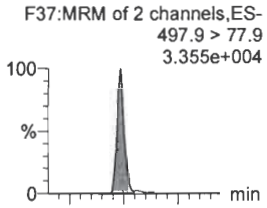

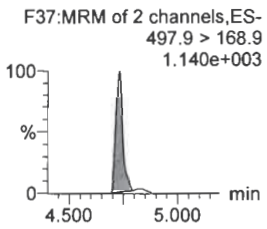

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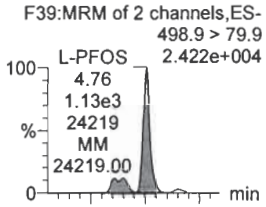

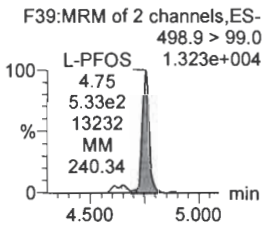

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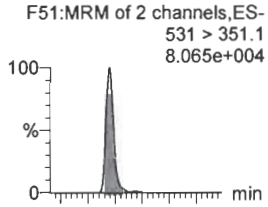

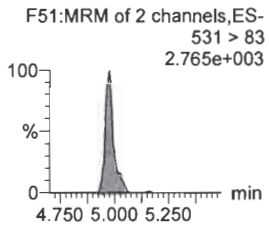

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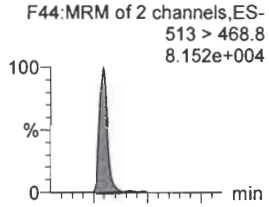

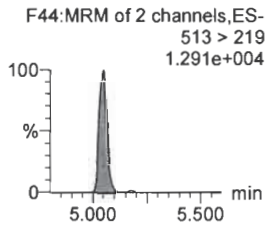

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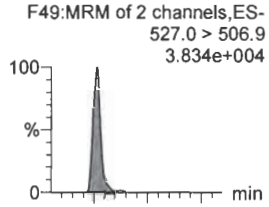
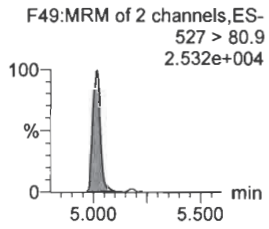
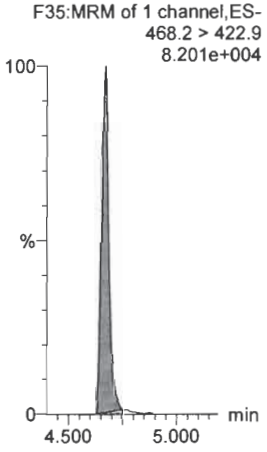
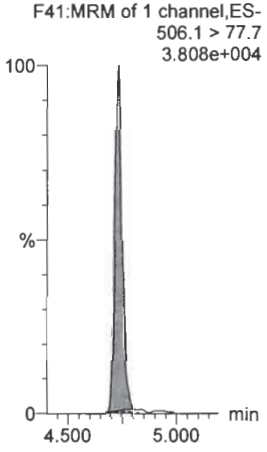




13C5-PFNA-EIS



13C8-PFOSA-EIS



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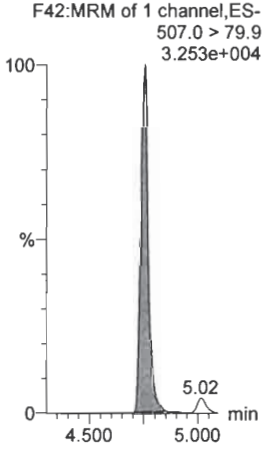
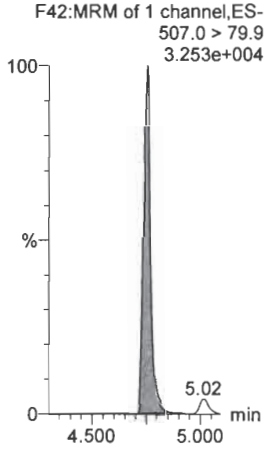
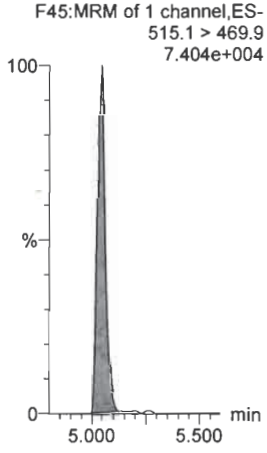


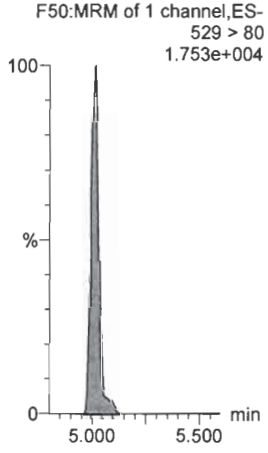
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-8:2 FTS-EIS



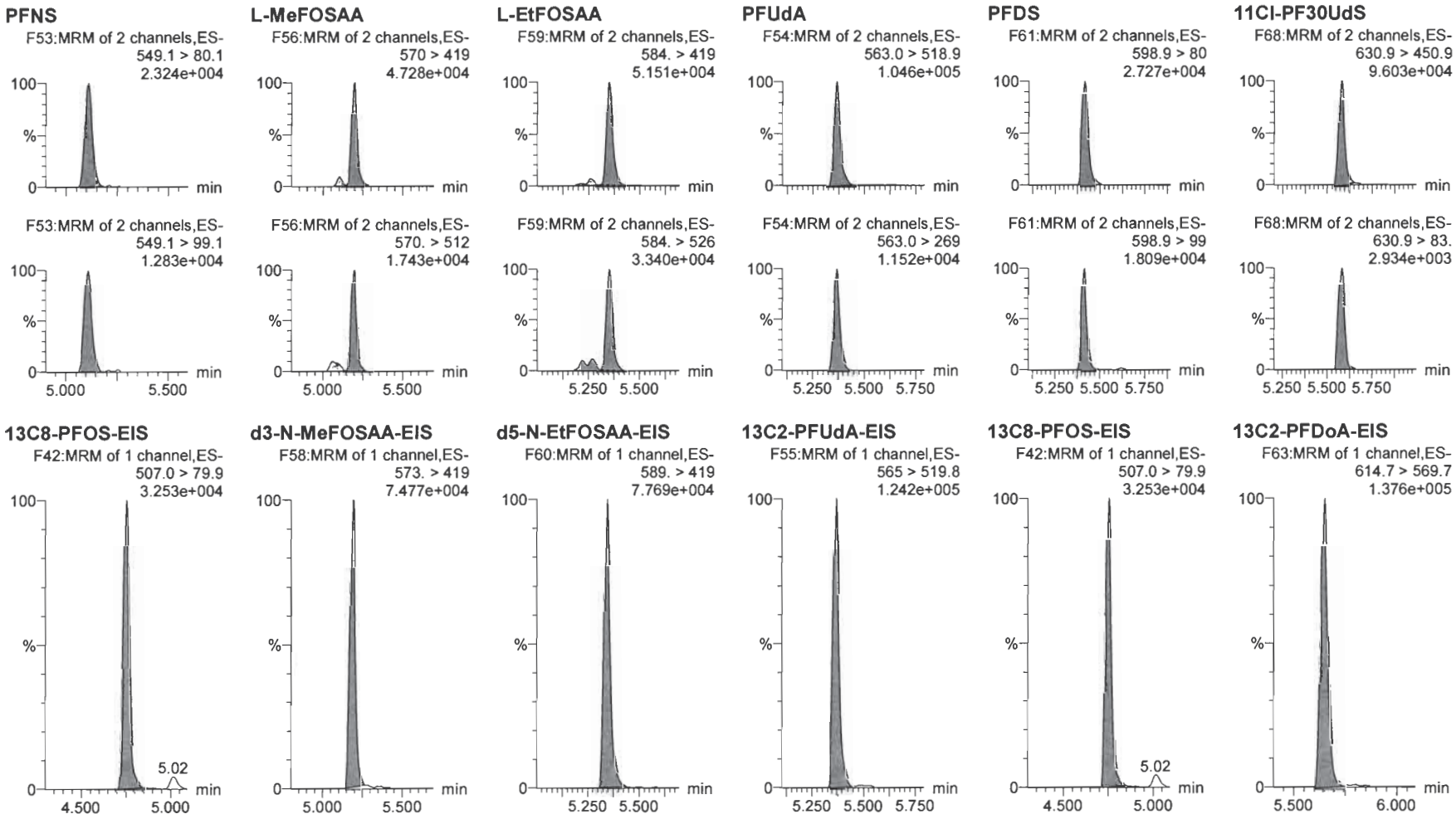
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107



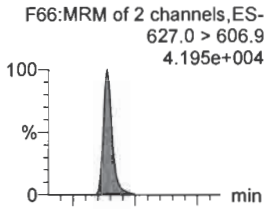
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

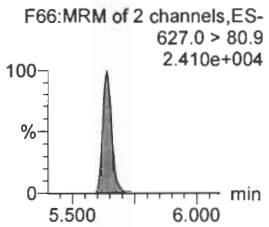
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

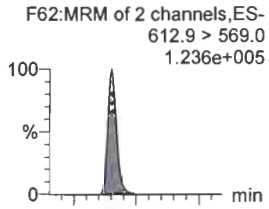
Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

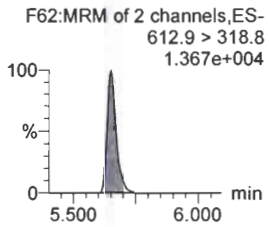
10:2 FTS



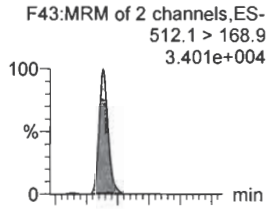


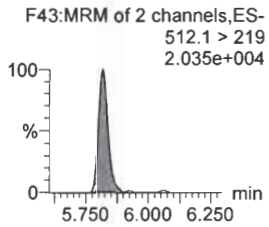
PFDoA



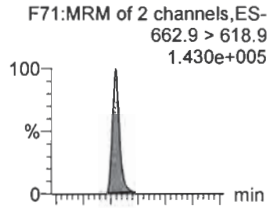


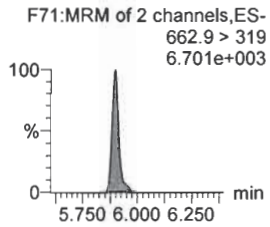
N-MeFOSA



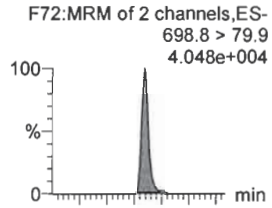


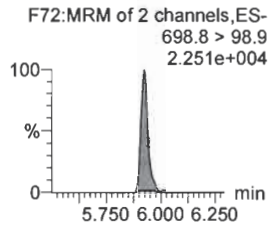
PFTrDA



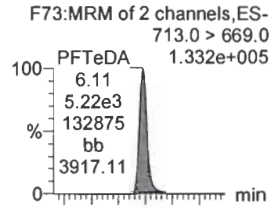


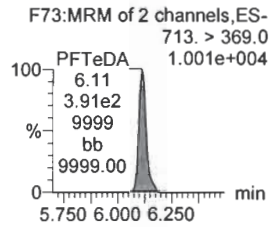
PFDoS



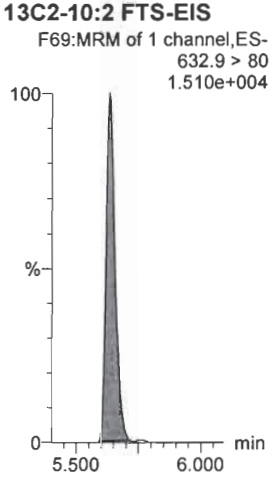


PFTeDA

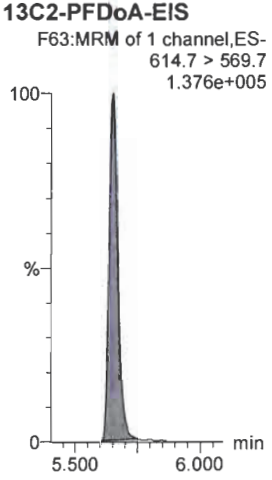




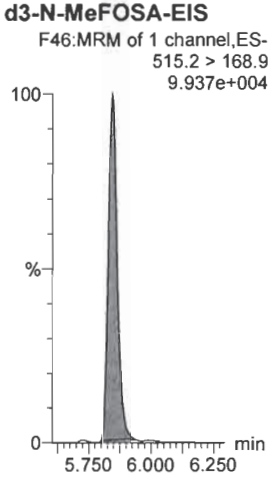
13C2-10:2 FTS-EIS



13C2-PFDoA-EIS



d3-N-MeFOSA-EIS



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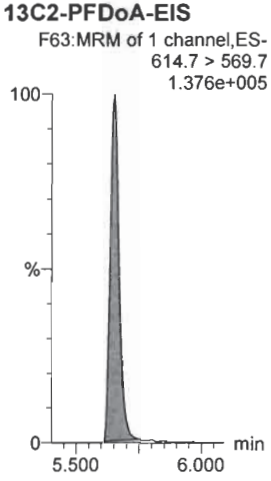
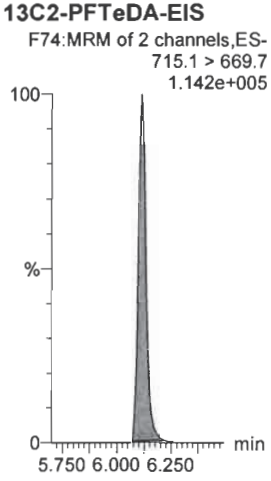
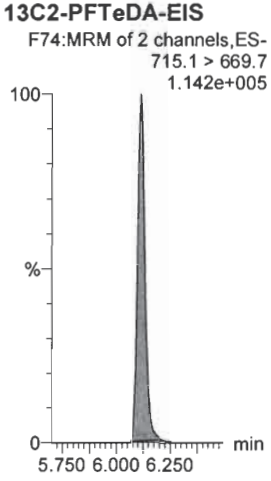


13C2-PFTeDA-EIS



13C2-PFTeDA-EIS

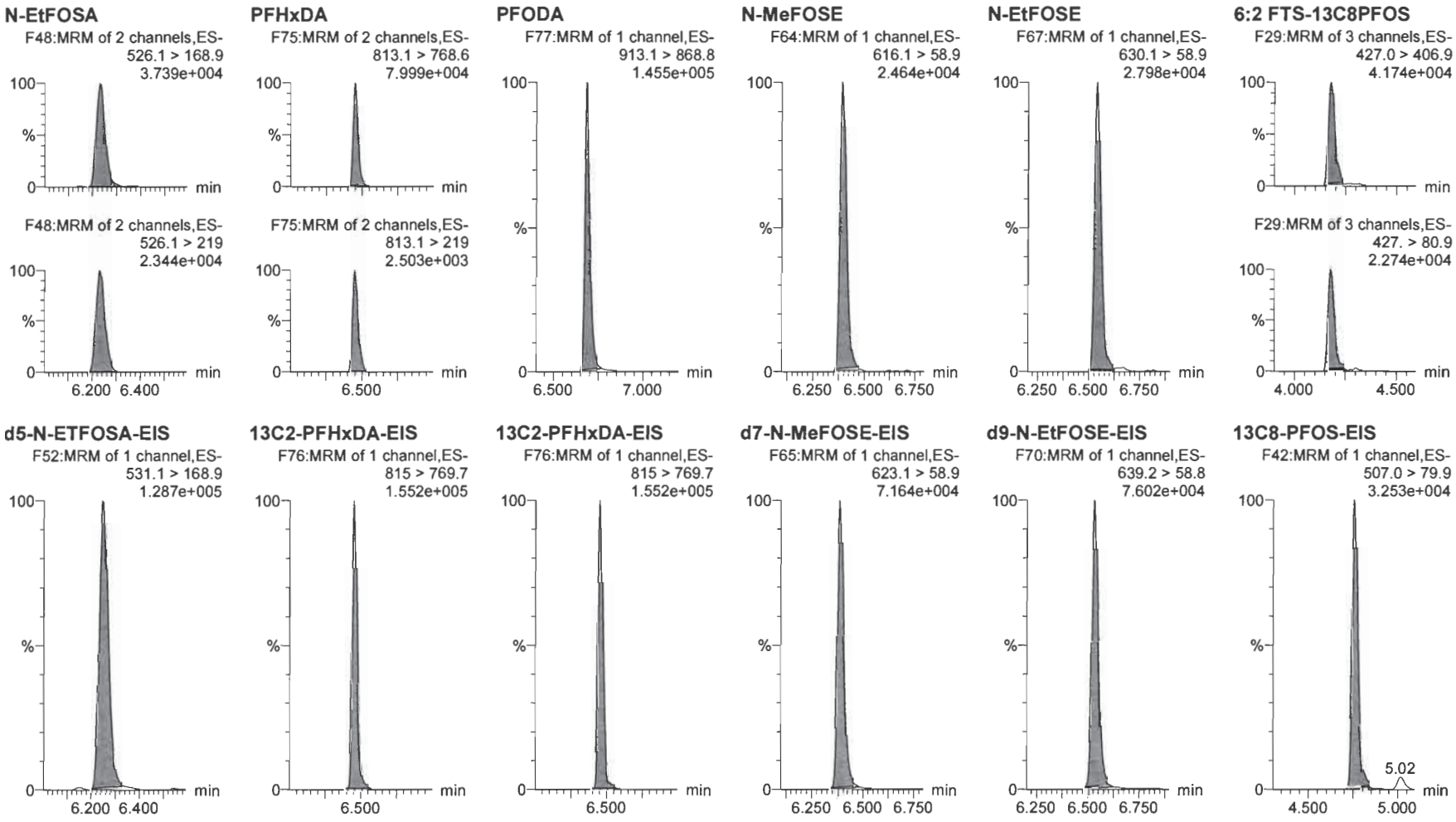


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107



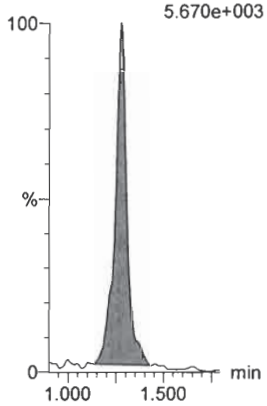
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

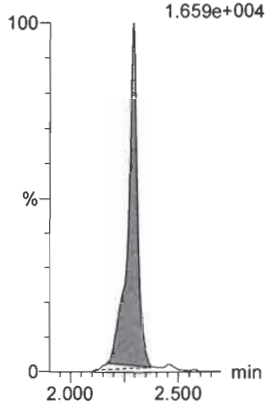
Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

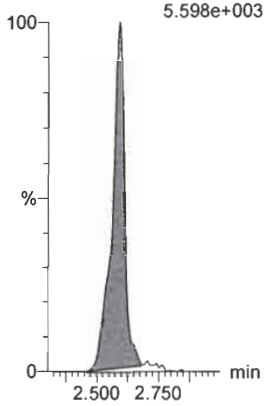
13C3-PFBA-RSD
F3:MRM of 1 channel,ES-
216.1 > 171.8
5.670e+003



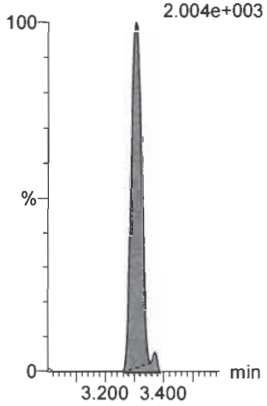
13C3-PFPeA-RSD
F8:MRM of 1 channel,ES-
266.0 > 221.8
1.659e+004



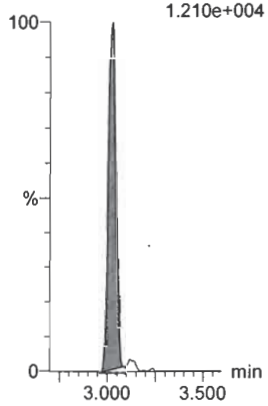
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
5.598e+003



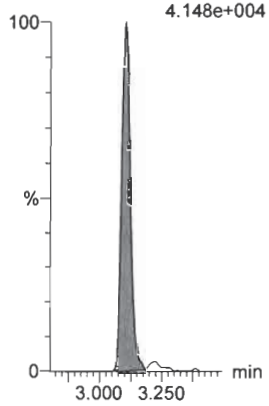
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.004e+003



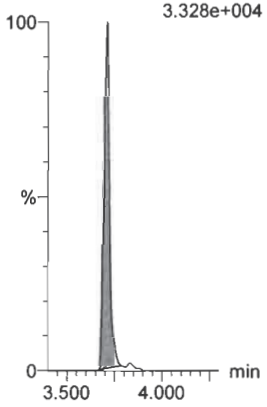
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.210e+004



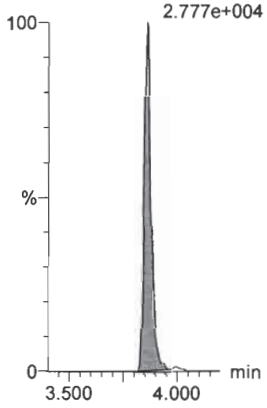
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.148e+004



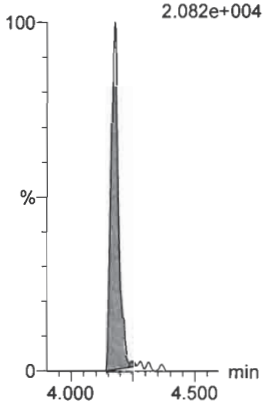
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.328e+004



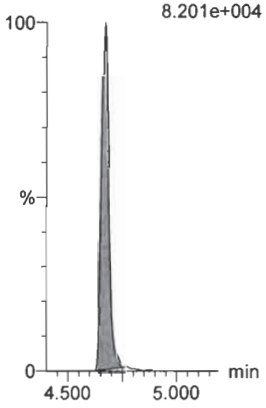
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.777e+004



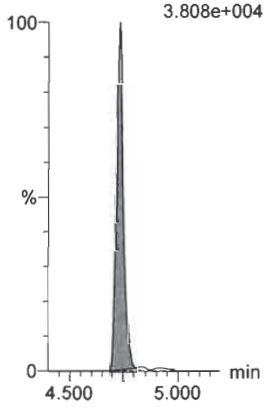
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
2.082e+004



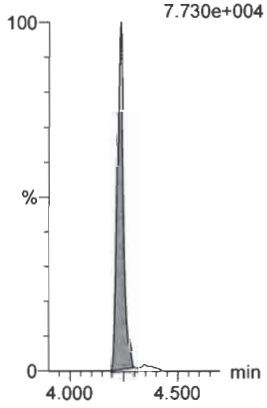
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
8.201e+004



13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.808e+004



13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.730e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

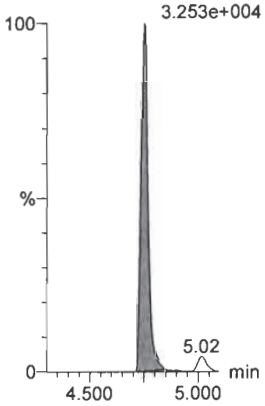
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

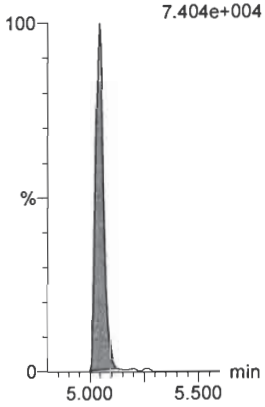
Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

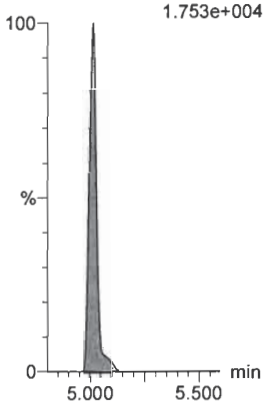
13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.253e+004



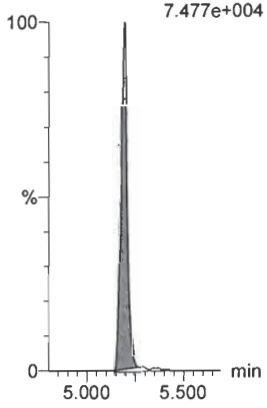
13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
7.404e+004



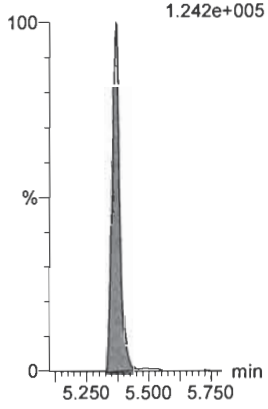
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.753e+004



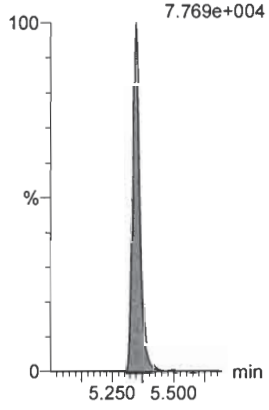
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.477e+004



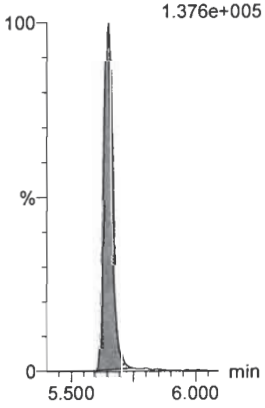
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.242e+005



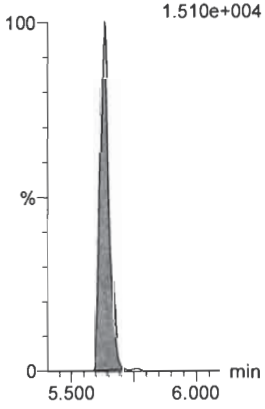
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
7.769e+004



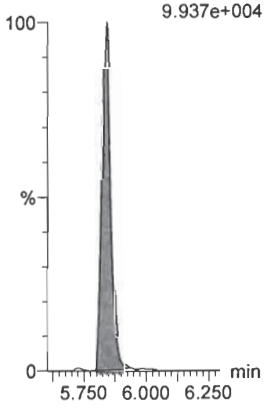
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.376e+005



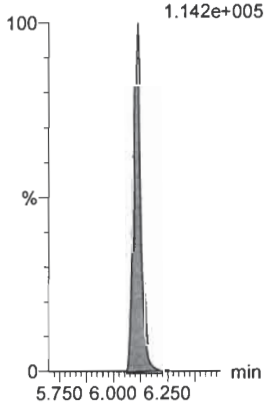
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.510e+004



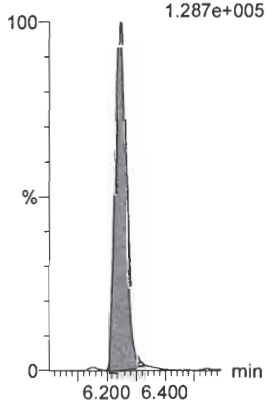
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.937e+004



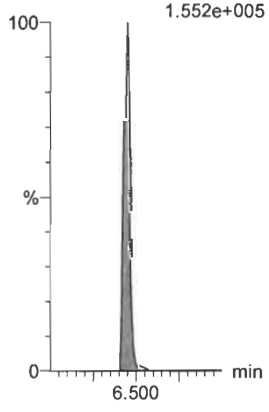
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.142e+005



d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.287e+005



13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.552e+005



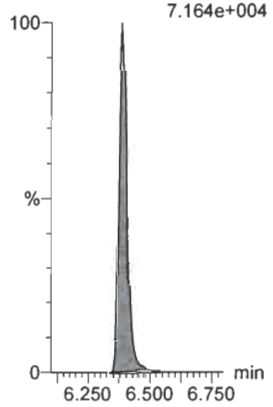
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_31.qld

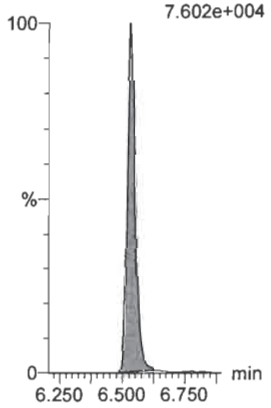
Last Altered: Thursday, February 13, 2020 16:11:10 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:13:59 Pacific Standard Time

Name: 200212M2_31, Date: 13-Feb-2020, Time: 00:20:37, ID: ST200212M2-11 PFC CS3 20B1107, Description: PFC CS3 20B1107

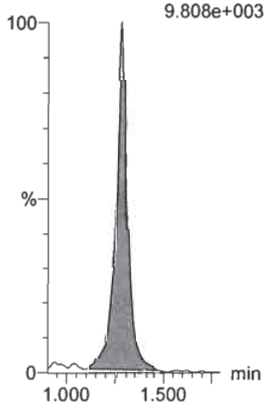
d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
7.164e+004



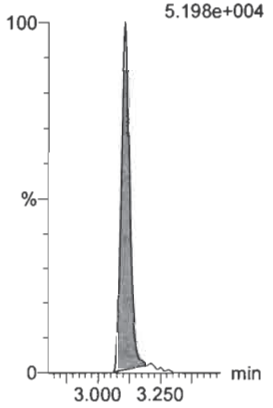
d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.602e+004



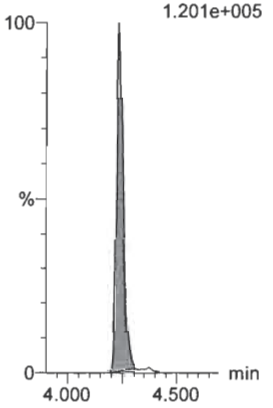
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
9.808e+003



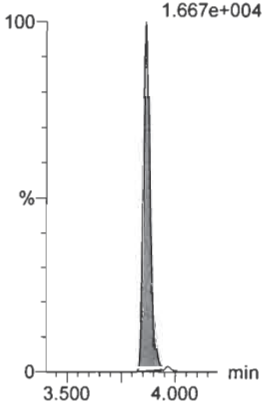
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
5.198e+004



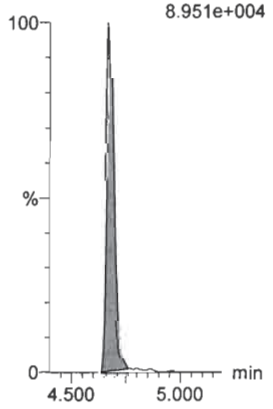
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
1.201e+005



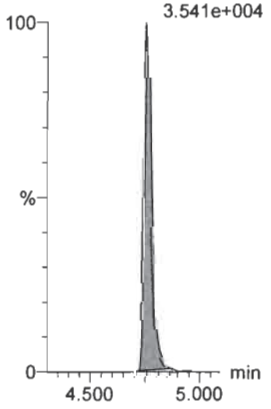
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 102.9
1.667e+004



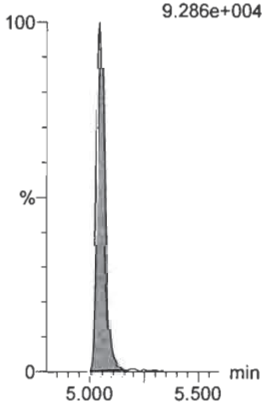
13C9-PFNA
F36:MRM of 1 channel,ES-
472.2 > 426.9
8.951e+004



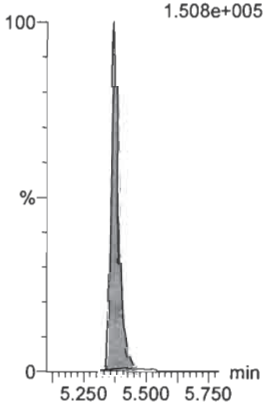
13C4-PFOS
F40:MRM of 1 channel,ES-
503 > 79.9
3.541e+004



13C6-PFDA
F47:MRM of 1 channel,ES-
519.1 > 473.7
9.286e+004



13C7-PFUdA
F57:MRM of 1 channel,ES-
570.1 > 524.8
1.508e+005



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 11 of 14
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

2/13/2020

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	212.7 > 168.9	580.372	396.360	1.00	1.29	18.303	10.000	10.7	107.1	NO		
2	2	PFPrS	248.9 > 79.9	305.154	332.551	1.00	1.67	11.470	10.000	8.68	86.8	NO	2.368	NO
3	3	3:3 FTCA	240.9 > 176.9	36.470	839.133	1.00	2.15	0.543	10.000	7.51	75.1	NO	1.661	NO
4	4	PFPeA	263.1 > 218.9	612.411	839.133	1.00	2.30	9.123	10.000	9.85	98.5	NO		
5	5	PFBS	299.0 > 79.7	584.000	332.551	1.00	2.60	21.952	10.000	9.40	94.0	NO	3.702	NO
6	6	4:2 FTS	327.0 > 306.9	1065.085	630.895	1.00	3.03	21.103	10.000	9.45	94.5	NO	1.735	NO
7	47	13C3-PFBA-EIS	216.1 > 171.8	396.360		1.00	1.28	396.360	12.500	11.9	95.4	NO		
8	51	13C3-PFBS-EIS	302.0 > 99	332.551		1.00	2.60	332.551	12.500	14.2	113.3	NO		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	839.133		1.00	2.30	839.133	12.500	11.9	95.4	NO		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	839.133		1.00	2.30	839.133	12.500	11.9	95.4	NO		
11	51	13C3-PFBS-EIS	302.0 > 99	332.551		1.00	2.60	332.551	12.500	14.2	113.3	NO		
12	55	13C2-4:2 FTS-EIS	329.0 >79.9	630.895		1.00	3.03	630.895	12.500	12.3	98.6	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0	1499.851	1701.892	1.00	3.11	11.016	10.000	10.2	101.9	NO	23.138	YES
15	8	PFPeS	349.1>80.1	597.013	332.551	1.00	3.31	22.441	10.000	8.56	85.6	NO	1.675	NO
16	9	HFPO-DA	284.5 > 168.8	55.251	98.142	1.00	3.31	7.037	10.000	8.34	83.4	NO	2.066	NO
17	10	5:3 FTCA	340.9 > 236.9	299.697	1196.753	1.00	3.65	3.130	10.000	9.36	93.6	NO	1.451	NO
18	11	PFHpA	363.0 > 318.9	1327.197	1196.753	1.00	3.72	13.862	10.000	10.7	106.9	NO	9.230	NO
19	12	ADONA	376.8 > 250.9	4738.372	1196.753	1.00	3.83	49.492	10.000	9.98	99.8	NO	2.712	NO
20	57	13C2-PFHxA-EIS	315.0 > 270.0	1701.892		1.00	3.11	1701.892	12.500	11.8	94.4	NO		
21	51	13C3-PFBS-EIS	302.0 > 99	332.551		1.00	2.60	332.551	12.500	14.2	113.3	NO		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	98.142		1.00	3.31	98.142	12.500	14.7	117.4	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	1196.753		1.00	3.72	1196.753	12.500	12.6	100.4	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	1196.753		1.00	3.72	1196.753	12.500	12.6	100.4	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	1196.753		1.00	3.72	1196.753	12.500	12.6	100.4	NO		
26	-1													
27	13	L-PFHxS	398.9 > 80	885.054	1045.159	1.00	3.87	10.585	10.000	10.1	100.7	NO	2.209	NO
28	15	6:2 FTS	427.0 > 406.9	1672.898	698.487	1.00	4.18	29.938	10.000	9.60	96.0	NO	2.117	NO
29	16	L-PFOA	412.8 > 368.9	3513.136	2668.175	1.00	4.24	16.459	10.000	11.3	112.6	NO	3.312	NO
30	18	PFecHS	460.8 > 381.0	1427.168	2668.175	1.00	4.25	6.686	10.000	8.72	87.2	NO	1.025	NO
31	19	PFHpS	449.0 > 79.9	302.898	1280.726	1.00	4.35	2.956	10.000	10.0	100.3	NO	1.039	NO
32	20	7:3 FTCA	440.9 > 336.9	456.860	3369.146	1.00	4.66	1.695	10.000	10.0	100.3	NO	1.549	NO
33	61	13C3-PFHxS-EIS	401.8 > 79.9	1045.159		1.00	3.87	1045.159	12.500	11.8	94.7	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >80	698.487		1.00	4.18	698.487	12.500	12.3	98.1	NO		

VY 02/13/20

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
35	69	13C2-PFOA-EIS	414.9 > 369.7	2668.175		1.00	4.24	2668.175	12.500	12.1	96.9	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	2668.175		1.00	4.24	2668.175	12.500	12.1	96.9	NO		
37	71	13C8-PFOS-EIS	507.0 > 79.9	1280.726		1.00	4.76	1280.726	12.500	12.1	96.8	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	3369.146		1.00	4.68	3369.146	12.500	12.8	102.6	NO		
39	-1													
40	21	PFNA	463.0 > 418.8	2916.514	3369.146	1.00	4.68	10.821	10.000	9.34	93.4	NO	3.942	NO
41	22	PFOSA	497.9 > 77.9	1464.088	1546.524	1.00	4.74	11.834	10.000	9.86	98.6	NO	30.057	NO
42	23	L-PFOS	498.9 > 79.9	1145.947	1280.726	1.00	4.76	11.185	10.000	9.64	96.4	NO	1.960	NO
43	25	9Cl-PF30NS	531 > 351.1	3411.051	1280.726	1.00	4.97	33.292	10.000	9.72	97.2	NO	28.645	NO
44	26	PFDA	513 > 468.8	3300.119	3486.146	1.00	5.05	11.833	10.000	9.44	94.4	NO	4.949	NO
45	27	8:2 FTS	527.0 > 506.9	1653.476	849.921	1.00	5.02	24.318	10.000	11.0	109.7	NO	1.984	NO
46	65	13C5-PFNA-EIS	468.2 > 422.9	3369.146		1.00	4.68	3369.146	12.500	12.8	102.6	NO		
47	67	13C8-PFOSA-EIS	506.1 > 77.7	1546.524		1.00	4.74	1546.524	12.500	13.0	104.4	NO		
48	71	13C8-PFOS-EIS	507.0 > 79.9	1280.726		1.00	4.76	1280.726	12.500	12.1	96.8	NO		
49	71	13C8-PFOS-EIS	507.0 > 79.9	1280.726		1.00	4.76	1280.726	12.500	12.1	96.8	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	3486.146		1.00	5.05	3486.146	12.500	13.2	105.9	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	849.921		1.00	5.02	849.921	12.500	12.4	99.1	NO		
52	-1													
53	28	PFNS	549.1 > 80.1	1123.417	1280.726	1.00	5.11	10.965	10.000	10.5	105.5	NO	1.781	NO
54	29	L-MeFOSAA	570 > 419	2080.781	3053.438	1.00	5.20	8.518	10.000	9.52	95.2	NO	2.301	NO
55	31	L-EtFOSAA	584. > 419	2151.607	2731.374	1.00	5.36	9.847	10.000	9.81	98.1	NO	1.522	NO
56	33	PFUdA	563.0 > 518.9	3975.126	4706.338	1.00	5.37	10.558	10.000	10.3	102.7	NO	10.523	NO
57	34	PFDS	598.9> 80	1283.137	1280.726	1.00	5.42	12.524	10.000	9.82	98.2	NO	2.154	NO
58	35	11Cl-PF30UdS	630.9 > 450.9	4227.239	5671.234	1.00	5.58	9.317	10.000	10.6	106.3	NO	27.335	NO
59	71	13C8-PFOS-EIS	507.0 > 79.9	1280.726		1.00	4.76	1280.726	12.500	12.1	96.8	NO		
60	77	d3-N-MeFOSAA-EIS	573. > 419	3053.438		1.00	5.20	3053.438	12.500	13.2	105.4	NO		
61	81	d5-N-EtFOSAA-EIS	589. > 419	2731.374		1.00	5.35	2731.374	12.500	12.4	99.4	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	4706.338		1.00	5.37	4706.338	12.500	13.0	104.0	NO		
63	71	13C8-PFOS-EIS	507.0 > 79.9	1280.726		1.00	4.76	1280.726	12.500	12.1	96.8	NO		
64	83	13C2-PFDoA-EIS	614.7 > 569.7	5671.234		1.00	5.66	5671.234	12.500	12.4	99.0	NO		
65	-1													
66	36	10:2 FTS	627.0 > 606.9	1894.618	661.106	1.00	5.64	35.823	10.000	10.7	107.1	NO	1.650	NO
67	37	PFDoA	612.9 > 569.0	4980.231	5671.234	1.00	5.66	10.977	10.000	10.1	101.2	NO	8.294	NO
68	38	N-MeFOSA	512.1 > 168.9	1438.969	4298.671	1.00	5.82	49.944	50.000	51.4	102.7	NO	1.516	NO

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
69	39	PFTrDA	662.9 > 618.9	5964.695	5671.234	1.00	5.90	13.147	10.000	10.2	101.6	NO	23.917	NO
70	40	PFDoS	698.8 > 79.9	1557.759	4807.695	1.00	5.92	4.050	10.000	10.4	103.6	NO	1.798	NO
71	41	PFTeDA	713.0 > 669.0	5209.906	4807.695	1.00	6.12	13.546	10.000	9.86	98.6	NO	12.606	NO
72	85	13C2-10:2 FTS-EIS	632.9 > 80	661.106		1.00	5.64	661.106	12.500	12.4	99.3	NO		
73	83	13C2-PFDoA-EIS	614.7 > 569.7	5671.234		1.00	5.66	5671.234	12.500	12.4	99.0	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	4298.671		1.00	5.85	4298.671	149.200	152	101.6	NO		
75	83	13C2-PFDoA-EIS	614.7 > 569.7	5671.234		1.00	5.66	5671.234	12.500	12.4	99.0	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	4807.695		1.00	6.12	4807.695	12.500	13.2	105.3	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	4807.695		1.00	6.12	4807.695	12.500	13.2	105.3	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9	1788.425	5736.301	1.00	6.24	46.517	50.000	56.3	112.7	NO	1.769	NO
80	43	PFHxDA	813.1 > 768.6	3360.031	6427.616	1.00	6.45	6.534	10.000	10.4	103.8	NO	25.642	NO
81	44	PFODA	913.1 > 868.8	5081.521	6427.616	1.00	6.69	9.882	10.000	10.3	103.0	NO		
82	45	N-MeFOSE	616.1 > 58.9	896.583	2604.248	1.00	6.40	51.366	50.000	51.4	102.8	NO		
83	46	N-EtFOSE	630.1 > 58.9	1078.419	2817.843	1.00	6.54	57.100	50.000	51.8	103.7	NO		
84	1...	6:2 FTS-13C8PFOS	427.0 > 406.9	1672.898	1280.726	1.00	4.18	16.328	10.000	19.4	194.5	YES	2.117	NO
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	5736.301		1.00	6.25	5736.301	149.200	154	102.9	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	6427.616		1.00	6.45	6427.616	12.500	12.5	100.3	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	6427.616		1.00	6.45	6427.616	12.500	12.5	100.3	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	2604.248		1.00	6.39	2604.248	149.200	149	99.6	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	2817.843		1.00	6.53	2817.843	149.200	144	96.8	NO		
90	71	13C8-PFOS-EIS	507.0 > 79.9	1280.726		1.00	4.76	1280.726	12.500	12.1	96.8	NO		
91	-1													
92	48	13C3-PFBA-RSD	216.1 > 171.8	396.360	615.554	1.00	1.28	8.049	12.500	13.2	106.0	NO		
93	50	13C3-PFPeA-RSD	266.0 > 221.8	821.060	2053.183	1.00	2.30	4.999	12.500	11.8	94.5	NO		
94	52	13C3-PFBS-RSD	302.0 > 99	332.551	514.291	1.00	2.60	8.083	12.500	14.1	112.8	NO		
95	54	13C3-HFPO-DA-RSD	287.0 > 168.9	98.142	2053.183	1.00	3.31	0.597	12.500	14.2	113.9	NO		
96	56	13C2-4:2 FTS-RSD	329.0 >79.9	629.714	514.291	1.00	3.03	15.305	12.500	13.9	111.1	NO		
97	58	13C2-PFHxA-RSD	315.0 > 270.0	1701.892	2053.183	1.00	3.11	10.361	12.500	12.4	99.6	NO		
98	60	13C4-PFHpA-RSD	367.2 > 321.8	1196.753	2053.183	1.00	3.72	7.286	12.500	12.9	102.8	NO		
99	62	13C3-PFHxS-RSD	401.8 > 79.9	1043.349	514.291	1.00	3.87	25.359	12.500	13.1	104.6	NO		
100	64	13C2-6:2 FTS-RSD	429.0 >80	698.487	1337.466	1.00	4.18	6.528	12.500	12.7	101.4	NO		
101	66	13C5-PFNA-RSD	468.2 > 422.9	3369.146	3601.227	1.00	4.68	11.694	12.500	12.7	101.4	NO		
102	68	13C8-PFOSA-RSD	506.1 > 77.7	1546.524	5416.940	1.00	4.74	3.569	12.500	12.7	101.5	NO		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
103	70	13C2-PFOA-RSD	414.9 > 369.7	2668.175	4306.735	1.00	4.24	7.744	12.500	12.1	96.4	NO		
104	-1													
105	72	13C8-PFOS-RSD	507.0 > 79.9	1280.726	1337.466	1.00	4.76	11.970	12.500	12.4	99.0	NO		
106	74	13C2-PFDA-RSD	515.1 > 469.9	3486.146	4077.839	1.00	5.05	10.686	12.500	12.6	100.7	NO		
107	76	13C2-8:2 FTS-RSD	529 > 80	849.921	1337.466	1.00	5.02	7.943	12.500	14.0	111.7	NO		
108	78	d3-N-MeFOSAA-RSD	573. > 419	3054.693	5416.940	1.00	5.20	7.049	12.500	12.1	96.8	NO		
109	80	13C2-PFUdA-RSD	565 > 519.8	4706.338	5416.940	1.00	5.37	10.860	12.500	12.4	98.9	NO		
110	82	d5-N-EtFOSAA-RSD	589. > 419	2729.814	5416.940	1.00	5.35	6.299	12.500	12.3	98.4	NO		
111	84	13C2-PFDoA-RSD	614.7 > 569.7	5671.234	4077.839	1.00	5.66	17.384	12.500	11.9	95.2	NO		
112	86	13C2-10:2 FTS-RSD	632.9 > 80	661.106	1337.466	1.00	5.64	6.179	12.500	12.6	100.8	NO		
113	88	d3-N-MeFOSA-RSD	515.2 > 168.9	4298.671	5416.940	1.00	5.85	9.920	149.200	140	94.1	NO		
114	90	13C2-PFTeDA-RSD	715.1 > 669.7	4807.695	5416.940	1.00	6.12	11.094	12.500	12.5	100.2	NO		
115	92	d5-N-ETFOSA-RSD	531.1 > 168.9	5736.301	5416.940	1.00	6.25	13.237	149.200	145	97.0	NO		
116	94	13C2-PFHxDA-RSD	815 > 769.7	6427.616	5416.940	1.00	6.45	14.832	12.500	12.3	98.3	NO		
117	-1													
118	96	d7-N-MeFOSE-RSD	623.1 > 58.9	2604.248	5416.940	1.00	6.39	6.009	149.200	135	90.8	NO		
119	98	d9-N-EtFOSE-RSD	639.2 > 58.8	2869.390	5416.940	1.00	6.53	6.621	149.200	135	90.8	NO		
120	99	13C4-PFBA	217.0 > 172.0	615.554	615.554	1.00	1.29	12.500	12.500	12.5	100.0	NO		
121	1...	13C5-PFHxA	318.0 > 272.9	2053.183	2053.183	1.00	3.11	12.500	12.500	12.5	100.0	NO		
122	1...	13C8-PFOA	420.9 > 376.0	4306.735	4306.735	1.00	4.24	12.500	12.500	12.5	100.0	NO		
123	1...	18O2-PFHxS	403.0 > 102.9	514.291	514.291	1.00	3.87	12.500	12.500	12.5	100.0	NO		
124	1...	13C9-PFNA	472.2 > 426.9	3601.227	3601.227	1.00	4.67	12.500	12.500	12.5	100.0	NO		
125	1...	13C4-PFOS	503 > 79.9	1337.466	1337.466	1.00	4.76	12.500	12.500	12.5	100.0	NO		
126	1...	13C6-PFDA	519.1 > 473.7	4077.839	4077.839	1.00	5.05	12.500	12.500	12.5	100.0	NO		
127	1...	13C7-PFUdA	570.1 > 524.8	5416.940	5416.940	1.00	5.37	12.500	12.500	12.5	100.0	NO		

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 16:49:45 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:51:17 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Compound name: PFBA

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1	1	200212M2_1	IPA	12-Feb-20	18:56:57
2	2	200212M2_2	IPA	12-Feb-20	19:19:48
3	3	200212M2_3	ST200212M2-1 PFC CS-2 20B1102	12-Feb-20	19:30:08
4	4	200212M2_4	ST200212M2-2 PFC CS-1 20B1103	12-Feb-20	19:40:29
5	5	200212M2_5	ST200212M2-3 PFC CS0 20B1104	12-Feb-20	19:50:52
6	6	200212M2_6	ST200212M2-4 PFC CS1 20B1105	12-Feb-20	20:01:14
7	7	200212M2_7	ST200212M2-5 PFC CS2 20B1106	12-Feb-20	20:11:36
8	8	200212M2_8	ST200212M2-6 PFC CS3 20B1107	12-Feb-20	20:21:58
9	9	200212M2_9	ST200212M2-7 PFC CS4 20B1108	12-Feb-20	20:32:23
10	10	200212M2_10	ST200212M2-8 PFC CS5 20B1109	12-Feb-20	20:42:48
11	11	200212M2_11	ST200212M2-9 PFC CS6 20B1110	12-Feb-20	20:53:10
12	12	200212M2_12	ST200212M2-10 PFC CS7 20B1111	12-Feb-20	21:03:33
13	13	200212M2_13	IB	12-Feb-20	21:13:55
14	14	200212M2_14	ICV200212M2-1 PFC ICV 20B1112	12-Feb-20	21:24:17
15	15	200212M2_15	IB	12-Feb-20	21:34:39
16	16	200212M2_16	B0B0041-BLK1 Method Blank 0.25	12-Feb-20	21:45:02
17	17	200212M2_17	B0B0041-BS1 OPR 0.25	12-Feb-20	21:55:24
18	18	200212M2_18	B0B0041-MS1 Matrix Spike 0.25218	12-Feb-20	22:05:46
19	19	200212M2_19	B0B0041-MSD1 Matrix Spike Dup 0.25368	12-Feb-20	22:16:08
20	20	200212M2_20	2000247-01 SB01-20200204 0.23504	12-Feb-20	22:26:30
21	21	200212M2_21	2000247-02 EB01-20200204 0.25944	12-Feb-20	22:36:53
22	22	200212M2_22	2000247-03 SGU-GW-SGUTPINF-20200204 0.25558	12-Feb-20	22:47:15
23	23	200212M2_23	2000247-04 DUP02-20200204 0.25162	12-Feb-20	22:57:40
24	24	200212M2_24	2000247-05 SGU-GW-SGUTPEFL-20200204 0.23794	12-Feb-20	23:08:02
25	25	200212M2_25	2000247-06 24-GW-21UGMW37-20200204 0.2553	12-Feb-20	23:18:24
26	26	200212M2_26	2000247-07 24-GW-24EX30B1-20200204 0.2516	12-Feb-20	23:28:46
27	27	200212M2_27	2000247-08 24-GW-24NEW7-20200204 0.24862	12-Feb-20	23:39:08
28	28	200212M2_28	2000247-09 24-GW-24MW10B-20200204 0.26372	12-Feb-20	23:49:31
29	29	200212M2_29	2000247-10 24-GW-24EX20B-20200204 0.25458	12-Feb-20	23:59:53
30	30	200212M2_30	IB	13-Feb-20	00:10:15
31	31	200212M2_31	ST200212M2-11 PFC CS3 20B1107	13-Feb-20	00:20:37

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945** Page 2 of 3
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 16:49:45 Pacific Standard Time
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Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time	
32	32	200212M2_32	IB	13-Feb-20	00:31:00	A Over 10 samples, invalid. GM
33	33	200212M2_33	2000247-11 24-GW-24MW05BR-20200204 0.26394	13-Feb-20	00:41:22	
34	34	200212M2_34	B0B0047-BLK1 Method Blank 0.125	13-Feb-20	00:51:44	
35	35	200212M2_35	B0B0047-BS1 OPR 0.125	13-Feb-20	01:02:06	
36	36	200212M2_36	2000208-01 S1 (pre-oxidation) 0.06128	13-Feb-20	01:12:29	
37	37	200212M2_37	2000208-03 S3 (pre-oxidation) 0.06154	13-Feb-20	01:22:51	
38	38	200212M2_38	2000208-05 S5 (pre-oxidation) 0.06004	13-Feb-20	01:33:13	
39	39	200212M2_39	B0B0058-BLK1 Method Blank 0.25	13-Feb-20	01:43:35	
40	40	200212M2_40	B0B0058-BS1 OPR 0.25	13-Feb-20	01:53:57	
41	41	200212M2_41	B0B0058-BSD1 LCSD 0.25	13-Feb-20	02:04:19	
42	42	200212M2_42	2000256-01 FRAC-7 0.23032	13-Feb-20	02:14:41	
43	43	200212M2_43	2000256-02 DISCH-7 0.22712	13-Feb-20	02:25:04	
44	44	200212M2_44	2000260-01 Str Schl 0.25568	13-Feb-20	02:35:26	
45	45	200212M2_45	B0B0049-BLK1 Method Blank 2	13-Feb-20	02:45:48	
46	46	200212M2_46	B0B0049-BS1 OPR 2	13-Feb-20	02:56:10	
47	47	200212M2_47	B0B0049-MS1 Matrix Spike 2.58	13-Feb-20	03:06:32	
48	48	200212M2_48	B0B0049-MSD1 Matrix Spike Dup 2.6	13-Feb-20	03:16:55	
49	49	200212M2_49	2000244-03 CDM-SS02-07-020320 2.64	13-Feb-20	03:27:17	
50	50	200212M2_50	2000244-04 CDM-SS02-07K-020320 2.6	13-Feb-20	03:37:39	
51	51	200212M2_51	2000244-05 CDM-SS03-07-020320 2.7	13-Feb-20	03:48:02	
52	52	200212M2_52	2000244-06 CDM-SS04-06-020320 2.68 A	13-Feb-20	03:58:24	
53	53	200212M2_53	IB	13-Feb-20	04:08:46	
54	54	200212M2_54	ST200212M2-12 PFC CS3 20B1107	13-Feb-20	04:19:08	
55	55	200212M2_55	IB	13-Feb-20	04:29:31	
56	56	200212M2_56	B0B0056-BLK1 Method Blank 0.125	13-Feb-20	04:39:53	
57	57	200212M2_57	B0B0056-BS1 OPR 0.125	13-Feb-20	04:50:15	
58	58	200212M2_58	2000262-04 Field Blank 0.11676	13-Feb-20	05:00:37	
59	59	200212M2_59	B0B0064-BLK1 Method Blank 0.25	13-Feb-20	05:11:02	
60	60	200212M2_60	B0B0064-BS1 OPR 0.25	13-Feb-20	05:21:27	
61	61	200212M2_61	2000261-01 002 FINISHED SAMPLE FROM PLANT/BLEND 4/	13-Feb-20	05:31:48	
62	62	200212M2_62	2000263-01 502 CASWELL PUMP STATION/TAP FOR SOURCE	13-Feb-20	05:42:11	
63	63	200212M2_63	2000263-02 503 CASWELL PUMP STATION/TAP FOR SOURCE	13-Feb-20	05:52:33	
64	64	200212M2_64	2000264-01 000 APARTMENT 10 KITCHEN SINK/BLEND 001	13-Feb-20	06:02:57	
65	65	200212M2_65	2000265-01 504 PUMPROOM IN BASEMENT/004 0.25762	13-Feb-20	06:13:23	

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 16:49:45 Pacific Standard Time
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Compound name: PFBA

	# Name	ID	Acq.Date	Acq.Time
66	66 200212M2_66	2000266-01 001 FINISHED WATER SAMPLE AT PLANT/002	13-Feb-20	06:23:45
67	67 200212M2_67	2000267-01 501 PH DEP TAP POST UV/BLEND 002 003 0.	13-Feb-20	06:34:07
68	68 200212M2_68	2000268-01 008 PUMPHOUSE TAP/BLND 0.25922	13-Feb-20	06:44:29
69	69 200212M2_69	2000269-01 501 DEP TAP/PH/AFTER TREAT/BLEND 001 00	13-Feb-20	06:54:51
70	70 200212M2_70	2000270-01 005 FINISHED WATER SAMPLE FROM PLANT/PO	13-Feb-20	07:05:14
71	71 200212M2_71	IB	13-Feb-20	07:15:36
72	72 200212M2_72	ST200212M2-13 PFC CS3 20B1107	13-Feb-20	07:25:58
73	73 200212M2_73	IB	13-Feb-20	07:36:20
74	74 200212M2_74	2000270-02 004 COLD SPR GRP/WET WELL IN PH/7/8/9/1	13-Feb-20	07:46:43
75	75 200212M2_75	2000270-03 506 FINISHED WATER SAMPLE FROM PLANT/PE	13-Feb-20	07:57:05
76	76 200212M2_76	2000271-01 501 VILLAS WELL HOUSE SOURCE TAP/001 0.	13-Feb-20	08:07:27
77	77 200212M2_77	2000272-01 501 DEP TAP PUMPHOUSE/BLEND OF 001 002	13-Feb-20	08:17:49
78	78 200212M2_78	2000273-01 501 HAND SINK BY BOILER ROOM/001 0.2529	13-Feb-20	08:28:12
79	79 200212M2_79	2000274-01 501 DEP TAP/PH/AFTER TREATMENT/BLEND 00	13-Feb-20	08:38:34
80	80 200212M2_80	2000275-01 000 MOBILE HOME 15/BLEND 001 002 0.2580	13-Feb-20	08:48:56
81	81 200212M2_81	B0B0053-BS1 OPR 0.125	13-Feb-20	08:59:18
82	82 200212M2_82	B0A0238-BLK1 Method Blank 500	13-Feb-20	09:09:41
83	83 200212M2_83	B0A0238-BS1 OPR 500	13-Feb-20	09:20:03
84	84 200212M2_84	2000191-01@5X South Berwick 301.32	13-Feb-20	09:30:25
85	85 200212M2_85	2000192-01 Dyer Septage 495.02	13-Feb-20	09:40:47
86	86 200212M2_86	IB	13-Feb-20	09:51:10
87	87 200212M2_87	ST200212M2-14 PFC CS3 20B1107	13-Feb-20	10:01:32
88	88 200212M2_88	IB	13-Feb-20	10:11:54

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 1 of 14
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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

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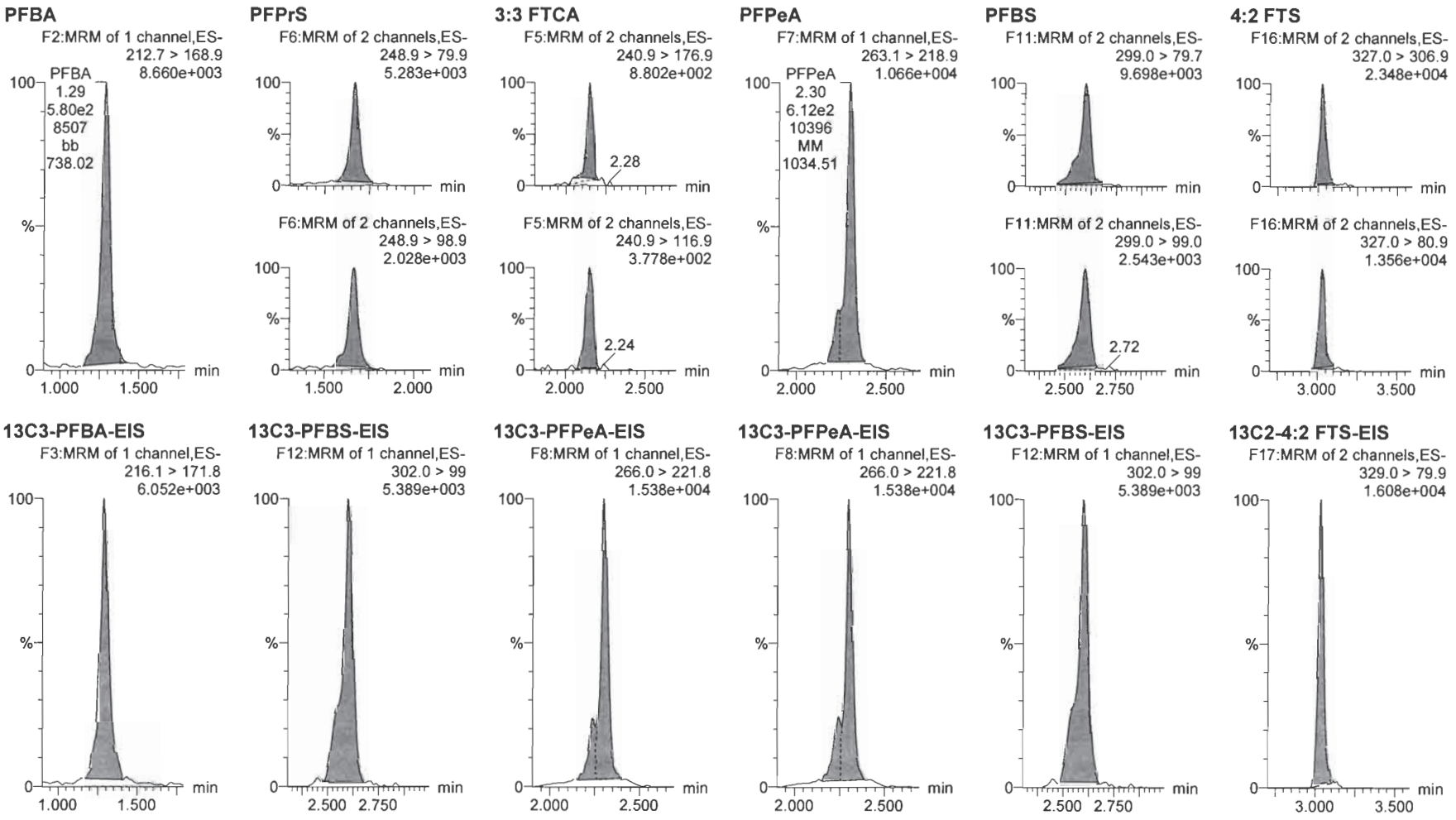

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 2 of 14
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

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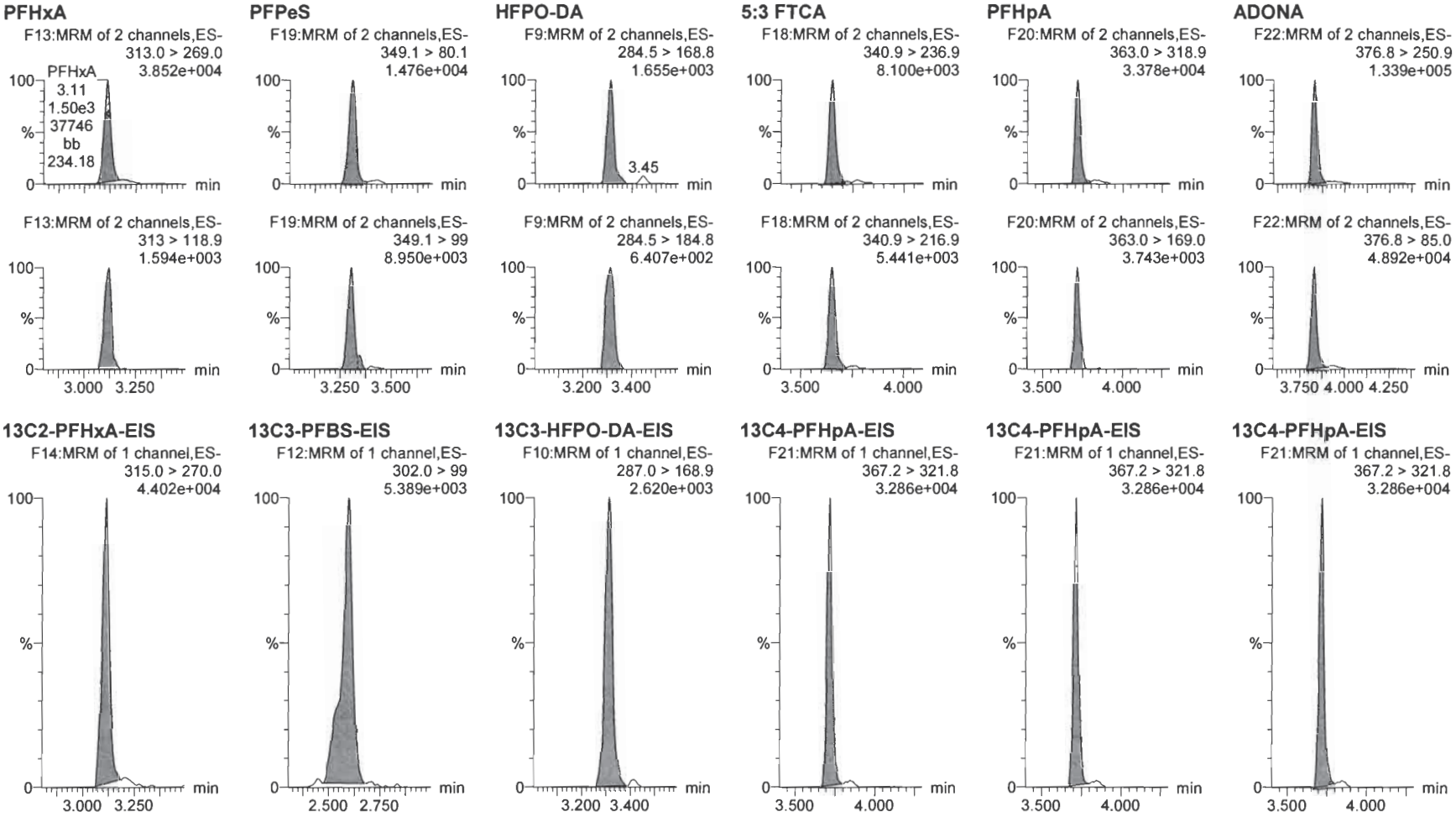


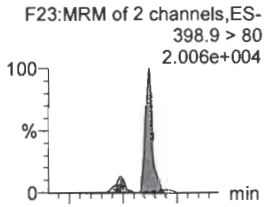
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 3 of 14
Vista Analytical Laboratory

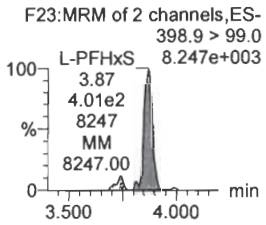
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

L-PFHxS





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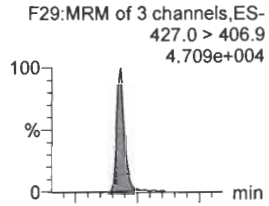

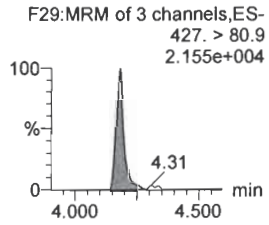

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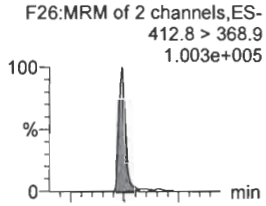

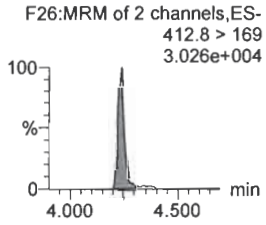

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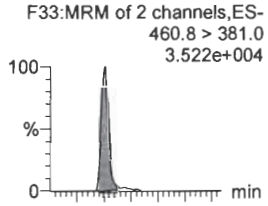
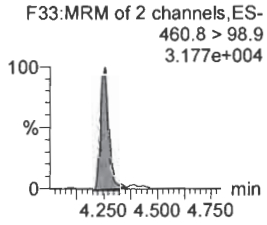
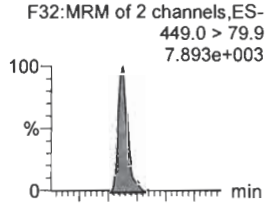
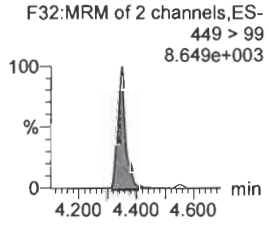


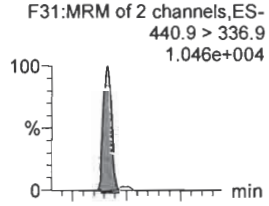


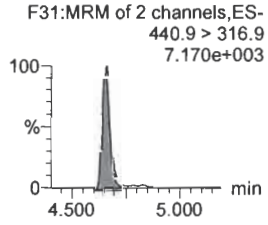
PFHpS



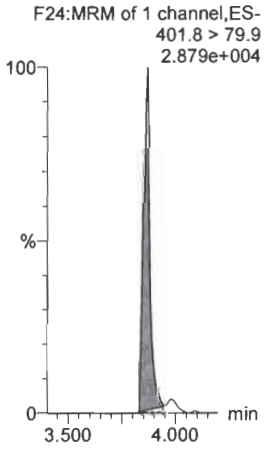


7:3 FTCA

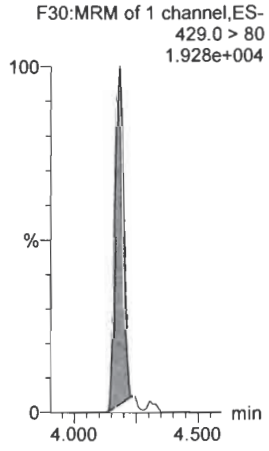




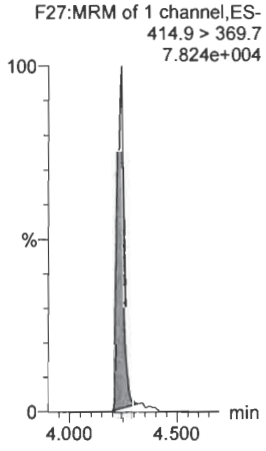
13C3-PFHxS-EIS



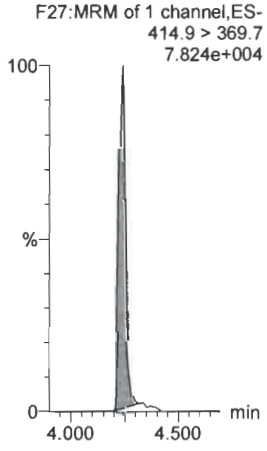
13C2-6:2 FTS-EIS



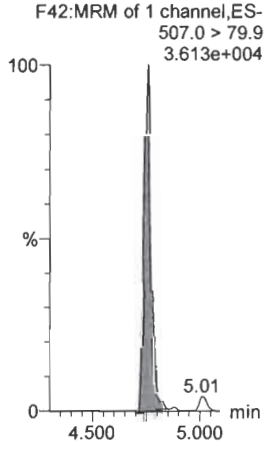
13C2-PFOA-EIS



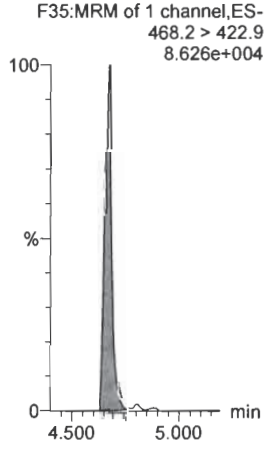
13C2-PFOA-EIS



13C8-PFOS-EIS



13C5-PFNA-EIS



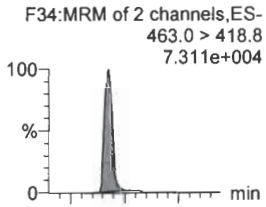
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 4 of 14
Vista Analytical Laboratory

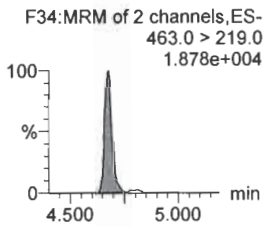
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

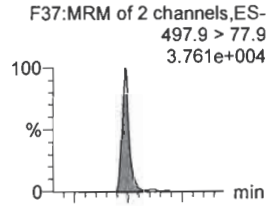
Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

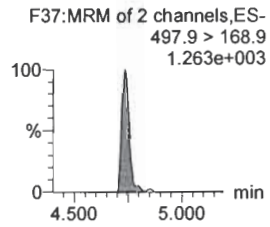
PFNA



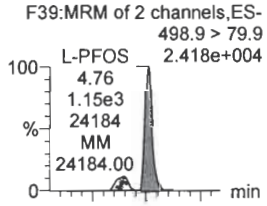


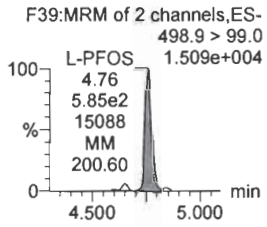
PFOSA



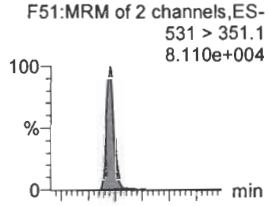


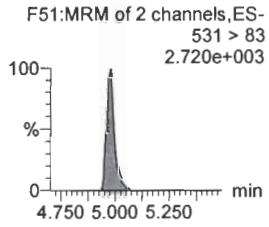
L-PFOS



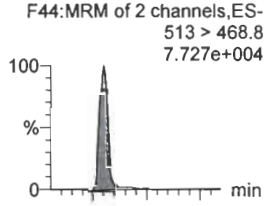


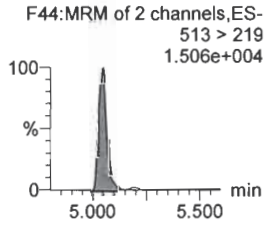
9Cl-PF30NS



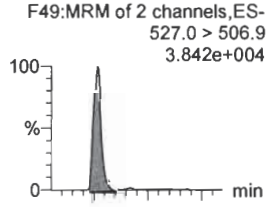


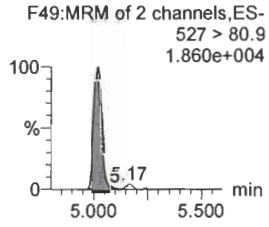
PFDA



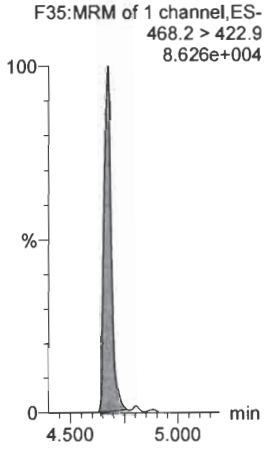


8:2 FTS

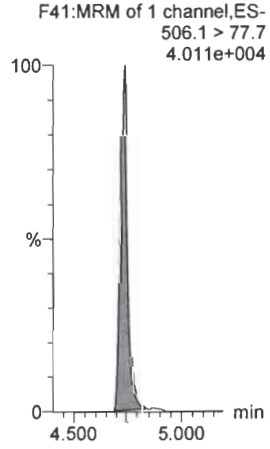




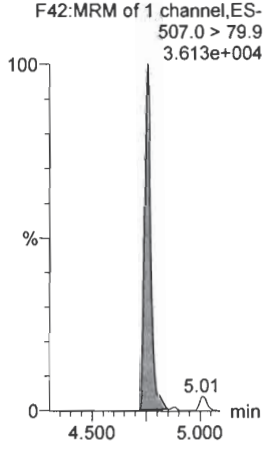
13C5-PFNA-EIS



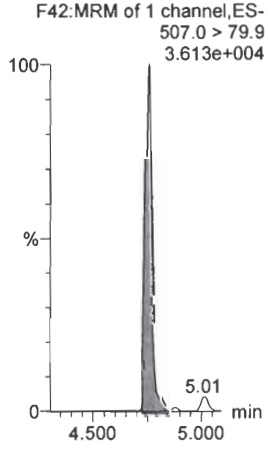
13C8-PFOSA-EIS



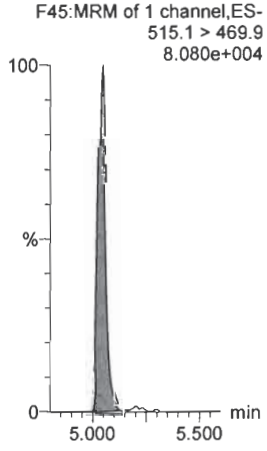
13C8-PFOS-EIS



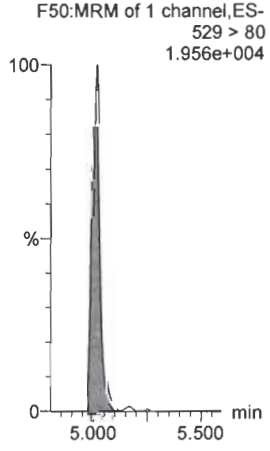
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-8:2 FTS-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

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Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

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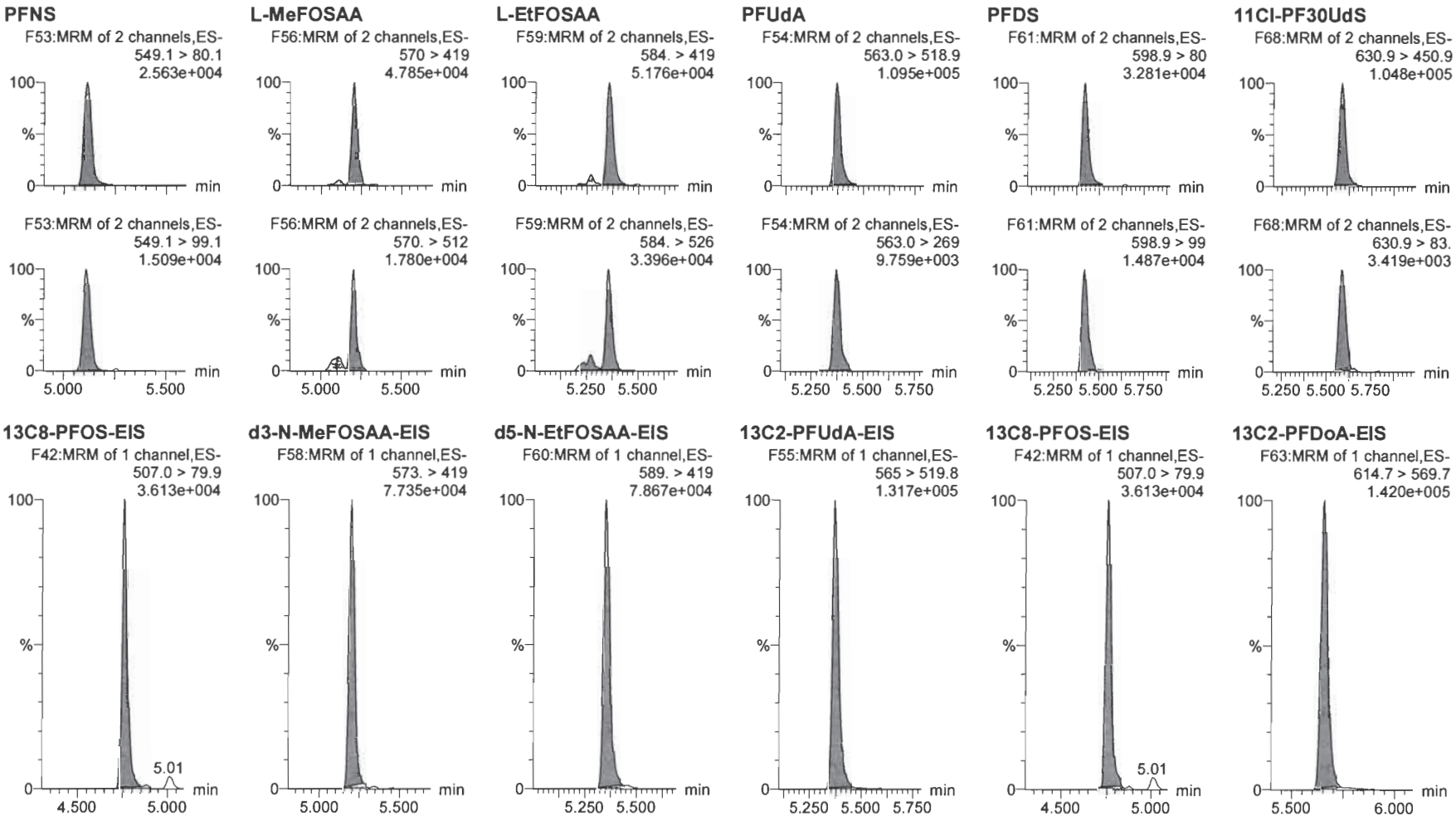


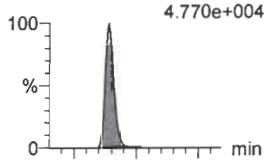
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

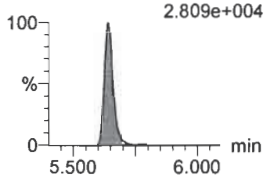
Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

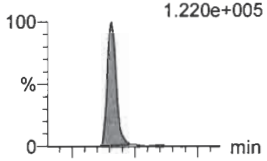
10:2 FTS
F66:MRM of 2 channels,ES-
627.0 > 606.9
4.770e+004



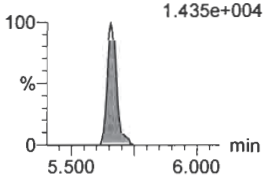
F66:MRM of 2 channels,ES-
627.0 > 80.9
2.809e+004



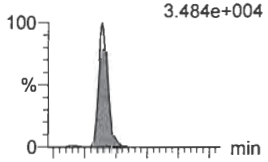
PFDoA
F62:MRM of 2 channels,ES-
612.9 > 569.0
1.220e+005



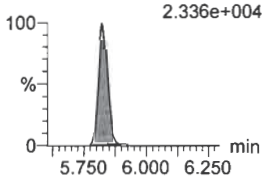
F62:MRM of 2 channels,ES-
612.9 > 318.8
1.435e+004



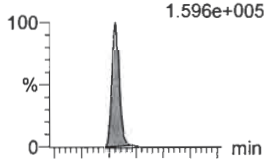
N-MeFOSA
F43:MRM of 2 channels,ES-
512.1 > 168.9
3.484e+004



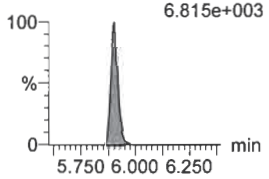
F43:MRM of 2 channels,ES-
512.1 > 219
2.336e+004



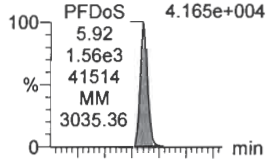
PFTrDA
F71:MRM of 2 channels,ES-
662.9 > 618.9
1.596e+005



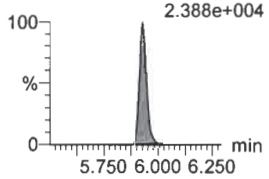
F71:MRM of 2 channels,ES-
662.9 > 319
6.815e+003



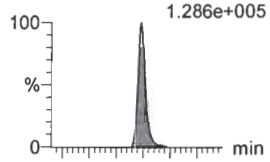
PFDoS
F72:MRM of 2 channels,ES-
698.8 > 79.9
4.165e+004



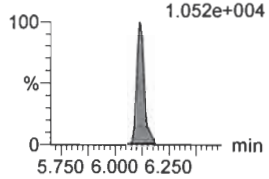
F72:MRM of 2 channels,ES-
698.8 > 98.9
2.388e+004



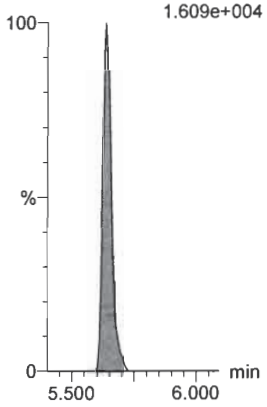
PFTeDA
F73:MRM of 2 channels,ES-
713.0 > 669.0
1.286e+005



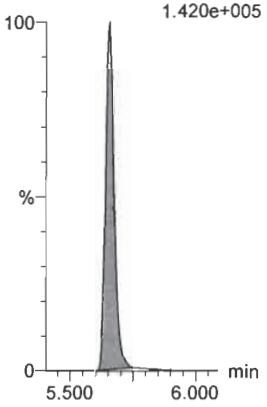
F73:MRM of 2 channels,ES-
713. > 369.0
1.052e+004



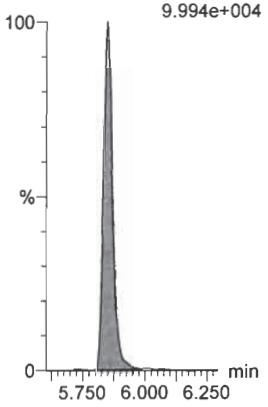
13C2-10:2 FTS-EIS
F69:MRM of 1 channel,ES-
632.9 > 80
1.609e+004



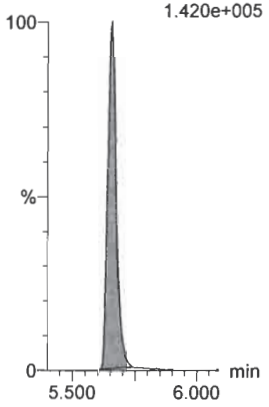
13C2-PFDoA-EIS
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.420e+005



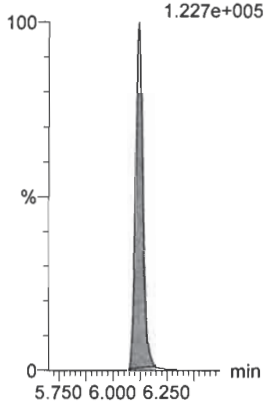
d3-N-MeFOSA-EIS
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.994e+004



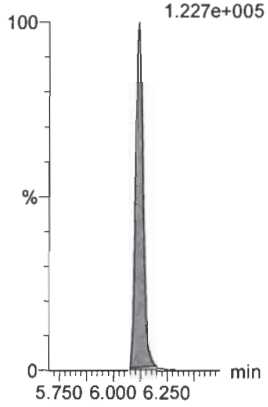
13C2-PFDoA-EIS
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.420e+005



13C2-PFTeDA-EIS
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.227e+005



13C2-PFTeDA-EIS
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.227e+005



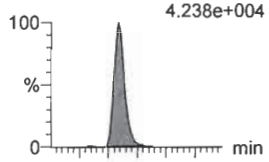
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 7 of 14
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

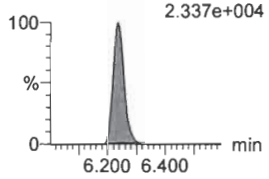
Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

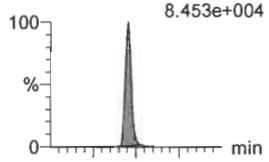
N-EtFOSA
F48:MRM of 2 channels,ES-
526.1 > 168.9
4.238e+004



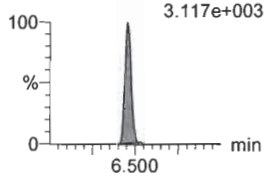
F48:MRM of 2 channels,ES-
526.1 > 219
2.337e+004



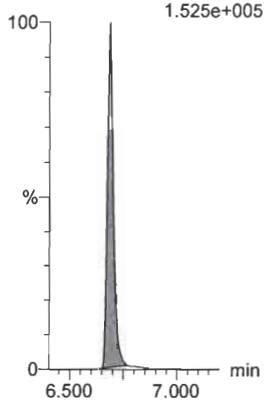
PFHxDA
F75:MRM of 2 channels,ES-
813.1 > 768.6
8.453e+004



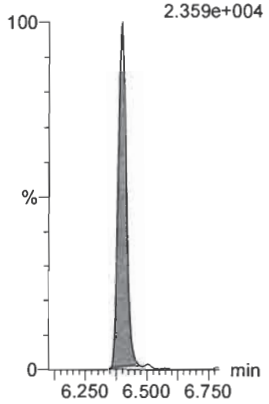
F75:MRM of 2 channels,ES-
813.1 > 219
3.117e+003



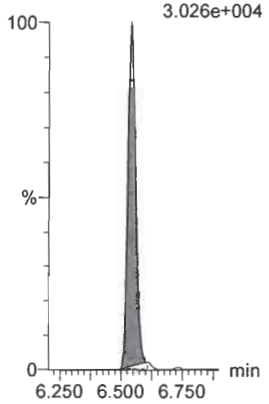
PFODA
F77:MRM of 1 channel,ES-
913.1 > 868.8
1.525e+005



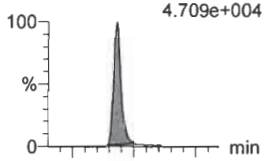
N-MeFOSE
F64:MRM of 1 channel,ES-
616.1 > 58.9
2.359e+004



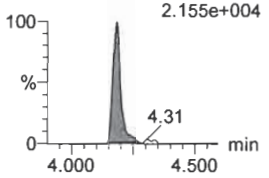
N-EtFOSE
F67:MRM of 1 channel,ES-
630.1 > 58.9
3.026e+004



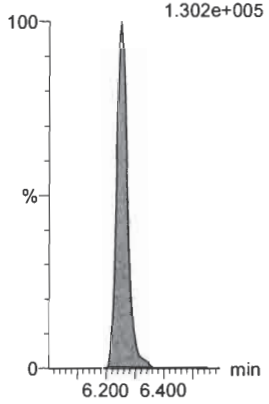
6:2 FTS-13C8PFOS
F29:MRM of 3 channels,ES-
427.0 > 406.9
4.709e+004



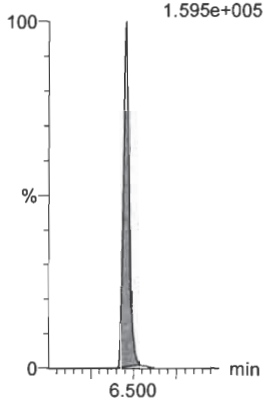
F29:MRM of 3 channels,ES-
427. > 80.9
2.155e+004



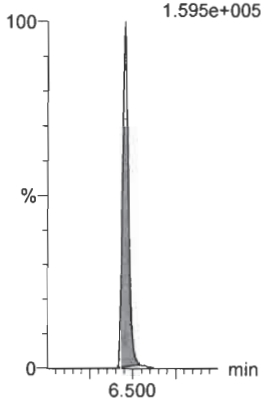
d5-N-ETFOSA-EIS
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.302e+005



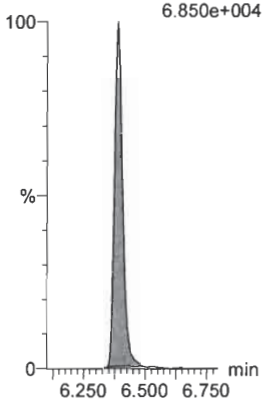
13C2-PFHxDA-EIS
F76:MRM of 1 channel,ES-
815 > 769.7
1.595e+005



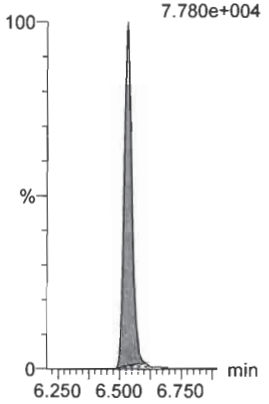
13C2-PFHxDA-EIS
F76:MRM of 1 channel,ES-
815 > 769.7
1.595e+005



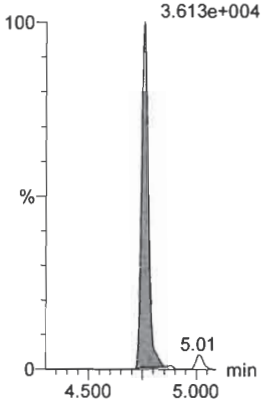
d7-N-MeFOSE-EIS
F65:MRM of 1 channel,ES-
623.1 > 58.9
6.850e+004



d9-N-EtFOSE-EIS
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.780e+004



13C8-PFOS-EIS
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.613e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 8 of 14
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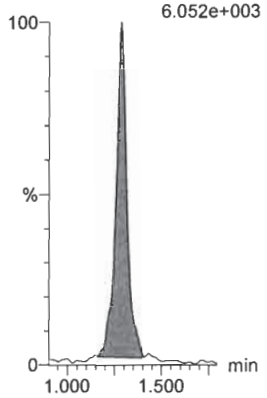
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

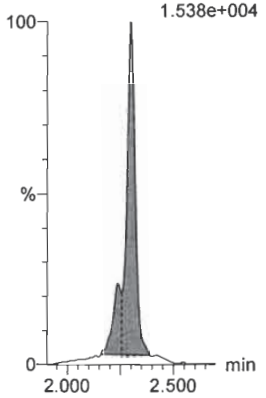
Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

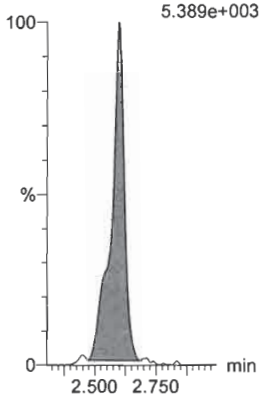
13C3-PFBA-RSD
F3:MRM of 1 channel,ES-
216.1 > 171.8
6.052e+003



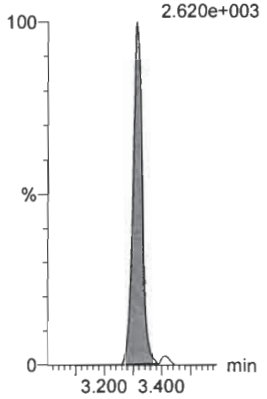
13C3-PFPeA-RSD
F8:MRM of 1 channel,ES-
266.0 > 221.8
1.538e+004



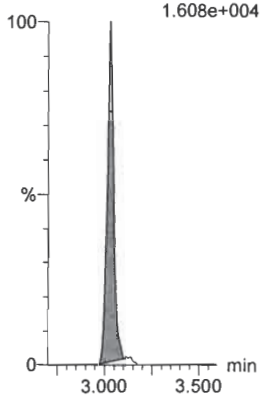
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
5.389e+003



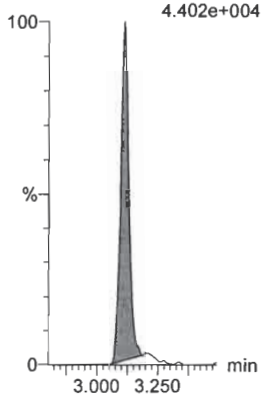
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.620e+003



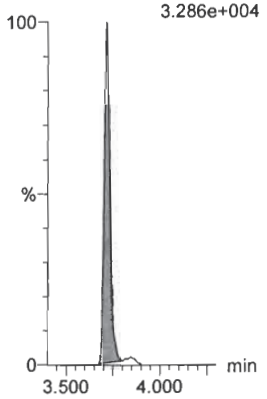
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.608e+004



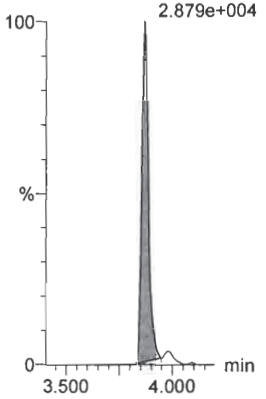
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.402e+004



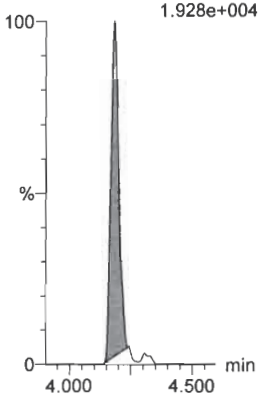
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.286e+004



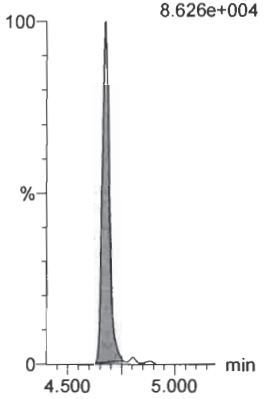
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.879e+004



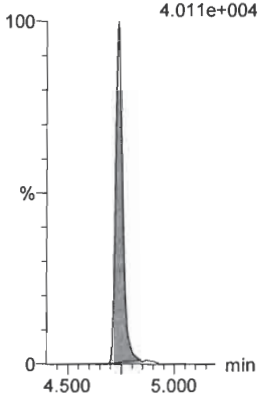
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.928e+004



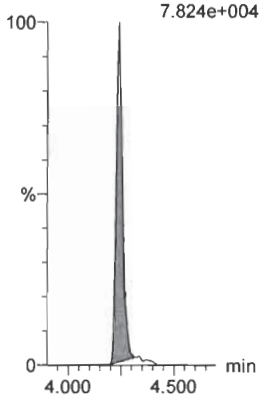
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
8.626e+004



13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
4.011e+004



13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.824e+004



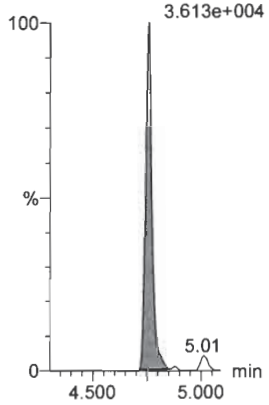
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

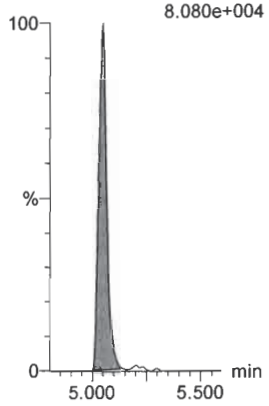
Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

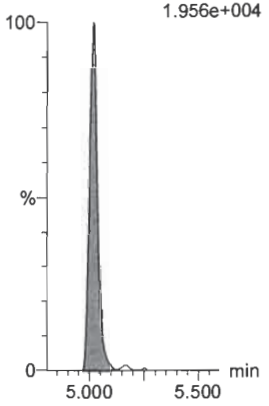
13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.613e+004



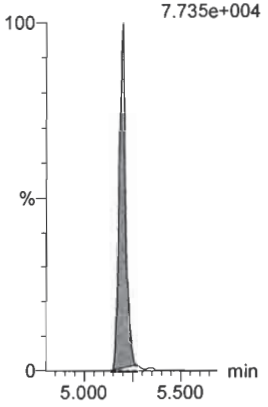
13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
8.080e+004



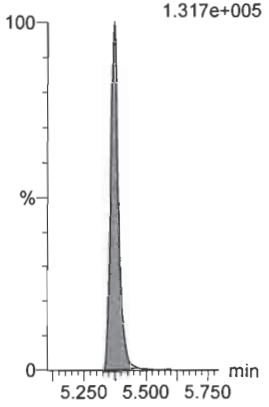
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.956e+004



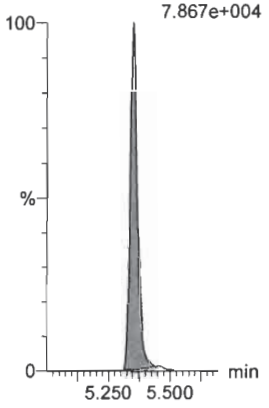
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.735e+004



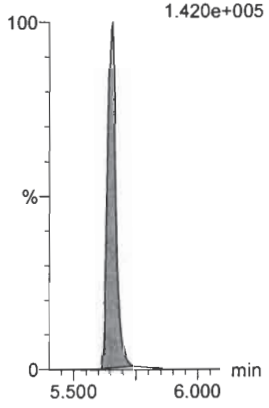
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.317e+005



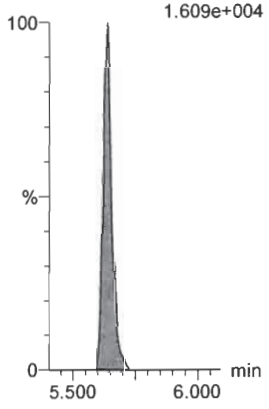
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
7.867e+004



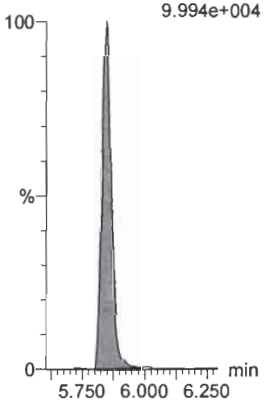
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.420e+005



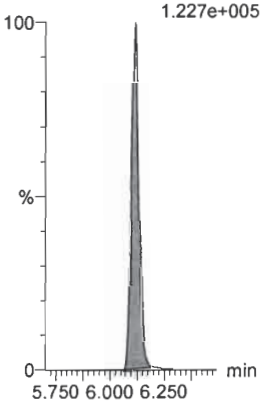
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.609e+004



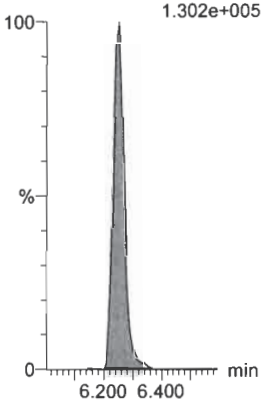
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.994e+004



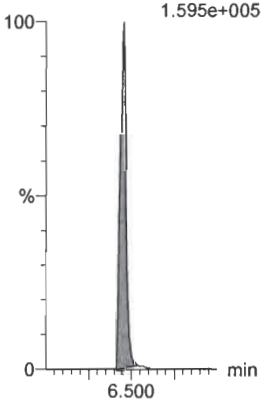
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.227e+005



d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.302e+005



13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.595e+005



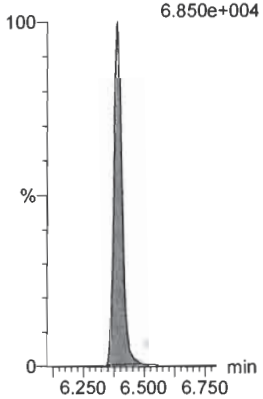
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 10 of 14
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_54.qld

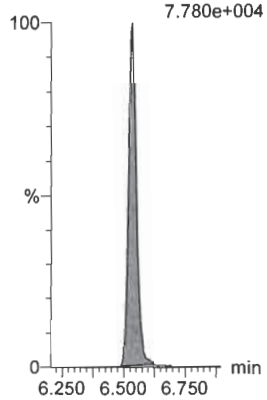
Last Altered: Thursday, February 13, 2020 16:24:26 Pacific Standard Time
Printed: Thursday, February 13, 2020 16:25:19 Pacific Standard Time

Name: 200212M2_54, Date: 13-Feb-2020, Time: 04:19:08, ID: ST200212M2-12 PFC CS3 20B1107, Description: PFC CS3 20B1107

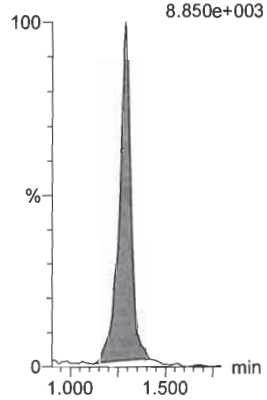
d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
6.850e+004



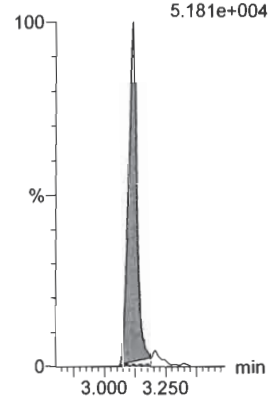
d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.780e+004



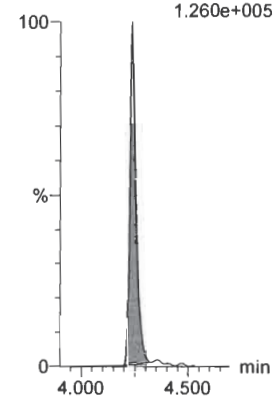
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
8.850e+003



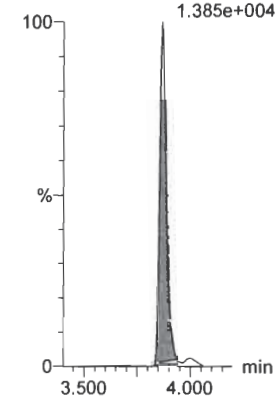
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
5.181e+004



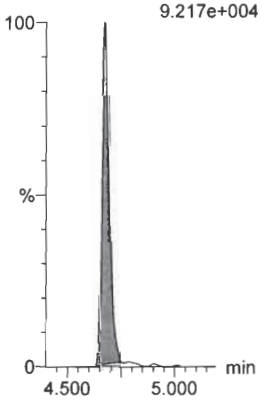
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
1.260e+005



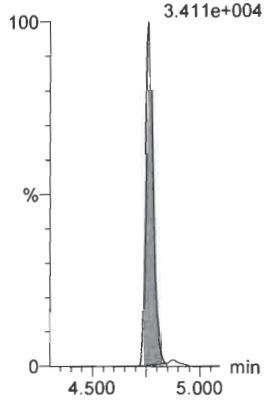
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 102.9
1.385e+004



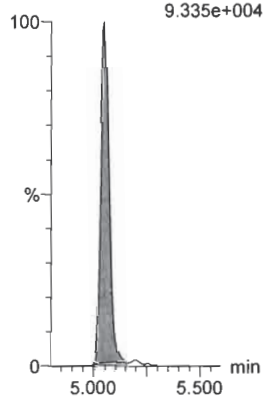
13C9-PFNA
F36:MRM of 1 channel,ES-
472.2 > 426.9
9.217e+004



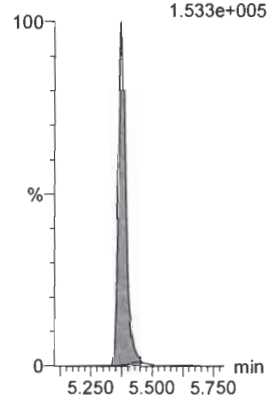
13C4-PFOS
F40:MRM of 1 channel,ES-
503 > 79.9
3.411e+004



13C6-PFDA
F47:MRM of 1 channel,ES-
519.1 > 473.7
9.335e+004



13C7-PFUdA
F57:MRM of 1 channel,ES-
570.1 > 524.8
1.533e+005



INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV) AND INSTRUMENT BLANK (IB)

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 15:03:10 Pacific Standard Time

low pt
6:2FTS = 0.5
PFHpS
3:3FTCA
PFDA

high pt
3:3FTCA = 100
5:3FTCA
7:3FTCA
HFPO-DA

HFPO-DA = 1.0
7:3FTCA
N-ETFOSE = 2.5

RK 2/13/20

All high pts not dropped are at 250.

JM 2/13/20

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 13:55:50

Compound name: PFBA
Correlation coefficient: r = 0.999263, r^2 = 0.998526
Calibration curve: 1.71274 * x + -0.0466937
Response type: Internal Std (Ref 47), 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 200212M2_3	Standard	0.250	1.27	11.613	374.340	0.388	0.3	1.5	NO	0.999	NO	bb
2	2 200212M2_4	Standard	0.500	1.28	17.712	380.955	0.581	0.4	-26.7	NO	0.999	NO	bb
3	3 200212M2_5	Standard	1.000	1.28	66.600	421.932	1.973	1.2	17.9	NO	0.999	NO	bb
4	4 200212M2_6	Standard	2.000	1.27	121.957	420.096	3.629	2.1	7.3	NO	0.999	NO	bb
5	5 200212M2_7	Standard	5.000	1.28	281.260	418.003	8.411	4.9	-1.2	NO	0.999	NO	bb
6	6 200212M2_8	Standard	10.000	1.27	554.936	415.286	16.703	9.8	-2.2	NO	0.999	NO	bb
7	7 200212M2_9	Standard	50.000	1.28	2673.113	391.870	85.268	49.8	-0.4	NO	0.999	NO	bb
8	8 200212M2_10	Standard	100.000	1.28	5879.067	404.276	181.778	106.2	6.2	NO	0.999	NO	bb
9	9 200212M2_11	Standard	250.000	1.27	14762.719	441.408	418.058	244.1	-2.4	NO	0.999	NO	bb
10	10 200212M2_12	Standard	500.000	1.27	252.373	1.904	1656.861	967.4	93.5	YES	0.999	NO	MMX

Compound name: PFPrS
Coefficient of Determination: R^2 = 0.998943
Calibration curve: 0.000487526 * x^2 + 1.32433 * x + -0.062416
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 200212M2_3	Standard	0.250	1.64	6.729	296.802	0.283	0.3	4.4	NO	0.999	NO	MM
2	2 200212M2_4	Standard	0.500	1.65	15.463	303.645	0.637	0.5	5.5	NO	0.999	NO	bb
3	3 200212M2_5	Standard	1.000	1.65	24.710	314.433	0.982	0.8	-21.1	NO	0.999	NO	bb
4	4 200212M2_6	Standard	2.000	1.65	51.576	311.116	2.072	1.6	-19.5	NO	0.999	NO	bb
5	5 200212M2_7	Standard	5.000	1.65	176.120	327.915	6.714	5.1	2.1	NO	0.999	NO	bb
6	6 200212M2_8	Standard	10.000	1.65	335.627	293.526	14.293	10.8	8.0	NO	0.999	NO	bb
7	7 200212M2_9	Standard	50.000	1.65	1455.871	257.009	70.808	52.5	5.0	NO	0.999	NO	MM
8	8 200212M2_10	Standard	100.000	1.65	3129.704	296.456	131.963	96.3	-3.7	NO	0.999	NO	MM
9	9 200212M2_11	Standard	250.000	1.66	8360.110	287.982	362.875	250.9	0.4	NO	0.999	NO	MM
10	10 200212M2_12	Standard	500.000	1.66	131.100	0.480	3414.063	1616.3	223.3	YES	0.999	NO	MMX

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:12:56 Pacific Standard Time

Compound name: 3:3 FTCA
Coefficient of Determination: R^2 = 0.998423
Calibration curve: -1.0865e-005 * x^2 + 0.075033 * x + -0.0193409
Response type: Internal Std (Ref 49), 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	200212M2_3	Standard	0.250	2.13	0.269	872.049	0.004	0.3	23.7	NO	0.998	NO	MMX
2	2	200212M2_4	Standard	0.500	2.14	0.619	822.186	0.009	0.4	-23.4	NO	0.998	NO	MM
3	3	200212M2_5	Standard	1.000	2.14	2.723	902.326	0.038	0.8	-23.9	NO	0.998	NO	MM
4	4	200212M2_6	Standard	2.000	2.13	8.748	879.118	0.124	1.9	-4.2	NO	0.998	NO	MM
5	5	200212M2_7	Standard	5.000	2.14	25.671	914.915	0.351	4.9	-1.3	NO	0.998	NO	MM
6	6	200212M2_8	Standard	10.000	2.14	51.174	879.897	0.727	10.0	-0.4	NO	0.998	NO	bb
7	7	200212M2_9	Standard	50.000	2.13	245.734	811.563	3.785	51.1	2.2	NO	0.998	NO	bb
8	8	200212M2_10	Standard	100.000	2.14	505.721	861.674	7.336	99.5	-0.5	NO	0.998	NO	MM
9	9	200212M2_11	Standard	250.000	2.13	275.121	881.621	3.901	52.6	-78.9	YES	0.998	NO	bbX
10	10	200212M2_12	Standard	500.000	2.14	1.670	8.924	2.339	31.6	-93.7	YES	0.998	NO	MMX

Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999837
Calibration curve: 1.92245e-005 * x^2 + 0.922113 * x + 0.0354823
Response type: Internal Std (Ref 49), 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	200212M2_3	Standard	0.250	2.29	20.523	872.049	0.294	0.3	12.2	NO	1.000	NO	MM
2	2	200212M2_4	Standard	0.500	2.29	30.197	822.186	0.459	0.5	-8.1	NO	1.000	NO	MM
3	3	200212M2_5	Standard	1.000	2.28	69.415	902.326	0.962	1.0	0.4	NO	1.000	NO	MM
4	4	200212M2_6	Standard	2.000	2.29	136.115	879.118	1.935	2.1	3.0	NO	1.000	NO	MM
5	5	200212M2_7	Standard	5.000	2.29	353.835	914.915	4.834	5.2	4.1	NO	1.000	NO	MM
6	6	200212M2_8	Standard	10.000	2.29	681.352	879.897	9.679	10.5	4.6	NO	1.000	NO	MM
7	7	200212M2_9	Standard	50.000	2.29	3012.946	811.563	46.407	50.2	0.5	NO	1.000	NO	MM
8	8	200212M2_10	Standard	100.000	2.29	6278.916	861.674	91.086	98.5	-1.5	NO	1.000	NO	MM
9	9	200212M2_11	Standard	250.000	2.29	16379.955	881.621	232.242	250.5	0.2	NO	1.000	NO	MM
10	10	200212M2_12	Standard	500.000	2.29	170.266	8.924	238.495	257.2	-48.6	YES	1.000	NO	MMX

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
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Compound name: PFBS
Correlation coefficient: r = 0.999614, r^2 = 0.999228
Calibration curve: 2.34564 * x + -0.0870961
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	200212M2_3	Standard	0.250	2.59	11.275	296.802	0.475	0.2	-4.2	NO	0.999	NO	MM
2	2	200212M2_4	Standard	0.500	2.59	31.826	303.645	1.310	0.6	19.1	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	2.59	47.780	314.433	1.899	0.8	-15.3	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	2.58	105.812	311.116	4.251	1.8	-7.5	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	2.59	279.382	327.915	10.650	4.6	-8.5	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	2.59	541.810	293.526	23.073	9.9	-1.3	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	2.59	2406.528	257.009	117.045	49.9	-0.1	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	2.59	5794.663	296.456	244.331	104.2	4.2	NO	0.999	NO	bd
9	9	200212M2_11	Standard	250.000	2.59	13325.903	287.982	578.417	246.6	-1.3	NO	0.999	NO	bd
10	10	200212M2_12	Standard	500.000	2.59	158.883	0.480	4137.578	1764.0	252.8	YES	0.999	NO	bdX

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999729
Calibration curve: -0.000792822 * x^2 + 2.26726 * x + -0.243927
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	0.250	3.02	15.768	552.261	0.357	0.3	6.0	NO	1.000	NO	MM
2	2	200212M2_4	Standard	0.500	3.03	48.042	642.718	0.934	0.5	4.0	NO	1.000	NO	MM
3	3	200212M2_5	Standard	1.000	3.02	116.090	695.615	2.086	1.0	2.8	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	3.02	182.033	613.477	3.709	1.7	-12.8	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	3.02	508.048	576.893	11.008	5.0	-0.6	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	3.02	1132.043	639.920	22.113	9.9	-1.1	NO	1.000	NO	MM
7	7	200212M2_9	Standard	50.000	3.02	4344.011	474.679	114.393	51.5	3.0	NO	1.000	NO	bd
8	8	200212M2_10	Standard	100.000	3.02	9201.391	533.933	215.415	98.5	-1.5	NO	1.000	NO	bd
9	9	200212M2_11	Standard	250.000	3.02	19036.723	459.700	517.640	250.3	0.1	NO	1.000	NO	bd
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	X

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:12:56 Pacific Standard Time

Compound name: PFHxA
Correlation coefficient: r = 0.999847, r^2 = 0.999694
Calibration curve: 1.08068 * x + 0.00169652
Response type: Internal Std (Ref 57), 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	200212M2_3	Standard	0.250	3.10	26.271	1544.523	0.213	0.2	-21.9	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	3.10	90.808	1674.895	0.678	0.6	25.1	NO	1.000	NO	MM
3	3	200212M2_5	Standard	1.000	3.10	157.820	1860.551	1.060	1.0	-2.0	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	3.10	262.875	1735.250	1.894	1.8	-12.5	NO	1.000	NO	MM
5	5	200212M2_7	Standard	5.000	3.10	821.969	1793.575	5.729	5.3	6.0	NO	1.000	NO	MM
6	6	200212M2_8	Standard	10.000	3.10	1644.009	1802.894	11.398	10.5	5.5	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	3.10	7165.253	1652.605	54.197	50.1	0.3	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	3.10	15251.756	1766.984	107.894	99.8	-0.2	NO	1.000	NO	MM
9	9	200212M2_11	Standard	250.000	3.10	34802.004	1614.272	269.487	249.4	-0.3	NO	1.000	NO	MM
10	10	200212M2_12	Standard	500.000	3.11	457.438	9.810	582.872	539.4	7.9	NO	1.000	NO	MMX

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999451
Calibration curve: -0.00282776 * x^2 + 2.67923 * x + -0.285128
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	0.250	3.30	6.981	296.802	0.294	0.2	-13.5	NO	0.999	NO	MM
2	2	200212M2_4	Standard	0.500	3.29	21.423	303.645	0.882	0.4	-12.8	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	3.29	49.365	314.433	1.962	0.8	-16.0	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	3.30	118.249	311.116	4.751	1.9	-5.8	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	3.29	337.961	327.915	12.883	4.9	-1.2	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	3.29	657.956	293.526	28.019	10.7	6.8	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	3.29	2628.201	257.009	127.826	50.5	1.0	NO	0.999	NO	MM
8	8	200212M2_10	Standard	100.000	3.29	5615.636	296.456	236.782	98.8	-1.2	NO	0.999	NO	MM
9	9	200212M2_11	Standard	250.000	3.30	11369.782	287.982	493.511	250.6	0.2	NO	0.999	NO	MM
10	10	200212M2_12	Standard	500.000	3.30	166.145	0.480	4326.693			NO	0.999	NO	bbXI

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:12:56 Pacific Standard Time

Compound name: HFPO-DA
Coefficient of Determination: R^2 = 0.998394
Calibration curve: -0.000936982 * x^2 + 0.914428 * x + -0.527708
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	200212M2_3	Standard	0.250			91.447				NO	0.998	NO	X
2	2	200212M2_4	Standard	0.500	3.30	1.453	74.584	0.244	0.8	68.8	YES	0.998	NO	MMX
3	3	200212M2_5	Standard	1.000	3.31	1.816	90.842	0.250	0.9	-14.9	NO	0.998	NO	MM
4	4	200212M2_6	Standard	2.000	3.29	11.155	103.124	1.352	2.1	3.0	NO	0.998	NO	bb
5	5	200212M2_7	Standard	5.000	3.30	30.267	78.703	4.807	5.9	17.4	NO	0.998	NO	bb
6	6	200212M2_8	Standard	10.000	3.30	54.361	83.587	8.129	9.6	-4.4	NO	0.998	NO	MM
7	7	200212M2_9	Standard	50.000	3.30	297.664	88.113	42.228	49.2	-1.5	NO	0.998	NO	bb
8	8	200212M2_10	Standard	100.000	3.30	607.611	92.785	81.857	100.4	0.4	NO	0.998	NO	bb
9	9	200212M2_11	Standard	250.000	3.30	1385.928	75.660	228.973			NO	0.998	NO	MMXI
10	10	200212M2_12	Standard	500.000	3.31	13.042	0.478	341.056			NO	0.998	NO	MMXI

Compound name: 5:3 FTCA
Coefficient of Determination: R^2 = 0.999352
Calibration curve: -0.000114717 * x^2 + 0.338399 * x + -0.0279812
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	0.250	3.64	5.335	1195.701	0.056	0.2	-1.0	NO	0.999	NO	bb
2	2	200212M2_4	Standard	0.500	3.63	16.166	1237.770	0.163	0.6	13.0	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	3.63	32.628	1253.123	0.325	1.0	4.5	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	3.64	52.871	1151.479	0.574	1.8	-11.0	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	3.64	156.838	1217.800	1.610	4.8	-3.0	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	3.64	304.194	1191.747	3.191	9.5	-4.6	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	3.64	1367.856	1002.634	17.053	51.4	2.7	NO	0.999	NO	MM
8	8	200212M2_10	Standard	100.000	3.64	3079.115	1185.737	32.460	99.4	-0.6	NO	0.999	NO	MM
9	9	200212M2_11	Standard	250.000	3.64	1547.313	1081.130	17.890	53.9	-78.4	YES	0.999	NO	bbX
10	10	200212M2_12	Standard	500.000	3.64	14.408	6.154	29.266	89.3	-82.1	YES	0.999	NO	MMX

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

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Compound name: PFHpA
Coefficient of Determination: R^2 = 0.998196
Calibration curve: -0.000254937 * x^2 + 1.30794 * x + -0.0871493
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	0.250	3.71	22.378	1195.701	0.234	0.2	-1.8	NO	0.998	NO	MM
2	2	200212M2_4	Standard	0.500	3.71	39.232	1237.770	0.396	0.4	-26.1	NO	0.998	NO	bb
3	3	200212M2_5	Standard	1.000	3.71	134.585	1253.123	1.342	1.1	9.3	NO	0.998	NO	bb
4	4	200212M2_6	Standard	2.000	3.70	235.591	1151.479	2.557	2.0	1.1	NO	0.998	NO	bb
5	5	200212M2_7	Standard	5.000	3.71	708.114	1217.800	7.268	5.6	12.6	NO	0.998	NO	bb
6	6	200212M2_8	Standard	10.000	3.71	1281.599	1191.747	13.442	10.4	3.7	NO	0.998	NO	bb
7	7	200212M2_9	Standard	50.000	3.71	5520.940	1002.634	68.830	53.2	6.5	NO	0.998	NO	MM
8	8	200212M2_10	Standard	100.000	3.71	11435.436	1185.737	120.552	94.0	-6.0	NO	0.998	NO	MM
9	9	200212M2_11	Standard	250.000	3.71	27083.605	1081.130	313.140	251.8	0.7	NO	0.998	NO	MM
10	10	200212M2_12	Standard	500.000	3.71	356.199	6.154	723.511	630.8	26.2	NO	0.998	NO	bbX

Compound name: ADONA
Coefficient of Determination: R^2 = 0.999618
Calibration curve: -0.00220737 * x^2 + 4.9932 * x + -0.115029
Response type: Internal Std (Ref 59), 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	200212M2_3	Standard	0.250	3.83	89.643	1195.701	0.937	0.2	-15.7	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	3.82	252.401	1237.770	2.549	0.5	6.7	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	3.82	469.196	1253.123	4.680	1.0	-3.9	NO	1.000	NO	MM
4	4	200212M2_6	Standard	2.000	3.82	895.328	1151.479	9.719	2.0	-1.4	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	3.82	2496.309	1217.800	25.623	5.2	3.3	NO	1.000	NO	MM
6	6	200212M2_8	Standard	10.000	3.82	4762.427	1191.747	49.952	10.1	0.7	NO	1.000	NO	MM
7	7	200212M2_9	Standard	50.000	3.82	20228.887	1002.634	252.197	51.7	3.4	NO	1.000	NO	MM
8	8	200212M2_10	Standard	100.000	3.82	44102.270	1185.737	464.925	97.3	-2.7	NO	1.000	NO	MM
9	9	200212M2_11	Standard	250.000	3.82	96302.125	1081.130	1113.443	250.8	0.3	NO	1.000	NO	MM
10	10	200212M2_12	Standard	500.000	3.82	1210.407	6.154	2458.578	724.4	44.9	YES	1.000	NO	MMX

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

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Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999518
Calibration curve: 7.94953e-005 * x^2 + 1.06282 * x + -0.121755
Response type: Internal Std (Ref 61), 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	200212M2_3	Standard	0.250	3.86	13.648	969.007	0.176	0.3	12.1	NO	1.000	NO	MM
2	2	200212M2_4	Standard	0.500	3.86	33.045	1058.640	0.390	0.5	-3.7	NO	1.000	NO	MM
3	3	200212M2_5	Standard	1.000	3.85	79.601	1119.375	0.889	1.0	-4.9	NO	1.000	NO	MM
4	4	200212M2_6	Standard	2.000	3.85	129.481	964.924	1.677	1.7	-15.4	NO	1.000	NO	MM
5	5	200212M2_7	Standard	5.000	3.86	482.603	1006.022	5.996	5.8	15.1	NO	1.000	NO	MM
6	6	200212M2_8	Standard	10.000	3.86	893.342	1103.638	10.118	9.6	-3.7	NO	1.000	NO	MM
7	7	200212M2_9	Standard	50.000	3.86	3976.953	921.032	53.974	50.7	1.4	NO	1.000	NO	MM
8	8	200212M2_10	Standard	100.000	3.86	8626.700	1018.476	105.878	99.0	-1.0	NO	1.000	NO	MM
9	9	200212M2_11	Standard	250.000	3.86	20157.645	930.347	270.835	250.3	0.1	NO	1.000	NO	MM
10	10	200212M2_12	Standard	500.000	3.86	209.839	4.160	630.526	569.1	13.8	NO	1.000	NO	MMX

Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999579
Calibration curve: -0.00238759 * x^2 + 3.14059 * x
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: Null, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	0.250	4.16	19.847	680.710	0.364	0.1	-53.6	YES	1.000	NO	bdX
2	2	200212M2_4	Standard	0.500	4.18	81.573	758.317	1.345	0.4	-14.3	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	4.17	173.164	681.153	3.178	1.0	1.3	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	4.17	345.444	675.858	6.389	2.0	1.9	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	4.17	885.616	713.484	15.516	5.0	-0.8	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	4.17	1557.001	711.859	27.340	8.8	-12.4	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	4.17	7079.231	624.335	141.735	46.8	-6.4	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	4.17	15192.386	639.366	297.021	102.6	2.6	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	4.17	30142.070	593.152	635.210	249.6	-0.1	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000	4.17	394.588	3.695	1334.871			NO	1.000	NO	MMXI

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

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Compound name: L-PFOA
Correlation coefficient: r = 0.999767, r^2 = 0.999534
Calibration curve: 1.45172 * x + 0.11617
Response type: Internal Std (Ref 69), 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	200212M2_3	Standard	0.250	4.23	94.453	2449.699	0.482	0.3	0.8	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	4.22	183.990	2762.702	0.832	0.5	-1.3	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	4.22	392.307	2854.782	1.718	1.1	10.3	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	4.23	642.216	2592.238	3.097	2.1	2.7	NO	1.000	NO	bd
5	5	200212M2_7	Standard	5.000	4.23	1828.460	2670.556	8.558	5.8	16.3	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	4.23	3339.108	2752.340	15.165	10.4	3.7	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	4.23	13475.445	2307.419	73.001	50.2	0.4	NO	1.000	NO	MM
8	8	200212M2_10	Standard	100.000	4.22	27809.455	2400.948	144.784	99.7	-0.3	NO	1.000	NO	MM
9	9	200212M2_11	Standard	250.000	4.23	61597.820	2131.014	361.318	248.8	-0.5	NO	1.000	NO	MM
10	10	200212M2_12	Standard	500.000	4.23	849.807	3.078	3451.133	2377.2	375.4	YES	1.000	NO	MMX

Compound name: PFecHS
Coefficient of Determination: R^2 = 0.999301
Calibration curve: 0.000135882 * x^2 + 0.779117 * x + -0.114263
Response type: Internal Std (Ref 69), 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	200212M2_3	Standard	0.250	4.26	24.550	2449.699	0.125	0.3	23.0	NO	0.999	NO	MM
2	2	200212M2_4	Standard	0.500	4.25	49.433	2762.702	0.224	0.4	-13.3	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	4.24	143.401	2854.782	0.628	1.0	-4.8	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	4.24	289.406	2592.238	1.396	1.9	-3.1	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	4.24	838.231	2670.556	3.923	5.2	3.6	NO	0.999	NO	bd
6	6	200212M2_8	Standard	10.000	4.24	1626.289	2752.340	7.386	9.6	-3.9	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	4.25	6888.971	2307.419	37.320	47.7	-4.7	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	4.24	15760.395	2400.948	82.053	103.6	3.6	NO	0.999	NO	bd
9	9	200212M2_11	Standard	250.000	4.25	34502.172	2131.014	202.381	249.1	-0.4	NO	0.999	NO	bd
10	10	200212M2_12	Standard	500.000	4.25	422.577	3.078	1716.118	1699.2	239.8	YES	0.999	NO	bbX

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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Compound name: PFHpS
Coefficient of Determination: R^2 = 0.997855
Calibration curve: -0.000147793 * x^2 + 0.309325 * x + -0.132365
Response type: Internal Std (Ref 71), 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	200212M2_3	Standard	0.250	4.34	2.819	1224.880	0.029	0.5	108.4	YES	0.998	NO	MMX
2	2	200212M2_4	Standard	0.500	4.35	5.093	1310.664	0.049	0.6	17.0	NO	0.998	NO	bb
3	3	200212M2_5	Standard	1.000	4.35	17.600	1340.917	0.164	1.0	-4.1	NO	0.998	NO	bb
4	4	200212M2_6	Standard	2.000	4.34	59.823	1284.388	0.582	2.3	15.6	NO	0.998	NO	MM
5	5	200212M2_7	Standard	5.000	4.34	105.813	1395.017	0.948	3.5	-30.0	~~YES~~ NO	0.998	NO	bb
6	6	200212M2_8	Standard	10.000	4.34	316.309	1323.550	2.987	10.1	1.3	NO	0.998	NO	bb
7	7	200212M2_9	Standard	50.000	4.34	1372.529	1186.716	14.457	48.3	-3.4	NO	0.998	NO	bb
8	8	200212M2_10	Standard	100.000	4.34	2932.698	1201.701	30.506	104.2	4.2	NO	0.998	NO	bb
9	9	200212M2_11	Standard	250.000	4.34	6408.433	1185.048	67.597	248.5	-0.6	NO	0.998	NO	MM
10	10	200212M2_12	Standard	500.000	4.35	62.863	3.711	211.745			NO	0.998	NO	MMXI

Compound name: 7:3 FTCA
Coefficient of Determination: R^2 = 0.997562
Calibration curve: 8.04903e-005 * x^2 + 0.179896 * x + -0.117997
Response type: Internal Std (Ref 65), 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	200212M2_3	Standard	0.250			3091.308				NO	0.998	NO	
2	2	200212M2_4	Standard	0.500	4.64	11.392	3132.095	0.045	0.9	81.7	YES	0.998	NO	bbX
3	3	200212M2_5	Standard	1.000	4.65	8.128	3463.224	0.029	0.8	-18.1	NO	0.998	NO	bb
4	4	200212M2_6	Standard	2.000	4.65	74.716	3439.948	0.272	2.2	8.2	NO	0.998	NO	bb
5	5	200212M2_7	Standard	5.000	4.65	264.034	3395.380	0.972	6.0	20.9	NO	0.998	NO	bb
6	6	200212M2_8	Standard	10.000	4.65	391.374	3285.325	1.489	8.9	-11.0	NO	0.998	NO	bb
7	7	200212M2_9	Standard	50.000	4.65	1986.922	2733.291	9.087	50.0	0.1	NO	0.998	NO	bb
8	8	200212M2_10	Standard	100.000	4.65	4317.002	2888.404	18.682	100.0	0.0	NO	0.998	NO	bb
9	9	200212M2_11	Standard	250.000	4.65	2082.080	2790.896	9.325	51.3	-79.5	YES	0.998	NO	MMX
10	10	200212M2_12	Standard	500.000	4.65	7.260	17.800	5.098	28.6	-94.3	YES	0.998	NO	bbX

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Compound name: PFNA
Coefficient of Determination: R^2 = 0.999332
Calibration curve: -0.000509947 * x^2 + 1.16841 * x + -0.0515936
Response type: Internal Std (Ref 65), 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 200212M2_3	Standard	0.250	4.67	44.242	3091.308	0.179	0.2	-21.1	NO	0.999	NO	bb
2	2 200212M2_4	Standard	0.500	4.66	155.084	3132.095	0.619	0.6	14.8	NO	0.999	NO	bb
3	3 200212M2_5	Standard	1.000	4.66	290.132	3463.224	1.047	0.9	-5.9	NO	0.999	NO	MM
4	4 200212M2_6	Standard	2.000	4.67	613.771	3439.948	2.230	2.0	-2.3	NO	0.999	NO	bb
5	5 200212M2_7	Standard	5.000	4.67	1611.793	3395.380	5.934	5.1	2.7	NO	0.999	NO	bb
6	6 200212M2_8	Standard	10.000	4.67	2889.933	3285.325	10.996	9.5	-5.1	NO	0.999	NO	bb
7	7 200212M2_9	Standard	50.000	4.67	12015.559	2733.291	54.950	48.1	-3.8	NO	0.999	NO	bb
8	8 200212M2_10	Standard	100.000	4.67	26664.121	2888.404	115.393	103.5	3.5	NO	0.999	NO	bb
9	9 200212M2_11	Standard	250.000	4.67	57860.664	2790.896	259.149	248.9	-0.5	NO	0.999	NO	MM
10	10 200212M2_12	Standard	500.000	4.67	698.337	17.800	490.405	553.4	10.7	NO	0.999	NO	bbX

Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999656
Calibration curve: -0.00032434 * x^2 + 1.20662 * x + -0.0271428
Response type: Internal Std (Ref 67), 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 200212M2_3	Standard	0.250	4.74	26.315	1402.705	0.235	0.2	-13.3	NO	1.000	NO	bb
2	2 200212M2_4	Standard	0.500	4.72	71.969	1527.886	0.589	0.5	2.1	NO	1.000	NO	bb
3	3 200212M2_5	Standard	1.000	4.72	174.738	1485.012	1.471	1.2	24.2	NO	1.000	NO	bb
4	4 200212M2_6	Standard	2.000	4.73	263.906	1436.418	2.297	1.9	-3.7	NO	1.000	NO	bb
5	5 200212M2_7	Standard	5.000	4.73	718.787	1567.198	5.733	4.8	-4.4	NO	1.000	NO	bb
6	6 200212M2_8	Standard	10.000	4.73	1330.233	1481.507	11.224	9.3	-6.5	NO	1.000	NO	MM
7	7 200212M2_9	Standard	50.000	4.73	5978.197	1239.435	60.292	50.7	1.4	NO	1.000	NO	bb
8	8 200212M2_10	Standard	100.000	4.73	13028.946	1383.475	117.719	100.3	0.3	NO	1.000	NO	bb
9	9 200212M2_11	Standard	250.000	4.73	28321.600	1259.399	281.102	249.8	-0.1	NO	1.000	NO	MM
10	10 200212M2_12	Standard	500.000	4.73	326.604	0.635	6429.213			NO	1.000	NO	MMXI

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Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999840
Calibration curve: -0.000147321 * x^2 + 1.16219 * x
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: Null, Axis trans: None

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	0.250	4.76	22.764	1224.880	0.232	0.2	-20.0	NO	1.000	NO	MM
2	2	200212M2_4	Standard	0.500	4.75	63.592	1310.664	0.606	0.5	4.4	NO	1.000	NO	MM
3	3	200212M2_5	Standard	1.000	4.75	107.782	1340.917	1.005	0.9	-13.5	NO	1.000	NO	MM
4	4	200212M2_6	Standard	2.000	4.75	309.505	1284.388	3.012	2.6	29.6	NO	1.000	NO	MM
5	5	200212M2_7	Standard	5.000	4.75	643.233	1395.017	5.764	5.0	-0.8	NO	1.000	NO	MM
6	6	200212M2_8	Standard	10.000	4.75	1233.582	1323.550	11.650	10.0	0.4	NO	1.000	NO	MM
7	7	200212M2_9	Standard	50.000	4.75	5221.515	1186.716	55.000	47.6	-4.8	NO	1.000	NO	MM
8	8	200212M2_10	Standard	100.000	4.75	11204.607	1201.701	116.549	101.6	1.6	NO	1.000	NO	MM
9	9	200212M2_11	Standard	250.000	4.76	26655.025	1185.048	281.160	249.8	-0.1	NO	1.000	NO	MM
10	10	200212M2_12	Standard	500.000	4.75	223.189	3.711	751.782	710.9	42.2	YES	1.000	NO	MMX

Compound name: 9Cl-PF30NS
Coefficient of Determination: R^2 = 0.999056
Calibration curve: -0.0011756 * x^2 + 3.47248 * x + -0.348595
Response type: Internal Std (Ref 71), 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	200212M2_3	Standard	0.250	4.97	57.913	1224.880	0.591	0.3	8.2	NO	0.999	NO	bb
2	2	200212M2_4	Standard	0.500	4.96	155.501	1310.664	1.483	0.5	5.5	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	4.96	337.073	1340.917	3.142	1.0	0.6	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	4.97	636.635	1284.388	6.196	1.9	-5.7	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	4.97	1823.556	1395.017	16.340	4.8	-3.7	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	4.97	3487.771	1323.550	32.940	9.6	-3.8	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	4.97	15363.067	1186.716	161.823	47.5	-5.1	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	4.97	33647.758	1201.701	350.001	104.6	4.6	NO	0.999	NO	bb
9	9	200212M2_11	Standard	250.000	4.97	74906.844	1185.048	790.125	248.6	-0.6	NO	0.999	NO	bb
10	10	200212M2_12	Standard	500.000	4.97	719.250	3.711	2422.696	1130.3	126.1	YES	0.999	NO	bbX

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Compound name: PFDA
Coefficient of Determination: R^2 = 0.999244
Calibration curve: -9.04543e-005 * x^2 + 1.25326 * x + 0.00967378
Response type: Internal Std (Ref 73), 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	200212M2_3	Standard	0.250	5.04	70.023	3028.622	0.289	0.2	-10.8	NO	0.999	NO	bbX
2	2	200212M2_4	Standard	0.500	5.04	155.428	3491.207	0.556	0.4	-12.7	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	5.04	474.746	3625.869	1.637	1.3	29.8	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	5.04	497.517	3238.264	1.920	1.5	-23.8	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	5.04	1839.054	3587.417	6.408	5.1	2.1	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	5.04	3558.940	3291.974	13.514	10.8	7.8	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	5.04	14317.073	2931.178	61.055	48.9	-2.2	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	5.04	32222.547	3222.398	124.994	100.5	0.5	NO	0.999	NO	bb
9	9	200212M2_11	Standard	250.000	5.04	69312.773	2815.896	307.685	250.0	0.0	NO	0.999	NO	bb
10	10	200212M2_12	Standard	500.000	5.04	855.357	7.024	1522.204	1345.2	169.0	YES	0.999	NO	bbX

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999240
Calibration curve: 0.000847967 * x^2 + 2.21221 * x + -0.0555202
Response type: Internal Std (Ref 75), 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	200212M2_3	Standard	0.250	5.01	36.506	768.199	0.594	0.3	17.4	NO	0.999	NO	bb
2	2	200212M2_4	Standard	0.500	5.01	50.533	742.317	0.851	0.4	-18.1	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	5.00	120.656	832.650	1.811	0.8	-15.6	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	5.01	255.644	776.556	4.115	1.9	-5.8	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	5.01	857.090	792.895	13.512	6.1	22.4	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	5.01	1552.612	857.326	22.637	10.2	2.2	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	5.01	6389.487	729.716	109.452	48.6	-2.8	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	5.01	12709.579	689.905	230.278	100.3	0.3	NO	0.999	NO	bb
9	9	200212M2_11	Standard	250.000	5.01	27100.609	558.710	606.321	250.1	0.0	NO	0.999	NO	MM
10	10	200212M2_12	Standard	500.000	5.01	475.585					NO	0.999	NO	MMX

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Compound name: PFNS
Coefficient of Determination: R^2 = 0.998089
Calibration curve: -0.000649828 * x^2 + 1.05778 * x + -0.117577
Response type: Internal Std (Ref 71), 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 200212M2_3	Standard	0.250	5.11	21.739	1224.880	0.222	0.3	28.4	NO	0.998	NO	bb
2	2 200212M2_4	Standard	0.500	5.10	36.527	1310.664	0.348	0.4	-11.9	NO	0.998	NO	bb
3	3 200212M2_5	Standard	1.000	5.11	99.299	1340.917	0.926	1.0	-1.3	NO	0.998	NO	bb
4	4 200212M2_6	Standard	2.000	5.10	179.553	1284.388	1.747	1.8	-11.7	NO	0.998	NO	bb
5	5 200212M2_7	Standard	5.000	5.10	569.980	1395.017	5.107	5.0	-0.9	NO	0.998	NO	bb
6	6 200212M2_8	Standard	10.000	5.10	1100.395	1323.550	10.392	10.0	-0.0	NO	0.998	NO	bb
7	7 200212M2_9	Standard	50.000	5.10	4487.714	1186.716	47.270	46.1	-7.8	NO	0.998	NO	bb
8	8 200212M2_10	Standard	100.000	5.10	10077.482	1201.701	104.825	106.1	6.1	NO	0.998	NO	bb
9	9 200212M2_11	Standard	250.000	5.11	21067.818	1185.048	222.225	248.0	-0.8	NO	0.998	NO	bb
10	10 200212M2_12	Standard	500.000	5.11	263.413	3.711	887.271			NO	0.998	NO	bbXI

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.998884
Calibration curve: -0.000164398 * x^2 + 0.900256 * x + -0.039526
Response type: Internal Std (Ref 77), 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 200212M2_3	Standard	0.250	5.20	49.586	3057.061	0.203	0.3	7.7	NO	0.999	NO	MM
2	2 200212M2_4	Standard	0.500	5.19	88.194	3064.573	0.360	0.4	-11.3	NO	0.999	NO	MM
3	3 200212M2_5	Standard	1.000	5.19	234.593	3031.155	0.967	1.1	11.9	NO	0.999	NO	MM
4	4 200212M2_6	Standard	2.000	5.19	373.544	2944.620	1.586	1.8	-9.7	NO	0.999	NO	MM
5	5 200212M2_7	Standard	5.000	5.19	1026.046	3145.853	4.077	4.6	-8.5	NO	0.999	NO	MM
6	6 200212M2_8	Standard	10.000	5.19	2344.628	2896.843	10.117	11.3	13.1	NO	0.999	NO	MM
7	7 200212M2_9	Standard	50.000	5.19	9199.758	2721.458	42.256	47.4	-5.2	NO	0.999	NO	MM
8	8 200212M2_10	Standard	100.000	5.19	20829.012	2882.235	90.334	102.3	2.3	NO	0.999	NO	MM
9	9 200212M2_11	Standard	250.000	5.20	46675.324	2721.579	214.376	249.5	-0.2	NO	0.999	NO	MM
10	10 200212M2_12	Standard	500.000							NO	0.999	NO	X

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Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021320.mdb 13 Feb 2020 13:56:38
Calibration: P:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_02-13-20.cdb 13 Feb 2020 13:55:50

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.998490
Calibration curve: -0.000415609 * x^2 + 1.01126 * x + -0.0376791
Response type: Internal Std (Ref 81), 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	200212M2_3	Standard	0.250	5.36	33.039	2573.932	0.160	0.2	-21.6	NO	0.998	NO	bb
2	2	200212M2_4	Standard	0.500	5.35	127.742	2673.267	0.597	0.6	25.6	NO	0.998	NO	MM
3	3	200212M2_5	Standard	1.000	5.35	202.306	2816.269	0.898	0.9	-7.4	NO	0.998	NO	MM
4	4	200212M2_6	Standard	2.000	5.35	392.837	2634.830	1.864	1.9	-5.9	NO	0.998	NO	MM
5	5	200212M2_7	Standard	5.000	5.35	1213.594	2920.995	5.193	5.2	3.7	NO	0.998	NO	MM
6	6	200212M2_8	Standard	10.000	5.35	2029.165	2748.792	9.228	9.2	-8.0	NO	0.998	NO	MM
7	7	200212M2_9	Standard	50.000	5.35	8869.458	2375.577	46.670	47.1	-5.8	NO	0.998	NO	MM
8	8	200212M2_10	Standard	100.000	5.35	18867.055	2315.024	101.873	105.3	5.3	NO	0.998	NO	MM
9	9	200212M2_11	Standard	250.000	5.35	40663.313	2254.871	225.419	248.3	-0.7	NO	0.998	NO	MM
10	10	200212M2_12	Standard	500.000							NO	0.998	NO	X

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999198
Calibration curve: -0.000353826 * x^2 + 1.03021 * x + 0.0108515
Response type: Internal Std (Ref 79), 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	200212M2_3	Standard	0.250	5.37	102.540	4491.861	0.285	0.3	6.6	NO	0.999	NO	bb
2	2	200212M2_4	Standard	0.500	5.37	152.042	4821.465	0.394	0.4	-25.6	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	5.36	436.658	4821.735	1.132	1.1	8.9	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	5.36	742.915	4504.051	2.062	2.0	-0.4	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	5.36	2195.903	4766.903	5.758	5.6	11.8	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	5.36	3788.316	4526.675	10.461	10.2	1.8	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	5.36	16308.146	4243.182	48.042	47.4	-5.2	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	5.36	33543.203	4121.884	101.723	102.3	2.3	NO	0.999	NO	bb
9	9	200212M2_11	Standard	250.000	5.37	70707.867	3760.162	235.056	249.5	-0.2	NO	0.999	NO	bb
10	10	200212M2_12	Standard	500.000							NO	0.999	NO	X

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Compound name: PFDS
Coefficient of Determination: R^2 = 0.998254
Calibration curve: -0.000347791 * x^2 + 1.28819 * x + -0.0935305
Response type: Internal Std (Ref 71), 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	200212M2_3	Standard	0.250	5.42	13.688	1224.880	0.140	0.2	-27.6	NO	0.998	NO	bb
2	2	200212M2_4	Standard	0.500	5.42	65.179	1310.664	0.622	0.6	11.0	NO	0.998	NO	bb
3	3	200212M2_5	Standard	1.000	5.41	146.315	1340.917	1.364	1.1	13.2	NO	0.998	NO	bb
4	4	200212M2_6	Standard	2.000	5.41	269.254	1284.388	2.620	2.1	5.4	NO	0.998	NO	bb
5	5	200212M2_7	Standard	5.000	5.41	733.711	1395.017	6.574	5.2	3.7	NO	0.998	NO	bb
6	6	200212M2_8	Standard	10.000	5.41	1320.418	1323.550	12.470	9.8	-2.2	NO	0.998	NO	bb
7	7	200212M2_9	Standard	50.000	5.41	5530.559	1186.716	58.255	45.9	-8.3	NO	0.998	NO	bb
8	8	200212M2_10	Standard	100.000	5.41	12666.547	1201.701	131.756	105.3	5.3	NO	0.998	NO	bb
9	9	200212M2_11	Standard	250.000	5.41	28313.852	1185.048	298.657	248.6	-0.6	NO	0.998	NO	bb
10	10	200212M2_12	Standard	500.000	5.41	328.946	3.711	1108.010	1358.4	171.7	YES	0.998	NO	bbX

Compound name: 11Cl-PF30UdS
Coefficient of Determination: R^2 = 0.999767
Calibration curve: -0.00037379 * x^2 + 0.87972 * x + 0.011818
Response type: Internal Std (Ref 83), 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	200212M2_3	Standard	0.250	5.59	83.046	5553.757	0.187	0.2	-20.4	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	5.58	228.860	5770.212	0.496	0.6	10.1	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	5.57	425.269	5671.951	0.937	1.1	5.2	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	5.58	773.187	5514.186	1.753	2.0	-1.0	NO	1.000	NO	MM
5	5	200212M2_7	Standard	5.000	5.58	2207.890	5762.201	4.790	5.4	8.9	NO	1.000	NO	MM
6	6	200212M2_8	Standard	10.000	5.58	3900.794	5726.621	8.515	9.7	-2.9	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	5.58	17369.955	4990.091	43.511	50.5	1.1	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	5.58	37593.602	5635.989	83.378	98.9	-1.1	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	5.58	84106.852	5341.069	196.840	250.4	0.2	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	X

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Compound name: 10:2 FTS
Coefficient of Determination: R^2 = 0.998049
Calibration curve: -0.000410297 * x^2 + 3.31782 * x + 0.349258
Response type: Internal Std (Ref 85), 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	200212M2_3	Standard	0.250	5.64	70.772	723.378	1.223	0.3	5.3	NO	0.998	NO	bb
2	2	200212M2_4	Standard	0.500	5.64	114.207	769.669	1.855	0.5	-9.2	NO	0.998	NO	bb
3	3	200212M2_5	Standard	1.000	5.63	188.492	721.747	3.265	0.9	-12.1	NO	0.998	NO	bb
4	4	200212M2_6	Standard	2.000	5.64	354.793	673.064	6.589	1.9	-5.9	NO	0.998	NO	bb
5	5	200212M2_7	Standard	5.000	5.63	1023.926	661.216	19.357	5.7	14.7	NO	0.998	NO	bb
6	6	200212M2_8	Standard	10.000	5.64	1892.149	665.443	35.543	10.6	6.2	NO	0.998	NO	bb
7	7	200212M2_9	Standard	50.000	5.63	7480.646	531.349	175.982	53.3	6.6	NO	0.998	NO	bb
8	8	200212M2_10	Standard	100.000	5.63	14961.396	607.370	307.914	93.8	-6.2	NO	0.998	NO	bb
9	9	200212M2_11	Standard	250.000	5.64	30245.703	466.797	809.927	251.9	0.7	NO	0.998	NO	MM
10	10	200212M2_12	Standard	500.000							NO	0.998	NO	X

Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999049
Calibration curve: -0.00074147 * x^2 + 1.08705 * x + 0.054034
Response type: Internal Std (Ref 83), 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	200212M2_3	Standard	0.250	5.66	114.102	5553.757	0.257	0.2	-25.4	NO	0.999	NO	bb
2	2	200212M2_4	Standard	0.500	5.65	291.882	5770.212	0.632	0.5	6.4	NO	0.999	NO	bb
3	3	200212M2_5	Standard	1.000	5.65	578.843	5671.951	1.276	1.1	12.5	NO	0.999	NO	bb
4	4	200212M2_6	Standard	2.000	5.65	1073.055	5514.186	2.432	2.2	9.6	NO	0.999	NO	bb
5	5	200212M2_7	Standard	5.000	5.65	2883.005	5762.201	6.254	5.7	14.5	NO	0.999	NO	bb
6	6	200212M2_8	Standard	10.000	5.65	5155.456	5726.621	11.253	10.4	3.8	NO	0.999	NO	bb
7	7	200212M2_9	Standard	50.000	5.65	21311.152	4990.091	53.384	50.8	1.6	NO	0.999	NO	bb
8	8	200212M2_10	Standard	100.000	5.65	44096.504	5635.989	97.801	96.2	-3.8	NO	0.999	NO	bb
9	9	200212M2_11	Standard	250.000	5.65	96861.750	5341.069	226.691	251.7	0.7	NO	0.999	NO	bb
10	10	200212M2_12	Standard	500.000							NO	0.999	NO	X

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Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999412
Calibration curve: -6.17098e-005 * x^2 + 0.976739 * x + -0.0661459
Response type: Internal Std (Ref 87), 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	200212M2_3	Standard	1.250	5.82	28.169	3995.644	1.052	1.1	-8.4	NO	0.999	NO	bb
2	2	200212M2_4	Standard	2.500	5.82	73.452	4443.104	2.467	2.6	3.7	NO	0.999	NO	bb
3	3	200212M2_5	Standard	5.000	5.82	113.657	4394.129	3.859	4.0	-19.6	NO	0.999	NO	bb
4	4	200212M2_6	Standard	10.000	5.82	267.807	4112.328	9.716	10.0	0.2	NO	0.999	NO	bb
5	5	200212M2_7	Standard	25.000	5.82	801.668	4339.761	27.561	28.3	13.3	NO	0.999	NO	bb
6	6	200212M2_8	Standard	50.000	5.81	1475.084	4232.317	52.000	53.5	7.0	NO	0.999	NO	MM
7	7	200212M2_9	Standard	250.000	5.82	6389.427	3967.232	240.294	250.0	0.0	NO	0.999	NO	bb
8	8	200212M2_10	Standard	500.000	5.82	13878.886	4465.796	463.687	490.0	-2.0	NO	0.999	NO	bb
9	9	200212M2_11	Standard	1250.000	5.82	31804.910	4207.163	1127.908	1254.2	0.3	NO	0.999	NO	bb
10	10	200212M2_12	Standard	2500.000							NO	0.999	NO	

Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999820
Calibration curve: -0.00112477 * x^2 + 1.30065 * x + 0.0523353
Response type: Internal Std (Ref 83), 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	200212M2_3	Standard	0.250	5.90	144.036	5553.757	0.324	0.2	-16.4	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	5.89	340.636	5770.212	0.738	0.5	5.5	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	5.89	645.813	5671.951	1.423	1.1	5.5	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	5.89	1155.699	5514.186	2.620	2.0	-1.1	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	5.89	3195.723	5762.201	6.933	5.3	6.3	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	5.89	5957.313	5726.621	13.004	10.0	0.4	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	5.89	25115.021	4990.091	62.912	50.5	1.1	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	5.89	52853.609	5635.989	117.223	98.5	-1.5	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	5.89	109144.375	5341.069	255.437	250.7	0.3	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	

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Compound name: PFDoS
Coefficient of Determination: R^2 = 0.999746
Calibration curve: -9.08542e-006 * x^2 + 0.390215 * x + 0.00798781
Response type: Internal Std (Ref 89), 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	200212M2_3	Standard	0.250	5.92	29.669	4481.919	0.083	0.2	-23.4	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	5.92	79.932	4741.914	0.211	0.5	3.9	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	5.92	149.816	4709.423	0.398	1.0	-0.1	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	5.92	322.892	4582.389	0.881	2.2	11.8	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	5.92	755.313	4674.403	2.020	5.2	3.1	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	5.92	1519.520	4567.127	4.159	10.6	6.4	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	5.92	6312.532	4088.364	19.300	49.5	-1.0	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	5.92	13742.736	4453.368	38.574	99.1	-0.9	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	5.92	30746.076	3955.316	97.167	250.4	0.2	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	

Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999728
Calibration curve: -0.000265915 * x^2 + 1.36903 * x + 0.0678797
Response type: Internal Std (Ref 89), 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	200212M2_3	Standard	0.250	6.12	125.399	4481.919	0.350	0.2	-17.6	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	6.11	278.027	4741.914	0.733	0.5	-2.8	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	6.11	622.220	4709.423	1.652	1.2	15.7	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	6.11	999.318	4582.389	2.726	1.9	-2.9	NO	1.000	NO	MM
5	5	200212M2_7	Standard	5.000	6.11	2664.514	4674.403	7.125	5.2	3.2	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	6.11	5269.167	4567.127	14.421	10.5	5.1	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	6.11	22412.934	4088.364	68.527	50.5	1.0	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	6.11	46977.914	4453.368	131.861	98.1	-1.9	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	6.11	103318.883	3955.316	326.519	250.7	0.3	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	

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Compound name: N-EtFOSA
Correlation coefficient: r = 0.999515, r^2 = 0.999031
Calibration curve: 0.82533 * x + 0.0107008
Response type: Internal Std (Ref 91), 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	200212M2_3	Standard	1.250	6.24	27.534	4965.997	0.827	1.0	-20.9	NO	0.999	NO	bb
2	2	200212M2_4	Standard	2.500	6.24	56.707	5686.568	1.488	1.8	-28.4	NO	0.999	NO	bb
3	3	200212M2_5	Standard	5.000	6.23	199.711	5819.389	5.120	6.2	23.8	NO	0.999	NO	bb
4	4	200212M2_6	Standard	10.000	6.23	330.526	5663.082	8.708	10.5	5.4	NO	0.999	NO	bb
5	5	200212M2_7	Standard	25.000	6.23	892.048	5797.352	22.958	27.8	11.2	NO	0.999	NO	bb
6	6	200212M2_8	Standard	50.000	6.23	1726.135	5575.204	46.194	56.0	11.9	NO	0.999	NO	bb
7	7	200212M2_9	Standard	250.000	6.23	7065.057	5082.504	207.399	251.3	0.5	NO	0.999	NO	bb
8	8	200212M2_10	Standard	500.000	6.23	15433.888	5740.298	401.153	486.0	-2.8	NO	0.999	NO	bb
9	9	200212M2_11	Standard	1250.000	6.24	35894.195	5177.891	1034.285	1253.2	0.3	NO	0.999	NO	bb
10	10	200212M2_12	Standard	2500.000							NO	0.999	NO	X

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999863
Calibration curve: -0.000140365 * x^2 + 0.619391 * x + 0.120842
Response type: Internal Std (Ref 93), 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	200212M2_3	Standard	0.250	6.45	131.226	5926.843	0.277	0.3	0.7	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	6.45	204.049	6497.574	0.393	0.4	-12.3	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	6.45	375.338	6309.100	0.744	1.0	0.6	NO	1.000	NO	MM
4	4	200212M2_6	Standard	2.000	6.45	711.014	6131.961	1.449	2.1	7.3	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	6.45	1723.402	6559.835	3.284	5.1	2.3	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	6.45	3321.124	6405.480	6.481	10.3	2.9	NO	1.000	NO	bd
7	7	200212M2_9	Standard	50.000	6.45	13271.247	5506.480	30.126	49.0	-2.0	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	6.45	29804.654	6109.779	60.977	100.5	0.5	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	6.45	63426.570	5423.648	146.181	250.0	-0.0	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	X

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Compound name: PFODA
Coefficient of Determination: R^2 = 0.999832
Calibration curve: -8.69823e-005 * x^2 + 0.95594 * x + 0.0425231
Response type: Internal Std (Ref 93), 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	200212M2_3	Standard	0.250	6.69	128.800	5926.843	0.272	0.2	-4.1	NO	1.000	NO	bb
2	2	200212M2_4	Standard	0.500	6.68	277.288	6497.574	0.533	0.5	2.7	NO	1.000	NO	bb
3	3	200212M2_5	Standard	1.000	6.68	540.138	6309.100	1.070	1.1	7.5	NO	1.000	NO	bb
4	4	200212M2_6	Standard	2.000	6.68	993.235	6131.961	2.025	2.1	3.7	NO	1.000	NO	bb
5	5	200212M2_7	Standard	5.000	6.68	2720.964	6559.835	5.185	5.4	7.6	NO	1.000	NO	bb
6	6	200212M2_8	Standard	10.000	6.68	4968.686	6405.480	9.696	10.1	1.1	NO	1.000	NO	bb
7	7	200212M2_9	Standard	50.000	6.68	21070.006	5506.480	47.830	50.2	0.4	NO	1.000	NO	bb
8	8	200212M2_10	Standard	100.000	6.68	45695.078	6109.779	93.488	98.6	-1.4	NO	1.000	NO	bb
9	9	200212M2_11	Standard	250.000	6.69	101551.852	5423.648	234.049	250.5	0.2	NO	1.000	NO	bb
10	10	200212M2_12	Standard	500.000							NO	1.000	NO	X

Compound name: N-MeFOSE
Coefficient of Determination: R^2 = 0.999164
Calibration curve: -2.81765e-006 * x^2 + 0.995431 * x + 0.197809
Response type: Internal Std (Ref 95), 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	200212M2_3	Standard	1.250	6.40	18.522	2310.268	1.196	1.0	-19.8	NO	0.999	NO	bb
2	2	200212M2_4	Standard	2.500	6.40	55.380	2641.062	3.129	2.9	17.8	NO	0.999	NO	bb
3	3	200212M2_5	Standard	5.000	6.39	91.918	2835.554	4.837	4.7	-6.8	NO	0.999	NO	bb
4	4	200212M2_6	Standard	10.000	6.40	193.538	2622.694	11.010	10.9	8.6	NO	0.999	NO	bb
5	5	200212M2_7	Standard	25.000	6.40	488.148	2678.789	27.188	27.1	8.5	NO	0.999	NO	bb
6	6	200212M2_8	Standard	50.000	6.40	979.287	2614.309	55.888	56.0	11.9	NO	0.999	NO	bb
7	7	200212M2_9	Standard	250.000	6.39	4056.588	2552.962	237.075	238.1	-4.8	NO	0.999	NO	bb
8	8	200212M2_10	Standard	500.000	6.40	9373.337	2803.494	498.842	501.6	0.3	NO	0.999	NO	bb
9	9	200212M2_11	Standard	1250.000	6.40	23351.660	2806.325	1241.505	1251.4	0.1	NO	0.999	NO	bb
10	10	200212M2_12	Standard	2500.000							NO	0.999	NO	X

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Compound name: N-EtFOSE
Correlation coefficient: r = 0.999814, r^2 = 0.999629
Calibration curve: 1.08477 * x + 0.877366
Response type: Internal Std (Ref 97), 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	200212M2_3	Standard	1.250	6.54	16.758	2699.870	0.926	0.0	-96.4	YES	1.000	NO	MMX
2	2	200212M2_4	Standard	2.500	6.54	65.215	2974.302	3.271	2.2	-11.7	NO	1.000	NO	bb
3	3	200212M2_5	Standard	5.000	6.54	123.023	3066.291	5.986	4.7	-5.8	NO	1.000	NO	bb
4	4	200212M2_6	Standard	10.000	6.54	232.327	2836.645	12.220	10.5	4.6	NO	1.000	NO	bb
5	5	200212M2_7	Standard	25.000	6.54	604.202	3081.247	29.257	26.2	4.6	NO	1.000	NO	bb
6	6	200212M2_8	Standard	50.000	6.54	1148.749	2910.026	58.898	53.5	7.0	NO	1.000	NO	bd
7	7	200212M2_9	Standard	250.000	6.54	4853.205	2641.161	274.159	251.9	0.8	NO	1.000	NO	bb
8	8	200212M2_10	Standard	500.000	6.54	11340.637	3058.728	553.179	509.1	1.8	NO	1.000	NO	bb
9	9	200212M2_11	Standard	1250.000	6.54	27664.990	3080.488	1339.923	1234.4	-1.2	NO	1.000	NO	bb
10	10	200212M2_12	Standard	2500.000							NO	1.000	NO	X

Compound name: 13C3-PFBA-EIS
Response Factor: 33.2229
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	1.27	374.340		374.340	11.3	-9.9	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	1.27	380.955		380.955	11.5	-8.3	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	1.27	421.932		421.932	12.7	1.6	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	1.27	420.096		420.096	12.6	1.2	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	1.27	418.003		418.003	12.6	0.7	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	1.27	415.286		415.286	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	1.27	391.870		391.870	11.8	-5.6	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	1.28	404.276		404.276	12.2	-2.7	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	1.28	441.408		441.408	13.3	6.3	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	1.28	1.904		1.904	0.1	-99.5	NO		NO	MMX

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Compound name: 13C3-PFBA-RSD
Response Factor: 0.607727
RRF SD: 0.0179005, Relative SD: 2.94548
Response type: Internal Std (Ref 99), 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	200212M2_3	Standard	12.500	1.27	374.340	630.740	7.419	12.2	-2.3	NO		NO	bb
2	2	200212M2_4	Standard	12.500	1.27	380.955	642.135	7.416	12.2	-2.4	NO		NO	bb
3	3	200212M2_5	Standard	12.500	1.27	421.932	660.641	7.983	13.1	5.1	NO		NO	bb
4	4	200212M2_6	Standard	12.500	1.27	419.213	679.504	7.712	12.7	1.5	NO		NO	MM
5	5	200212M2_7	Standard	12.500	1.27	418.003	690.731	7.565	12.4	-0.4	NO		NO	bb
6	6	200212M2_8	Standard	12.500	1.27	415.286	668.913	7.760	12.8	2.2	NO		NO	bb
7	7	200212M2_9	Standard	12.500	1.27	391.870	642.868	7.620	12.5	0.3	NO		NO	bb
8	8	200212M2_10	Standard	12.500	1.28	404.276	699.593	7.223	11.9	-4.9	NO		NO	bb
9	9	200212M2_11	Standard	12.500	1.28	441.408	719.212	7.672	12.6	1.0	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C3-PFPeA-EIS
Response Factor: 70.3918
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	2.29	872.049		872.049	12.4	-0.9	NO		NO	MMX
2	2	200212M2_4	Standard	12.500	2.28	822.186		822.186	11.7	-6.6	NO		NO	MMX
3	3	200212M2_5	Standard	12.500	2.29	902.326		902.326	12.8	2.5	NO		NO	MMX
4	4	200212M2_6	Standard	12.500	2.29	879.118		879.118	12.5	-0.1	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	2.29	914.915		914.915	13.0	4.0	NO		NO	MMX
6	6	200212M2_8	Standard	12.500	2.28	879.897		879.897	12.5	0.0	NO		NO	MM
7	7	200212M2_9	Standard	12.500	2.29	811.563		811.563	11.5	-7.8	NO		NO	MMX
8	8	200212M2_10	Standard	12.500	2.29	861.674		861.674	12.2	-2.1	NO		NO	MMX
9	9	200212M2_11	Standard	12.500	2.29	881.621		881.621	12.5	0.2	NO		NO	MMX
10	10	200212M2_12	Standard	12.500	2.30	8.924		8.924	0.1	-99.0	NO		NO	MMX

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Compound name: 13C3-PFPeA-RSD
Response Factor: 0.423235
RRF SD: 0.0251989, Relative SD: 5.95387
Response type: Internal Std (Ref 100), 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 200212M2_3	Standard	12.500	2.29	867.700	2021.502	5.365	12.7	1.4	NO		NO	bb
2	2 200212M2_4	Standard	12.500	2.28	829.393	2208.186	4.695	11.1	-11.3	NO		NO	bb
3	3 200212M2_5	Standard	12.500	2.29	906.049	2133.129	5.309	12.5	0.4	NO		NO	MM
4	4 200212M2_6	Standard	12.500	2.29	876.514	2093.029	5.235	12.4	-1.1	NO		NO	MM
5	5 200212M2_7	Standard	12.500	2.29	923.870	2124.091	5.437	12.8	2.8	NO		NO	MM
6	6 200212M2_8	Standard	12.500	2.28	876.957	2082.131	5.265	12.4	-0.5	NO		NO	bb
7	7 200212M2_9	Standard	12.500	2.29	848.943	1882.120	5.638	13.3	6.6	NO		NO	MM
8	8 200212M2_10	Standard	12.500	2.29	850.901	2145.029	4.959	11.7	-6.3	NO		NO	MM
9	9 200212M2_11	Standard	12.500	2.29	871.092	1906.599	5.711	13.5	8.0	NO		NO	bb
10	10 200212M2_12	Standard	12.500							NO		NO	

Compound name: 13C3-PFBS-EIS
Response Factor: 23.4821
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 200212M2_3	Standard	12.500	2.59	296.802		296.802	12.6	1.1	NO		NO	bbX
2	2 200212M2_4	Standard	12.500	2.59	303.645		303.645	12.9	3.4	NO		NO	bbX
3	3 200212M2_5	Standard	12.500	2.59	314.433		314.433	13.4	7.1	NO		NO	MMX
4	4 200212M2_6	Standard	12.500	2.59	311.116		311.116	13.2	6.0	NO		NO	bbX
5	5 200212M2_7	Standard	12.500	2.59	327.915		327.915	14.0	11.7	NO		NO	bbX
6	6 200212M2_8	Standard	12.500	2.59	293.526		293.526	12.5	0.0	NO		NO	bb
7	7 200212M2_9	Standard	12.500	2.59	257.009		257.009	10.9	-12.4	NO		NO	MMX
8	8 200212M2_10	Standard	12.500	2.59	296.456		296.456	12.6	1.0	NO		NO	MMX
9	9 200212M2_11	Standard	12.500	2.59	287.982		287.982	12.3	-1.9	NO		NO	MMX
10	10 200212M2_12	Standard	12.500	2.74	0.480		0.480	0.0	-99.8	NO		NO	MMX

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Compound name: 13C3-PFBS-RSD
Response Factor: 0.573044
RRF SD: 0.0436292, Relative SD: 7.61358
Response type: Internal Std (Ref 101), 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	200212M2_3	Standard	12.500	2.59	296.802	489.708	7.576	13.2	5.8	NO		NO	bb
2	2	200212M2_4	Standard	12.500	2.59	303.645	608.259	6.240	10.9	-12.9	NO		NO	bb
3	3	200212M2_5	Standard	12.500	2.59	314.590	567.678	6.927	12.1	-3.3	NO		NO	MM
4	4	200212M2_6	Standard	12.500	2.59	311.116	530.058	7.337	12.8	2.4	NO		NO	bb
5	5	200212M2_7	Standard	12.500	2.59	327.915	516.633	7.934	13.8	10.8	NO		NO	bb
6	6	200212M2_8	Standard	12.500	2.59	293.526	494.985	7.412	12.9	3.5	NO		NO	bb
7	7	200212M2_9	Standard	12.500	2.59	256.748	479.021	6.700	11.7	-6.5	NO		NO	MM
8	8	200212M2_10	Standard	12.500	2.59	292.833	544.425	6.723	11.7	-6.1	NO		NO	MM
9	9	200212M2_11	Standard	12.500	2.59	288.581	473.537	7.618	13.3	6.3	NO		NO	MM
10	10	200212M2_12	Standard	12.500							NO		NO	

Compound name: 13C3-HFPO-DA-EIS
Response Factor: 6.68696
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	3.30	91.447		91.447	13.7	9.4	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	3.30	74.584		74.584	11.2	-10.8	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	3.30	90.842		90.842	13.6	8.7	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	3.30	103.124		103.124	15.4	23.4	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	3.30	78.703		78.703	11.8	-5.8	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	3.30	83.587		83.587	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	3.30	88.113		88.113	13.2	5.4	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	3.30	92.785		92.785	13.9	11.0	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	3.31	75.660		75.660	11.3	-9.5	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	3.28	0.478		0.478	0.1	-99.4	NO		NO	MMX

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Compound name: 13C3-HFPO-DA-RSD
Response Factor: 0.0419802
RRF SD: 0.00486522, Relative SD: 11.5893
Response type: Internal Std (Ref 100), 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	200212M2_3	Standard	12.500	3.30	91.447	2021.502	0.565	13.5	7.8	NO		NO	bb
2	2	200212M2_4	Standard	12.500	3.30	74.584	2208.186	0.422	10.1	-19.5	NO		NO	bb
3	3	200212M2_5	Standard	12.500	3.30	90.842	2133.129	0.532	12.7	1.4	NO		NO	bb
4	4	200212M2_6	Standard	12.500	3.30	103.124	2093.029	0.616	14.7	17.4	NO		NO	bb
5	5	200212M2_7	Standard	12.500	3.30	78.703	2124.091	0.463	11.0	-11.7	NO		NO	bb
6	6	200212M2_8	Standard	12.500	3.30	83.587	2082.131	0.502	12.0	-4.4	NO		NO	bb
7	7	200212M2_9	Standard	12.500	3.30	88.113	1882.120	0.585	13.9	11.5	NO		NO	bb
8	8	200212M2_10	Standard	12.500	3.30	92.785	2145.029	0.541	12.9	3.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	3.31	75.660	1906.599	0.496	11.8	-5.5	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C2-4:2 FTS-EIS
Response Factor: 51.1936
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	3.02	552.261		552.261	10.8	-13.7	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	3.02	642.718		642.718	12.6	0.4	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	3.02	695.615		695.615	13.6	8.7	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	3.02	613.477		613.477	12.0	-4.1	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	3.02	576.893		576.893	11.3	-9.8	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	3.02	639.920		639.920	12.5	0.0	NO		NO	MM
7	7	200212M2_9	Standard	12.500	3.02	474.679		474.679	9.3	-25.8	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	3.02	533.933		533.933	10.4	-16.6	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	3.03	459.700		459.700	9.0	-28.2	NO		NO	MMX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-4:2 FTS-RSD
Response Factor: 1.10217
RRF SD: 0.112966, Relative SD: 10.2494
Response type: Internal Std (Ref 101), 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	200212M2_3	Standard	12.500	3.02	552.261	489.708	14.097	12.8	2.3	NO		NO	bb
2	2	200212M2_4	Standard	12.500	3.02	642.718	608.259	13.208	12.0	-4.1	NO		NO	bb
3	3	200212M2_5	Standard	12.500	3.02	695.615	567.678	15.317	13.9	11.2	NO		NO	bb
4	4	200212M2_6	Standard	12.500	3.02	613.477	530.058	14.467	13.1	5.0	NO		NO	bb
5	5	200212M2_7	Standard	12.500	3.02	576.893	516.633	13.958	12.7	1.3	NO		NO	bb
6	6	200212M2_8	Standard	12.500	3.02	640.180	494.985	16.167	14.7	17.3	NO		NO	MM
7	7	200212M2_9	Standard	12.500	3.02	474.679	479.021	12.387	11.2	-10.1	NO		NO	bb
8	8	200212M2_10	Standard	12.500	3.02	533.933	544.425	12.259	11.1	-11.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	3.03	459.696	473.537	12.135	11.0	-11.9	NO		NO	MM
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C2-PFHxA-EIS
Response Factor: 144.232
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	3.10	1544.523		1544.523	10.7	-14.3	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	3.10	1674.895		1674.895	11.6	-7.1	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	3.10	1860.551		1860.551	12.9	3.2	NO		NO	MMX
4	4	200212M2_6	Standard	12.500	3.10	1735.250		1735.250	12.0	-3.8	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	3.10	1793.575		1793.575	12.4	-0.5	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	3.10	1802.894		1802.894	12.5	0.0	NO		NO	MM
7	7	200212M2_9	Standard	12.500	3.10	1652.605		1652.605	11.5	-8.3	NO		NO	MMX
8	8	200212M2_10	Standard	12.500	3.10	1766.984		1766.984	12.3	-2.0	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	3.10	1614.272		1614.272	11.2	-10.5	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	3.12	9.810		9.810	0.1	-99.5	NO		NO	MMX

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Compound name: 13C2-PFHxA-RSD
Response Factor: 0.832348
RRF SD: 0.0442228, Relative SD: 5.31302
Response type: Internal Std (Ref 100), 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	200212M2_3	Standard	12.500	3.10	1544.523	2021.502	9.551	11.5	-8.2	NO		NO	bb
2	2	200212M2_4	Standard	12.500	3.10	1674.895	2208.186	9.481	11.4	-8.9	NO		NO	bb
3	3	200212M2_5	Standard	12.500	3.10	1860.398	2133.129	10.902	13.1	4.8	NO		NO	MM
4	4	200212M2_6	Standard	12.500	3.10	1744.695	2093.029	10.420	12.5	0.1	NO		NO	MM
5	5	200212M2_7	Standard	12.500	3.10	1793.575	2124.091	10.555	12.7	1.4	NO		NO	bb
6	6	200212M2_8	Standard	12.500	3.10	1810.132	2082.131	10.867	13.1	4.4	NO		NO	MM
7	7	200212M2_9	Standard	12.500	3.10	1653.767	1882.120	10.983	13.2	5.6	NO		NO	MM
8	8	200212M2_10	Standard	12.500	3.10	1766.984	2145.029	10.297	12.4	-1.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	3.10	1614.272	1906.599	10.583	12.7	1.7	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C4-PFHpA-EIS
Response Factor: 95.3398
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	3.71	1195.701		1195.701	12.5	0.3	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	3.70	1237.770		1237.770	13.0	3.9	NO		NO	MMX
3	3	200212M2_5	Standard	12.500	3.70	1253.123		1253.123	13.1	5.2	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	3.70	1151.479		1151.479	12.1	-3.4	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	3.71	1217.800		1217.800	12.8	2.2	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	3.70	1191.747		1191.747	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	3.70	1002.634		1002.634	10.5	-15.9	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	3.70	1185.737		1185.737	12.4	-0.5	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	3.71	1081.130		1081.130	11.3	-9.3	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	3.70	6.154		6.154	0.1	-99.5	NO		NO	bbX

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Compound name: 13C4-PFHpA-RSD
Response Factor: 0.566897
RRF SD: 0.0187363, Relative SD: 3.30506
Response type: Internal Std (Ref 100), 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 200212M2_3	Standard	12.500	3.71	1195.701	2021.502	7.394	13.0	4.3	NO		NO	bb
2	2 200212M2_4	Standard	12.500	3.70	1269.115	2208.186	7.184	12.7	1.4	NO		NO	MM
3	3 200212M2_5	Standard	12.500	3.70	1253.123	2133.129	7.343	13.0	3.6	NO		NO	bb
4	4 200212M2_6	Standard	12.500	3.70	1151.479	2093.029	6.877	12.1	-3.0	NO		NO	bb
5	5 200212M2_7	Standard	12.500	3.71	1217.800	2124.091	7.167	12.6	1.1	NO		NO	bb
6	6 200212M2_8	Standard	12.500	3.70	1191.747	2082.131	7.155	12.6	1.0	NO		NO	bb
7	7 200212M2_9	Standard	12.500	3.70	1002.634	1882.120	6.659	11.7	-6.0	NO		NO	bb
8	8 200212M2_10	Standard	12.500	3.70	1185.737	2145.029	6.910	12.2	-2.5	NO		NO	bb
9	9 200212M2_11	Standard	12.500	3.71	1081.130	1906.599	7.088	12.5	0.0	NO		NO	bb
10	10 200212M2_12	Standard	12.500	3.70	6.154					NO		NO	bbX

Compound name: 13C3-PFHxS-EIS
Response Factor: 88.291
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 200212M2_3	Standard	12.500	3.86	969.007		969.007	11.0	-12.2	NO		NO	bbX
2	2 200212M2_4	Standard	12.500	3.86	1058.640		1058.640	12.0	-4.1	NO		NO	bbX
3	3 200212M2_5	Standard	12.500	3.86	1119.375		1119.375	12.7	1.4	NO		NO	MMX
4	4 200212M2_6	Standard	12.500	3.86	964.924		964.924	10.9	-12.6	NO		NO	bbX
5	5 200212M2_7	Standard	12.500	3.86	1006.022		1006.022	11.4	-8.8	NO		NO	bbX
6	6 200212M2_8	Standard	12.500	3.86	1103.638		1103.638	12.5	0.0	NO		NO	bb
7	7 200212M2_9	Standard	12.500	3.86	921.032		921.032	10.4	-16.5	NO		NO	MMX
8	8 200212M2_10	Standard	12.500	3.86	1018.476		1018.476	11.5	-7.7	NO		NO	bbX
9	9 200212M2_11	Standard	12.500	3.86	930.347		930.347	10.5	-15.7	NO		NO	bbX
10	10 200212M2_12	Standard	12.500	3.86	4.160		4.160	0.0	-99.6	NO		NO	MMX

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Compound name: 13C3-PFHxS-RSD
Response Factor: 1.93868
RRF SD: 0.13486, Relative SD: 6.95628
Response type: Internal Std (Ref 101), 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	200212M2_3	Standard	12.500	3.86	969.007	489.708	24.734	12.8	2.1	NO		NO	bb
2	2	200212M2_4	Standard	12.500	3.86	1058.640	608.259	21.756	11.2	-10.2	NO		NO	bb
3	3	200212M2_5	Standard	12.500	3.86	1113.988	567.678	24.529	12.7	1.2	NO		NO	MM
4	4	200212M2_6	Standard	12.500	3.86	964.924	530.058	22.755	11.7	-6.1	NO		NO	bb
5	5	200212M2_7	Standard	12.500	3.86	1006.022	516.633	24.341	12.6	0.4	NO		NO	bb
6	6	200212M2_8	Standard	12.500	3.86	1103.638	494.985	27.870	14.4	15.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	3.86	926.347	479.021	24.173	12.5	-0.2	NO		NO	MM
8	8	200212M2_10	Standard	12.500	3.86	1018.476	544.425	23.384	12.1	-3.5	NO		NO	bb
9	9	200212M2_11	Standard	12.500	3.86	930.347	473.537	24.558	12.7	1.3	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C2-6:2 FTS-EIS
Response Factor: 56.9487
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	4.18	680.710		680.710	12.0	-4.4	NO		NO	MMX
2	2	200212M2_4	Standard	12.500	4.17	758.317		758.317	13.3	6.5	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	4.17	681.153		681.153	12.0	-4.3	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	4.17	675.858		675.858	11.9	-5.1	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	4.17	713.484		713.484	12.5	0.2	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	4.17	711.859		711.859	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.17	624.335		624.335	11.0	-12.3	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	4.17	639.366		639.366	11.2	-10.2	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	4.17	593.152		593.152	10.4	-16.7	NO		NO	MMX
10	10	200212M2_12	Standard	12.500	4.18	3.695		3.695	0.1	-99.5	NO		NO	MMX

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Compound name: 13C2-6:2 FTS-RSD
Response Factor: 0.515231
RRF SD: 0.0193379, Relative SD: 3.75325
Response type: Internal Std (Ref 104), 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	200212M2_3	Standard	12.500	4.18	681.703	1335.615	6.380	12.4	-0.9	NO		NO	MM
2	2	200212M2_4	Standard	12.500	4.17	758.317	1448.947	6.542	12.7	1.6	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.17	681.153	1350.618	6.304	12.2	-2.1	NO		NO	bb
4	4	200212M2_6	Standard	12.500	4.17	675.858	1309.572	6.451	12.5	0.2	NO		NO	bb
5	5	200212M2_7	Standard	12.500	4.17	713.484	1383.110	6.448	12.5	0.1	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.17	711.859	1434.825	6.202	12.0	-3.7	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.17	624.335	1152.582	6.771	13.1	5.1	NO		NO	bb
8	8	200212M2_10	Standard	12.500	4.17	639.366	1317.426	6.066	11.8	-5.8	NO		NO	bb
9	9	200212M2_11	Standard	12.500	4.17	614.470	1129.721	6.799	13.2	5.6	NO		NO	MM
10	10	200212M2_12	Standard	12.500			5.773				NO		NO	

Compound name: 13C5-PFNA-EIS
Response Factor: 262.826
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	4.67	3091.308		3091.308	11.8	-5.9	NO		NO	MMX
2	2	200212M2_4	Standard	12.500	4.66	3132.095		3132.095	11.9	-4.7	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	4.66	3463.224		3463.224	13.2	5.4	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	4.67	3439.948		3439.948	13.1	4.7	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	4.66	3395.380		3395.380	12.9	3.3	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	4.67	3285.325		3285.325	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.67	2733.291		2733.291	10.4	-16.8	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	4.67	2888.404		2888.404	11.0	-12.1	NO		NO	MMX
9	9	200212M2_11	Standard	12.500	4.67	2790.896		2790.896	10.6	-15.0	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	4.67	17.800		17.800	0.1	-99.5	NO		NO	bbX

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Compound name: 13C5-PFNA-RSD
Response Factor: 0.922243
RRF SD: 0.0361968, Relative SD: 3.92487
Response type: Internal Std (Ref 103), 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	200212M2_3	Standard	12.500	4.67	3089.425	3529.855	10.940	11.9	-5.1	NO		NO	MM
2	2	200212M2_4	Standard	12.500	4.66	3132.095	3450.374	11.347	12.3	-1.6	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.66	3463.224	3663.078	11.818	12.8	2.5	NO		NO	bb
4	4	200212M2_6	Standard	12.500	4.67	3439.948	3582.820	12.002	13.0	4.1	NO		NO	bb
5	5	200212M2_7	Standard	12.500	4.66	3395.380	3736.892	11.358	12.3	-1.5	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.67	3285.325	3413.384	12.031	13.0	4.4	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.67	2733.291	3008.438	11.357	12.3	-1.5	NO		NO	bb
8	8	200212M2_10	Standard	12.500	4.67	2898.068	3326.587	10.890	11.8	-5.5	NO		NO	MM
9	9	200212M2_11	Standard	12.500	4.67	2790.896	2904.696	12.010	13.0	4.2	NO		NO	bb
10	10	200212M2_12	Standard	12.500	4.67	17.800	20.488	10.860	11.8	-5.8	NO		NO	bbX

Compound name: 13C8-PFOSA-EIS
Response Factor: 118.521
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	4.73	1402.705		1402.705	11.8	-5.3	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	4.73	1527.886		1527.886	12.9	3.1	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	4.73	1485.012		1485.012	12.5	0.2	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	4.73	1436.418		1436.418	12.1	-3.0	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	4.73	1567.198		1567.198	13.2	5.8	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	4.73	1481.507		1481.507	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.73	1239.435		1239.435	10.5	-16.3	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	4.73	1383.475		1383.475	11.7	-6.6	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	4.73	1259.399		1259.399	10.6	-15.0	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	4.75	0.635		0.635	0.0	-100.0	NO		NO	MMX

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Compound name: 13C8-PFOSA-RSD
Response Factor: 0.281172
RRF SD: 0.0107317, Relative SD: 3.81677
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	12.500	4.73	1402.705	5209.775	3.366	12.0	-4.2	NO		NO	bb
2	2	200212M2_4	Standard	12.500	4.73	1527.886	5142.147	3.714	13.2	5.7	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.73	1485.012	5204.674	3.567	12.7	1.5	NO		NO	bb
4	4	200212M2_6	Standard	12.500	4.73	1444.210	5161.053	3.498	12.4	-0.5	NO		NO	bd
5	5	200212M2_7	Standard	12.500	4.73	1567.198	5600.955	3.498	12.4	-0.5	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.73	1481.507	5508.641	3.362	12.0	-4.3	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.73	1239.435	4591.574	3.374	12.0	-4.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	4.73	1383.475	4864.122	3.555	12.6	1.2	NO		NO	bb
9	9	200212M2_11	Standard	12.500	4.73	1259.399	4256.036	3.699	13.2	5.2	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C2-PFOA-EIS
Response Factor: 220.187
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	4.23	2449.699		2449.699	11.1	-11.0	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	4.23	2762.702		2762.702	12.5	0.4	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	4.23	2854.782		2854.782	13.0	3.7	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	4.23	2592.238		2592.238	11.8	-5.8	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	4.23	2670.556		2670.556	12.1	-3.0	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	4.23	2752.340		2752.340	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.23	2307.419		2307.419	10.5	-16.2	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	4.23	2400.948		2400.948	10.9	-12.8	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	4.23	2131.014		2131.014	9.7	-22.6	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	4.23	3.078		3.078	0.0	-99.9	NO		NO	MMX

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Compound name: 13C2-PFOA-RSD
Response Factor: 0.642587
RRF SD: 0.0294682, Relative SD: 4.58586
Response type: Internal Std (Ref 102), 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	200212M2_3	Standard	12.500	4.23	2449.699	4194.535	7.300	11.4	-9.1	NO		NO	bb
2	2	200212M2_4	Standard	12.500	4.23	2762.702	4539.473	7.607	11.8	-5.3	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.23	2854.782	4242.705	8.411	13.1	4.7	NO		NO	bb
4	4	200212M2_6	Standard	12.500	4.23	2594.236	4060.156	7.987	12.4	-0.6	NO		NO	MM
5	5	200212M2_7	Standard	12.500	4.23	2670.556	4133.674	8.076	12.6	0.5	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.23	2752.340	4101.478	8.388	13.1	4.4	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.23	2307.419	3488.244	8.269	12.9	2.9	NO		NO	bb
8	8	200212M2_10	Standard	12.500	4.23	2400.948	3740.802	8.023	12.5	-0.1	NO		NO	bb
9	9	200212M2_11	Standard	12.500	4.23	2131.014	3236.503	8.230	12.8	2.5	NO		NO	bb
10	10	200212M2_12	Standard	12.500			21.245				NO		NO	

Compound name: 13C8-PFOS-EIS
Response Factor: 105.884
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	4.75	1224.880		1224.880	11.6	-7.5	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	4.74	1310.664		1310.664	12.4	-1.0	NO		NO	MMX
3	3	200212M2_5	Standard	12.500	4.75	1340.917		1340.917	12.7	1.3	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	4.75	1284.388		1284.388	12.1	-3.0	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	4.75	1395.017		1395.017	13.2	5.4	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	4.75	1323.550		1323.550	12.5	0.0	NO		NO	MM
7	7	200212M2_9	Standard	12.500	4.75	1186.716		1186.716	11.2	-10.3	NO		NO	MMX
8	8	200212M2_10	Standard	12.500	4.75	1201.701		1201.701	11.3	-9.2	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	4.75	1185.048		1185.048	11.2	-10.5	NO		NO	MMX
10	10	200212M2_12	Standard	12.500	4.75	3.711		3.711	0.0	-99.7	NO		NO	MMX

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Compound name: 13C8-PFOS-RSD
Response Factor: 0.967619
RRF SD: 0.0583865, Relative SD: 6.03403
Response type: Internal Std (Ref 104), 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	200212M2_3	Standard	12.500	4.75	1224.880	1335.615	11.464	11.8	-5.2	NO		NO	bb
2	2	200212M2_4	Standard	12.500	4.74	1300.726	1448.947	11.221	11.6	-7.2	NO		NO	MM
3	3	200212M2_5	Standard	12.500	4.75	1348.292	1350.618	12.478	12.9	3.2	NO		NO	bd
4	4	200212M2_6	Standard	12.500	4.75	1284.388	1309.572	12.260	12.7	1.4	NO		NO	bb
5	5	200212M2_7	Standard	12.500	4.75	1398.866	1383.110	12.642	13.1	4.5	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.75	1308.156	1434.825	11.396	11.8	-5.8	NO		NO	MM
7	7	200212M2_9	Standard	12.500	4.75	1186.834	1152.582	12.871	13.3	6.4	NO		NO	MM
8	8	200212M2_10	Standard	12.500	4.75	1201.701	1317.426	11.402	11.8	-5.7	NO		NO	bb
9	9	200212M2_11	Standard	12.500	4.75	1185.919	1129.721	13.122	13.6	8.5	NO		NO	bb
10	10	200212M2_12	Standard	12.500			5.773				NO		NO	X

Compound name: 13C2-PFDA-EIS
Response Factor: 263.358
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	5.04	3028.622		3028.622	11.5	-8.0	NO		NO	MMX
2	2	200212M2_4	Standard	12.500	5.04	3491.207		3491.207	13.3	6.1	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	5.04	3625.869		3625.869	13.8	10.1	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	5.04	3238.264		3238.264	12.3	-1.6	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	5.04	3587.417		3587.417	13.6	9.0	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	5.04	3291.974		3291.974	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.04	2931.178		2931.178	11.1	-11.0	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	5.04	3222.398		3222.398	12.2	-2.1	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	5.04	2815.896		2815.896	10.7	-14.5	NO		NO	bbX
10	10	200212M2_12	Standard	12.500	5.03	7.024		7.024	0.0	-99.8	NO		NO	bbX

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Compound name: 13C2-PFDA-RSD
Response Factor: 0.849014
RRF SD: 0.0423307, Relative SD: 4.98587
Response type: Internal Std (Ref 105), 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	200212M2_3	Standard	12.500	5.04	3023.692	3760.579	10.051	11.8	-5.3	NO		NO	MM
2	2	200212M2_4	Standard	12.500	5.04	3491.207	4104.192	10.633	12.5	0.2	NO		NO	bb
3	3	200212M2_5	Standard	12.500	5.04	3625.869	4155.660	10.906	12.8	2.8	NO		NO	bb
4	4	200212M2_6	Standard	12.500	5.04	3233.142	4001.400	10.100	11.9	-4.8	NO		NO	MM
5	5	200212M2_7	Standard	12.500	5.04	3587.417	4059.150	11.047	13.0	4.1	NO		NO	bb
6	6	200212M2_8	Standard	12.500	5.04	3291.974	4187.189	9.828	11.6	-7.4	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.04	2931.178	3244.736	11.292	13.3	6.4	NO		NO	bb
8	8	200212M2_10	Standard	12.500	5.04	3222.398	3835.774	10.501	12.4	-1.1	NO		NO	bb
9	9	200212M2_11	Standard	12.500	5.04	2815.896	3155.169	11.156	13.1	5.1	NO		NO	bb
10	10	200212M2_12	Standard	12.500	5.03	7.024	29.905	2.936	3.5	-72.3	NO		NO	bbX

Compound name: 13C2-8:2 FTS-EIS
Response Factor: 68.5861
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	5.02	768.199		768.199	11.2	-10.4	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	5.01	742.317		742.317	10.8	-13.4	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	5.00	832.650		832.650	12.1	-2.9	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	5.01	776.556		776.556	11.3	-9.4	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	5.01	792.895		792.895	11.6	-7.5	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	5.01	857.326		857.326	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.01	729.716		729.716	10.6	-14.9	NO		NO	MMX
8	8	200212M2_10	Standard	12.500	5.01	689.905		689.905	10.1	-19.5	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	5.01	558.710		558.710	8.1	-34.8	NO		NO	bbX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-8:2 FTS-RSD
Response Factor: 0.568794
RRF SD: 0.0482531, Relative SD: 8.48342
Response type: Internal Std (Ref 104), 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	200212M2_3	Standard	12.500	5.02	768.199	1335.615	7.190	12.6	1.1	NO		NO	bb
2	2	200212M2_4	Standard	12.500	5.01	742.317	1448.947	6.404	11.3	-9.9	NO		NO	bb
3	3	200212M2_5	Standard	12.500	5.00	832.650	1350.618	7.706	13.5	8.4	NO		NO	bb
4	4	200212M2_6	Standard	12.500	5.01	776.556	1309.572	7.412	13.0	4.3	NO		NO	bb
5	5	200212M2_7	Standard	12.500	5.01	792.895	1383.110	7.166	12.6	0.8	NO		NO	bb
6	6	200212M2_8	Standard	12.500	5.01	857.326	1434.825	7.469	13.1	5.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.01	729.779	1152.582	7.915	13.9	11.3	NO		NO	MM
8	8	200212M2_10	Standard	12.500	5.01	689.905	1317.426	6.546	11.5	-7.9	NO		NO	bb
9	9	200212M2_11	Standard	12.500	5.01	558.710	1129.721	6.182	10.9	-13.1	NO		NO	bb
10	10	200212M2_12	Standard	12.500			5.773				NO		NO	X

Compound name: d3-N-MeFOSAA-EIS
Response Factor: 231.747
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	5.19	3057.061		3057.061	13.2	5.5	NO		NO	MMX
2	2	200212M2_4	Standard	12.500	5.19	3064.573		3064.573	13.2	5.8	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	5.19	3031.155		3031.155	13.1	4.6	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	5.19	2944.620		2944.620	12.7	1.6	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	5.19	3145.853		3145.853	13.6	8.6	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	5.19	2896.843		2896.843	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.19	2721.458		2721.458	11.7	-6.1	NO		NO	MMX
8	8	200212M2_10	Standard	12.500	5.19	2882.235		2882.235	12.4	-0.5	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	5.19	2721.579		2721.579	11.7	-6.1	NO		NO	bbX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: d3-N-MeFOSAA-RSD
Response Factor: 0.582577
RRF SD: 0.03033, Relative SD: 5.20618
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	12.500	5.19	3056.456	5209.775	7.333	12.6	0.7	NO		NO	MM
2	2	200212M2_4	Standard	12.500	5.19	3064.573	5142.147	7.450	12.8	2.3	NO		NO	bb
3	3	200212M2_5	Standard	12.500	5.19	3031.155	5204.674	7.280	12.5	-0.0	NO		NO	bb
4	4	200212M2_6	Standard	12.500	5.19	2944.620	5161.053	7.132	12.2	-2.1	NO		NO	bb
5	5	200212M2_7	Standard	12.500	5.19	3145.853	5600.955	7.021	12.1	-3.6	NO		NO	bb
6	6	200212M2_8	Standard	12.500	5.19	2896.843	5508.641	6.573	11.3	-9.7	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.19	2700.096	4591.574	7.351	12.6	0.9	NO		NO	MM
8	8	200212M2_10	Standard	12.500	5.19	2882.235	4864.122	7.407	12.7	1.7	NO		NO	bb
9	9	200212M2_11	Standard	12.500	5.19	2721.579	4256.036	7.993	13.7	9.8	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C2-PFUdA-EIS
Response Factor: 362.134
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	5.37	4491.861		4491.861	12.4	-0.8	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	5.36	4821.465		4821.465	13.3	6.5	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	5.36	4821.735		4821.735	13.3	6.5	NO		NO	MMX
4	4	200212M2_6	Standard	12.500	5.36	4504.051		4504.051	12.4	-0.5	NO		NO	MMX
5	5	200212M2_7	Standard	12.500	5.36	4766.903		4766.903	13.2	5.3	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	5.36	4526.675		4526.675	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.36	4243.182		4243.182	11.7	-6.3	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	5.36	4121.884		4121.884	11.4	-8.9	NO		NO	MMX
9	9	200212M2_11	Standard	12.500	5.37	3760.162		3760.162	10.4	-16.9	NO		NO	bbX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-PFUdA-RSD
Response Factor: 0.878644
RRF SD: 0.0394491, Relative SD: 4.48977
Response type: Internal Std (Ref 106), 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 200212M2_3	Standard	12.500	5.37	4491.861	5209.775	10.777	12.3	-1.9	NO		NO	bb
2	2 200212M2_4	Standard	12.500	5.36	4821.465	5142.147	11.720	13.3	6.7	NO		NO	bb
3	3 200212M2_5	Standard	12.500	5.36	4771.919	5204.674	11.461	13.0	4.3	NO		NO	MM
4	4 200212M2_6	Standard	12.500	5.36	4443.438	5161.053	10.762	12.2	-2.0	NO		NO	bb
5	5 200212M2_7	Standard	12.500	5.36	4766.903	5600.955	10.639	12.1	-3.1	NO		NO	bb
6	6 200212M2_8	Standard	12.500	5.36	4526.675	5508.641	10.272	11.7	-6.5	NO		NO	bb
7	7 200212M2_9	Standard	12.500	5.36	4243.182	4591.574	11.552	13.1	5.2	NO		NO	bb
8	8 200212M2_10	Standard	12.500	5.36	4133.083	4864.122	10.621	12.1	-3.3	NO		NO	MM
9	9 200212M2_11	Standard	12.500	5.37	3760.162	4256.036	11.044	12.6	0.6	NO		NO	bb
10	10 200212M2_12	Standard	12.500							NO		NO	X

Compound name: d5-N-EtFOSAA-EIS
Response Factor: 219.903
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	# Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1 200212M2_3	Standard	12.500	5.35	2573.932		2573.932	11.7	-6.4	NO		NO	bbX
2	2 200212M2_4	Standard	12.500	5.34	2673.267		2673.267	12.2	-2.7	NO		NO	bbX
3	3 200212M2_5	Standard	12.500	5.34	2816.269		2816.269	12.8	2.5	NO		NO	bbX
4	4 200212M2_6	Standard	12.500	5.34	2634.830		2634.830	12.0	-4.1	NO		NO	bbX
5	5 200212M2_7	Standard	12.500	5.34	2920.995		2920.995	13.3	6.3	NO		NO	bbX
6	6 200212M2_8	Standard	12.500	5.34	2748.792		2748.792	12.5	0.0	NO		NO	bb
7	7 200212M2_9	Standard	12.500	5.34	2375.577		2375.577	10.8	-13.6	NO		NO	bbX
8	8 200212M2_10	Standard	12.500	5.34	2315.024		2315.024	10.5	-15.8	NO		NO	MMX
9	9 200212M2_11	Standard	12.500	5.34	2254.871		2254.871	10.3	-18.0	NO		NO	bbX
10	10 200212M2_12	Standard	12.500							NO		NO	X

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Compound name: d5-N-EtFOSAA-RSD
Response Factor: 0.512144
RRF SD: 0.0197842, Relative SD: 3.86301
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	12.500	5.35	2573.932	5209.775	6.176	12.1	-3.5	NO		NO	bb
2	2	200212M2_4	Standard	12.500	5.34	2673.267	5142.147	6.498	12.7	1.5	NO		NO	bb
3	3	200212M2_5	Standard	12.500	5.34	2816.269	5204.674	6.764	13.2	5.7	NO		NO	bb
4	4	200212M2_6	Standard	12.500	5.34	2634.830	5161.053	6.382	12.5	-0.3	NO		NO	bb
5	5	200212M2_7	Standard	12.500	5.34	2920.995	5600.955	6.519	12.7	1.8	NO		NO	bb
6	6	200212M2_8	Standard	12.500	5.34	2748.792	5508.641	6.237	12.2	-2.6	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.34	2375.577	4591.574	6.467	12.6	1.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	5.34	2315.541	4864.122	5.951	11.6	-7.0	NO		NO	MM
9	9	200212M2_11	Standard	12.500	5.34	2254.871	4256.036	6.623	12.9	3.4	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 13C2-PFDoA-EIS
Response Factor: 458.13
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	5.65	5553.757		5553.757	12.1	-3.0	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	5.65	5770.212		5770.212	12.6	0.8	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	5.65	5671.951		5671.951	12.4	-1.0	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	5.65	5514.186		5514.186	12.0	-3.7	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	5.65	5762.201		5762.201	12.6	0.6	NO		NO	MMX
6	6	200212M2_8	Standard	12.500	5.65	5726.621		5726.621	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.65	4990.091		4990.091	10.9	-12.9	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	5.65	5635.989		5635.989	12.3	-1.6	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	5.65	5341.069		5341.069	11.7	-6.7	NO		NO	bbX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-PFDoA-RSD
Response Factor: 1.46014
RRF SD: 0.104879, Relative SD: 7.1828
Response type: Internal Std (Ref 105), 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	200212M2_3	Standard	12.500	5.65	5553.757	3760.579	18.460	12.6	1.1	NO		NO	bb
2	2	200212M2_4	Standard	12.500	5.65	5770.212	4104.192	17.574	12.0	-3.7	NO		NO	bb
3	3	200212M2_5	Standard	12.500	5.65	5671.951	4155.660	17.061	11.7	-6.5	NO		NO	bb
4	4	200212M2_6	Standard	12.500	5.65	5514.186	4001.400	17.226	11.8	-5.6	NO		NO	bb
5	5	200212M2_7	Standard	12.500	5.65	5877.034	4059.150	18.098	12.4	-0.8	NO		NO	MM
6	6	200212M2_8	Standard	12.500	5.65	5726.621	4187.189	17.096	11.7	-6.3	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.65	4990.091	3244.736	19.224	13.2	5.3	NO		NO	bb
8	8	200212M2_10	Standard	12.500	5.65	5635.989	3835.774	18.367	12.6	0.6	NO		NO	bb
9	9	200212M2_11	Standard	12.500	5.65	5341.069	3155.169	21.160	14.5	15.9	NO		NO	bb
10	10	200212M2_12	Standard	12.500			29.905				NO		NO	X

Compound name: 13C2-10:2 FTS-EIS
Response Factor: 53.2354
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	5.64	723.378		723.378	13.6	8.7	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	5.63	769.669		769.669	14.5	15.7	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	5.63	721.747		721.747	13.6	8.5	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	5.63	673.064		673.064	12.6	1.1	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	5.63	661.216		661.216	12.4	-0.6	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	5.63	665.443		665.443	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.63	531.349		531.349	10.0	-20.2	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	5.63	607.370		607.370	11.4	-8.7	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	5.63	466.797		466.797	8.8	-29.9	NO		NO	MMX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-10:2 FTS-RSD
Response Factor: 0.490552
RRF SD: 0.040337, Relative SD: 8.22277
Response type: Internal Std (Ref 104), 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	200212M2_3	Standard	12.500	5.64	723.378	1335.615	6.770	13.8	10.4	NO		NO	bb
2	2	200212M2_4	Standard	12.500	5.63	769.669	1448.947	6.640	13.5	8.3	NO		NO	bb
3	3	200212M2_5	Standard	12.500	5.63	721.747	1350.618	6.680	13.6	8.9	NO		NO	bb
4	4	200212M2_6	Standard	12.500	5.63	673.064	1309.572	6.424	13.1	4.8	NO		NO	bb
5	5	200212M2_7	Standard	12.500	5.63	661.216	1383.110	5.976	12.2	-2.5	NO		NO	bb
6	6	200212M2_8	Standard	12.500	5.63	665.443	1434.825	5.797	11.8	-5.5	NO		NO	bb
7	7	200212M2_9	Standard	12.500	5.63	531.349	1152.582	5.763	11.7	-6.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	5.63	607.370	1317.426	5.763	11.7	-6.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	5.63	485.727	1129.721	5.374	11.0	-12.4	NO		NO	MM
10	10	200212M2_12	Standard	12.500			5.773				NO		NO	X

Compound name: d3-N-MeFOSA-EIS
Response Factor: 28.3667
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	149.200	5.85	3995.644		3995.644	140.9	-5.6	NO		NO	bbX
2	2	200212M2_4	Standard	149.200	5.84	4443.104		4443.104	156.6	5.0	NO		NO	bbX
3	3	200212M2_5	Standard	149.200	5.84	4394.129		4394.129	154.9	3.8	NO		NO	bbX
4	4	200212M2_6	Standard	149.200	5.84	4112.328		4112.328	145.0	-2.8	NO		NO	bbX
5	5	200212M2_7	Standard	149.200	5.84	4339.761		4339.761	153.0	2.5	NO		NO	bbX
6	6	200212M2_8	Standard	149.200	5.84	4232.317		4232.317	149.2	0.0	NO		NO	bb
7	7	200212M2_9	Standard	149.200	5.84	3967.232		3967.232	139.9	-6.3	NO		NO	bbX
8	8	200212M2_10	Standard	149.200	5.84	4465.796		4465.796	157.4	5.5	NO		NO	bbX
9	9	200212M2_11	Standard	149.200	5.84	4207.163		4207.163	148.3	-0.6	NO		NO	bbX
10	10	200212M2_12	Standard	149.200							NO		NO	X

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Compound name: d3-N-MeFOSA-RSD
Response Factor: 0.070616
RRF SD: 0.00634246, Relative SD: 8.98162
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	149.200	5.85	3995.644	5209.775	9.587	135.8	-9.0	NO		NO	bb
2	2	200212M2_4	Standard	149.200	5.84	4443.104	5142.147	10.801	152.9	2.5	NO		NO	bb
3	3	200212M2_5	Standard	149.200	5.84	4394.129	5204.674	10.553	149.4	0.2	NO		NO	bb
4	4	200212M2_6	Standard	149.200	5.84	4112.328	5161.053	9.960	141.0	-5.5	NO		NO	bb
5	5	200212M2_7	Standard	149.200	5.84	4339.761	5600.955	9.685	137.2	-8.1	NO		NO	bb
6	6	200212M2_8	Standard	149.200	5.84	4232.317	5508.641	9.604	136.0	-8.8	NO		NO	bb
7	7	200212M2_9	Standard	149.200	5.84	3967.232	4591.574	10.800	152.9	2.5	NO		NO	bb
8	8	200212M2_10	Standard	149.200	5.84	4465.796	4864.122	11.476	162.5	8.9	NO		NO	bb
9	9	200212M2_11	Standard	149.200	5.84	4207.163	4256.036	12.356	175.0	17.3	NO		NO	bb
10	10	200212M2_12	Standard	149.200							NO		NO	X

Compound name: 13C2-PFTeDA-EIS
Response Factor: 365.37
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	6.12	4481.919		4481.919	12.3	-1.9	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	6.11	4741.914		4741.914	13.0	3.8	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	6.11	4709.423		4709.423	12.9	3.1	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	6.11	4582.389		4582.389	12.5	0.3	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	6.11	4674.403		4674.403	12.8	2.3	NO		NO	bbX
6	6	200212M2_8	Standard	12.500	6.11	4567.127		4567.127	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	6.11	4088.364		4088.364	11.2	-10.5	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	6.11	4453.368		4453.368	12.2	-2.5	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	6.11	3955.316		3955.316	10.8	-13.4	NO		NO	bbX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-PFTeDA-RSD
Response Factor: 0.886016
RRF SD: 0.0370528, Relative SD: 4.18196
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	12.500	6.12	4481.919	5209.775	10.754	12.1	-2.9	NO		NO	bb
2	2	200212M2_4	Standard	12.500	6.11	4741.914	5142.147	11.527	13.0	4.1	NO		NO	bb
3	3	200212M2_5	Standard	12.500	6.11	4709.423	5204.674	11.311	12.8	2.1	NO		NO	bb
4	4	200212M2_6	Standard	12.500	6.11	4582.389	5161.053	11.098	12.5	0.2	NO		NO	bb
5	5	200212M2_7	Standard	12.500	6.11	4674.403	5600.955	10.432	11.8	-5.8	NO		NO	bb
6	6	200212M2_8	Standard	12.500	6.11	4567.127	5508.641	10.364	11.7	-6.4	NO		NO	bb
7	7	200212M2_9	Standard	12.500	6.11	4088.364	4591.574	11.130	12.6	0.5	NO		NO	bb
8	8	200212M2_10	Standard	12.500	6.11	4453.368	4864.122	11.444	12.9	3.3	NO		NO	bb
9	9	200212M2_11	Standard	12.500	6.11	3955.316	4256.036	11.617	13.1	4.9	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: d5-N-ETFOSA-EIS
Response Factor: 37.3673
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	149.200	6.25	4965.997		4965.997	132.9	-10.9	NO		NO	bbX
2	2	200212M2_4	Standard	149.200	6.25	5686.568		5686.568	152.2	2.0	NO		NO	bbX
3	3	200212M2_5	Standard	149.200	6.25	5819.389		5819.389	155.7	4.4	NO		NO	bbX
4	4	200212M2_6	Standard	149.200	6.25	5663.082		5663.082	151.6	1.6	NO		NO	bbX
5	5	200212M2_7	Standard	149.200	6.25	5797.352		5797.352	155.1	4.0	NO		NO	bbX
6	6	200212M2_8	Standard	149.200	6.25	5575.204		5575.204	149.2	0.0	NO		NO	bb
7	7	200212M2_9	Standard	149.200	6.25	5082.504		5082.504	136.0	-8.8	NO		NO	bbX
8	8	200212M2_10	Standard	149.200	6.25	5740.298		5740.298	153.6	3.0	NO		NO	bbX
9	9	200212M2_11	Standard	149.200	6.25	5177.891		5177.891	138.6	-7.1	NO		NO	bbX
10	10	200212M2_12	Standard	149.200							NO		NO	X

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Compound name: d5-N-ETFOSA-RSD
Response Factor: 0.0914624
RRF SD: 0.00683895, Relative SD: 7.47733
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	149.200	6.25	4965.997	5209.775	11.915	130.3	-12.7	NO		NO	bb
2	2	200212M2_4	Standard	149.200	6.25	5686.568	5142.147	13.823	151.1	1.3	NO		NO	bb
3	3	200212M2_5	Standard	149.200	6.25	5819.389	5204.674	13.976	152.8	2.4	NO		NO	bb
4	4	200212M2_6	Standard	149.200	6.25	5663.082	5161.053	13.716	150.0	0.5	NO		NO	bb
5	5	200212M2_7	Standard	149.200	6.25	5797.352	5600.955	12.938	141.5	-5.2	NO		NO	bb
6	6	200212M2_8	Standard	149.200	6.25	5575.204	5508.641	12.651	138.3	-7.3	NO		NO	bb
7	7	200212M2_9	Standard	149.200	6.25	5082.504	4591.574	13.836	151.3	1.4	NO		NO	bb
8	8	200212M2_10	Standard	149.200	6.25	5740.298	4864.122	14.752	161.3	8.1	NO		NO	bb
9	9	200212M2_11	Standard	149.200	6.25	5177.891	4256.036	15.207	166.3	11.4	NO		NO	bb
10	10	200212M2_12	Standard	149.200							NO		NO	X

Compound name: 13C2-PFHxDA-EIS
Response Factor: 512.438
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	12.500	6.45	5926.843		5926.843	11.6	-7.5	NO		NO	bbX
2	2	200212M2_4	Standard	12.500	6.45	6497.574		6497.574	12.7	1.4	NO		NO	bbX
3	3	200212M2_5	Standard	12.500	6.45	6309.100		6309.100	12.3	-1.5	NO		NO	bbX
4	4	200212M2_6	Standard	12.500	6.45	6131.961		6131.961	12.0	-4.3	NO		NO	bbX
5	5	200212M2_7	Standard	12.500	6.45	6559.835		6559.835	12.8	2.4	NO		NO	bdX
6	6	200212M2_8	Standard	12.500	6.45	6405.480		6405.480	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	6.45	5506.480		5506.480	10.7	-14.0	NO		NO	bbX
8	8	200212M2_10	Standard	12.500	6.45	6109.779		6109.779	11.9	-4.6	NO		NO	bbX
9	9	200212M2_11	Standard	12.500	6.45	5423.648		5423.648	10.6	-15.3	NO		NO	bbX
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C2-PFHxDA-RSD
Response Factor: 1.20725
RRF SD: 0.048265, Relative SD: 3.99793
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	12.500	6.45	5926.843	5209.775	14.220	11.8	-5.8	NO		NO	bb
2	2	200212M2_4	Standard	12.500	6.45	6497.574	5142.147	15.795	13.1	4.7	NO		NO	bb
3	3	200212M2_5	Standard	12.500	6.45	6309.100	5204.674	15.152	12.6	0.4	NO		NO	bb
4	4	200212M2_6	Standard	12.500	6.45	6131.961	5161.053	14.852	12.3	-1.6	NO		NO	bb
5	5	200212M2_7	Standard	12.500	6.45	6559.835	5600.955	14.640	12.1	-3.0	NO		NO	bd
6	6	200212M2_8	Standard	12.500	6.45	6405.480	5508.641	14.535	12.0	-3.7	NO		NO	bb
7	7	200212M2_9	Standard	12.500	6.45	5506.480	4591.574	14.991	12.4	-0.7	NO		NO	bb
8	8	200212M2_10	Standard	12.500	6.45	6109.779	4864.122	15.701	13.0	4.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	6.45	5423.648	4256.036	15.929	13.2	5.6	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: d7-N-MeFOSE-EIS
Response Factor: 17.5222
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	149.200	6.39	2310.268		2310.268	131.8	-11.6	NO		NO	MMX
2	2	200212M2_4	Standard	149.200	6.39	2641.062		2641.062	150.7	1.0	NO		NO	bbX
3	3	200212M2_5	Standard	149.200	6.38	2835.554		2835.554	161.8	8.5	NO		NO	bbX
4	4	200212M2_6	Standard	149.200	6.38	2622.694		2622.694	149.7	0.3	NO		NO	bbX
5	5	200212M2_7	Standard	149.200	6.39	2678.789		2678.789	152.9	2.5	NO		NO	bbX
6	6	200212M2_8	Standard	149.200	6.38	2614.309		2614.309	149.2	0.0	NO		NO	bb
7	7	200212M2_9	Standard	149.200	6.38	2552.962		2552.962	145.7	-2.3	NO		NO	MMX
8	8	200212M2_10	Standard	149.200	6.39	2803.494		2803.494	160.0	7.2	NO		NO	bbX
9	9	200212M2_11	Standard	149.200	6.39	2806.325		2806.325	160.2	7.3	NO		NO	bbX
10	10	200212M2_12	Standard	149.200							NO		NO	X

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Compound name: d7-N-MeFOSE-RSD
Response Factor: 0.0443596
RRF SD: 0.00530151, Relative SD: 11.9512
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	149.200	6.39	2365.745	5209.775	5.676	128.0	-14.2	NO		NO	MM
2	2	200212M2_4	Standard	149.200	6.39	2641.062	5142.147	6.420	144.7	-3.0	NO		NO	bb
3	3	200212M2_5	Standard	149.200	6.38	2835.554	5204.674	6.810	153.5	2.9	NO		NO	bb
4	4	200212M2_6	Standard	149.200	6.38	2622.694	5161.053	6.352	143.2	-4.0	NO		NO	bb
5	5	200212M2_7	Standard	149.200	6.39	2678.789	5600.955	5.978	134.8	-9.7	NO		NO	bb
6	6	200212M2_8	Standard	149.200	6.38	2614.309	5508.641	5.932	133.7	-10.4	NO		NO	bb
7	7	200212M2_9	Standard	149.200	6.38	2552.955	4591.574	6.950	156.7	5.0	NO		NO	bd
8	8	200212M2_10	Standard	149.200	6.39	2803.494	4864.122	7.205	162.4	8.9	NO		NO	bb
9	9	200212M2_11	Standard	149.200	6.39	2806.325	4256.036	8.242	185.8	24.5	NO		NO	bb
10	10	200212M2_12	Standard	149.200							NO		NO	X

Compound name: d9-N-EtFOSE-EIS
Response Factor: 19.5042
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

	#	Name	Type	Std. Conc	RT	Area	IS Area	Response	Conc.	%Dev	Conc. Flag	CoD	CoD Flag	x=excluded
1	1	200212M2_3	Standard	149.200	6.53	2699.870		2699.870	138.4	-7.2	NO		NO	bbX
2	2	200212M2_4	Standard	149.200	6.53	2974.302		2974.302	152.5	2.2	NO		NO	bbX
3	3	200212M2_5	Standard	149.200	6.53	3066.291		3066.291	157.2	5.4	NO		NO	MMX
4	4	200212M2_6	Standard	149.200	6.53	2836.645		2836.645	145.4	-2.5	NO		NO	bbX
5	5	200212M2_7	Standard	149.200	6.53	3081.247		3081.247	158.0	5.9	NO		NO	bbX
6	6	200212M2_8	Standard	149.200	6.53	2910.026		2910.026	149.2	0.0	NO		NO	bb
7	7	200212M2_9	Standard	149.200	6.53	2641.161		2641.161	135.4	-9.2	NO		NO	bbX
8	8	200212M2_10	Standard	149.200	6.53	3058.728		3058.728	156.8	5.1	NO		NO	bbX
9	9	200212M2_11	Standard	149.200	6.53	3080.488		3080.488	157.9	5.9	NO		NO	bbX
10	10	200212M2_12	Standard	149.200							NO		NO	X

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Compound name: d9-N-EtFOSE-RSD
Response Factor: 0.0488933
RRF SD: 0.00527127, Relative SD: 10.7812
Response type: Internal Std (Ref 106), 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	200212M2_3	Standard	149.200	6.53	2699.870	5209.775	6.478	132.5	-11.2	NO		NO	bb
2	2	200212M2_4	Standard	149.200	6.53	2974.302	5142.147	7.230	147.9	-0.9	NO		NO	bb
3	3	200212M2_5	Standard	149.200	6.53	3121.764	5204.674	7.498	153.3	2.8	NO		NO	MM
4	4	200212M2_6	Standard	149.200	6.53	2836.645	5161.053	6.870	140.5	-5.8	NO		NO	bb
5	5	200212M2_7	Standard	149.200	6.53	3081.247	5600.955	6.877	140.6	-5.7	NO		NO	bb
6	6	200212M2_8	Standard	149.200	6.53	2910.026	5508.641	6.603	135.1	-9.5	NO		NO	bb
7	7	200212M2_9	Standard	149.200	6.53	2641.161	4591.574	7.190	147.1	-1.4	NO		NO	bb
8	8	200212M2_10	Standard	149.200	6.53	3058.728	4864.122	7.860	160.8	7.8	NO		NO	bb
9	9	200212M2_11	Standard	149.200	6.53	3080.488	4256.036	9.047	185.0	24.0	NO		NO	bb
10	10	200212M2_12	Standard	149.200							NO		NO	X

Compound name: 13C4-PFBA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 99), 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	200212M2_3	Standard	12.500	1.27	630.740	630.740	12.500	12.5	0.0	NO		NO	MM
2	2	200212M2_4	Standard	12.500	1.27	642.135	642.135	12.500	12.5	0.0	NO		NO	bb
3	3	200212M2_5	Standard	12.500	1.27	660.641	660.641	12.500	12.5	0.0	NO		NO	bb
4	4	200212M2_6	Standard	12.500	1.27	679.504	679.504	12.500	12.5	0.0	NO		NO	bb
5	5	200212M2_7	Standard	12.500	1.28	690.731	690.731	12.500	12.5	0.0	NO		NO	bb
6	6	200212M2_8	Standard	12.500	1.27	668.913	668.913	12.500	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	1.27	642.868	642.868	12.500	12.5	0.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	1.27	699.593	699.593	12.500	12.5	0.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	1.27	719.212	719.212	12.500	12.5	0.0	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

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Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 1.11022e-016, Relative SD: 1.11022e-014
Response type: Internal Std (Ref 100), 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	200212M2_3	Standard	12.500	3.10	2021.502	2021.502	12.500	12.5	0.0	NO		NO	MM
2	2	200212M2_4	Standard	12.500	3.10	2208.186	2208.186	12.500	12.5	0.0	NO		NO	MM
3	3	200212M2_5	Standard	12.500	3.10	2133.129	2133.129	12.500	12.5	0.0	NO		NO	MM
4	4	200212M2_6	Standard	12.500	3.10	2093.029	2093.029	12.500	12.5	0.0	NO		NO	bb
5	5	200212M2_7	Standard	12.500	3.10	2124.091	2124.091	12.500	12.5	0.0	NO		NO	bb
6	6	200212M2_8	Standard	12.500	3.10	2082.131	2082.131	12.500	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	3.10	1882.120	1882.120	12.500	12.5	0.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	3.10	2145.029	2145.029	12.500	12.5	0.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	3.10	1906.599	1906.599	12.500	12.5	0.0	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

Compound name: 18O2-PFHxS
Response Factor: 1
RRF SD: 8.77708e-017, Relative SD: 8.77708e-015
Response type: Internal Std (Ref 101), 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	200212M2_3	Standard	12.500	3.86	489.708	489.708	12.500	12.5	0.0	NO		NO	bb
2	2	200212M2_4	Standard	12.500	3.86	608.259	608.259	12.500	12.5	0.0	NO		NO	bb
3	3	200212M2_5	Standard	12.500	3.86	567.678	567.678	12.500	12.5	0.0	NO		NO	MM
4	4	200212M2_6	Standard	12.500	3.86	530.058	530.058	12.500	12.5	0.0	NO		NO	MM
5	5	200212M2_7	Standard	12.500	3.86	516.633	516.633	12.500	12.5	0.0	NO		NO	bb
6	6	200212M2_8	Standard	12.500	3.86	494.985	494.985	12.500	12.5	0.0	NO		NO	MM
7	7	200212M2_9	Standard	12.500	3.86	479.021	479.021	12.500	12.5	0.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	3.86	544.425	544.425	12.500	12.5	0.0	NO		NO	MM
9	9	200212M2_11	Standard	12.500	3.86	473.537	473.537	12.500	12.5	0.0	NO		NO	bb
10	10	200212M2_12	Standard	12.500							NO		NO	X

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Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 102), 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	200212M2_3	Standard	12.500	4.23	4194.535	4194.535	12.500	12.5	0.0	NO		NO	bb
2	2	200212M2_4	Standard	12.500	4.23	4539.473	4539.473	12.500	12.5	0.0	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.23	4242.705	4242.705	12.500	12.5	0.0	NO		NO	bb
4	4	200212M2_6	Standard	12.500	4.23	4060.156	4060.156	12.500	12.5	0.0	NO		NO	bb
5	5	200212M2_7	Standard	12.500	4.23	4133.674	4133.674	12.500	12.5	0.0	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.23	4101.478	4101.478	12.500	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.23	3488.244	3488.244	12.500	12.5	0.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	4.23	3740.802	3740.802	12.500	12.5	0.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	4.23	3236.503	3236.503	12.500	12.5	0.0	NO		NO	MM
10	10	200212M2_12	Standard	12.500	4.23	21.245	21.245	12.500	12.5	0.0	NO		NO	bbX

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 103), 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	200212M2_3	Standard	12.500	4.67	3529.855	3529.855	12.500	12.5	0.0	NO		NO	bb
2	2	200212M2_4	Standard	12.500	4.66	3450.374	3450.374	12.500	12.5	0.0	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.66	3663.078	3663.078	12.500	12.5	0.0	NO		NO	bb
4	4	200212M2_6	Standard	12.500	4.67	3582.820	3582.820	12.500	12.5	0.0	NO		NO	bb
5	5	200212M2_7	Standard	12.500	4.66	3736.892	3736.892	12.500	12.5	0.0	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.66	3413.384	3413.384	12.500	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.66	3008.438	3008.438	12.500	12.5	0.0	NO		NO	MM
8	8	200212M2_10	Standard	12.500	4.67	3326.587	3326.587	12.500	12.5	0.0	NO		NO	MM
9	9	200212M2_11	Standard	12.500	4.67	2904.696	2904.696	12.500	12.5	0.0	NO		NO	bb
10	10	200212M2_12	Standard	12.500	4.67	20.488	20.488	12.500	12.5	0.0	NO		NO	bbX

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Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 104), 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	200212M2_3	Standard	12.500	4.76	1335.615	1335.615	12.500	12.5	0.0	NO		NO	bb
2	2	200212M2_4	Standard	12.500	4.75	1448.947	1448.947	12.500	12.5	0.0	NO		NO	bb
3	3	200212M2_5	Standard	12.500	4.75	1350.618	1350.618	12.500	12.5	0.0	NO		NO	MM
4	4	200212M2_6	Standard	12.500	4.75	1309.572	1309.572	12.500	12.5	0.0	NO		NO	bb
5	5	200212M2_7	Standard	12.500	4.75	1383.110	1383.110	12.500	12.5	0.0	NO		NO	bb
6	6	200212M2_8	Standard	12.500	4.75	1434.825	1434.825	12.500	12.5	0.0	NO		NO	bb
7	7	200212M2_9	Standard	12.500	4.75	1152.582	1152.582	12.500	12.5	0.0	NO		NO	bb
8	8	200212M2_10	Standard	12.500	4.75	1317.426	1317.426	12.500	12.5	0.0	NO		NO	bb
9	9	200212M2_11	Standard	12.500	4.75	1129.721	1129.721	12.500	12.5	0.0	NO		NO	bb
10	10	200212M2_12	Standard	12.500	4.75	5.773	5.773	12.500	12.5	0.0	NO		NO	bbX

Compound name: TDCA
No Calibration
Response type: External Std, 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	200212M2_3	Standard	0.250							NO		NO	
2	2	200212M2_4	Standard	0.500							NO		NO	
3	3	200212M2_5	Standard	1.000							NO		NO	
4	4	200212M2_6	Standard	2.000							NO		NO	
5	5	200212M2_7	Standard	5.000							NO		NO	
6	6	200212M2_8	Standard	10.000							NO		NO	
7	7	200212M2_9	Standard	50.000							NO		NO	
8	8	200212M2_10	Standard	100.000							NO		NO	
9	9	200212M2_11	Standard	250.000							NO		NO	
10	10	200212M2_12	Standard	500.000							NO		NO	

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Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 15:38:04
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

	#	Name	IS#	CoD	CoD Flag	%RSD
1	1	PFBA	47	0.9985	NO	
2	2	PFPrS	51	0.9989	NO	
3	3	3:3 FTCA	49	0.9984	NO	
4	4	PFPeA	49	0.9998	NO	
5	5	PFBS	51	0.9992	NO	
6	6	4:2 FTS	55	0.9997	NO	
7	7	PFHxA	57	0.9997	NO	
8	8	PFPeS	51	0.9995	NO	
9	9	HFPO-DA	53	0.9984	NO	
10	10	5:3 FTCA	59	0.9994	NO	
11	11	PFHpA	59	0.9982	NO	
12	12	ADONA	59	0.9996	NO	
13	13	L-PFHxS	61	0.9995	NO	
14	15	6:2 FTS	63	0.9996	NO	
15	16	L-PFOA	69	0.9995	NO	
16	18	PFecHS	69	0.9993	NO	
17	19	PFHpS	71	0.9979	NO	
18	20	7:3 FTCA	65	0.9976	NO	
19	21	PFNA	65	0.9993	NO	
20	22	PFOSA	67	0.9997	NO	
21	23	L-PFOS	71	0.9998	NO	
22	25	9Cl-PF30NS	71	0.9991	NO	
23	26	PFDA	73	0.9992	NO	
24	27	8:2 FTS	75	0.9992	NO	
25	28	PFNS	71	0.9981	NO	
26	29	L-MeFOSAA	77	0.9989	NO	

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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 15:38:06 Pacific Standard Time
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Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 15:38:04
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

	#	Name	IS#	CoD	CoD Flag	%RSD
1	31	L-EtFOSAA	81	0.9985	NO	
2	33	PFUdA	79	0.9992	NO	
3	34	PFDS	71	0.9983	NO	
4	35	11Cl-PF30UdS	83	0.9998	NO	
5	36	10:2 FTS	85	0.9980	NO	
6	37	PFDoA	83	0.9990	NO	
7	38	N-MeFOSA	87	0.9994	NO	
8	39	PFTrDA	83	0.9998	NO	
9	40	PFDoS	89	0.9997	NO	
10	41	PFTeDA	89	0.9997	NO	
11	42	N-EtFOSA	91	0.9990	NO	
12	43	PFHxDA	93	0.9999	NO	
13	44	PFODA	93	0.9998	NO	
14	45	N-MeFOSE	95	0.9992	NO	
15	46	N-EtFOSE	97	0.9996	NO	
16	47	13C3-PFBA-EIS			NO	0.000
17	48	13C3-PFBA-RSD	99		NO	2.945
18	49	13C3-PFPeA-EIS			NO	0.000
19	50	13C3-PFPeA-RSD	100		NO	5.954
20	51	13C3-PFBS-EIS			NO	0.000
21	52	13C3-PFBS-RSD	101		NO	7.614
22	53	13C3-HFPO-DA-EIS			NO	0.000
23	54	13C3-HFPO-DA-RSD	100		NO	11.589
24	55	13C2-4:2 FTS-EIS			NO	0.000
25	56	13C2-4:2 FTS-RSD	101		NO	10.249
26	57	13C2-PFHxA-EIS			NO	0.000
27	58	13C2-PFHxA-RSD	100		NO	5.313
28	59	13C4-PFHpA-EIS			NO	0.000
29	60	13C4-PFHpA-RSD	100		NO	3.305
30	61	13C3-PFHxS-EIS			NO	0.000
31	62	13C3-PFHxS-RSD	101		NO	6.956
32	63	13C2-6:2 FTS-EIS			NO	0.000

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Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

	#	Name	IS#	CoD	CoD Flag	%RSD
33	64	13C2-6:2 FTS-RSD	104		NO	3.753
34	65	13C5-PFNA-EIS			NO	0.000
35	66	13C5-PFNA-RSD	103		NO	3.925
36	67	13C8-PFOSA-EIS			NO	0.000
37	68	13C8-PFOSA-RSD	106		NO	3.817
38	69	13C2-PFOA-EIS			NO	0.000
39	70	13C2-PFOA-RSD	102		NO	4.586
40	71	13C8-PFOS-EIS			NO	0.000
41	72	13C8-PFOS-RSD	104		NO	6.034
42	73	13C2-PFDA-EIS			NO	0.000
43	74	13C2-PFDA-RSD	105		NO	4.986
44	75	13C2-8:2 FTS-EIS			NO	0.000
45	76	13C2-8:2 FTS-RSD	104		NO	8.483
46	77	d3-N-MeFOSAA-EIS			NO	0.000
47	78	d3-N-MeFOSAA-RSD	106		NO	5.206
48	79	13C2-PFUdA-EIS			NO	0.000
49	80	13C2-PFUdA-RSD	106		NO	4.490
50	81	d5-N-EtFOSAA-EIS			NO	0.000
51	82	d5-N-EtFOSAA-RSD	106		NO	3.863
52	83	13C2-PFDoA-EIS			NO	0.000
53	84	13C2-PFDoA-RSD	105		NO	7.183
54	85	13C2-10:2 FTS-EIS			NO	0.000
55	86	13C2-10:2 FTS-RSD	104		NO	8.223
56	87	d3-N-MeFOSA-EIS			NO	0.000
57	88	d3-N-MeFOSA-RSD	106		NO	8.982
58	89	13C2-PFTeDA-EIS			NO	0.000
59	90	13C2-PFTeDA-RSD	106		NO	4.182
60	91	d5-N-ETFOSA-EIS			NO	0.000
61	92	d5-N-ETFOSA-RSD	106		NO	7.477
62	93	13C2-PFHxDA-EIS			NO	0.000
63	94	13C2-PFHxDA-RSD	106		NO	3.998
64	95	d7-N-MeFOSE-EIS			NO	0.000
65	96	d7-N-MeFOSE-RSD	106		NO	11.951
66	97	d9-N-EtFOSE-EIS			NO	0.000
67	98	d9-N-EtFOSE-RSD	106		NO	10.781
68	99	13C4-PFBA	99		NO	0.000

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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

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Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

	#	Name	IS#	CoD	CoD Flag	%RSD
69	1...	13C5-PFHxA	100		NO	0.000
70	1...	18O2-PFHxS	101		NO	0.000
71	1...	13C8-PFOA	102		NO	0.000
72	1...	13C9-PFNA	103		NO	0.000
73	1...	13C4-PFOS	104		NO	0.000
74	1...	TDCA			NO	

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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:43:41 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: P:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_02-12-20.cdb 13 Feb 2020 13:55:50

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

	Name	Pred.RT	RT	Pred. Ratio	Ion Ratio	Ratio out?
1	PFBA	1.27	1.27			
2	PFPrS	1.63	1.65	3.074	3.074	NO
3	3:3 FTCA	2.14	2.14	1.737	1.737	NO
4	PFPeA	2.28	2.29			
5	PFBS	2.59	2.59	3.252	3.252	NO
6	4:2 FTS	3.02	3.02	1.633	1.633	NO
7	PFHxA	3.10	3.10	12.751	12.751	NO
8	PFPeS	3.33	3.29	1.720	1.720	NO
9	HFPO-DA	3.30	3.30	1.985	1.985	NO
10	5:3 FTCA	3.65	3.64	1.358	1.358	NO
11	PFHpA	3.70	3.71	10.089	10.089	NO
12	ADONA	3.80	3.82	2.810	2.810	NO
13	L-PFHxS	3.86	3.86	2.204	2.204	NO
14	6:2 FTS	4.17	4.17	1.847	1.847	NO
15	L-PFOA	4.23	4.23	3.156	3.156	NO
16	PFecHS	4.24	4.24	1.126	1.126	NO
17	PFHpS	4.35	4.34	1.293	1.293	NO
18	7:3 FTCA	4.66	4.65	1.217	1.217	NO
19	PFNA	4.67	4.67	4.567	4.567	NO
20	PFOSA	4.73	4.73	26.105	26.105	NO
21	L-PFOS	4.75	4.75	2.684	2.684	NO
22	9Cl-PF30NS	4.96	4.97	21.106	21.106	NO
23	PFDA	5.04	5.04	6.094	6.094	NO
24	8:2 FTS	5.01	5.01	1.698	1.698	NO
25	PFNS	5.09	5.10	1.904	1.904	NO
26	L-MeFOSAA	5.19	5.19	2.435	2.435	NO

Quantify Sample Summary Report **MassLynx MassLynx V4.1 SCN 945** Page 1 of 1
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:44:04 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: P:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_02-12-20.cdb 13 Feb 2020 13:55:50

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

	Name	Pred.RT	RT	Pred. Ratio	Ion Ratio	Ratio out?
1	L-EtFOSAA	5.34	5.35	1.268	1.268	NO
2	PFUdA	5.36	5.36	10.273	10.273	NO
3	PFDS	5.38	5.41	2.012	2.012	NO
4	11Cl-PF30UdS	5.58	5.58	24.950	24.950	NO
5	10:2 FTS	5.61	5.64	1.730	1.730	NO
6	PFDoA	5.65	5.65	8.659	8.659	NO
7	N-MeFOSA	5.83	5.81	1.620	1.620	NO
8	PFTrDA	5.90	5.89	22.232	22.232	NO
9	PFDoS	5.92	5.92	1.877	1.877	NO
10	PFTeDA	6.11	6.11	13.158	13.158	NO
11	N-EtFOSA	6.23	6.23	1.633	1.633	NO
12	PFHxDA	6.45	6.45	26.194	26.194	NO
13	PFODA	6.66	6.68			
14	N-MeFOSE	6.38	6.40			
15	N-EtFOSE	6.53	6.54			
16	TDCA	4.69		0.000		

Quantify Compound Summary Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:52:27 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:53:23 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 13:55:50

Compound name: PFBA

	#	Name	ID	Acq.Date	Acq.Time
1	1	200212M2_2	IPA	12-Feb-20	19:19:48
2	2	200212M2_3	ST200212M2-1 PFC CS-2 20B1102	12-Feb-20	19:30:08
3	3	200212M2_4	ST200212M2-2 PFC CS-1 20B1103	12-Feb-20	19:40:29
4	4	200212M2_5	ST200212M2-3 PFC CS0 20B1104	12-Feb-20	19:50:52
5	5	200212M2_6	ST200212M2-4 PFC CS1 20B1105	12-Feb-20	20:01:14
6	6	200212M2_7	ST200212M2-5 PFC CS2 20B1106	12-Feb-20	20:11:36
7	7	200212M2_8	ST200212M2-6 PFC CS3 20B1107	12-Feb-20	20:21:58
8	8	200212M2_9	ST200212M2-7 PFC CS4 20B1108	12-Feb-20	20:32:23
9	9	200212M2_10	ST200212M2-8 PFC CS5 20B1109	12-Feb-20	20:42:48
10	10	200212M2_11	ST200212M2-9 PFC CS6 20B1110	12-Feb-20	20:53:10
11	11	200212M2_12	ST200212M2-10 PFC CS7 20B1111	12-Feb-20	21:03:33
12	12	200212M2_13	IB	12-Feb-20	21:13:55
13	13	200212M2_14	ICV200212M2-1 PFC ICV 20B1112	12-Feb-20	21:24:17

RK 2/13/20
not used due to
poor chromatography

Low point
6:2 FTS 0.5
PFHpS
3:3 FTCA
PFDA
HFPO-DA 1.0
7:3 FTCA 1.0
N-etfose 2.5

High point
3:3 FTCA 100
~~6:2~~
7:3 FTCA
5:3 FTCA
HFPO-DA

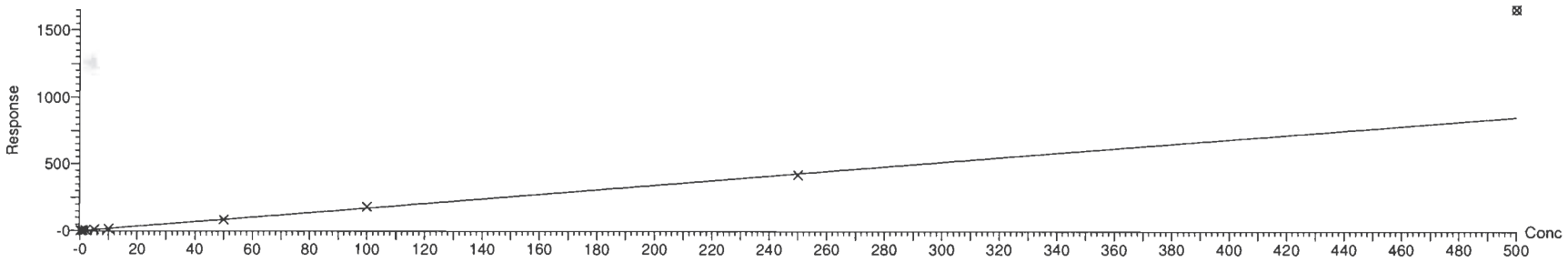
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

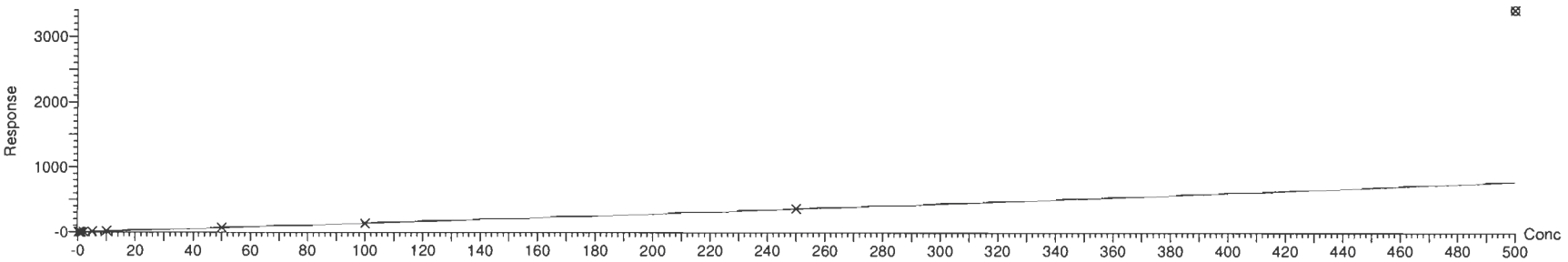
Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 15:00:37 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 13 Feb 2020 13:56:38
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 13:55:50

Compound name: PFBA
Correlation coefficient: r = 0.999263, r^2 = 0.998526
Calibration curve: 1.71274 * x + -0.0466937
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFPrS
Coefficient of Determination: R^2 = 0.998943
Calibration curve: 0.000487526 * x^2 + 1.32433 * x + -0.062416
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

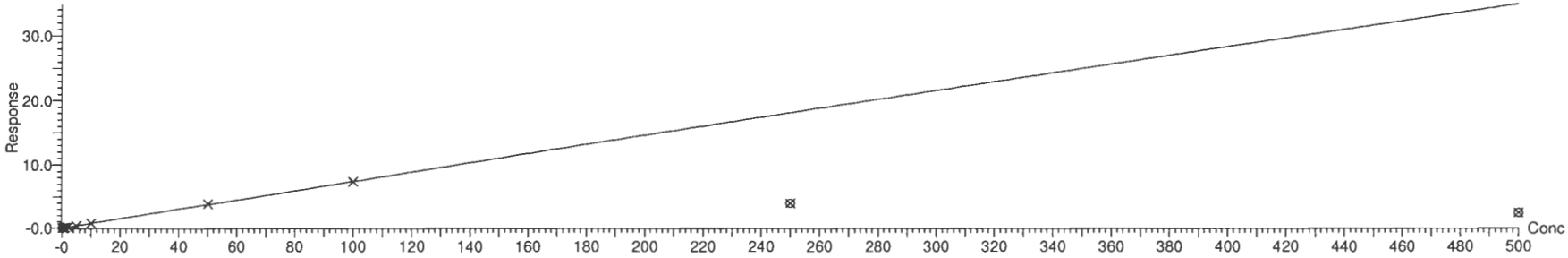


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945** Page 2 of 13
Vista Analytical Laboratory Q1

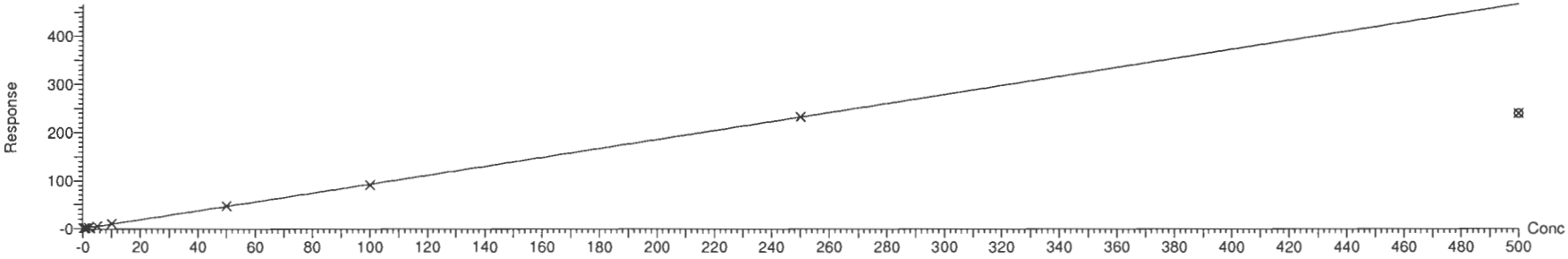
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: 3:3 FTCA
Coefficient of Determination: R^2 = 0.998423
Calibration curve: -1.0865e-005 * x^2 + 0.075033 * x + -0.0193409
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999837
Calibration curve: 1.92245e-005 * x^2 + 0.922113 * x + 0.0354823
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

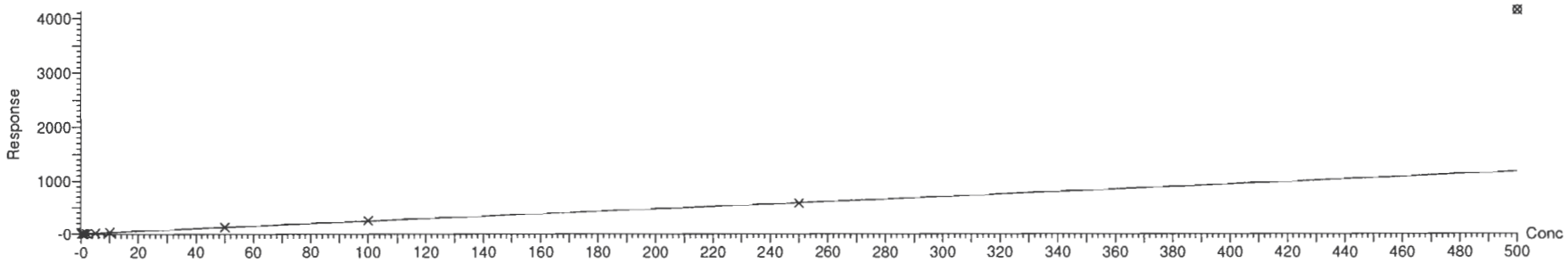


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

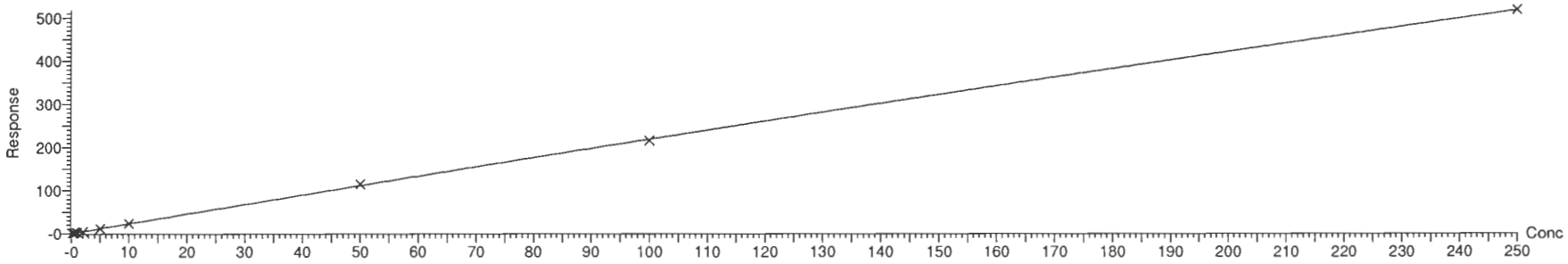
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFBS
Correlation coefficient: r = 0.999614, r^2 = 0.999228
Calibration curve: 2.34564 * x + -0.0870961
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999729
Calibration curve: -0.000792822 * x^2 + 2.26726 * x + -0.243927
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

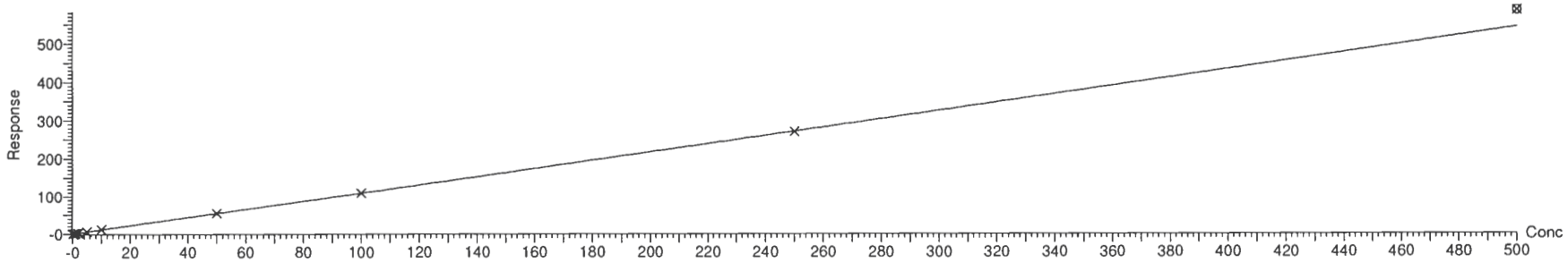


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

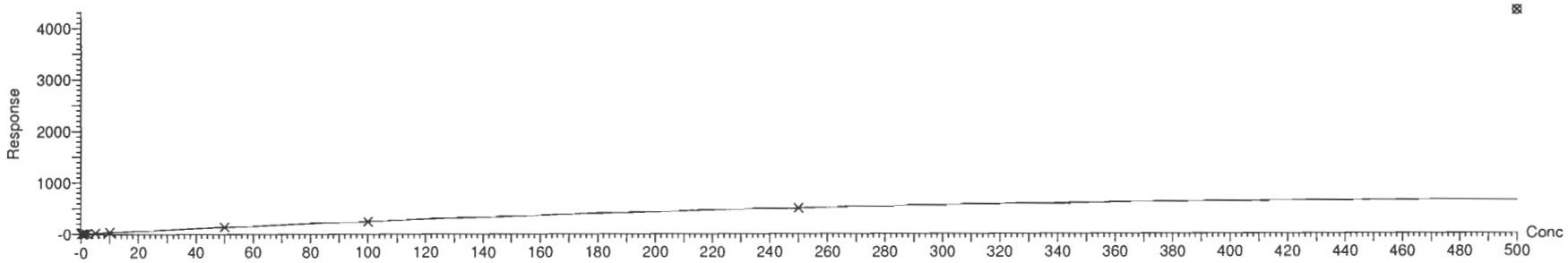
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFHxA
Correlation coefficient: r = 0.999847, r^2 = 0.999694
Calibration curve: 1.08068 * x + 0.00169652
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999451
Calibration curve: -0.00282776 * x^2 + 2.67923 * x + -0.285128
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



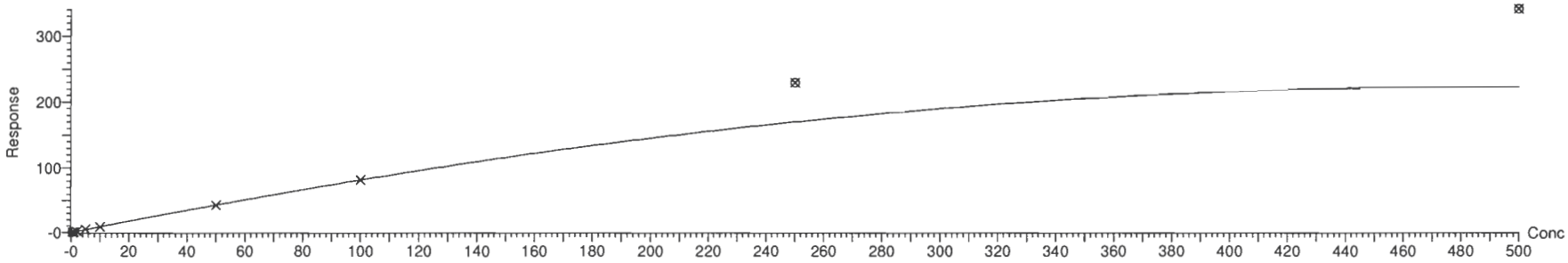
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory Q1

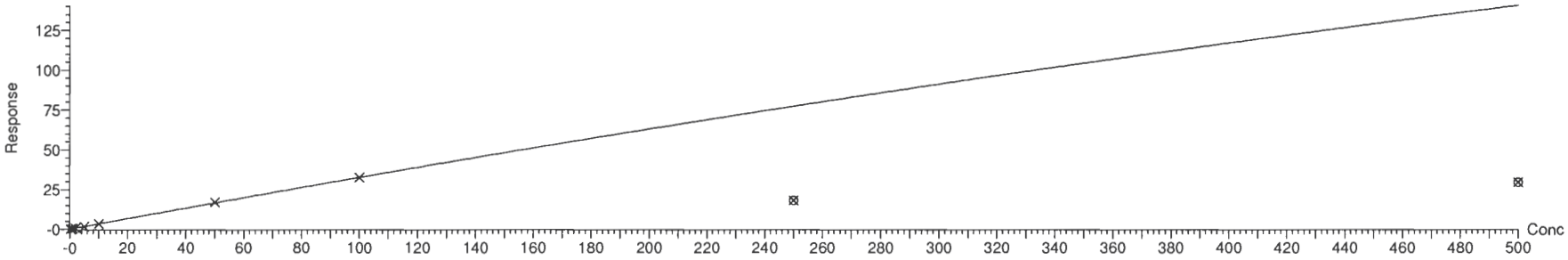
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: HFPO-DA
Coefficient of Determination: R^2 = 0.998394
Calibration curve: -0.000936982 * x^2 + 0.914428 * x + -0.527708
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: 5:3 FTCA
Coefficient of Determination: R^2 = 0.999352
Calibration curve: -0.000114717 * x^2 + 0.338399 * x + -0.0279812
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

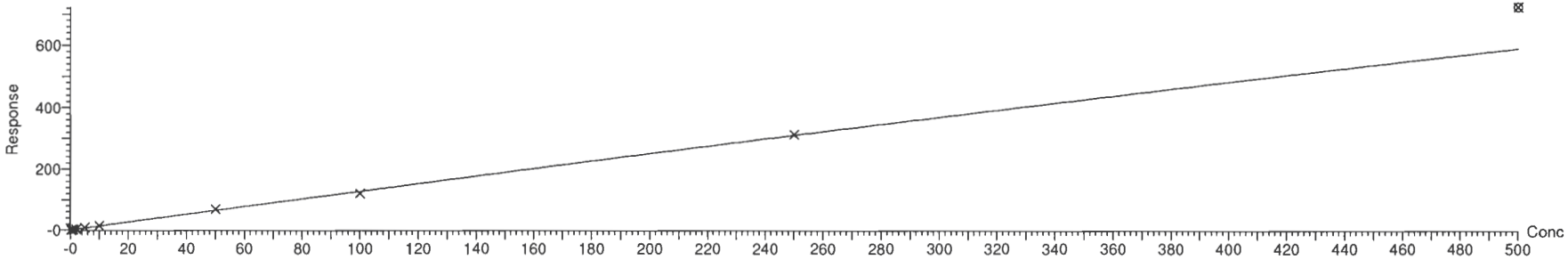


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

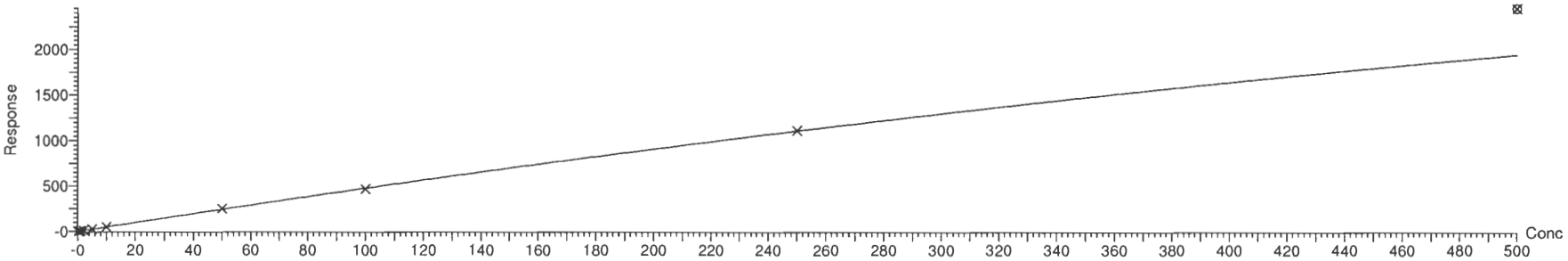
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFHpA
Coefficient of Determination: R^2 = 0.998196
Calibration curve: -0.000254937 * x^2 + 1.30794 * x + -0.0871493
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: ADONA
Coefficient of Determination: R^2 = 0.999618
Calibration curve: -0.00220737 * x^2 + 4.9932 * x + -0.115029
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

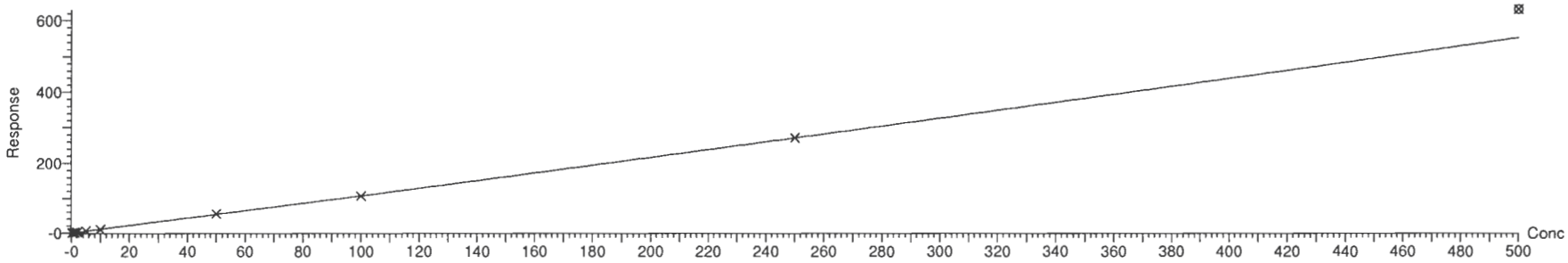


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

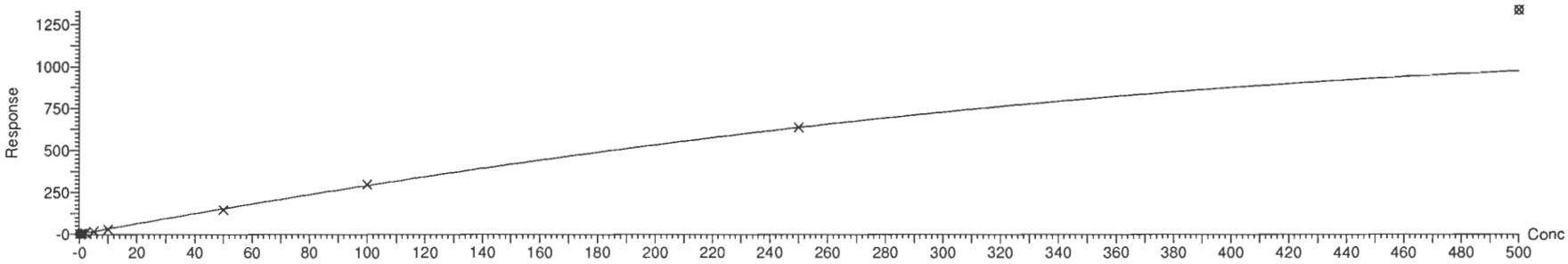
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.999518
Calibration curve: 7.94953e-005 * x^2 + 1.06282 * x + -0.121755
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.999579
Calibration curve: -0.00238759 * x^2 + 3.14059 * x
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: Null, Axis trans: None

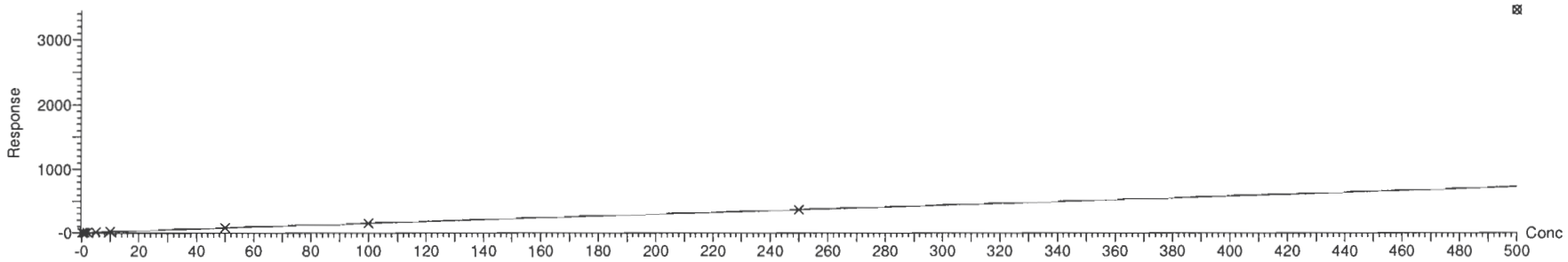


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

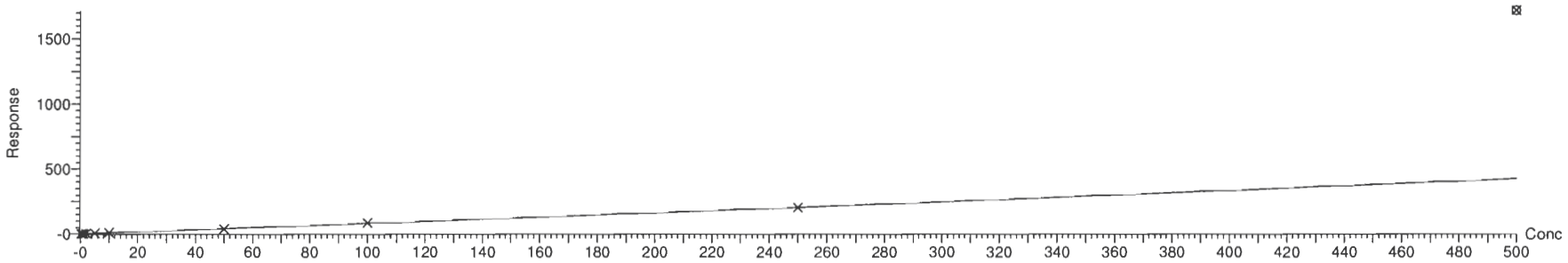
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: L-PFOA
Correlation coefficient: r = 0.999767, r^2 = 0.999534
Calibration curve: 1.45172 * x + 0.11617
Response type: Internal Std (Ref 69), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFecHS
Coefficient of Determination: R^2 = 0.999301
Calibration curve: 0.000135882 * x^2 + 0.779117 * x + -0.114263
Response type: Internal Std (Ref 69), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

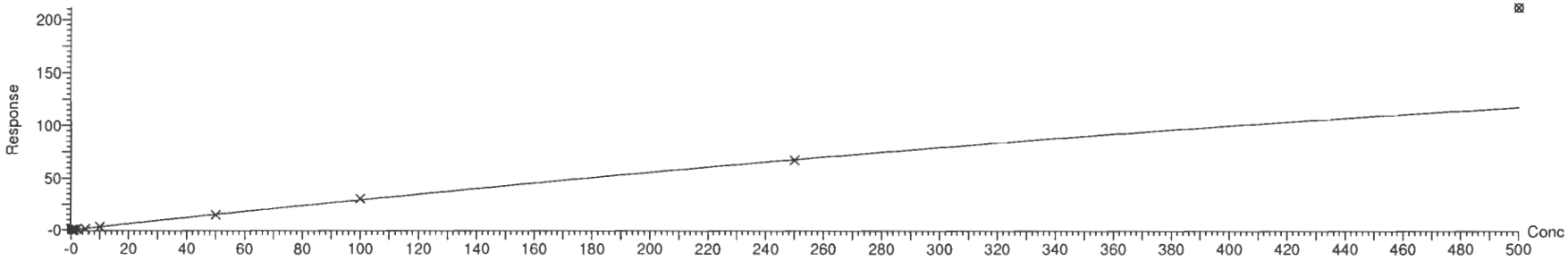


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

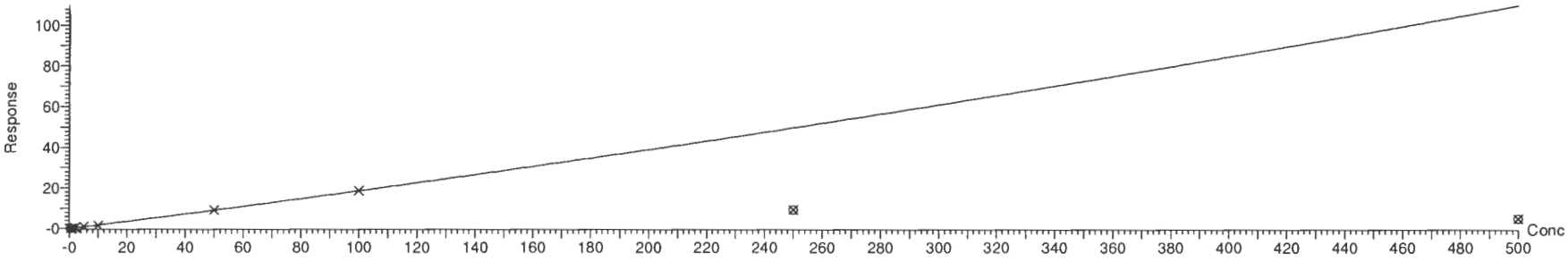
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFHpS
Coefficient of Determination: R^2 = 0.997855
Calibration curve: -0.000147793 * x^2 + 0.309325 * x + -0.132365
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: 7:3 FTCA
Coefficient of Determination: R^2 = 0.997562
Calibration curve: 8.04903e-005 * x^2 + 0.179896 * x + -0.117997
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

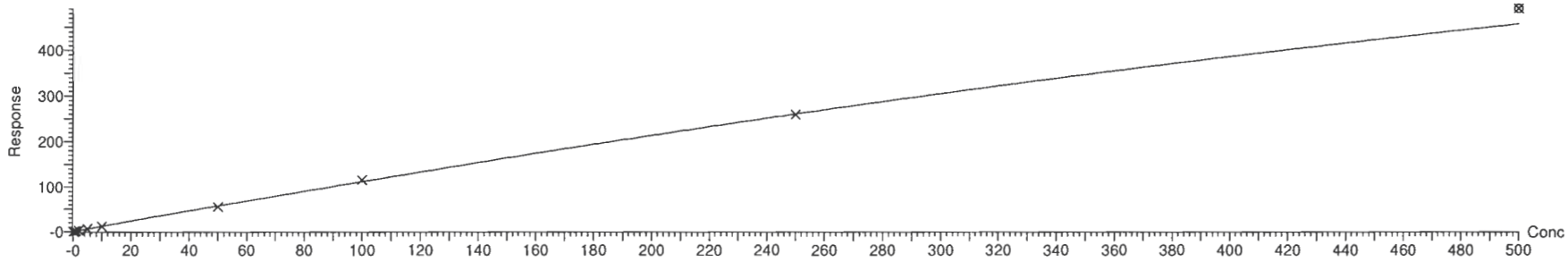


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

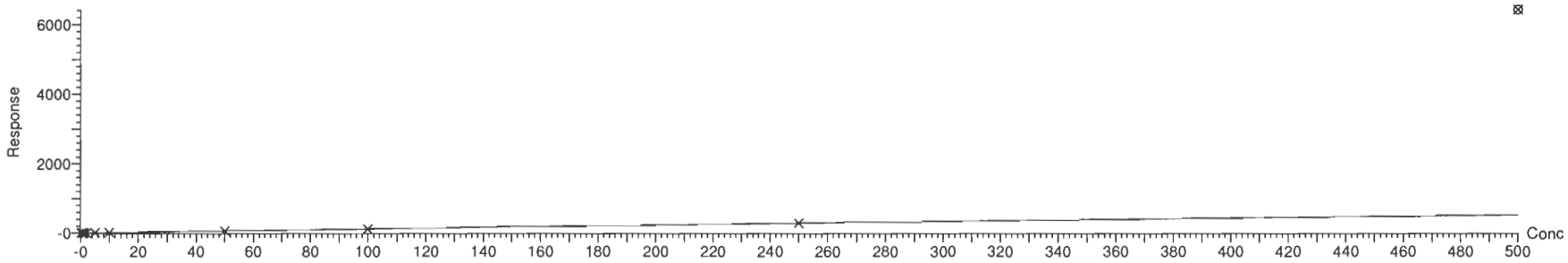
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999332
Calibration curve: -0.000509947 * x^2 + 1.16841 * x + -0.0515936
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999656
Calibration curve: -0.00032434 * x^2 + 1.20662 * x + -0.0271428
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

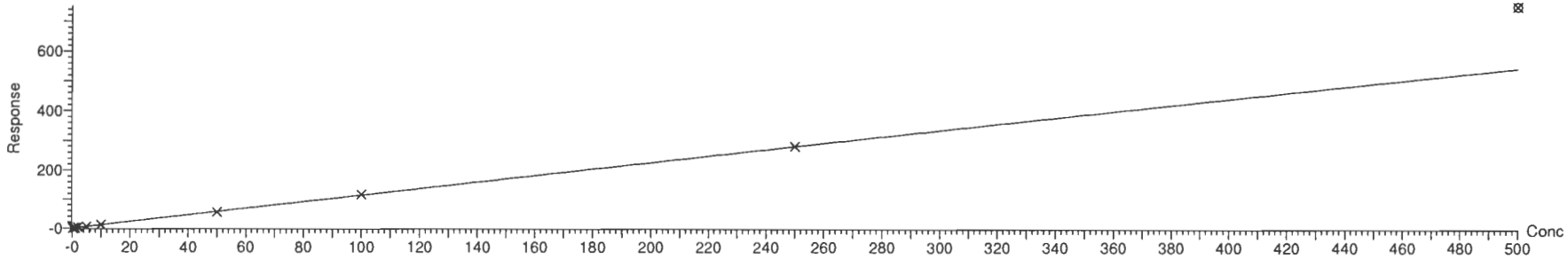


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

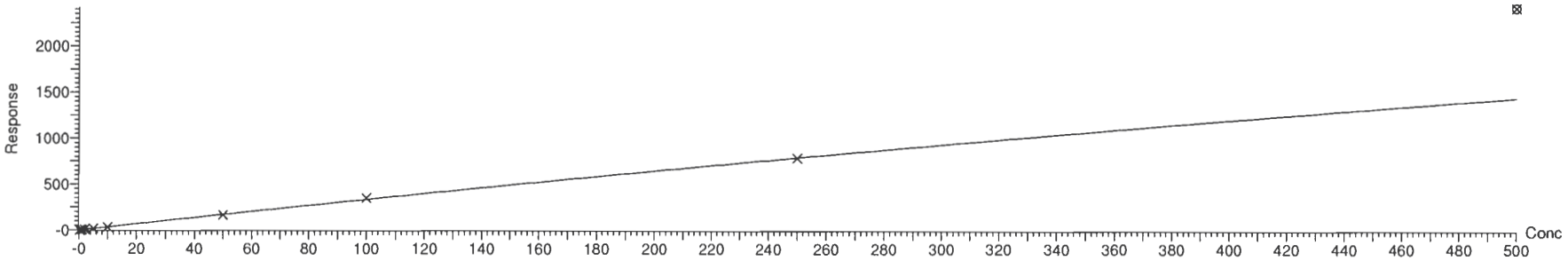
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999840
Calibration curve: -0.000147321 * x^2 + 1.16219 * x
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Force, Weighting: Null, Axis trans: None



Compound name: 9Cl-PF30NS
Coefficient of Determination: R^2 = 0.999056
Calibration curve: -0.0011756 * x^2 + 3.47248 * x + -0.348595
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

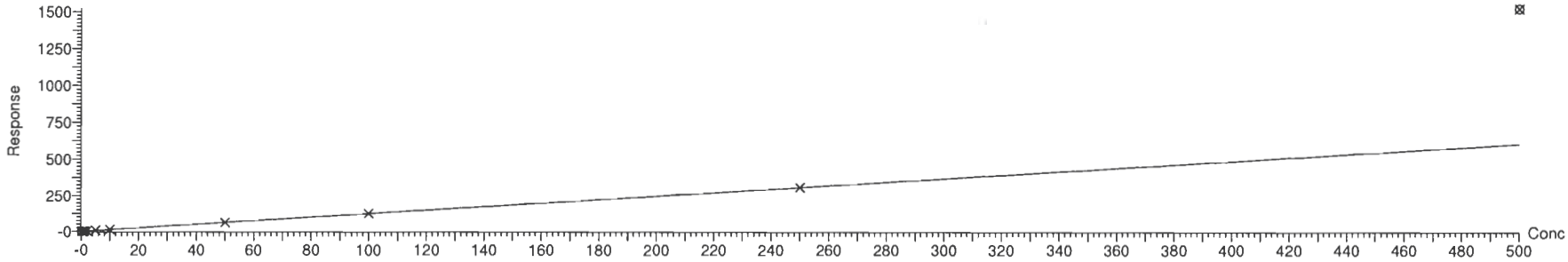


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

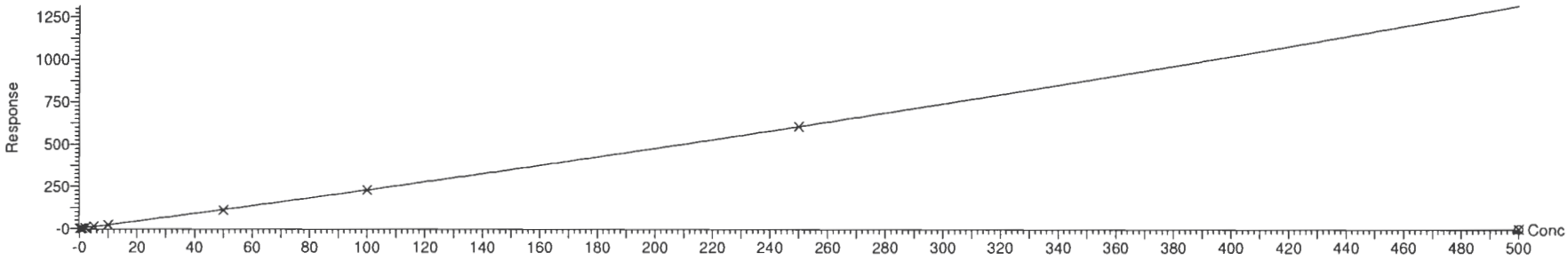
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999244
Calibration curve: -9.04543e-005 * x^2 + 1.25326 * x + 0.00967378
Response type: Internal Std (Ref 73), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.999240
Calibration curve: 0.000847967 * x^2 + 2.21221 * x + -0.0555202
Response type: Internal Std (Ref 75), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

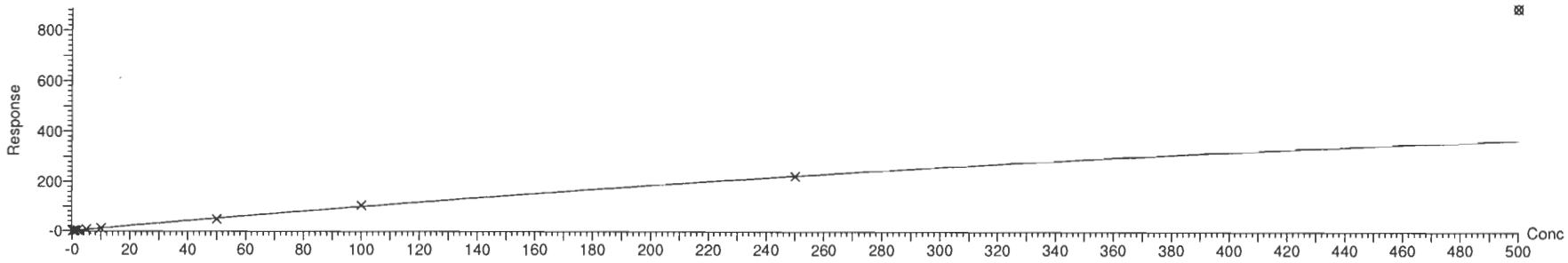


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

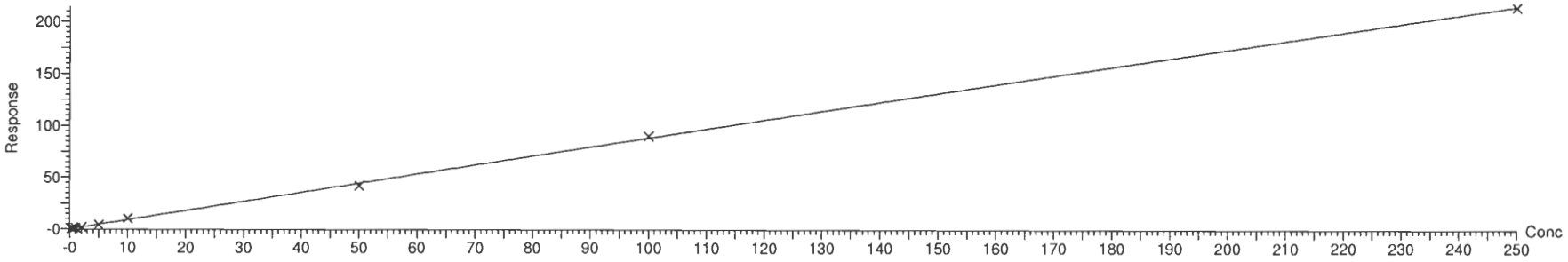
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:31 Pacific Standard Time

Compound name: PFNS
Coefficient of Determination: R^2 = 0.998089
Calibration curve: -0.000649828 * x^2 + 1.05778 * x + -0.117577
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.998884
Calibration curve: -0.000164398 * x^2 + 0.900256 * x + -0.039526
Response type: Internal Std (Ref 77), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



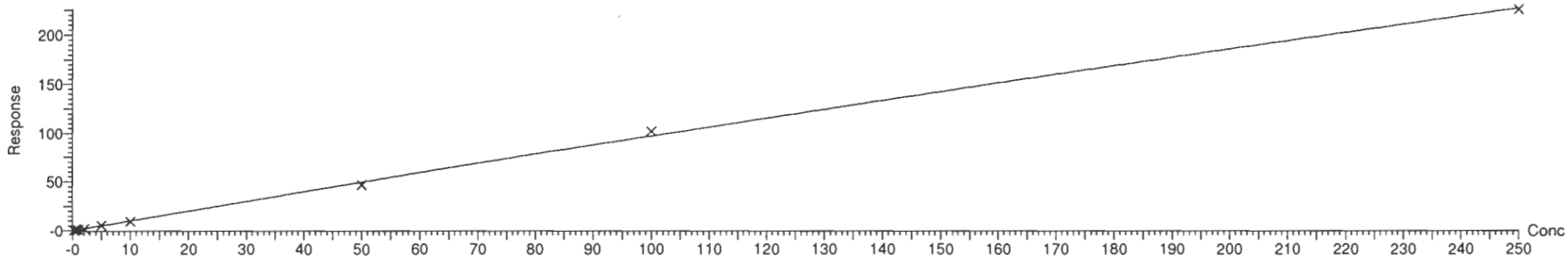
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

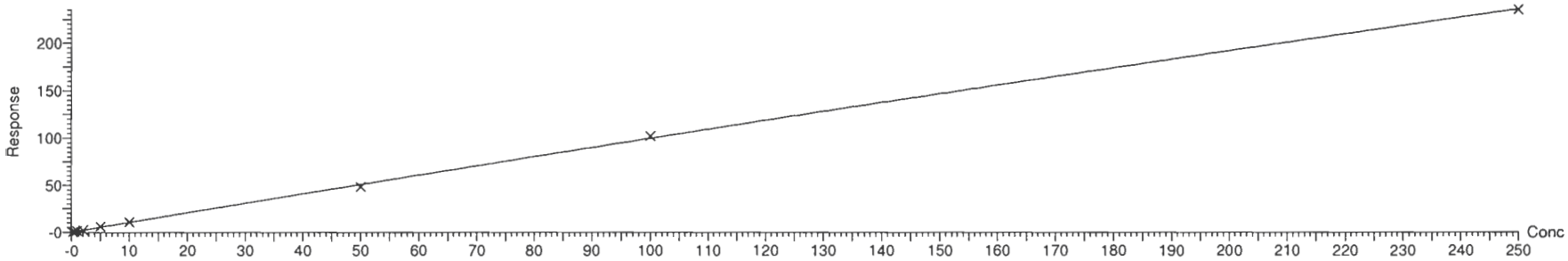
Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021320.mdb 13 Feb 2020 13:56:38
Calibration: P:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_02-13-20.cdb 13 Feb 2020 13:55:50

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.998490
Calibration curve: -0.000415609 * x^2 + 1.01126 * x + -0.0376791
Response type: Internal Std (Ref 81), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999198
Calibration curve: -0.000353826 * x^2 + 1.03021 * x + 0.0108515
Response type: Internal Std (Ref 79), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

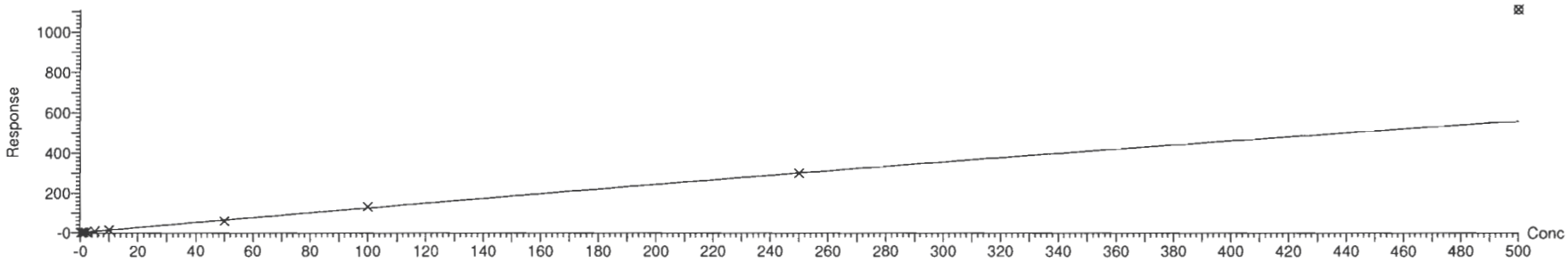


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

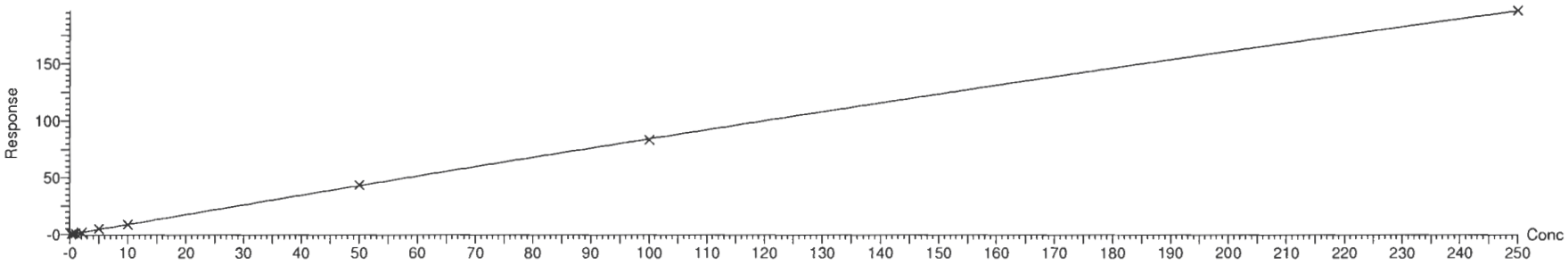
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: PFDS
Coefficient of Determination: R^2 = 0.998254
Calibration curve: -0.000347791 * x^2 + 1.28819 * x + -0.0935305
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: 11Cl-PF30UdS
Coefficient of Determination: R^2 = 0.999767
Calibration curve: -0.00037379 * x^2 + 0.87972 * x + 0.011818
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



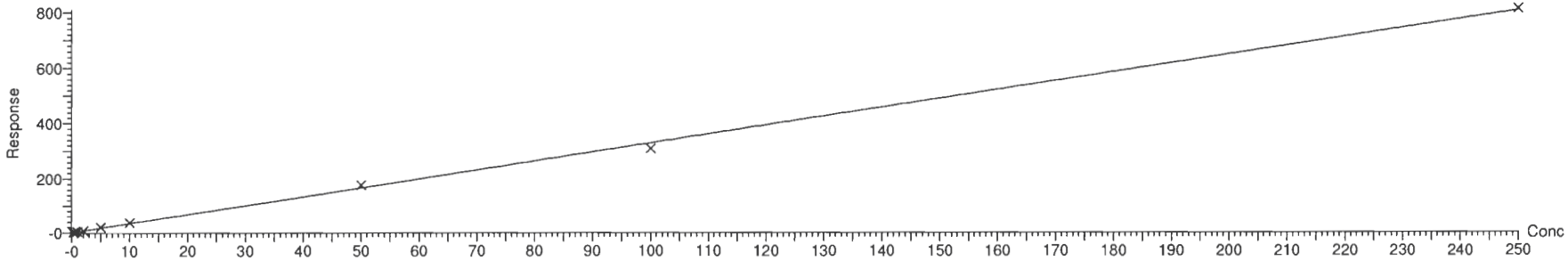
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory Q1

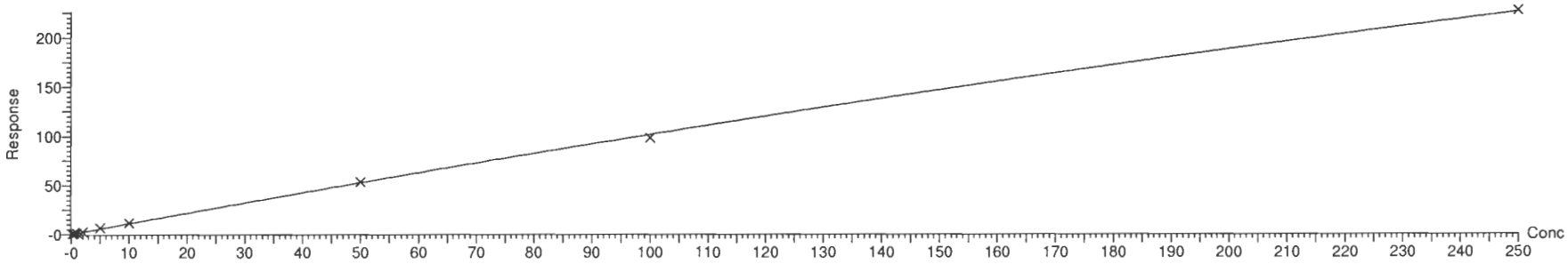
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: 10:2 FTS
Coefficient of Determination: R^2 = 0.998049
Calibration curve: -0.000410297 * x^2 + 3.31782 * x + 0.349258
Response type: Internal Std (Ref 85), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999049
Calibration curve: -0.00074147 * x^2 + 1.08705 * x + 0.054034
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

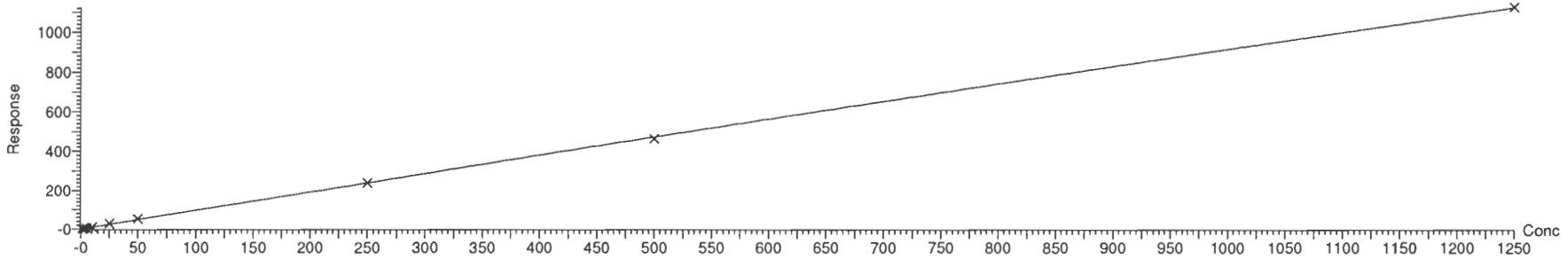


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory Q1

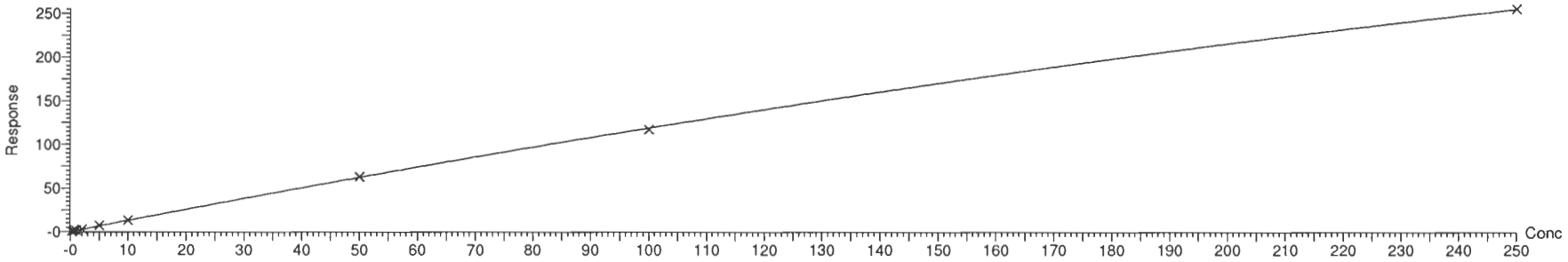
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999412
Calibration curve: -6.17098e-005 * x^2 + 0.976739 * x + -0.0661459
Response type: Internal Std (Ref 87), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999820
Calibration curve: -0.00112477 * x^2 + 1.30065 * x + 0.0523353
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



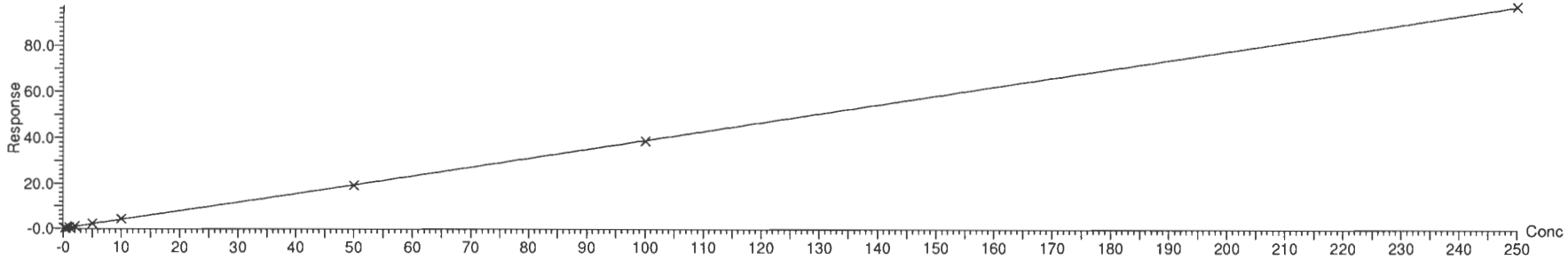
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory Q1

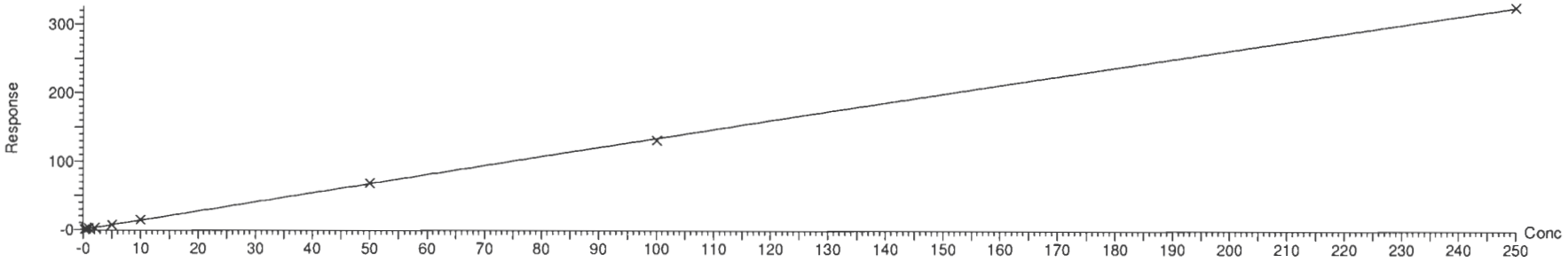
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: PFDoS
Coefficient of Determination: R^2 = 0.999746
Calibration curve: -9.08542e-006 * x^2 + 0.390215 * x + 0.00798781
Response type: Internal Std (Ref 89), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFTeDA
Coefficient of Determination: R^2 = 0.999728
Calibration curve: -0.000265915 * x^2 + 1.36903 * x + 0.0678797
Response type: Internal Std (Ref 89), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



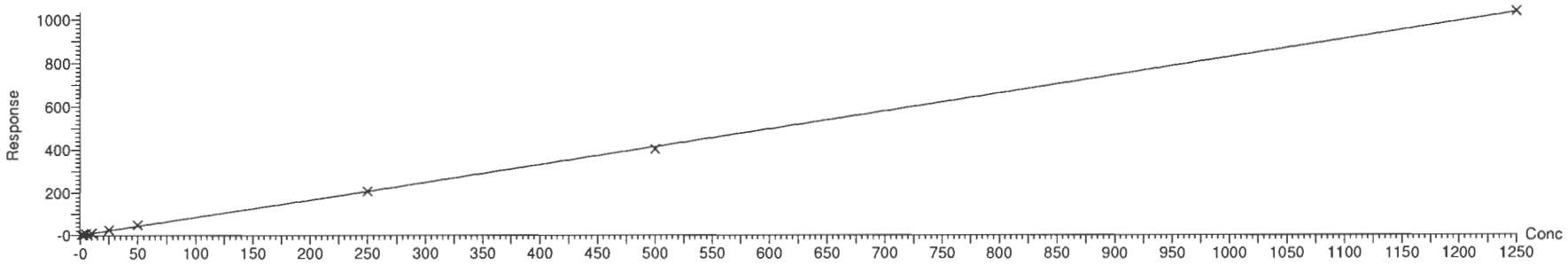
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory Q1

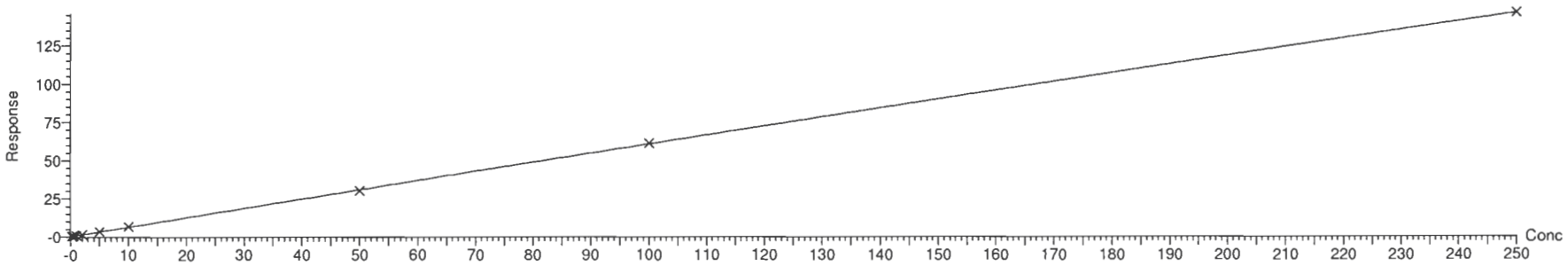
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: N-EtFOSA
Correlation coefficient: r = 0.999515, r^2 = 0.999031
Calibration curve: 0.82533 * x + 0.0107008
Response type: Internal Std (Ref 91), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999863
Calibration curve: -0.000140365 * x^2 + 0.619391 * x + 0.120842
Response type: Internal Std (Ref 93), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

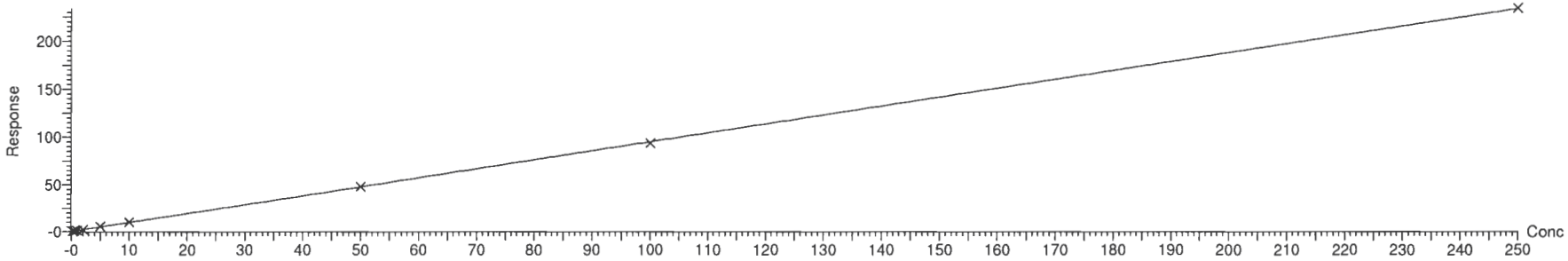


Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945** Page 7 of 8
Vista Analytical Laboratory Q1

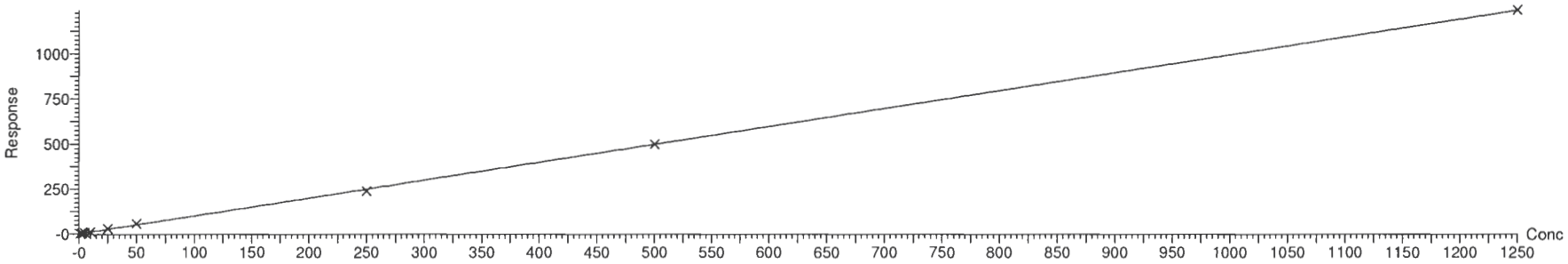
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: PFODA
Coefficient of Determination: R^2 = 0.999832
Calibration curve: -8.69823e-005 * x^2 + 0.95594 * x + 0.0425231
Response type: Internal Std (Ref 93), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: N-MeFOSE
Coefficient of Determination: R^2 = 0.999164
Calibration curve: -2.81765e-006 * x^2 + 0.995431 * x + 0.197809
Response type: Internal Std (Ref 95), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



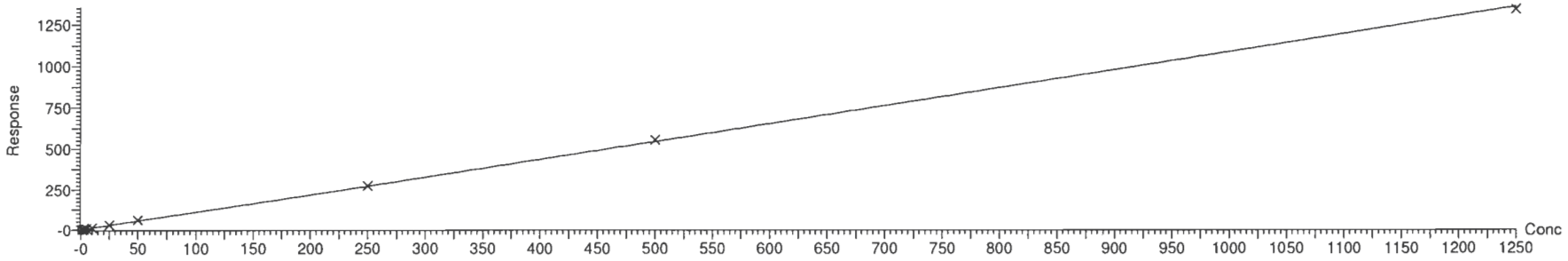
Quantify Calibration Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory Q1

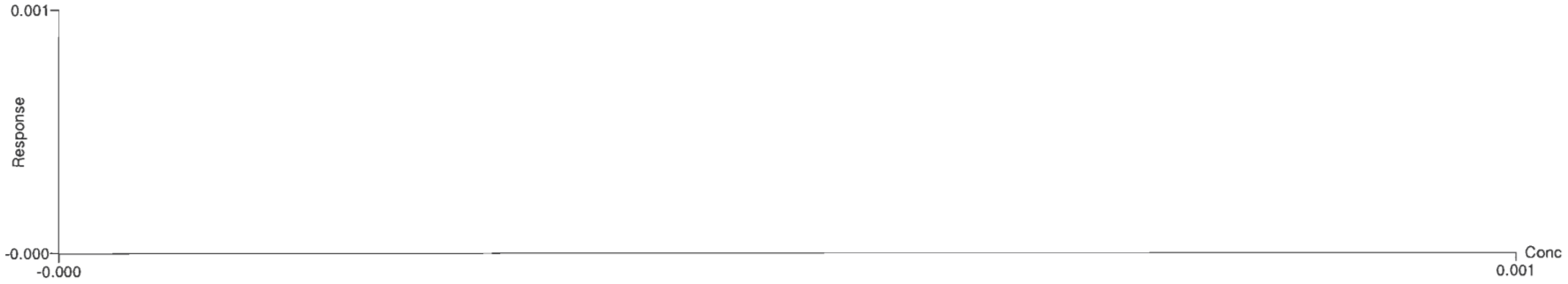
Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 13:56:40 Pacific Standard Time
Printed: Thursday, February 13, 2020 13:58:55 Pacific Standard Time

Compound name: N-EtFOSE
Correlation coefficient: r = 0.999814, r^2 = 0.999629
Calibration curve: 1.08477 * x + 0.877366
Response type: Internal Std (Ref 97), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: TDCA
No Calibration
Response type: External Std, Area
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



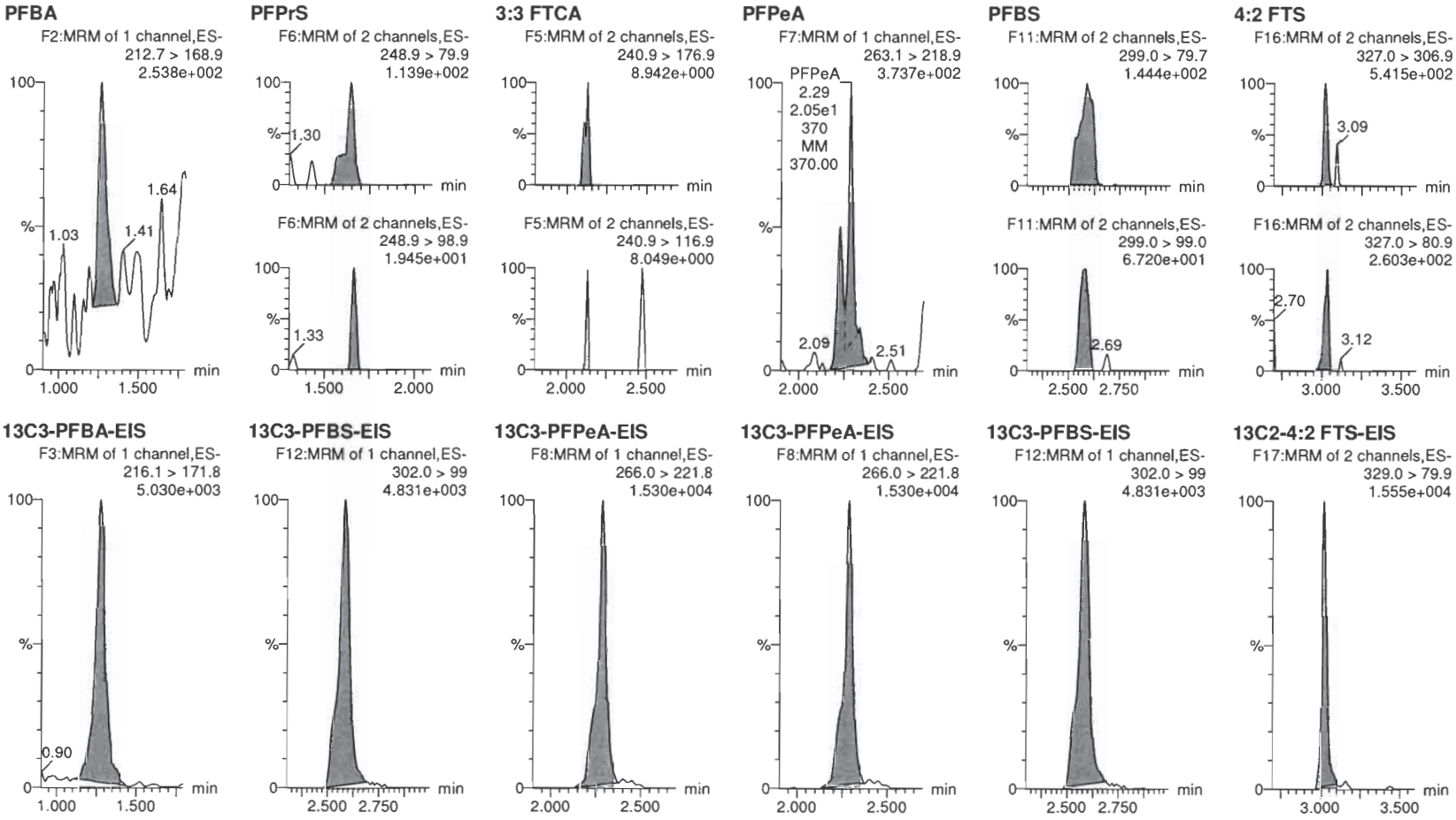
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 1 of 100
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 12:25:13 Pacific Standard Time
Printed: Thursday, February 13, 2020 12:25:25 Pacific Standard Time

Method: Z:\Projects\PFAS.PRO\MethDB\PFAS_FULL_80C_021220.mdb 12 Feb 2020 18:55:45
Calibration: 13 Feb 2020 12:25:13

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102



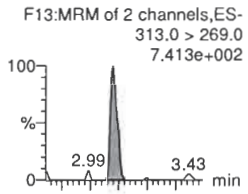
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 2 of 100
Vista Analytical Laboratory

Dataset: Untitled

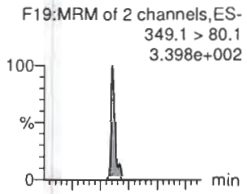
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

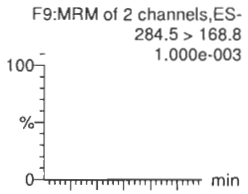
PFHxA



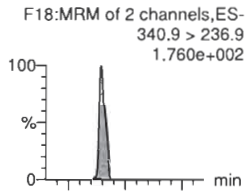
PFPeS



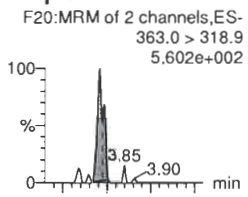
HFPO-DA



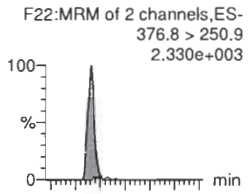
5:3 FTCA



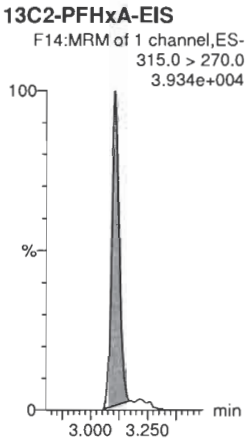
PFHpA



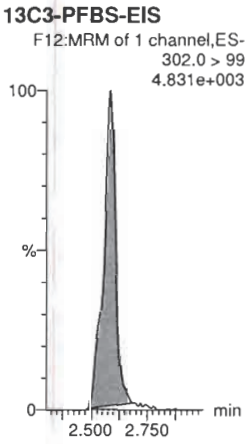
ADONA



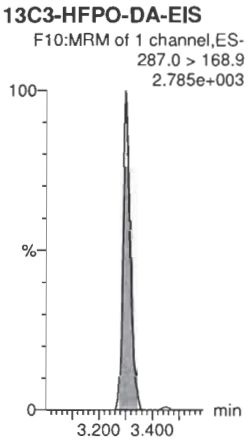
13C2-PFHxA-EIS



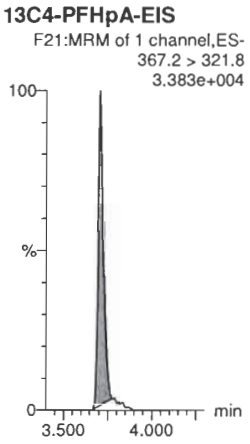
13C3-PFBS-EIS



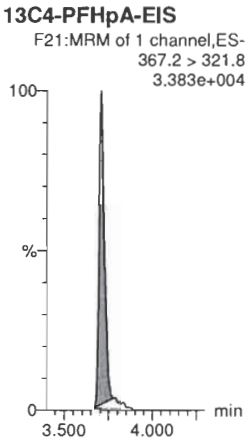
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



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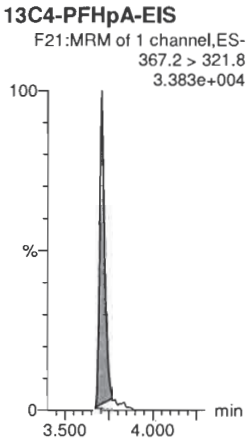

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

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Printed: Thursday, February 13, 2020 12:21:38 Pacific Standard Time

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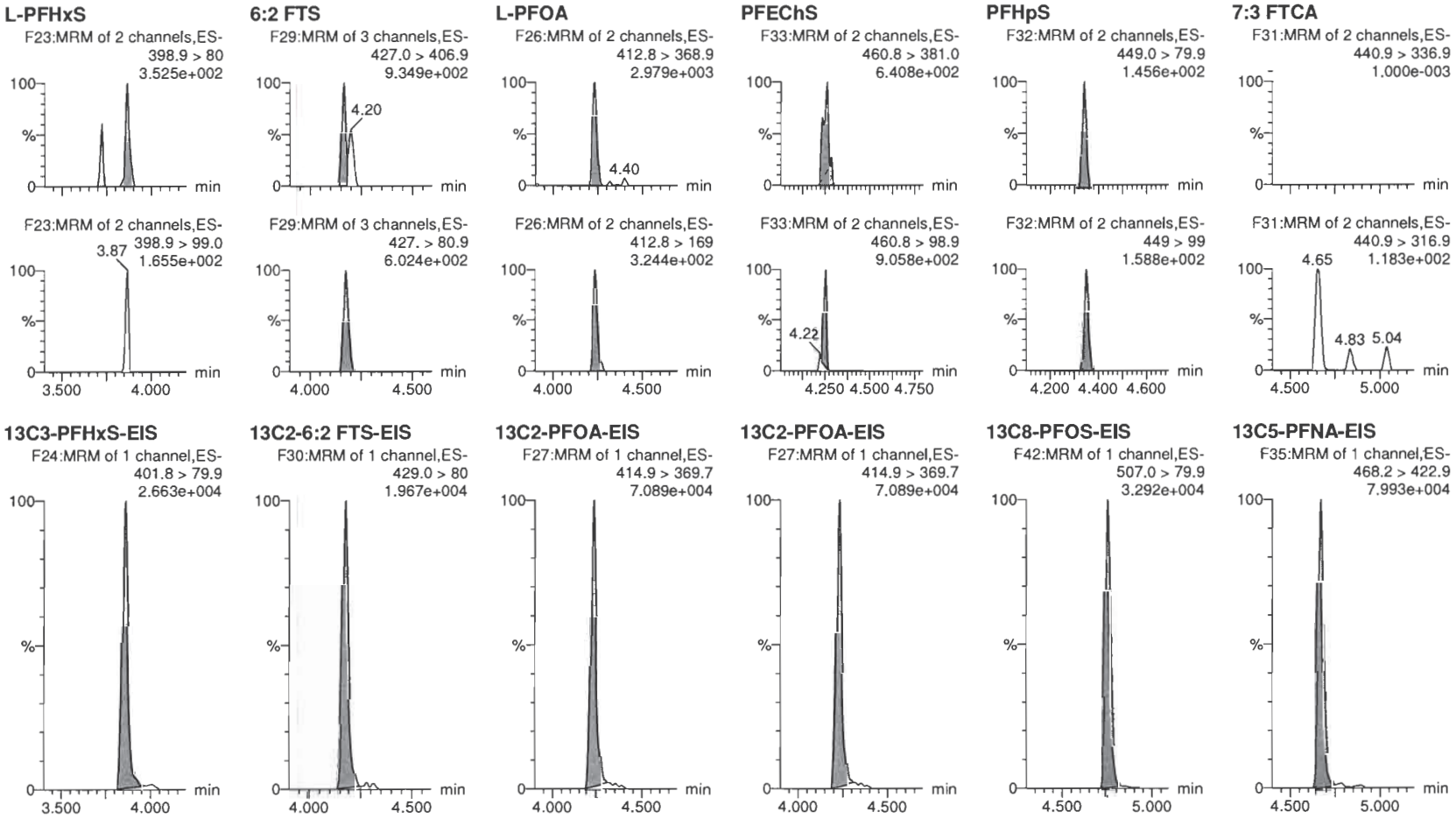

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 4 of 100
Vista Analytical Laboratory

Dataset: Untitled

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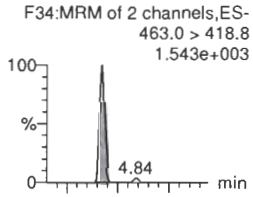

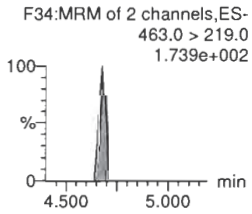

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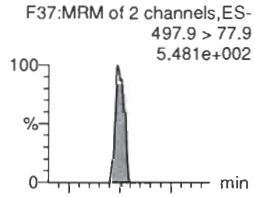

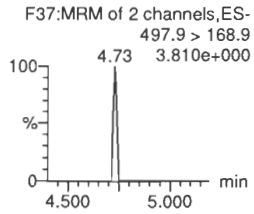

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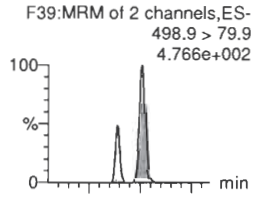

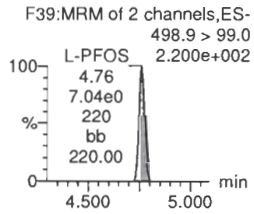

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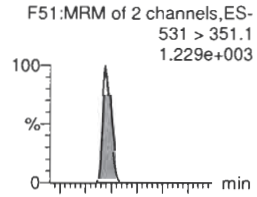

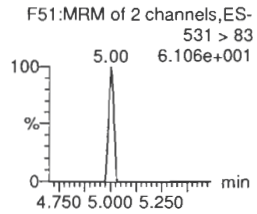

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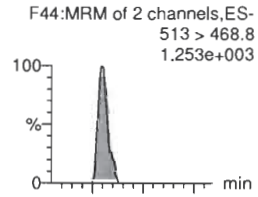

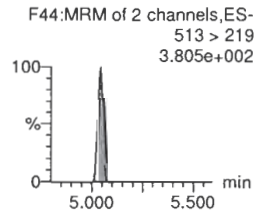

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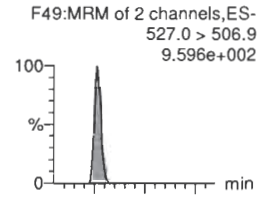

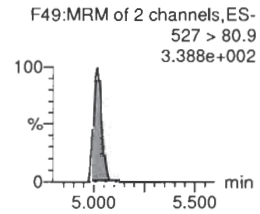

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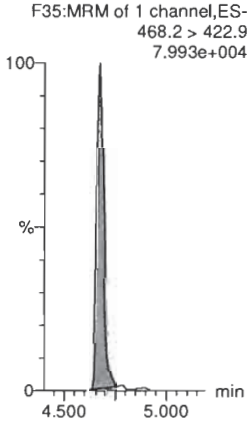

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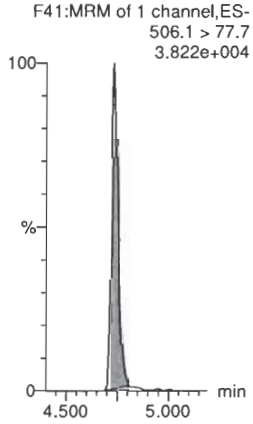

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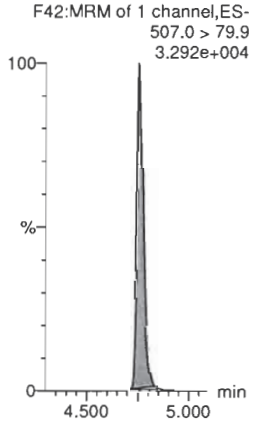

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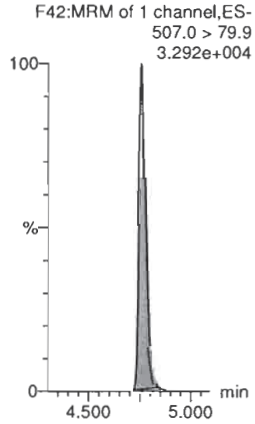

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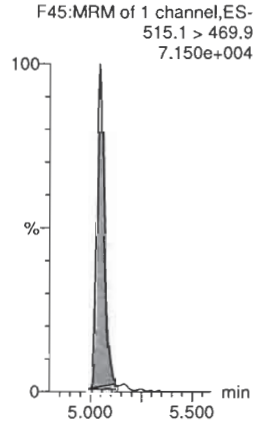

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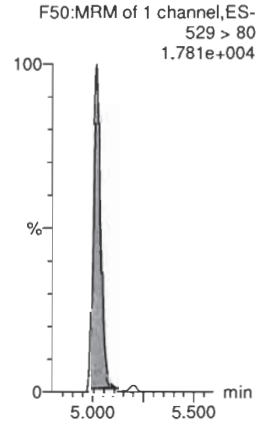

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 5 of 100
Vista Analytical Laboratory

Dataset: Untitled

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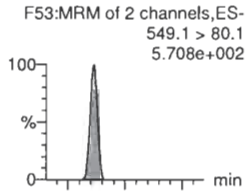

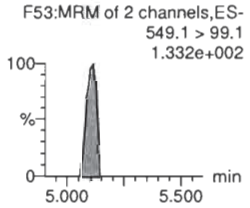

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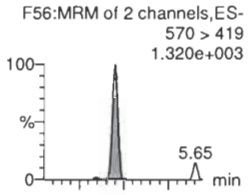

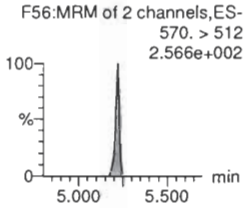

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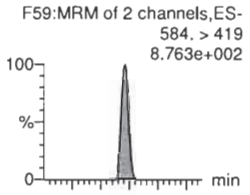

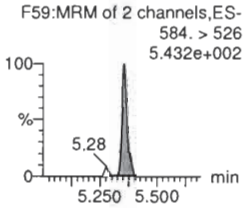

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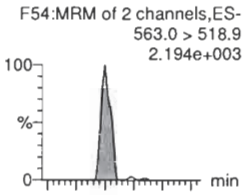

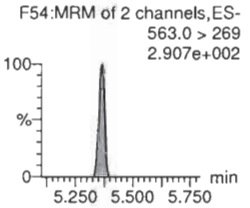

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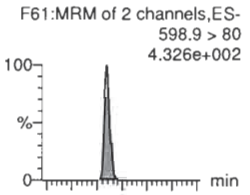

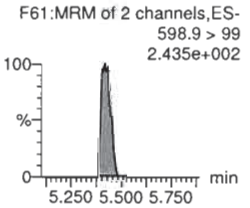

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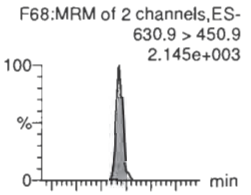

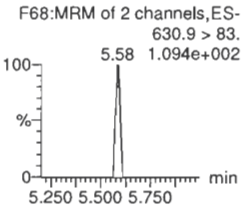

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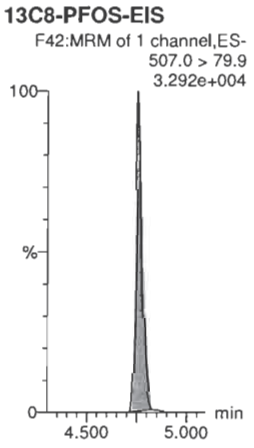

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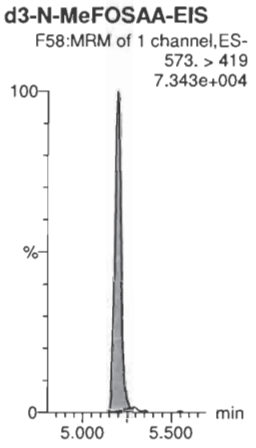

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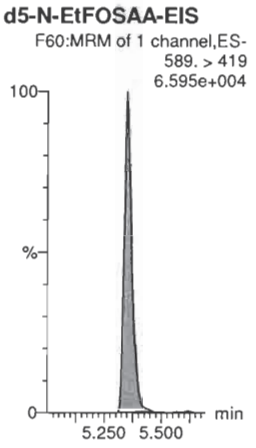

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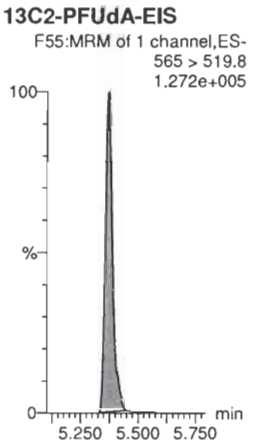

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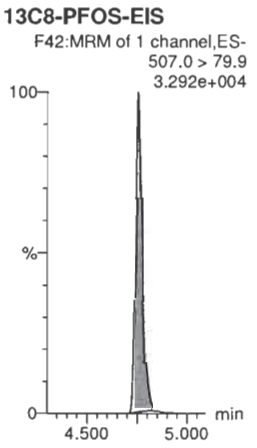

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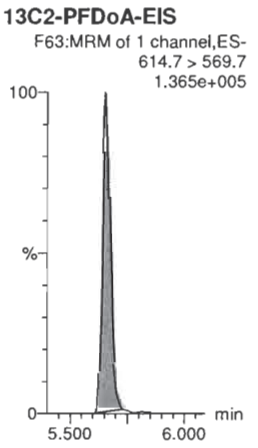

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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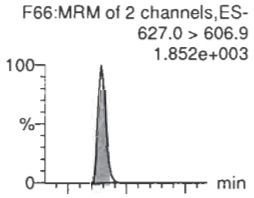
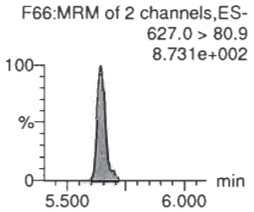
10:2 FTS





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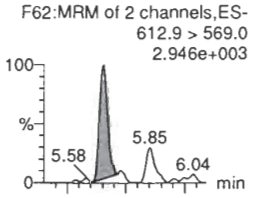

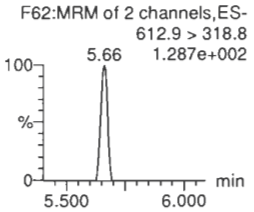

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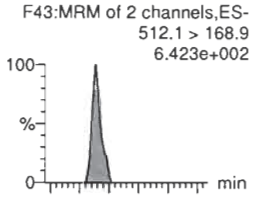

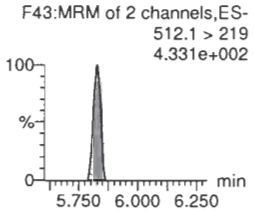

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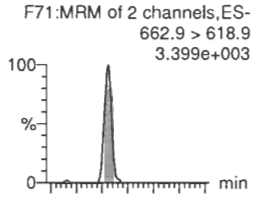

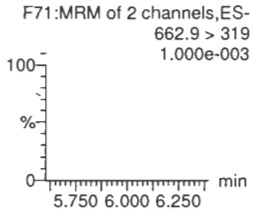

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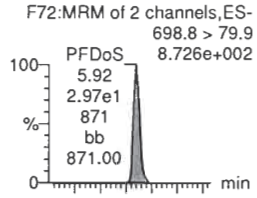

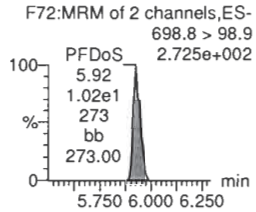

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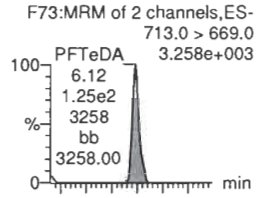

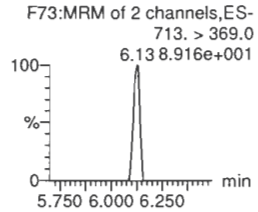

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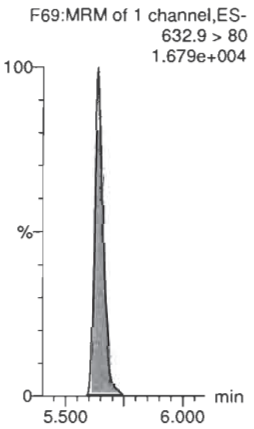
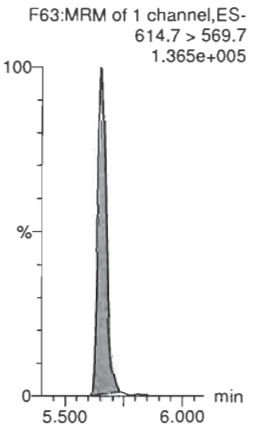
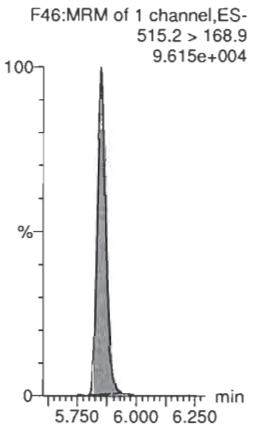


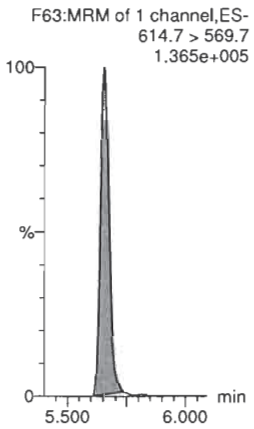
13C2-PFDoA-EIS



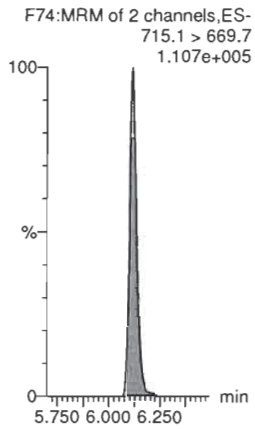
d3-N-MeFOSA-EIS



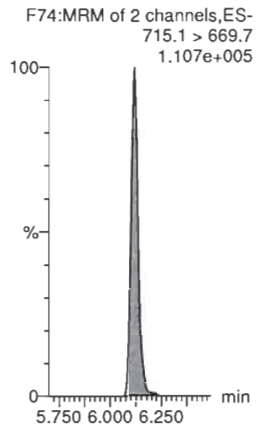
13C2-PFDoA-EIS



13C2-PFTeDA-EIS



13C2-PFTeDA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 12:21:15 Pacific Standard Time
Printed: Thursday, February 13, 2020 12:21:38 Pacific Standard Time

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

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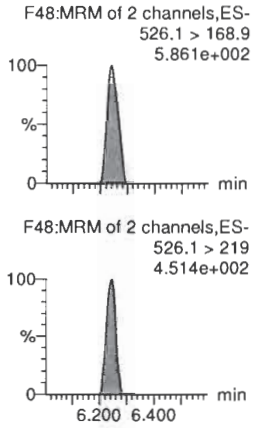
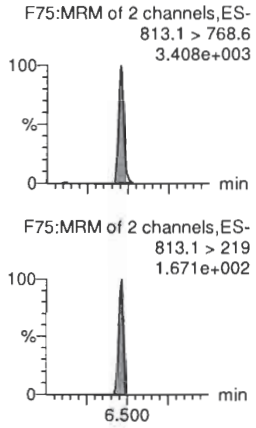
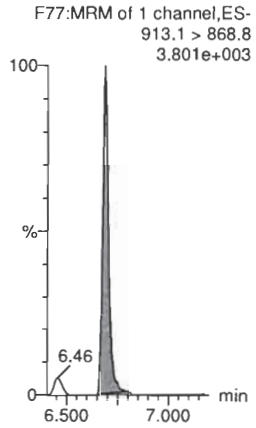


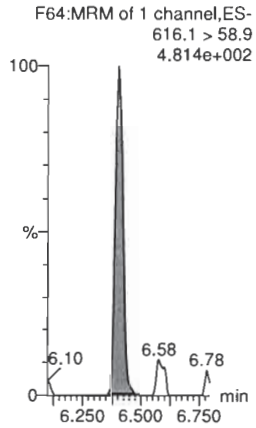
PFHxDA



PFODA



N-MeFOSE



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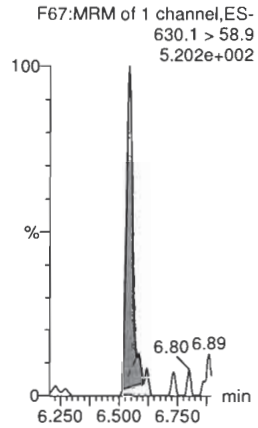
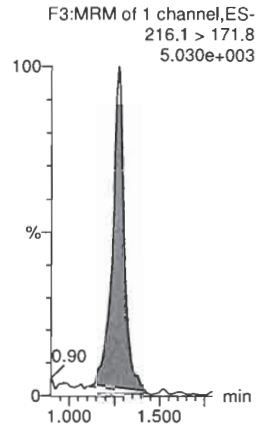
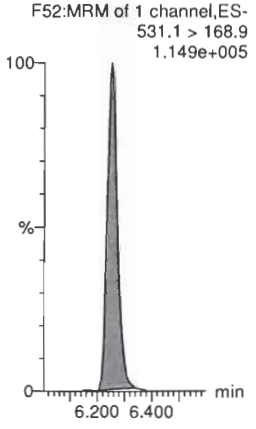


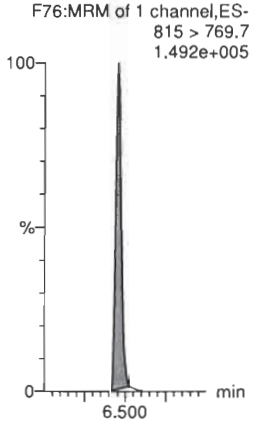
13C3-PFBA-RSD



d5-N-ETFOSA-EIS



13C2-PFHxDA-EIS



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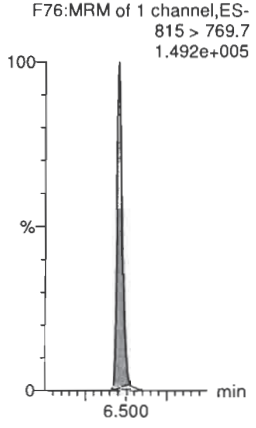
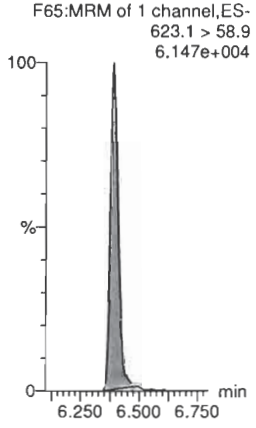
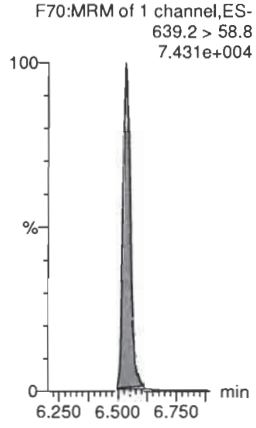


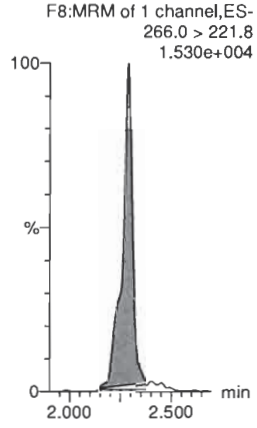
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



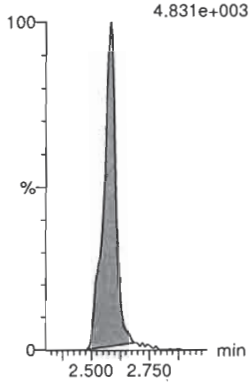
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

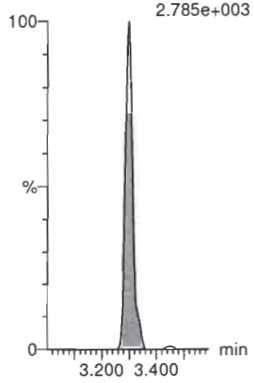
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

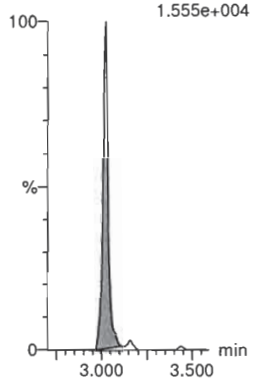
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
4.831e+003



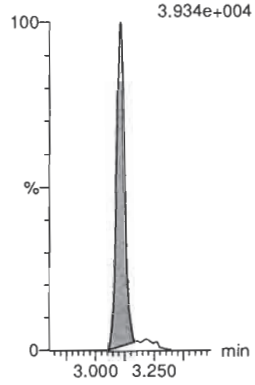
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.785e+003



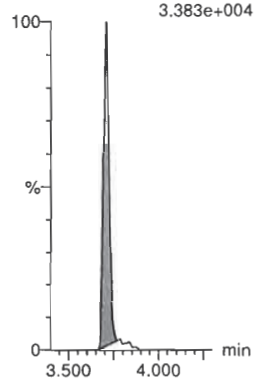
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.555e+004



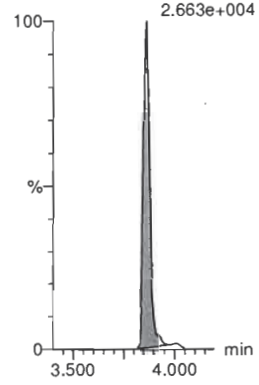
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
3.934e+004



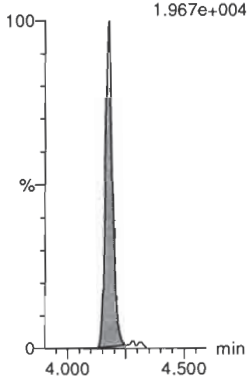
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.383e+004



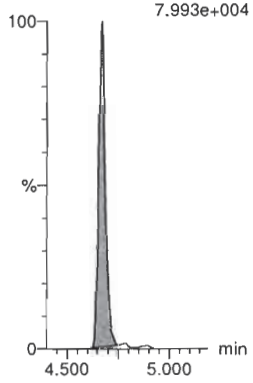
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.663e+004



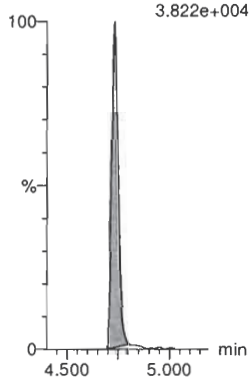
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.967e+004



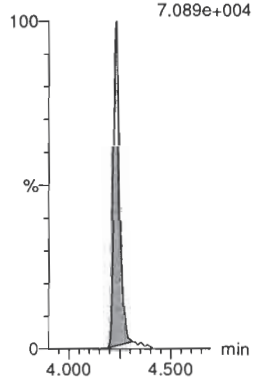
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
7.993e+004



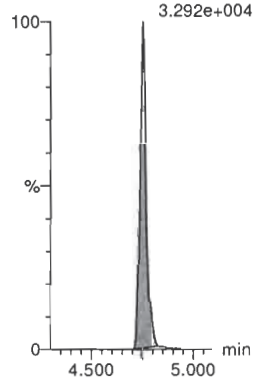
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.822e+004



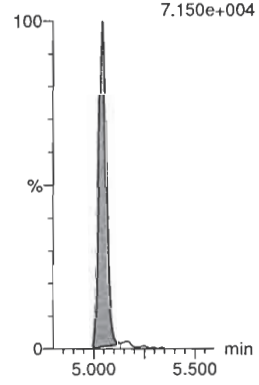
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.089e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.292e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
7.150e+004



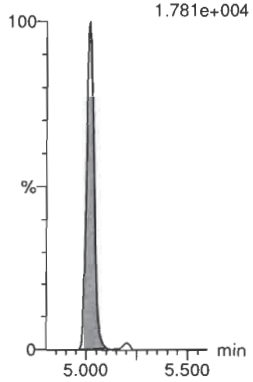
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 9 of 100
Vista Analytical Laboratory

Dataset: Untitled

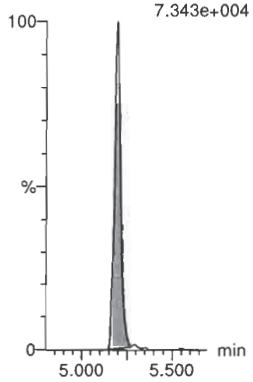
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

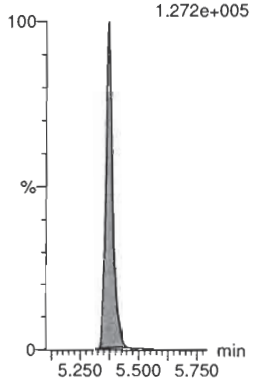
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.781e+004



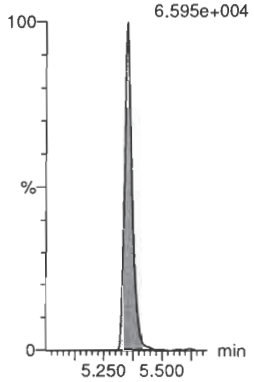
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.343e+004



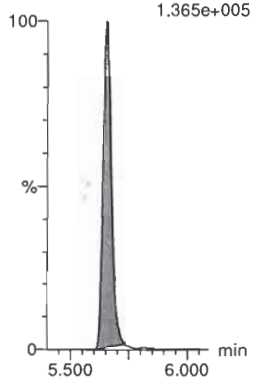
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.272e+005



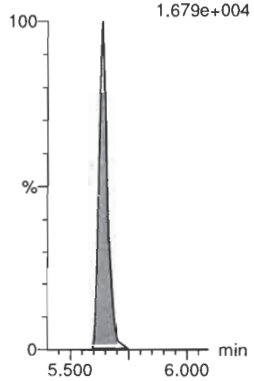
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
6.595e+004



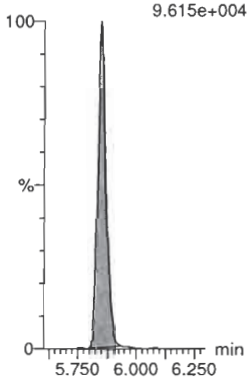
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.365e+005



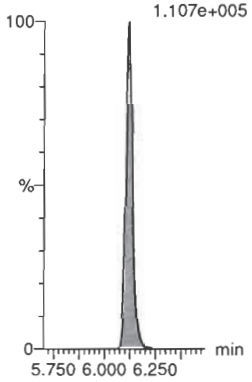
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.679e+004



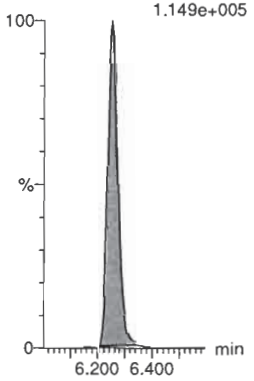
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.615e+004



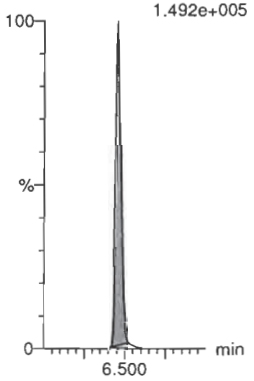
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.107e+005



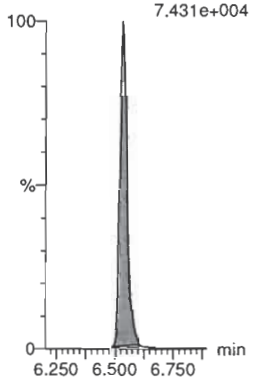
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.149e+005



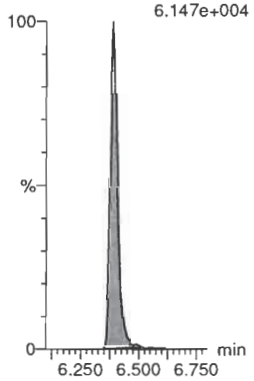
13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.492e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.431e+004



d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
6.147e+004



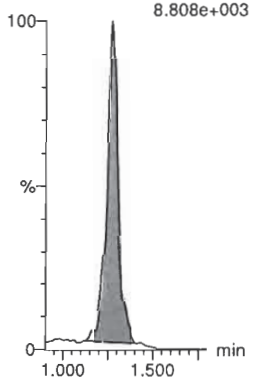
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 10 of 100
Vista Analytical Laboratory

Dataset: Untitled

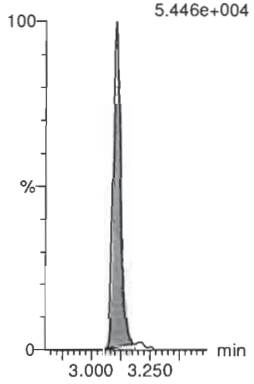
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_3, Date: 12-Feb-2020, Time: 19:30:08, ID: ST200212M2-1 PFC CS-2 20B1102, Description: PFC CS-2 20B1102

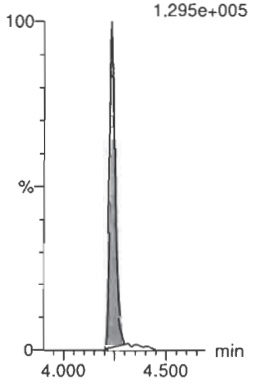
13C4-PFBA



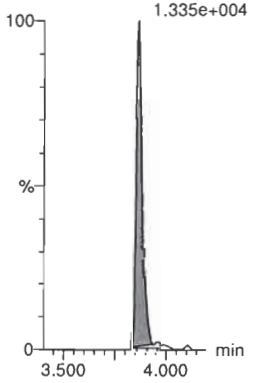
13C5-PFHxA



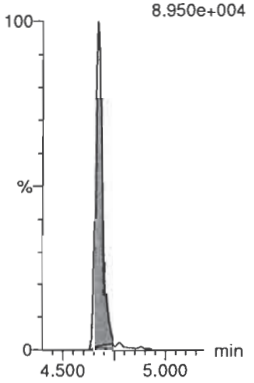
13C8-PFOA



18O2-PFHxS



13C9-PFNA



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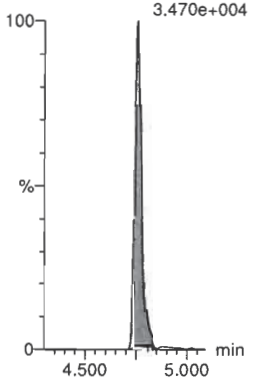

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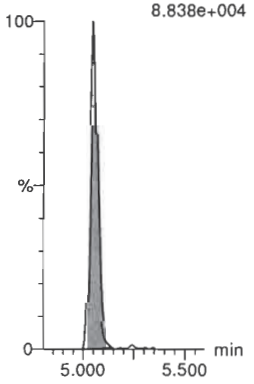

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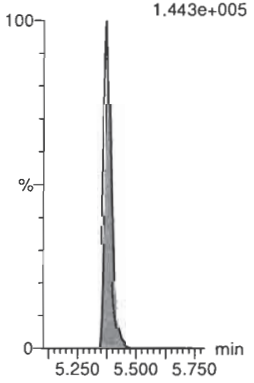

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 11 of 100
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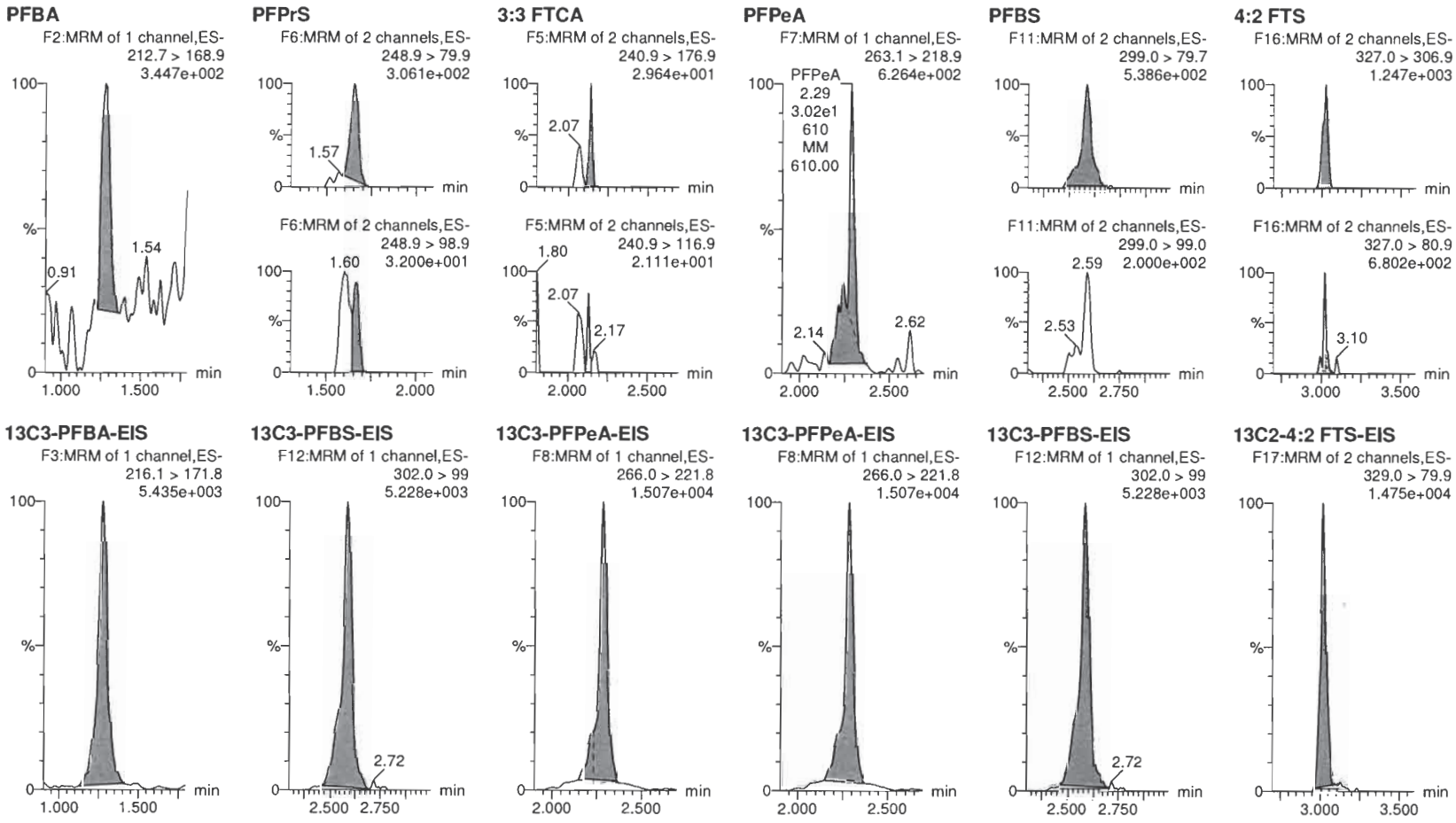

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 12 of 100
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Dataset: Untitled

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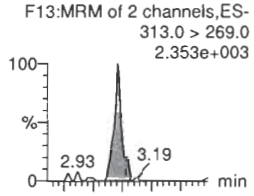

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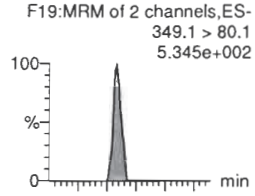

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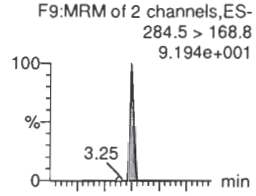

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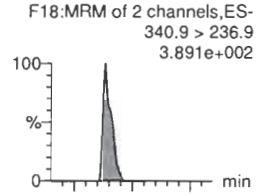

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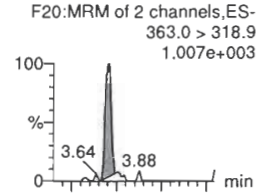

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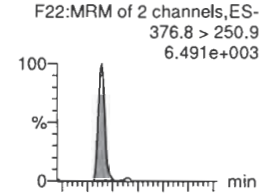

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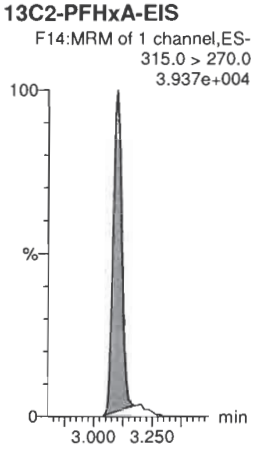

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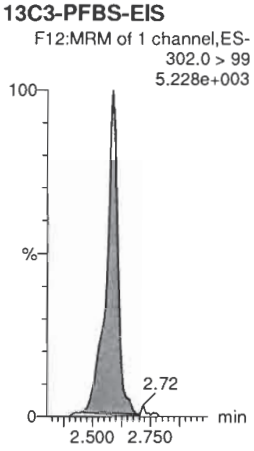

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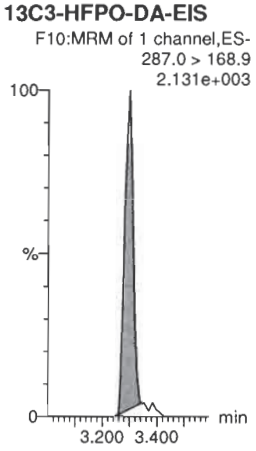

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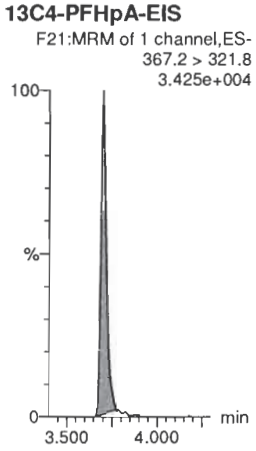

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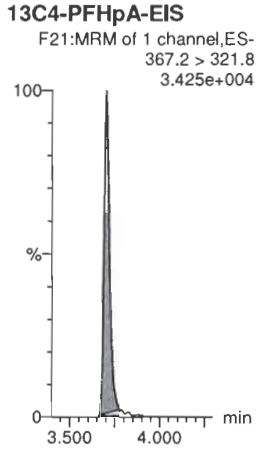

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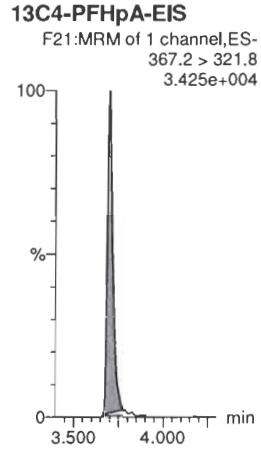

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Dataset: Untitled

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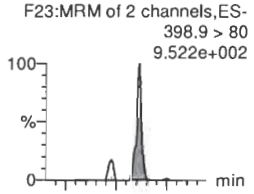

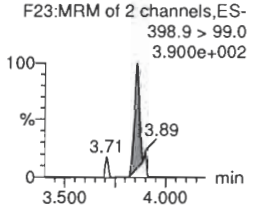

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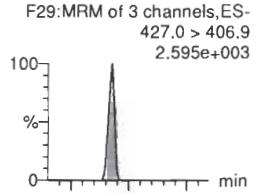

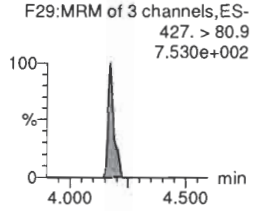

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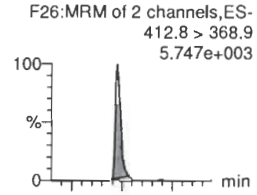

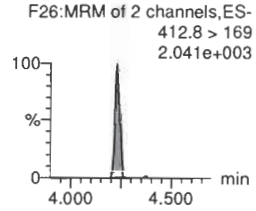

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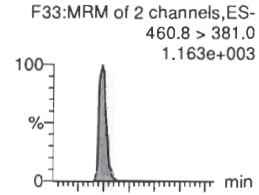

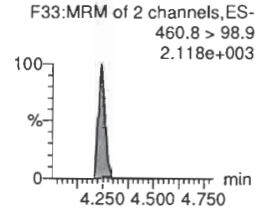

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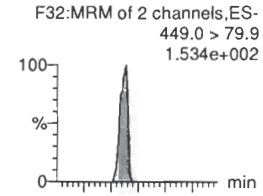

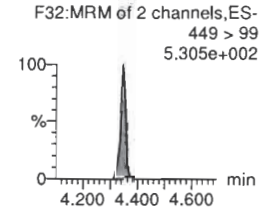

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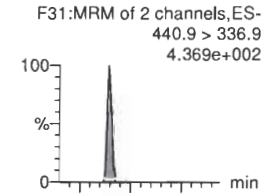

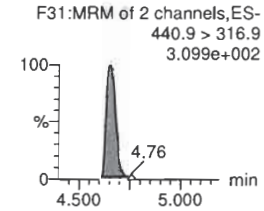

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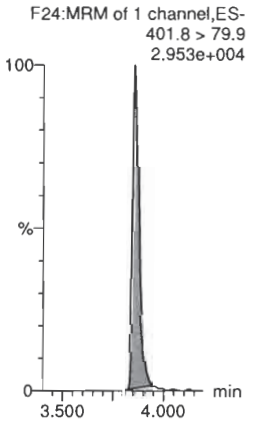

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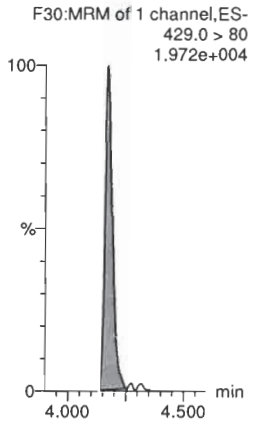

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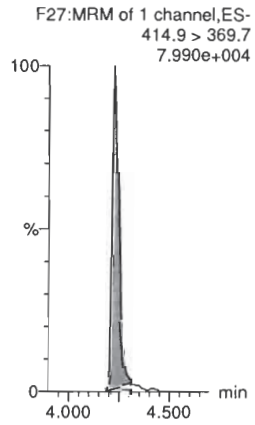

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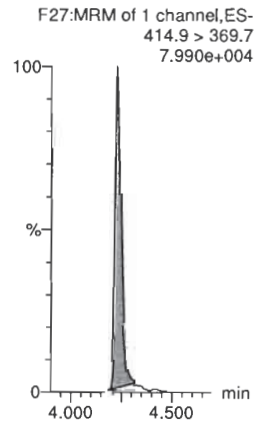

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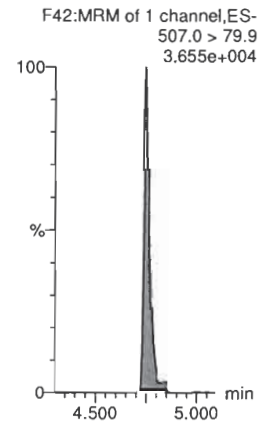

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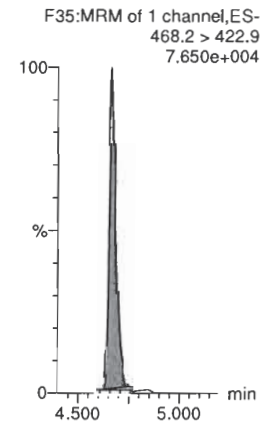

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

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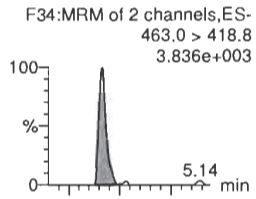

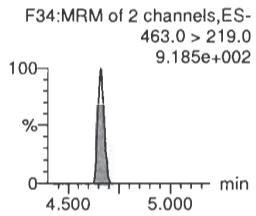

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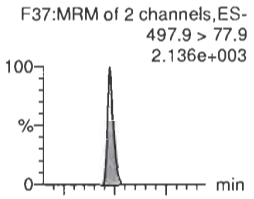
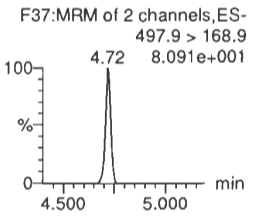
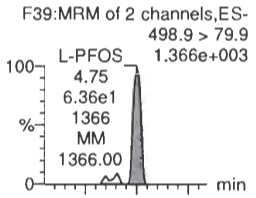
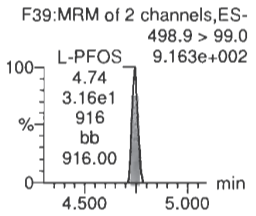




L-PFOS





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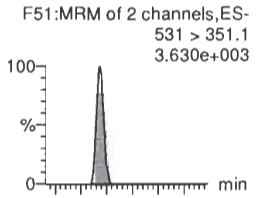

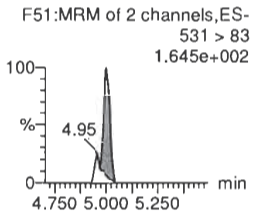

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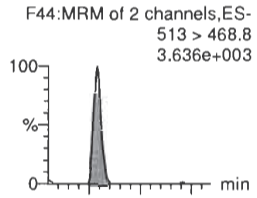

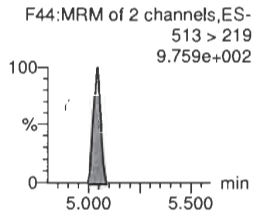

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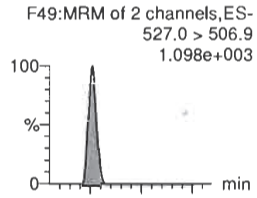

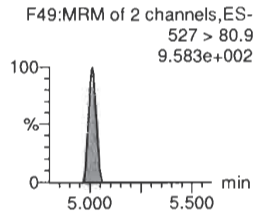

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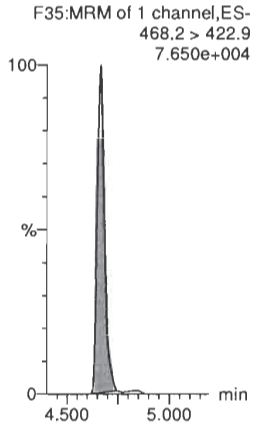

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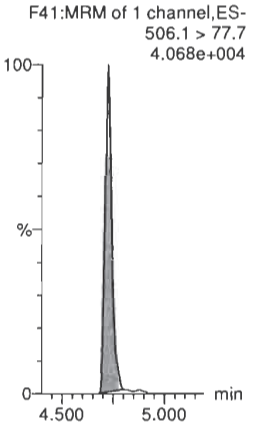

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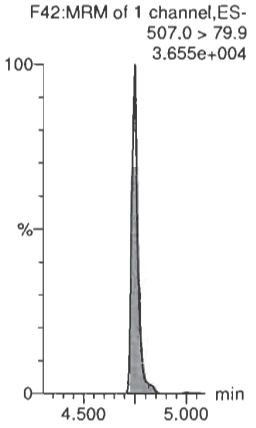

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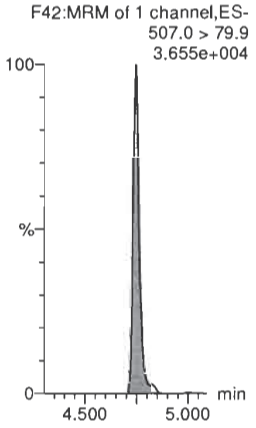

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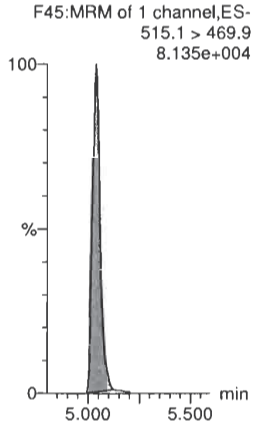

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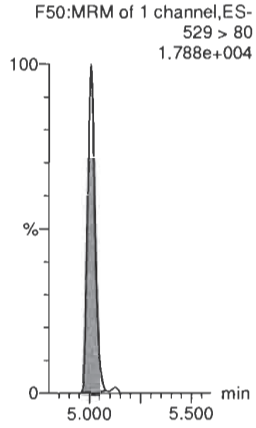

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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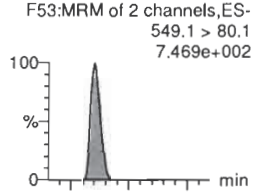

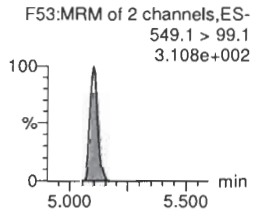

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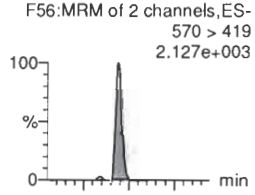

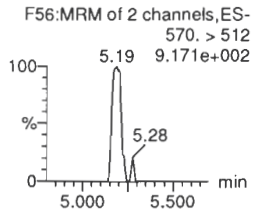

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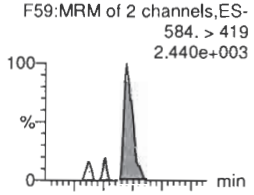

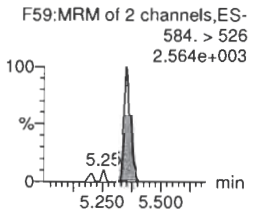

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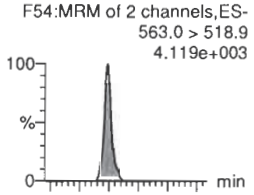

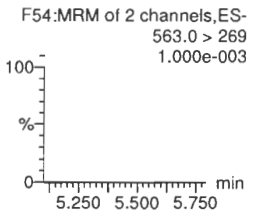

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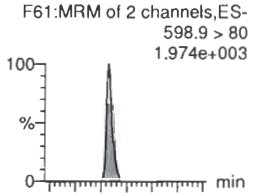

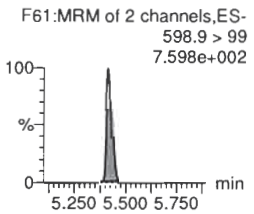

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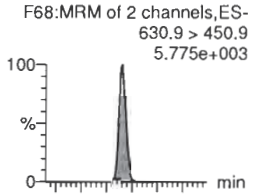

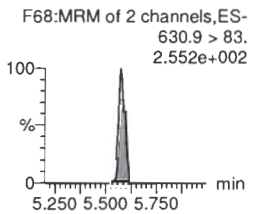

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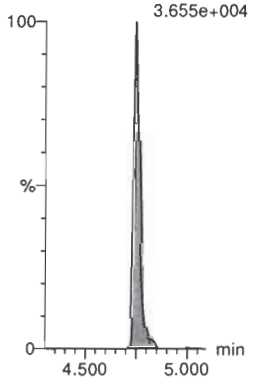

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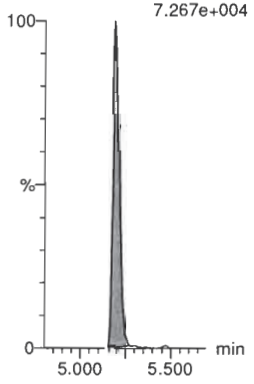

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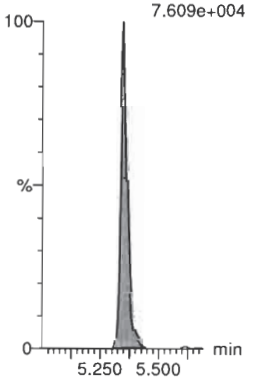

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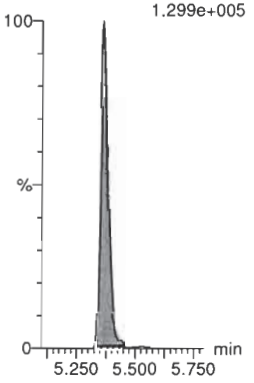

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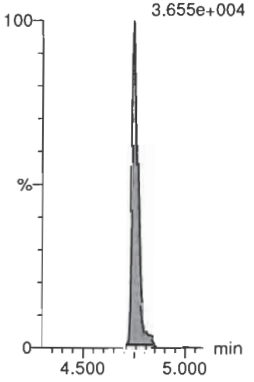

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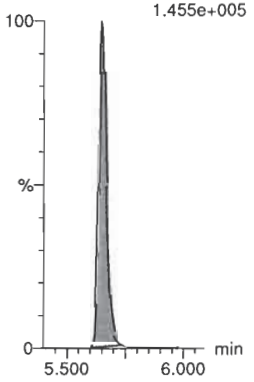

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 16 of 100
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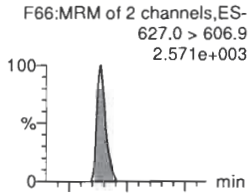
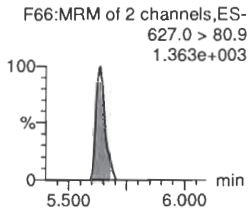
10:2 FTS





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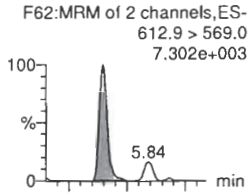

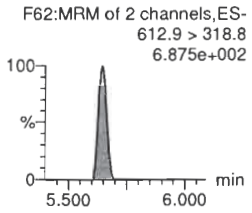

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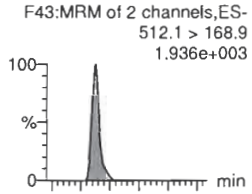

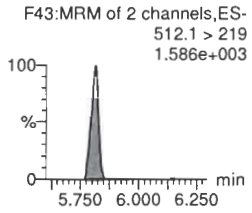

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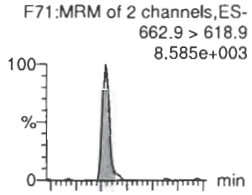

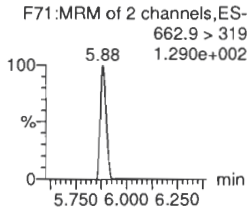

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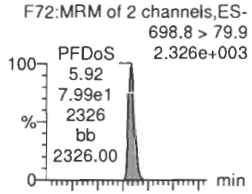

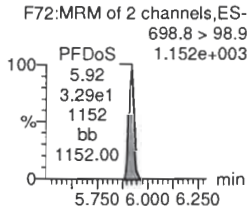

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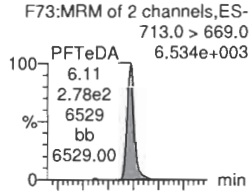

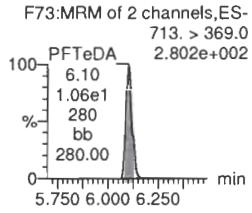

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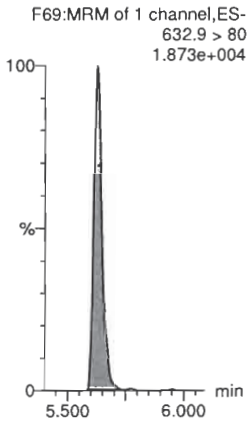

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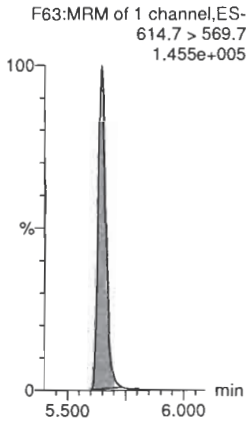

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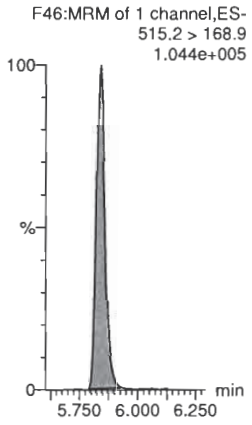

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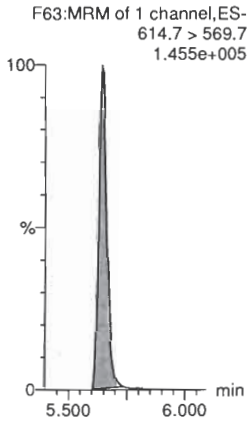

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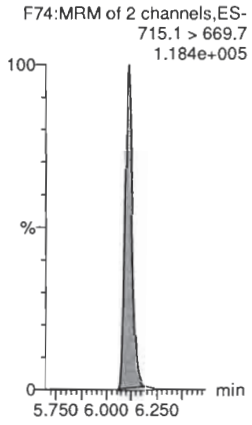

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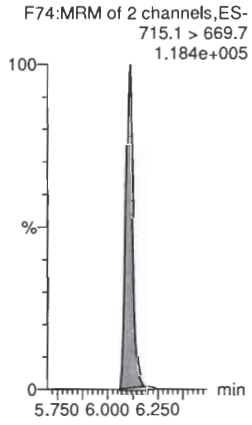

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 17 of 100
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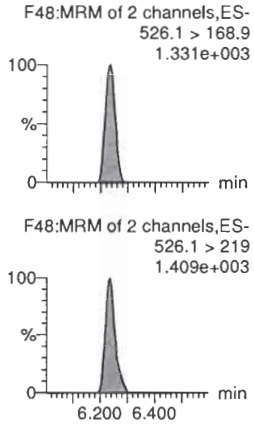

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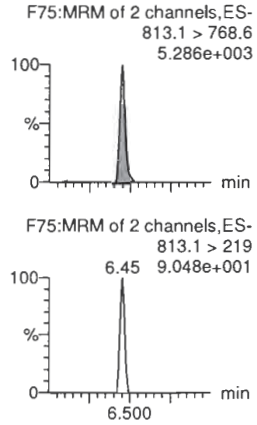

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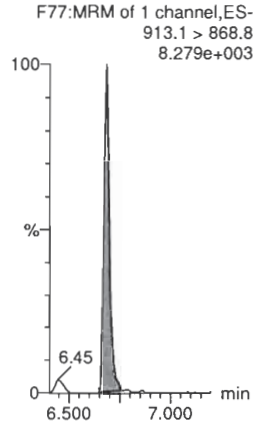

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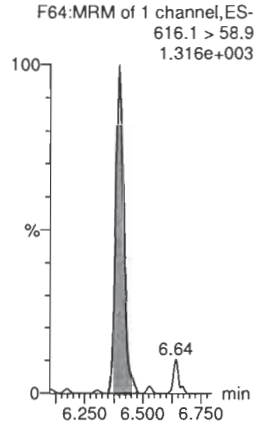

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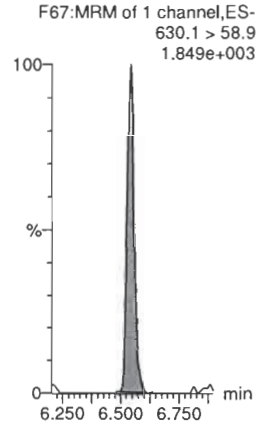

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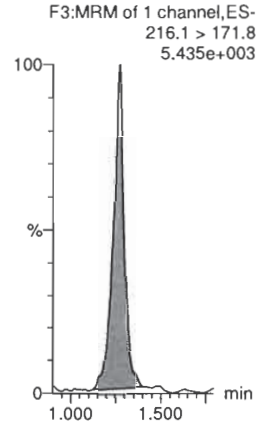

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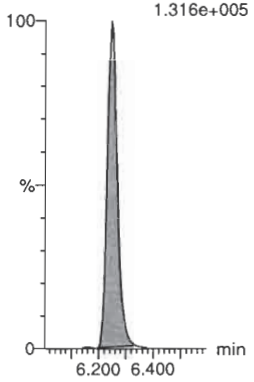

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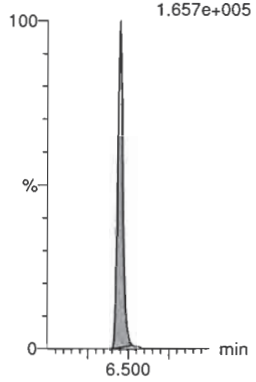

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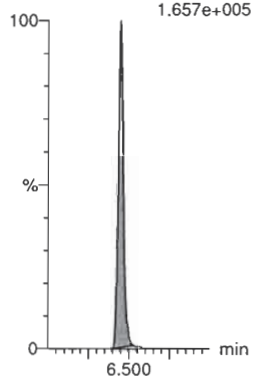

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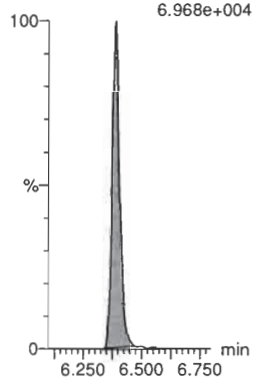

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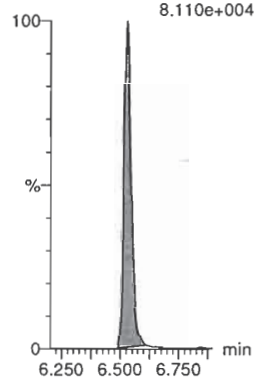

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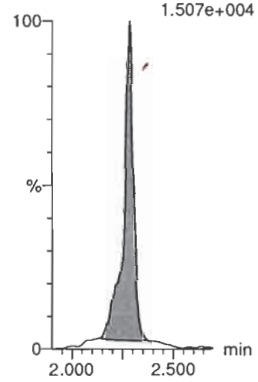

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

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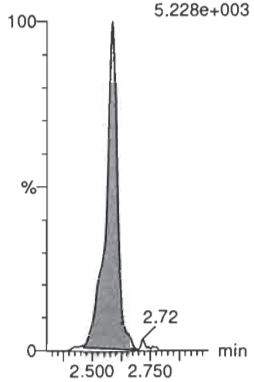
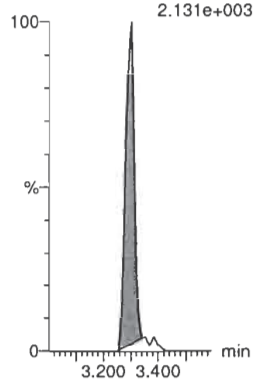
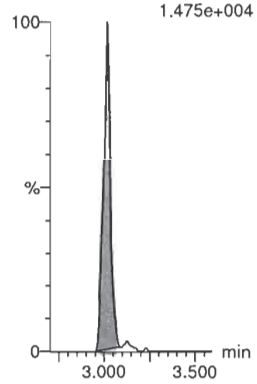


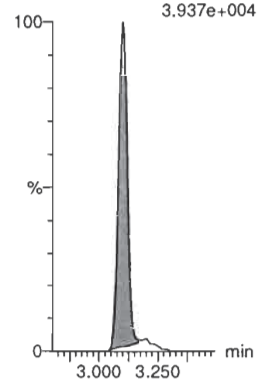
13C3-HFPO-DA-RSD



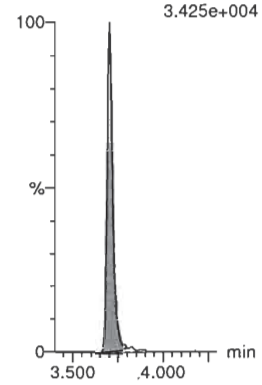
13C2-4:2 FTS-RSD



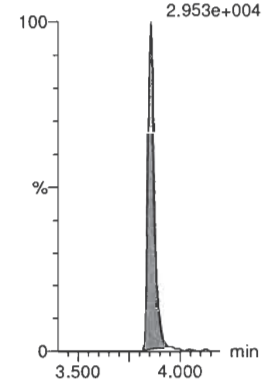
13C2-PFHxA-RSD



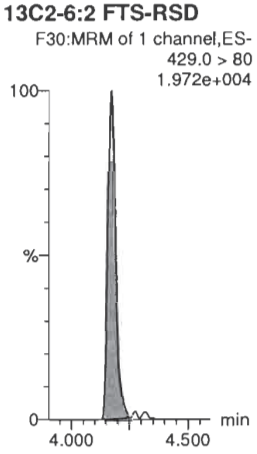
13C4-PFHpA-RSD



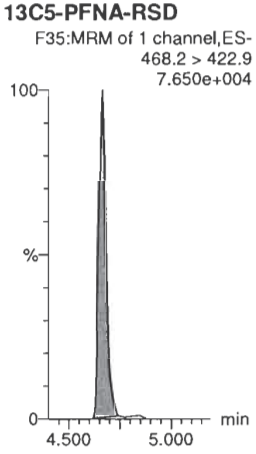
13C3-PFHxS-RSD



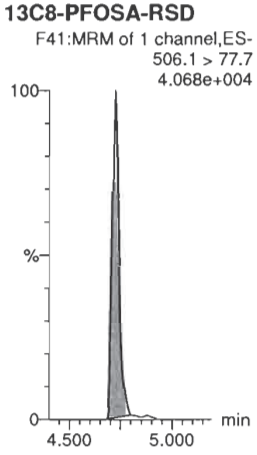
13C2-6:2 FTS-RSD



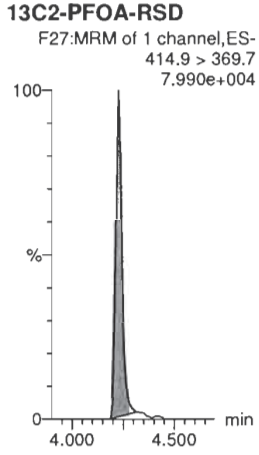
13C5-PFNA-RSD



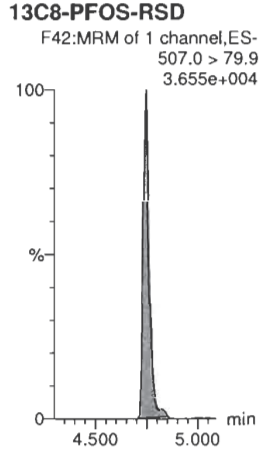
13C8-PFOSA-RSD



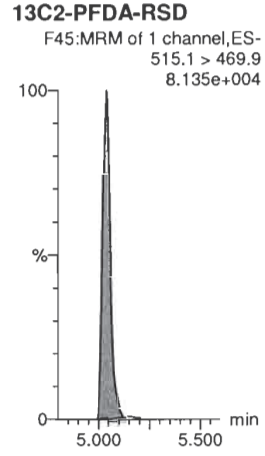
13C2-PFOA-RSD



13C8-PFOS-RSD



13C2-PFDA-RSD



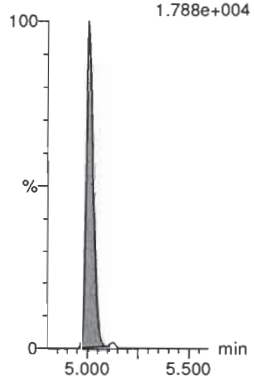
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

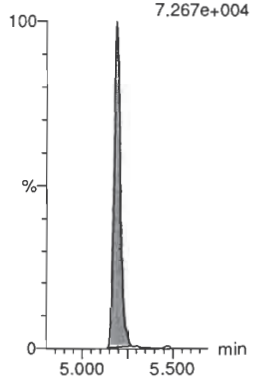
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_4, Date: 12-Feb-2020, Time: 19:40:29, ID: ST200212M2-2 PFC CS-1 20B1103, Description: PFC CS-1 20B1103

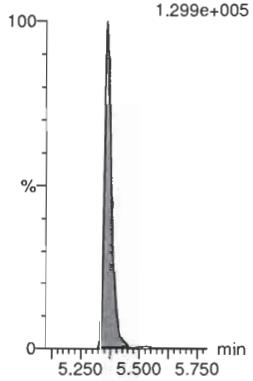
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.788e+004



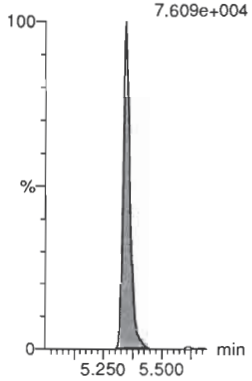
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.267e+004



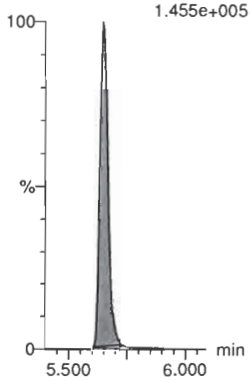
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.299e+005



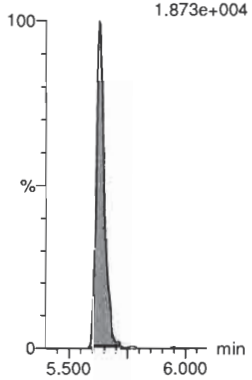
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
7.609e+004



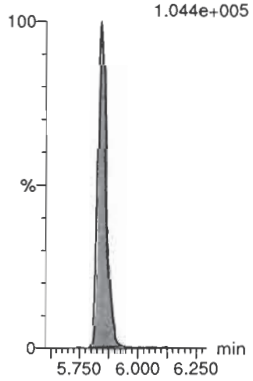
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.455e+005



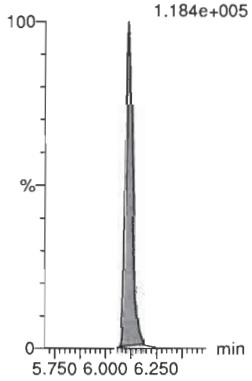
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.873e+004



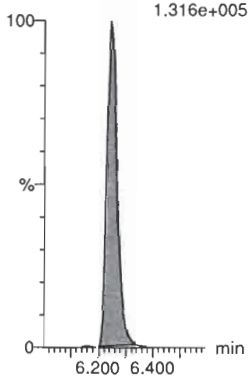
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
1.044e+005



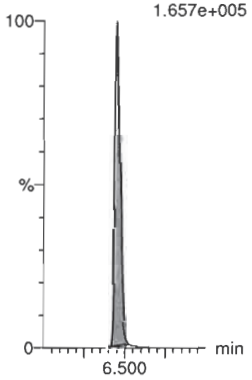
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.184e+005



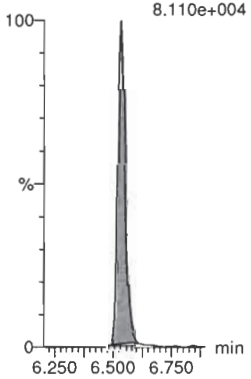
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.316e+005



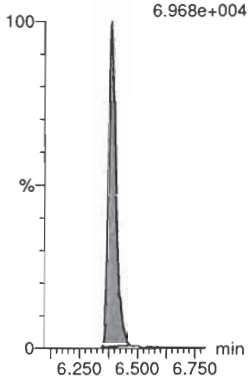
13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.657e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
8.110e+004



d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
6.968e+004



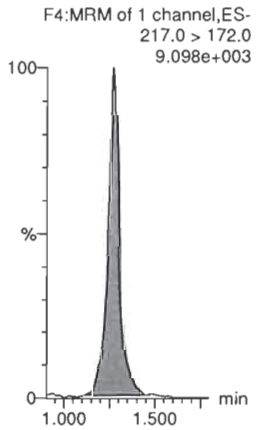
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_4, Date: 12-Feb-2020, Time: 19:40:29, ID: ST200212M2-2 PFC CS-1 20B1103, Description: PFC CS-1 20B1103

13C4-PFBA



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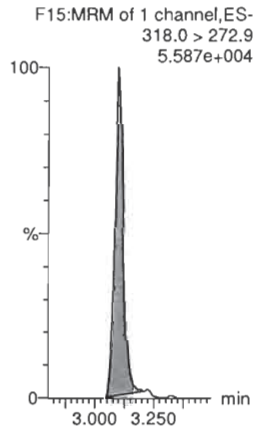
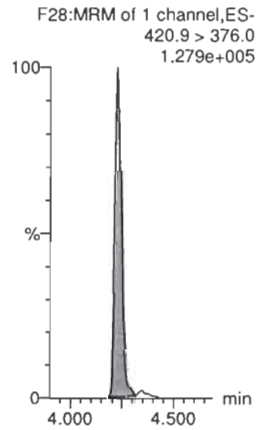
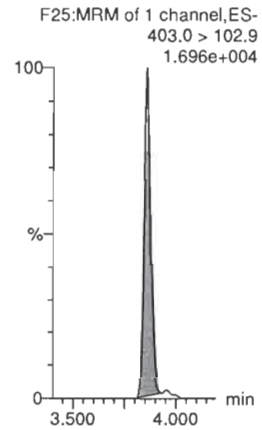


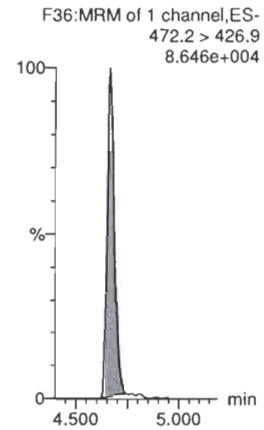
13C8-PFOA



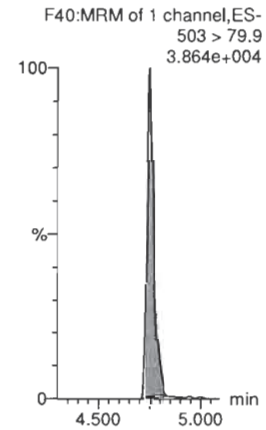
18O2-PFHxS



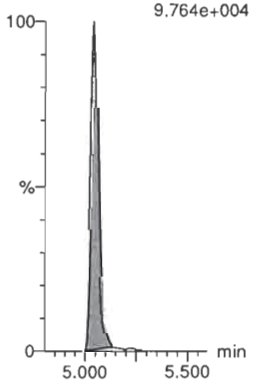
13C9-PFNA



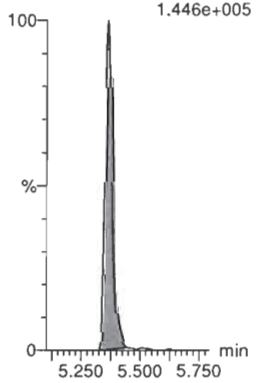
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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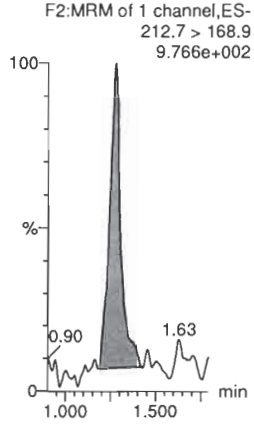
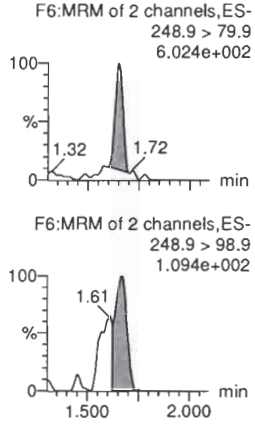
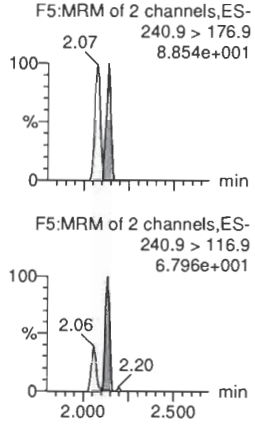
PFBA



PFPrS



3:3 FTCA



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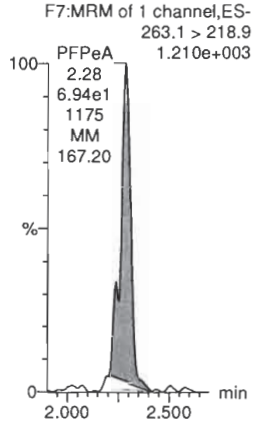
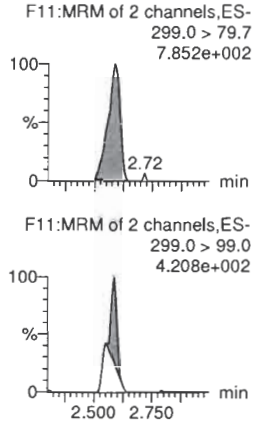
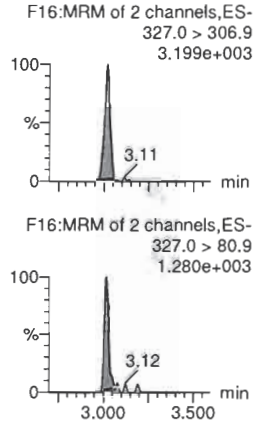


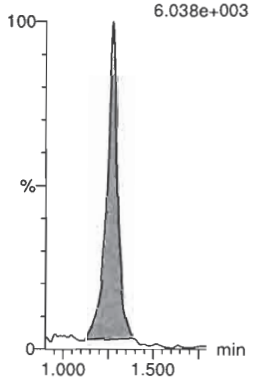
PFBS



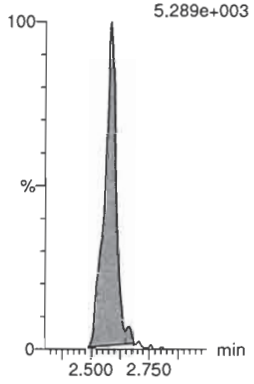
4:2 FTS



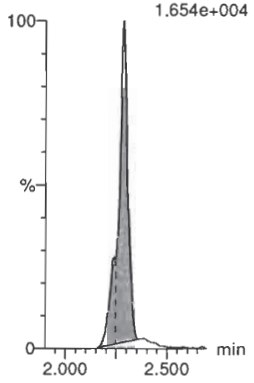
13C3-PFBA-EIS



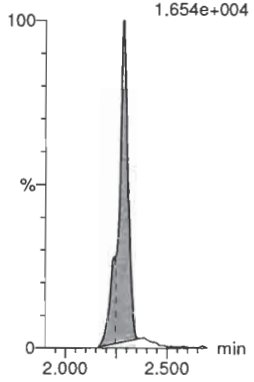
13C3-PFBS-EIS



13C3-PFPeA-EIS



13C3-PFPeA-EIS



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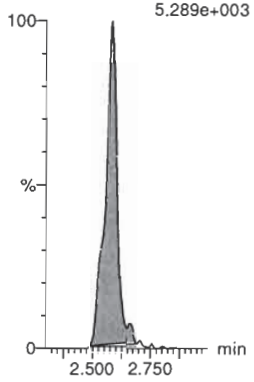
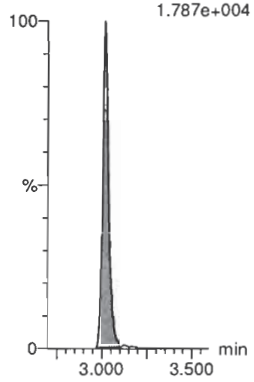


13C2-4:2 FTS-EIS



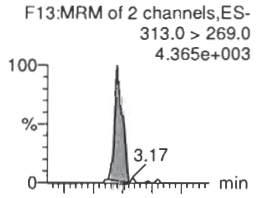
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

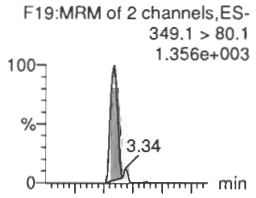
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

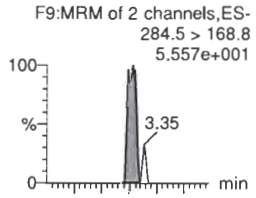
PFHxA



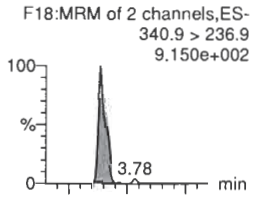
PFPeS



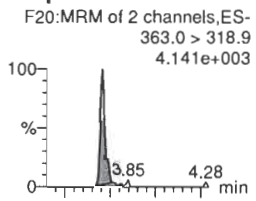
HFPO-DA



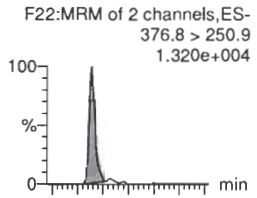
5:3 FTCA



PFHpA



ADONA



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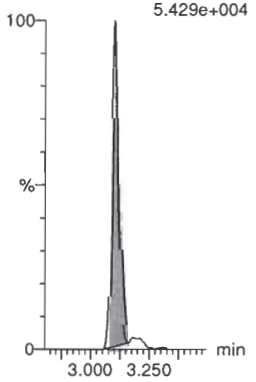

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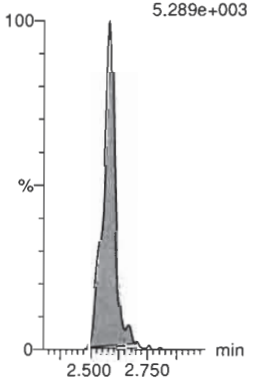

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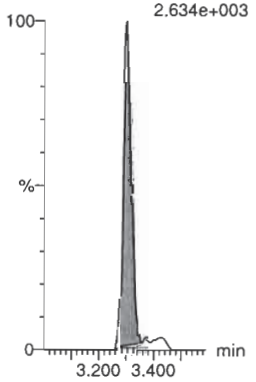

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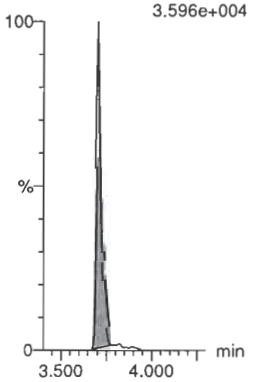

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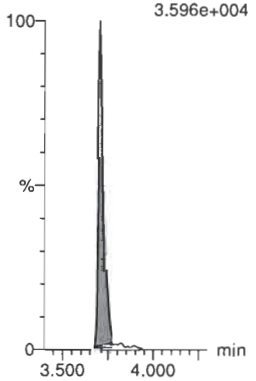

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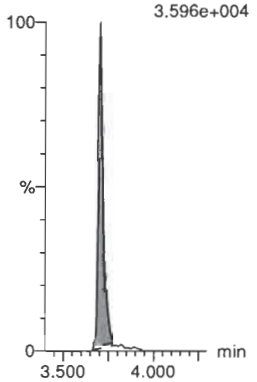

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

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Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

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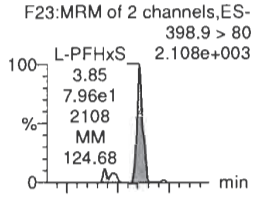

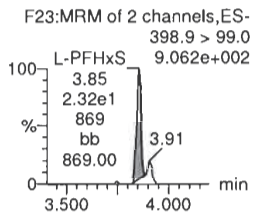

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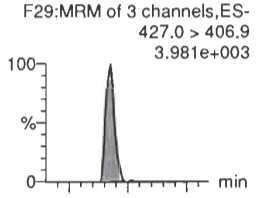

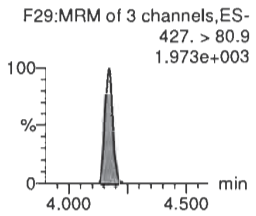

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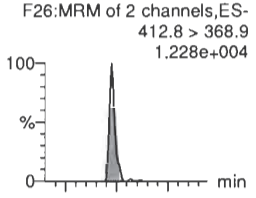

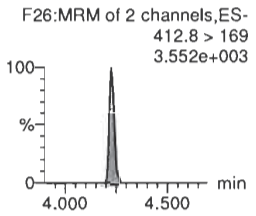

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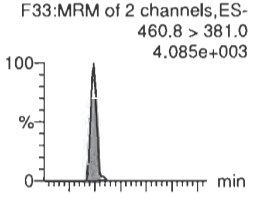

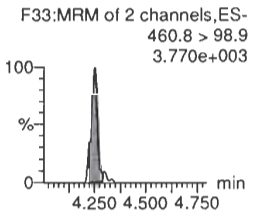

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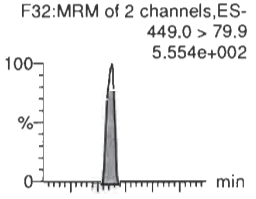

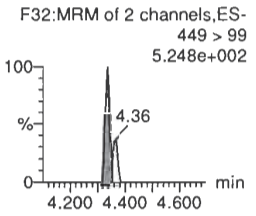

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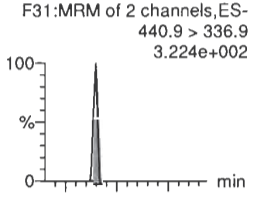

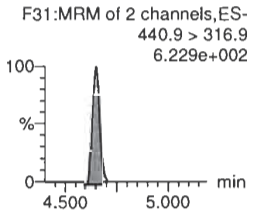

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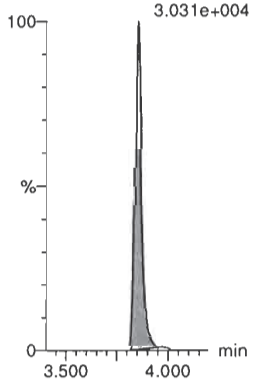

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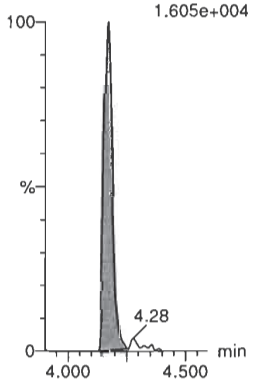

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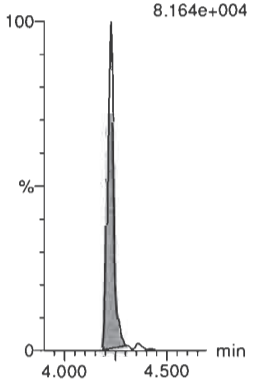

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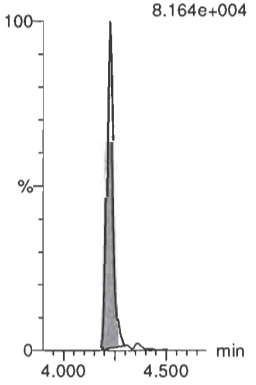

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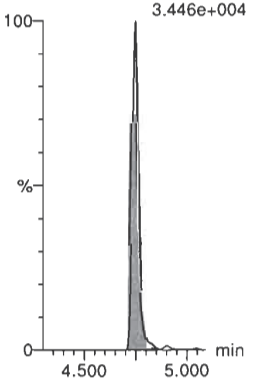

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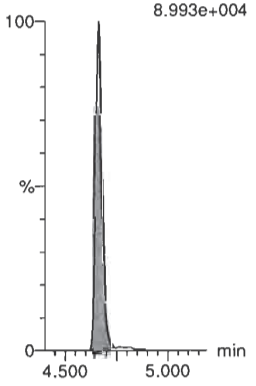

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 24 of 100
Vista Analytical Laboratory

Dataset: Untitled

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Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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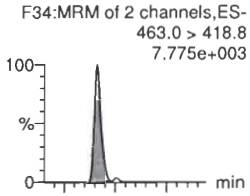

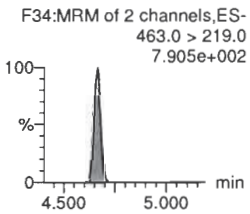

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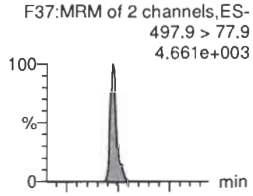

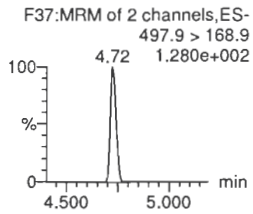

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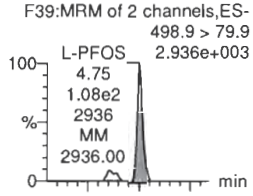

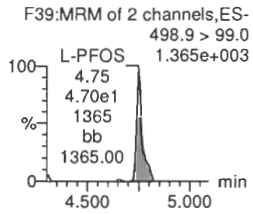

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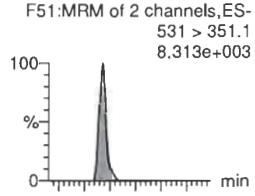

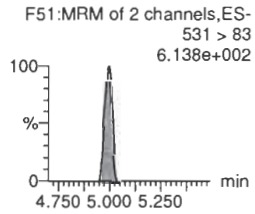

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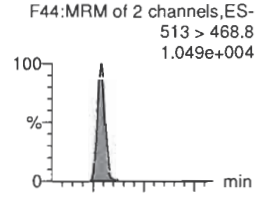

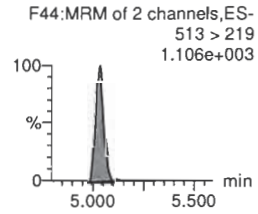

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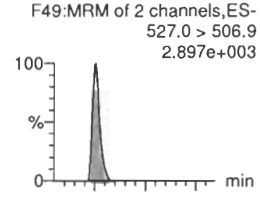

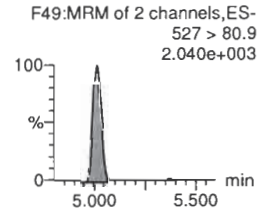

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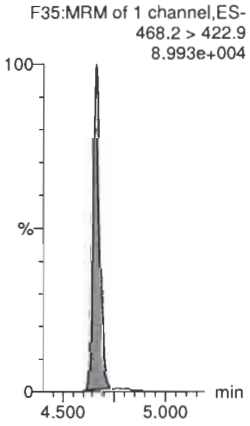

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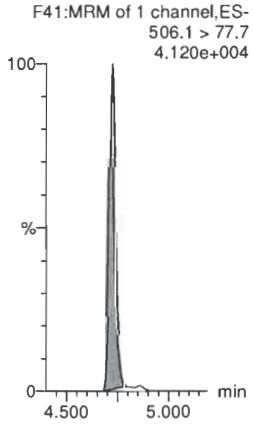

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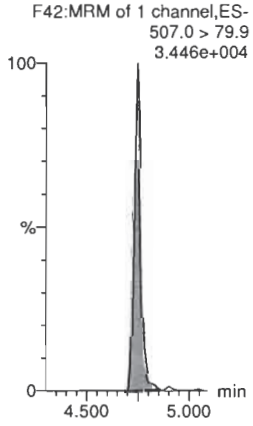

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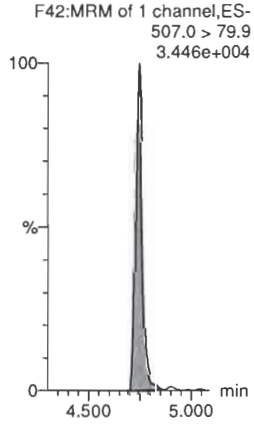

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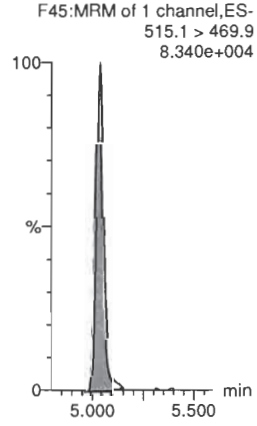

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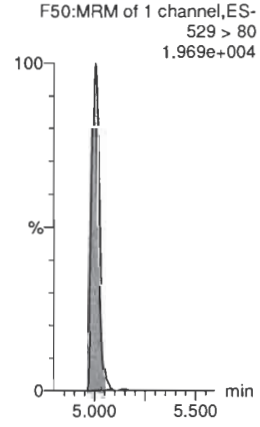

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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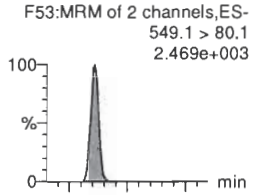

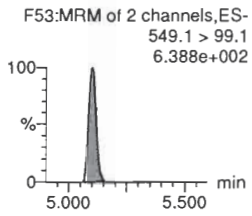

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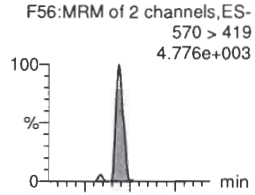

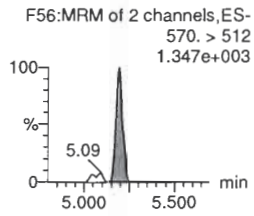

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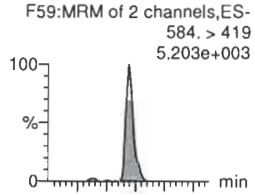

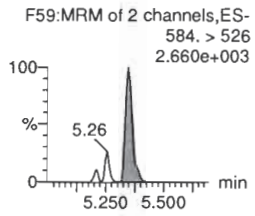

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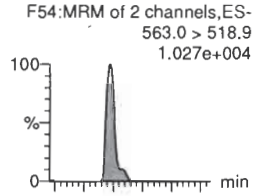

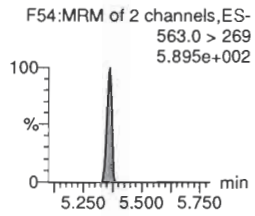

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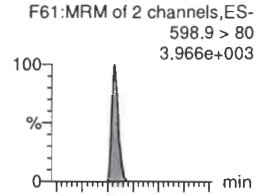

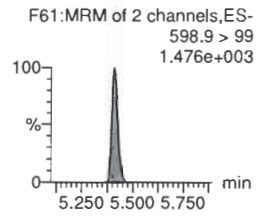

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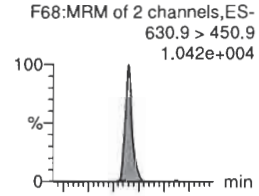
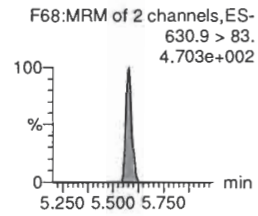
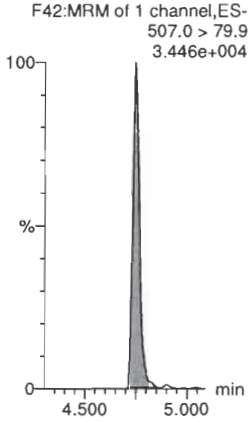
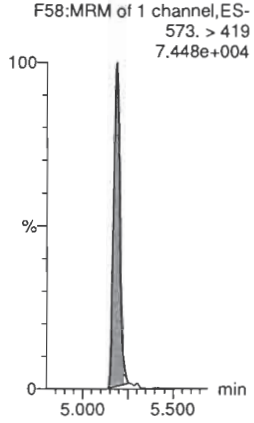




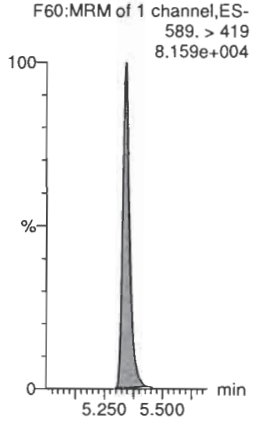
13C8-PFOS-EIS



d3-N-MeFOSAA-EIS



d5-N-EtFOSAA-EIS



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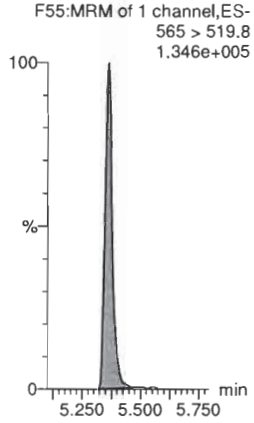

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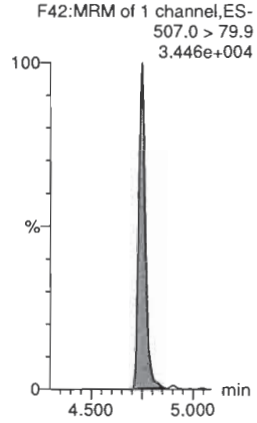
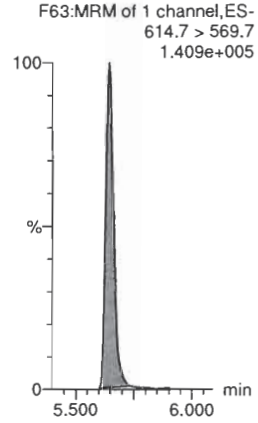


13C2-PFDoA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

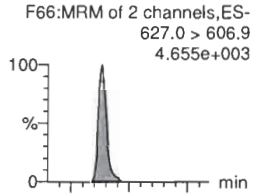
Vista Analytical Laboratory

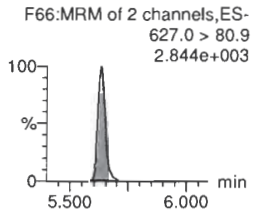
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

10:2 FTS





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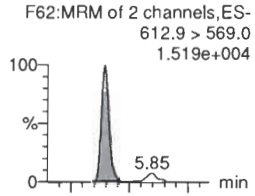
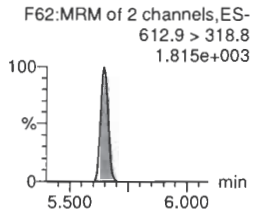
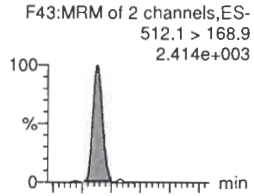
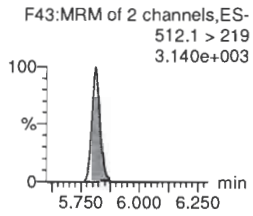




N-MeFOSA





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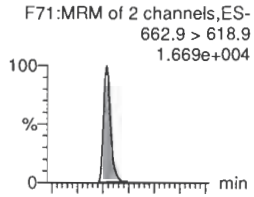
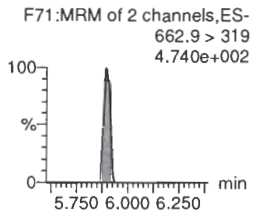
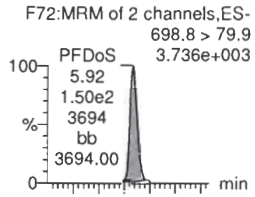
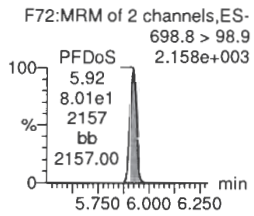




PFDoS





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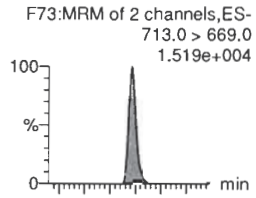
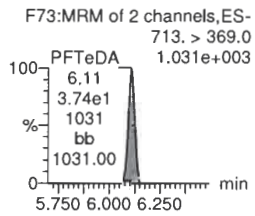
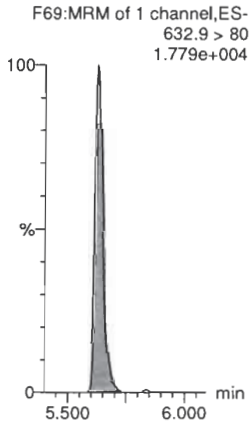
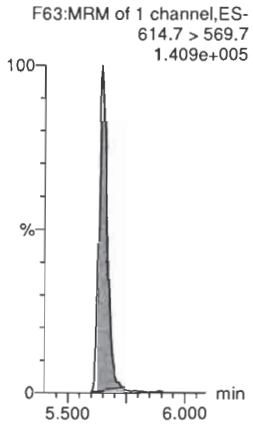




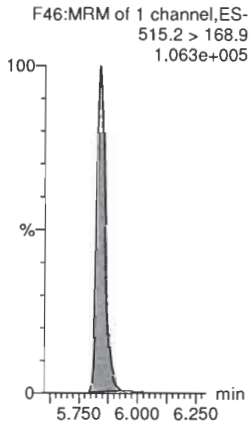
13C2-10:2 FTS-EIS



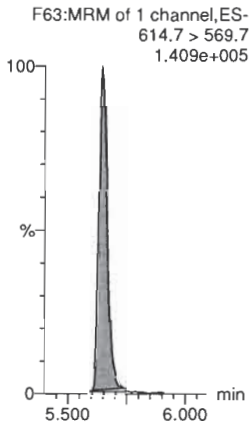
13C2-PFDoA-EIS



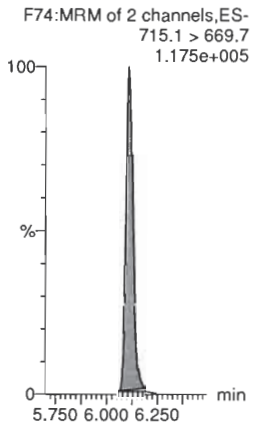
d3-N-MeFOSA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



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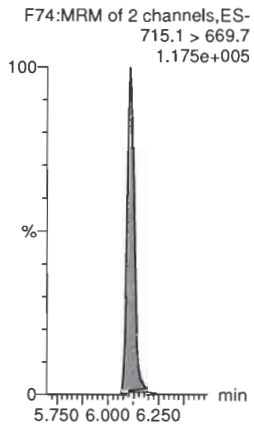


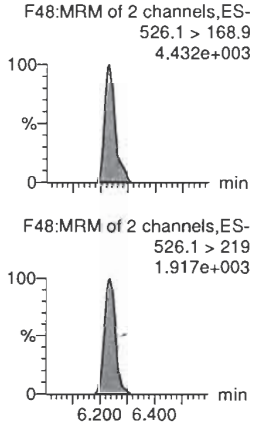
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

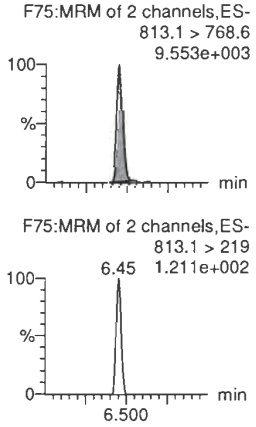
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

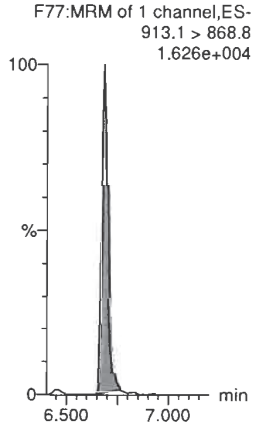
N-EtFOSA



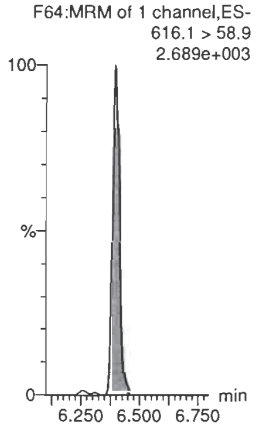
PFHxDA



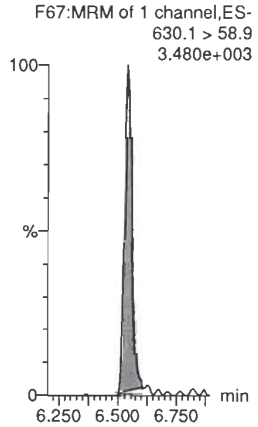
PFODA



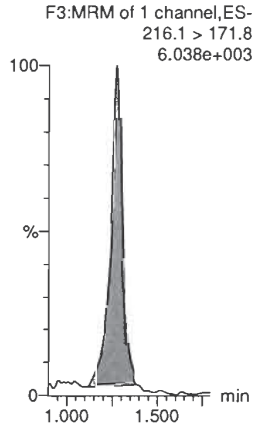
N-MeFOSE



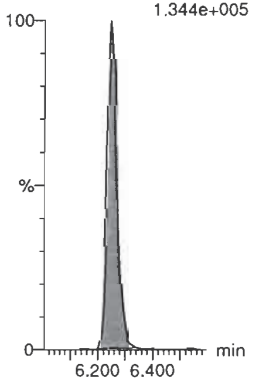
N-EtFOSE



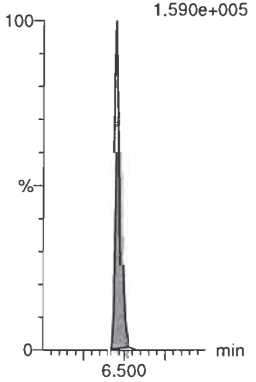
13C3-PFBA-RSD



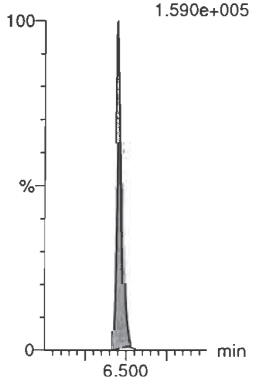
d5-N-ETFOSA-EIS



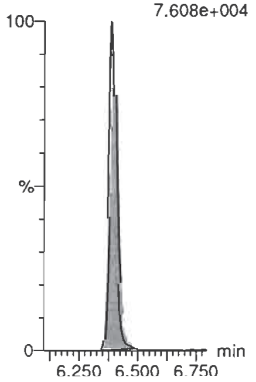
13C2-PFHxDA-EIS



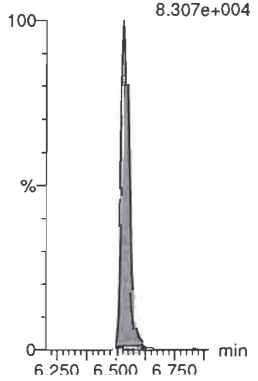
13C2-PFHxDA-EIS



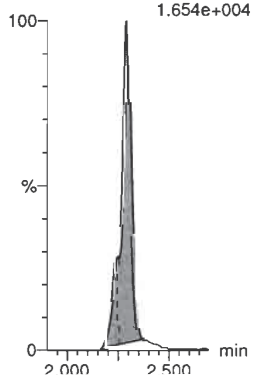
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



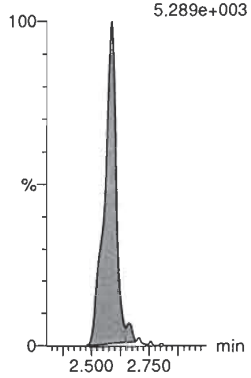
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

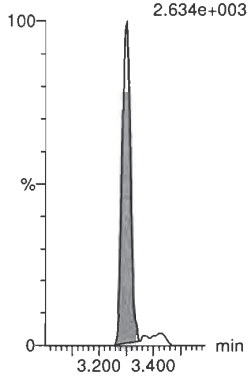
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

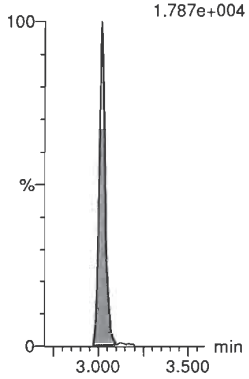
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
5.289e+003



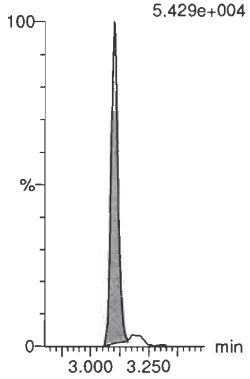
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.634e+003



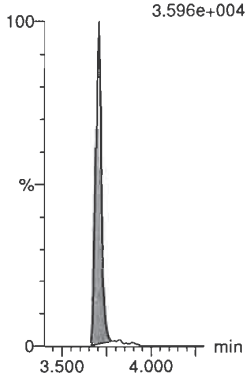
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.787e+004



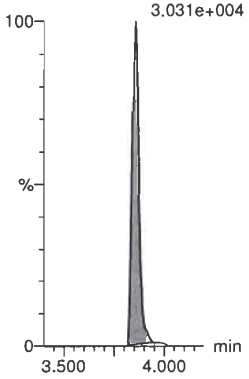
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
5.429e+004



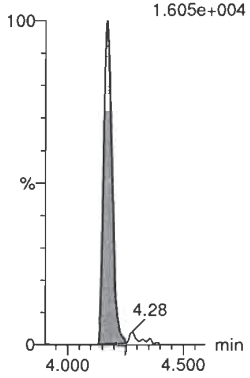
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.596e+004



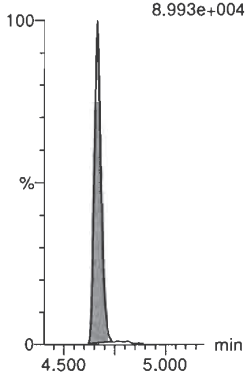
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
3.031e+004



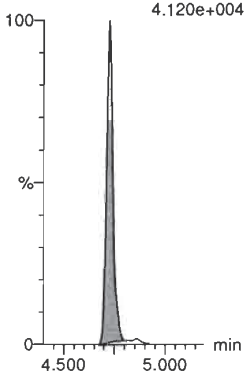
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.605e+004



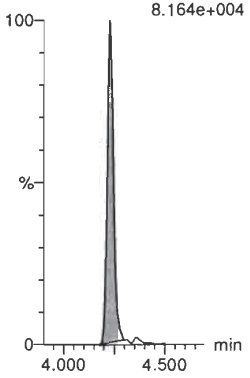
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
8.993e+004



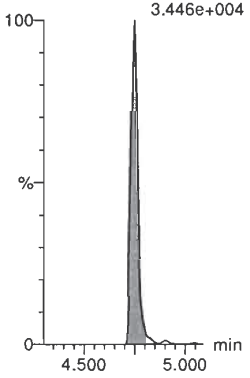
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
4.120e+004



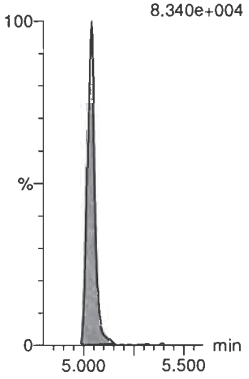
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
8.164e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.446e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
8.340e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

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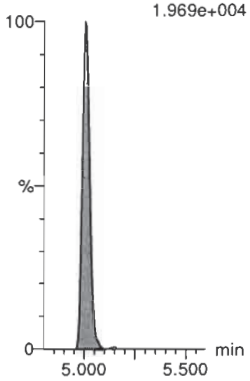

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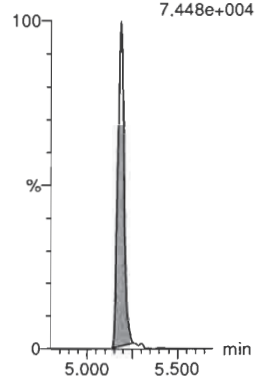

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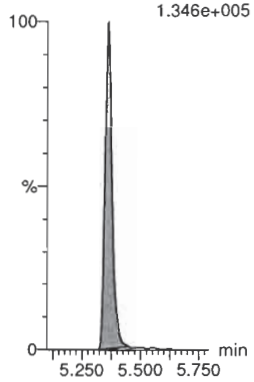

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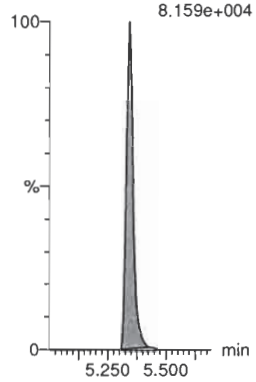

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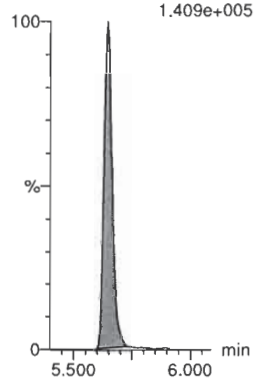
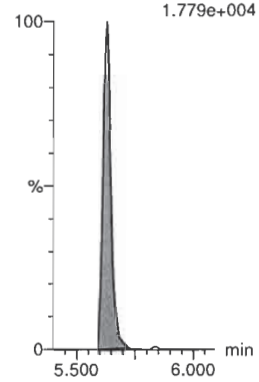


13C2-10:2 FTS-RSD



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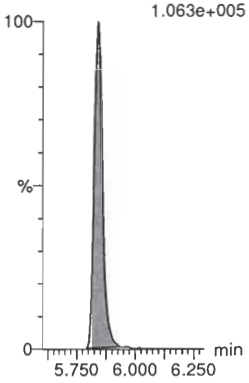

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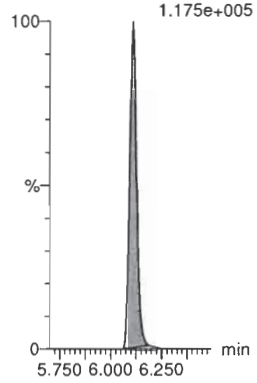

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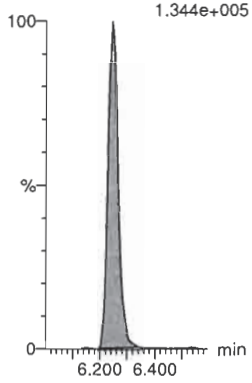

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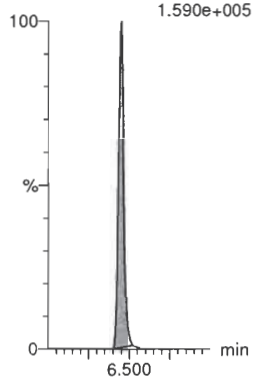

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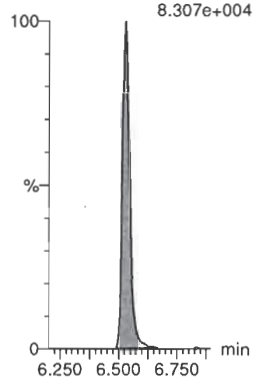

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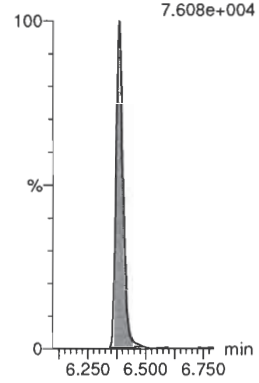

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_5, Date: 12-Feb-2020, Time: 19:50:52, ID: ST200212M2-3 PFC CS0 20B1104, Description: PFC CS0 20B1104

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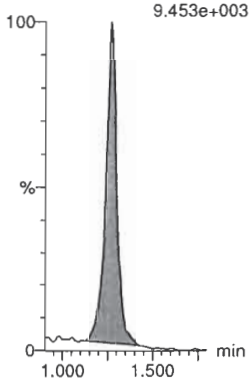

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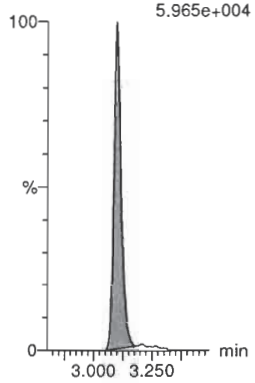

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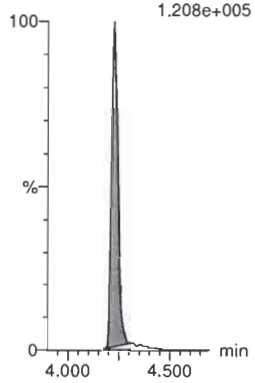

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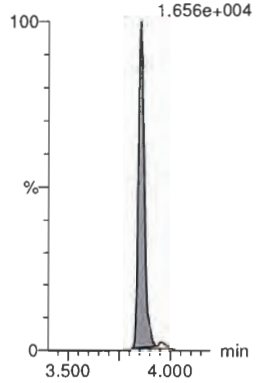

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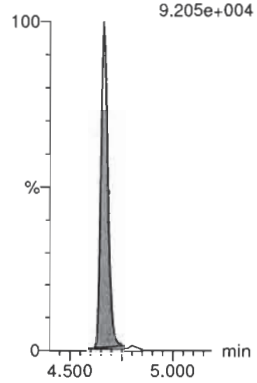

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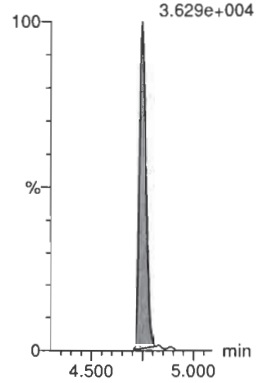

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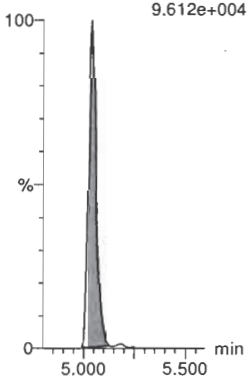

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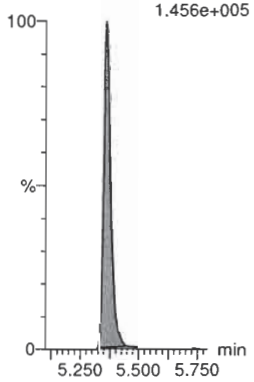

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

Last Altered: Thursday, February 13, 2020 12:21:15 Pacific Standard Time
Printed: Thursday, February 13, 2020 12:21:38 Pacific Standard Time

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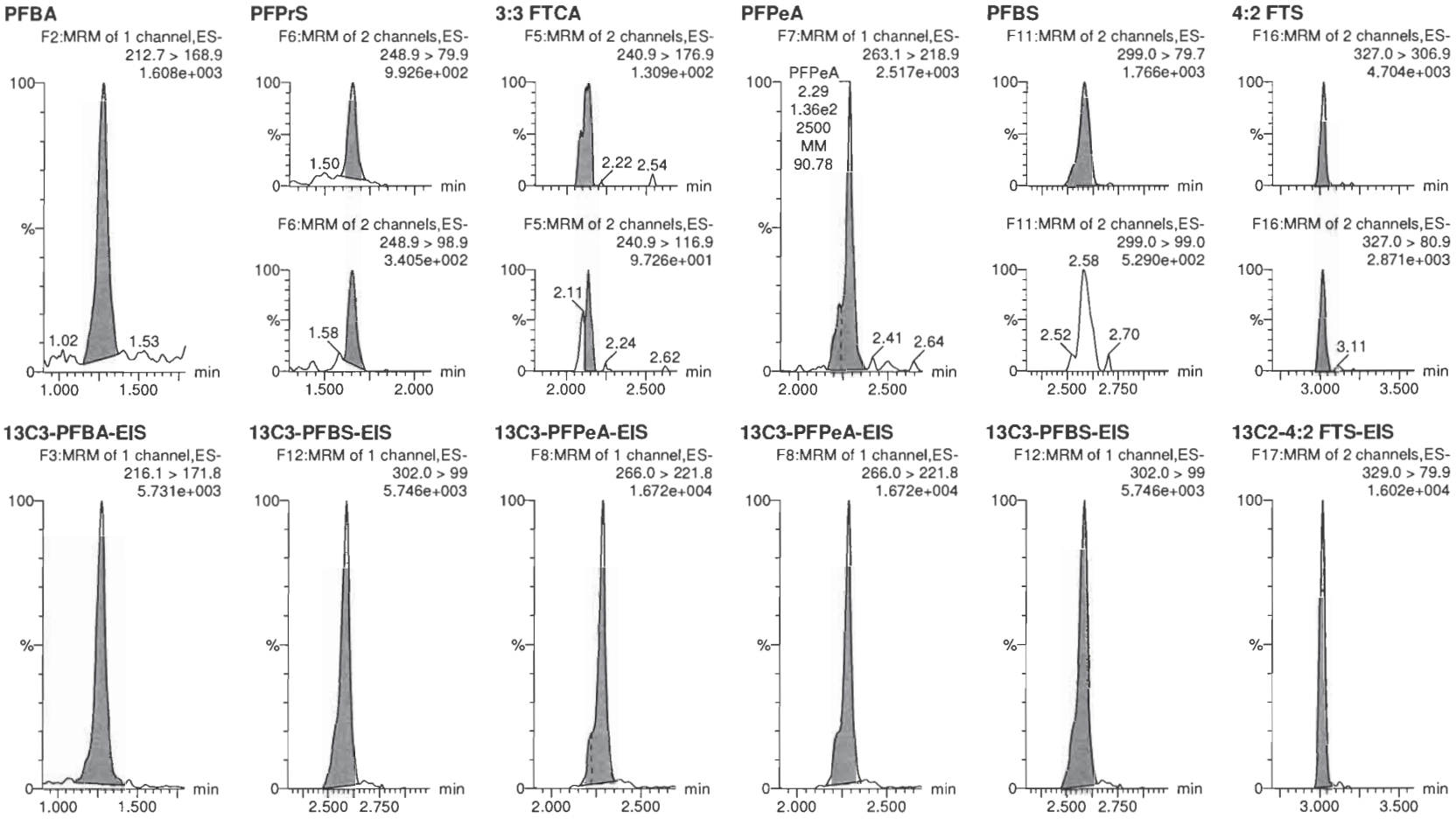

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
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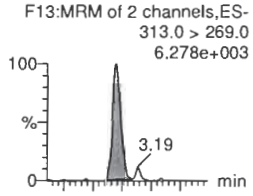

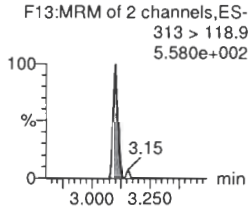

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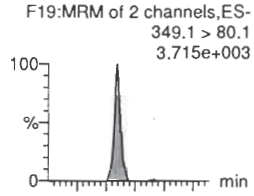

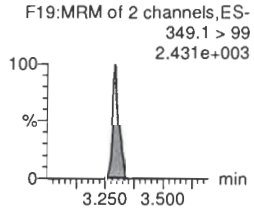

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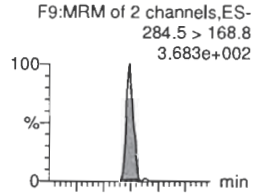

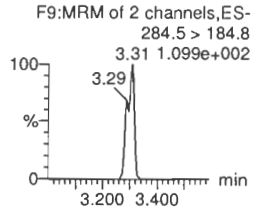

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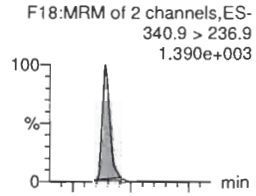

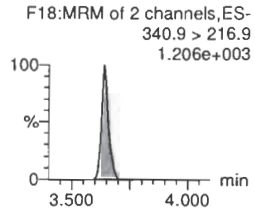

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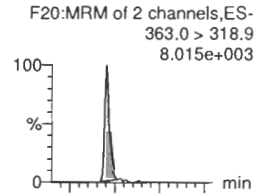

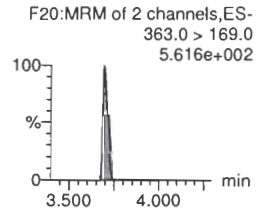

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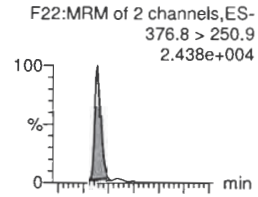

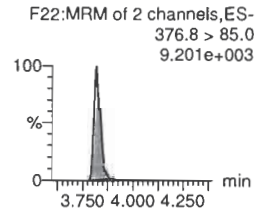

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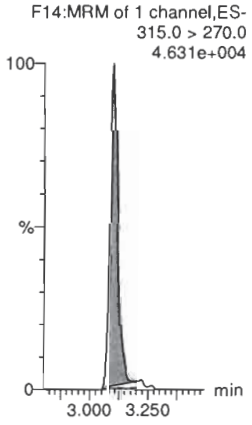

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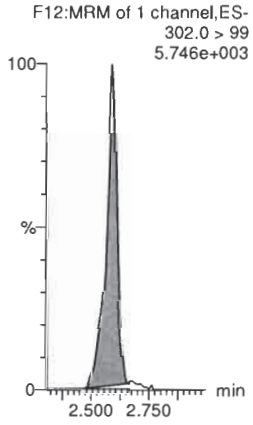
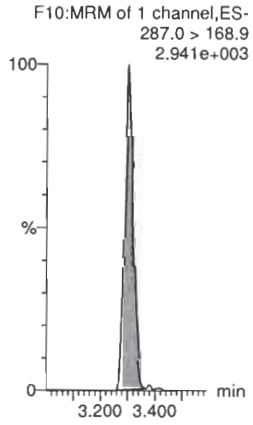


13C3-HFPO-DA-EIS



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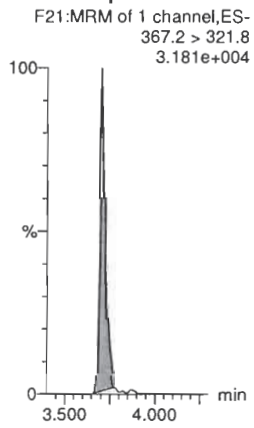

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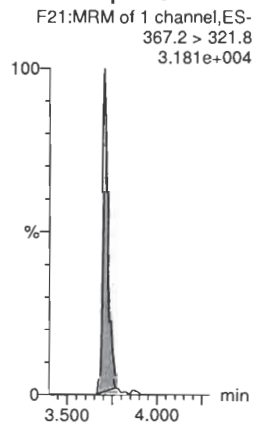

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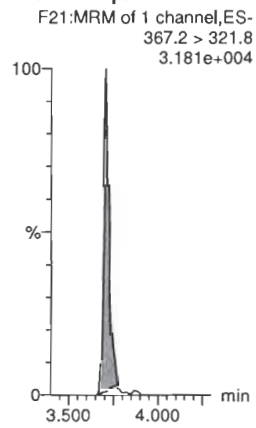

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_6, Date: 12-Feb-2020, Time: 20:01:14, ID: ST200212M2-4 PFC CS1 20B1105, Description: PFC CS1 20B1105

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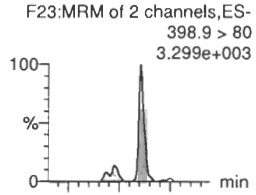
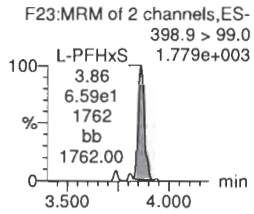
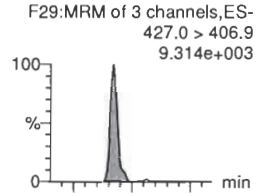
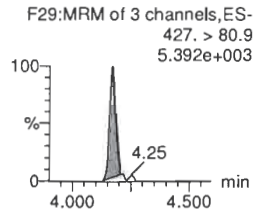




6:2 FTS





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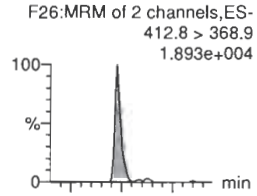

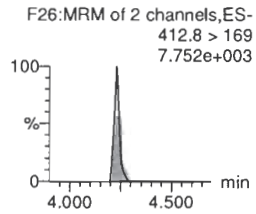

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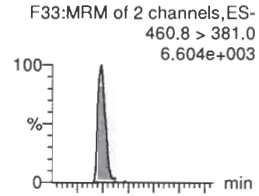

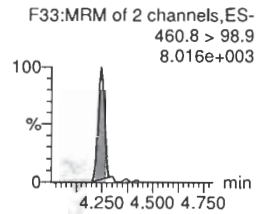

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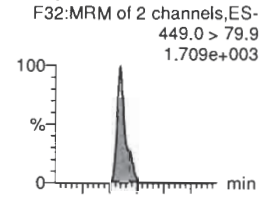

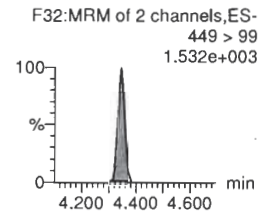

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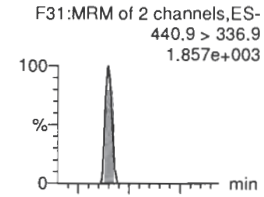
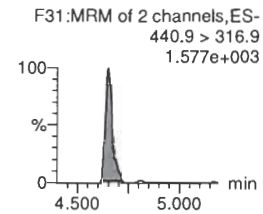
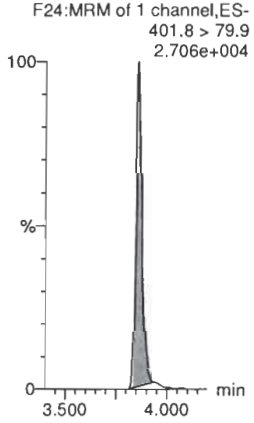




13C3-PFHxS-EIS



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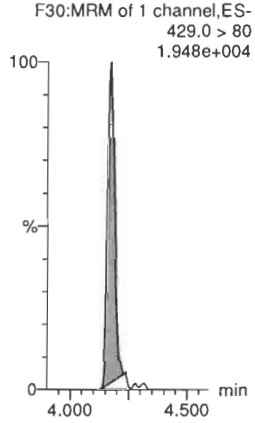

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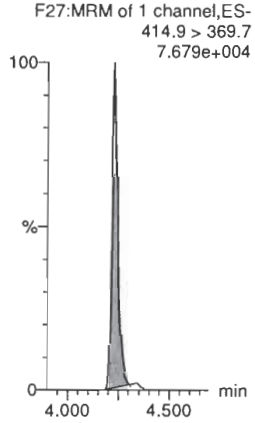

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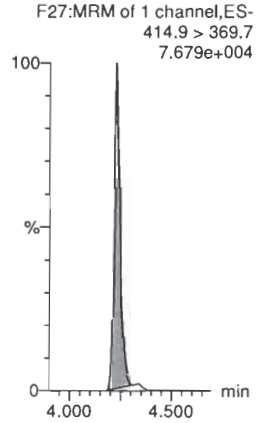

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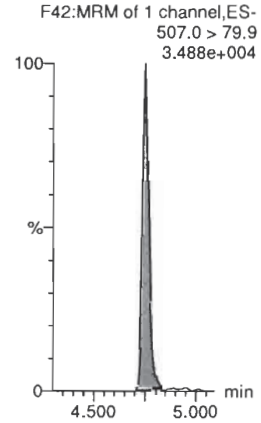
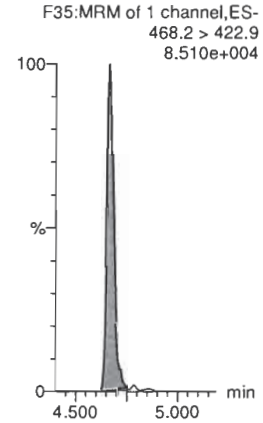


13C5-PFNA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

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Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_6, Date: 12-Feb-2020, Time: 20:01:14, ID: ST200212M2-4 PFC CS1 20B1105, Description: PFC CS1 20B1105

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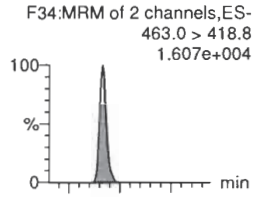

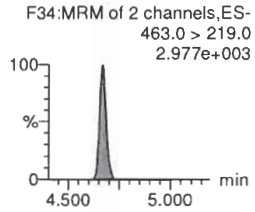

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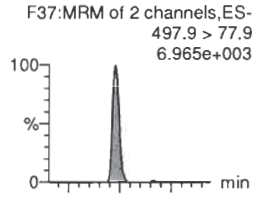

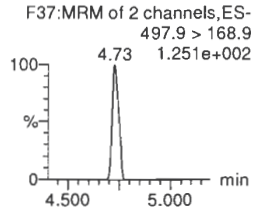

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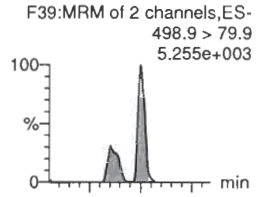

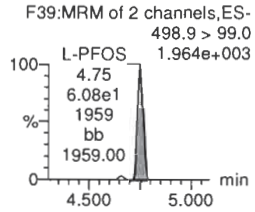

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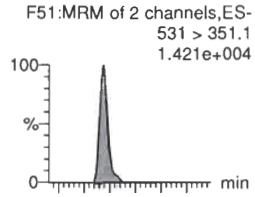

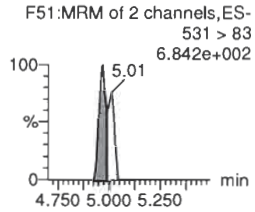

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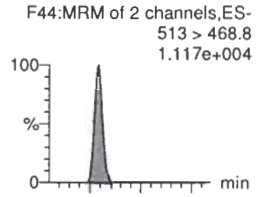

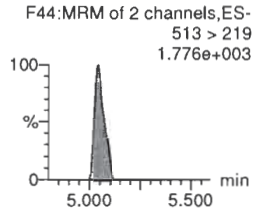

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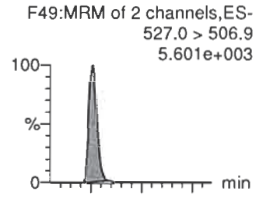
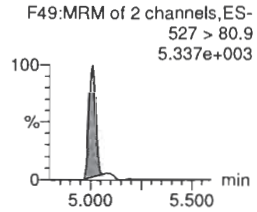
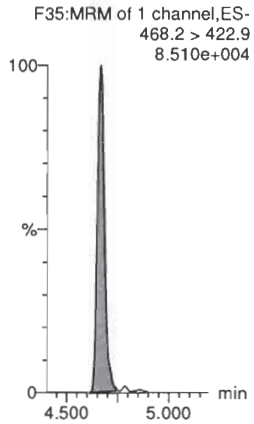
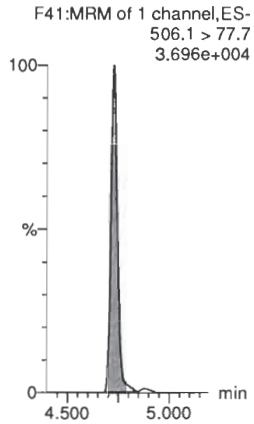




13C5-PFNA-EIS



13C8-PFOSA-EIS



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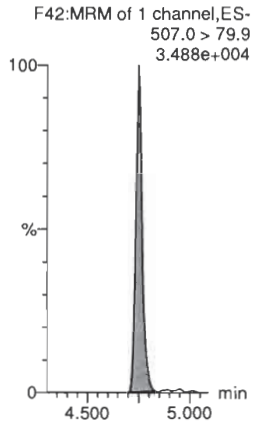

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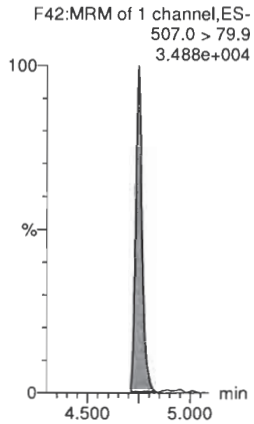
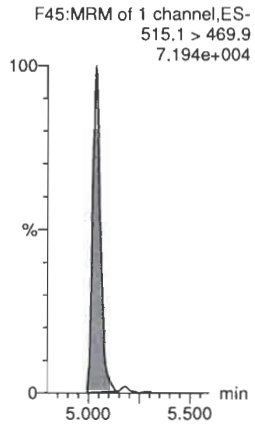


13C2-PFDA-EIS



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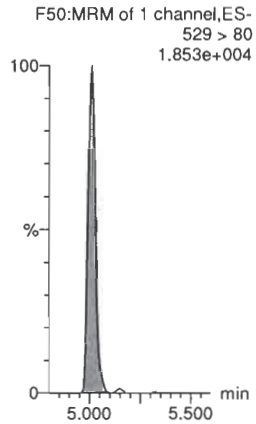

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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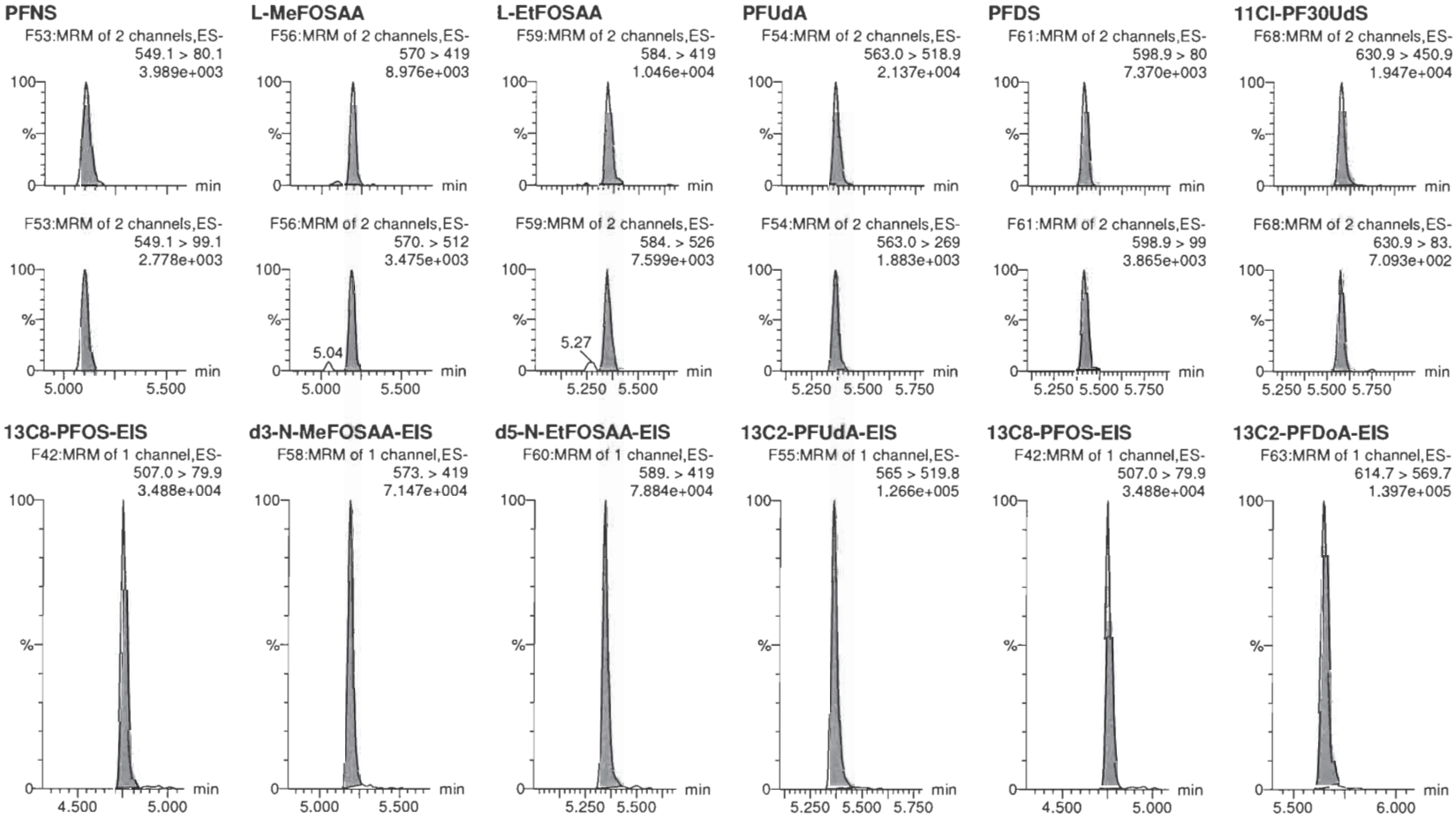


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

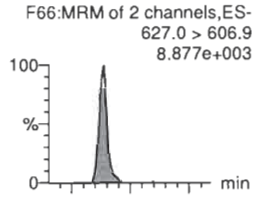
Vista Analytical Laboratory

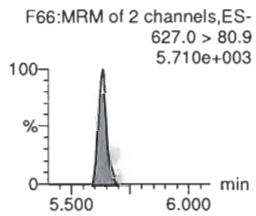
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

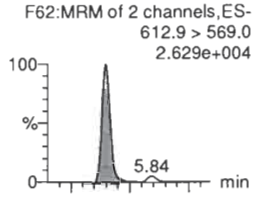
Name: 200212M2_6, Date: 12-Feb-2020, Time: 20:01:14, ID: ST200212M2-4 PFC CS1 20B1105, Description: PFC CS1 20B1105

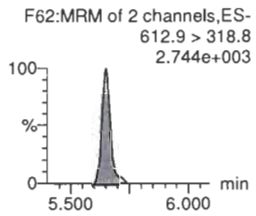
10:2 FTS





PFDoA





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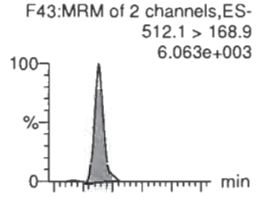

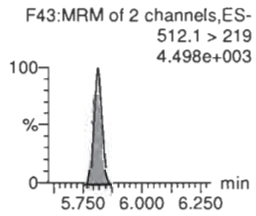

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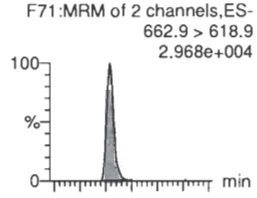

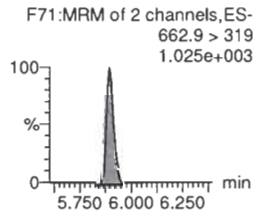

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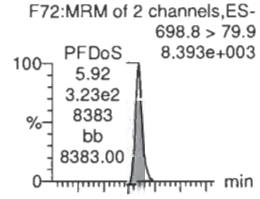

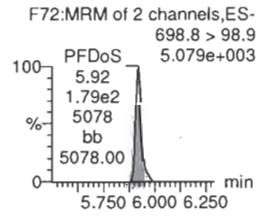

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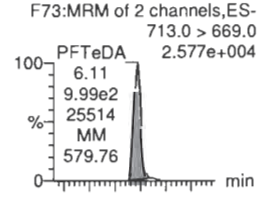

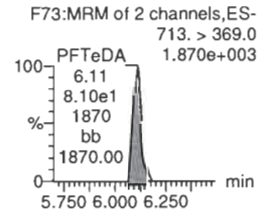

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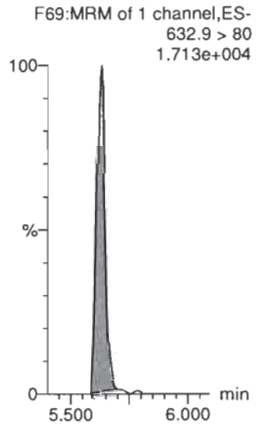

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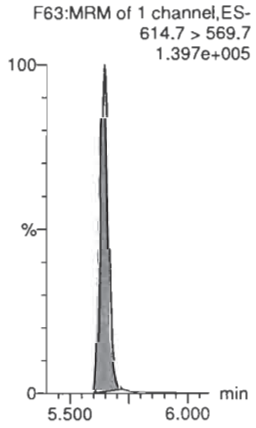

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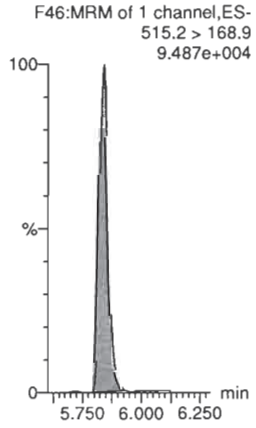

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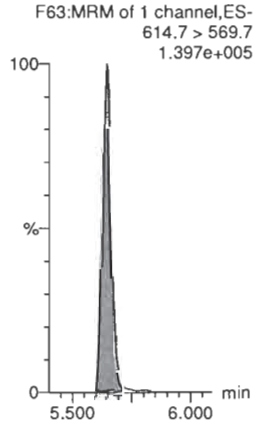

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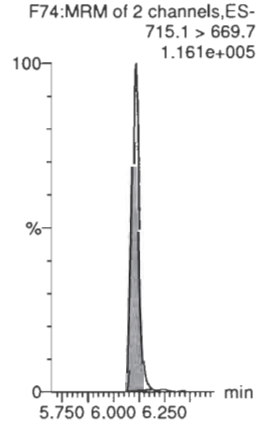

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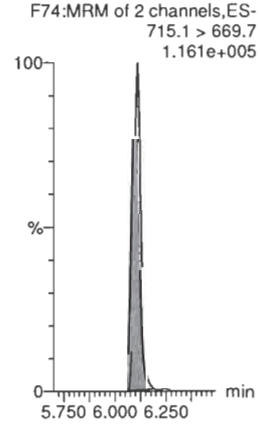

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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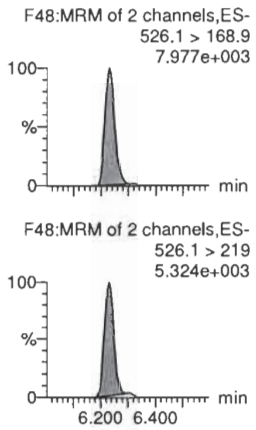
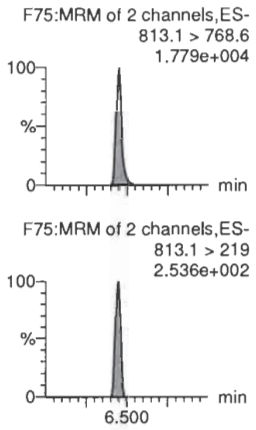
N-EtFOSA



PFHxDA



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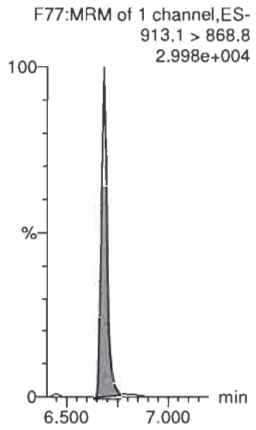

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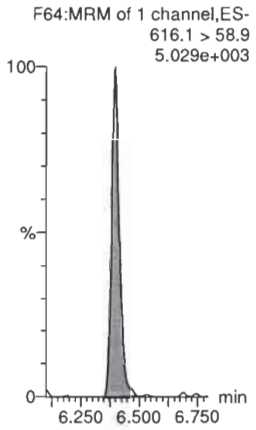

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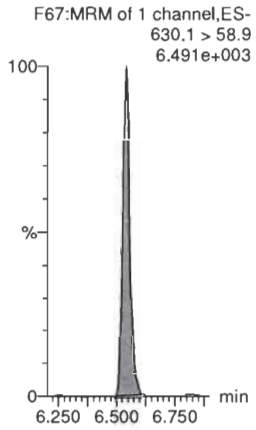

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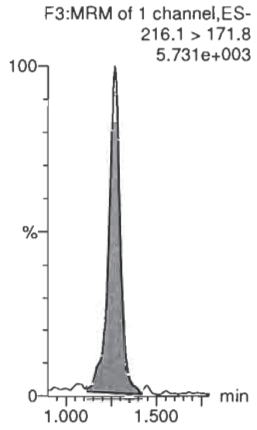
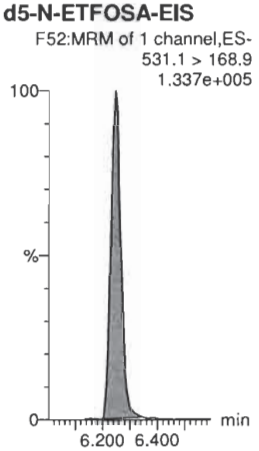
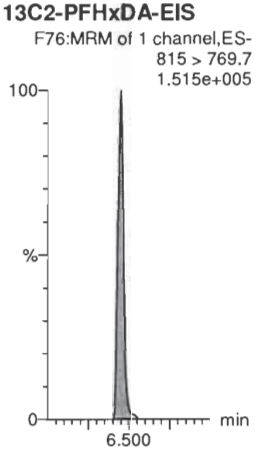


d5-N-ETFOSA-EIS



13C2-PFHxDA-EIS



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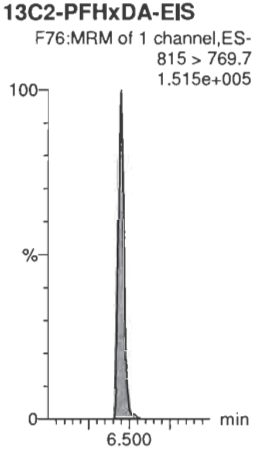
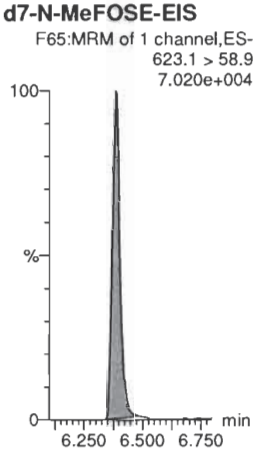
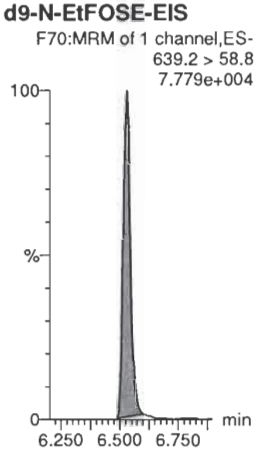


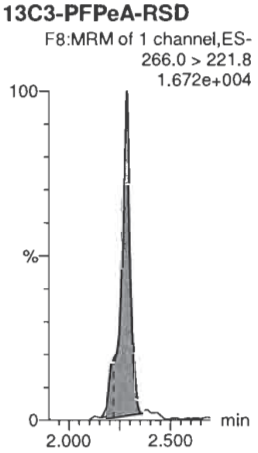
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

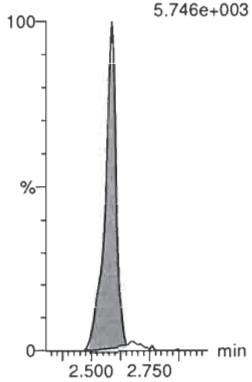
Vista Analytical Laboratory

Dataset: Untitled

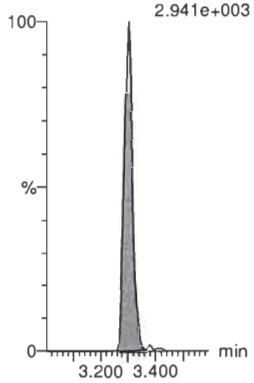
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_6, Date: 12-Feb-2020, Time: 20:01:14, ID: ST200212M2-4 PFC CS1 20B1105, Description: PFC CS1 20B1105

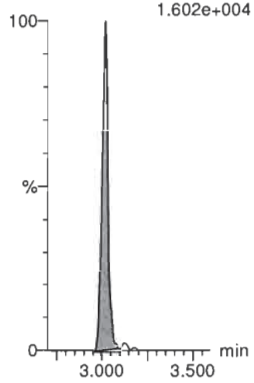
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
5.746e+003



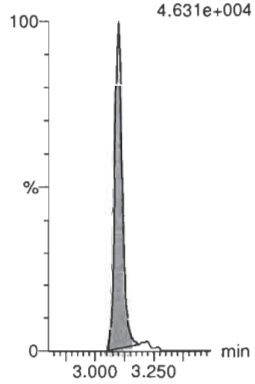
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.941e+003



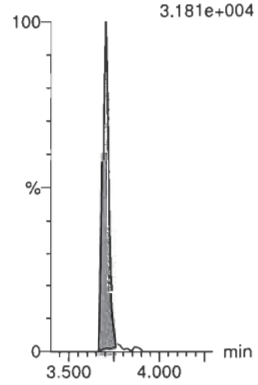
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.602e+004



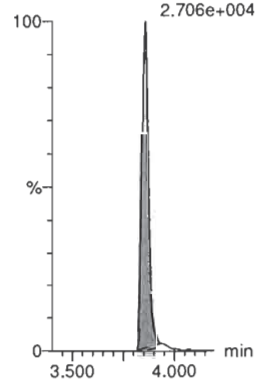
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.631e+004



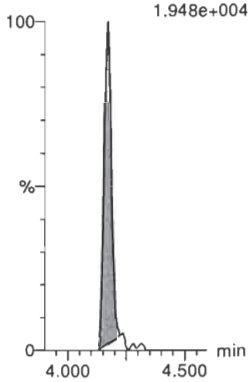
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.181e+004



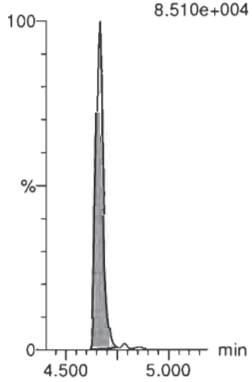
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.706e+004



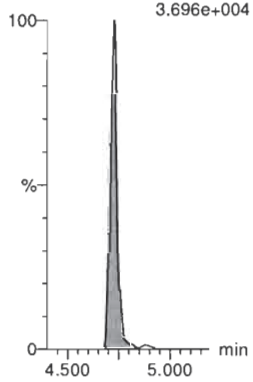
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.948e+004



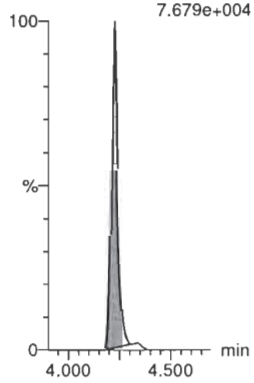
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
8.510e+004



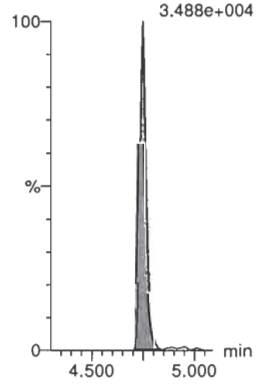
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.696e+004



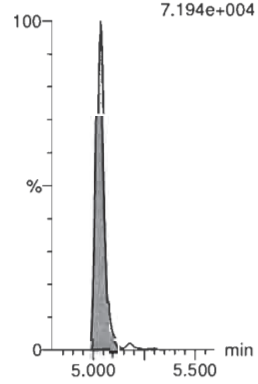
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.679e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.488e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
7.194e+004



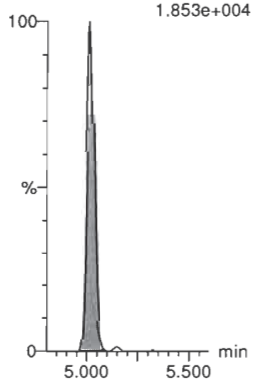
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

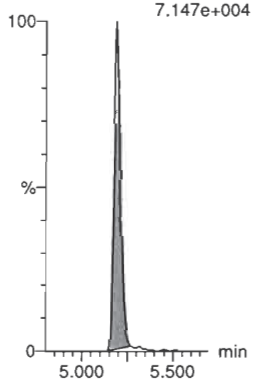
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_6, Date: 12-Feb-2020, Time: 20:01:14, ID: ST200212M2-4 PFC CS1 20B1105, Description: PFC CS1 20B1105

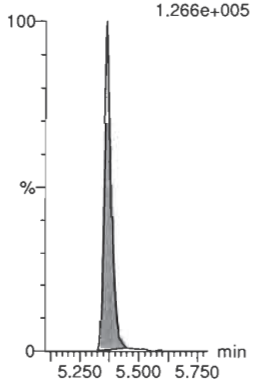
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.853e+004



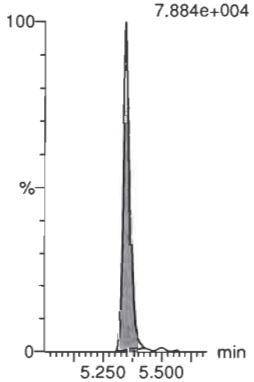
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.147e+004



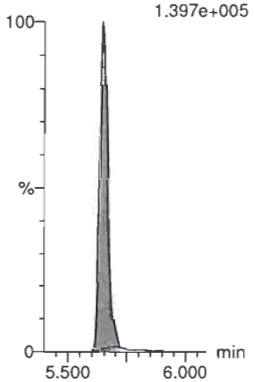
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.266e+005



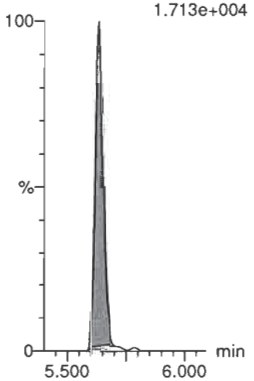
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
7.884e+004



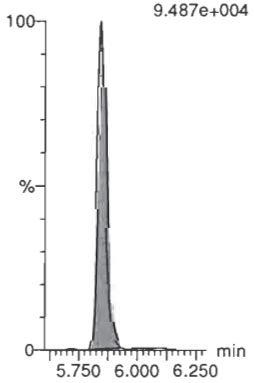
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.397e+005



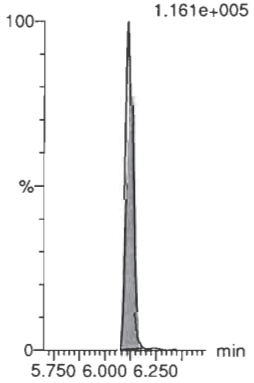
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.713e+004



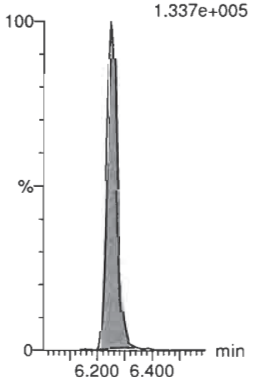
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.487e+004



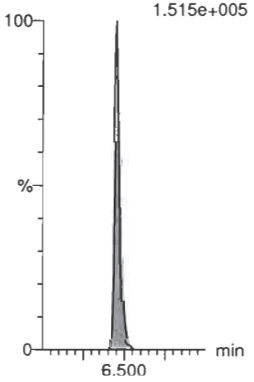
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.161e+005



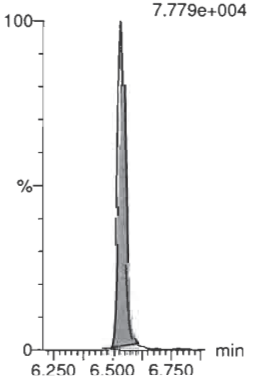
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.337e+005



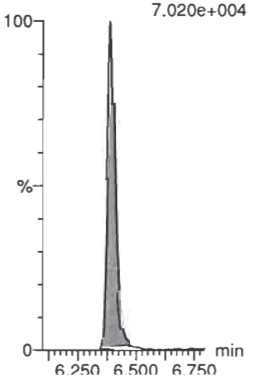
13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.515e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.779e+004



d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
7.020e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

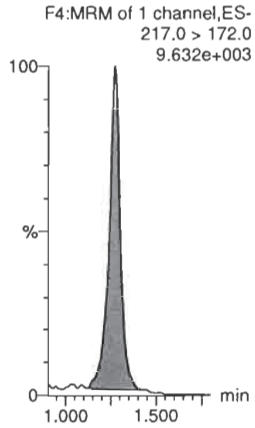
Vista Analytical Laboratory

Dataset: Untitled

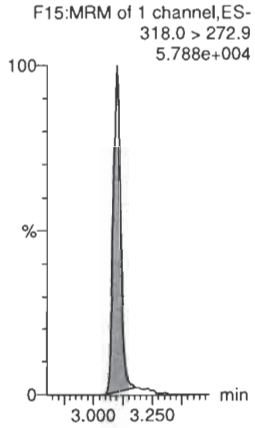
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_6, Date: 12-Feb-2020, Time: 20:01:14, ID: ST200212M2-4 PFC CS1 20B1105, Description: PFC CS1 20B1105

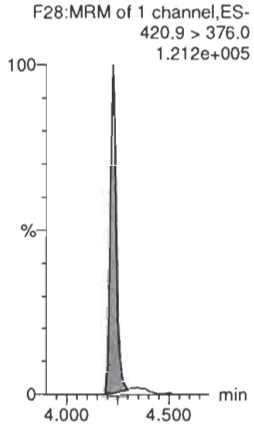
13C4-PFBA



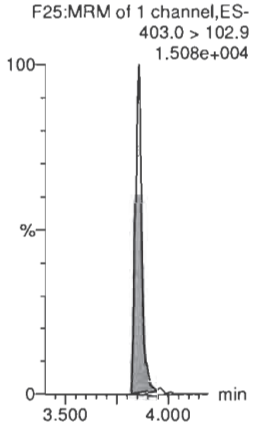
13C5-PFHxA



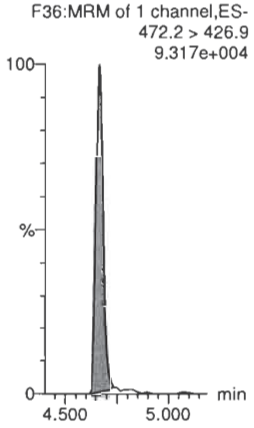
13C8-PFOA



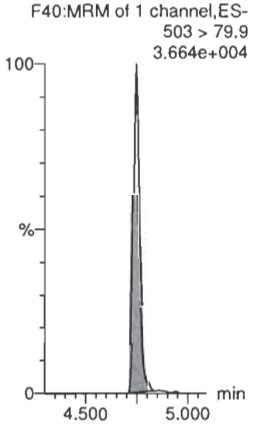
18O2-PFHxS



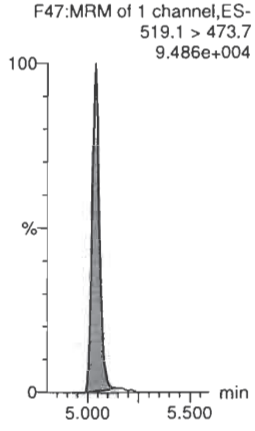
13C9-PFNA



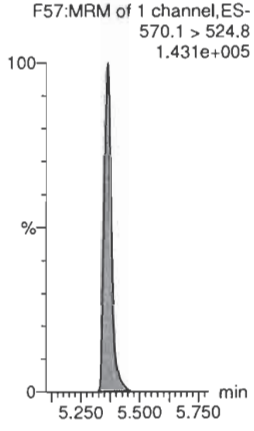
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 41 of 100
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Dataset: Z:\Projects\PFAS.PRO\Results\200212M2\200212M2_CRV.qld

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Printed: Thursday, February 13, 2020 12:21:38 Pacific Standard Time

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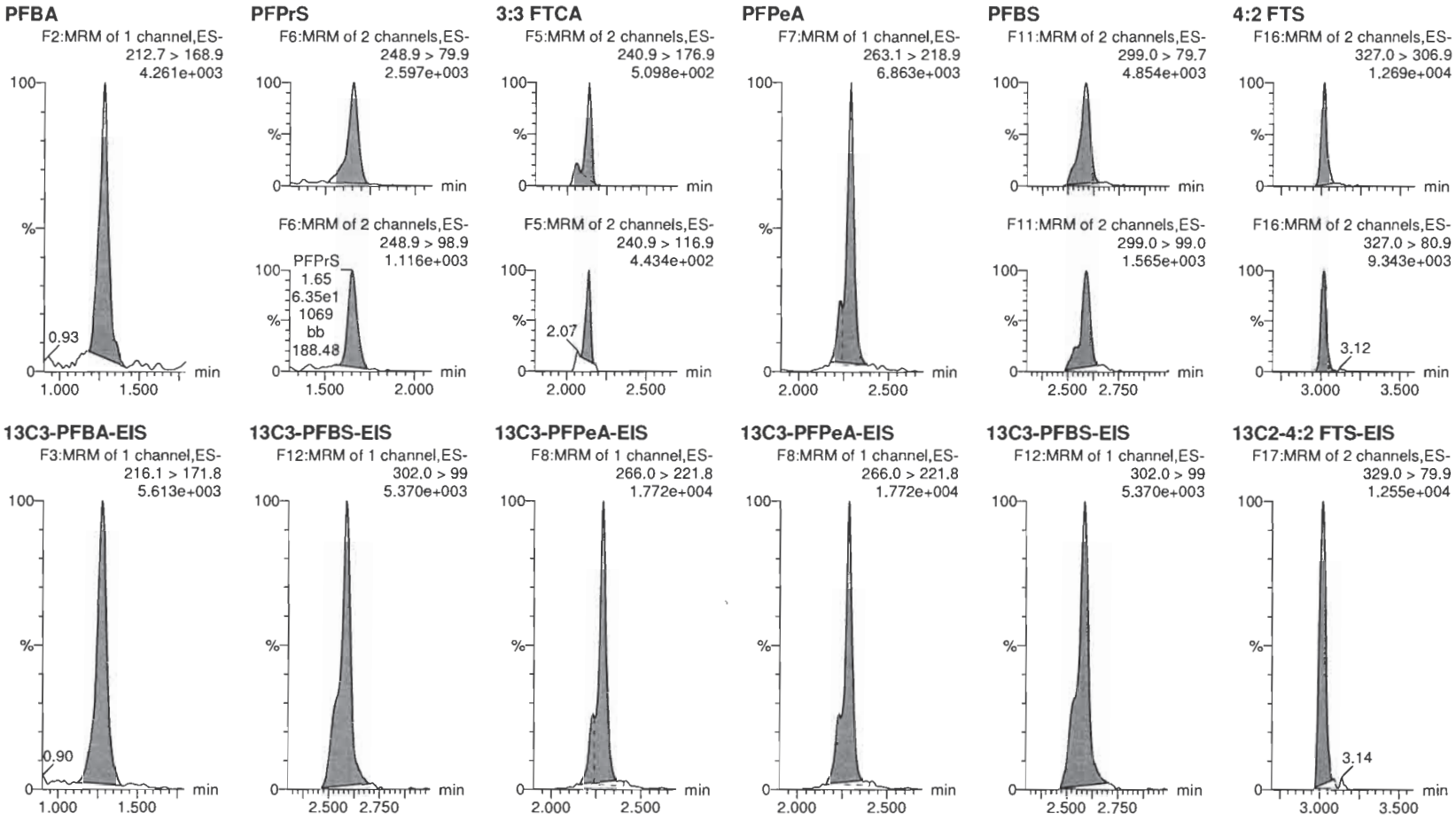

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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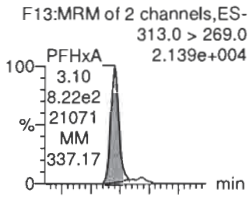
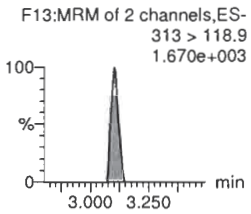
PFHxA





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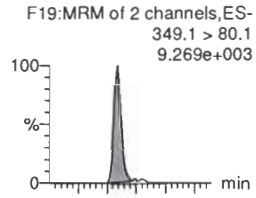
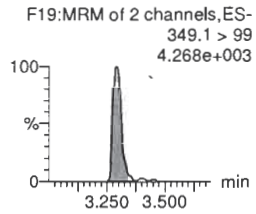
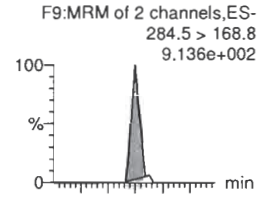
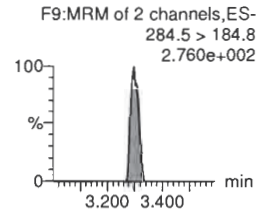




HFPO-DA





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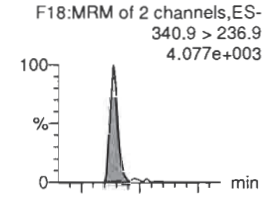

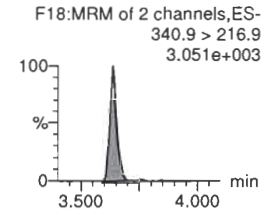

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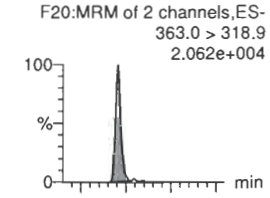

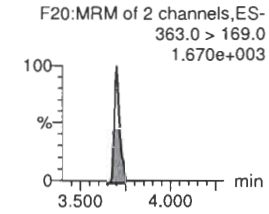

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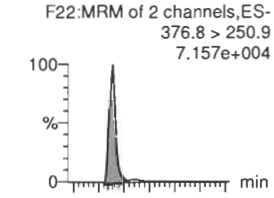

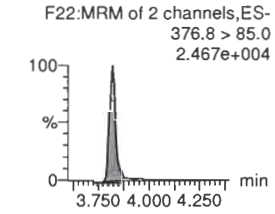

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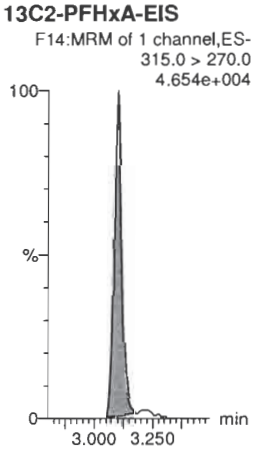

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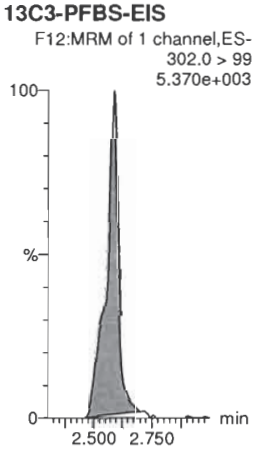

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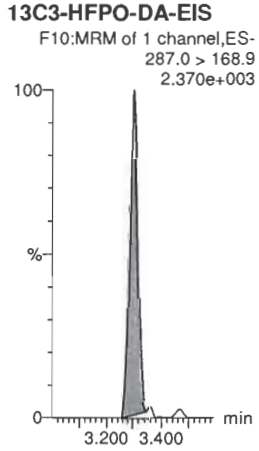

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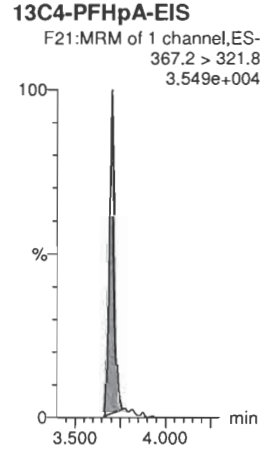

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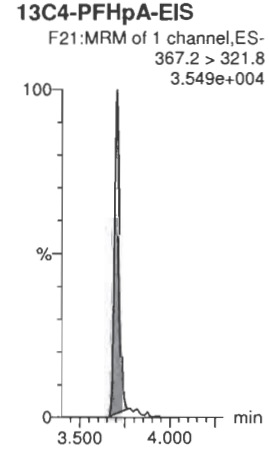

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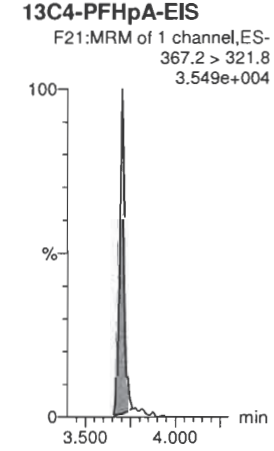

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

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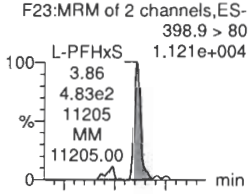

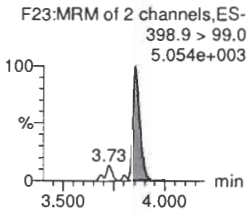

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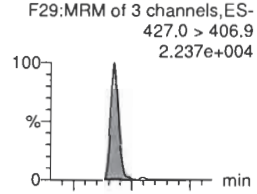

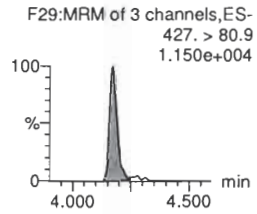

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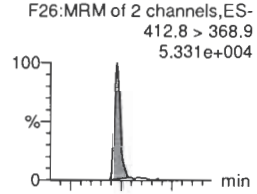

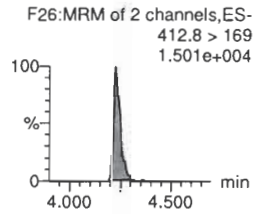

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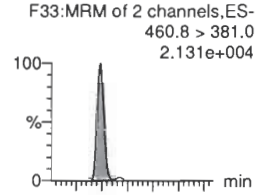

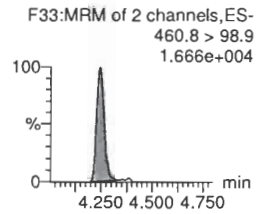

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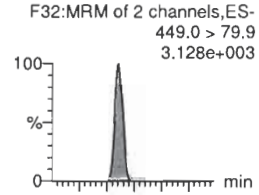
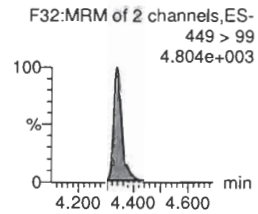
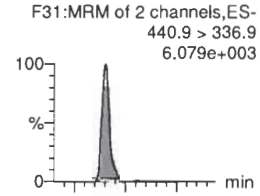
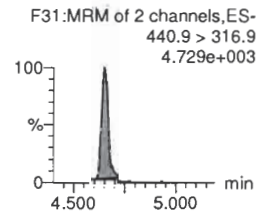




7:3 FTCA





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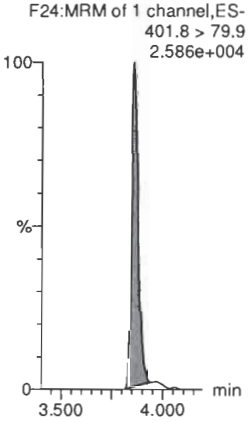

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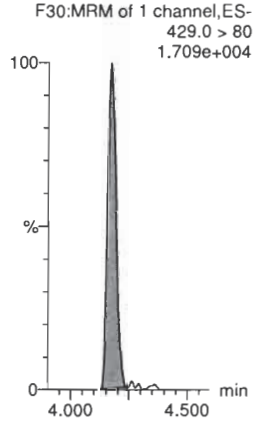

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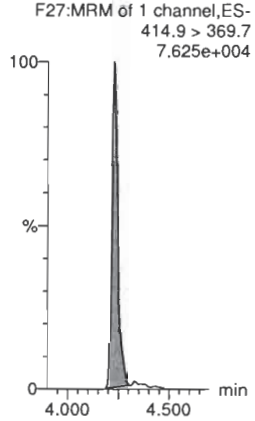

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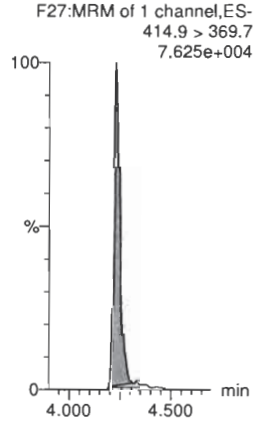

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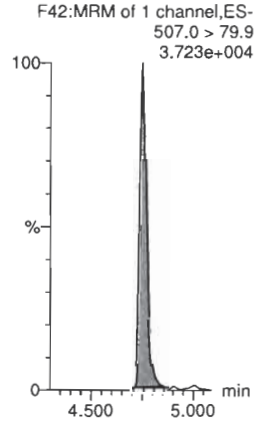

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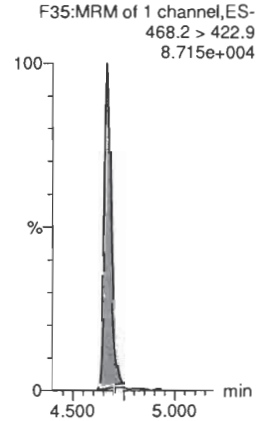

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

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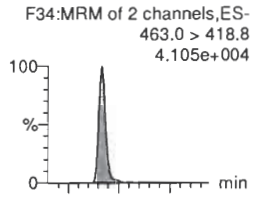

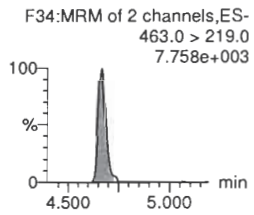

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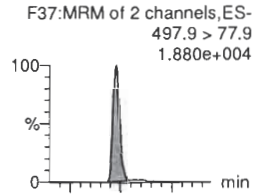
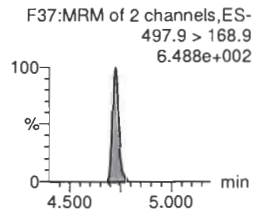
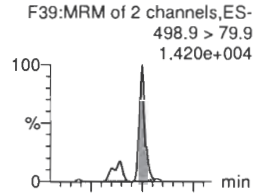
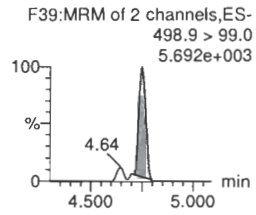




L-PFOS





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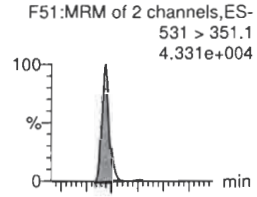

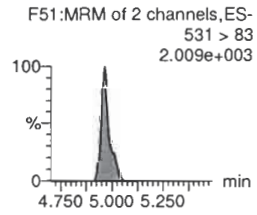

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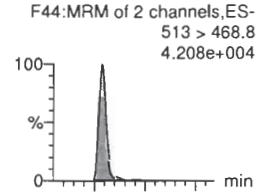

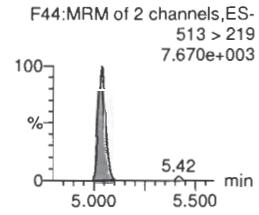

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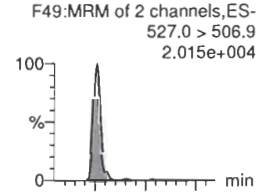

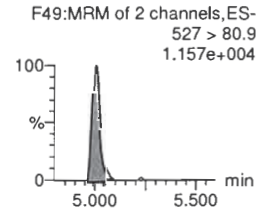

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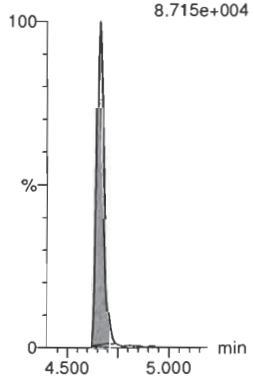

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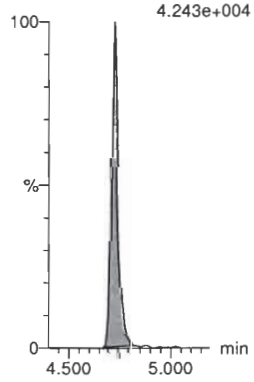

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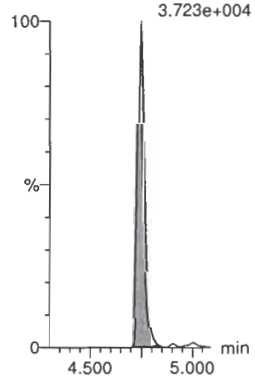

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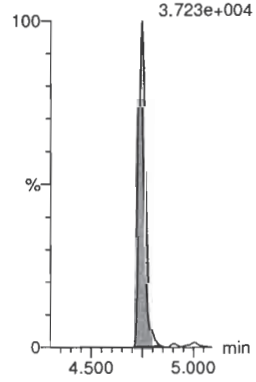

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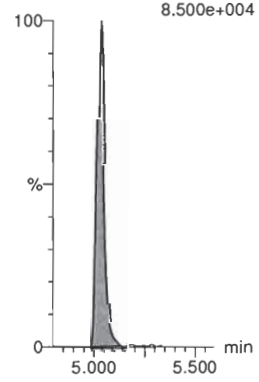

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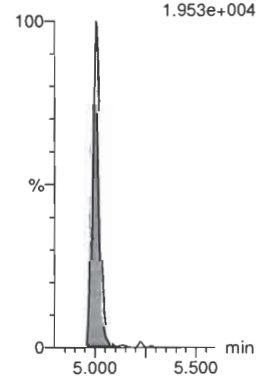


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

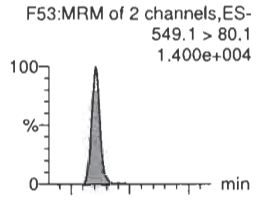
Vista Analytical Laboratory

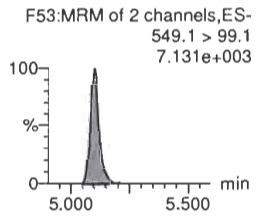
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

PFNS





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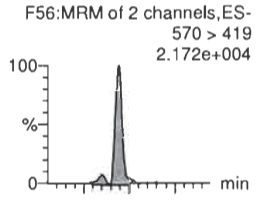

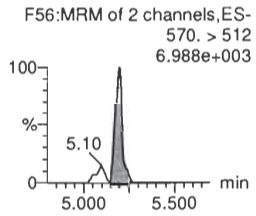

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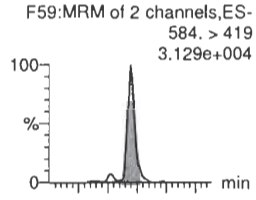
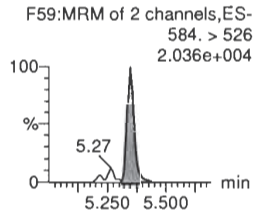
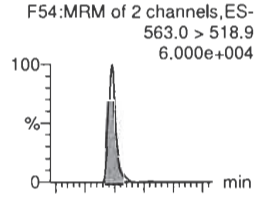
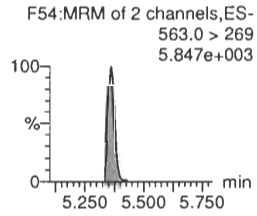


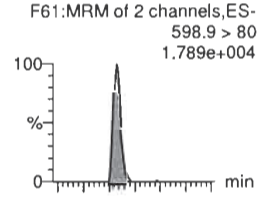


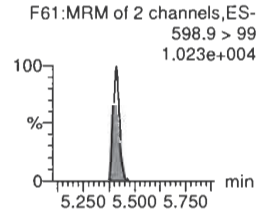
PFUdA



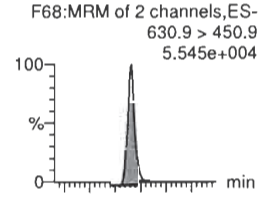


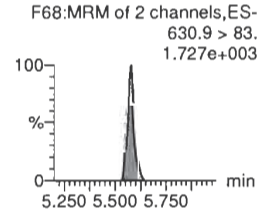
PFDS



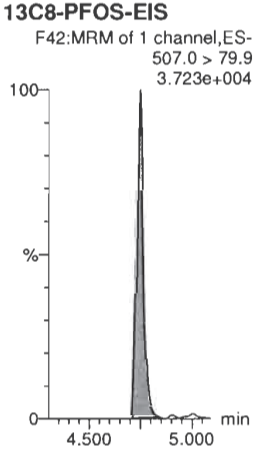


11Cl-PF30UdS

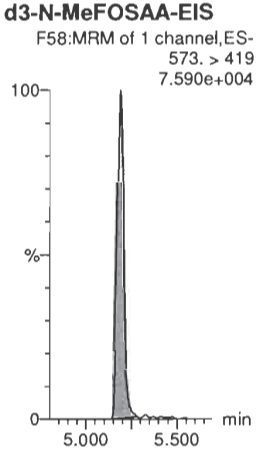




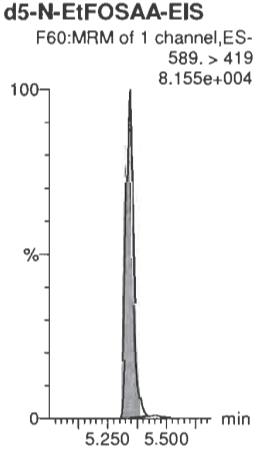
13C8-PFOS-EIS



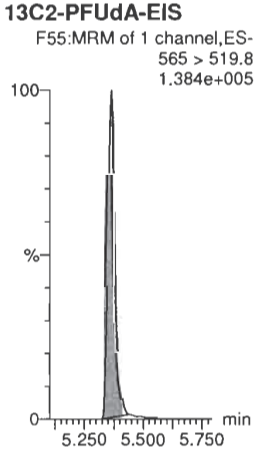
d3-N-MeFOSAA-EIS



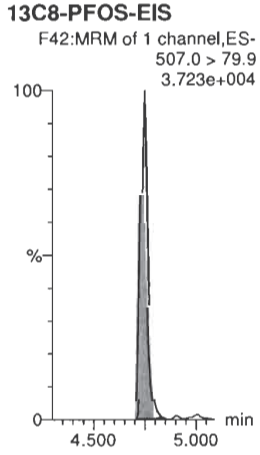
d5-N-EtFOSAA-EIS



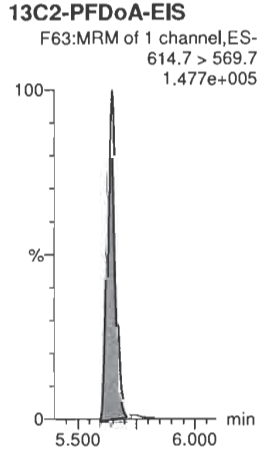
13C2-PFUdA-EIS



13C8-PFOS-EIS



13C2-PFDoA-EIS



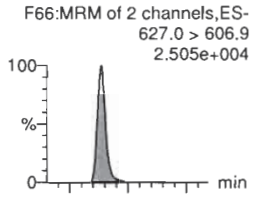
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

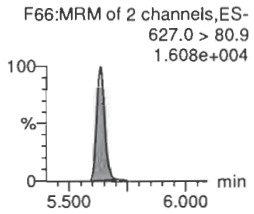
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

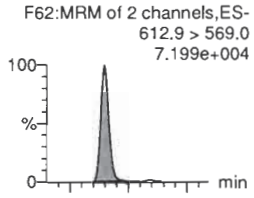
Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

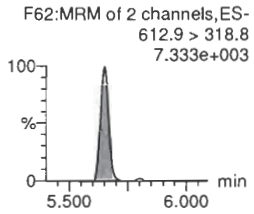
10:2 FTS



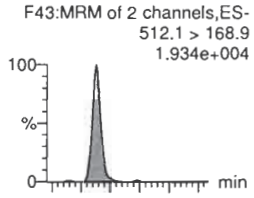


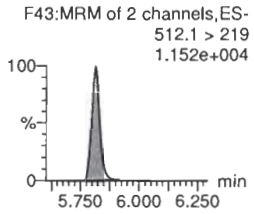
PFDoA



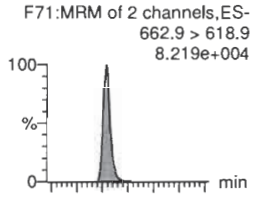


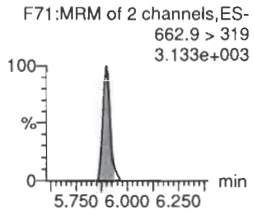
N-MeFOSA





PFTrDA





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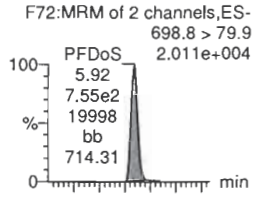

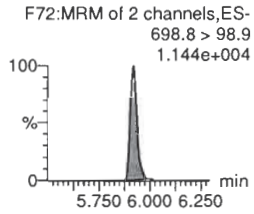

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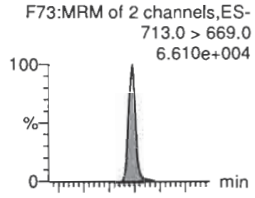
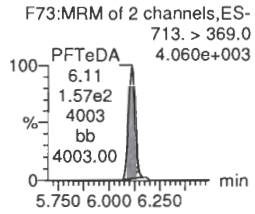
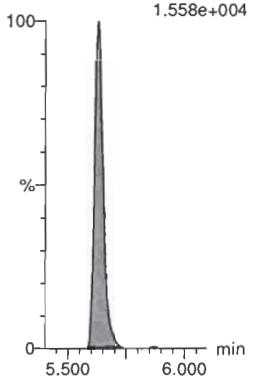
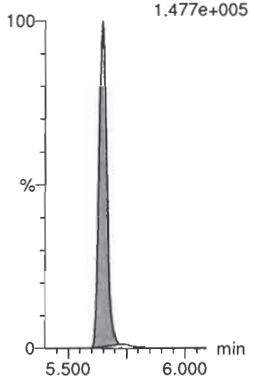




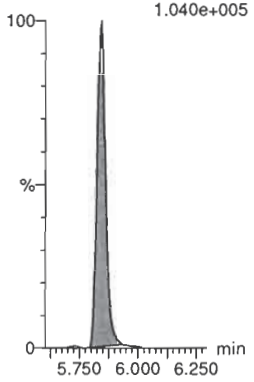
13C2-10:2 FTS-EIS



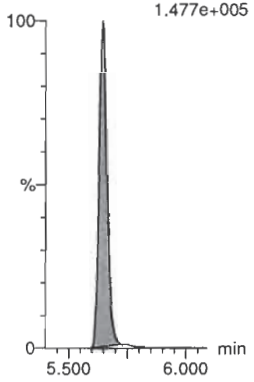
13C2-PFDoA-EIS



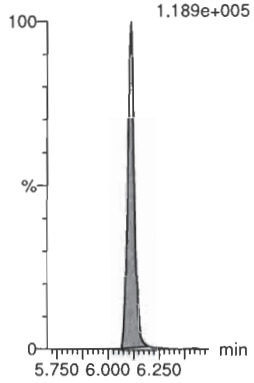
d3-N-MeFOSA-EIS



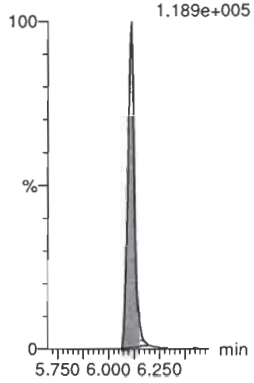
13C2-PFDoA-EIS



13C2-PFTeDA-EIS



13C2-PFTeDA-EIS



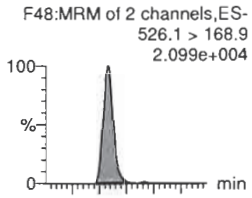
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

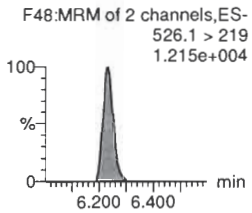
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

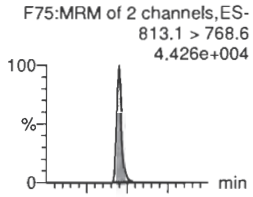
Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

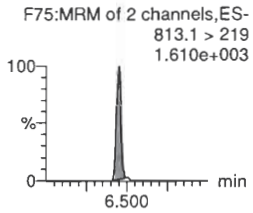
N-EtFOSA



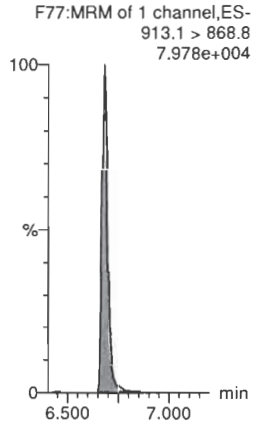


PFHxDA

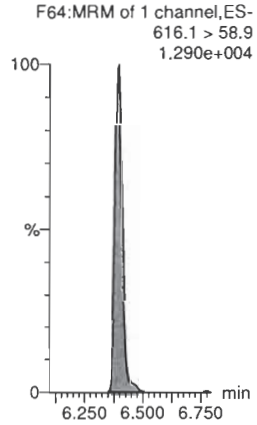




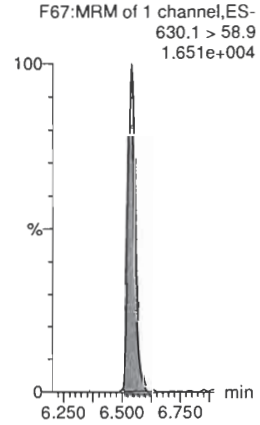
PFODA



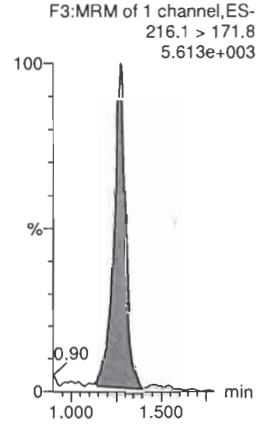
N-MeFOSE



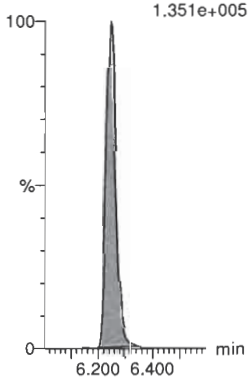
N-EtFOSE



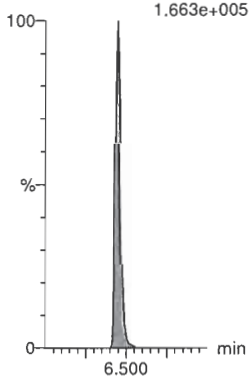
13C3-PFBA-RSD



d5-N-ETFOSA-EIS



13C2-PFHxDA-EIS



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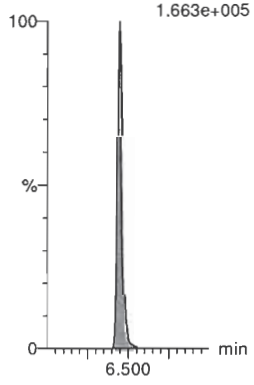
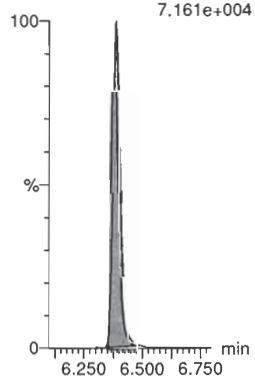
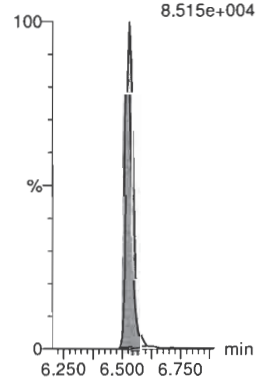


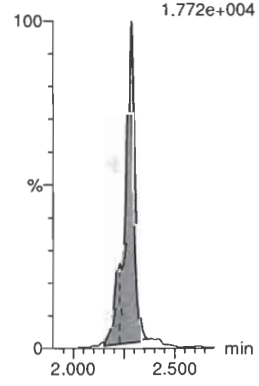
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



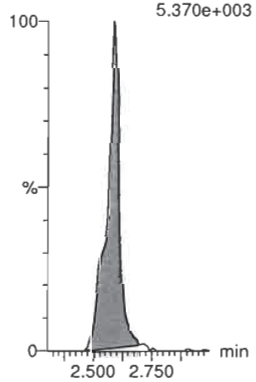
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

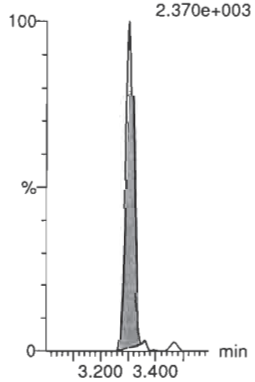
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

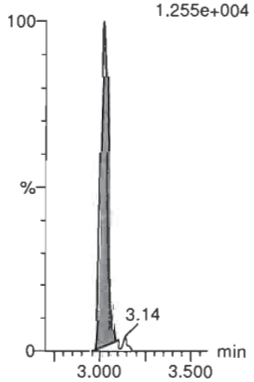
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
5.370e+003



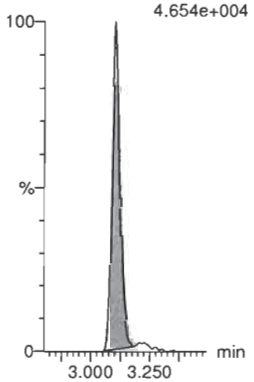
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.370e+003



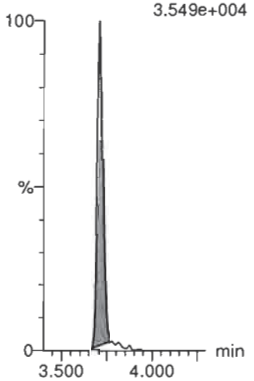
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.255e+004



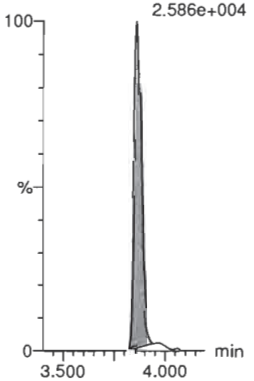
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.654e+004



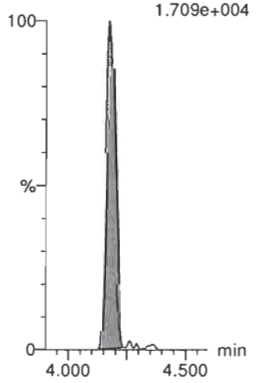
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.549e+004



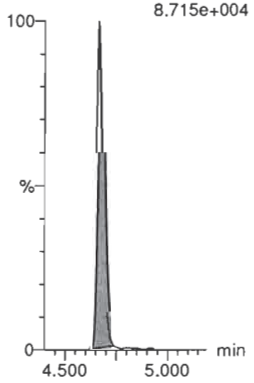
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.586e+004



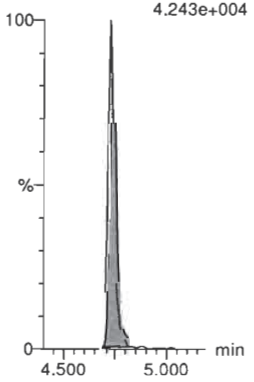
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.709e+004



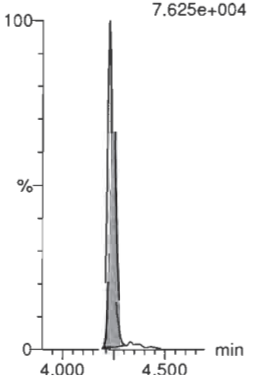
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
8.715e+004



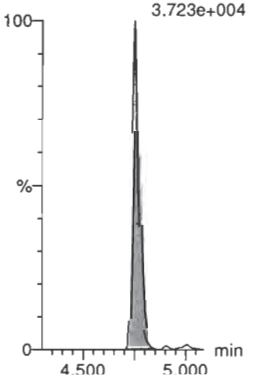
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
4.243e+004



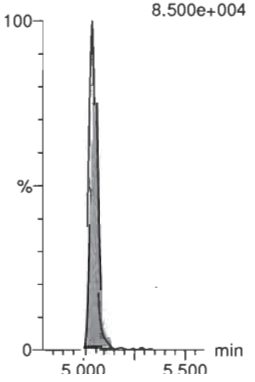
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.625e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.723e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
8.500e+004



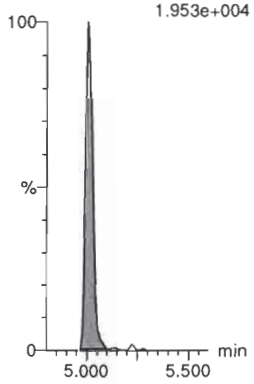
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

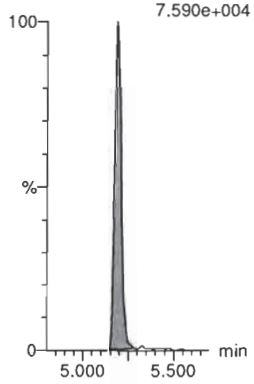
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

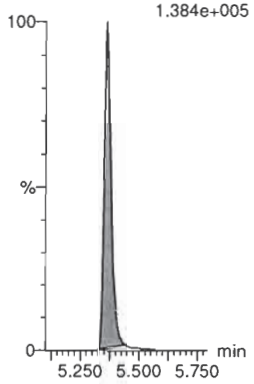
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.953e+004



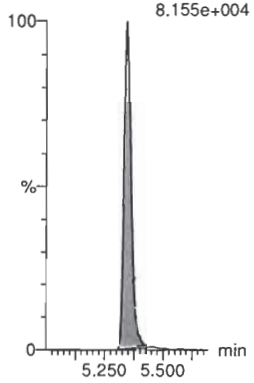
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.590e+004



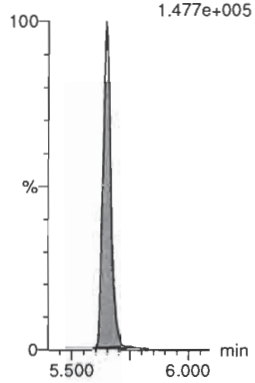
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.384e+005



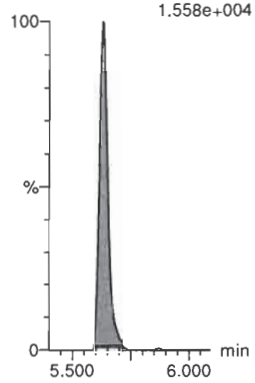
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
8.155e+004



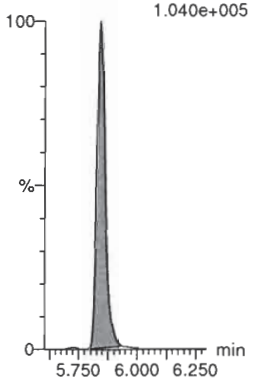
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.477e+005



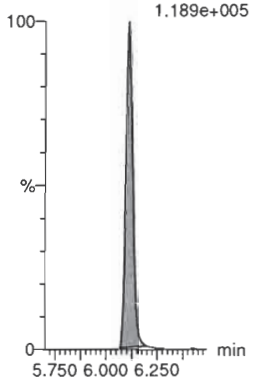
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.558e+004



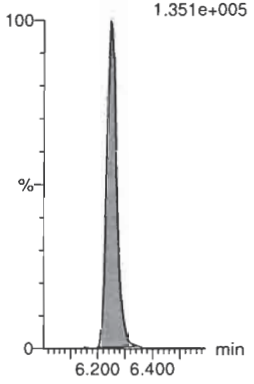
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
1.040e+005



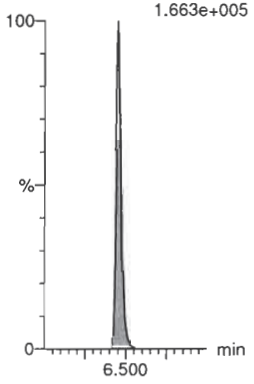
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.189e+005



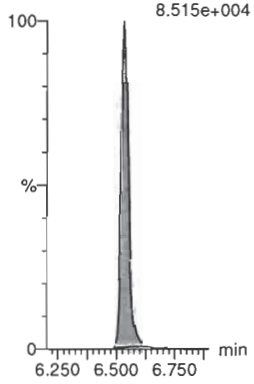
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.351e+005



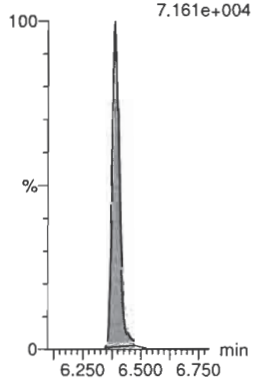
13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.663e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
8.515e+004



d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
7.161e+004



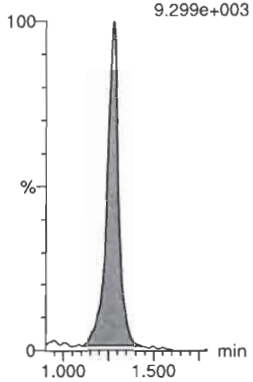
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_7, Date: 12-Feb-2020, Time: 20:11:36, ID: ST200212M2-5 PFC CS2 20B1106, Description: PFC CS2 20B1106

13C4-PFBA



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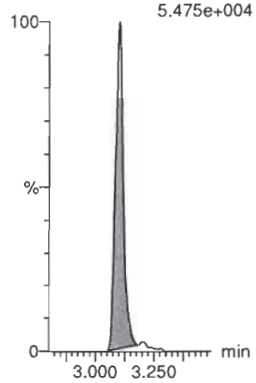
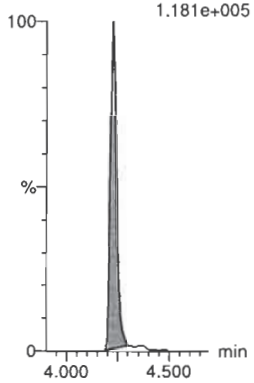
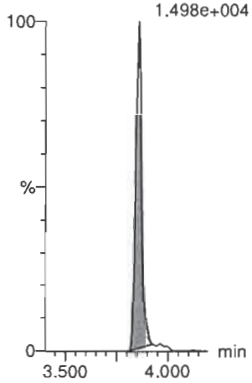


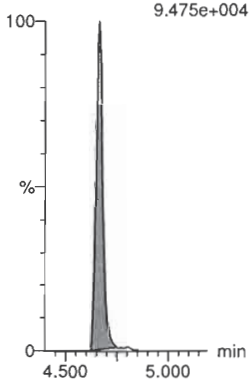
13C8-PFOA



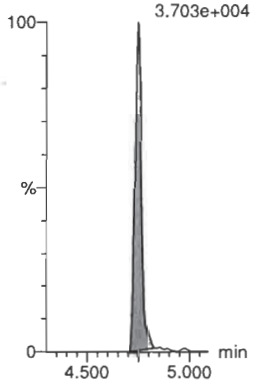
18O2-PFHxS



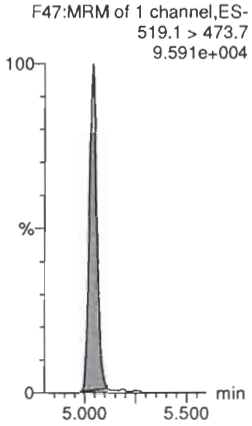
13C9-PFNA



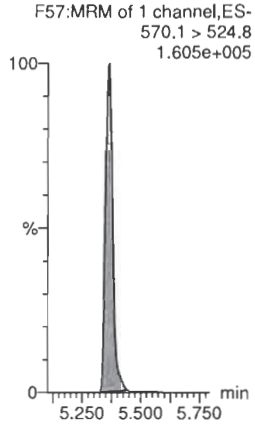
13C4-PFOS



13C6-PFDA



13C7-PFUdA

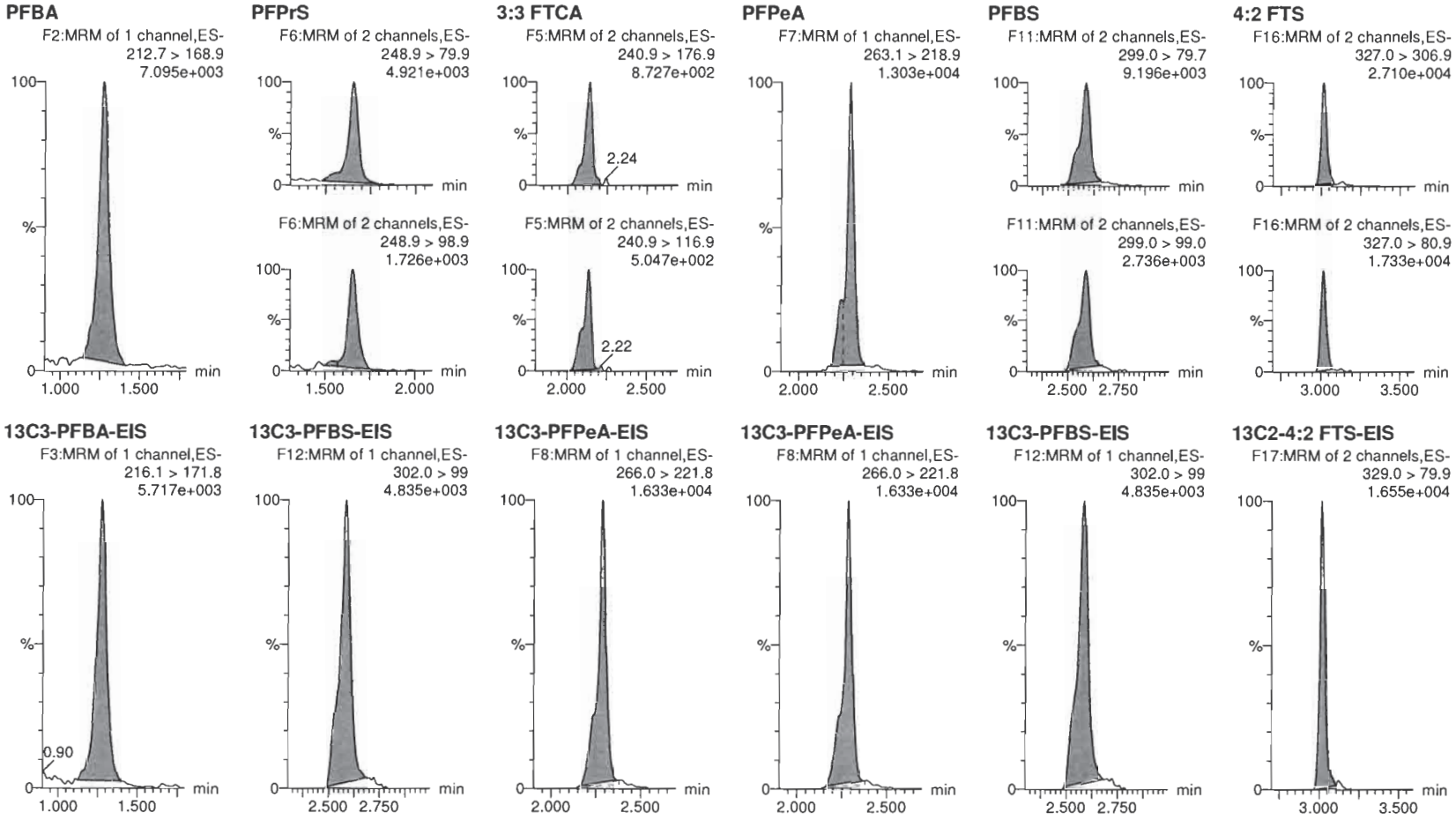


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 51 of 100
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

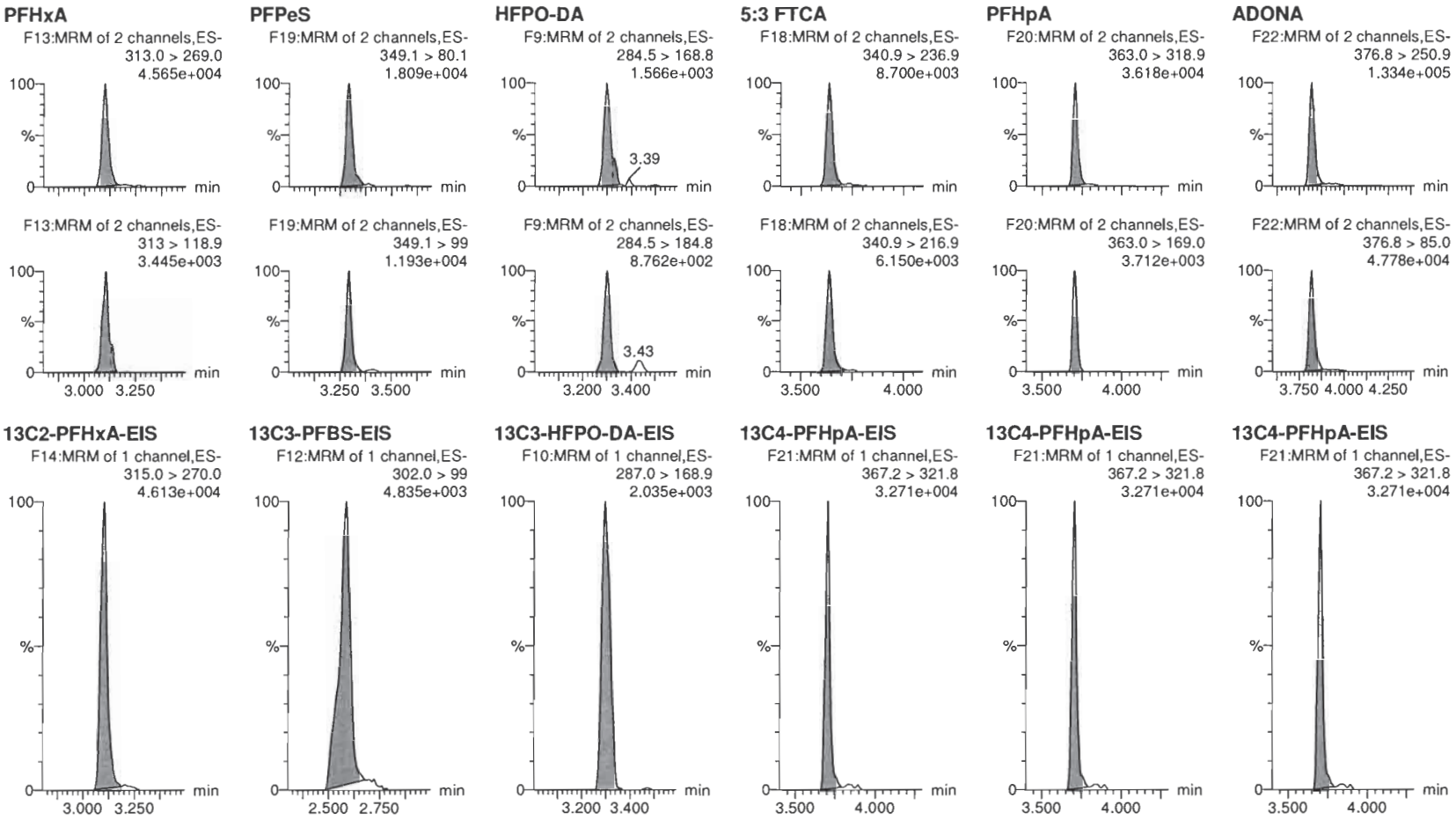


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 52 of 100
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107



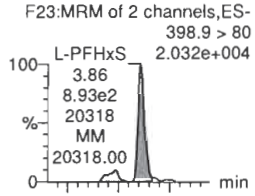
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

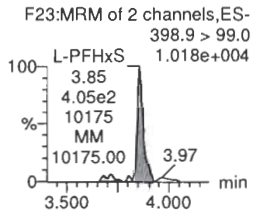
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

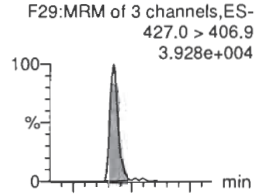
Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

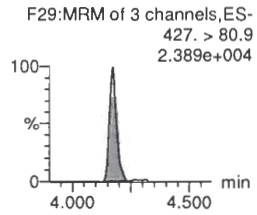
L-PFHxS



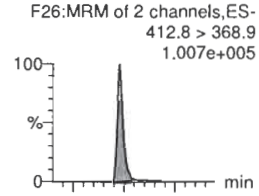


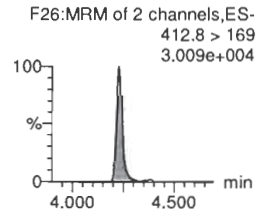
6:2 FTS



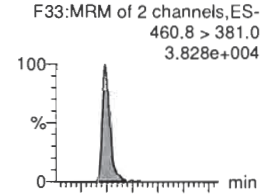


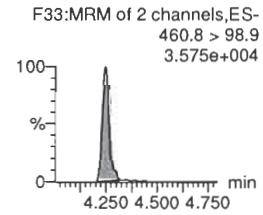
L-PFOA



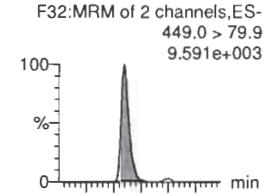


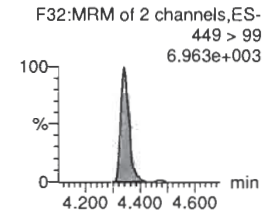
PFEChS



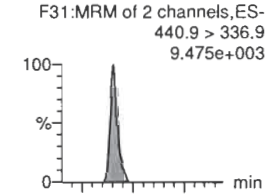


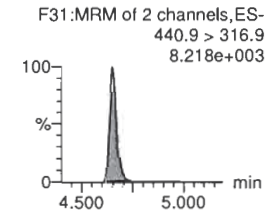
PFHpS



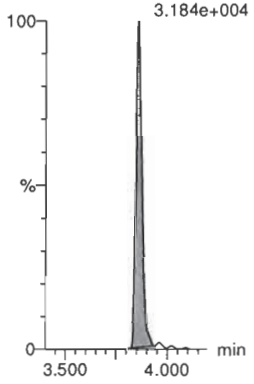


7:3 FTCA

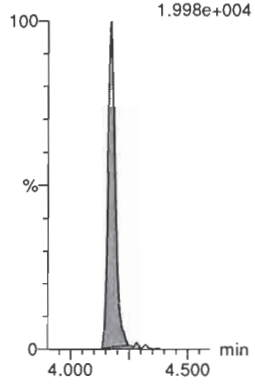




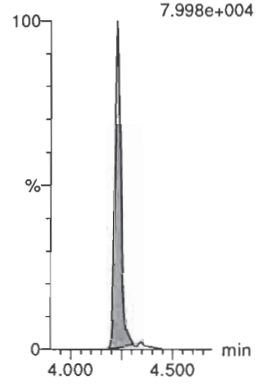
13C3-PFHxS-EIS



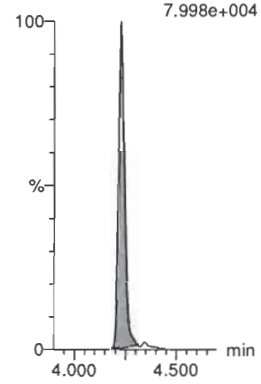
13C2-6:2 FTS-EIS



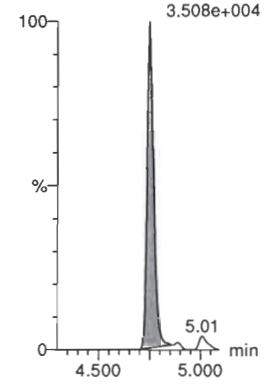
13C2-PFOA-EIS



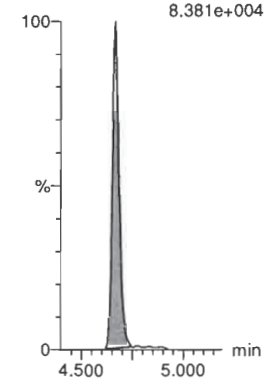
13C2-PFOA-EIS



13C8-PFOS-EIS



13C5-PFNA-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
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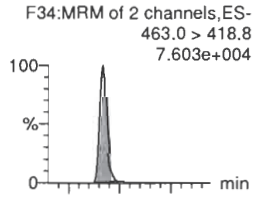
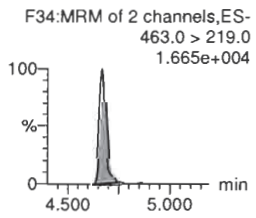
Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

PFNA





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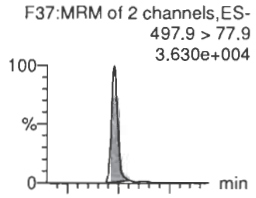

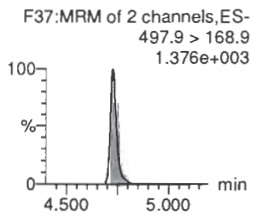

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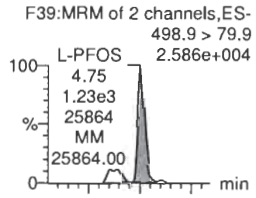

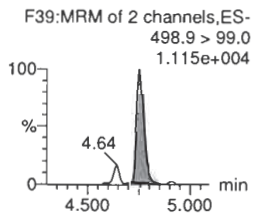

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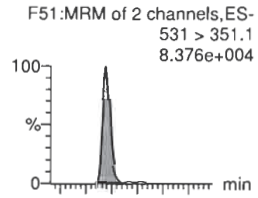

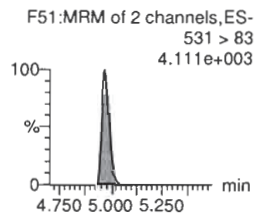

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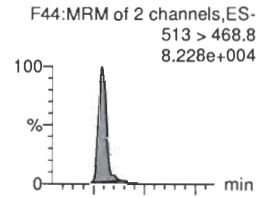
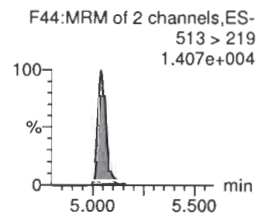
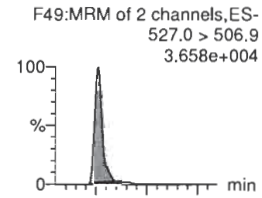
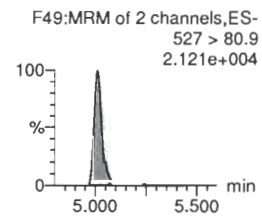




8:2 FTS





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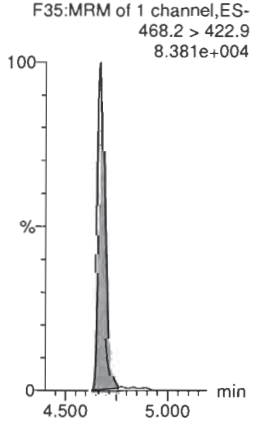

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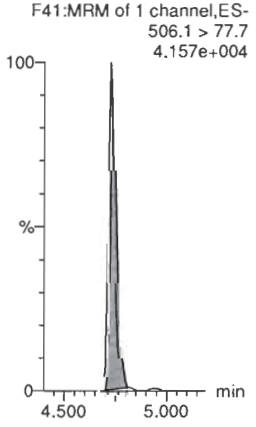

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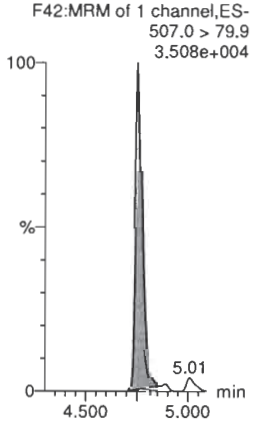

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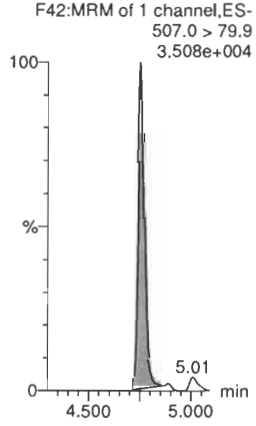

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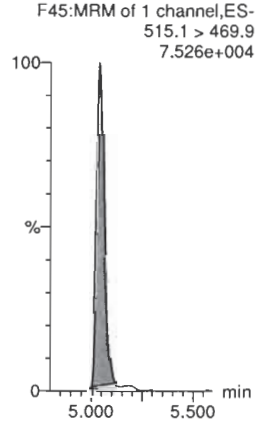
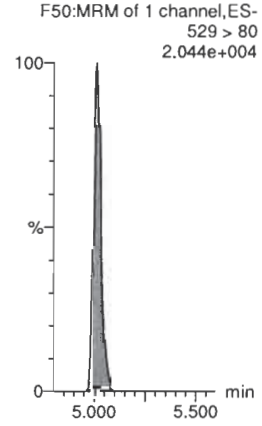


13C2-8:2 FTS-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

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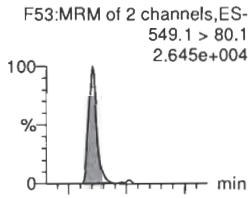

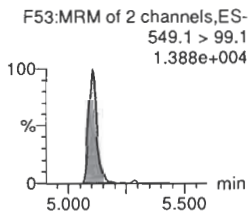

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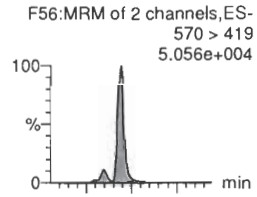

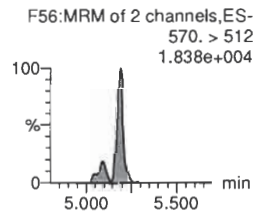

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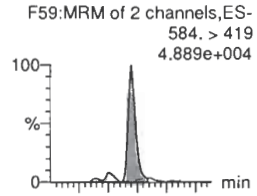

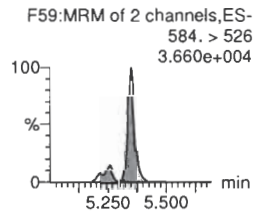

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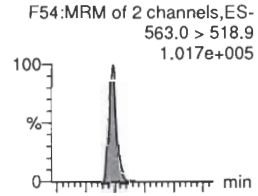

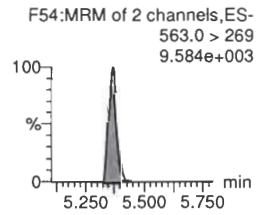

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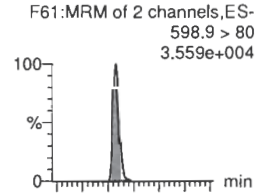

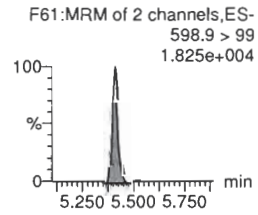

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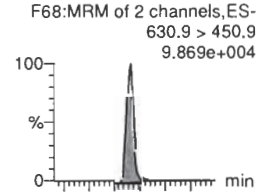

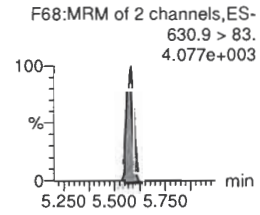

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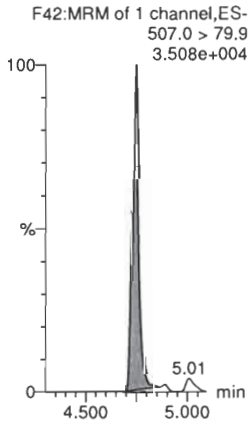

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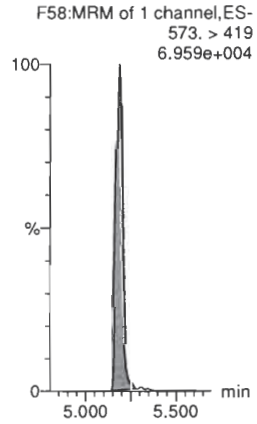

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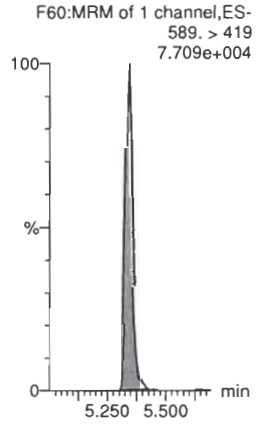

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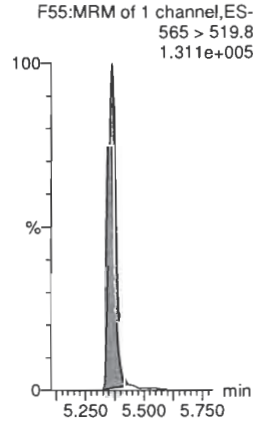
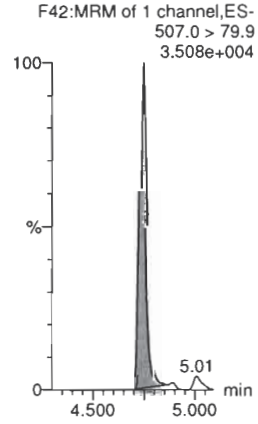


13C8-PFOS-EIS



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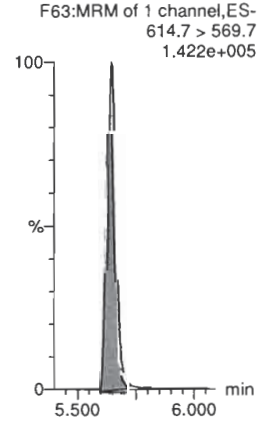

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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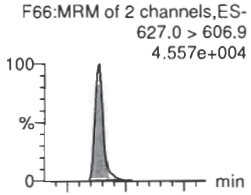
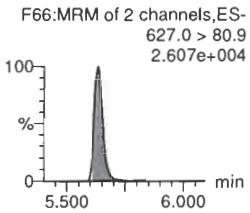
10:2 FTS





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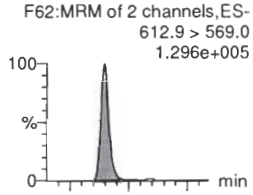

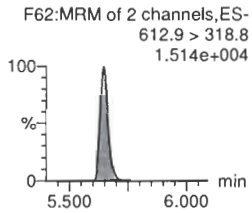

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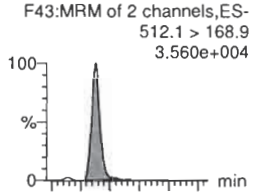

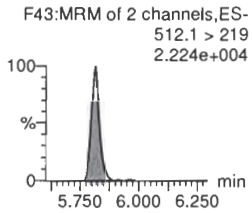

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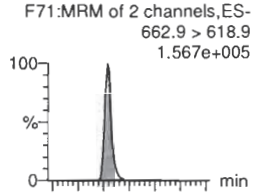

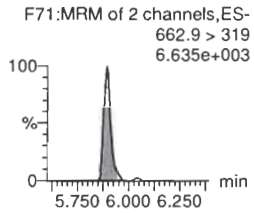

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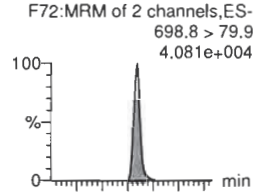

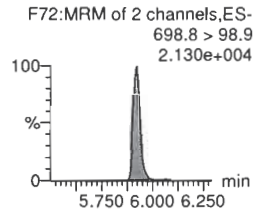

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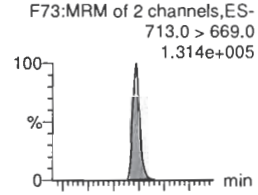

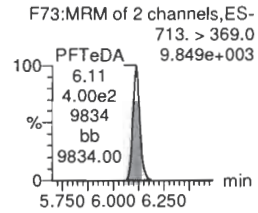

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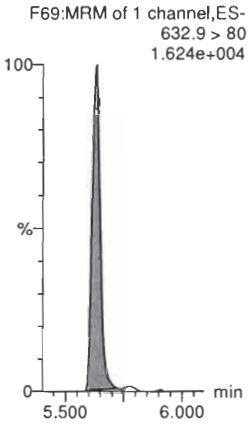
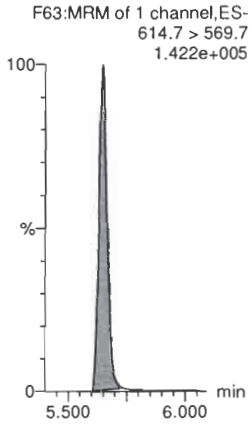


13C2-PFDoA-EIS



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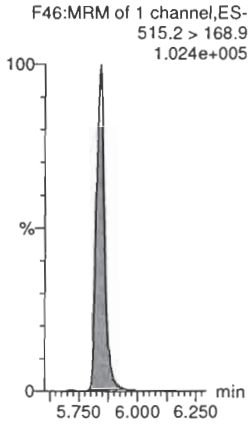

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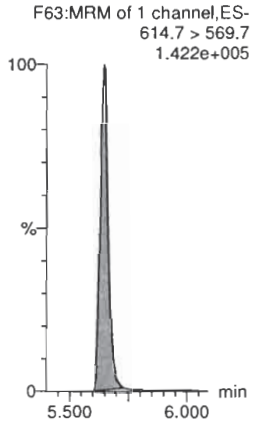

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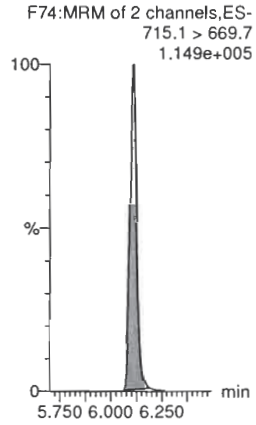

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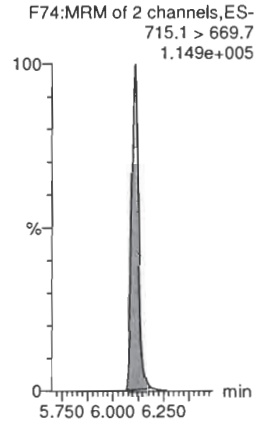

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

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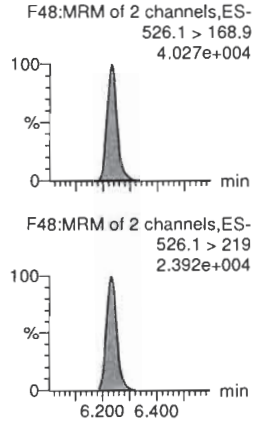

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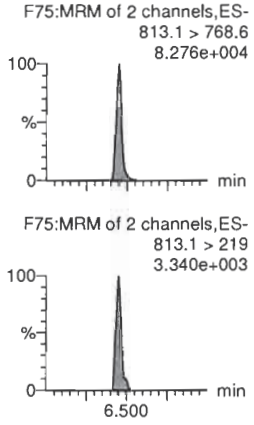

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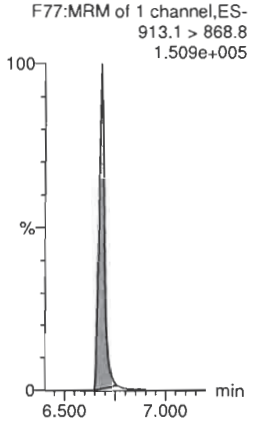

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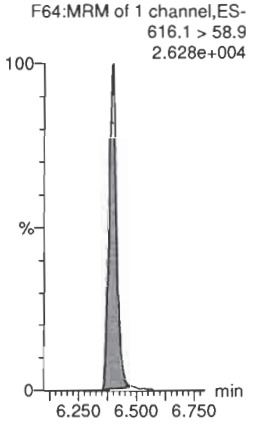

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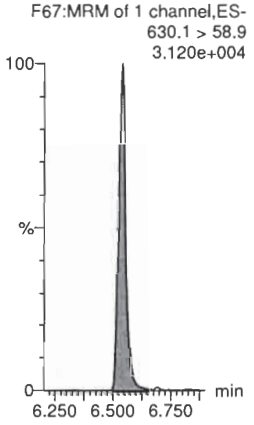
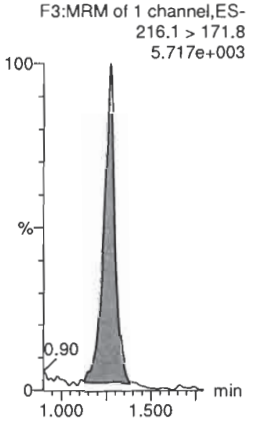
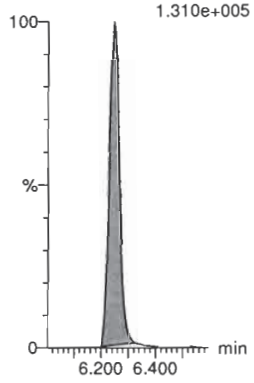


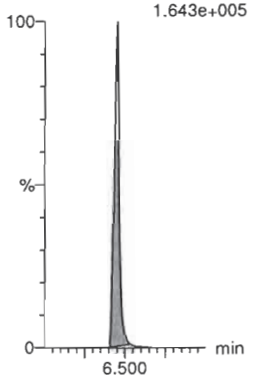
13C3-PFBA-RSD



d5-N-ETFOSA-EIS



13C2-PFHxDA-EIS



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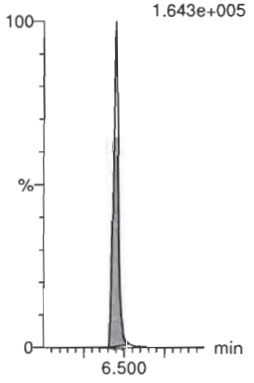
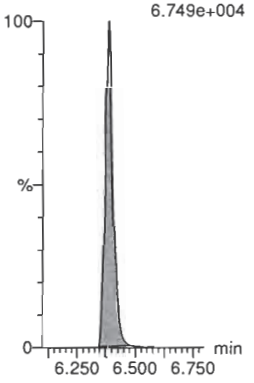
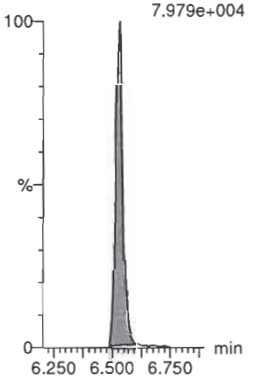


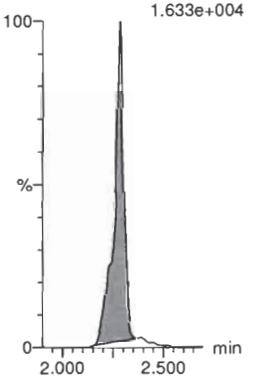
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



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Dataset: Untitled

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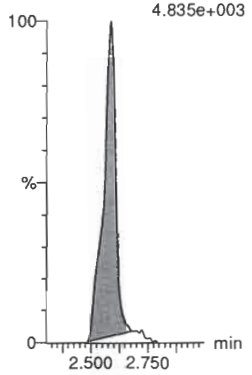
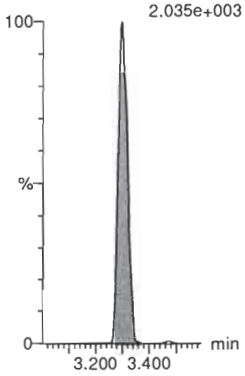
Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107

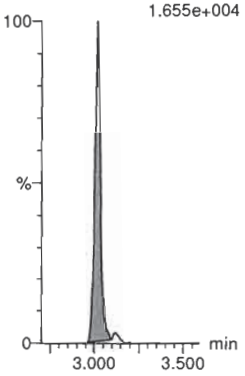
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
4.835e+003



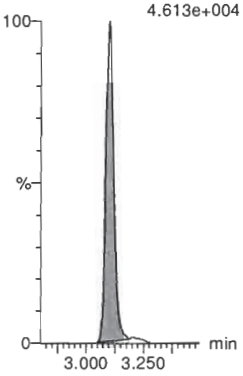
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.035e+003



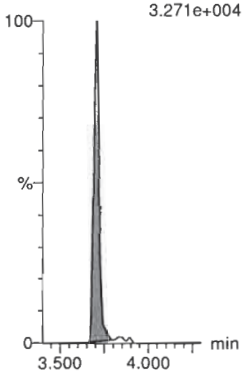
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.655e+004



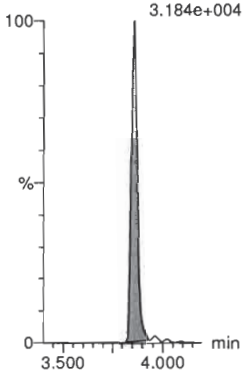
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.613e+004



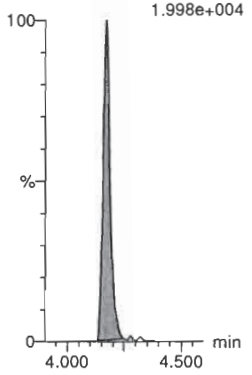
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.271e+004



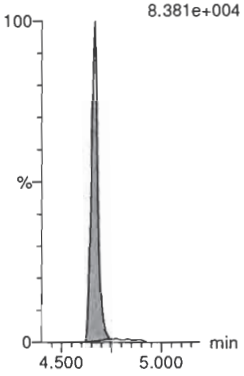
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
3.184e+004



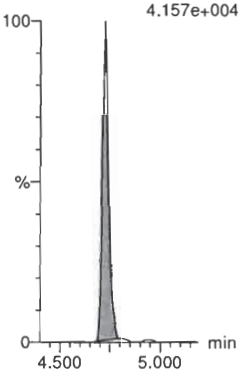
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.998e+004



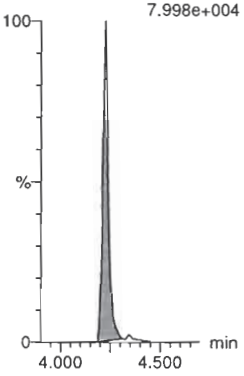
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
8.381e+004



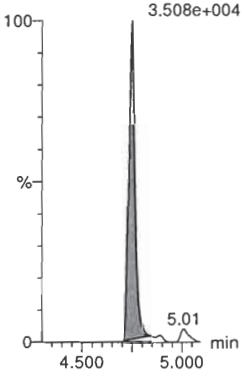
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
4.157e+004



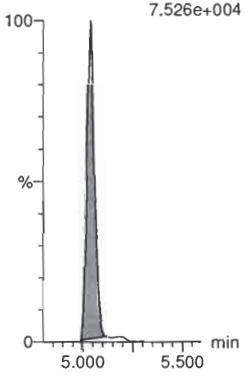
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.998e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.508e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
7.526e+004



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Dataset: Untitled

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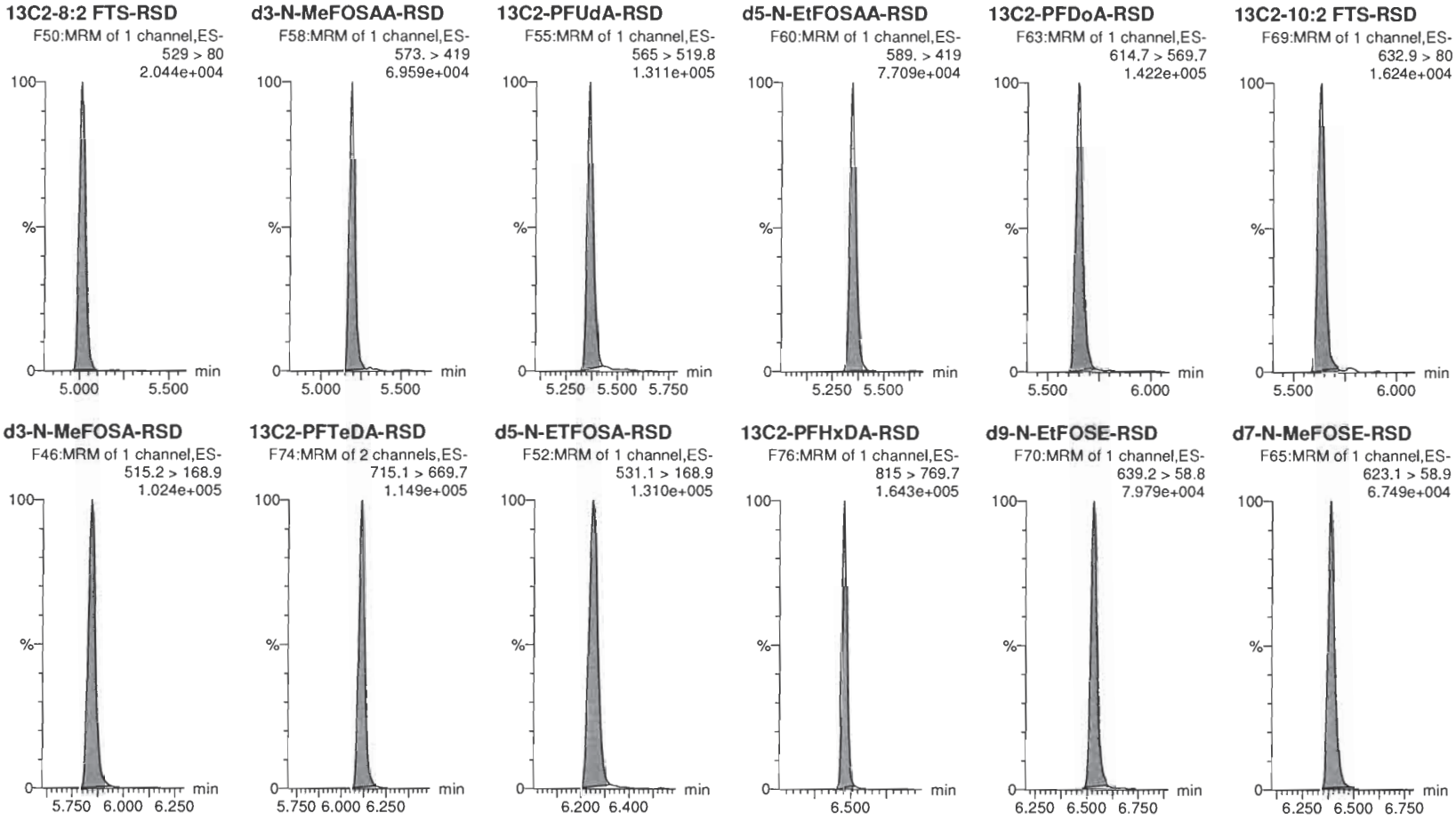
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_8, Date: 12-Feb-2020, Time: 20:21:58, ID: ST200212M2-6 PFC CS3 20B1107, Description: PFC CS3 20B1107



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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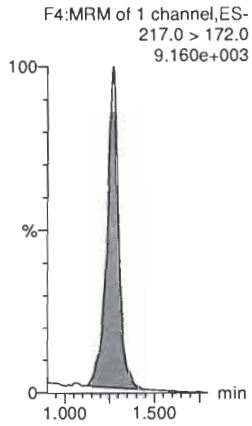
13C4-PFBA



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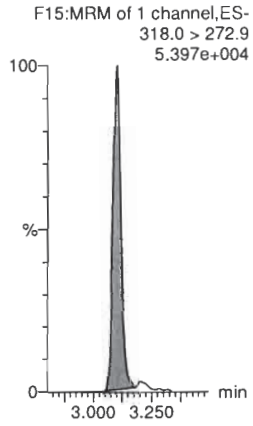
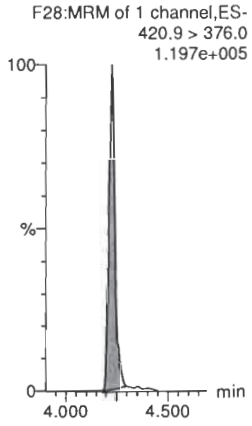
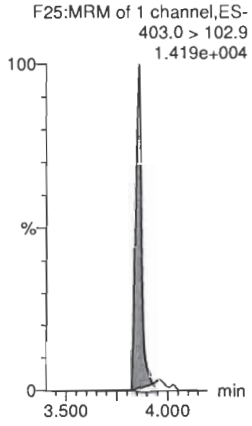


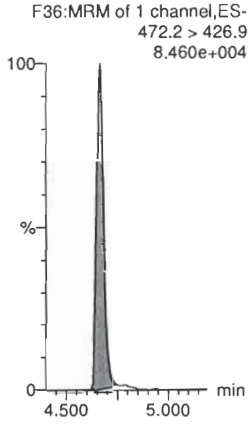
13C8-PFOA



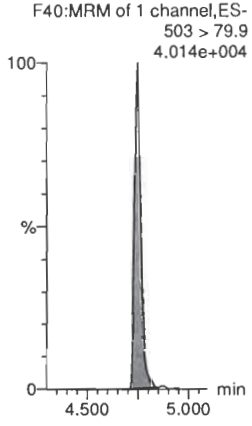
18O2-PFHxS



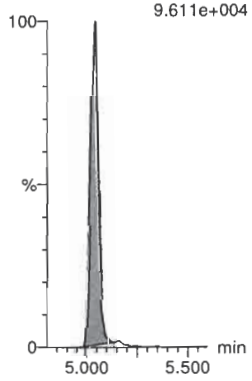
13C9-PFNA



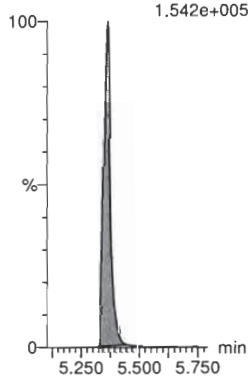
13C4-PFOS



13C6-PFDA



13C7-PFUdA



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Dataset: Untitled

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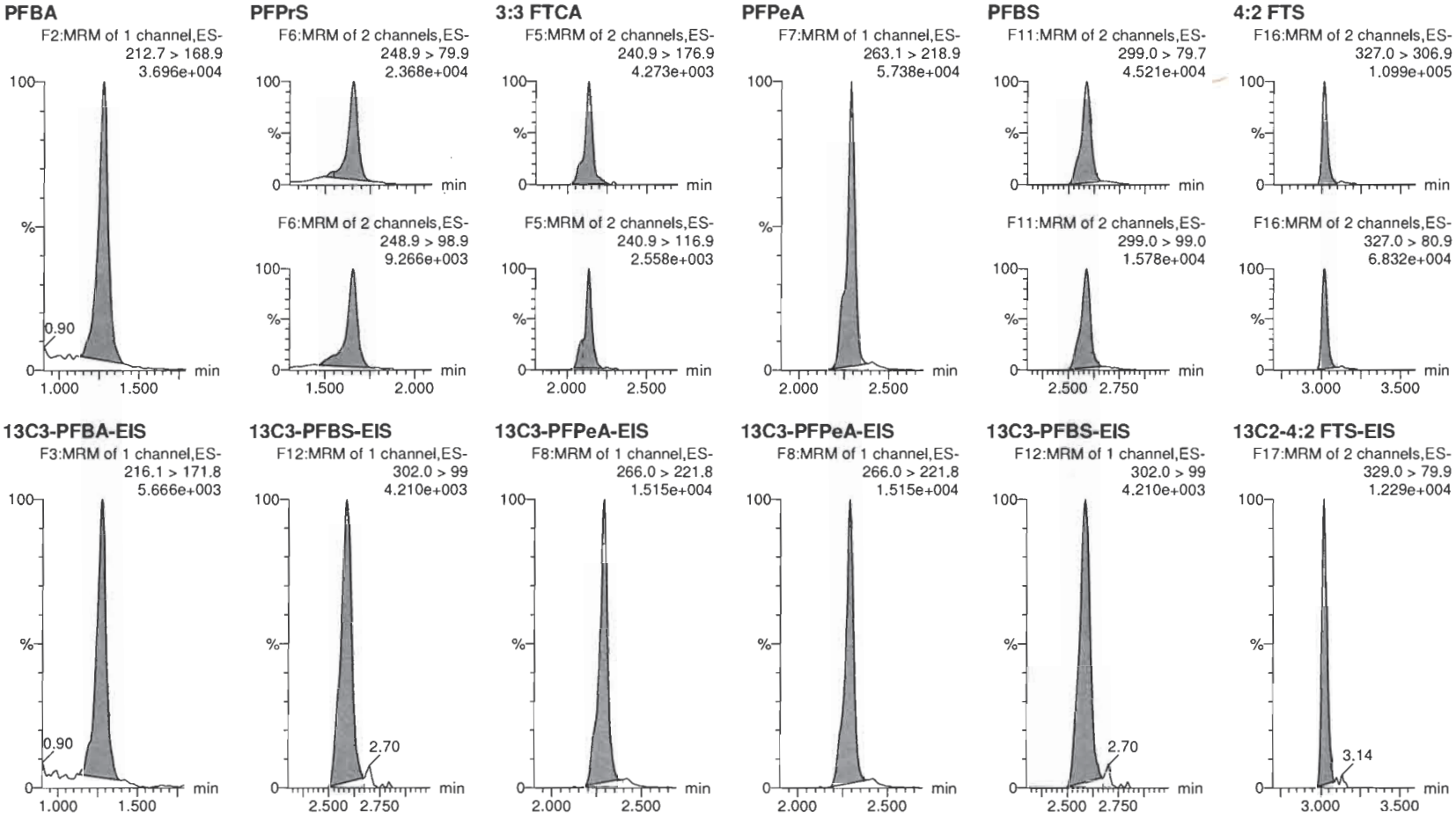

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 62 of 100
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Dataset: Untitled

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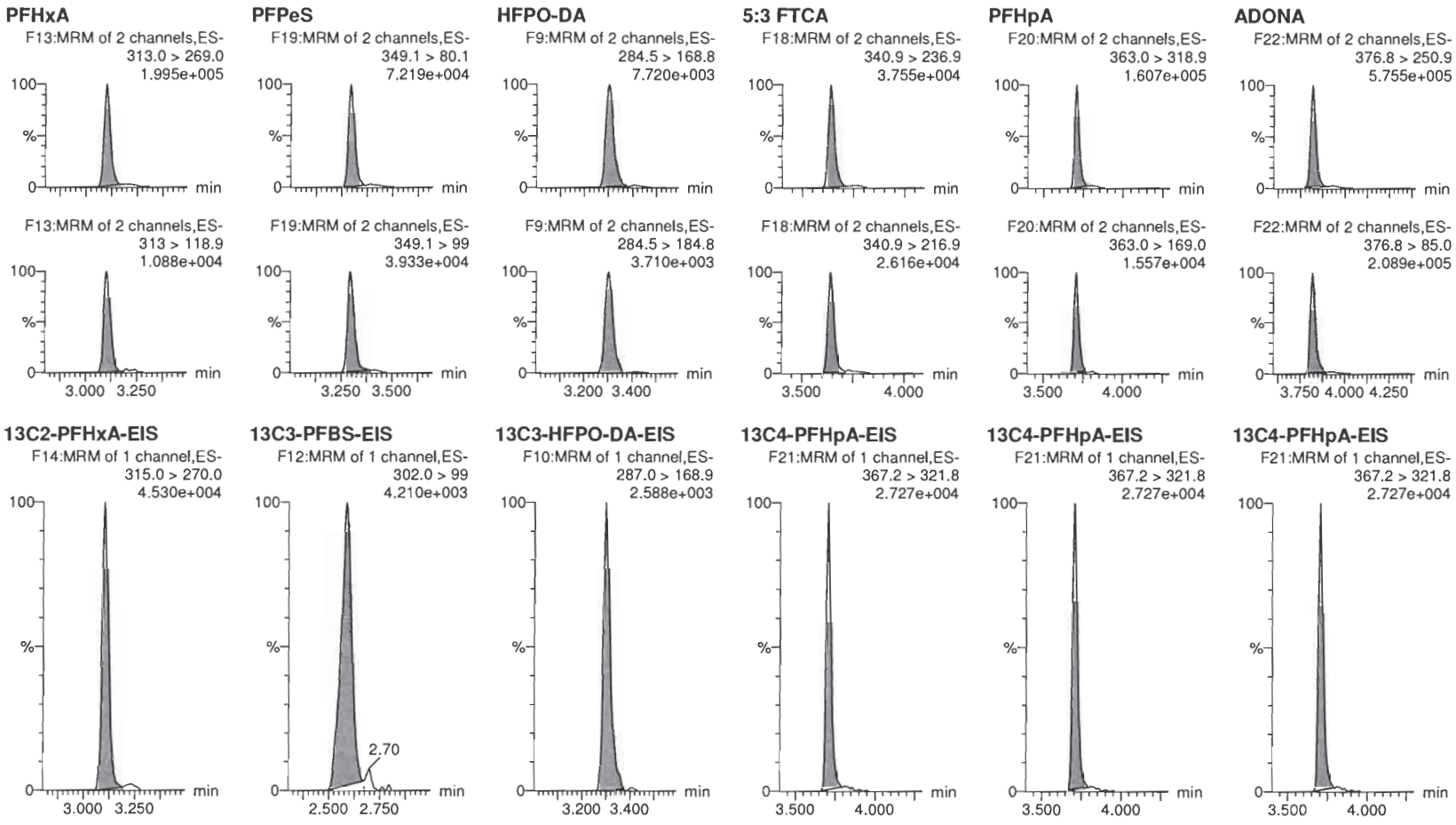

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Dataset: Untitled

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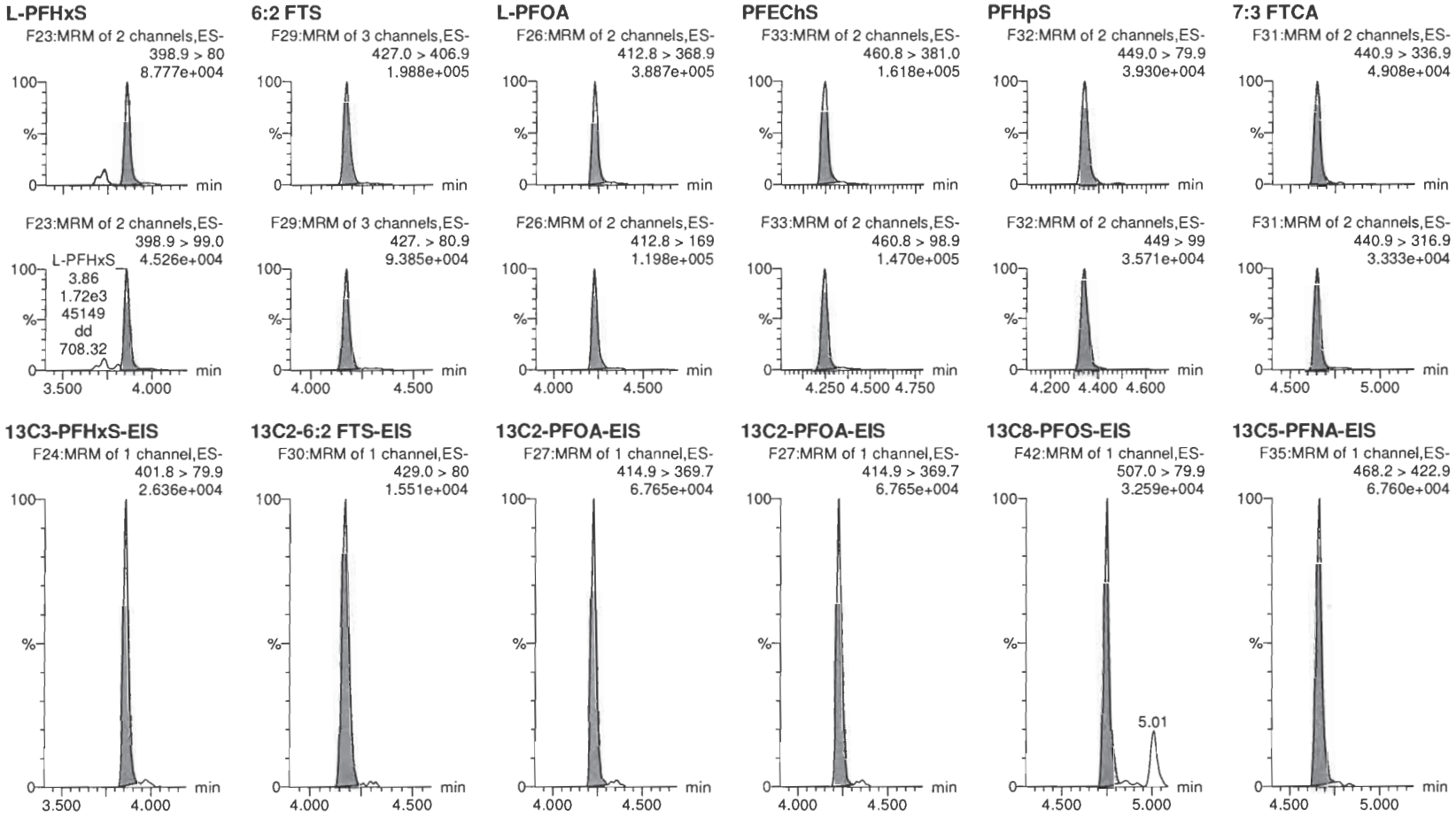

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Vista Analytical Laboratory

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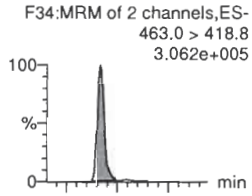
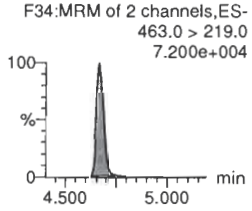
PFNA





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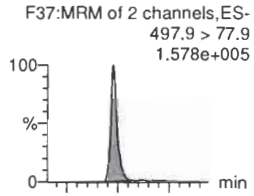

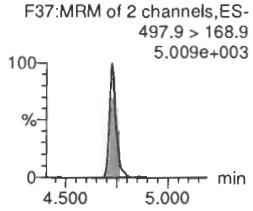

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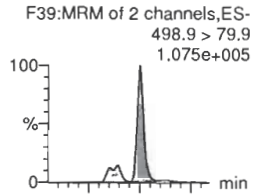

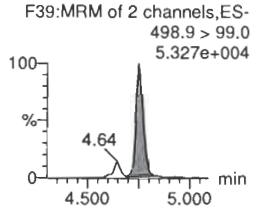

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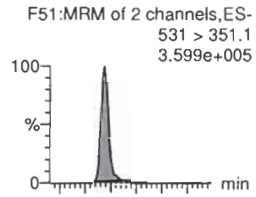
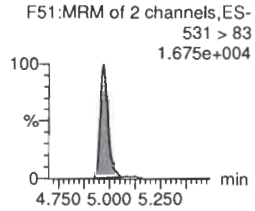
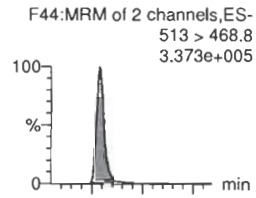
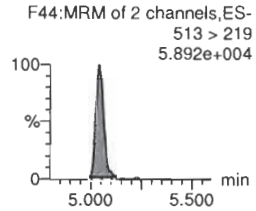


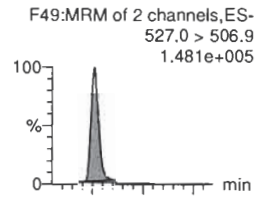


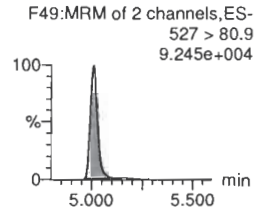
PFDA



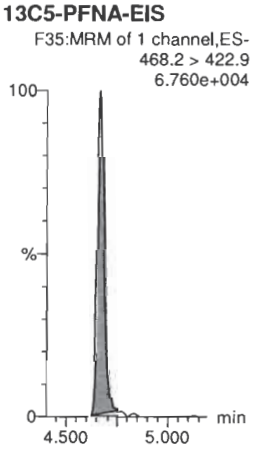


8:2 FTS

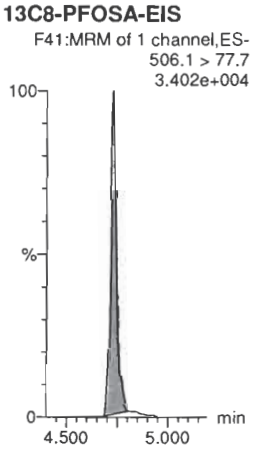




13C5-PFNA-EIS



13C8-PFOSA-EIS



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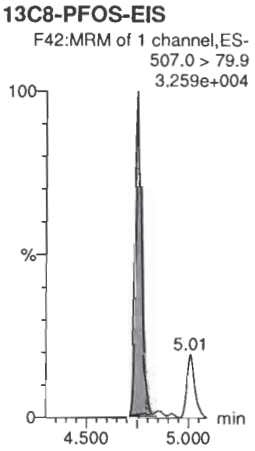

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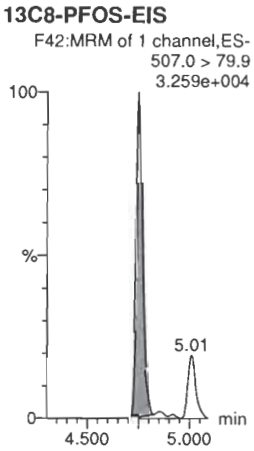
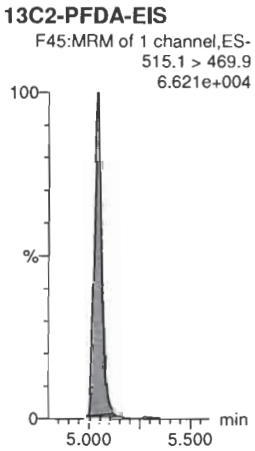
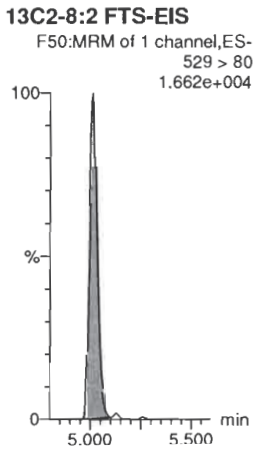


13C2-PFDA-EIS



13C2-8:2 FTS-EIS



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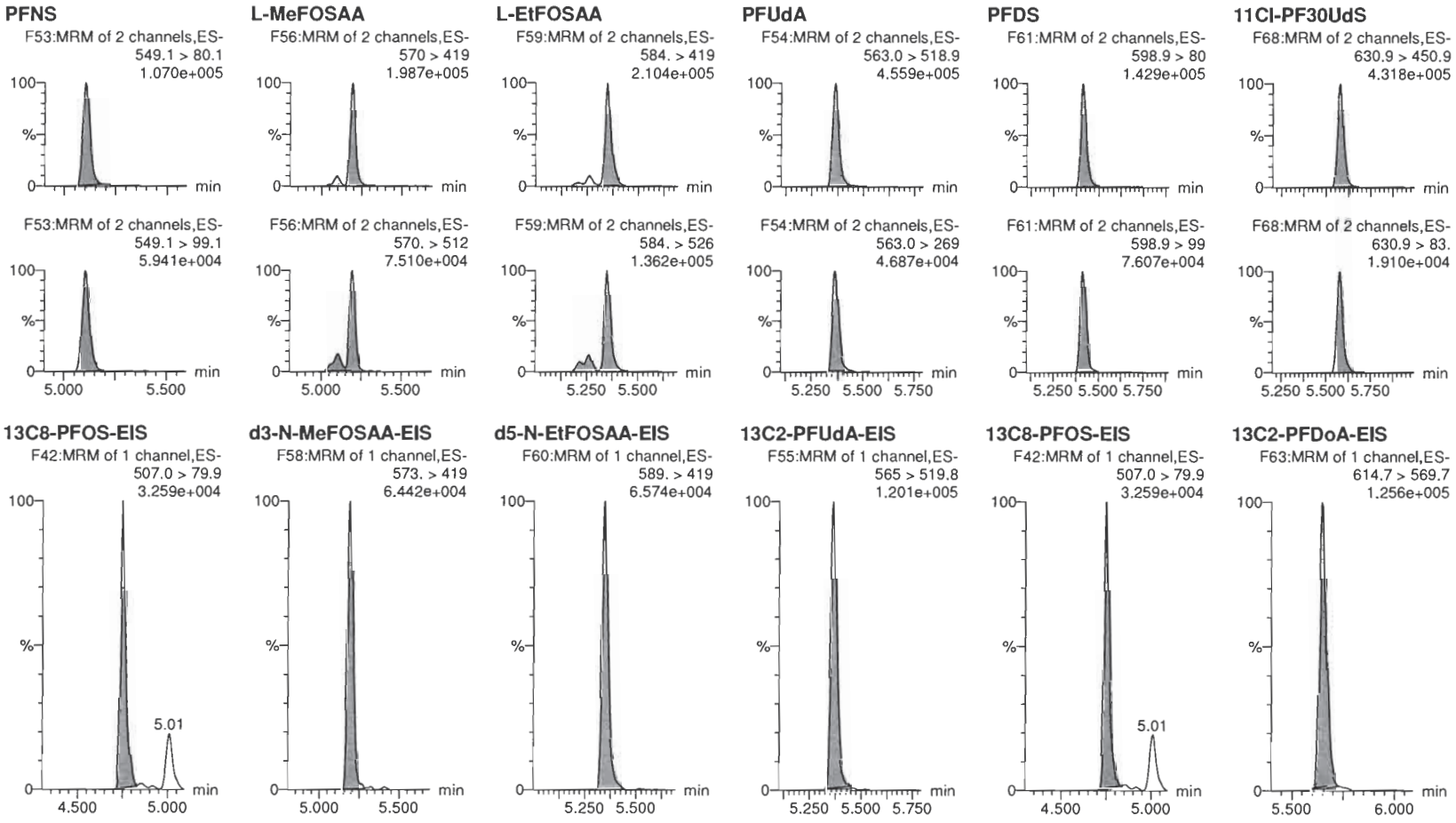
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_9, Date: 12-Feb-2020, Time: 20:32:23, ID: ST200212M2-7 PFC CS4 20B1108, Description: PFC CS4 20B1108



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 66 of 100
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Dataset: Untitled

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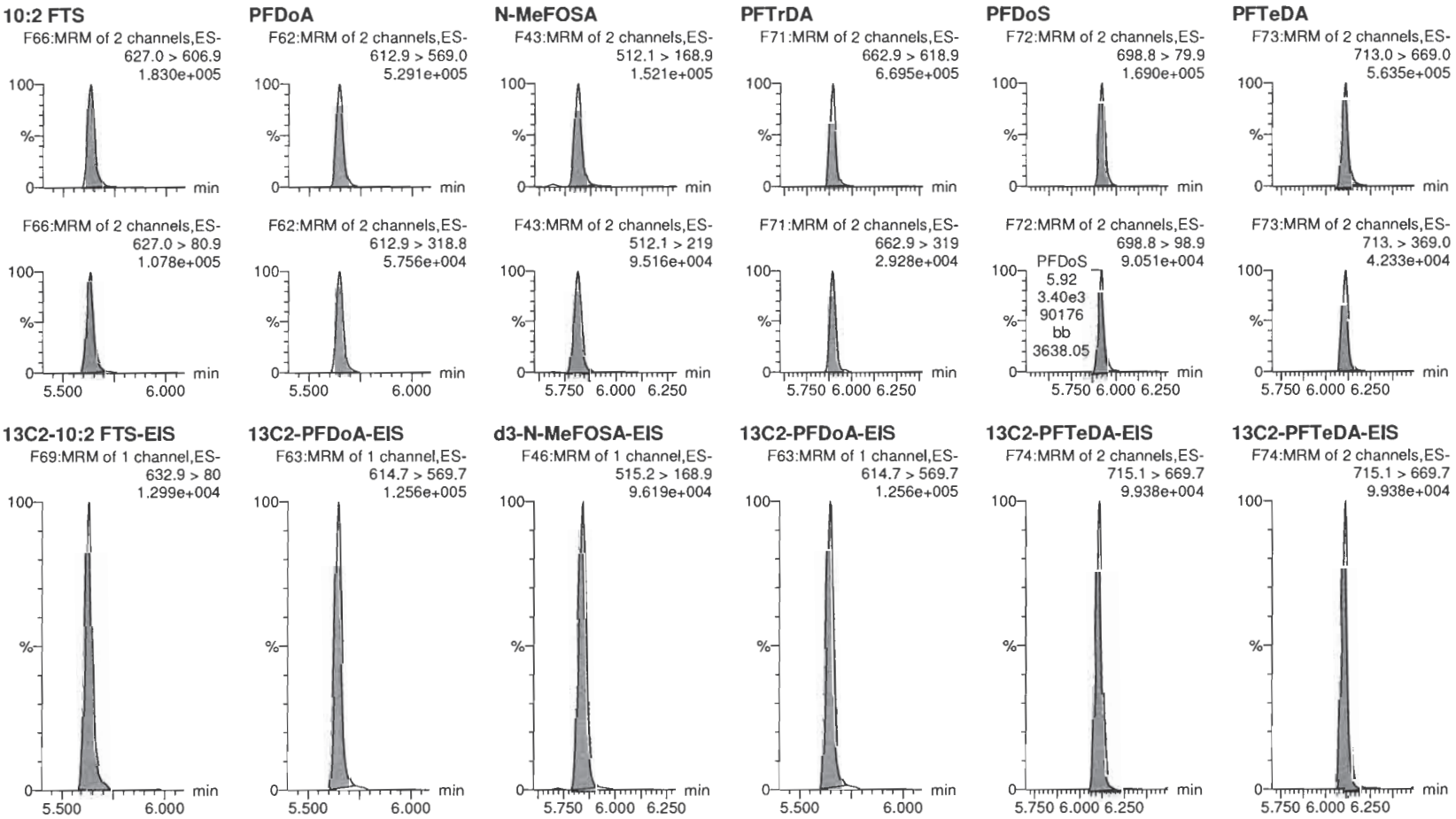

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Dataset: Untitled

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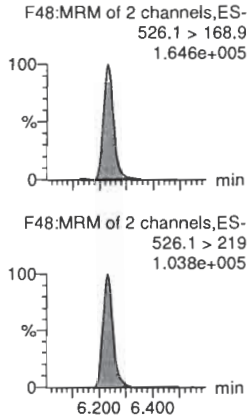
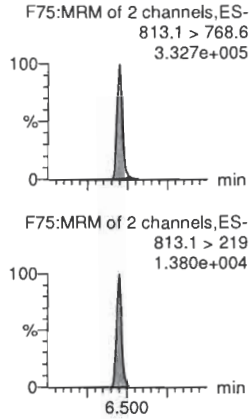
Name: 200212M2_9, Date: 12-Feb-2020, Time: 20:32:23, ID: ST200212M2-7 PFC CS4 20B1108, Description: PFC CS4 20B1108

N-EtFOSA



PFHxDA



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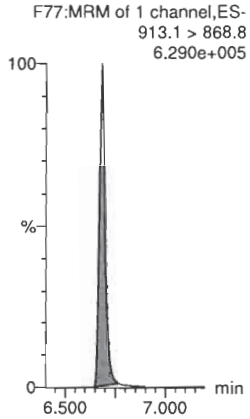
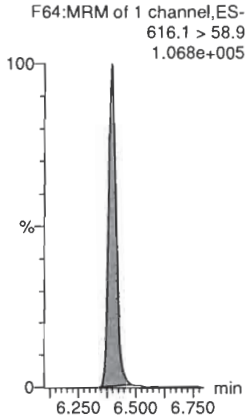


N-MeFOSE



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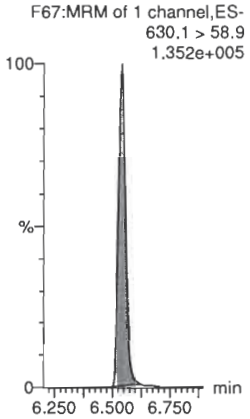

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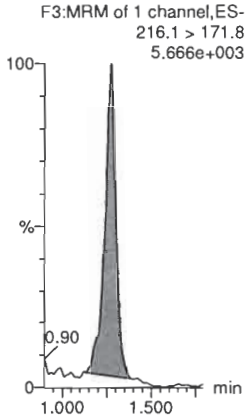
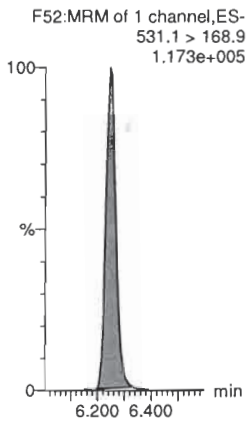
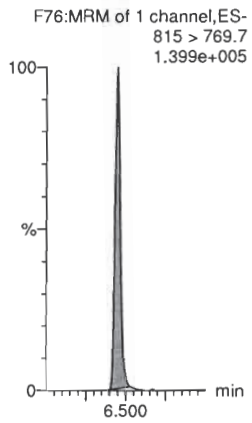


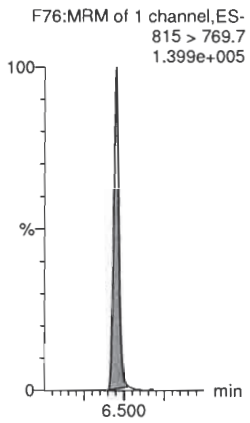
d5-N-ETFOSA-EIS



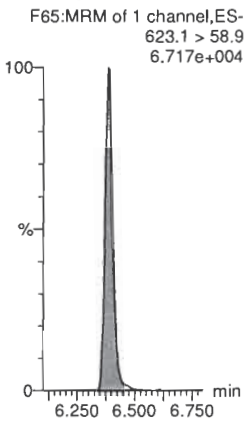
13C2-PFHxDA-EIS



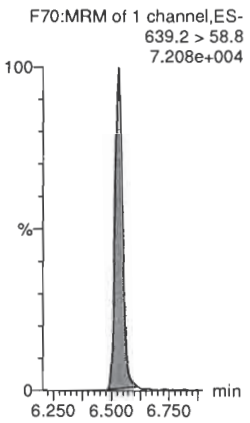
13C2-PFHxDA-EIS



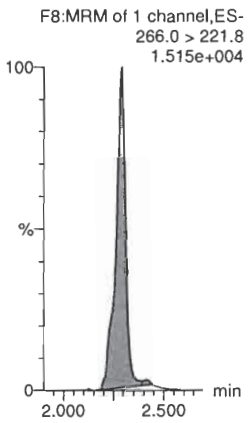
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



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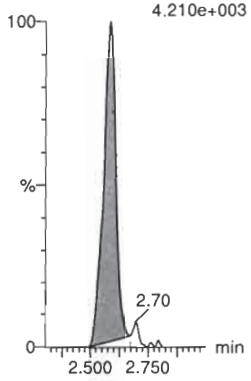
Dataset: Untitled

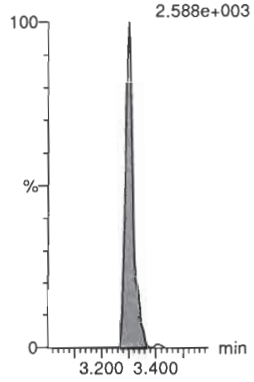
Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_9, Date: 12-Feb-2020, Time: 20:32:23, ID: ST200212M2-7 PFC CS4 20B1108, Description: PFC CS4 20B1108

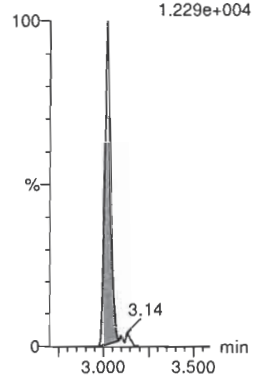
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
4.210e+003



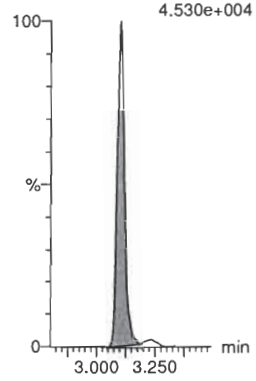
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.588e+003



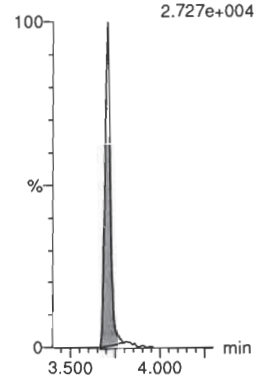
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.229e+004



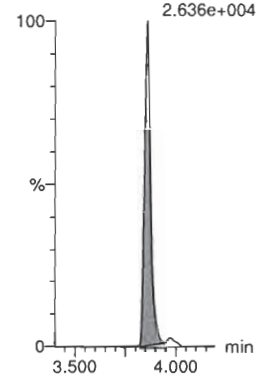
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.530e+004



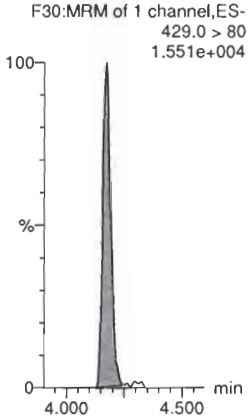
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
2.727e+004



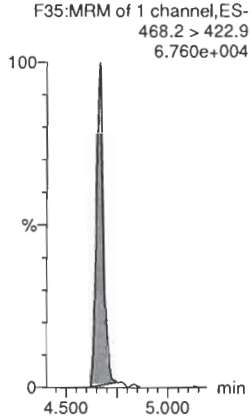
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.636e+004



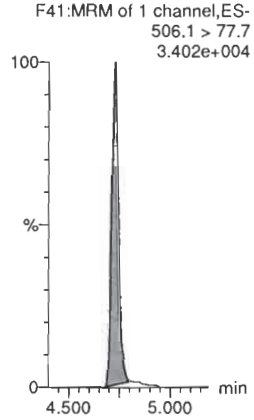
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.551e+004



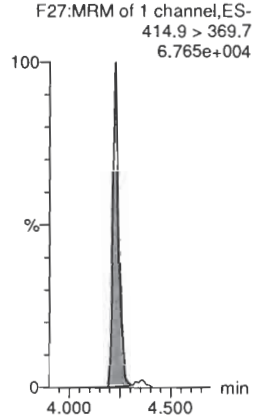
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
6.760e+004



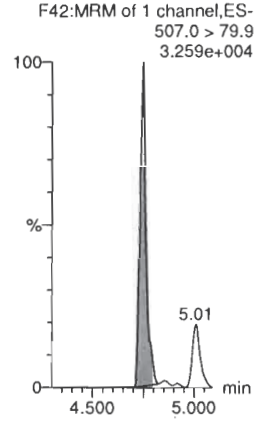
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.402e+004



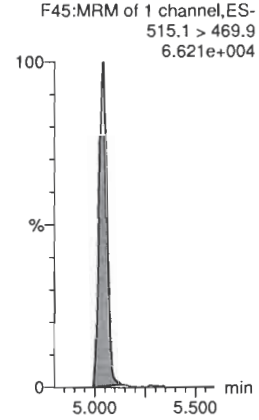
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
6.765e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.259e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
6.621e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
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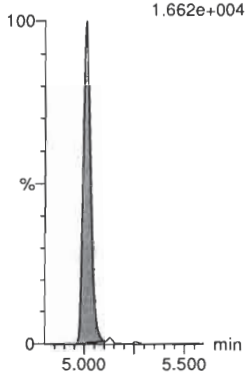
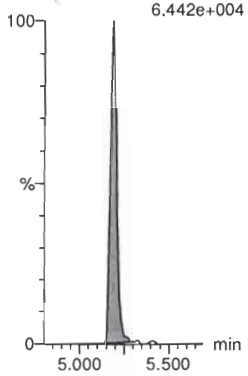
Name: 200212M2_9, Date: 12-Feb-2020, Time: 20:32:23, ID: ST200212M2-7 PFC CS4 20B1108, Description: PFC CS4 20B1108

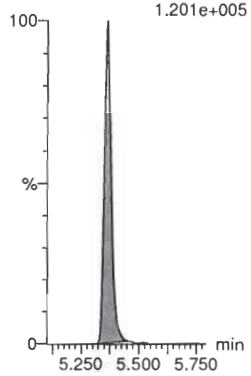
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.662e+004



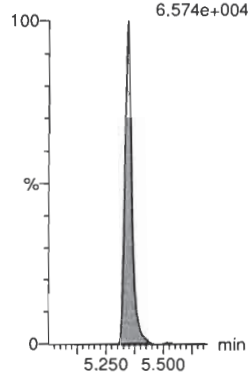
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
6.442e+004



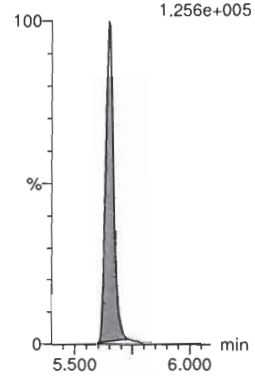
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.201e+005



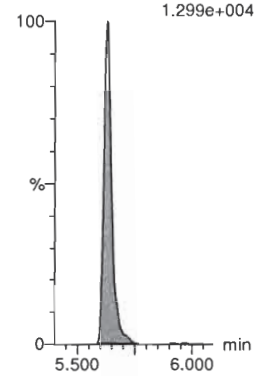
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
6.574e+004



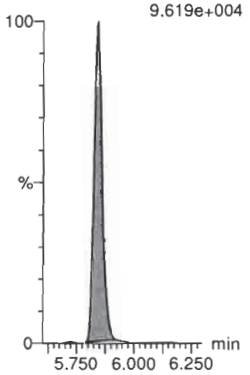
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.256e+005



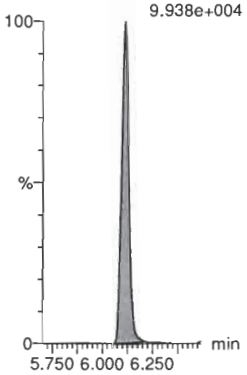
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.299e+004



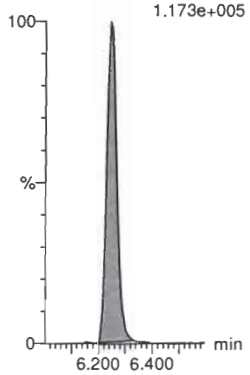
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.619e+004



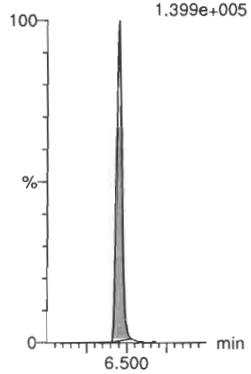
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
9.938e+004



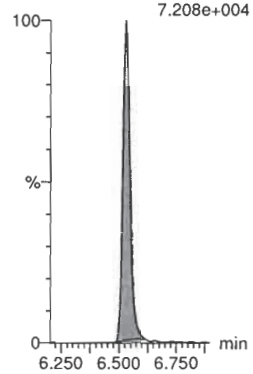
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.173e+005



13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.399e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.208e+004



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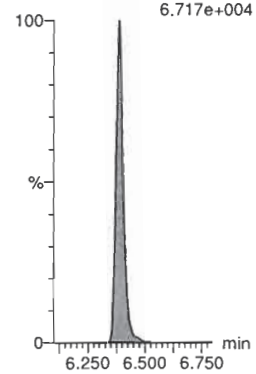

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 70 of 100
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Dataset: Untitled

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Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_9, Date: 12-Feb-2020, Time: 20:32:23, ID: ST200212M2-7 PFC CS4 20B1108, Description: PFC CS4 20B1108

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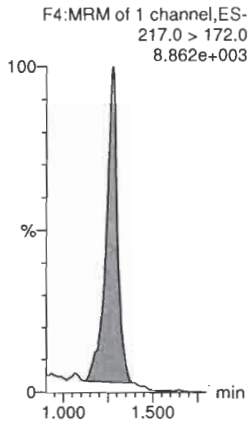

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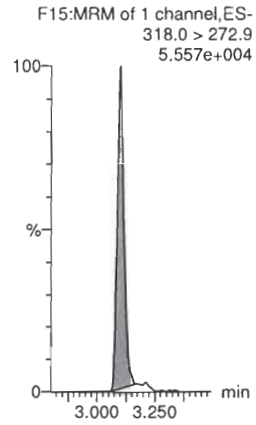

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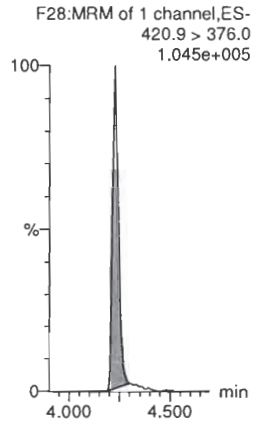

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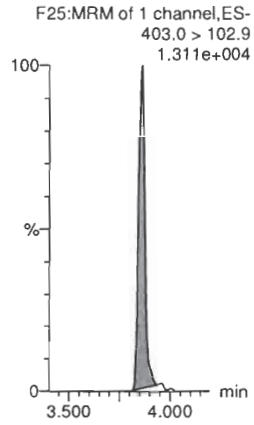

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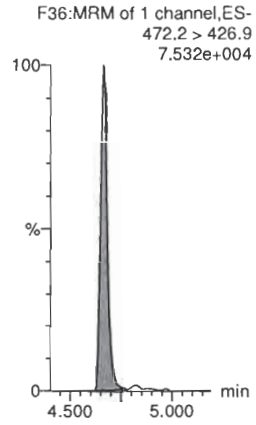

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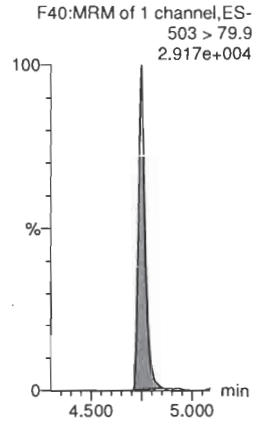

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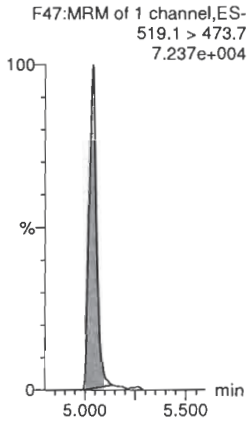

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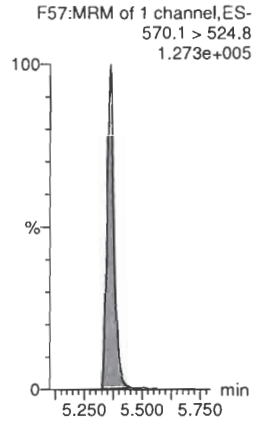

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Dataset: Untitled

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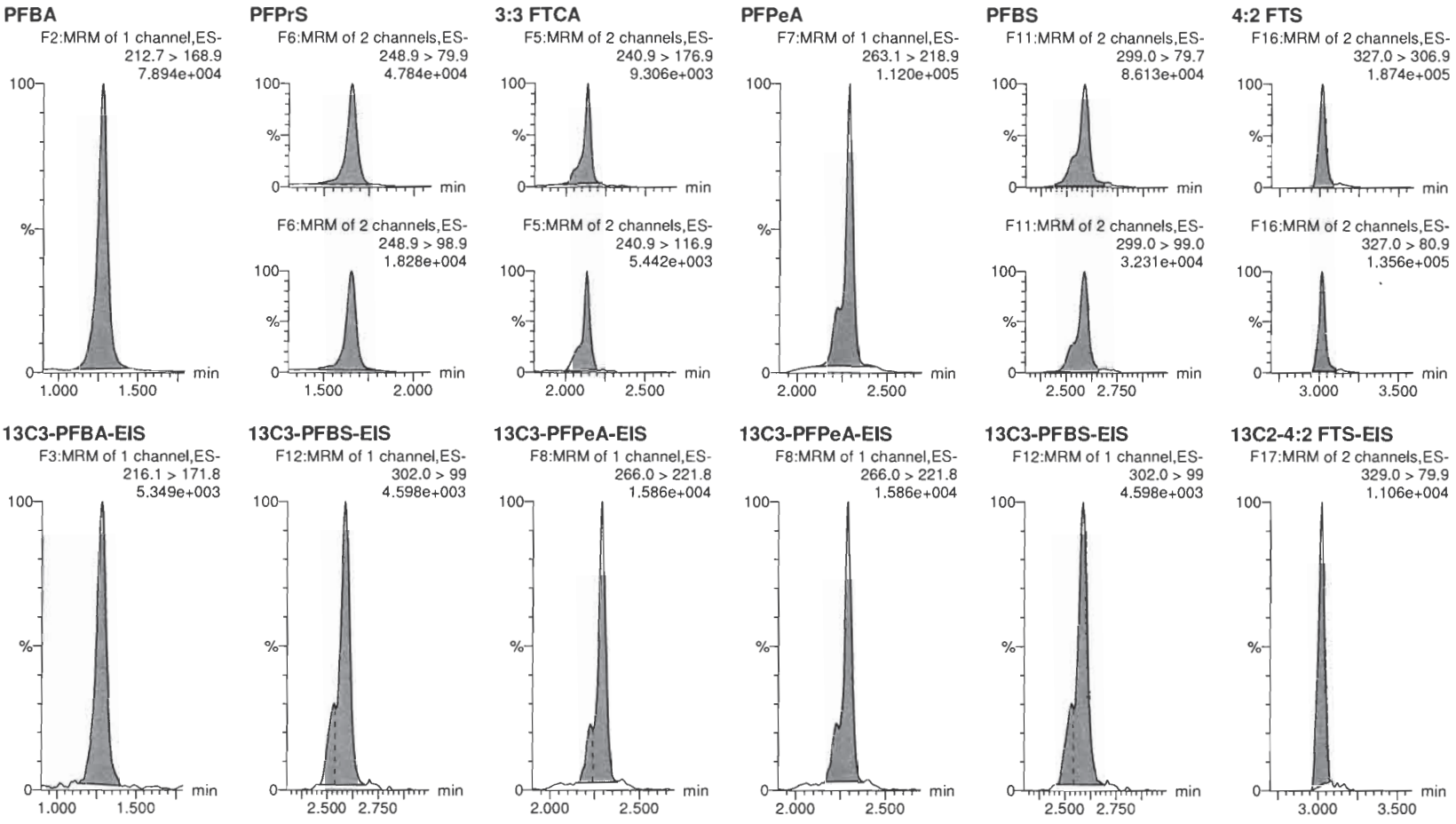

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 72 of 100
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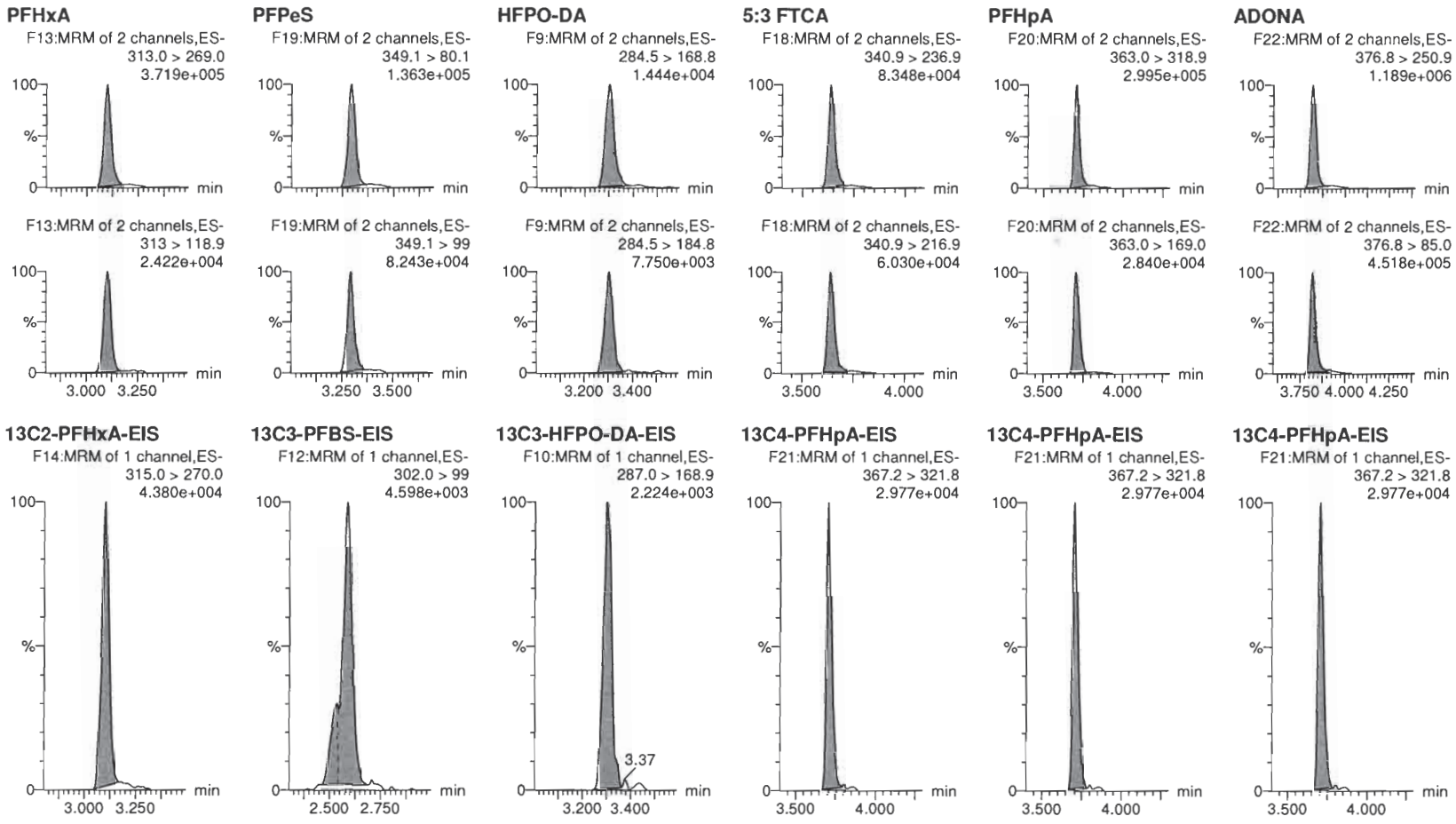

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Dataset: Untitled

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Name: 200212M2_10, Date: 12-Feb-2020, Time: 20:42:48, ID: ST200212M2-8 PFC CS5 20B1109, Description: PFC CS5 20B1109

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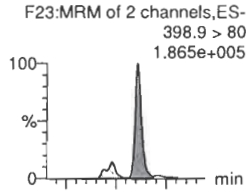

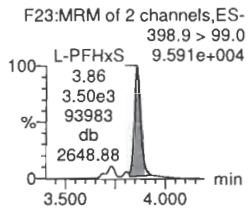

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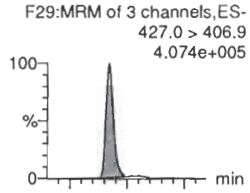

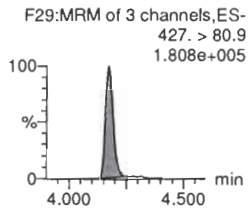

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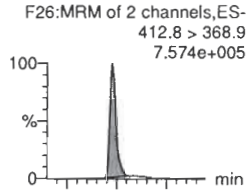

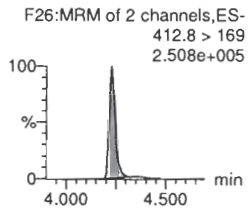

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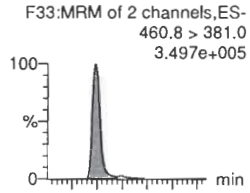

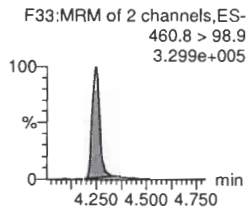

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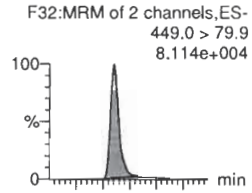

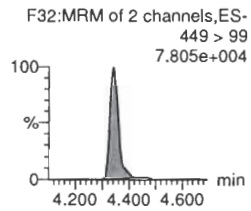

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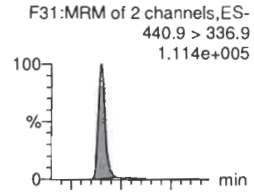

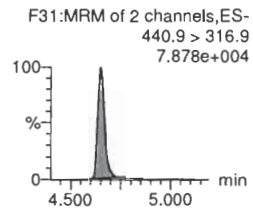

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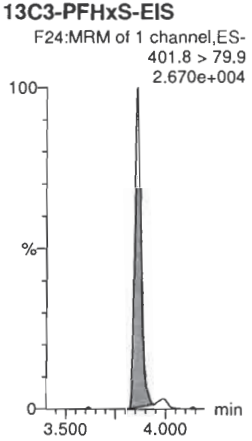

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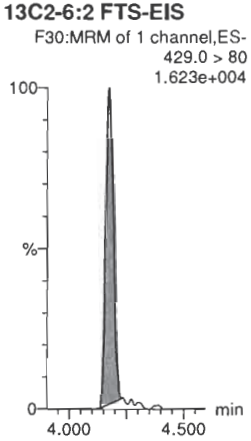

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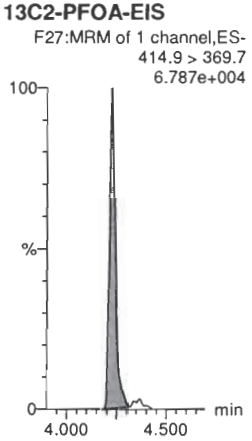

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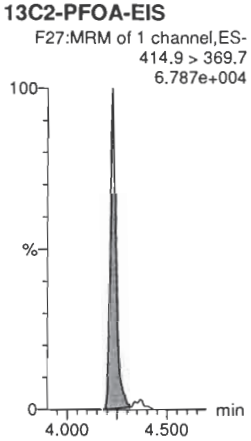

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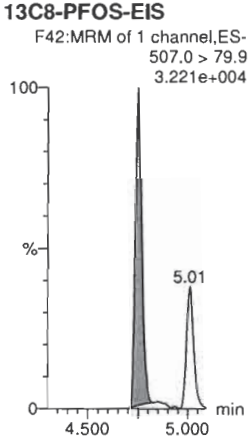

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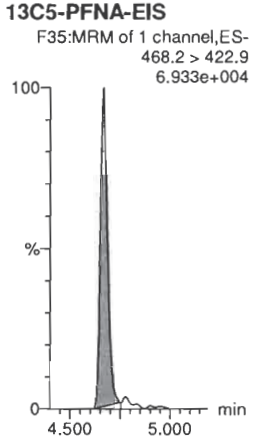

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 74 of 100
Vista Analytical Laboratory

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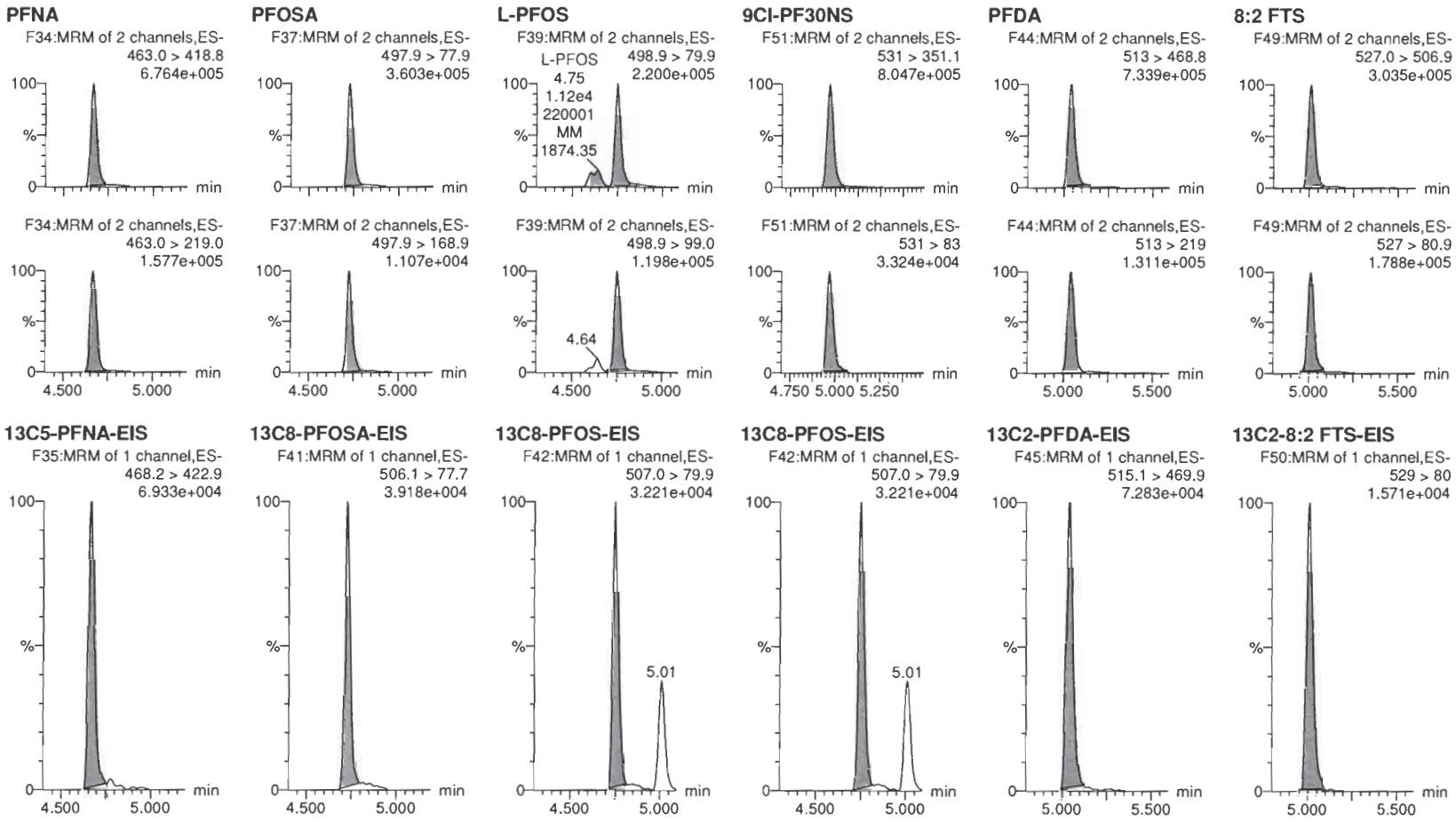

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 75 of 100
Vista Analytical Laboratory

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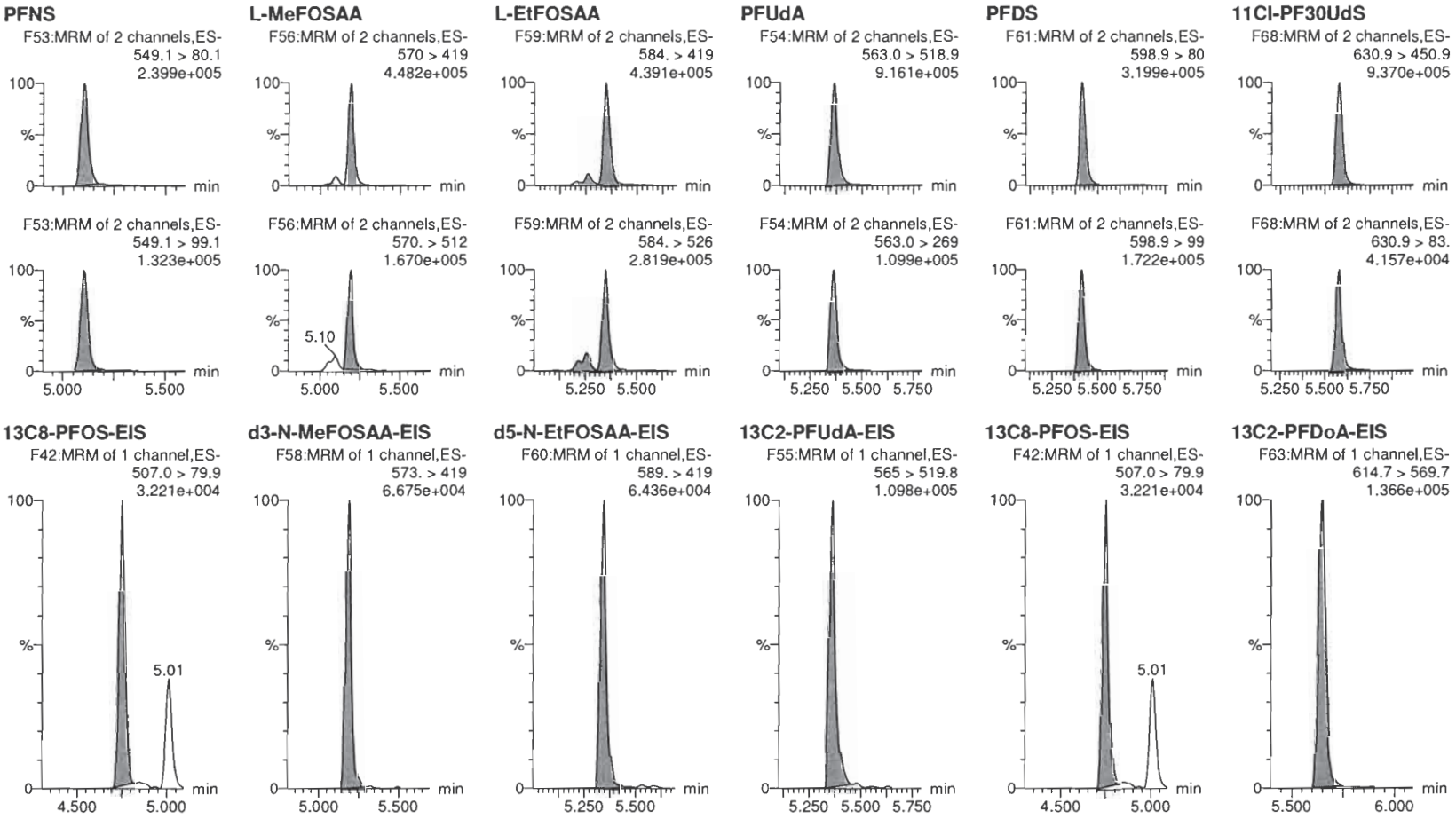

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Vista Analytical Laboratory

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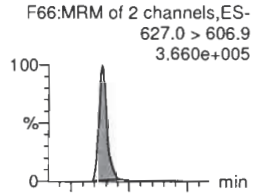

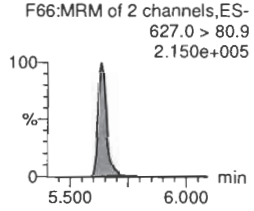

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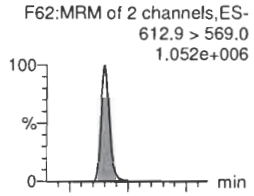

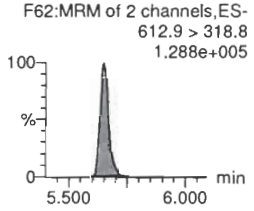

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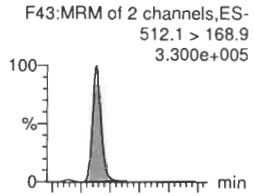

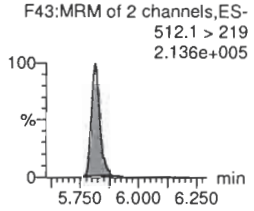

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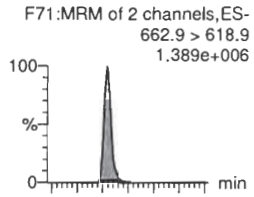

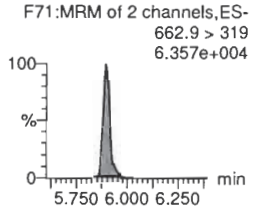

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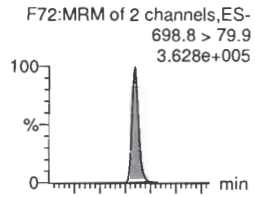

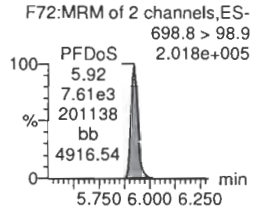

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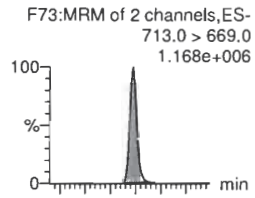

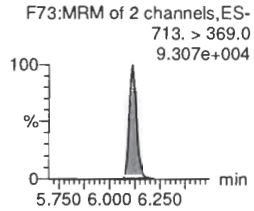

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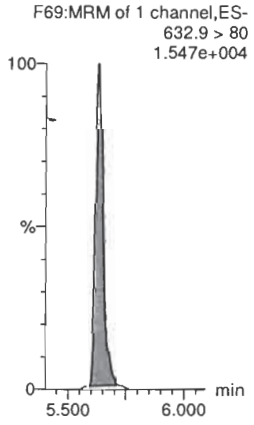

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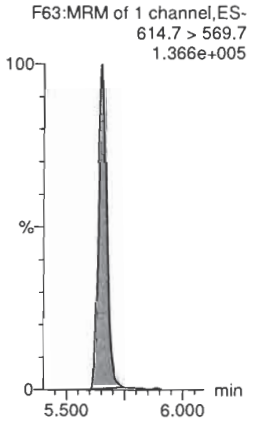
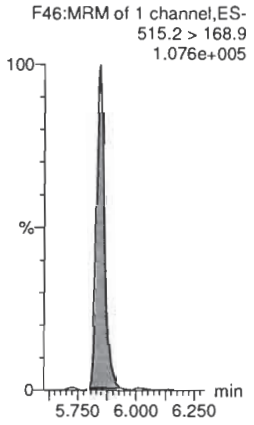


d3-N-MeFOSA-EIS



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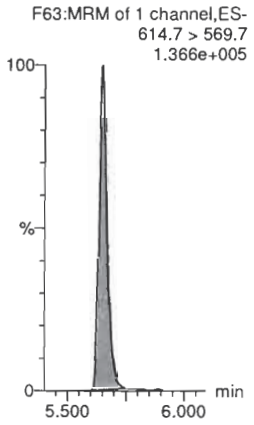

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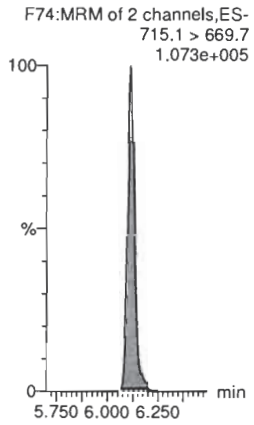

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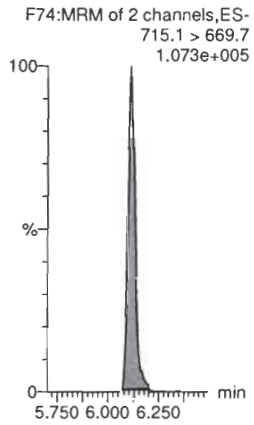


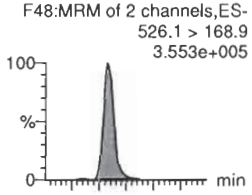
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

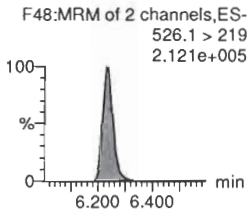
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

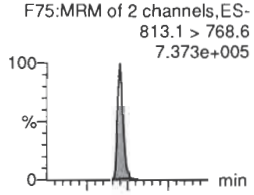
Name: 200212M2_10, Date: 12-Feb-2020, Time: 20:42:48, ID: ST200212M2-8 PFC CS5 20B1109, Description: PFC CS5 20B1109

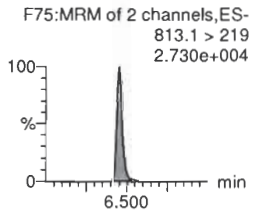
N-EtFOSA



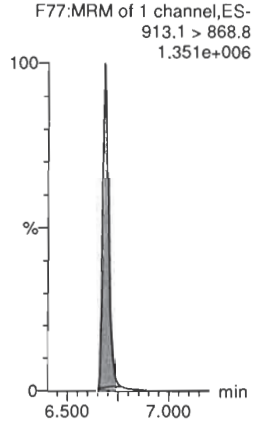


PFHxDA

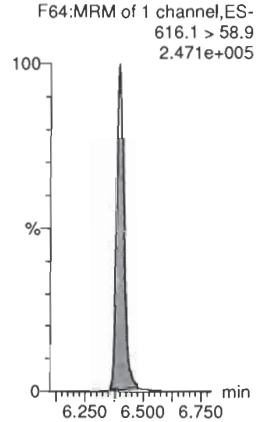




PFODA



N-MeFOSE



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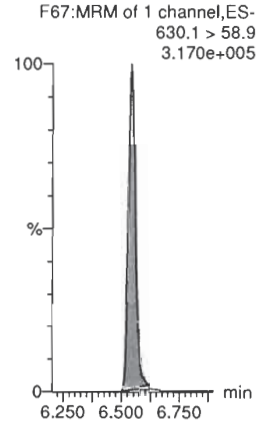
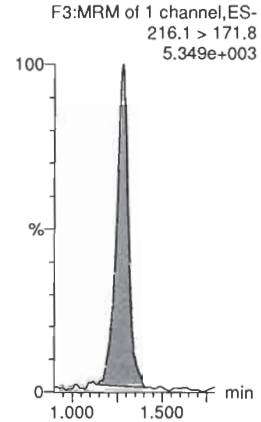
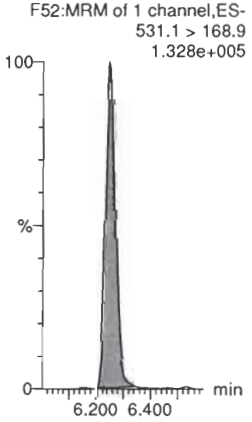


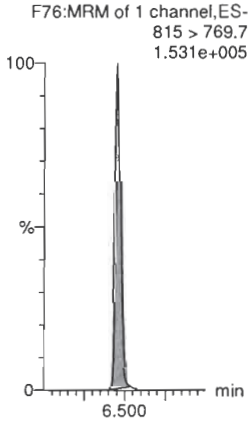
13C3-PFBA-RSD



d5-N-ETFOSA-EIS



13C2-PFHxDA-EIS



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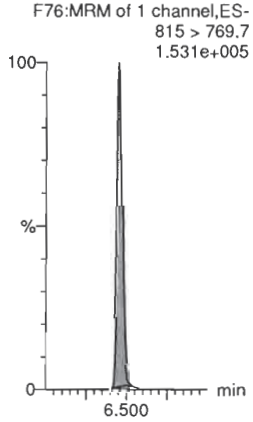
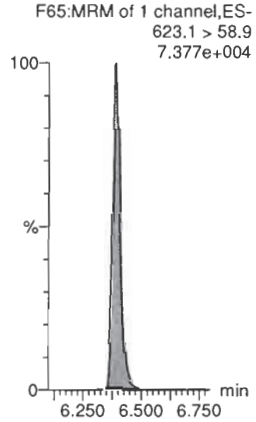


d7-N-MeFOSE-EIS



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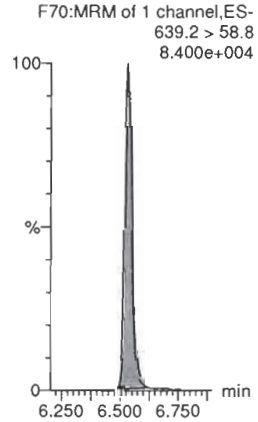
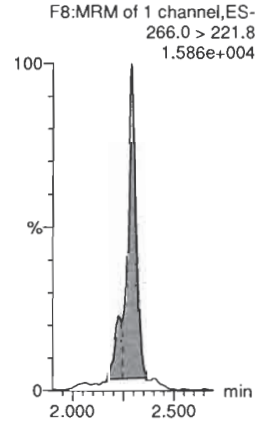


13C3-PFPeA-RSD



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
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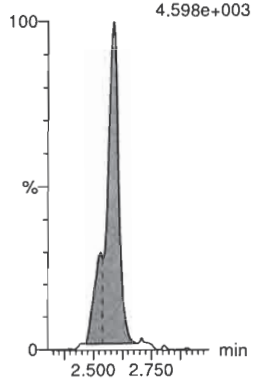
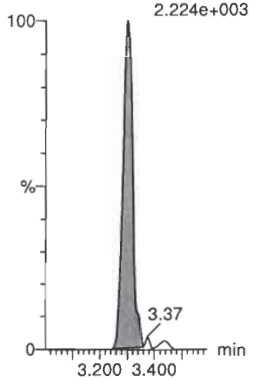
Name: 200212M2_10, Date: 12-Feb-2020, Time: 20:42:48, ID: ST200212M2-8 PFC CS5 20B1109, Description: PFC CS5 20B1109

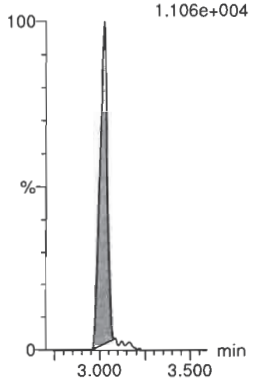
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
4.598e+003



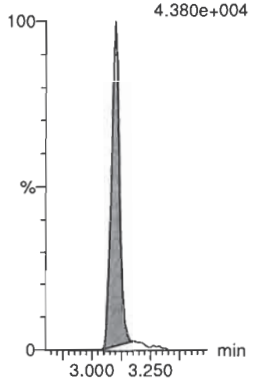
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.224e+003



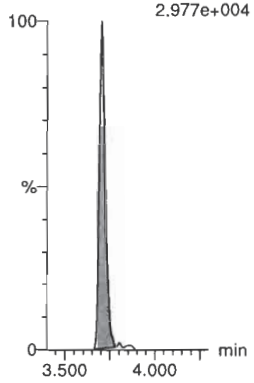
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.106e+004



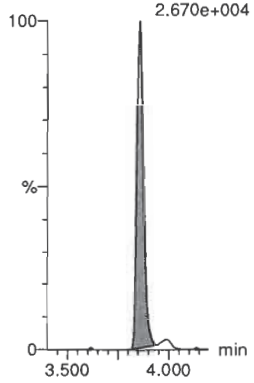
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.380e+004



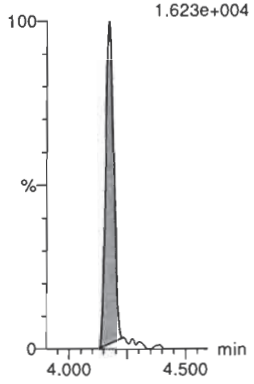
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
2.977e+004



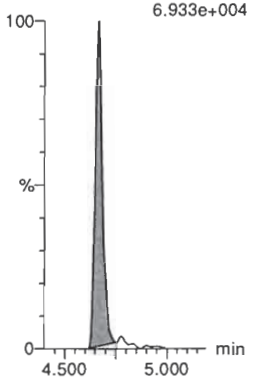
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.670e+004



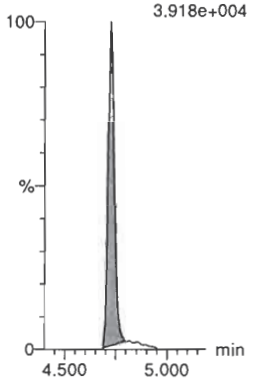
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.623e+004



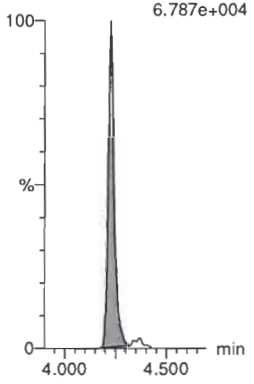
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
6.933e+004



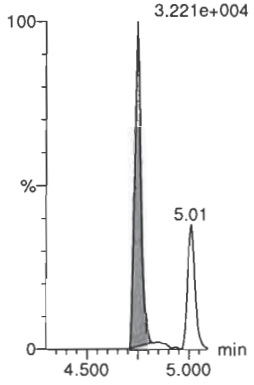
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.918e+004



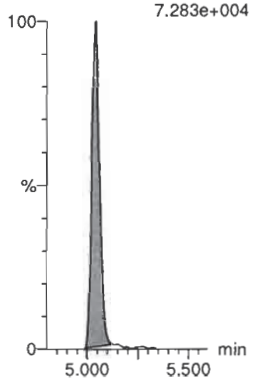
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
6.787e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.221e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
7.283e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 79 of 100
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Dataset: Untitled

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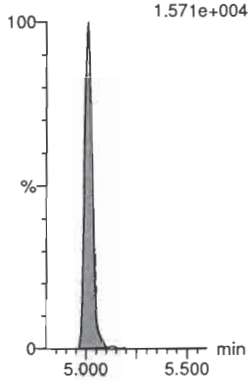
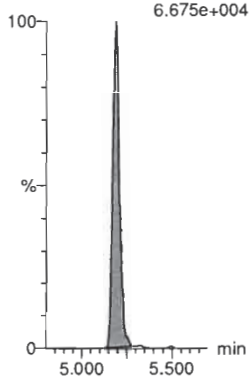
Name: 200212M2_10, Date: 12-Feb-2020, Time: 20:42:48, ID: ST200212M2-8 PFC CS5 20B1109, Description: PFC CS5 20B1109

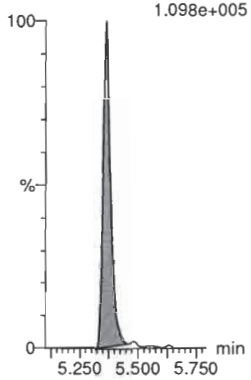
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.571e+004



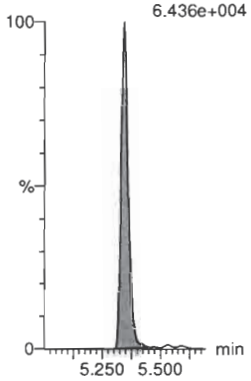
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
6.675e+004



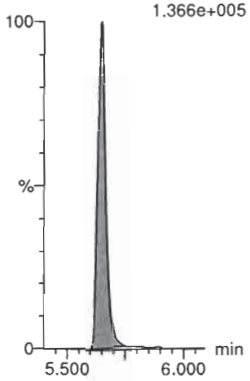
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.098e+005



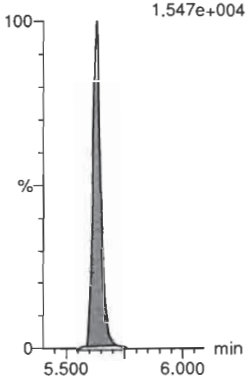
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
6.436e+004



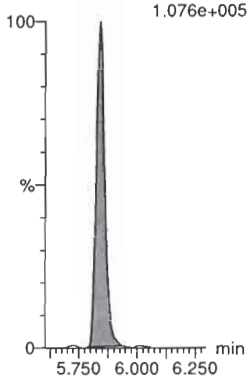
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.366e+005



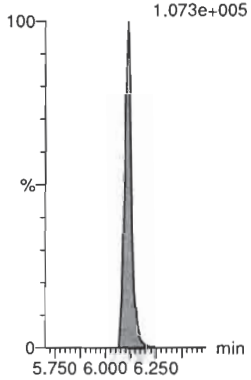
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.547e+004



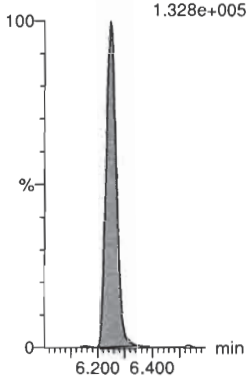
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
1.076e+005



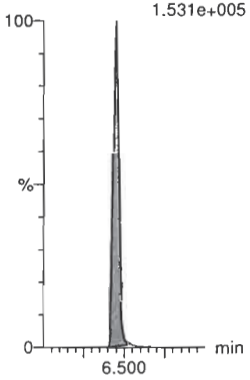
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.073e+005



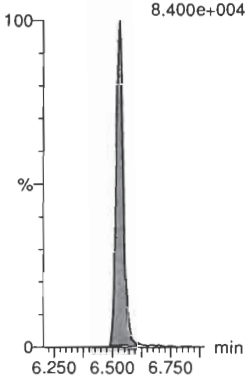
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.328e+005



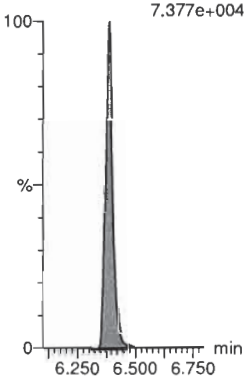
13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.531e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
8.400e+004



d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
7.377e+004



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Dataset: Untitled

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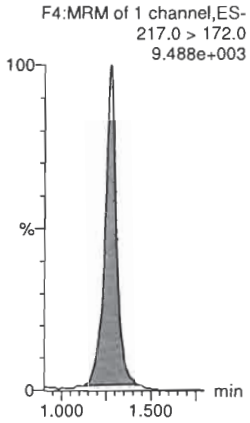
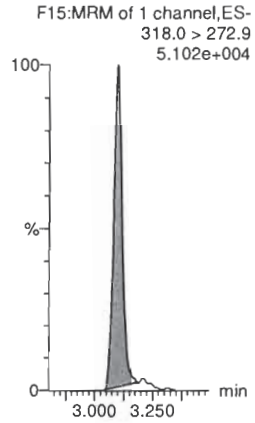
Name: 200212M2_10, Date: 12-Feb-2020, Time: 20:42:48, ID: ST200212M2-8 PFC CS5 20B1109, Description: PFC CS5 20B1109

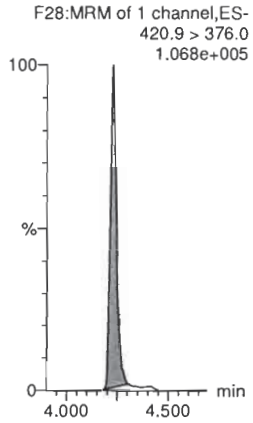
13C4-PFBA



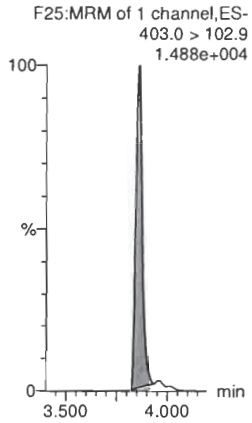
13C5-PFHxA



13C8-PFOA



18O2-PFHxS



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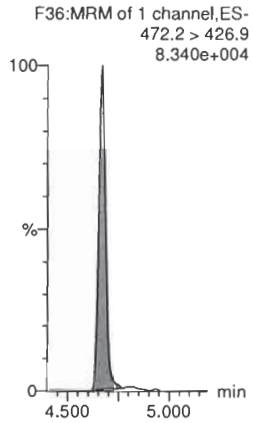
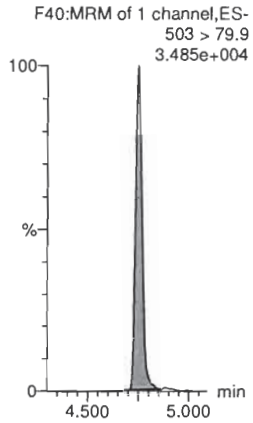
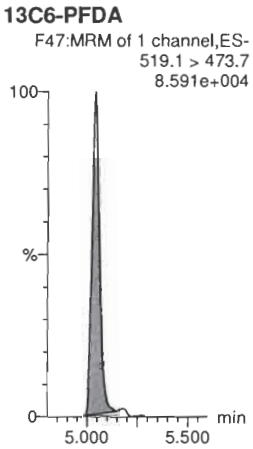


13C4-PFOS



13C6-PFDA



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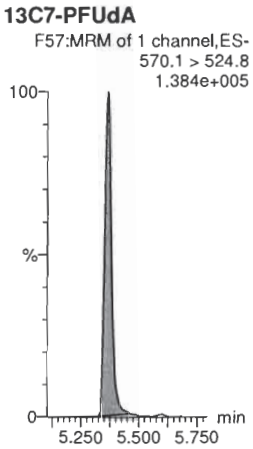

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 81 of 100
Vista Analytical Laboratory

Dataset: Untitled

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Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

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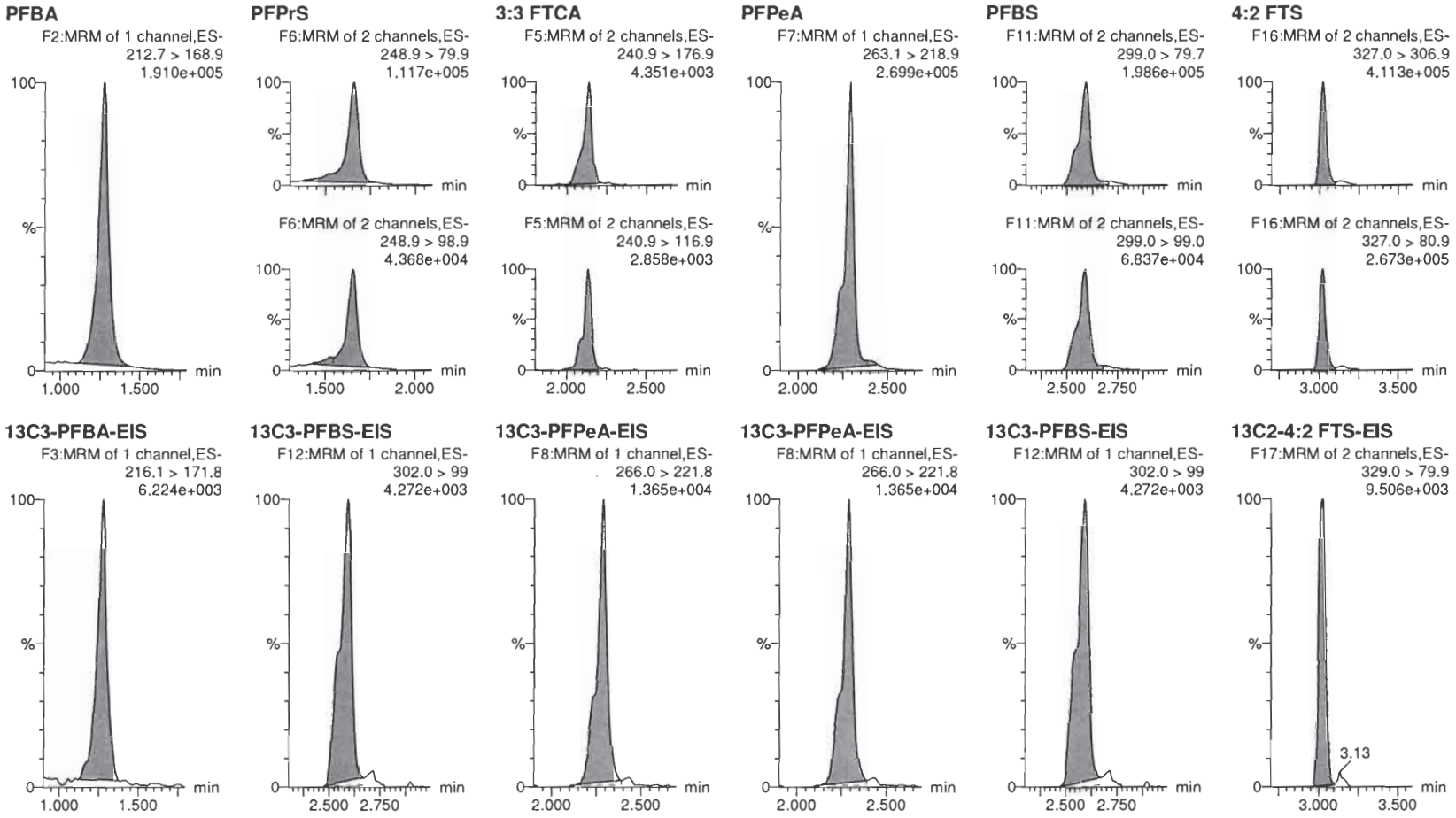

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 82 of 100
Vista Analytical Laboratory

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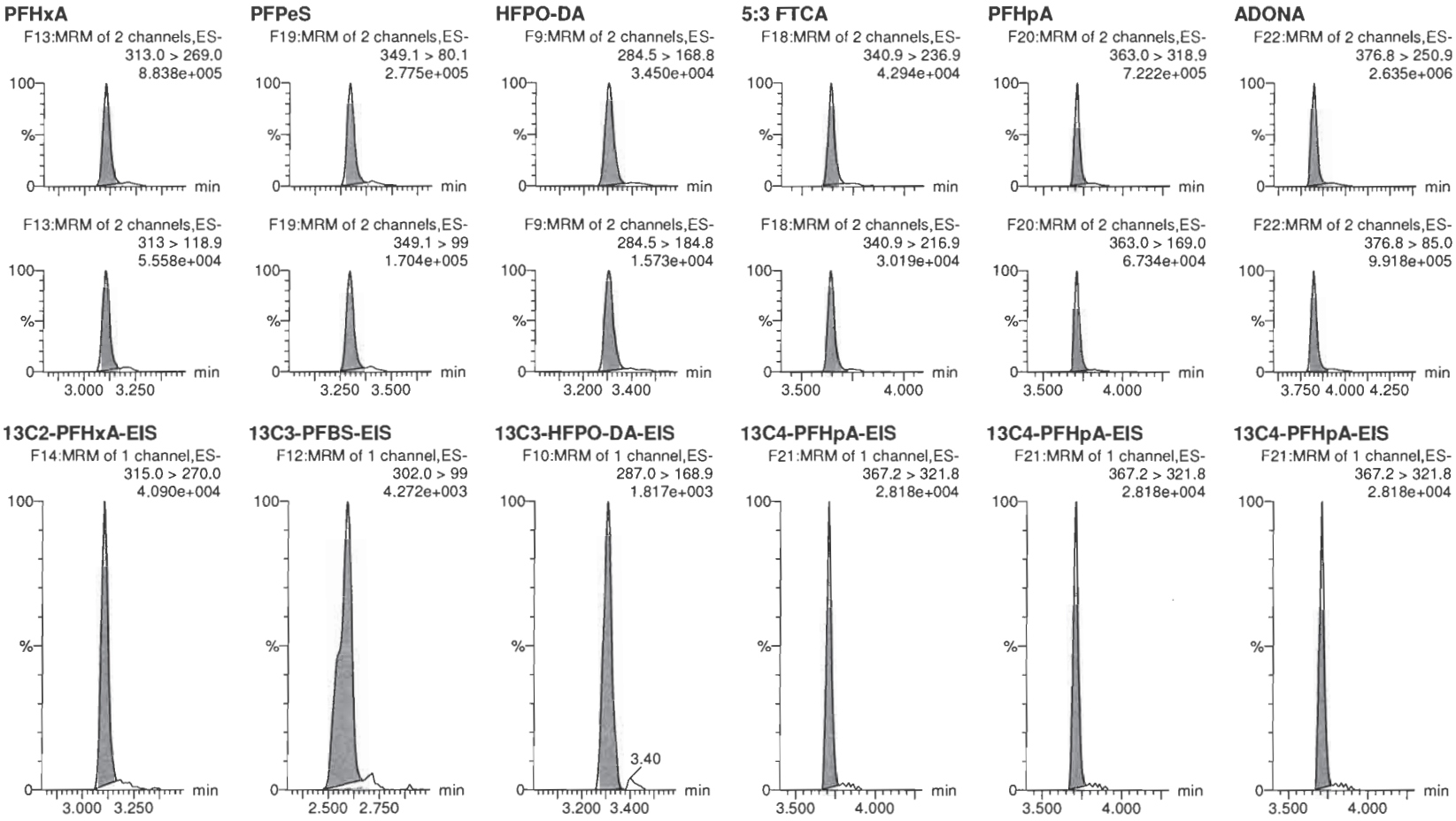

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Vista Analytical Laboratory

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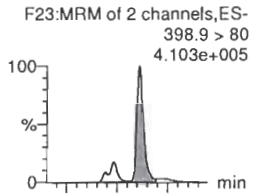

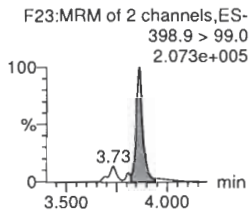

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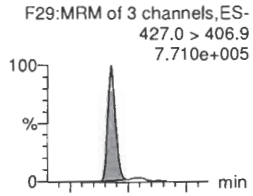

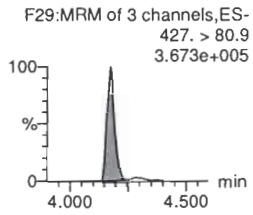

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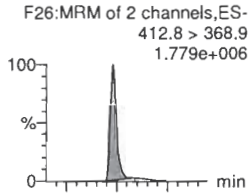

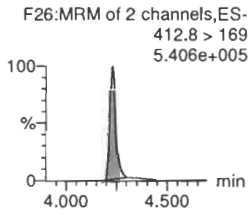

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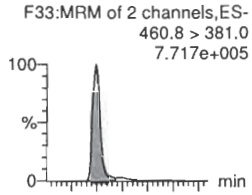

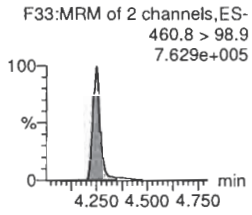

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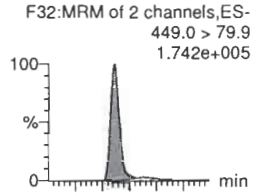

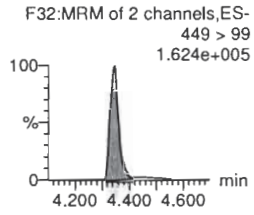

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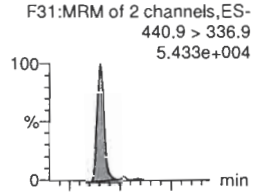

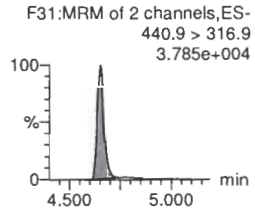

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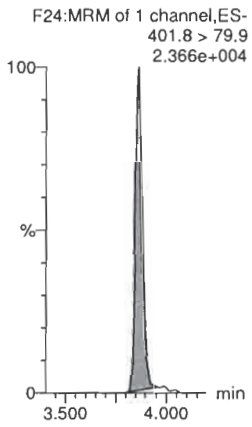

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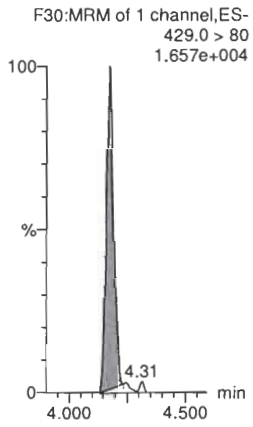

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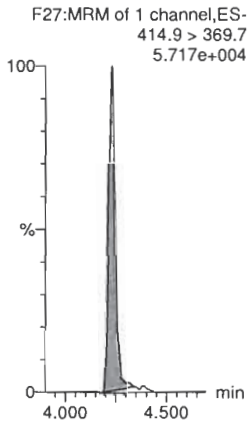

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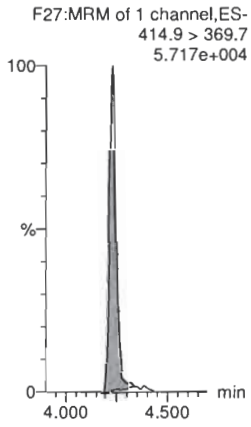

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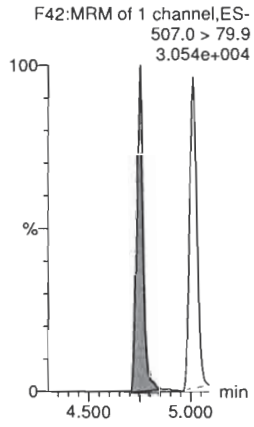

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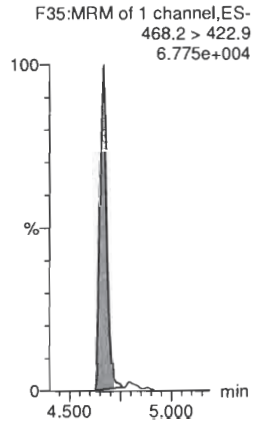

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

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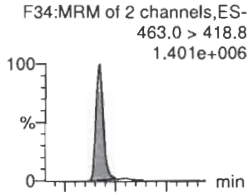

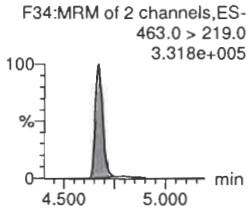

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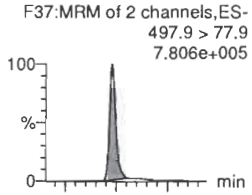

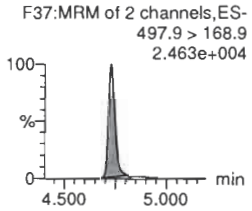

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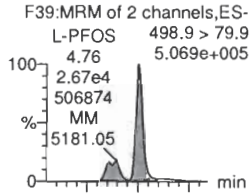

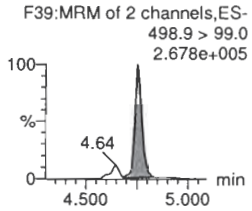

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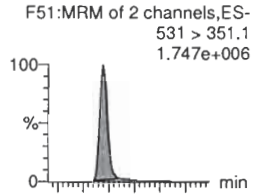

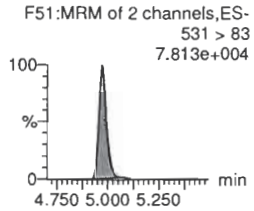

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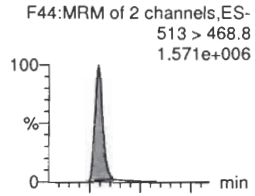

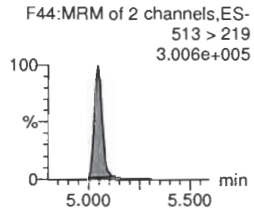

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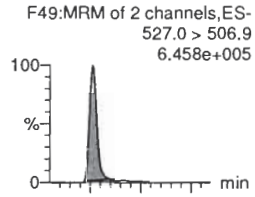

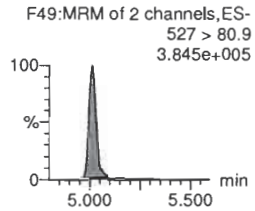

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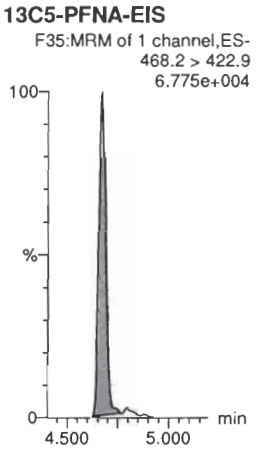

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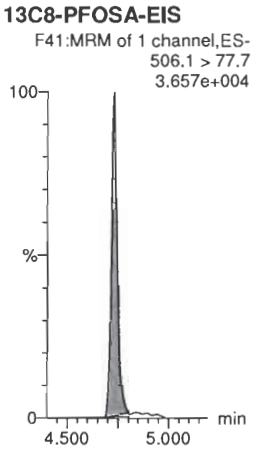

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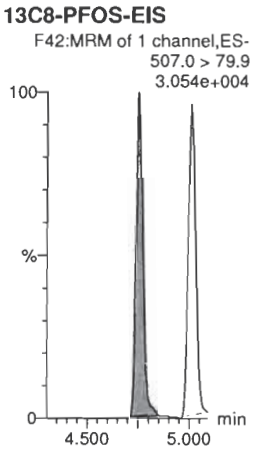

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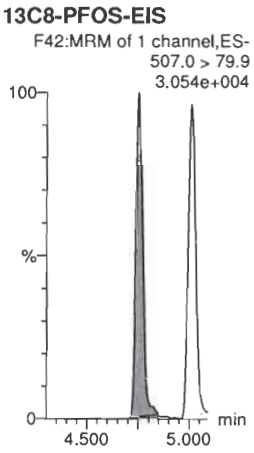

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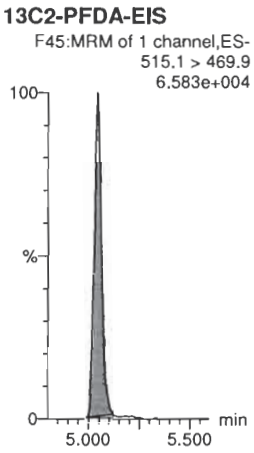

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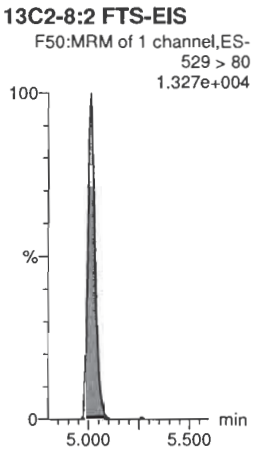

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

Vista Analytical Laboratory

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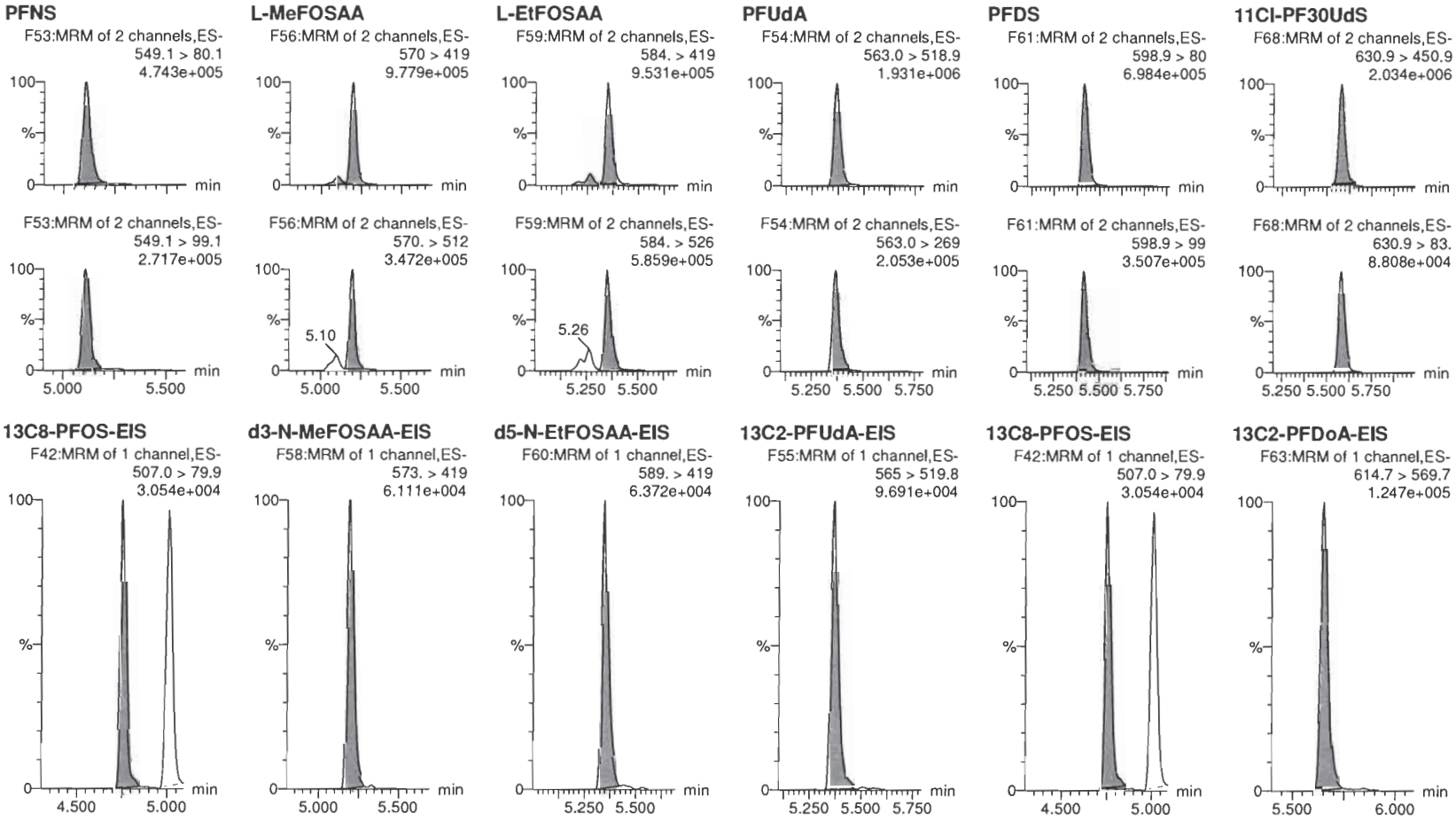

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 86 of 100
Vista Analytical Laboratory

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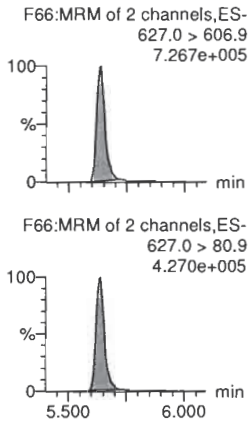

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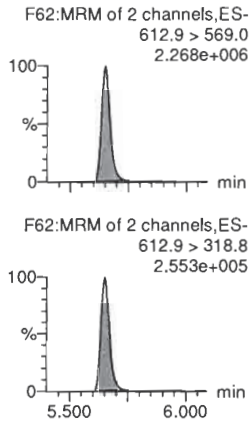

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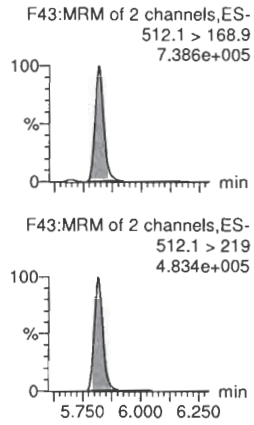

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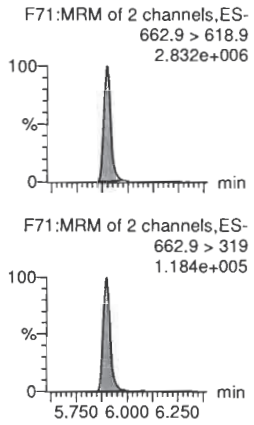

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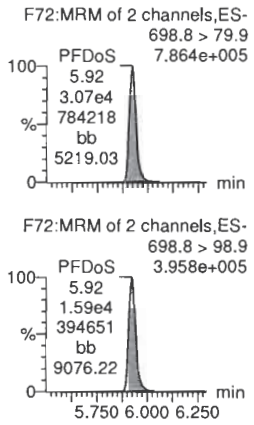

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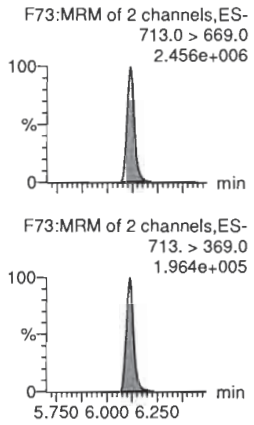

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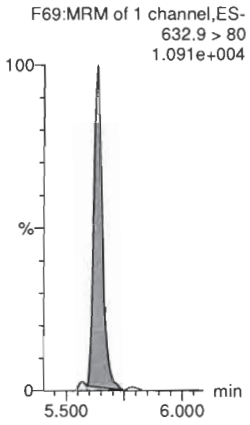

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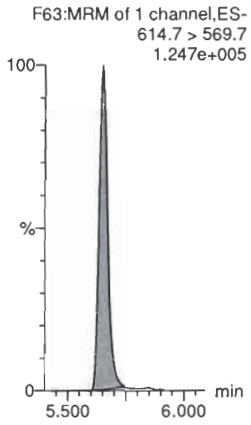

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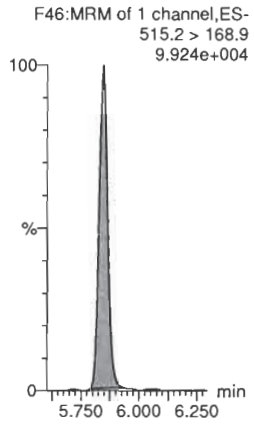
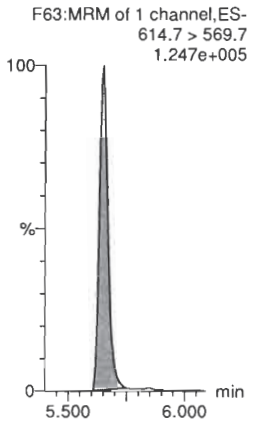


13C2-PFDoA-EIS



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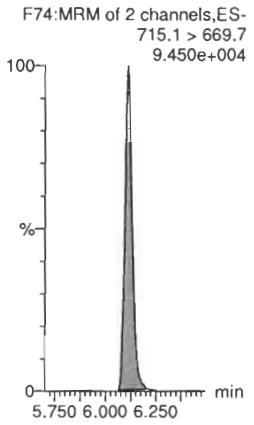

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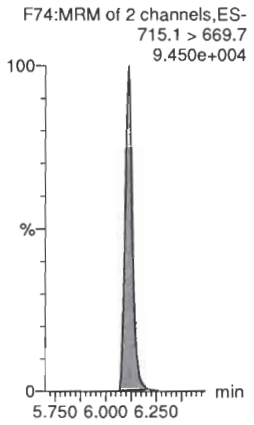

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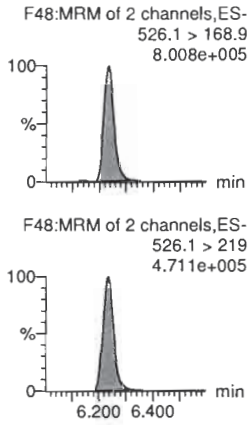
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 11:12:50 Pacific Standard Time
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_11, Date: 12-Feb-2020, Time: 20:53:10, ID: ST200212M2-9 PFC CS6 20B1110, Description: PFC CS6 20B1110

N-EtFOSA



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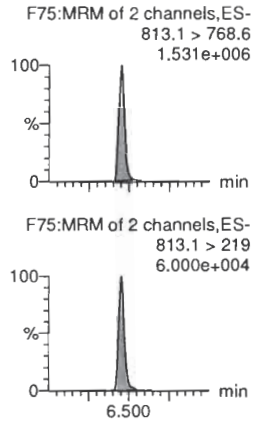
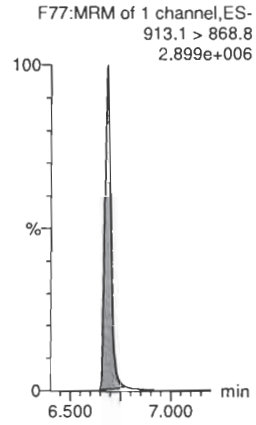
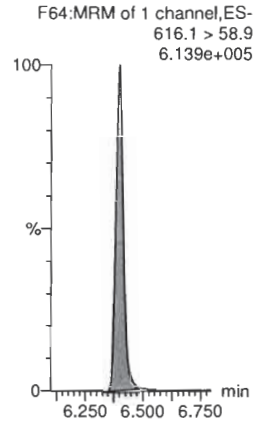


PFODA



N-MeFOSE



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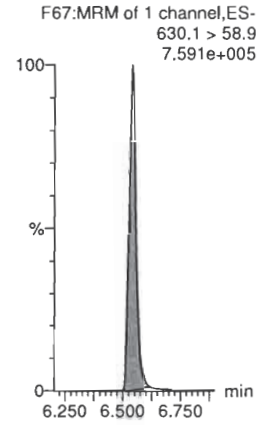

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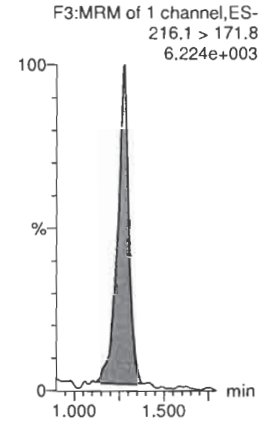
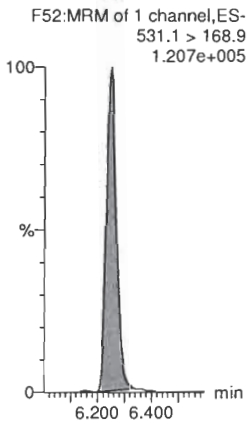


d5-N-ETFOSA-EIS



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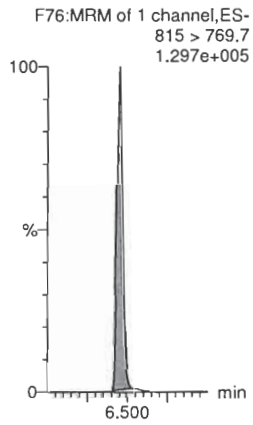

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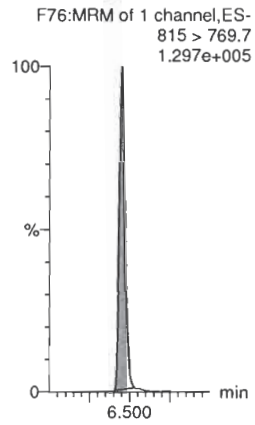
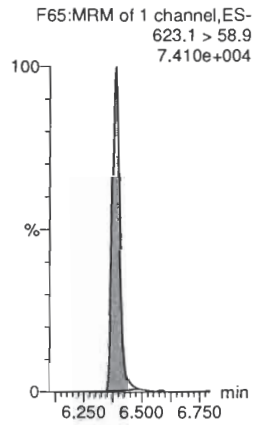


d7-N-MeFOSE-EIS



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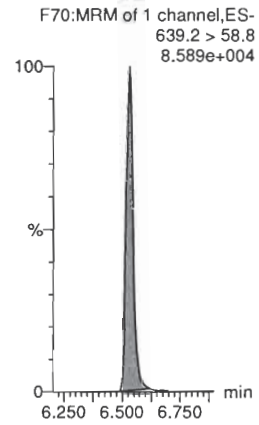
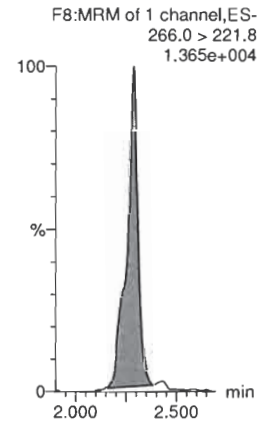


13C3-PFPeA-RSD



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

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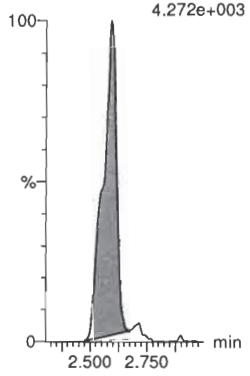
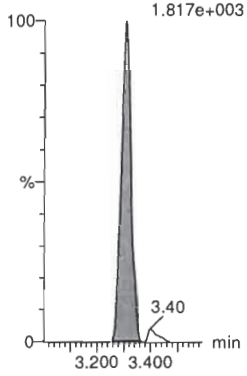
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_11, Date: 12-Feb-2020, Time: 20:53:10, ID: ST200212M2-9 PFC CS6 20B1110, Description: PFC CS6 20B1110

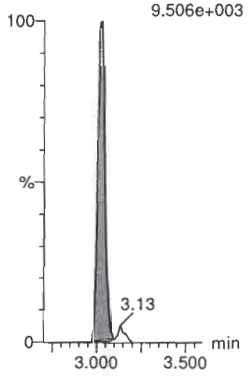
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
4.272e+003



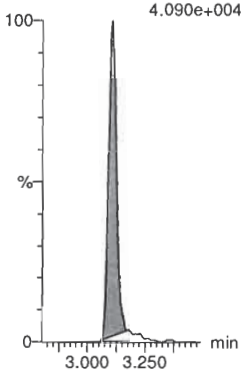
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
1.817e+003



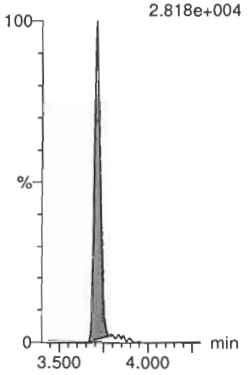
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
9.506e+003



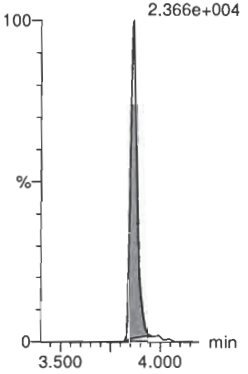
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
4.090e+004



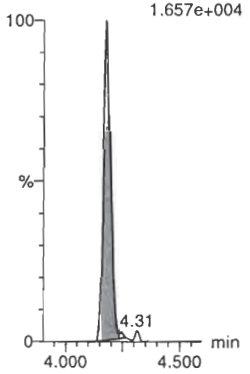
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
2.818e+004



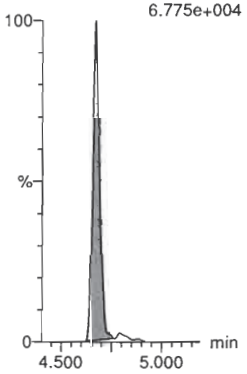
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.366e+004



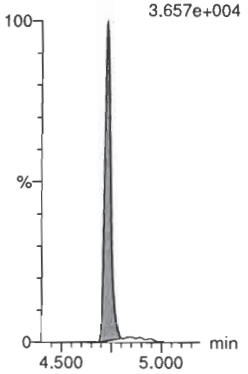
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.657e+004



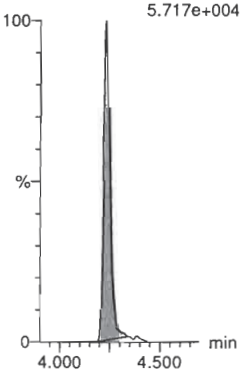
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
6.775e+004



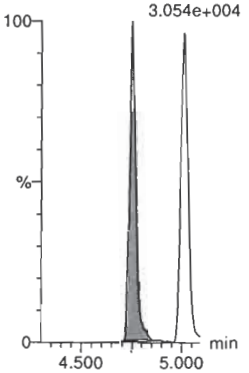
13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.657e+004



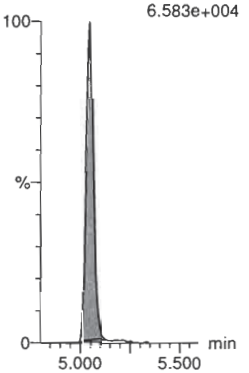
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
5.717e+004



13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.054e+004



13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
6.583e+004



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Vista Analytical Laboratory

Dataset: Untitled

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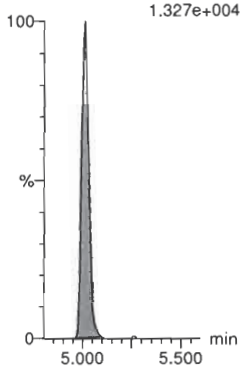
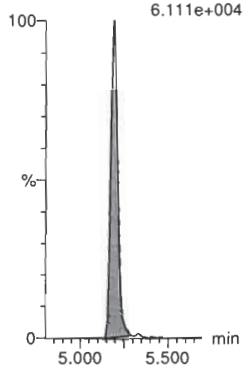
Printed: Thursday, February 13, 2020 11:15:22 Pacific Standard Time

Name: 200212M2_11, Date: 12-Feb-2020, Time: 20:53:10, ID: ST200212M2-9 PFC CS6 20B1110, Description: PFC CS6 20B1110

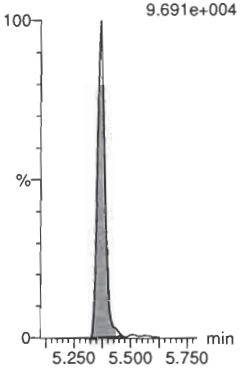
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.327e+004



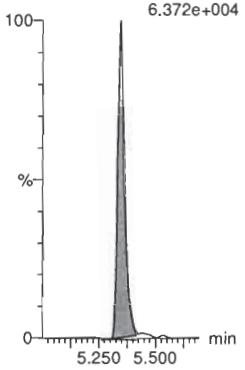
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
6.111e+004



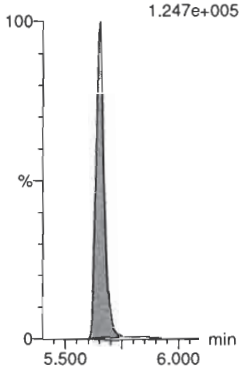
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
9.691e+004



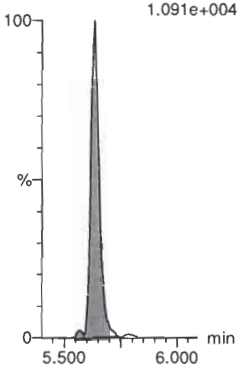
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
6.372e+004



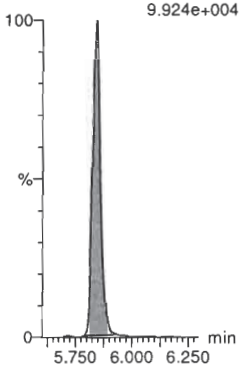
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.247e+005



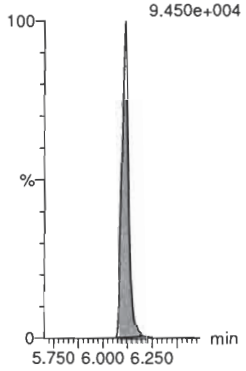
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.091e+004



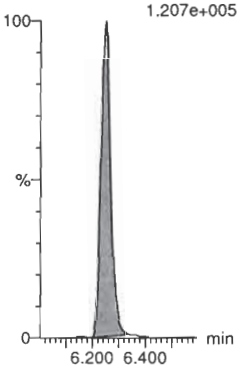
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
9.924e+004



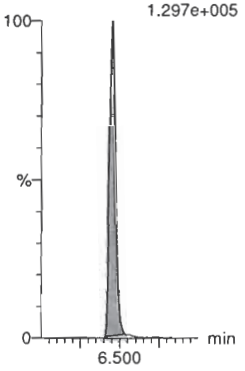
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
9.450e+004



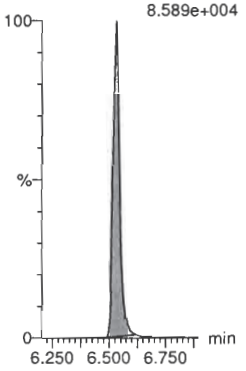
d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.207e+005



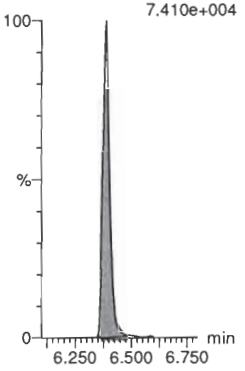
13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.297e+005



d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
8.589e+004



d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
7.410e+004



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

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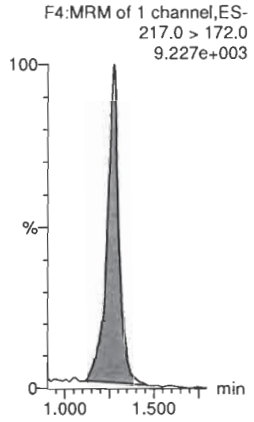
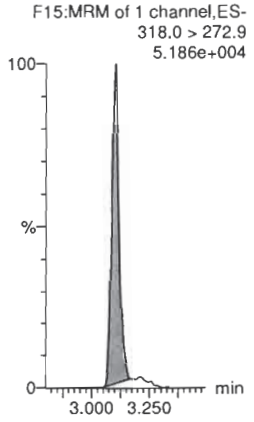
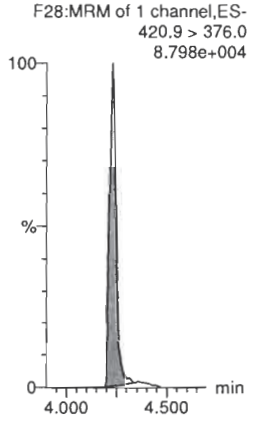
13C4-PFBA



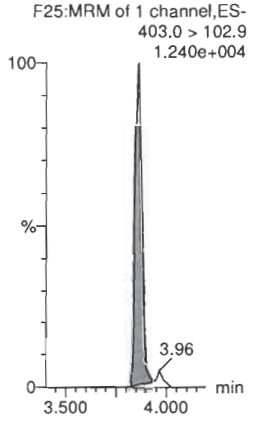
13C5-PFHxA



13C8-PFOA



18O2-PFHxS



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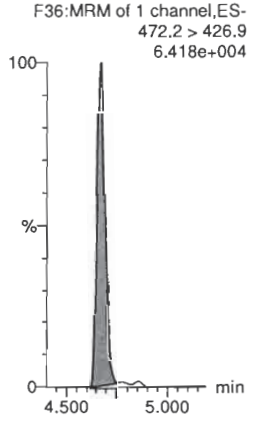

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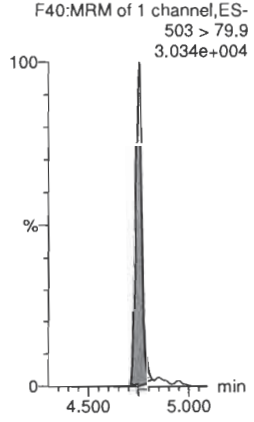
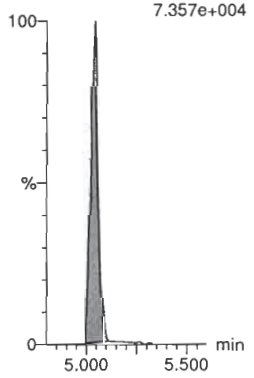
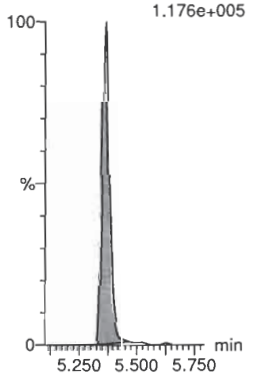


13C6-PFDA



13C7-PFUdA



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(A) Not in ICV RK 2/13/20

JM 2/13/2020

Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	212.7 > 168.9	644.221	431.869	1.00	1.28	18.646	10.000	10.9	109.1	NO		
2	2	PFPrS	248.9 > 79.9		343.687	1.00			10.000		(A)	NO		
3	3	3:3 FTCA	240.9 > 176.9		938.220	1.00			10.000		↓	NO		
4	4	PFPeA	263.1 > 218.9	697.225	938.220	1.00	2.29	9.289	10.000	10.0	100.3	NO		
5	5	PFBS	299.0 > 79.7	524.588	343.687	1.00	2.59	19.079	8.840	8.17	92.4	NO	3.023	NO
6	6	4:2 FTS	327.0 > 306.9	1009.331	619.718	1.00	3.02	20.359	9.360	9.12	97.4	NO	1.425	NO
7	47	13C3-PFBA-EIS	216.1 > 171.8	431.869		1.00	1.28	431.869	12.500	13.0	104.0	NO		
8	51	13C3-PFBS-EIS	302.0 > 99	343.687		1.00	2.59	343.687	12.500	14.6	117.1	NO		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	938.220		1.00	2.29	938.220	12.500	13.3	106.6	NO		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	938.220		1.00	2.29	938.220	12.500	13.3	106.6	NO		
11	51	13C3-PFBS-EIS	302.0 > 99	343.687		1.00	2.59	343.687	12.500	14.6	117.1	NO		
12	55	13C2-4:2 FTS-EIS	329.0 >79.9	619.718		1.00	3.02	619.718	12.500	12.1	96.8	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0	1725.942	1833.383	1.00	3.10	11.767	10.000	10.9	108.9	NO	15.846	NO
15	8	PFPeS	349.1>80.1	550.016	343.687	1.00	3.30	20.004	9.360	7.63	81.6	NO	1.658	NO
16	9	HFPO-DA	284.5 > 168.8	56.119	104.490	1.00	3.30	6.713	10.000	7.98	79.8	NO	1.575	NO
17	10	5:3 FTCA	340.9 > 236.9		1165.920	1.00			10.000		(A)	NO		
18	11	PFHpA	363.0 > 318.9	1273.847	1165.920	1.00	3.71	13.657	10.000	10.5	105.3	NO	9.459	NO
19	12	ADONA	376.8 > 250.9	4631.888	1165.920	1.00	3.82	49.659	9.440	10.0	106.1	NO	2.792	NO
20	57	13C2-PFHxA-EIS	315.0 > 270.0	1833.383		1.00	3.10	1833.383	12.500	12.7	101.7	NO		
21	51	13C3-PFBS-EIS	302.0 > 99	343.687		1.00	2.59	343.687	12.500	14.6	117.1	NO		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	104.490		1.00	3.30	104.490	12.500	15.6	125.0	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	1165.920		1.00	3.71	1165.920	12.500	12.2	97.8	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	1165.920		1.00	3.71	1165.920	12.500	12.2	97.8	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	1165.920		1.00	3.71	1165.920	12.500	12.2	97.8	NO		
26	-1													
27	13	L-PFHxS	398.9 > 80	808.250	1021.501	1.00	3.86	9.890	9.120	9.41	103.2	NO	2.274	NO
28	15	6:2 FTS	427.0 > 406.9	1734.237	803.609	1.00	4.17	26.976	9.480	8.65	91.2	NO	2.140	NO
29	16	L-PFOA	412.8 > 368.9	3454.163	2648.122	1.00	4.23	16.305	10.000	11.2	111.5	NO	3.170	NO
30	18	PFecHS	460.8 > 381.0		2648.122	1.00			10.000		(A)	NO		
31	19	PFHpS	449.0 > 79.9	275.870	1256.781	1.00	4.34	2.744	9.520	9.34	98.1	NO	0.959	NO
32	20	7:3 FTCA	440.9 > 336.9		3658.788	1.00			10.000		(A)	NO		
33	61	13C3-PFHxS-EIS	401.8 > 79.9	1021.501		1.00	3.86	1021.501	12.500	11.6	92.6	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >80	803.609		1.00	4.17	803.609	12.500	14.1	112.9	NO		
35	69	13C2-PFOA-EIS	414.9 > 369.7	2648.122		1.00	4.23	2648.122	12.500	12.0	96.2	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	2648.122		1.00	4.23	2648.122	12.500	12.0	96.2	NO		

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Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
37	71	13C8-PFOS-EIS	507.0 > 79.9	1256.781		1.00	4.75	1256.781	12.500	11.9	95.0	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	3658.788		1.00	4.67	3658.788	12.500	13.9	111.4	NO		
39	-1													
40	21	PFNA	463.0 > 418.8	3134.791	3658.788	1.00	4.67	10.710	10.000	9.25	92.5	NO	4.208	NO
41	22	PFOSA	497.9 > 77.9	1569.682	1490.211	1.00	4.73	13.167	10.000	11.0	109.7	NO	31.303	NO
42	23	L-PFOS	498.9 > 79.9	1218.675	1256.781	1.00	4.75	12.121	9.280	10.4	112.5	NO	2.307	NO
43	25	9Cl-PF30NS	531 > 351.1	3363.629	1256.781	1.00	4.97	33.455	10.000	9.77	97.7	NO	23.245	NO
44	26	PFDA	513 > 468.8	3696.493	3185.892	1.00	5.04	14.503	10.000	11.6	115.7	NO	5.235	NO
45	27	8:2 FTS	527.0 > 506.9	1591.301	745.557	1.00	5.01	26.680	9.600	12.0	125.3	NO	1.591	NO
46	65	13C5-PFNA-EIS	468.2 > 422.9	3658.788		1.00	4.67	3658.788	12.500	13.9	111.4	NO		
47	67	13C8-PFOSA-EIS	506.1 > 77.7	1490.211		1.00	4.73	1490.211	12.500	12.6	100.6	NO		
48	71	13C8-PFOS-EIS	507.0 > 79.9	1256.781		1.00	4.75	1256.781	12.500	11.9	95.0	NO		
49	71	13C8-PFOS-EIS	507.0 > 79.9	1256.781		1.00	4.75	1256.781	12.500	11.9	95.0	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	3185.892		1.00	5.04	3185.892	12.500	12.1	96.8	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	745.557		1.00	5.01	745.557	12.500	10.9	87.0	NO		
52	-1													
53	28	PFNS	549.1 > 80.1	1148.822	1256.781	1.00	5.10	11.426	10.000	11.0	109.9	NO	1.874	NO
54	29	L-MeFOSAA	570 > 419	2210.840	3232.339	1.00	5.19	8.550	10.000	9.56	95.6	NO	2.443	NO
55	31	L-EtFOSAA	584. > 419	2150.174	2796.962	1.00	5.35	9.609	10.000	9.58	95.8	NO	1.371	NO
56	33	PFUdA	563.0 > 518.9	4066.551	4563.052	1.00	5.37	11.140	10.000	10.8	108.4	NO	9.533	NO
57	34	PFDS	598.9> 80	1299.562	1256.781	1.00	5.42	12.926	9.640	10.1	105.1	NO	1.835	NO
58	35	11Cl-PF30UdS	630.9 > 450.9	3906.477	5550.886	1.00	5.58	8.797	9.440	10.0	106.2	NO	21.692	NO
59	71	13C8-PFOS-EIS	507.0 > 79.9	1256.781		1.00	4.75	1256.781	12.500	11.9	95.0	NO		
60	77	d3-N-MeFOSAA-EIS	573. > 419	3232.339		1.00	5.19	3232.339	12.500	13.9	111.6	NO		
61	81	d5-N-EtFOSAA-EIS	589. > 419	2796.962		1.00	5.35	2796.962	12.500	12.7	101.8	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	4563.052		1.00	5.37	4563.052	12.500	12.6	100.8	NO		
63	71	13C8-PFOS-EIS	507.0 > 79.9	1256.781		1.00	4.75	1256.781	12.500	11.9	95.0	NO		
64	83	13C2-PFDoA-EIS	614.7 > 569.7	5550.886		1.00	5.65	5550.886	12.500	12.1	96.9	NO		
65	-1													
66	36	10:2 FTS	627.0 > 606.9	8.217	720.470	1.00	5.64	0.143	10.000		(A)	NO	1.689	NO
67	37	PFDoA	612.9 > 569.0	5183.786	5550.886	1.00	5.65	11.673	10.000	10.8	107.7	NO	7.635	NO
68	38	N-MeFOSA	512.1 > 168.9		4355.600	1.00			9.600		(A)	NO		
69	39	PFTrDA	662.9 > 618.9	6199.607	5550.886	1.00	5.89	13.961	10.000	10.8	107.9	NO	26.590	NO
70	40	PFDoS	698.8 > 79.9		4754.587	1.00			10.000		(A)	NO		
71	41	PFTeDA	713.0 > 669.0	5567.100	4754.587	1.00	6.11	14.636	10.000	10.7	106.6	NO	12.097	NO
72	85	13C2-10:2 FTS-EIS	632.9 > 80	720.470		1.00	5.63	720.470	12.500	13.5	108.3	NO		

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Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
73	83	13C2-PFDoA-EIS	614.7 > 569.7	5550.886		1.00	5.65	5550.886	12.500	12.1	96.9	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	4355.600		1.00	5.84	4355.600	149.200	154	102.9	NO		
75	83	13C2-PFDoA-EIS	614.7 > 569.7	5550.886		1.00	5.65	5550.886	12.500	12.1	96.9	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	4754.587		1.00	6.11	4754.587	12.500	13.0	104.1	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	4754.587		1.00	6.11	4754.587	12.500	13.0	104.1	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9		5781.372	1.00			9.600			NO		
80	43	PFHxDA	813.1 > 768.6		6567.599	1.00			10.000			NO		
81	44	PFODA	913.1 > 868.8	11.275	6567.599	1.00	6.69	0.021	10.000			NO		
82	45	N-MeFOSE	616.1 > 58.9		2845.237	1.00			9.600			NO		
83	46	N-EtFOSE	630.1 > 58.9		2929.179	1.00			9.600			NO		
84	1...	6:2 FTS-13C8PFOS	427.0 > 406.9	1734.237	1256.781	1.00	4.17	17.249	10.000	20.5	204.6	YES	2.140	NO
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	5781.372		1.00	6.25	5781.372	149.200	155	103.7	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	6567.599		1.00	6.45	6567.599	12.500	12.8	102.5	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	6567.599		1.00	6.45	6567.599	12.500	12.8	102.5	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	2845.237		1.00	6.38	2845.237	149.200	162	108.8	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	2929.179		1.00	6.53	2929.179	149.200	150	100.7	NO		
90	71	13C8-PFOS-EIS	507.0 > 79.9	1256.781		1.00	4.75	1256.781	12.500	11.9	95.0	NO		
91	-1													
92	48	13C3-PFBA-RSD	216.1 > 171.8	436.611	706.146	1.00	1.28	7.729	12.500	12.7	101.7	NO		
93	50	13C3-PFPeA-RSD	266.0 > 221.8	938.220	2170.915	1.00	2.29	5.402	12.500	12.8	102.1	NO		
94	52	13C3-PFBS-RSD	302.0 > 99	343.894	534.943	1.00	2.59	8.036	12.500	14.0	112.2	NO		
95	54	13C3-HFPO-DA-RSD	287.0 > 168.9	104.490	2170.915	1.00	3.30	0.602	12.500	14.3	114.7	NO		
96	56	13C2-4:2 FTS-RSD	329.0 >79.9	619.718	534.943	1.00	3.02	14.481	12.500	13.1	105.1	NO		
97	58	13C2-PFHxA-RSD	315.0 > 270.0	1833.383	2170.915	1.00	3.10	10.557	12.500	12.7	101.5	NO		
98	60	13C4-PFHpA-RSD	367.2 > 321.8	1165.920	2170.915	1.00	3.71	6.713	12.500	11.8	94.7	NO		
99	62	13C3-PFHxS-RSD	401.8 > 79.9	1021.501	534.943	1.00	3.86	23.869	12.500	12.3	98.5	NO		
100	64	13C2-6:2 FTS-RSD	429.0 >80	803.609	1411.976	1.00	4.17	7.114	12.500	13.8	110.5	NO		
101	66	13C5-PFNA-RSD	468.2 > 422.9	3657.132	3550.849	1.00	4.67	12.874	12.500	14.0	111.7	NO		
102	68	13C8-PFOSA-RSD	506.1 > 77.7	1490.211	5153.109	1.00	4.73	3.615	12.500	12.9	102.9	NO		
103	70	13C2-PFOA-RSD	414.9 > 369.7	2650.008	4389.927	1.00	4.23	7.546	12.500	11.7	93.9	NO		
104	-1													
105	72	13C8-PFOS-RSD	507.0 > 79.9	1256.781	1411.976	1.00	4.75	11.126	12.500	11.5	92.0	NO		
106	74	13C2-PFDA-RSD	515.1 > 469.9	3185.892	4233.961	1.00	5.04	9.406	12.500	11.1	88.6	NO		
107	76	13C2-8:2 FTS-RSD	529 > 80	745.023	1411.976	1.00	5.01	6.596	12.500	11.6	92.8	NO		
108	78	d3-N-MeFOSAA-RSD	573. > 419	3232.339	5153.109	1.00	5.19	7.841	12.500	13.5	107.7	NO		

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Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
109	80	13C2-PFUdA-RSD	565 > 519.8	4563.052	5153.109	1.00	5.37	11.069	12.500	12.6	100.8	NO		
110	82	d5-N-EtFOSAA-RSD	589. > 419	2796.962	5153.109	1.00	5.35	6.785	12.500	13.2	106.0	NO		
111	84	13C2-PFDoA-RSD	614.7 > 569.7	5550.886	4233.961	1.00	5.65	16.388	12.500	11.2	89.8	NO		
112	86	13C2-10:2 FTS-RSD	632.9 > 80	720.470	1411.976	1.00	5.63	6.378	12.500	13.0	104.0	NO		
113	88	d3-N-MeFOSA-RSD	515.2 > 168.9	4355.600	5153.109	1.00	5.84	10.565	149.200	150	100.3	NO		
114	90	13C2-PFTeDA-RSD	715.1 > 669.7	4754.587	5153.109	1.00	6.11	11.533	12.500	13.0	104.1	NO		
115	92	d5-N-ETFOSA-RSD	531.1 > 168.9	5781.372	5153.109	1.00	6.25	14.024	149.200	153	102.8	NO		
116	94	13C2-PFHxDA-RSD	815 > 769.7	6564.614	5153.109	1.00	6.45	15.924	12.500	13.2	105.5	NO		
117	-1													
118	96	d7-N-MeFOSE-RSD	623.1 > 58.9	2845.237	5153.109	1.00	6.38	6.902	149.200	156	104.3	NO		
119	98	d9-N-EtFOSE-RSD	639.2 > 58.8	2929.179	5153.109	1.00	6.53	7.105	149.200	145	97.4	NO		
120	99	13C4-PFBA	217.0 > 172.0	706.146	706.146	1.00	1.28	12.500	12.500	12.5	100.0	NO		
121	1...	13C5-PFHxA	318.0 > 272.9	2170.915	2170.915	1.00	3.10	12.500	12.500	12.5	100.0	NO		
122	1...	13C8-PFOA	420.9 > 376.0	4389.927	4389.927	1.00	4.23	12.500	12.500	12.5	100.0	NO		
123	1...	18O2-PFHxS	403.0 > 102.9	534.943	534.943	1.00	3.86	12.500	12.500	12.5	100.0	NO		
124	1...	13C9-PFNA	472.2 > 426.9	3550.849	3550.849	1.00	4.67	12.500	12.500	12.5	100.0	NO		
125	1...	13C4-PFOS	503 > 79.9	1411.976	1411.976	1.00	4.75	12.500	12.500	12.5	100.0	NO		
126	1...	13C6-PFDA	519.1 > 473.7	4233.961	4233.961	1.00	5.04	12.500	12.500	12.5	100.0	NO		
127	1...	13C7-PFUdA	570.1 > 524.8	5153.109	5153.109	1.00	5.36	12.500	12.500	12.5	100.0	NO		

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Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 15:37:24

Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

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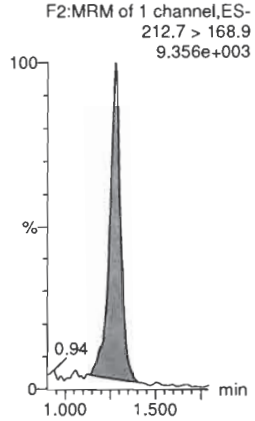

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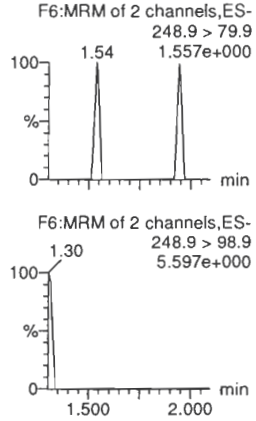

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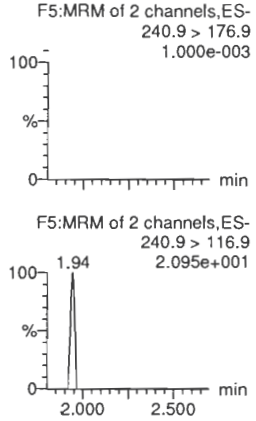

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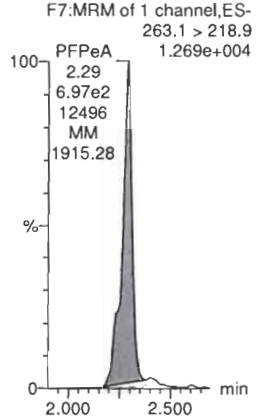

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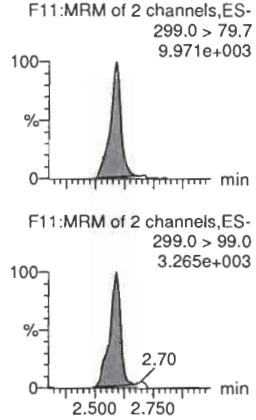

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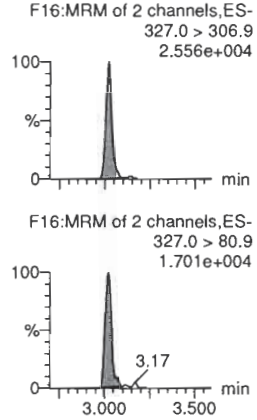

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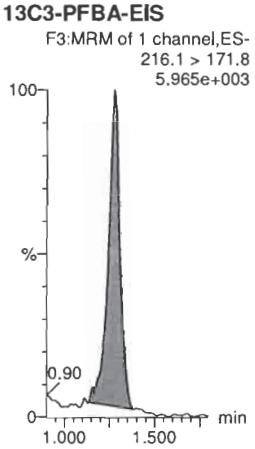

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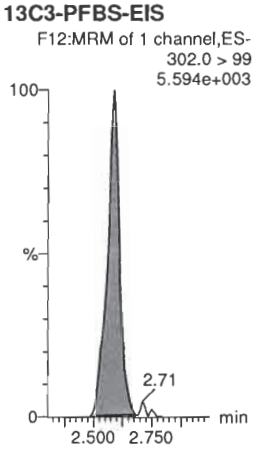

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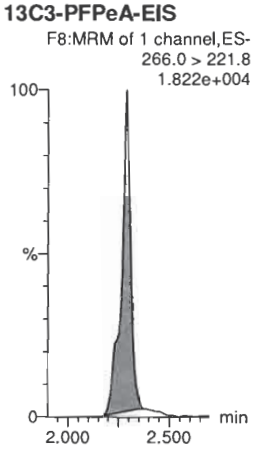

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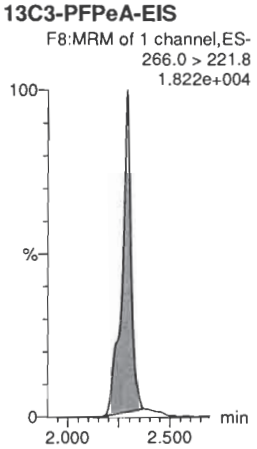

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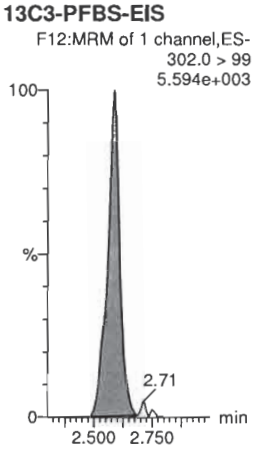

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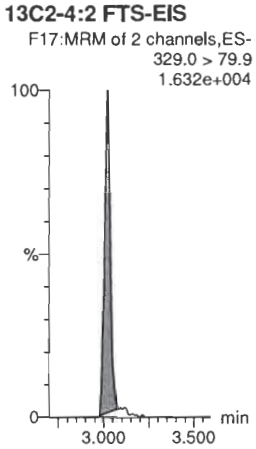

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 2 of 14
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Printed: Thursday, February 13, 2020 15:59:45 Pacific Standard Time

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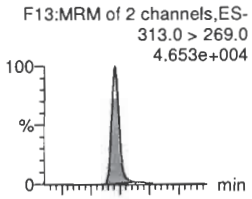

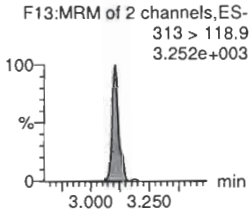

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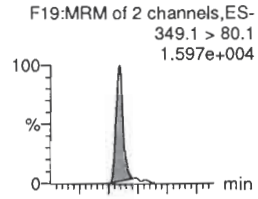

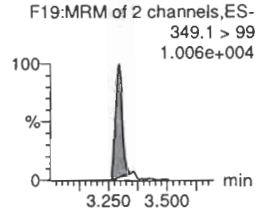

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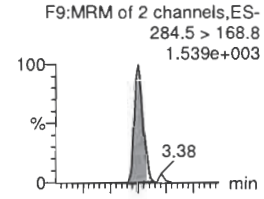

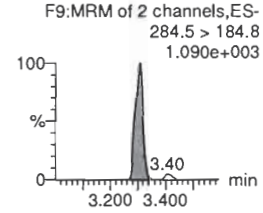

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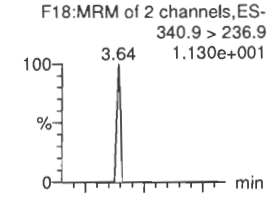

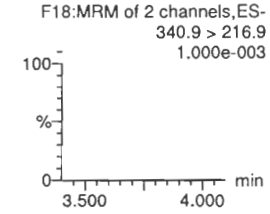

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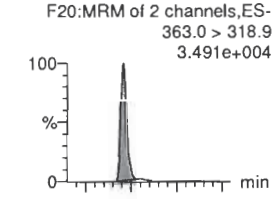

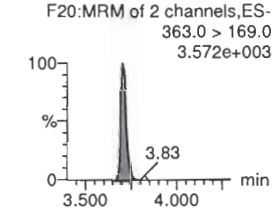

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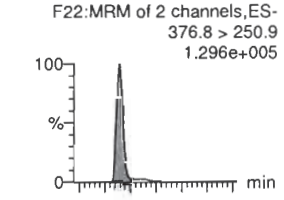

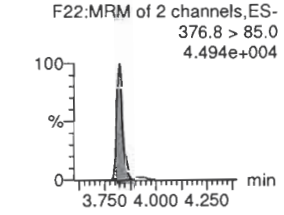

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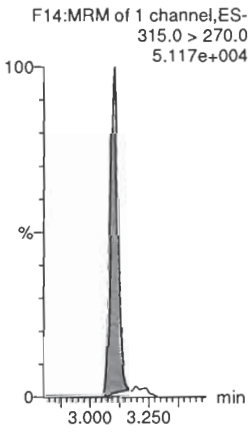

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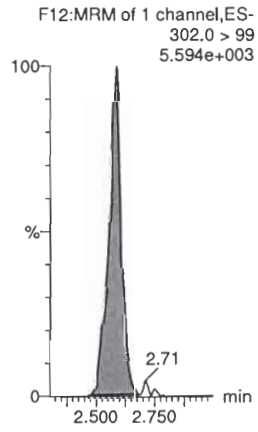

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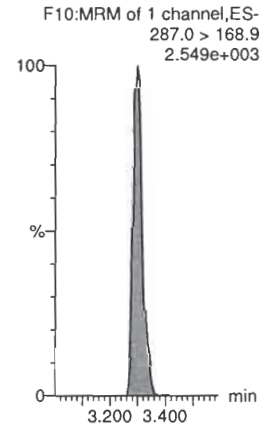

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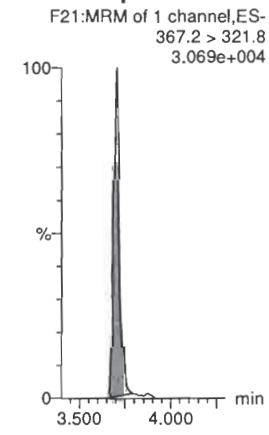

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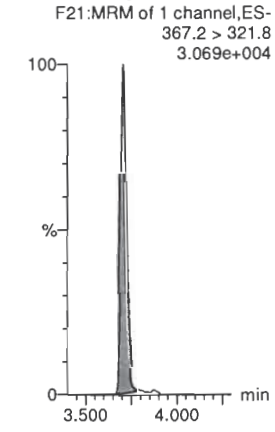

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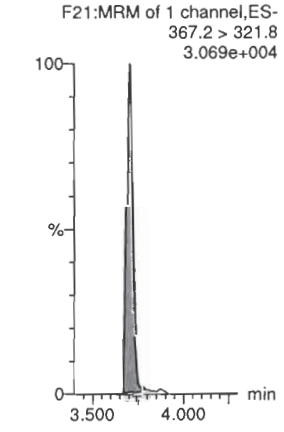

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 3 of 14
Vista Analytical Laboratory

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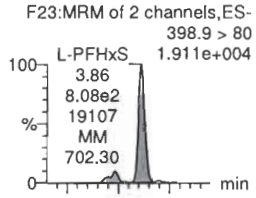

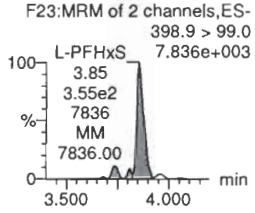

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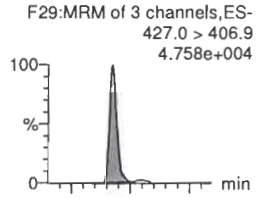

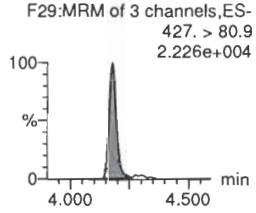

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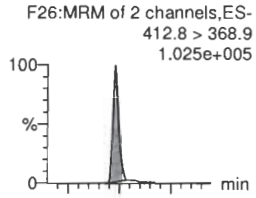

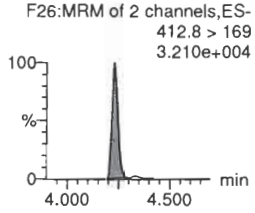

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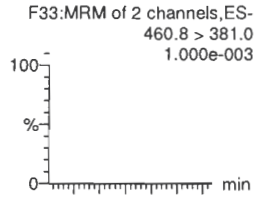

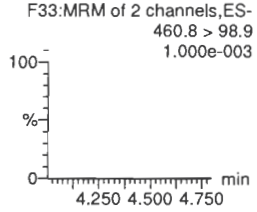

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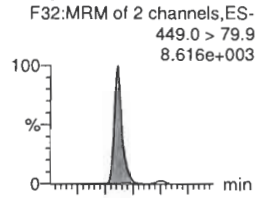

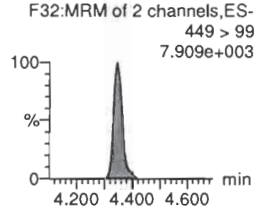

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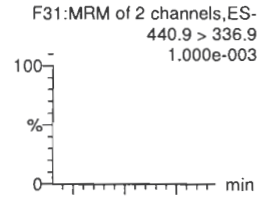

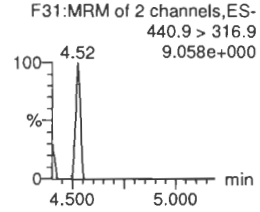

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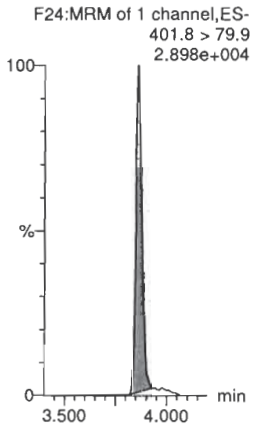

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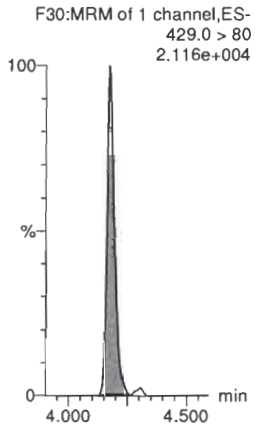

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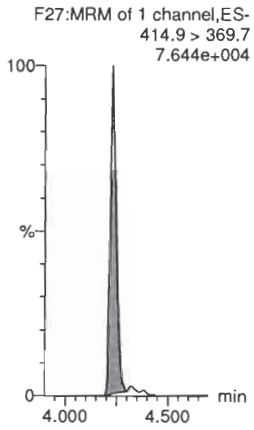

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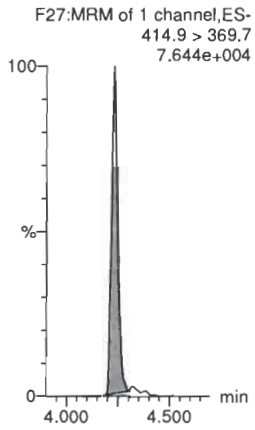

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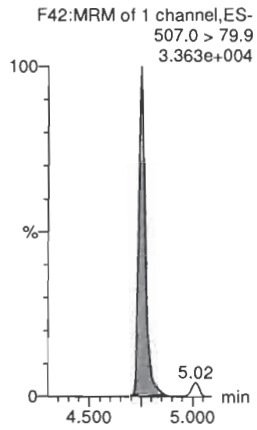

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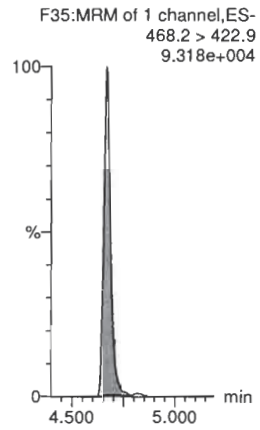

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 4 of 14
Vista Analytical Laboratory

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Printed: Thursday, February 13, 2020 15:59:45 Pacific Standard Time

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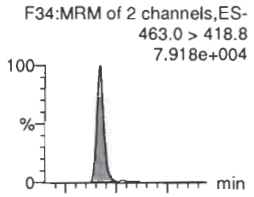

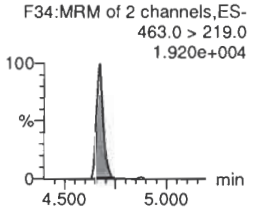

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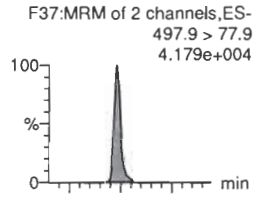
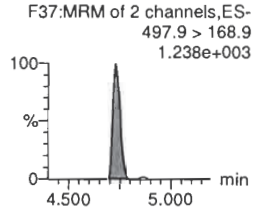
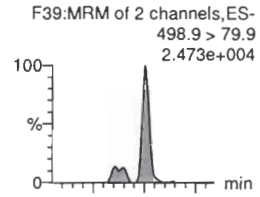
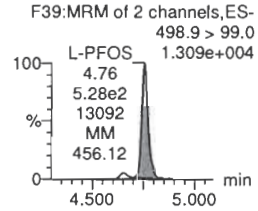




L-PFOS





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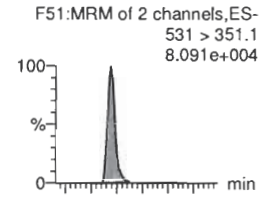

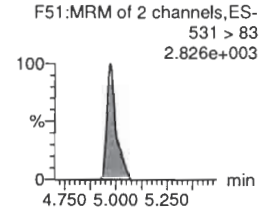

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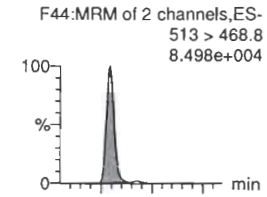

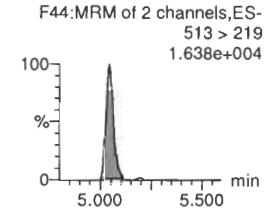

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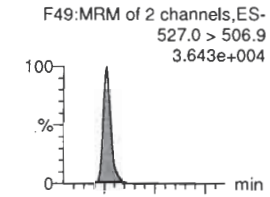

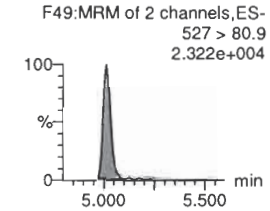

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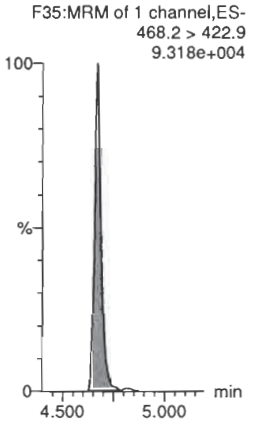

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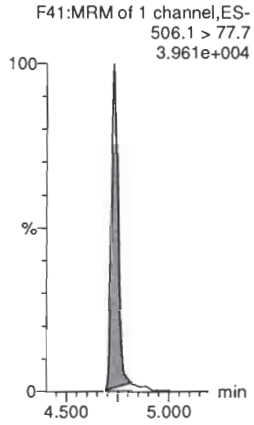

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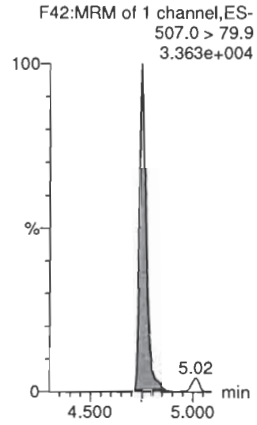

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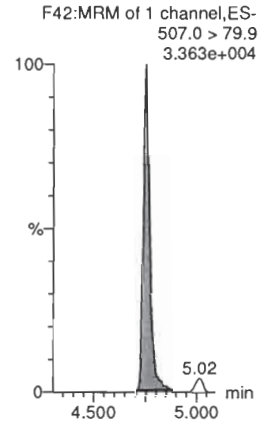

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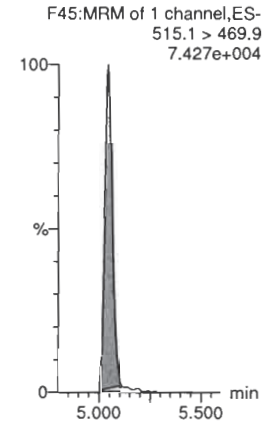

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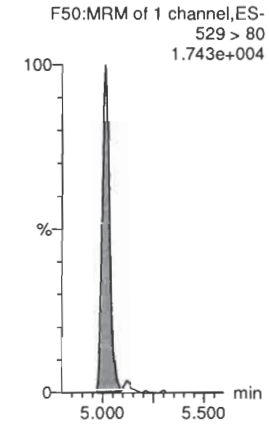

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 5 of 14
Vista Analytical Laboratory

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Printed: Thursday, February 13, 2020 15:59:45 Pacific Standard Time

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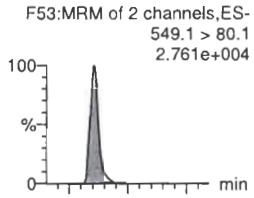

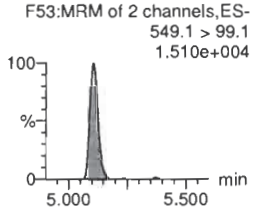

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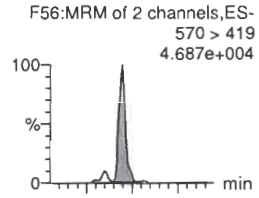

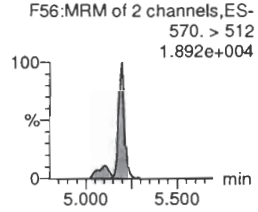

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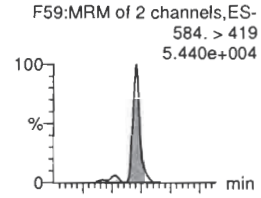

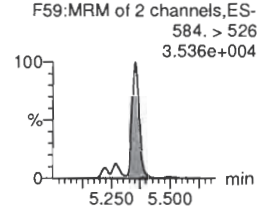

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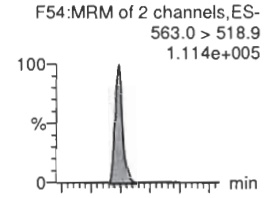

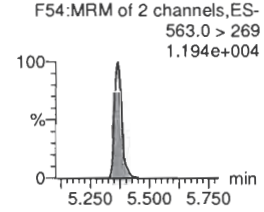

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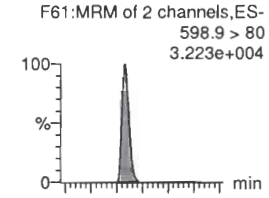

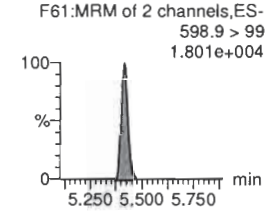

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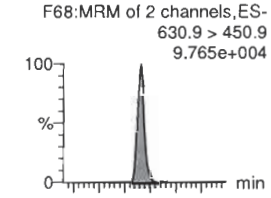

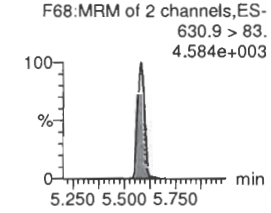

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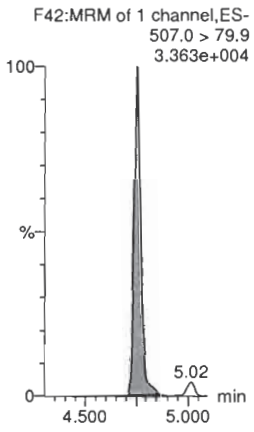

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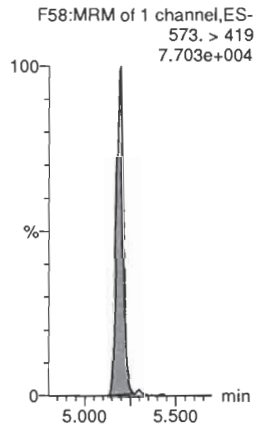

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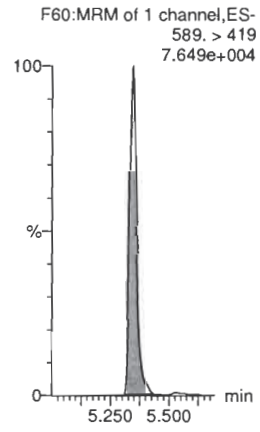

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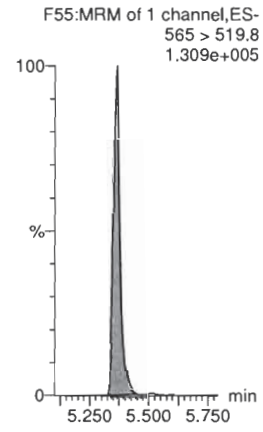

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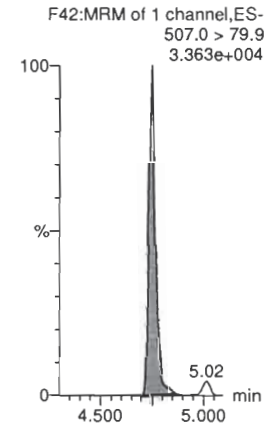

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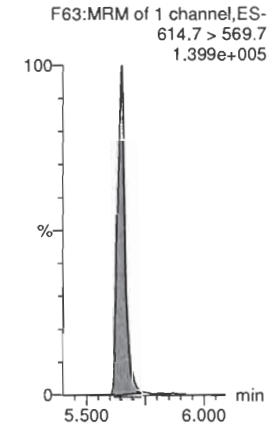

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 6 of 14
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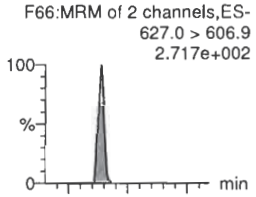

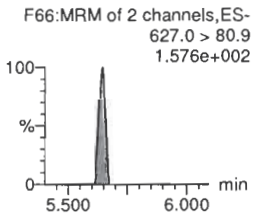

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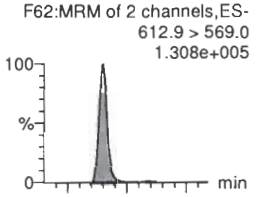

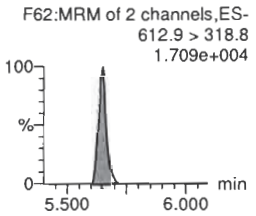

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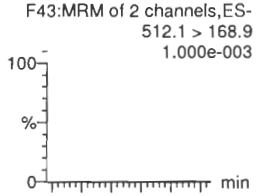

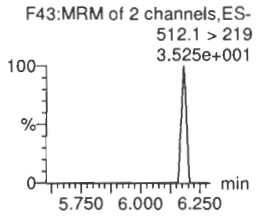

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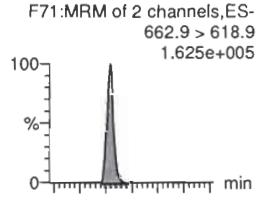

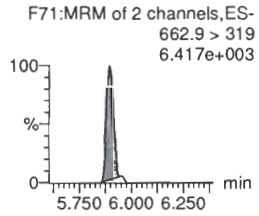

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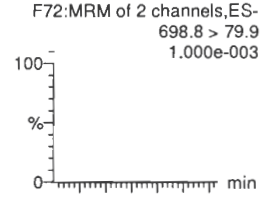

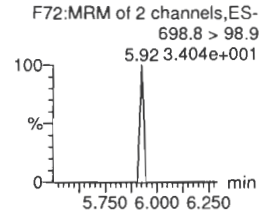

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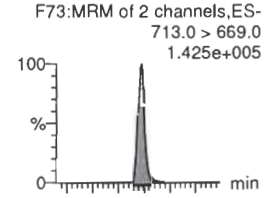

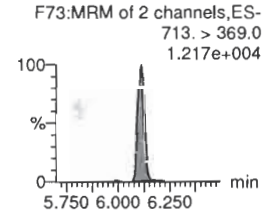

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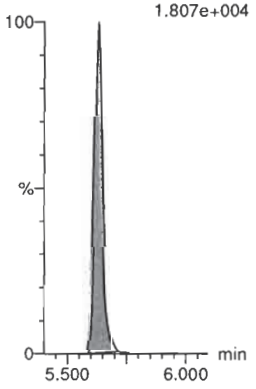

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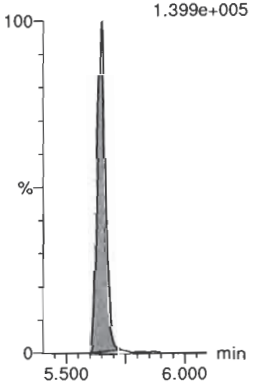

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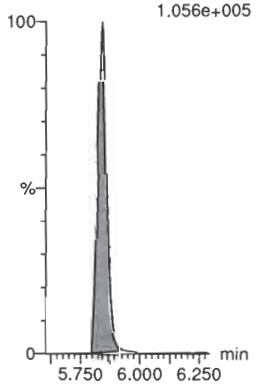

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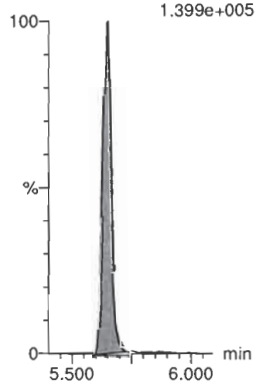

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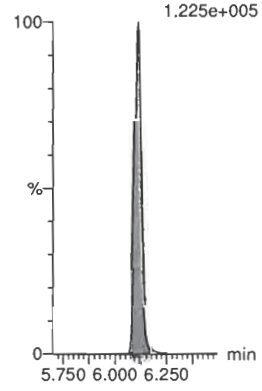

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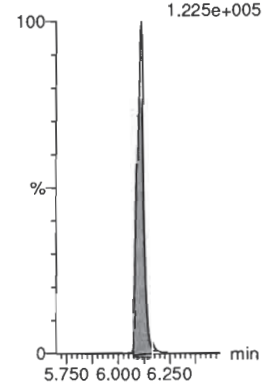

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 7 of 14
Vista Analytical Laboratory

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Printed: Thursday, February 13, 2020 15:59:45 Pacific Standard Time

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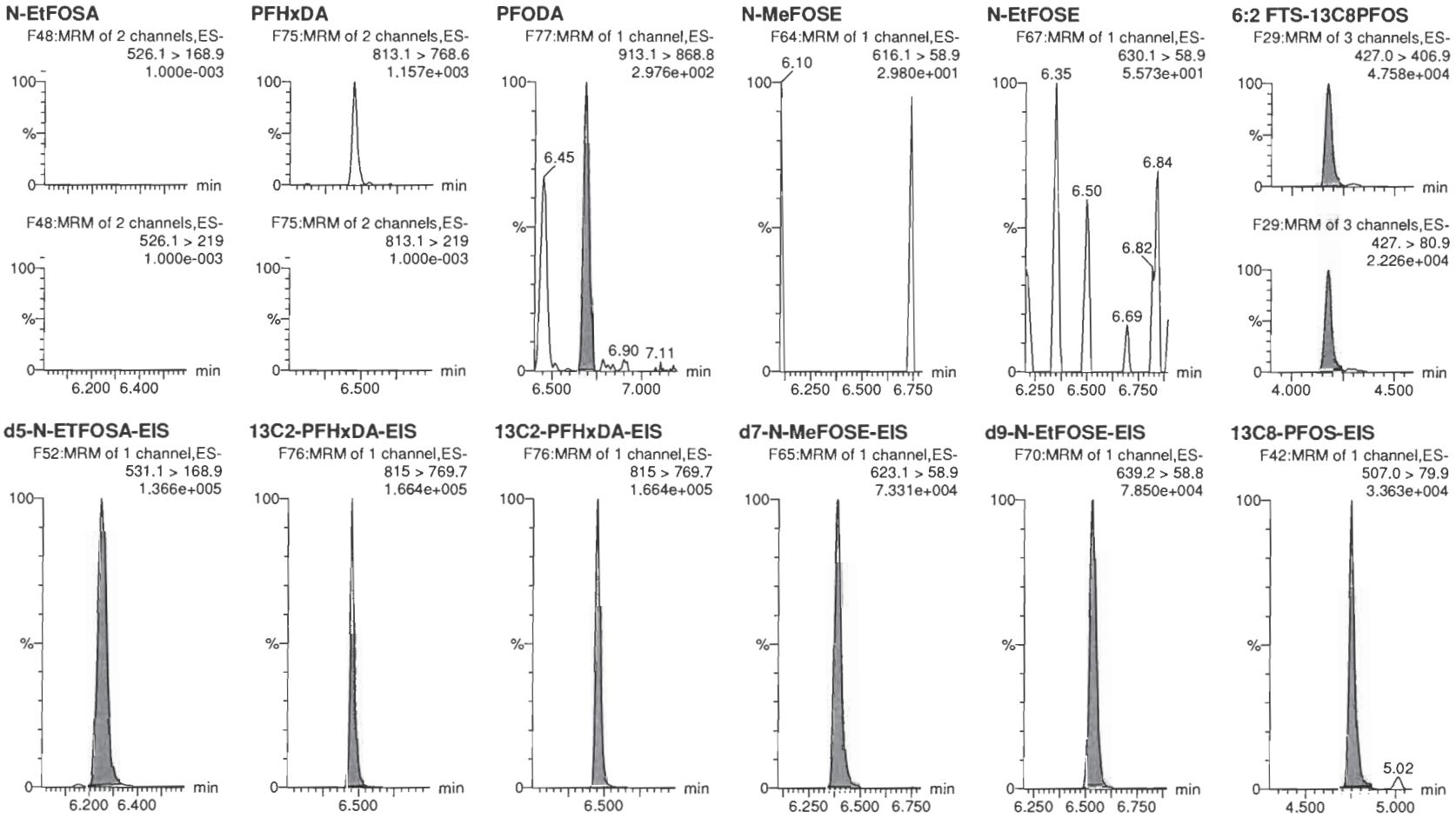

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 8 of 14
Vista Analytical Laboratory

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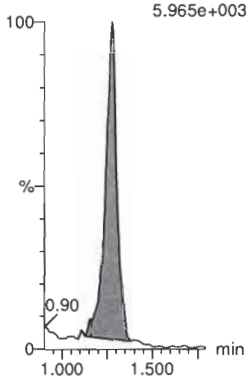
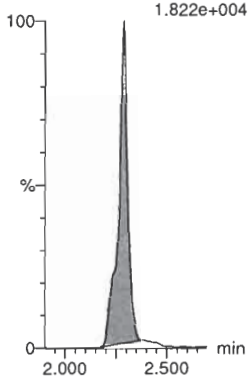
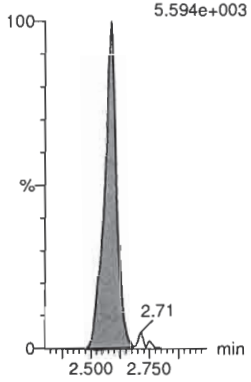
13C3-PFBA-RSD
F3:MRM of 1 channel,ES-
216.1 > 171.8
5.965e+003



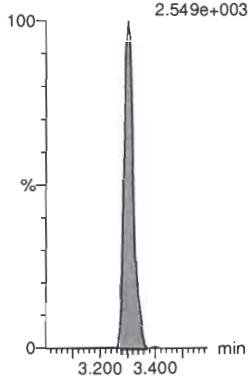
13C3-PFPeA-RSD
F8:MRM of 1 channel,ES-
266.0 > 221.8
1.822e+004



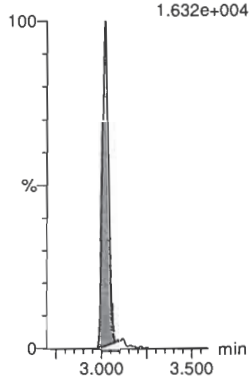
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
5.594e+003



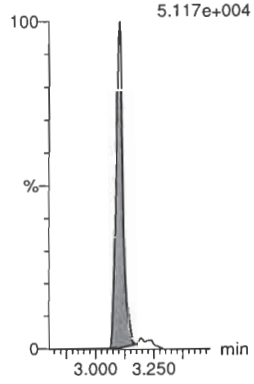
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
2.549e+003



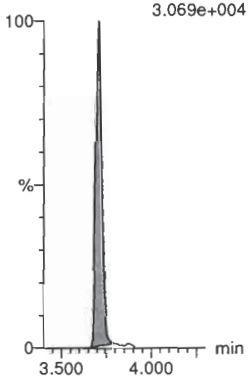
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
1.632e+004



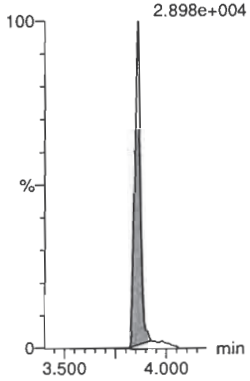
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
5.117e+004



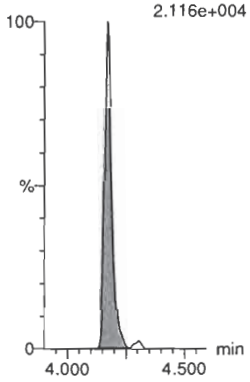
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.069e+004



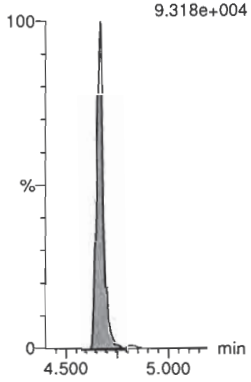
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
2.898e+004



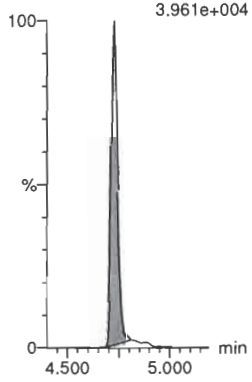
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
2.116e+004



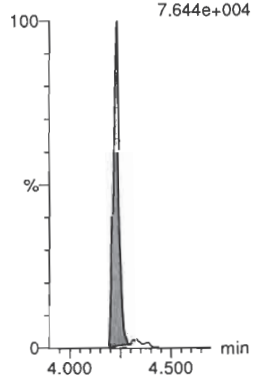
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
9.318e+004



13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
3.961e+004



13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
7.644e+004



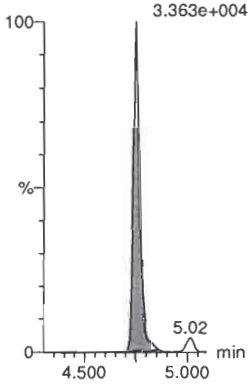
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 9 of 14
Vista Analytical Laboratory

Dataset: Untitled

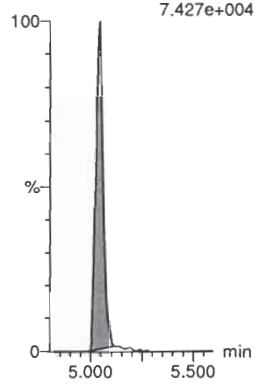
Last Altered: Thursday, February 13, 2020 15:57:22 Pacific Standard Time
Printed: Thursday, February 13, 2020 15:59:45 Pacific Standard Time

Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

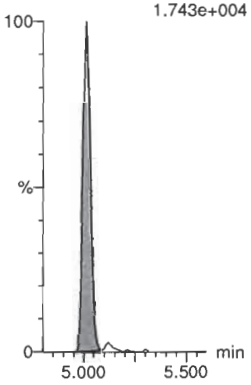
13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
3.363e+004



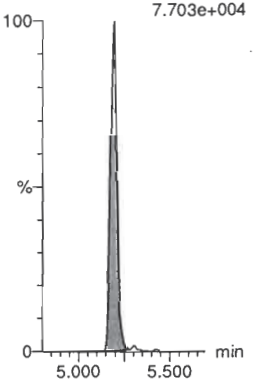
13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
7.427e+004



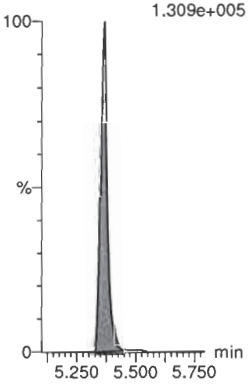
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.743e+004



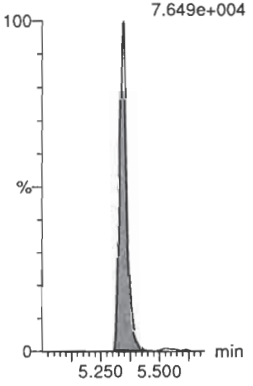
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
7.703e+004



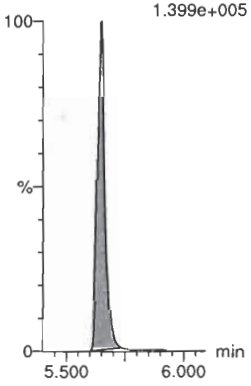
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
1.309e+005



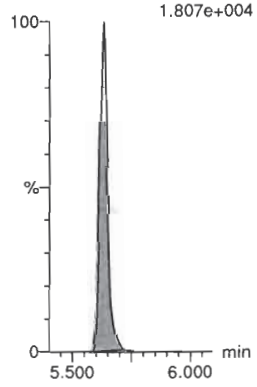
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
7.649e+004



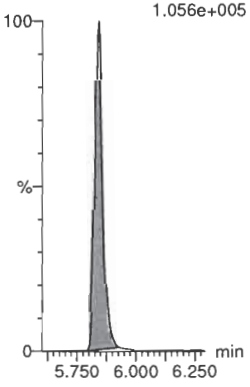
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
1.399e+005



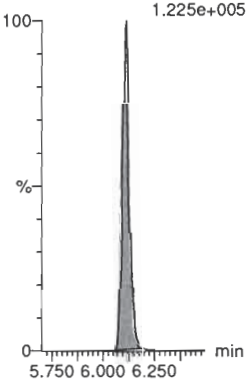
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.807e+004



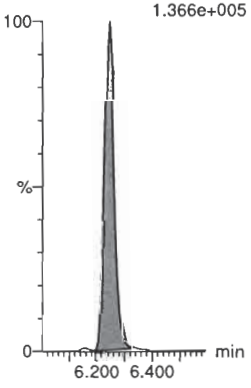
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
1.056e+005



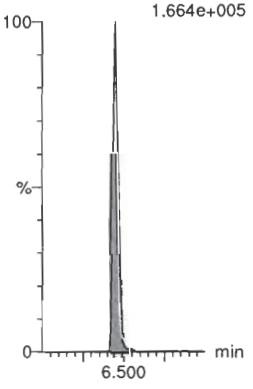
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
1.225e+005



d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
1.366e+005



13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.664e+005



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945** Page 10 of 14
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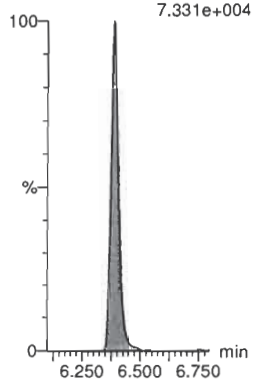
Dataset: Untitled

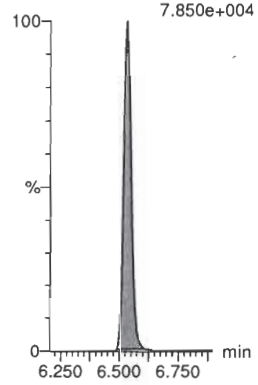
Last Altered: Thursday, February 13, 2020 15:57:22 Pacific Standard Time
Printed: Thursday, February 13, 2020 15:59:45 Pacific Standard Time

Name: 200212M2_14, Date: 12-Feb-2020, Time: 21:24:17, ID: ICV200212M2-1 PFC ICV 20B1112, Description: PFC ICV 20B1112

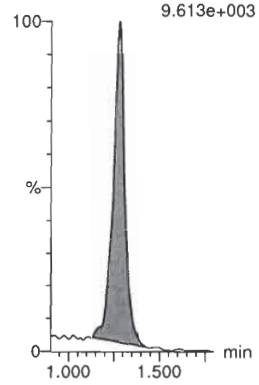
d7-N-MeFOSE-RSD
F65:MRM of 1 channel,ES-
623.1 > 58.9
7.331e+004



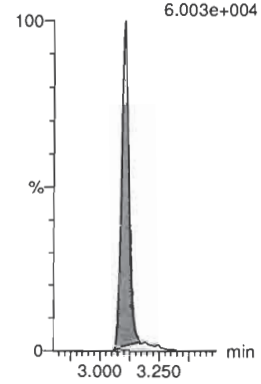
d9-N-EtFOSE-RSD
F70:MRM of 1 channel,ES-
639.2 > 58.8
7.850e+004



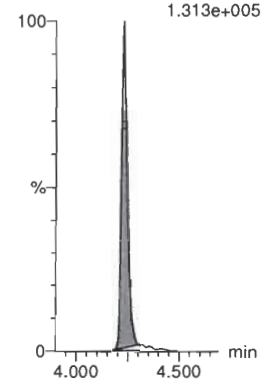
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
9.613e+003



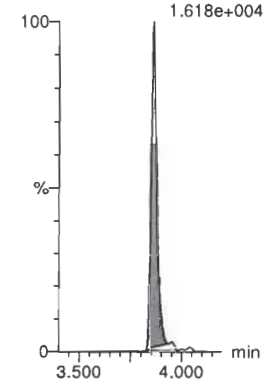
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
6.003e+004



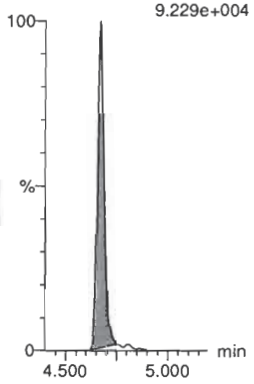
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
1.313e+005



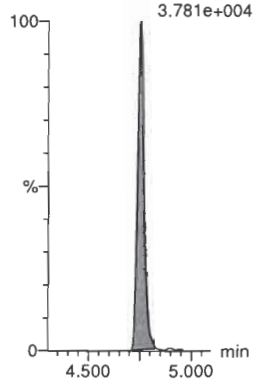
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 102.9
1.618e+004



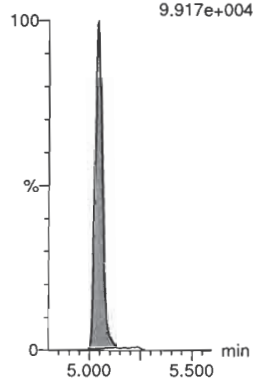
13C9-PFNA
F36:MRM of 1 channel,ES-
472.2 > 426.9
9.229e+004



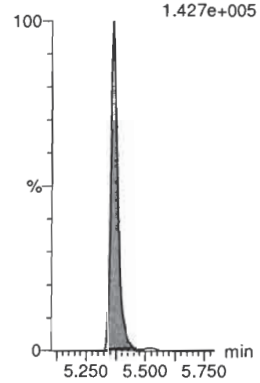
13C4-PFOS
F40:MRM of 1 channel,ES-
503 > 79.9
3.781e+004



13C6-PFDA
F47:MRM of 1 channel,ES-
519.1 > 473.7
9.917e+004



13C7-PFUdA
F57:MRM of 1 channel,ES-
570.1 > 524.8
1.427e+005



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

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Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

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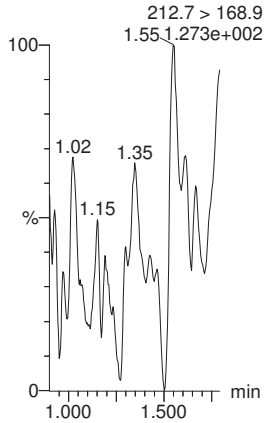
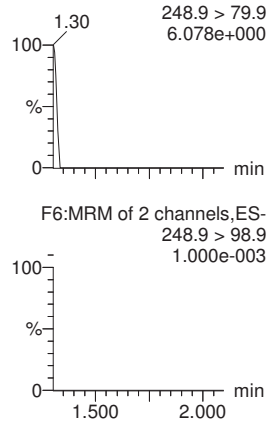
Calibration: Z:\Projects\PFAS.PRO\CurveDB\C18_VAL-PFAS_Q4_02-12-20.cdb 13 Feb 2020 13:55:50

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

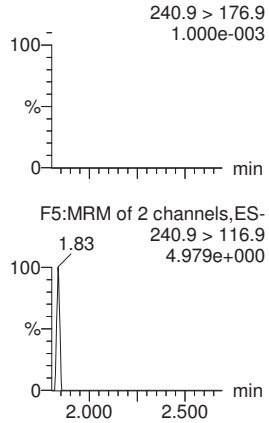
PFBA



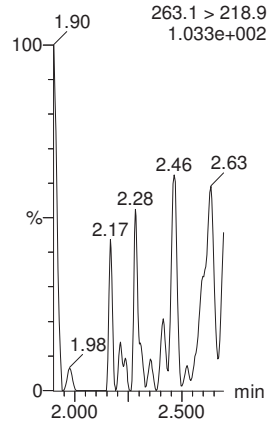
PFPrS



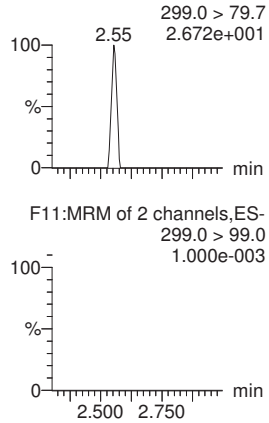
3:3 FTCA



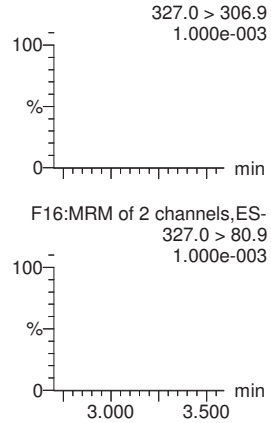
PFPeA



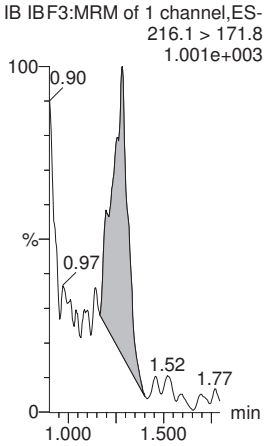
PFBS



4:2 FTS



13C3-PFBA-EIS



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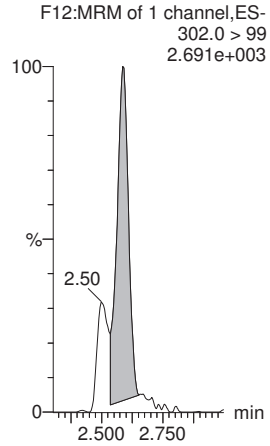

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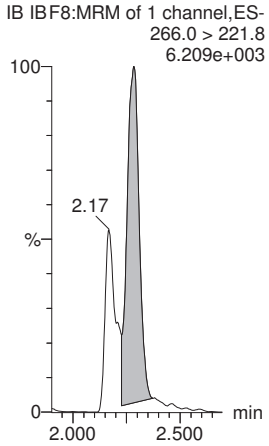

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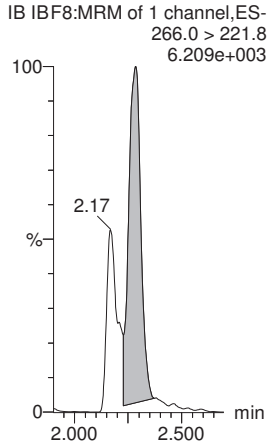

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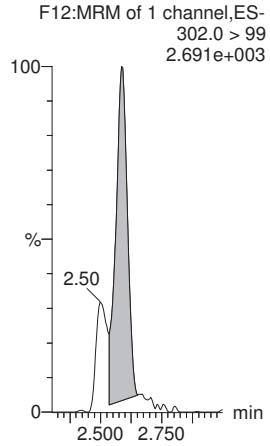
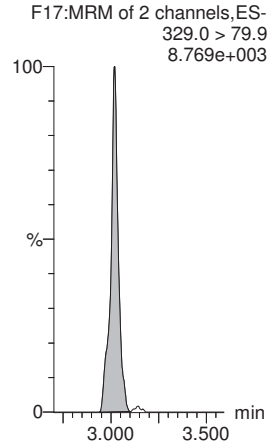


13C2-4:2 FTS-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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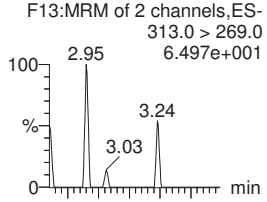

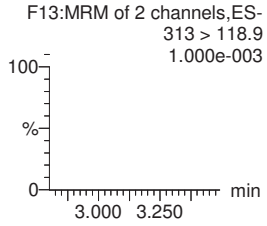

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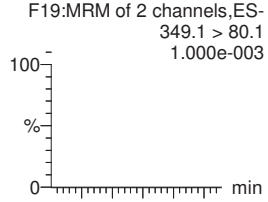

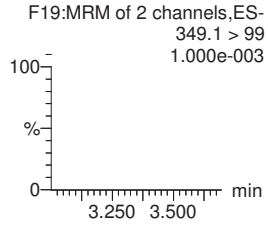

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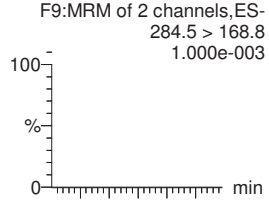

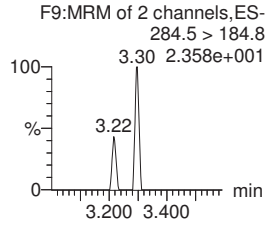

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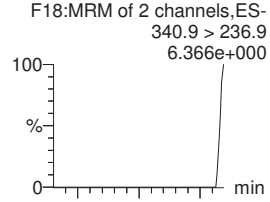

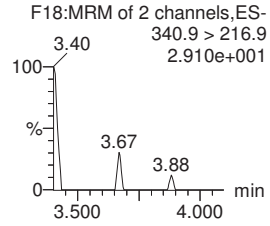

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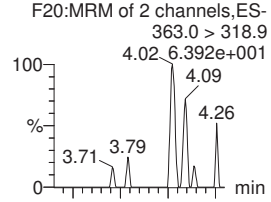

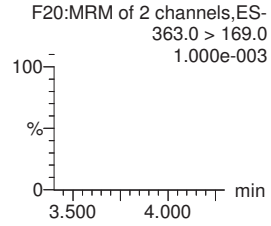

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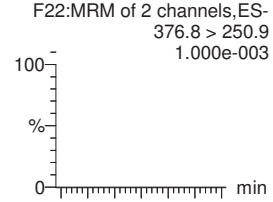

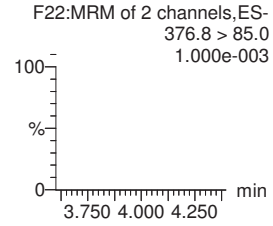

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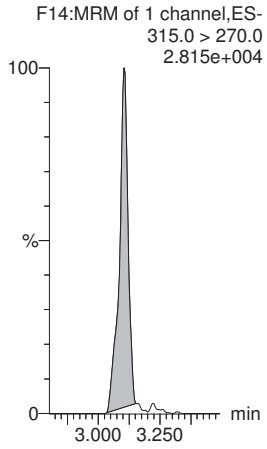

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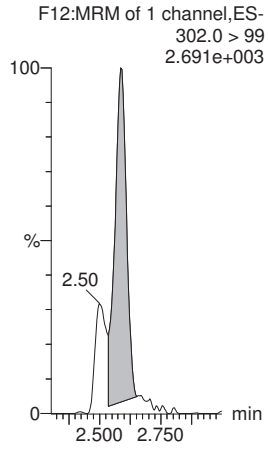

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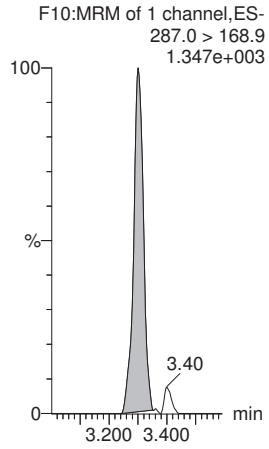

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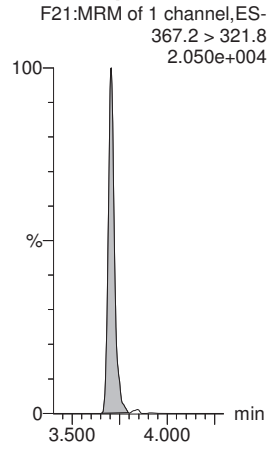

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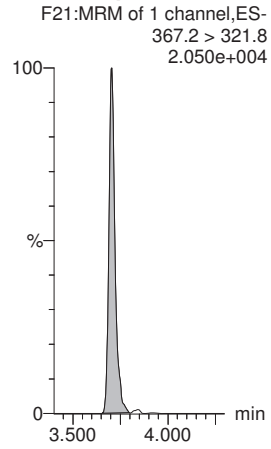

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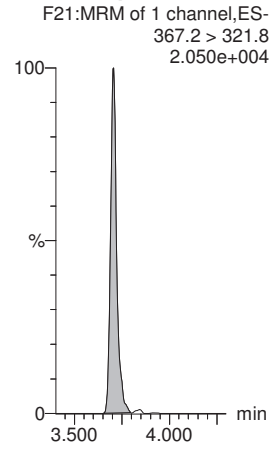

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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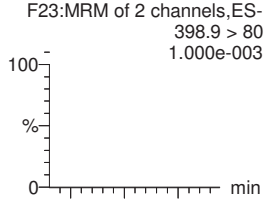

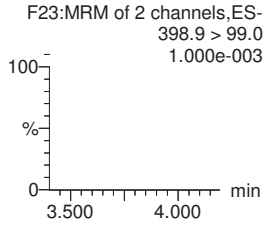

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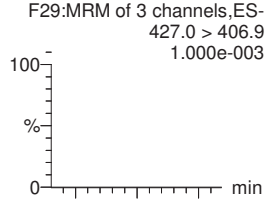

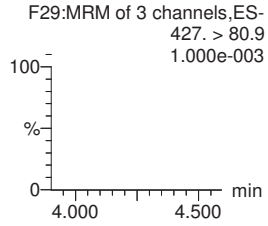

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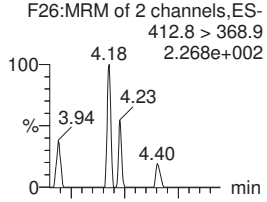

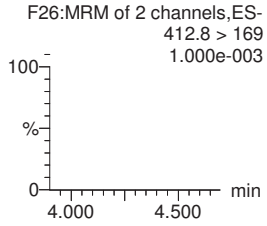

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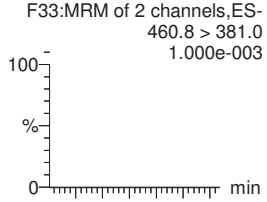

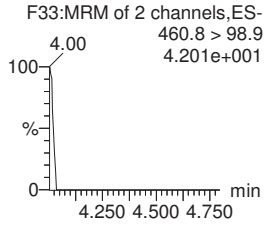

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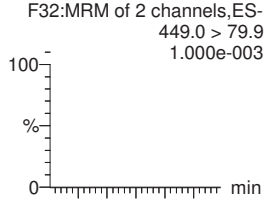

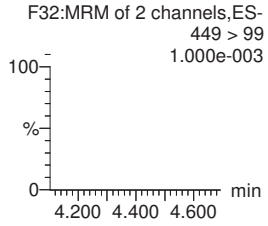

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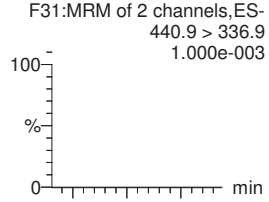

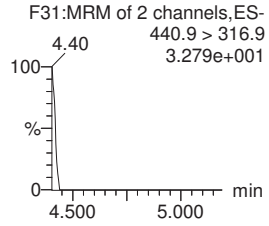

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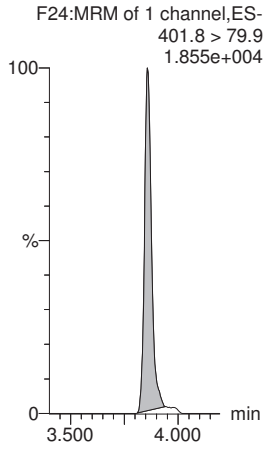

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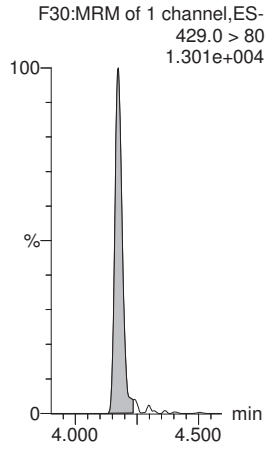

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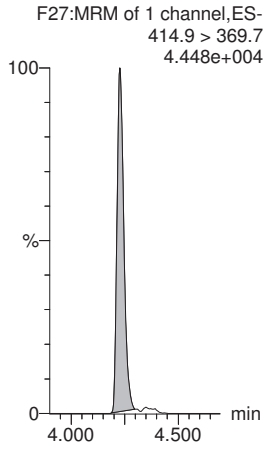

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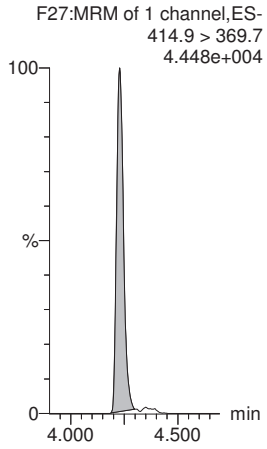

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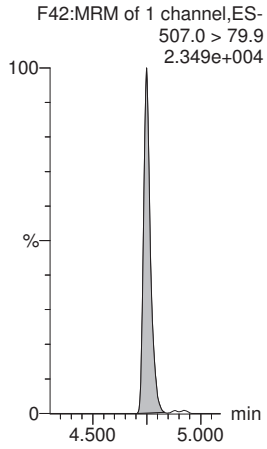

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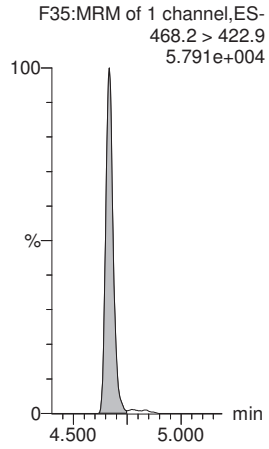

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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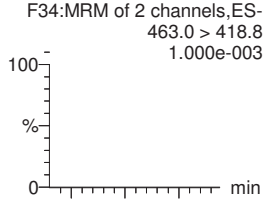

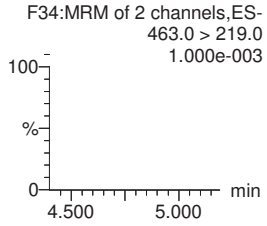

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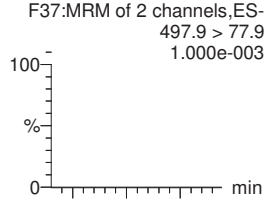
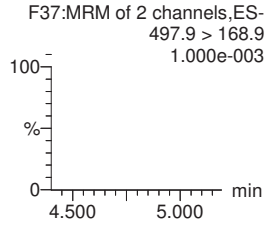
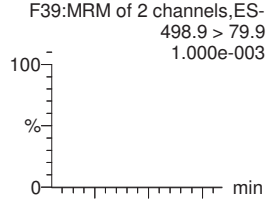
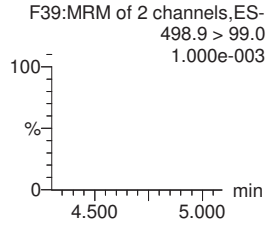




L-PFOS





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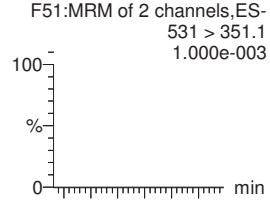

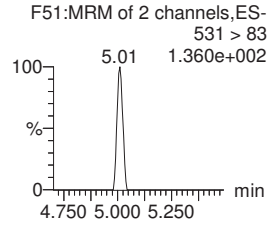

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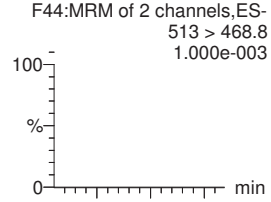

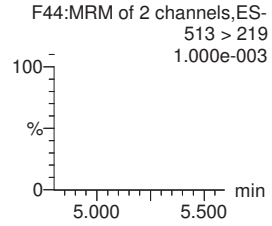

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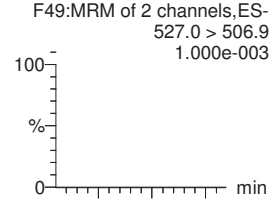

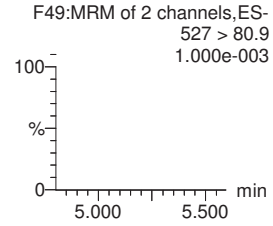

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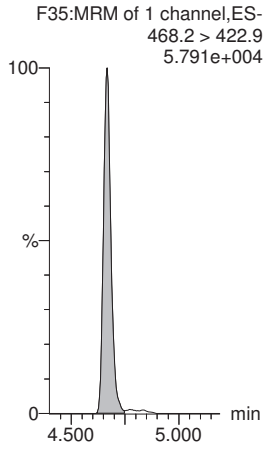

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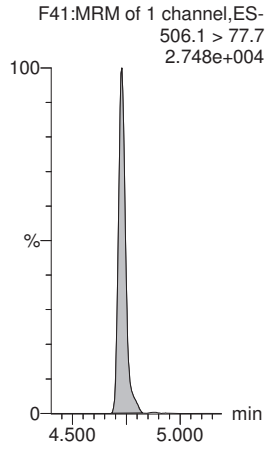

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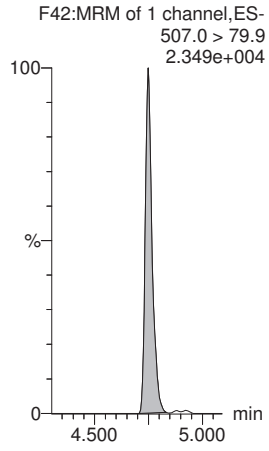

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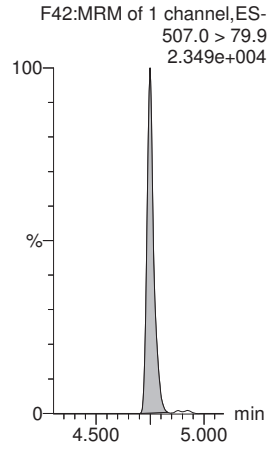

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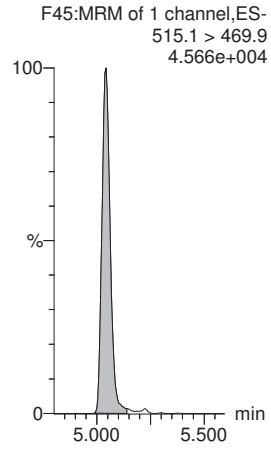
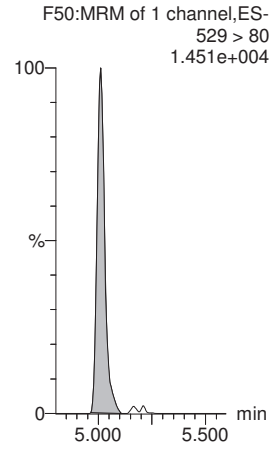


13C2-8:2 FTS-EIS



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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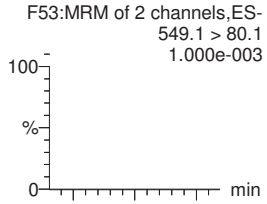

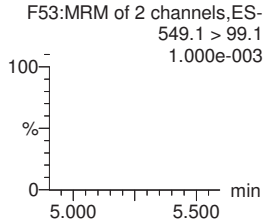

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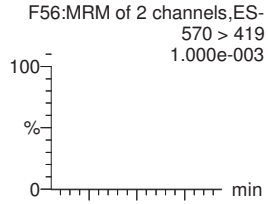

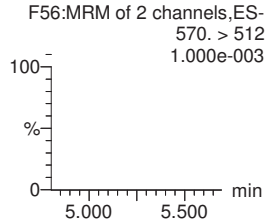

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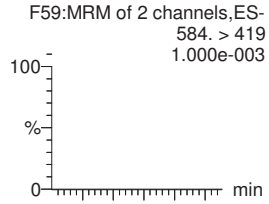

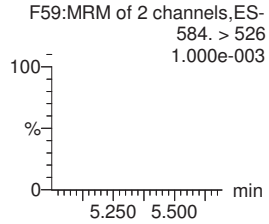

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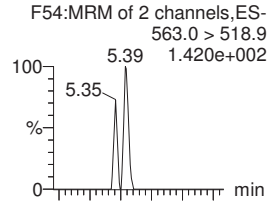

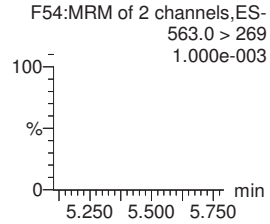

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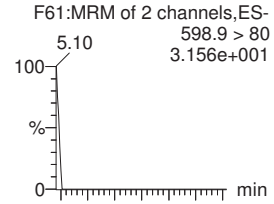

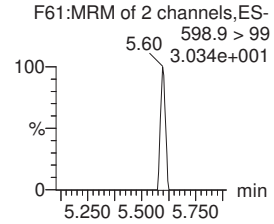

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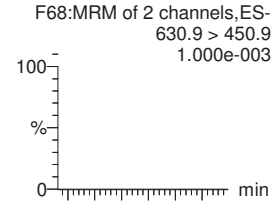

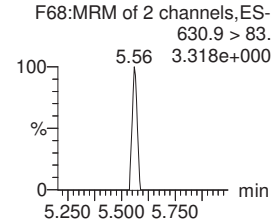

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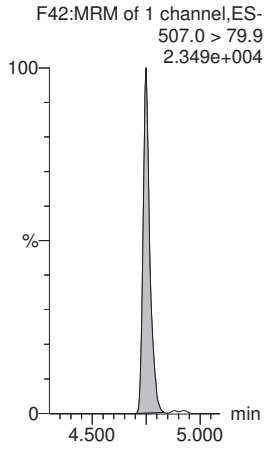
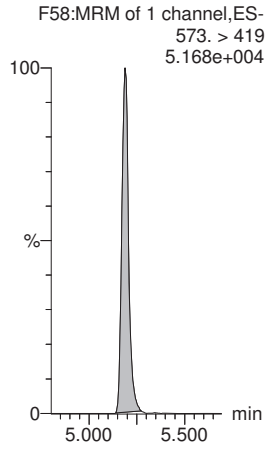


d3-N-MeFOSAA-EIS



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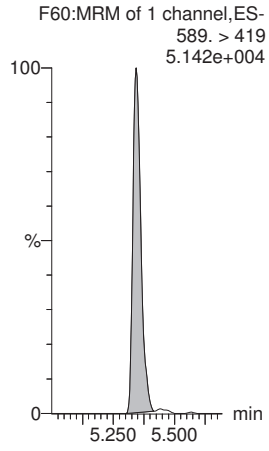

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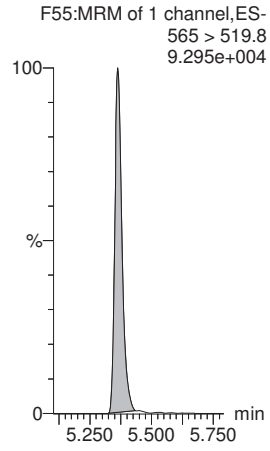

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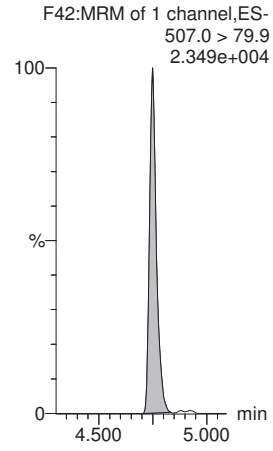

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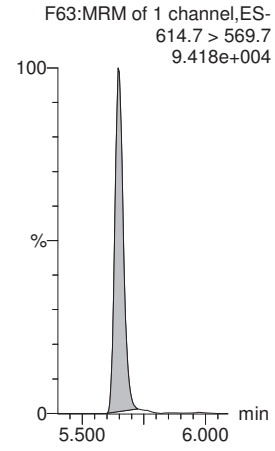


Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**

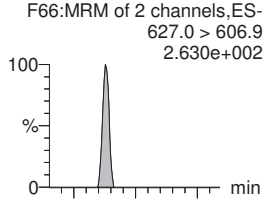
Vista Analytical Laboratory

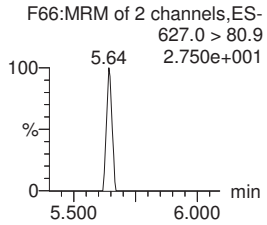
Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

10:2 FTS





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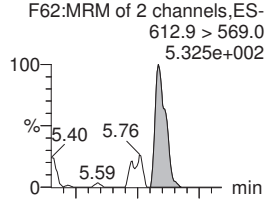

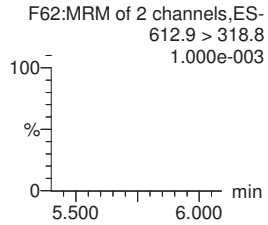

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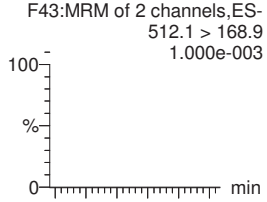

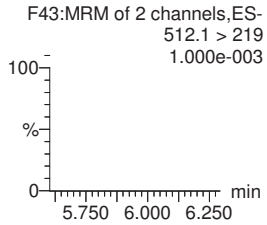

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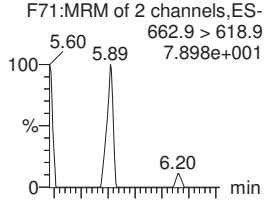

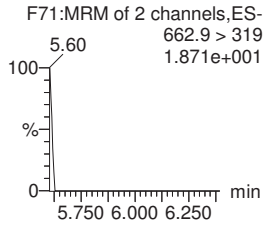

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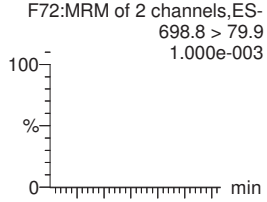

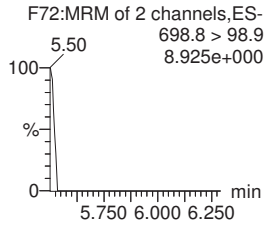

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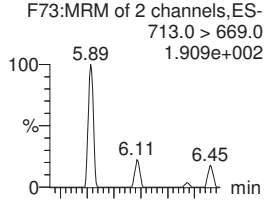

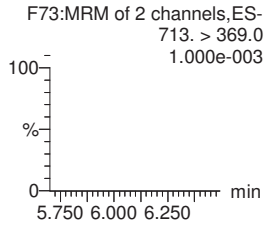

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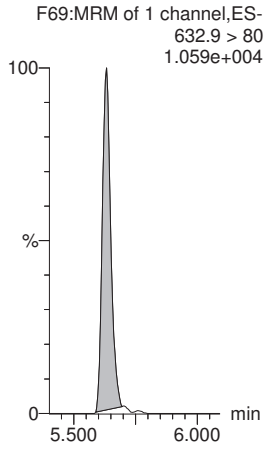

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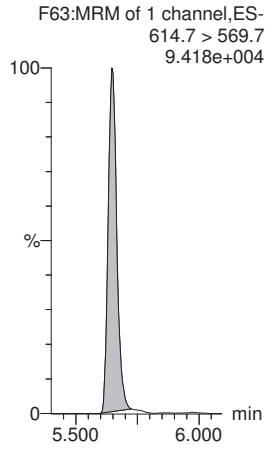

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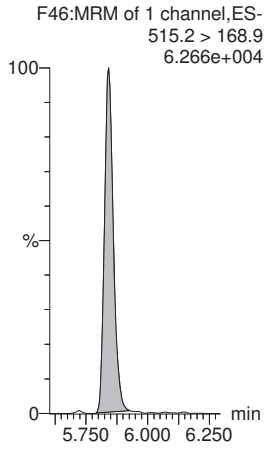

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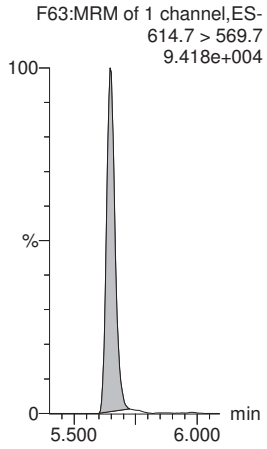

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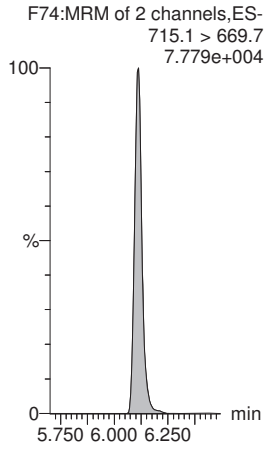

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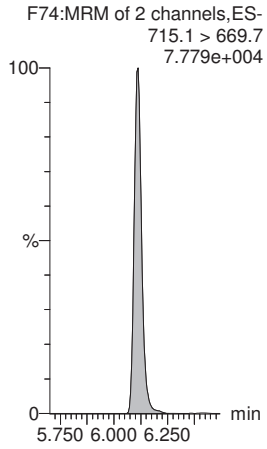

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
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Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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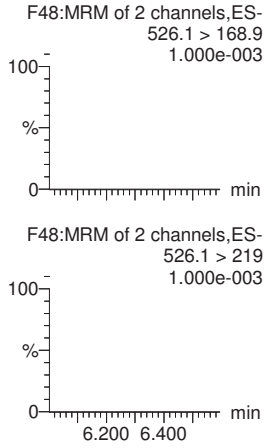

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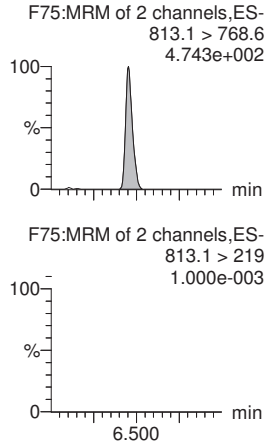

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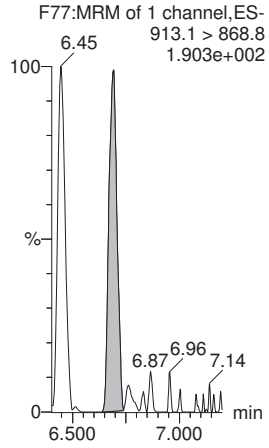

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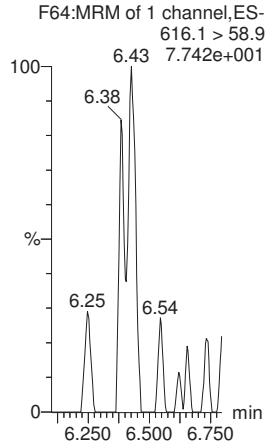

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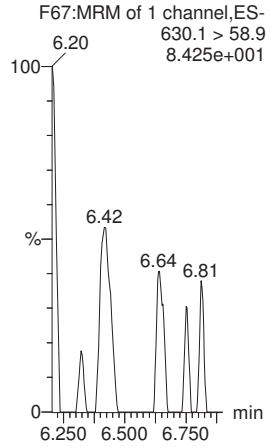
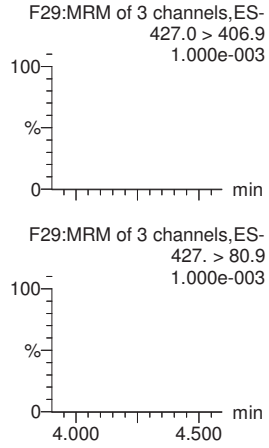
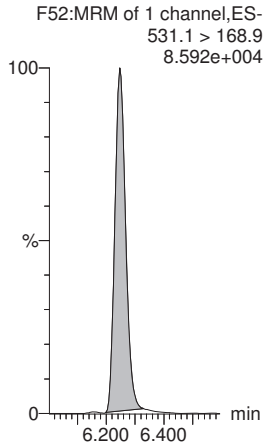


6:2 FTS-13C8PFOS



d5-N-ETFOSA-EIS



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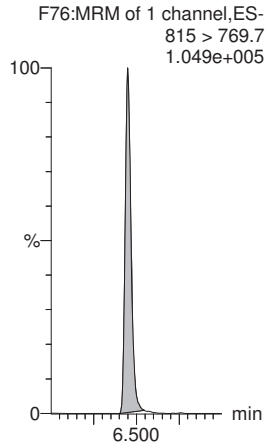

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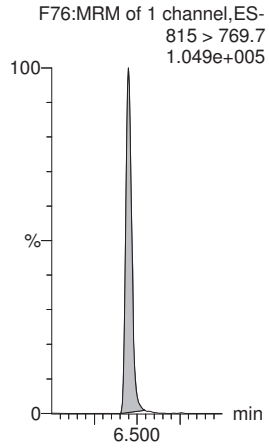
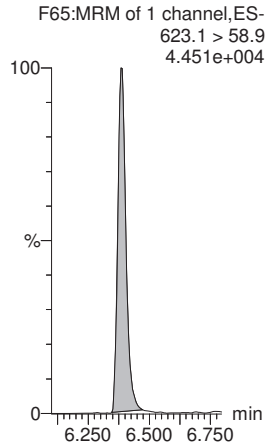


d7-N-MeFOSE-EIS



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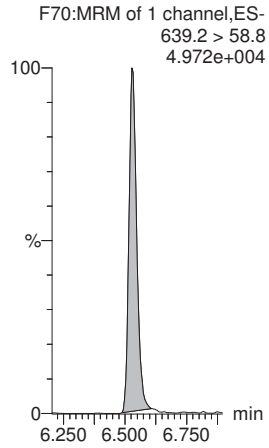
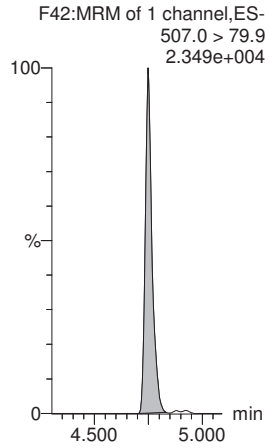


13C8-PFOS-EIS



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Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

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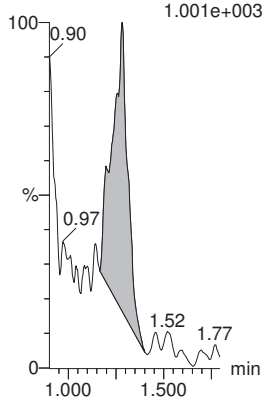
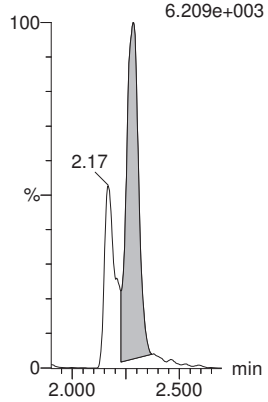
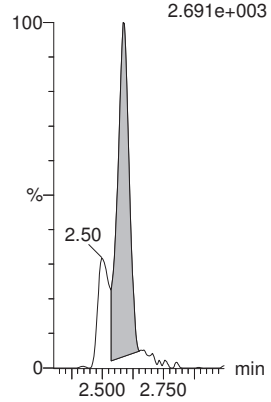
1.001e+003



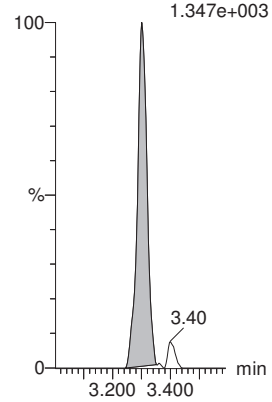
13C3-PFPeA-RSD
IB IBF8:MRM of 1 channel,ES-
266.0 > 221.8
6.209e+003



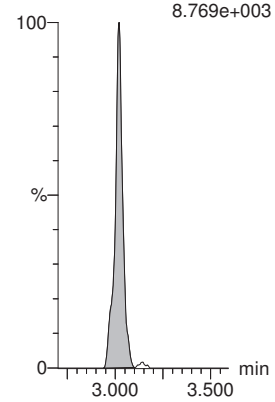
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 99
2.691e+003



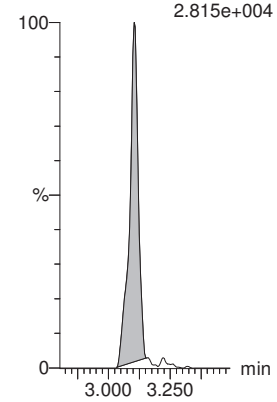
13C3-HFPO-DA-RSD
F10:MRM of 1 channel,ES-
287.0 > 168.9
1.347e+003



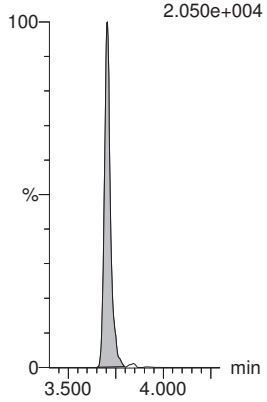
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 79.9
8.769e+003



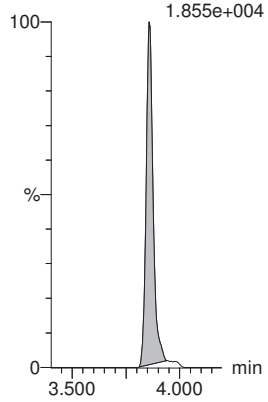
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
2.815e+004



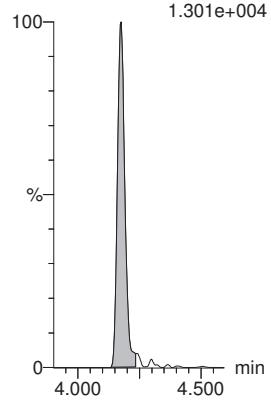
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
2.050e+004



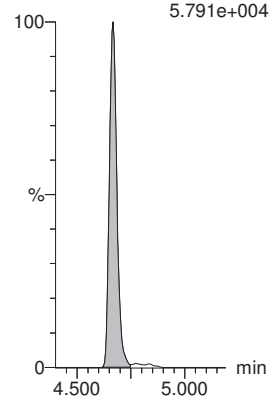
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
401.8 > 79.9
1.855e+004



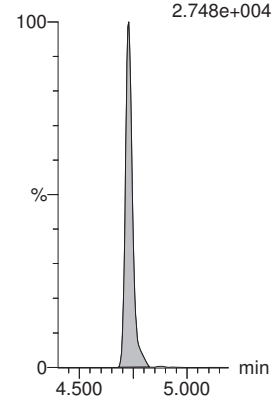
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 80
1.301e+004



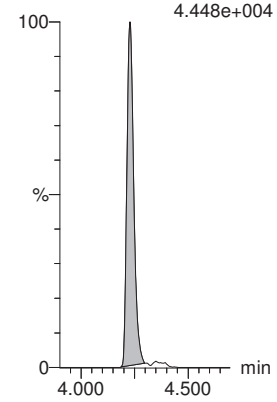
13C5-PFNA-RSD
F35:MRM of 1 channel,ES-
468.2 > 422.9
5.791e+004



13C8-PFOSA-RSD
F41:MRM of 1 channel,ES-
506.1 > 77.7
2.748e+004



13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
4.448e+004



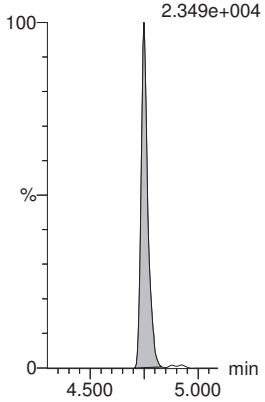
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

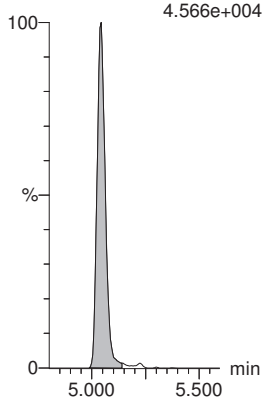
Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

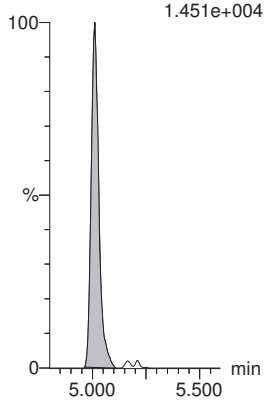
13C8-PFOS-RSD
F42:MRM of 1 channel,ES-
507.0 > 79.9
2.349e+004



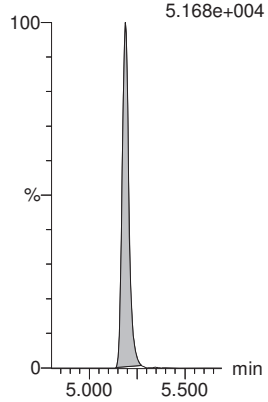
13C2-PFDA-RSD
F45:MRM of 1 channel,ES-
515.1 > 469.9
4.566e+004



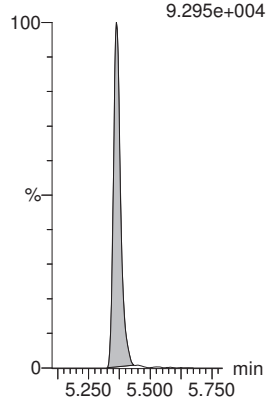
13C2-8:2 FTS-RSD
F50:MRM of 1 channel,ES-
529 > 80
1.451e+004



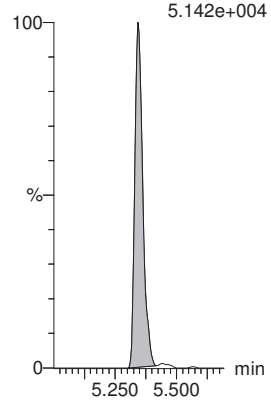
d3-N-MeFOSAA-RSD
F58:MRM of 1 channel,ES-
573. > 419
5.168e+004



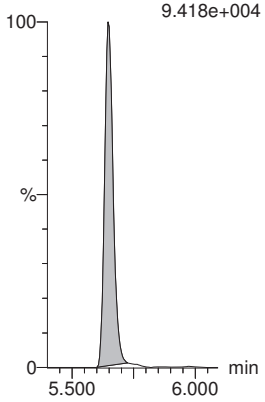
13C2-PFUdA-RSD
F55:MRM of 1 channel,ES-
565 > 519.8
9.295e+004



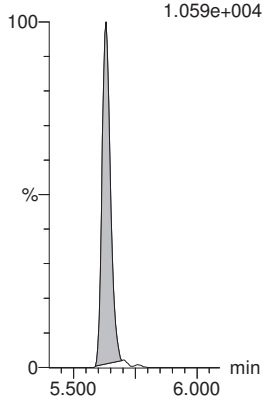
d5-N-EtFOSAA-RSD
F60:MRM of 1 channel,ES-
589. > 419
5.142e+004



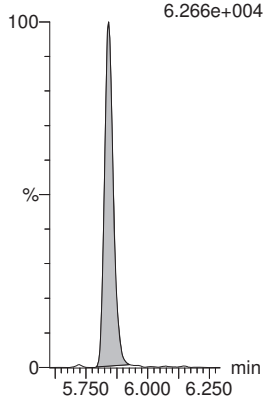
13C2-PFDoA-RSD
F63:MRM of 1 channel,ES-
614.7 > 569.7
9.418e+004



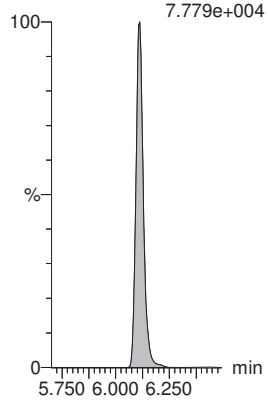
13C2-10:2 FTS-RSD
F69:MRM of 1 channel,ES-
632.9 > 80
1.059e+004



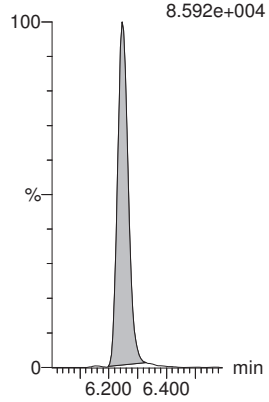
d3-N-MeFOSA-RSD
F46:MRM of 1 channel,ES-
515.2 > 168.9
6.266e+004



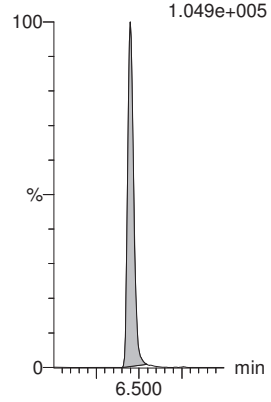
13C2-PFTeDA-RSD
F74:MRM of 2 channels,ES-
715.1 > 669.7
7.779e+004



d5-N-ETFOSA-RSD
F52:MRM of 1 channel,ES-
531.1 > 168.9
8.592e+004



13C2-PFHxDA-RSD
F76:MRM of 1 channel,ES-
815 > 769.7
1.049e+005



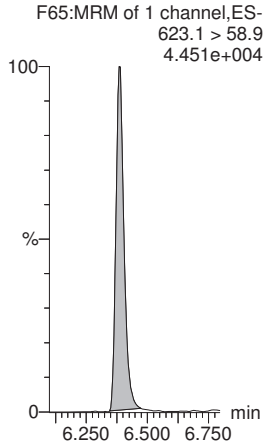
Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

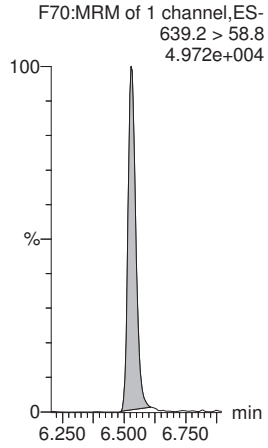
Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

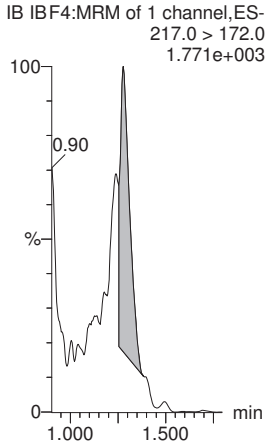
d7-N-MeFOSE-RSD



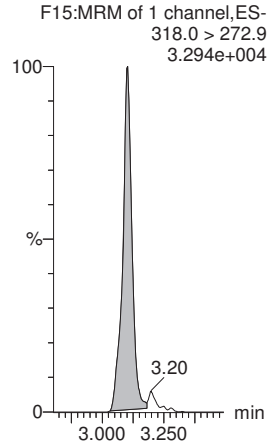
d9-N-EtFOSE-RSD



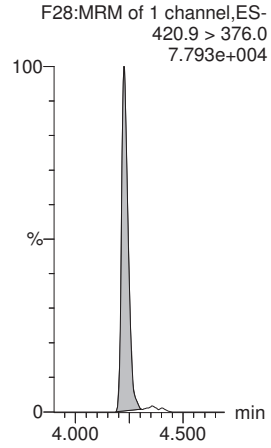
13C4-PFBA



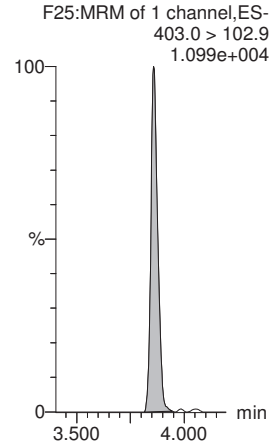
13C5-PFHxA



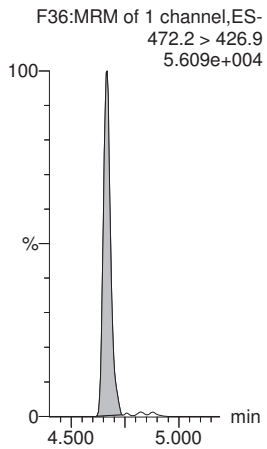
13C8-PFOA



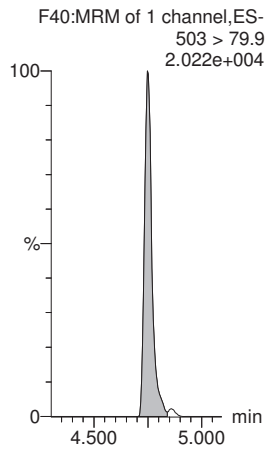
18O2-PFHxS



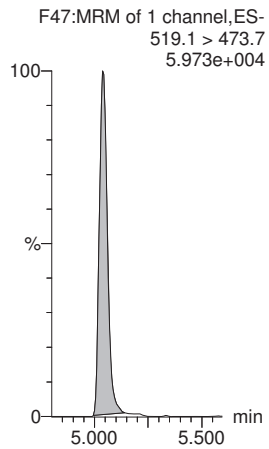
13C9-PFNA



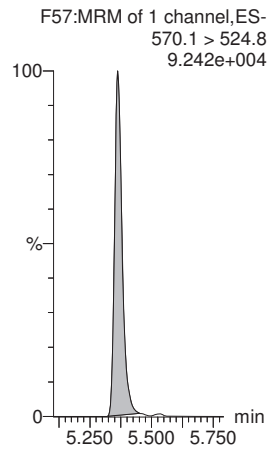
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
1	1	PFBA	212.7 > 168.9		77.680	1.00						NO		
2	2	PFPrS	248.9 > 79.9		142.677	1.00						NO		
3	3	3:3 FTCA	240.9 > 176.9		394.816	1.00						NO		
4	4	PFPeA	263.1 > 218.9		394.816	1.00						NO		
5	5	PFBS	299.0 > 79.7		142.677	1.00						NO		
6	6	4:2 FTS	327.0 > 306.9		393.525	1.00						NO		
7	47	13C3-PFBA-EIS	216.1 > 171.8	77.680		1.00	1.28	77.680	12.500	2.34	18.7	YES		
8	51	13C3-PFBS-EIS	302.0 > 99	142.677		1.00	2.59	142.677	12.500	6.08	48.6	YES		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	394.816		1.00	2.28	394.816	12.500	5.61	44.9	YES		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	394.816		1.00	2.28	394.816	12.500	5.61	44.9	YES		
11	51	13C3-PFBS-EIS	302.0 > 99	142.677		1.00	2.59	142.677	12.500	6.08	48.6	YES		
12	55	13C2-4:2 FTS-EIS	329.0 >79.9	393.525		1.00	3.02	393.525	12.500	7.69	61.5	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0		1113.038	1.00						NO		
15	8	PFPeS	349.1>80.1		142.677	1.00						NO		
16	9	HFPO-DA	284.5 > 168.8		51.951	1.00						NO		
17	10	5:3 FTCA	340.9 > 236.9		753.312	1.00						NO		
18	11	PFHpA	363.0 > 318.9		753.312	1.00						NO		
19	12	ADONA	376.8 > 250.9		753.312	1.00						NO		
20	57	13C2-PFHxA-EIS	315.0 > 270.0	1113.038		1.00	3.10	1113.038	12.500	7.72	61.7	NO		
21	51	13C3-PFBS-EIS	302.0 > 99	142.677		1.00	2.59	142.677	12.500	6.08	48.6	YES		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	51.951		1.00	3.30	51.951	12.500	7.77	62.2	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	753.312		1.00	3.71	753.312	12.500	7.90	63.2	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	753.312		1.00	3.71	753.312	12.500	7.90	63.2	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	753.312		1.00	3.71	753.312	12.500	7.90	63.2	NO		
26	-1													
27	13	L-PFHxS	398.9 > 80		683.042	1.00						NO		
28	15	6:2 FTS	427.0 > 406.9		450.739	1.00						NO		
29	16	L-PFOA	412.8 > 368.9		1634.090	1.00						NO		
30	18	PFecHS	460.8 > 381.0		1634.090	1.00						NO		
31	19	PFHpS	449.0 > 79.9		852.233	1.00						NO		
32	20	7:3 FTCA	440.9 > 336.9		2303.936	1.00						NO		
33	61	13C3-PFHxS-EIS	401.8 > 79.9	683.042		1.00	3.86	683.042	12.500	7.74	61.9	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >80	450.739		1.00	4.17	450.739	12.500	7.91	63.3	NO		
35	69	13C2-PFOA-EIS	414.9 > 369.7	1634.090		1.00	4.23	1634.090	12.500	7.42	59.4	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	1634.090		1.00	4.23	1634.090	12.500	7.42	59.4	NO		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
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Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
37	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	2303.936		1.00	4.67	2303.936	12.500	8.77	70.1	NO		
39	-1													
40	21	PFNA	463.0 > 418.8		2303.936	1.00						NO		
41	22	PFOSA	497.9 > 77.9		1041.297	1.00						NO		
42	23	L-PFOS	498.9 > 79.9		852.233	1.00						NO		
43	25	9Cl-PF30NS	531 > 351.1		852.233	1.00						NO		
44	26	PFDA	513 > 468.8		2013.283	1.00						NO		
45	27	8:2 FTS	527.0 > 506.9		598.827	1.00						NO		
46	65	13C5-PFNA-EIS	468.2 > 422.9	2303.936		1.00	4.67	2303.936	12.500	8.77	70.1	NO		
47	67	13C8-PFOSA-EIS	506.1 > 77.7	1041.297		1.00	4.73	1041.297	12.500	8.79	70.3	NO		
48	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
49	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	2013.283		1.00	5.04	2013.283	12.500	7.64	61.2	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	598.827		1.00	5.01	598.827	12.500	8.73	69.8	NO		
52	-1													
53	28	PFNS	549.1 > 80.1		852.233	1.00						NO		
54	29	L-MeFOSAA	570 > 419		2086.884	1.00						NO		
55	31	L-EtFOSAA	584. > 419		1905.486	1.00						NO		
56	33	PFUdA	563.0 > 518.9		3121.909	1.00						NO		
57	34	PFDS	598.9> 80		852.233	1.00						NO		
58	35	11Cl-PF30UdS	630.9 > 450.9		3729.066	1.00						NO		
59	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
60	77	d3-N-MeFOSAA-EIS	573. > 419	2086.884		1.00	5.19	2086.884	12.500	9.00	72.0	NO		
61	81	d5-N-EtFOSAA-EIS	589. > 419	1905.486		1.00	5.34	1905.486	12.500	8.67	69.3	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	3121.909		1.00	5.36	3121.909	12.500	8.62	69.0	NO		
63	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
64	83	13C2-PFDoA-EIS	614.7 > 569.7	3729.066		1.00	5.65	3729.066	12.500	8.14	65.1	NO		
65	-1													
66	36	10:2 FTS	627.0 > 606.9	8.012	410.561	1.00	5.63	0.244				NO		
67	37	PFDoA	612.9 > 569.0	25.790	3729.066	1.00	5.83	0.086		0.0298		NO		
68	38	N-MeFOSA	512.1 > 168.9		2547.612	1.00						NO		
69	39	PFTrDA	662.9 > 618.9		3729.066	1.00						NO		
70	40	PFDoS	698.8 > 79.9		3079.235	1.00						NO		
71	41	PFTeDA	713.0 > 669.0		3079.235	1.00						NO		
72	85	13C2-10:2 FTS-EIS	632.9 > 80	410.561		1.00	5.63	410.561	12.500	7.71	61.7	YES		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
73	83	13C2-PFDoA-EIS	614.7 > 569.7	3729.066		1.00	5.65	3729.066	12.500	8.14	65.1	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	2547.612		1.00	5.84	2547.612	149.200	89.8	60.2	NO		
75	83	13C2-PFDoA-EIS	614.7 > 569.7	3729.066		1.00	5.65	3729.066	12.500	8.14	65.1	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	3079.235		1.00	6.11	3079.235	12.500	8.43	67.4	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	3079.235		1.00	6.11	3079.235	12.500	8.43	67.4	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9		3639.215	1.00						NO		
80	43	PFHxDA	813.1 > 768.6	21.740	4170.197	1.00	6.45	0.065				NO		
81	44	PFODA	913.1 > 868.8	8.226	4170.197	1.00	6.69	0.025				NO		
82	45	N-MeFOSE	616.1 > 58.9		1674.858	1.00						NO		
83	46	N-EtFOSE	630.1 > 58.9		1790.798	1.00						NO		
84	1...	6:2 FTS-13C8PFOS	427.0 > 406.9		852.233	1.00						NO		
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	3639.215		1.00	6.25	3639.215	149.200	97.4	65.3	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	4170.197		1.00	6.45	4170.197	12.500	8.14	65.1	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	4170.197		1.00	6.45	4170.197	12.500	8.14	65.1	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	1674.858		1.00	6.38	1674.858	149.200	95.6	64.1	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	1790.798		1.00	6.53	1790.798	149.200	91.8	61.5	NO		
90	71	13C8-PFOS-EIS	507.0 > 79.9	852.233		1.00	4.75	852.233	12.500	8.05	64.4	NO		
91	-1													
92	48	13C3-PFBA-RSD	216.1 > 171.8	77.680	82.920	1.00	1.28	11.710	12.500	19.3	154.1	YES		
93	50	13C3-PFPeA-RSD	266.0 > 221.8	394.833	1405.131	1.00	2.28	3.512	12.500	8.30	66.4	NO		
94	52	13C3-PFBS-RSD	302.0 > 99	142.677	398.677	1.00	2.59	4.473	12.500	7.81	62.5	NO		
95	54	13C3-HFPO-DA-RSD	287.0 > 168.9	51.951	1405.131	1.00	3.30	0.462	12.500	11.0	88.1	NO		
96	56	13C2-4:2 FTS-RSD	329.0 >79.9	393.525	398.677	1.00	3.02	12.338	12.500	11.2	89.6	NO		
97	58	13C2-PFHxA-RSD	315.0 > 270.0	1113.038	1405.131	1.00	3.10	9.902	12.500	11.9	95.2	NO		
98	60	13C4-PFHpA-RSD	367.2 > 321.8	753.312	1405.131	1.00	3.71	6.701	12.500	11.8	94.6	NO		
99	62	13C3-PFHxS-RSD	401.8 > 79.9	683.042	398.677	1.00	3.86	21.416	12.500	11.0	88.4	NO		
100	64	13C2-6:2 FTS-RSD	429.0 >80	450.739	805.870	1.00	4.17	6.991	12.500	13.6	108.6	NO		
101	66	13C5-PFNA-RSD	468.2 > 422.9	2303.936	2221.419	1.00	4.67	12.964	12.500	14.1	113.1	NO		
102	68	13C8-PFOSA-RSD	506.1 > 77.7	1041.297	3281.987	1.00	4.73	3.966	12.500	14.1	112.8	NO		
103	70	13C2-PFOA-RSD	414.9 > 369.7	1634.090	2738.947	1.00	4.23	7.458	12.500	11.6	92.8	NO		
104	-1													
105	72	13C8-PFOS-RSD	507.0 > 79.9	852.233	805.870	1.00	4.75	13.219	12.500	13.7	109.3	NO		
106	74	13C2-PFDA-RSD	515.1 > 469.9	2013.283	2549.278	1.00	5.04	9.872	12.500	11.6	93.0	NO		
107	76	13C2-8:2 FTS-RSD	529 > 80	598.827	805.870	1.00	5.01	9.289	12.500	16.3	130.6	NO		
108	78	d3-N-MeFOSAA-RSD	573. > 419	2086.884	3281.987	1.00	5.19	7.948	12.500	13.6	109.1	NO		

Quantify Sample Report **MassLynx MassLynx V4.1 SCN 945**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Thursday, February 13, 2020 14:54:51 Pacific Standard Time
Printed: Thursday, February 13, 2020 14:55:34 Pacific Standard Time

Name: 200212M2_13, Date: 12-Feb-2020, Time: 21:13:55, ID: IB, Description: IB

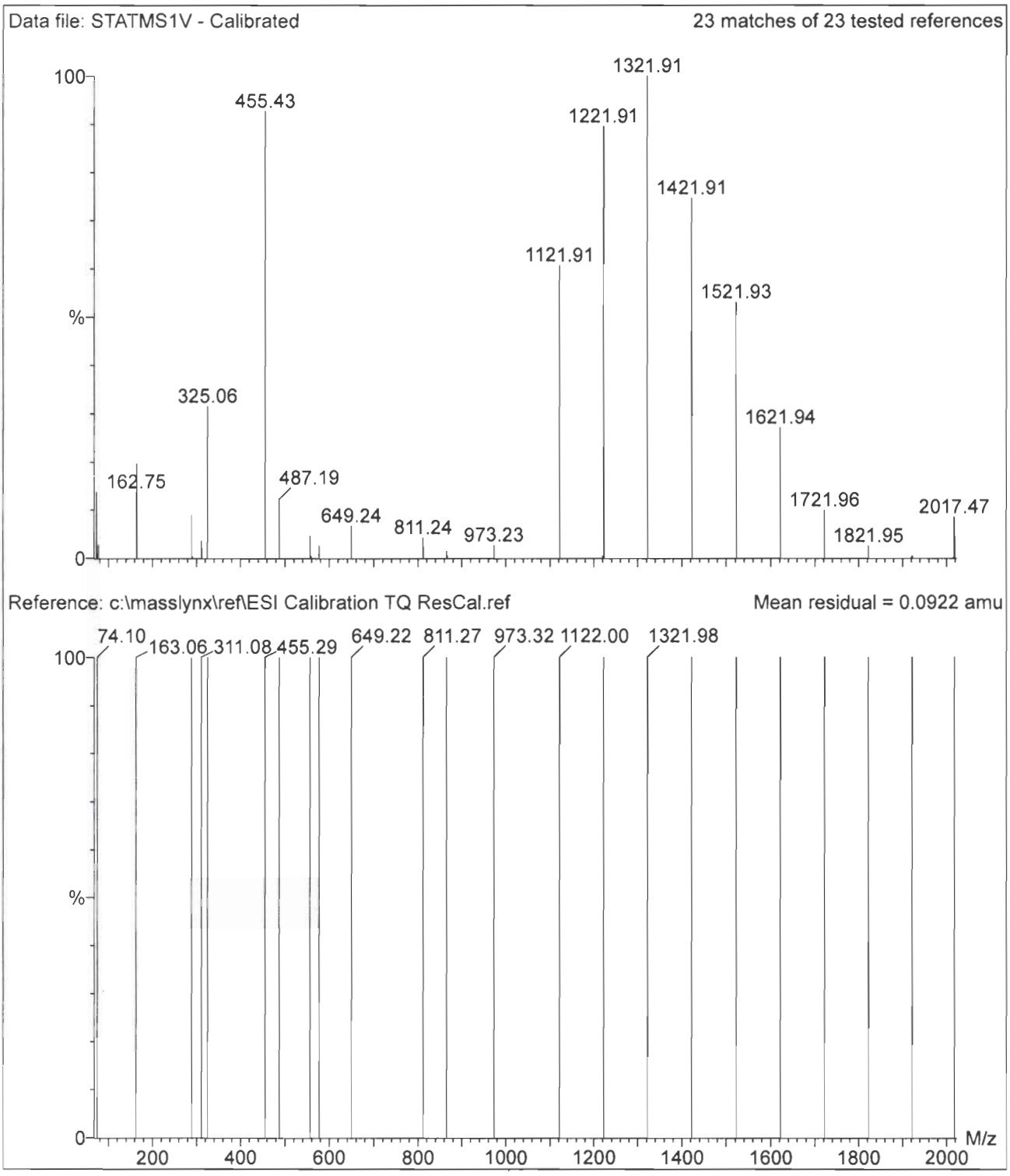
	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
109	80	13C2-PFUdA-RSD	565 > 519.8	3121.909	3281.987	1.00	5.36	11.890	12.500	13.5	108.3	NO		
110	82	d5-N-EtFOSAA-RSD	589. > 419	1905.486	3281.987	1.00	5.34	7.257	12.500	14.2	113.4	NO		
111	84	13C2-PFDoA-RSD	614.7 > 569.7	3729.066	2549.278	1.00	5.65	18.285	12.500	12.5	100.2	NO		
112	86	13C2-10:2 FTS-RSD	632.9 > 80	410.561	805.870	1.00	5.63	6.368	12.500	13.0	103.9	NO		
113	88	d3-N-MeFOSA-RSD	515.2 > 168.9	2547.612	3281.987	1.00	5.84	9.703	149.200	137	92.1	NO		
114	90	13C2-PFTeDA-RSD	715.1 > 669.7	3079.235	3281.987	1.00	6.11	11.728	12.500	13.2	105.9	NO		
115	92	d5-N-ETFOSA-RSD	531.1 > 168.9	3639.215	3281.987	1.00	6.25	13.861	149.200	152	101.6	NO		
116	94	13C2-PFHxDA-RSD	815 > 769.7	4170.197	3281.987	1.00	6.45	15.883	12.500	13.2	105.3	NO		
117	-1													
118	96	d7-N-MeFOSE-RSD	623.1 > 58.9	1674.858	3281.987	1.00	6.38	6.379	149.200	144	96.4	NO		
119	98	d9-N-EtFOSE-RSD	639.2 > 58.8	1790.798	3281.987	1.00	6.53	6.821	149.200	139	93.5	NO		
120	99	13C4-PFBA	217.0 > 172.0	82.920	82.920	1.00	1.28	12.500	12.500	12.5	100.0	NO		
121	1...	13C5-PFHxA	318.0 > 272.9	1405.131	1405.131	1.00	3.10	12.500	12.500	12.5	100.0	NO		
122	1...	13C8-PFOA	420.9 > 376.0	2738.947	2738.947	1.00	4.23	12.500	12.500	12.5	100.0	NO		
123	1...	18O2-PFHxS	403.0 > 102.9	398.677	398.677	1.00	3.86	12.500	12.500	12.5	100.0	NO		
124	1...	13C9-PFNA	472.2 > 426.9	2221.419	2221.419	1.00	4.67	12.500	12.500	12.5	100.0	NO		
125	1...	13C4-PFOS	503 > 79.9	805.870	805.870	1.00	4.75	12.500	12.500	12.5	100.0	NO		
126	1...	13C6-PFDA	519.1 > 473.7	2549.278	2549.278	1.00	5.04	12.500	12.500	12.5	100.0	NO		
127	1...	13C7-PFUdA	570.1 > 524.8	3281.987	3281.987	1.00	5.36	12.500	12.500	12.5	100.0	NO		

TUNE CHECKS

Q4(M) Tune Check 2-12-2020

Calibration Verification Report - MS1 Static **Page 1 of 6**

Printed: **Wed Feb 12 19:12:47 2020** 20200211



Calibration Verification Report - MS1 Scanning **Page 2 of 6**

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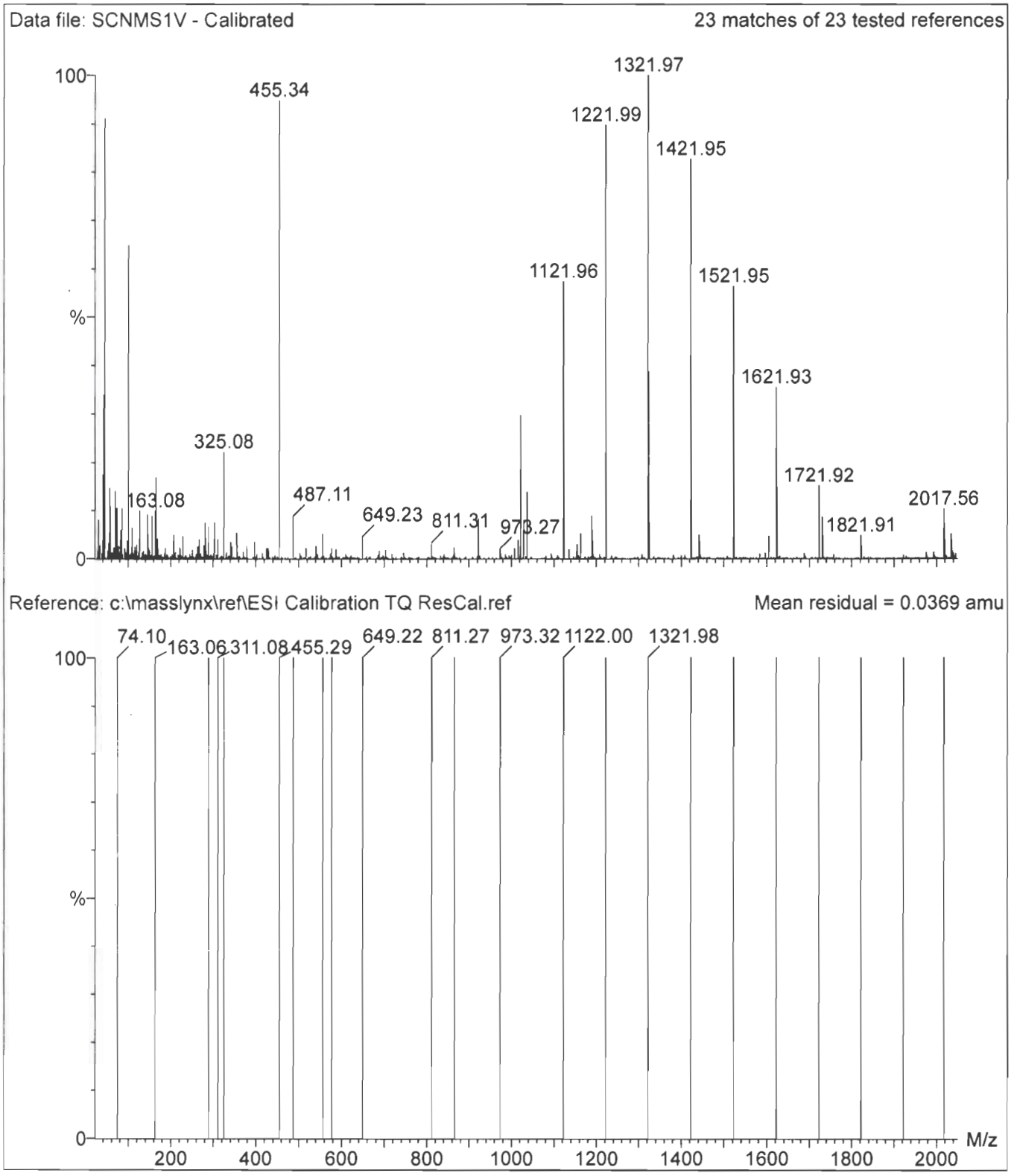

Calibration Verification Report - MS1 Scan Speed Compensation **Page 3 of 6**

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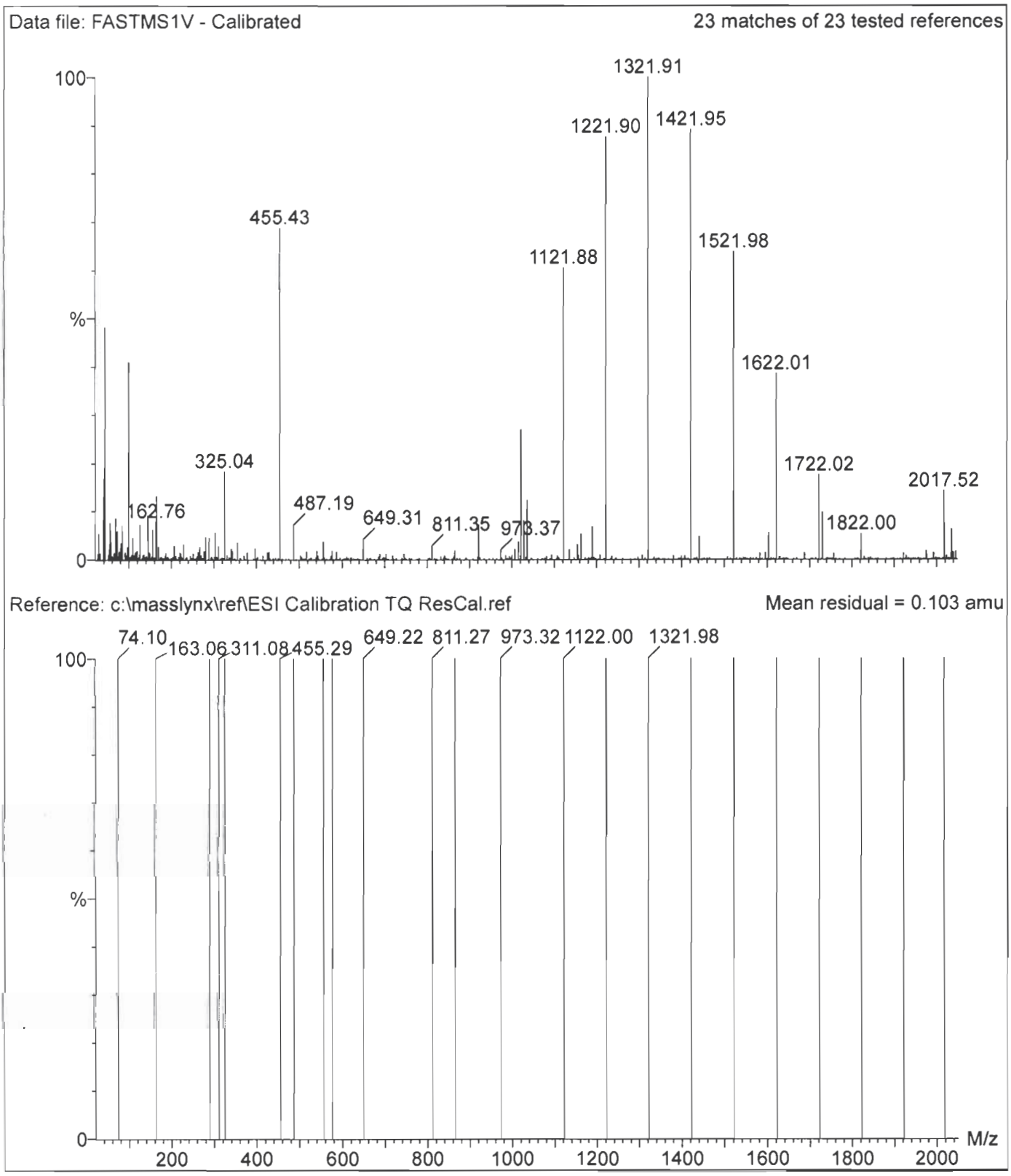

Calibration Verification Report - MS2 Static **Page 4 of 6**

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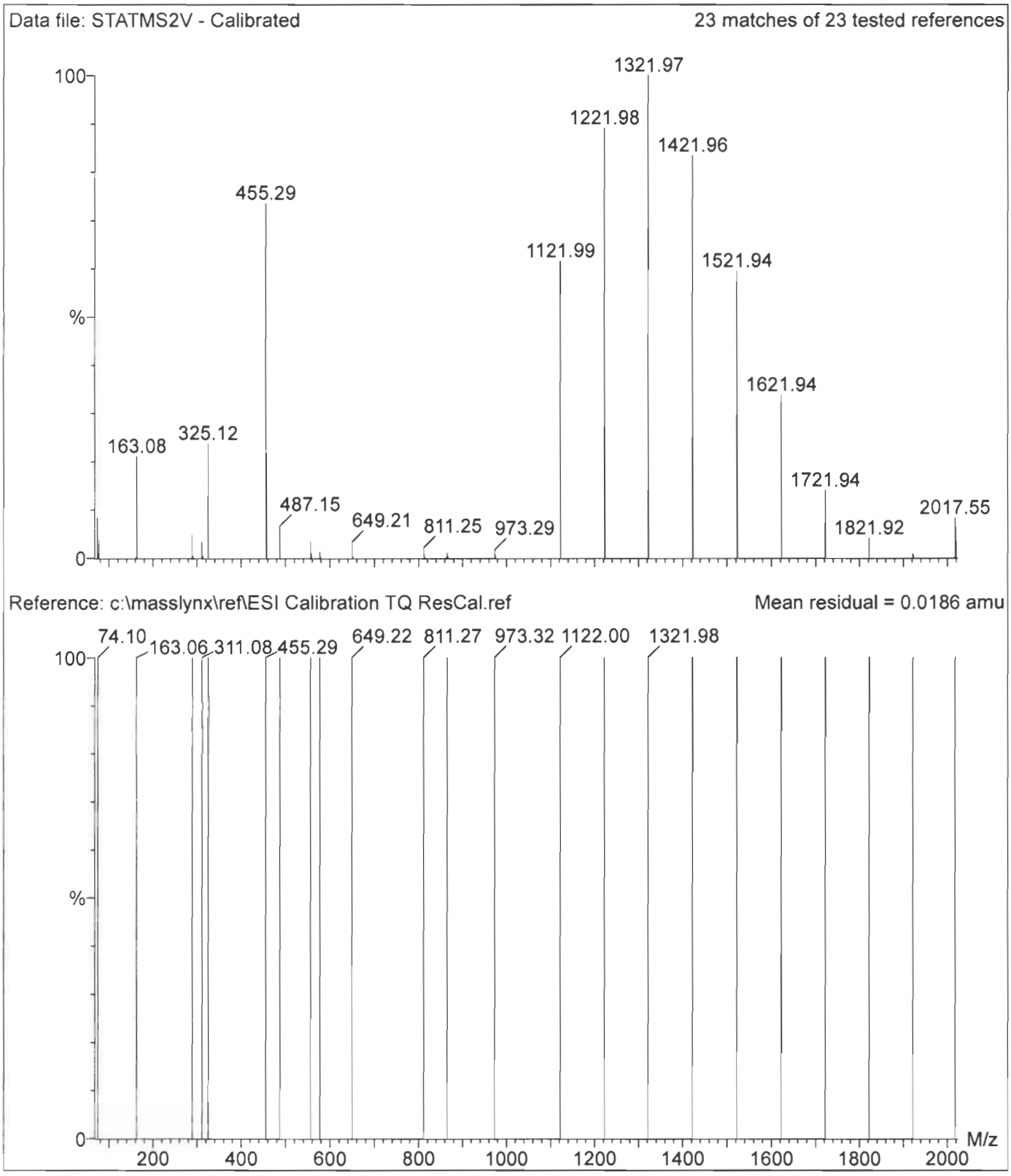

Calibration Verification Report - MS2 Scanning **Page 5 of 6**

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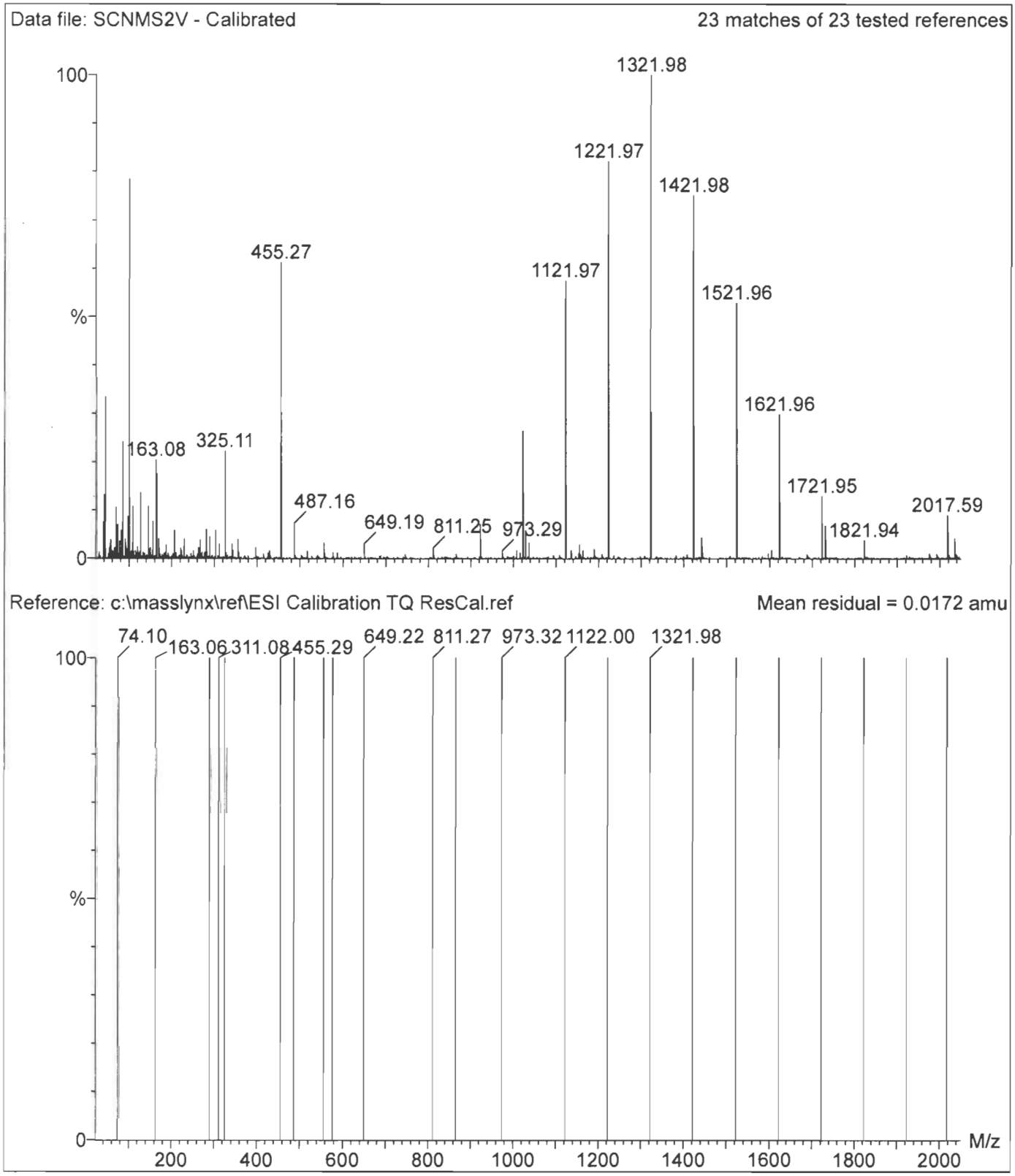
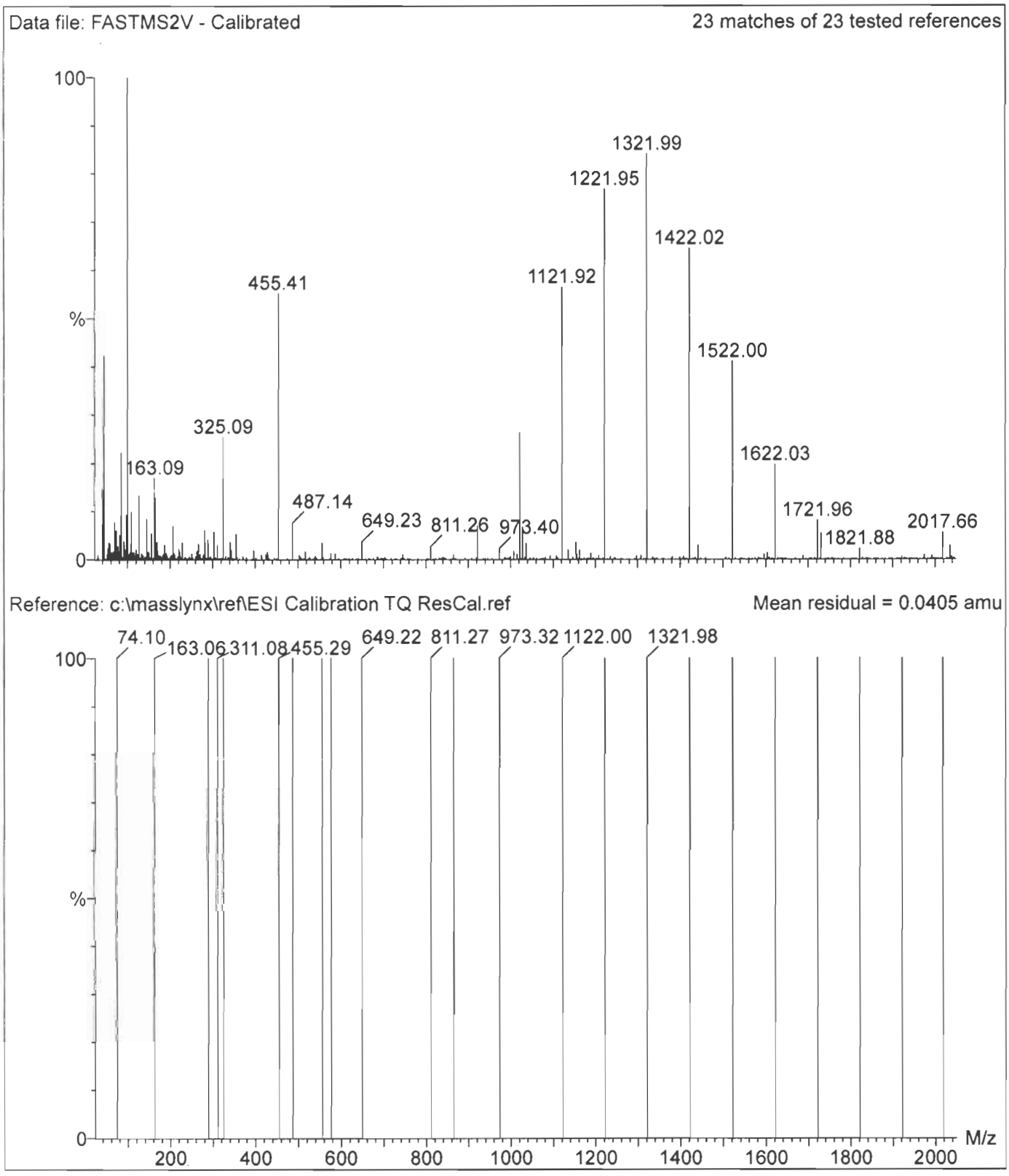


Calibration Verification Report - MS2 Scan Speed Compensation **Page 6 of 6**

Printed: **Wed Feb 12 19:18:49 2020**



STANDARDS

Analytical Standard Record

Vista Analytical Laboratory

20A0801

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
19H2706	13C2-10:2 FTS	21-Aug-19	** Vendor **	21-Aug-24	1
19L0601	13C2-4:2 FTS	06-Dec-19	** Vendor **	29-Oct-24	1.07
19L0602	13C2-6:2 FTS	06-Dec-19	** Vendor **	21-Nov-24	1.05
19L0603	13C2-8:2 FTS	06-Dec-19	** Vendor **	11-Oct-24	1.04
19L0604	13C3-PFBA	06-Dec-19	** Vendor **	14-Dec-22	1
19L0605	13C2-PFDA	06-Dec-19	** Vendor **	05-Sep-24	1
19L0606	13C2-PFUdA	06-Dec-19	** Vendor **	04-Jul-24	1
19L0607	13C2-PFTeDA	06-Dec-19	** Vendor **	11-Dec-23	1
19L0608	13C5-PFNA	06-Dec-19	** Vendor **	05-Dec-23	1
19L0609	13C2-PFDoA	06-Dec-19	** Vendor **	11-Dec-23	1
19L0610	13C4-PFHpA	06-Dec-19	** Vendor **	06-May-24	1
19L0611	13C2-PFOA	06-Dec-19	** Vendor **	21-Jun-24	1
19L0612	13C3-PFPeA	06-Dec-19	** Vendor **	08-Mar-24	1
19L0613	13C8-FOSA-I	06-Dec-19	** Vendor **	19-Jun-24	1
19L0614	d3-N-Me-FOSAA	06-Dec-19	** Vendor **	24-Jul-24	1
19L0615	d5-N-EtFOSAA	06-Dec-19	** Vendor **	25-Jul-24	1
19L0616	13C3-PFBS	06-Dec-19	** Vendor **	29-Oct-24	1.075
19L0617	13C8-PFOS	06-Dec-19	** Vendor **	06-May-24	1.045
19L0618	13C3-PFHxS	06-Dec-19	** Vendor **	15-Oct-24	1.06
19L0619	13C2-PFHxA	06-Dec-19	** Vendor **	11-Oct-24	1
19L0620	13C2-PFHxDA	06-Dec-19	** Vendor **	11-Oct-24	1
19L0621	13C3-HFPO-DA	06-Dec-19	** Vendor **	20-Sep-22	1

Description:	PFC - IS	Expires:	07-Jan-21
Standard Type:	Reagent	Prepared:	08-Jan-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	23-Jan-20 14:53 by BML

10:2 added
10 uL spike

Analyte	CAS Number	Concentration	Units
13C3-HFPO-DA		1.25	ug/mL
13C2-4:2 FTS		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		1.25	ug/mL
13C2-PFHxDA		1.25	ug/mL
13C2-PFOA		1.25	ug/mL
13C2-10:2 FTS		1.25	ug/mL
13C2-PFUnA		1.25	ug/mL
d5-EtFOSAA		1.25	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

20A0801

Description:	PFC - IS	Expires:	07-Jan-21
Standard Type:	Reagent	Prepared:	08-Jan-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	23-Jan-20 14:53 by BML

10:2 added
10 uL spike

Analyte	CAS Number	Concentration	Units
13C3-PFBA		1.25	ug/mL
13C3-PFBS		1.25	ug/mL
13C3-PFHxS		1.25	ug/mL
13C3-PFPeA		1.25	ug/mL
13C4-PFHpA		1.25	ug/mL
13C5-PFNA		1.25	ug/mL
13C8-PFOS		1.25	ug/mL
13C8-PFOSA		1.25	ug/mL
d3-MeFOSAA		1.25	ug/mL
13C2-PFTeDA		1.25	ug/mL

19H2706

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Product Name: (Isotopic Label & Enrichment Specification)	1H,1H,2H,2H-PERFLUORODODECANE SULFONATE(10:2 FTS), SODIUM SALT (13C2, 99%; D4, 98%) 50 UG/ML IN MEOH
Lot Number:	SDIJ-019A
Catalog Number:	CDLM-10750-S

Product Information

Chemical Purity Specification:	≥ 98%
MW*: ** For isotopically labeled compounds, MW listed is for the fully enriched product.*	656.19
Labeled CAS Number:	NA
Unlabeled CAS Number:	108026-35-3
Chemical Formula:	C10*C2D4F21NaO3S
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated. CIL Certificates of Analysis are occasionally updated with new data following recertification. We recommend checking the website for the latest version.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Sashi Sivendran-Basak

Sashi Sivendran-Basak, Ph.D., Quality Review

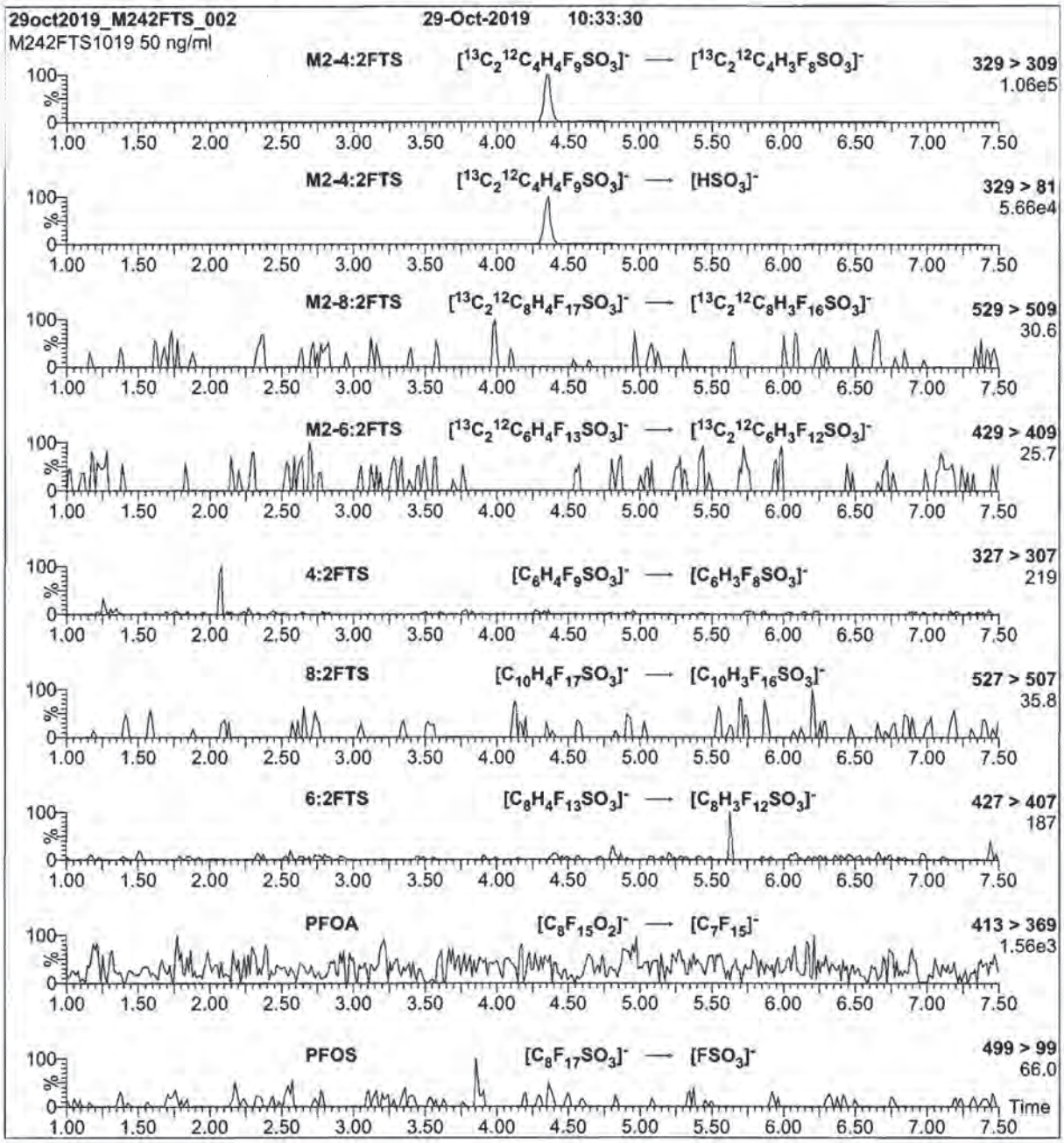
Quality Control Tests and Results

QC Release Date	8/21/2019
Expiration Date	8/21/2024
Concentration Based on Gravimetry	50.0 ± 0.5 µg/mL (k=2)
Chemical Purity of Neat Material(s)	100.0%

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.

19L0601

Figure 2: **M2-4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M2-4:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

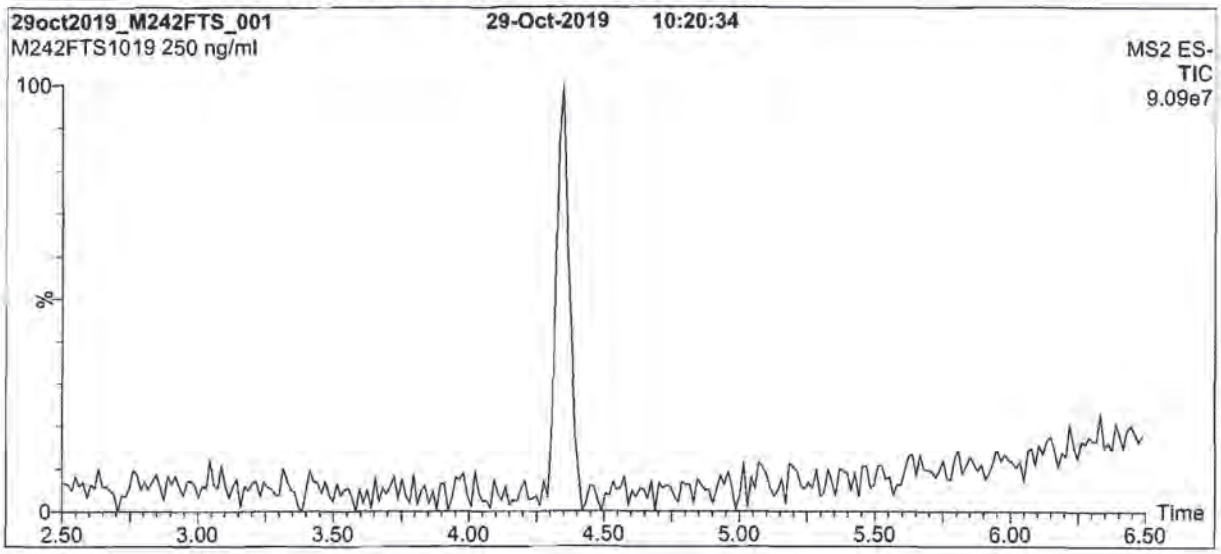
Collision Gas (mbar) = 3.51e-3
Collision Energy (eV) = 18

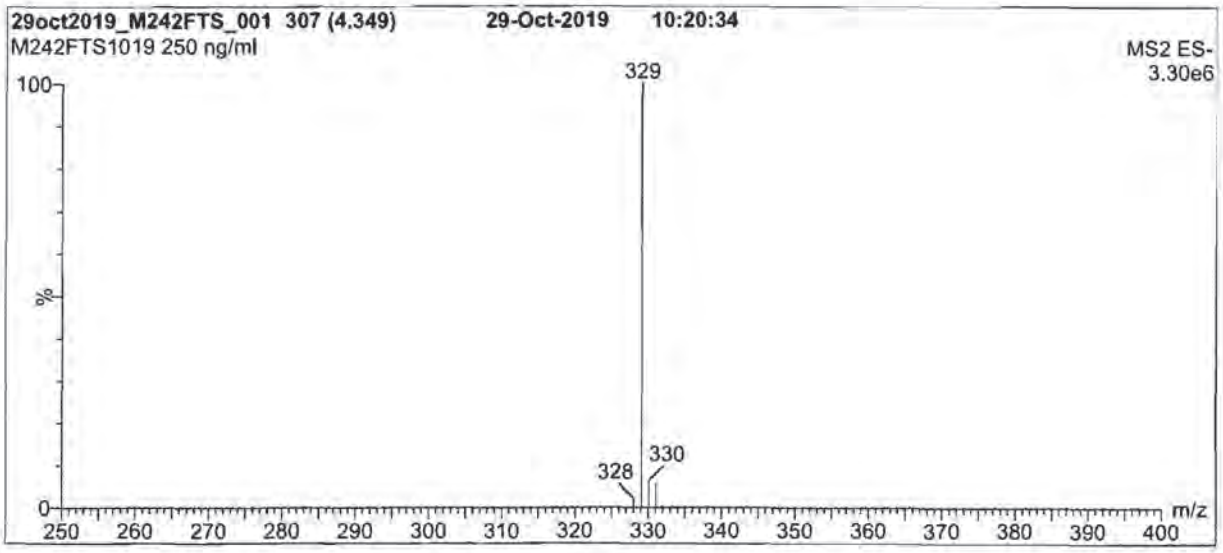
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M242FTS1019 (4 of 4)
rev0

19L0601

Figure 1: M2-4:2FTS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M242FTS1019 (3 of 4)
rev0

19L0601

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

19L0601

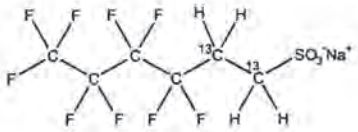
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-4:2FTS **LOT NUMBER:** M242FTS1019

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4H_4F_9SO_3Na$	**MOLECULAR WEIGHT:**	352.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	46.7 ± 2.3 µg/ml (M2-4:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/29/2019		
EXPIRY DATE: (mm/dd/yyyy)	10/29/2024		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 4:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 4:2FTS and M2-4:2FTS will produce signals in the m/z 329 to m/z 309 channel during SRM analysis. We recommend using the m/z 329 to m/z 81 transition to monitor for M2-4:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

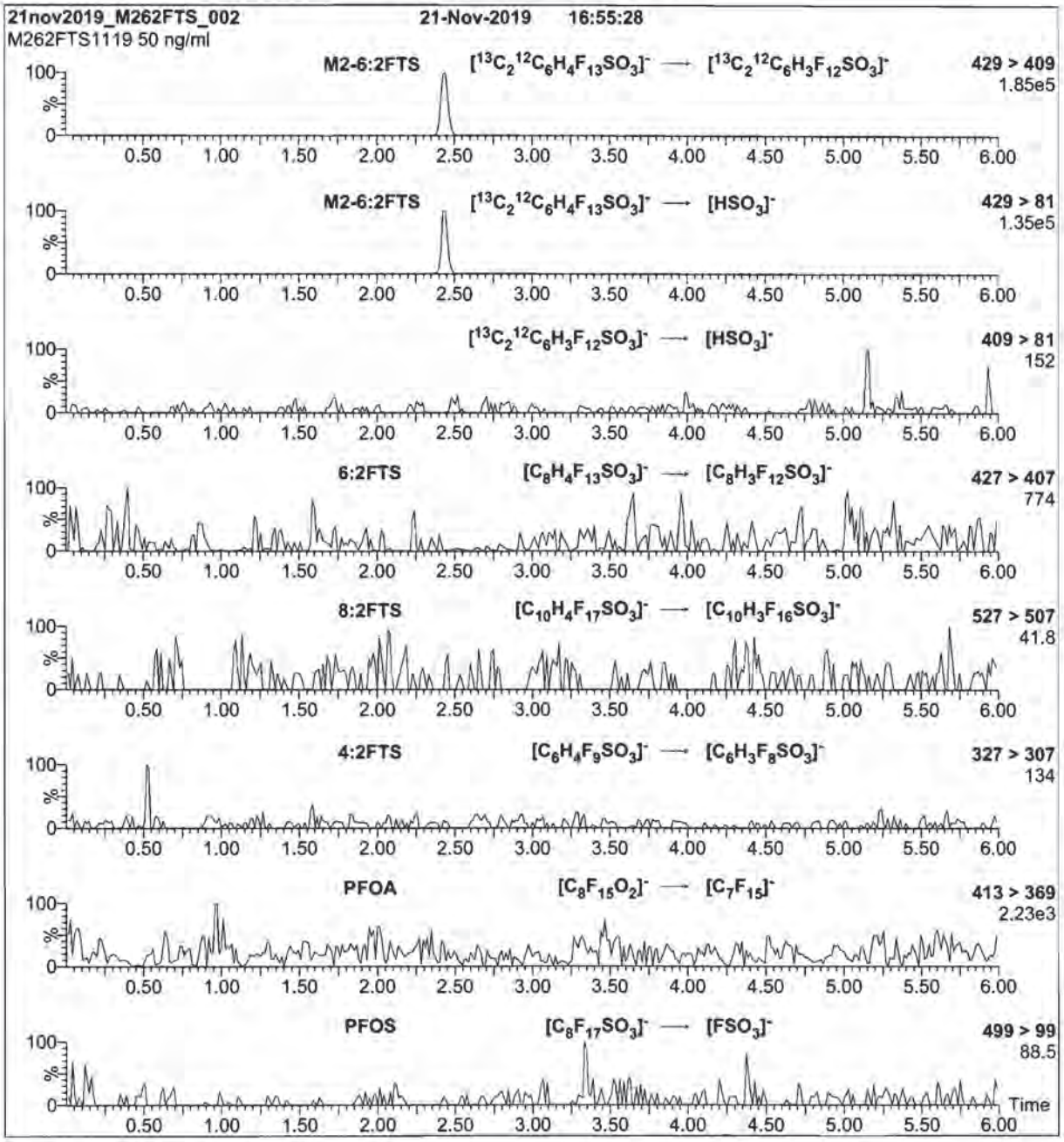
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/05/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0602

Figure 2: **M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M2-6:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 20

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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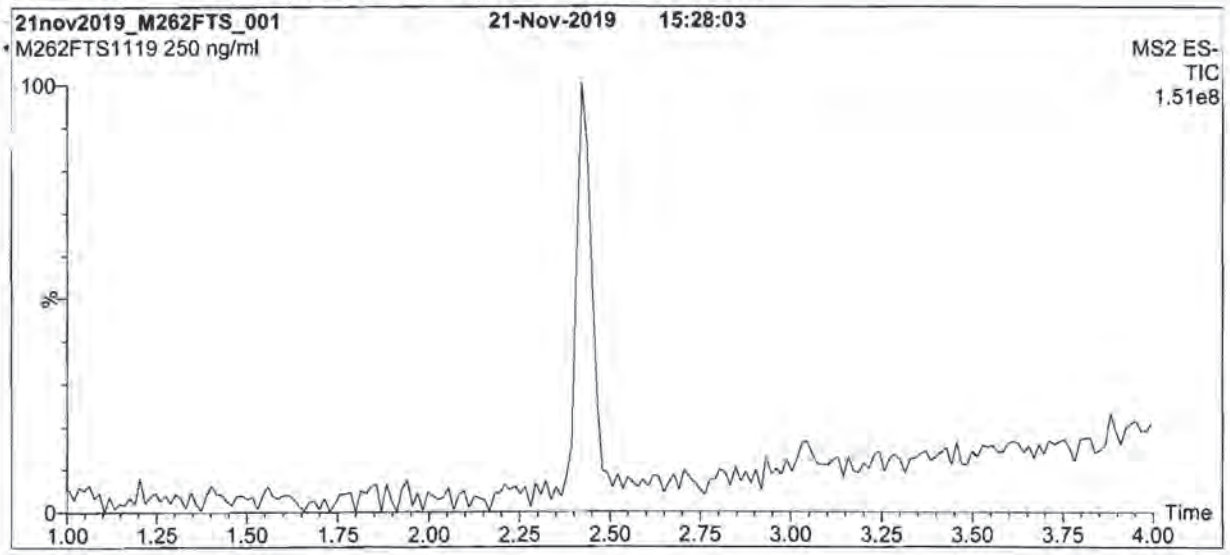
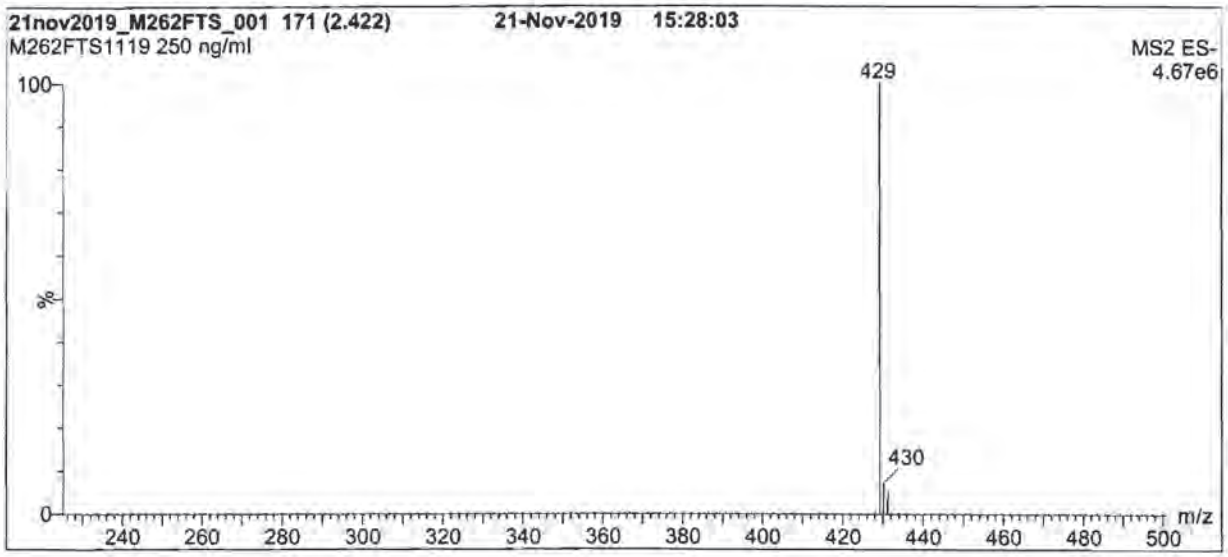
rev0

19L0602

Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M262FTS1119 (3 of 4)
rev0

19L0602

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 $x_1, x_2,...x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0602

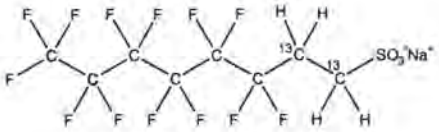
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS1119

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.5 ± 2.4 µg/ml (M2-6:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	11/21/2019		
EXPIRY DATE: (mm/dd/yyyy)	11/21/2024		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/25/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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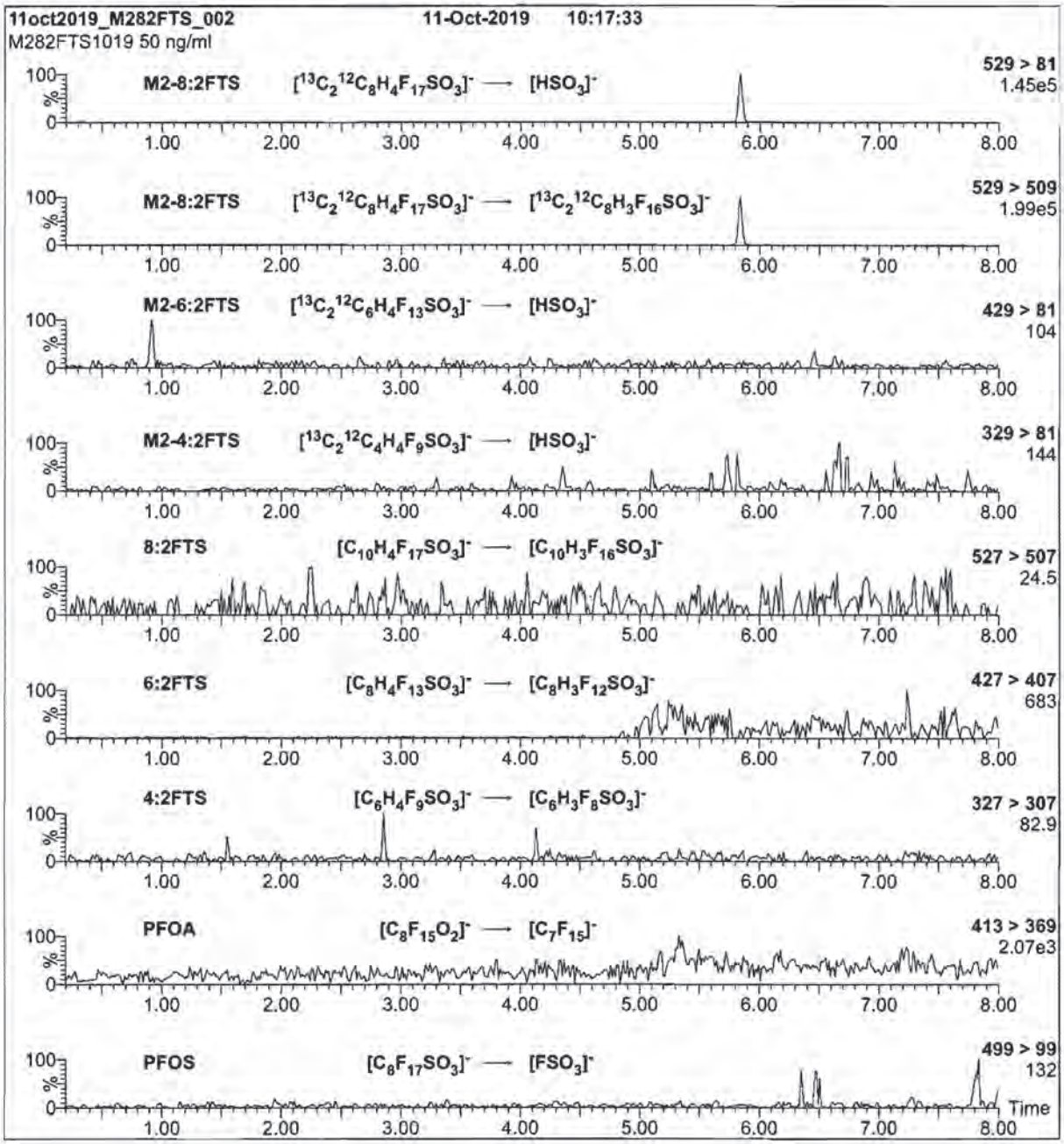
Figure 2: **M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M2-8:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

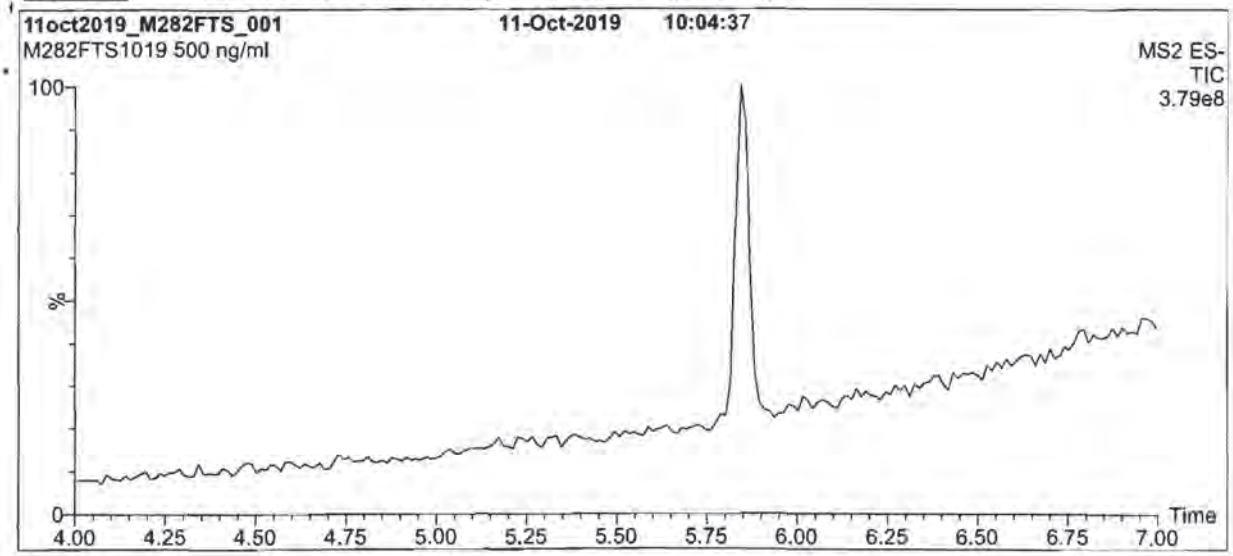
Collision Gas (mbar) = 3.87e-3
Collision Energy (eV) = 26

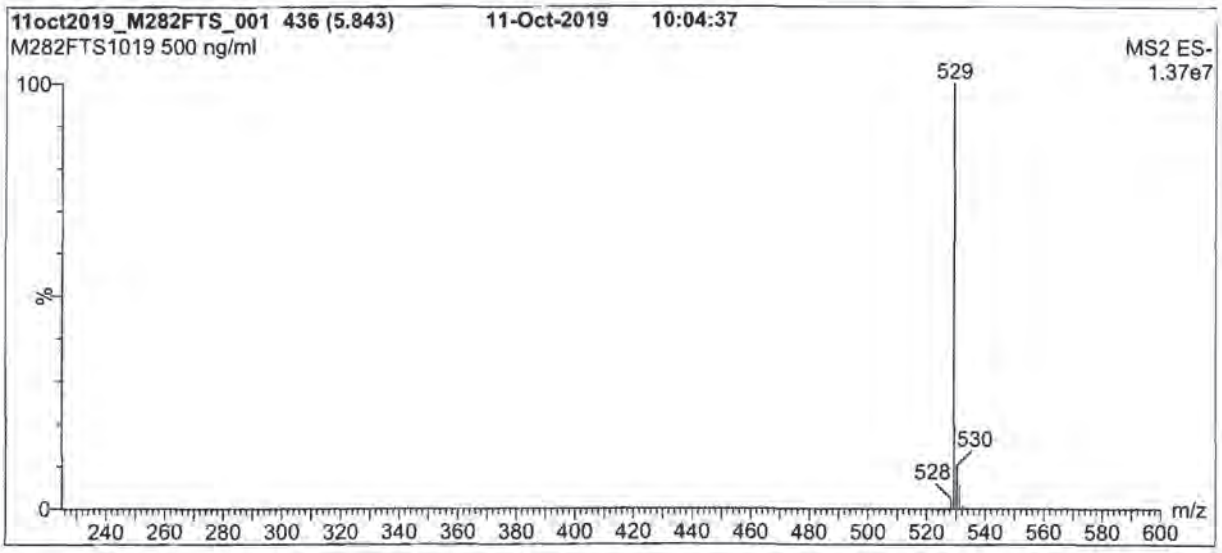
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M282FTS1019 (4 of 4)
rev0

19L0603

Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M282FTS1019 (3 of 4)
rev0

19L0603

INTENDED USE:

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HANDLING:

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HOMOGENEITY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0603

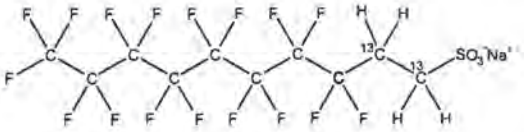
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS1019

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.9 ± 2.4 µg/ml (M2-8:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/11/2019		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2024		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

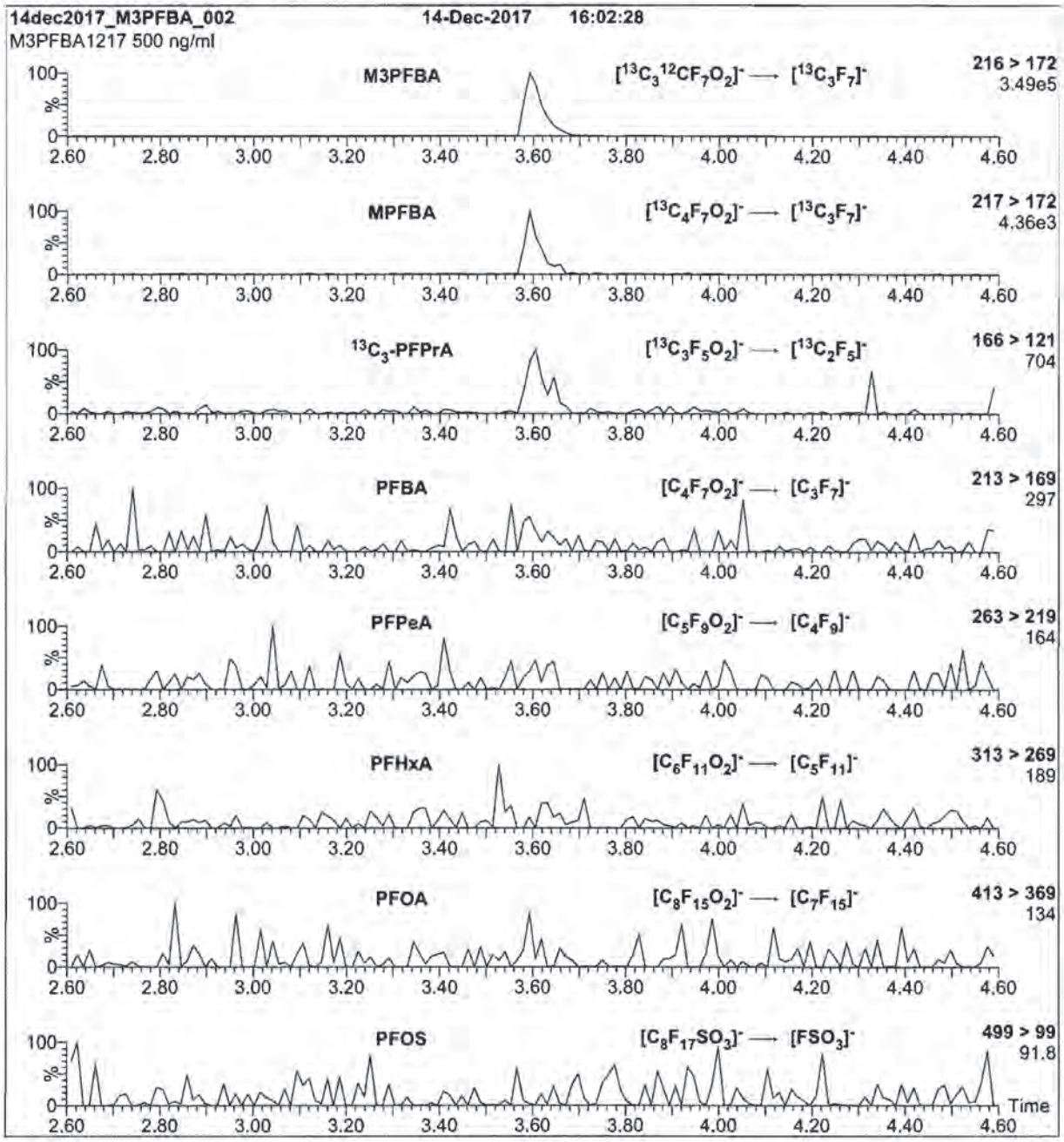
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/15/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0604

Figure 2: **M3PFBA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFBA)

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

Flow: 300 µl/min

MS Parameters

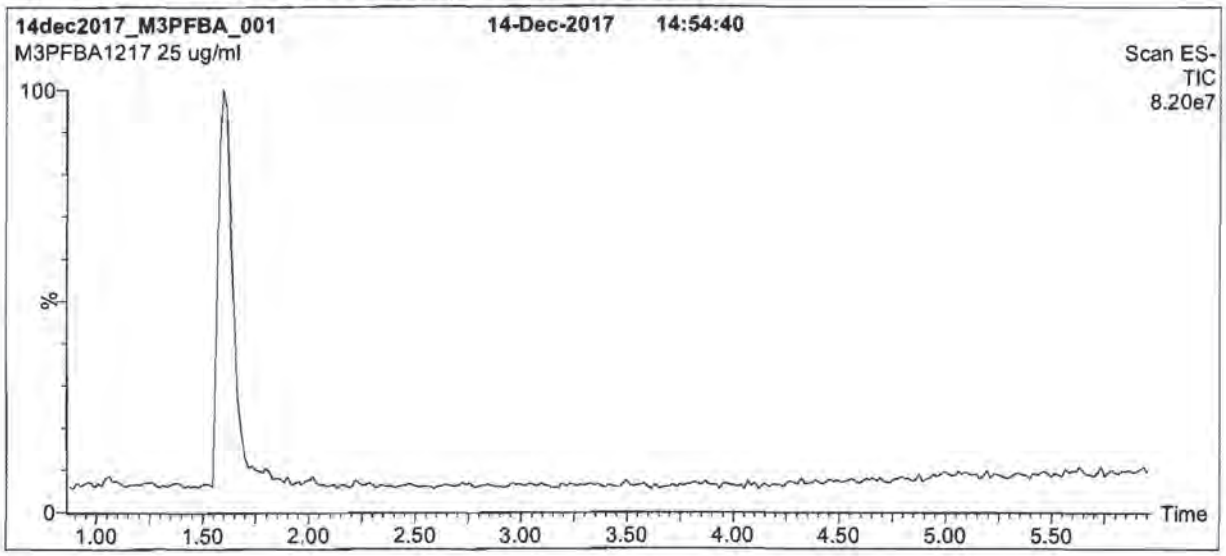
Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

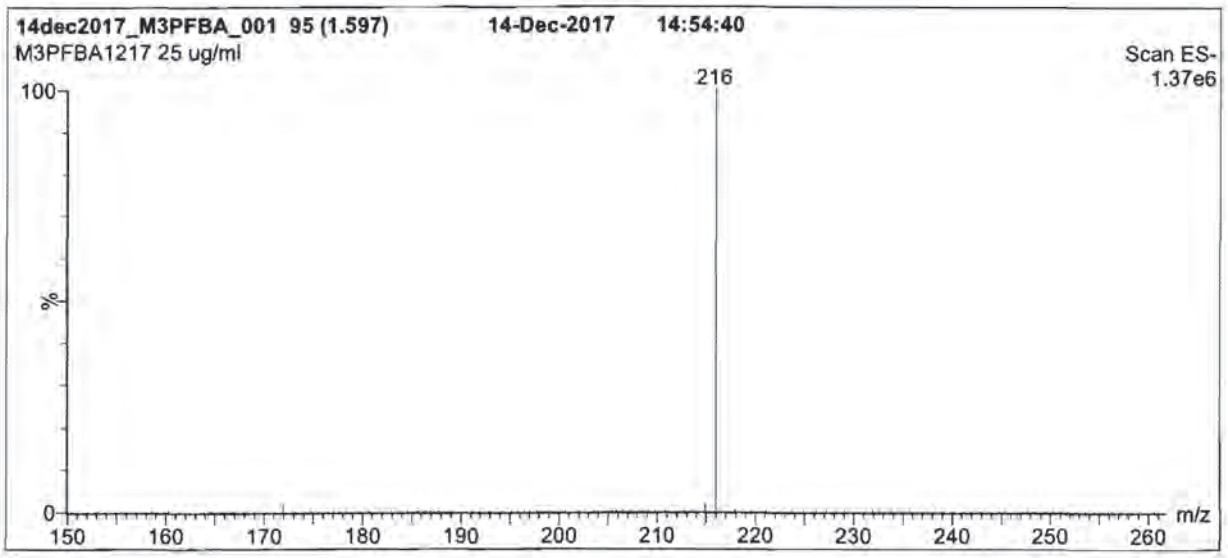
Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

M3PFBA1217 (4 of 4)
rev0

19L0604

Figure 1: M3PFBA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

19L0604

INTENDED USE:

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HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. # 1226

ANAB ACCREDITED

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

19L0604

WELLINGTON LABORATORIES

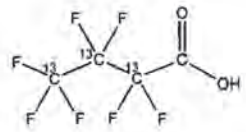
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBA
COMPOUND: Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid

LOT NUMBER: M3PFBA1217

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_3{}^{12}CHF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 217.02
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

ISOTOPIC PURITY: ≥99% ^{13}C ($2,3,4\text{-}^{13}C_3$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager **Date:** 12/22/2017 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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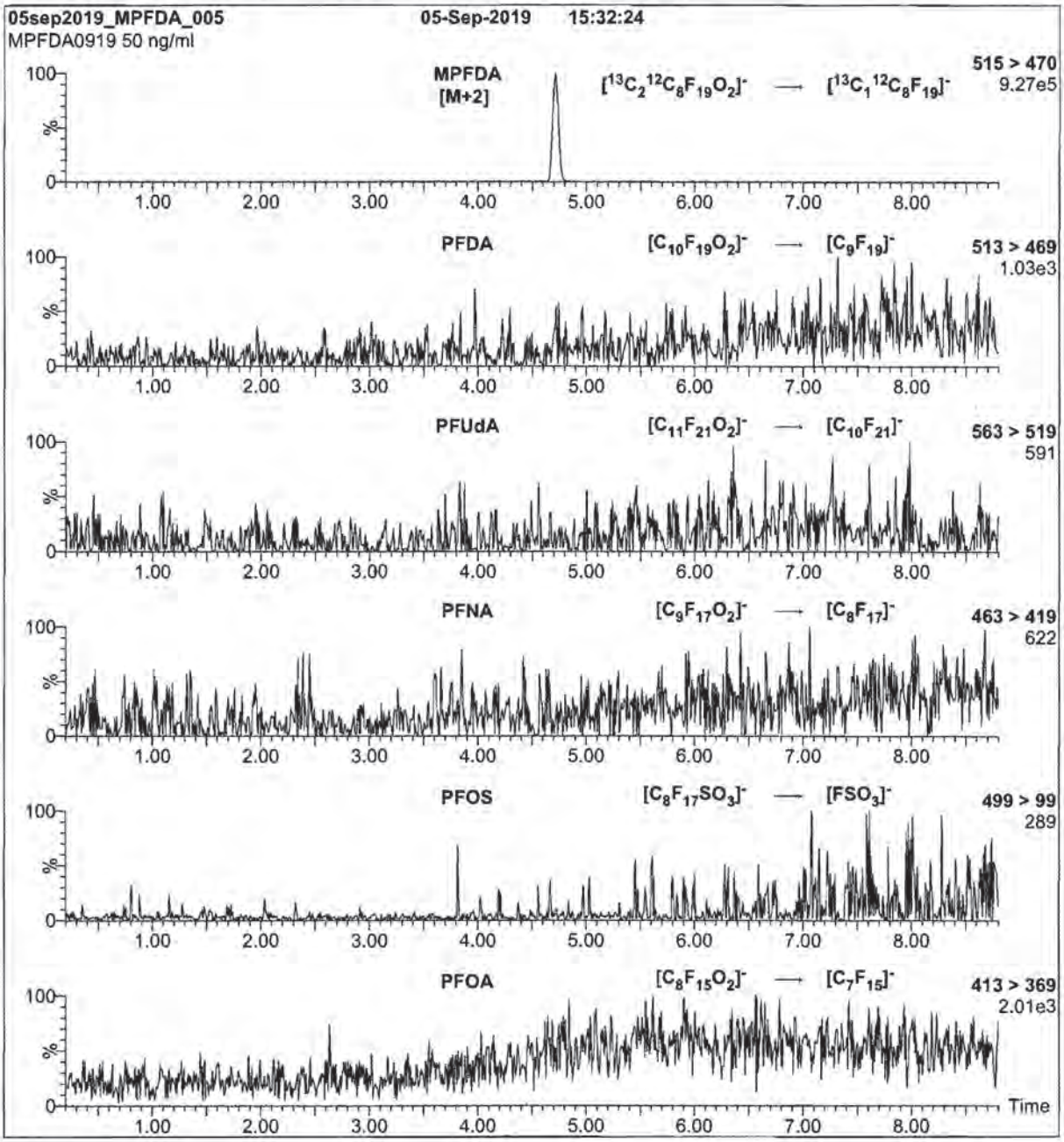
19L0605

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



Conditions for Figure 2:

Injection: On-column (MPFDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 10

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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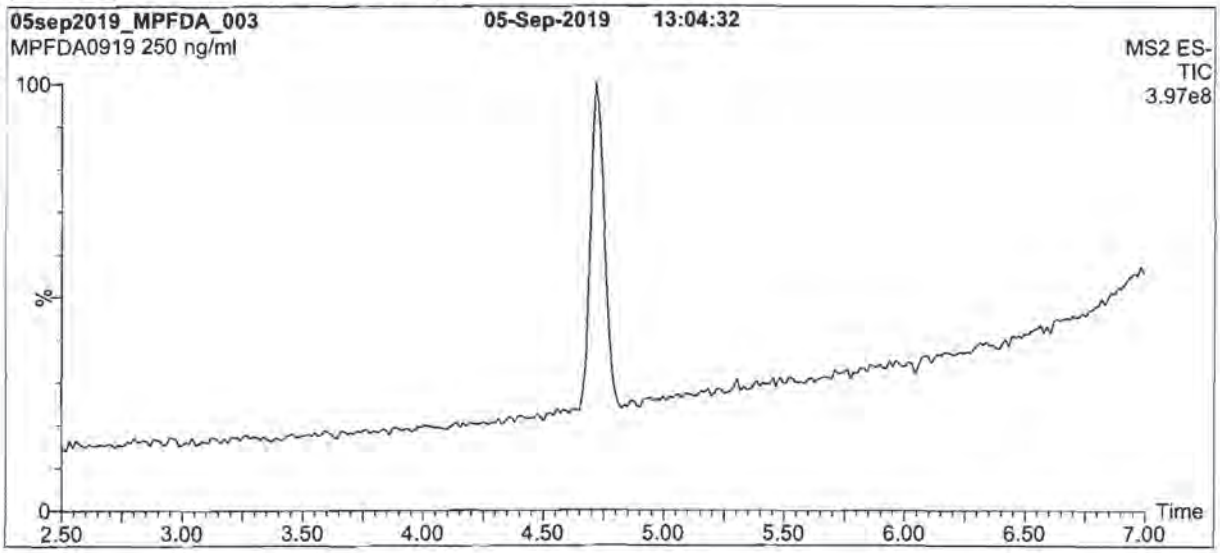
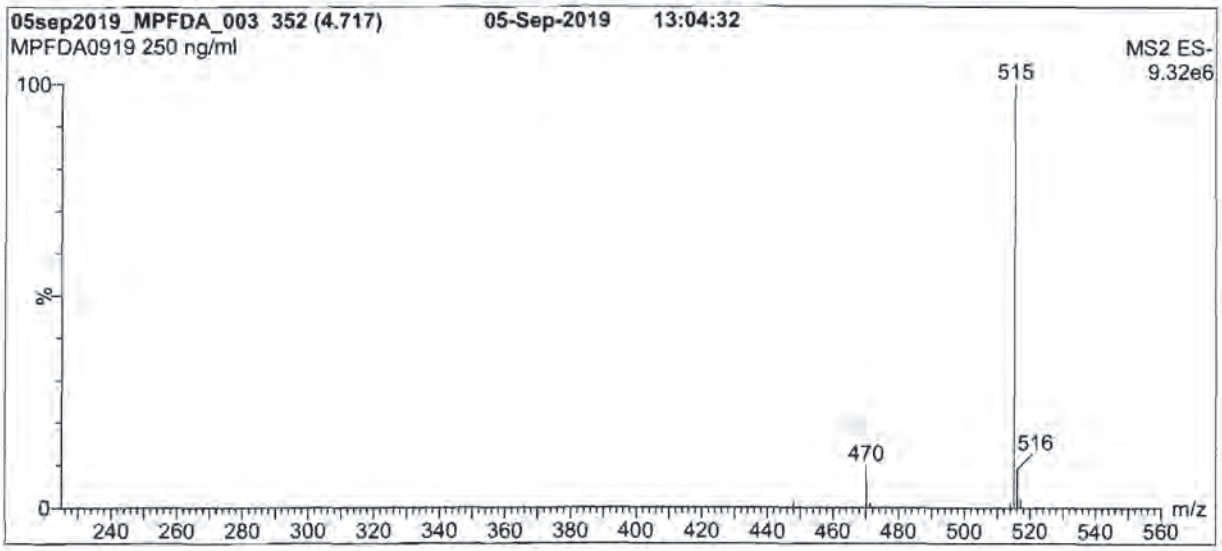
rev0

1910605

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFDA0919 (3 of 4)
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SYNTHESIS / CHARACTERIZATION:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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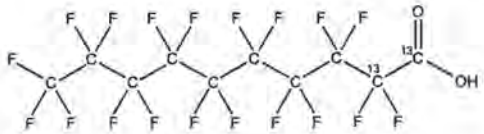
19L0605

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid
LOT NUMBER: MPFDA0919

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{19}O_2$
MOLECULAR WEIGHT: 516.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 09/05/2019
EXPIRY DATE: (mm/dd/yyyy) 09/05/2024
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:** 09/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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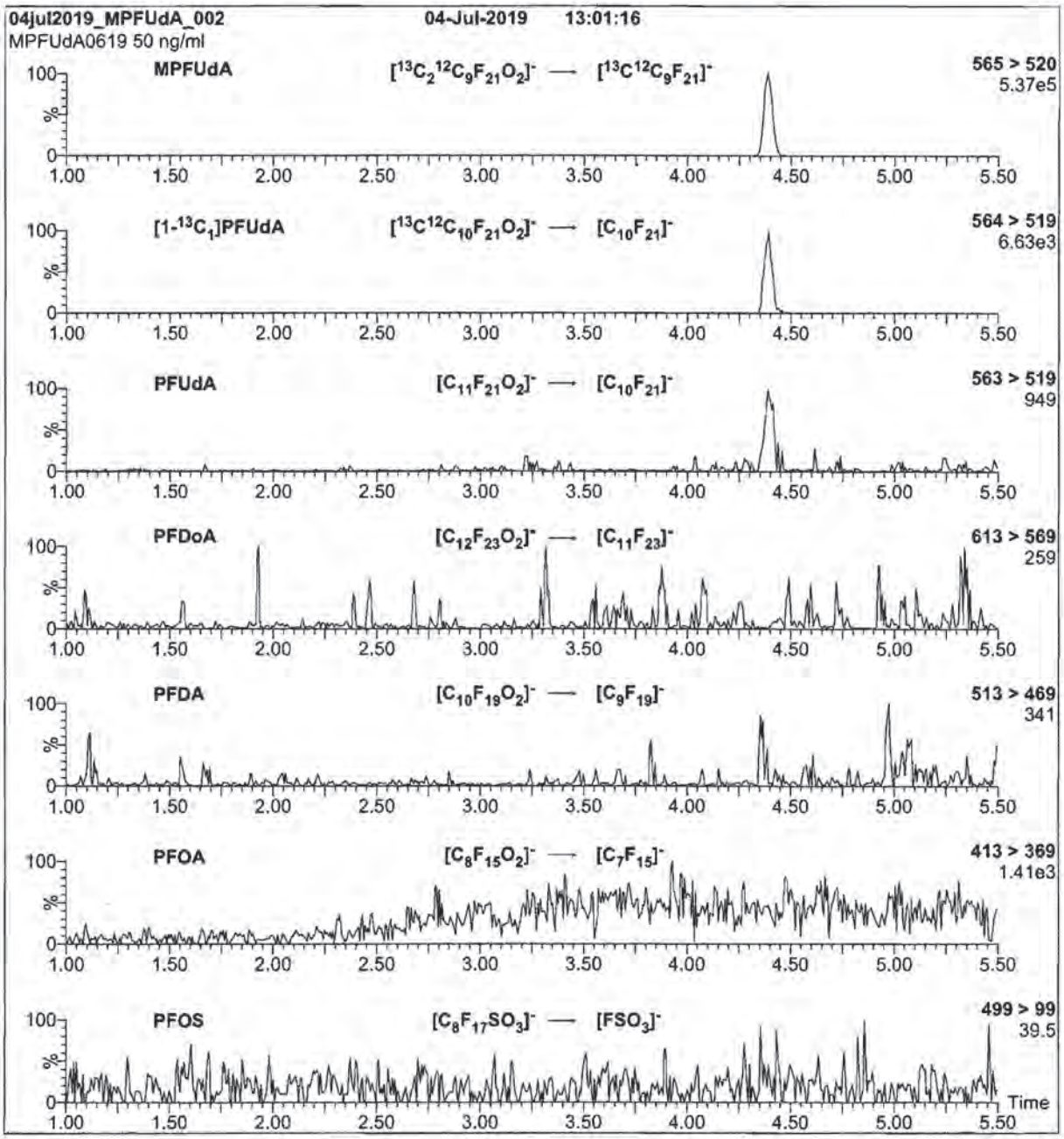
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0606

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



Conditions for Figure 2:

Injection: On-column (MPFUdA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

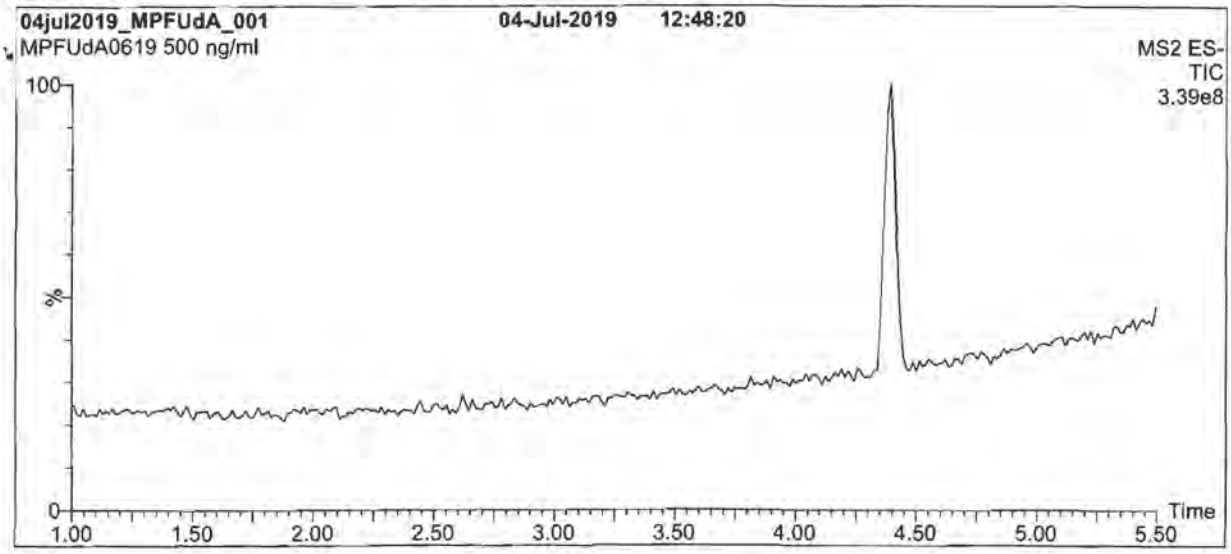
Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 12

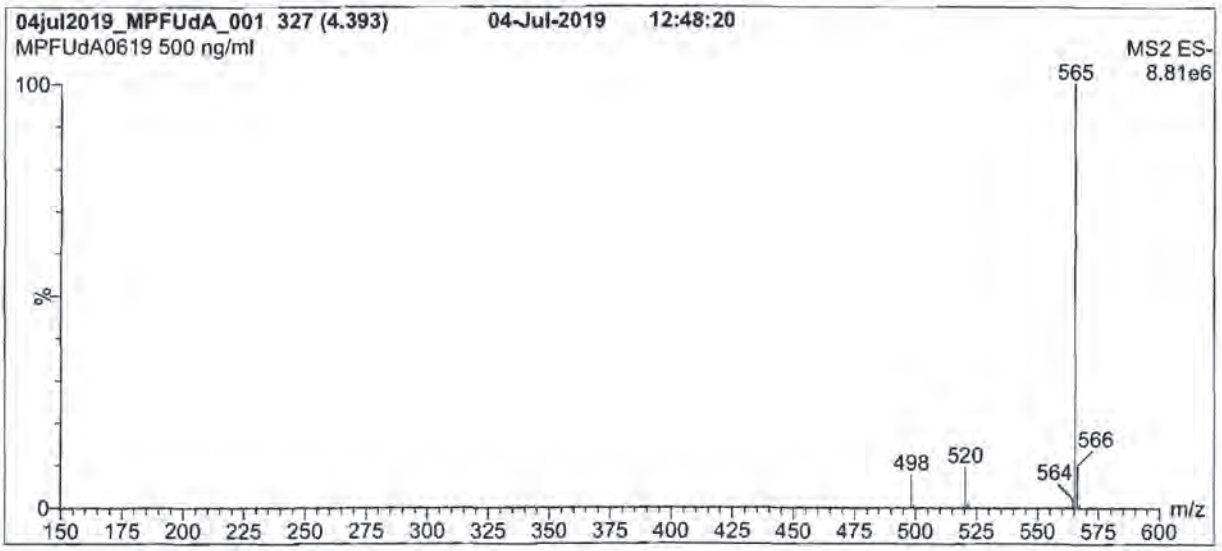
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFUdA0619 (4 of 4)
rev0

19L0606

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFUdA0619 (3 of 4)
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19L0606

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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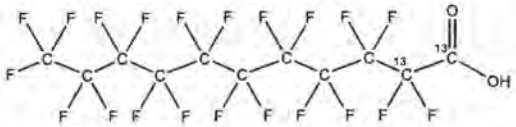
19L0606

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFUdA	**LOT NUMBER:**	MPFUdA0619
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/04/2019		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/05/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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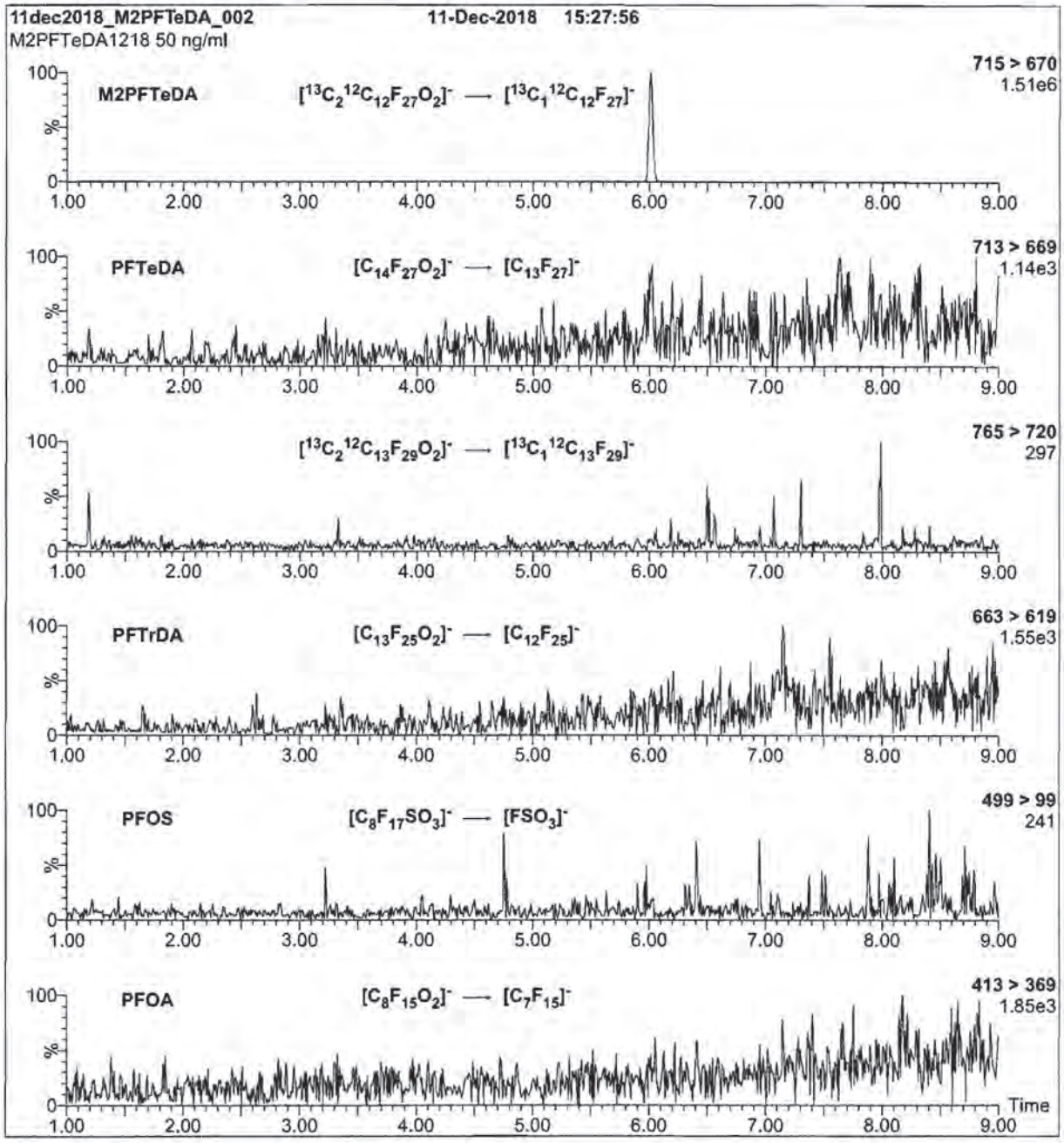
19L0607

Figure 2: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M2PFTeDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

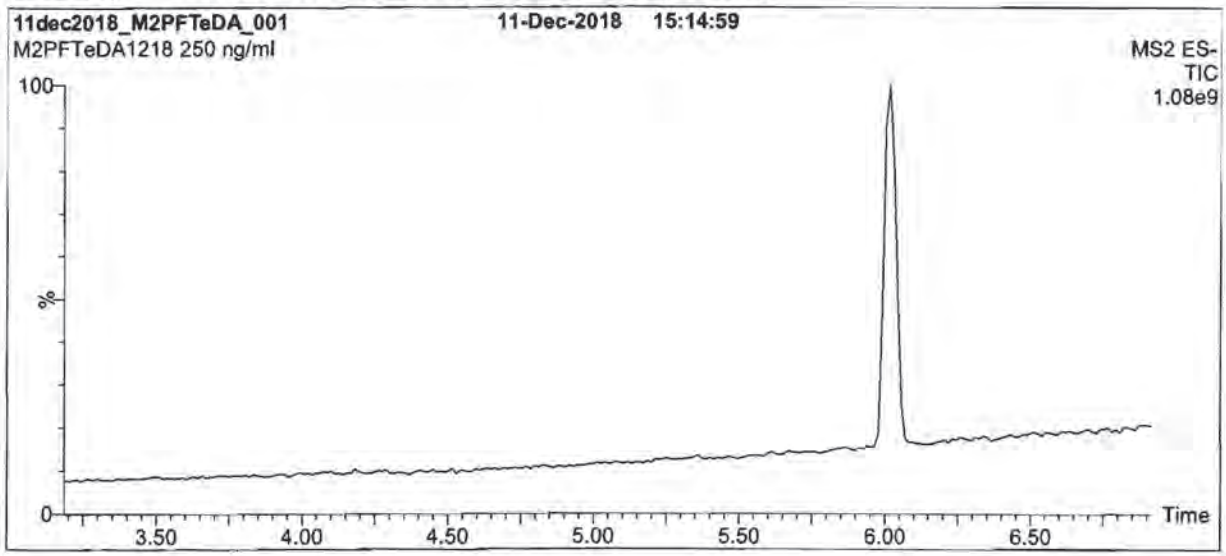
Collision Gas (mbar) = 3.16e-3
Collision Energy (eV) = 14

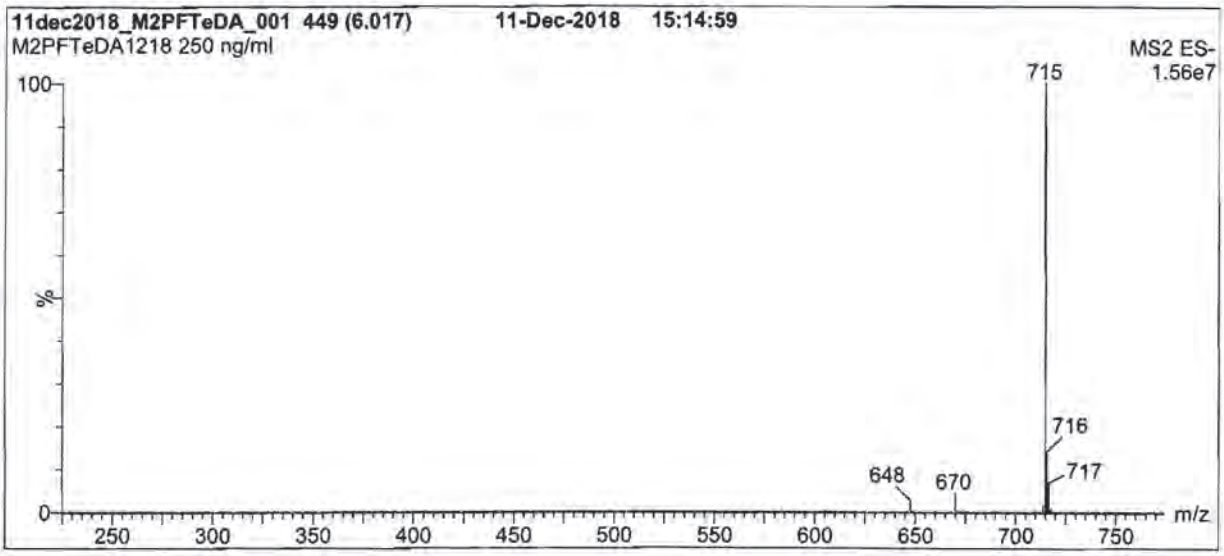
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M2PFTeDA1218 (4 of 4)
rev0

19L0607

Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

M2PFTeDA1218 (3 of 4)
rev0

19L0607

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0607

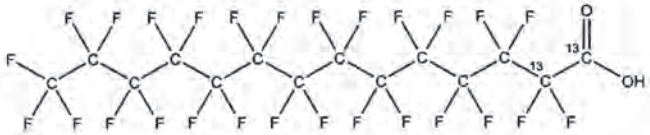
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid
LOT NUMBER: M2PFTeDA1218

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	12/11/2018		
EXPIRY DATE: (mm/dd/yyyy)	12/11/2023		
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

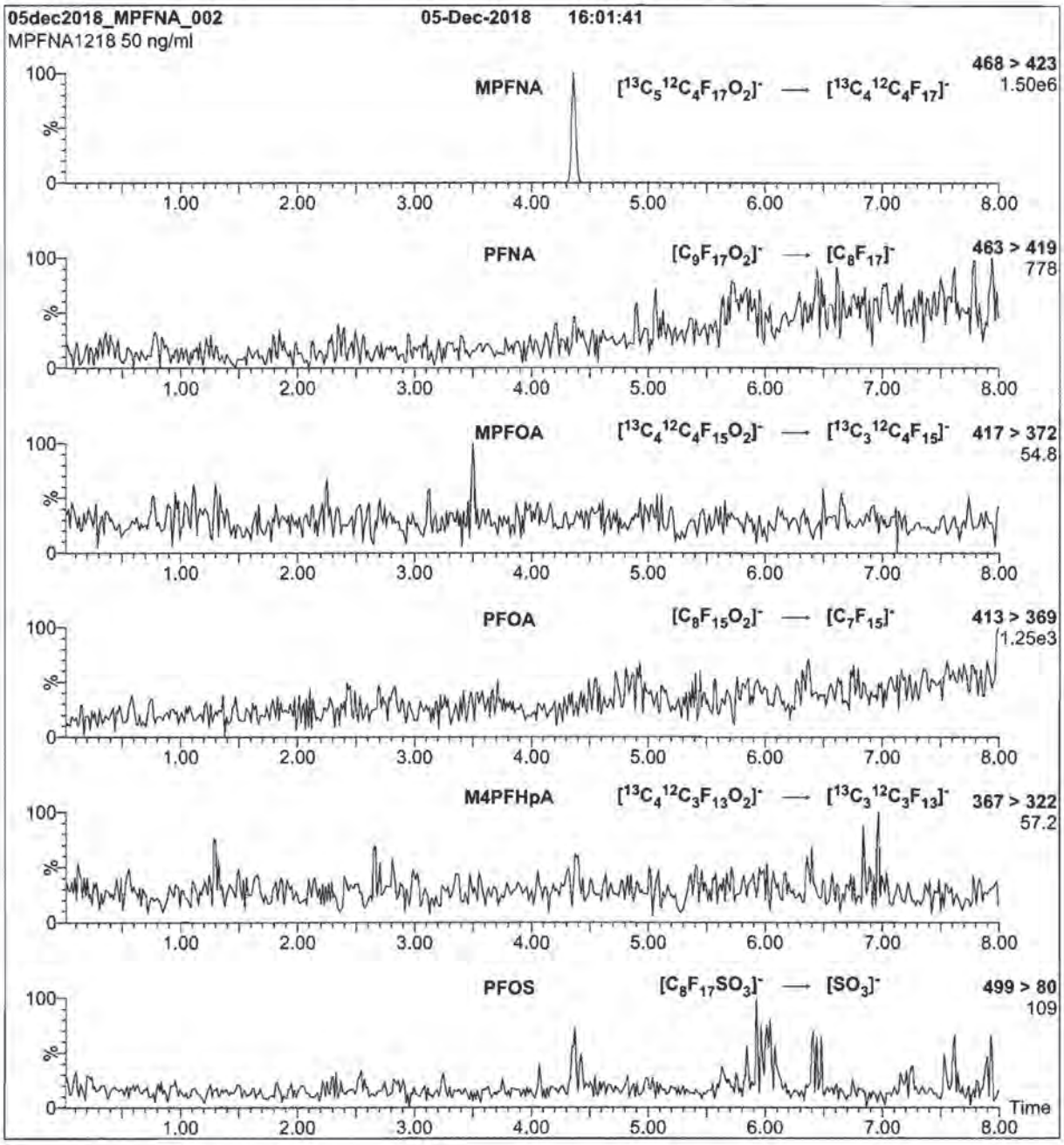
Certified By: _____ **Date:** 12/20/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0608

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



Conditions for Figure 2:

Injection: On-column (MPFNA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 10

Form#:27, Issued 2004-11-10
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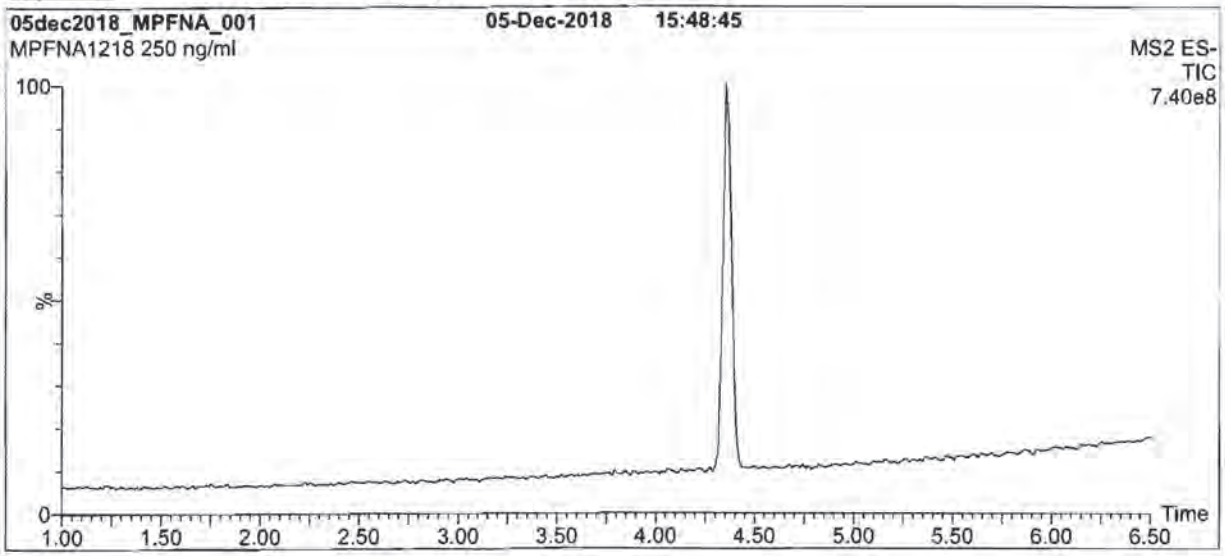
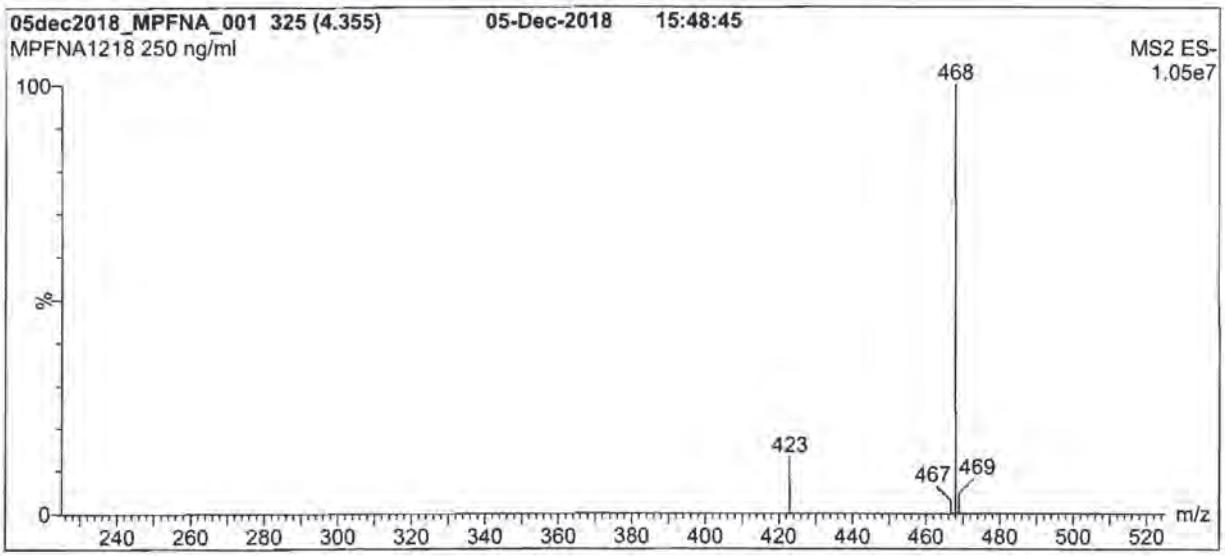
MPFNA1218 (4 of 4)
rev0

1912608

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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19L0608

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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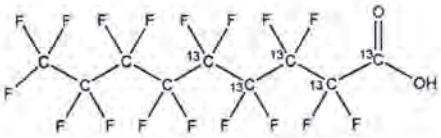
rev0

19L0608

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFNA	**LOT NUMBER:**	MPFNA1218
COMPOUND:	Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_4HF_{17}O_2$	**MOLECULAR WEIGHT:**	469.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	12/05/2018		
EXPIRY DATE: (mm/dd/yyyy)	12/05/2023		
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:** 12/10/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0609

WELLINGTON LABORATORIES

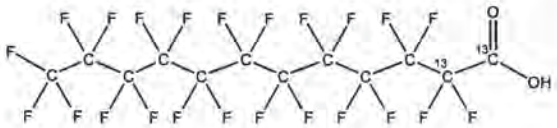
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDoA1218

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	12/11/2018		
EXPIRY DATE: (mm/dd/yyyy)	12/11/2023		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
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Certified By: _____ **Date:** 12/18/2018 (mm/dd/yyyy)
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19L0609

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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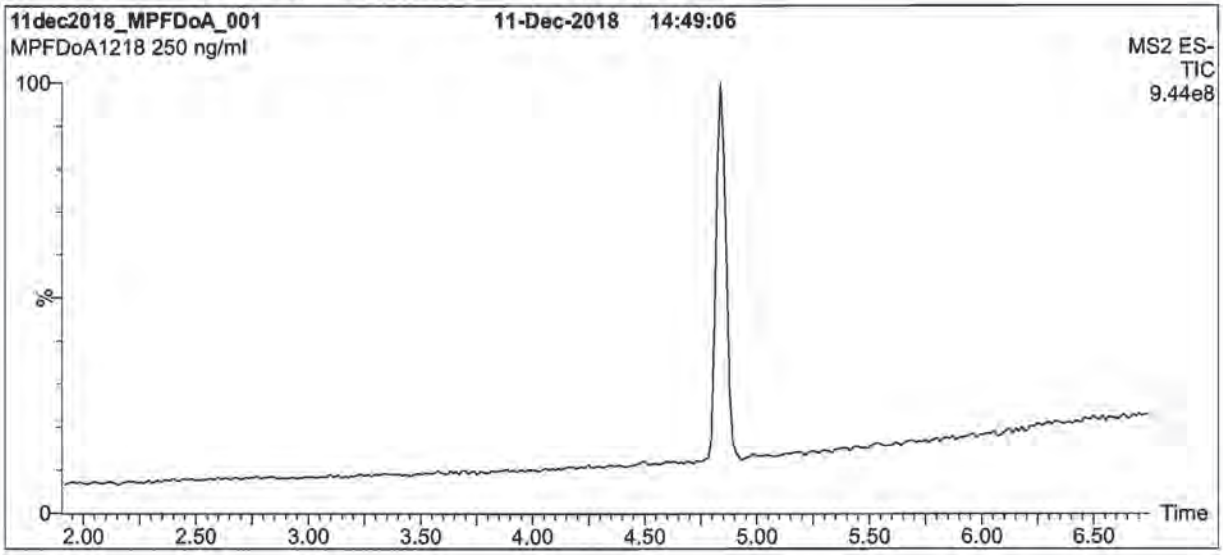
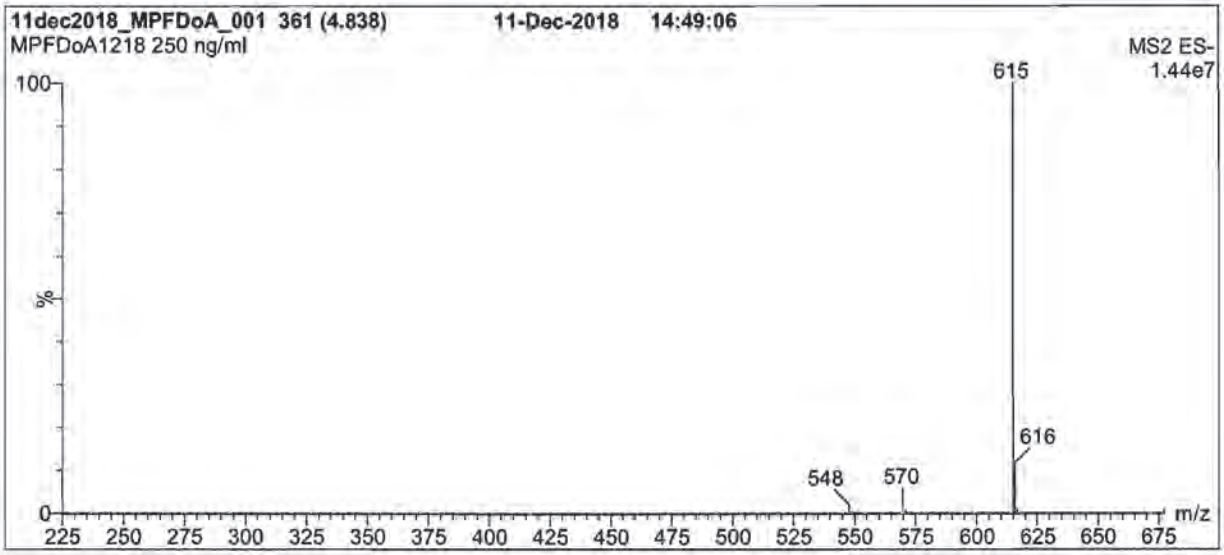
19L0609

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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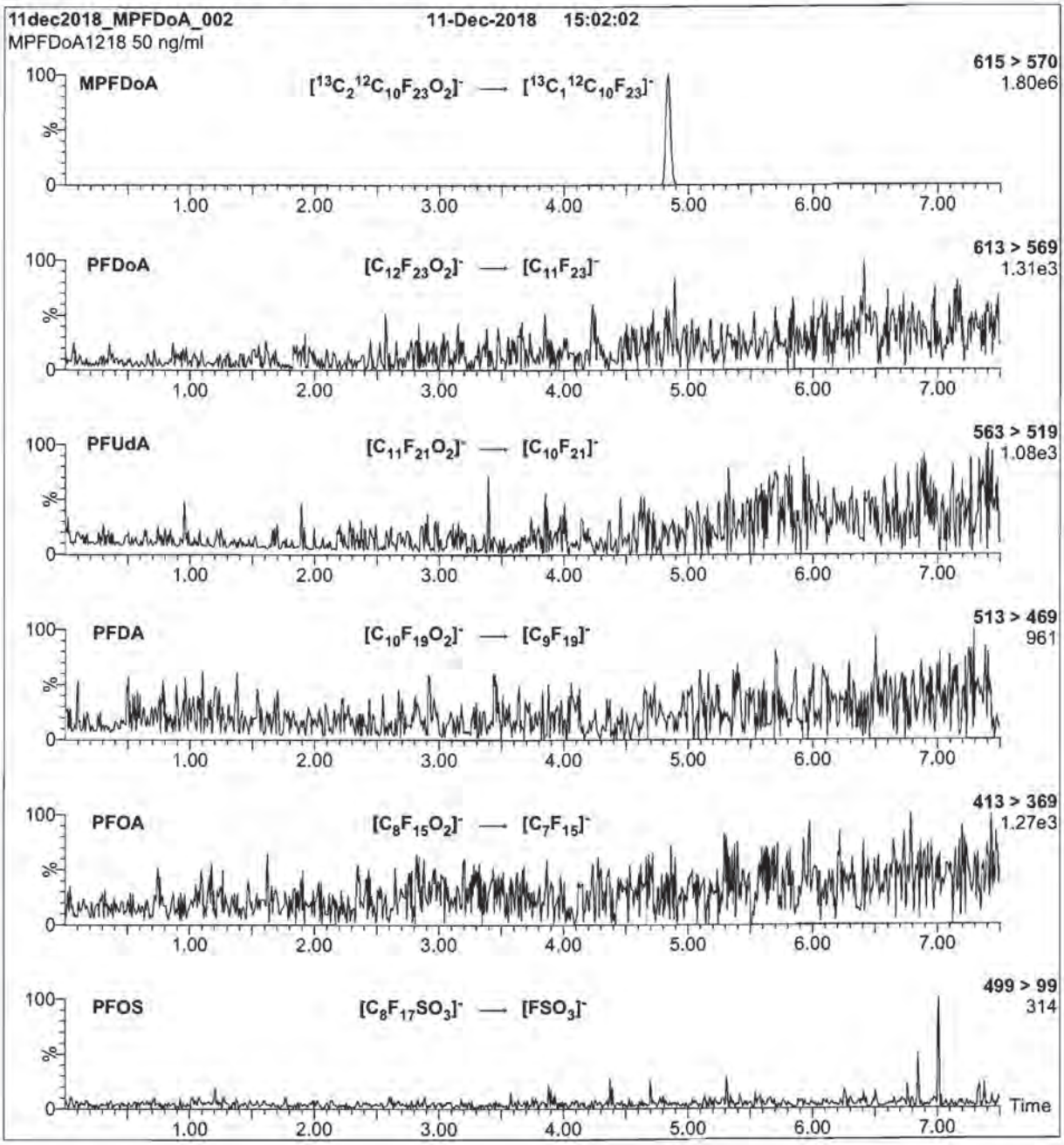
Revision#:6, Revised 2018-08-14

MPFDoA1218 (3 of 4)
rev0

19L0609

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



Conditions for Figure 2:

Injection: On-column (MPFDoA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

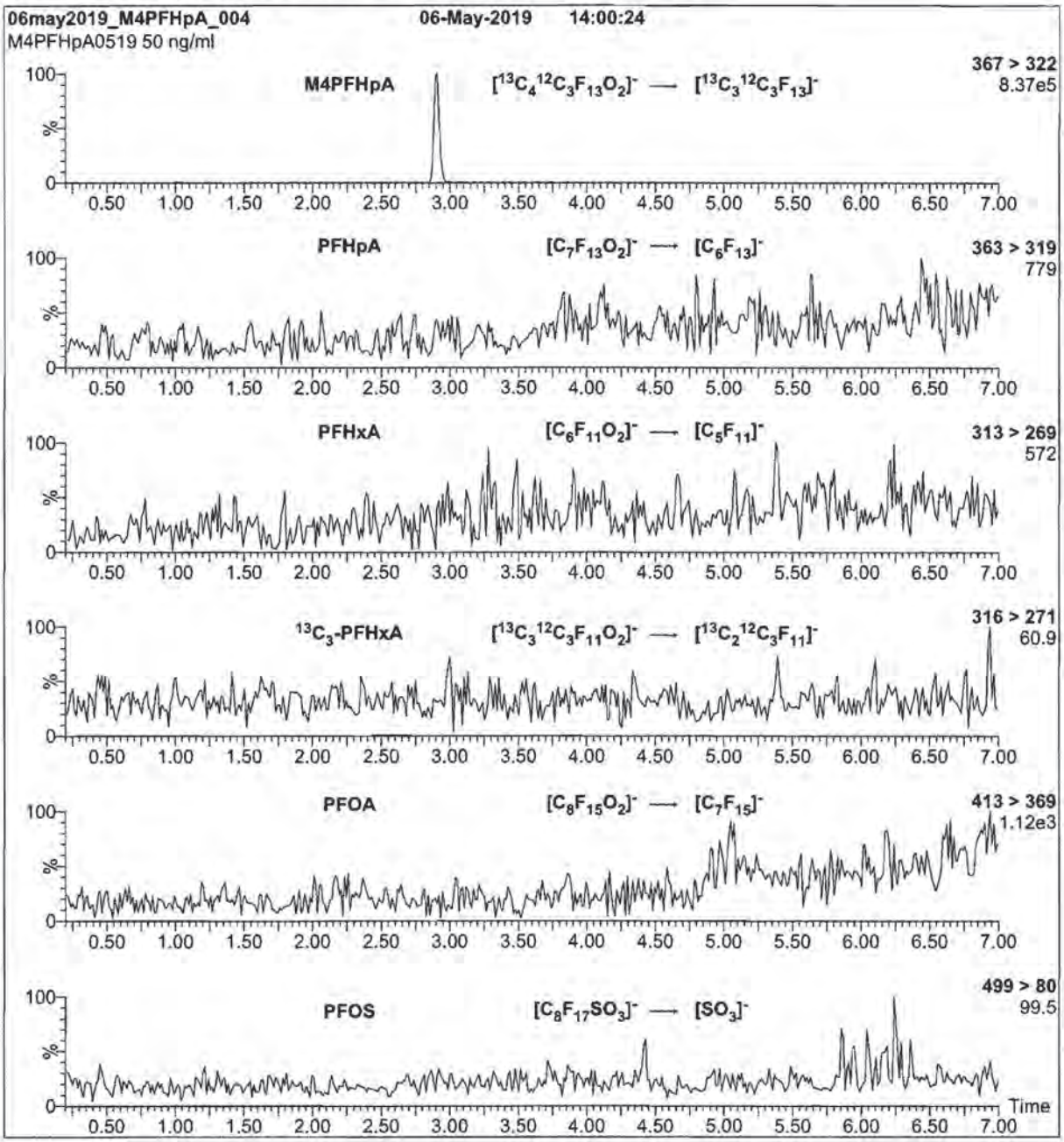
Collision Gas (mbar) = 3.16e-3
Collision Energy (eV) = 12

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFDoA1218 (4 of 4)
rev0

19L0610

Figure 2: **M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M4PFHpA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

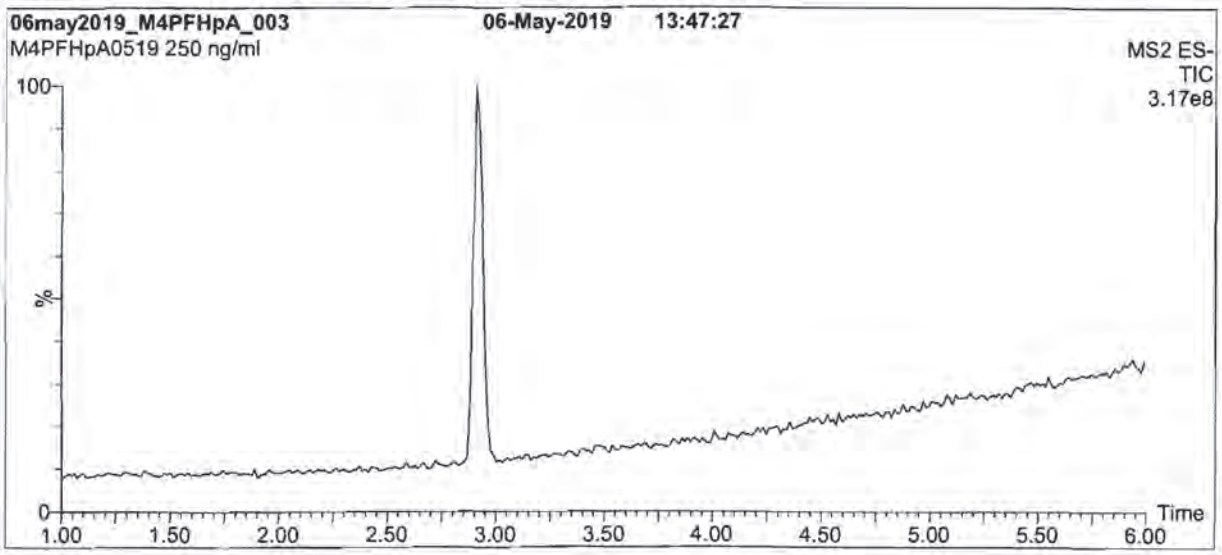
Collision Gas (mbar) = 2.87e-3
Collision Energy (eV) = 8

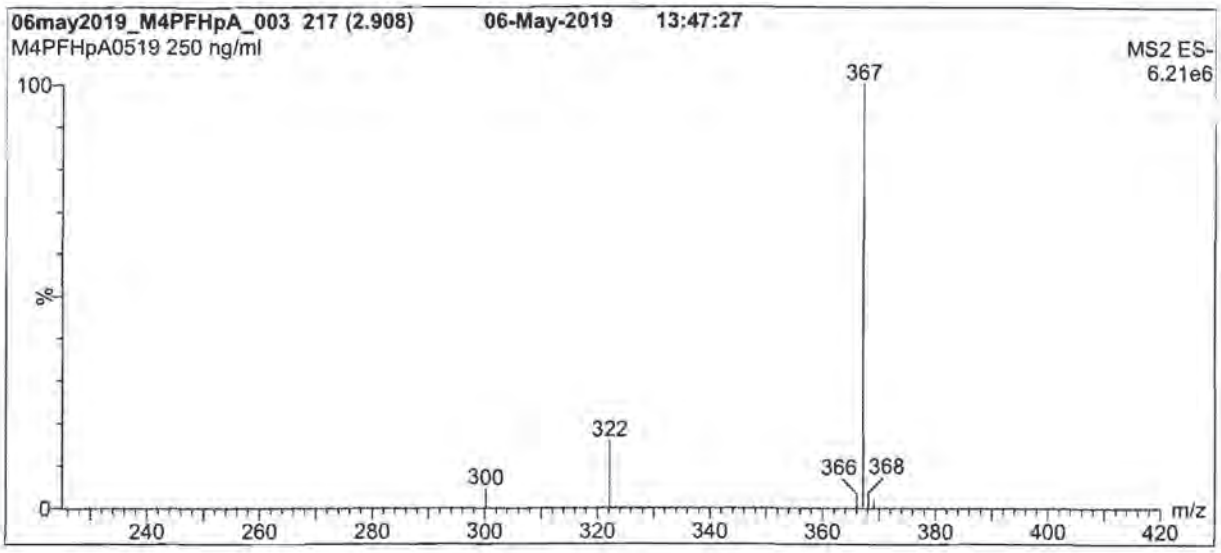
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M4PFHpA0519 (4 of 4)
rev0

19L0610

Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)





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

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Start: 50% (80:20 MeOH:ACN) / 50% H_2O
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Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
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M4PFHpA0519 (3 of 4)
rev0

19L0090

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

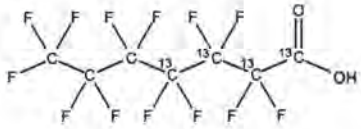
19L0610

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M4PFHpA
LOT NUMBER: M4PFHpA0519
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/06/2019		
EXPIRY DATE: (mm/dd/yyyy)	05/06/2024		
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

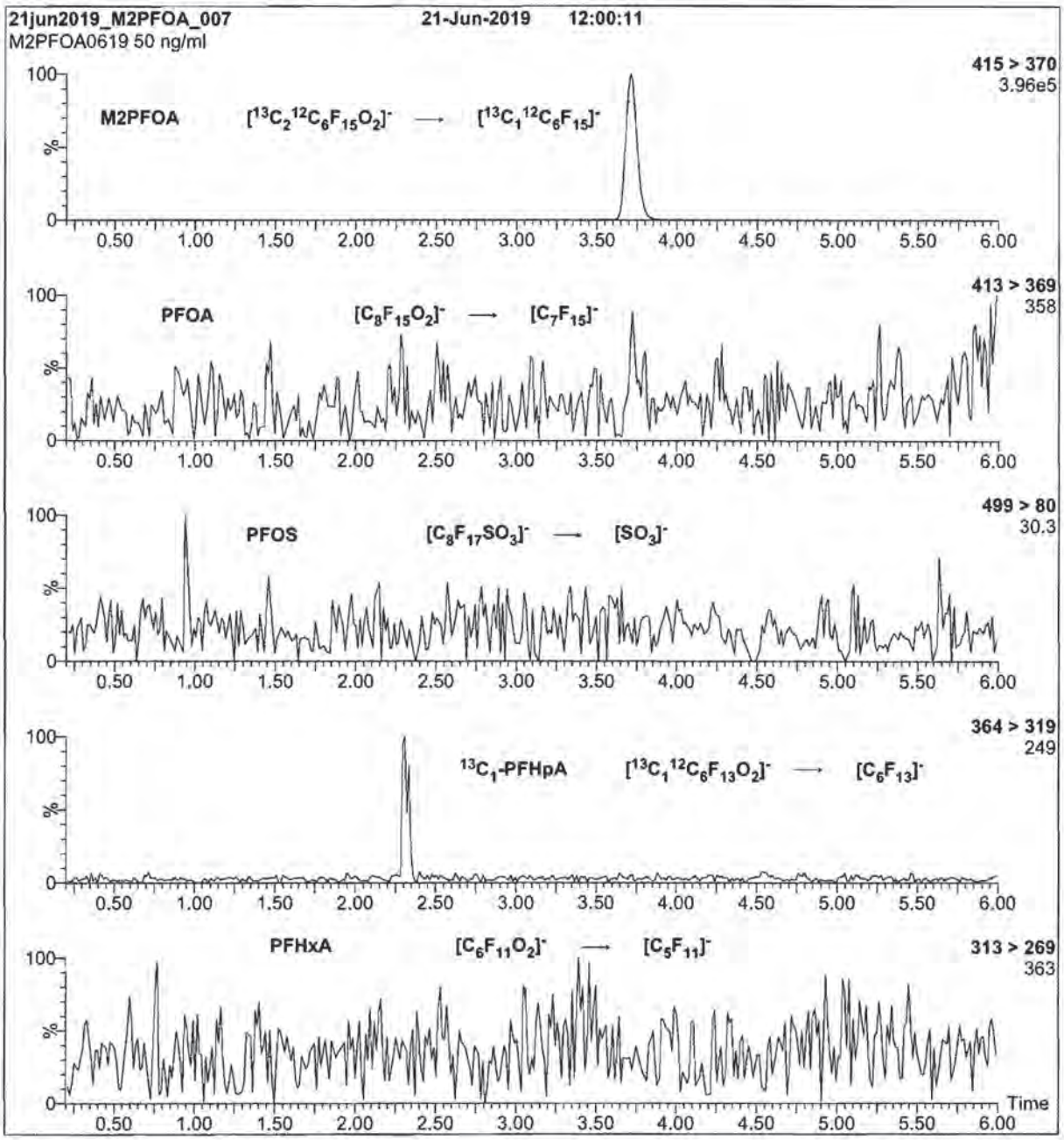
Certified By: _____ **Date:** 05/17/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0611

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



Conditions for Figure 2:

Injection: On-column (M2PFOA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

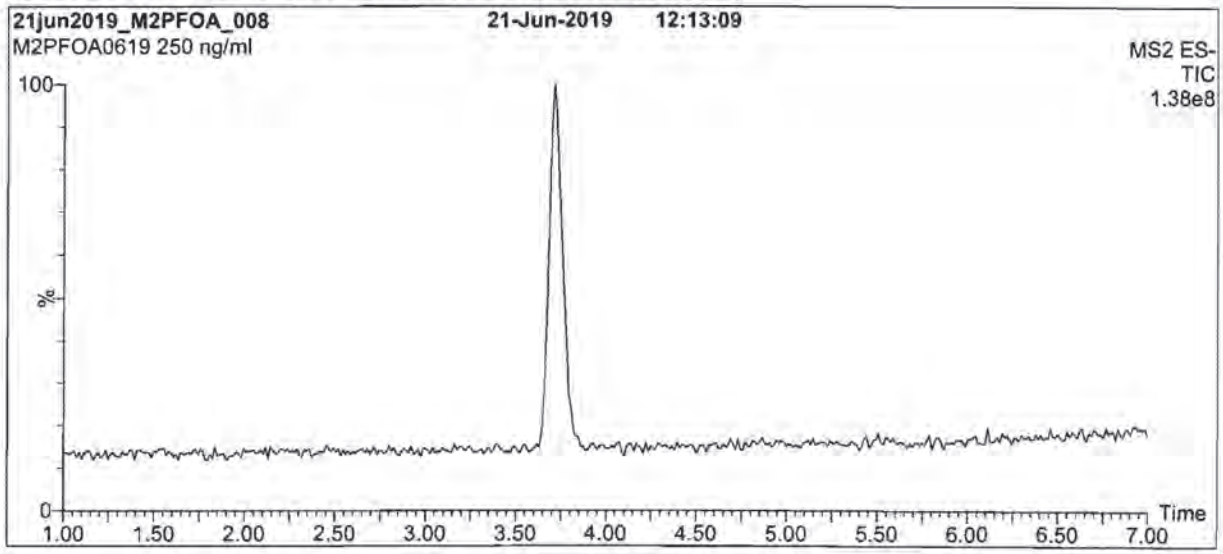
Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 8

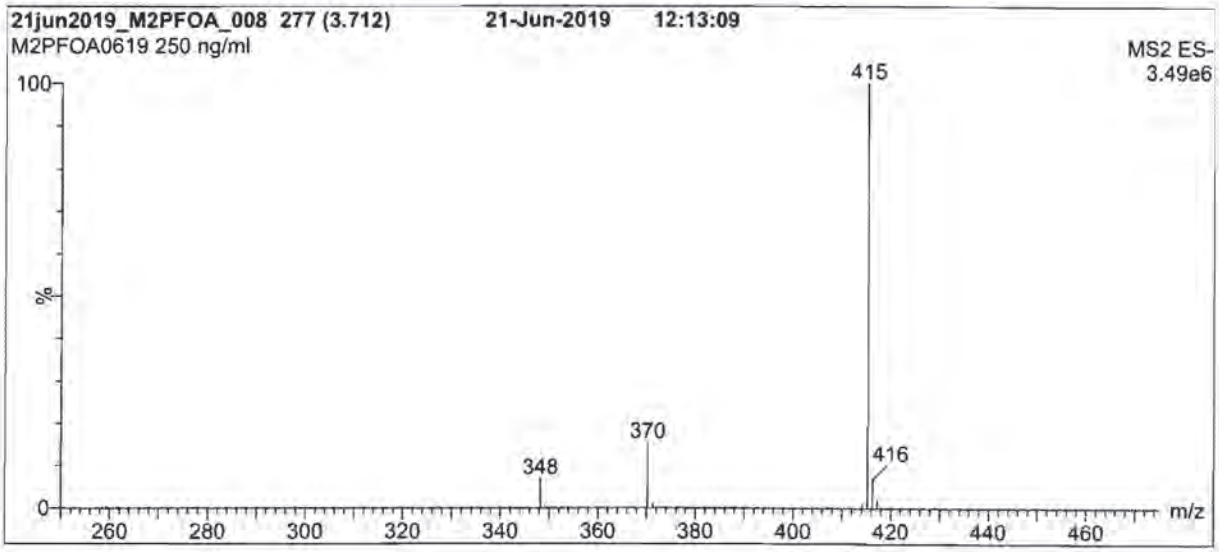
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M2PFOA0619 (4 of 4)
rev0

19L0611

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M2PFOA0619 (3 of 4)
rev0

1920611

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L 0611

WELLINGTON LABORATORIES

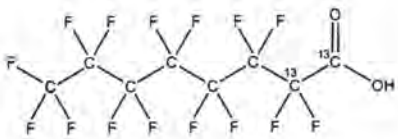
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M2PFOA0619

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	06/21/2019		
EXPIRY DATE: (mm/dd/yyyy)	06/21/2024		
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-[$^{13}C_1$]heptanoic acid ($^{13}C_1$-PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

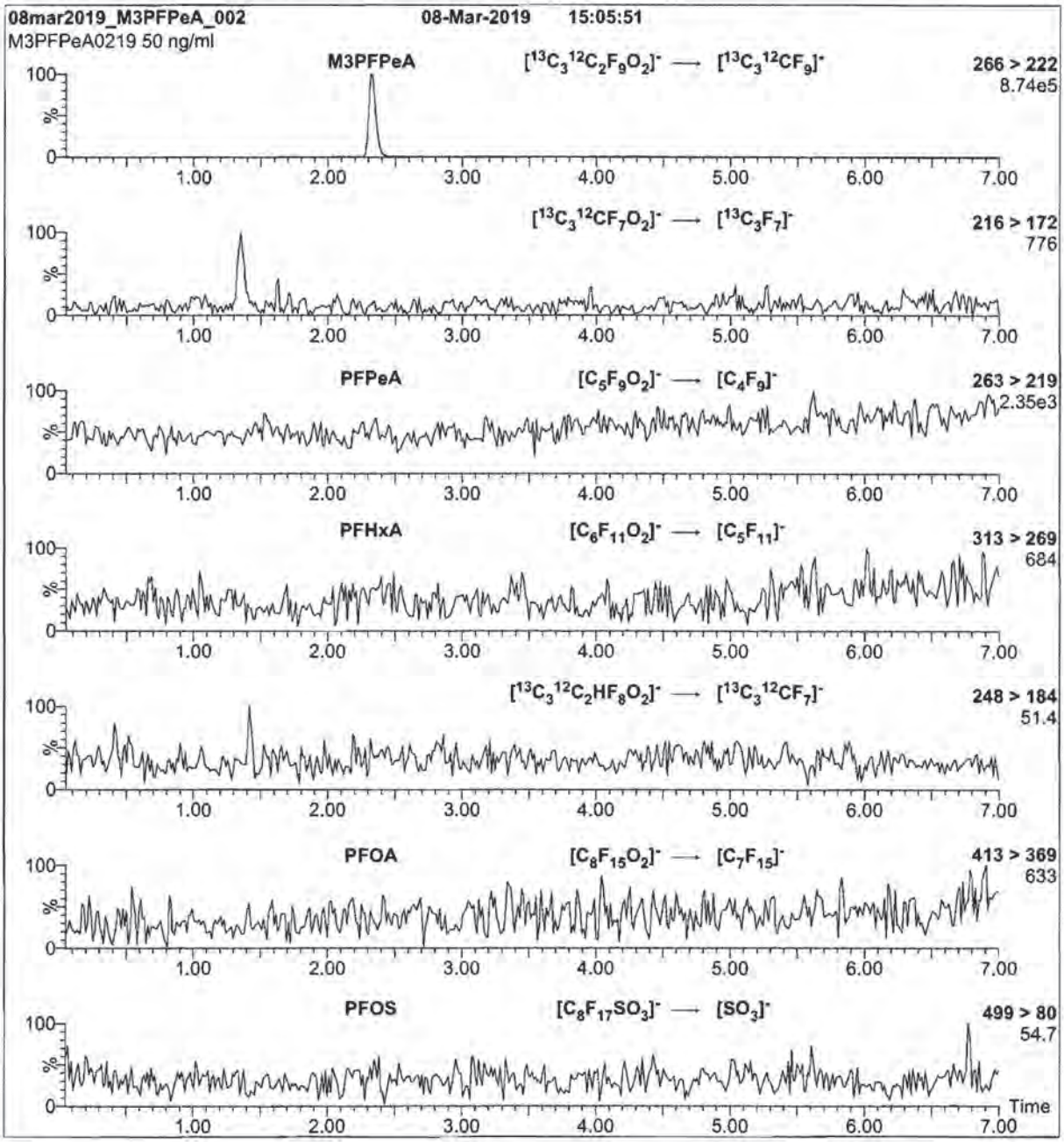
Certified By: _____ **Date:** 06/21/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0612

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



Conditions for Figure 2:

Injection: On-column (M3PFPeA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

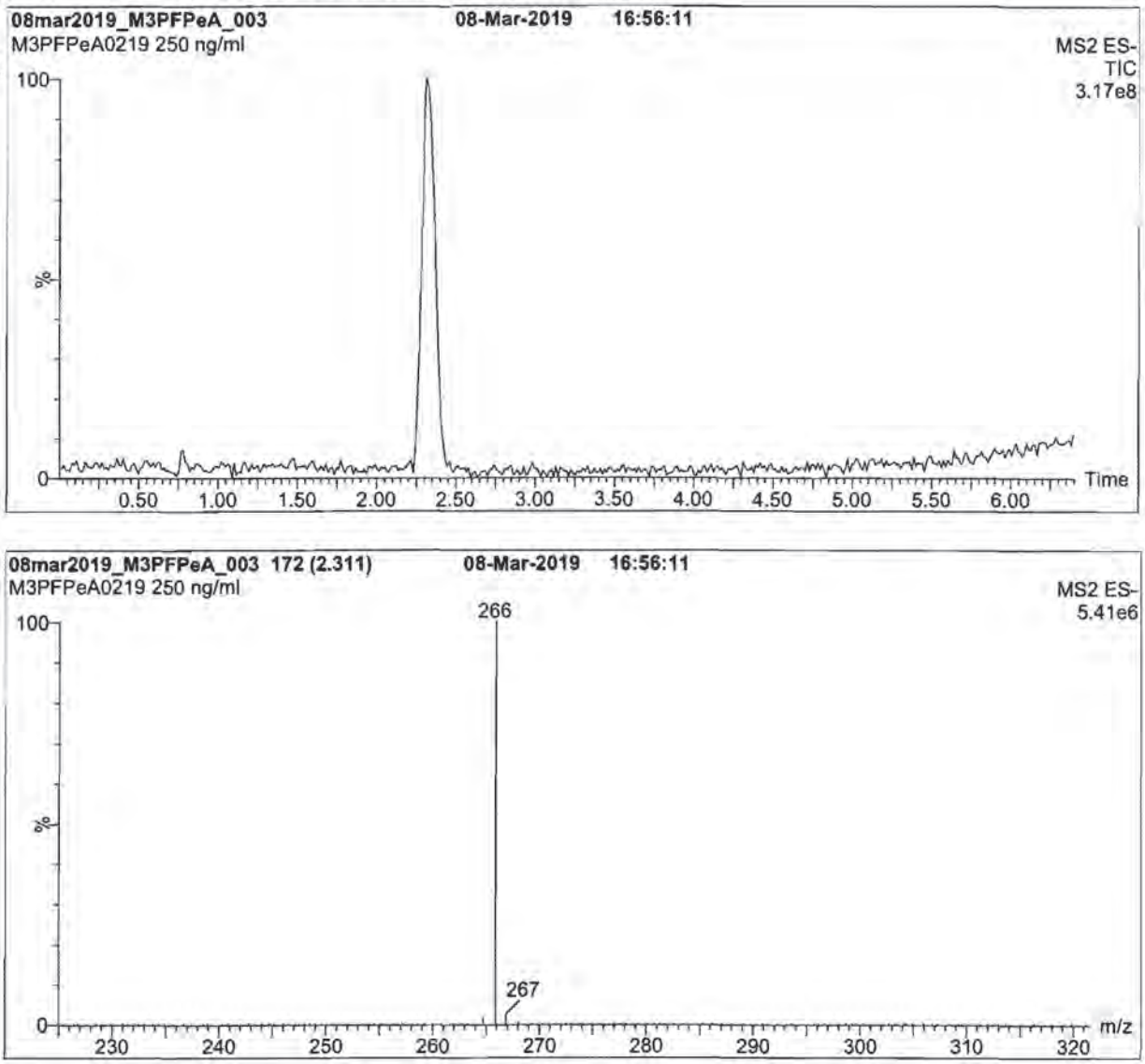
Collision Gas (mbar) = 2.84e-3
Collision Energy (eV) = 8

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFPeA0219 (4 of 4)
rev0

19L0612

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



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFPeA0219 (3 of 4)
rev0

19L0612

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 $x_1, x_2,...x_n$ on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly 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:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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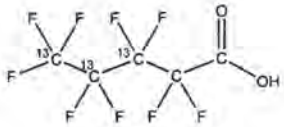
19L0612

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M3PFPeA	**LOT NUMBER:**	M3PFPeA0219
COMPOUND:	Perfluoro-n-[3,4,5-$^{13}C_3$]pentanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_2HF_9O_2$	**MOLECULAR WEIGHT:**	267.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($3,4,5$-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	03/08/2019		
EXPIRY DATE: (mm/dd/yyyy)	03/08/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

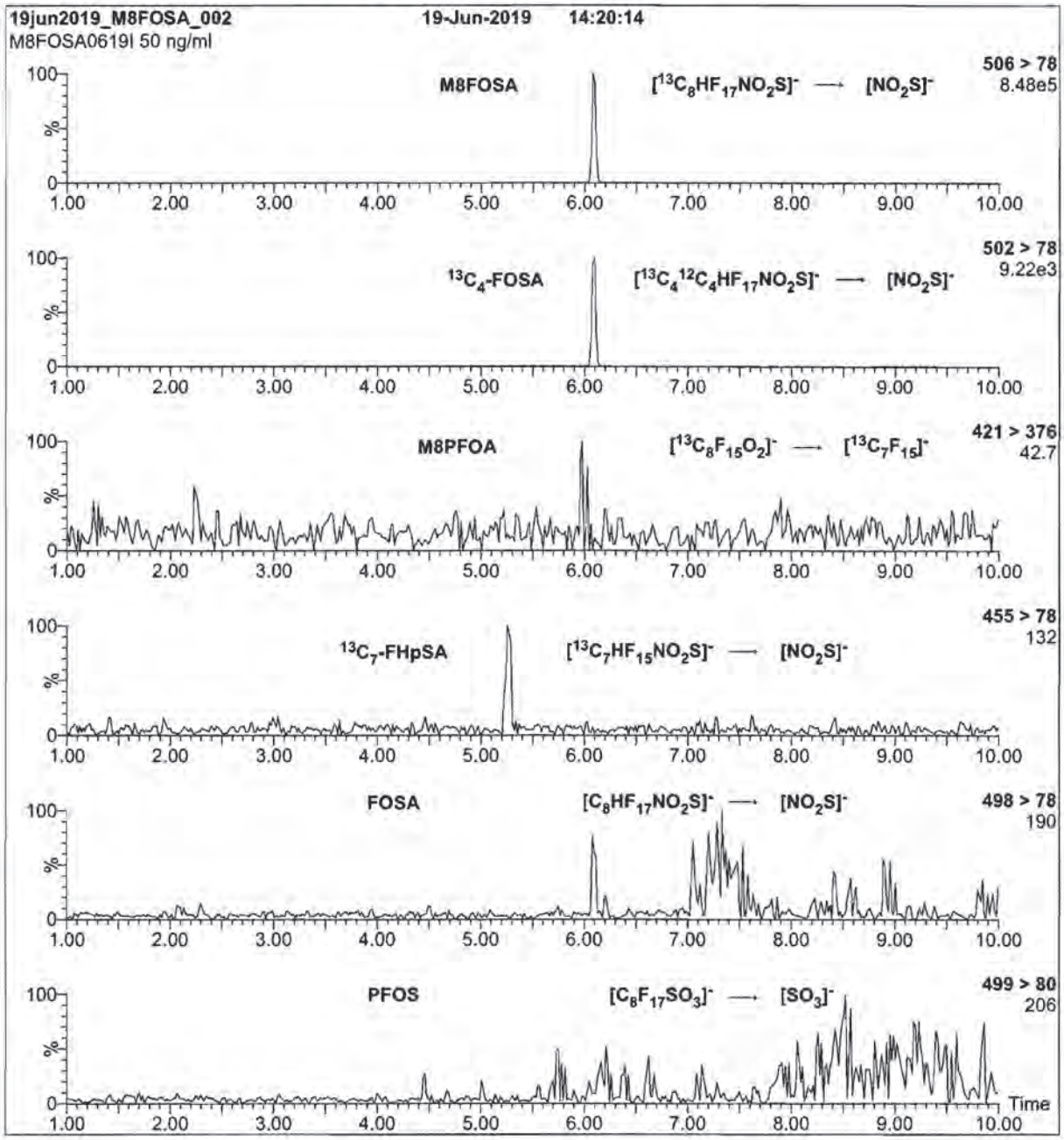
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/19/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0613

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



Conditions for Figure 2:

Injection: On-column (M8FOSA-I)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

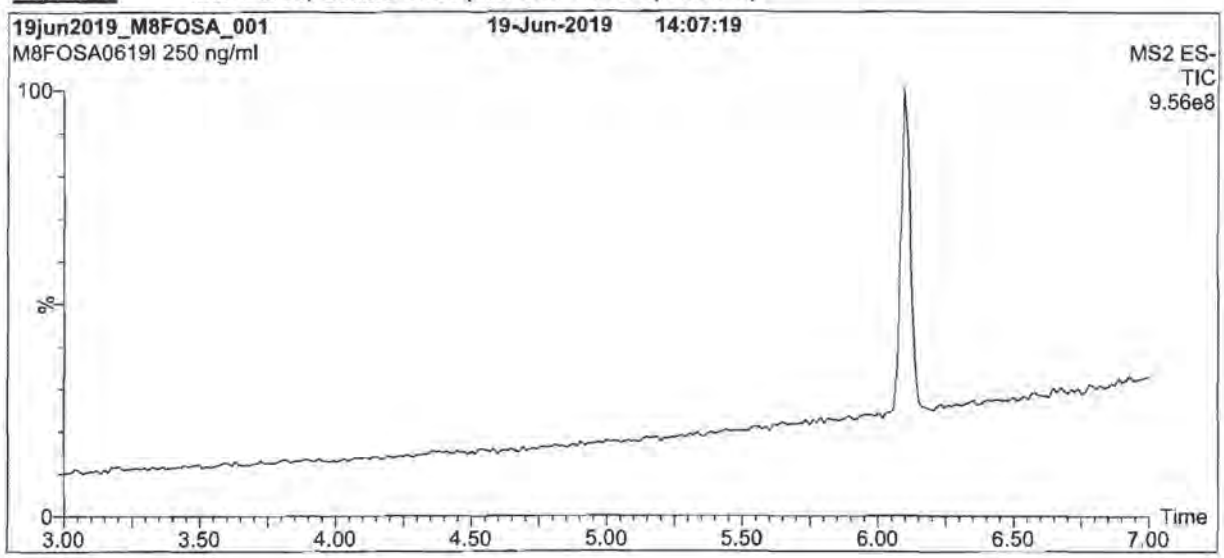
Collision Gas (mbar) = 2.94e-3
Collision Energy (eV) = 30

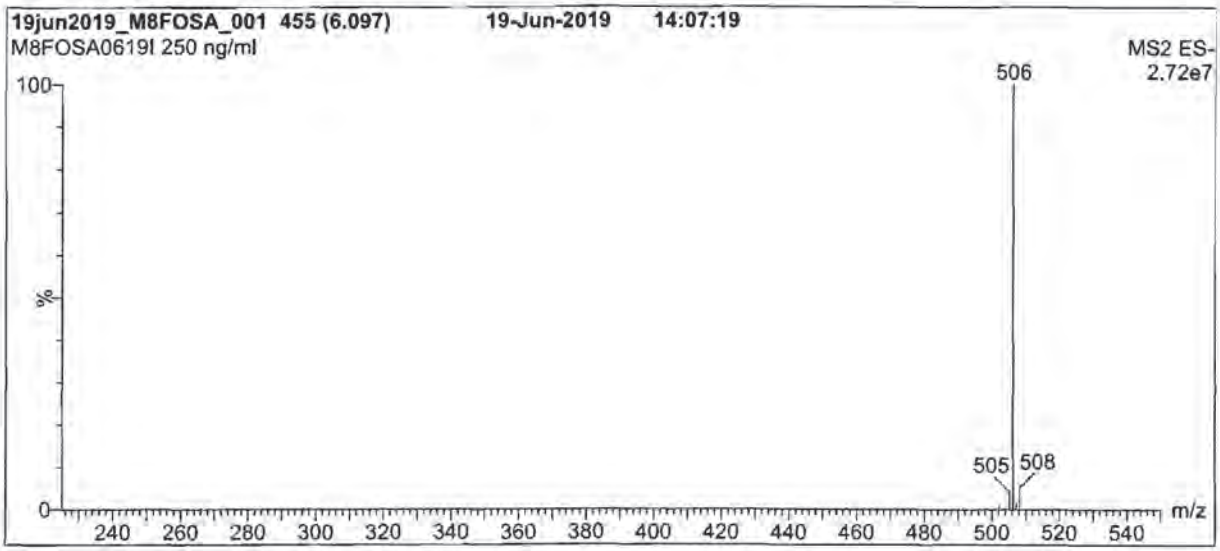
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

M8FOSA0619I (4 of 4)
rev0

19L0613

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M8FOSA0619I (3 of 4)
rev0

19L0613

INTENDED USE:

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HANDLING:

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

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HOMOGENEITY:

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

UNCERTAINTY:

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

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly 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:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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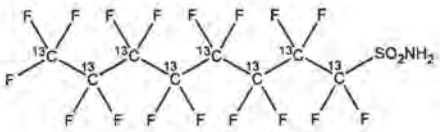
19L0613

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M8FOSA-I	**LOT NUMBER:**	M8FOSA0619I
COMPOUND:	Perfluoro-1-[$^{13}C_8$]octanesulfonamide		
STRUCTURE:		**CAS #:**	1365803-60-6



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	06/19/2019		
EXPIRY DATE: (mm/dd/yyyy)	06/19/2024		
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 ~ 1.2% of perfluoro-1-[$^{13}C_4$]octanesulfonamide and ~ 0.02% of perfluoro-1-[$^{13}C_7$]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 06/21/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

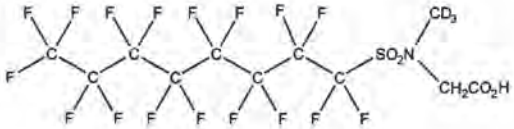
19L0614

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0719
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 1400690-70-1



MOLECULAR FORMULA: $C_{11}D_3H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 574.23
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy) 07/24/2019
EXPIRY DATE: (mm/dd/yyyy) 07/24/2024
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:** 07/26/2019 (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

19LC06H

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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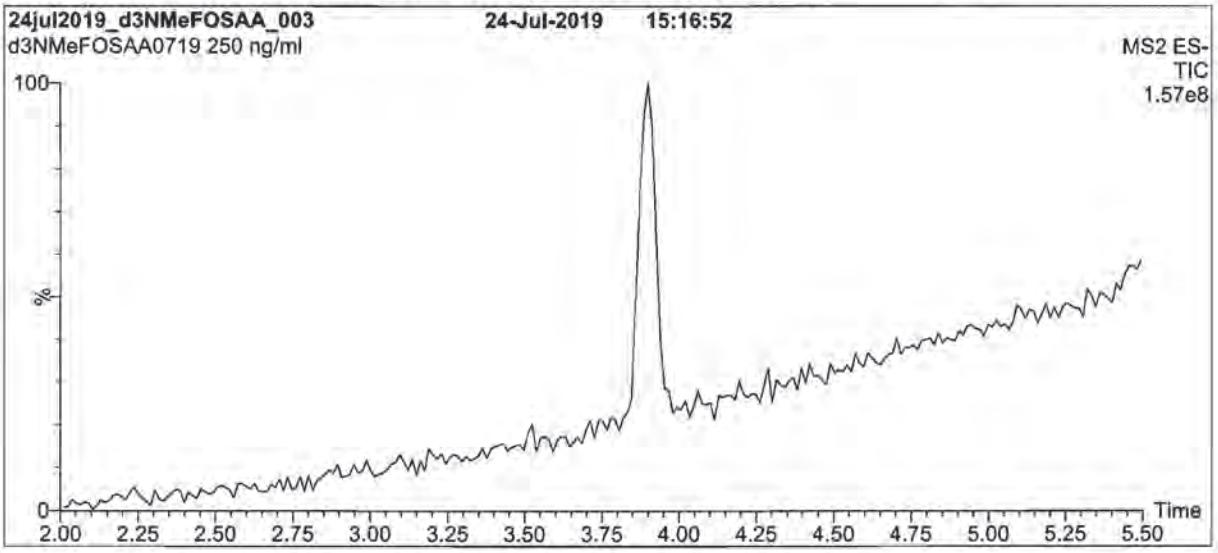
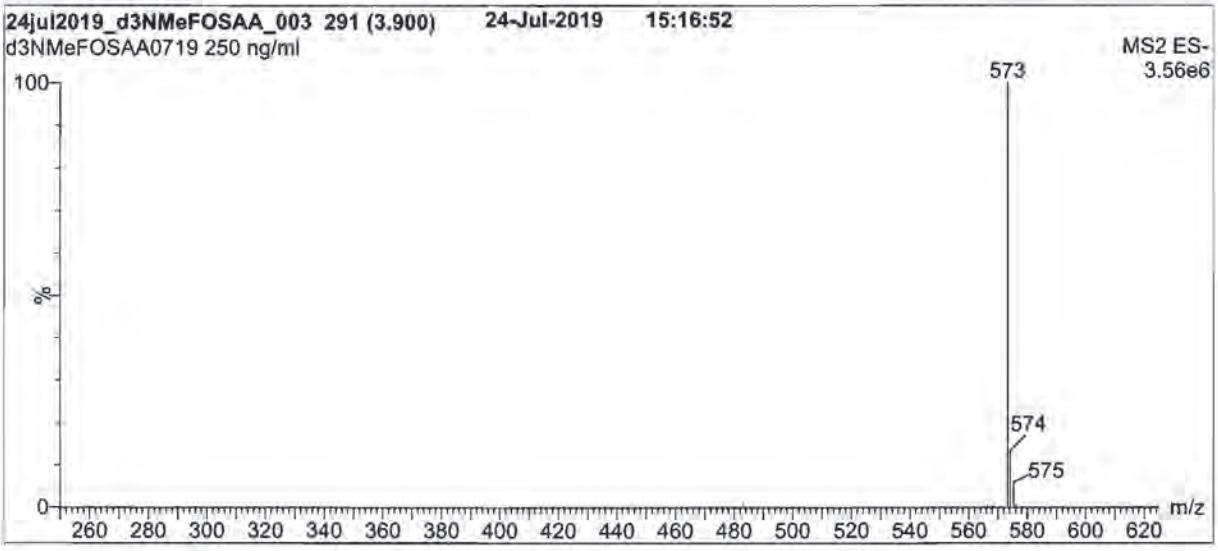
19L0614

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

d3NMeFOSAA0719 (3 of 4)
rev0

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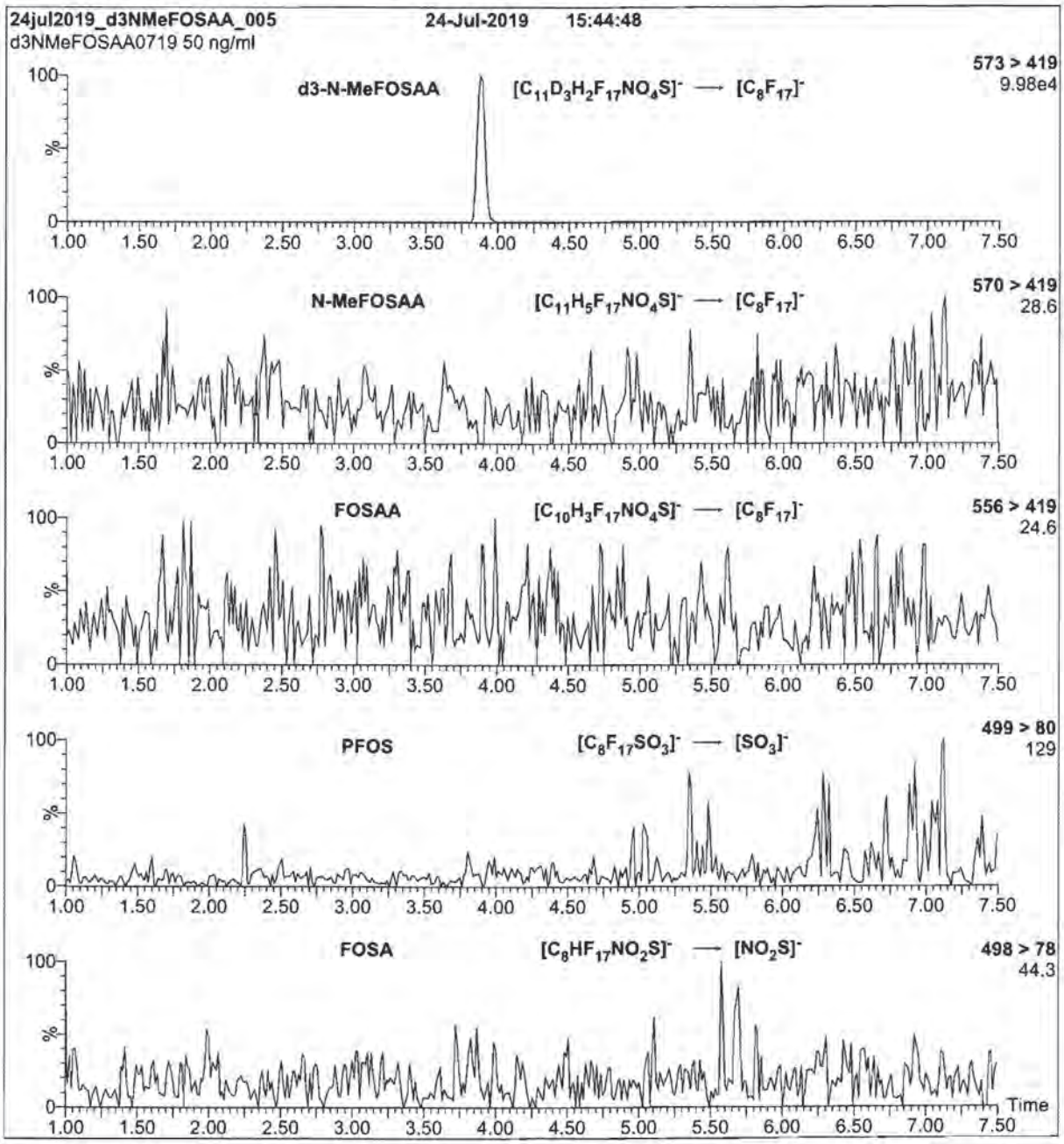
Figure 2: **d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (d3-N-MeFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.33e-3
Collision Energy (eV) = 18

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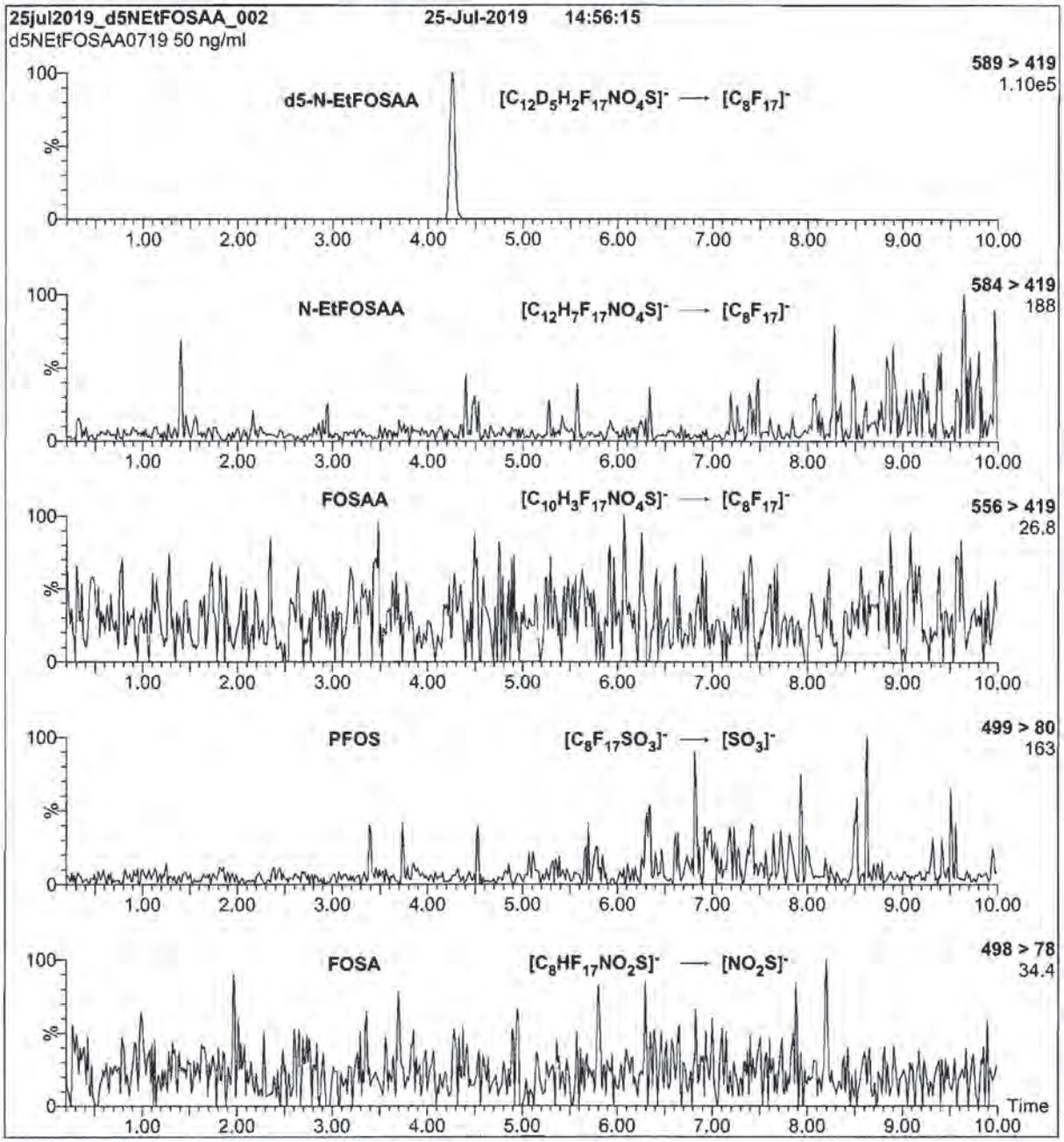
Revision#:6, Revised 2018-08-14

d3NMeFOSAA0719 (4 of 4)
rev0

19L0615

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



Conditions for Figure 2:

Injection: On-column (d5-N-EtFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

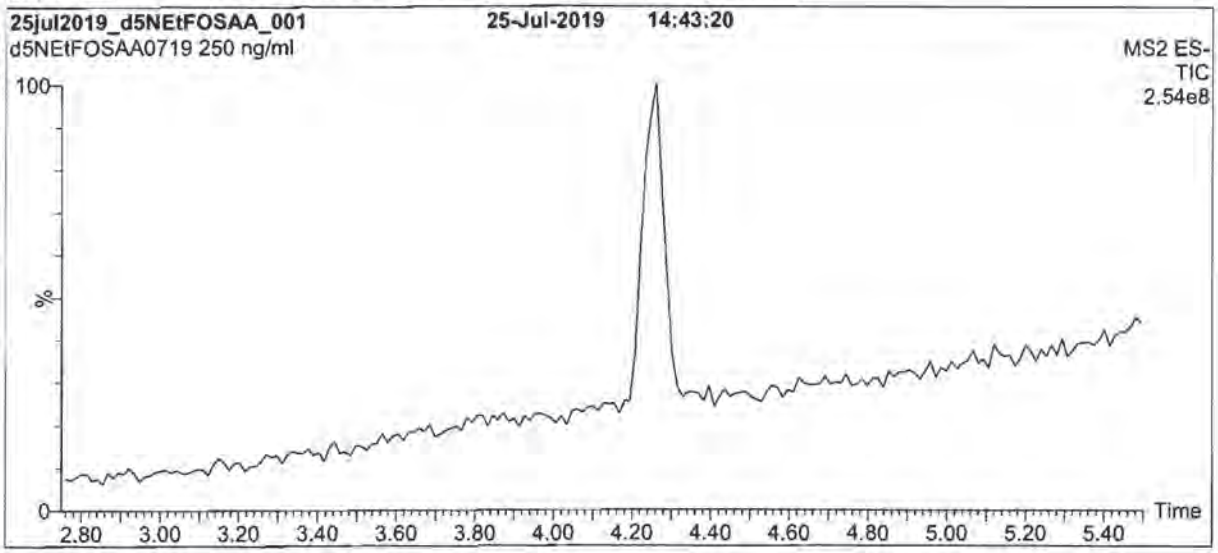
Collision Gas (mbar) = 3.29e-3
Collision Energy (eV) = 18

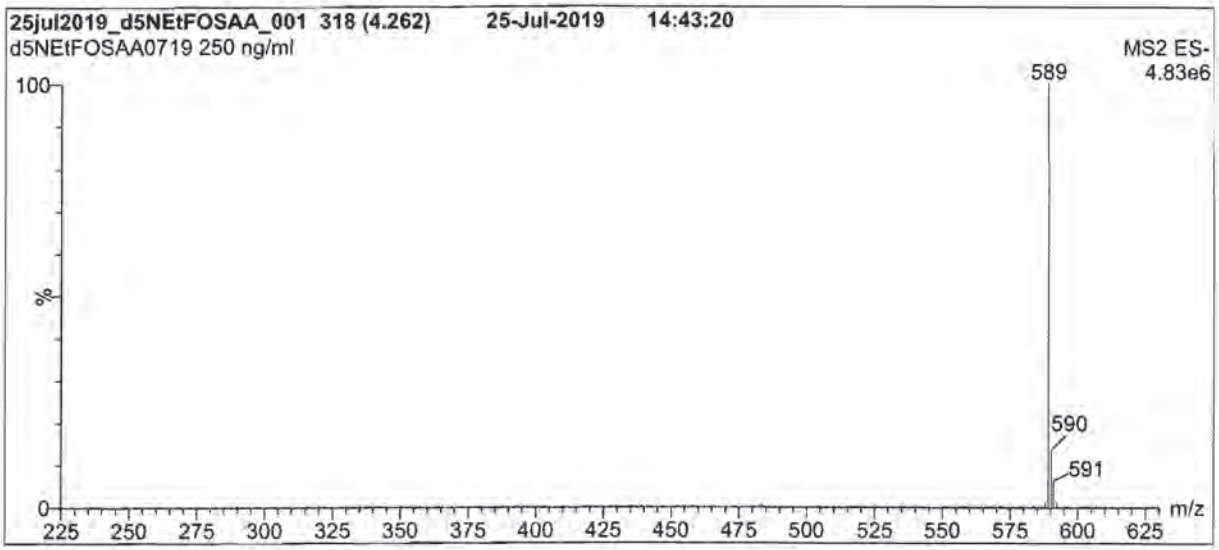
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

d5NEtFOSAA0719 (4 of 4)
rev0

19L0615

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





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Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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d5NEtFOSAA0719 (3 of 4)
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19L0615

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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rev0

19L0615

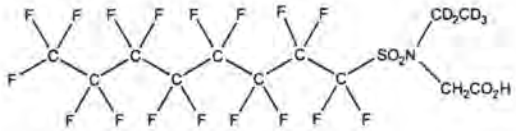
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0719

COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.26
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	07/25/2019		
EXPIRY DATE: (mm/dd/yyyy)	07/25/2024		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/26/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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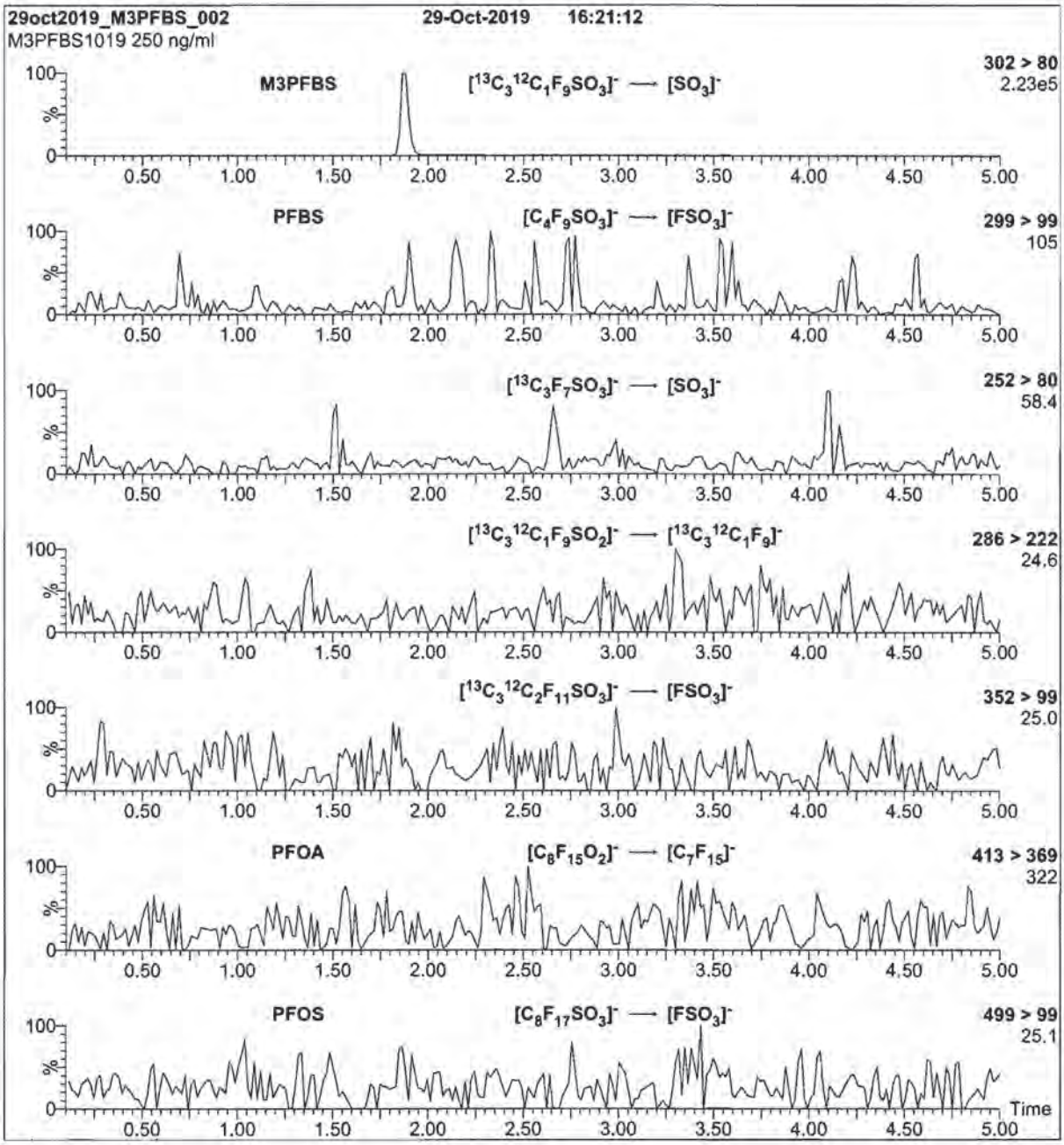
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0616

Figure 2: **M3PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M3PFBS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

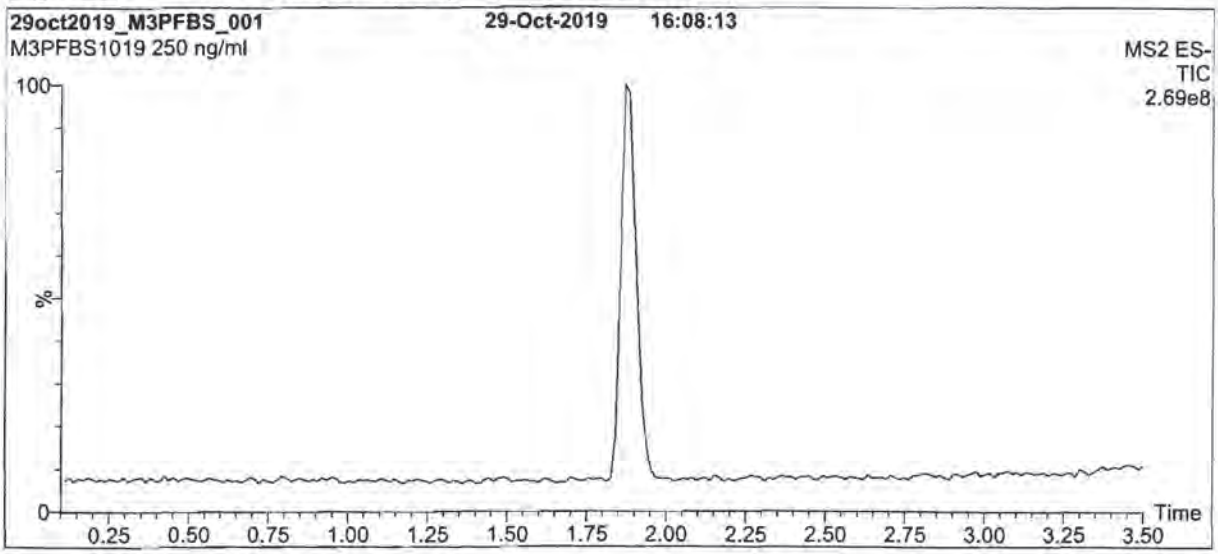
Collision Gas (mbar) = 3.57e-3
Collision Energy (eV) = 30

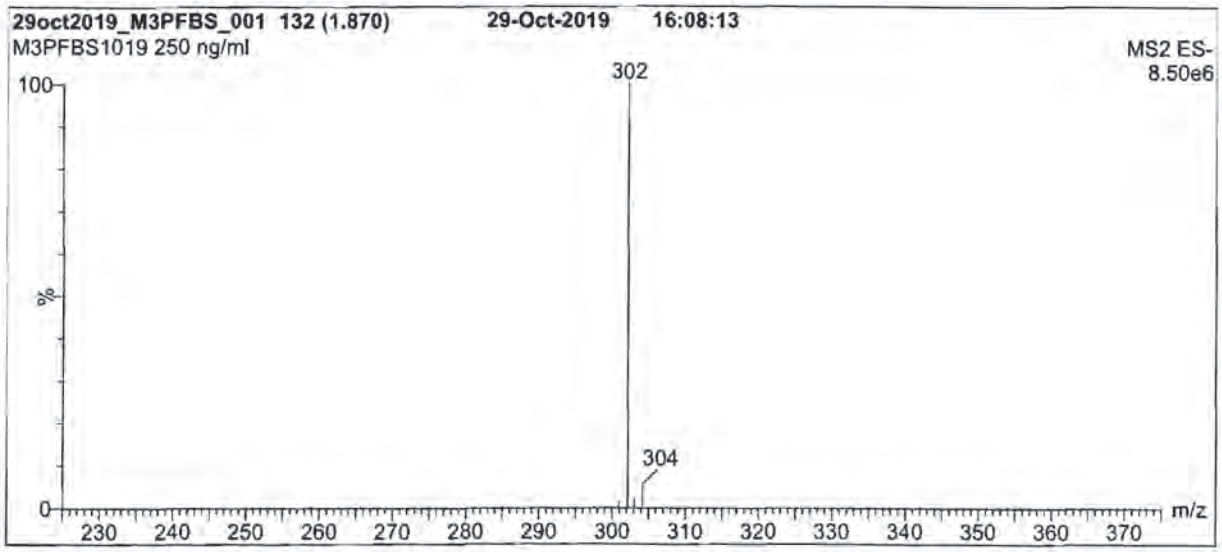
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFBS1019 (4 of 4)
rev0

191L0616

Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
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Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFBS1019 (3 of 4)
rev0

19L0616

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0616

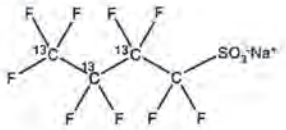
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS1019

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CF_9SO_3Na$	**MOLECULAR WEIGHT:**	325.06
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($2,3,4\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	10/29/2019		
EXPIRY DATE: (mm/dd/yyyy)	10/29/2024		
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 < 0.1% of perfluoro-1-butanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/08/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

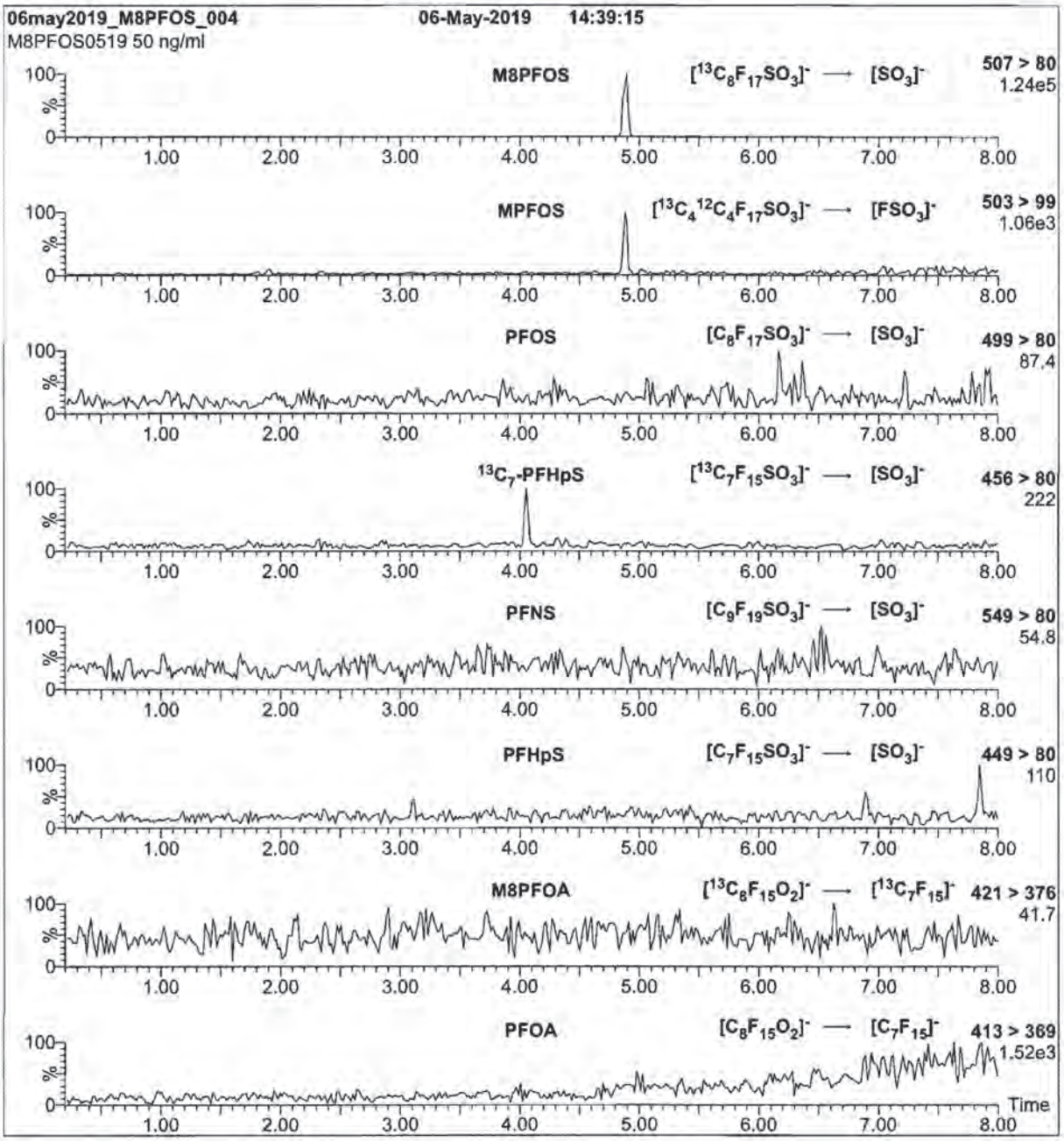
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFBS1019 (1 of 4)
rev0

19L0617

Figure 2: **M8PFOS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M8PFOS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

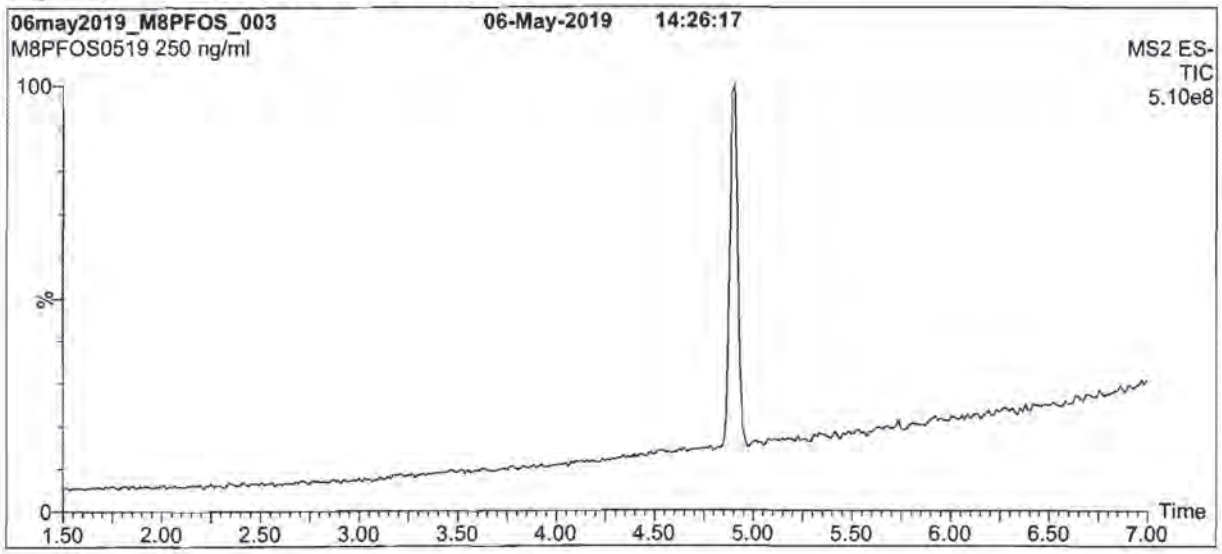
Collision Gas (mbar) = 2.85e-3
Collision Energy (eV) = 42

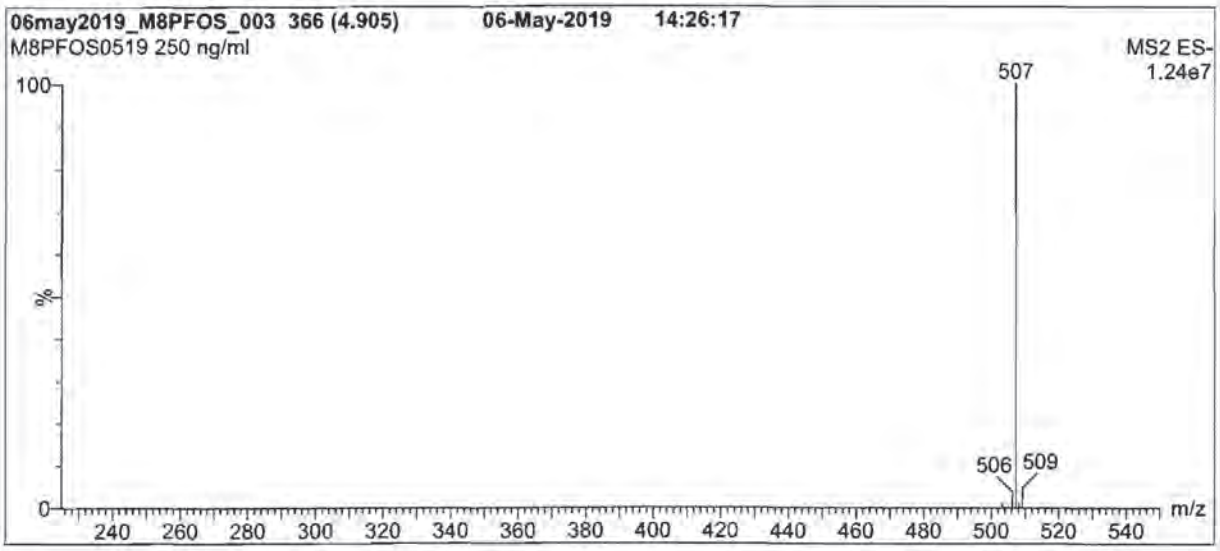
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M8PFOS0519 (4 of 4)
rev0

19L0617

Figure 1: **M8PFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M8PFOS0519 (3 of 4)
rev0

19L0617

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED Reference Material Producer

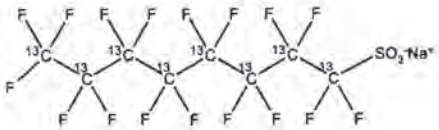
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0607

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M8PFOS	**LOT NUMBER:**	M8PFOS0519
COMPOUND:	Sodium perfluoro-1-[$^{13}C_8$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_6F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	530.05
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (M8PFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	05/06/2019		
EXPIRY DATE: (mm/dd/yyyy)	05/06/2024		
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 sodium perfluoro-1-[$^{13}C_7$]heptanesulfonate ($^{13}C_7$-PFHpS) and ~ 1.0% of sodium perfluoro-1-[$^{13}C_4$]octanesulfonate (MPFOS).

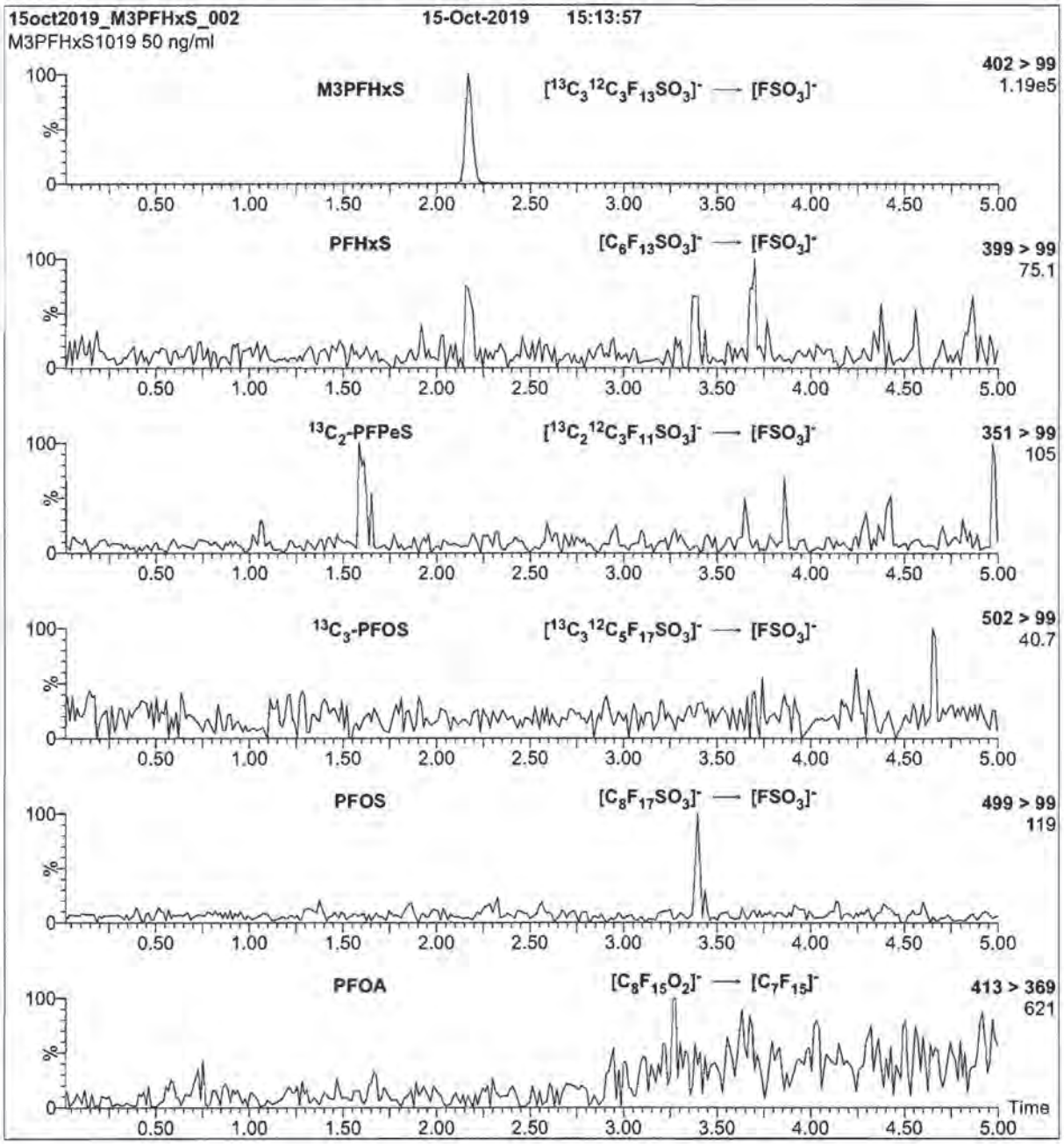
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/23/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0618

Figure 2: **M3PFHxS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M3PFHxS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

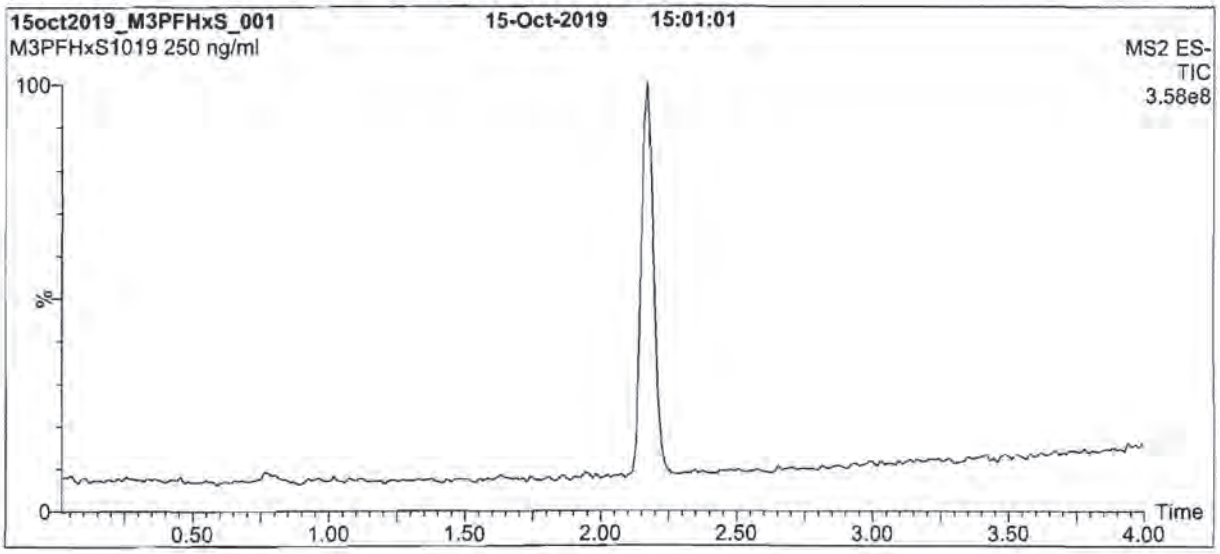
Collision Gas (mbar) = 3.91e-3
Collision Energy (eV) = 32

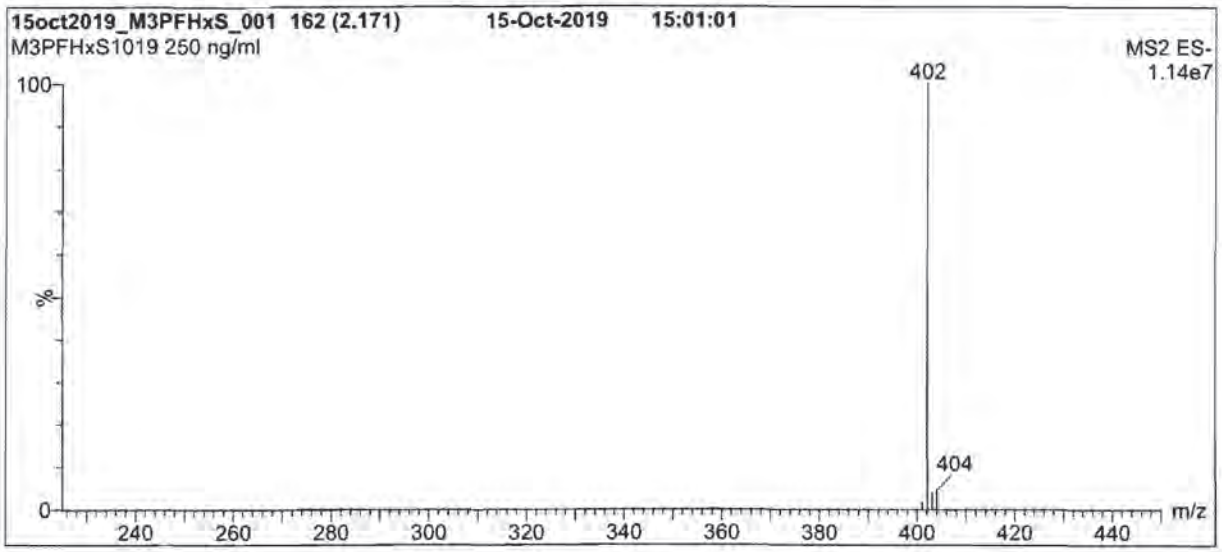
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFHxS1019 (4 of 4)
rev0

19LC0618

Figure 1: **M3PFHxS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFHxS1019 (3 of 4)
rev0

19L0618

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:

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

UNCERTAINTY:

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0e18

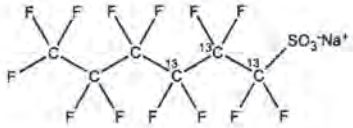
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFHxS **LOT NUMBER:** M3PFHxS1019

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	425.07
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (M3PFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3\text{-}^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	10/15/2019		
EXPIRY DATE: (mm/dd/yyyy)	10/15/2024		
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 ~ 0.1% perfluoro-1-[1,2-$^{13}C_2$]pentanesulfonate, ~ 0.1% perfluoro-1-octanesulfonate, and ~ 0.05% of perfluoro-1-hexanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/16/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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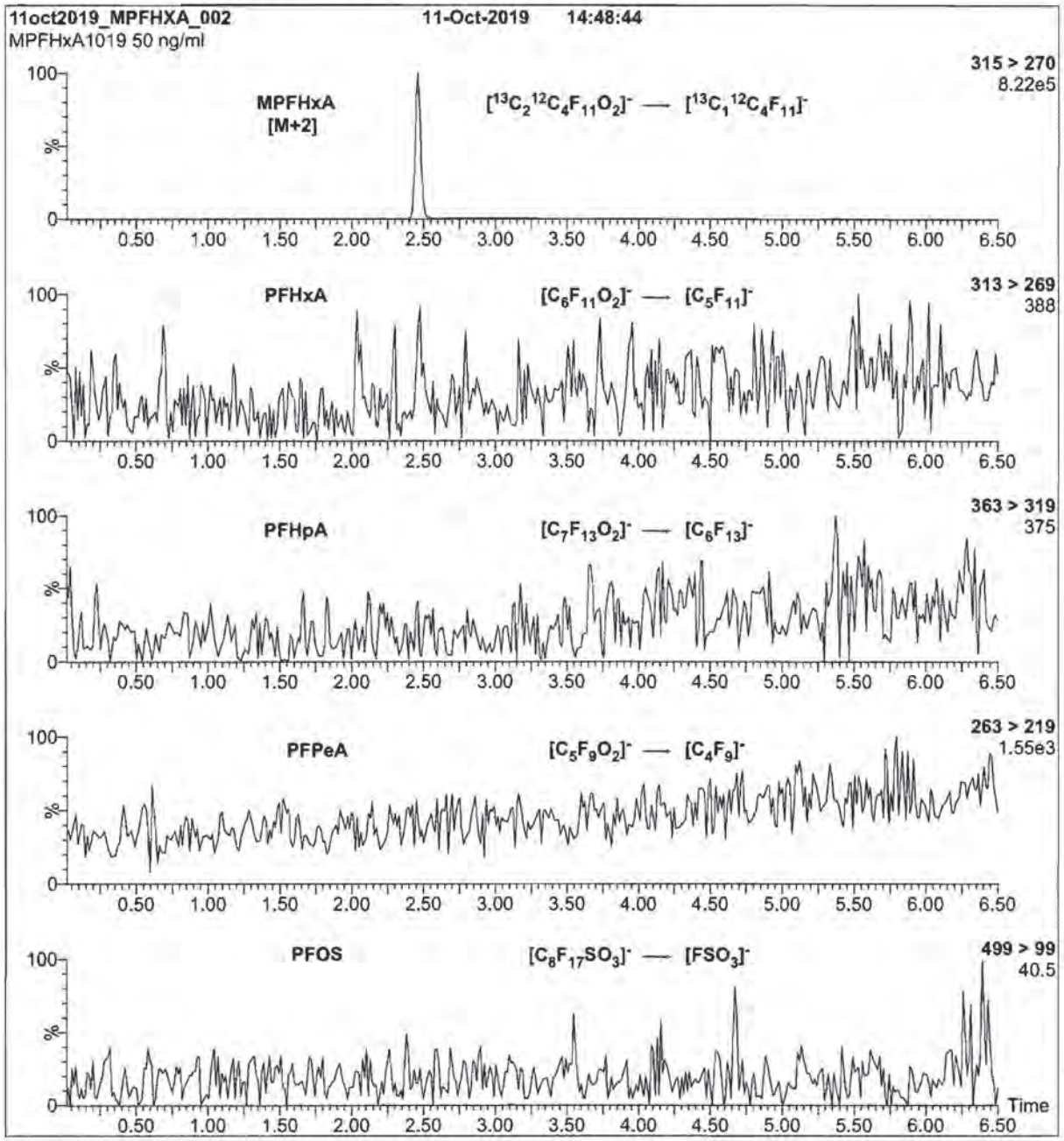
Revision#:6, Revised 2018-08-14

19L0619

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



Conditions for Figure 2:

Injection: On-column (MPFHxA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

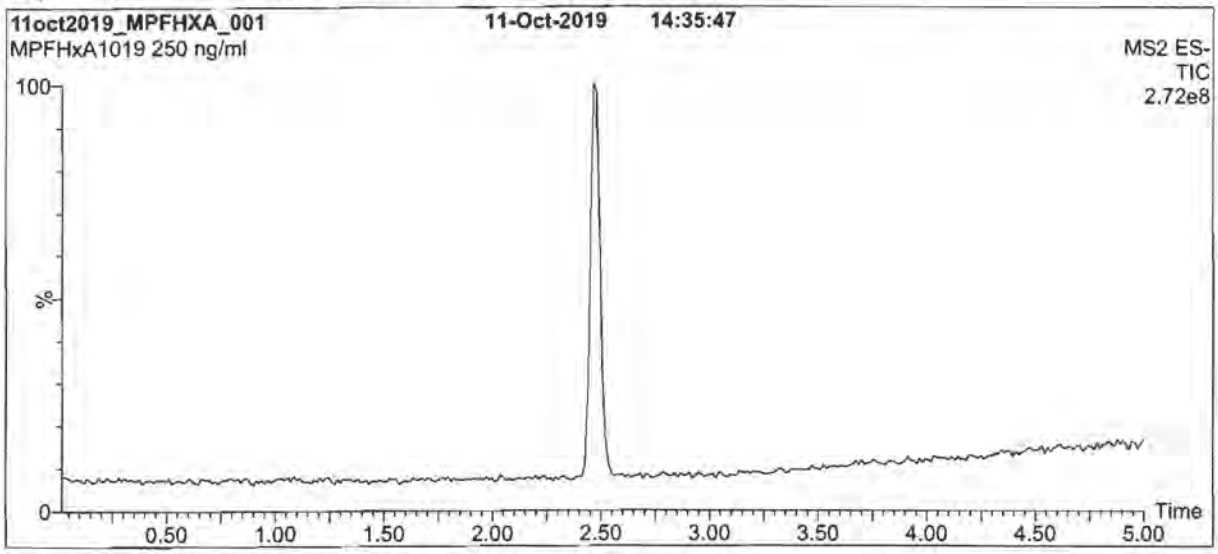
Collision Gas (mbar) = 3.80e-3
Collision Energy (eV) = 8

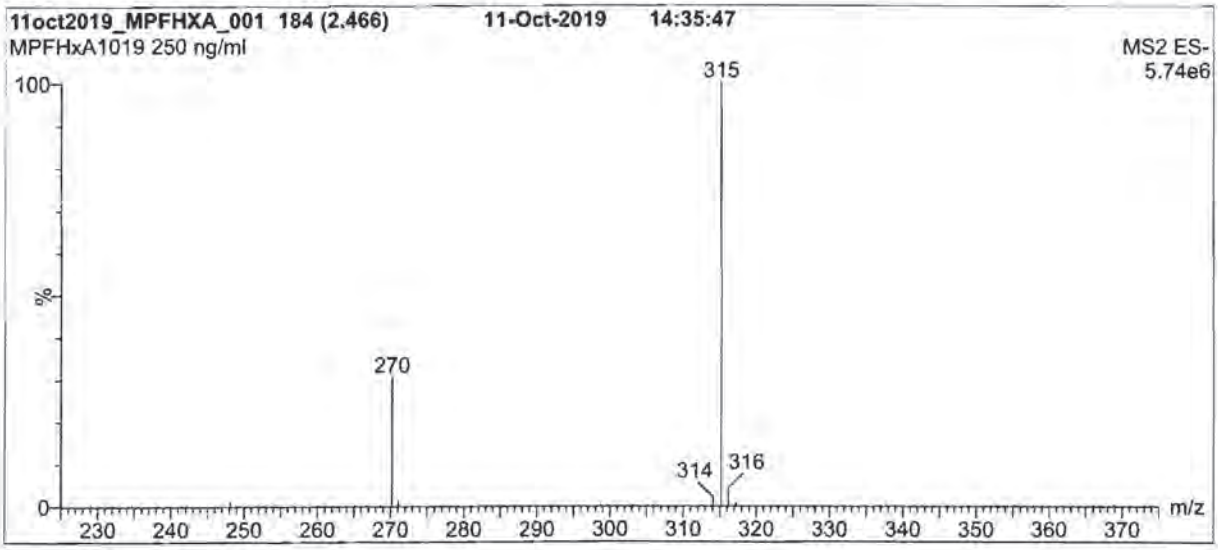
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFHxA1019 (4 of 4)
rev0

19L0619

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFHxA1019 (3 of 4)
rev0

19L0619

INTENDED USE:

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HANDLING:

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UNCERTAINTY:

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

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0619

WELLINGTON LABORATORIES

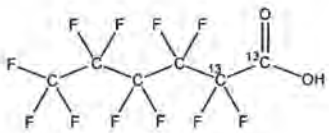
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFHxA1019

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/11/2019		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/22/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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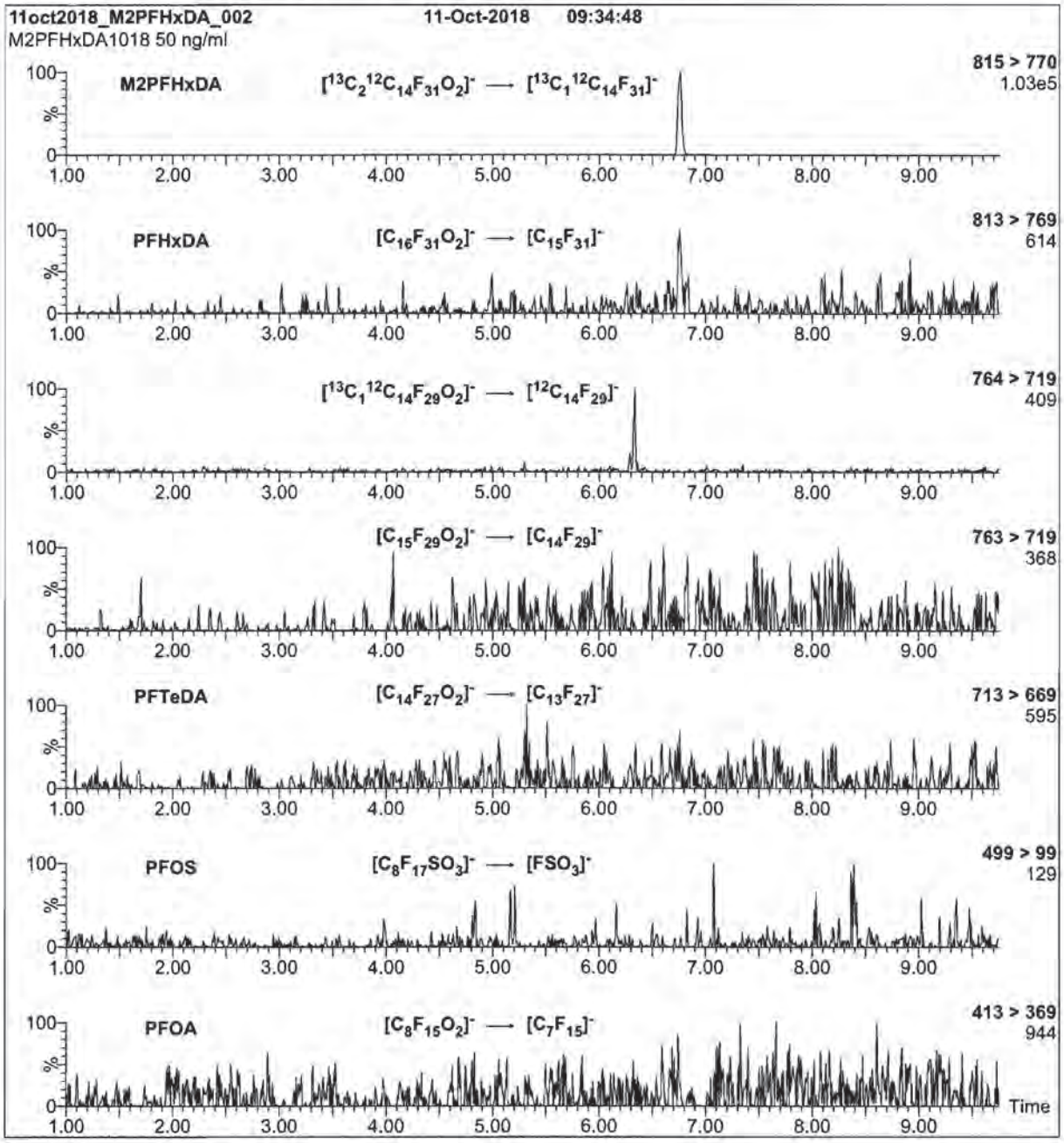
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0620

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



Conditions for Figure 2:

Injection: On-column (M2PFHxDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

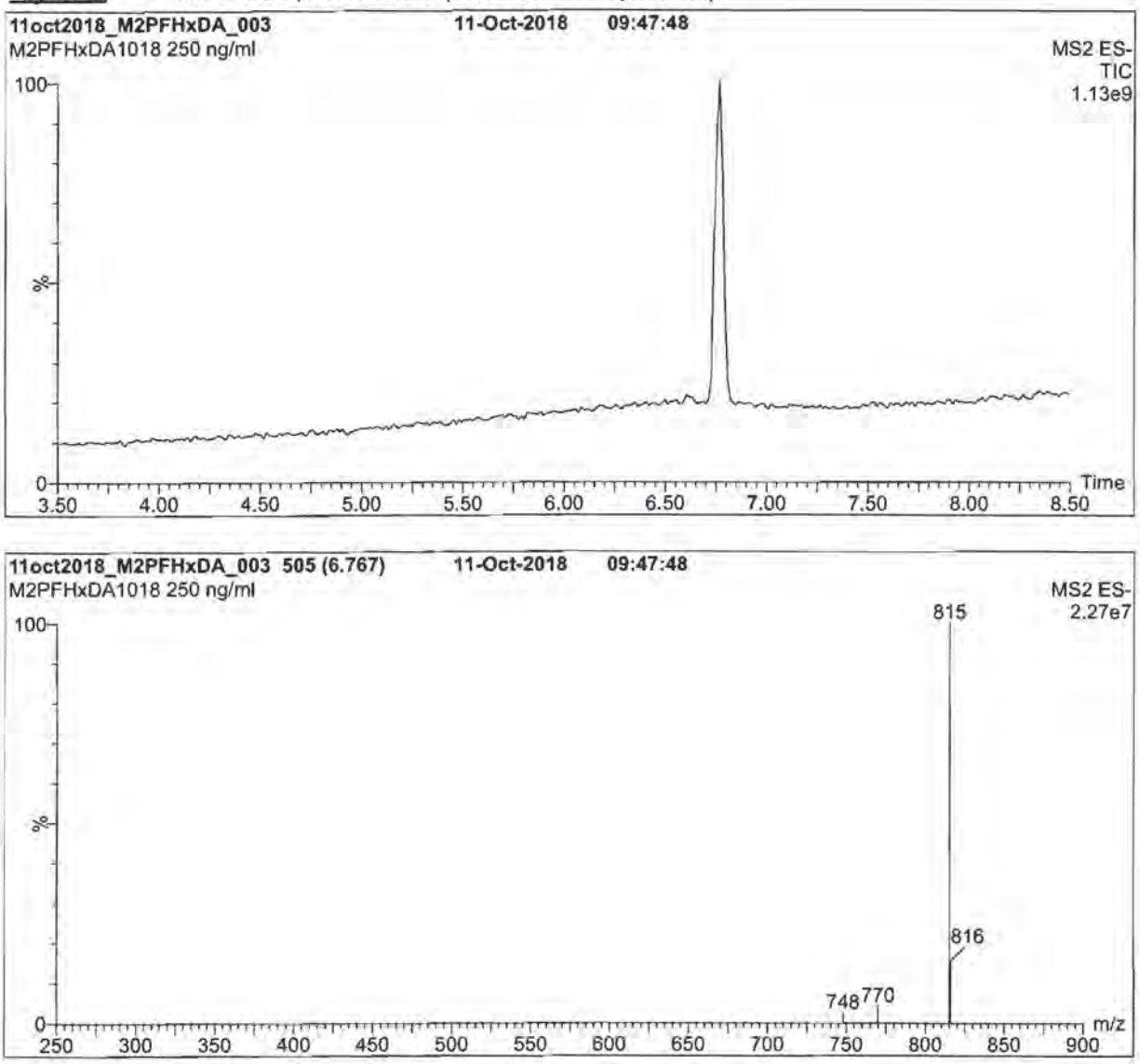
Collision Gas (mbar) = 2.97e-3
Collision Energy (eV) = 15

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M2PFHxDA1018 (4 of 4)
rev0

19L0620

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



Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M2PFHxDA1018 (3 of 4)
rev0

19L0620

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

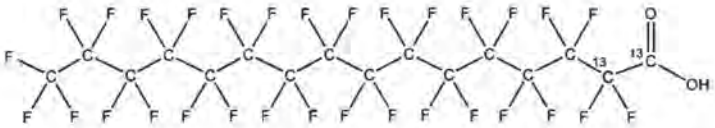
19L0620

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFHxDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid
LOT NUMBER: M2PFHxDA1018

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/11/2018		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2023		
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 and ~ 0.2% of perfluoro-n-[$^{13}C_1$]pentadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

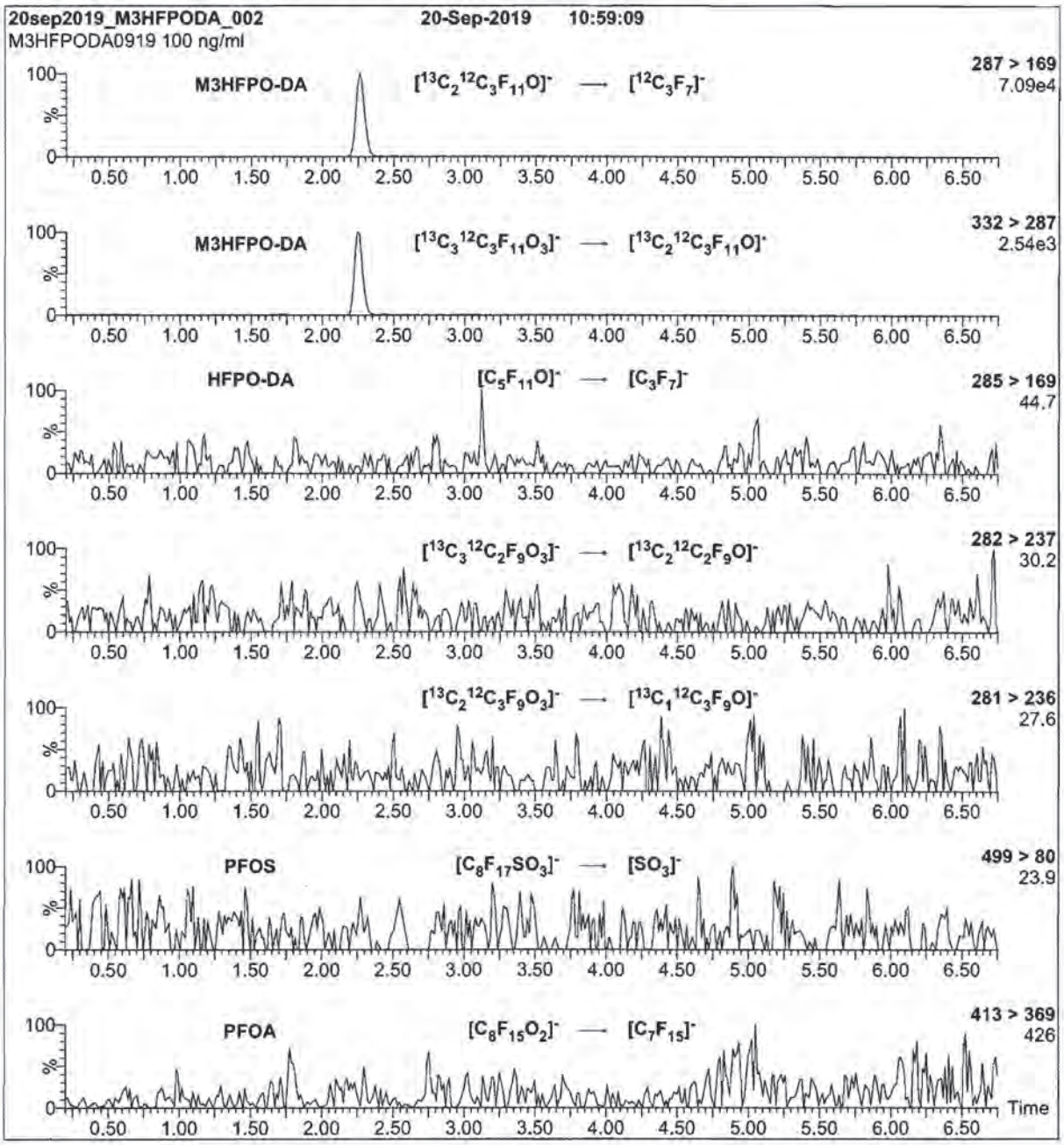
Certified By: _____ **Date:** 10/19/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0621

Figure 2: **M3HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M3HFPO-DA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

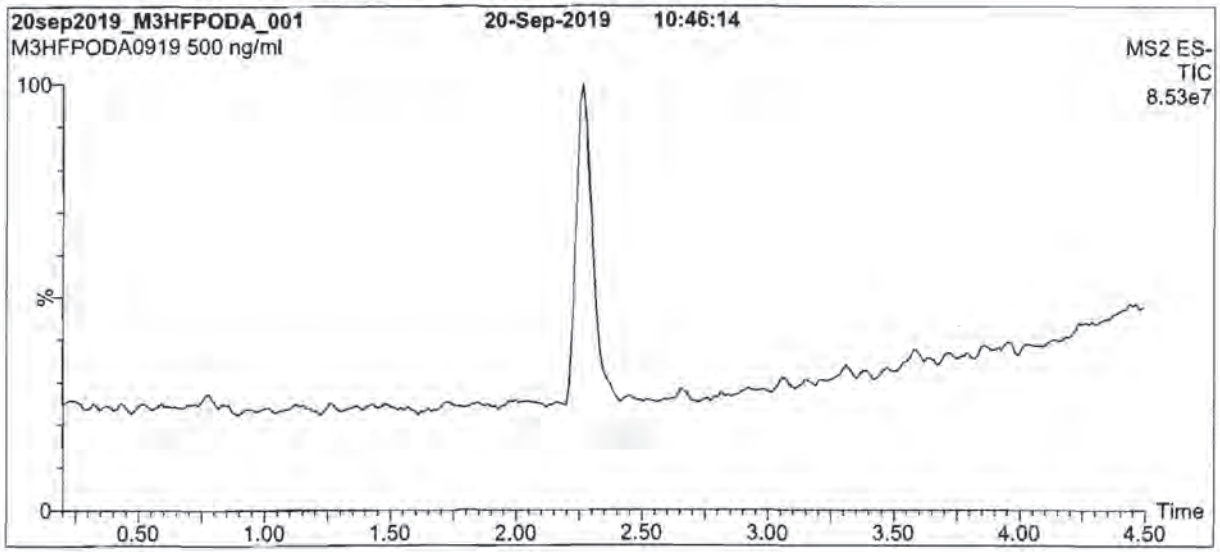
Collision Gas (mbar) = 3.60e-3
Collision Energy (eV) = 8

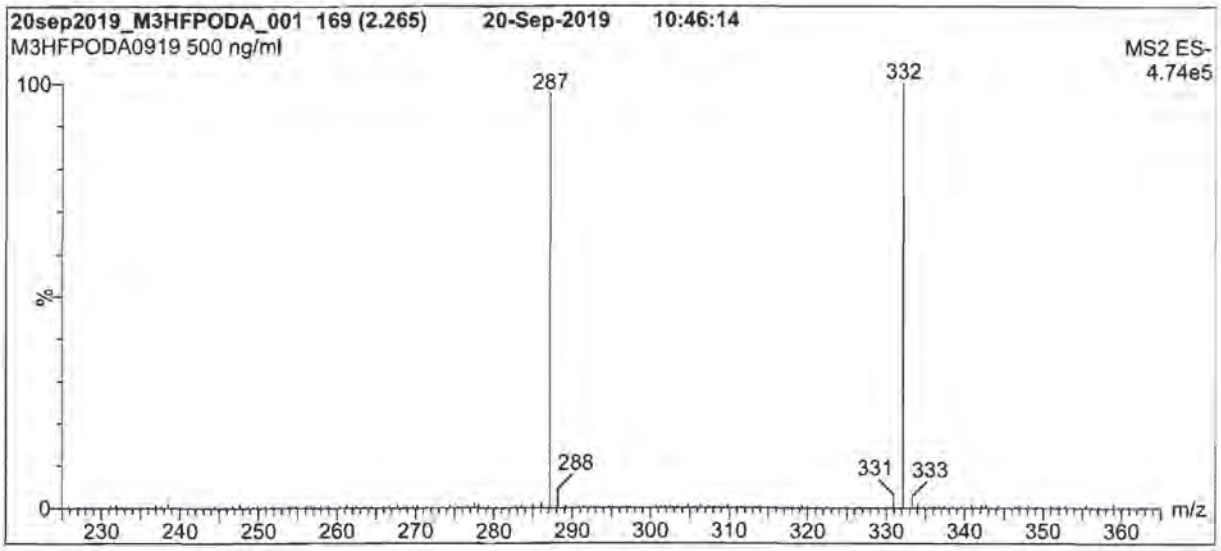
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3HFPODA0919 (4 of 4)
rev0

194621

Figure 1: **M3HFPO-DA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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MS: **Waters Xevo TQ-S micro MS**

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

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Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Desolvation Temperature (°C) = 325
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3HFPODA0919 (3 of 4)
rev0

19L0621

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0621

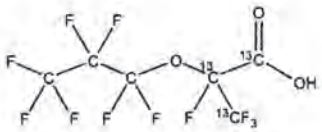
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3HFPO-DA **LOT NUMBER:** M3HFPODA0919

COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-$^{13}C_3$-propanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3HF_{11}O_3$	**MOLECULAR WEIGHT:**	333.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	09/20/2019		
EXPIRY DATE: (mm/dd/yyyy)	09/20/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.9% of the linear M3HFPO-DA isomer.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/30/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

Analytical Standard Record

Vista Analytical Laboratory

20A0803

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
19L0635	PFDoA	06-Dec-19	** Vendor **	23-Jan-24	0.4
19L0636	PFBA	06-Dec-19	** Vendor **	10-Jul-24	0.4
19L0637	PFPeA	06-Dec-19	** Vendor **	04-Sep-24	0.4
19L0638	PFHxA	06-Dec-19	** Vendor **	08-Aug-24	0.4
19L0639	PFDA	06-Dec-19	** Vendor **	01-May-24	0.4
19L0640	PFUdA	06-Dec-19	** Vendor **	19-Mar-24	0.4
19L0641	PFTrDA	06-Dec-19	** Vendor **	26-Sep-24	0.4
19L0642	PFHpA	06-Dec-19	** Vendor **	05-Mar-24	0.4
19L0643	PFOA	06-Dec-19	** Vendor **	06-Sep-24	0.4
19L0644	PFNA	06-Dec-19	** Vendor **	08-Jul-24	0.4
19L0645	PFTeDA	06-Dec-19	** Vendor **	11-Mar-24	0.4
19L0646	PFHxDA	06-Dec-19	** Vendor **	03-Nov-24	0.4
19L0647	PFODA	06-Dec-19	** Vendor **	02-May-24	0.4
19L0648	L-PFBS	06-Dec-19	** Vendor **	10-Jul-24	0.454
19L0649	L-PFPeS	06-Dec-19	** Vendor **	08-Jul-24	0.428
19L0650	L-PFHpS	06-Dec-19	** Vendor **	16-Aug-24	0.42
19L0651	L-PFNS	06-Dec-19	** Vendor **	06-Aug-24	0.418
19L0652	L-PFDS	06-Dec-19	** Vendor **	04-Apr-24	0.415
19L0653	br-PFHxSK	06-Dec-19	** Vendor **	02-Oct-23	0.44
19L0654	br-PFOSK anion	06-Dec-19	** Vendor **	07-Jun-24	0.431
19L0655	4:2 FTS	06-Dec-19	** Vendor **	08-May-24	0.43
19L0656	6:2FTS	06-Dec-19	** Vendor **	09-Sep-24	0.422
19L0657	8:2FTS	06-Dec-19	** Vendor **	11-Sep-24	0.418
19L0658	FOSA-I	06-Dec-19	** Vendor **	12-Sep-24	0.4
19L0659	br-NMeFOSAA	06-Dec-19	** Vendor **	08-Jan-24	0.4
19L0660	br-NEtFOSAA	06-Dec-19	** Vendor **	20-Aug-24	0.4
19L0661	N-MeFOSA-M	06-Dec-19	** Vendor **	07-May-24	2
19L0662	N-EtFOSA-M	06-Dec-19	** Vendor **	07-May-24	2
19L0663	N-MeFOSE-M	06-Dec-19	** Vendor **	08-Apr-24	2
19L0664	N-EtFOSE-M	06-Dec-19	** Vendor **	08-Apr-24	2
19L0665	10:2FTS	06-Dec-19	** Vendor **	11-Jun-22	0.415
19L0666	HFPO-DA	06-Dec-19	** Vendor **	20-Sep-22	0.4
19L0667	11Cl-PF3OUdS	06-Dec-19	** Vendor **	23-Nov-24	0.425
19L0668	9Cl-PF3ONS	06-Dec-19	** Vendor **	30-Oct-24	0.43
19L0669	NaDONA	06-Dec-19	** Vendor **	15-Jul-24	0.425
19L0670	PFECHS	06-Dec-19	** Vendor **	04-Apr-24	0.435
19L0671	L-PFPrS	06-Dec-19	** Vendor **	14-Dec-24	0.438
19L1707	L-PFDoS	17-Dec-19	** Vendor **	06-Dec-23	0.415

Analytical Standard Record

Vista Analytical Laboratory

20A0803

Description:	PFC NS Stock	Expires:	07-Jan-21
Standard Type:	Analyte Spike	Prepared:	08-Jan-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	08-Jan-20 14:18 by BML

Analyte	CAS Number	Concentration	Units
L-PFHpA		1	ug/mL
L-PFOS		0.789	ug/mL
L-MeFOSA	31506-32-8	5	ug/mL
L-MeFOSAA	2355-31-9	0.76	ug/mL
L-MeFOSE	24448-09-7	5	ug/mL
L-PFBA		1	ug/mL
L-PFBS		1	ug/mL
L-PFDA		1	ug/mL
L-PFDoA		1	ug/mL
L-EtFOSAA	2991-50-6	0.776	ug/mL
L-PFDS		1	ug/mL
L-EtFOSA	4151-50-2	5	ug/mL
L-PFHpS		1	ug/mL
L-PFHxA		1	ug/mL
L-PFHxDA		1	ug/mL
L-PFHxS		0.812	ug/mL
L-PFNA		1	ug/mL
L-PFNS	68259-12-1	1	ug/mL
L-PFOA		1	ug/mL
10:2 FTS	120226-60-0	1	ug/mL
L-PFDoS		1	ug/mL
cis-PFECHS		0.668	ug/mL
11Cl-PF3OUdS	763051-92-9	1	ug/mL
4:2 FTS	757124-72-4	1	ug/mL
6:2 FTS	27619-97-2	1	ug/mL
8:2 FTS	39108-34-4	1	ug/mL
9Cl-PF3ONS	756426-58-1	1	ug/mL
ADONA	919005-14-4	1	ug/mL
Br-EtFOSAA		0.224	ug/mL
Br-MeFOSAA		0.24	ug/mL
L-EtFOSE	1691-99-2	5	ug/mL
Br-PFOS	2795-39-3	0.211	ug/mL
L-PFOSA		1	ug/mL
EtFOSA	4151-50-2	5	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

20A0803

Description:	PFC NS Stock	Expires:	07-Jan-21
Standard Type:	Analyte Spike	Prepared:	08-Jan-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	08-Jan-20 14:18 by BML

Analyte	CAS Number	Concentration	Units
EtFOSAA	2991-50-6	1	ug/mL
EtFOSE	1691-99-2	5	ug/mL
F-53B Total		2	ug/mL
HFPO-DA	13252-13-6	1	ug/mL
L-4:2 FTS	75124-72-4	1	ug/mL
L-6:2 FTS		1	ug/mL
L-8:2FTS		1	ug/mL
Br-PFHxS	3871-99-6	0.189	ug/mL
Total 6:2 FTS		1	ug/mL
L-PFODA		1	ug/mL
PFODA	16517-11-6	1	ug/mL
PFOS	1763-23-1	1	ug/mL
PFOSA	754-91-6	1	ug/mL
PFPeA	2706-90-3	1	ug/mL
PFPeS	2706-91-4	1	ug/mL
PFPrS	423-41-6	1	ug/mL
PFTeDA	376-06-7	1	ug/mL
PFNS	68259-12-1	1	ug/mL
PFUnA	2058-94-8	1	ug/mL
PFNA	375-95-1	1	ug/mL
Total EtFOSAA		1	ug/mL
Total MeFOSAA		1	ug/mL
Total PFDS		1	ug/mL
Total PFHpS		1	ug/mL
Total PFHxS		1	ug/mL
Total PFOA		1	ug/mL
Total PFOS		1	ug/mL
Total PFUnA		1	ug/mL
PFTrDA	72629-94-8	1	ug/mL
PFDA	335-76-2	1	ug/mL
L-PFPeA		1	ug/mL
L-PFPeS	2706-91-4	1	ug/mL
L-PFTeDA		1	ug/mL
L-PFTrDA		1	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

20A0803

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Standard Type:	Analyte Spike	Prepared:	08-Jan-20
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Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	08-Jan-20 14:18 by BML

Analyte	CAS Number	Concentration	Units
L-PFUnA		1	ug/mL
MeFOSA	31506-32-8	5	ug/mL
MeFOSAA	2355-31-9	1	ug/mL
MeFOSE	24448-09-7	5	ug/mL
PFOA	335-67-1	1	ug/mL
PFBS	375-73-5	1	ug/mL
trans-PFECHS		0.335	ug/mL
PFDoA	307-55-1	1	ug/mL
PFDS	335-77-3	1	ug/mL
PFecHS	646-83-3	1	ug/mL
PFHpA	375-85-9	1	ug/mL
PFHpS	375-92-8	1	ug/mL
PFHxA	307-24-4	1	ug/mL
PFHxDA	67905-19-5	1	ug/mL
PFHxS	355-46-4	1	ug/mL
PFBA	375-22-4	1	ug/mL

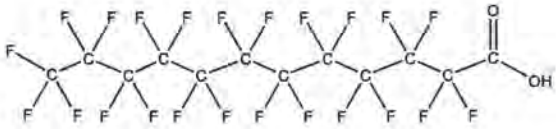
19L0635

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDoA
COMPOUND: Perfluoro-n-dodecanoic acid
LOT NUMBER: PFDoA0119

STRUCTURE:
CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
MOLECULAR WEIGHT: 614.10
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/23/2019
EXPIRY DATE: (mm/dd/yyyy) 01/23/2024
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 01/30/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0635

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

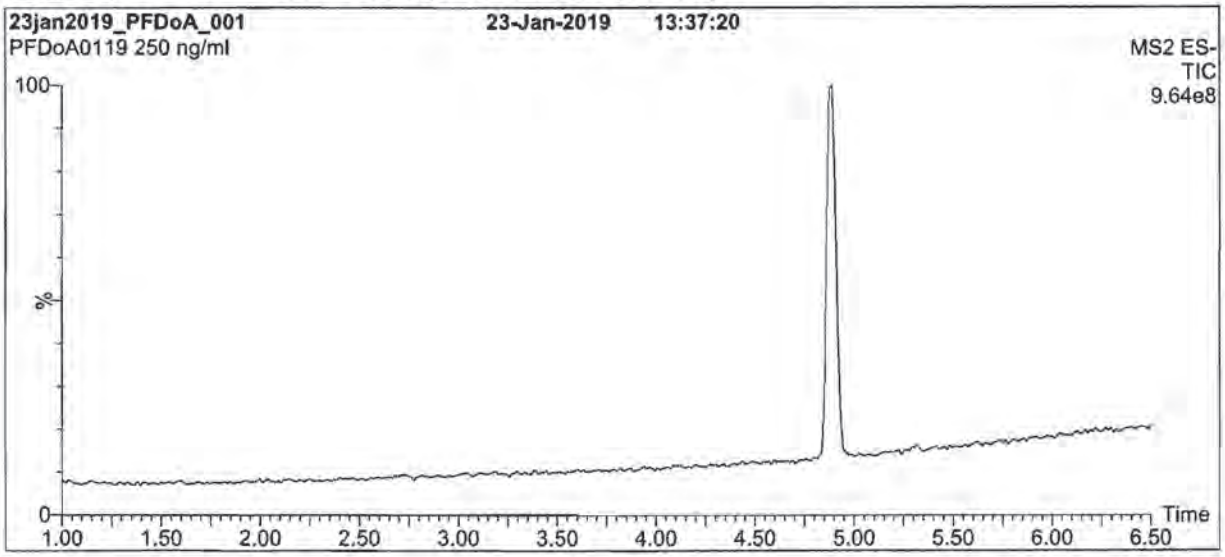
CALA Testing Accreditation No. A 1226

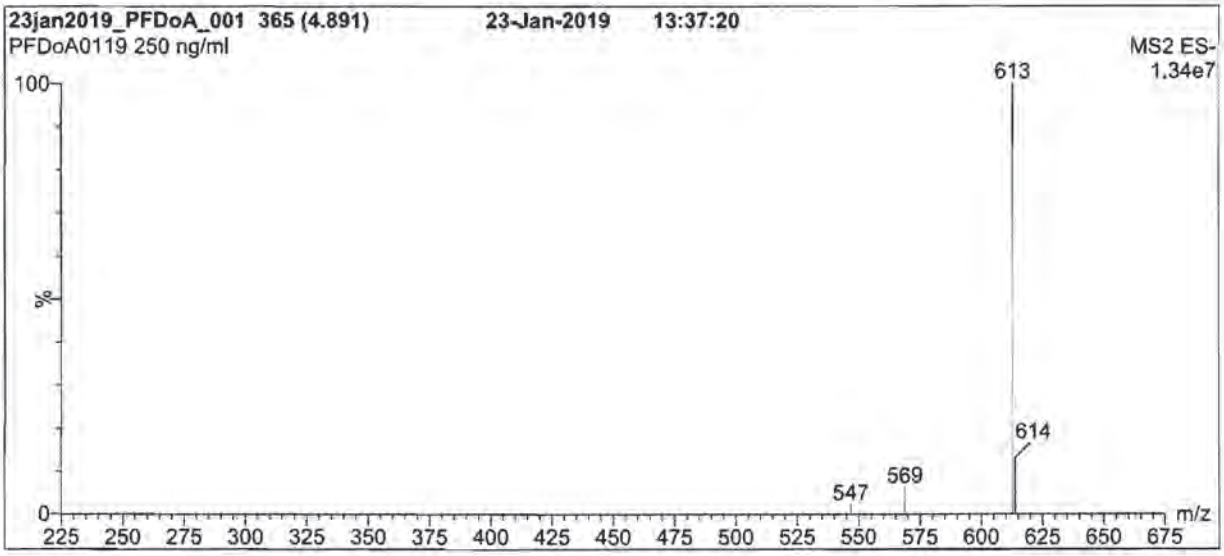
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

19L0635

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 500
Desolvation Gas Flow (l/hr) = 1000

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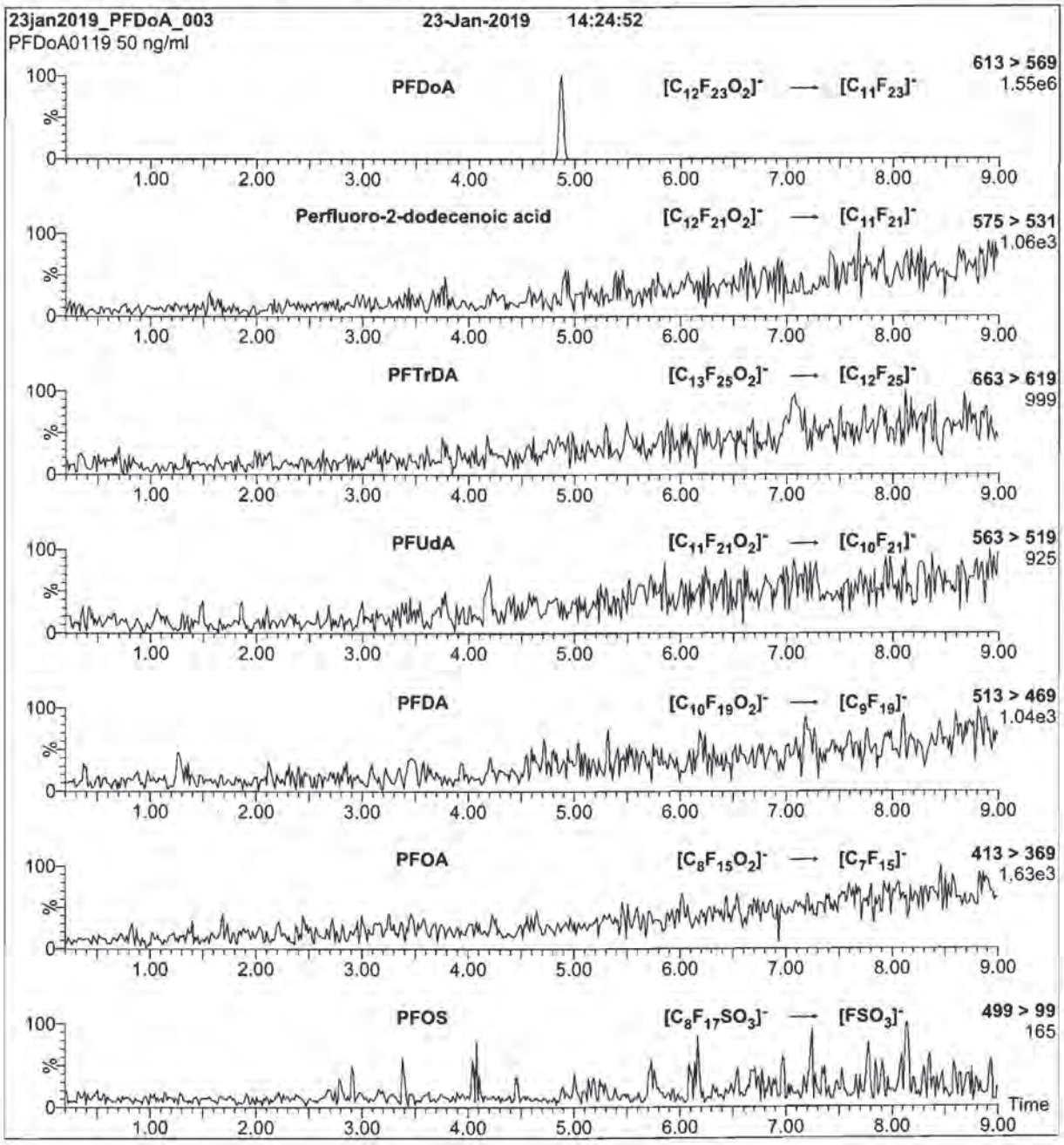
Figure 2: **PFDoA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFDoA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.72e-3
Collision Energy (eV) = 12

Form#:27, Issued 2004-11-10
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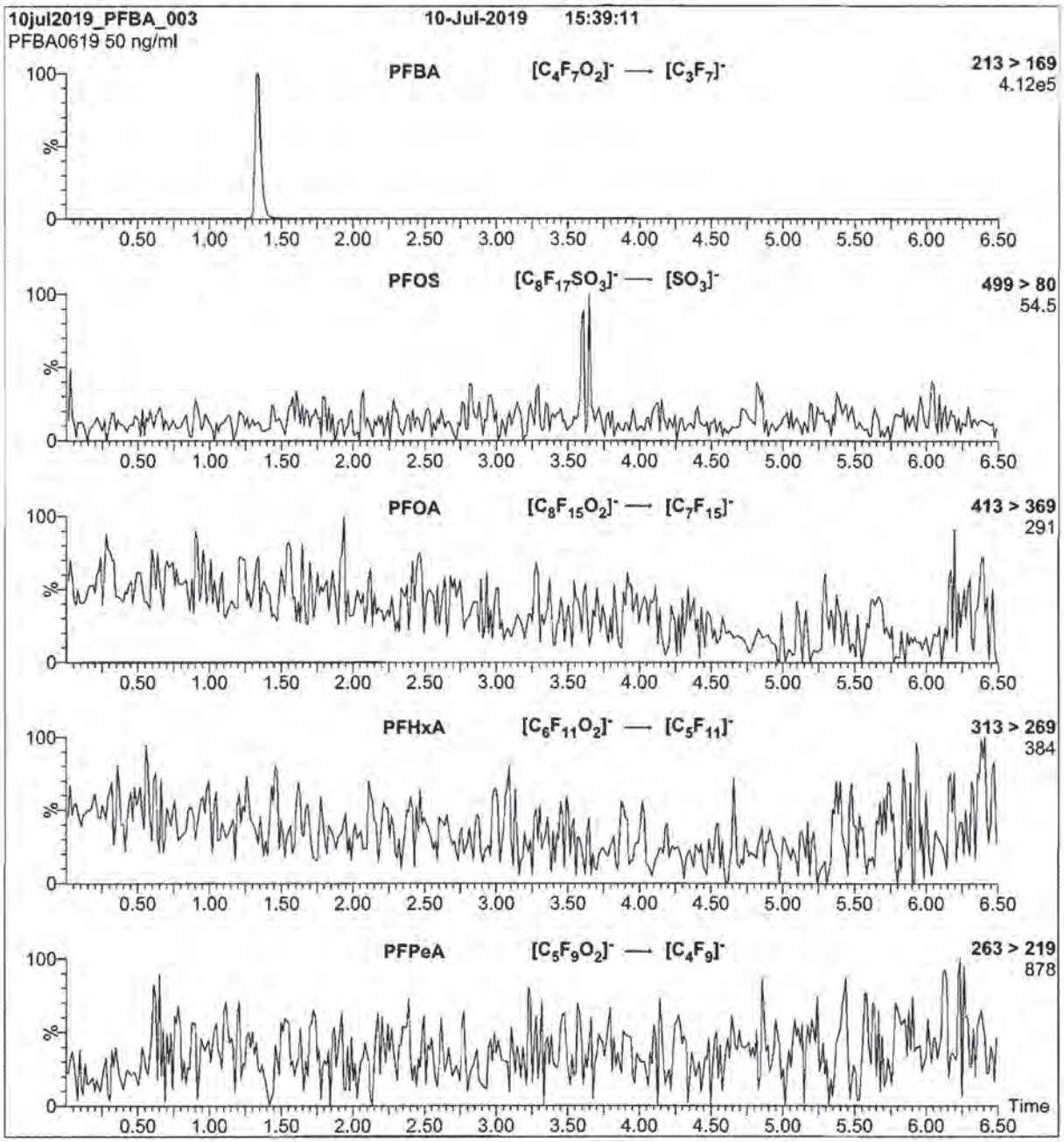
Figure 2: **PFBA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFBA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 8

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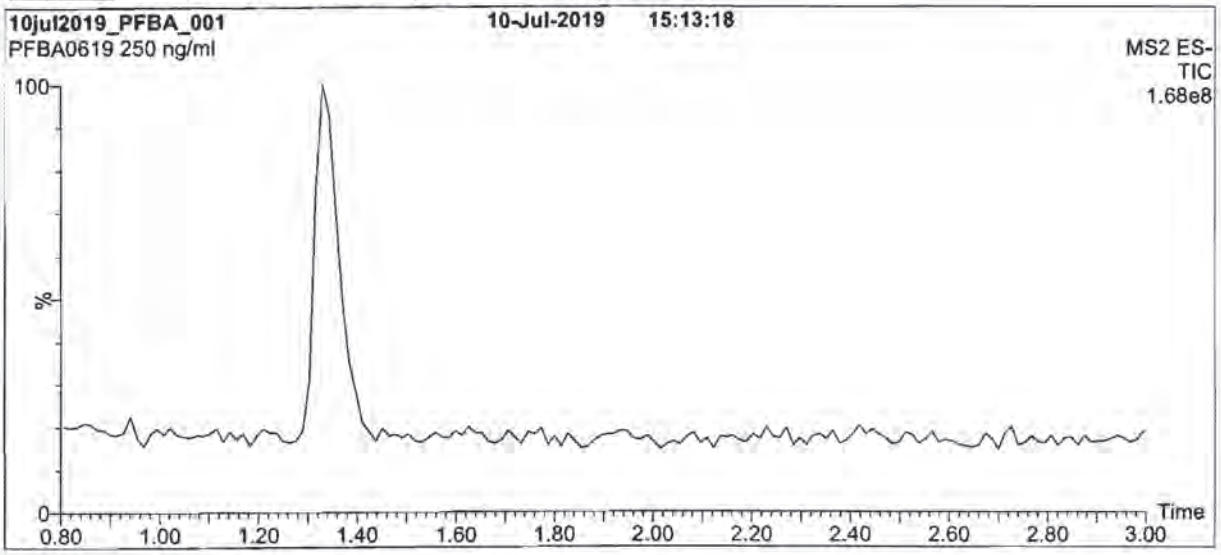
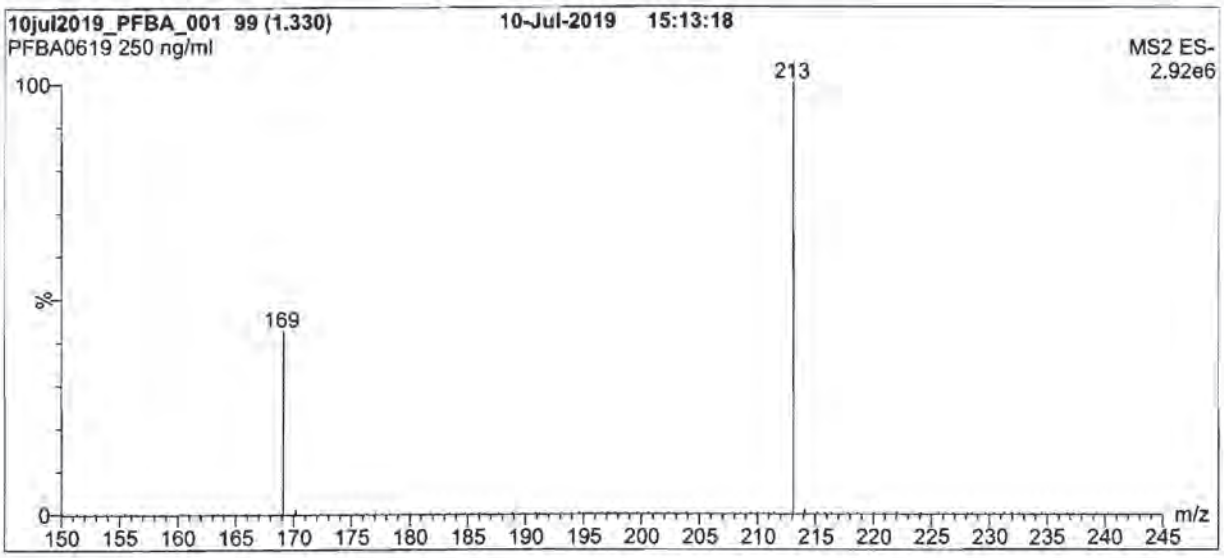
Figure 1: PFBA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 70% organic over 7 min.
Ramp to 90% organic over 2 min and hold for
1.5 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Revision#:6, Revised 2018-08-14

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19L0636

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HANDLING:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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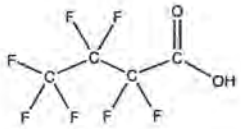
19L0636

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid
LOT NUMBER: PFBA0619

STRUCTURE:
CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
MOLECULAR WEIGHT: 214.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/10/2019
EXPIRY DATE: (mm/dd/yyyy) 07/10/2024
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:** 07/22/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Revision#:6, Revised 2018-08-14

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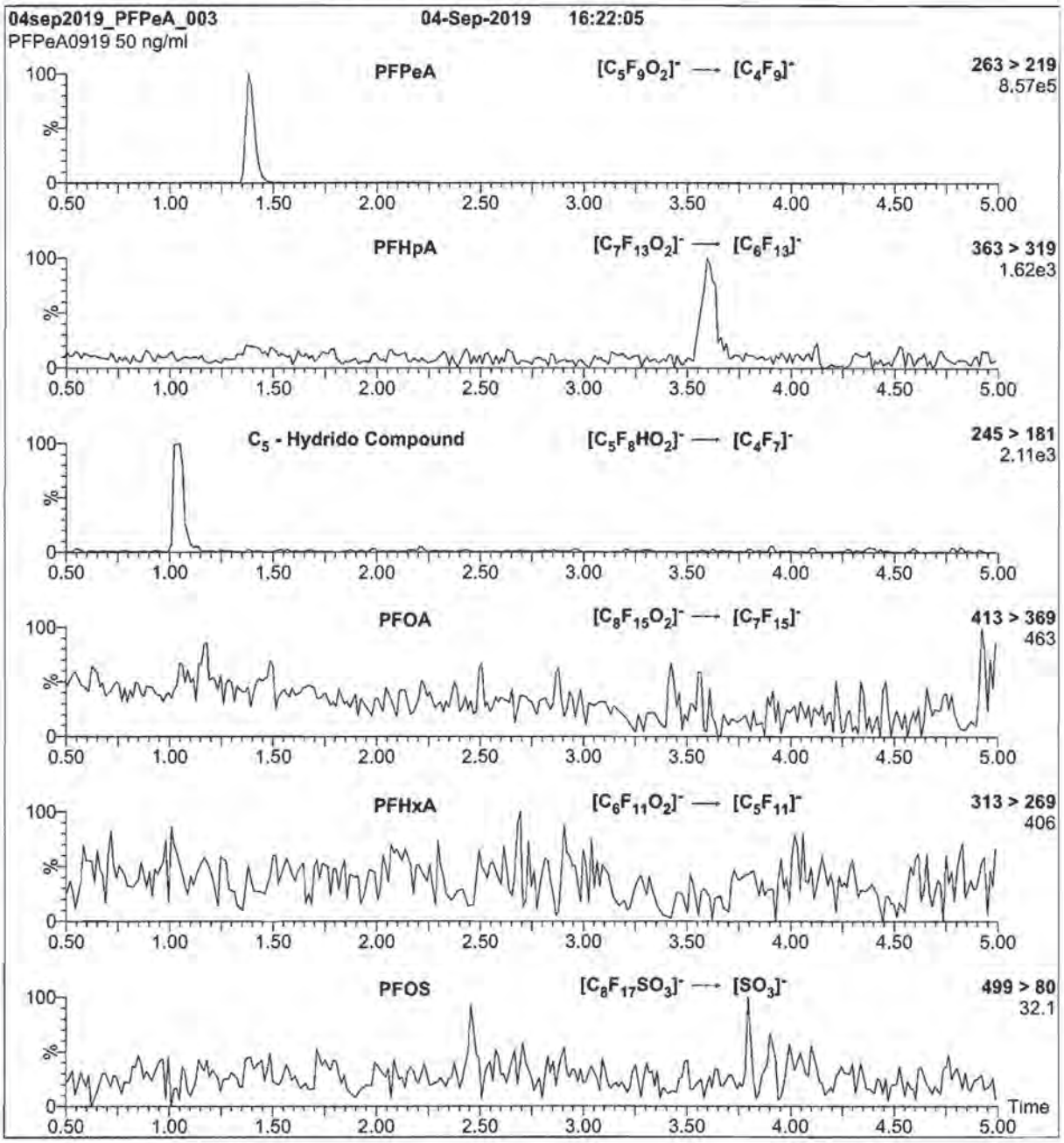
Figure 2: **PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFPeA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.51e-3
Collision Energy (eV) = 8

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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rev0

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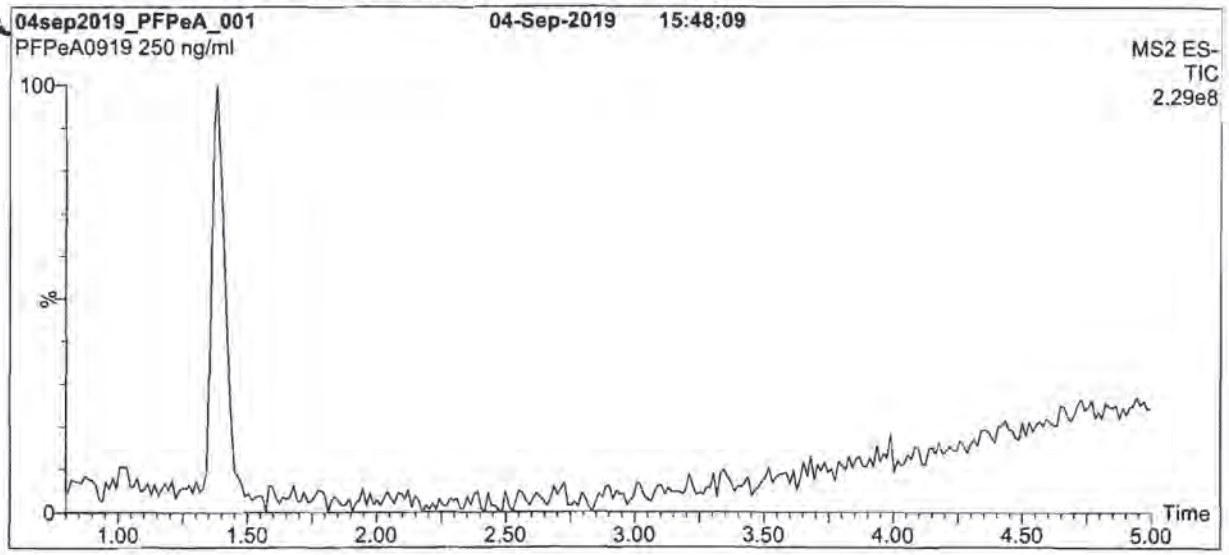
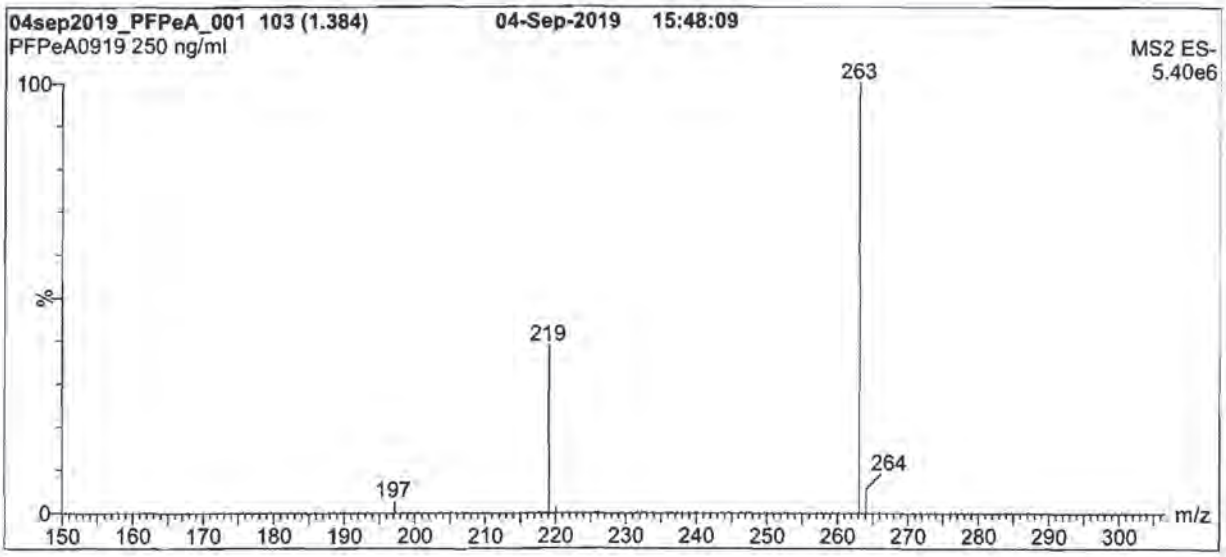
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

PFPeA0919 (3 of 4)
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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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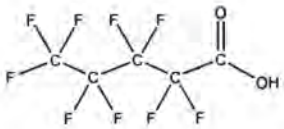
19L0637

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0919
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_9O_2$	**MOLECULAR WEIGHT:**	264.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/04/2019		
EXPIRY DATE: (mm/dd/yyyy)	09/04/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/05/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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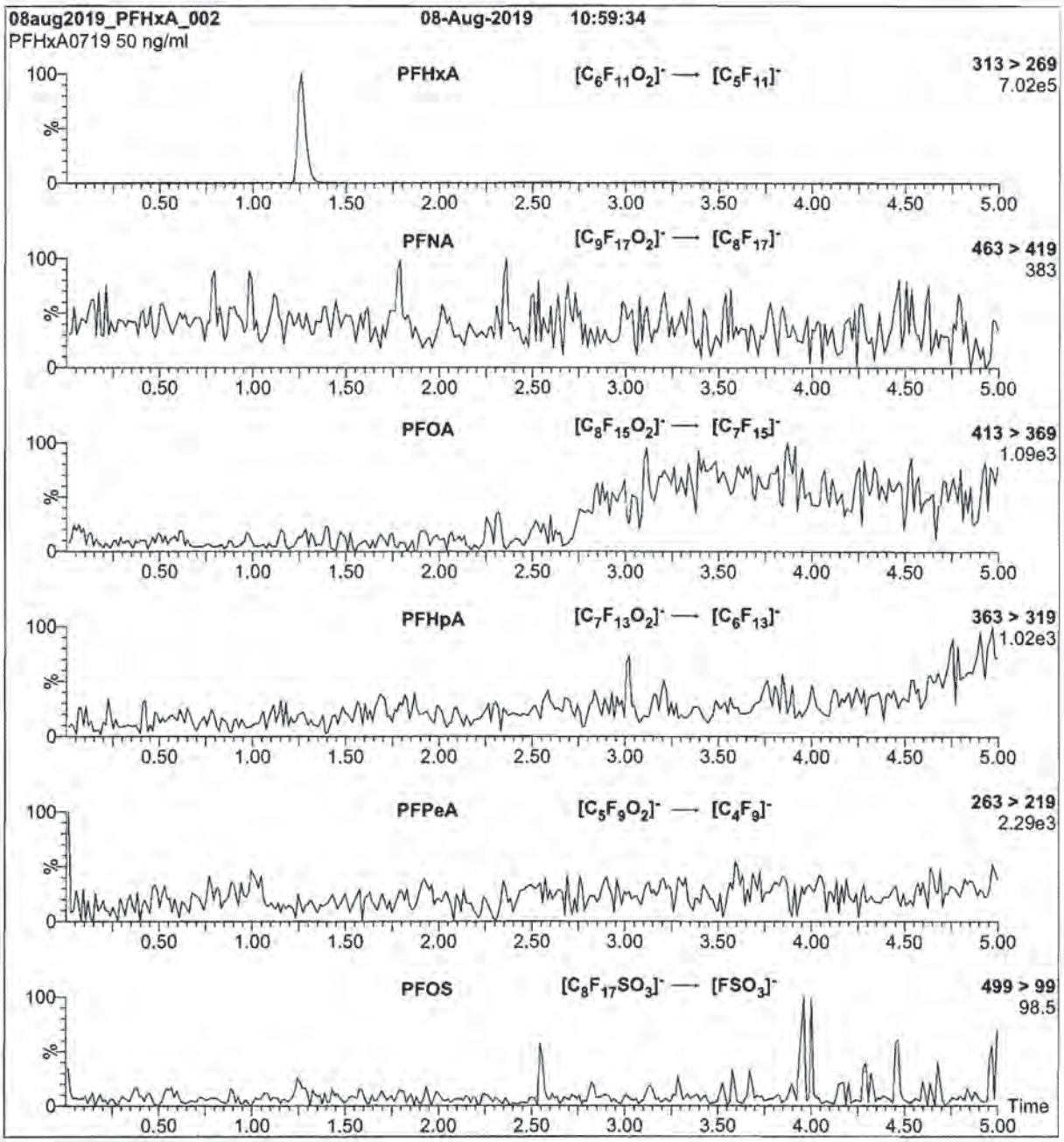
19L0638

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



Conditions for Figure 2:

Injection: On-column (PFHxA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 8

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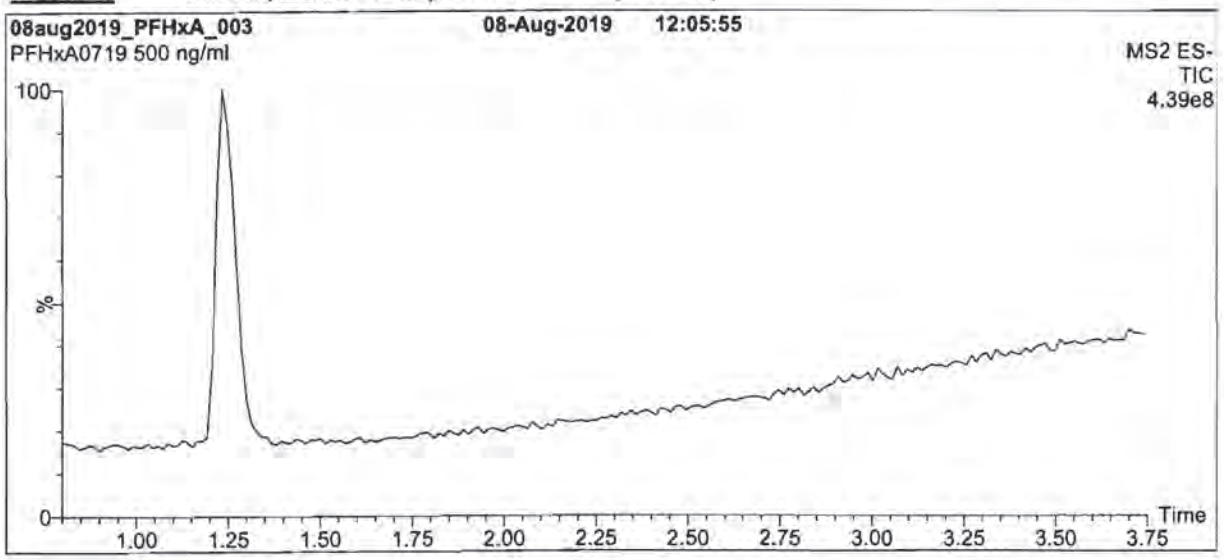
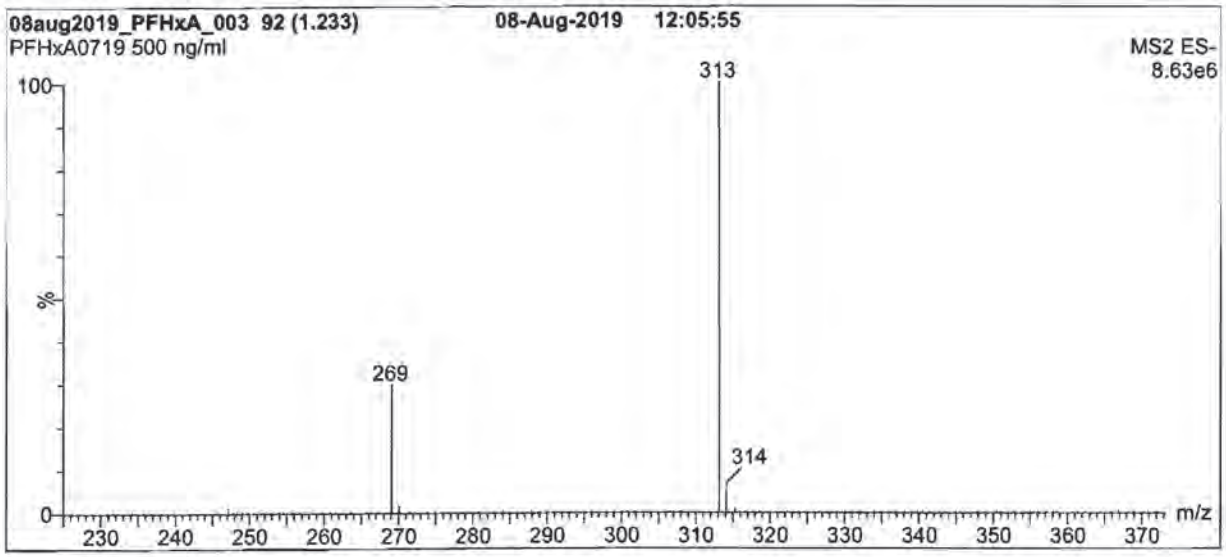
rev0

19L0638

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFHxA0719 (3 of 4)
rev0

19L0638

INTENDED USE:

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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 $x_1, x_2,...x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0638

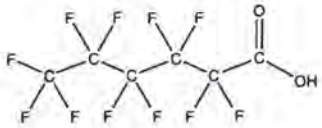
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid
LOT NUMBER: PFHxA0719

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/08/2019
EXPIRY DATE: (mm/dd/yyyy) 08/08/2024
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of branched isomers.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 08/15/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

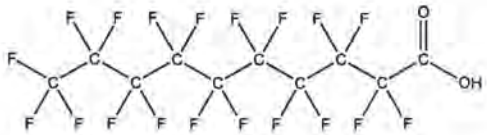
19L0639

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA
COMPOUND: Perfluoro-n-decanoic acid
LOT NUMBER: PFDA0419

STRUCTURE:
CAS #: 335-76-2



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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/01/2019
EXPIRY DATE: (mm/dd/yyyy) 05/01/2024
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:** 05/02/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0639

INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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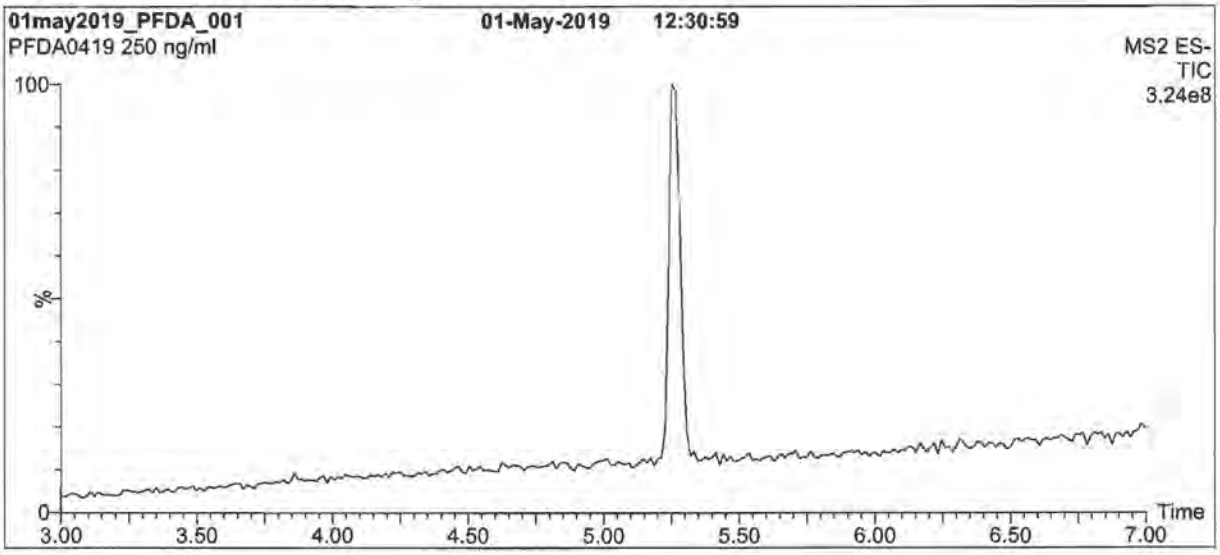
CALA Testing Accreditation No. A 1226

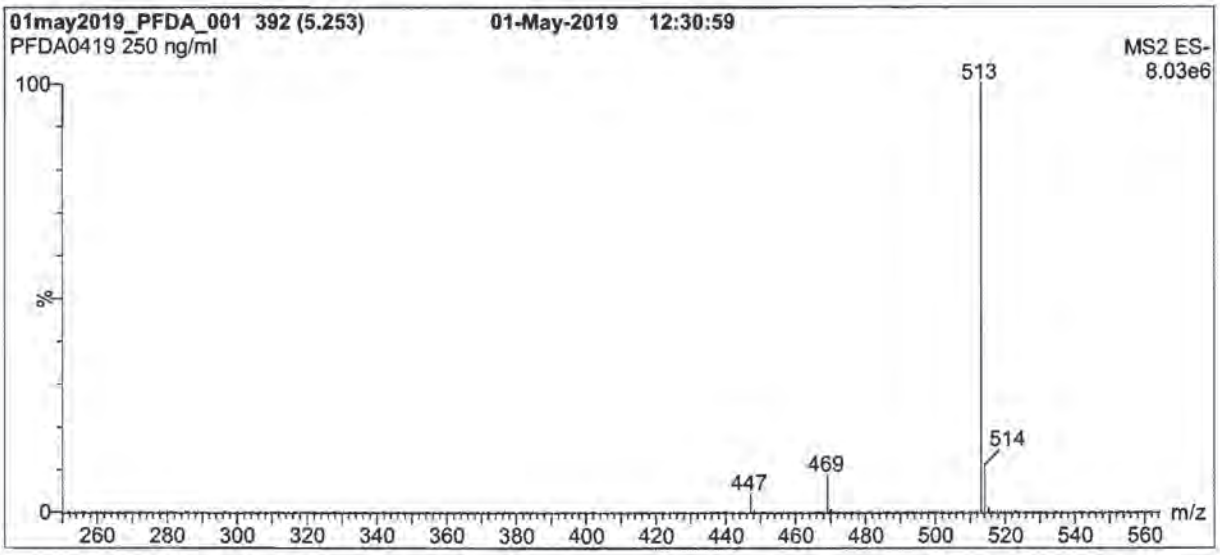
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0639

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFDA0419 (3 of 4)
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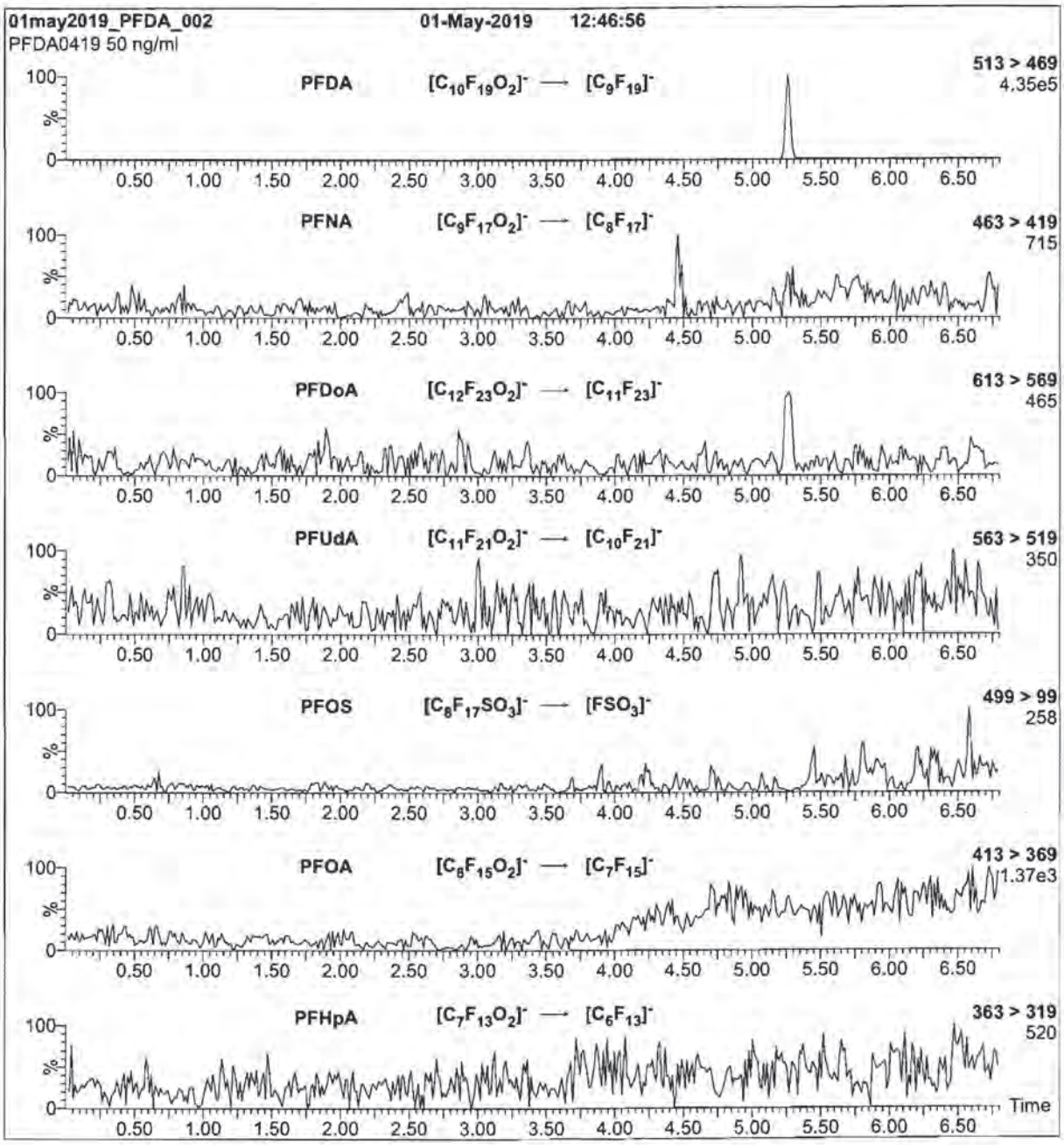
19L0639

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



Conditions for Figure 2:

Injection: On-column (PFDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 10

Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

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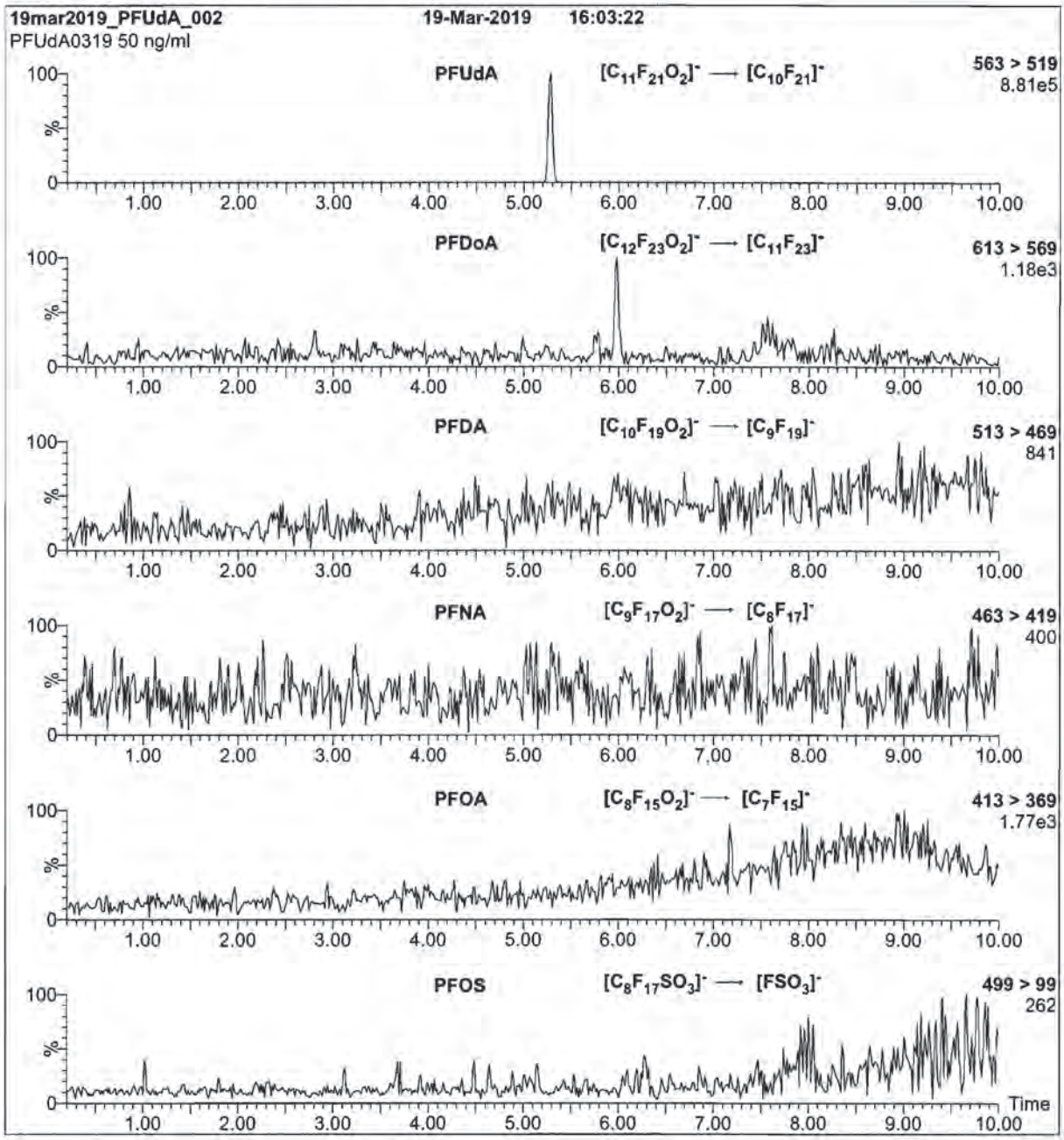
19L0640

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



Conditions for Figure 2:

Injection: On-column (PFUdA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

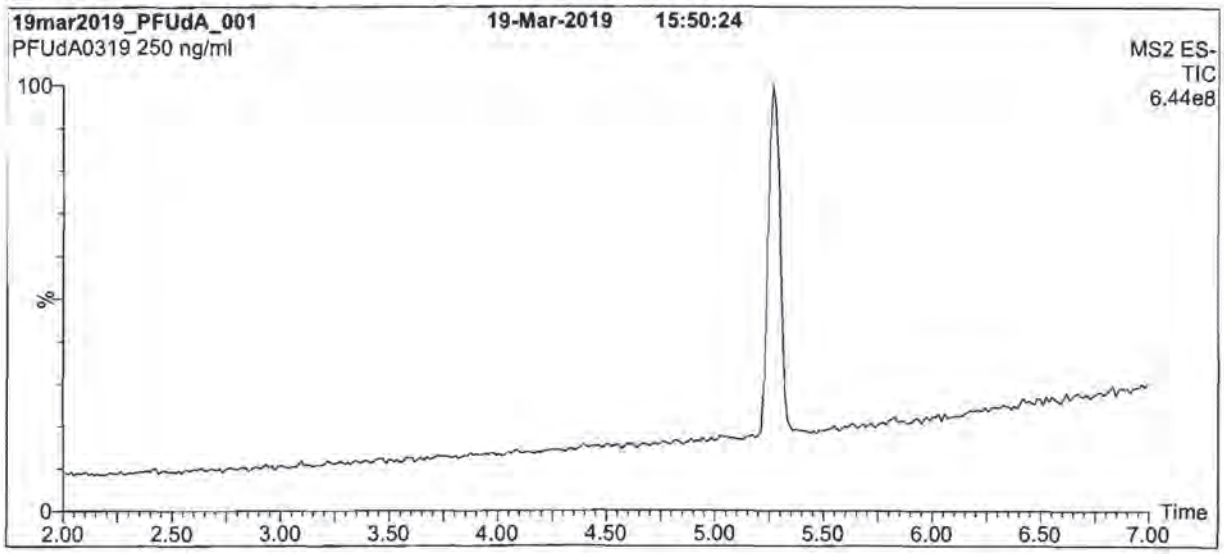
Collision Gas (mbar) = 3.04e-3
Collision Energy (eV) = 12

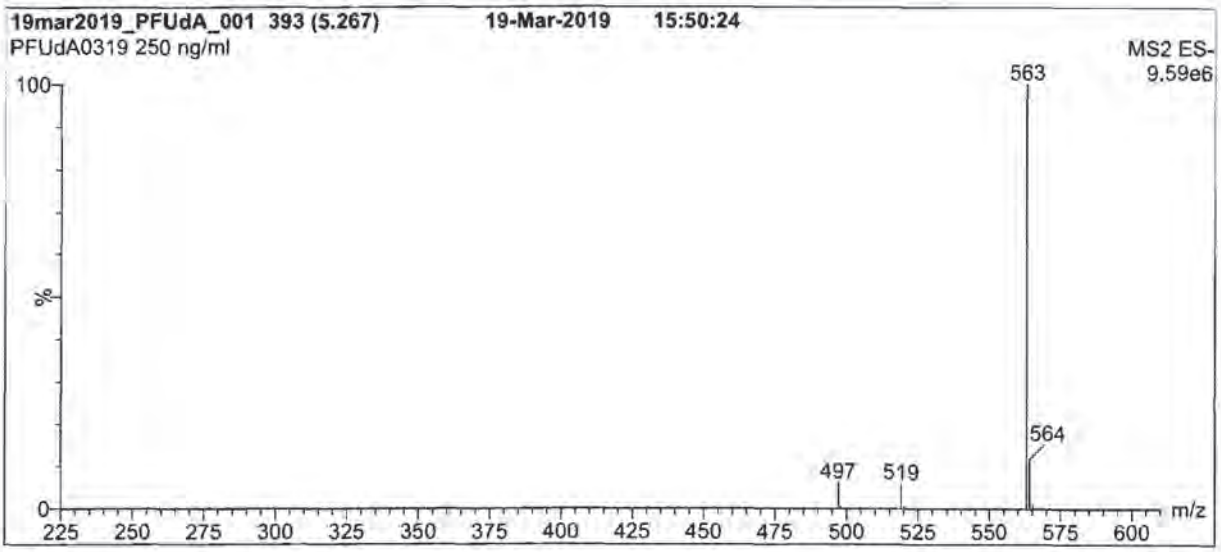
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFUdA0319 (4 of 4)
rev0

19L0640

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFUdA0319 (3 of 4)
rev0

19L0640

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HANDLING:

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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rev0

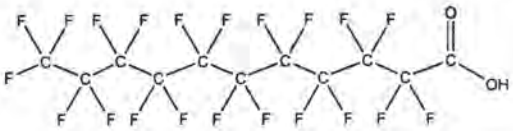
1910640

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid
LOT NUMBER: PFUdA0319

STRUCTURE:
CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/19/2019
EXPIRY DATE: (mm/dd/yyyy) 03/19/2024
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 pefluoro-n-dodecanoic acid (PFDoA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

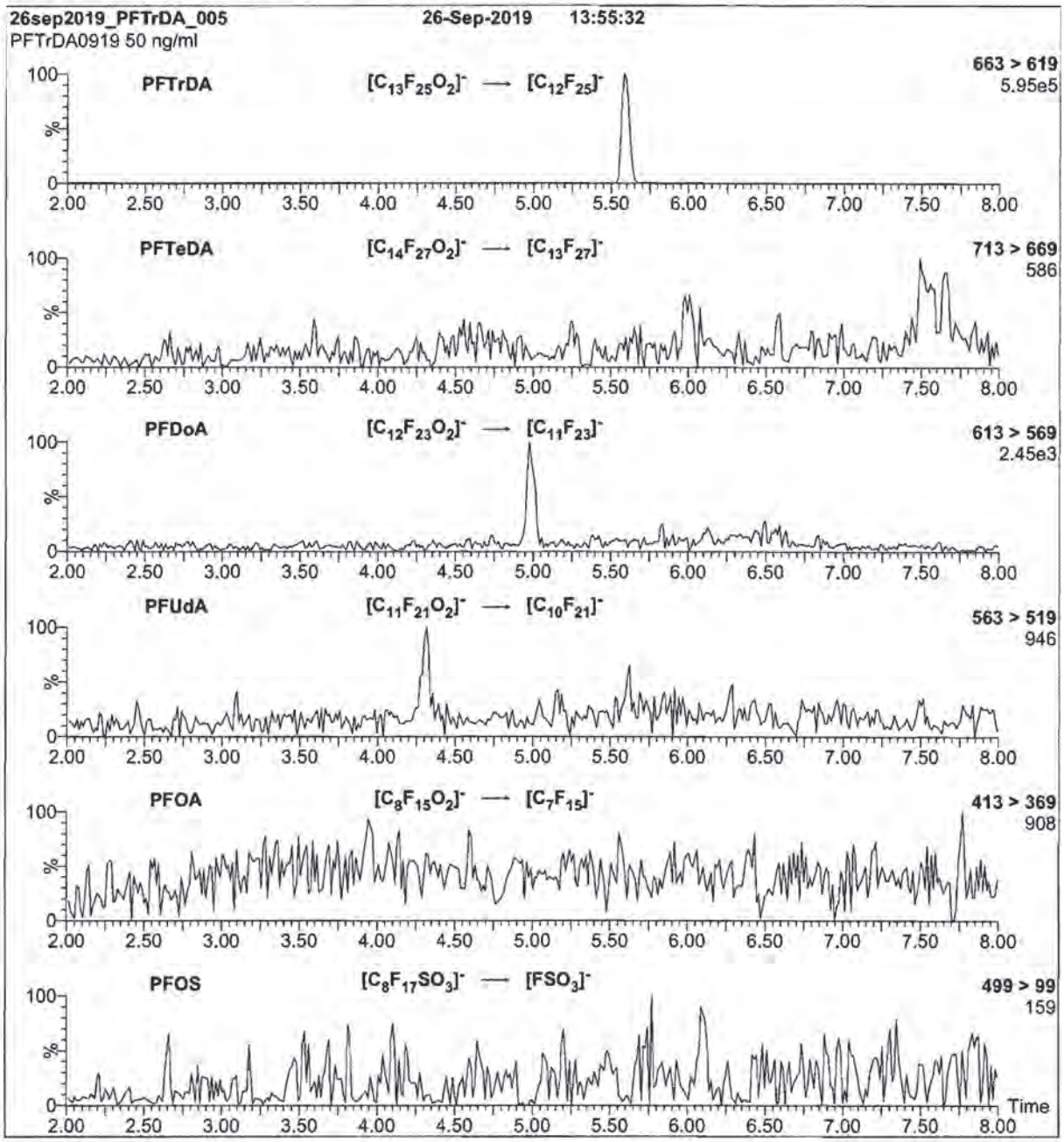
Certified By: B.G. Chittim, General Manager **Date:** 03/21/2019 (mm/dd/yyyy)

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0641

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



Conditions for Figure 2:

Injection: On-column (PFTrDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

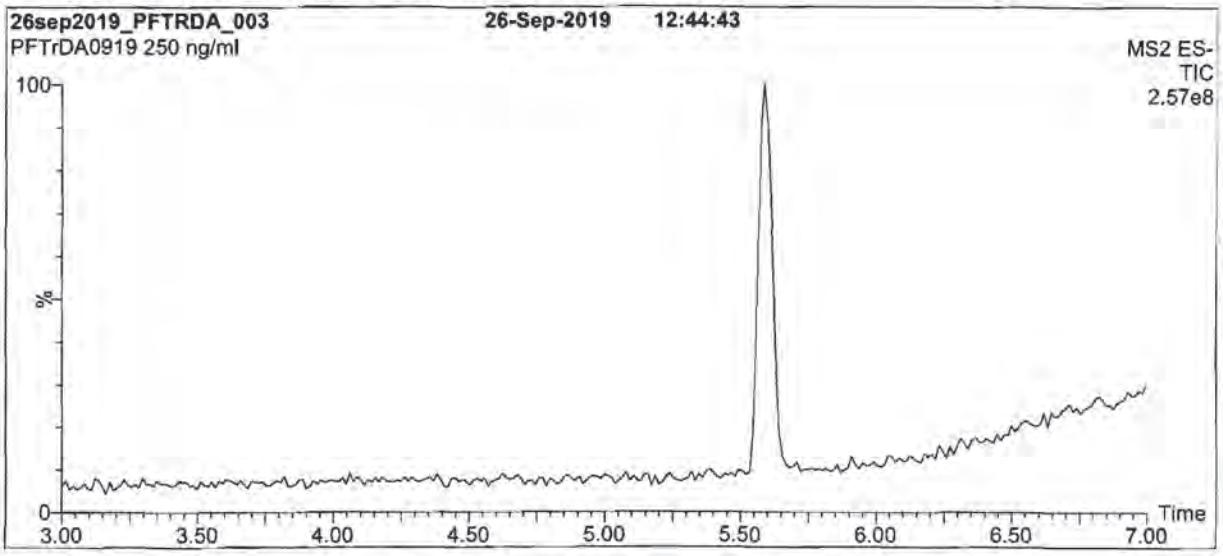
Collision Gas (mbar) = 3,73e-3
Collision Energy (eV) = 12

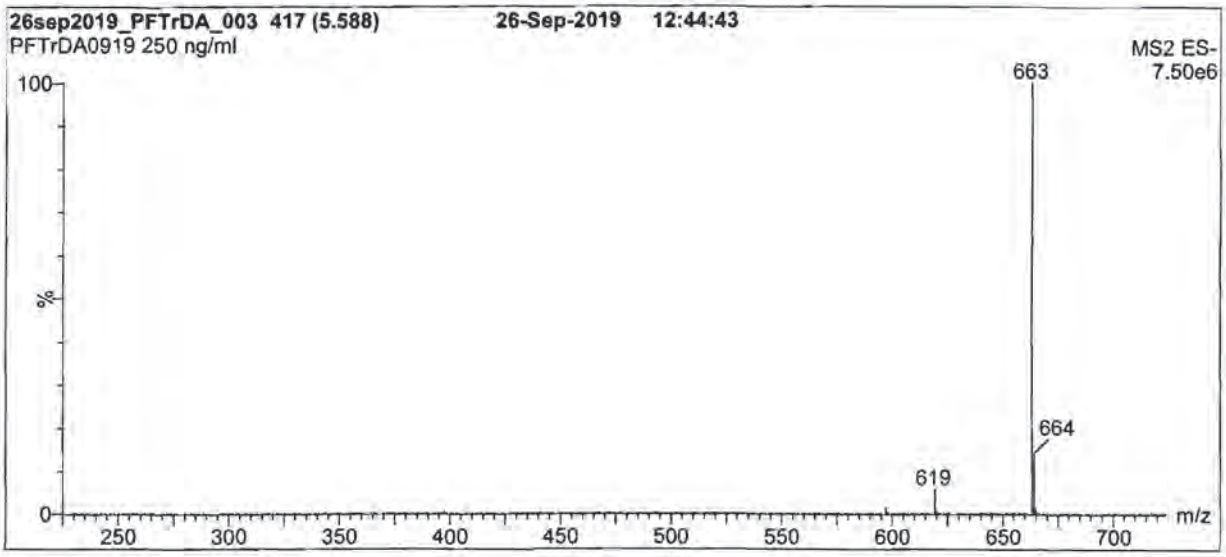
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFTrDA0919 (4 of 4)
rev0

192641

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFTrDA0919 (3 of 4)
rev0

19L0641

INTENDED USE:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

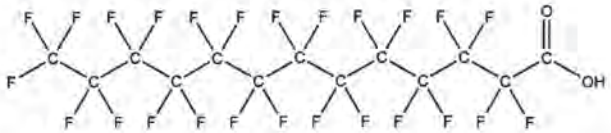
19L0691

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid
LOT NUMBER: PFTrDA0919

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
MOLECULAR WEIGHT: 664.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/26/2019
EXPIRY DATE: (mm/dd/yyyy) 09/26/2024
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 ($C_{14}HF_{27}O_2$).

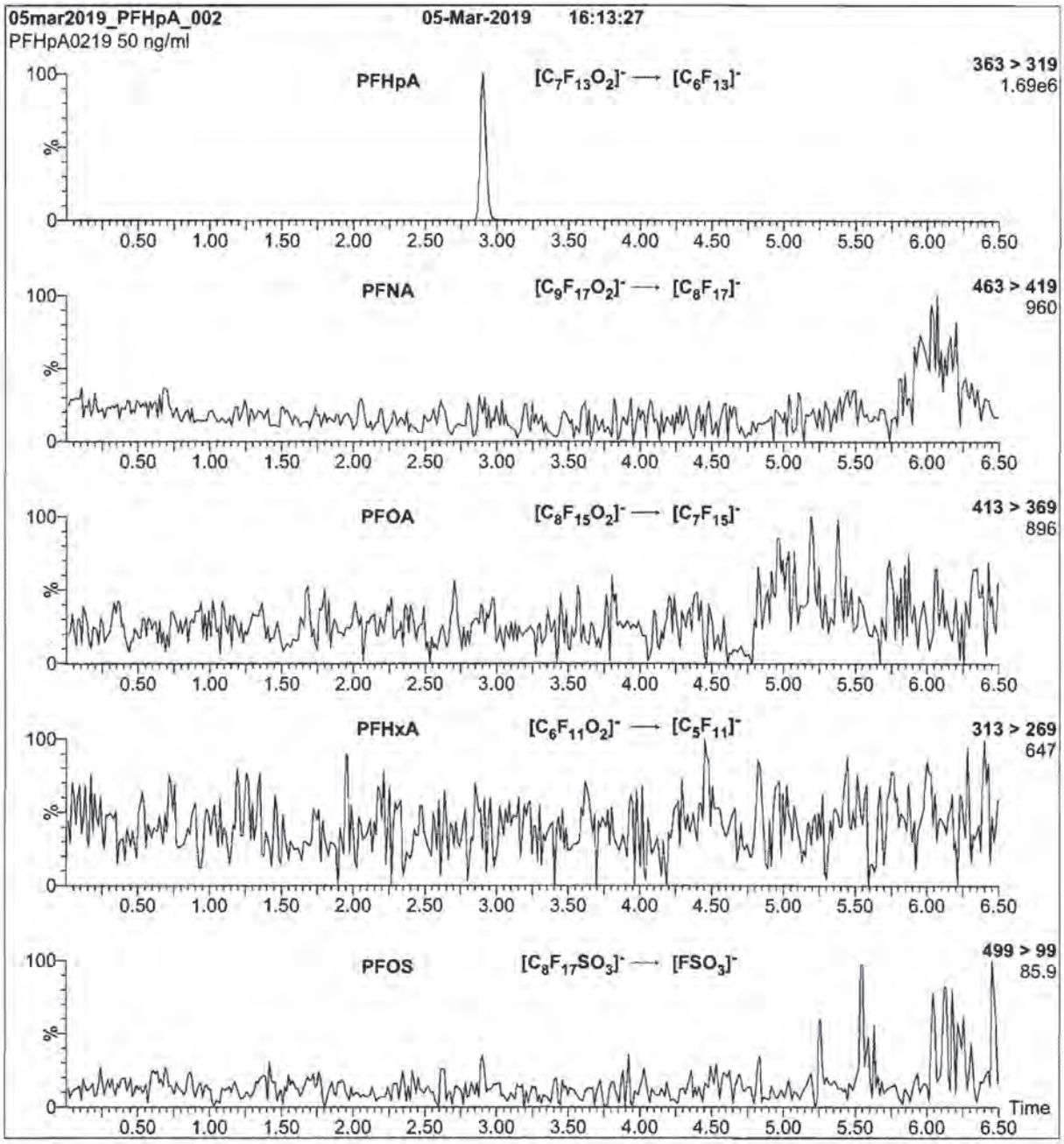
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager **Date:** 10/03/2019 (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

19L0642

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



Conditions for Figure 2:

Injection: On-column (PFHpA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

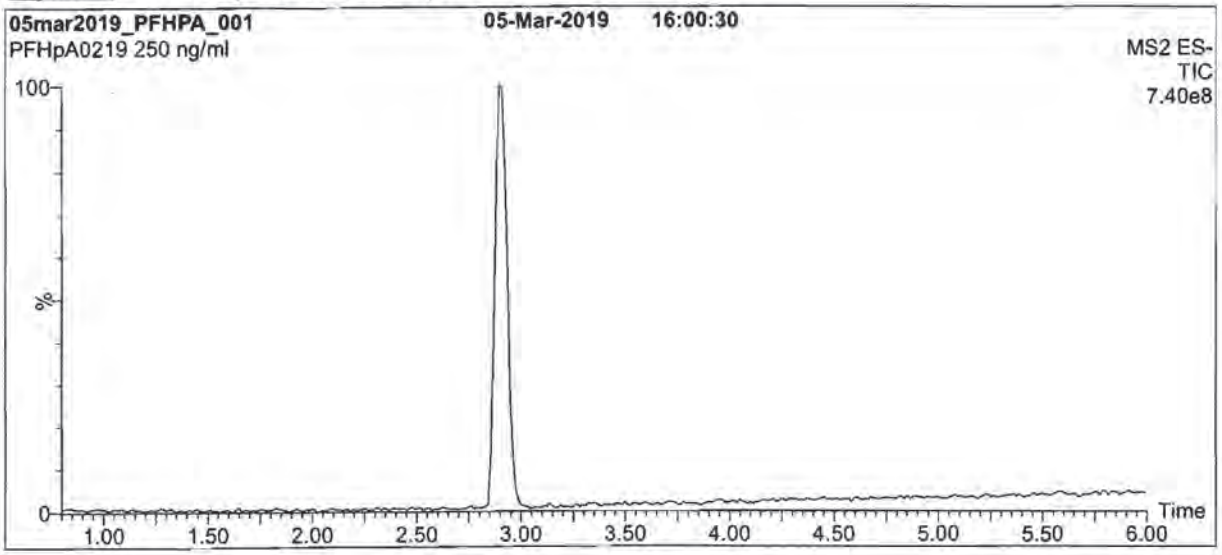
Collision Gas (mbar) = 2.74e-3
Collision Energy (eV) = 8

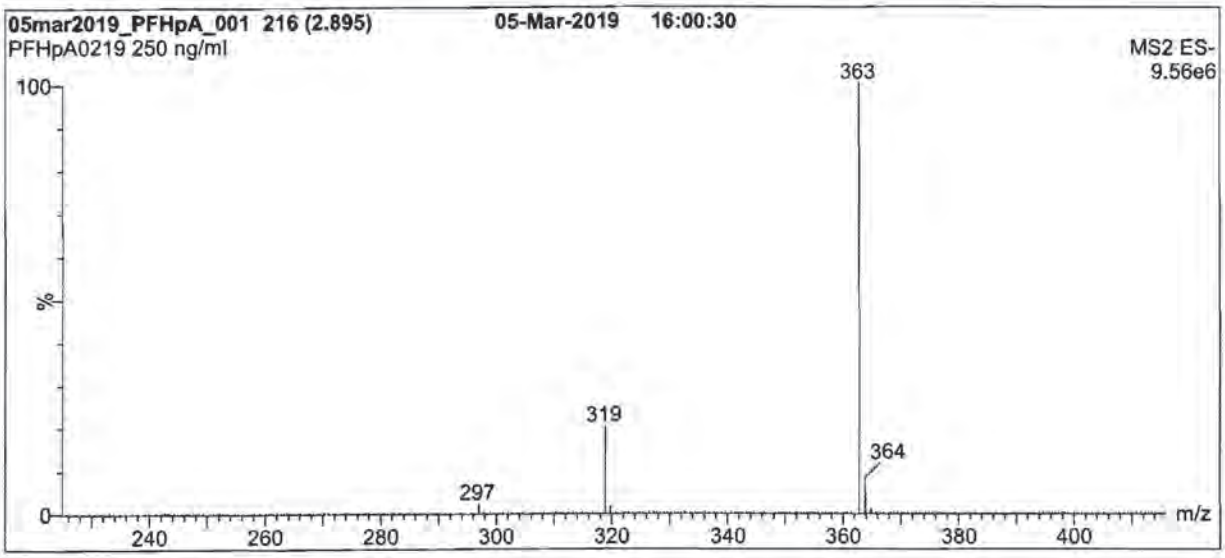
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFHpA0219 (4 of 4)
rev0

19L0642

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-06-14

PFHpA0219 (3 of 4)
rev0

19L0642

INTENDED USE:

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HANDLING:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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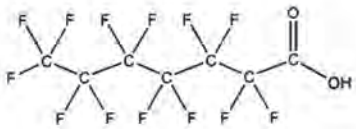
19L0642

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHpA	**LOT NUMBER:**	PFHpA0219
COMPOUND:	Perfluoro-n-heptanoic acid		
STRUCTURE:		**CAS #:**	375-85-9



MOLECULAR FORMULA:	$C_7HF_{13}O_2$	**MOLECULAR WEIGHT:**	364.06
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	03/05/2019		
EXPIRY DATE: (mm/dd/yyyy)	03/05/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/18/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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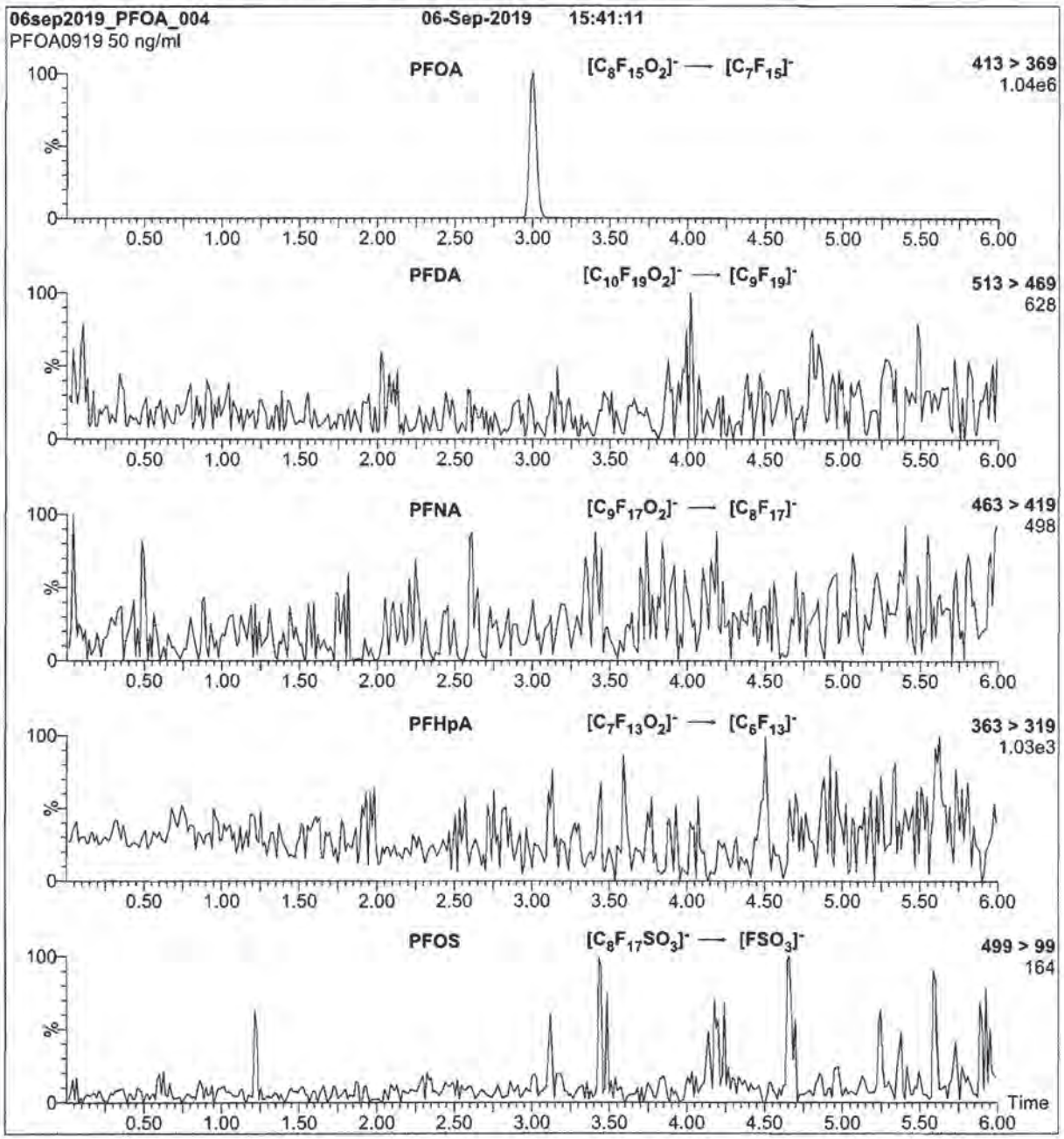
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0643

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



Conditions for Figure 2:

Injection: On-column (PFOA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

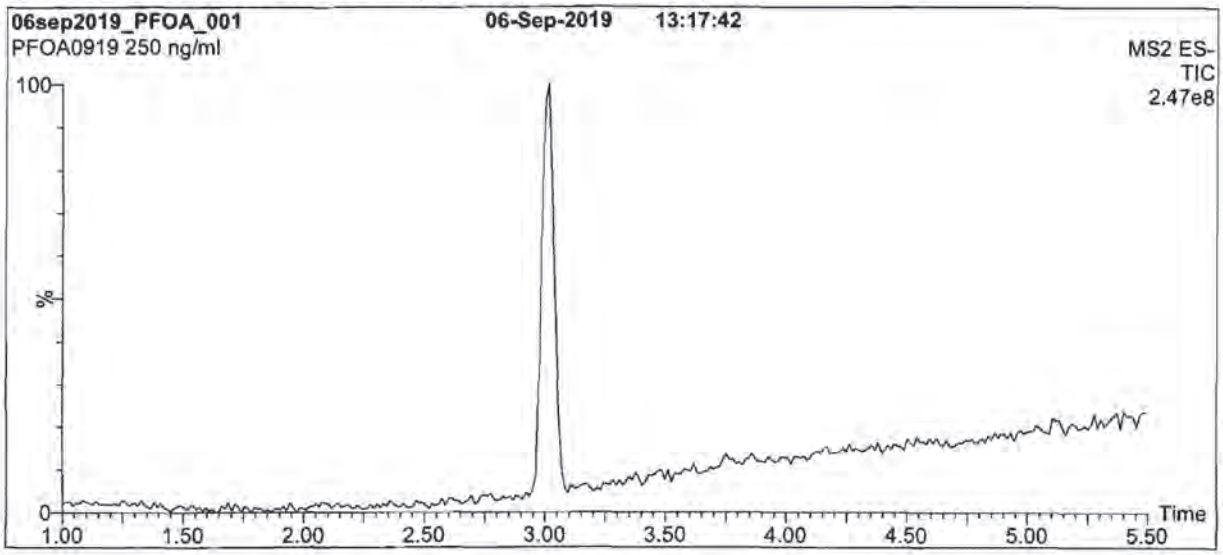
Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 8

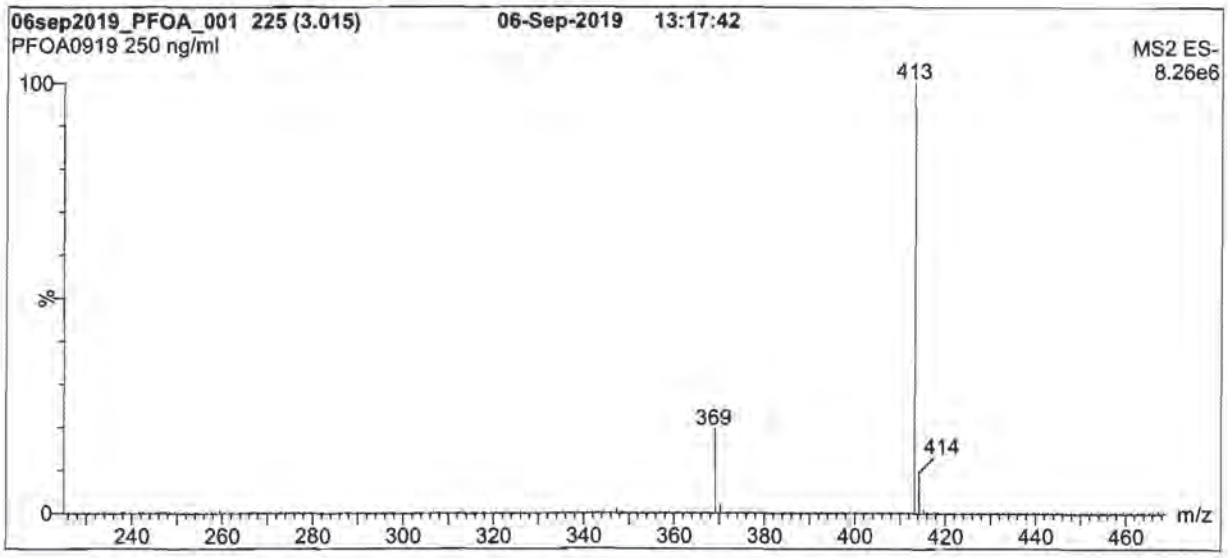
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2016-08-14

PFOA0919 (4 of 4)
rev0

19L0643

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFOA0919 (3 of 4)
rev0

19L0643

INTENDED USE:

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HANDLING:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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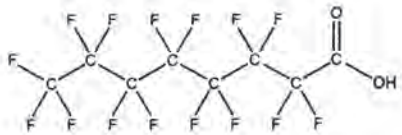
19L0643

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFOA	**LOT NUMBER:**	PFOA0919
COMPOUND:	Perfluoro-n-octanoic acid		
STRUCTURE:		**CAS #:**	335-67-1



MOLECULAR FORMULA:	$C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	414.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/06/2019		
EXPIRY DATE: (mm/dd/yyyy)	09/06/2024		
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:** 09/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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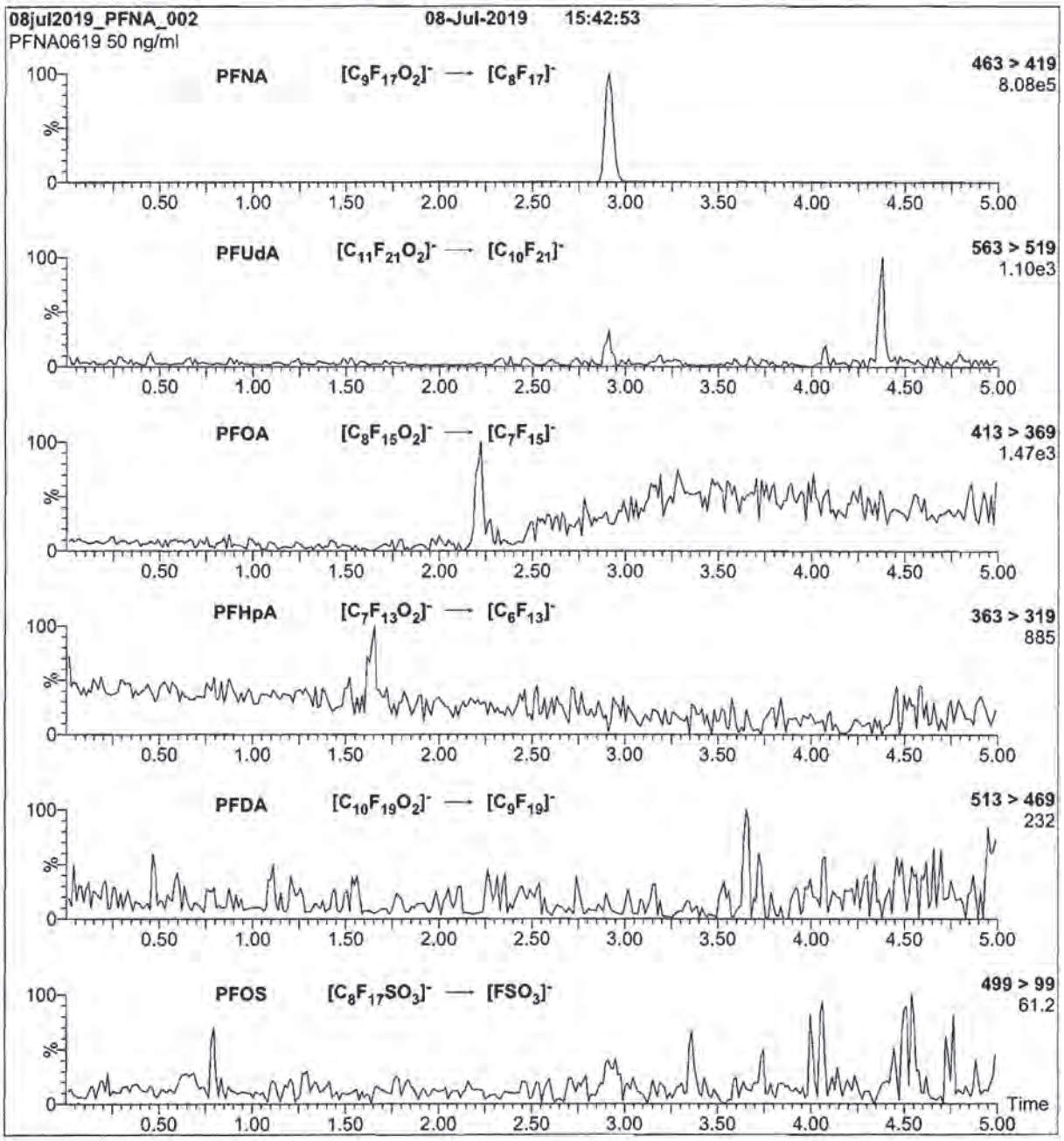
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0644

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



Conditions for Figure 2:

Injection: On-column (PFNA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

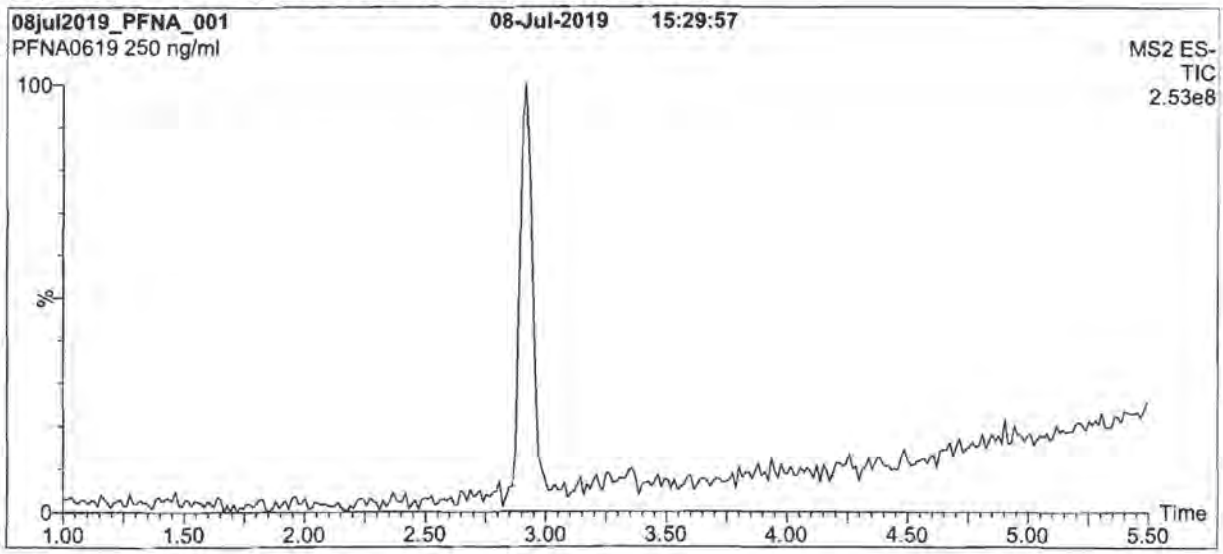
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

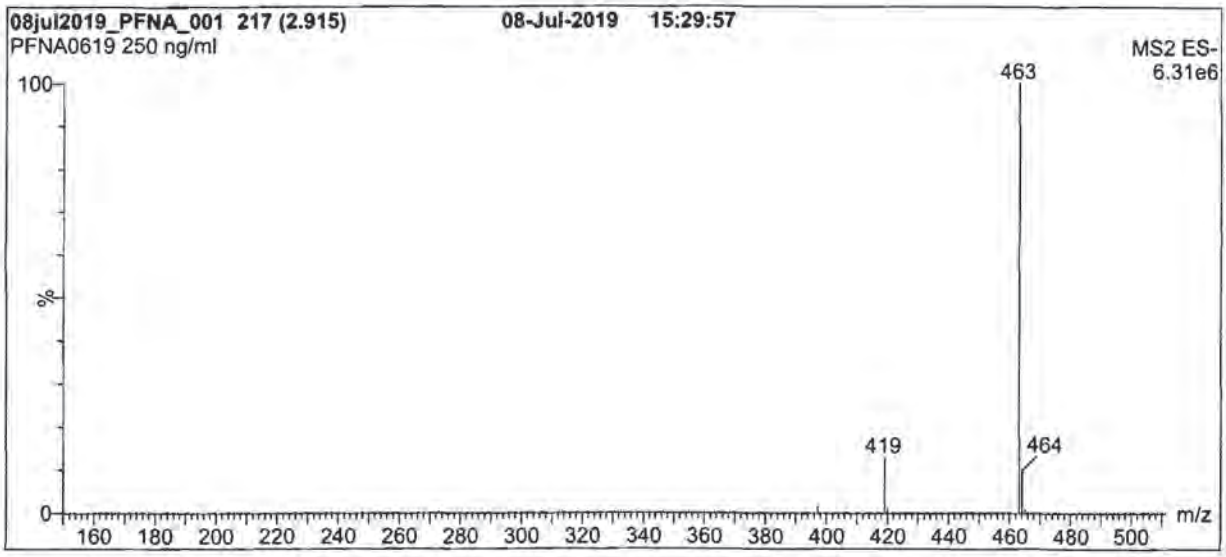
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFNA0619 (4 of 4)
rev0

19L0644

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





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Column: Acquity UPLC BEH Shield RP_{18}
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Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
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Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFNA0619 (3 of 4)
rev0

19L0644

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

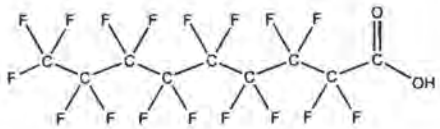
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0644

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid
LOT NUMBER: PFNA0619
STRUCTURE:
CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
MOLECULAR WEIGHT: 464.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/08/2019
EXPIRY DATE: (mm/dd/yyyy) 07/08/2024
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-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:** 07/11/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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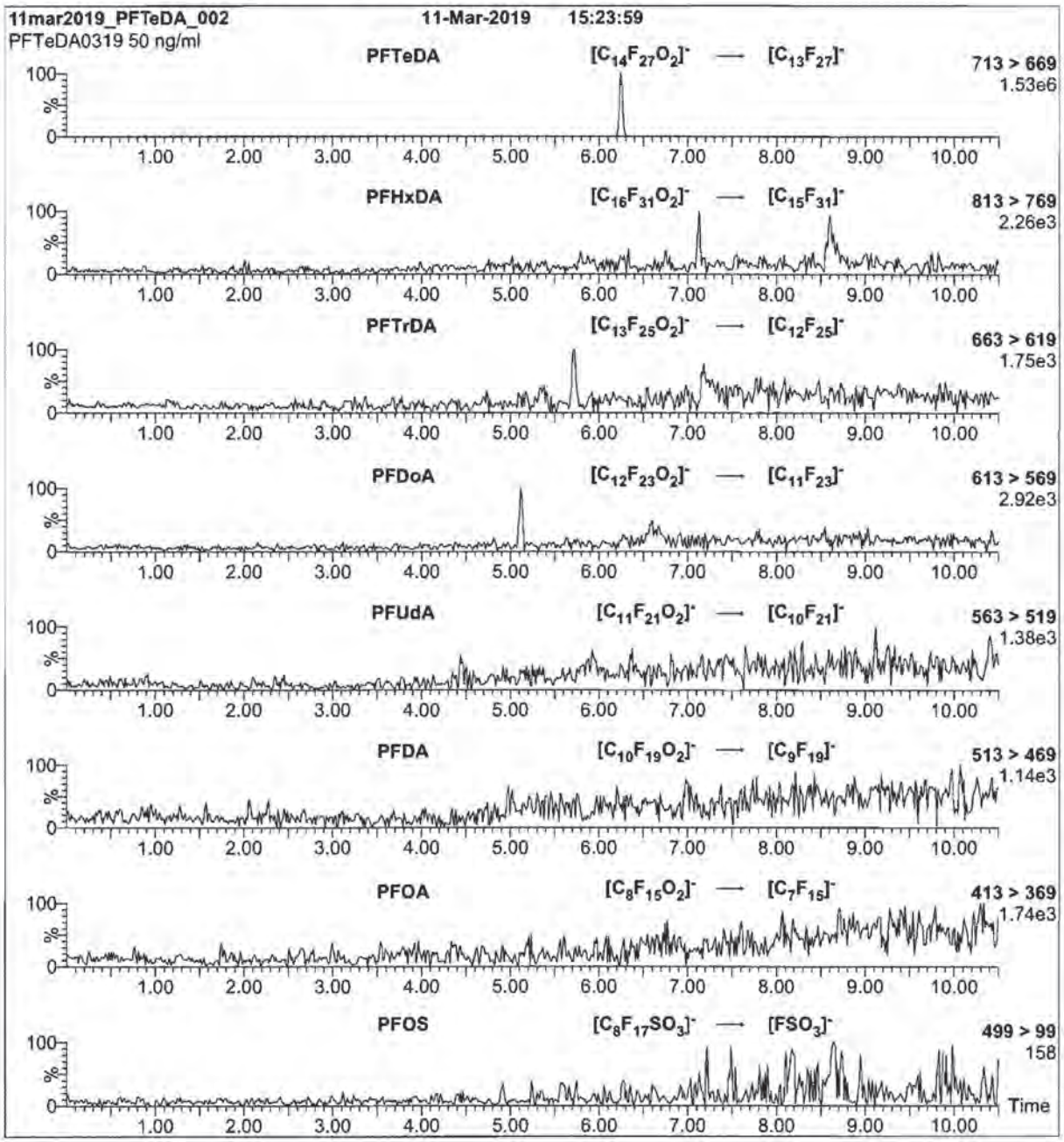
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0645

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



Conditions for Figure 2:

Injection: On-column (PFTeDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

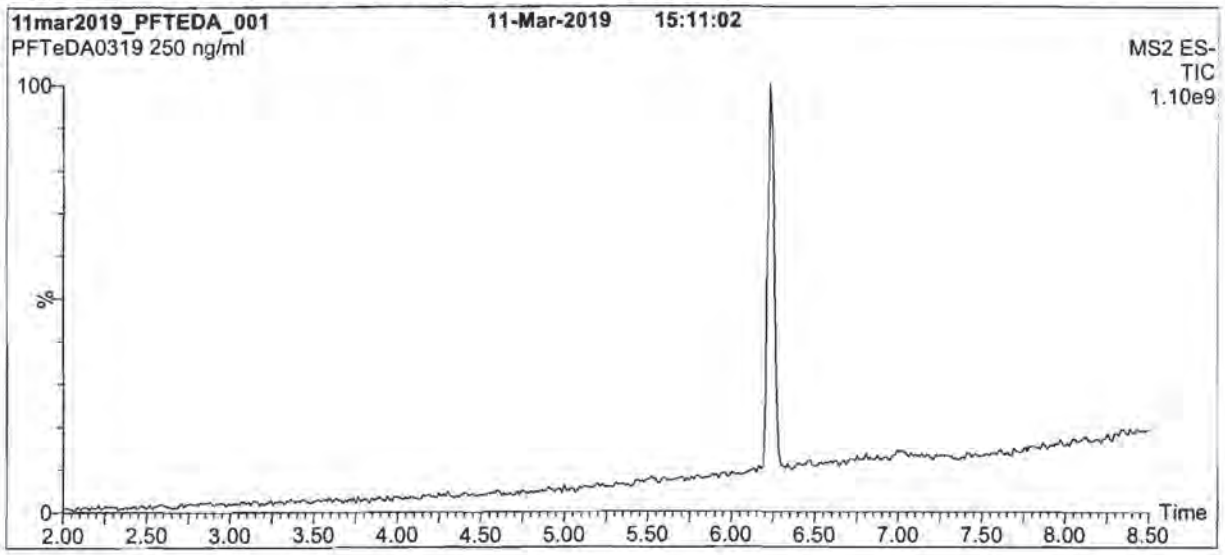
Collision Gas (mbar) = 3.03e-3
Collision Energy (eV) = 14

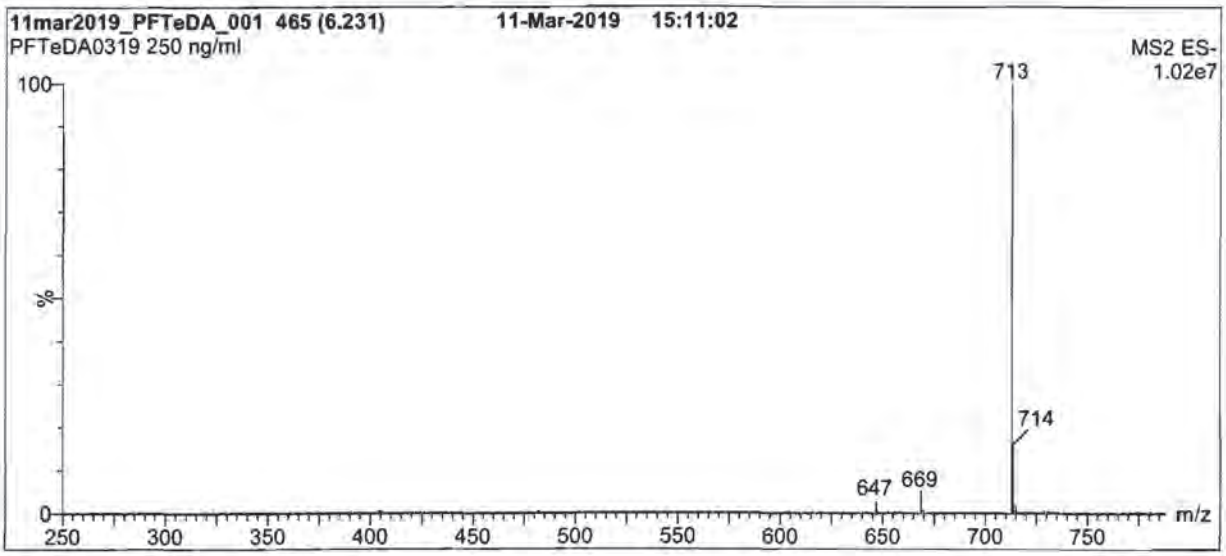
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFTeDA0319 (4 of 4)
rev0

1910645

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

PFTeDA0319 (3 of 4)
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19L0645

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 0226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFTeDA0319 (2 of 4)
rev0

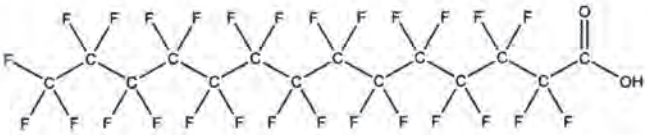
19L0645

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0319
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/11/2019
EXPIRY DATE: (mm/dd/yyyy) 03/11/2024
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 PFDoA ($C_{12}HF_{23}O_2$), ~ 0.1% of PFTrDA ($C_{13}HF_{25}O_2$), and ~ 0.1% of PFHxDA ($C_{16}HF_{31}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

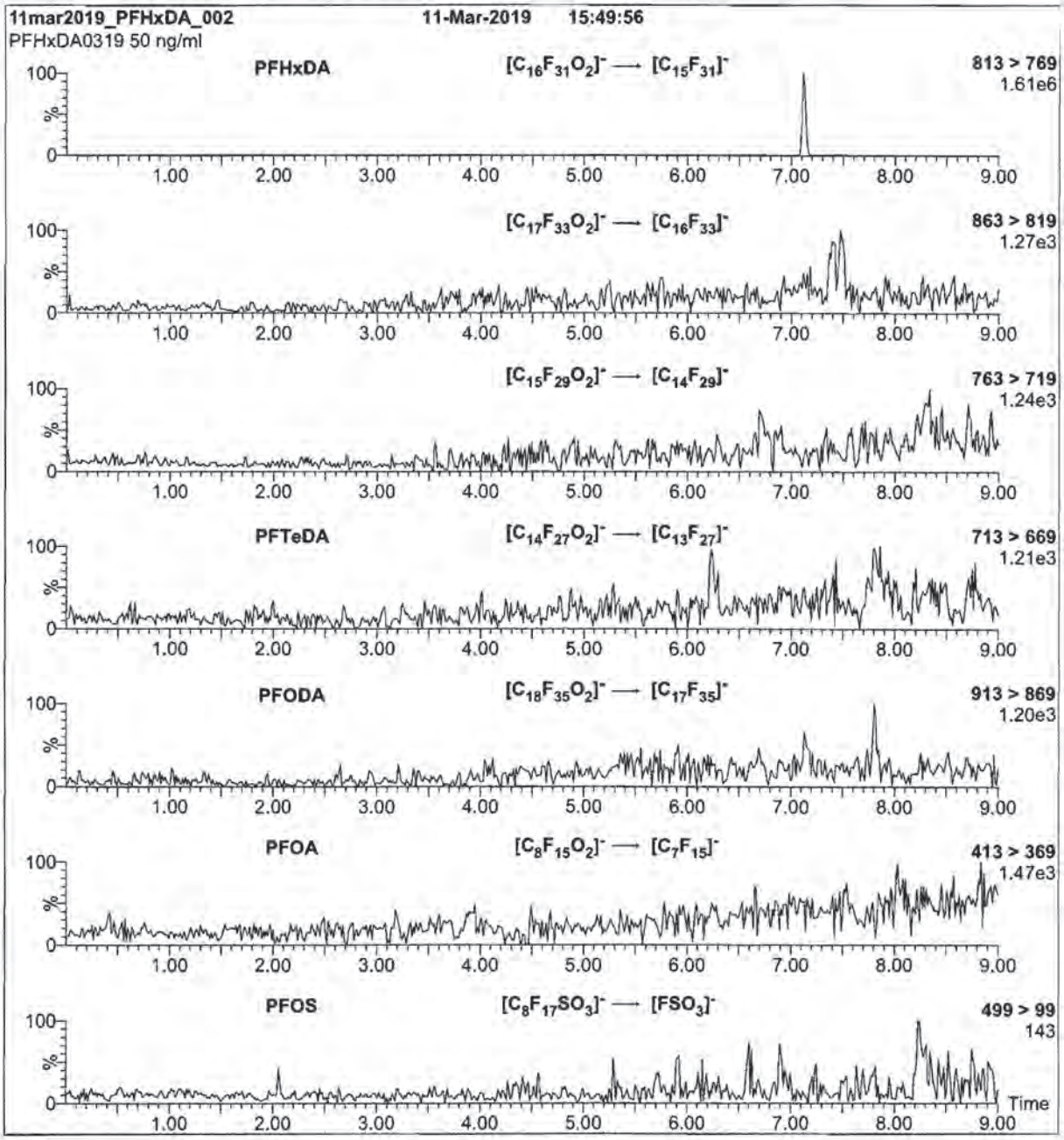
Certified By: B.G. Chittim, General Manager
Date: 03/28/2019 (mm/dd/yyyy)

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0646

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



Conditions for Figure 2:

Injection: On-column (PFHxDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

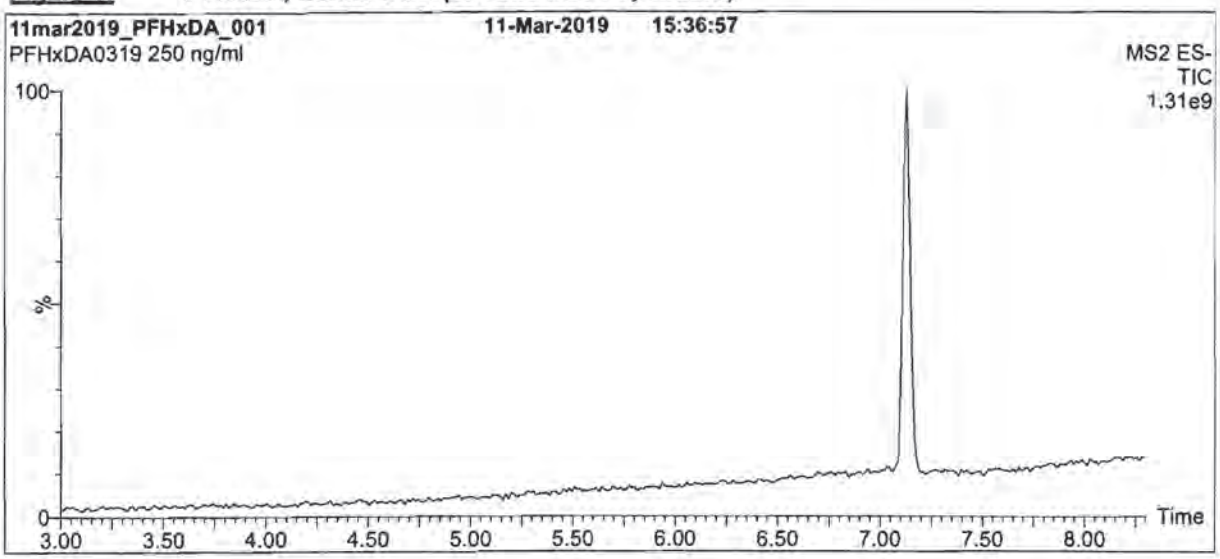
Collision Gas (mbar) = 3.03e-3
Collision Energy (eV) = 15

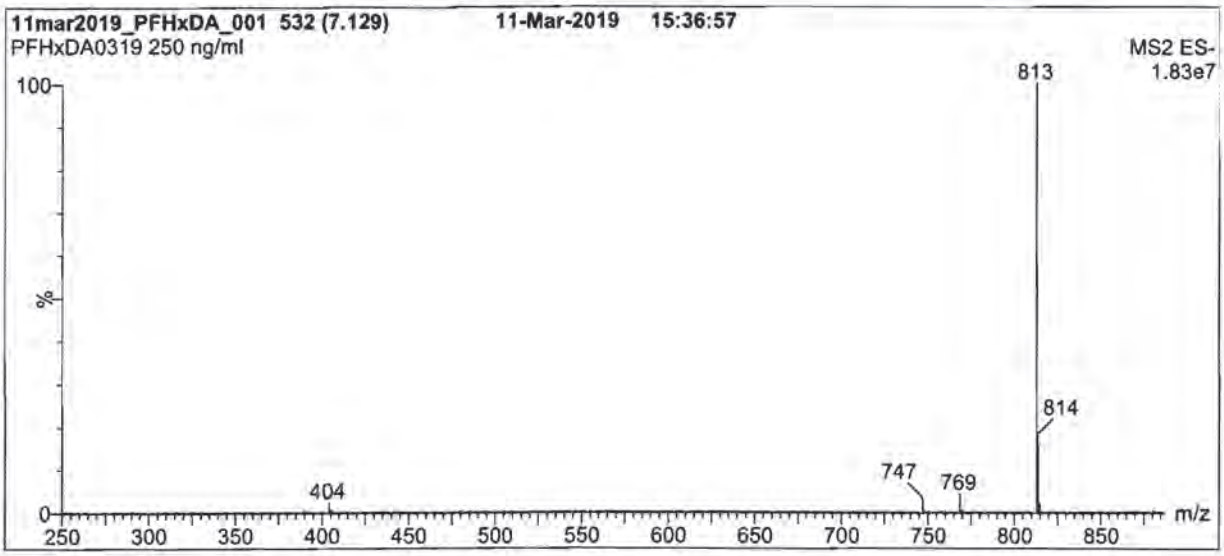
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFHxDA0319 (4 of 4)
rev0

19L0646

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFHxDA0319 (3 of 4)
rev0

19L0646

INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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19L0646

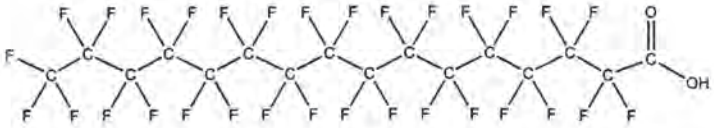
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxDA
COMPOUND: Perfluoro-n-hexadecanoic acid
LOT NUMBER: PFHxDA0319

STRUCTURE:

CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
MOLECULAR WEIGHT: 814.13
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/11/2019
EXPIRY DATE: (mm/dd/yyyy) 03/11/2024
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/28/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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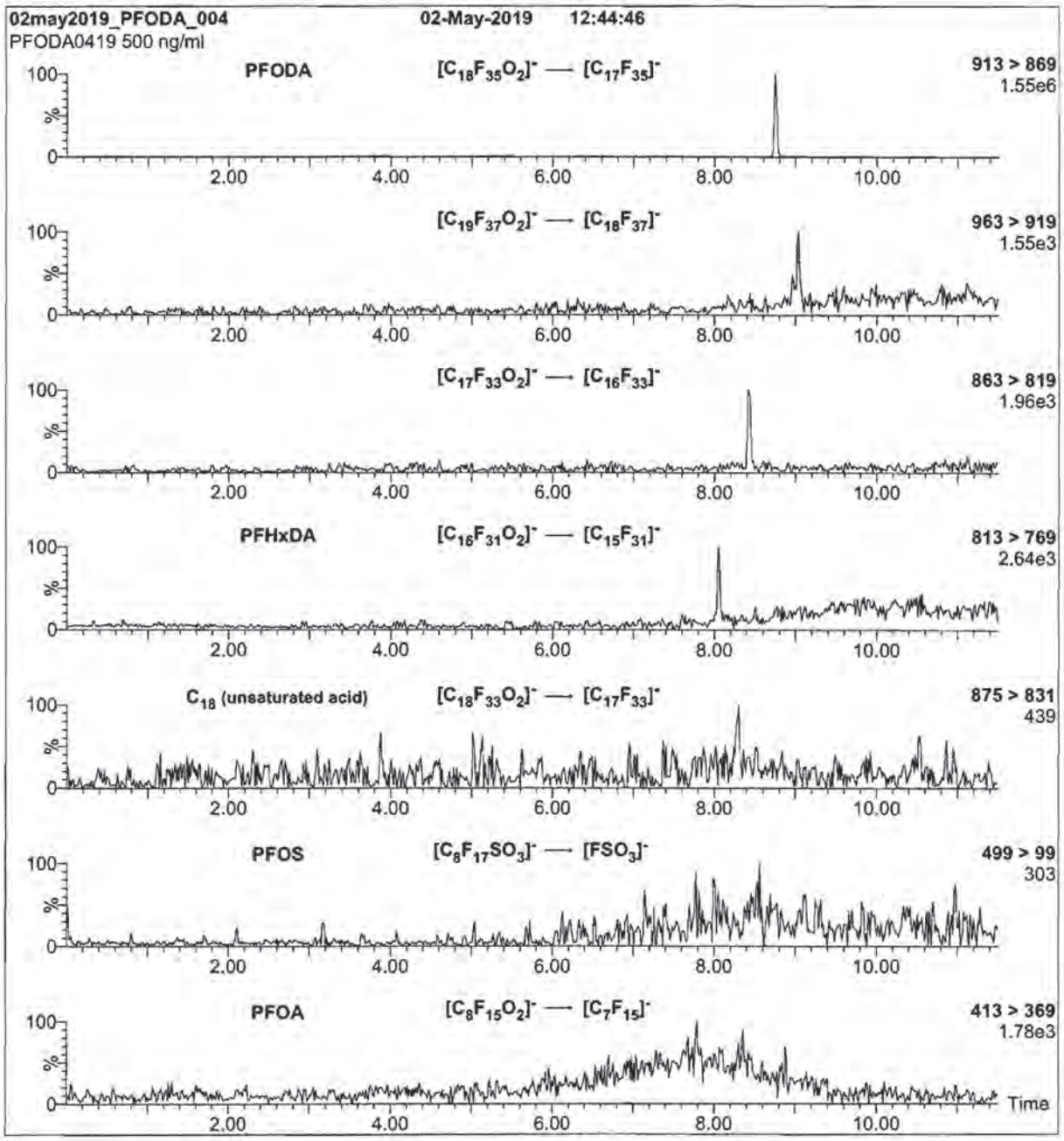
19L0647

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



Conditions for Figure 2:

Injection: On-column (PFODA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.92e-3
Collision Energy (eV) = 15

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFODA0419 (4 of 4)
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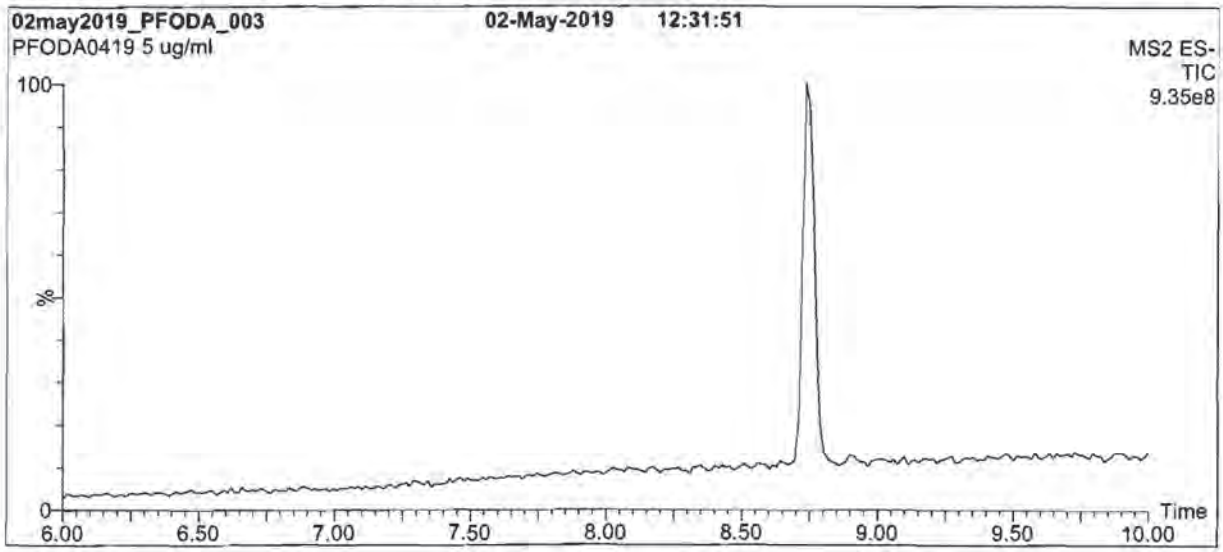
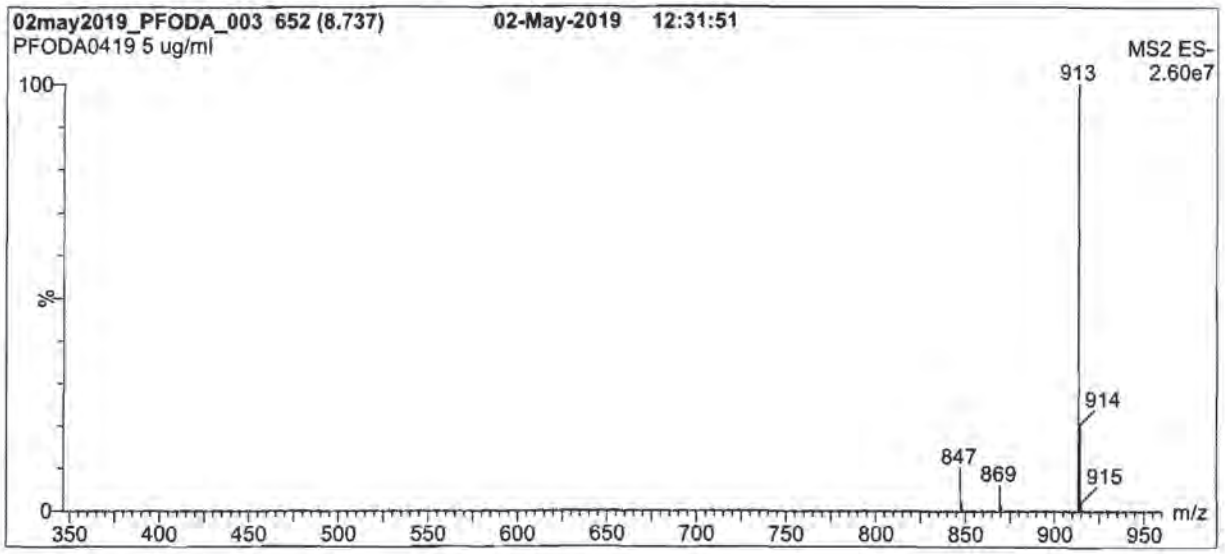
1910647

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFODA0419 (3 of 4)
rev0

19L0647

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

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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rev0

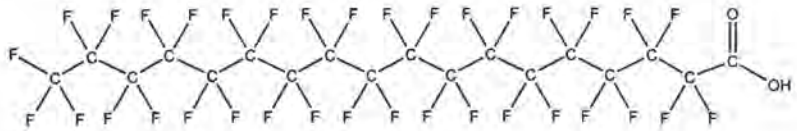
19L0647

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid
LOT NUMBER: PFODA0419

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.14
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/02/2019
EXPIRY DATE: (mm/dd/yyyy) 05/02/2024
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 PFHxDA ($C_{16}HF_{31}O_2$) and ~ 0.1% of PFHpDA ($C_{17}HF_{33}O_2$)

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager
Date: 05/16/2019 (mm/dd/yyyy)

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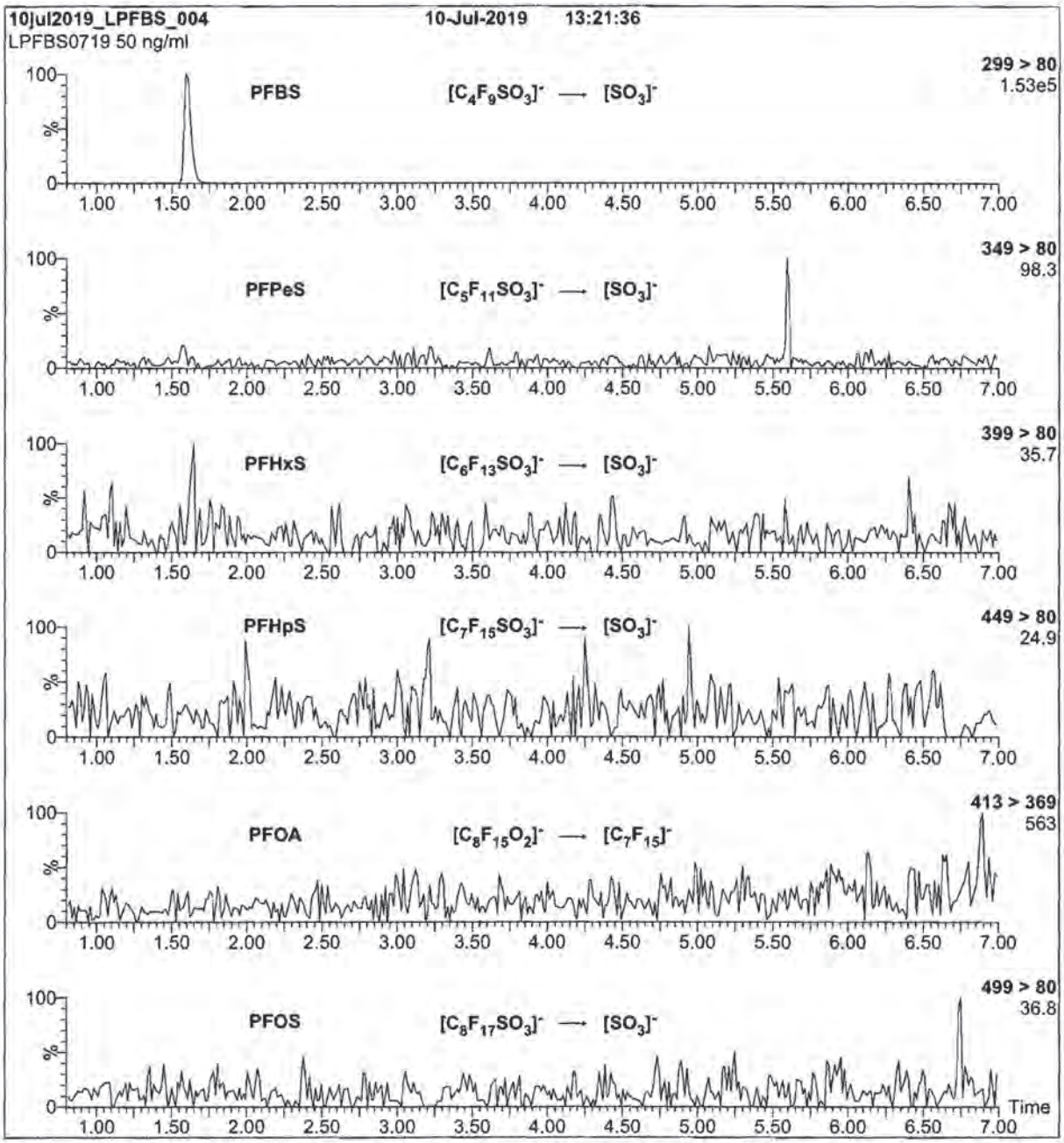
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0648

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFBS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.25e-3
Collision Energy (eV) = 30

Form#:27, Issued 2004-11-10
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LPFBS0719 (4 of 4)
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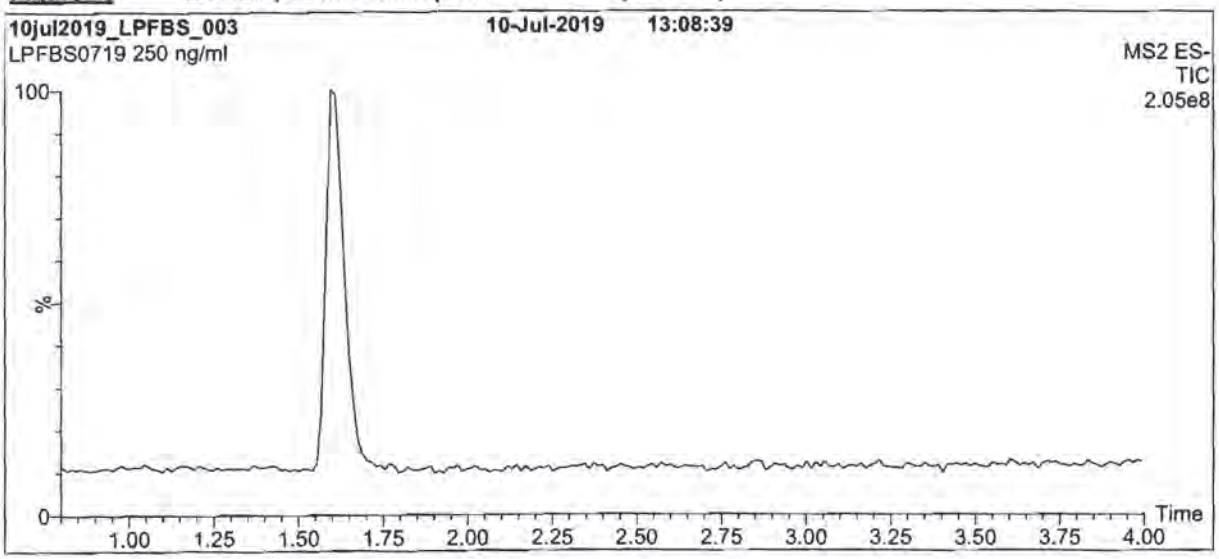
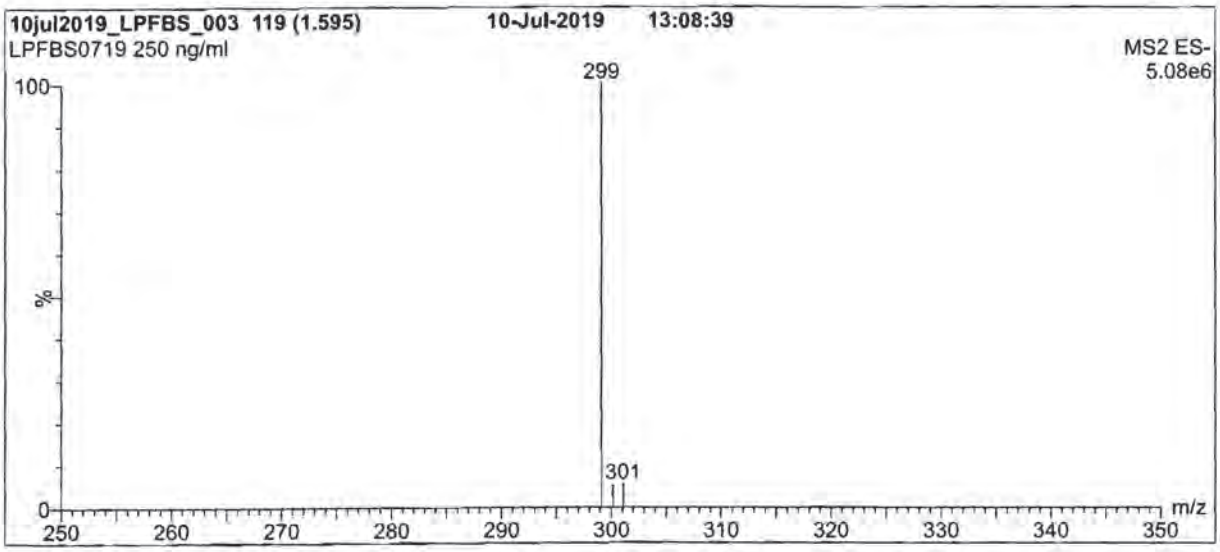
19L0648

Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 70% organic over 7 min, then ramp to 90% organic over 2 min and hold for 1.5 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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INTENDED USE:

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

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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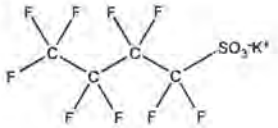
19L0648

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS0719
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/10/2019
EXPIRY DATE: (mm/dd/yyyy) 07/10/2024
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 sodium perfluoro-1-nonanesulfonate (L-PFNS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager **Date:** 08/06/2019 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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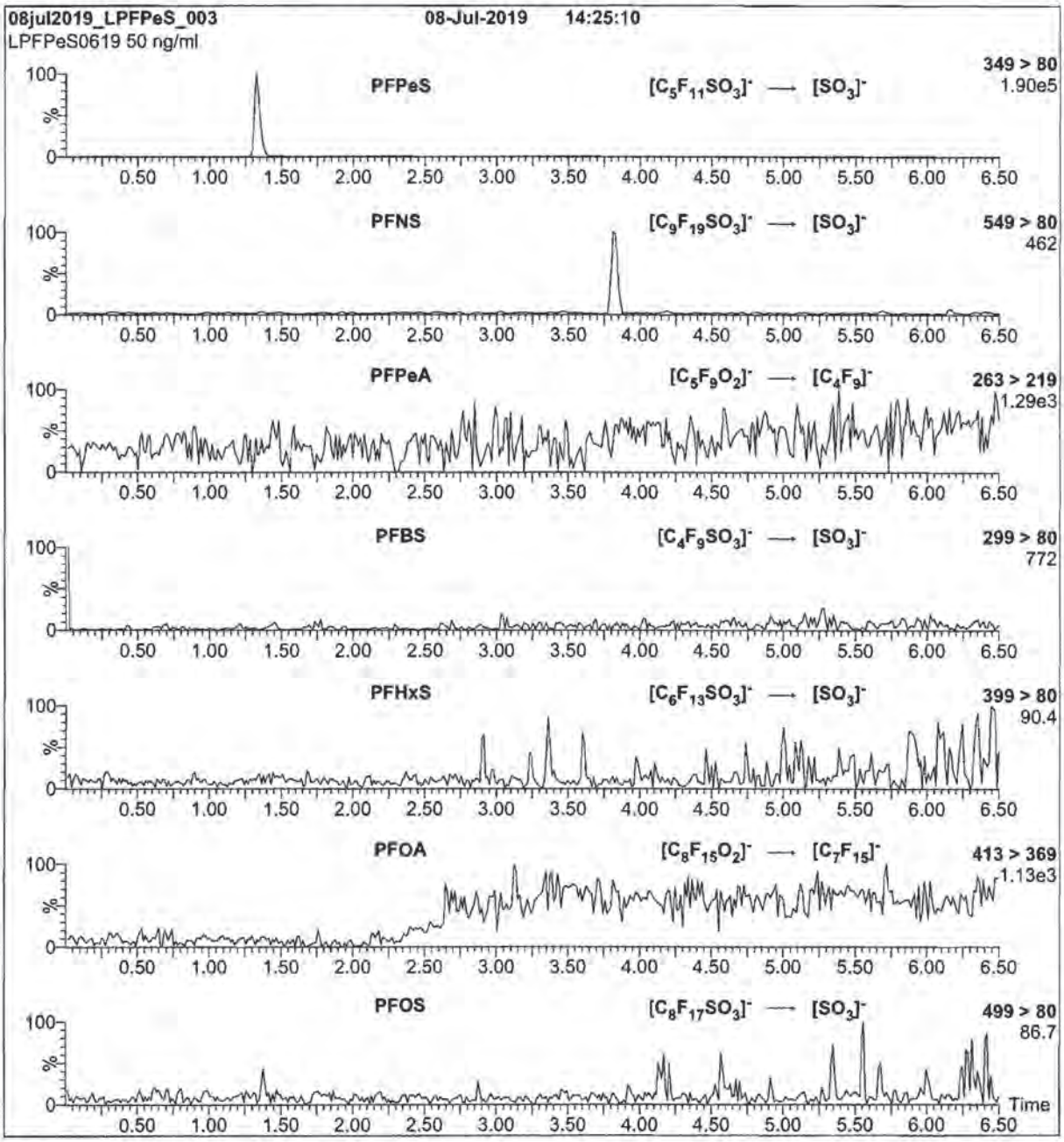
19L0649

Figure 2: **L-PFPeS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFPeS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

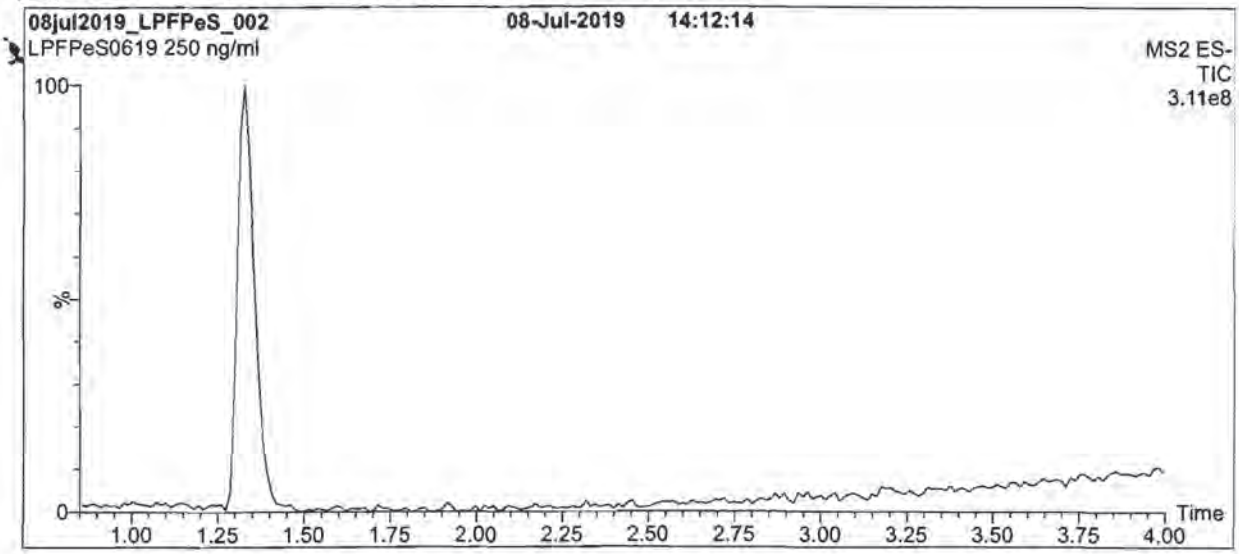
Collision Gas (mbar) = 3.37e-3
Collision Energy (eV) = 32

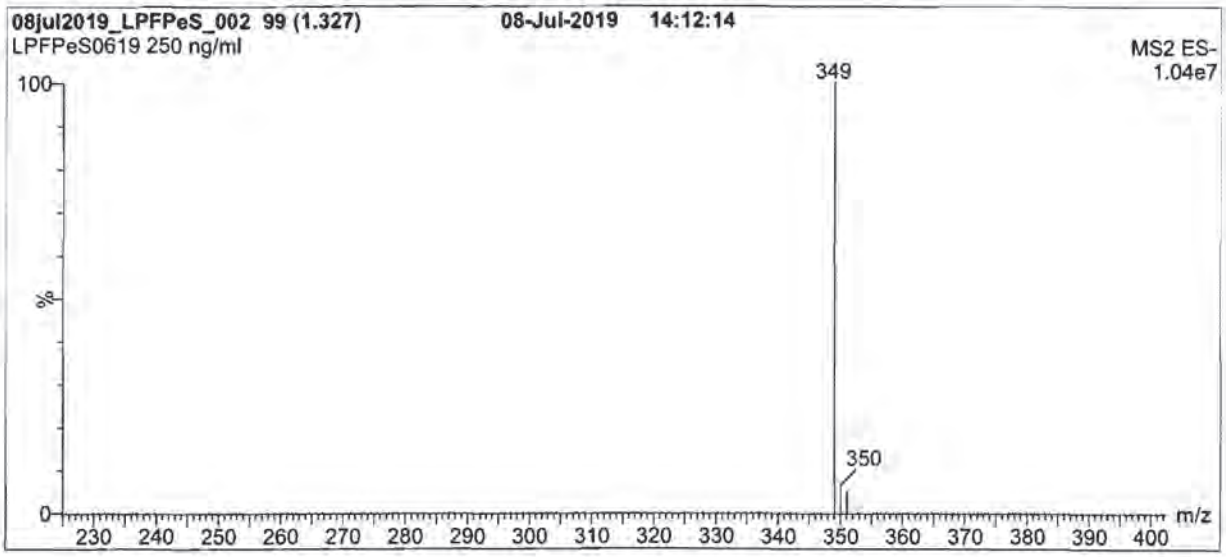
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFPeS0619 (4 of 4)
rev0

19L0649

Figure 1: L-PFPeS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFPeS0619 (3 of 4)
rev0

19L0649

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:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 0226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0619

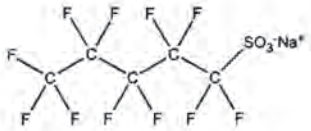
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFPeS
COMPOUND: Sodium perfluoro-1-pentanesulfonate
LOT NUMBER: LPFPeS0619

STRUCTURE:

CAS #: 630402-22-1



MOLECULAR FORMULA:	$C_5F_{11}SO_3Na$	**MOLECULAR WEIGHT:**	372.09
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.9 ± 2.3 µg/ml (PFPeS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/08/2019		
EXPIRY DATE: (mm/dd/yyyy)	07/08/2024		
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-nonanesulfonate (L-PFNS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/11/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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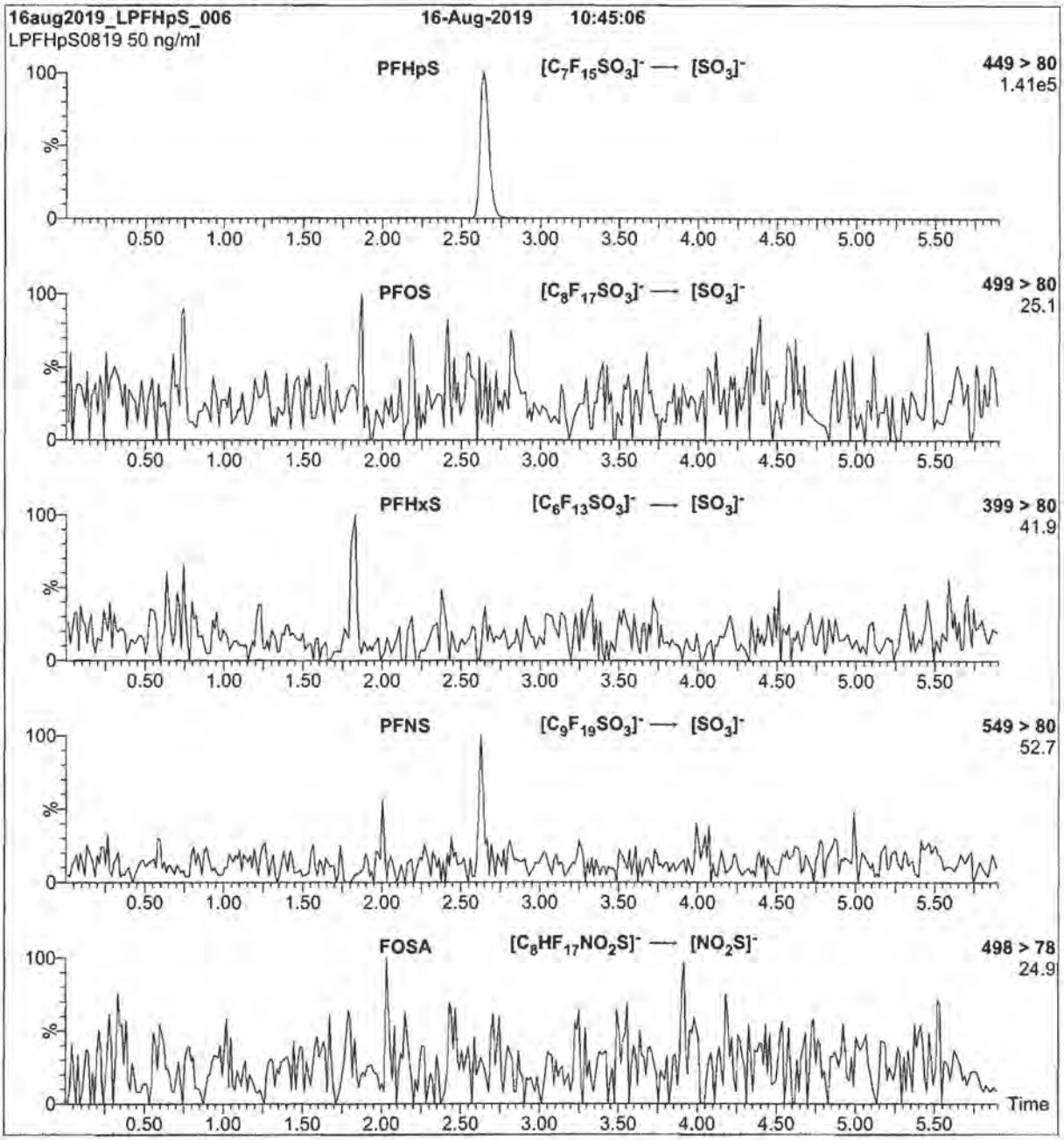
19L0650

Figure 2: **L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFHpS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

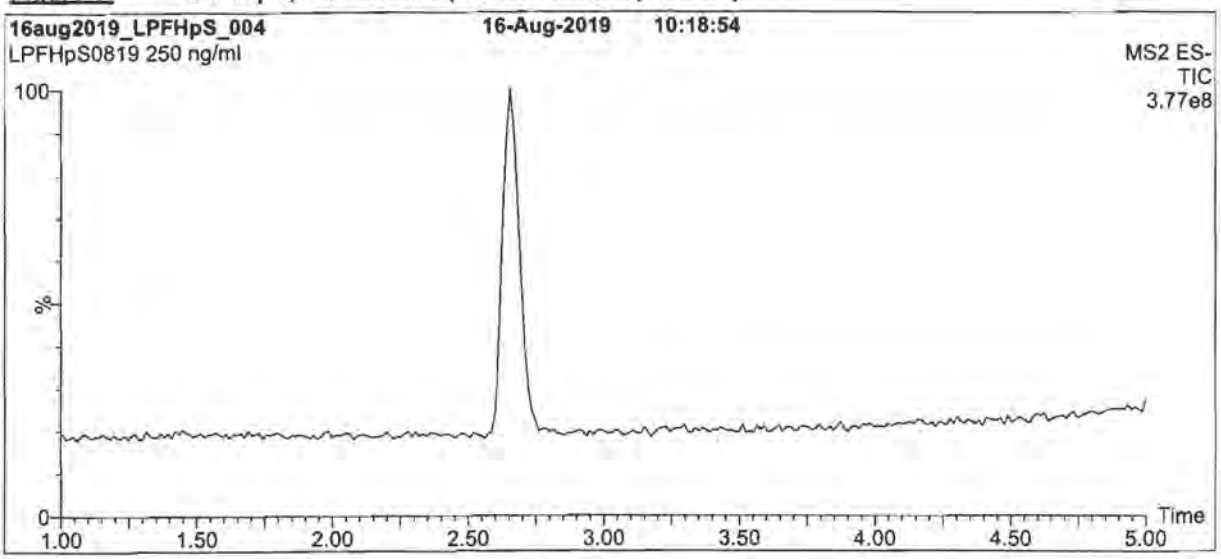
MS Parameters
Collision Gas (mbar) = 3.61e-3
Collision Energy (eV) = 42

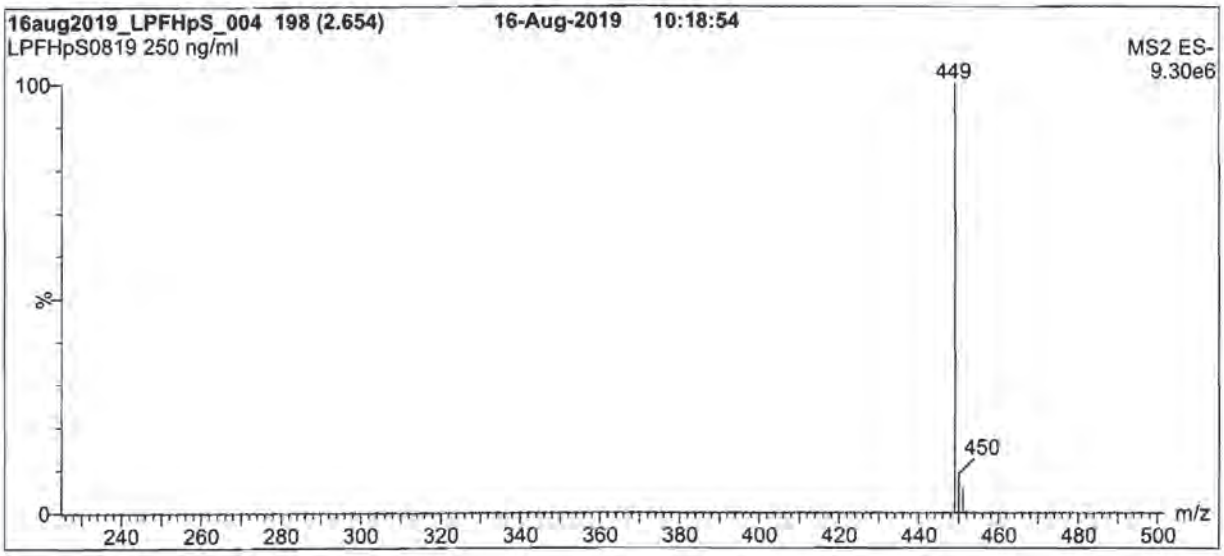
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFHpS0819 (4 of 4)
rev0

1910650

Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFHpS0819 (3 of 4)
rev0

19L0650

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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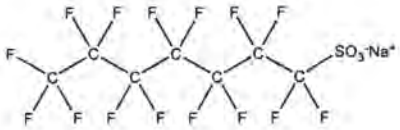
1910650

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS0819

STRUCTURE:
CAS #: 21934-50-9



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	08/16/2019		
EXPIRY DATE: (mm/dd/yyyy)	08/16/2024		
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:** 08/29/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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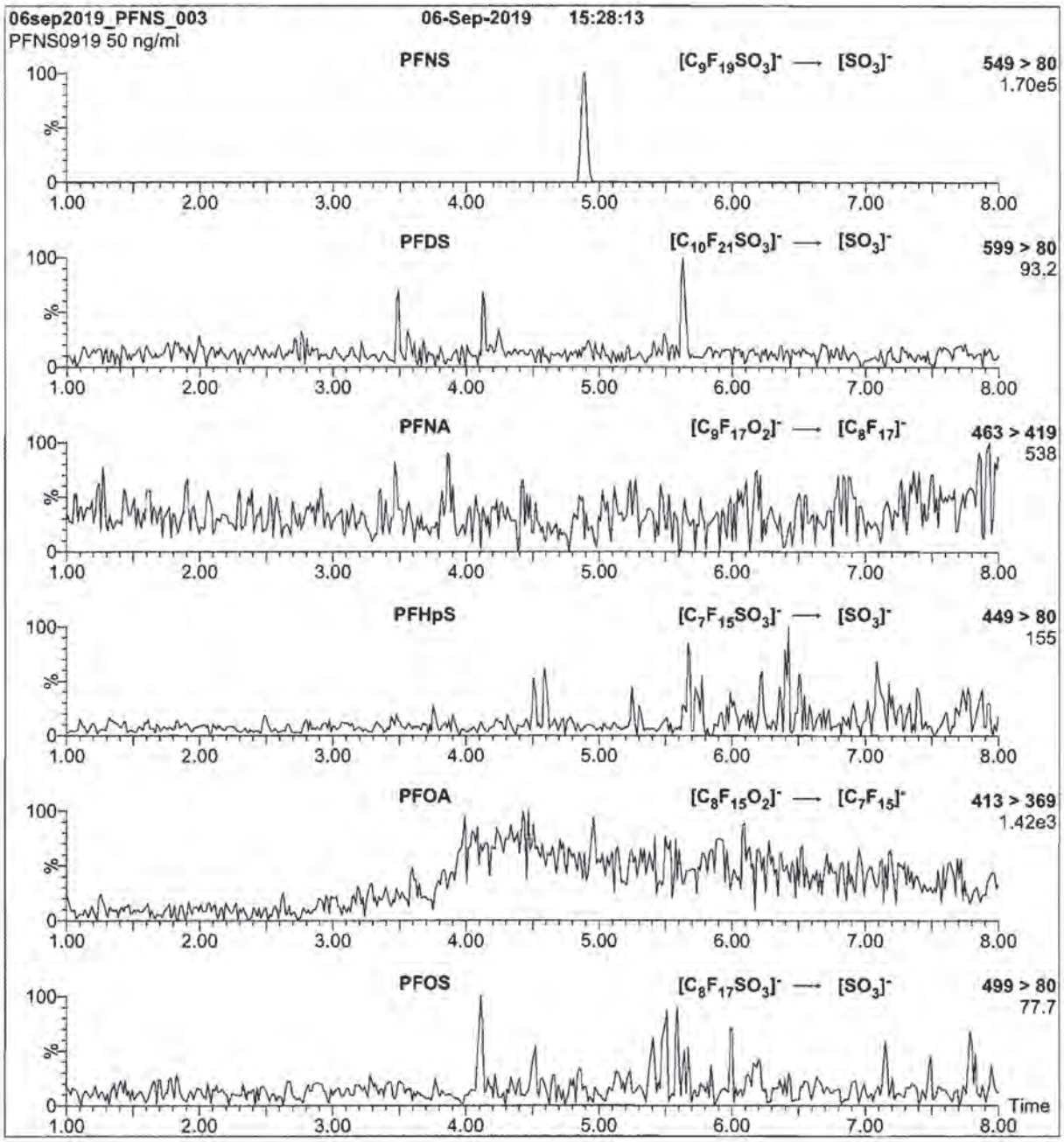
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0651

Figure 2: **L-PFNS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFNS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 64

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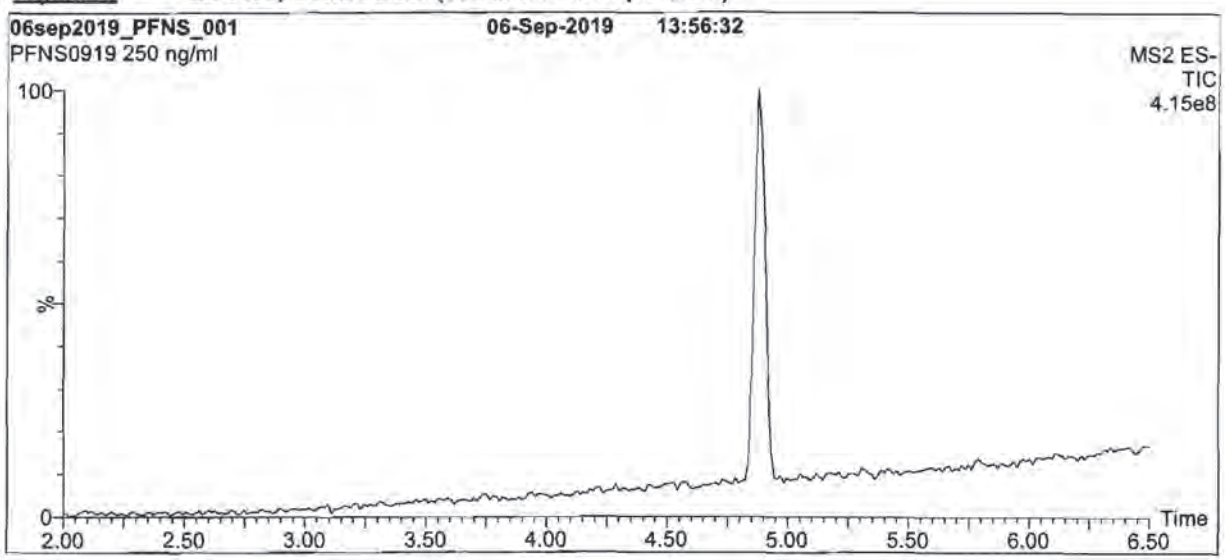
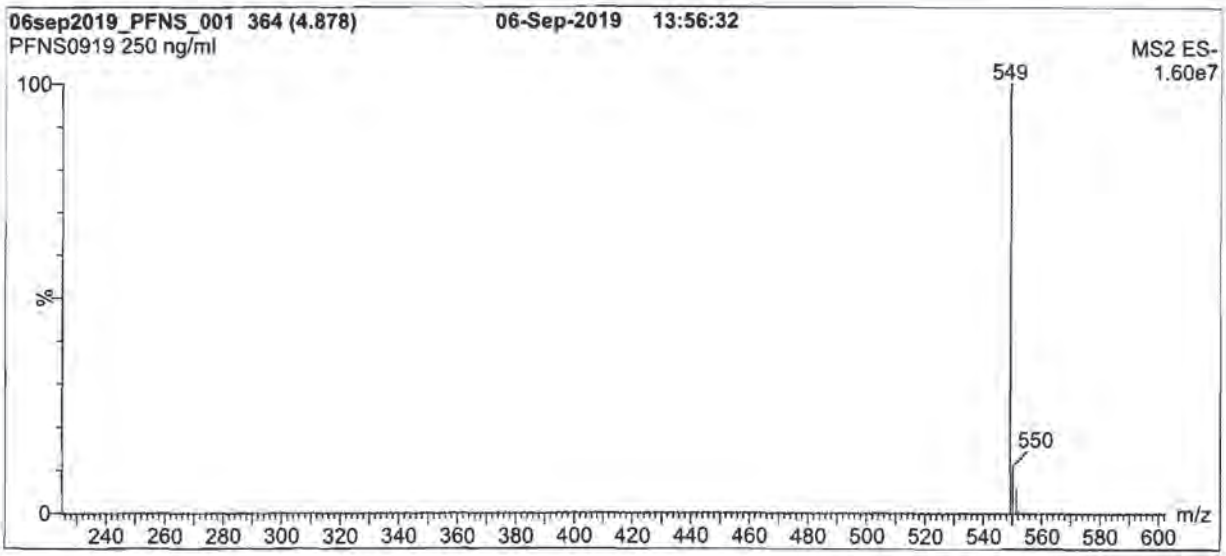
Figure 1: L-PFNS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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INTENDED USE:

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

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

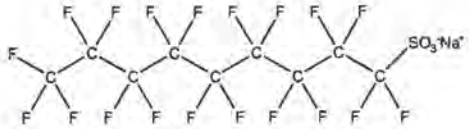
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0651

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFNS
LOT NUMBER: LPFNS0919
COMPOUND: Sodium perfluoro-1-nonanesulfonate
STRUCTURE:
CAS #: 98789-57-2



MOLECULAR FORMULA:	$C_9F_{19}SO_3Na$
MOLECULAR WEIGHT:	572.12
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.0 ± 2.4 µg/ml (PFNS anion)
SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	09/06/2019
EXPIRY DATE: (mm/dd/yyyy)	09/06/2024
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.

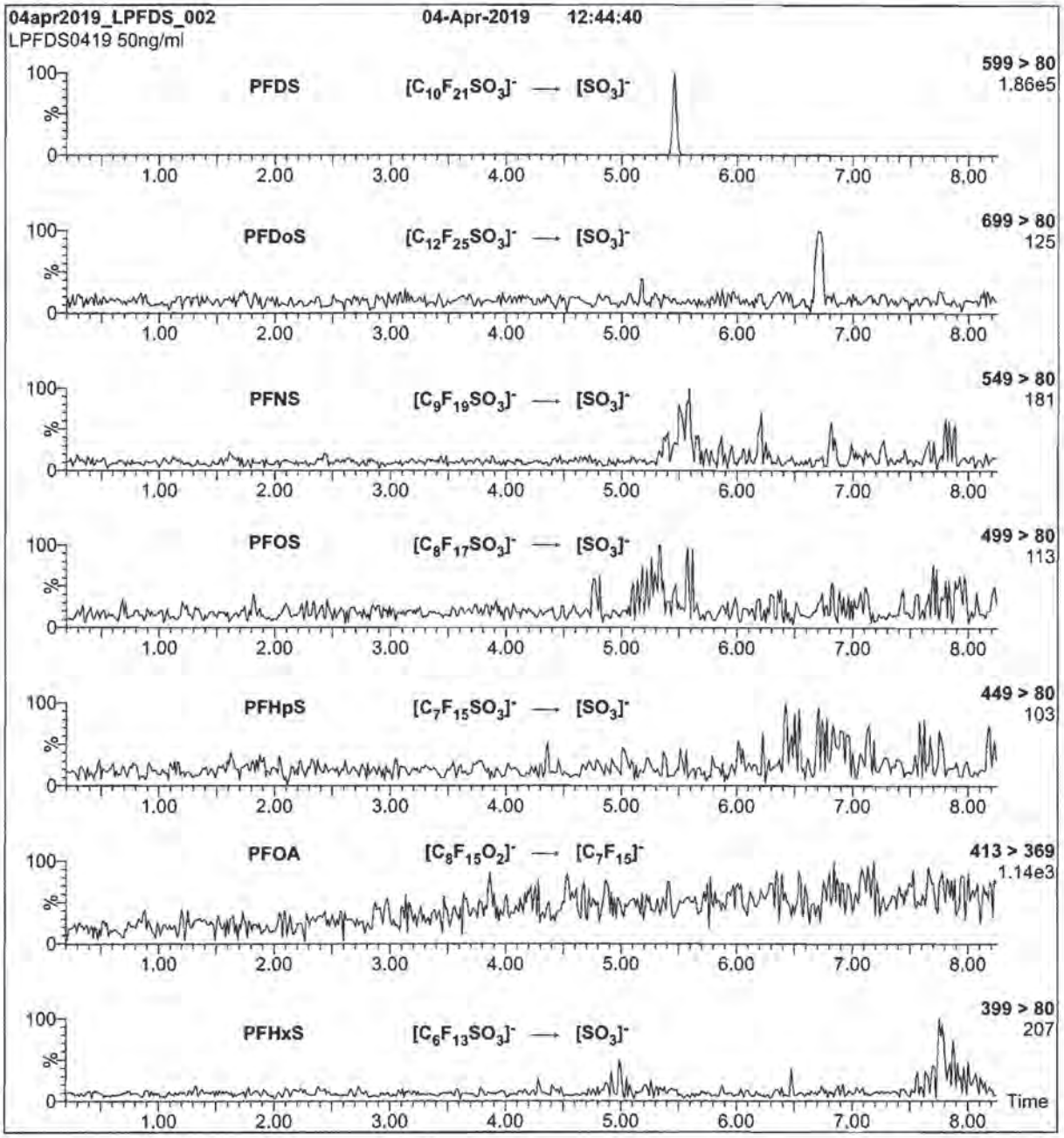
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0652

Figure 2: **L-PFDS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFDS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.99e-3
Collision Energy (eV) = 56

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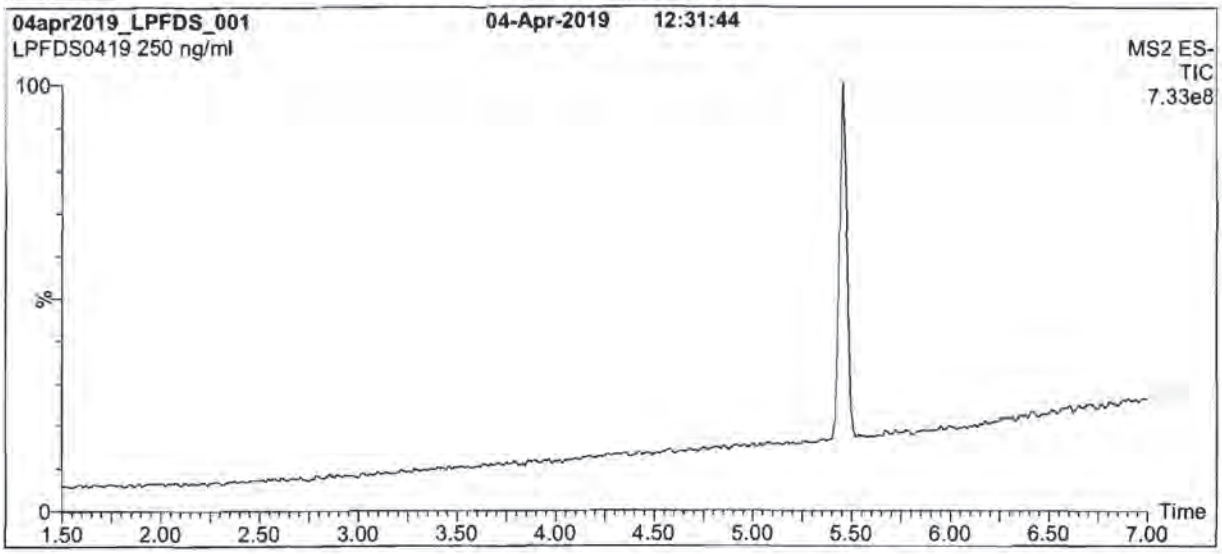
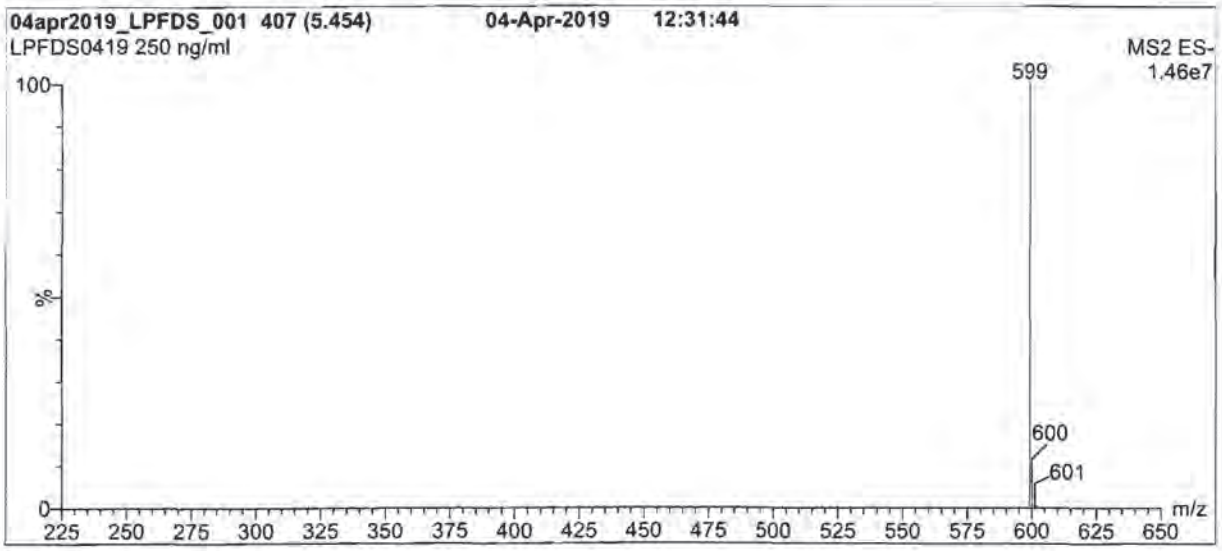
Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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19L0652

INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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

UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

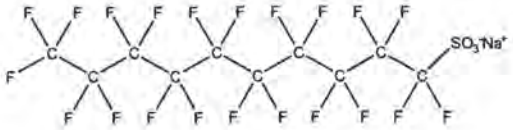
19L0652

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0419
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:



CAS #: 2806-15-7

MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/04/2019		
EXPIRY DATE: (mm/dd/yyyy)	04/04/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/30/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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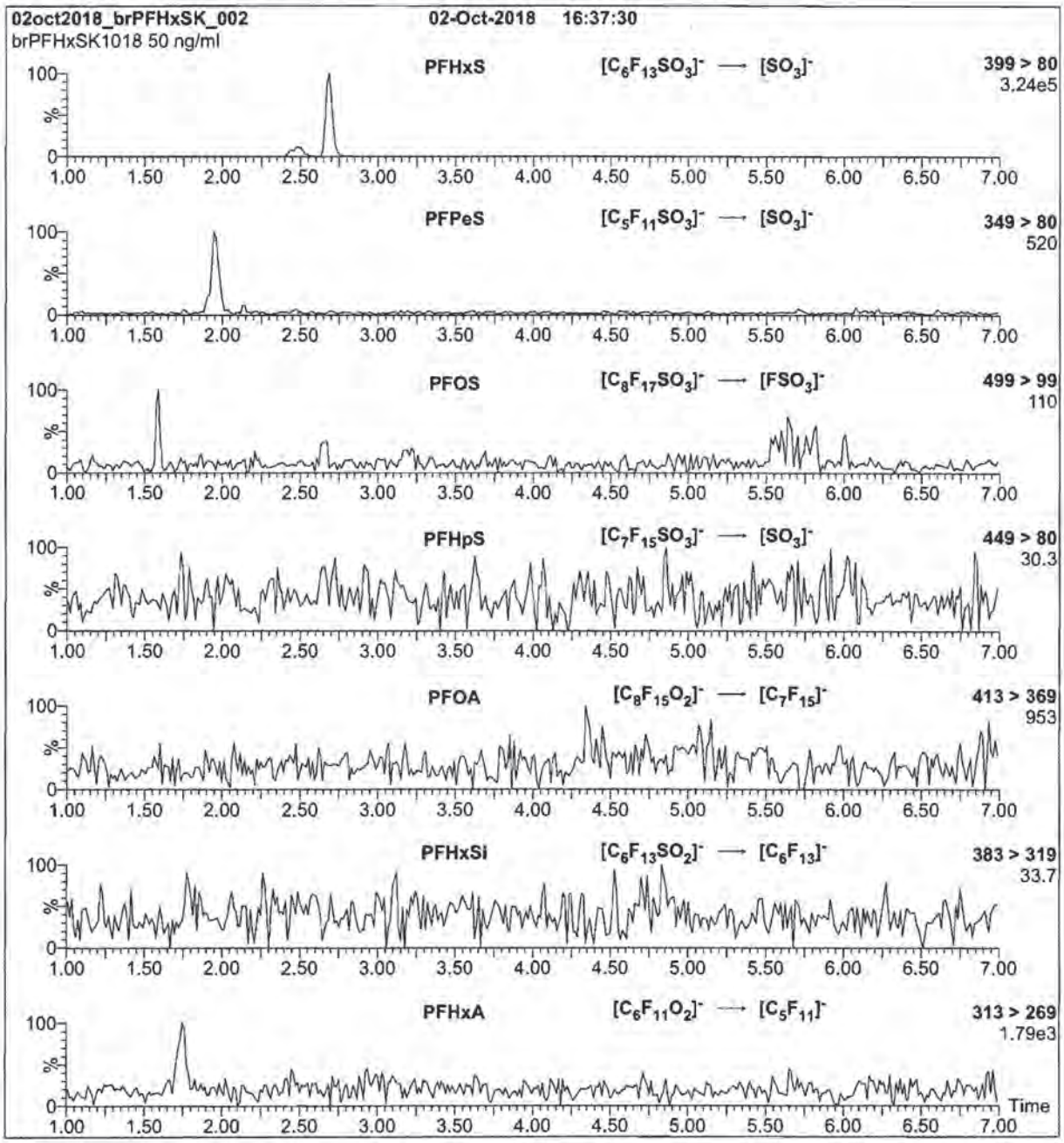
19L0653

Figure 3: **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column (br-PFHxSK)

Mobile phase: Same as Figures 1 and 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.87e-3
Collision Energy (eV) = 42

Form#:13, Issued 2004-11-10
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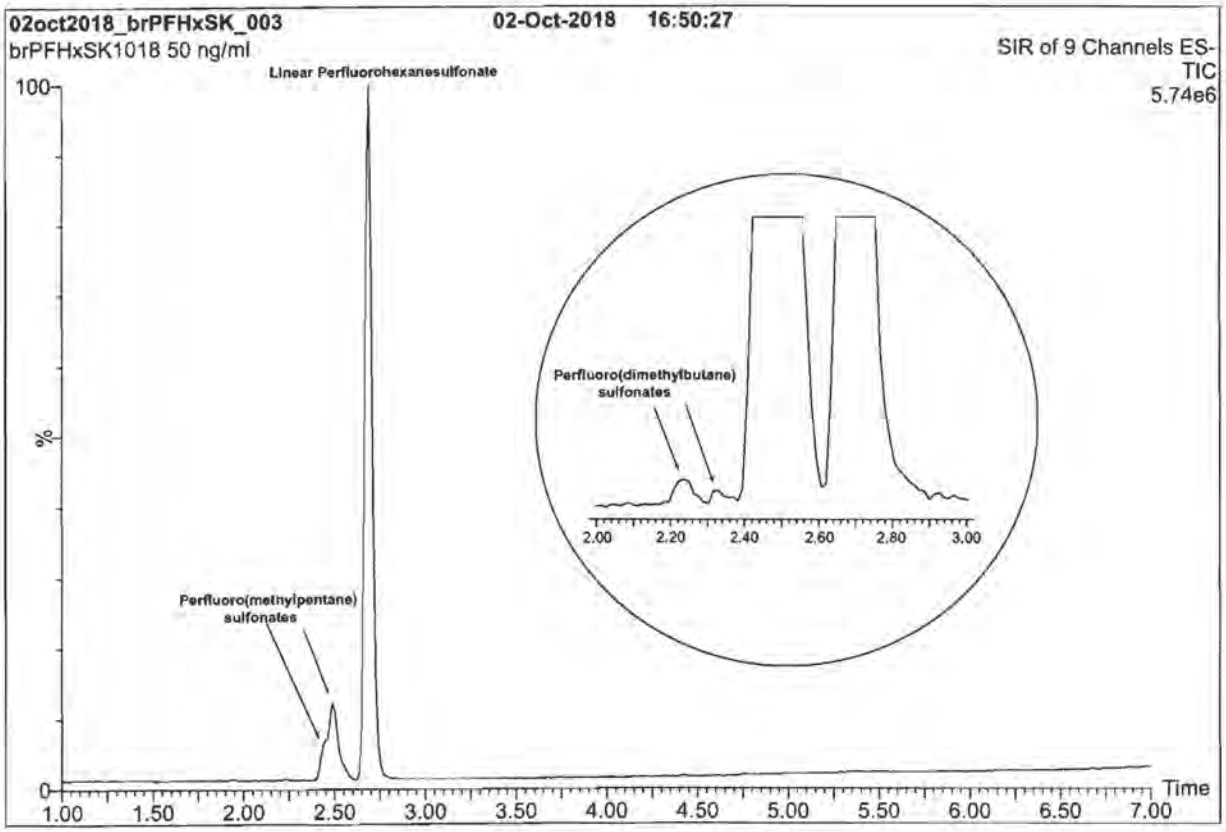
Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min. Hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR (9 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2 - 6)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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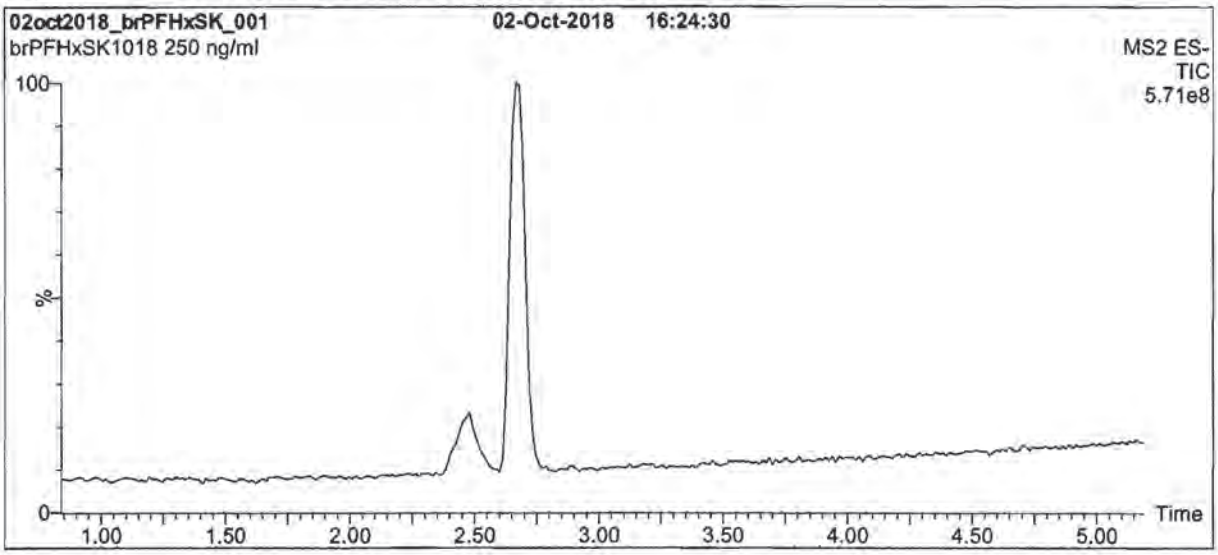
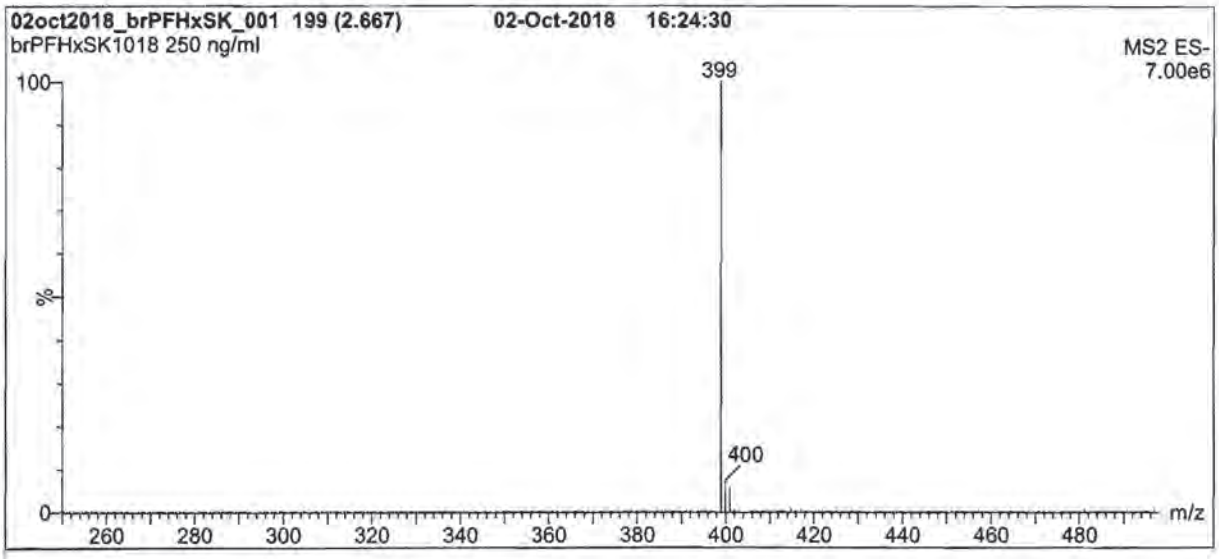
Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min. Hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Revision#:6, Revised 2018-08-14

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Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)*

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2\underset{\displaystyle CF_3}{\underset{\vert}{C}}FSO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2\underset{\displaystyle CF_3}{\underset{\vert}{C}}FCF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2\underset{\displaystyle CF_3}{\underset{\vert}{C}}FCF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3\underset{\displaystyle CF_3}{\underset{\vert}{C}}FCF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3\underset{\displaystyle CF_3}{\underset{\vert}{\overset{\displaystyle CF_3}{\overset{\vert}{C}}}}CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: _____ **Date:** 10/05/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brPFHxSK1018 (3 of 6)
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19L0653

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

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

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

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

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TRACEABILITY:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0653

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

**Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK1018
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)	10/01/2018
LAST TESTED: (mm/dd/yyyy)	10/02/2018
EXPIRY DATE: (mm/dd/yyyy)	10/02/2023
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.3% of perfluoro-n-hexanoic acid and ~ 0.15% of perfluoro-1-pentanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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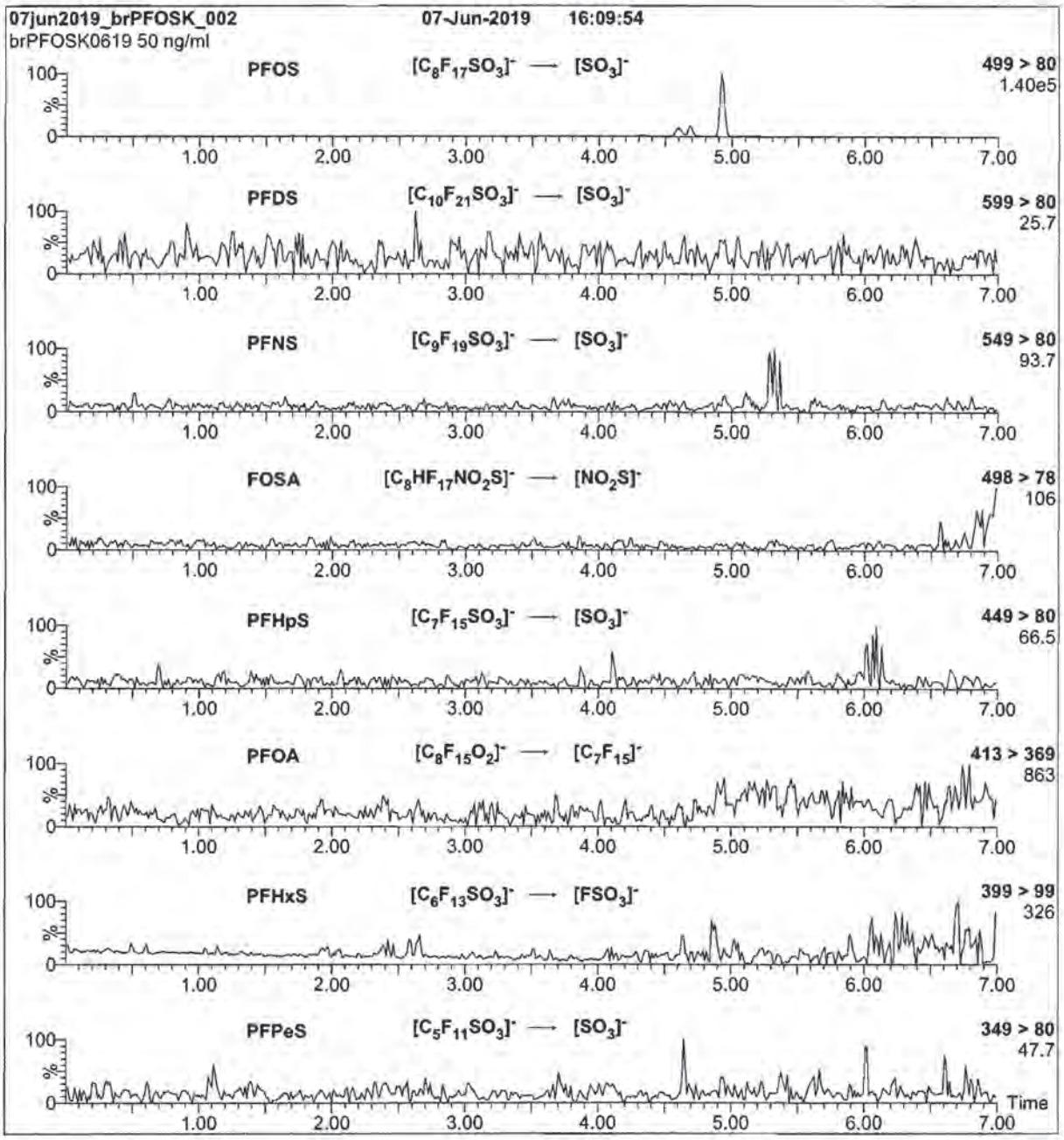
19L0654

Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column (br-PFOSK)

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.97e-3
Collision Energy (eV) = 64

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Revision#:6, Revised 2018-08-14

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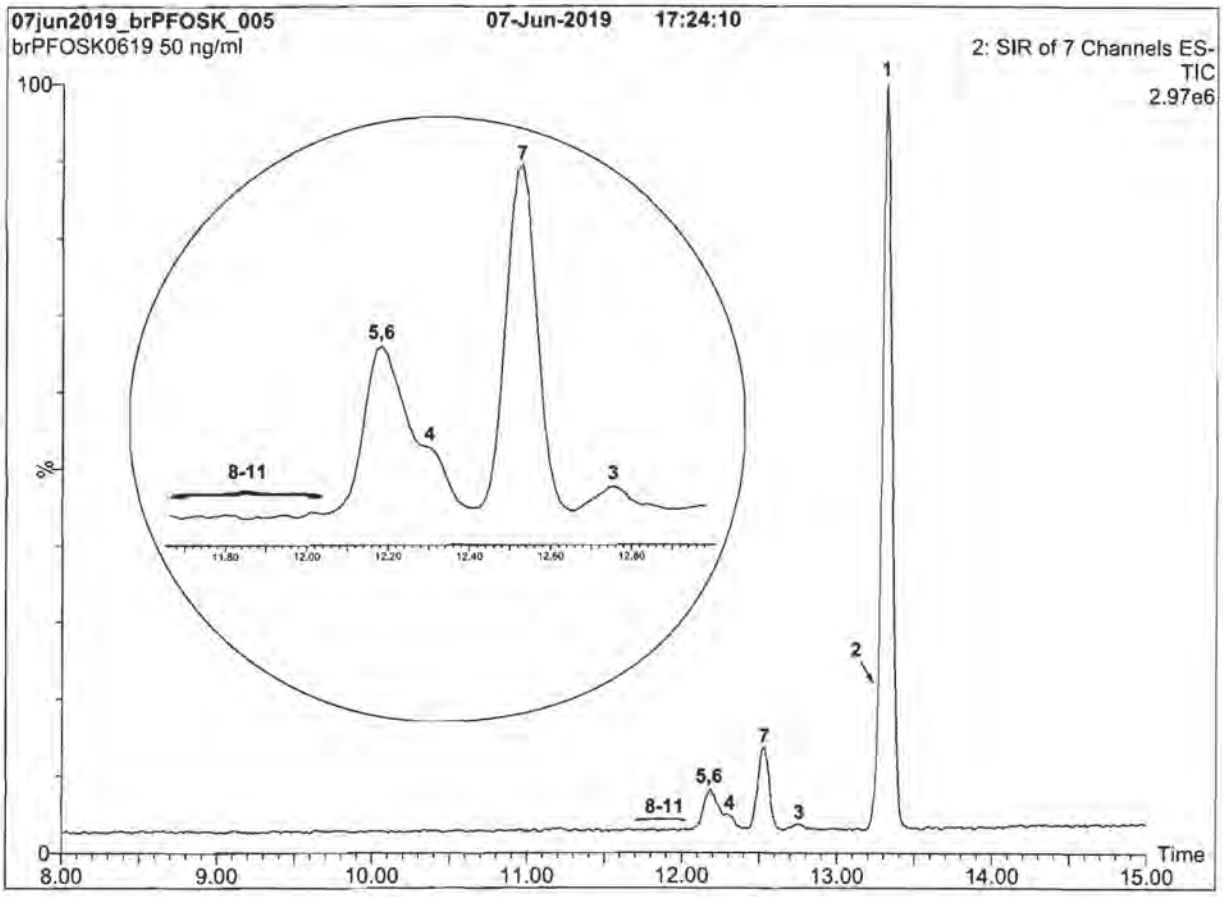
Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions:

Column:	Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)
Injection:	50 ng/ml of br-PFOSK
Mobile Phase:	Gradient 50% (80:20 MeOH:ACN) / 50% H_2O (both with 10 mM NH_4OAc buffer) Ramp to 90% organic over 8 min and hold for 2 min. Return to initial conditions over 0.75 min. Time: 12 min
Flow:	300 µl/min

MS Conditions:

SIR (ES^-)
Source = 120 °C
Desolvation = 500 °C
Cone Voltage = 2.00V

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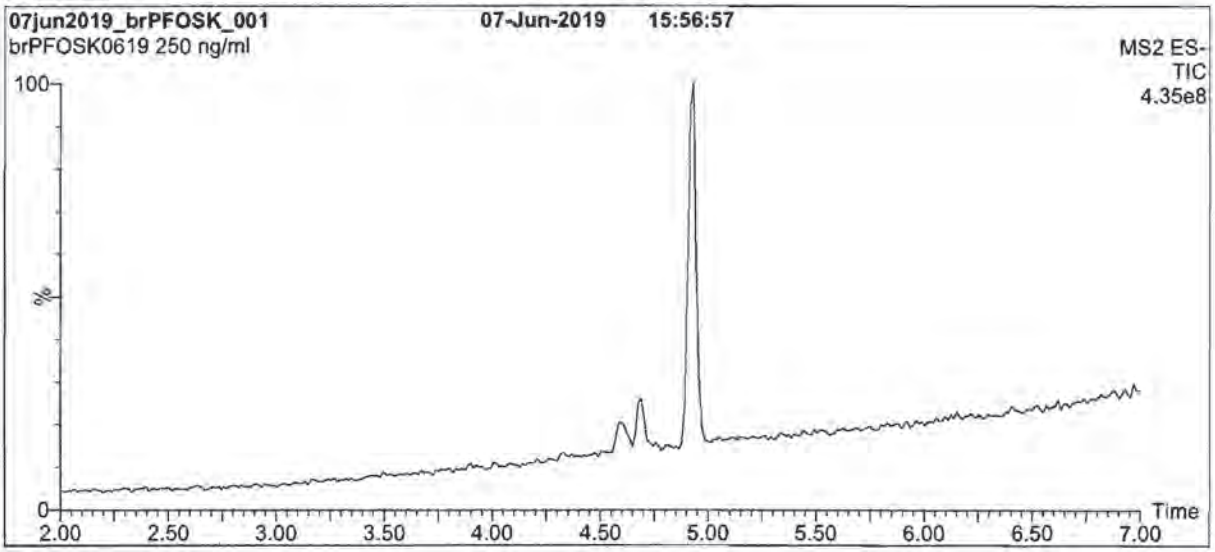
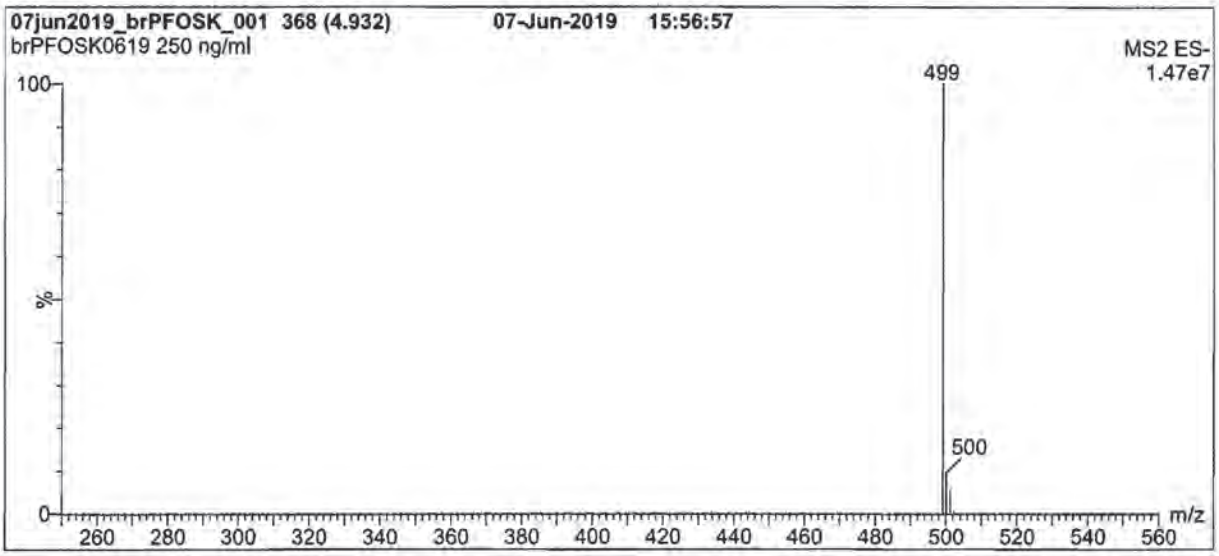
Figure 1: **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min.
Return to initial conditions over 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: _____ **Date:** 06/17/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds 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, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

**Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0619
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)	06/03/2019
LAST TESTED: (mm/dd/yyyy)	06/07/2019
EXPIRY DATE: (mm/dd/yyyy)	06/07/2024
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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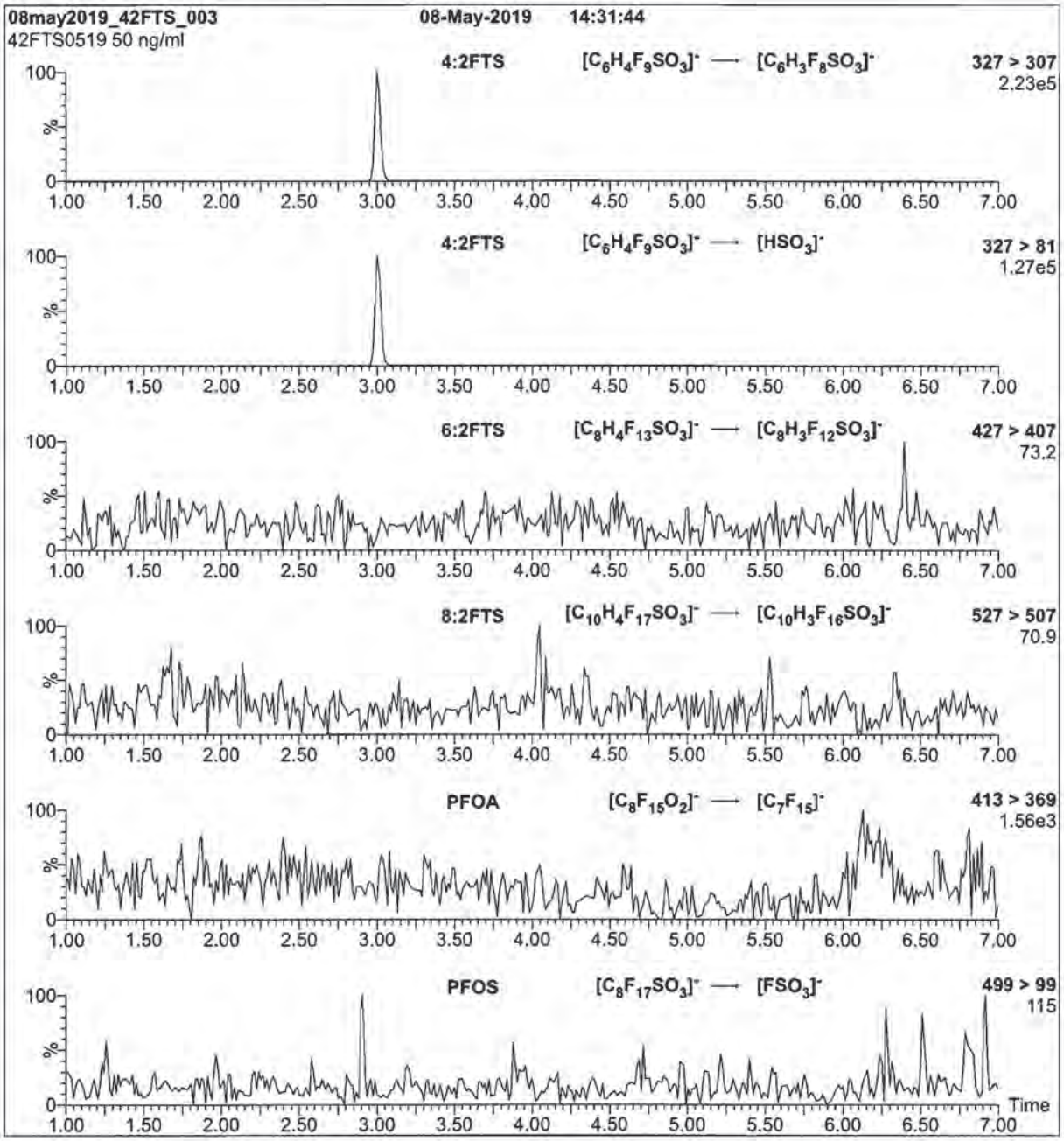
Figure 2: **4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (4:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.07e-3
Collision Energy (eV) = 18

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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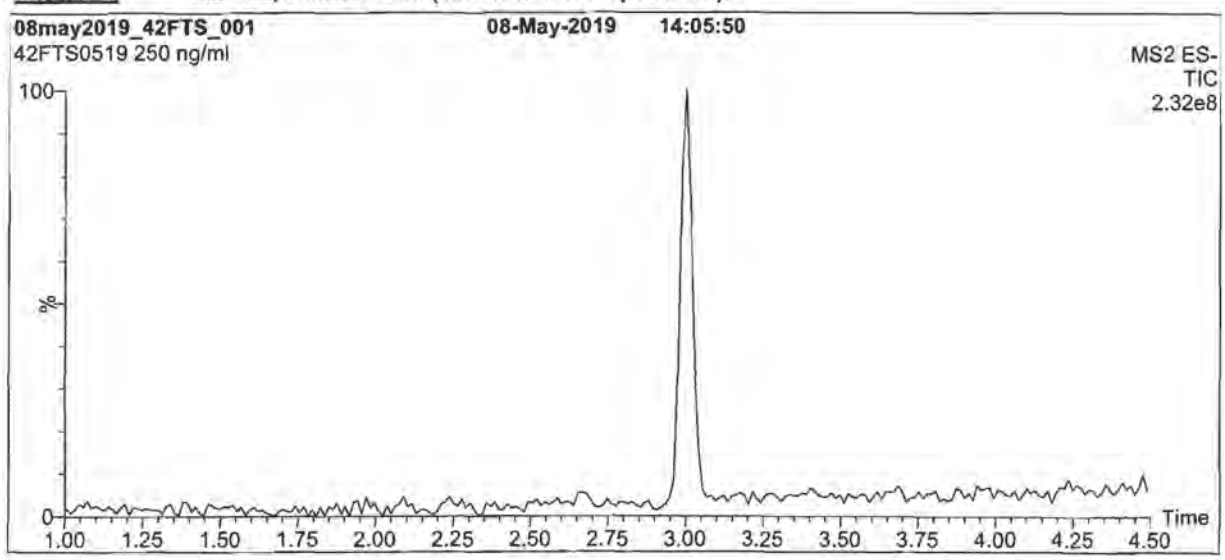
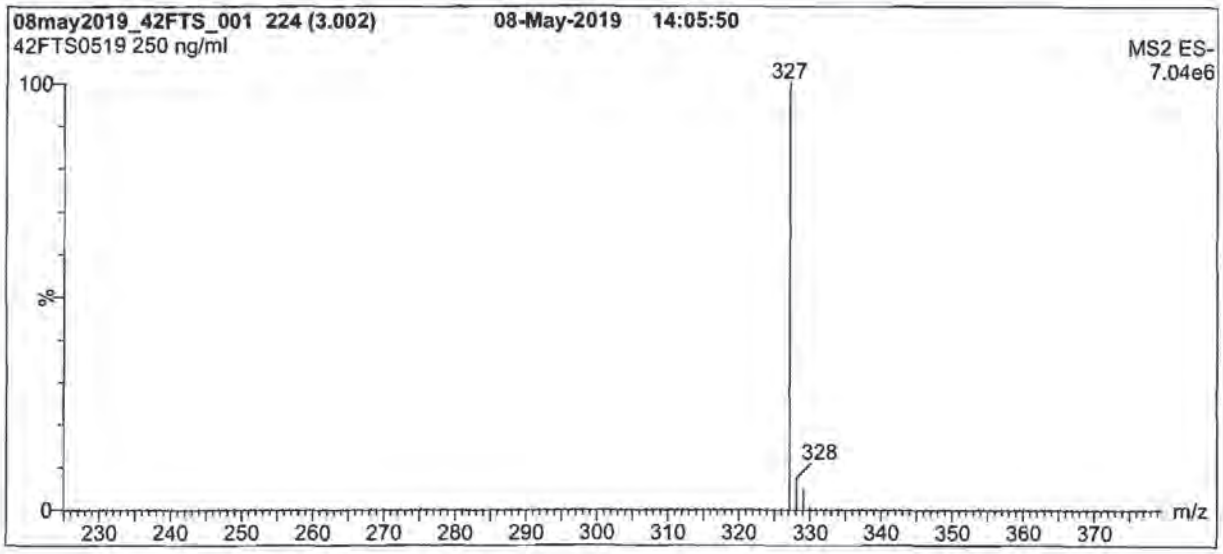
Figure 1: **4:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Revision#:6, Revised 2018-06-14

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INTENDED USE:

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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 $x_1, x_2,...x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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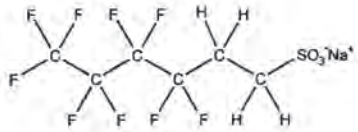
19L0655

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS0519
COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** 27619-93-8



MOLECULAR FORMULA: $C_6H_4F_8SO_3Na$ **MOLECULAR WEIGHT:** 350.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
46.7 ± 2.3 µg/ml (4:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/08/2019
EXPIRY DATE: (mm/dd/yyyy) 05/08/2024
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:** 05/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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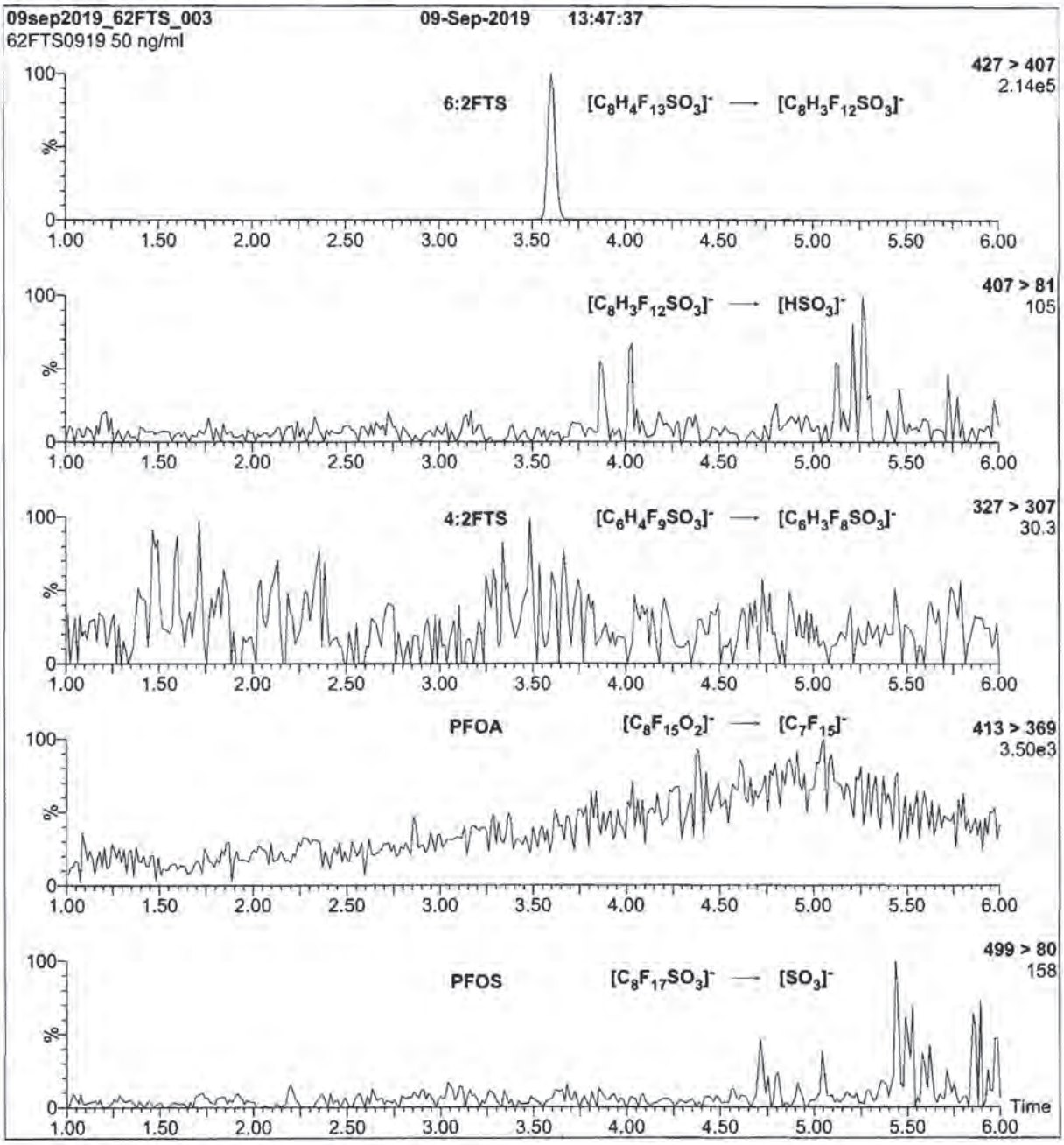
Revision#:6, Revised 2018-08-14

19L0656

Figure 2: **6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (6:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.61e-3
Collision Energy (eV) = 20

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Revision#:6, Revised 2018-08-14

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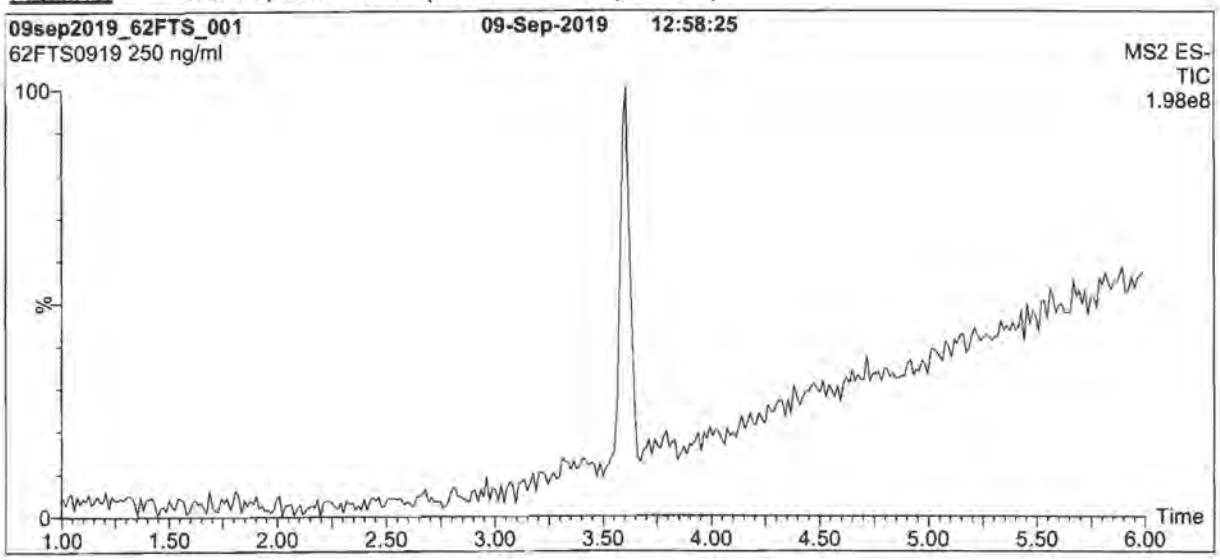
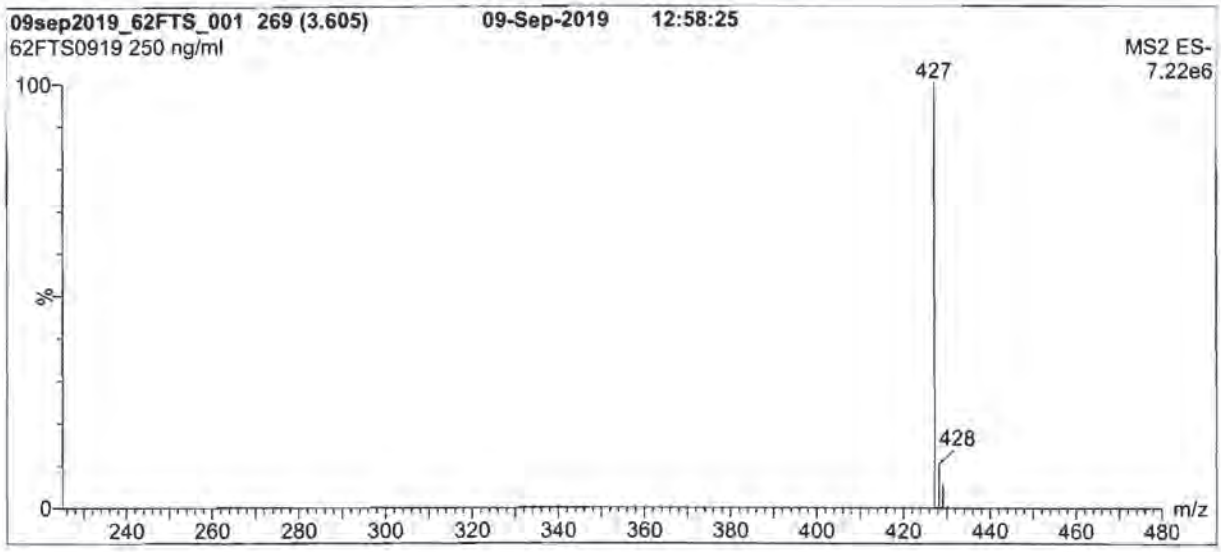
rev0

19L0656

Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

62FTS0919 (3 of 4)
rev0

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INTENDED USE:

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HANDLING:

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

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

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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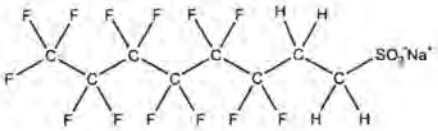
19L0656

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0919
COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** 27619-94-9



MOLECULAR FORMULA: $C_8H_4F_{13}SO_3Na$ **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.4 ± 2.4 µg/ml (6:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/09/2019
EXPIRY DATE: (mm/dd/yyyy) 09/09/2024
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:** 09/09/2019 (mm/dd/yyyy)

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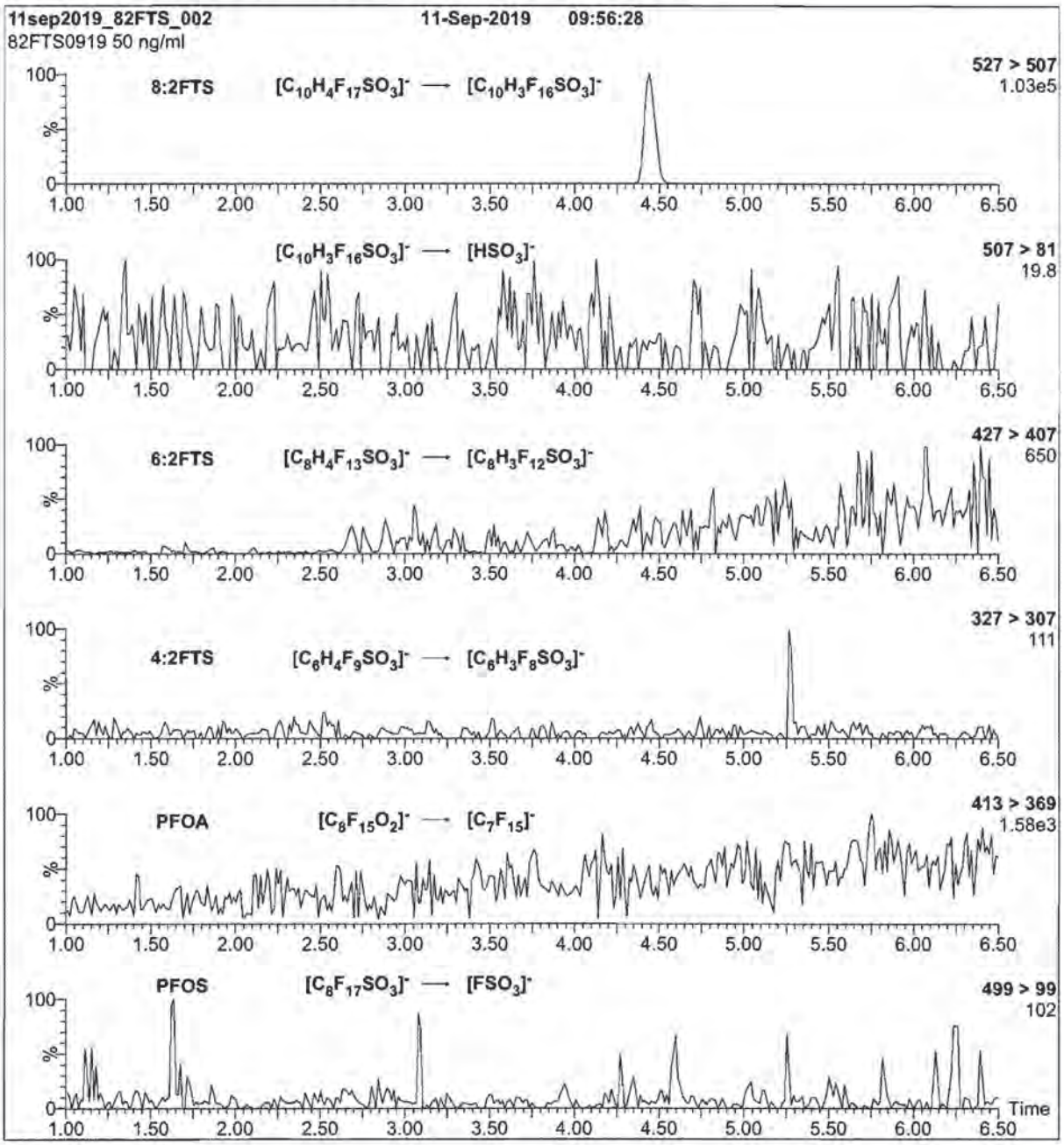
Revision#:6, Revised 2018-08-14

19L0657

Figure 2: **8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (8:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 26

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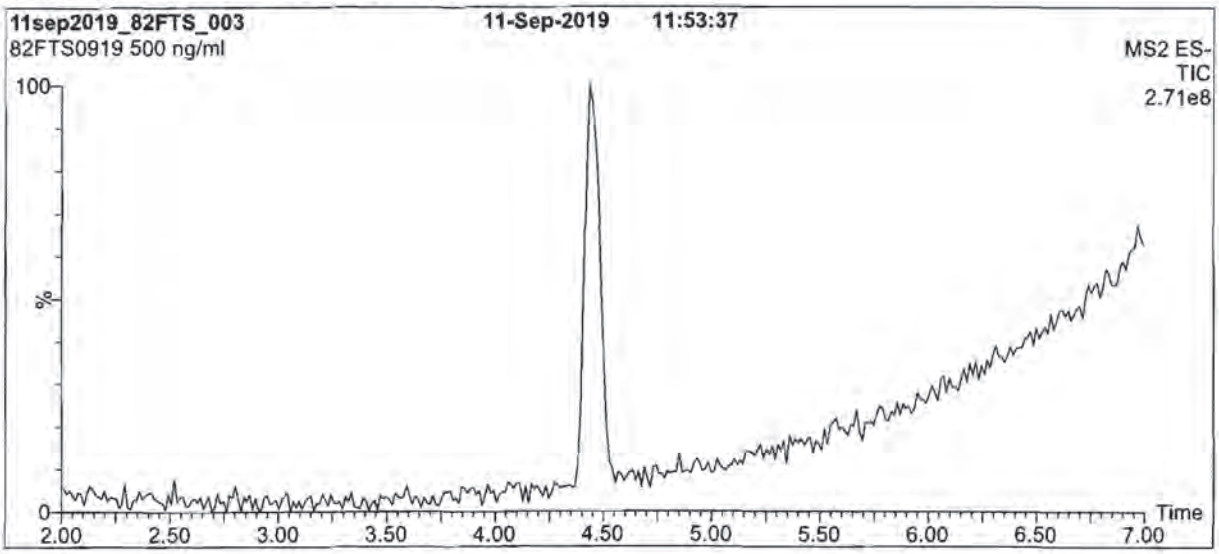
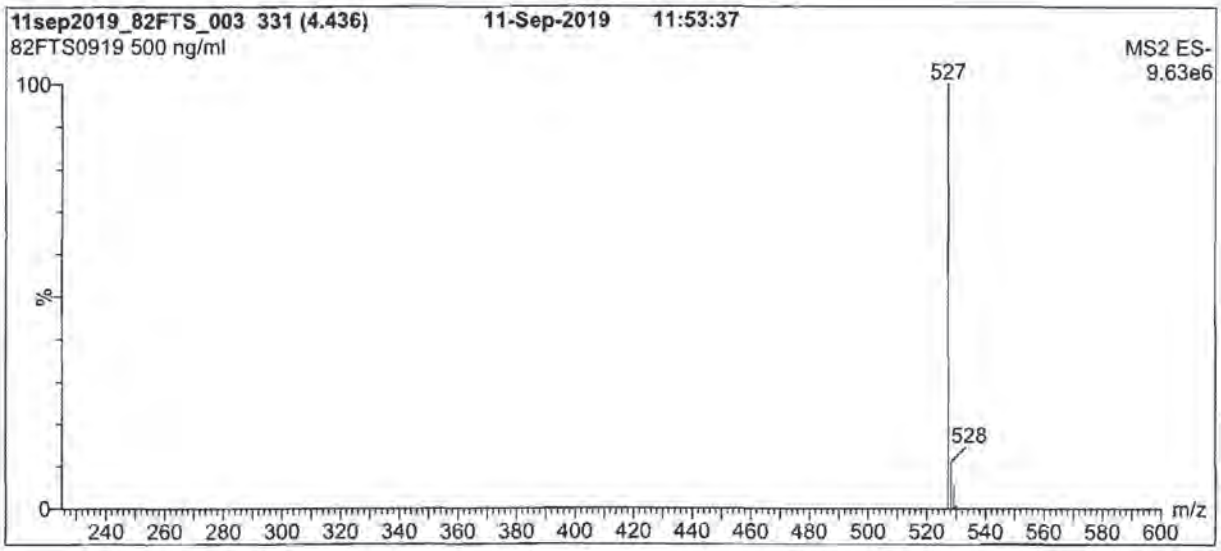
rev0

19L0657

Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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INTENDED USE:

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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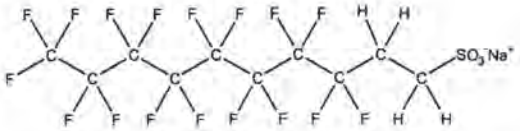
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0919
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** 27619-96-1



MOLECULAR FORMULA: $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (8:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/11/2019
EXPIRY DATE: (mm/dd/yyyy) 09/11/2024
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/11/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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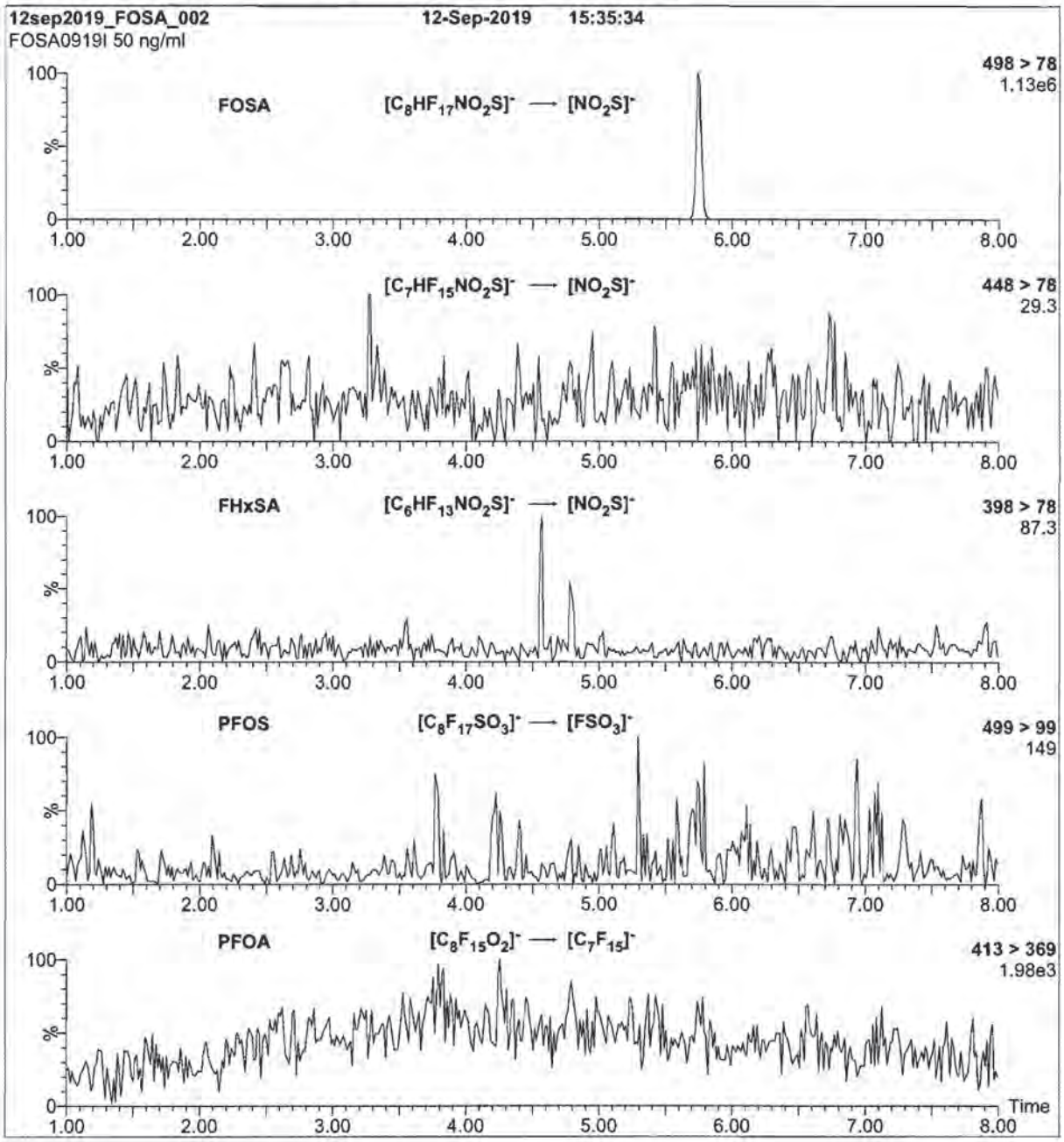
Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (FOSA-I)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.57e-3
Collision Energy (eV) = 30

Form#:27, Issued 2004-11-10
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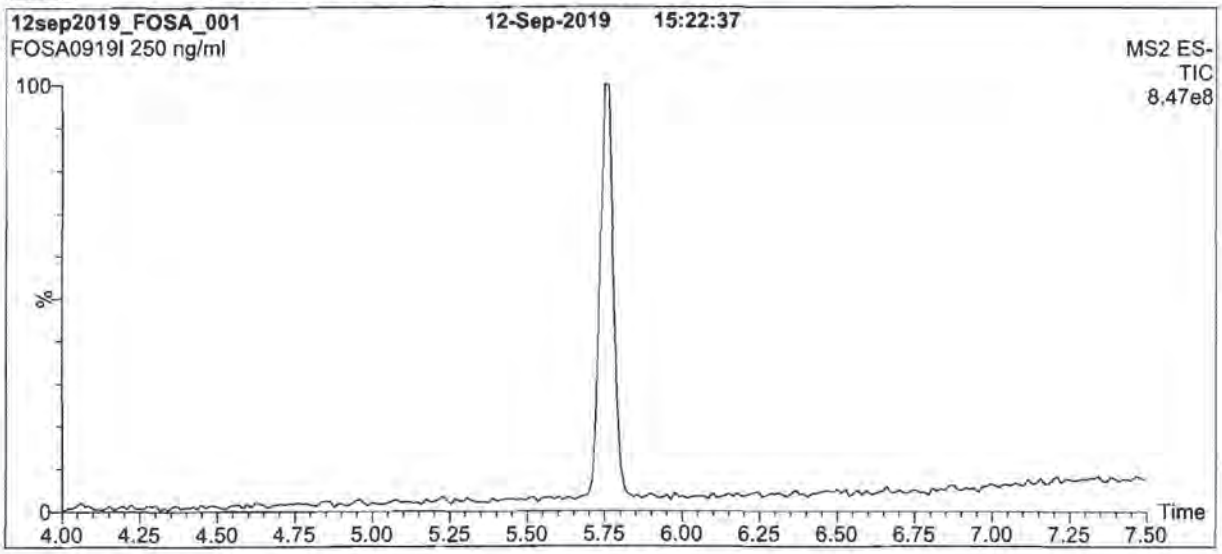
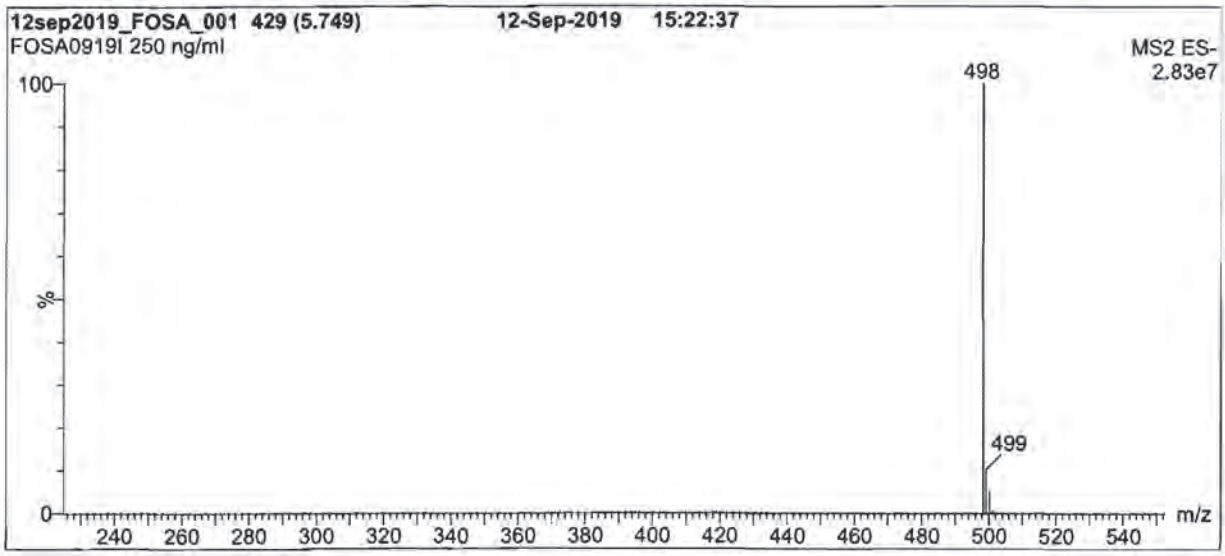
19L0658

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Revision#:6, Revised 2018-08-14

FOSA0919I (3 of 4)
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where x is expressed as a relative standard uncertainty of the individual parameter.

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CALA Testing Accreditation No. A1226

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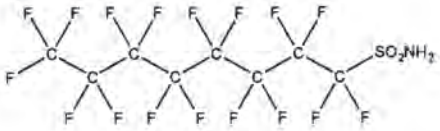
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide
LOT NUMBER: FOSA0919I

STRUCTURE:
CAS #: 754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/12/2019		
EXPIRY DATE: (mm/dd/yyyy)	09/12/2024		
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.

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Certified By: _____ **Date:** 09/13/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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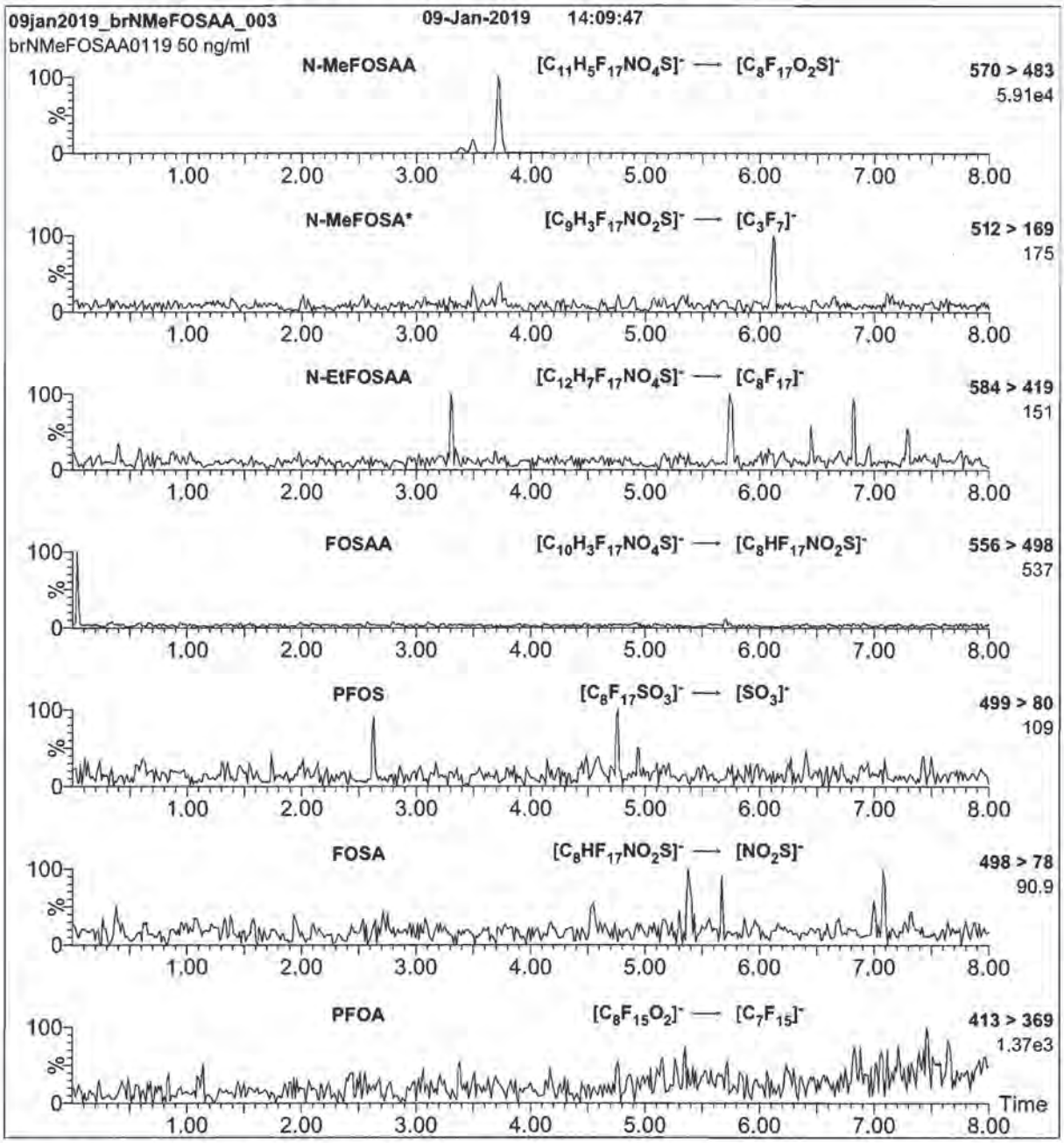
19L0659

Figure 3: **br-NMeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



***Note**: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column (br-NMeFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.79e-3
Collision Energy (eV) = 16

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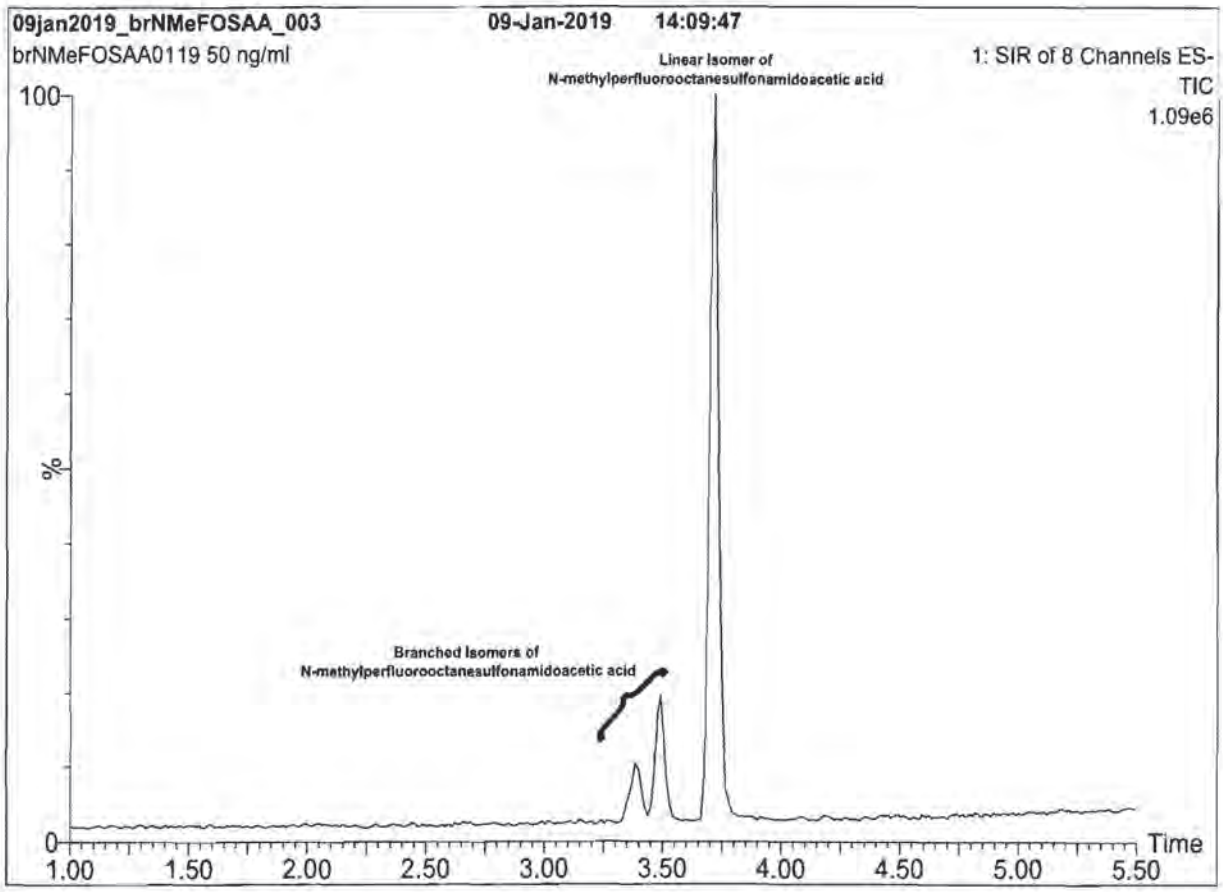
Figure 2: **br-NMeFOSAA; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR (8 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 2-64
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:13, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

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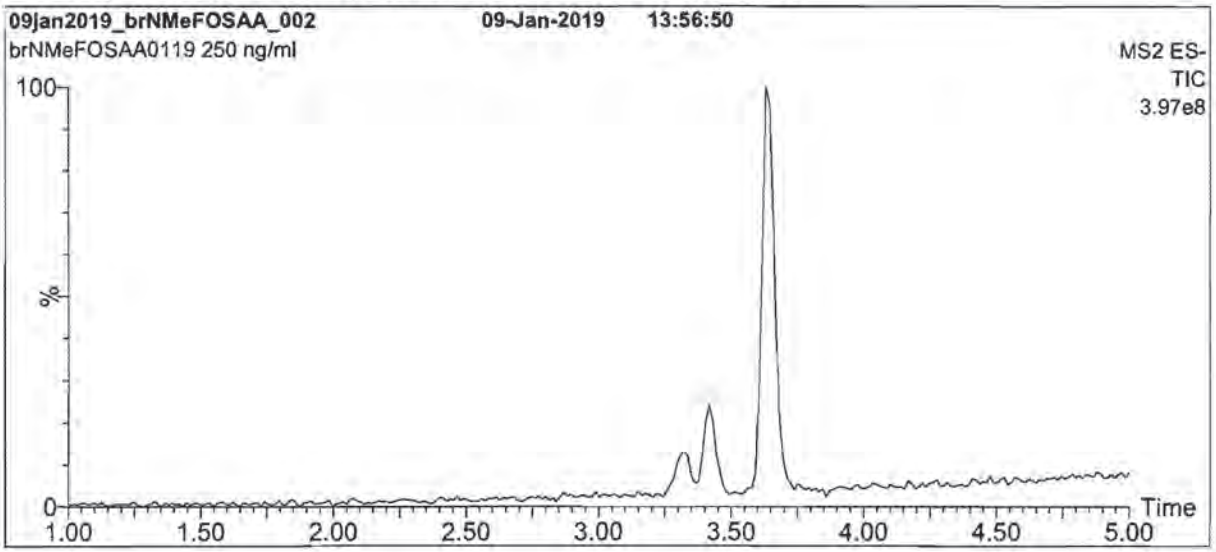
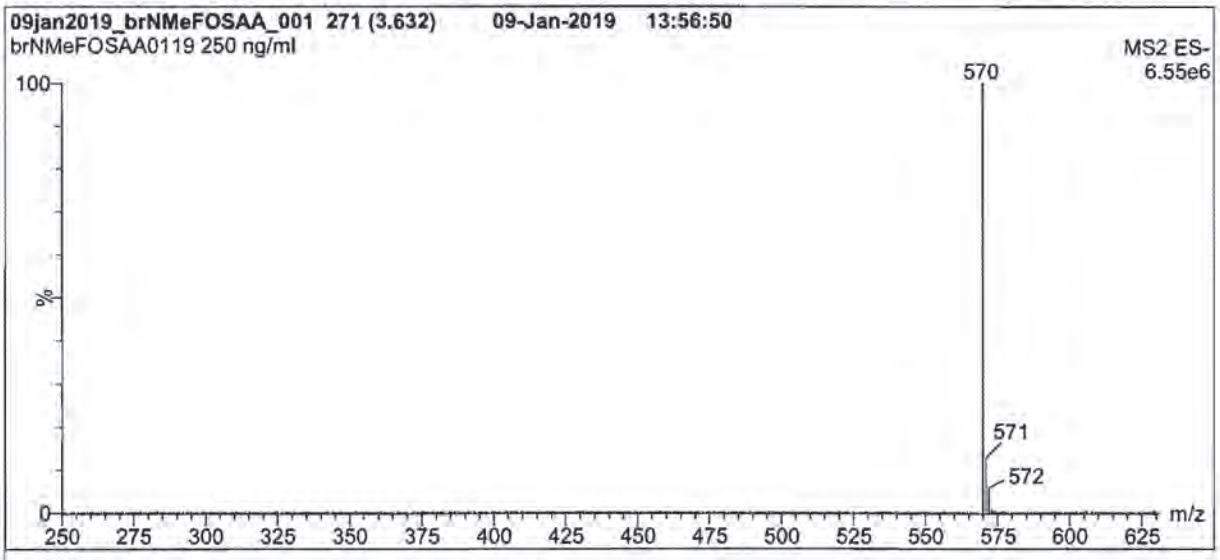
rev0

1912059

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Revision#:5, Revised 2016-08-14

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rev0

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Table A: **br-NMeFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2
7	Other Unidentified Isomers		1.1

* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: _____ **Date:** 01/16/2019 (mm/dd/yyyy)

B.G. Chittim, General Manager

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Revision#:6, Revised 2018-08-14

brNMeFOSAA0119 (3 of 6)
rev0

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HOMOGENEITY:

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

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0659

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-NMeFOSAA

N-Methylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NMeFOSAA
LOT NUMBER:	brNMeFOSAA0119
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/02/2019
LAST TESTED: (mm/dd/yyyy)	01/09/2019
EXPIRY DATE: (mm/dd/yyyy)	01/09/2024
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamidoacetic acid (linear and branched isomers). The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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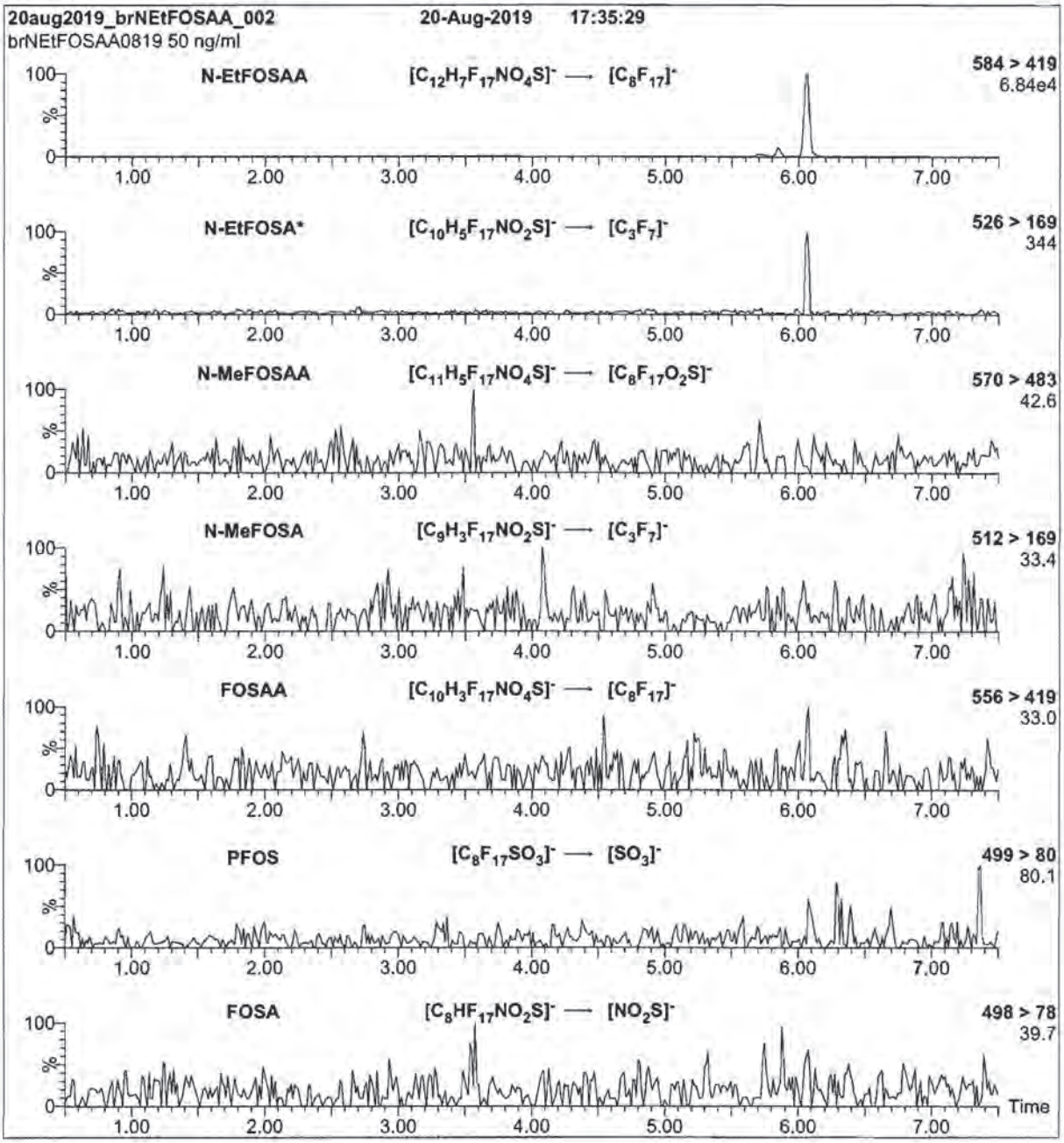
1920660

Figure 3: **br-NEtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



*Note: N-EtFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column (br-NEtFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.53e-3
Collision Energy (eV) = 18

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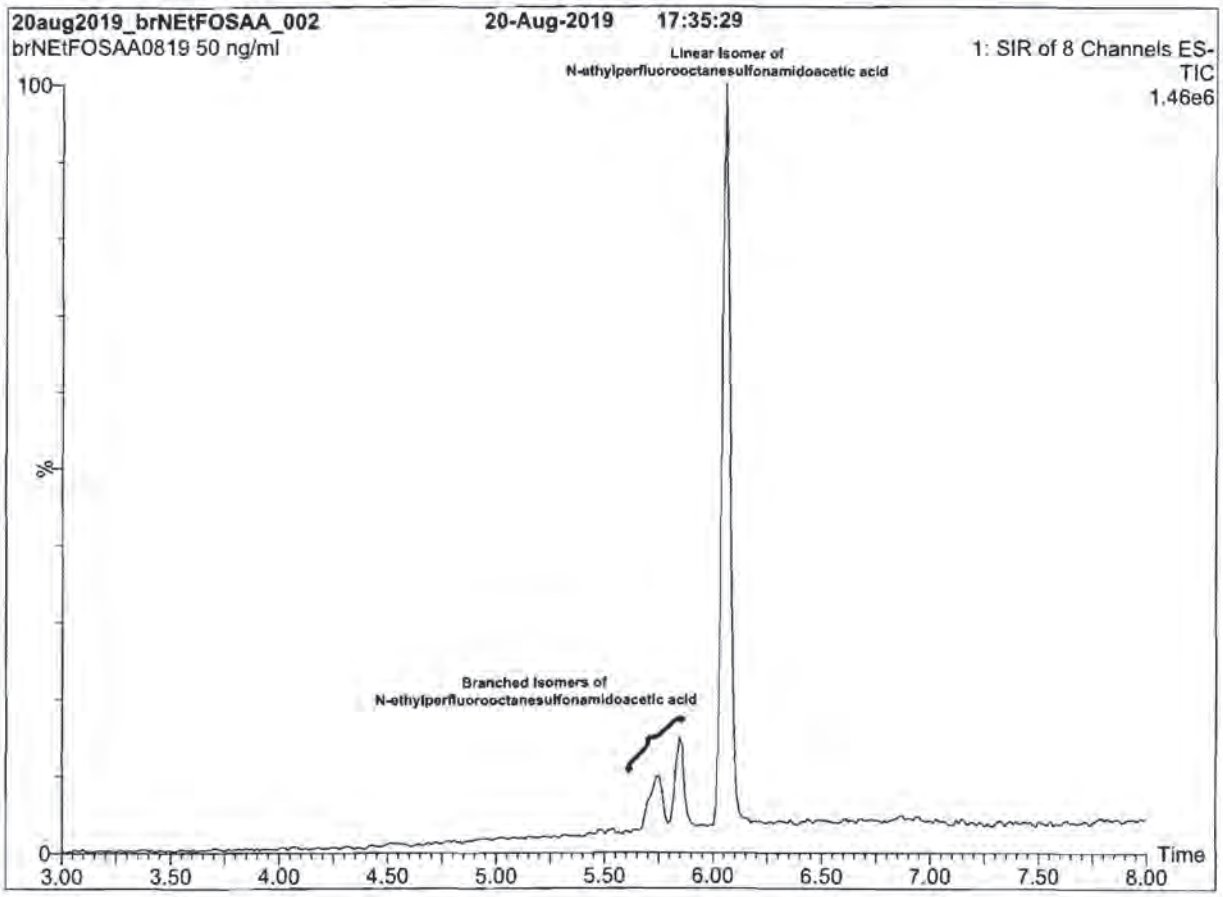
Figure 2: **br-NEtFOSAA; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR (8 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2-64)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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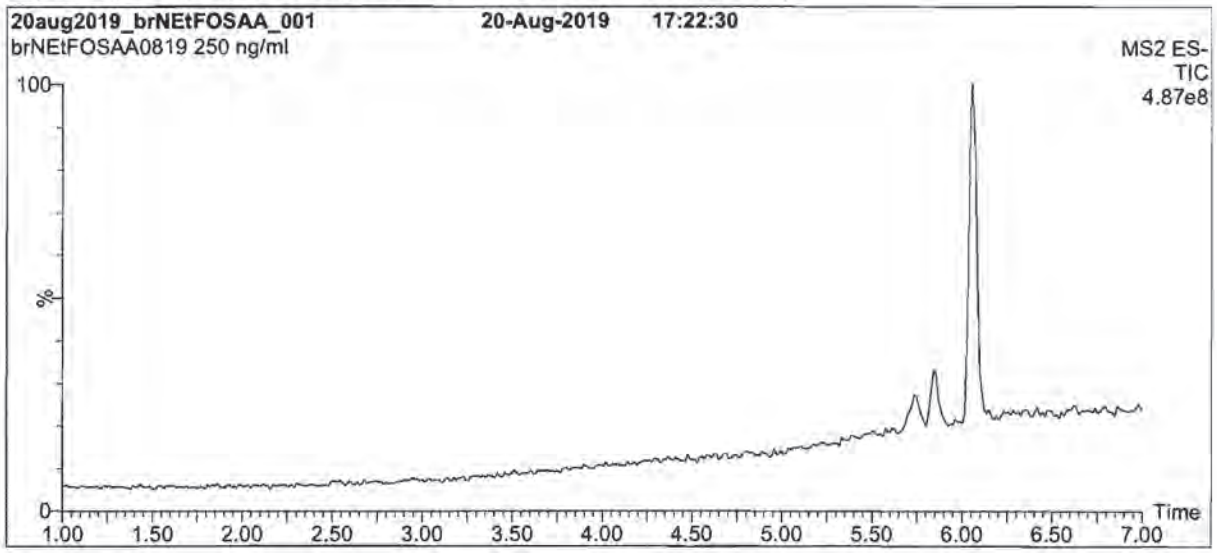
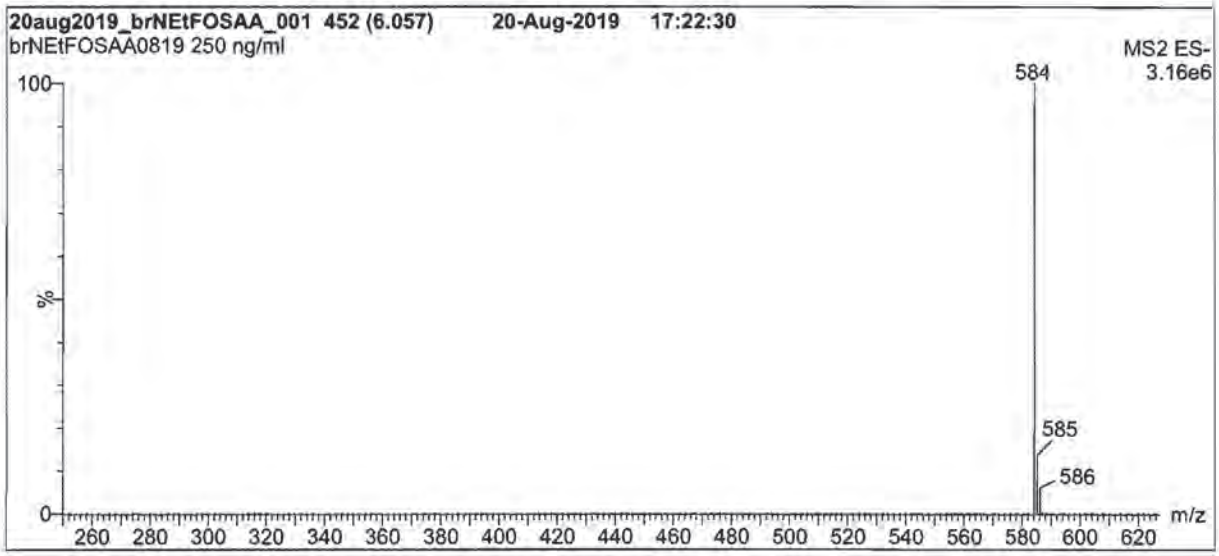
Figure 1: br-NEtFOSAA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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Table A: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	2.2
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	5.4
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$	10.4
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	0.3
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	0.3
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	0.3
9	Other Unidentified Isomers		1.3

* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: _____ **Date:** 08/29/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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Revision#:6, Revised 2018-08-14

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19L0660

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.

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-NEtFOSAA

N-Ethylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NEtFOSAA
LOT NUMBER:	brNEtFOSAA0819
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	08/20/2019
LAST TESTED: (mm/dd/yyyy)	08/20/2019
EXPIRY DATE: (mm/dd/yyyy)	08/20/2024
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamidoacetic acid (linear and branched isomers). The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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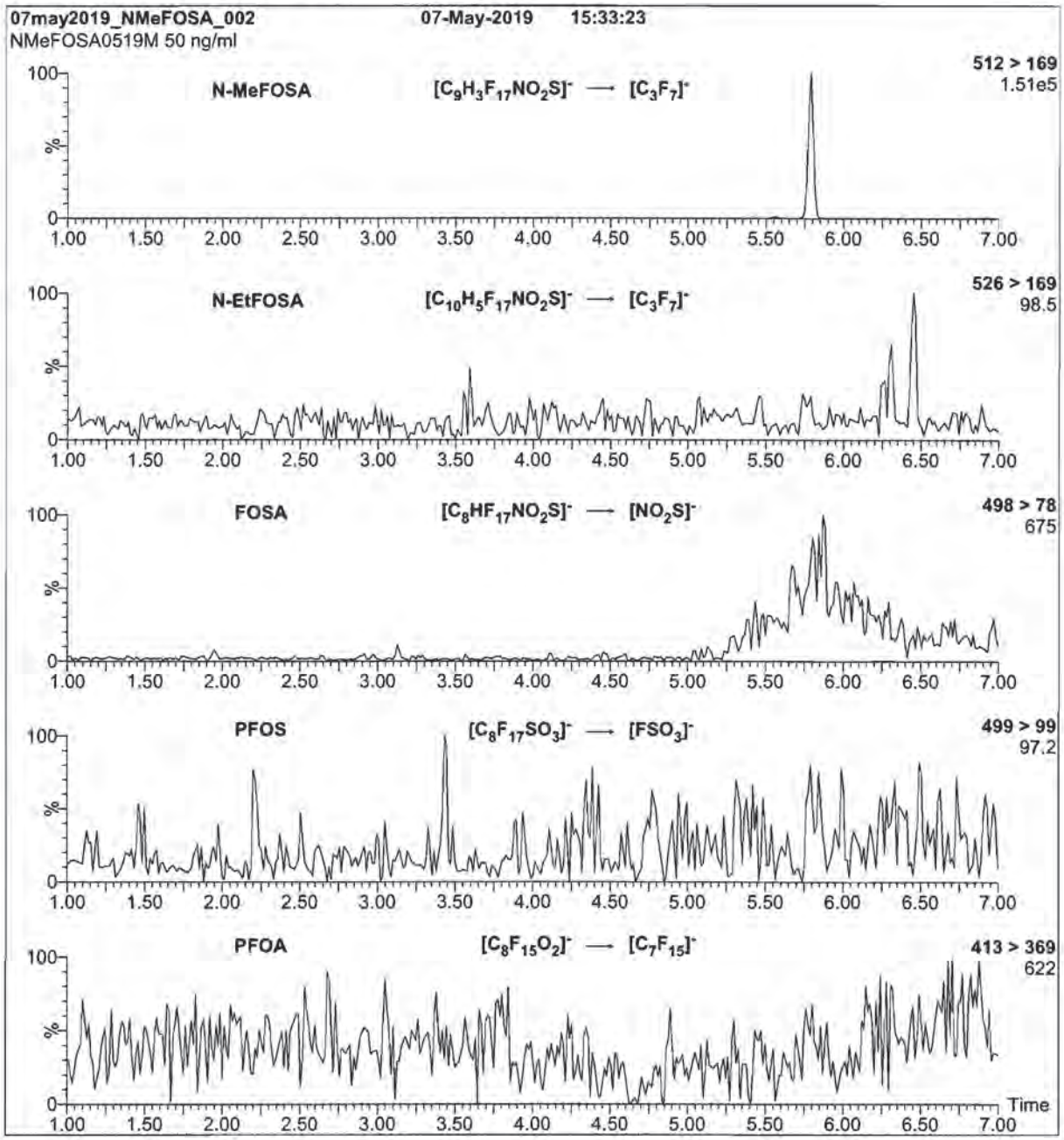
Figure 2: **N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (N-MeFOSA-M)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.99e-3
Collision Energy (eV) = 24

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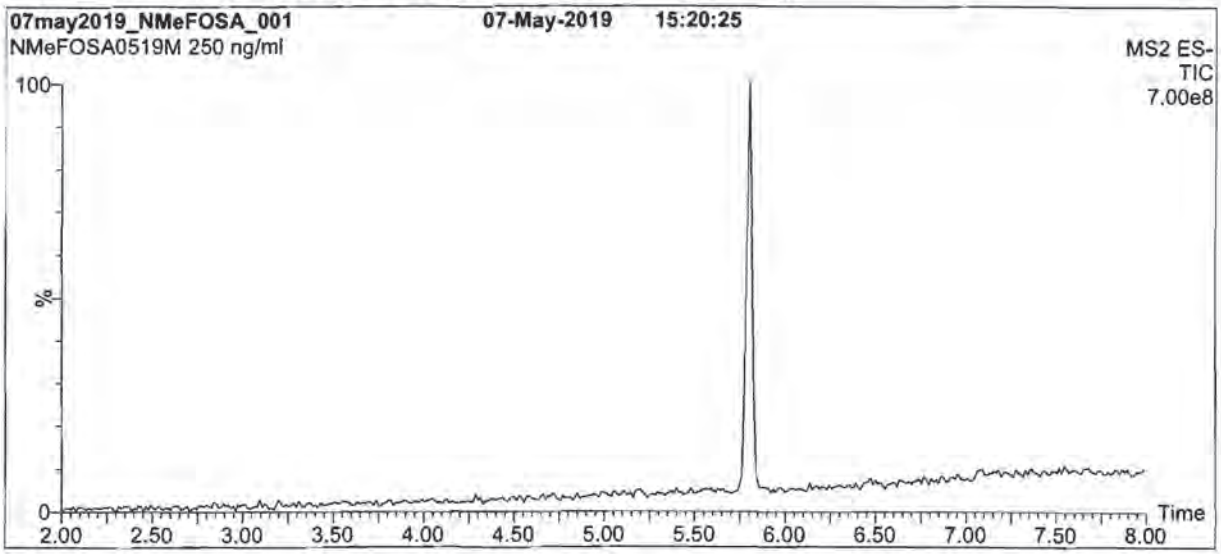
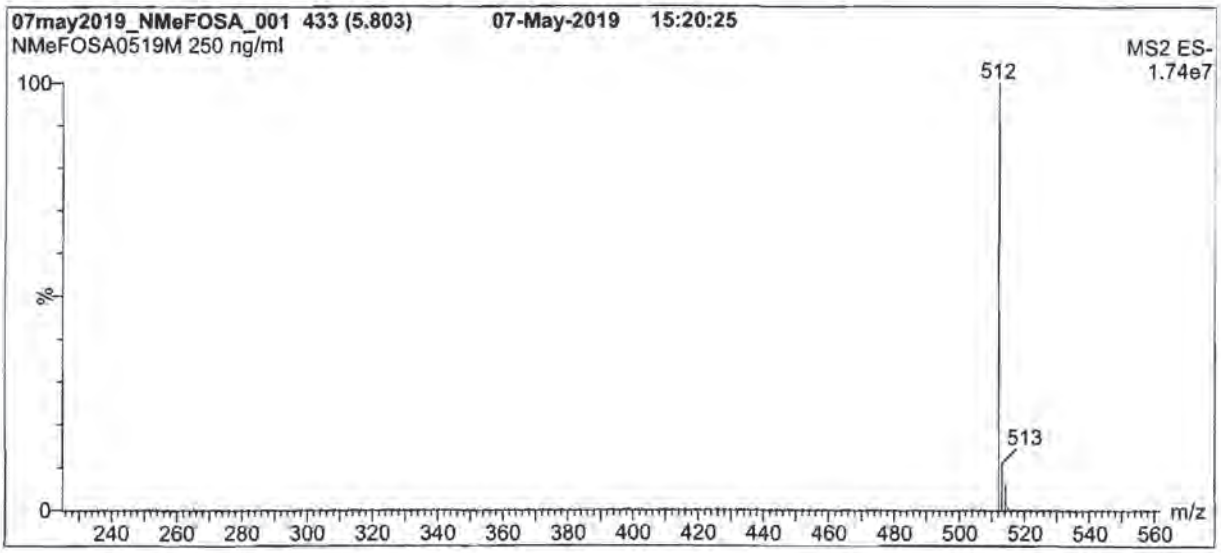
Figure 1: **N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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INTENDED USE:

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HANDLING:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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19L0661

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide
LOT NUMBER: NMeFOSA0519M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/07/2019		
EXPIRY DATE: (mm/dd/yyyy)	05/07/2024		
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:** 05/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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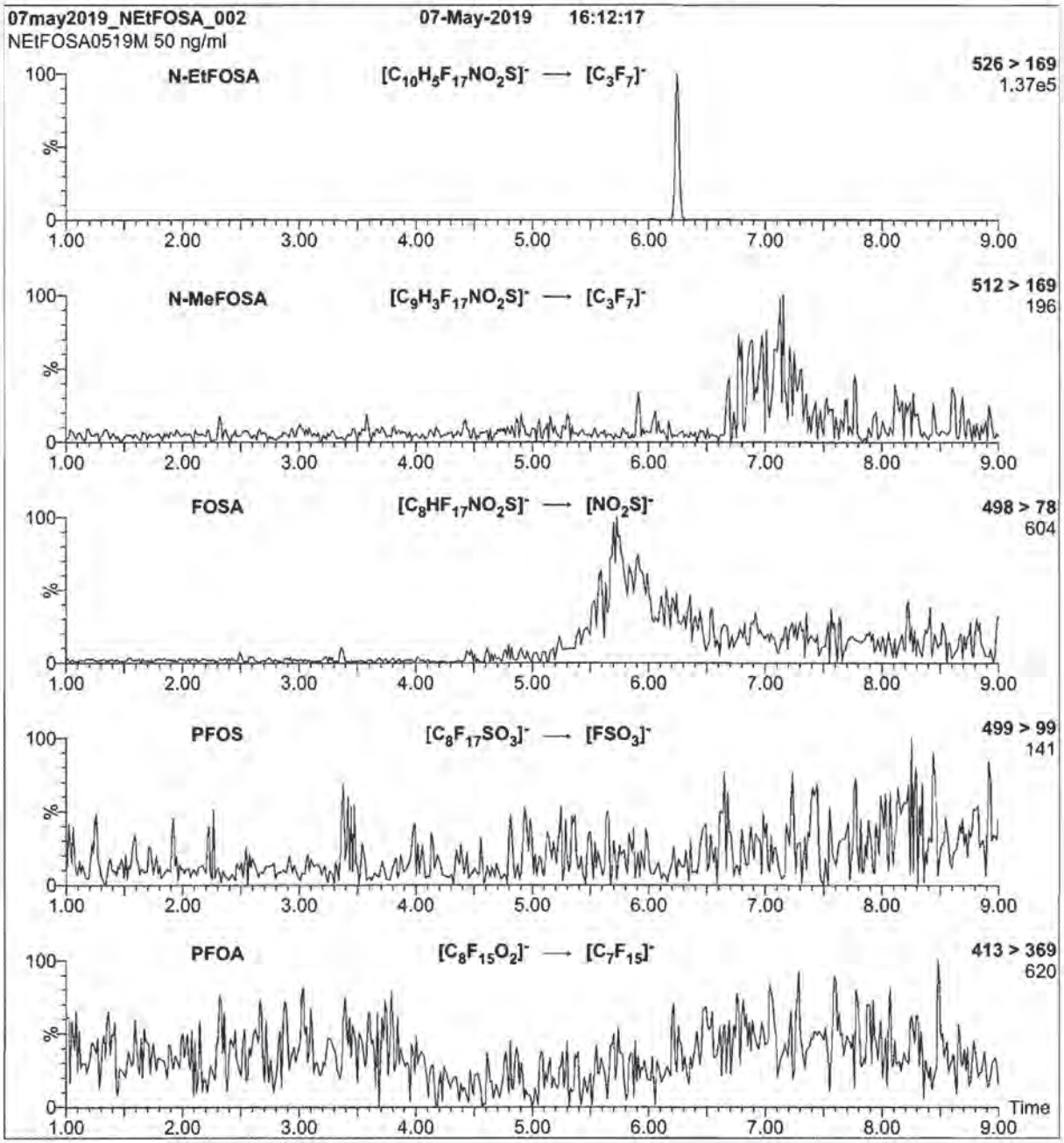
19L0662

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



Conditions for Figure 2:

Injection: On-column (N-EtFOSA-M)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.00e-3
Collision Energy (eV) = 24

Form#:27, Issued 2004-11-10
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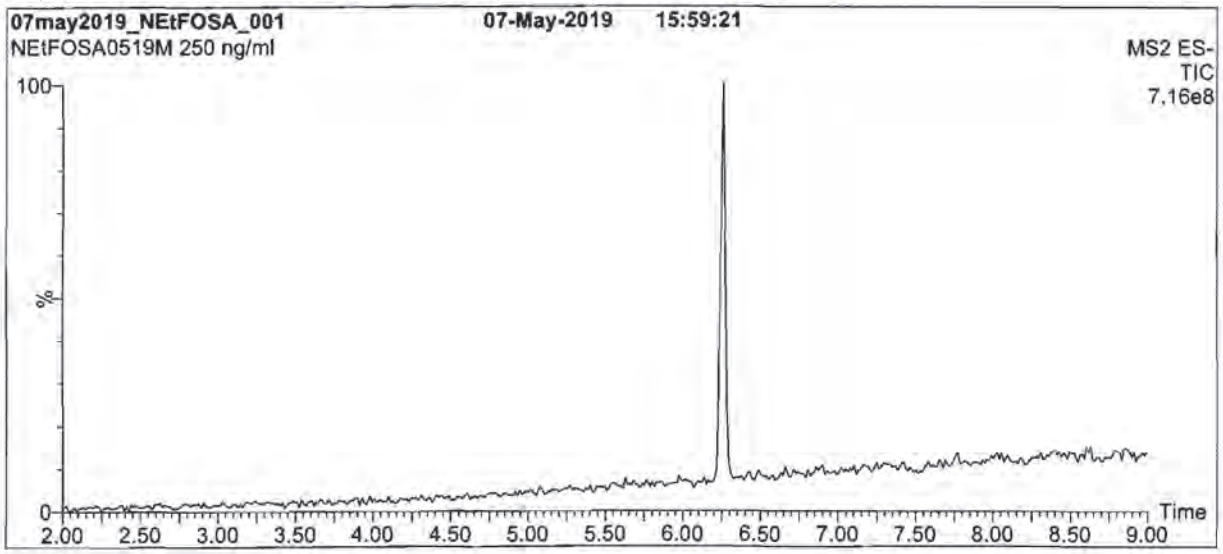
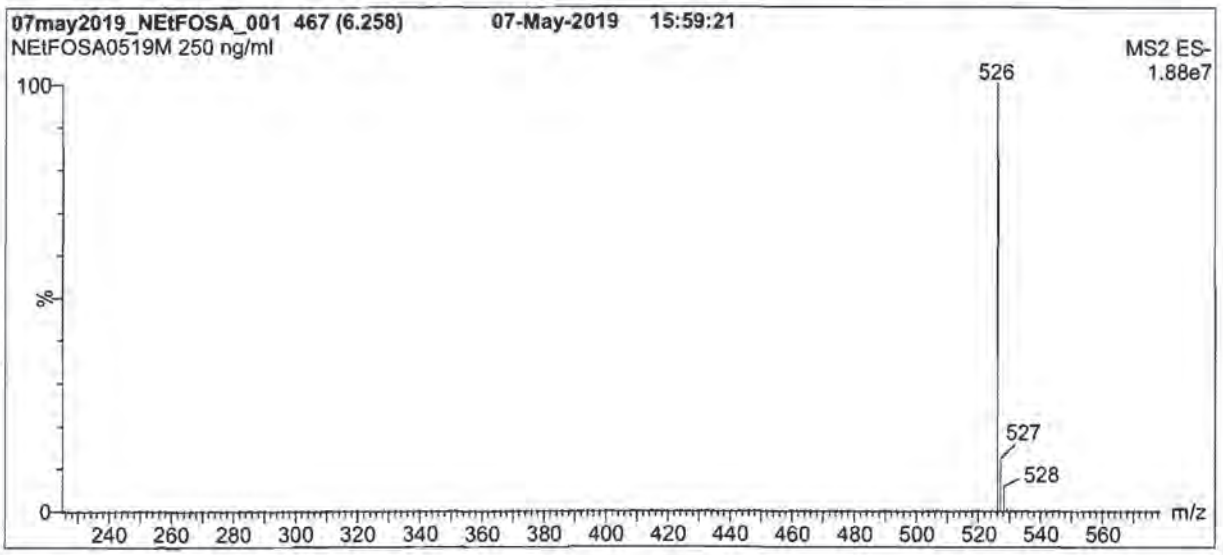
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 11 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NEtFOSA0519M (3 of 4)
rev0

19L0662

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NEtFOSA0519M (2 of 4)
rev0

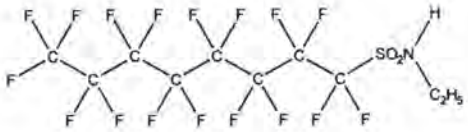
19L0662

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide
LOT NUMBER: NEtFOSA0519M

STRUCTURE:
CAS #: 4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/07/2019		
EXPIRY DATE: (mm/dd/yyyy)	05/07/2024		
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 ~ 0.5% branched isomers of N-ethylperfluorooctanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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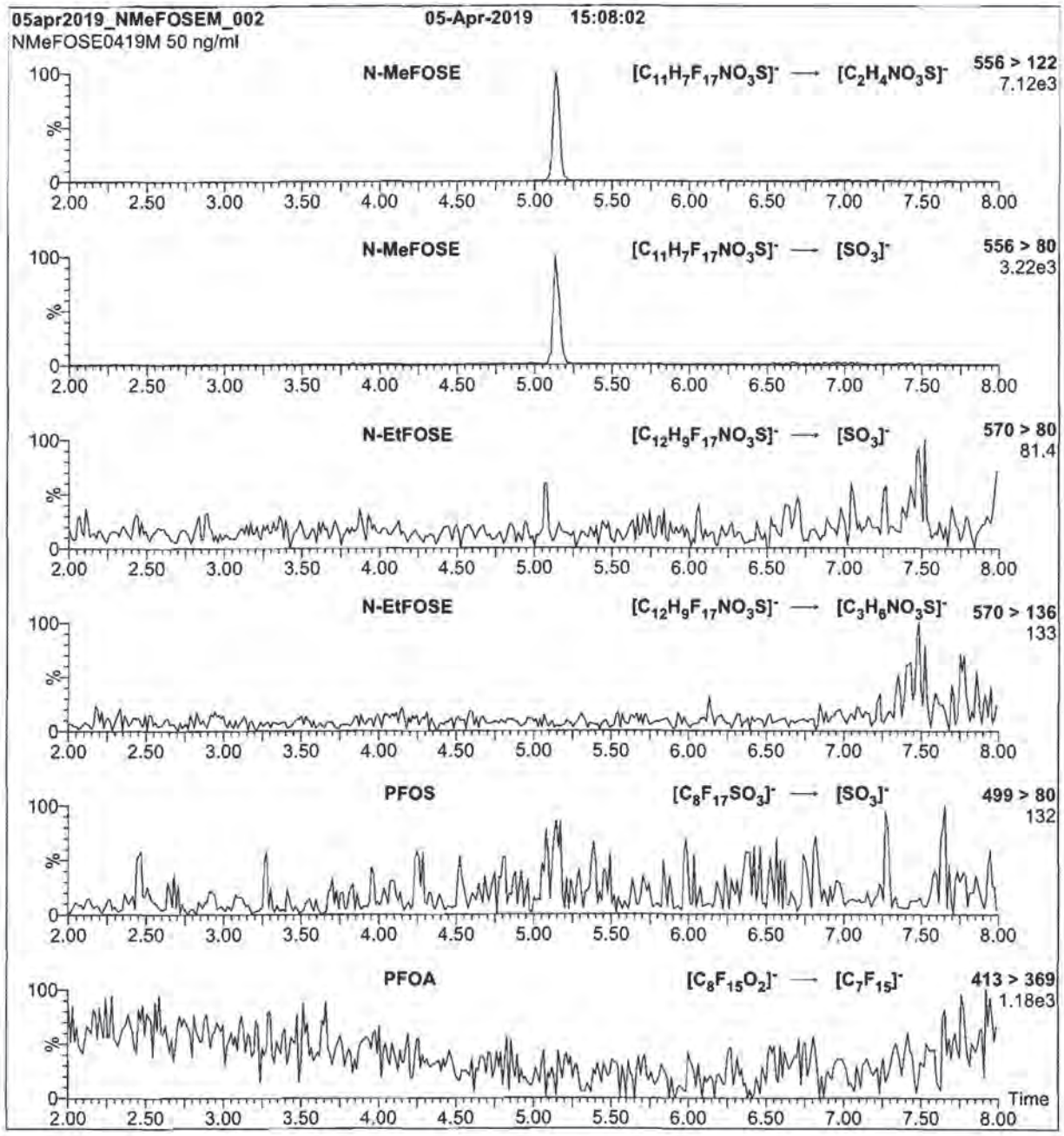
19L0663

Figure 3: **N-MeFOSE-M; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column (N-MeFOSE-M)

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.94e-3
Collision Energy (eV) = 36

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Revision#:6, Revised 2018-08-14

NMeFOSE0419M (5 of 5)
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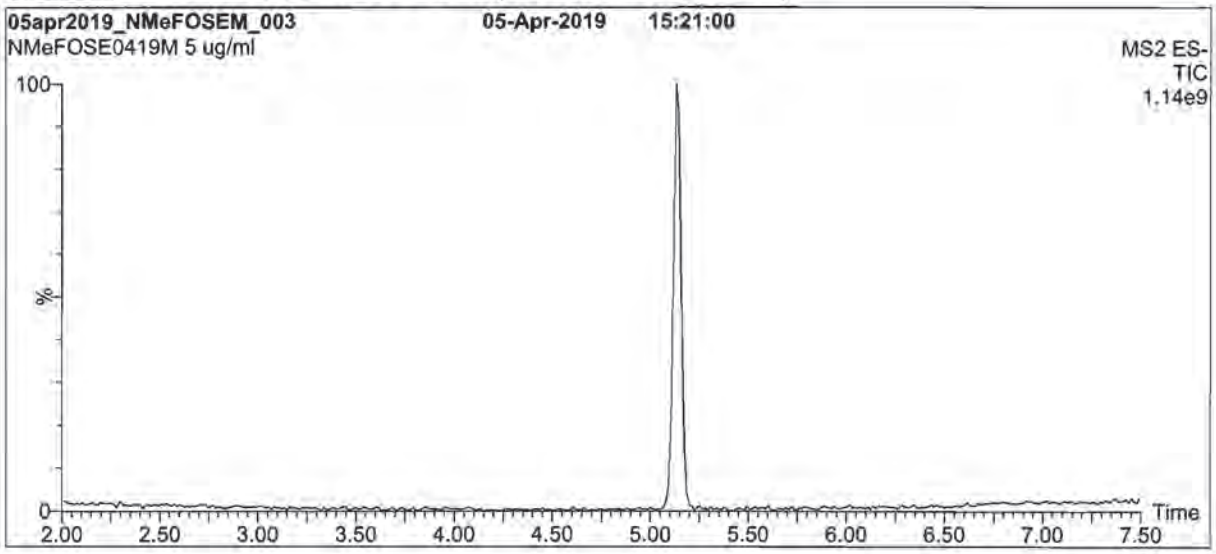
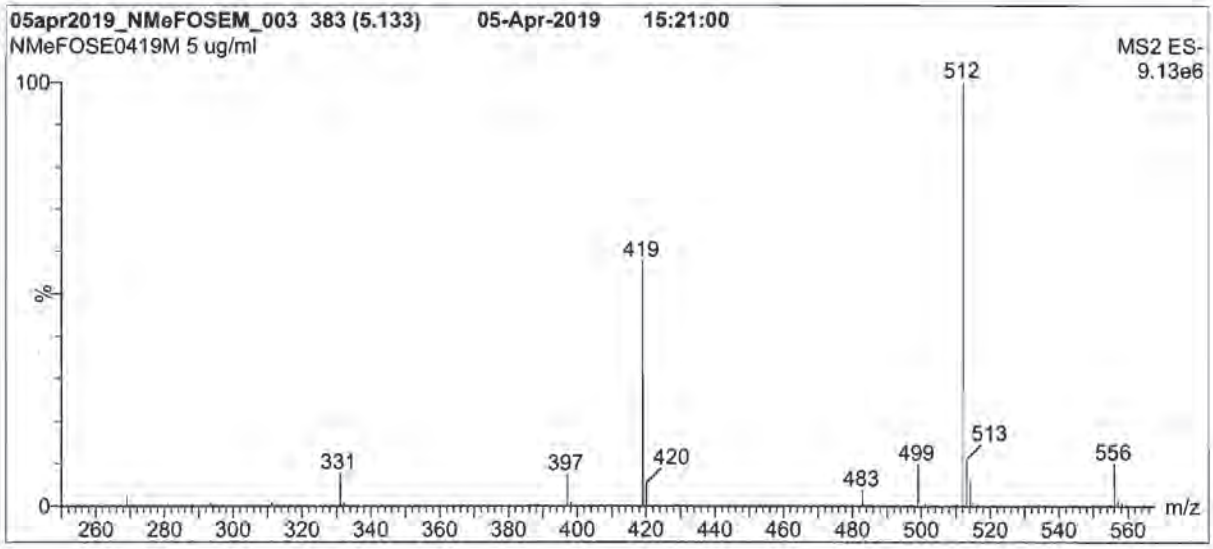
Figure 2: **N-MeFOSE-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% MeOH / 35% H_2O
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

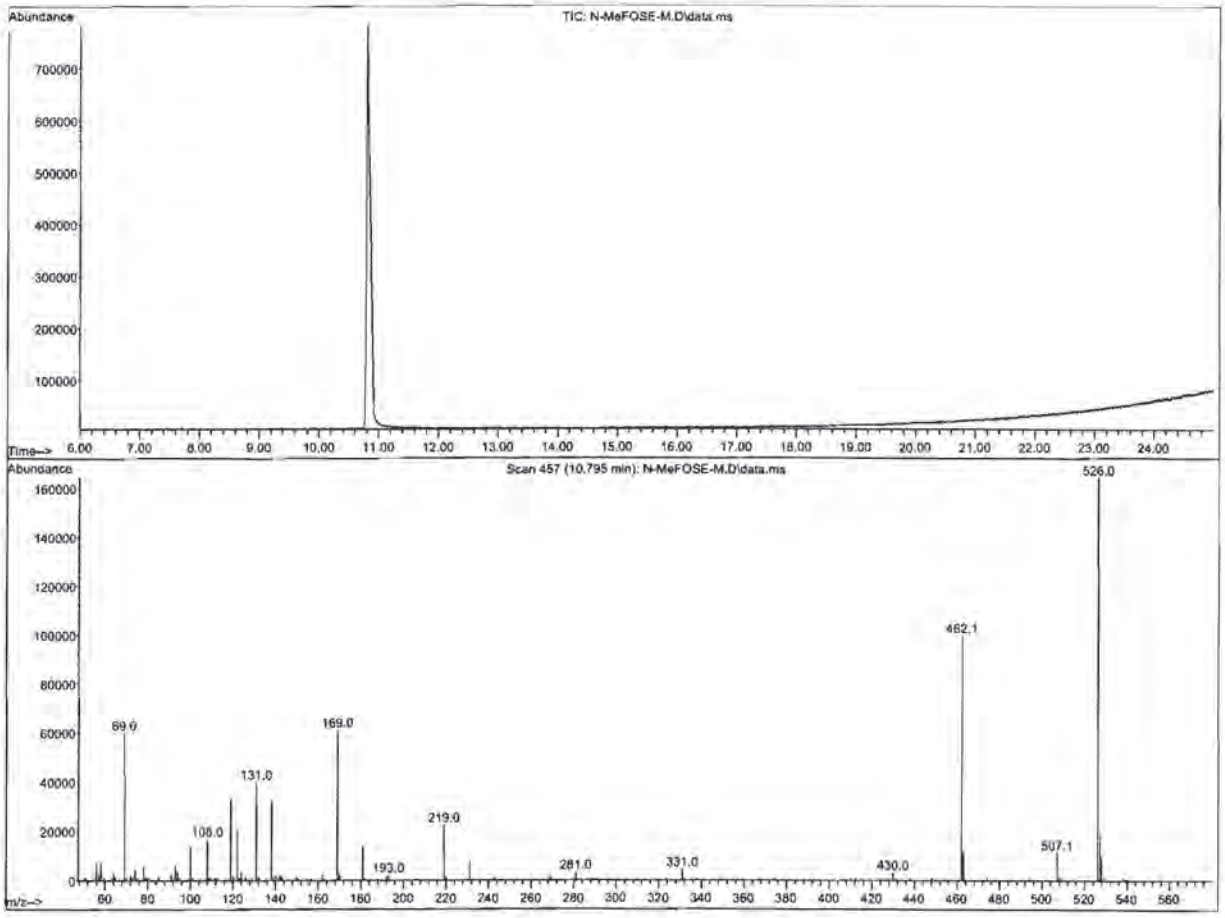
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Desolvation Temperature (°C) = 450
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NMeFOSE0419M (4 of 5)
rev0

1910663

Figure 1: **N-MeFOSE-M; HRGC/LRMS Data (TIC and Mass Spectrum)**



HRGC/LRMS:

Agilent 7890A (HRGC)
Agilent 5975C (LRMS)

Chromatographic Conditions:

Column:	30 m DB-5 (0.25 mm id, 0.25 µm film thickness) Agilent J&W
Injector:	250 °C (Splitless Injection)
Oven:	100 °C (5 min) 10 °C/min to 325 °C 325 °C (20 min)
Ionization:	EI+
Detector:	250 °C Full Scan (50-1000 amu)

19L0663

INTENDED USE:

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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

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

TRACEABILITY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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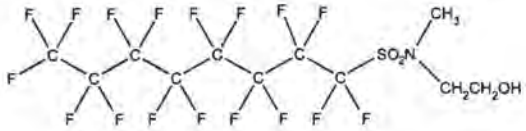
1910663

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0419M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 24448-09-7



MOLECULAR FORMULA: $C_{11}H_8F_{17}NO_3S$ **MOLECULAR WEIGHT:** 557.22
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/08/2019 (HRGC/LRMS)
04/05/2019 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 04/08/2024
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.

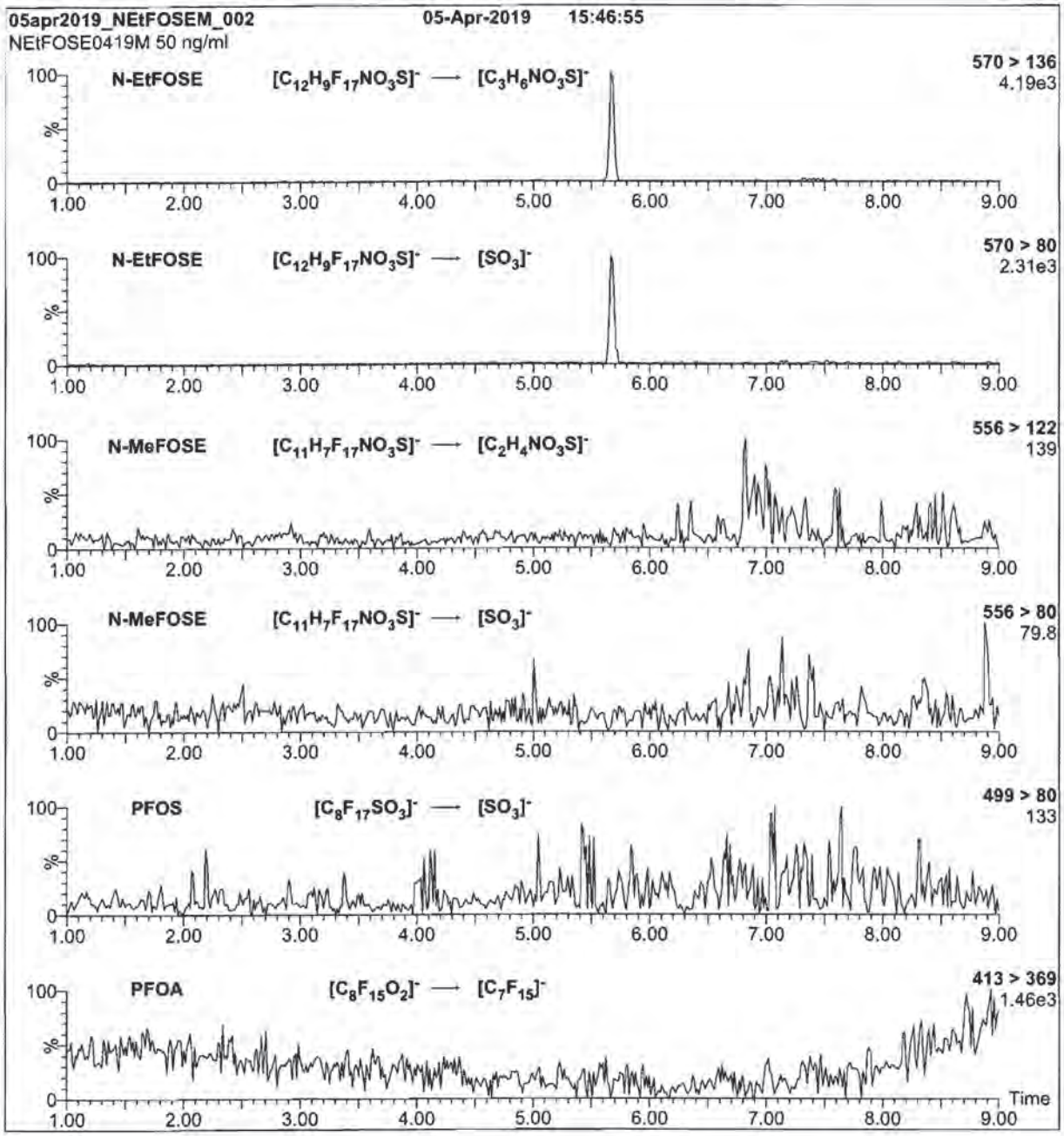
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/12/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0664

Figure 3: **N-EtFOSE-M; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column (N-EtFOSE-M)

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

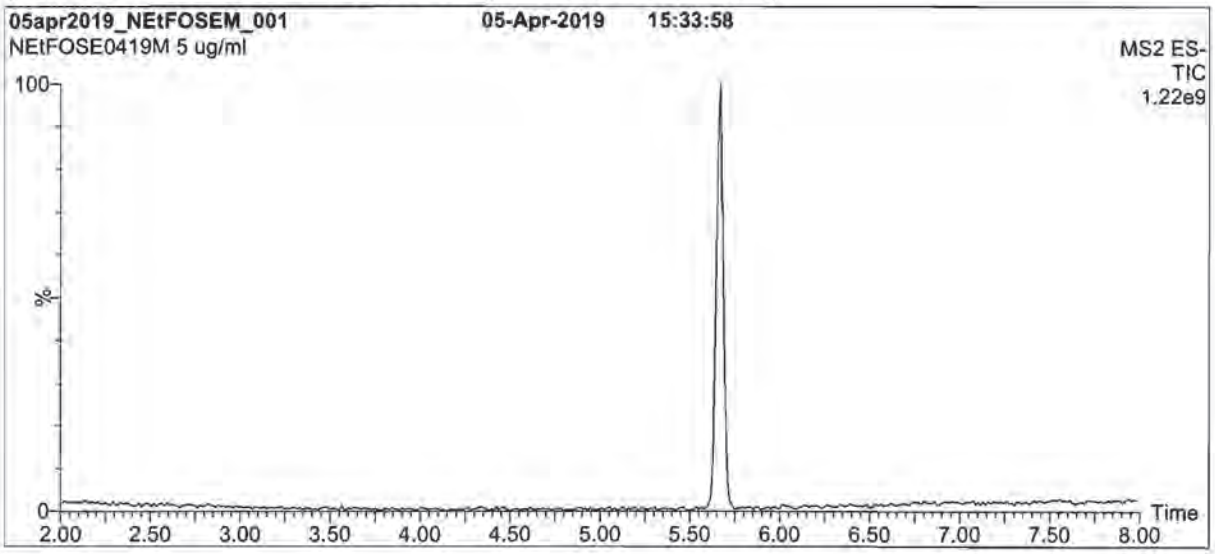
Collision Gas (mbar) = 2.76e-3
Collision Energy (eV) = 32

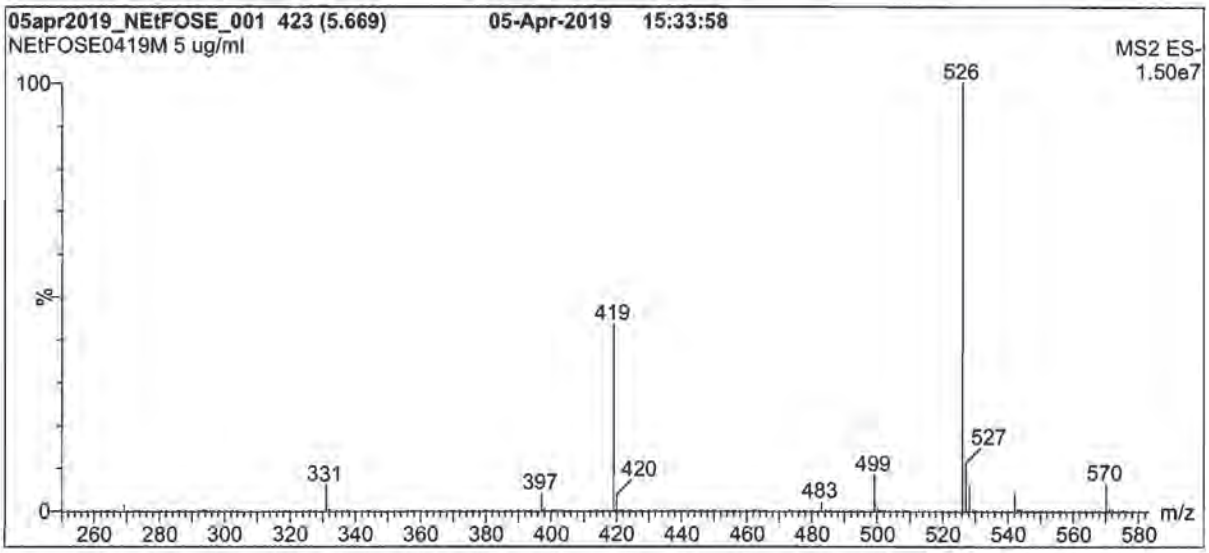
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

NEtFOSE0419M (5 of 5)
rev0

19L0664

Figure 2: **N-EtFOSE-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 65% MeOH / 35% H_2O
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Desolvation Temperature (°C) = 450
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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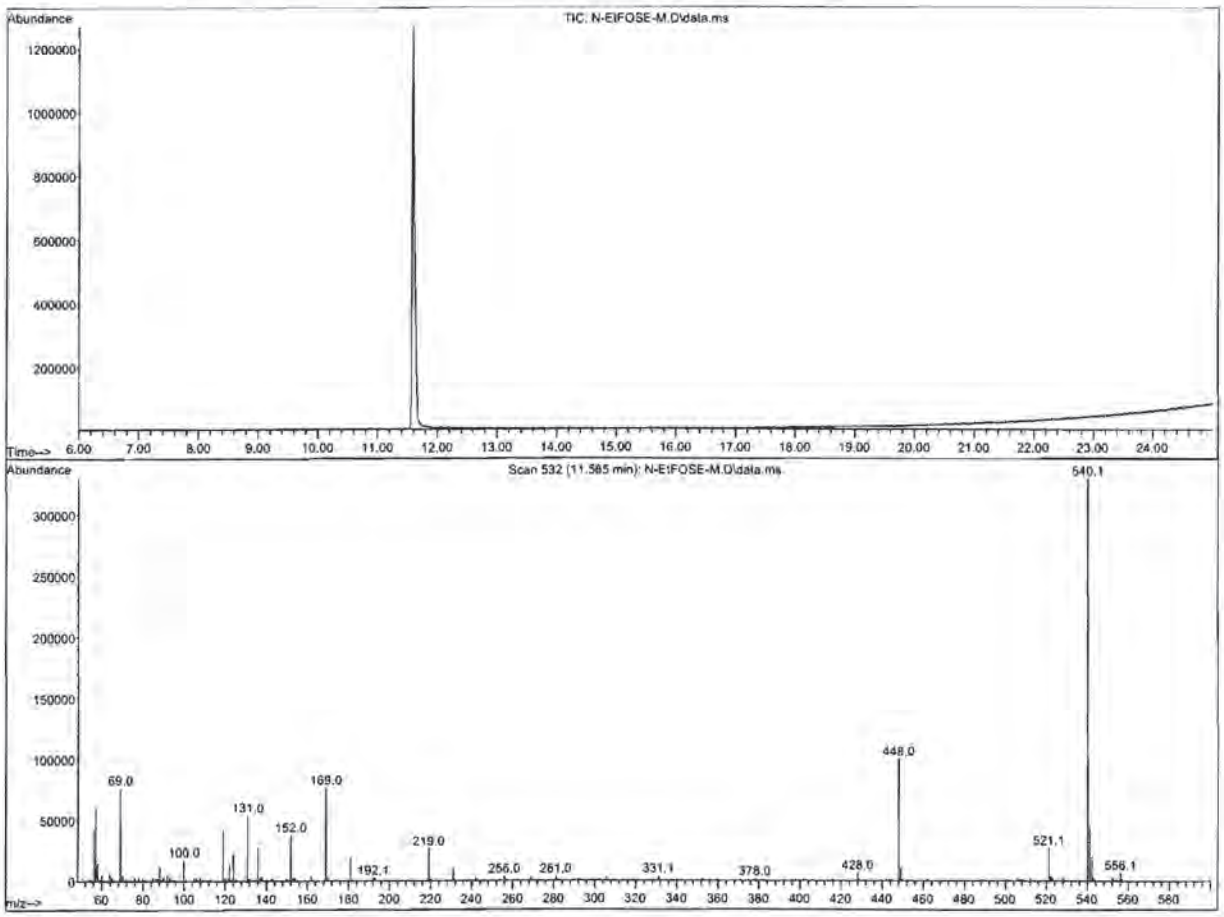
rev0

19L0564

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)

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NEtFOSE0419M (3 of 5)
rev0

19L0564

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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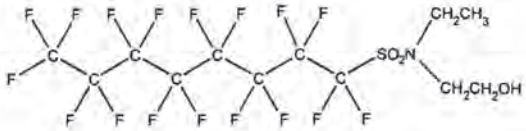
19L0664

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0419M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA:	$C_{12}H_{10}F_{17}NO_3S$	**MOLECULAR WEIGHT:**	571.25
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/08/2019 (HRGC/LRMS) 04/05/2019 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2024		
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:** 04/15/2019 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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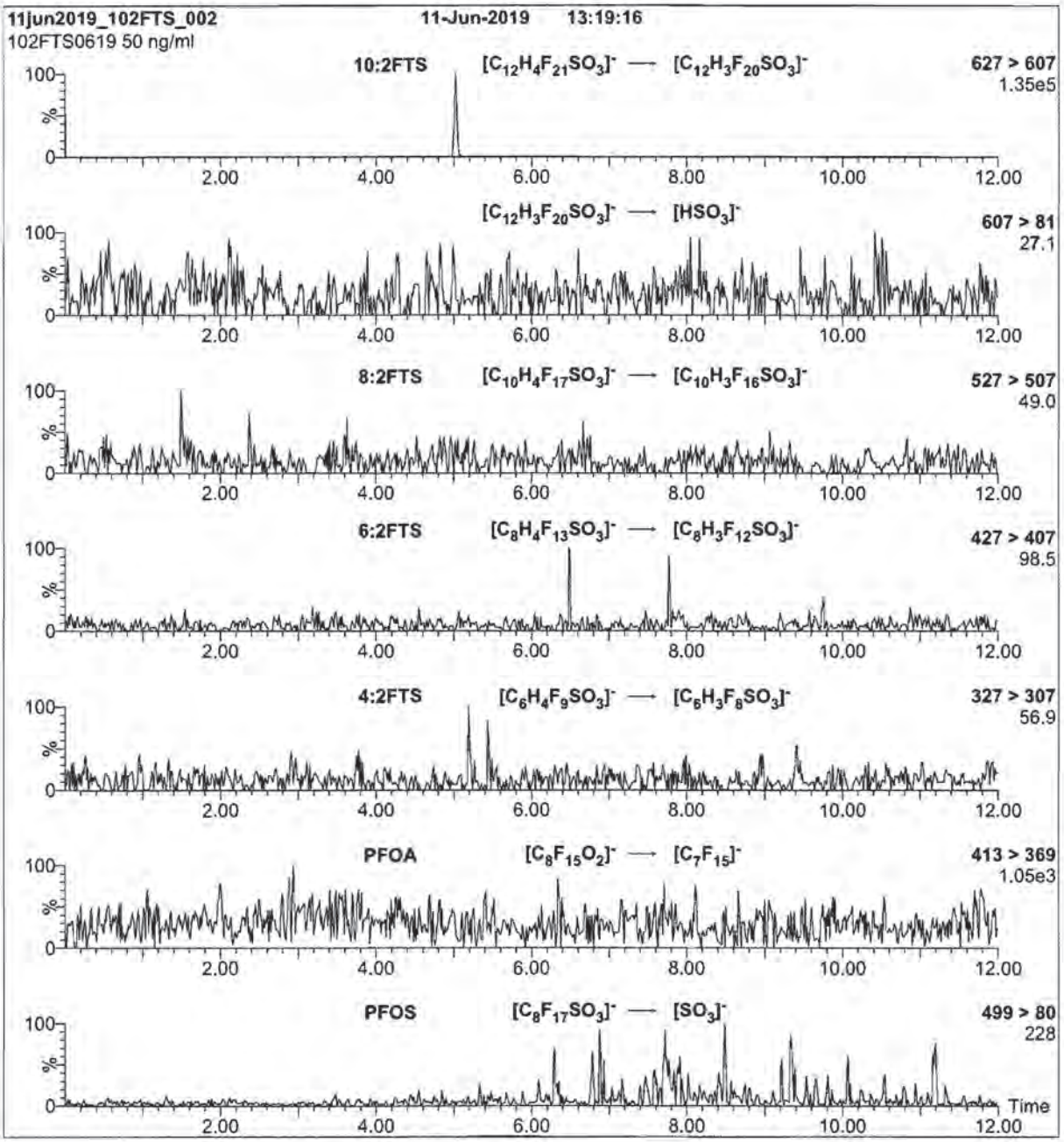
Revision#:6, Revised 2018-08-14

19L0665

Figure 2: **10:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (10:2FTS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.92e-3
Collision Energy (eV) = 25

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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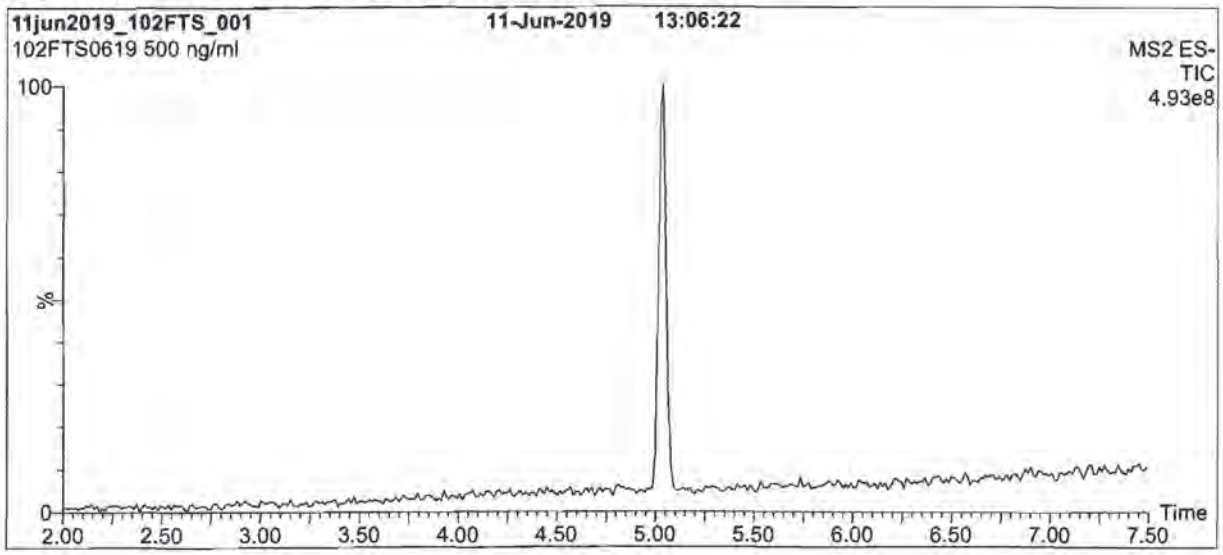
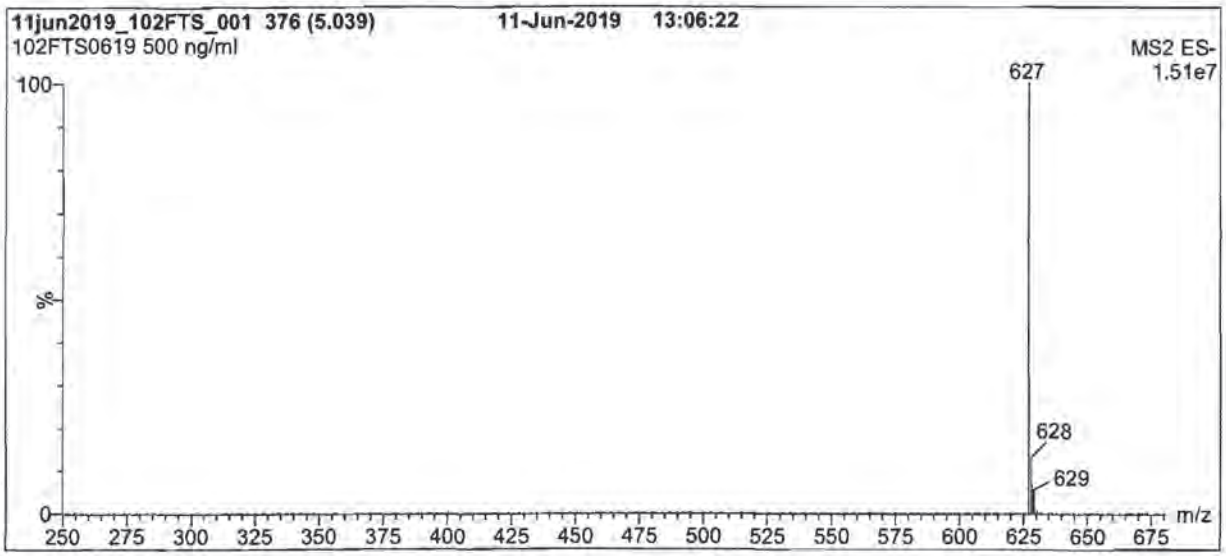
rev0

19L0665

Figure 1: 10:2FTS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 25.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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rev0

19L0665

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

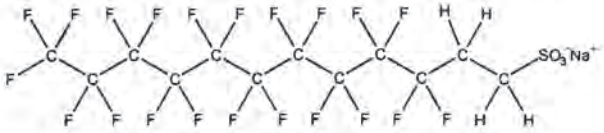
19L0665

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0619
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}H_4F_{21}SO_3Na$ **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
48.2 ± 2.4 µg/ml (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/11/2019
EXPIRY DATE: (mm/dd/yyyy) 06/11/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 06/18/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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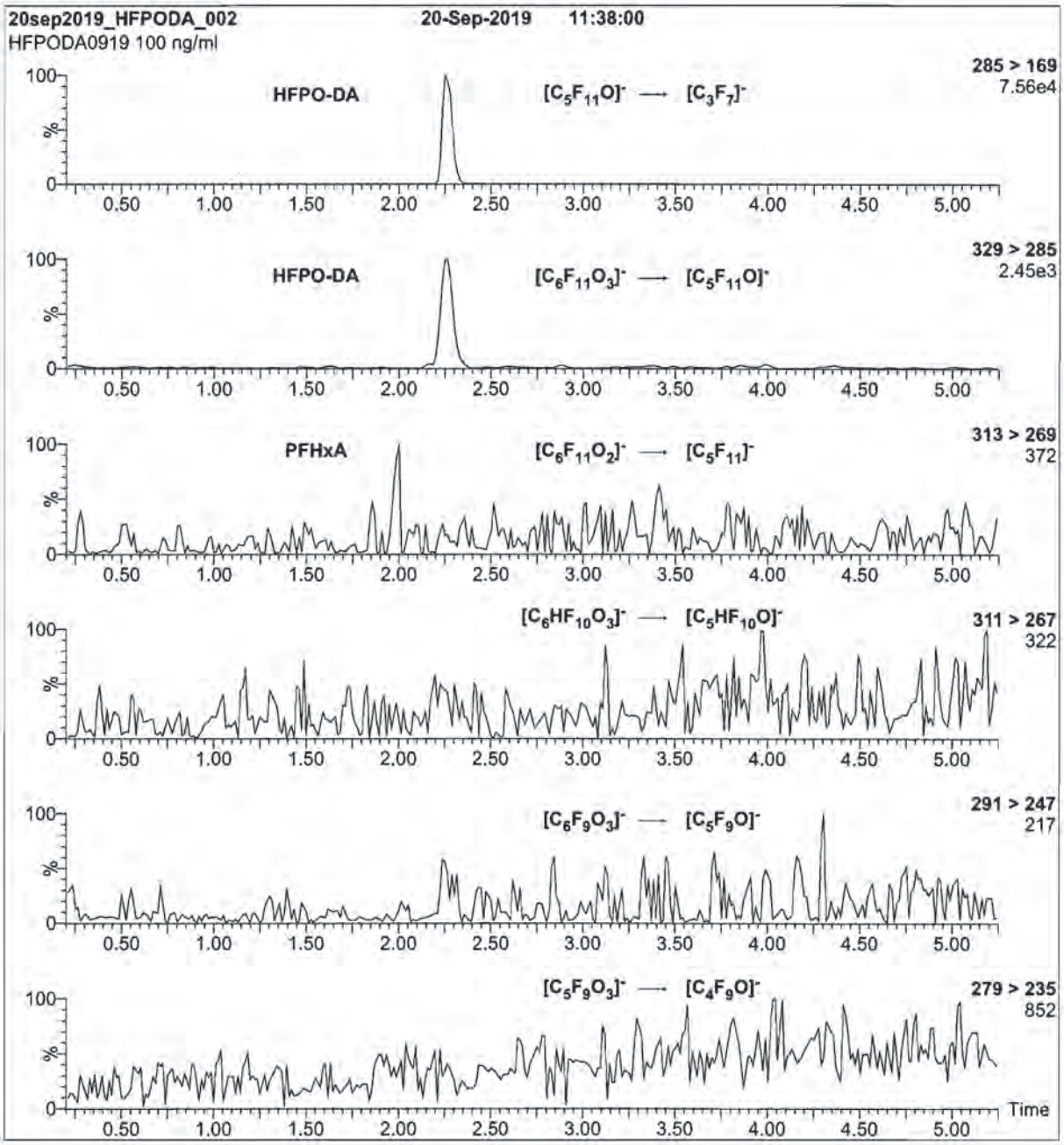
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0666

Figure 2: **HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (HFPO-DA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.60e-3
Collision Energy (eV) = 8

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Revision#:6, Revised 2018-08-14

HFPODA0919 (4 of 4)
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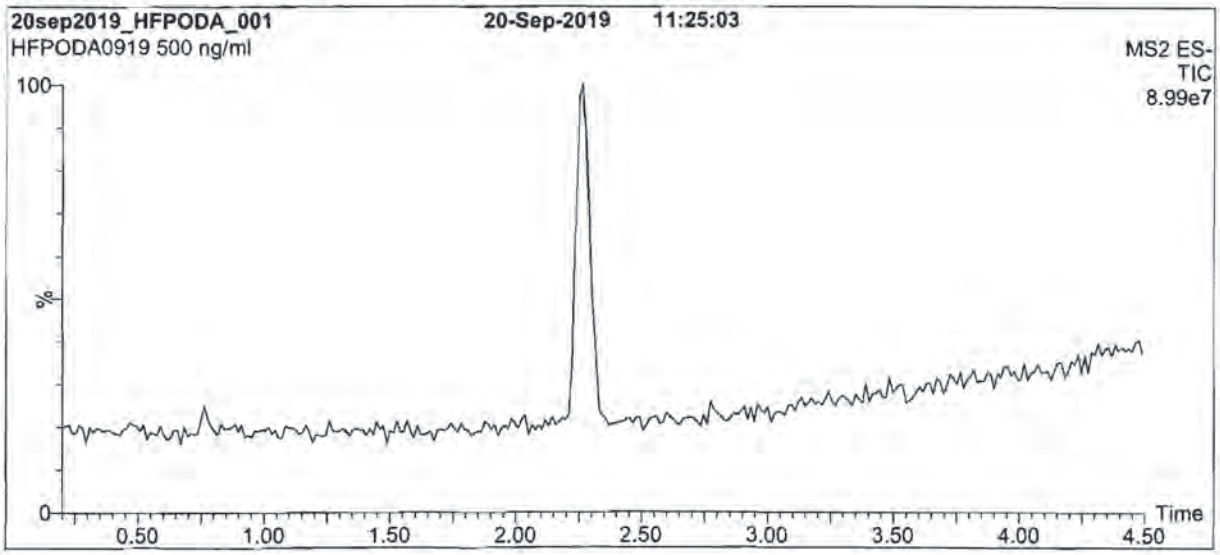
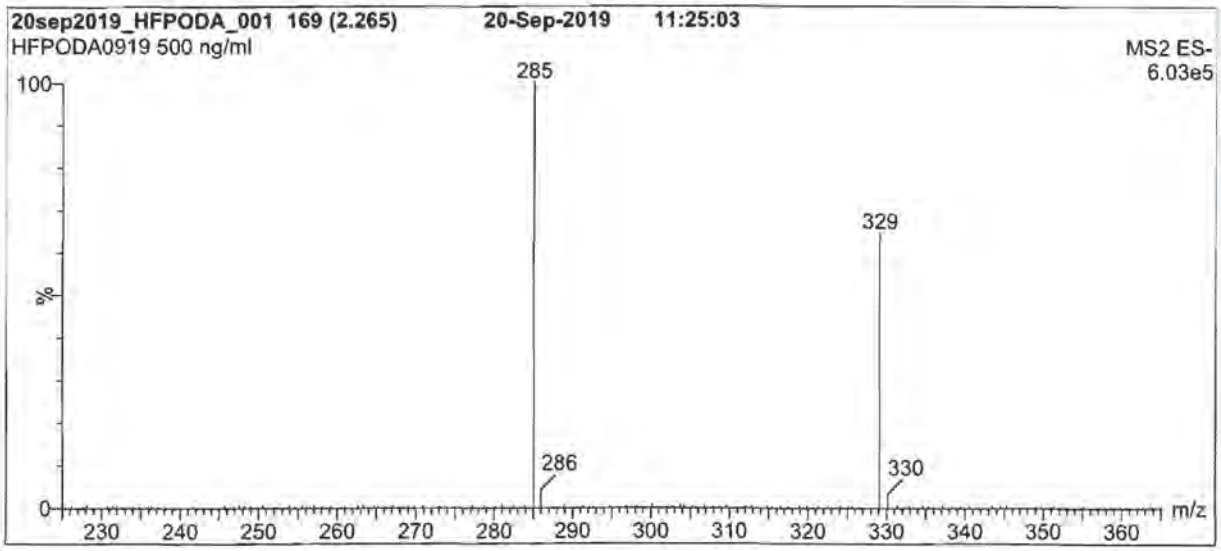
1920666

Figure 1: HFPO-DA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Desolvation Temperature (°C) = 325
Desolvation Gas Flow (l/hr) = 1000

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19L 0666

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

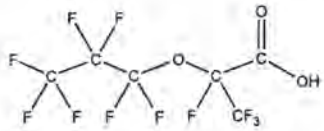
19L0666

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: HFPO-DA **LOT NUMBER:** HFPODA0919
COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid

STRUCTURE: **CAS #:** 13252-13-6



MOLECULAR FORMULA: $C_6HF_{11}O_3$ **MOLECULAR WEIGHT:** 330.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/20/2019
EXPIRY DATE: (mm/dd/yyyy) 09/20/2022
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.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager **Date:** 09/30/2019 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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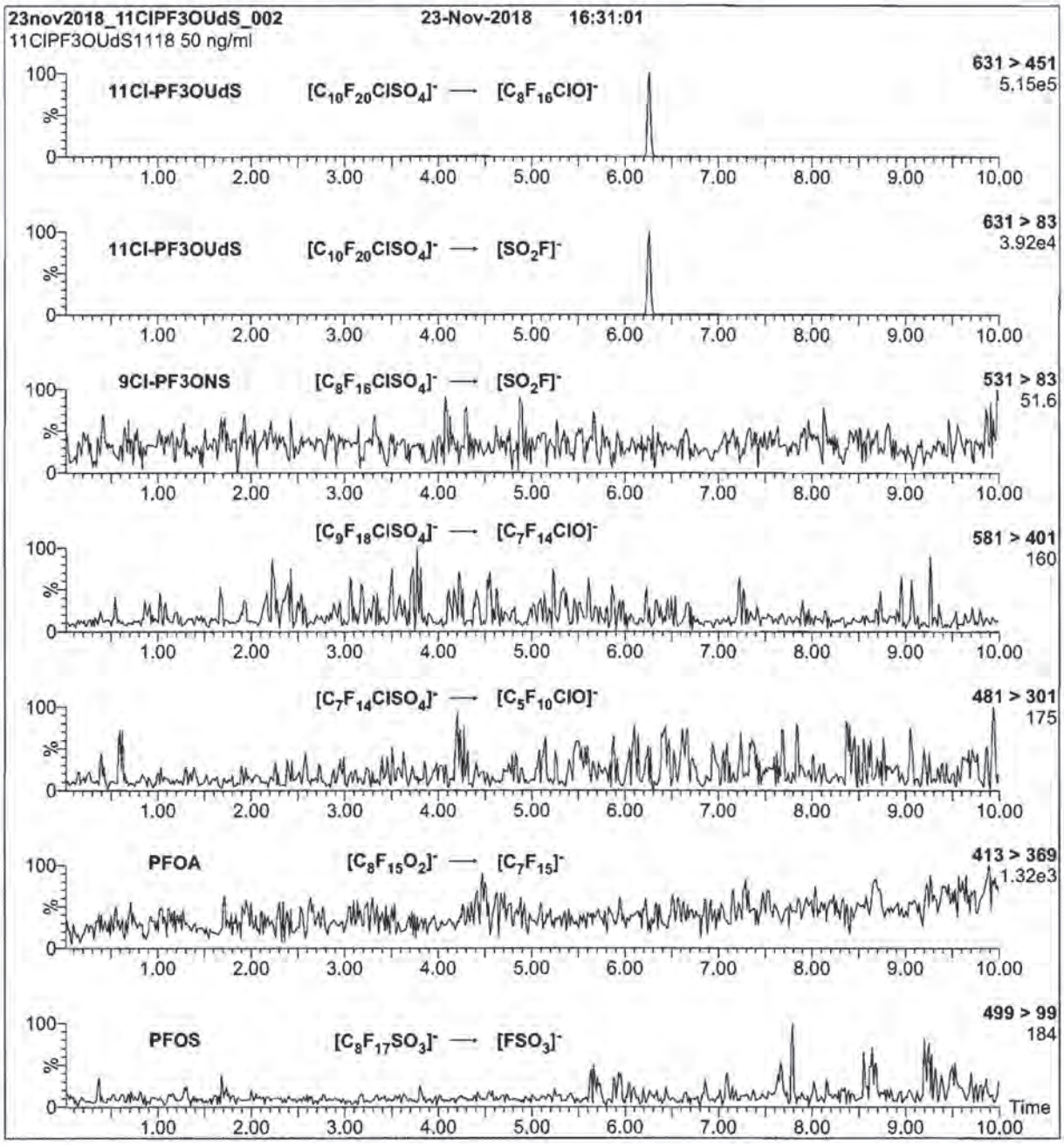
Revision#:6, Revised 2018-08-14

19L0667

Figure 2: **11Cl-PF3OUdS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (11Cl-PF3OUdS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.84e-3
Collision Energy (eV) = 24

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Revision#:6, Revised 2018-08-14

11ClPF3OUdS1118 (4 of 4)
rev0

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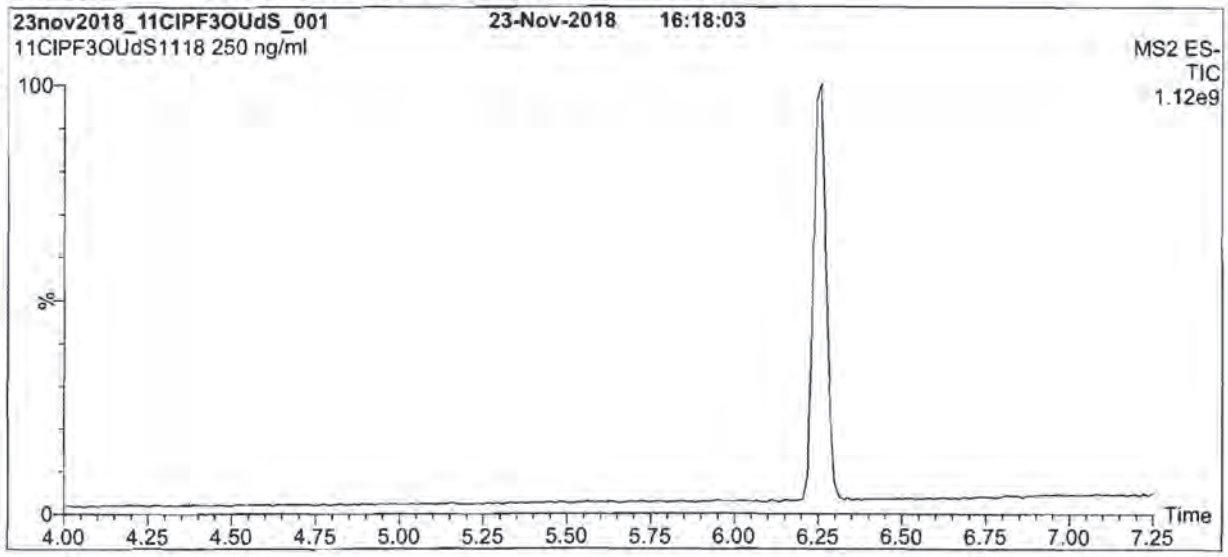
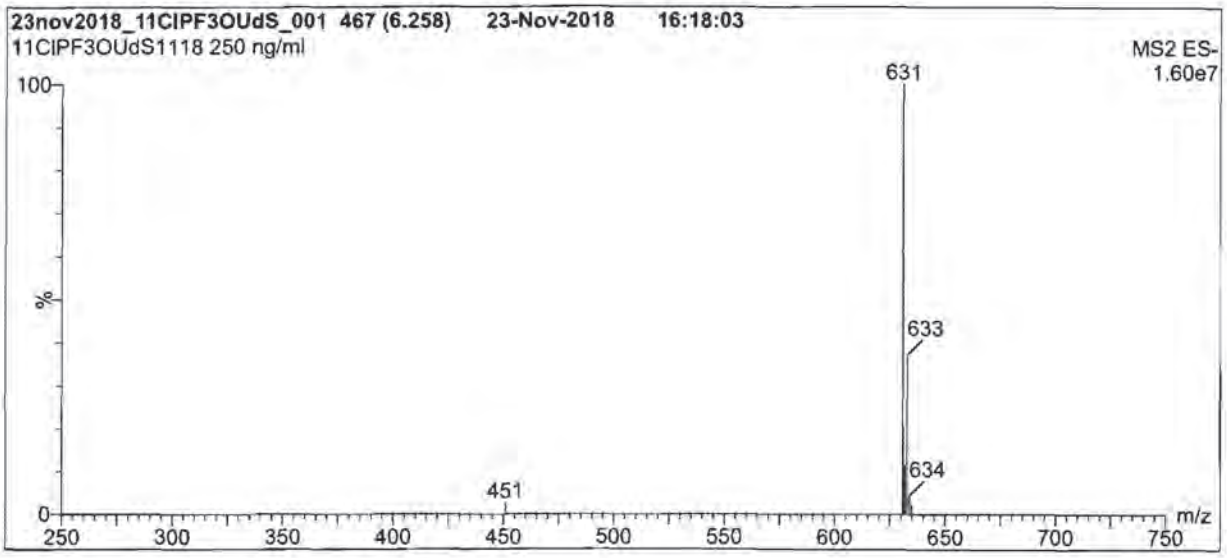
Figure 1: **11Cl-PF3OUdS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 70.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

11ClPF3OUdS1118 (3 of 4)
rev0

19L0667

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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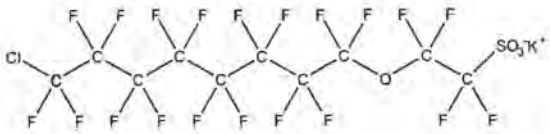
19L0667

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 11Cl-PF3OUdS **LOT NUMBER:** 11ClPF3OUdS1118
COMPOUND: Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate

STRUCTURE: **CAS #:** 83329-89-9



MOLECULAR FORMULA: $C_{10}F_{20}ClSO_4K$ **MOLECULAR WEIGHT:** 670.69
CONCENTRATION: 50.0 ± 2.5 µg/ml (K Salt) **SOLVENT(S):** Methanol
47.1 ± 2.4 µg/ml (11Cl-PF3OUdS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/23/2018
EXPIRY DATE: (mm/dd/yyyy) 11/23/2023
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.
- This compound is a minor component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager **Date:** 11/28/2018 (mm/dd/yyyy)

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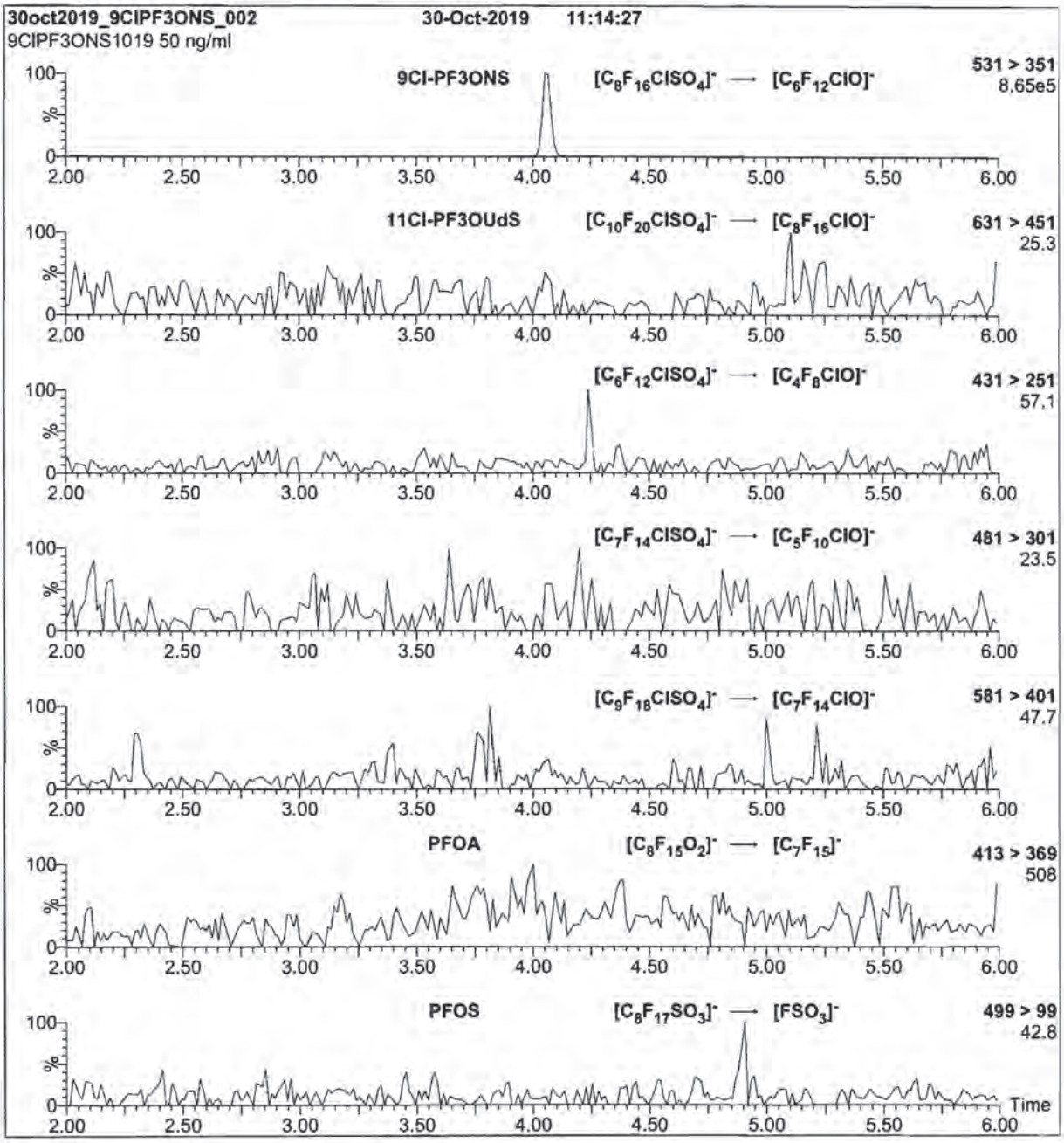
Revision#:6, Revised 2018-08-14

1910668

Figure 2: **9Cl-PF3ONS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (9Cl-PF3ONS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.25e-3
Collision Energy (eV) = 20

Form#:27, Issued 2004-11-10
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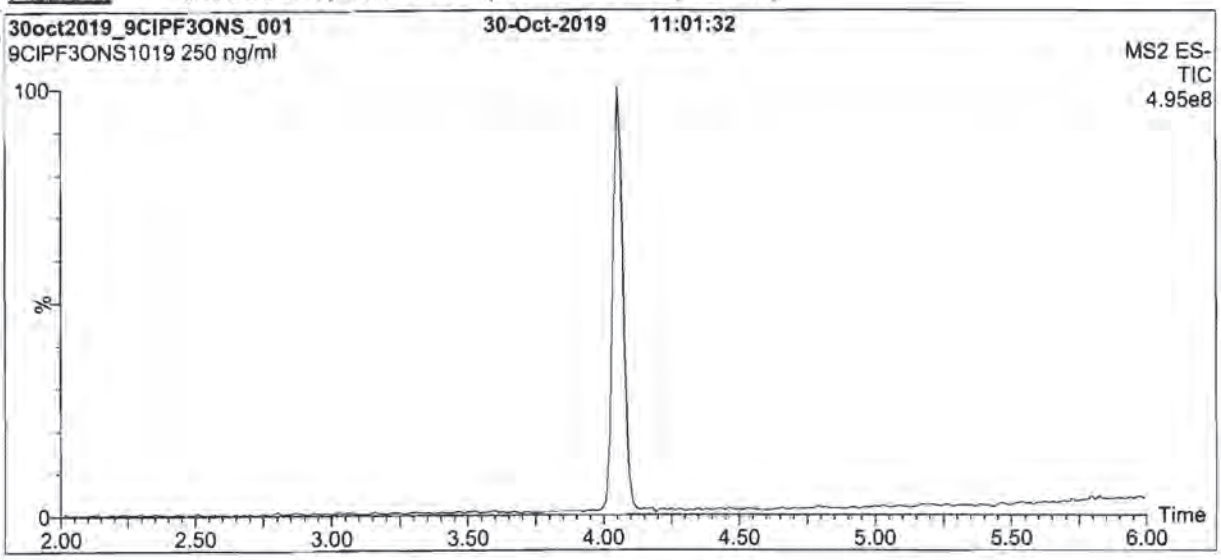
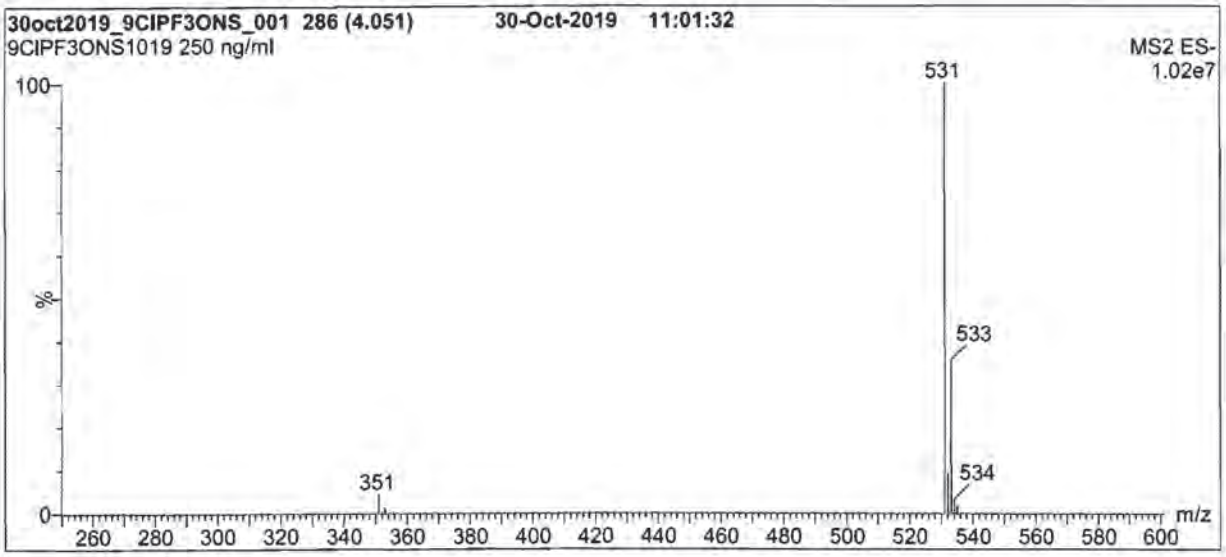
9ClPF3ONS1019 (4 of 4)
rev0

19L0668

Figure 1: 9Cl-PF3ONS; LC/MS Data (TIC and Mass Spectrum)





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Ramp to 90% organic over 7 min and hold for
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Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
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9ClPF3ONS1019 (3 of 4)
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19L0668

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

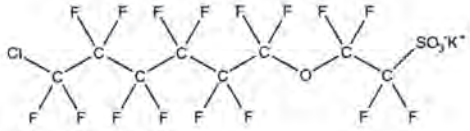
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0668

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	9Cl-PF3ONS	**LOT NUMBER:**	9ClPF3ONS1019
COMPOUND:	Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate		
STRUCTURE:		**CAS #:**	73606-19-6



MOLECULAR FORMULA:	$C_8F_{16}ClSO_4K$	**MOLECULAR WEIGHT:**	570.67
CONCENTRATION:	50.0 ± 2.5 µg/ml (K Salt) 46.6 ± 2.3 µg/ml (9Cl-PF3ONS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/30/2019		
EXPIRY DATE: (mm/dd/yyyy)	10/30/2024		
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.
- This compound is the major component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/04/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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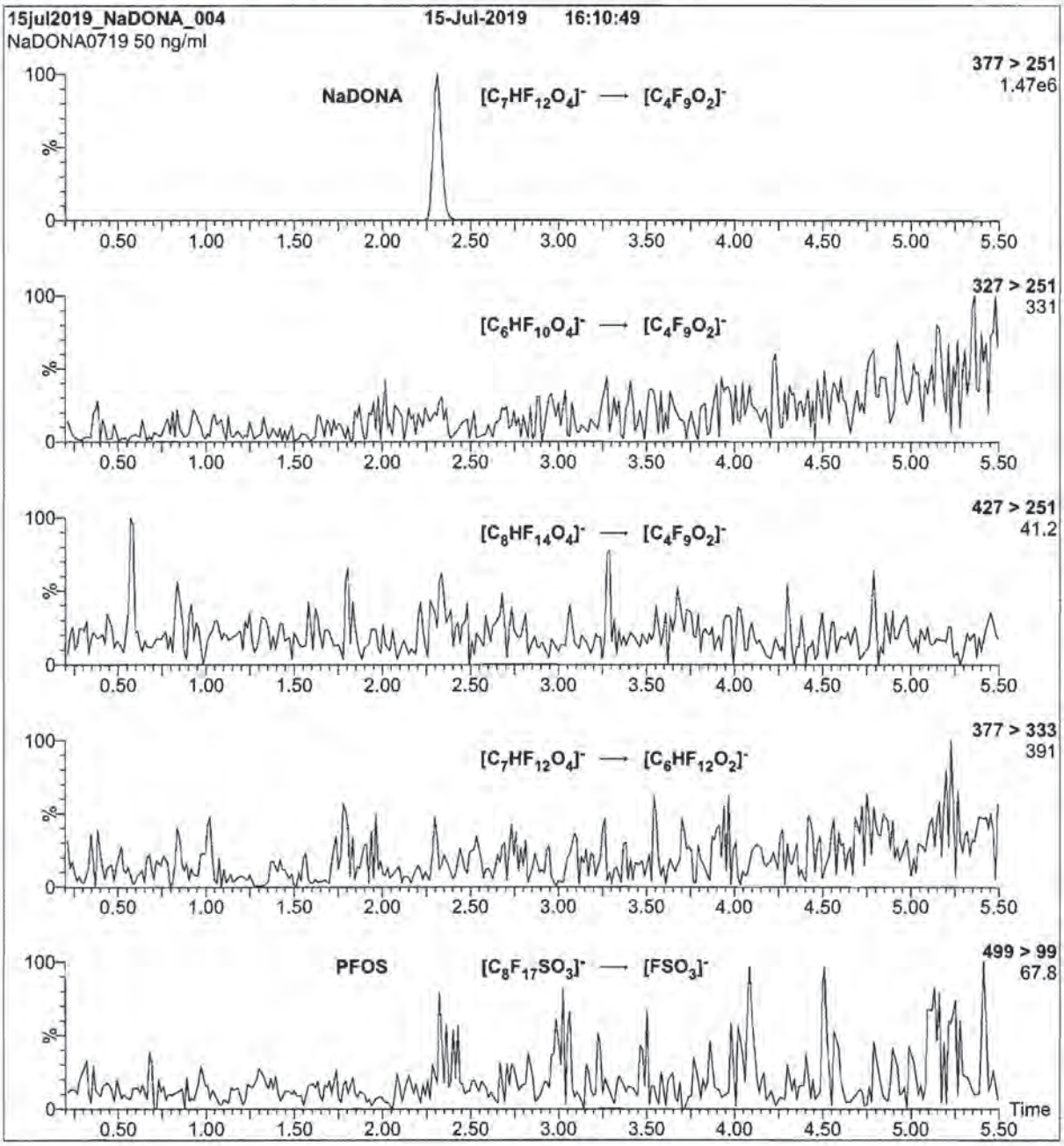
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0669

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



Conditions for Figure 2:

Injection: On-column (NaDONA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

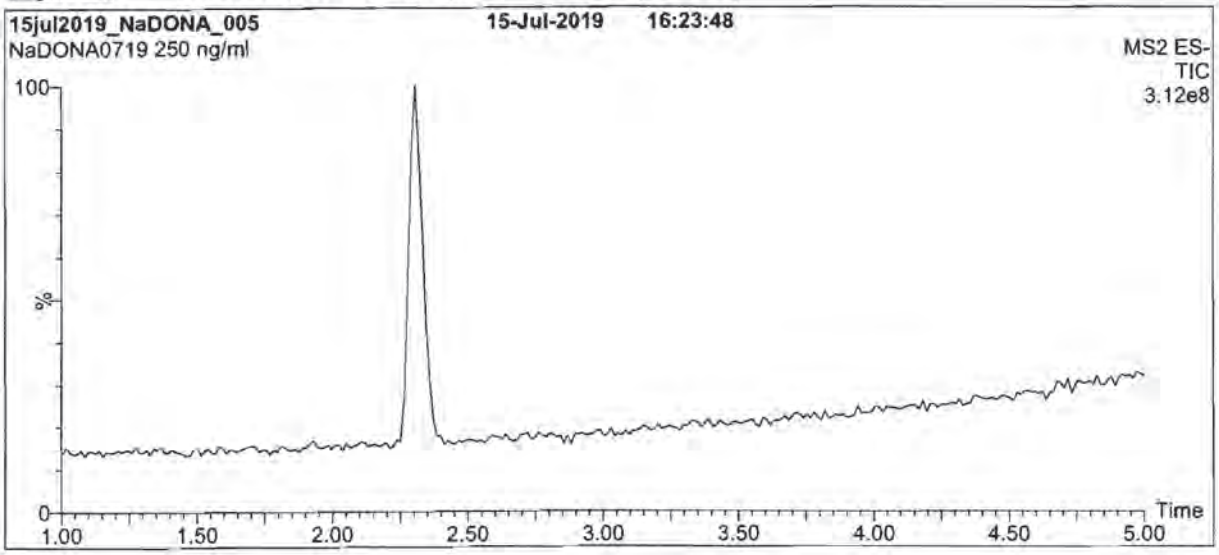
Collision Gas (mbar) = 3.37e-3
Collision Energy (eV) = 10

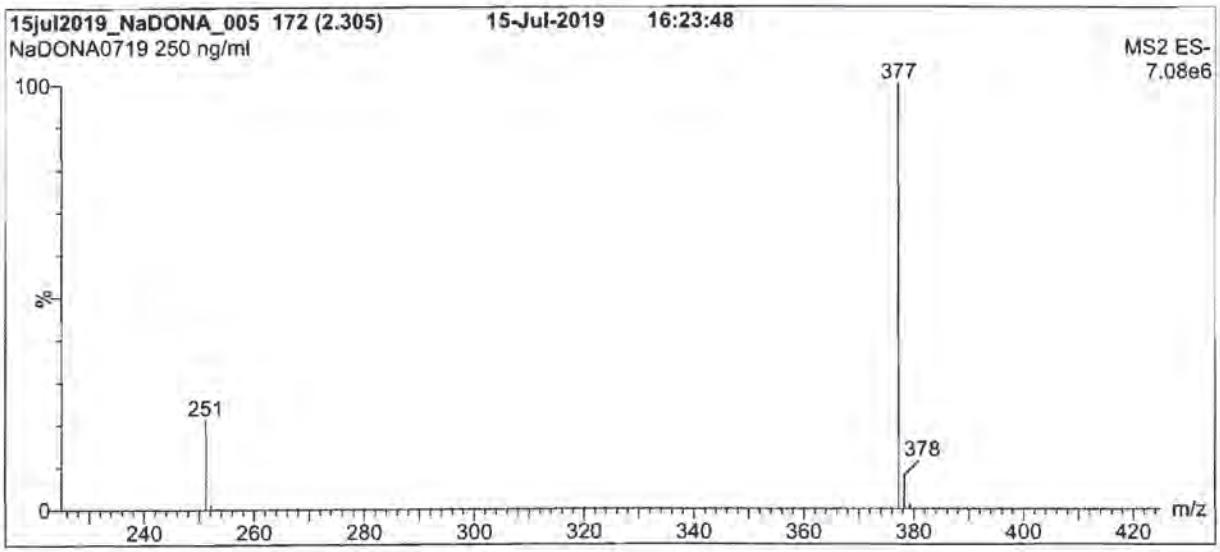
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NaDONA0719 (4 of 4)
rev0

19L0669

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.70
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NaDONA0719 (3 of 4)
rev0

19L0669

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 $x_1, x_2, ...x_n$ on which it depends is:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly 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:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 0136

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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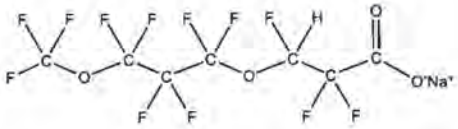
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: NaDONA
LOT NUMBER: NaDONA0719
COMPOUND: Sodium dodecafluoro-3H-4,8-dioxanonanoate

STRUCTURE:



CAS #: 958445-44-8 (ammonium salt)

MOLECULAR FORMULA:	$C_7HF_{12}O_4Na$
MOLECULAR WEIGHT:	400.05
CONCENTRATION:	50 ± 2.5 µg/ml (Na Salt) 47.1 ± 2.4 µg/ml (NaDONA anion)
SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	07/15/2019
EXPIRY DATE: (mm/dd/yyyy)	07/15/2024
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.
- Product is commercially known as ADONA.
- 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:** 07/25/2019 (mm/dd/yyyy)

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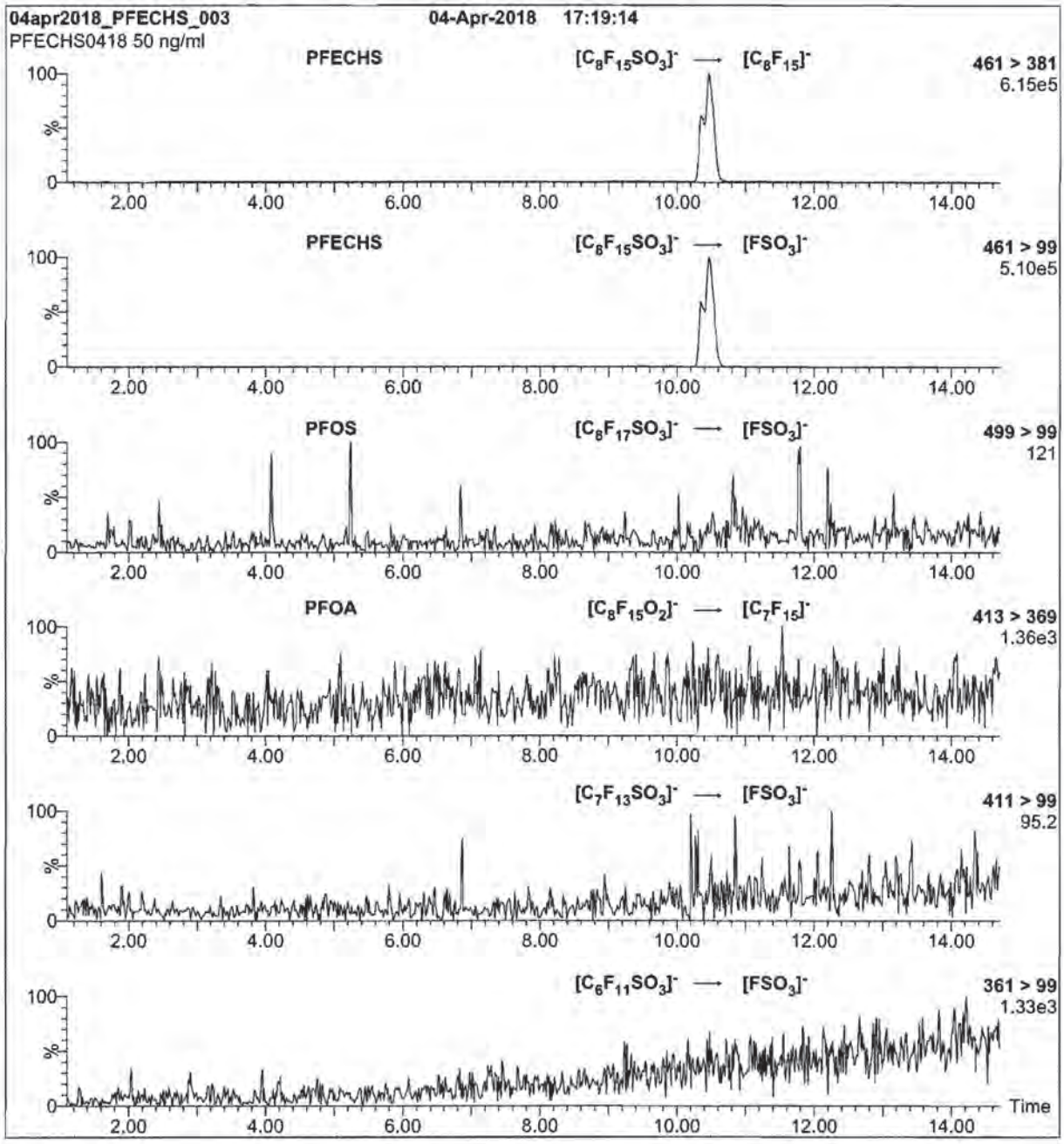
Figure 2: **PFECHS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFECHS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

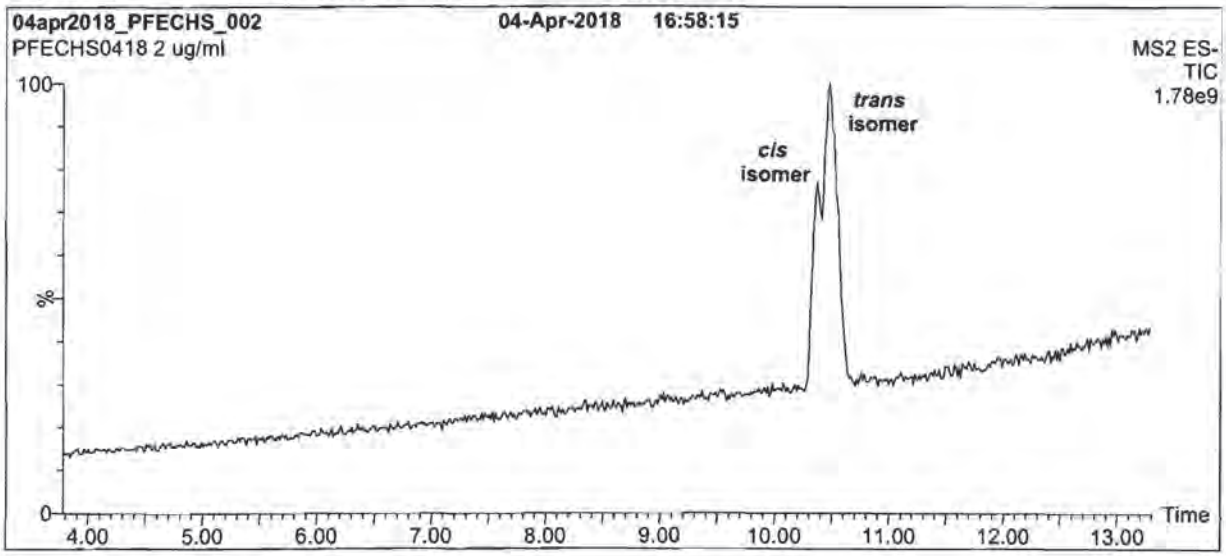
Collision Gas (mbar) = 3.37e-3
Collision Energy (eV) = 24

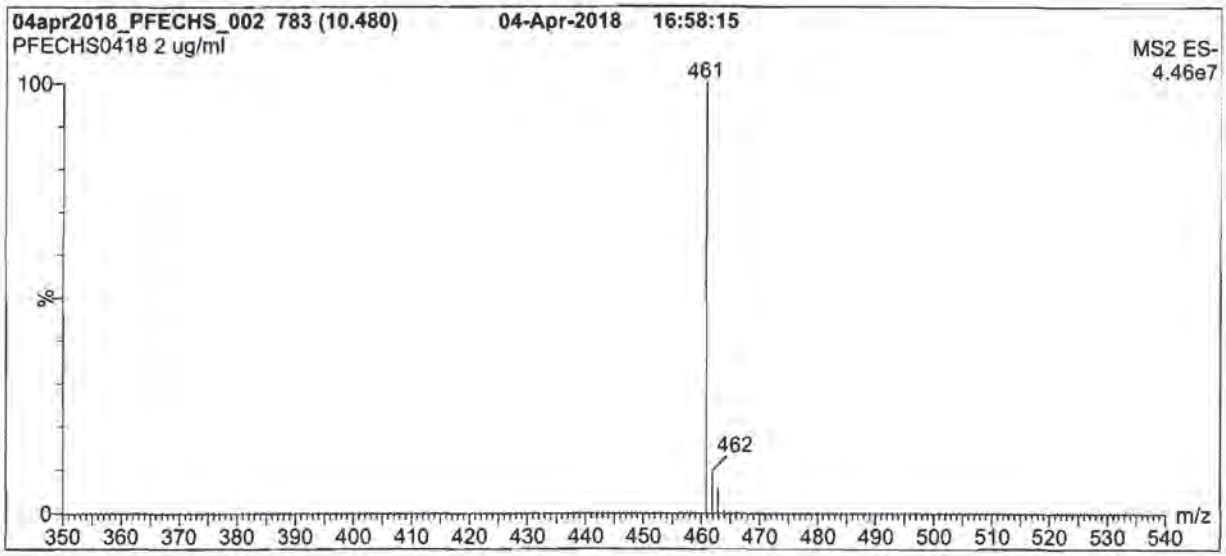
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-01-22

PFECHS0418 (4 of 4)
rev0

19L0670

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

Column: Acquity CSH Fluoro-Phenyl
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 25% (80:20 MeOH:ACN) / 75% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 60% organic over 13 min.
Ramp to 80% organic over 2 min and hold for
2 min before returning to initial conditions in 1 min.
Time: 20 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (350 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 45.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-01-22

PFECHS0418 (3 of 4)
rev0

19L0670

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:

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A1226

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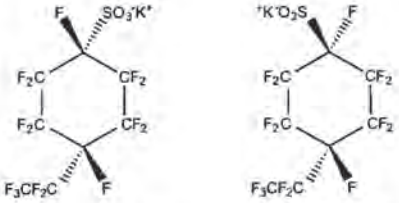
19L0670

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFECHS **LOT NUMBER:** PFECHS0418
COMPOUND: Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE: **CAS #:** 67584-42-3



cis-isomer *trans*-isomer

MOLECULAR FORMULA:	$C_9F_{15}SO_3K$	**MOLECULAR WEIGHT:**	500.22
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 46.1 ± 2.3 µg/ml (PFECHS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/04/2018		
EXPIRY DATE: (mm/dd/yyyy)	04/04/2023		
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 a mixture of the *cis*/*trans* isomers of PFECHS at a ratio of 2:3 (*cis*:*trans*).
- Contains ~ 1.5% of other isomeric impurities.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/09/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-01-22

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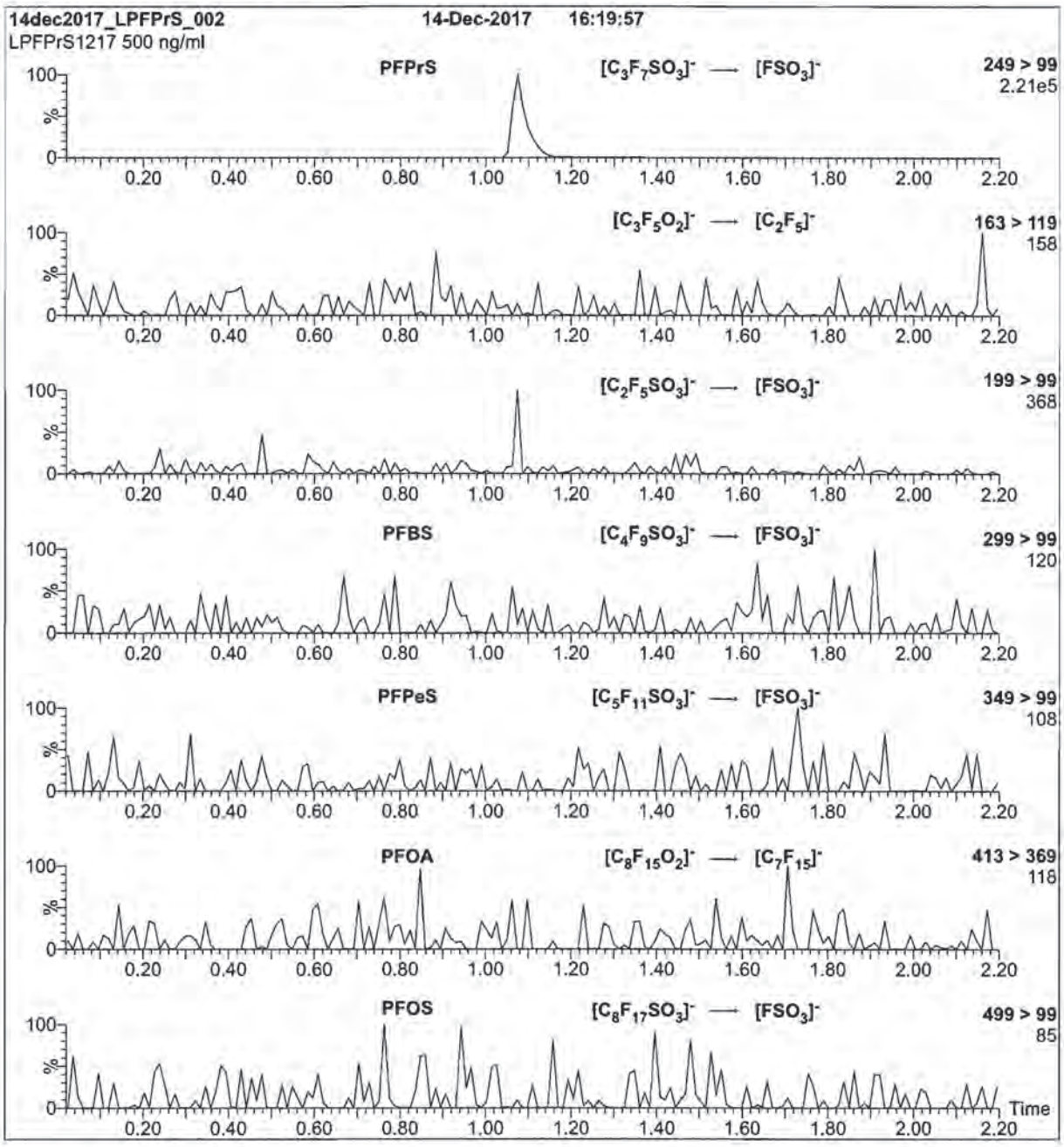
Figure 2: **L-PFPrS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFPrS)

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

Flow: 300 µl/min

MS Parameters

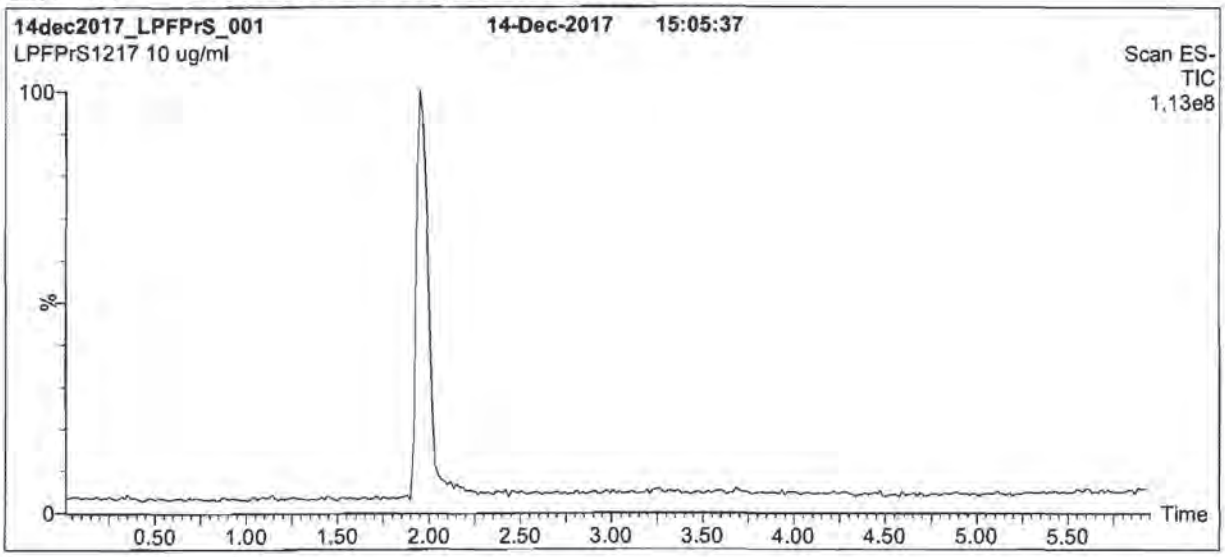
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

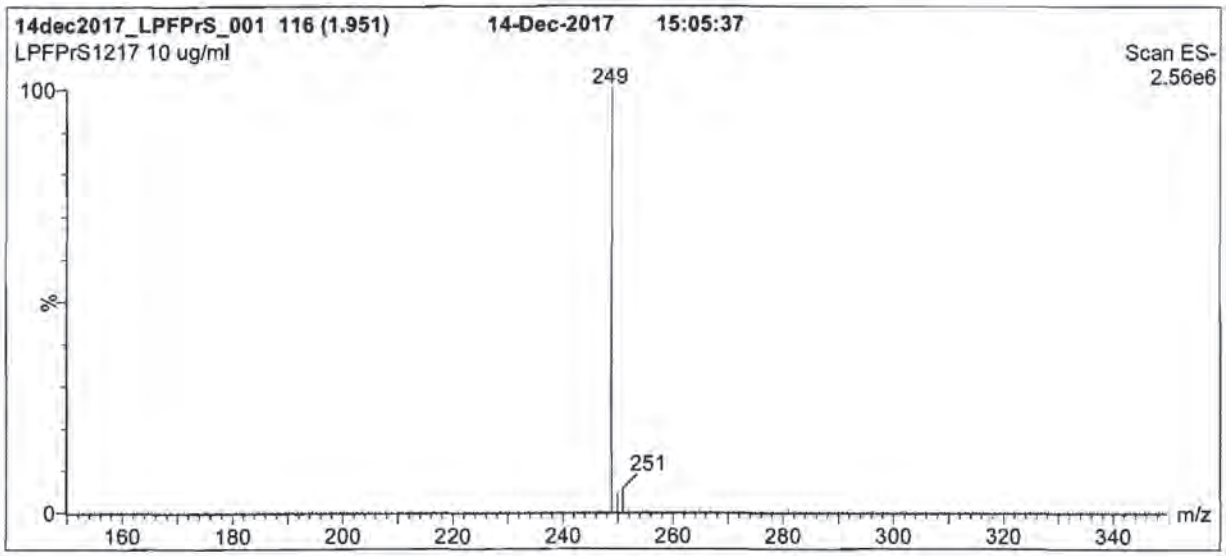
Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

LPFPrS1217 (4 of 4)
rev0

1910671

Figure 1: L-PFPrS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

LPFPrS1217 (3 of 4)
rev0

191067

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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

1910671

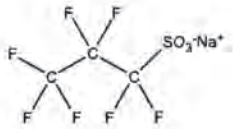
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFPrS
COMPOUND: Sodium perfluoro-1-propanesulfonate
LOT NUMBER: LPFPrS1217

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_3F_7SO_3Na$
MOLECULAR WEIGHT:	272.07
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 45.8 ± 2.3 µg/ml (PFPrS anion)
SOLVENT(S):	Methanol
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

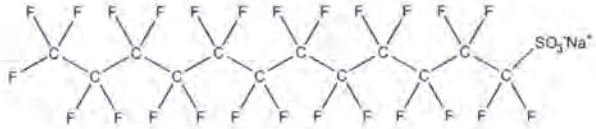
19L1707

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDoS
LOT NUMBER: LPFDoS1218
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

STRUCTURE:
CAS #: 1260224-54-1



MOLECULAR FORMULA:	$C_{12}F_{25}SO_3Na$
MOLECULAR WEIGHT:	722.14
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.4 ± 2.4 µg/ml (PFDoS anion)
SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%
LAST TESTED: (mm/dd/yyyy)	12/06/2018
EXPIRY DATE: (mm/dd/yyyy)	12/06/2023
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 perfluoro-n-dodecanoic acid (PFDoA).

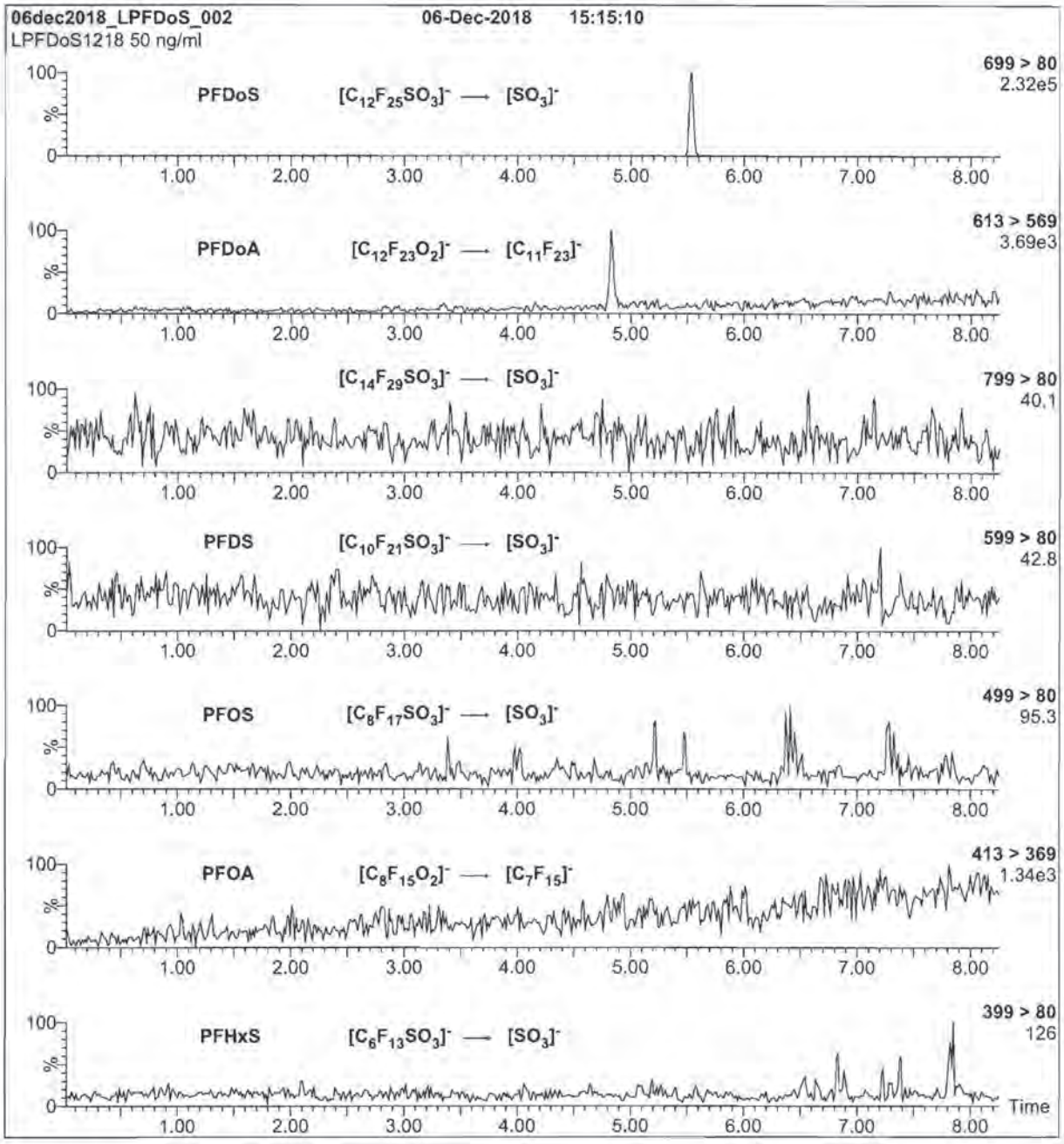
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/20/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L1707

Figure 2: **L-PFDoS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFDoS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

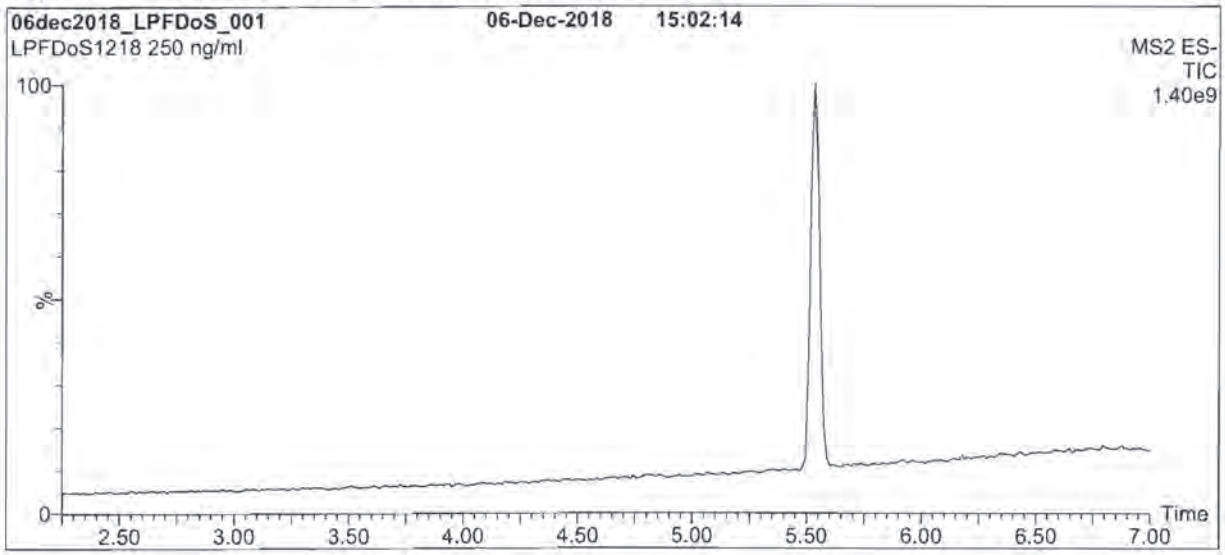
Collision Gas (mbar) = 3.27e-3
Collision Energy (eV) = 60

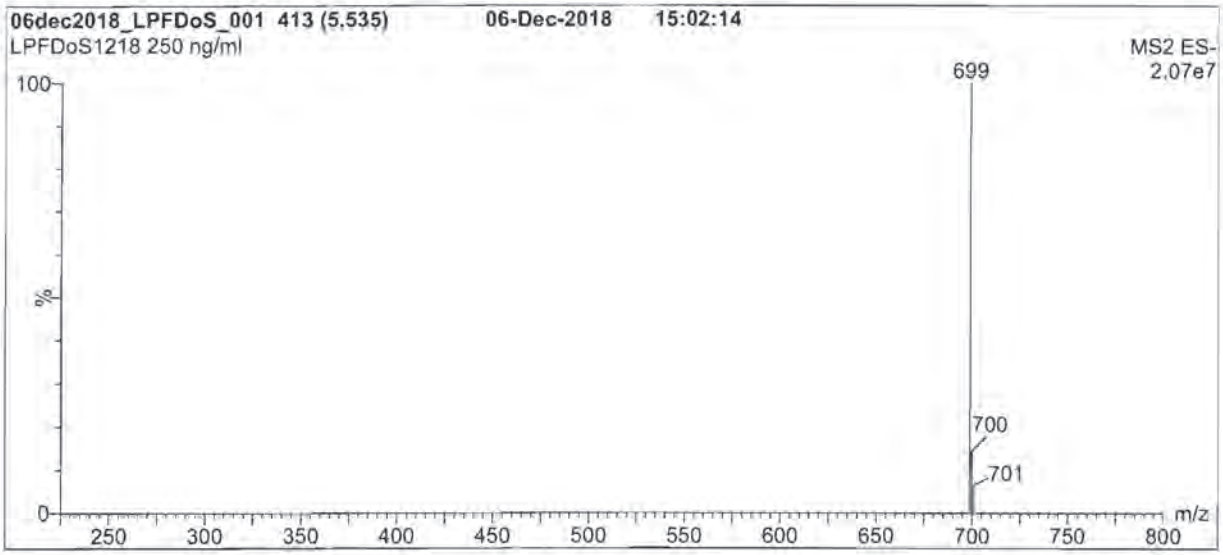
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

LPFDoS1218 (4 of 4)
rev0

19L1707

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFDoS1218 (3 of 4)
rev0

19L1707

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 $x_1, x_2,...x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Analytical Standard Record

Vista Analytical Laboratory

20A0804

Parent Standards used in this standard:

Standard	Description	Prepared	Prepared By	Expires	(mls)
19L0626	13C2-FOUEA	06-Dec-19	** Vendor **	29-Mar-21	1
19L0627	13C4-PFBA	06-Dec-19	** Vendor **	15-Nov-24	1
19L0628	13C6-PFDA	06-Dec-19	** Vendor **	25-Jul-24	1
19L0629	13C9-PFNA	06-Dec-19	** Vendor **	08-Sep-23	1
19L0630	13C7-PFUdA	06-Dec-19	** Vendor **	22-Jul-24	1
19L0631	13C5-PFHxA	06-Dec-19	** Vendor **	27-Sep-23	1
19L0632	18O2-PFHxS	06-Dec-19	** Vendor **	10-Jan-24	1.06
19L0633	13C4-PFOS	06-Dec-19	** Vendor **	01-Nov-24	1.05
19L0634	13C8-PFOA	06-Dec-19	** Vendor **	05-Mar-24	1.02

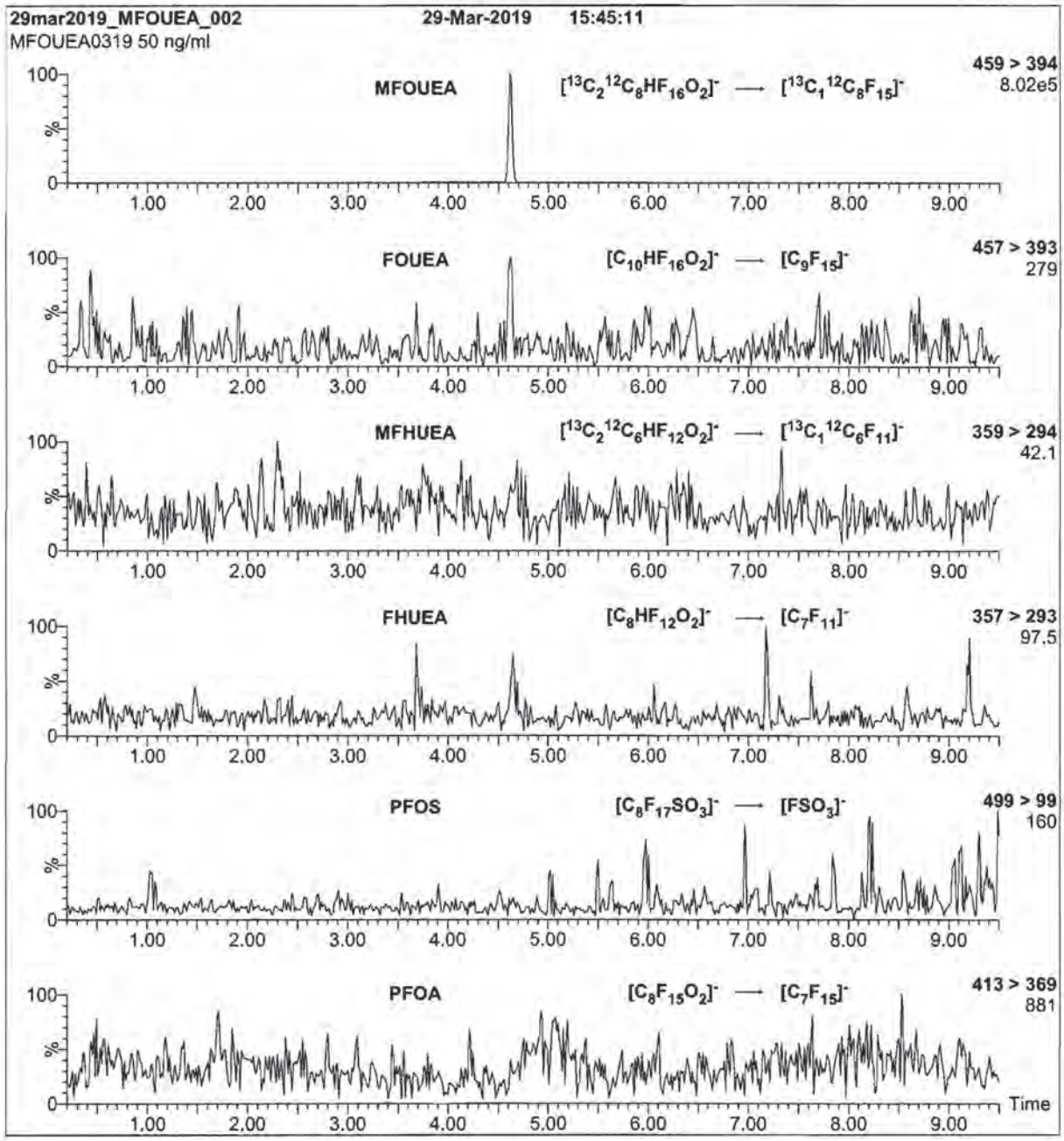
Description:	PFC-RS	Expires:	09-Jan-21
Standard Type:	Reagent	Prepared:	08-Jan-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	08-Jan-20 12:43 by BML

10 uL spike

Analyte	CAS Number	Concentration	Units
18O2-PFHxS		1.25	ug/mL
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
13C2-FOUEA		1.25	ug/mL

19L0626

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



Conditions for Figure 2:

Injection: On-column (MFOUEA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

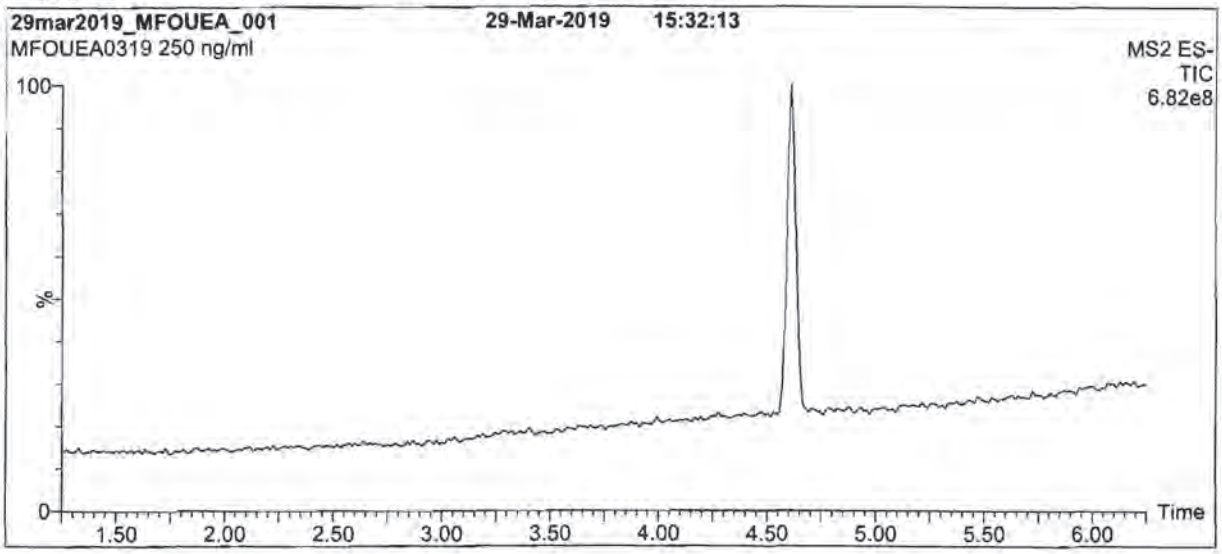
Collision Gas (mbar) = 2.84e-3
Collision Energy (eV) = 10

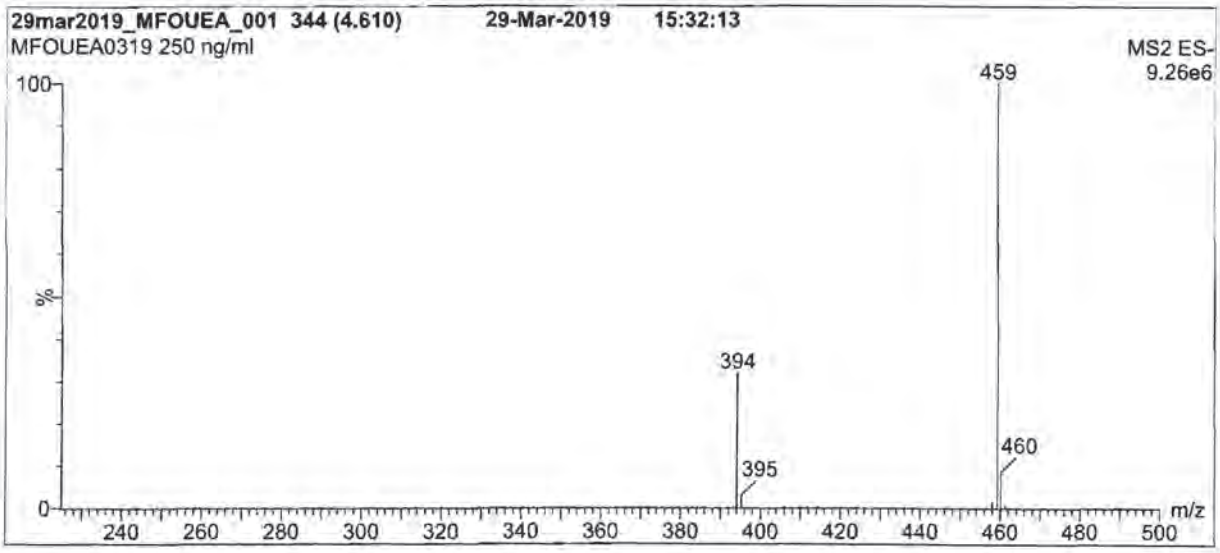
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MFOUEA0319 (4 of 4)
rev0

19L0626

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.70
Cone Voltage (V) = 28.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MFOUEA0319 (3 of 4)
rev0

19L0626

INTENDED USE:

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HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0626

WELLINGTON LABORATORIES

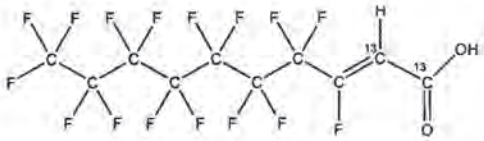
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MFOUEA
COMPOUND: 2H-Perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid

LOT NUMBER: MFOUEA0319

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_2F_{16}O_2$	**MOLECULAR WEIGHT:**	460.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Anhydrous Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	03/29/2019		
EXPIRY DATE: (mm/dd/yyyy)	03/29/2021		
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.
- Dilution of this standard in methanol may lead to the formation of 2H-3-methoxy-perfluoro-[1,2-$^{13}C_2$]-2-decenoic acid. This reaction can be catalyzed by the presence of acid or base. All dilutions should be routinely checked for degradation.

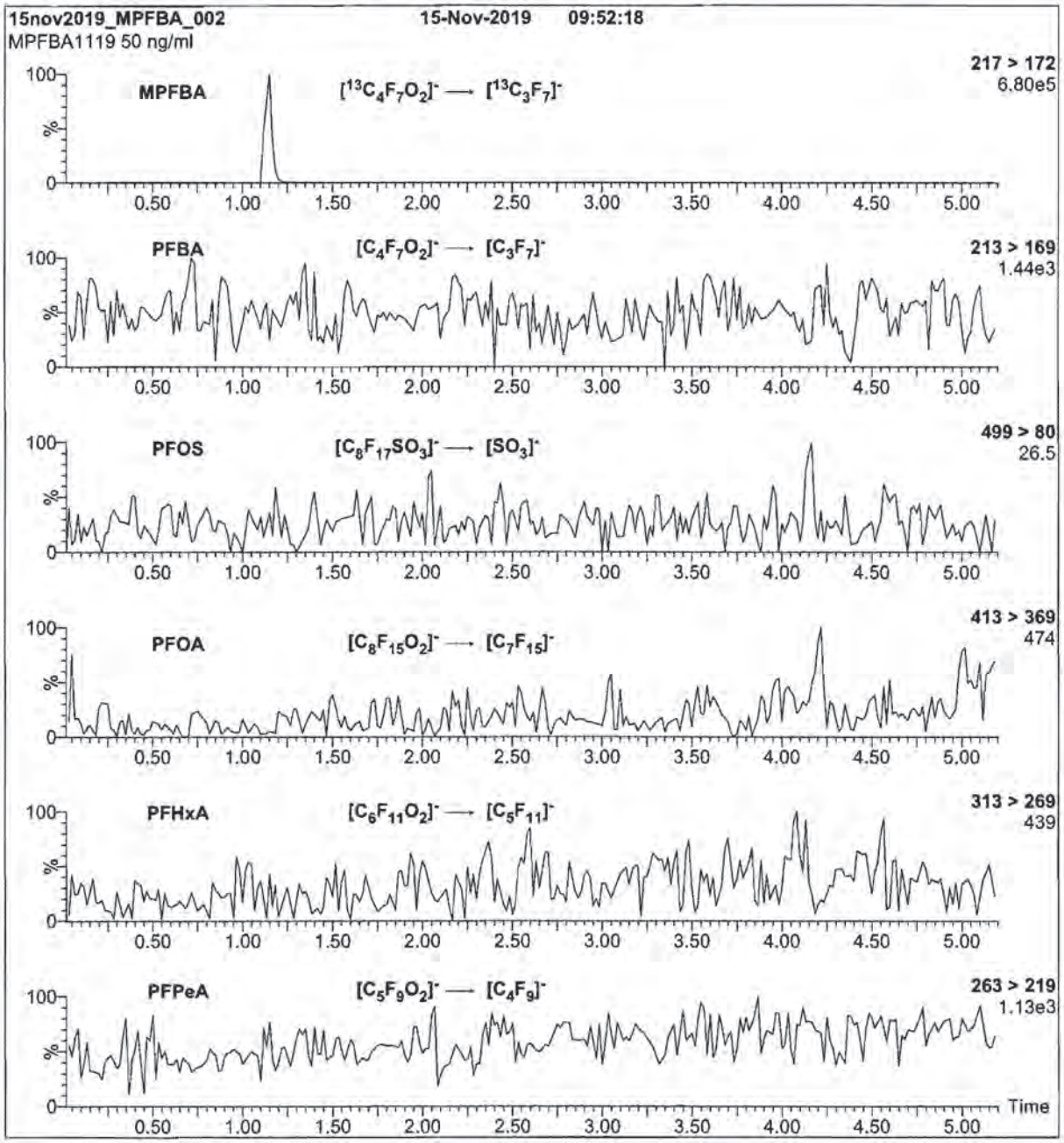
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/15/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0627

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



Conditions for Figure 2:

Injection: On-column (MPFBA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

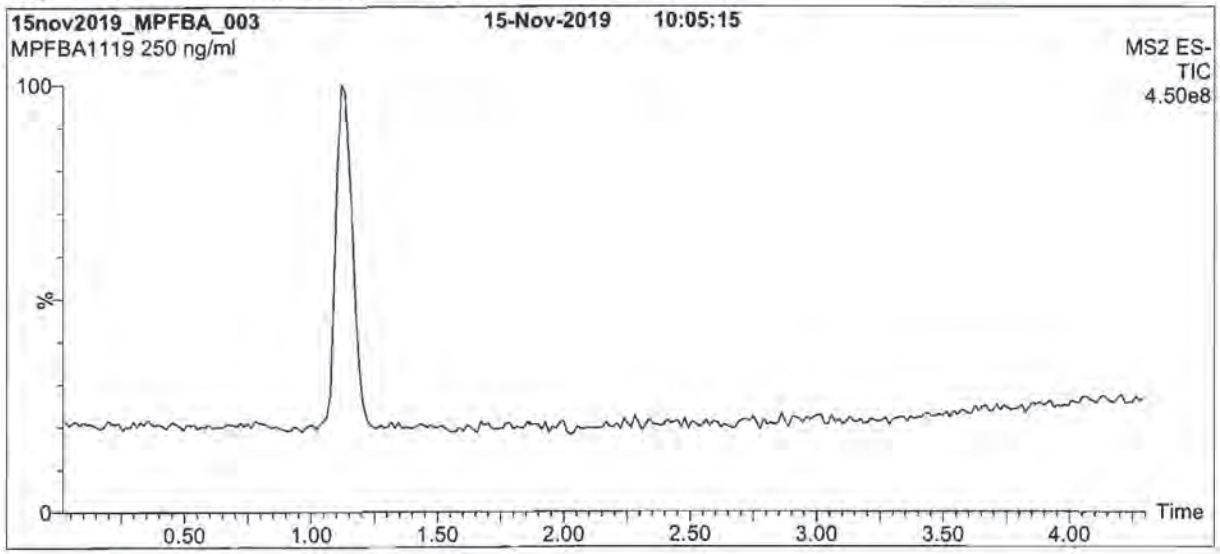
Collision Gas (mbar) = 3.33e-3
Collision Energy (eV) = 8

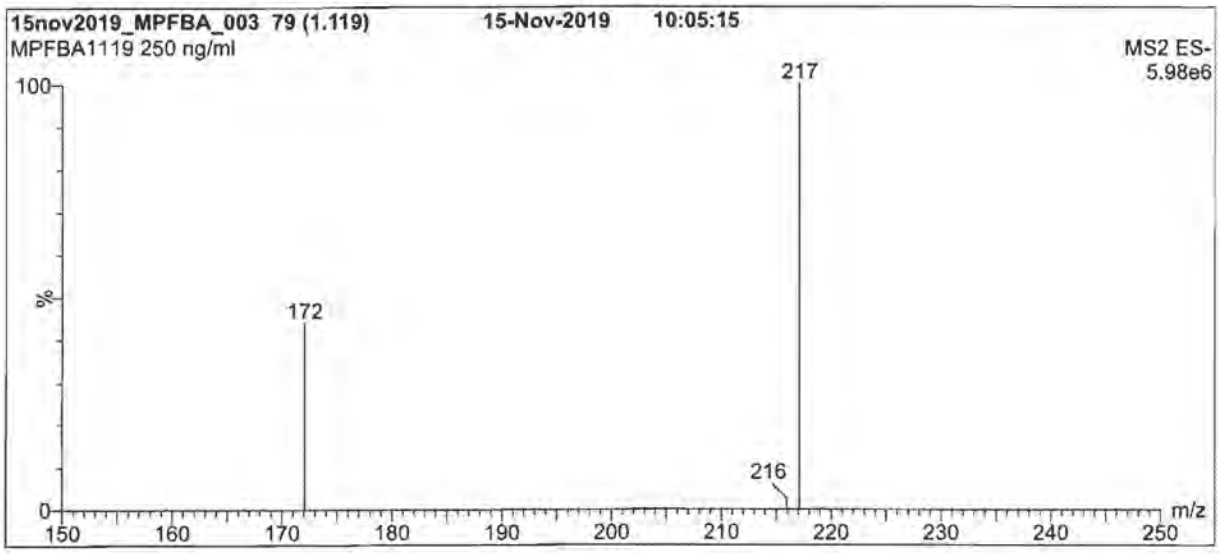
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFBA1119 (4 of 4)
rev0

19L0627

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFBA1119 (3 of 4)
rev0

19LC627

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HANDLING:

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

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

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TRACEABILITY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0627

WELLINGTON LABORATORIES

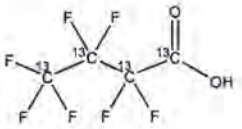
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid

LOT NUMBER: MPFBA1119

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4HF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/15/2019
EXPIRY DATE: (mm/dd/yyyy) 11/15/2024
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 218.01
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

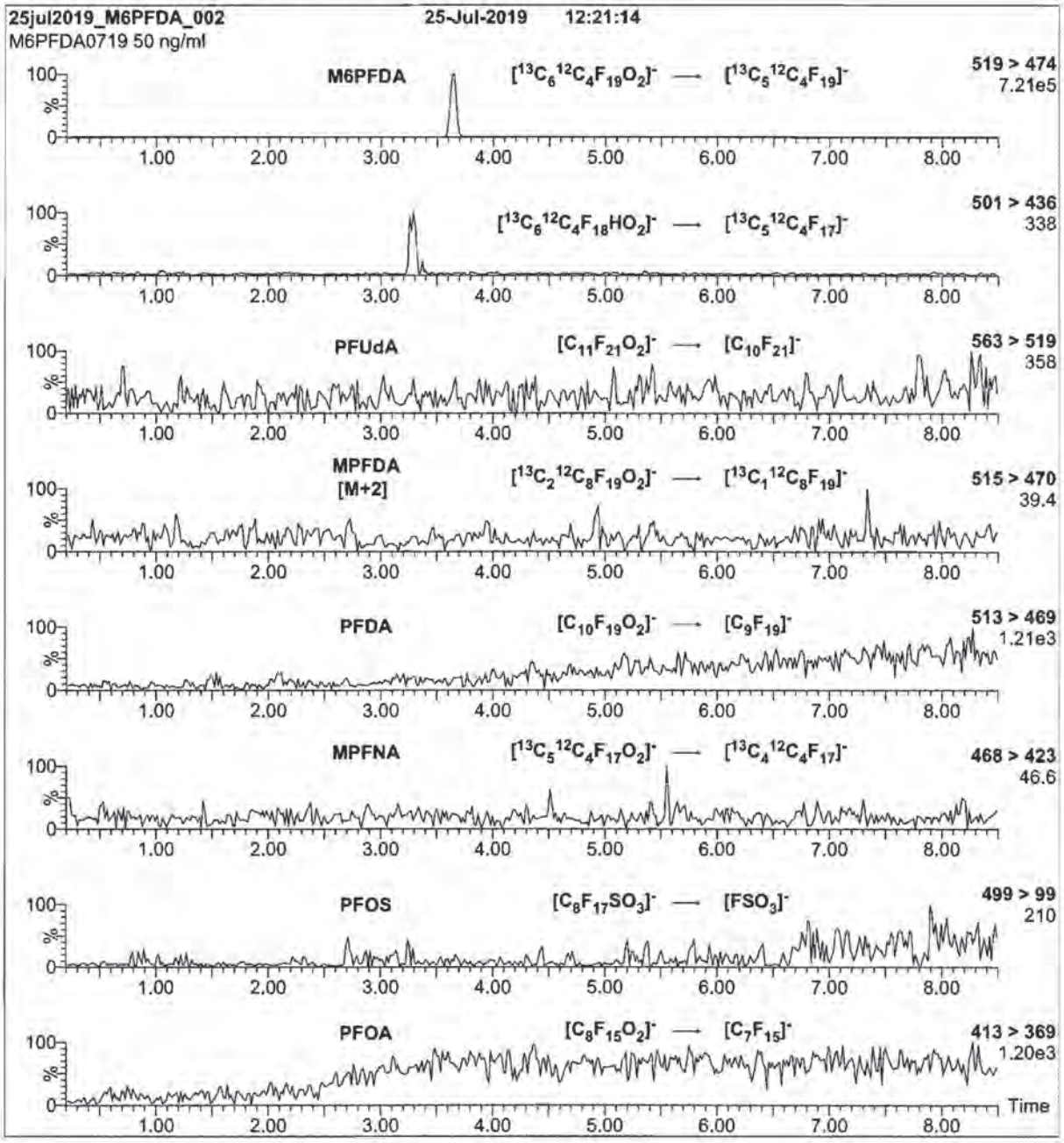
Certified By: _____ **Date:** 11/15/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-18

19L0628

Figure 2: **M6PFDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M6PFDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

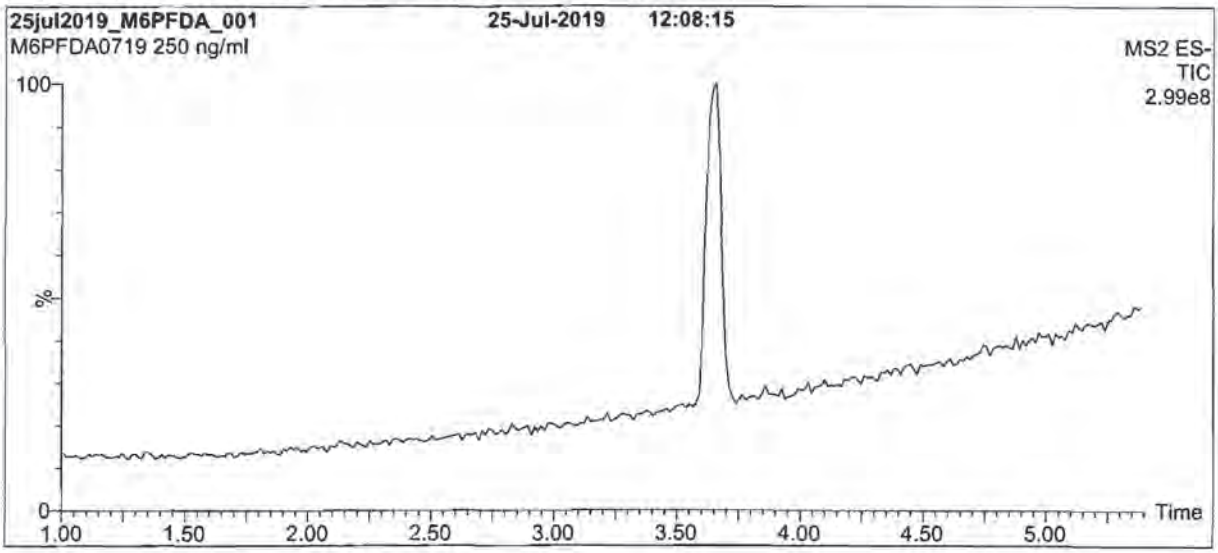
Collision Gas (mbar) = 3.33e-3
Collision Energy (eV) = 10

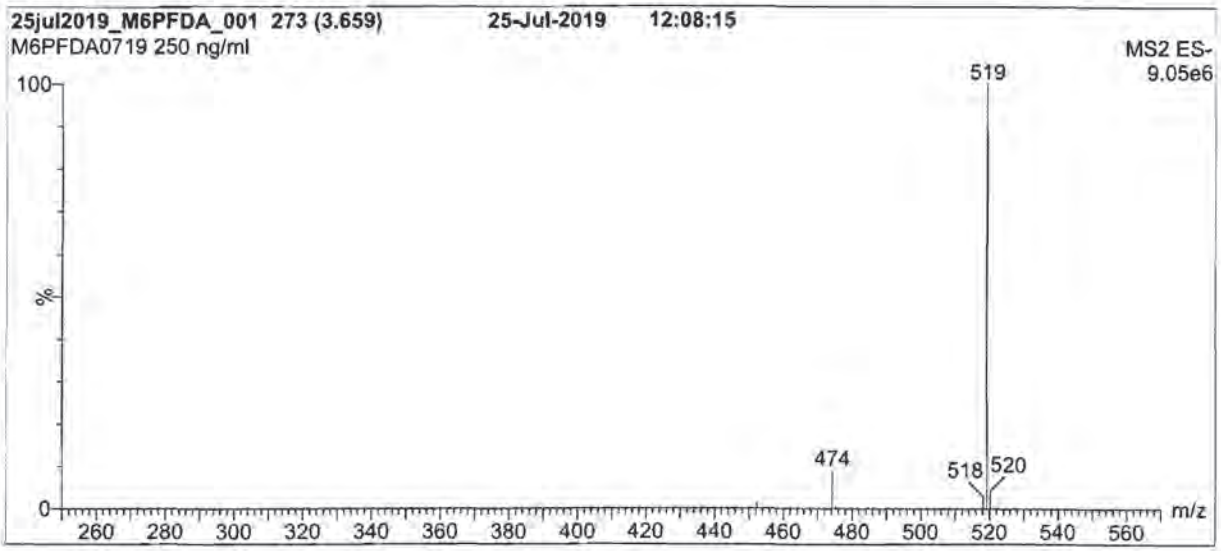
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M6PFDA0719 (4 of 4)
rev0

19L0628

Figure 1: **M6PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M6PFDA0719 (3 of 4)
rev0

19L0628

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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19L0628

WELLINGTON LABORATORIES

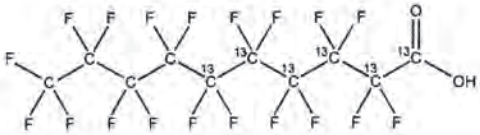
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M6PFDA
COMPOUND: Perfluoro-n-[1,2,3,4,5,6-$^{13}C_6$]decanoic acid

LOT NUMBER: M6PFDA0719

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_6{}^{12}C_4HF_{19}O_2$	**MOLECULAR WEIGHT:**	520.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5,6-$^{13}C_6$)
LAST TESTED: (mm/dd/yyyy)	07/25/2019		
EXPIRY DATE: (mm/dd/yyyy)	07/25/2024		
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

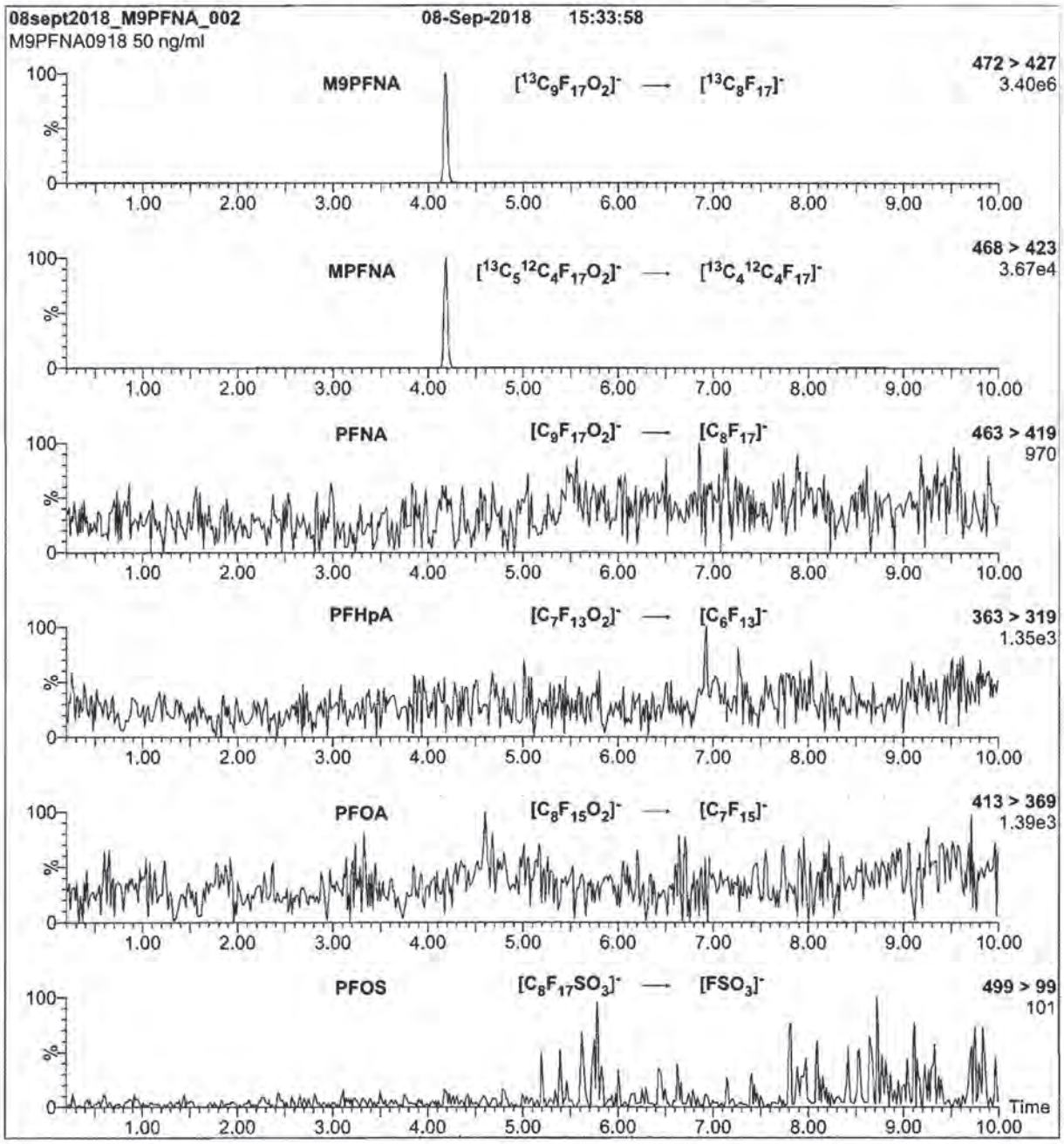
Certified By: _____ **Date:** 07/26/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0629

Figure 2: **M9PFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M9PFNA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

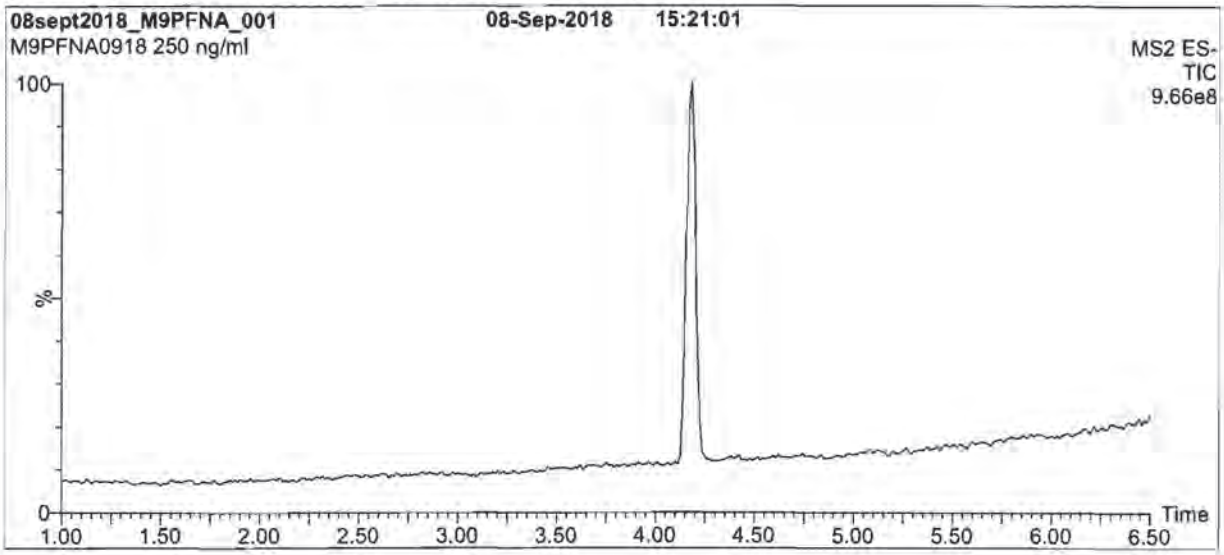
Collision Gas (mbar) = 2.95e-3
Collision Energy (eV) = 10

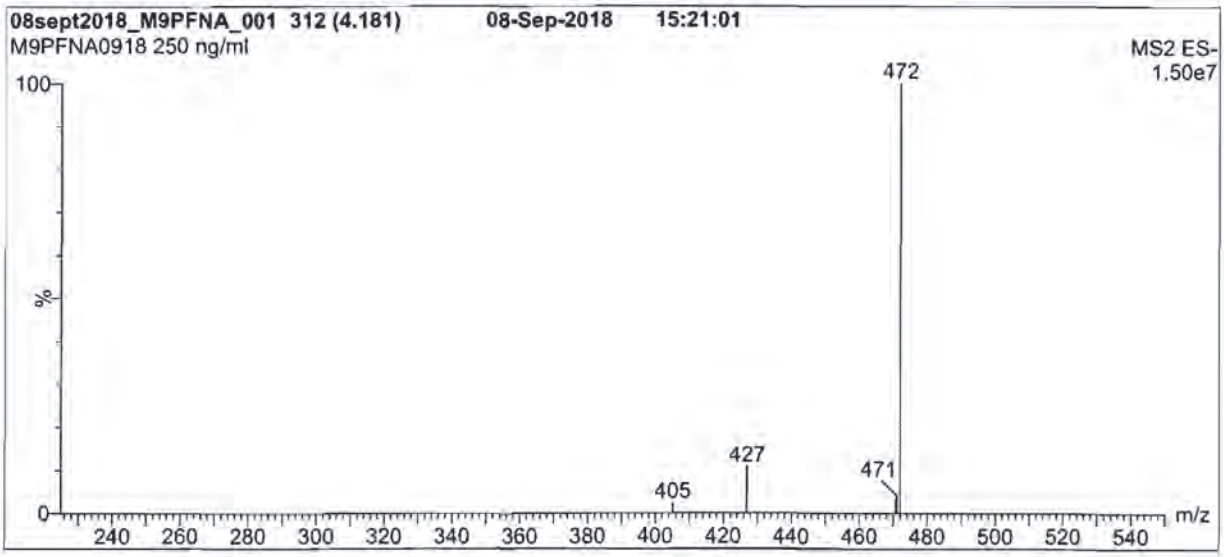
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

M9PFNA0918 (4 of 4)
rev0

19L0629

Figure 1: M9PFNA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M9PFNA0918 (3 of 4)
rev0

19L0629

INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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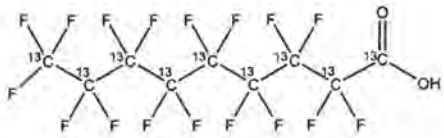
19L0629

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M9PFNA
COMPOUND: Perfluoro-n-[$^{13}C_9$]nonanoic acid
LOT NUMBER: M9PFNA0918

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	473.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_9$)
LAST TESTED: (mm/dd/yyyy)	09/08/2018		
EXPIRY DATE: (mm/dd/yyyy)	09/08/2023		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of $^{13}C_5{}^{12}C_4HF_{17}O_2$ (MPFNA).

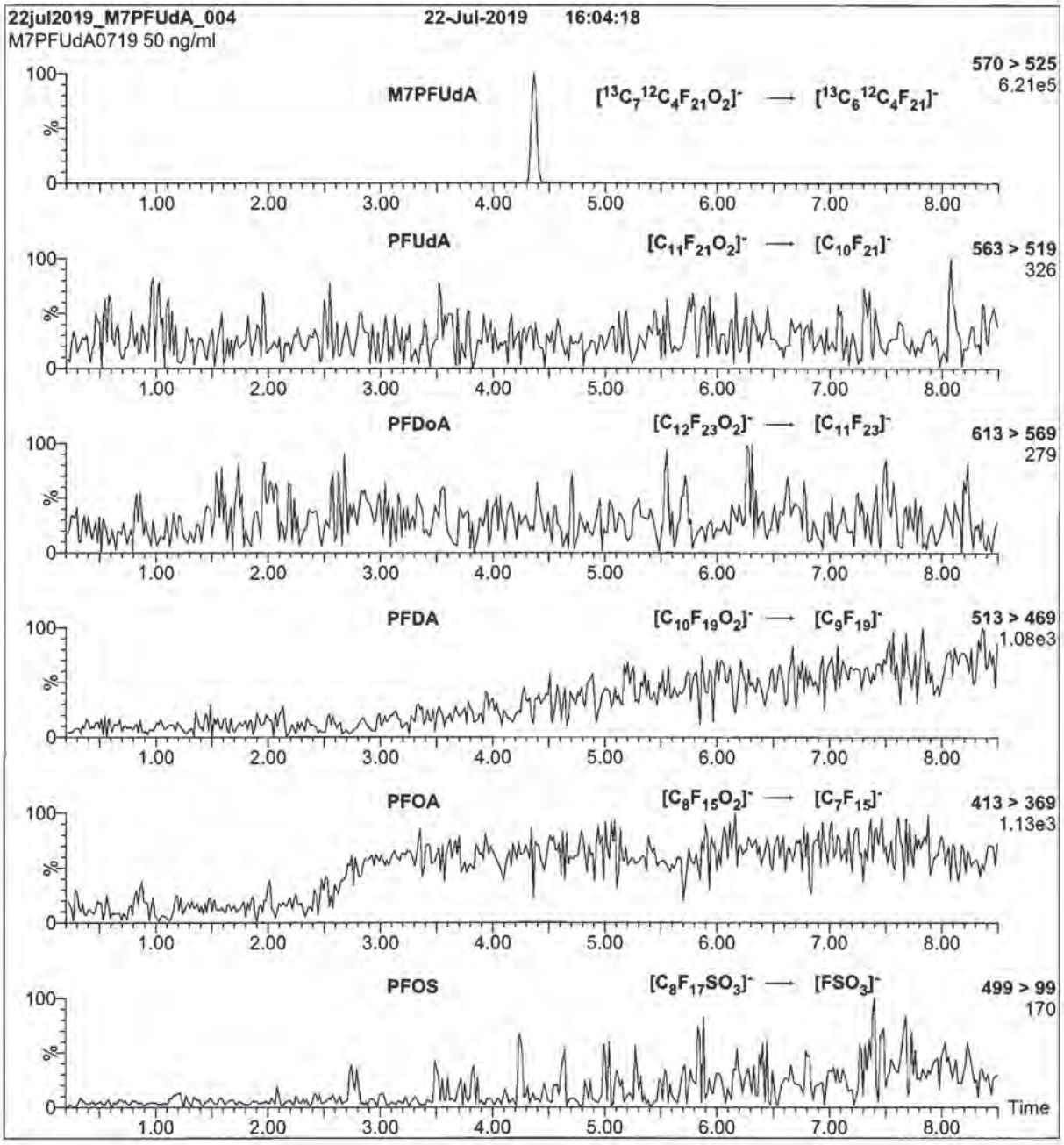
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/19/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0630

Figure 2: **M7PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M7PFUdA)

Mobile phase: Same as Figure 1

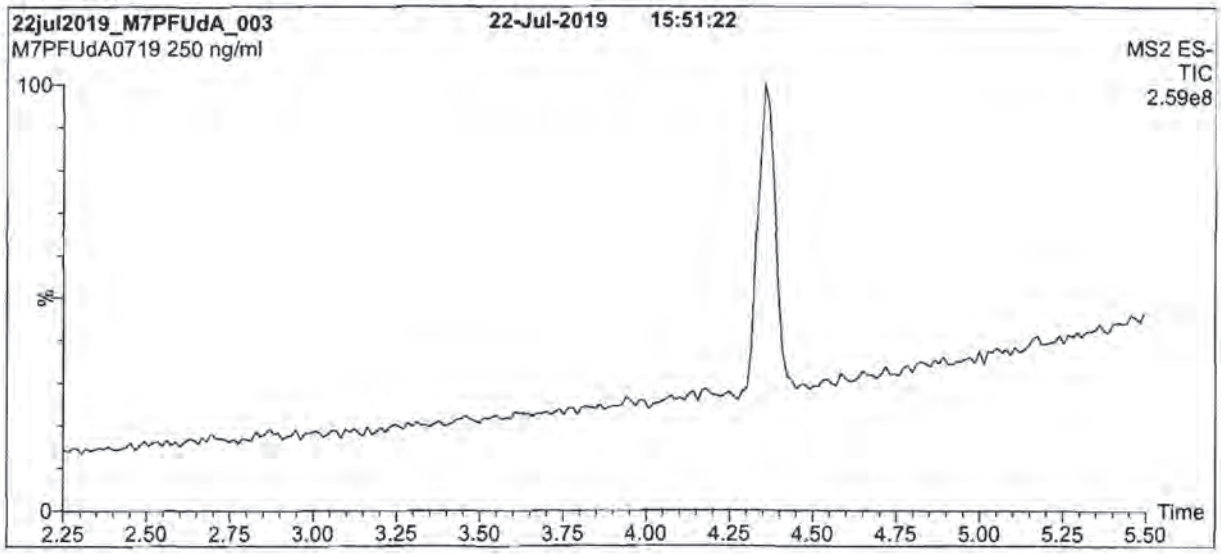
Flow: 300 µl/min

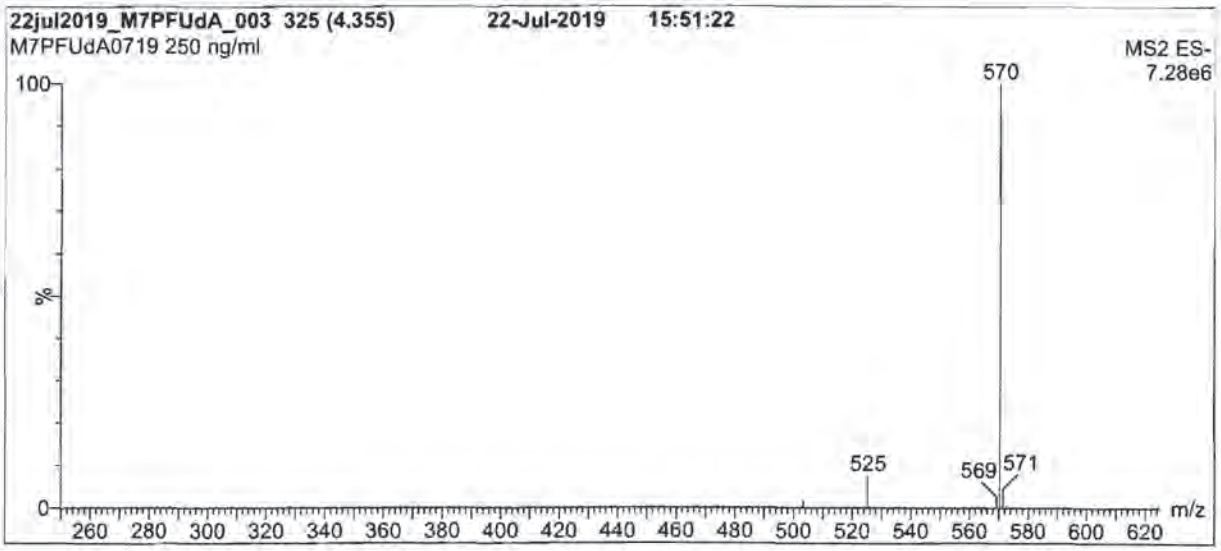
MS Parameters

Collision Gas (mbar) = 3.41e-3
Collision Energy (eV) = 12

19L0630

Figure 1: M7PFUdA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M7PFUdA0719 (3 of 4)
rev0

19L0630

INTENDED USE:

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HANDLING:

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

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No.: A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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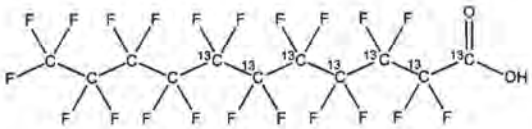
19L0630

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M7PFUdA	**LOT NUMBER:**	M7PFUdA0719
COMPOUND:	Perfluoro-n-[1,2,3,4,5,6,7-$^{13}C_7$]undecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_7{}^{12}C_4HF_{21}O_2$	**MOLECULAR WEIGHT:**	571.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4,5,6,7-$^{13}C_7$)
LAST TESTED: (mm/dd/yyyy)	07/22/2019		
EXPIRY DATE: (mm/dd/yyyy)	07/22/2024		
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

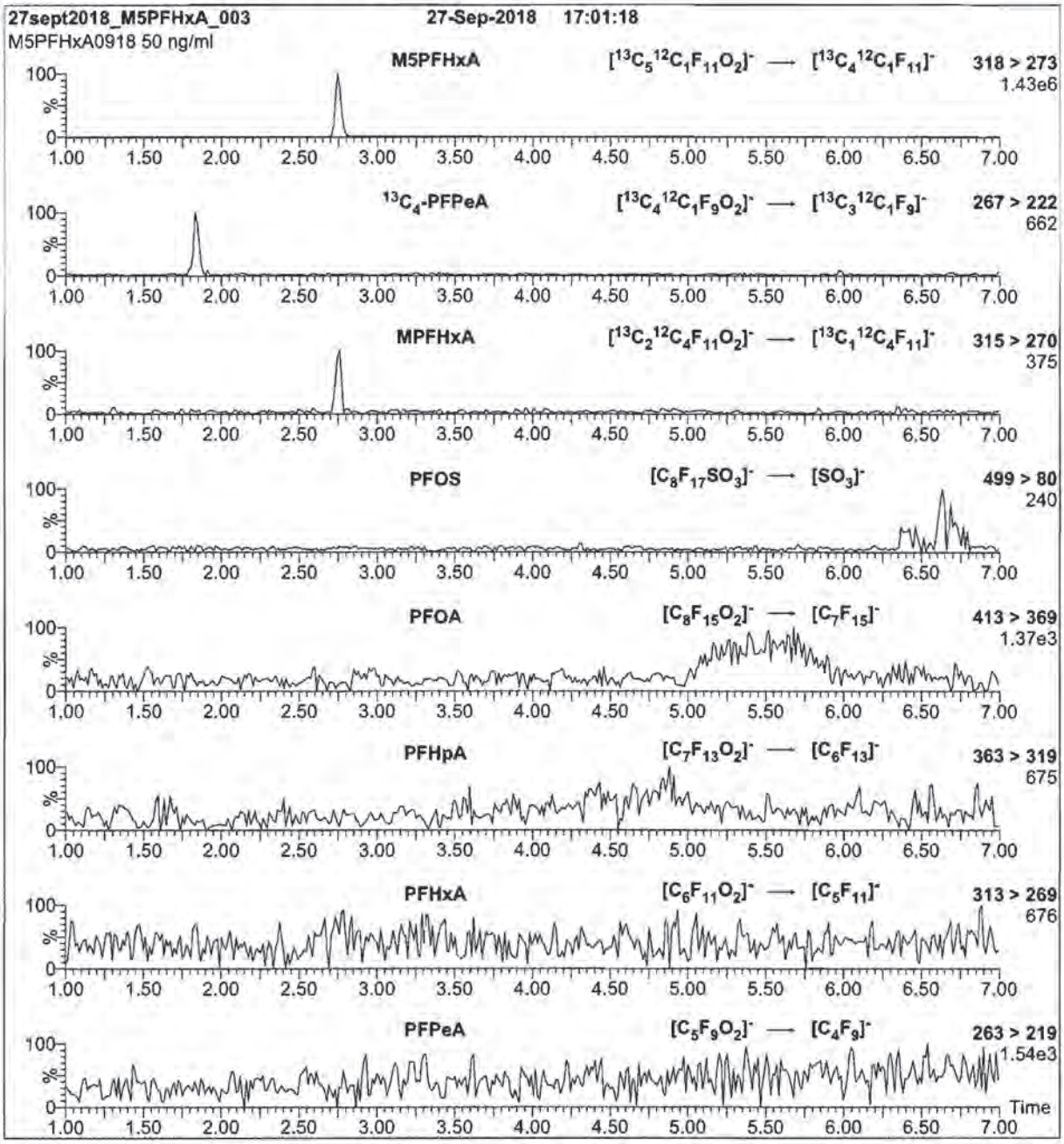
Certified By: _____ **Date:** 09/12/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0631

Figure 2: **M5PFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M5PFHxA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

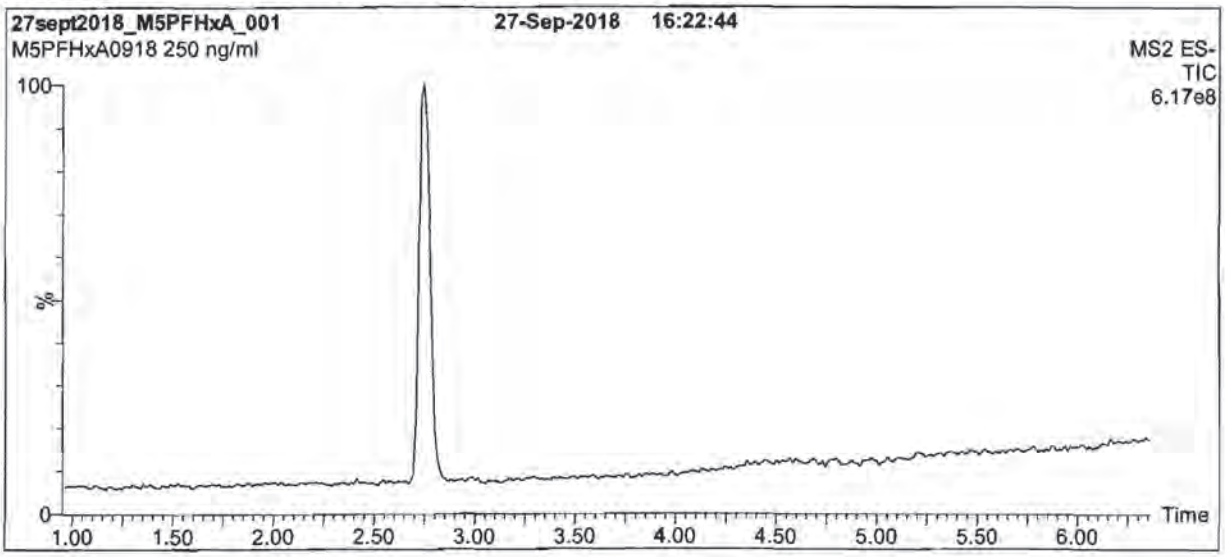
MS Parameters

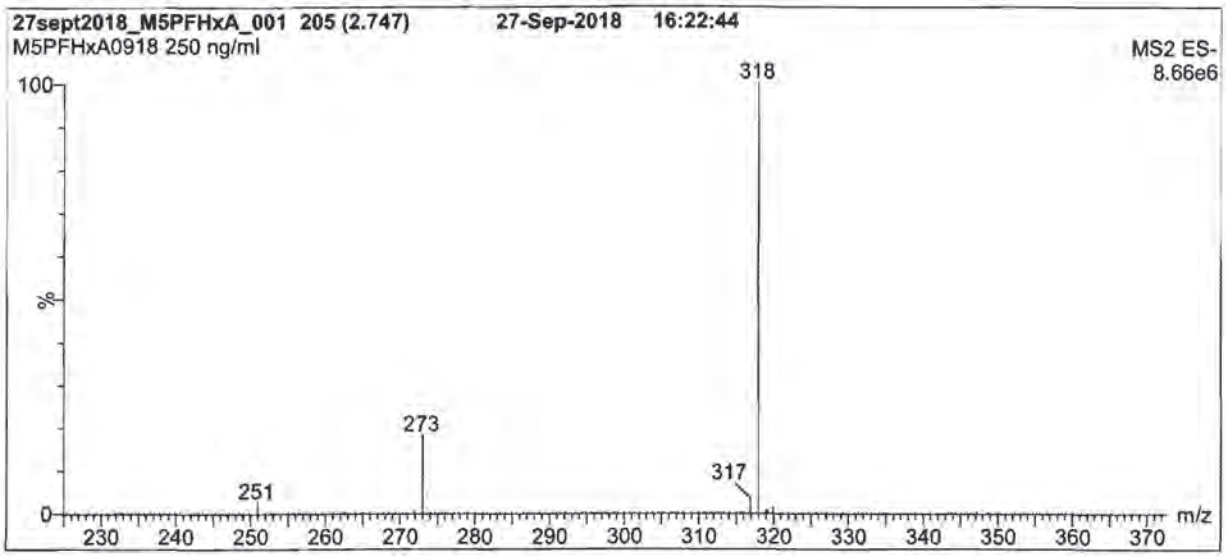
Collision Gas (mbar) = 2.97e-3
Collision Energy (eV) = 8

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0631

Figure 1: M5PFHxA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M5PFHxA0918 (3 of 4)
rev0

19L0631

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0631

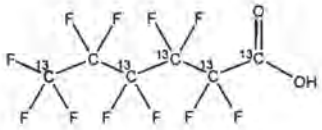
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFHxA
COMPOUND: Perfluoro-n-[1,2,3,4,6-$^{13}C_5$]hexanoic acid
LOT NUMBER: M5PFHxA0918

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_5{}^{12}C_1HF_{11}O_2$	**MOLECULAR WEIGHT:**	319.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4,6\text{-}^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	09/27/2018		
EXPIRY DATE: (mm/dd/yyyy)	09/27/2023		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

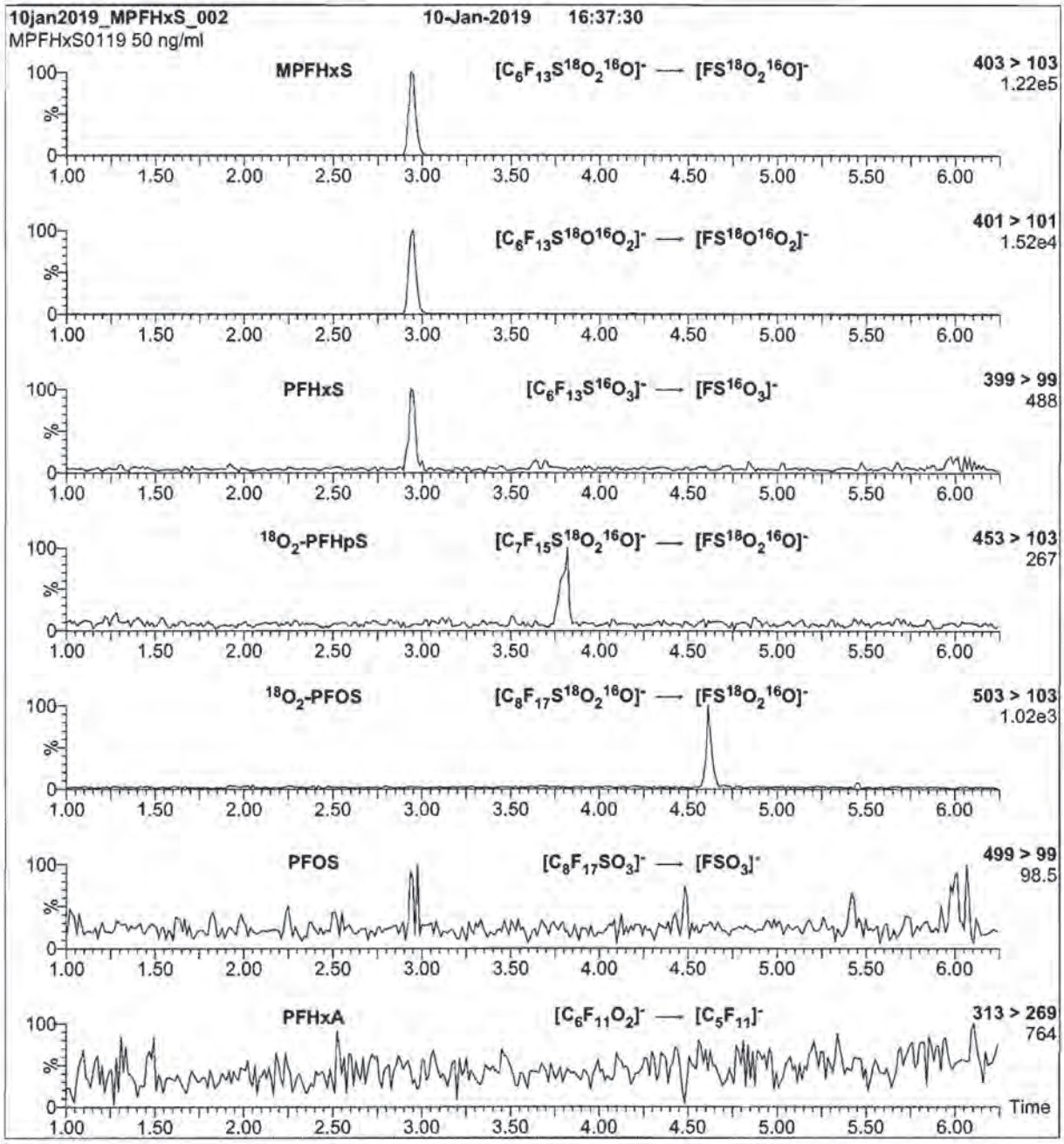
Certified By: _____ **Date:** 10/01/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0632

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



Conditions for Figure 2:

Injection: On-column (MPFHxS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

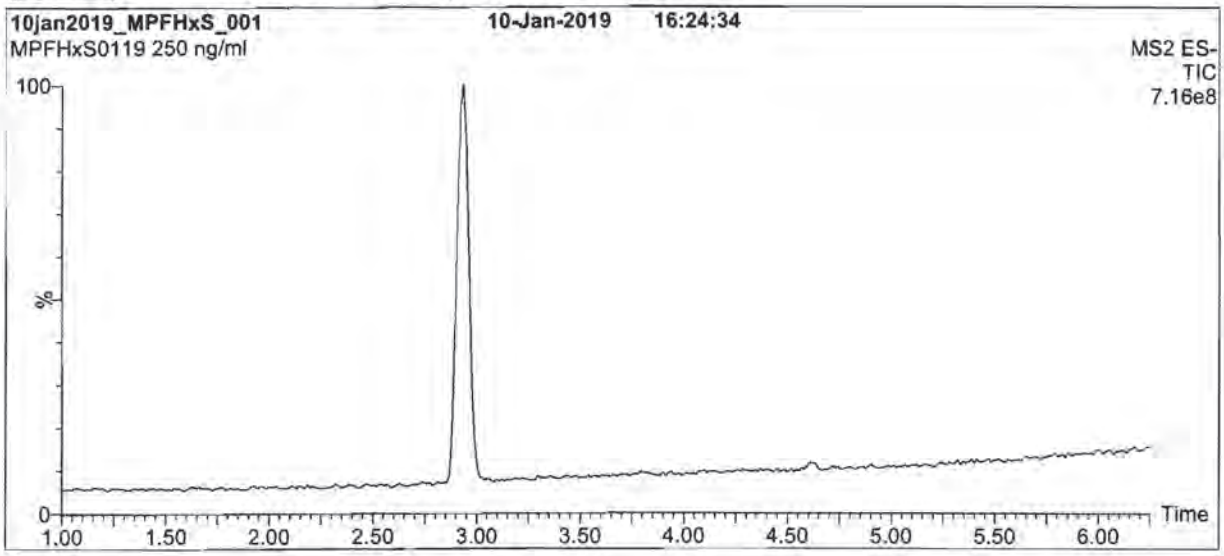
Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 32

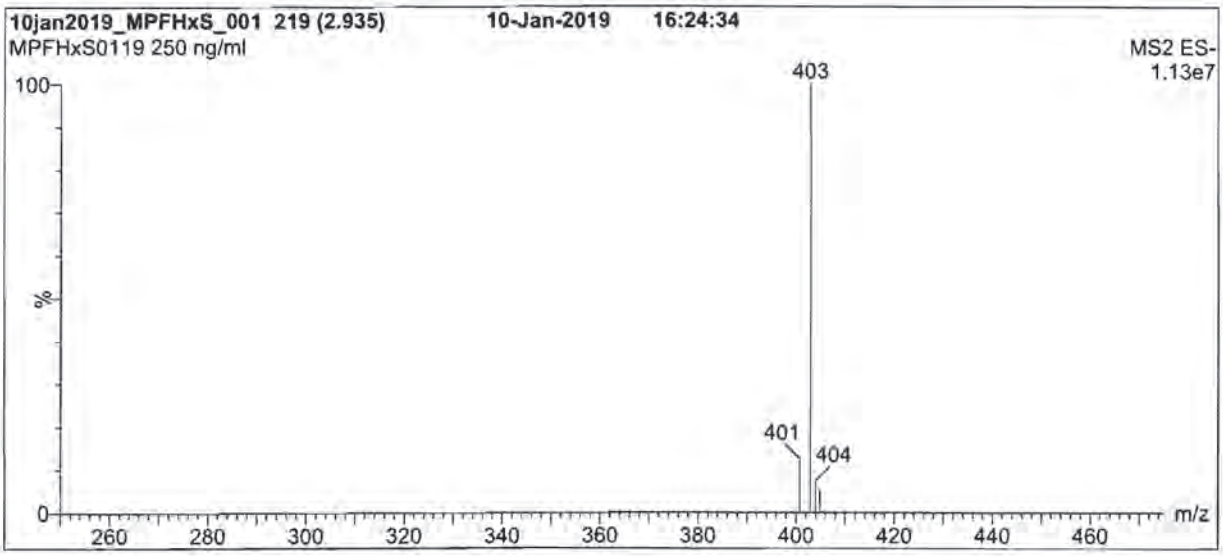
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFHxS0119 (4 of 4)
rev0

19L0632

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





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFHxS0119 (3 of 4)
rev0

19L0632

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:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFHxS0119 (2 of 4)
rev0

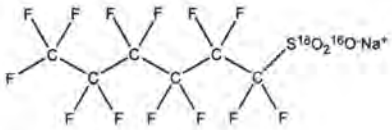
19L0632

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS
COMPOUND: Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate
LOT NUMBER: MPFHxS0119

STRUCTURE:



CAS #: 1585941-14-5

MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy)	01/10/2019		
EXPIRY DATE: (mm/dd/yyyy)	01/10/2024		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 0.6% of sodium perfluoro-1-octane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFOS) and ~ 0.2% of sodium perfluoro-1-heptane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFHpS).
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

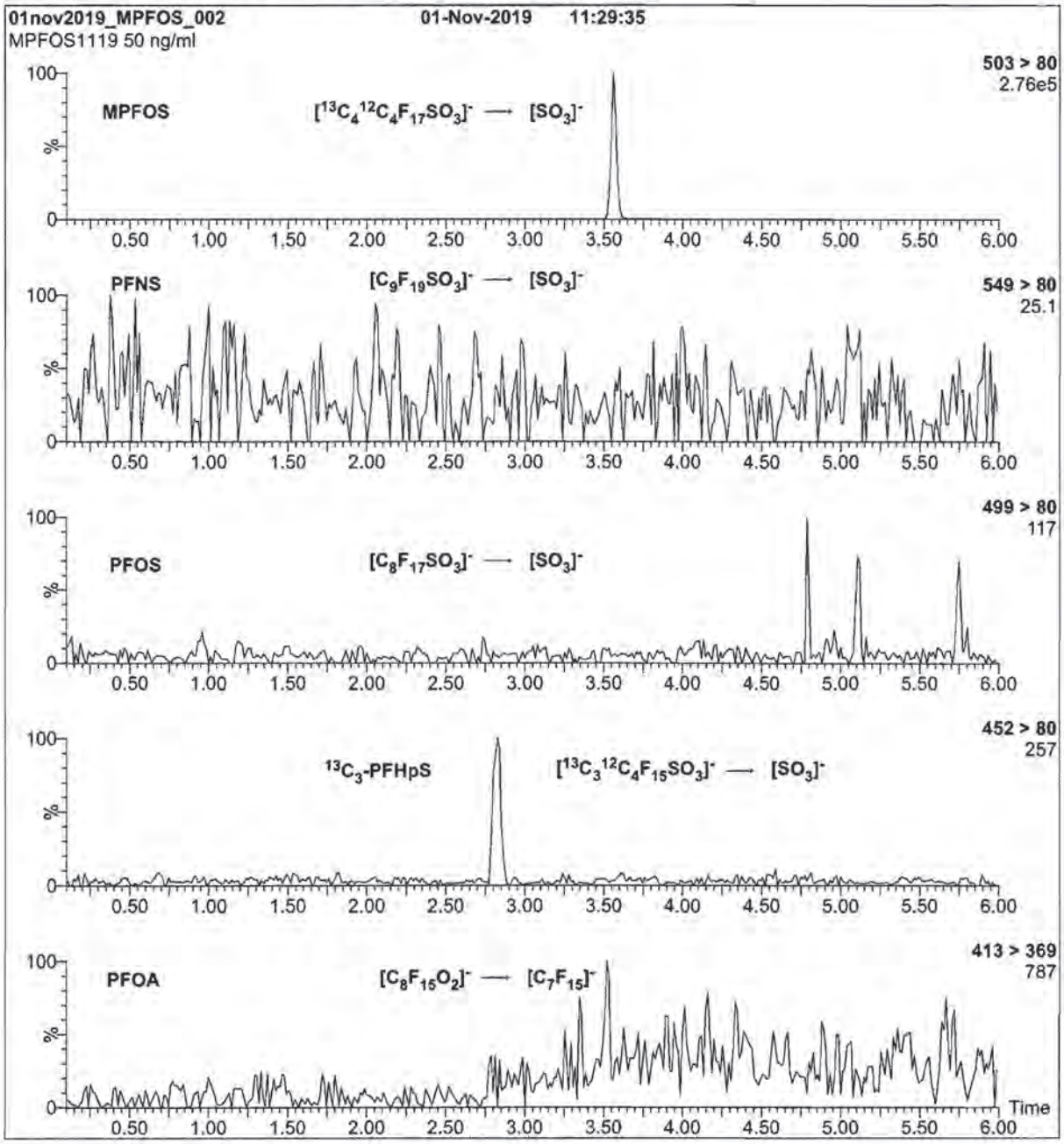
Certified By: _____ **Date:** 01/21/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0633

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



Conditions for Figure 2:

Injection: On-column (MPFOS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

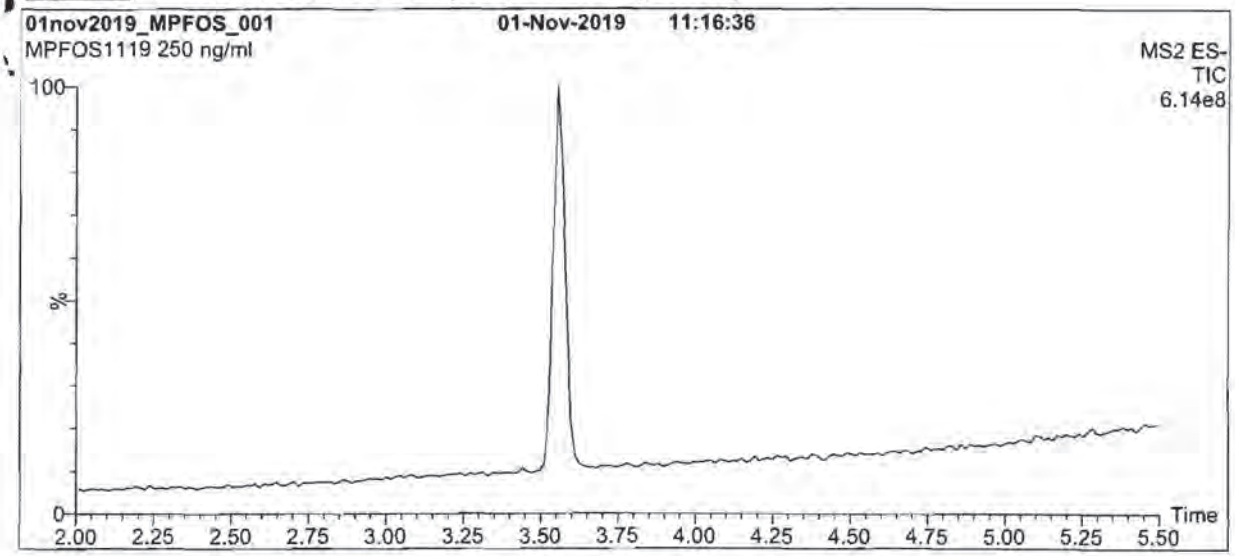
Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 42

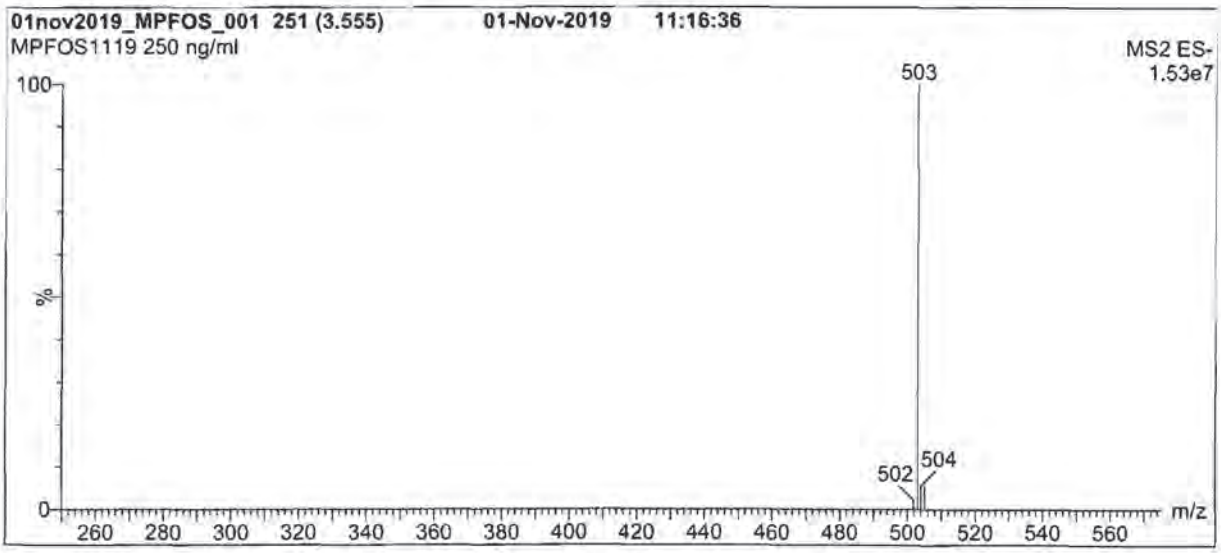
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-08-14

MPFOS1119 (4 of 4)
rev0

19L0633

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFOS1119 (3 of 4)
rev0

19L0633

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.

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

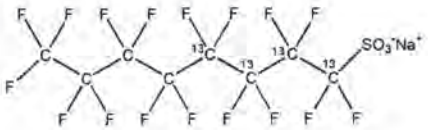
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0633

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS
LOT NUMBER: MPFOS1119
COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate
STRUCTURE:
CAS #: 960315-53-1



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	11/01/2019		
EXPIRY DATE: (mm/dd/yyyy)	11/01/2024		
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% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

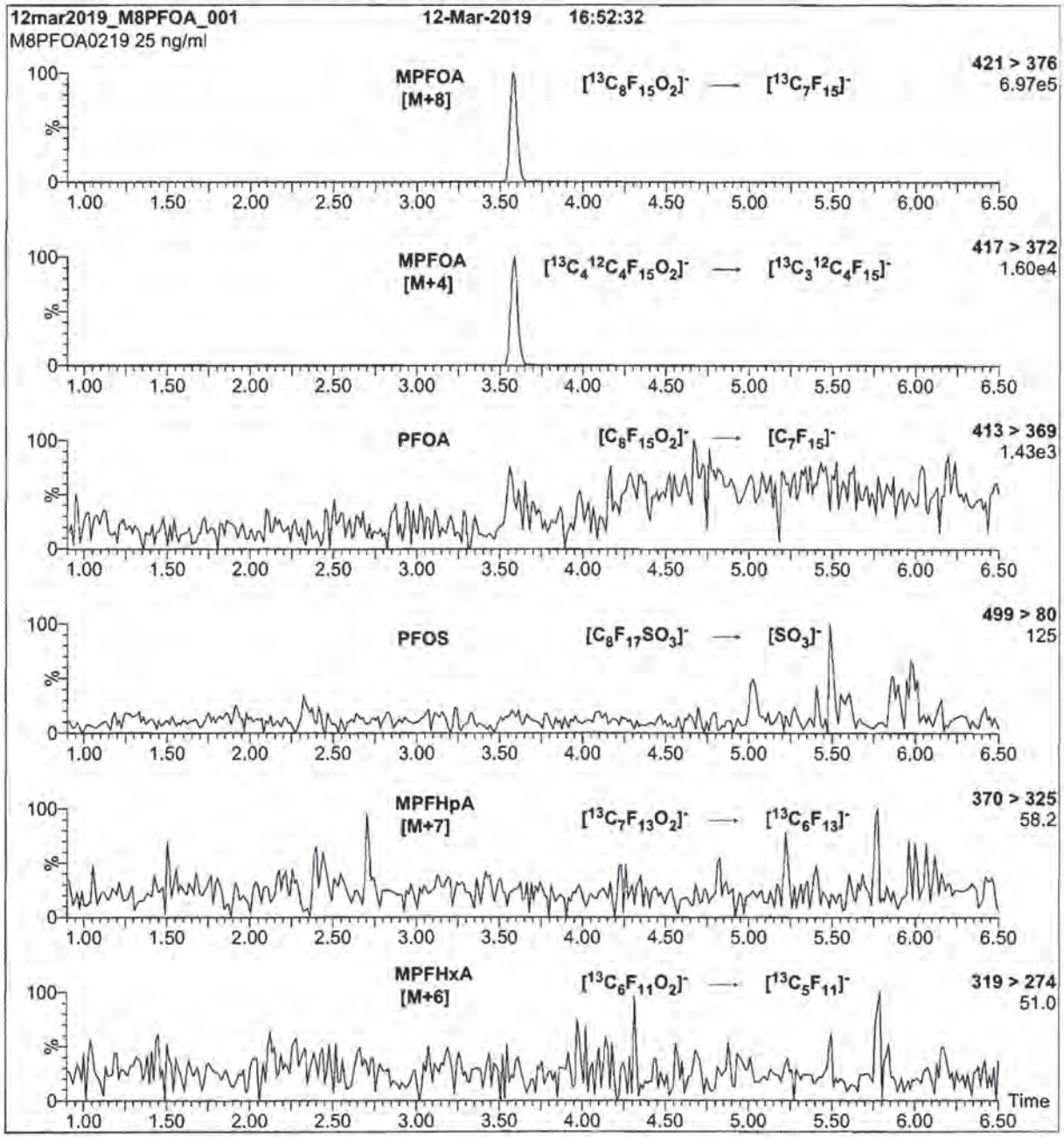
Certified By: _____ **Date:** 11/05/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0634

Figure 2: **M8PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M8PFOA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.74e-3
Collision Energy (eV) = 8

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rev1

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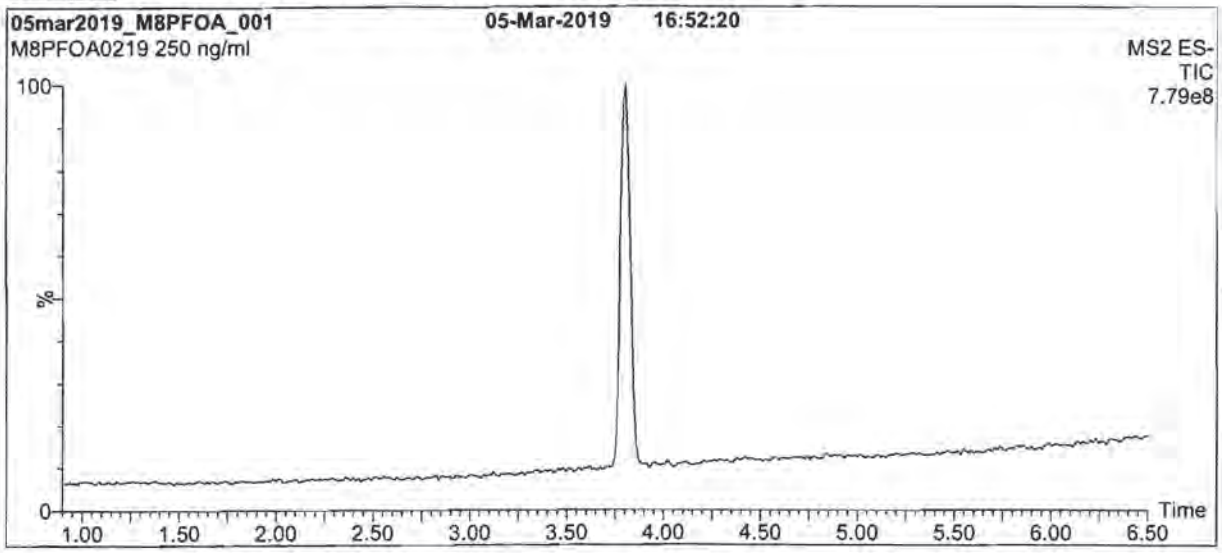
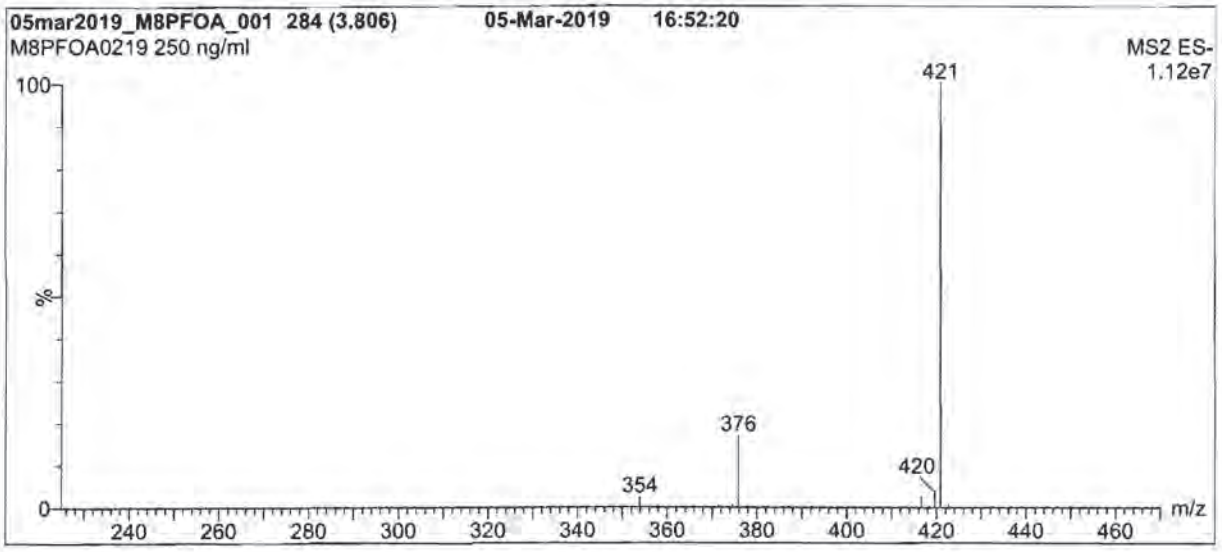
Figure 1: **M8PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

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

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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M8PFOA0219 (3 of 4)
rev1

19L0634

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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0634

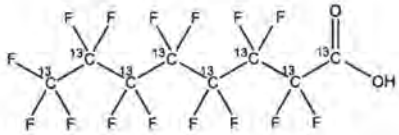
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8PFOA
COMPOUND: Perfluoro-n-[$^{13}C_8$]octanoic acid
LOT NUMBER: M8PFOA0219

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	422.01
CONCENTRATION:	48.9 ± 2.4 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	97.8% (M8PFOA) 2.2% (MPFOA [M+4])	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	03/05/2019		
EXPIRY DATE: (mm/dd/yyyy)	03/05/2024		
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 ~ 2.2% of [M+4] perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 08/07/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","13C8-PFOS","13C8-PFOS","120","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","120","120","","","","","","50","150","","","","",""
"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","13C2-PFDA","13C2-PFDA","136","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","136","136","","","","","","50","150","","","","",""
"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","128","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","128","128","","","","","","50","150","","","","","",""
"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","13C2-PFUnA","13C2-PFUnA","128","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","128","128","","","","","","50","150","","","","",""
"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","124","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","124","124","","","","","","50","150","","","","","",""
"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","13C2-PFDoA","13C2-PFDoA","122","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","122","122","","","","","","50","150","","","","","",""
"SGU-GW-SGUTPEFL-20200204","537_MOD","02/12/20","23:08","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","122","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","122","122","","","","","","50","150","","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","375-73-5","PFBS","0.0823","","TRG","Yes","Y","","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","","","","

,"","","","","","","","","","
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","","","","","","","

"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C5-PFNA","13C5-PFNA","124","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","124","124","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C2-PFOA","13C2-PFOA","114","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","114","114","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C8-PFOS","13C8-PFOS","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C2-PFDA","13C2-PFDA","118","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","118","118","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","119","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","119","119","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C2-PFUnA","13C2-PFUnA","119","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","119","119","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","113","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","113","113","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C2-PFDoA","13C2-PFDoA","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","",""
"24-GW-21UGMW37-20200204","537_MOD","02/12/20","23:18","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","108","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","108","108","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","375-73-5","PFBS","0.00252","","TRG","Yes","Y","J","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","","","

(PFNA)","","","TRG","Yes","N","U","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","

"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","13C2-PFOA","13C2-PFOA","129","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","129","129","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","13C8-PFOS","13C8-PFOS","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","13C2-PFDA","13C2-PFDA","127","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","127","127","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","13C2-PFUnA","13C2-PFUnA","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","13C2-PFDoA","13C2-PFDoA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","50","150","","","","",""
"24-GW-24EX30B1-20200204","537_MOD","02/12/20","23:28","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","375-73-5","PFBS","0.124","","TRG","Yes","Y","","Y","0.00138","0.00201","0.00402","UG_L","UG_L","","","","","","

1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","","","TRG","Yes","N","U","Y","0.00138","0.00201","0.00402","UG_L","UG_L","","","","","","","","","","","","","","","","
","","","",""
"24-GW-24NEW7-
20200204","537_MOD","02/12/20","23:39","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00138","0.00201
","0.00402","UG_L","UG_L","","","","","","","","","","","","","","","","

"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","13C8-PFOS","13C8-PFOS","87.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","87.8","87.8","","","","","","50","150","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","13C2-PFDA","13C2-PFDA","95.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","95.0","95.0","","","","","","50","150","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","100","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","100","100","","","","","","50","150","","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","13C2-PFUnA","13C2-PFUnA","91.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","91.2","91.2","","","","","","50","150","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","88.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","88.1","88.1","","","","","","50","150","","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","13C2-PFDoA","13C2-PFDoA","87.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","87.3","87.3","","","","","","50","150","","","",""
"24-GW-24NEW7-20200204","537_MOD","02/12/20","23:39","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","74.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.5","74.5","","","","","","50","150","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","375-73-5","PFBS","0.0979","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.284","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00228","0.00284","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0259","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0682","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.108","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""

"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","

"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","13C2-PFDA","13C2-PFDA","88.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","88.9","88.9","","","","","","50","150","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","73.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.2","73.2","","","","","","50","150","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","13C2-PFUnA","13C2-PFUnA","68.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","68.4","68.4","","","","","","50","150","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","66.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","66.9","66.9","","","","","","50","150","","","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","13C2-PFDoA","13C2-PFDoA","43.0","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","43.0","43.0","","","","","","50","150","","*","",""
"24-GW-24MW10B-20200204","537_MOD","02/12/20","23:49","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","39.3","","IS","Yes","Y","H","Y","","","","PCT_REC","","","","","100","39.3","39.3","","","","","","50","150","","*","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","375-73-5","PFBS","0.0586","","TRG","Yes","Y","","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.194","","TRG","Yes","Y","","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00237","0.00294","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0262","","TRG","Yes","Y","","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0932","","TRG","Yes","Y","","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.142","","TRG","Yes","Y","","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","","","TRG","Yes","N","U","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""

"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","","","TRG","Yes","N","U","Y","0.00135","0.00196","0.00393","UG_L","UG_L","","","

"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","112","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","112","112","","","","","","50","150","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","13C2-PFUnA","13C2-PFUnA","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","100","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","100","100","","","","","","50","150","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","13C2-PFDoA","13C2-PFDoA","99.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","99.1","99.1","","","","","","50","150","","","","",""
"24-GW-24EX20B-20200204","537_MOD","02/12/20","23:59","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","90.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","90.8","90.8","","","","","","50","150","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","375-73-5","PFBS","0.0218","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.0477","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00228","0.00284","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.00162","","TRG","Yes","Y","J","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.00262","","TRG","Yes","Y","J","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","","","","","","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","","","",

""","","","","","","","
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","","","","","

"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","13C2-PFUnA","13C2-PFUnA","101","","IS","Yes","Y","","","Y","","","","PCT_REC","","","","","100","101","101","","","","","","50","150","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","92.0","","IS","Yes","Y","","","Y","","","","PCT_REC","","","","","100","92.0","92.0","","","","","","50","150","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","13C2-PFDoA","13C2-PFDoA","88.2","","IS","Yes","Y","","","Y","","","","PCT_REC","","","","","100","88.2","88.2","","","","","","50","150","","","","","",""
"24-GW-24MW05BR-20200204","537_MOD","02/13/20","00:41","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","86.3","","IS","Yes","Y","","","Y","","","","PCT_REC","","","","","100","86.3","86.3","","","","","","50","150","","","","","",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","375-73-5","PFBS","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00241","0.00300","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","2991-50-6","EtFOSAA","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L",""
"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC

ACID
(PFUNA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"B0B0041-
BLK1","537_MOD","02/12/20","21:45","N","NA","000","","","","","TRG","Yes","N","U","Y","0.00137","0.00200","0
.00400","UG_L","UG_L","","","","","","","","","","

"B0B0041-BLK1","537_MOD","02/12/20","21:45","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","86.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","86.0","86.0","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","375-73-5","PFBS","0.0348","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0348","86.9","","","","","","","72","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.0355","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0355","88.8","","","","","","","72","129","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","","","0.0327","","TRG","Yes","Y","","Y","0.00241","0.00300","0.00400","UG_L","UG_L","","","","0.0400","0.0327","81.8","","","","","","","70","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0364","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0364","90.9","","","","","","","72","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","","","0.0347","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0347","86.7","","","","","","","70","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0371","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0371","92.9","","","","","","","68","131","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.0369","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0369","92.2","","","","","","","71","133","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","0.0338","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0338","84.6","","","","","","","69","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.0336","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0336","84.0","","","","","","","65","140","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","","","0.0396","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0396","98.9","","","","","","","70","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","0.0371","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0371","92.7","","","","","","","71","129","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","2355-31-9","MeFOSAA","0.0437","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0437","109","","","","","","","65","136","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","2991-50-6","EtFOSAA","0.0324","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0324","80.9","","","","","","","61","135","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","0.0355","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0355","88.7","","","","","","","69","133","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","","","0.0387","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0387","96.9","","","","","","","70","130","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","0.0382","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0382","95.5","","","","","","","72","134","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","72629-94-

8","PFTrDA","0.0371","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0371","92.6","","","","","","","65","144","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","376-06-7","PFTeDA","0.0380","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0380","94.9","","","","","","","71","132","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C3-PFBS","13C3-PFBS","128","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","128","128","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","","","125","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","125","125","","","","","","50","150","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C2-PFHxA","13C2-PFHxA","117","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","117","117","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C4-PFHpA","13C4-PFHpA","126","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","126","126","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","","","115","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","115","115","","","","","","50","150","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C5-PFNA","13C5-PFNA","118","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","118","118","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C2-PFOA","13C2-PFOA","115","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","115","115","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C8-PFOS","13C8-PFOS","105","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","105","105","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C2-PFDA","13C2-PFDA","120","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","120","120","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","103","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","103","103","","","","","","50","150","","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C2-PFUnA","13C2-PFUnA","116","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","116","116","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","93.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","93.4","93.4","","","","","","50","150","","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C2-PFDoA","13C2-PFDoA","103","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","103","103","","","","","","50","150","","","","",""
"B0B0041-BS1","537_MOD","02/12/20","21:55","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","106","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","106","106","","","","","","50","150","","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","375-73-5","PFBS","0.100","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.0548","0.0397","0.100","114","","","","","","72","130","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.244","","TRG","Yes","Y","H","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.190","0.0397","0.244","137","","","","","","72","129","","+","",""
"B0B0041-

MS1","537_MOD","02/12/20","22:05","N","NA","000","","","0.0349","","TRG","Yes","Y","","Y","0.00239","0.00298
","0.00397","UG_L","UG_L","","","","0.0397","0.0349","88.0","","","","","","70","130","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID
(PFHPA)","0.0675","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.0335","0.03
97","0.0675","85.6","","","","","","","72","130","","","",""
"B0B0041-
MS1","537_MOD","02/12/20","22:05","N","NA","000","","","0.0353","","TRG","Yes","Y","","Y","0.00136","0.00198
","0.00397","UG_L","UG_L","","","","0.0397","0.0353","89.0","","","","","","70","130","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC
ACID
(PFHXS)","0.268","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.237","0.0397
","0.268","78.4","","","","","","68","131","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.307","","TRG","Yes","Y","H","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.241","0.0397
","0.307","166","","","","","","71","133","","+","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0409","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.00408","0.03
97","0.0409","92.7","","","","","","69","130","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","1763-23-
1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","0.196","","TRG","Yes","Y","H","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","0.175","0.0397","0.196
","51.5","","","","","","65","140","","+","",""
"B0B0041-
MS1","537_MOD","02/12/20","22:05","N","NA","000","","","0.0379","","TRG","Yes","Y","","Y","0.00136","0.00198
","0.00397","UG_L","UG_L","","","","0.0397","0.0379","95.4","","","","","","70","130","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","0.0435","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.0397","0.0
435","109","","","","","","71","129","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","2355-31-
9","MeFOSAA","0.0362","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.039
7","0.0362","91.1","","","","","","65","136","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","2991-50-
6","EtFOSAA","0.0393","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.0397
","0.0393","98.9","","","","","","","61","135","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","0.0385","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.0397","0.
0385","97.0","","","","","","","69","133","","","",""
"B0B0041-
MS1","537_MOD","02/12/20","22:05","N","NA","000","","","0.0402","","TRG","Yes","Y","","Y","0.00136","0.00198
","0.00397","UG_L","UG_L","","","","0.0397","0.0402","101","","","","","","70","130","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","0.0401","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.0397","0.
0401","101","","","","","","72","134","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","72629-94-
8","PFTrDA","0.0354","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.0397",
"0.0354","89.3","","","","","","65","144","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","376-06-
7","PFTeDA","0.0400","","TRG","Yes","Y","","Y","0.00136","0.00198","0.00397","UG_L","UG_L","","","","0.0397",
"0.0400","101","","","","","","71","132","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C3-PFBS","13C3-
PFBS","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","","","","",""
"B0B0041-
MS1","537_MOD","02/12/20","22:05","N","NA","000","","","103","","IS","Yes","Y","","Y","","","","PCT_REC","",""

,"","","100","103","103","","","","","","50","150","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C2-PFHxA","13C2-
PFHxA","107","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","107","107","","","","","","50","150","",
"","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C4-PFHpA","13C4-
PFHpA","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","",
"","",""
"B0B0041-
MS1","537_MOD","02/12/20","22:05","N","NA","000","","","119","","IS","Yes","Y","","Y","","","","PCT_REC","","",
"","","100","119","119","","","","","","50","150","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C5-PFNA","13C5-
PFNA","113","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","113","113","","","","","","50","150","","
","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C2-PFOA","13C2-
PFOA","104","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","104","104","","","","","","50","150","","
","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C8-PFOS","13C8-
PFOS","127","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","127","127","","","","","","50","150","","",
"","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C2-PFDA","13C2-
PFDA","117","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","117","117","","","","","","50","150","","
","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","d3-MeFOSAA","d3-
MeFOSAA","121","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","121","121","","","","","","50","150
","","","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C2-PFUnA","13C2-
PFUnA","119","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","119","119","","","","","","50","150","",
"","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","104","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","104","104","","","","","","50","150",
"","","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C2-PFDoA","13C2-
PFDoA","108","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","108","108","","","","","","50","150","",
"","","",""
"B0B0041-MS1","537_MOD","02/12/20","22:05","N","NA","000","13C2-PFTeDA","13C2-
PFTeDA","104","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","104","104","","","","","","50","150","
","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","375-73-
5","PFBS","0.0881","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.0548","0.03
94","0.0881","84.4","0.100","0.0394","0.0881","84.4","29.8","72","130","30","","","*"
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID
(PFHXA)","0.229","","TRG","Yes","Y","H","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.190","0.03
94","0.229","99.9","0.244","0.0394","0.229","99.9","31.3","72","129","30","","","*"
"B0B0041-
MSD1","537_MOD","02/12/20","22:16","N","NA","000","","","0.0337","","TRG","Yes","Y","","Y","0.00238","0.002
95","0.00394","UG_L","UG_L","","","","0.0394","0.0337","85.5","0.0349","0.0394","0.0337","85.5","2.88","70","130
","30","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID
(PFHPA)","0.0681","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.0335","0.03
94","0.0681","88.0","0.0675","0.0394","0.0681","88.0","2.76","72","130","30","","",""
"B0B0041-
MSD1","537_MOD","02/12/20","22:16","N","NA","000","","","0.0356","","TRG","Yes","Y","","Y","0.00135","0.001
97","0.00394","UG_L","UG_L","","","","0.0394","0.0356","90.4","0.0353","0.0394","0.0356","90.4","1.56","70","130
","30","","","",""

"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","0.276","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.237","0.0394","0.276","98.8","0.268","0.0394","0.276","98.8","23.0","68","131","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.291","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.241","0.0394","0.291","127","0.307","0.0394","0.291","127","26.6","71","133","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0388","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.00408","0.0394","0.0388","88.1","0.0409","0.0394","0.0388","88.1","5.09","69","130","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","1763-23-
1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","0.191","","TRG","Yes","Y","H","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","0.175","0.0394","0.191","39.6","0.196","0.0394","0.191","39.6","26.1","65","140","30","","*",""
"B0B0041-
MSD1","537_MOD","02/12/20","22:16","N","NA","000","","","0.0348","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0348","88.3","0.0379","0.0394","0.0348","88.3","7.73","70","130","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","0.0389","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0389","98.8","0.0435","0.0394","0.0389","98.8","9.82","71","129","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","2355-31-
9","MeFOSAA","0.0380","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0380","96.4","0.0362","0.0394","0.0380","96.4","5.65","65","136","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","2991-50-
6","EtFOSAA","0.0357","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0357","90.6","0.0393","0.0394","0.0357","90.6","8.76","61","135","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","0.0378","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0378","95.9","0.0385","0.0394","0.0378","95.9","1.14","69","133","30","","",""
"B0B0041-
MSD1","537_MOD","02/12/20","22:16","N","NA","000","","","0.0383","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0383","97.3","0.0402","0.0394","0.0383","97.3","3.73","70","130","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","0.0373","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0373","94.8","0.0401","0.0394","0.0373","94.8","6.33","72","134","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","72629-94-
8","PFTrDA","0.0372","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0372","94.3","0.0354","0.0394","0.0372","94.3","5.45","65","144","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","376-06-
7","PFTeDA","0.0375","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00394","UG_L","UG_L","","","","0.0394","0.0375","95.1","0.0400","0.0394","0.0375","95.1","6.02","71","132","30","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C3-PFBS","13C3-
PFBS","144","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","144","144","","","","","","50","150","","","","","
"B0B0041-
MSD1","537_MOD","02/12/20","22:16","N","NA","000","","","131","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","","100","131","131","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C2-PFHxA","13C2-
PFHxA","114","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","114","114","","","","","","50","150","","","","",""

"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C4-PFHpA","13C4-PFHpA","122","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","122","122","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","","","114","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","114","114","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C5-PFNA","13C5-PFNA","120","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","120","120","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C2-PFOA","13C2-PFOA","115","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","115","115","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C8-PFOS","13C8-PFOS","131","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","131","131","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C2-PFDA","13C2-PFDA","127","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","127","127","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","123","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","123","123","","","","","","50","150","","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C2-PFUnA","13C2-PFUnA","121","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","121","121","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C2-PFDoA","13C2-PFDoA","114","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","114","114","","","","","","50","150","","","","",""
"B0B0041-MSD1","537_MOD","02/12/20","22:16","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","110","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","110","110","","","","","","50","150","","","","","",""

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

Wood Environment & Infrastructure Solutions, Inc. April 13, 2020
7376 SW Durham Road
Portland, OR 97224
Attn: Ms. Kimberly Shiroodi
Kimberly.Shiroodi@woodplc.com

SUBJECT: REVISED MCAS El Toro & Tustin PFAs, Data Validation

Dear Ms. Shiroodi,

Enclosed are the revised validation reports for the fraction listed below. These SDGs were received on March 10, 2020. Attachment 1 is a summary of the samples that were reviewed for analysis.

LDC Project #47500_RV1:

SDG #	**Fraction**
2000247, 2000333, 2000346	Perfluoroalkyl & Polyfluoroalkyl Substances

- Revision: Updated QAPP

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

- Final Sampling and Analysis Plan, Field Sampling Plan and Quality Assurance Project Plan for Initial Basewide Assessmnet of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances in Groundwater, Former Marine Corps Air Station El Toro, Irvine, California; June 2017
- Field Change Request Form No. FCRF-2405-008-01-0066; January 2020
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.3, 2019
- DoD General Validation Guidelines, February 2018

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

Sincerely,

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

2,524 pages-ADV (100% Stage 4 for this job)

Attachment 1

Client Select / Stage 2B/4 **LDC #47500 (Wood/KMEA - National City, CA / MCAS El Toro & Tustin PFAs)** **PO001184**

LDC	SDG#	DATE REC'D	(2) DATE DUE	PFAs (537M/ QSM 5.3)																															
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	2000247	03/10/20	03/24/20	9	0																														
B	2000333	03/10/20	03/24/20	7	0																														
C	2000346	03/10/20	03/24/20	4	0																														
Total	J/PG			20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS/MSD, and DUPs

L:\Wood Environmental\El Toro\47500ST.wpd

LDC Report# 47500A96_RV1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro and Tustin PFAS

LDC Report Date: March 24, 2020

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 2000247

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
SGU-GW-SGUTPINF-20200204	2000247-03	Water	02/04/20
DUP02-20200204	2000247-04	Water	02/04/20
SGU-GW-SGUTPEFL-20200204	2000247-05	Water	02/04/20
24-GW-21UGMW37-20200204	2000247-06	Water	02/04/20
24-GW-24EX30B1-20200204	2000247-07	Water	02/04/20
24-GW-24NEW7-20200204	2000247-08	Water	02/04/20
24-GW-24MW10B-20200204	2000247-09	Water	02/04/20
24-GW-24EX20B-20200204	2000247-10	Water	02/04/20
24-GW-24MW05BR-20200204	2000247-11	Water	02/04/20
SGU-GW-SGUTPINF-20200204MS	2000247-03MS	Water	02/04/20
SGU-GW-SGUTPINF-20200204MSD	2000247-03MSD	Water	02/04/20

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Initial Basewide Assessment of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances in Groundwater, Former Marine Corps Air Station El Toro, Irvine, California (June 2017), Field Change Request Form No. FCRF-2405-0008-01-0066 (January 2020), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), and the DoD General Validation Guidelines (February 2018). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified and LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the methods.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

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

Retention time windows were established as required by the methods.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

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

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB01-20200204 was identified as an equipment blank. No contaminants were found.

Sample SB01-20200204 was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For SGU-GW-SGUTPINF-20200204MS/MSD, no data were qualified for perfluorohexanoic acid (PFHxA), perfluorooctanoic acid (PFOA), and perfluorooctanesulfonic acid (PFOS) percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

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

Spike ID (Associated Samples)	Compound	RPD (Limits)	Flag	A or P
SGU-GW-SGUTPINF-20200204MS/MSD (SGU-GW-SGUTPEFL-20200204)	Perfluorohexanoic acid (PFHxA)	31.3 (≤30)	J (all detects)	A

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples SGU-GW-SGUTPINF-20200204 and DUP02-20200204 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	SGU-GW-SGUTPINF-20200204	DUP02-20200204				
Perfluorobutanesulfonic acid (PFBS)	0.0548	0.0599	9 (≤30)	-	-	-
Perfluorohexanoic acid (PFHxA)	0.190	0.196	3 (≤30)	-	-	-
Perfluoroheptanoic acid (PFHpA)	0.0335	0.0344	3 (≤30)	-	-	-
Perfluorohexanesulfonic acid (PFHxS)	0.237	0.249	5 (≤30)	-	-	-
Perfluorooctanoic acid (PFOA)	0.241	0.252	4 (≤30)	-	-	-

Compound	Concentration (ug/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	SGU-GW-SGUTPINF-20200204	DUP02-20200204				
Perfluorononanoic acid (PFNA)	0.00408	0.00404	-	0 (≤0.00397)	-	-
Perfluorooctanesulfonic acid (PFOS)	0.175	0.196	11 (≤30)	-	-	-

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits with the following exceptions:

Sample	Labeled Compound	%R (Limits)	Affected Compound	Flag	A or P
24-GW-24MW10B-20200204	13C2-PFDoA 13C2-PFTeDA	43.0 (50-150) 39.3 (50-150)	Perfluorododecanoic acid (PFDoA) Perfluorotridecanoic acid (PFTriDA) Perfluorotetradecanoic acid (PFTeDA)	J (all detects) J (all detects) J (all detects)	P

XI. Compound Quantitation

All compound quantitations met validation criteria.

XII. Target Compound Identifications

All target compound identifications met validation criteria with the following exceptions:

Sample	Compound	Ion Abundance Ratio (Limits)	Flag	A or P
24-GW-21UGMW37-20200204	Perfluorooctanesulfonic acid (PFOS)	4.03 (1.342-4.026)	J (all detects)	A
24-GW-24NEW7-20200204	Perfluorohexanoic acid (PFHxA) Perfluoroheptanoic acid (PFHpA)	21.615 (6.3755-19.1265) 17.462 (5.0445-15.1335)	J (all detects) J (all detects)	A

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS/MSD RPD, labeled compound %R, and ion abundance ratio, data were qualified as estimated in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG 2000247

Sample	Compound	Flag	A or P	Reason
SGU-GW-SGUTPEFL-20200204	Perfluorohexanoic acid (PFHxA)	J (all detects)	A	Matrix spike/Matrix spike duplicate (RPD)
24-GW-24MW10B-20200204	Perfluorododecanoic acid (PFDoA) Perfluorotridecanoic acid (PFTriDA) Perfluorotetradecanoic acid (PFTeDA)	J (all detects) J (all detects) J (all detects)	P	Labeled compounds (%R)
24-GW-21UGMW37-20200204	Perfluorooctanesulfonic acid (PFOS)	J (all detects)	A	Target compound identification (ion abundance ratio)
24-GW-24NEW7-20200204	Perfluorohexanoic acid (PFHxA) Perfluoroheptanoic acid (PFHpA)	J (all detects) J (all detects)	A	Target compound identification (ion abundance ratio)

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 2000247

No Sample Data Qualified in this SDG

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 2000247

No Sample Data Qualified in this SDG

LDC #: 47500A96
SDG #: 2000247
Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET
Stage 4

Date: 3/12/20
Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M DOD QSM 5.3)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	RSD ≤ 20%, r^2 TMC/ICV ≤ 30%
IV.	Continuing calibration/ISC	A	CCV/ISC ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	SB=1, EB=2.
VII.	Matrix spike/Matrix spike duplicates	TW	
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	TW	D=3+4
X.	Labeled Compounds	TW	
VI.	Compound quantitation RL/LOQ/LODs	A	
XII.	Target compound identification	TW	
XIII.	System performance	A	
XIV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
~~1~~	~~SB01-20200204~~	~~2000247-01~~	~~Water~~	~~02/04/20~~
~~2~~	~~EB01-20200204~~	~~2000247-02~~	~~Water~~	~~02/04/20~~
3	SGU-GW-SGUTPINF-20200204	2000247-03	Water	02/04/20
4	DUP02-20200204	2000247-04	Water	02/04/20
5	SGU-GW-SGUTPEFL-20200204	2000247-05	Water	02/04/20
6	24-GW-21UGMW37-20200204	2000247-06	Water	02/04/20
7	24-GW-24EX30B1-20200204	2000247-07	Water	02/04/20
8	24-GW-24NEW7-20200204	2000247-08	Water	02/04/20
9	24-GW-24MW10B-20200204	2000247-09	Water	02/04/20
10	24-GW-24EX20B-20200204	2000247-10	Water	02/04/20
11	24-GW-24MW05BR-20200204	2000247-11	Water	02/04/20
12	SGU-GW-SGUTPINF-20200204MS	2000247-03MS	Water	02/04/20
13	SGU-GW-SGUTPINF-20200204MSD	2000247-03MSD	Water	02/04/20
14				
15	BOB0041-BK1			

LDC #: 47908B96

VALIDATION FINDINGS CHECKLIST

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

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
III. Initial calibration and Initial Calibration Verification				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination (r^2) criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were the retention time windows properly established?	✓			
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) of the initial calibration verification ≤ 30%?	✓			
IV. Continuing calibration and Instrument Sensitivity Check				
Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence?	✓			
Were all percent differences (%D) of the continuing calibration ≤ 30%?	✓			
Were all the retention times within the acceptance windows?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		

Level IV checklist_LCMS_PFAS_QSM5.3_Table B-15.wpd

LDC #: 4T500A96

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: [illegible]
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
X. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?		✓		
Were retention times within 0.4 minutes of the associated calibration standard?	✓			
XI. Compound quantitation				
Did the laboratory reporting limits (i.e. DL, LOD, LOQ) meet the QAPP?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound retention times within 0.1 minutes of the associated labeled compound for compounds with a labeled analog?	✓			
Were compound quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation?	✓			
XII. Target compound identification				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
Were ion ratios between 50-150%?		✓		
XIII. System performance				
System performance was found to be acceptable.	✓			
XIV. Overall assessment of Data				
Overall assessment of data was found to be acceptable.	✓			

Level IV checklist_LCMS_PFAS_QSM5.3_Table B-15.wpd

LDC #: ~~47300A-96~~

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

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

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?
~~Y N N/A~~ Was a MS/MSD analyzed every 20 samples of each matrix?
Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		1>/13>	~~PFHxA~~	137 (72-129)	( )	( )	3	No Qual ~~AX~~
			~~PFOA~~	166 (71-133)	( )	( )		
			~~PFOS~~	51.5 (65-140)	39.6 (65-140)	( )		
			~~PFHxA~~	( )	( )	31.3 (≤30)	(1 det>)	~~No Qual~~ /A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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MSD.wpd

LDC#: 47500A96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Compound	Concentration (ug/L)		(≤30) RPD	Difference (≤LOQ)	Limits	Qual
	3	4				
PFBS	0.0548	0.0599	9			
PFHxA	0.190	0.196	3			
PFHpA	0.0335	0.0344	3			
PFHxS	0.237	0.249	5			
PFOA	0.241	0.252	4			
PFNA	0.00408	0.00404		0	≤0.00397	
PFOS	0.175	0.196	11			

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2020\47500A96_WOOD.wpd

LDC #: 47000A96

VALIDATION FINDINGS WORKSHEET
Labeled Compounds

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y (N) N/A Were all labeled compound recoveries within the QC criteria?

#	Date	Lab ID/Reference	Labeled Compound	% Recovery	(Limit)	Qualifications
		9 (dot3)	13C2-PFDoA	43.0	(50-150)	dot3/P (PFDoA,
			13C2-PFTeDA	39.3	(V)	PFTyDA,
					( )	PFTeDA)
					( )	
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V:\Validation Worksheets\PFAS-537MTable B15\LC_INTST.wpd

LDC #: 4T520A96

VALIDATION FINDINGS WORKSHEET
Target Compound Identification

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

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.1.1

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was the signal to noise (S/N) ratio for all compounds within the validation criteria?
Y N N/A Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?
Y N N/A Were ion ratios between 50-150%?

#	Date	Sample ID	Associated Samples	Finding (ion ratio ~~[illegible]~~ (50-150%))	Qualifications
		6	PFOS	4.03 (1.342 - 4.026)	Idets / A
		8	PFHxA	21.615 (6.3755 - 19.1265)	↓
			PFHpA	17.462 (5.0445 - 15.1335)	↓

V:\Validation Worksheets\PFAS-537M\Table B15\TCI.wpd

LDC#: 41522K90

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

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

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
2/12/2020	MQ4	PFOA	0	0.4819612	0.250
			s1	0.8324725	0.500
			s2	1.7177625	1.000
			s3	3.0968212	2.000
			s4	8.5584237	5.000
			s5	15.164858	10.000
			s6	73.000638	50.000
			s7	144.783710	100.000
			s8	361.31753	250.000

Regression Output		***Reported***
Constant	*0.497703*	*0.116170*
Std Err of Y Est		
R Squared	*0.999989*	*0.999534*
Degrees of Freedom		
X Coefficient(s)	*1.443522*	*1.451720*
Std Err of Coef.		
Correlation Coefficient	*0.999994*	
Coefficient of Determination (r^2)	*0.999989*	*0.999534*

Vosta_96_021220_L_PFOA

LDC #: 47500A-96

Validation Findings Worksheet
Initial Calibration Calculation Verification

Page: 2 of 2
Reviewer:
2nd Reviewer:

Method: LC/MS PFCs (EPA Method 537)

Date	System	Compound	Level	(Y) Response	(X) Conc.	(X^2) Conc.
2/12/2020	MQ4	PFOS	1	0.2323075	0.25	0.0625
			2	0.6064862	0.50	0.2500
			3	1.0047412	1.00	1.0000
			4	3.0121825	2.00	4.0000
			5	5.7636662	5.00	25.000
			6	11.650315	10.0	100.00
			7	54.999626	50.0	2500.0
			8	116.54944	100.0	10000.0
			9	281.15975	250.0	62500.0

Regression Output			Reported
Constant	c =	0.0000	0
Std Err of Y Est			
R Squared		0.9998820	0.9998
Degrees of Freedom			
	B =	A =	B=
X Coefficient(s)	1.16219E+00	-1.4732E-04	1.16219
Std Err of Coef.			A=
			-0.000147321
Correlation Coefficient		0.999941	
Coefficient of Determination (r^2)	r^ 2	0.999882	1

LDC #: 4T500A96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

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

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	20021242.31	2/13/10	PFOA ($^{13}C_2$-PFOA)	10.0	10.5	10.5	5.0	5.0
			PFOS ($^{13}C_8$-PFOS)	↓	9.77	9.77	2.3	2.3
2			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CONCLC-LCMS.wpd

Privileged and Confidential

LDC #41522A90

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

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

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentation

RPD = | MSC - MSC | * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD samples: 12/13

Compound	Spike Added (µg/L)		Sample Concentration (µg/L)	Spiked Sample Concentration (µg/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD *	
	MS	MSD	-----	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
PFOA	0.0397	0.0394	0.241	0.307	0.291	166	166	127	127	26.6	26.6
PFOS	↓	↓	0.175	0.196	0.191	51.5	52.9	39.6	40.6	26.1	26.2

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.
* Use %R to calculate RPD

LDC #: 47200A96

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 77

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 800041-BS1

Compound	Spike Added (µg/L)		Spike Concentration (µg/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
PFOA	0.0400	NA	0.0369	NA	92.2	92.2				
PFOS	↓	↓	0.0336	↓	84.0	84.0				

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 47500A96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_i)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_t)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 3 , PFOA:

Conc. = $\frac{2.38e4 \times 125}{3.333} - 0.11617$ ( ) ( ) ( )
(1.45172) (~~250~~ 255.5) (8)

= 0.2405 ng/L

#	Sample ID	Compound	Reported Concentration (ng/L)	Calculated Concentration ( )	Qualification
	3	PFOA	0.241		

LDC Report# 47500B96

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro and Tustin PFAS

LDC Report Date: March 18, 2020

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 2000333

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
18-GW-18BGMP10E-20200217	2000333-02	Water	02/17/20
18-GW-18BGMP10F-20200217	2000333-03	Water	02/17/20
18-GW-18BGMP08C-20200217	2000333-04	Water	02/17/20
24-GW-18BGMP08D-20200217	2000333-05	Water	02/17/20
24-GW-18BGMP08E-20200217	2000333-06	Water	02/17/20
24-GW-18PS1-20200217	2000333-07	Water	02/17/20
DUP01-20200217	2000333-08	Water	02/17/20

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Initial Basewide Assessment of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances in Groundwater, Former Marine Corps Air Station El Toro, Irvine, California (June 2017), Field Change Request Form No. FCRF-2405-0008-01-0066 (January 2020), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), and the DoD General Validation Guidelines (February 2018). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified and LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the methods.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

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

Retention time windows were established as required by the methods.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

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

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB02-20200217 was identified as an equipment blank. No contaminants were found.

Sample SB01-20200204 (from SDG 2000247) was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

Samples 24-GW-18PS1-20200217 and DUP01-20200217 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	24-GW-18PS1-20200217	DUP01-20200217				
Perfluorobutanesulfonic acid (PFBS)	0.0277	0.0261	6 (≤30)	-	-	-
Perfluorohexanoic acid (PFHxA)	0.103	0.113	9 (≤30)	-	-	-
Perfluoroheptanoic acid (PFHpA)	0.00883	0.00935	-	0.0005 (≤0.00404)	-	-
Perfluorohexanesulfonic acid (PFHxS)	0.0736	0.0690	6 (≤30)	-	-	-
Perfluorooctanoic acid (PFOA)	0.0323	0.0308	5 (≤30)	-	-	-

X. Labeled Compounds

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

XI. Compound Quantitation

All compound quantitations met validation criteria.

XII. Target Compound Identifications

All target compound identifications met validation criteria with the following exceptions:

Sample	Compound	Ion Abundance Ratio (Limits)	Flag	A or P
18-GW-18BGMP08C-20200217	Perfluorohexanoic acid (PFHxA) Perfluorooctanoic acid (PFOA) Perfluorooctanesulfonic acid (PFOS)	29.160 (8.4655-25.3965) 5.037 (1.400-4.200) 5.674 (1.304-3.912)	J (all detects) J (all detects) J (all detects)	A
24-GW-18BGMP08D-20200217	Perfluoroheptanoic acid (PFHpA) Perfluorooctanesulfonic acid (PFOS)	64.776 (16.8465-50.5395) 4.167 (1.304-3.912)	J (all detects) J (all detects)	A
24-GW-18BGMP08E-20200217	Perfluoroheptanoic acid (PFHpA)	12.942 (16.8465-50.5395)	J (all detects)	A
24-GW-18PS1-20200217	Perfluoroheptanoic acid (PFHpA)	11.026 (16.8465-50.5395)	J (all detects)	A
DUP01-20200217	Perfluoroheptanoic acid (PFHpA)	16.161 (16.8465-50.5395)	J (all detects)	A

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to ion abundance ratio, data were qualified as estimated in five samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG 2000333

Sample	Compound	Flag	A or P	Reason
18-GW-18BGMP08C-20200217	Perfluorohexanoic acid (PFHxA) Perfluorooctanoic acid (PFOA) Perfluorooctanesulfonic acid (PFOS)	J (all detects) J (all detects) J (all detects)	A	Target compound identification (ion abundance ratio)
24-GW-18BGMP08D-20200217	Perfluoroheptanoic acid (PFHpA) Perfluorooctanesulfonic acid (PFOS)	J (all detects) J (all detects)	A	Target compound identification (ion abundance ratio)
24-GW-18BGMP08E-20200217 24-GW-18PS1-20200217 DUP01-20200217	Perfluoroheptanoic acid (PFHpA)	J (all detects)	A	Target compound identification (ion abundance ratio)

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 2000333

No Sample Data Qualified in this SDG

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 2000333

No Sample Data Qualified in this SDG

LDC #: 47500B96
SDG #: 2000333
Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET
Stage 4

Date: 3/12/20
Page: 1 of 1
Reviewer:
2nd Reviewer: PT

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M DOD QSM 5.3)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, A	RSD≤20%, r^2 TML/ICV≤30%
IV.	Continuing calibration/ISC	A	CCV/ISC≤30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB=1. SB=SB01-20200204 (2000247)
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	TW	D=T+8
X.	Labeled Compounds	A	
VI.	Compound quantitation RL/LOQ/LODs	A	
XII.	Target compound identification	TW	
XIII.	System performance	A	
XIV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
~~1~~	~~EB02-20200217~~	~~2000333-01~~	~~Water~~	~~02/17/20~~
2	18-GW-18BGMP10E-20200217	2000333-02	Water	02/17/20
3	18-GW-18BGMP10F-20200217	2000333-03	Water	02/17/20
4	18-GW-18BGMP08C-20200217	2000333-04	Water	02/17/20
5	24-GW-18BGMP08D-20200217	2000333-05	Water	02/17/20
6	24-GW-18BGMP08E-20200217	2000333-06	Water	02/17/20
7	24-GW-18PS1-20200217	2000333-07	Water	02/17/20
8	DUP01-20200217	2000333-08	Water	02/17/20
9				
10				

Notes:

	B0B0155-B4c1						

LDC #: 47502B96

VALIDATION FINDINGS CHECKLIST

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

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
III. Initial calibration and Initial Calibration Verification				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination (r^2) criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were the retention time windows properly established?	✓			
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) of the initial calibration verification ≤ 30%?	✓			
IV. Continuing calibration and Instrument Sensitivity Check				
Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence?	✓			
Were all percent differences (%D) of the continuing calibration ≤ 30%?	✓			
Were all the retention times within the acceptance windows?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	

Level IV checklist_LCMS_PFAS_QSM5.3_Table B-15.wpd

LDC #: 47506B96

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: Q
2nd Reviewer: RT

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
X. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?	✓			
Were retention times within 0.4 minutes of the associated calibration standard?	✓			
XI. Compound quantitation				
Did the laboratory reporting limits (i.e. DL, LOD, LOQ) meet the QAPP?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound retention times within 0.1 minutes of the associated labeled compound for compounds with a labeled analog?	✓			
Were compound quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation?	✓			
XII. Target compound identification				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
Were ion ratios between 50-150%?		✓		
XIII. System performance				
System performance was found to be acceptable.	✓			
XIV. Overall assessment of Data				
Overall assessment of data was found to be acceptable.	✓			

Level IV checklist_LCMS_PFAS_QSM5.3_Table B-15.wpd

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

COMPNDL_PFAS.wpd

LDC#: 47500B96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

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

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Compound	Concentration (ug/L)		(≤30) RPD	Difference (≤LOQ)	Limits	Qual
	7	8				
PFBS	0.0277	0.0261	6			
PFHxA	0.103	0.113	9			
PFHpA	0.00883	0.00935		0.0005	≤0.00404	
PFHxS	0.0736	0.0690	6			
PFOA	0.0323	0.0308	5			

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2020\47500B96_WOOD.wpd

LDC #: ~~41500B46~~

VALIDATION FINDINGS WORKSHEET
Target Compound Identification

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

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.1.1

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was the signal to noise (S/N) ratio for all compounds within the validation criteria?
Y N N/A Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?
Y N N/A Were ion ratios between 50-150%?

#	Date	Sample ID	Associated Samples	Ion Ratio ~~30-D~~ Finding (50-150%)	Qualifications
		4	PFHxA	29.161 (8.4655 - 25.3965)	J detects/A
			PFOA	5.037 (1.400 - 4.200)	
			PFOS	5.674 (1.304 - 3.912)	
		5	PFHpA	64.776 (16.8465 - 50.5395)	
			PFOS	4.167 (1.304 - 3.912)	
		6	PFHpA	12.942 (16.8465 - 50.5395)	
		7	PFHpA	11.026 (	
		8	PFHpA	16.161 ( )	

V:\Validation Worksheets\PFAS-537M\Table B15\TCI.wpd

LDC#: 47520B96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 4
Reviewer: 9
2nd Reviewer: 19

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
2/28/2020	MQ4	PFHxA	1	0.303600128	0.250
			2	0.597584798	0.500
			3	1.164206205	1.000
			4	1.968289604	2.000
			5	5.098500037	5.000
			6	9.640800994	10.000
			7	47.14252829	50.000
			8	95.7879666	100.000
			9	219.0447367	250.000
			10	420.3159336	500.000

Regression Output		***Reported***
Constant	*2.481143*	*0.122807*
Std Err of Y Est		
R Squared	*0.999080*	*0.997551*
Degrees of Freedom		
X Coefficient(s)	*0.844901*	*0.870570*
Std Err of Coef.		
Correlation Coefficient	*0.999540*	
Coefficient of Determination (r^2)	*0.999080*	*0.997551*

Vosta_96_022820_L_PFHxA

LDC #: 47500B46

Validation Findings Worksheet
Initial Calibration Calculation Verification

Page: 2 of 4
Reviewer: A
2nd Reviewer: F

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	Instrument	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
2/28/2020	MQ4	PFHxS	1	0.12583571	0.250	0.0625
			2	0.546220095	0.500	0.25
			3	1.100093989	1.000	1
			4	2.268965029	2.000	4
			5	5.842901742	5.000	25
			6	12.00998324	10.000	100
			7	51.40861626	50.000	2500
			8	106.1284785	100.000	10000
			9	267.918899	250.000	62500
			10	468.4202122	500.000	250000

Regression Output	Calculated		*Reported*	
Constant	c	-1.04004		-0.0812317
Std Err of Y Est				
R Squared		0.9996150		0.9990280
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.170779375	-0.000459763	1.12704	-0.00036565
Std Err of Coef.				
Correlation Coefficient		0.999807		
Coefficient of Determination (r^2)		0.999615		

LDC#: 47520B96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 7 of 7
Reviewer: 9
2nd Reviewer: FT

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
2/29/2020	MQ4	PFHxA	1	0.336760587	0.250
			2	0.525808004	0.500
			3	1.059053993	1.000
			4	1.789563772	2.000
			5	4.533320243	5.000
			6	9.543637384	10.000
			7	43.43257984	50.000
			8	87.66842719	100.000
			9	211.5450436	250.000
			10	411.3908911	500.000

Regression Output		***Reported***
Constant	*1.333075*	*0.104630*
Std Err of Y Est		
R Squared	*0.999735*	*0.999222*
Degrees of Freedom		
X Coefficient(s)	*0.825572*	*0.838943*
Std Err of Coef.		
Correlation Coefficient	*0.999868*	
Coefficient of Determination (r^2)	*0.999735*	*0.999222*

Vosta_96_022920_L_PFHxA

LDC #: 47500B96

Validation Findings Worksheet
Initial Calibration Calculation Verification

Page: 4 of 4
Reviewer: [illegible]
2nd Reviewer: [illegible]

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	Instrument	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
2/29/2020	MQ4	PFHxS	1	0.090312611	0.250	0.0625
			2	0.554619134	0.500	0.25
			3	0.879094479	1.000	1
			4	1.88339845	2.000	4
			5	5.243644386	5.000	25
			6	11.85984225	10.000	100
			7	50.53408586	50.000	2500
			8	102.9247442	100.000	10000
			9	270.4999765	250.000	62500
			10	481.5067366	500.000	250000

Regression Output	Calculated		*Reported*	
Constant	c	-1.40260		-0.145925
Std Err of Y Est				
R Squared		0.9994316		0.9986790
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.155909744	-0.000375202	1.09858	-0.000251852
Std Err of Coef.				
Correlation Coefficient		0.999716		
Coefficient of Determination (r^2)		0.999432		

LDC #: ~~41500B90~~

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 5

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	20022801-13	2/28/20	~~PFOA ($^{13}C_2$-PFOA)~~ ~~PFHxA~~	10.00	11.0	11.0	10.5	10.5
			~~PFOS ($^{13}C_8$-PFOS)~~ ~~PFHxS~~	10.00	10.3	10.3	3.2	3.2
2			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results

LDC #: 47592B96

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

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

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 280155-BS1/-BSD1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~PFOA~~ PFHxA	0.0400	0.0400	0.0428	0.0424	107	107	106	106	0.794	0.939
~~PFOS~~ PFHxS	V	V	0.0423	0.0331	106	106	82.8	82.8	24.3	24.4

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: ~~47528~~96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.1

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
V_o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).
V_i	=	Volume of extract injected in microliters (ul)
V_t	=	Volume of the concentrated extract in microliters (ul)
Df	=	Dilution Factor.
%S	=	Percent solids, applicable to soil and solid matrices only.
2.0	=	Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 3 PFHxA

Conc. = $\frac{(\frac{438 \times 12.5}{15400} - 0.10463)(1)}{(0.838943)(248)}$

= 0.00316 µg/L

#	Sample ID	Compound	Reported Concentration (µg/L)	Calculated Concentration ( )	Qualification
	3	PFHxA	0.00316		

RECALC.wpd

LDC Report# 47500C96

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro and Tustin PFAS

LDC Report Date: March 18, 2020

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 2000346

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
18-GW-18BGMW19C-20200218	2000346-02	Water	02/18/20
18-GW-18IDP2-D-20200218	2000346-03	Water	02/18/20
18-GW-18DW540-20200218	2000346-04	Water	02/18/20
18-GW-18DW450-20200218	2000346-05	Water	02/18/20

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Initial Basewide Assessment of Perfluorinated Compounds or Per- and Polyfluoroalkyl Substances in Groundwater, Former Marine Corps Air Station El Toro, Irvine, California (June 2017), Field Change Request Form No. FCRF-2405-0008-01-0066 (January 2020), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.3 (2019), and the DoD General Validation Guidelines (February 2018). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified and LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the methods.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

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

Retention time windows were established as required by the methods.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration and Instrument Sensitivity Check

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

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

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

Retention times of all compounds in the calibration standards were within the established retention time windows.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB03-20200218 was identified as an equipment blank. No contaminants were found.

Sample SB01-20200204 (from SDG 2000247) was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits with the following exceptions:

Sample	Labeled Compound	%R (Limits)	Affected Compound	Flag	A or P
18-GW-18IDP2-D-20200218	13C2-PFTeDA	10.5 (50-150)	Perfluorotetradecanoic acid (PFTeDA)	NA	-

XI. Compound Quantitation

All compound quantitations met validation criteria.

XII. Target Compound Identifications

All target compound identifications met validation criteria with the following exceptions:

Sample	Compound	Ion Abundance Ratio (Limits)	Flag	A or P
18-GW-18BGMW19C-20200218	Perfluoroheptanoic acid (PFHpA) Perfluorooctanesulfonic acid (PFOS)	14.502 (16.8465-50.5395) 11.242 (1.304-3.912)	J (all detects) J (all detects)	A

Sample	Compound	Ion Abundance Ratio (Limits)	Flag	A or P
18-GW-18DW540-20200218	Perfluoroheptanoic acid (PFHpA)	16.623 (16.8465-50.5395)	J (all detects)	A
18-GW-18DW450-20200218	Perfluoroheptanoic acid (PFHpA)	12.832 (16.8465-50.5395)	J (all detects)	A

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to ion abundance ratio, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable.

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG 2000346

Sample	Compound	Flag	A or P	Reason
18-GW-18BGMW19C-20200218	Perfluoroheptanoic acid (PFHpA) Perfluorooctanesulfonic acid (PFOS)	J (all detects) J (all detects)	A	Target compound identification (ion abundance ratio)
18-GW-18DW540-20200218 18-GW-18DW450-20200218	Perfluoroheptanoic acid (PFHpA)	J (all detects)	A	Target compound identification (ion abundance ratio)

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 2000346

No Sample Data Qualified in this SDG

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 2000346

No Sample Data Qualified in this SDG

LDC #: 47500C96
SDG #: 2000346
Laboratory: Vista Analytical Laboratory

VALIDATION COMPLETENESS WORKSHEET
Stage 4

Date: 3/20/20
Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M DOD QSM 5.3)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A/A	RSD ≤ 30% or r² True/ICV ≤ 30%
IV.	Continuing calibration/ISC	A	CCV/ISC ≤ 30%
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB=4. SB=SB01-20200204 (2000247)
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	N	
X.	Labeled Compounds	SW	
VI.	Compound quantitation RL/LOQ/LODs	A	
XII.	Target compound identification	SW	
XIII.	System performance	A	
XIV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
~~1~~	~~EB03-20200218~~	~~2000346-01~~	~~Water~~	~~02/18/20~~
2	18-GW-18BGMW19C-20200218	2000346-02	Water	02/18/20
3	18-GW-18IDP2-D-20200218	2000346-03	Water	02/18/20
4	18-GW-18DW540-20200218	2000346-04	Water	02/18/20
5	18-GW-18DW450-20200218	2000346-05	Water	02/18/20
6				
7				
8				
9				
10				

Notes:

	B0B0160-BK1						

LDC #: 47500C96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: 9
2nd Reviewer: 19

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?	✓			
III. Initial calibration and Initial Calibration Verification				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20%?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination (r^2) criteria of ≥ 0.990?	✓			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were the retention time windows properly established?	✓			
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) of the initial calibration verification ≤ 30%?	✓			
IV. Continuing calibration and Instrument Sensitivity Check				
Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence?	✓			
Were all percent differences (%D) of the continuing calibration ≤ 30%?	✓			
Were all the retention times within the acceptance windows?	✓			
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?	✓			
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
VI. Field blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?		✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	

Level IV checklist_LCMS_PFAS_QSM5.3_Table B-15.wpd

LDC #: 47520c96

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: 4
2nd Reviewer: 5

Validation Area	Yes	No	NA	Findings/Comments
VIII. Laboratory control samples				
Was an LCS analyzed per extraction batch for this SDG?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Labeled compounds				
Were labeled compound percent recoveries (%R) within the QC limits?		✓		
Were retention times within 0.4 minutes of the associated calibration standard?	✓			
XI. Compound quantitation				
Did the laboratory reporting limits (i.e. DL, LOD, LOQ) meet the QAPP?	✓			
Did reported results include both branched and linear isomers?	✓			
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound retention times within 0.1 minutes of the associated labeled compound for compounds with a labeled analog?	✓			
Were compound quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation?	✓			
XII. Target compound identification				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	✓			
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?	✓			
Were ion ratios between 50-150%?		✓		
XIII. System performance				
System performance was found to be acceptable.	✓			
XIV. Overall assessment of Data				
Overall assessment of data was found to be acceptable.	✓			

Level IV checklist_LCMS_PFAS_QSM5.3_Table B-15.wpd

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

A. Perfluorohexanoic acid (PFHxA)			
B. Perfluoroheptanoic acid (PFHpA)			
C. Perfluorooctanoic acid (PFOA)			
D. Perfluorononanoic acid (PFNA)			
E. Perfluorodecanoic acid (PFDA)			
F. Perfluoroundecanoic acid (PFUnA)			
G. Perfluorododecanoic acid (PFDoA)			
H. Perfluorotridecanoic acid (PFTriDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. Perfluorobutanesulfonic acid (PFBS)			
K. Perfluorohexanesulfonic acid (PFHxS)			
L. Perfluoroheptanesulfonic acid (PFHpS)			
M. Perfluorooctanesulfonic acid (PFOS)			
N.Perfluorodecanesulfonic acid (PFDS)			
O. Perfluorooctane Sulfonamide (FOSA)			
P. Perfluorobutanoic acid (PFBA)			
Q. Perfluoropentanoic acis (PFPeA)			
R. 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6:2FTS)			
S. 1H, 1H, 2H, 2H-perfluorodecane sulfonate (8:2 FTS)			
T. N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)			
U. N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)			
V. 1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)			

COMPNDL_PFAS.wpd

LDC #: 47500C96

VALIDATION FINDINGS WORKSHEET
Labeled Compounds

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 5

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y (N) N/A Were all labeled compound recoveries within the QC criteria?

#	Date	Lab ID/Reference	Labeled Compound	% Recovery	(Limit)	Qualifications
		3 (1/0)	13C2-PFTeDA	10.5	(50-150)	J- (all dets) / UJ (PFTeDA)
					( )	
					( )	
					( )	
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V:\Validation Worksheets\PFAS-537M\Table B15\LC_INTST.wpd

LDC #: 47500C96

VALIDATION FINDINGS WORKSHEET
Target Compound Identification

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

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.1.1

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was the signal to noise (S/N) ratio for all compounds within the validation criteria?
Y N N/A Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?
Y N N/A Were ion ratios between 50-150%?

#	Date	Sample ID	Associated Samples	Ion Ratio (50-150%) Finding	Qualifications
		2	PFHpA	14.502 (16.8465 - 50.5395	Ldets/A
			PFOS	11.242 (1.304 - 3.912)	
		4	PFHpA	16.623 (16.8465 - 50.5395)	
		5	PFHpA	12.832	

V:\Validation Worksheets\PFAS-537M\Table B15\TCI.wpd

LDC#: 47500C96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 4
Reviewer: 9
2nd Reviewer: 9

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
2/28/2020	MQ4	PFHxA	1	0.303600128	0.250
			2	0.597584798	0.500
			3	1.164206205	1.000
			4	1.968289604	2.000
			5	5.098500037	5.000
			6	9.640800994	10.000
			7	47.14252829	50.000
			8	95.7879666	100.000
			9	219.0447367	250.000
			10	420.3159336	500.000

Regression Output		***Reported***
Constant	*2.481143*	*0.122807*
Std Err of Y Est		
R Squared	*0.999080*	*0.997551*
Degrees of Freedom		
X Coefficient(s)	*0.844901*	*0.870570*
Std Err of Coef.		
Correlation Coefficient	*0.999540*	
Coefficient of Determination (r^2)	*0.999080*	*0.997551*

Vosta_96_022820_L_PFHxA

LDC #: 46247500c96

Validation Findings Worksheet
Initial Calibration Calculation Verification

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	Instrument	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
2/28/2020	MQ4	PFHxS	1	0.12583571	0.250	0.0625
			2	0.546220095	0.500	0.25
			3	1.100093989	1.000	1
			4	2.268965029	2.000	4
			5	5.842901742	5.000	25
			6	12.00998324	10.000	100
			7	51.40861626	50.000	2500
			8	106.1284785	100.000	10000
			9	267.918899	250.000	62500
			10	468.4202122	500.000	250000

Regression Output	Calculated		*Reported*	
Constant	c	-1.04004		-0.0812317
Std Err of Y Est				
R Squared		0.9996150		0.9990280
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.170779375	-0.000459763	1.12704	-0.00036565
Std Err of Coef.				
Correlation Coefficient		0.999807		
Coefficient of Determination (r^2)		0.999615		

LDC#: 47500C96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 3 of 4
Reviewer:
2nd Reviewer:

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	System	Compound	Standard	(Y) Response	(X) Concentration
2/29/2020	MQ4	PFHxA	1	0.336760587	0.250
			2	0.525808004	0.500
			3	1.059053993	1.000
			4	1.789563772	2.000
			5	4.533320243	5.000
			6	9.543637384	10.000
			7	43.43257984	50.000
			8	87.66842719	100.000
			9	211.5450436	250.000
			10	411.3908911	500.000

Regression Output		***Reported***
Constant	*1.333075*	*0.104630*
Std Err of Y Est		
R Squared	*0.999735*	*0.999222*
Degrees of Freedom		
X Coefficient(s)	*0.825572*	*0.838943*
Std Err of Coef.		
Correlation Coefficient	*0.999868*	
Coefficient of Determination (r^2)	*0.999735*	*0.999222*

Vosta_96_022920_L_PFHxA

LDC #: 47500C96

Validation Findings Worksheet
Initial Calibration Calculation Verification

Page: 4 of 4
Reviewer:
2nd Reviewer:

Method: LC/MS PFCs (EPA Method 537)

Calibration Date	Instrument	Compound	Standard	(Y) Response	(X) Conc.	(X^2) Conc.
2/29/2020	MQ4	PFHxS	1	0.090312611	0.250	0.0625
			2	0.554619134	0.500	0.25
			3	0.879094479	1.000	1
			4	1.88339845	2.000	4
			5	5.243644386	5.000	25
			6	11.85984225	10.000	100
			7	50.53408586	50.000	2500
			8	102.9247442	100.000	10000
			9	270.4999765	250.000	62500
			10	481.5067366	500.000	250000

Regression Output	Calculated		*Reported*	
Constant	c	-1.40260		-0.145925
Std Err of Y Est				
R Squared		0.9994316		0.9986790
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.155909744	-0.000375202	1.09858	-0.000251852
Std Err of Coef.				
Correlation Coefficient		0.999716		
Coefficient of Determination (r^2)		0.999432		

LDC #: ~~47500c-96~~

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 3

METHOD: LC/MS PFAS (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
$RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	Reported RRF	Recalculated RRF	Reported %D	Recalculated %D
1	~~20022SP243~~	3/28/20	~~PFOA ($^{13}C_2$-PFOA)~~ PFHxA	10.000	11.0	11.0	10.5	10.5
			~~PFOS ($^{13}C_8$-PFOS)~~ PFHxS	↓	10.3	10.3	3.2	3.2
2	~~20022911-2~~	3/29/20	~~PFOA ($^{13}C_2$-PFOA)~~ PFHxA	10.000	10.9	10.9	9.5	9.5
			~~PFOS ($^{13}C_8$-PFOS)~~ PFHxS	↓	10.2	10.2	1.5	1.5
3			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					
4			PFOA ($^{13}C_2$-PFOA)					
			PFOS ($^{13}C_8$-PFOS)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results

LDC #: 47502C90

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page: 1 of 1
Reviewer: 9
2nd Reviewer: 7

METHOD: LC/MS PFAS (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA Where: SSC = Spike concentration
SA = Spike added

RPD = | LCSC - LCSDC | * 2/(LCSC + LCSDC) LCSC = Laboratory control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS/LCSD samples: 280160-BS1/BSD1

Compound	Spike Added (ng/L)		Spike Concentration (ng/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
~~PFOA~~ PFHxA	0.0400	0.0400	0.0431	0.0458	108	108	115	115	6.0	6.0
~~PFOS~~ PFHxS	↓	↓	0.0366	0.0389	91.4	91.4	97.2	97.2	6.1	6.09

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 4T500C96

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

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

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(V_t)(DF)(2.0)}{(A_{is})(RRF)(V_o)(V_i)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

V_o = Volume or weight of sample extract in milliliters (ml) or grams (g).

V_i = Volume of extract injected in microliters (ul)

V_t = Volume of the concentrated extract in microliters (ul)

Df = Dilution Factor.

%S = Percent solids, applicable to soil and solid matrices only.

2.0 = Factor of 2 to account for GPC cleanup

Example:

Sample I.D. 1, PFHxA

Conc. = $\frac{18900 \times 12.5}{(11.860)(\quad)(-0.104630)(\quad)(1)(\quad)}$ / $(0.838943)(250.3)(1)(\quad)$

= ~~0.9~~ 0.0948 µg/L

#	Sample ID	Compound	Reported Concentration (µg/L)	Calculated Concentration ( )	Qualification
	1	PFHxA	0.0943		



Enthalpy Analytical
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900

enthalpy.com

Lab Job Number: 318380
Report Level: II
Report Date: 03/02/2020

Analytical Report *prepared for:*

Jade White D
Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762

Project: MCAS EL TORO - MCAS El Toro and Tustin, PFAS

Authorized for release by:



Patrick McCarthy, Project Manager
(510) 204-2236 ext 13115
patrick.mccarthy@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 2896, NELAP# 4044-001

ENTHALPY ANALYTICAL

Sample Summary

Jade White D
Vista Analytical Laboratory
1104 Windfield Way
El Dorado Hills, CA 95762

Lab Job #:	318380
Project No:	MCAS EL TORO
Location:	MCAS El Toro and Tustin, PFAS
Date Received:	02/19/20

Sample ID	Lab ID	Collected	Matrix
ET-LW01-20200218	318380-001	02/18/20 14:45	Water

ENTHALPY ANALYTICAL

Case Narrative

Vista Analytical Laboratory	Lab Job Number: 318380
1104 Windfield Way	Project No: MCAS EL TORO
El Dorado Hills, CA 95762	Location: MCAS El Toro and Tustin, PFAS
Jade White D	Date Received: 02/19/20

This data package contains sample and QC results for one water sample, requested for the above referenced project on 02/19/20. The sample was received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
Gasoline C7-C12 was detected between the MDL and the RL in the method blank for batch 278758; this analyte was not detected in the sample at or above the RL. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):
Diesel C10-C24 was detected between the MDL and the RL in the method blank for batch 278763; this analyte was detected in the sample at a level at least 10 times that of the blank. ET-LW01-20200218 (lab # 318380-001) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
Chloroform was detected between the MDL and the RL in the method blank for batch 278813; this analyte was not detected in the sample at or above the RL. ET-LW01-20200218 (lab # 318380-001) was diluted due to foaming. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7470A):
Low recoveries were observed for antimony in the MS/MSD of ET-LW01-20200218 (lab # 318380-001); the BS/BSD were within limits, and the associated RPD was within limits. High recovery was observed for copper in the MSD of ET-LW01-20200218 (lab # 318380-001); the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Temperature measurement (SM2550B):
No analytical problems were encountered.

Total Oil & Grease (HEM) (EPA 1664A):
Matrix spikes were not performed for this analysis due to insufficient sample volume. No analytical problems were encountered.

pH (EPA 9040C):
No analytical problems were encountered.

Flash Point (ASTM D93):
No analytical problems were encountered.

ENTHALPY ANALYTICAL

Detection Summary for 318380

Client: Vista Analytical Laboratory
Project: MCAS EL TORO
Location MCAS El Toro and Tustin, PFAS

Sample ID: ET-LW01-20200218 Lab ID: 318380-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	23	B,J	50	9.4	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B
Diesel C10-C24	950	Y	540	180	ug/L	As Recd	10.00	EPA 8015B	EPA 3520C
Acetone	11	J	50	7.5	ug/L	As Recd	5.000	EPA 8260B	EPA 5030B
cis-1,2-Dichloroethene	1.0	J	2.5	0.5	ug/L	As Recd	5.000	EPA 8260B	EPA 5030B
Chloroform	1.2	B,J	10	0.8	ug/L	As Recd	5.000	EPA 8260B	EPA 5030B
Trichloroethene	1.0	J	2.5	0.5	ug/L	As Recd	5.000	EPA 8260B	EPA 5030B
Arsenic	13		10	1.7	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Barium	140		5.0	0.85	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Beryllium	0.67	J	2.0	0.35	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Cadmium	0.75	J	5.0	0.31	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Chromium	1,900		5.0	0.67	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Cobalt	9.9		5.0	0.31	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Copper	310		5.0	1.4	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Lead	18		5.0	1.4	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Molybdenum	33		5.0	0.42	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Nickel	120		5.0	0.52	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Vanadium	65		5.0	0.65	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Zinc	260		20	4.2	ug/L	TOTAL	1.000	EPA 6010B	EPA 3010A
Flash Point	>212		1.0		deg F	TOTAL	1.000	ASTM D93	METHOD
pH	7.5		1.0		SU	TOTAL	1.000	EPA 9040C	METHOD
Temperature (for pH)	13.5				deg C	TOTAL	1.000	SM2550B	

>: Value exceeds indicated concentration
B: Contamination found in associated Method Blank
J: Estimated value
Y: Sample exhibits chromatographic pattern which does not resemble standard

Results for any subcontracted analyses are not included in this summary. Data qualifiers and additional information necessary for the interpretation of the test results are contained in the PDF file and may not be included in this summary.

318380

Vista Analytical
1104 Windfield Way
El Dorado Hills, CA 95762
TEL: 916-673-1520

Enthalphy, 2323 Fifth St., Berkeley, CA 94710
Enthalpy PM: Patrick McCarthy
Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 2/18/2020
PAGE: 1 OF 1

LABORATORY CLIENT: KMEA
ADDRESS: 9210 Sky Park Court, Suite 220
CITY: San Diego, CA 92123
TEL: (619) 399-5900 | E-Mail: kimberly.shiroodi@woodplc.com | E-MAIL: brian.johnson@woodplc.com

CLIENT PROJECT NAME / NUMBER: MCAS El Toro and Tustin, PFAS
PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson
SAMPLER(S): (SIGNATURE) Uly Ruiz

P.O. NO.: TO 008 Mod 4
CONTRACT NO.: N62473-16-D-2405
LAB USE ONLY

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ ~~10 DAYS~~ Standard

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
* Total, not field filtered
Waste Sample, Separate SDG

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS	VOCs 8260B	TPH-g	TPH-d	Oil & Grease	TTLC CAM-17 Metals*	Ignitability	pH
	ET-LW01-20200218	2/18/20	14:45	WW	10			X	X	X	X	X	X	X

Uly Ruiz 2-18-20

Relinquished by: (Signature) Uly Ruiz	Received by: (Signature) / Carrier Tracking Number FedEx	Date: 2/18/20	Time: 17:00
Relinquished by: (Signature)	Received by: (Signature)	Date: 2/19/20	Time: 10:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

SAMPLE RECEIPT CHECKLIST

Section 1: Login # 318380 Client: Vista

Date Received: 2/19/20 Project: _____

Section 2: Shipping info (if applicable) Fed Ex 8101 0952 1862

Are custody seals present? ☑ No, or ☐ Yes. If yes, where? ☐ on cooler, ☐ on samples, ☐ on package

☐ Date: _____ How many _____ ☐ Signature, ☐ Initials, ☐ None

Were custody seals intact upon arrival? ☐ Yes ☐ No ☐ N/A

Samples received in a cooler? ☑ Yes, how many? 1 ☐ No (**skip Section 3 below**)

If no cooler Sample Temp (°C): _____ using IR Gun # ☐ B, or ☐ C

☐ Samples received on ice directly from the field. Cooling process had begun

If in cooler: Date Opened 2/19/20 By (print) ZA (sign) _____

Section 3: ***Important*: Notify PM if temperature exceeds 6°C or arrive frozen.**

Packing in cooler: (if other, describe) _____

☑ Bubble Wrap, ☐ Foam blocks, ☑ Bags, ☐ None, ☐ Cloth material, ☐ Cardboard, ☐ Styrofoam, ☐ Paper towels

☐ Samples received on ice directly from the field. Cooling process had begun

Type of ice used : ☑ Wet, ☐ Blue/Gel, ☐ None Temperature blank(s) included? ☐ Yes, ☐ No

Temperature measured using ☐ Thermometer ID: _____, or IR Gun # ☐ B ☑ C

Cooler Temp (°C): #1: 1.5, #2: _____, #3: _____, #4: _____, #5: _____, #6: _____, #7: _____

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	✓		
Were Method 5035 sampling containers present?		✓	
If YES, what time were they transferred to freezer? _____			
Did all bottles arrive unbroken/unopened?	✓		
Are there any missing / extra samples?		✓	
Are samples in the appropriate containers for indicated tests?	✓		
Are sample labels present, in good condition and complete?	✓		
Does the container count match the COC?	✓		
Do the sample labels agree with custody papers?	✓		
Was sufficient amount of sample sent for tests requested?	✓		
Did you change the hold time in LIMS for unpreserved VOAs?			✓
Did you change the hold time in LIMS for preserved terracores?			✓
Are bubbles > 6mm present in VOA samples?		✓	
Was the client contacted concerning this sample delivery?		✓	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)	✓		
Did you check preservatives for all bottles for each sample?		✓	
Did you document your preservative check?	✓		

pH strip lot# 50B0173191, pH strip lot# _____, pH strip lot# _____

Preservative added:

☐ H2SO4 lot# _____ added to samples _____ on/at _____

☐ HCL lot# _____ added to samples _____ on/at _____

☐ HNO3 lot# _____ added to samples _____ on/at _____

☐ NaOH lot# _____ added to samples _____ on/at _____

Section 6:

Explanations/Comments: _____

Date Logged in 2/19/20 **By (print)** ZA **(sign)** _____

Date Labeled 2/20/20 **By (print)** ZA **(sign)** _____

Enthalpy Analytical - Berkeley Rev.15.1, 09/13/2019

Enthalpy Sample Preservation for 318380

Sample	pH: <2	>9	>12	Other
-001a	[ ]	[ ]	[ ]	_____
b	[ ]	[ ]	[ ]	_____
c	[ ]	[ ]	[ ]	_____
d	[ ]	[ ]	[ ]	_____
e	[ ]	[ ]	[ ]	_____
f	[✓]	[ ]	[ ]	_____
g	[ ]	[ ]	[ ]	_____
h	[ ]	[ ]	[ ]	_____
i	[ ]	[ ]	[ ]	_____
j	[ ]	[ ]	[ ]	_____

Analyst: W
Date: 2/20/20

Page 1 of 1

ENTHALPY ANALYTICAL

Total Volatile Hydrocarbons

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Diln Fac:** 1.000 **Analyzed:** 02/20/20

Type: SAMPLE **Batch#:** 278758 **Prep:** EPA 5030B

Lab ID: 318380-001 **Sampled:** 02/18/20 **Analysis:** EPA 8015B

Matrix: Water **Received:** 02/19/20

Analyte	Result	RL	MDL	Units	Qual
Gasoline C7-C12	**23 J**	50	9.4	ug/L	B

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	80-120

Type: BLANK **Matrix:** Water **Batch#:** 278758 **Prep:** EPA 5030B

Lab ID: QC1010096 **Diln Fac:** 1.000 **Analyzed:** 02/20/20 **Analysis:** EPA 8015B

Analyte	Result	RL	MDL	Units
Gasoline C7-C12	**9.5 J**	50	9.4	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	80-120

Legend

B: Contamination found in associated Method Blank

J: Estimated value

MDL: Method Detection Limit

RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Volatile Hydrocarbons: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Matrix:** Water **Batch#:** 278758 **Prep:** EPA 5030B

Lab ID: QC1010097 **Diln Fac:** 1.000 **Analyzed:** 02/20/20 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units
Gasoline C7-C12	1,000	960.3	96	80-123	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	92	80-120

Type: BSD **Matrix:** Water **Batch#:** 278758 **Prep:** EPA 5030B

Lab ID: QC1010098 **Diln Fac:** 1.000 **Analyzed:** 02/20/20 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Gasoline C7-C12	1,000	921.9	92	80-123	ug/L	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	80-120

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Total Volatile Hydrocarbons: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ZZZZZZZZZZ **Matrix:** Water **Received:** 02/18/20
Type: MS **Diln Fac:** 1.000 **Analyzed:** 02/20/20
MSS Lab ID: 318371-005 **Batch#:** 278758 **Prep:** EPA 5030B
Lab ID: QC1010099 **Sampled:** 02/18/20 **Analysis:** EPA 8015B

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Gasoline C7-C12	26.24	2,000	1,847	91	80-124	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	80-120

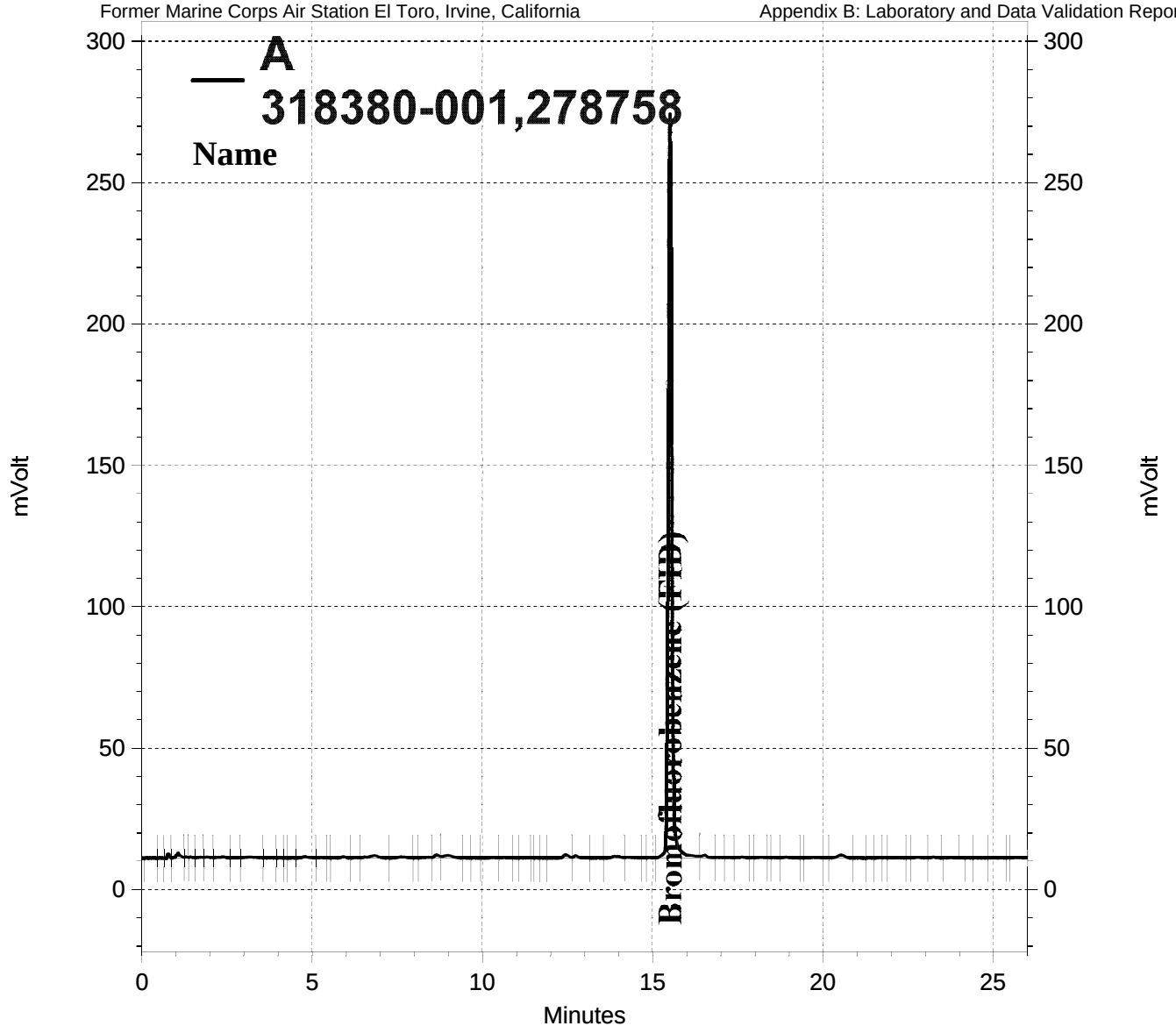
Field ID: ZZZZZZZZZZ **Matrix:** Water **Received:** 02/18/20
Type: MSD **Diln Fac:** 1.000 **Analyzed:** 02/20/20
MSS Lab ID: 318371-005 **Batch#:** 278758 **Prep:** EPA 5030B
Lab ID: QC1010100 **Sampled:** 02/18/20 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Gasoline C7-C12	2,000	1,819	90	80-124	ug/L	2	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	101	80-120

Legend

RPD: Relative Percent Difference



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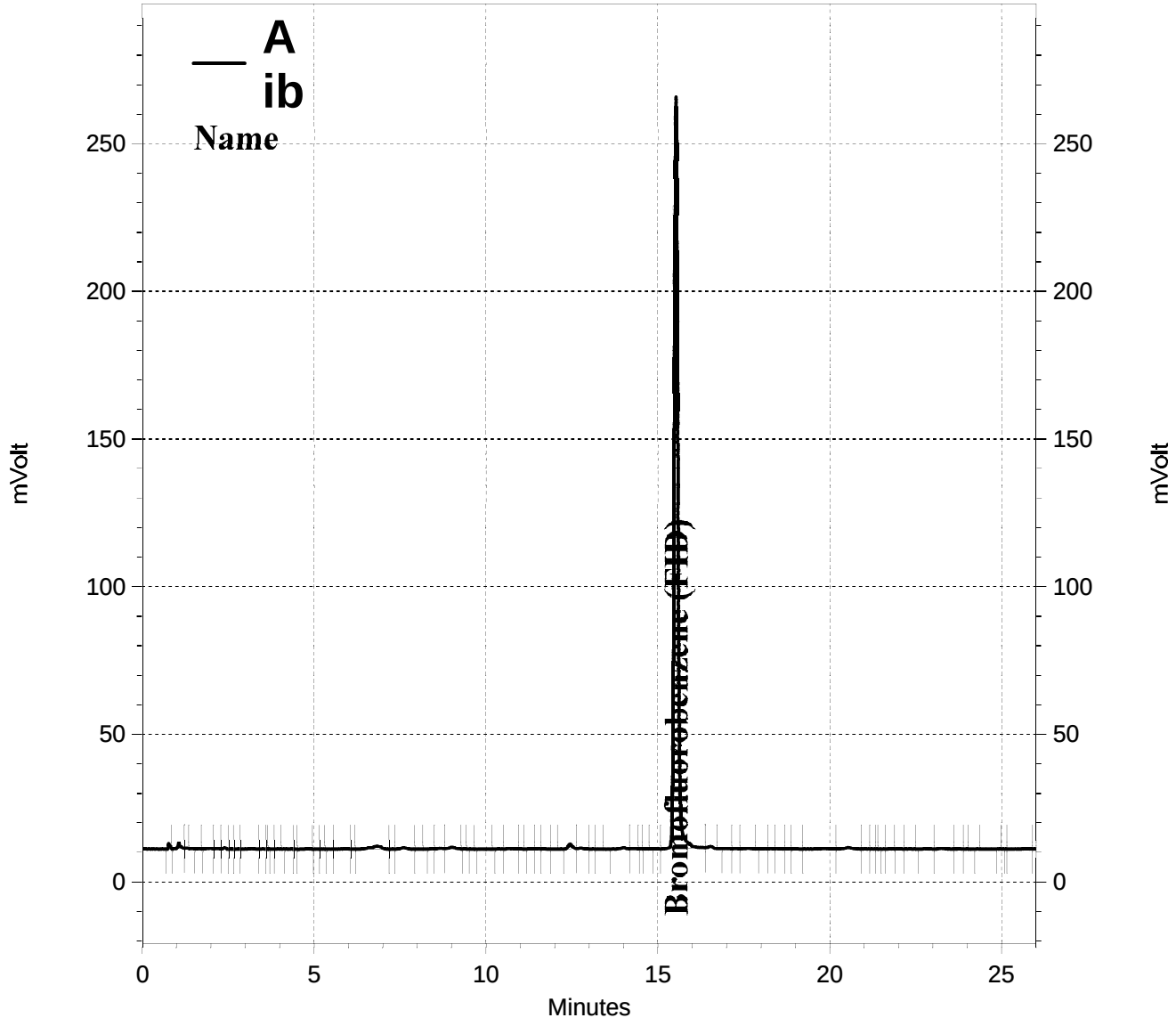
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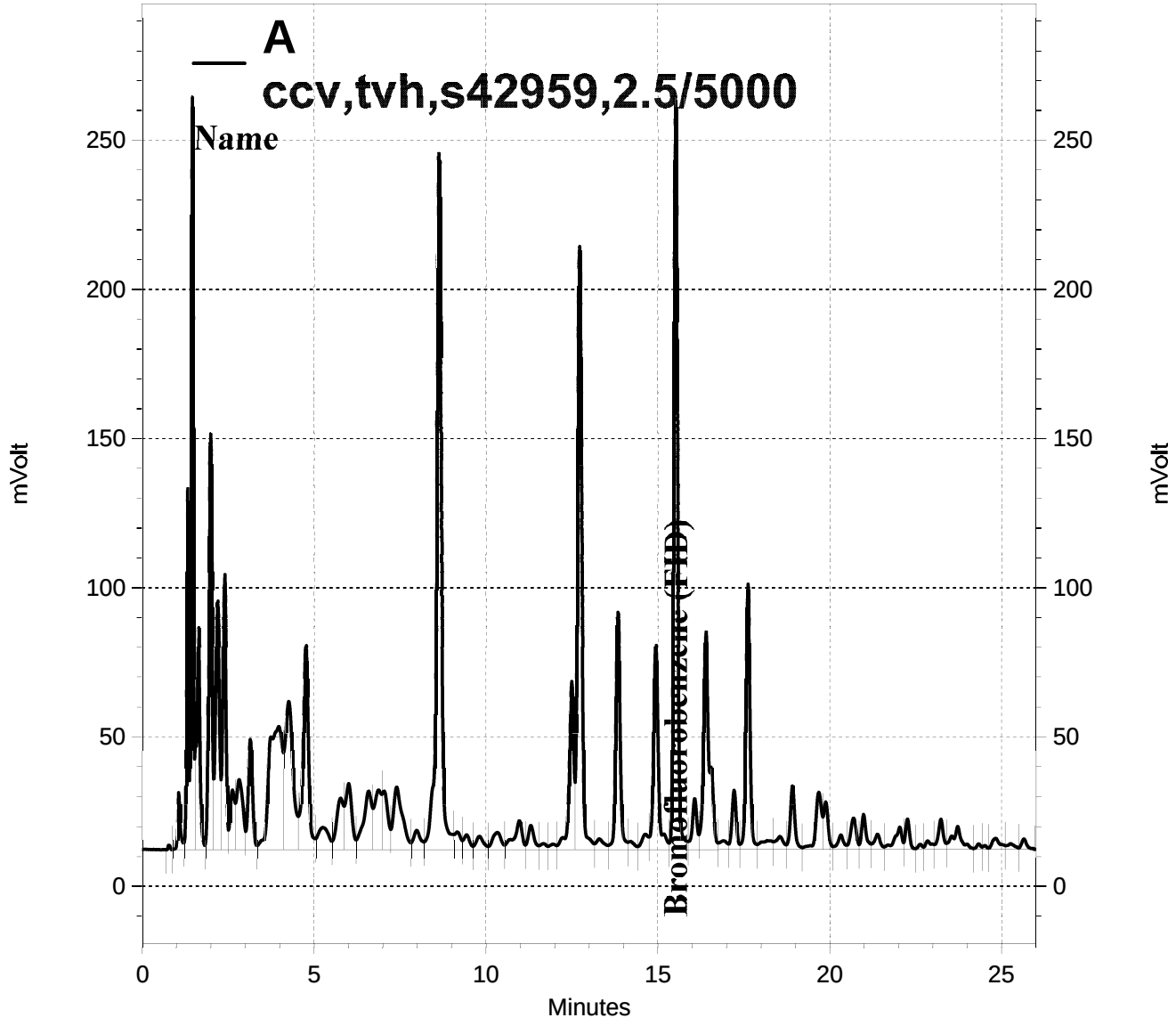

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ENTHALPY ANALYTICAL

Total Extractable Hydrocarbons

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Diln Fac:** 10.00 **Prepared:** 02/20/20

Type: SAMPLE **Batch#:** 278763 **Analyzed:** 02/21/20

Lab ID: 318380-001 **Sampled:** 02/18/20 **Prep:** EPA 3520C

Matrix: Water **Received:** 02/19/20 **Analysis:** EPA 8015B

Analyte	Result	RL	MDL	Units	Qual
Diesel C10-C24	**950**	540	180	ug/L	Y

Surrogate	%REC	Limits
o-Terphenyl	DO	66-142

Type: BLANK **Diln Fac:** 1.000 **Analyzed:** 02/21/20

Lab ID: QC1010119 **Batch#:** 278763 **Prep:** EPA 3520C

Matrix: Water **Prepared:** 02/20/20 **Analysis:** EPA 8015B

Analyte	Result	RL	MDL	Units
Diesel C10-C24	**22 J**	50	16	ug/L

Surrogate	%REC	Limits
o-Terphenyl	104	66-142

Legend

DO: Diluted Out
J: Estimated value
MDL: Method Detection Limit
RL: Reporting Limit
Y: Sample exhibits chromatographic pattern which does not resemble standard

ENTHALPY ANALYTICAL

Total Extractable Hydrocarbons: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Dil Fac:** 1.000 **Analyzed:** 02/21/20

Lab ID: QC1010120 **Batch#:** 278763 **Prep:** EPA 3520C

Matrix: Water **Prepared:** 02/20/20 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units
Diesel C10-C24	2,500	2,504	100	50-132	ug/L

Surrogate	%REC	Limits
o-Terphenyl	111	66-142

Type: BSD **Dil Fac:** 1.000 **Analyzed:** 02/21/20

Lab ID: QC1010121 **Batch#:** 278763 **Prep:** EPA 3520C

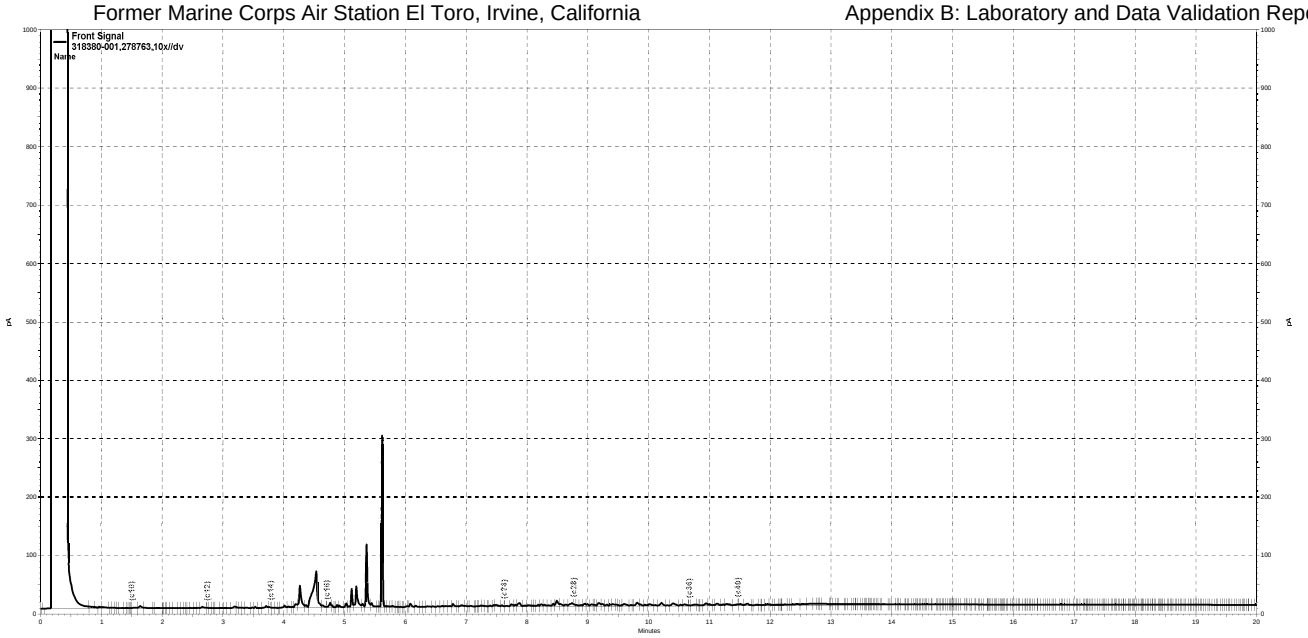
Matrix: Water **Prepared:** 02/20/20 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Diesel C10-C24	2,500	2,457	98	50-132	ug/L	2	56

Surrogate	%REC	Limits
o-Terphenyl	111	66-142

Legend

RPD: Relative Percent Difference



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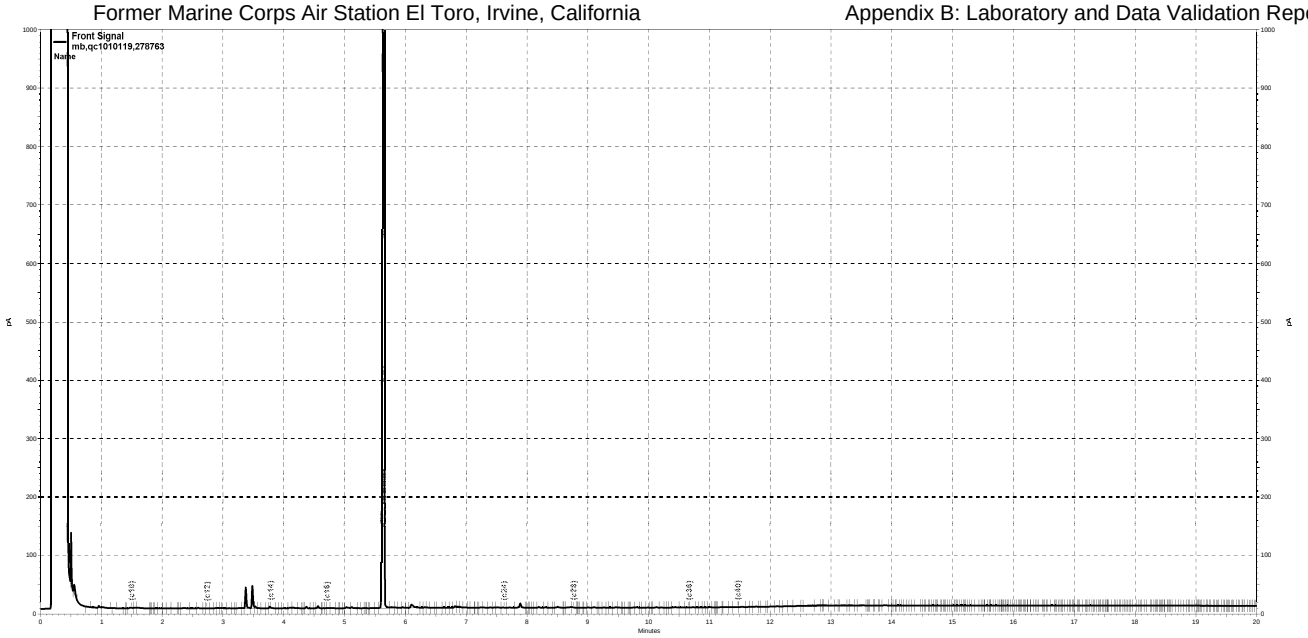

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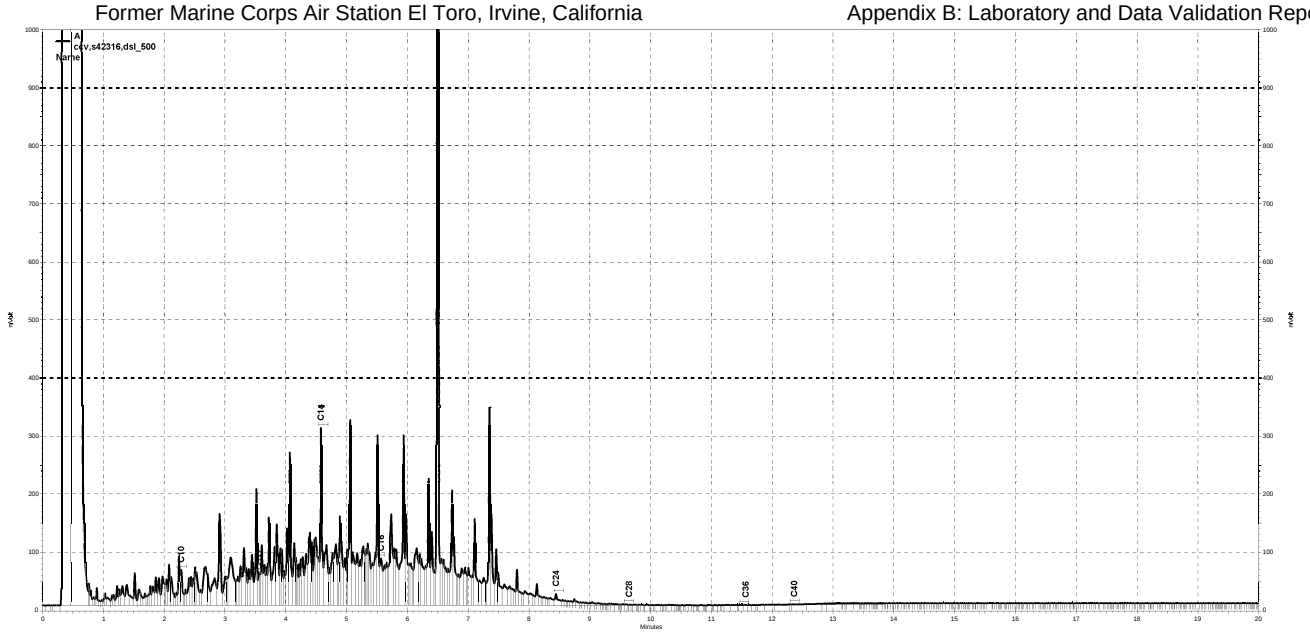

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ENTHALPY ANALYTICAL

Purgeable Organics by GC/MS

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Batch#:** 278813 **Prep:** EPA 5030B

Lab ID: 318380-001 **Sampled:** 02/18/20 **Analysis:** EPA 8260B

Matrix: Water **Received:** 02/19/20

DilN Fac: 5.000 **Analyzed:** 02/23/20

Analyte	Result	RL	MDL	Units	Qual
Freon 12	ND	5.0	0.5	ug/L	
Chloromethane	ND	5.0	1.0	ug/L	
Vinyl Chloride	ND	2.5	0.5	ug/L	
Bromomethane	ND	5.0	1.0	ug/L	
Chloroethane	ND	5.0	1.0	ug/L	
Trichlorofluoromethane	ND	5.0	0.5	ug/L	
Acetone	**11 J**	50	7.5	ug/L	
Freon 113	ND	10	0.7	ug/L	
1,1-Dichloroethene	ND	2.5	0.5	ug/L	
Methylene Chloride	ND	50	4.3	ug/L	
Carbon Disulfide	ND	2.5	0.5	ug/L	
MTBE	ND	2.5	0.5	ug/L	
trans-1,2-Dichloroethene	ND	2.5	0.5	ug/L	
Vinyl Acetate	ND	50	2.5	ug/L	
1,1-Dichloroethane	ND	2.5	0.5	ug/L	
2-Butanone	ND	50	10	ug/L	
cis-1,2-Dichloroethene	**1.0 J**	2.5	0.5	ug/L	
2,2-Dichloropropane	ND	2.5	0.6	ug/L	
Chloroform	**1.2 J**	10	0.8	ug/L	B
Bromochloromethane	ND	2.5	0.5	ug/L	
1,1,1-Trichloroethane	ND	2.5	0.5	ug/L	
1,1-Dichloropropene	ND	2.5	0.5	ug/L	
Carbon Tetrachloride	ND	2.5	0.5	ug/L	
1,2-Dichloroethane	ND	2.5	0.8	ug/L	
Benzene	ND	2.5	0.5	ug/L	
Trichloroethene	**1.0 J**	2.5	0.5	ug/L	
1,2-Dichloropropane	ND	2.5	0.5	ug/L	
Bromodichloromethane	ND	2.5	0.5	ug/L	
Dibromomethane	ND	2.5	0.5	ug/L	
4-Methyl-2-Pentanone	ND	50	0.6	ug/L	
cis-1,3-Dichloropropene	ND	2.5	0.5	ug/L	
Toluene	ND	2.5	0.5	ug/L	
trans-1,3-Dichloropropene	ND	2.5	0.5	ug/L	
1,1,2-Trichloroethane	ND	2.5	0.5	ug/L	
2-Hexanone	ND	50	1.2	ug/L	
1,3-Dichloropropane	ND	2.5	0.5	ug/L	
Tetrachloroethene	ND	2.5	0.6	ug/L	
Dibromochloromethane	ND	2.5	0.5	ug/L	
1,2-Dibromoethane	ND	2.5	0.5	ug/L	
Chlorobenzene	ND	2.5	0.5	ug/L	
1,1,1,2-Tetrachloroethane	ND	2.5	0.5	ug/L	

ENTHALPY ANALYTICAL

Purgeable Organics by GC/MS

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Analyte	Result	RL	MDL	Units	Qual
Ethylbenzene	ND	2.5	0.5	ug/L	
m,p-Xylenes	ND	2.5	0.5	ug/L	
o-Xylene	ND	2.5	0.5	ug/L	
Styrene	ND	2.5	0.5	ug/L	
Bromoform	ND	5.0	0.5	ug/L	
Isopropylbenzene	ND	2.5	0.5	ug/L	
1,1,2,2-Tetrachloroethane	ND	2.5	0.5	ug/L	
1,2,3-Trichloropropane	ND	2.5	0.5	ug/L	
Propylbenzene	ND	2.5	0.6	ug/L	
Bromobenzene	ND	2.5	0.5	ug/L	
1,3,5-Trimethylbenzene	ND	2.5	0.6	ug/L	
2-Chlorotoluene	ND	2.5	0.6	ug/L	
4-Chlorotoluene	ND	2.5	0.5	ug/L	
tert-Butylbenzene	ND	2.5	0.5	ug/L	
1,2,4-Trimethylbenzene	ND	2.5	0.6	ug/L	
sec-Butylbenzene	ND	2.5	0.5	ug/L	
para-Isopropyl Toluene	ND	2.5	0.5	ug/L	
1,3-Dichlorobenzene	ND	2.5	0.6	ug/L	
1,4-Dichlorobenzene	ND	2.5	0.6	ug/L	
n-Butylbenzene	ND	2.5	0.5	ug/L	
1,2-Dichlorobenzene	ND	2.5	0.5	ug/L	
1,2-Dibromo-3-Chloropropane	ND	10	1.1	ug/L	
1,2,4-Trichlorobenzene	ND	5.0	1.0	ug/L	
Hexachlorobutadiene	ND	10	1.0	ug/L	
Naphthalene	ND	10	2.1	ug/L	
1,2,3-Trichlorobenzene	ND	5.0	1.3	ug/L	

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-120
1,2-Dichloroethane-d4	96	80-120
Toluene-d8	106	80-120
Bromofluorobenzene	107	80-120

Legend

B: Contamination found in associated Method Blank
J: Estimated value
MDL: Method Detection Limit
ND: Not Detected at or above MDL
RL: Reporting Limit

ENTHALPY ANALYTICAL

Purgeable Organics by GC/MS: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BLANK **Matrix:** Water **Batch#:** 278813 **Prep:** EPA 5030B

Lab ID: QC1010311 **Dil'n Fac:** 1.000 **Analyzed:** 02/22/20 **Analysis:** EPA 8260B

Analyte	Result	RL	MDL	Units
Freon 12	ND	1.0	0.1	ug/L
Chloromethane	ND	1.0	0.2	ug/L
Vinyl Chloride	ND	0.5	0.1	ug/L
Bromomethane	ND	1.0	0.2	ug/L
Chloroethane	ND	1.0	0.2	ug/L
Trichlorofluoromethane	ND	1.0	0.1	ug/L
Acetone	ND	10	1.5	ug/L
Freon 113	ND	2.0	0.1	ug/L
1,1-Dichloroethene	ND	0.5	0.1	ug/L
Methylene Chloride	ND	10	0.9	ug/L
Carbon Disulfide	ND	0.5	0.1	ug/L
MTBE	ND	0.5	0.1	ug/L
trans-1,2-Dichloroethene	ND	0.5	0.1	ug/L
Vinyl Acetate	ND	10	0.5	ug/L
1,1-Dichloroethane	ND	0.5	0.1	ug/L
2-Butanone	ND	10	2.0	ug/L
cis-1,2-Dichloroethene	ND	0.5	0.1	ug/L
2,2-Dichloropropane	ND	0.5	0.1	ug/L
Chloroform	**0.3 J**	2.0	0.2	ug/L
Bromochloromethane	ND	0.5	0.1	ug/L
1,1,1-Trichloroethane	ND	0.5	0.1	ug/L
1,1-Dichloropropene	ND	0.5	0.1	ug/L
Carbon Tetrachloride	ND	0.5	0.1	ug/L
1,2-Dichloroethane	ND	0.5	0.2	ug/L
Benzene	ND	0.5	0.1	ug/L
Trichloroethene	ND	0.5	0.1	ug/L
1,2-Dichloropropane	ND	0.5	0.1	ug/L
Bromodichloromethane	ND	0.5	0.1	ug/L
Dibromomethane	ND	0.5	0.1	ug/L
4-Methyl-2-Pentanone	ND	10	0.1	ug/L
cis-1,3-Dichloropropene	ND	0.5	0.1	ug/L
Toluene	ND	0.5	0.1	ug/L
trans-1,3-Dichloropropene	ND	0.5	0.1	ug/L
1,1,2-Trichloroethane	ND	0.5	0.1	ug/L
2-Hexanone	ND	10	0.2	ug/L
1,3-Dichloropropane	ND	0.5	0.1	ug/L
Tetrachloroethene	ND	0.5	0.1	ug/L
Dibromochloromethane	ND	0.5	0.1	ug/L
1,2-Dibromoethane	ND	0.5	0.1	ug/L
Chlorobenzene	ND	0.5	0.1	ug/L
1,1,1,2-Tetrachloroethane	ND	0.5	0.1	ug/L
Ethylbenzene	ND	0.5	0.1	ug/L
m,p-Xylenes	ND	0.5	0.1	ug/L

ENTHALPY ANALYTICAL

Purgeable Organics by GC/MS: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Analyte	Result	RL	MDL	Units
o-Xylene	ND	0.5	0.1	ug/L
Styrene	ND	0.5	0.1	ug/L
Bromoform	ND	1.0	0.1	ug/L
Isopropylbenzene	ND	0.5	0.1	ug/L
1,1,2,2-Tetrachloroethane	ND	0.5	0.1	ug/L
1,2,3-Trichloropropane	ND	0.5	0.1	ug/L
Propylbenzene	ND	0.5	0.1	ug/L
Bromobenzene	ND	0.5	0.1	ug/L
1,3,5-Trimethylbenzene	ND	0.5	0.1	ug/L
2-Chlorotoluene	ND	0.5	0.1	ug/L
4-Chlorotoluene	ND	0.5	0.1	ug/L
tert-Butylbenzene	ND	0.5	0.1	ug/L
1,2,4-Trimethylbenzene	ND	0.5	0.1	ug/L
sec-Butylbenzene	ND	0.5	0.1	ug/L
para-Isopropyl Toluene	ND	0.5	0.1	ug/L
1,3-Dichlorobenzene	ND	0.5	0.1	ug/L
1,4-Dichlorobenzene	ND	0.5	0.1	ug/L
n-Butylbenzene	ND	0.5	0.1	ug/L
1,2-Dichlorobenzene	ND	0.5	0.1	ug/L
1,2-Dibromo-3-Chloropropane	ND	2.0	0.2	ug/L
1,2,4-Trichlorobenzene	ND	1.0	0.2	ug/L
Hexachlorobutadiene	ND	2.0	0.2	ug/L
Naphthalene	ND	2.0	0.4	ug/L
1,2,3-Trichlorobenzene	ND	1.0	0.3	ug/L

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-120
1,2-Dichloroethane-d4	96	80-120
Toluene-d8	106	80-120
Bromofluorobenzene	106	80-120

Legend

J: Estimated value

MDL: Method Detection Limit

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

Purgeable Organics by GC/MS: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Matrix:** Water **Batch#:** 278813 **Prep:** EPA 5030B

Lab ID: QC1010312 **Diln Fac:** 1.000 **Analyzed:** 02/22/20 **Analysis:** EPA 8260B

Analyte	Spiked	Result	%REC	Limits	Units
1,1-Dichloroethene	10.00	8.233	82	71-129	ug/L
Benzene	10.00	9.413	94	77-120	ug/L
Trichloroethene	10.00	9.415	94	73-120	ug/L
Toluene	10.00	9.727	97	78-120	ug/L
Chlorobenzene	10.00	9.894	99	80-120	ug/L

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-120
1,2-Dichloroethane-d4	99	80-120
Toluene-d8	104	80-120
Bromofluorobenzene	95	80-120

Type: BSD **Matrix:** Water **Batch#:** 278813 **Prep:** EPA 5030B

Lab ID: QC1010313 **Diln Fac:** 1.000 **Analyzed:** 02/22/20 **Analysis:** EPA 8260B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
1,1-Dichloroethene	10.00	8.174	82	71-129	ug/L	1	20
Benzene	10.00	8.964	90	77-120	ug/L	5	20
Trichloroethene	10.00	9.079	91	73-120	ug/L	4	20
Toluene	10.00	9.481	95	78-120	ug/L	3	20
Chlorobenzene	10.00	9.957	100	80-120	ug/L	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-120
1,2-Dichloroethane-d4	98	80-120
Toluene-d8	105	80-120
Bromofluorobenzene	98	80-120

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

California Title 22 Metals

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Matrix:** Water **Sampled:** 02/18/20

Lab ID: 318380-001 **Dil'n Fac:** 1.000 **Received:** 02/19/20

Analyte	Result	RL	MDL	Units	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	10	1.4	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Arsenic	**13**	10	1.7	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Barium	**140**	5.0	0.85	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Beryllium	**0.67 J**	2.0	0.35	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Cadmium	**0.75 J**	5.0	0.31	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Chromium	**1,900**	5.0	0.67	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Cobalt	**9.9**	5.0	0.31	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Copper	**310**	5.0	1.4	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Lead	**18**	5.0	1.4	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Mercury	ND	0.20	0.040	ug/L	278825	02/24/20	02/24/20	METHOD	EPA 7470A
Molybdenum	**33**	5.0	0.42	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Nickel	**120**	5.0	0.52	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Selenium	ND	10	2.4	ug/L	278762	02/20/20	02/21/20	EPA 3010A	EPA 6010B
Silver	ND	5.0	0.52	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Thallium	ND	10	2.2	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Vanadium	**65**	5.0	0.65	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B
Zinc	**260**	20	4.2	ug/L	278762	02/20/20	02/24/20	EPA 3010A	EPA 6010B

Legend

J: Estimated value

MDL: Method Detection Limit

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BLANK **Matrix:** Water **Batch#:** 278762 **Prep:** EPA 3010A

Lab ID: QC1010112 **Diln Fac:** 1.000 **Prepared:** 02/20/20 **Analysis:** EPA 6010B

Analyte	Result	RL	MDL	Units	Analyzed
Antimony	ND	10	1.4	ug/L	02/24/20
Arsenic	ND	10	1.7	ug/L	02/24/20
Barium	ND	5.0	0.85	ug/L	02/24/20
Beryllium	ND	2.0	0.35	ug/L	02/24/20
Cadmium	ND	5.0	0.31	ug/L	02/24/20
Chromium	ND	5.0	0.67	ug/L	02/24/20
Cobalt	ND	5.0	0.31	ug/L	02/24/20
Copper	ND	5.0	1.4	ug/L	02/24/20
Lead	ND	5.0	1.4	ug/L	02/24/20
Molybdenum	ND	5.0	0.42	ug/L	02/24/20
Nickel	ND	5.0	0.52	ug/L	02/24/20
Selenium	ND	10	2.4	ug/L	02/21/20
Silver	ND	5.0	0.52	ug/L	02/24/20
Thallium	ND	10	2.2	ug/L	02/24/20
Vanadium	ND	5.0	0.65	ug/L	02/24/20
Zinc	ND	20	4.2	ug/L	02/24/20

Legend

MDL: Method Detection Limit

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Matrix:** Water **Batch#:** 278762 **Prep:** EPA 3010A

Lab ID: QC1010113 **Diln Fac:** 1.000 **Prepared:** 02/20/20 **Analysis:** EPA 6010B

Analyte	Spiked	Result	%REC	Limits	Units	Analyzed
Antimony	100.0	105.1	105	80-120	ug/L	02/24/20
Arsenic	100.0	104.3	104	80-120	ug/L	02/24/20
Barium	100.0	103.4	103	80-120	ug/L	02/24/20
Beryllium	100.0	101.8	102	80-120	ug/L	02/24/20
Cadmium	100.0	100.0	100	80-120	ug/L	02/24/20
Chromium	100.0	105.9	106	80-120	ug/L	02/24/20
Cobalt	100.0	104.2	104	80-120	ug/L	02/24/20
Copper	100.0	97.80	98	80-120	ug/L	02/24/20
Lead	100.0	103.4	103	80-120	ug/L	02/24/20
Molybdenum	100.0	104.3	104	80-120	ug/L	02/24/20
Nickel	100.0	104.0	104	80-120	ug/L	02/24/20
Selenium	100.0	95.99	96	80-120	ug/L	02/21/20
Silver	100.0	98.86	99	80-120	ug/L	02/24/20
Thallium	50.00	52.59	105	80-120	ug/L	02/24/20
Vanadium	100.0	105.6	106	80-120	ug/L	02/24/20
Zinc	100.0	103.1	103	80-120	ug/L	02/24/20

Type: BSD **Matrix:** Water **Batch#:** 278762 **Prep:** EPA 3010A

Lab ID: QC1010114 **Diln Fac:** 1.000 **Prepared:** 02/20/20 **Analysis:** EPA 6010B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Analyzed
Antimony	100.0	103.4	103	80-120	ug/L	2	20	02/24/20
Arsenic	100.0	104.2	104	80-120	ug/L	0	20	02/24/20
Barium	100.0	102.4	102	80-120	ug/L	1	20	02/24/20
Beryllium	100.0	101.4	101	80-120	ug/L	0	20	02/24/20
Cadmium	100.0	99.20	99	80-120	ug/L	1	20	02/24/20
Chromium	100.0	105.6	106	80-120	ug/L	0	20	02/24/20
Cobalt	100.0	102.8	103	80-120	ug/L	1	20	02/24/20
Copper	100.0	97.59	98	80-120	ug/L	0	20	02/24/20
Lead	100.0	103.0	103	80-120	ug/L	0	20	02/24/20
Molybdenum	100.0	103.4	103	80-120	ug/L	1	20	02/24/20
Nickel	100.0	103.3	103	80-120	ug/L	1	20	02/24/20
Selenium	100.0	92.17	92	80-120	ug/L	4	20	02/21/20
Silver	100.0	97.88	98	80-120	ug/L	1	20	02/24/20
Thallium	50.00	52.85	106	80-120	ug/L	0	20	02/24/20
Vanadium	100.0	103.7	104	80-120	ug/L	2	20	02/24/20
Zinc	100.0	102.2	102	80-120	ug/L	1	20	02/24/20

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Matrix:** Water **Received:** 02/19/20
Type: MS **Diln Fac:** 1.000 **Prepared:** 02/20/20
MSS Lab ID: 318380-001 **Batch#:** 278762 **Prep:** EPA 3010A
Lab ID: QC1010115 **Sampled:** 02/18/20 **Analysis:** EPA 6010B

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Analyzed	Qual
Antimony	<1.362	100.0	54.93	55 *	75-125	ug/L	02/24/20	
Arsenic	13.33	100.0	126.0	113	80-125	ug/L	02/24/20	
Barium	143.8	100.0	243.3	100	78-120	ug/L	02/24/20	
Beryllium	0.6736	100.0	108.2	108	80-120	ug/L	02/24/20	
Cadmium	0.7467	100.0	108.0	107	80-120	ug/L	02/24/20	
Chromium	1,942	100.0	2,150	208	80-120	ug/L	02/24/20	NM
Cobalt	9.856	100.0	117.7	108	80-120	ug/L	02/24/20	
Copper	314.9	100.0	432.9	118	80-120	ug/L	02/24/20	
Lead	17.67	100.0	123.8	106	80-120	ug/L	02/24/20	
Molybdenum	33.49	100.0	147.0	114	80-120	ug/L	02/24/20	
Nickel	124.6	100.0	235.2	111	80-120	ug/L	02/24/20	
Selenium	<2.444	100.0	95.13	95	75-125	ug/L	02/21/20	
Silver	<0.5225	100.0	105.4	105	80-120	ug/L	02/24/20	
Thallium	<2.180	50.00	52.14	104	75-120	ug/L	02/24/20	
Vanadium	65.42	100.0	178.7	113	80-122	ug/L	02/24/20	
Zinc	257.2	100.0	361.0	104	80-122	ug/L	02/24/20	

Field ID: ET-LW01-20200218 **Matrix:** Water **Received:** 02/19/20
Type: MSD **Diln Fac:** 1.000 **Prepared:** 02/20/20
MSS Lab ID: 318380-001 **Batch#:** 278762 **Prep:** EPA 3010A
Lab ID: QC1010116 **Sampled:** 02/18/20 **Analysis:** EPA 6010B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim	Analyzed	Qual
Antimony	100.0	56.99	57 *	75-125	ug/L	4	32	02/24/20	
Arsenic	100.0	128.4	115	80-125	ug/L	2	22	02/24/20	
Barium	100.0	248.2	104	78-120	ug/L	2	20	02/24/20	
Beryllium	100.0	108.1	107	80-120	ug/L	0	20	02/24/20	
Cadmium	100.0	108.2	107	80-120	ug/L	0	20	02/24/20	
Chromium	100.0	2,184	243	80-120	ug/L	2	20	02/24/20	NM
Cobalt	100.0	118.0	108	80-120	ug/L	0	20	02/24/20	
Copper	100.0	442.7	128 *	80-120	ug/L	2	20	02/24/20	
Lead	100.0	124.3	107	80-120	ug/L	0	20	02/24/20	
Molybdenum	100.0	146.5	113	80-120	ug/L	0	20	02/24/20	
Nickel	100.0	239.8	115	80-120	ug/L	2	20	02/24/20	
Selenium	100.0	100.4	100	75-125	ug/L	5	43	02/21/20	
Silver	100.0	105.7	106	80-120	ug/L	0	20	02/24/20	
Thallium	50.00	51.81	104	75-120	ug/L	1	20	02/24/20	
Vanadium	100.0	180.8	115	80-122	ug/L	1	20	02/24/20	
Zinc	100.0	366.9	110	80-122	ug/L	2	20	02/24/20	

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Legend

***:** Value is outside QC limits

NM: Not Meaningful: Sample concentration > 4X spike concentration

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Matrix:** Water **Received:** 02/19/20

Type: Serial Dilution **Diln Fac:** 5.000 **Prep:** EPA 3010A

MSS Lab ID: 318380-001 **Batch#:** 278762 **Analysis:** EPA 6010B

Lab ID: QC1010117 **Sampled:** 02/18/20

Analyte	MSS Result	MSS RL	Result	RL	Units	% Diff	Lim	Analyzed
Antimony	ND	10.00	ND	50.00	ug/L	NC	10	02/24/20
Arsenic	13.33	10.00	**20.67 J**	25.48	ug/L	NC	10	02/24/20
Barium	143.8	5.000	**140.7**	25.00	ug/L	2	10	02/24/20
Beryllium	0.6736	2.000	ND	10.00	ug/L	NC	10	02/24/20
Cadmium	0.7467	5.000	ND	25.00	ug/L	NC	10	02/24/20
Chromium	1,942	5.000	**1,804**	25.00	ug/L	7	10	02/24/20
Cobalt	9.856	5.000	**10.13 J**	25.00	ug/L	NC	10	02/24/20
Copper	314.9	5.000	**317.2**	25.00	ug/L	1	10	02/24/20
Lead	17.67	5.000	**19.88 J**	25.00	ug/L	NC	10	02/24/20
Molybdenum	33.49	5.000	**35.12**	25.00	ug/L	5	10	02/24/20
Nickel	124.6	5.000	**126.7**	25.00	ug/L	2	10	02/24/20
Selenium	ND	10.00	ND	50.00	ug/L	NC	10	02/21/20
Silver	ND	5.000	ND	25.00	ug/L	NC	10	02/24/20
Thallium	ND	10.00	ND	50.00	ug/L	NC	10	02/24/20
Vanadium	65.42	5.000	**63.61**	25.00	ug/L	3	10	02/24/20
Zinc	257.2	20.00	**252.7**	100.0	ug/L	2	10	02/24/20

Legend

J: Estimated value

NC: Not Calculated

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Matrix:** Water **Received:** 02/19/20

Type: Post Digest Spike **Diln Fac:** 1.000 **Prep:** EPA 3010A

MSS Lab ID: 318380-001 **Batch#:** 278762 **Analysis:** EPA 6010B

Lab ID: QC1010118 **Sampled:** 02/18/20

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units	Analyzed	Qual
Antimony	<1.362	100.0	105.7	106	75-125	ug/L	02/24/20	
Arsenic	13.33	100.0	122.0	109	75-125	ug/L	02/24/20	
Barium	143.8	100.0	229.5	86	75-125	ug/L	02/24/20	
Beryllium	0.6736	100.0	104.2	104	75-125	ug/L	02/24/20	
Cadmium	0.7467	100.0	103.9	103	75-125	ug/L	02/24/20	
Chromium	1,942	100.0	1,973	32	75-125	ug/L	02/24/20	NM
Cobalt	9.856	100.0	112.7	103	75-125	ug/L	02/24/20	
Copper	314.9	100.0	404.9	90	75-125	ug/L	02/24/20	
Lead	17.67	100.0	117.6	100	75-125	ug/L	02/24/20	
Molybdenum	33.49	100.0	139.2	106	75-125	ug/L	02/24/20	
Nickel	124.6	100.0	223.2	99	75-125	ug/L	02/24/20	
Selenium	<2.444	100.0	89.11	89	75-125	ug/L	02/21/20	
Silver	<0.5225	100.0	101.7	102	75-125	ug/L	02/24/20	
Thallium	<2.180	50.00	50.09	100	75-125	ug/L	02/24/20	
Vanadium	65.42	100.0	168.2	103	75-125	ug/L	02/24/20	
Zinc	257.2	100.0	341.4	84	75-125	ug/L	02/24/20	

Legend

NM: Not Meaningful: Sample concentration > 4X spike concentration

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BLANK **Diln Fac:** 1.000 **Analyzed:** 02/24/20

Lab ID: QC1010360 **Batch#:** 278825 **Prep:** METHOD

Matrix: Water **Prepared:** 02/24/20 **Analysis:** EPA 7470A

Analyte	Result	RL	MDL	Units
Mercury	ND	0.20	0.040	ug/L

Legend

MDL: Method Detection Limit

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Dil'n Fac:** 1.000 **Analyzed:** 02/24/20

Lab ID: QC1010361 **Batch#:** 278825 **Prep:** METHOD

Matrix: Water **Prepared:** 02/24/20 **Analysis:** EPA 7470A

Analyte	Spiked	Result	%REC	Limits	Units
Mercury	2.000	2.048	102	80-120	ug/L

Type: BSD **Dil'n Fac:** 1.000 **Analyzed:** 02/24/20

Lab ID: QC1010362 **Batch#:** 278825 **Prep:** METHOD

Matrix: Water **Prepared:** 02/24/20 **Analysis:** EPA 7470A

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Mercury	2.000	2.094	105	80-120	ug/L	2	20

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ZZZZZZZZZZ **Diln Fac:** 1.000 **Analyzed:** 02/24/20
Type: MS **Batch#:** 278825 **Prep:** METHOD
MSS Lab ID: 318425-002 **Sampled:** 02/18/20 **Analysis:** EPA 7470A
Lab ID: QC1010363 **Received:** 02/20/20
Matrix: Water **Prepared:** 02/24/20

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Mercury	<0.04000	2.000	2.088	104	62-120	ug/L

Field ID: ZZZZZZZZZZ **Diln Fac:** 1.000 **Analyzed:** 02/24/20
Type: MSD **Batch#:** 278825 **Prep:** METHOD
MSS Lab ID: 318425-002 **Sampled:** 02/18/20 **Analysis:** EPA 7470A
Lab ID: QC1010364 **Received:** 02/20/20
Matrix: Water **Prepared:** 02/24/20

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Mercury	2.000	2.065	103	62-120	ug/L	1	46

Legend
RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

California Title 22 Metals: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID:	ZZZZZZZZZZ	**Matrix:**	Water	**Received:**	02/20/20
Type:	Serial Dilution	**DiIn Fac:**	5.000	**Analyzed:**	02/24/20
MSS Lab ID:	318425-002	**Batch#:**	278825	**Prep:**	METHOD
Lab ID:	QC1010365	**Sampled:**	02/18/20	**Analysis:**	EPA 7470A

Analyte	MSS Result	MSS RL	Result	RL	Units	% Diff	Lim
Mercury	ND	0.2000	ND	1.000	ug/L	NC	10

Legend

NC: Not Calculated

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Oil & Grease (HEM)

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Diln Fac:** 1.075 **Analyzed:** 02/19/20 10:00

Type: SAMPLE **Batch#:** 278708 **Prep:** METHOD

Lab ID: 318380-001 **Sampled:** 02/18/20 14:45 **Analysis:** EPA 1664A

Matrix: Water **Received:** 02/19/20

Analyte	Result	RL	MDL	Units
Oil & Grease (HEM)	ND	5.38	1.83	mg/L

Type: BLANK **Matrix:** Water **Batch#:** 278708 **Prep:** METHOD

Lab ID: QC1009885 **Diln Fac:** 1.000 **Analyzed:** 02/18/20 16:33 **Analysis:** EPA 1664A

Analyte	Result	RL	MDL	Units
Oil & Grease (HEM)	ND	5.00	1.70	mg/L

Legend

MDL: Method Detection Limit

ND: Not Detected at or above MDL

RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Oil & Grease (HEM): Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Matrix:** Water **Batch#:** 278708 **Prep:** METHOD

Lab ID: QC1009886 **DiIn Fac:** 1.000 **Analyzed:** 02/18/20 16:33 **Analysis:** EPA 1664A

Analyte	Spiked	Result	%REC	Limits	Units
Oil & Grease (HEM)	40.00	36.70	92	78-114	mg/L

Type: BSD **Matrix:** Water **Batch#:** 278708 **Prep:** METHOD

Lab ID: QC1009887 **DiIn Fac:** 1.000 **Analyzed:** 02/18/20 16:33 **Analysis:** EPA 1664A

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Oil & Grease (HEM)	40.00	36.20	91	78-114	mg/L	1	18

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Flash Point

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID:	ET-LW01-20200218	**Batch#:**	278828	**Prep:**	METHOD
Lab ID:	318380-001	**Sampled:**	02/18/20	**Analysis:**	ASTM D93
Matrix:	Water	**Received:**	02/19/20		
DiIn Fac:	1.000	**Analyzed:**	02/24/20		

Analyte	Result	RL	Units
Flash Point	**>212**	1.0	deg F

Legend
RL: Reporting Limit

ENTHALPY ANALYTICAL

Flash Point: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Type: BS **Matrix:** Water **Batch#:** 278828 **Prep:** METHOD

Lab ID: QC1010375 **Diln Fac:** 1.000 **Analyzed:** 02/24/20 **Analysis:** ASTM D93

Analyte	Spiked	Result	%REC	Limits	Units
Flash Point	81.00	81.00	100	98-103	deg F

Type: BSD **Matrix:** Water **Batch#:** 278828 **Prep:** METHOD

Lab ID: QC1010376 **Diln Fac:** 1.000 **Analyzed:** 02/24/20 **Analysis:** ASTM D93

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Flash Point	81.00	81.00	100	98-103	deg F	0	10

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

pH

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Matrix:** Water **Batch#:** 278731 **Received:** 02/19/20

Lab ID: 318380-001 **Diln Fac:** 1.000 **Sampled:** 02/18/20 14:45 **Analyzed:** 02/19/20 10:15

Analyte	Result	RL	Units	Prep	Analysis
pH	**7.5**	1.0	SU	METHOD	EPA 9040C
Temperature (for pH)	**13.5**		deg C		SM2550B

Legend

RL: Reporting Limit

ENTHALPY ANALYTICAL

pH: Batch QC

Lab #: 318380 **Project#:** MCAS EL TORO

Client: Vista Analytical Laboratory **Location:** MCAS El Toro and Tustin, PFAS

Field ID: ET-LW01-20200218 **Matrix:** Water **Received:** 02/19/20

Type: SDUP **Diln Fac:** 1.000 **Analyzed:** 02/19/20 10:15

MSS Lab ID: 318380-001 **Batch#:** 278731

Lab ID: QC1009977 **Sampled:** 02/18/20 14:45

Analyte	MSS Result	Result	RL	Units	RPD	Lim	Prep	Analysis
pH	7.530	**7.560**	1.000	SU	0	20	METHOD	EPA 9040C
Temperature (for pH)	13.50	**13.50**		deg C	0			SM2550B

Legend

RL: Reporting Limit

RPD: Relative Percent Difference

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Appendix C:
Waste Manifest

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NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CA5170023208	1	800-424-9300-CHEMTREC	62561

GENERATOR

5. Generator's Name and Mailing Address
US NAVY BRAC, PMO - W (EL TORO)
1 AVE OF THE PALMS, SUITE - 161
SAN FRANCISCO, CA 94130
Generator's Phone: 415-743-4713-DOUGLAS DELONG

Generator's Site Address (if different than mailing address)
MAGAZINE RD & IRVINE BLVD, SITES 18 & 24
IRVINE, CA 92618

6. Transporter 1 Company Name: EFR ENVIRONMENTAL SERVICES, INC
U.S. EPA ID Number: CAR000011205

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
CROSBY & OVERTON PLANT #1
1630 W. 17TH ST
LONG BEACH, CA 90813 USA
Facility's Phone: 562-432-5445
U.S. EPA ID Number: CAD028409019

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	NON-HAZARDOUS WASTE LIQUID (PURGE WATER)	1	DM	50	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
9-1 PROFILE #115340 (PURGE WATER) TRACKING # ET-12076
ALWAYS WEAR APPROPRIATE PPE AND USE SAFE HANDLING METHODS
CHEMTREC CUSTOMER #7429

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Jeff McGovern — Signature — Month 6 Day 26 Year 20

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Devin Austin — On behalf of — Signature — Month 6 Day 26 Year 20

Transporter 2 Printed/Typed Name: — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name — Signature — Month Day Year

169-BLC-O 5 11977 (Rev. 9/09) GENERATOR'S/SHIPPER'S INITIAL COPY

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INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
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INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247

INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-EFF	Treatment system air or water	6104475.416	2191351.197	SGU-GW-SGUTPEFL-20200204	Ground water effluent (from system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	DUP02-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
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EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW05BR	Monitoring well	6108285.86	2190795.56	24-GW-24MW05BR-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24_EX30_B1	Unknown	6110253.281	2188238.144	24-GW-24EX30B1-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	SGU-INF	Treatment system air or water	6104469.902	2191431.4	SGU-GW-SGUTPINF-20200204	Ground water influent (into system)	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24EX2OB	Monitoring well	6106099.18	2192977.23	24-GW-24EX20B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	21UGMW37	Monitoring well	6108130.47	2188793.27	24-GW-21UGMW37-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24MW10B	Monitoring well	6107253.44	2191367.48	24-GW-24MW10B-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247
EL_TORO_MCAS	SITE 00024	24NEW7	Monitoring well	6108983.54	2190576.73	24-GW-24NEW7-20200204	Ground water	4-Feb-20	Perfluoroalkyl Compounds	2000247